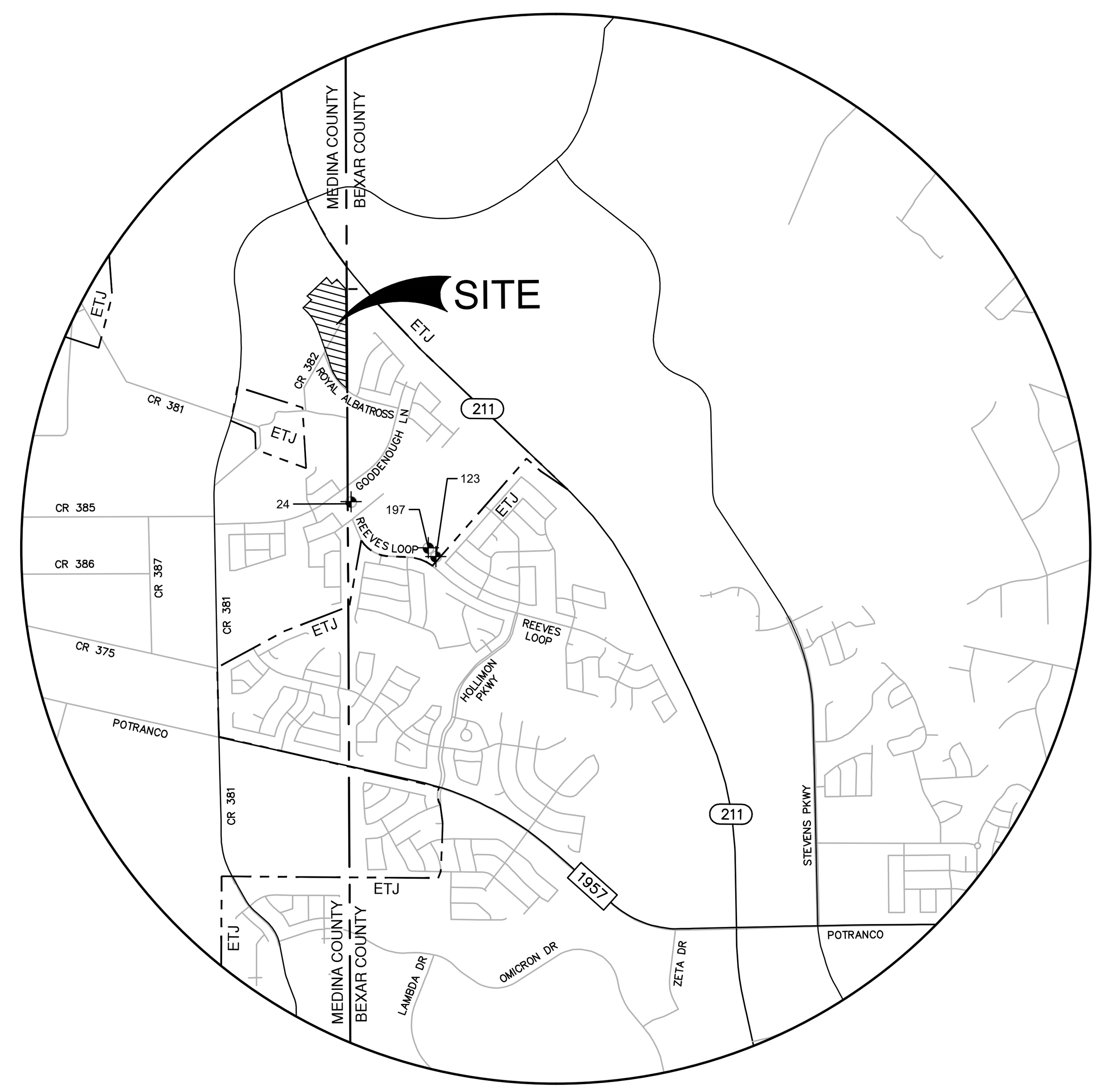
REDBIRD RANCH UNIT 2M-2

SAN ANTONIO, TEXAS

CIVIL CONSTRUCTION PLANS



LOCATION MAP
NOT-TO-SCALE

MARCH 2024

PREPARED FOR:

CONTINENTAL HOMES OF TEXAS, L.P.
5419 N LOOP 1604 EAST
SAN ANTONIO, TEXAS 78247

STATE OF TEXAS
VANCE L. WEYNAND
99269
LICENSED
PROFESSIONAL ENGINEER
3/20/2024
Vance Weynand

DHI

DHI Engineering, LLC.
5419 N. LOOP 1604 EAST
SAN ANTONIO, TX 78247
(210) 496-2668 | dhiengineering.com
TBPE REG. NO. F-19561

BENCHMARKS				
POINT	NORTHING	EASTING	ELEVATION	FULL DESCRIPTION
24	13,710,759.16	2,030,892.83	1018.44	SET MAG NAIL (TRAV)
123	13,709,660.22	2,032,593.76	968.92	SET MAG NAIL (TRAV)
197	13,709,835.28	2,032,443.01	970.45	SET MAG NAIL & WASHER (TRAV)

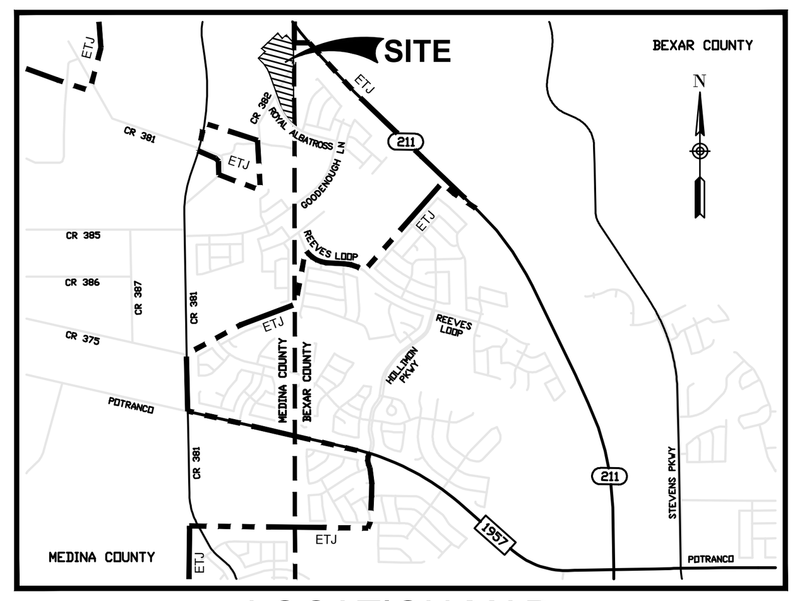
SHEET INDEX

SEWER: SAWS MEDIO CREEK WRC

DEVELOPER'S NAME: CONTINENTAL HOMES OF TEXAS, L.P.
ADDRESS: 5419 N. LOOP 1604 EAST
CITY: SAN ANTONIO STATE: TEXAS ZIP: 78247
PHONE # (210) 496-2668 FAX # (210) 496-2668
SAWS BLOCK MAP # 062586 062588 TOTAL EDU'S: 89 TOTAL ACREAGE: 20.795
TOTAL LINEAR FOOTAGE OF PIPE: 3,625 L.F. (8") DOC. NO: (MEDINA COUNTY)
NUMBER OF LOTS: 89 SAWS JOB NO: 24-1513

SHEET NO.
C0.00

DHI ENGINEERING, LLC.



LOCATION MAP
NOT-TO-SCALE

REDBIRD RANCH UNIT 2M-2

ATLAS 14 EXISTING FLOW (Q) CALCULATIONS

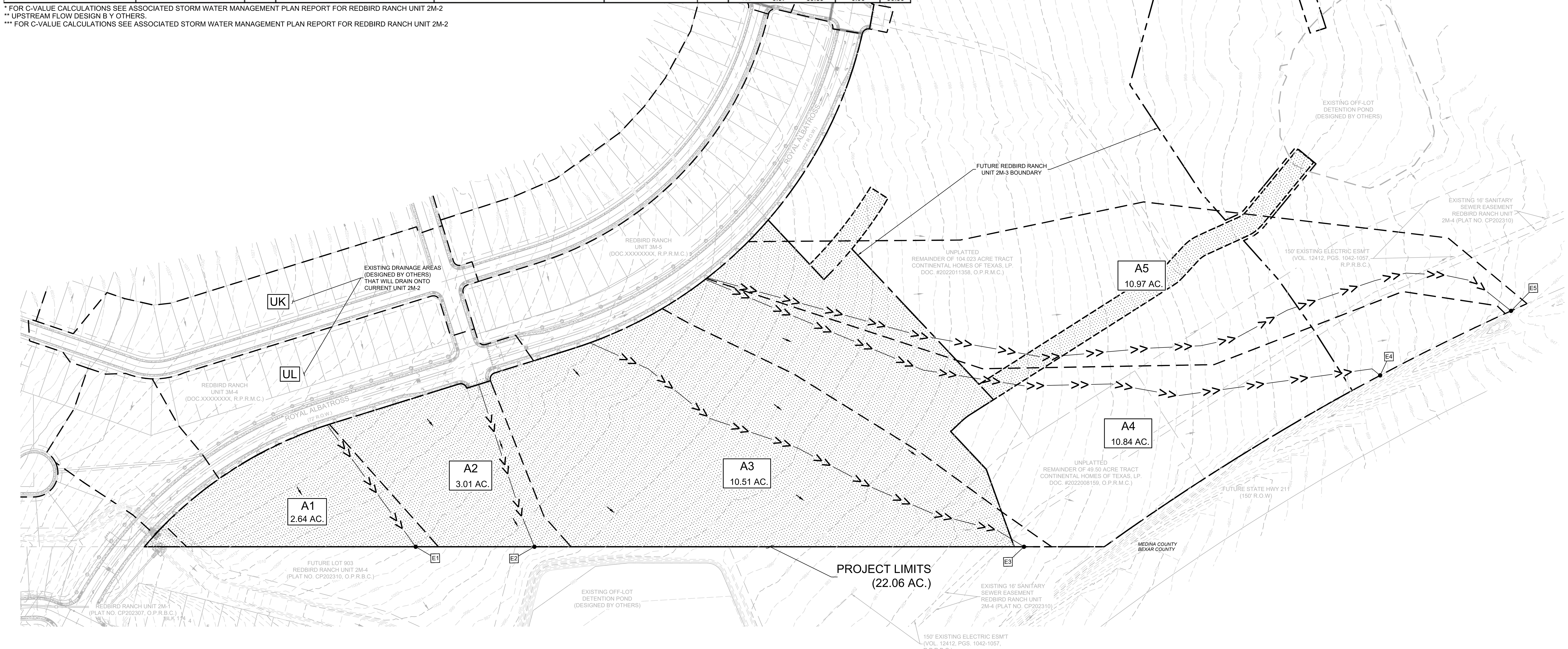
Ref. Point	Structure / Description	Drainage Areas #	Area (Ac)	C	Total flowpath (ft)	Overland/Sheet Flow (TR-55) L_o (ft)	n	P_2	S_0 (ft/ft)	T_0* (min)	Shallow Concentrated Flow L_{SC} (ft)	Condition	Slope (ft/ft)	V_{SC} (fps)	T_{SC} (min)	Channelized Flow L_{CH} (FT)	V_{CH} (fps)	T_{CH} (min)	T_{C-TOT}	Rational Method Q = C·I·A Return Year	Intensity (in/hr)	Q (cfs)	Upstream Carryover Q_{UP} (cfs)	Q Total (cfs)
E1	RUNOFF FROM EXISTING A1	A1	2.64	0.53	362.00	300	0.130	4.44	3.55	14.21	62	Unpaved	3.27	2.918	0.30	0	6.0	0.00	14.51	5	5.37	7.52	0.00	7.52
																				25	7.46	10.43	0.00	10.43
																				100	9.29	13.00	0.00	13.00
	-	A2	3.01	0.53	413.00	100	0.130	4.44	2.15	7.21	300	Unpaved	3.14	2.859	1.74	13	6.0	0.04	8.99	5	6.54	10.44	0.00	10.44
																				25	9.17	14.63	0.00	14.63
																				100	11.50	18.34	0.00	18.34
E2	RUNOFF FROM EXISTING A2+UK+UL	A2+UK+UL**	3.01	0.53	414.00	300	0.130	4.44	3.33	14.57	114	Unpaved	2.99	2.790	0.60	0	6.0	0.00	15.17	5	5.25	8.37	16.00**	23.74
																				25	7.28	11.61	24.00**	34.73
																				100	9.06	14.45	29.00**	42.36
E3	RUNOFF FROM EXISTING A3	A3	10.51	0.53	1166.00	300	0.130	4.44	3.05	15.10	476	Unpaved	2.42	2.510	3.16	390	3.0	2.17	20.43	5	4.50	25.04	0.00	25.04
																				25	6.21	34.59	0.00	34.59
																				100	7.70	42.91	0.00	42.91
E4	RUNOFF FROM EXISTING A4	A4	10.84	0.49	1686.00	300	0.130	4.44	2.57	16.16	1386	Unpaved	2.50	2.551	9.05	0	6.0	0.00	25.21	5	4.04	21.47	0.00	21.47
																				25	5.57	29.61	0.00	29.61
																				100	6.90	36.67	0.00	36.67
E5	RUNOFF FROM EXISTING A5	A5	10.97	0.49	2019.00	300	0.130	4.44	2.55	16.22	1439	Unpaved	2.62	2.612	9.18	280	3.0	1.56	26.96	5	3.91	21.00	0.00	21.00
																				25	5.39	28.95	0.00	28.95
																				100	6.67	35.85	0.00	35.85

* FOR C-VALUE CALCULATIONS SEE ASSOCIATED STORM WATER MANAGEMENT PLAN REPORT FOR REDBIRD RANCH UNIT 2M-2
** UPSTREAM FLOW DESIGN B Y OTHERS.
*** FOR C-VALUE CALCULATIONS SEE ASSOCIATED STORM WATER MANAGEMENT PLAN REPORT FOR REDBIRD RANCH UNIT 2M-2

LEGEND (DRAINAGE AREA MAP)

- PROJECT LIMITS
- EXISTING CONTOUR (985)
- PROPOSED CONTOUR (1002)
- FLOW ARROW
- TYPICAL LOT GRADING (A)(B)(C)
- TIME OF CONCENTRATION (>>)
- ANALYSIS POINT (J1)
- DRAINAGE AREA (A2 43.82 AC)
- DRAINAGE AREA BOUNDARY

0 120' 240'



REV	DATE	DESCRIPTION

3/20/2024
STATE OF TEXAS
VANCE L. WEYNAND
99269
LICENSED
PROFESSIONAL ENGINEER
Vance Weynand

DHI Engineering, LLC.
5419 N. LOOP 1604 EAST
SAN ANTONIO, TX 78247
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TBPE REG. NO. F-19561

DHI

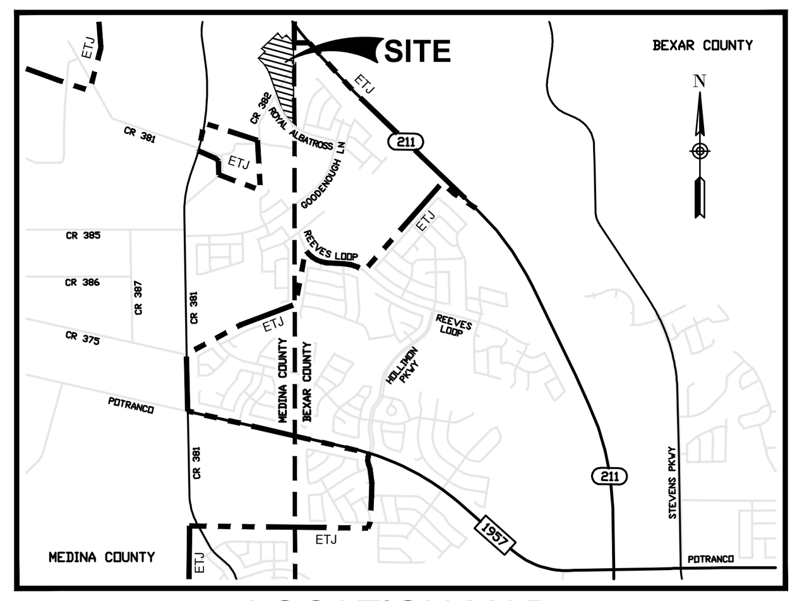
REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX

EXISTING DRAINAGE AREA MAP

DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	3/20/2024
JOB NO.:	05000-200
SHEET NO.	C1.00

DOC. # XXXXXXXXXXXXX
REDBIRD RANCH UNIT 2M-2

Date: Mar 20, 2024, 10:51am User ID: AMSiller File: \\drhorton.com\tex-sant\HBGROUPS\Engineering_PROJECT\05000\200\900 – Design\930 – Sheets\C1.00 EXISTING DRAINAGE AREA MAP.dwg



LOCATION MAP

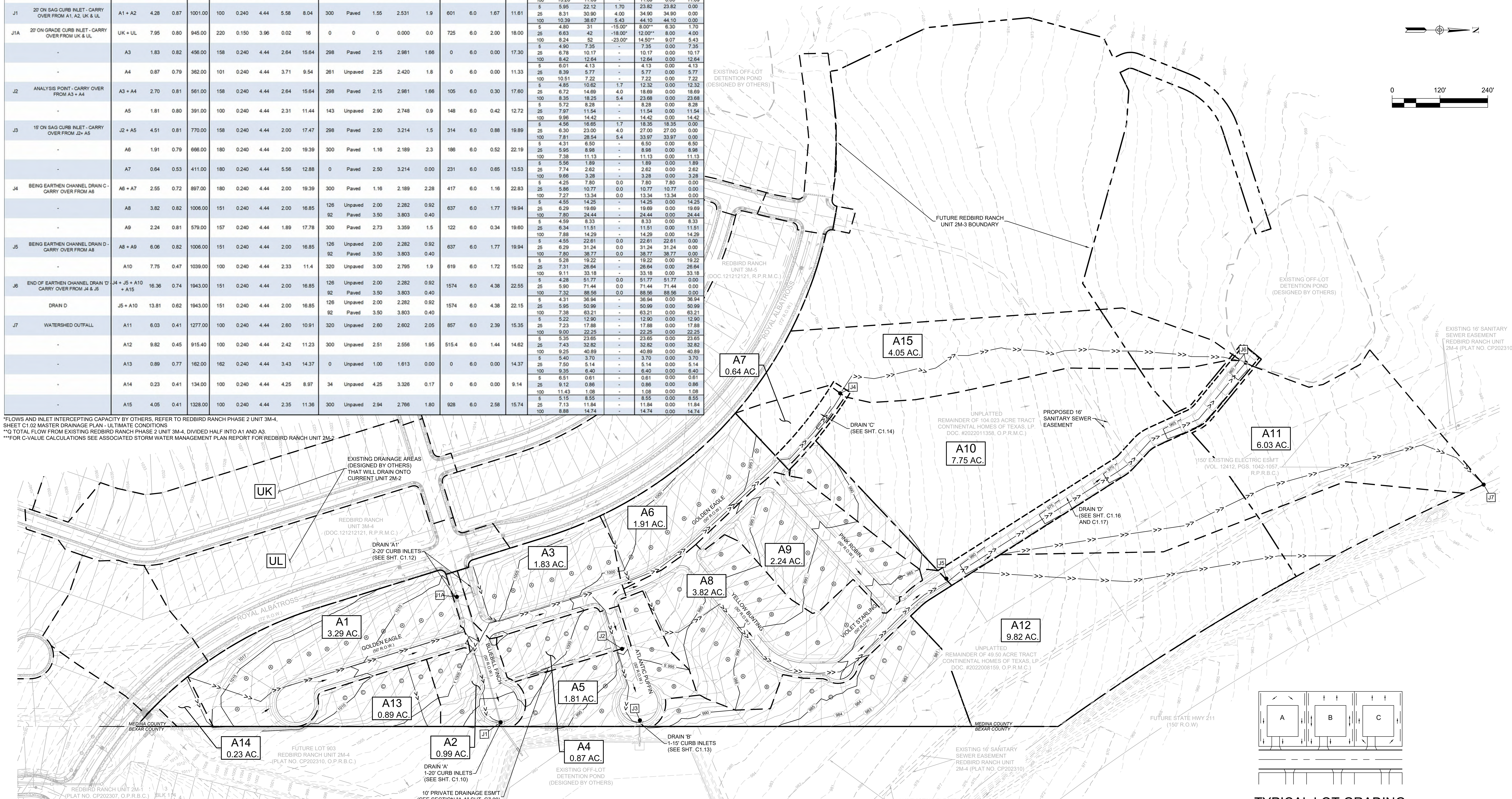
NOT-TO-SCALE

REDBIRD RANCH UNIT 2M-2

PROPOSED TIME OF CONCENTRATION - SCS TR-55 Method

Ref. Point	Structure / Description	Drainage Areas #	Area (Ac)	C	Total flowpath (ft)	L_0 (ft)	n	P_2	S_0 (ft/ft)	T_0 (min)	L_{SC} (ft)	Condition	Slope (ft/ft)	V_{SC} (fps)	T_{SC} (min)	L_{CH} (FT)	V_{CH} (fps)	T_{CH} (min)	$T_{C\text{-}TOT}$ (min)	Return Year	Intensity (in/hr)	Q (cfs)	Upstream Carryover Q_{UP} (cfs)	Q Total (cfs)	Q Intercept (cfs)	Q Bypass (cfs)
	-	A1	3.29	0.86	738.00	100	0.240	4.44	5.58	8.04	300	Paved	1.55	2.531	1.9	338	6.0	0.94	10.88	5	6.10	17.25	-	17.25	0.00	17.25
																				25	8.53	24.12	-	24.12	0.00	24.12
																				100	10.69	30.20	-	30.20	0.00	30.20
	-	A2	0.99	0.89	423.00	160	0.011	4.44	2.50	5	0	0	0	0.000	0.0	263	6.0	0.74	5.74	5	7.57	6.67	-	6.67	0.00	6.67
																				25	10.58	9.32	-	9.32	0.00	9.32
																				100	13.26	11.69	-	11.69	0.00	11.69
J1	20' ON SAG CURB INLET - CARRY OVER FROM A1, A2, UK & UL	A1 + A2	4.28	0.87	1001.00	100	0.240	4.44	5.58	8.04	300	Paved	1.55	2.531	1.9	601	6.0	1.67	11.61	5	5.95	22.12	1.70	23.82	23.82	0.00
																				25	8.31	30.90	4.00	34.90	34.90	0.00
																				100	10.39	38.67	5.43	44.10	44.10	0.00
J1A	20' ON GRADE CURB INLET - CARRY OVER FROM UK & UL	UK + UL	7.95	0.80	945.00	220	0.150	3.96	0.02	16	0	0	0	0.000	0.0	725	6.0	2.00	18.00	5	4.80	31	-15.00*	8.00**	6.30	1.70
																				25	6.63	42	-18.00*	12.00**	8.00	4.00
																				100	8.24	52	-23.00*	14.50**	9.07	5.43
	-	A3	1.83	0.82	456.00	158	0.240	4.44	2.64	15.64	298	Paved	2.15	2.981	1.66	0	6.0	0.00	17.30	5	4.90	7.35	-	7.35	0.00	7.35
																				25	6.78	10.17	-	10.17	0.00	10.17
																				100	8.42	12.64	-	12.64	0.00	12.64
	-	A4	0.87	0.79	362.00	101	0.240	4.44	3.71	9.54	261	Unpaved	2.25	2.420	1.8	0	6.0	0.00	11.33	5	6.01	4.13	-	4.13	0.00	4.13
																				25	8.39	5.77	-	5.77	0.00	5.77
																				100	10.51	7.22	-	7.22	0.00	7.22
J2	ANALYSIS POINT - CARRY OVER FROM A3 + A4	A3 + A4	2.70	0.81	561.00	158	0.240	4.44	2.64	15.64	298	Paved	2.15	2.981	1.66	105	6.0	0.30	17.60	5	4.85	10.62	1.7	12.32	0.00	12.32
																				25	6.72	14.69	4.0	18.69	0.00	18.69
																				100	8.35	18.25	5.4	23.68	0.00	23.68
	-	A5	1.81	0.80	391.00	100	0.240	4.44	2.31	11.44	143	Unpaved	2.90	2.748	0.9	148	6.0	0.42	12.72	5	5.72	8.28	-	8.28	0.00	8.28
																				25	7.97	11.54	-	11.54	0.00	11.54
																				100	9.96	14.42	-	14.42	0.00	14.42
J3	15' ON SAG CURB INLET - CARRY OVER FROM J2+ A5	J2 + A5	4.51	0.81	770.00	158	0.240	4.44	2.00	17.47	298	Paved	2.50	3.214	1.5	314	6.0	0.88	19.89	5	4.56	16.65	1.7	18.35	18.35	0.00
																				25	6.30	23.00	4.0	27.00	27.00	0.00
																				100	7.81	28.54	5.4	33.97	33.97	0.00
	-	A6	1.91	0.79	666.00	180	0.240	4.44	2.00	19.39	300	Paved	1.16	2.189	2.3	186	6.0	0.52	22.19	5	4.31	6.50	-	6.50	0.00	6.50
																				25	5.95	8.98	-	8.98	0.00	8.98
																				100	7.38	11.13	-	11.13	0.00	11.13
	-	A7	0.64	0.53	411.00	180	0.240	4.44	5.56	12.88	0	Paved	2.50	3.214	0.00	231	6.0	0.65	13.53	5	5.56	1.89	-	1.89	0.00	1.89
																				25	7.74	2.62	-	2.62	0.00	2.62
																				100	9.66	3.28	-	3.28	0.00	3.28
J4	BEING EARTHEN CHANNEL DRAIN C - CARRY OVER FROM A6	A6 + A7	2.55	0.72	897.00	180	0.240	4.44	2.00	19.39	300	Paved	1.16	2.189	2.28	417	6.0	1.16	22.83	5	4.25	7.80	0.0	7.80	7.80	0.00
																				25	5.86	10.77	0.0	10.77	10.77	0.00
																				100	7.27	13.34	0.0	13.34	13.34	0.00
	-	A8	3.82	0.82	1006.00	151	0.240	4.44	2.00	16.85	126	Unpaved	2.00	2.282	0.92	637	6.0	1.77	19.94	5	4.55	14.25	-	14.25	0.00	14.25
											92	Paved	3.50	3.803	0.40					25	6.29	19.69	-	19.69	0.00	19.69
																				100	7.80	24.44	-	24.44	0.00	24.44
	-	A9	2.24	0.81	579.00	157	0.240	4.44	1.89	17.78	300	Paved	2.73	3.359	1.5	122	6.0	0.34	19.60	5	4.59	8.33	-	8.33	0.00	8.33
																				25	6.34	11.51	-	11.51	0.00	11.51
																				100	7.88	14.29	-	14.29	0.00	14.29
J5	BEING EARTHEN CHANNEL DRAIN D - CARRY OVER FROM A8	A8 + A9	6.06	0.82	1006.00	151	0.240	4.44	2.00	16.85	126	Unpaved	2.00	2.282	0.92	637	6.0	1.77	19.94	5	4.55	22.61	0.0	22.61	22.61	0.00
											92	Paved	3.50	3.803	0.40					25	6.29	31.24	0.0	31.24	31.24	0.00
																				100	7.80	38.77	0.0	38.77	38.77	0.00
	-	A10	7.75	0.47	1039.00	100	0.240	4.44	2.33	11.4	320	Unpaved	3.00	2.795	1.9	619	6.0	1.72	15.02	5	5.28	19.22	-	19.22	0.00	19.22
																				25	7.31	26.64	-	26.64	0.00	26.64
																				100	9.11	33.18	-	33.18	0.00	33.18
J6	END OF EARTHEN CHANNEL DRAIN 'D' - CARRY OVER FROM J4 & J5	J4 + J5 + A10 + A15	16.36	0.74	1943.00	151	0.240	4.44	2.00	16.85	126	Unpaved	2.00	2.282	0.92	1574	6.0	4.38	22.55	5	4.28	51.77	0.0	51.77	51.77	0.00
											92	Paved	3.50	3.803	0.40					25	5.90	71.44	0.0	71.44	71.44	0.00
																				100	7.32	88.56	0.0	88.56	88.56	0.00
	DRAIN D	J5 + A10	13.81	0.62	1943.00	151	0.240	4.44	2.00	16.85	126	Unpaved	2.00	2.282	0.92	1574	6.0	4.38	22.15	5	4.31	36.94	-	36.94	0.00	36.94
											92	Paved	3.50	3.803	0.40					25	5.95	50.99	-	50.99	0.00	50.99
																				100	7.38	63.21	-	63.21	0.00	63.21
J7	WATERSHED OUTFALL	A11	6.03	0.41	1277.00	100	0.240	4.44	2.60	10.91	320	Unpaved	2.60	2.602	2.05	857	6.0	2.39	15.35	5	5.22	12.90	-	12.90	0.00	12.90
																				25	7.23	17.88	-	17.88	0.00	17.88
																				100	9.00	22.25	-	22.25	0.00	22.25
	-	A12	9.82	0.45	915.40	100	0.240	4.44	2.42	11.23	300	Unpaved	2.51	2.556	1.95	515.4	6.0	1.44	14.62	5	5.35	23.65	-	23.65	0.00	23.65
																				25	7.43	32.82	-	32.82	0.00	32.82
																				100	9.25	40.89	-	40.89	0.00	40.89
	-	A13	0.89	0.77	162.00	162	0.240	4.44	3.43	14.37	0	Unpaved	1.00	1.613	0.00	0	6.0	0.00	14.37	5	5.40	3.70	-	3.70	0.00	3.70
																				25	7.50	5.14	-	5.14	0.00	5.14
																				100	9.35	6.40	-	6.40	0.00	6.40
	-	A14	0.23	0.41	134.00	100	0.240	4.44	4.25	8.97	34	Unpaved	4.25	3.326	0.17	0	6.0	0.00	9.14	5	6.51	0.61	-	0.61	0.00	0.61
																				25	9.12	0.86	-	0.86	0.00	0.86
																				100	11.43	1.08	-	1.08	0.00	1.08
	-	A15	4.05	0.41	1328.00	100	0.240	4.44	2.35	11.36	300	Unpaved	2.94	2.766	1.80	928	6.0	2.58	15.74	5	5.15	8.55	-	8.55	0.00	8.55
																				25	7.13	11.84	-	11.84	0.00	11.84
																				100	8.88	14.74	-	14.74	0.00	14.74

*FLOWS AND INLET INTERCEPTING CAPACITY BY OTHERS, REFER TO REDBIRD RANCH PHASE 2 UNIT 3M-4, SHEET C1.02 MASTER DRAINAGE PLAN - ULTIMATE CONDITIONS
**Q TOTAL FLOW FROM EXISTING REDBIRD RANCH PHASE 2 UNIT 3M-4, DIVIDED HALF INTO A1 AND A3.
***FOR C-VALUE CALCULATIONS SEE ASSOCIATED STORM WATER MANAGEMENT PLAN REPORT FOR REDBIRD RANCH UNIT 2M-2



LEGEND (DRAINAGE AREA MAP)

- PROJECT LIMITS
- 985 EXISTING CONTOUR
- 1002 PROPOSED CONTOUR
- FLOW ARROW
- Ⓐ Ⓑ Ⓒ TYPICAL LOT GRADING
- >> TIME OF CONCENTRATION
- J1 ANALYSIS POINT
- A2 43.82 AC DRAINAGE AREA
- DRAINAGE AREA BOUNDARY

TYPICAL LOT GRADING

N.T.S

REV	DATE	DESCRIPTION

3/20/2024

STATE OF TEXAS
VANCE L. WEYNAND
99269
LICENSED PROFESSIONAL ENGINEER

Vance Weynand

DHI Engineering, LLC.
5419 N. LOOP 1604 EAST
SAN ANTONIO, TX 78247
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TBPE REG. NO. F-19561

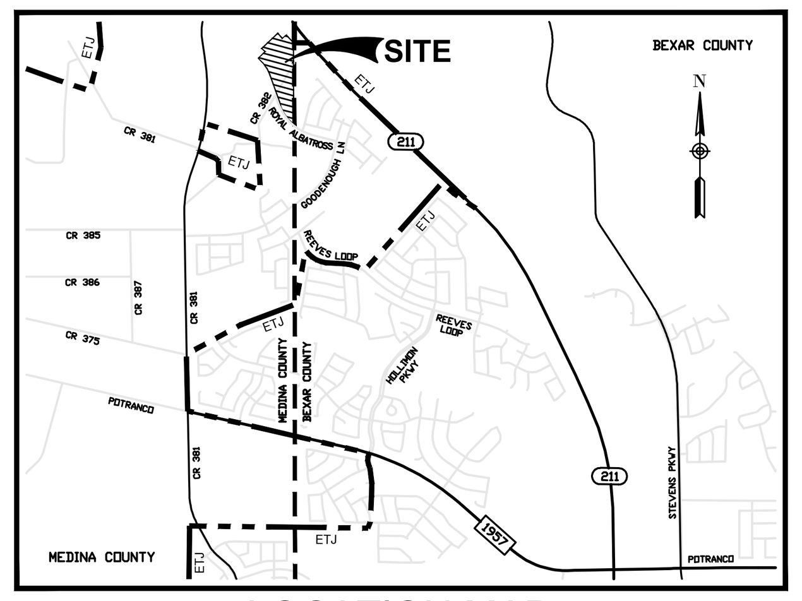
DHI

REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX

PROPOSED DRAINAGE AREA MAP

DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	3/20/2024
JOB NO.:	05000-200
SHEET NO.	C1.01

REDBIRD RANCH UNIT 2M-2 DOC. # XXXXXXXXXXXXX



LOCATION MAP

NOT-TO-SCALE

REDBIRD RANCH UNIT 2M-2 & 2M-3

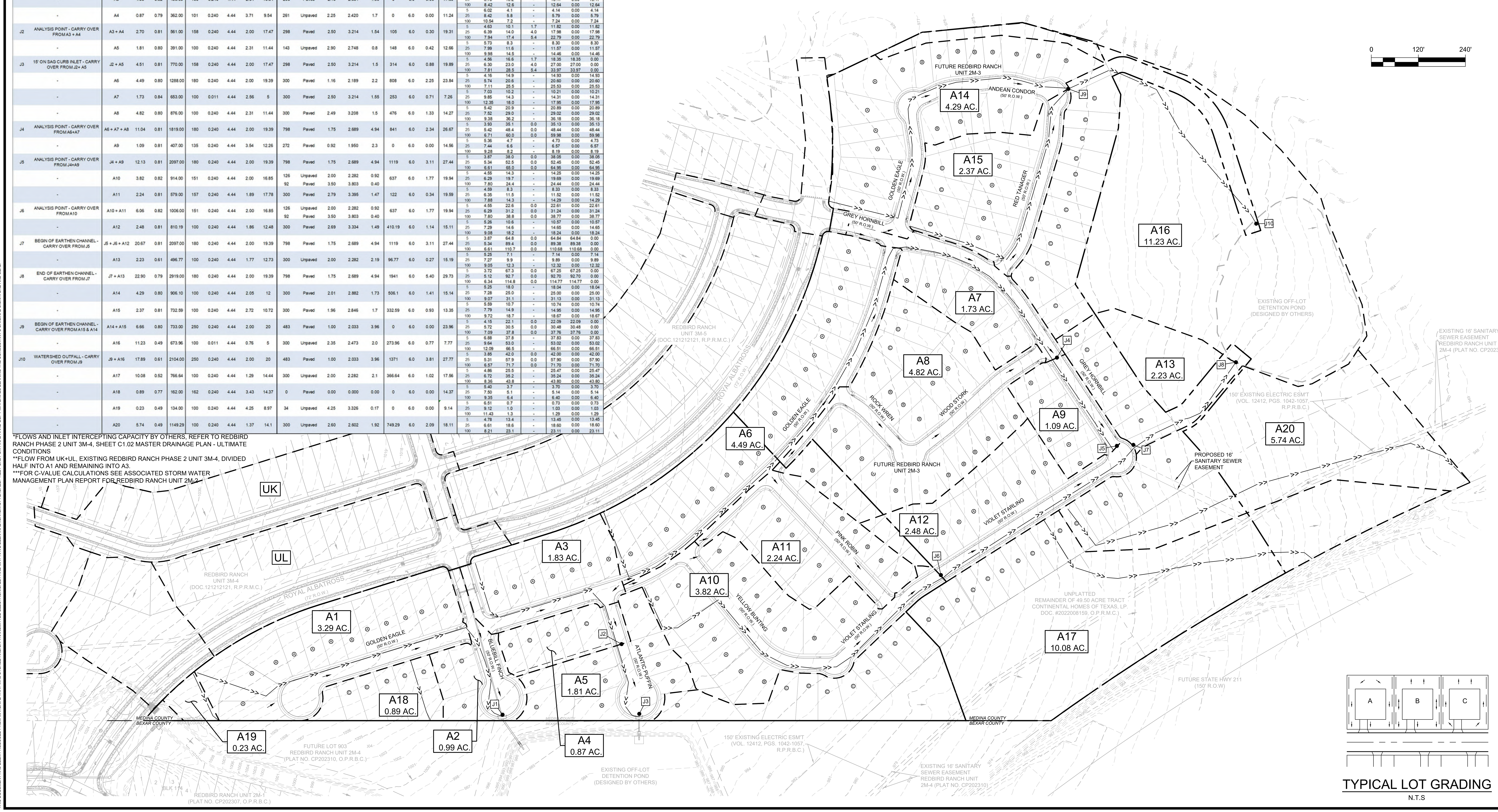
ULTIMATE TIME OF CONCENTRATION - SCS TR-55 Method

Ref. Point	Structure / Description	Drainage Areas #	Area (Ac)	C	Total flowpath (ft)	Overland/Sheet Flow (TR-55) L_o (ft)	n	P_2	S_o (ft/ft)	T_o (min)	Shallow Concentrated Flow L_{SC} (ft)	Condition	Slope (ft/ft)	V_{SC} (fps)	T_{SC} (min)	Channelized Flow L_{CH} (FT)	V_{CH} (fps)	T_{CH} (min)	$T_{C,TOT}$ (min)	Rational Method Q = C·I·A Return Year	Intensity (in/hr)	Q (cfs)	Upstream Carryover Q_{UP} (cfs)	Capture Structure Q Total (cfs)	Q Intercept (cfs)	Q Bypass (cfs)
	-	A1	3.29	0.86	738.00	100	0.240	4.44	5.58	8.04	300	Paved	1.55	2.531	1.9	338	6.0	0.94	10.88	5	6.10	17.3	-	17.27	0.00	17.27
																				25	8.53	24.1	-	24.15	0.00	24.15
																				100	10.69	30.2	-	30.24	0.00	30.24
	-	A2	0.99	0.89	423.00	160	0.011	4.44	2.50	5	0	Paved	0.00	0.000	0.00	263	6.0	0.74	5.74	5	7.57	6.7	-	6.67	0.00	6.67
																				25	10.58	9.3	-	9.32	0.00	9.32
																				100	13.26	11.7	-	11.69	0.00	11.69
J1	20' ON SAG CURB INLET - CARRY OVER FROM A1, A2, UK & UL	A1 + A2 + UK* + UL*	4.28	0.87	1003.00	100	0.240	4.44	5.60	8.03	640	Paved	1.50	2.490	4.2	263	6.0	0.74	12.97	5	5.67	21.1	1.7	22.79	22.79	0.00
																				25	7.90	29.4	4.0	33.38	33.38	0.00
																				100	9.87	36.7	5.4	42.13	42.13	0.00
	-	A3	1.83	0.82	456.00	158	0.240	4.44	2.64	15.64	298	Paved	2.15	2.981	1.66	0	6.0	0.00	17.30	5	4.90	7.3	-	7.35	0.00	7.35
																				25	6.78	10.2	-	10.17	0.00	10.17
																				100	8.42	12.6	-	12.64	0.00	12.64
	-	A4	0.87	0.79	362.00	101	0.240	4.44	3.71	9.54	261	Unpaved	2.25	2.420	1.7	0	6.0	0.00	11.24	5	6.02	4.1	-	4.14	0.00	4.14
																				25	8.42	5.8	-	5.79	0.00	5.79
																				100	10.54	7.2	-	7.24	0.00	7.24
J2	ANALYSIS POINT - CARRY OVER FROM A3 + A4	A3 + A4	2.70	0.81	561.00	158	0.240	4.44	2.00	17.47	298	Paved	2.50	3.214	1.54	105	6.0	0.30	19.31	5	4.63	10.1	1.7	11.82	0.00	11.82
																				25	6.39	14.0	4.0	17.98	0.00	17.98
																				100	7.94	17.4	5.4	22.79	0.00	22.79
	-	A5	1.81	0.80	391.00	100	0.240	4.44	2.31	11.44	143	Unpaved	2.90	2.748	0.8	148	6.0	0.42	12.66	5	5.73	8.3	-	8.30	0.00	8.30
																				25	7.99	11.6	-	11.57	0.00	11.57
																				100	9.98	14.5	-	14.46	0.00	14.46
J3	15' ON SAG CURB INLET - CARRY OVER FROM J2+ A5	J2 + A5	4.51	0.81	770.00	158	0.240	4.44	2.00	17.47	298	Paved	2.50	3.214	1.5	314	6.0	0.88	19.89	5	4.56	16.6	1.7	18.35	18.35	0.00
																				25	6.30	23.0	4.0	27.00	27.00	0.00
																				100	7.81	28.5	5.4	33.97	33.97	0.00
	-	A6	4.49	0.80	1288.00	180	0.240	4.44	2.00	19.39	300	Paved	1.16	2.189	2.2	808	6.0	2.25	23.84	5	4.16	14.9	-	14.93	0.00	14.93
																				25	5.74	20.6	-	20.60	0.00	20.60
																				100	7.11	25.5	-	25.53	0.00	25.53
	-	A7	1.73	0.84	653.00	100	0.011	4.44	2.56	5	300	Paved	2.50	3.214	1.55	253	6.0	0.71	7.26	5	7.03	10.2	-	10.21	0.00	10.21
																				25	9.85	14.3	-	14.31	0.00	14.31
																				100	12.35	18.0	-	17.95	0.00	17.95
	-	A8	4.82	0.80	876.00	100	0.240	4.44	2.31	11.44	300	Paved	2.49	3.208	1.5	476	6.0	1.33	14.27	5	5.42	20.9	-	20.89	0.00	20.89
																				25	7.52	29.0	-	29.02	0.00	29.02
																				100	9.38	36.2	-	36.18	0.00	36.18
J4	ANALYSIS POINT - CARRY OVER FROM A6+A7	A6 + A7 + A8	11.04	0.81	1819.00	180	0.240	4.44	2.00	19.39	798	Paved	1.75	2.689	4.94	841	6.0	2.34	26.67	5	3.93	35.1	0.0	35.13	0.00	35.13
																				25	5.42	48.4	0.0	48.44	0.00	48.44
																				100	6.71	60.0	0.0	59.98	0.00	59.98
	-	A9	1.09	0.81	407.00	135	0.240	4.44	3.54	12.26	272	Paved	0.92	1.950	2.3	0	6.0	0.00	14.56	5	5.36	4.7	-	4.73	0.00	4.73
																				25	7.44	6.6	-	6.57	0.00	6.57
																				100	9.28	8.2	-	8.19	0.00	8.19
J5	ANALYSIS POINT - CARRY OVER FROM J4+A9	J4 + A9	12.13	0.81	2097.00	180	0.240	4.44	2.00	19.39	798	Paved	1.75	2.689	4.94	1119	6.0	3.11	27.44	5	3.87	38.0	0.0	38.05	0.00	38.05
																				25	5.34	52.5	0.0	52.45	0.00	52.45
																				100	6.61	65.0	0.0	64.95	0.00	64.95
	-	A10	3.82	0.82	914.00	151	0.240	4.44	2.00	16.85	126	Unpaved	2.00	2.282	0.92	637	6.0	1.77	19.94	5	4.55	14.3	-	14.25	0.00	14.25
											92	Paved	3.50	3.803	0.40					25	6.29	19.7	-	19.69	0.00	19.69
																				100	7.80	24.4	-	24.44	0.00	24.44
	-	A11	2.24	0.81	579.00	157	0.240	4.44	1.89	17.78	300	Paved	2.79	3.395	1.47	122	6.0	0.34	19.59	5	4.59	8.3	-	8.33	0.00	8.33
																				25	6.35	11.5	-	11.52	0.00	11.52
																				100	7.88	14.3	-	14.29	0.00	14.29
J6	ANALYSIS POINT - CARRY OVER FROM A10	A10 + A11	6.06	0.82	1006.00	151	0.240	4.44	2.00	16.85	126	Unpaved	2.00	2.282	0.92	637	6.0	1.77	19.94	5	4.55	22.6	0.0	22.61	0.00	22.61
											92	Paved	3.50	3.803	0.40					25	6.29	31.2	0.0	31.24	0.00	31.24
																				100	7.80	38.8	0.0	38.77	0.00	38.77
	-	A12	2.48	0.81	810.19	100	0.240	4.44	1.86	12.48	300	Paved	2.69	3.334	1.49	410.19	6.0	1.14	15.11	5	5.26	10.6	-	10.57	0.00	10.57
																				25	7.29	14.6	-	14.65	0.00	14.65
																				100	9.08	18.2	-	18.24	0.00	18.24
J7	BEGIN OF EARTHEN CHANNEL - CARRY OVER FROM J5	J5 + J6 + A12	20.67	0.81	2097.00	180	0.240	4.44	2.00	19.39	798	Paved	1.75	2.689	4.94	1119	6.0	3.11	27.44	5	3.87	64.8	0.0	64.84	64.84	0.00
																				25	5.34	89.4	0.0	89.38	89.38	0.00
																				100	6.61	110.7	0.0	110.68	110.68	0.00
	-	A13	2.23	0.61	496.77	100	0.240	4.44	1.77	12.73	300	Unpaved	2.00	2.282	2.19	96.77	6.0	0.27	15.19	5	5.25	7.1	-	7.14	0.00	7.14
																				25	7.27	9.9	-	9.89	0.00	9.89
																				100	9.05	12.3	-	12.32	0.00	12.32
J8	END OF EARTHEN CHANNEL - CARRY OVER FROM J7	J7 + A13	22.90	0.79	2919.00	180	0.240	4.44	2.00	19.39	798	Paved	1.75	2.689	4.94	1941	6.0	5.40	29.73	5	3.72	67.3	0.0	67.25	67.25	0.00
																				25	5.12	92.7	0.0	92.70	92.70	0.00
																				100	6.34	114.8	0.0	114.77	114.77	0.00
	-	A14	4.29	0.80	906.10	100	0.240	4.44	2.05	12	300	Paved	2.01	2.882	1.73	506.1	6.0	1.41	15.14	5	5.25	18.0	-	18.04	0.00	18.04
																				25	7.28	25.0	-	25.00	0.00	25.00
																				100	9.07	31.1	-	31.13	0.00	31.13
	-	A15	2.37	0.81	732.59	100	0.240	4.44	2.72	10.72	300	Paved	1.96	2.846	1.7	332.59	6.0	0.93	13.35	5	5.59	10.7	-	10.74	0.00	10.74
																				25	7.79	14.9	-	14.95	0.00	14.95
																				100	9.72	18.7	-	18.67	0.00	18.67
J9	BEGIN OF EARTHEN CHANNEL - CARRY OVER FROM A15 & A14	A14 + A15	6.66	0.80	733.00	250	0.240	4.44	2.00	20	483	Paved	1.00	2.033	3.96	0	6.0	0.00	23.96	5	4.15	22.1	0.0	22.09	22.09	0.00
																				25	5.72	30.5	0.0	30.48	30.48	0.00
																				100	7.09	37.8	0.0	37.76	37.76	0.00
	-	A16	11.23	0.49	673.96	100	0.011	4.44	0.76	5	300	Unpaved	2.35	2.473	2.0	273.96	6.0	0.77	7.77	5	6.88	37.8	-	37.83	0.00	37.83
																				25	9.64	53.0	-	53.02	0.00	53.02
																				100	12.09	66.5	-	66.51	0.00	66.51
J10	WATERSHED OUTFALL - CARRY OVER FROM J9	J9 + A16	17.89	0.61	2104.00	250	0.240	4.44	2.00	20	483	Paved	1.00	2.033	3.96	1371	6.0	3.81	27.77	5	3.85	42.0	0.0	42.00	0.00	42.00
																				25	5.31	57.9	0.0	57.90	0.00	57.90
																				100	6.57	71.7	0.0	71.70	0.00	71.70
	-	A17	10.08	0.52	766.64	100	0.240	4.44	1.29	14.44	300	Unpaved	2.00	2.282	2.1	366.64	6.0	1.02	17.56	5	4.86	25.5	-	25.47	0.00	25.47
																				25	6.72	35.2	-	35.24	0.00	35.24
																				100	8.36	43.8	-	43.80	0.00	43.80
	-	A18	0.89	0.77	162.00	162	0.240	4.44	3.43	14.37	0	Paved	0.00	0.000	0.00	0	6.0	0.00	14.37	5	5.40	3.7	-	3.70	0.00	3.70
																				25	7.50	5.1	-	5.14	0.00	5.14
																				100	9.35	6.4	-	6.40	0.00	6.40
	-	A19	0.23	0.49	134.00	100	0.240	4.44	4.25	8.97	34	Unpaved	4.25	3.326	0.17	0	6.0	0.00	9.14	5	6.51	0.7	-	0.73	0.00	0.73
																				25	9.12	1.0	-	1.03	0.00	1.03
																				100	11.43	1.3	-	1.29	0.00	1.29
	-	A20	5.74	0.49	1149.29	100	0.240	4.44	1.37	14.1	300	Unpaved	2.60	2.602	1.92	749.29	6.0	2.09	18.11	5	4.78	13.4	-	13.45	0.00	13.45
																				25	6.61	18.6	-	18.60	0.00	18.60
																				100	8.21	23.1	-	23.11	0.00	23.11

*FLOWS AND INLET INTERCEPTING CAPACITY BY OTHERS, REFER TO REDBIRD RANCH PHASE 2 UNIT 3M-4, SHEET C1.02 MASTER DRAINAGE PLAN - ULTIMATE CONDITIONS

**FLOW FROM UK+UL, EXISTING REDBIRD RANCH PHASE 2 UNIT 3M-4, DIVIDED HALF INTO A1 AND REMAINING INTO A3.

***FOR C-VALUE CALCULATIONS SEE ASSOCIATED STORM WATER MANAGEMENT PLAN REPORT FOR REDBIRD RANCH UNIT 2M-2



LEGEND (DRAINAGE AREA MAP)

— — — —	PROJECT LIMITS
— 985 —	EXISTING CONTOUR
—(1002)—	PROPOSED CONTOUR
→	FLOW ARROW
Ⓐ Ⓑ Ⓒ	TYPICAL LOT GRADING
— >> —	TIME OF CONCENTRATION
J1 —●	ANALYSIS POINT
A2 43.82 AC	DRAINAGE AREA
▬ ▬	DRAINAGE AREA BOUNDARY

TYPICAL LOT GRADING

N.T.S

REV	DATE	DESCRIPTION

3/20/2024

STATE OF TEXAS VANCE L. WEYNAND 99269 LICENSED PROFESSIONAL ENGINEER

Vance Weynand

DHI Engineering, LLC.
5419 N. LOOP 1604 EAST
SAN ANTONIO, TX 78247
(210) 496-2668 | dhiengineering.com
TBPE REG. NO. F-19561

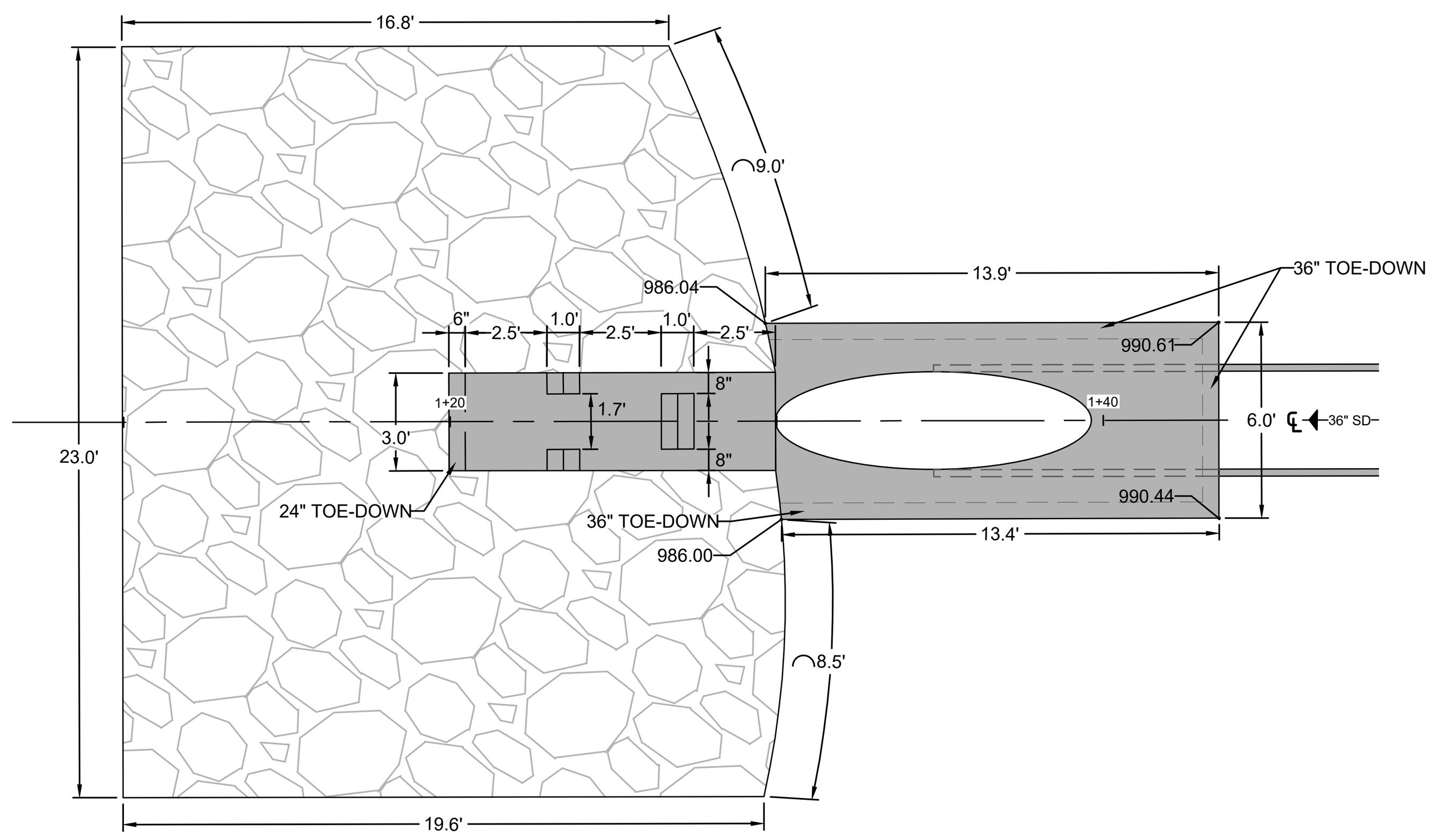
DHI

REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX

ULTIMATE DRAINAGE AREA MAP

DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	3/20/2024
JOB NO.:	05000-200
SHEET NO.	C1.02

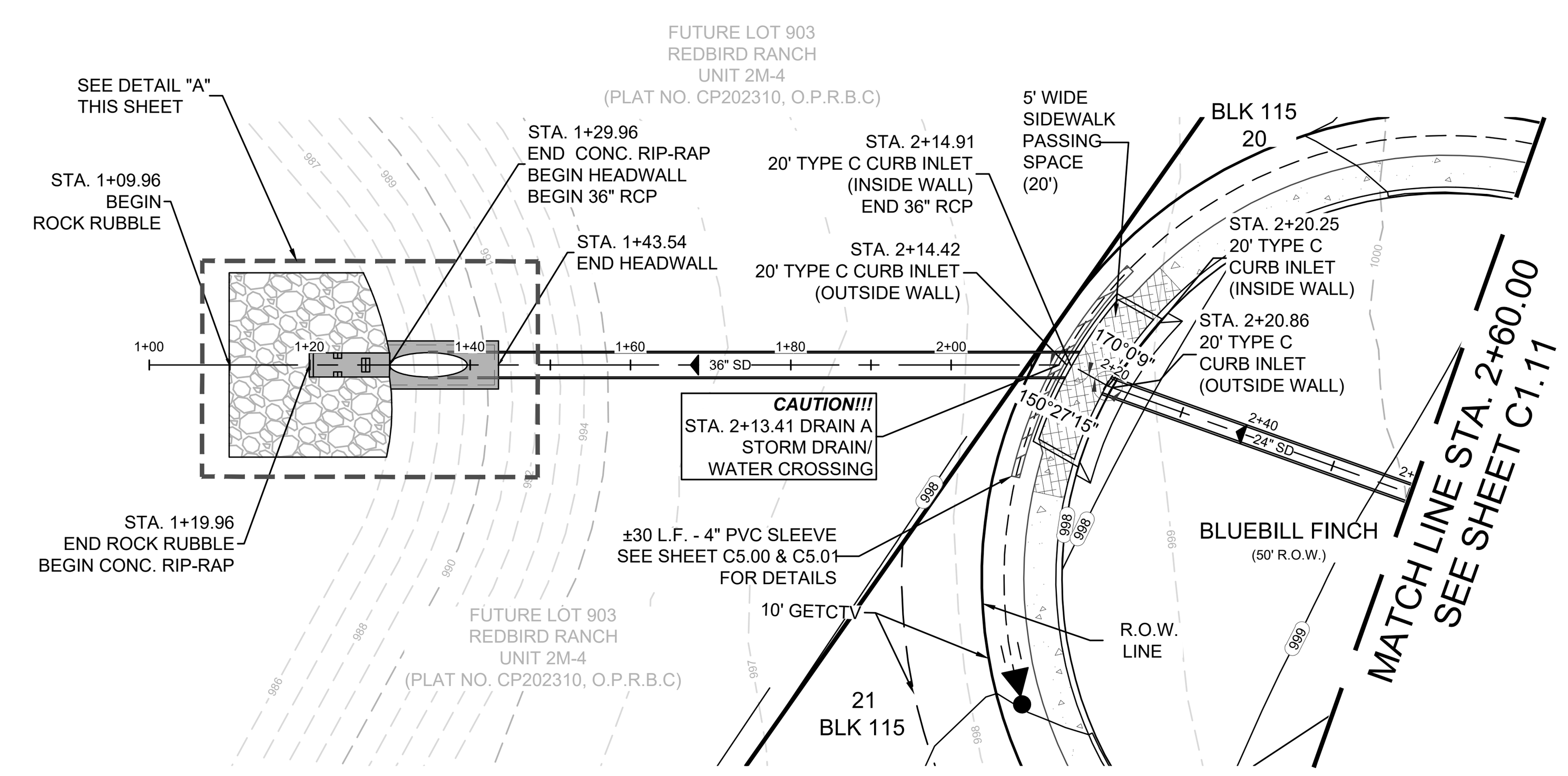
Date: Mar 20, 2024, 10:59am User ID: AMSiller File: \\drhorton.com\tex-sant\HBGROUPS\Engineering_PROJECT\05000\200\900 - Design\930 - Sheets\C1.02 ULTIMATE DRAINAGE AREA MAP.dwg



DETAIL "A"

STA. 1+09.96 - STA. 1+41.96

N.T.S.



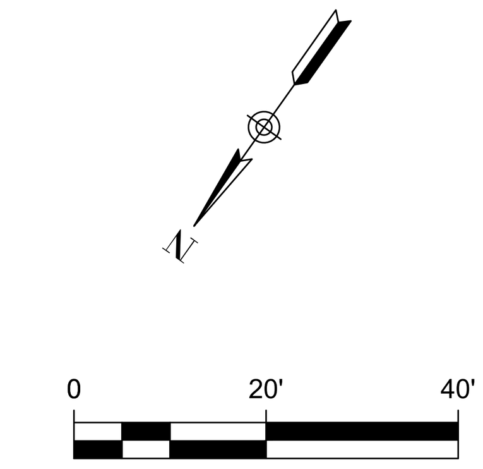
HYDRAULIC CALCULATION
1-20' CURB INLET

$L = \frac{Q_{25}\ (CFS)}{C(h^{3/2})}$

$L = \frac{34.90}{3.087(0.79^{3/2})}$

$L = 16.10'$

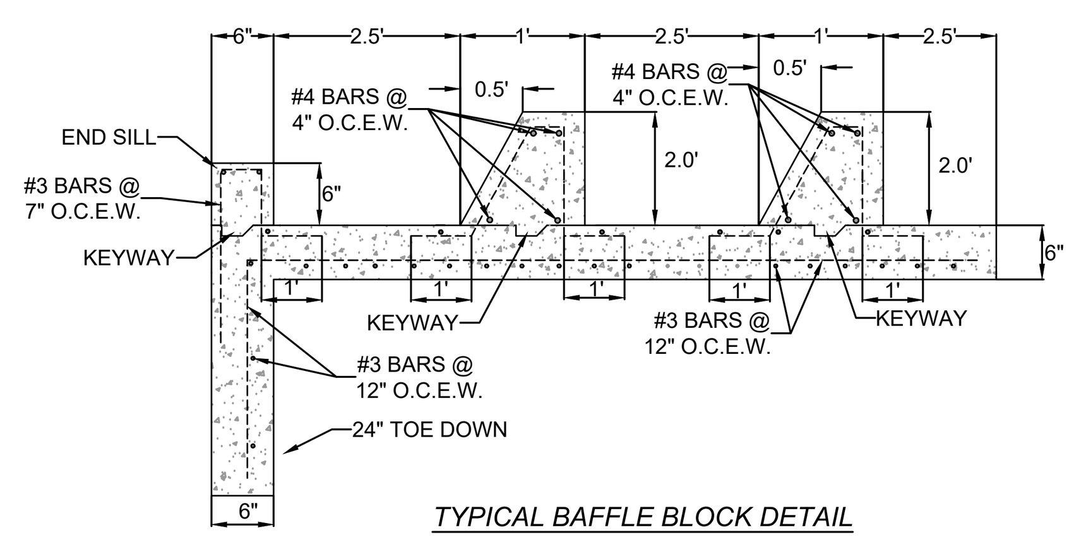
*USE INLET WITH A TOTAL MIN. OPENING LENGTH OF 20'



LEGEND (DRAIN)

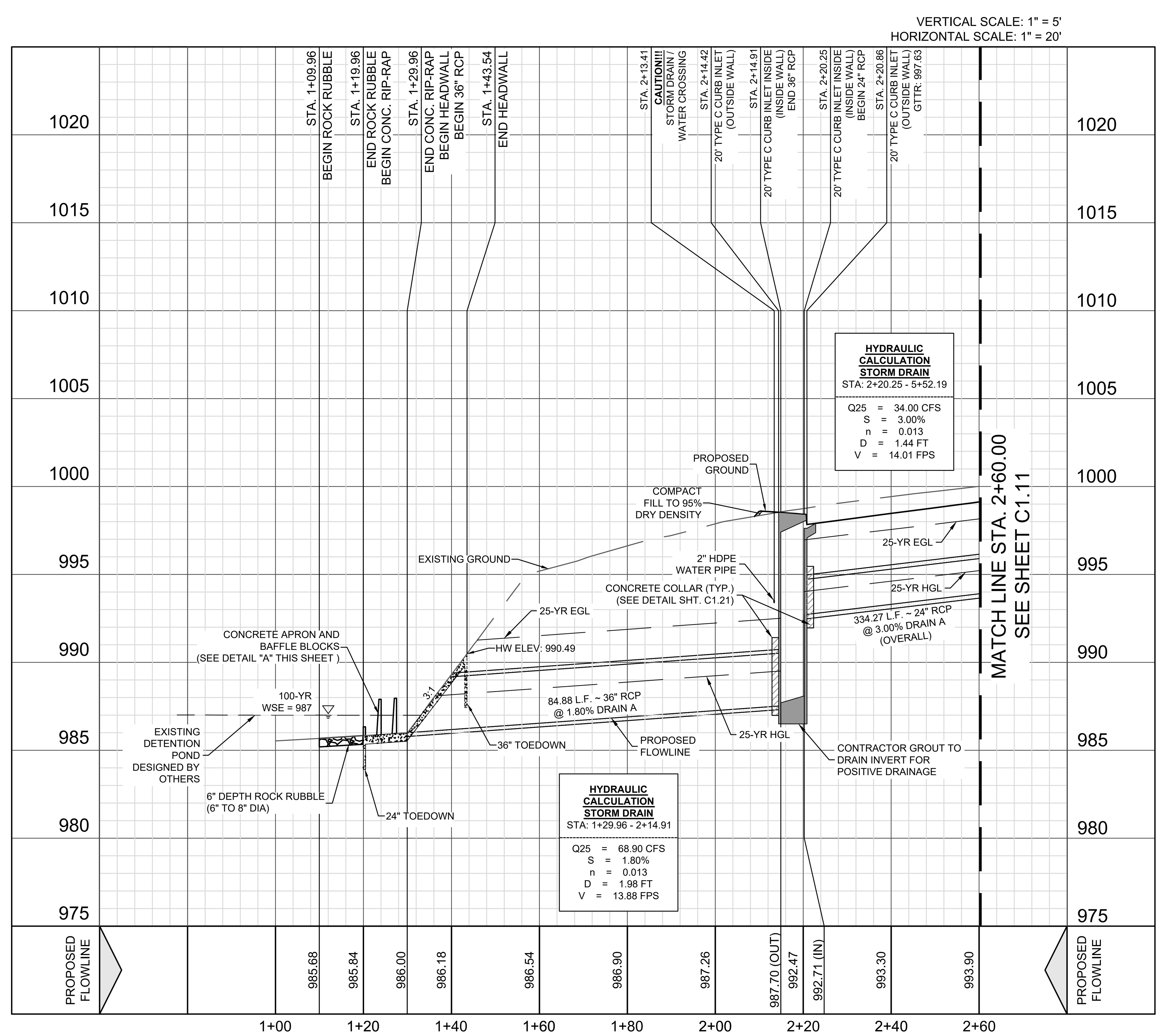
985	EXISTING CONTOUR
1002	PROPOSED CONTOUR
	PROJECT LIMITS
	PROPOSED WATER
	PROPOSED SEWER
S	PROPOSED MANHOLE
	FIRE HYDRANTS
S	PROPOSED WYE & LATERAL
W	SINGLE WATER SERVICE
W W	DUEL WATER SERVICE
	STREET LIGHTS
GETCTV	GAS, ELECTRIC, TELOPHONE & CABLE TELEVISION EASEMENT
	DRIVEWAY
TOC	TOP OF CURB
GTTR	GUTTER
FL	FLOWLINE

DRAIN A
1+00.00 - 2+60.00



TYPICAL BAFFLE BLOCK DETAIL

N.T.S.



DRAIN 'A' DISSIPATER CALCULATIONS				
Q (cfs)=	**68.90**		Wb (Basin Width)	3.00
Froud Number (Fr)=	1.738		Lb (Length of Basin)	8.37
Culvert Span or Bottom Width of Channel (ft)	**3**		Bw (Width of Baffle Block)	1.5
Culvert Rise or Top of Channel (ft)	**3**		Space Between Blocks	1.5
Number of Barrels	**1**		Nb (Number Of Blocks)	1
n	**0.013**		Height of Blocks	1.98
Slope (ft/ft)	**0.018**		Distance to Floor Blocks	2.79
Velocity (ft/s)	**13.88**		Depth of Tail Water above the Stilling Basin Floor	3.27
Y1 (Depth Before Jump)	**1.98**		Height of Max Tail Water	4.29
Y2 (Sequent Depth Downstream)	3.04		Velocity after Baffle Blocks (fps)	7.02
C	1.07		Height of Sill End	0.20
Y2'	3.27		Thinkness of Baffle Blocks	0.396
z	1.01		C=1.1-((Fr)^2/120)	When 1.7< Fr<5.5
			C=0.85	When 5.5< Fr<11
			C=1.0-((Fr)^2/800)	When 11< Fr<17

CPS NOTES:

1. A MEDINA COUNTY ROW PERMIT MUST BE OBTAINED BEFORE WORKING IN MEDINA COUNTY ROW. CONTRACTOR SHALL COORDINATE A TRAFFIC CONTROL PLAN FOR ALL WORK WITHIN THE ROW. ADDITIONAL WORKING SIGNS MAY BE RECOMMENDED BY THE ENGINEER ONCE THE ROADWAYS ARE CONSTRUCTED.

2. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION TO VERIFY SIZE, GRADE, AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR, AT HIS EXPANSE.

3. ALL CONCRETE FOR TXDOT DRAINAGE STRUCTURES SHALL MEET TXDOT SPECIFICATIONS. ALL OTHER CONCRETE SHALL BE CLASS "A" 3000 PSI CYLINDER STRENGTH IN 28 DAYS.

4. REFERENCE DRAINAGE DETAILS FOR PIPE TRENCH DETAILS, BOX CULVERT, HEADWALL WINGWALL CONSTRUCTION DETAILS, AND BOX CULVERT BEDDING AND EXCAVATION LIMITS.

5. CONTRACTOR SHALL GROUT ALL CURB INLETS AND JUNCTION BOXES TO PROVIDE FOR POSITIVE DRAINAGE.

6. EARTHEN CHANNELS WILL BE VEGETATED BY SEEDING OR SODDING 85% OF THE CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION BEFORE BEXAR COUNTY WILL ACCEPT.

7. CONTRACTOR SHALL MATCH TOP OF CHANNEL TO NATURAL GROUND AND MAINTAIN A MINIMUM CHANNEL DEPTH OF "0" AS SHOWN IN THE PROFILE.

TRENCH EXCAVATION PROTECTION

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

CAUTION!!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO : WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

REV	DATE	DESCRIPTION

3/20/2024
STATE OF TEXAS
VANCE L. WEYNAND
99269
LICENSED PROFESSIONAL ENGINEER
Vance Weynand

DHI Engineering, LLC.
5419 N. LOOP 1604 EAST
SAN ANTONIO, TX 78247
(210) 496-2668 | dhiengineering.com
TBPE REG. NO. F-19561

DHI

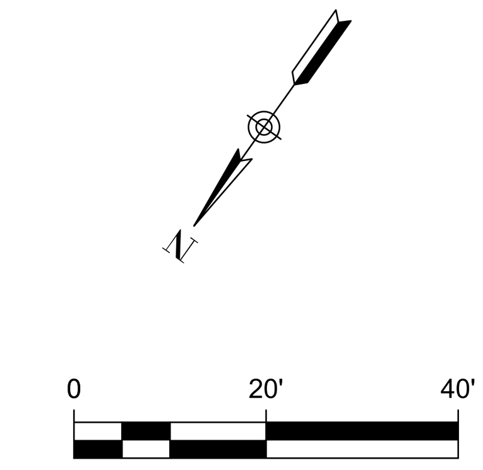
REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX

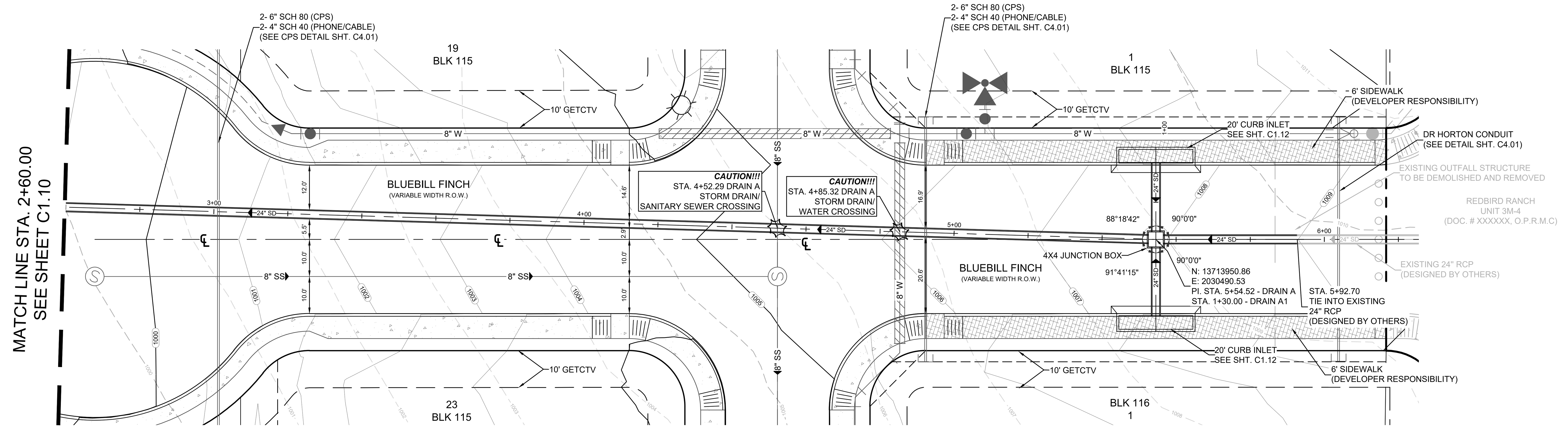
DRAIN A - STA. 1+00.00 - 2+60.00

DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	3/20/2024
JOB NO.:	05000-200
SHEET NO.	C1.10

DOC. # XXXXXXXXXXXX

REDBIRD RANCH UNIT 2M-2

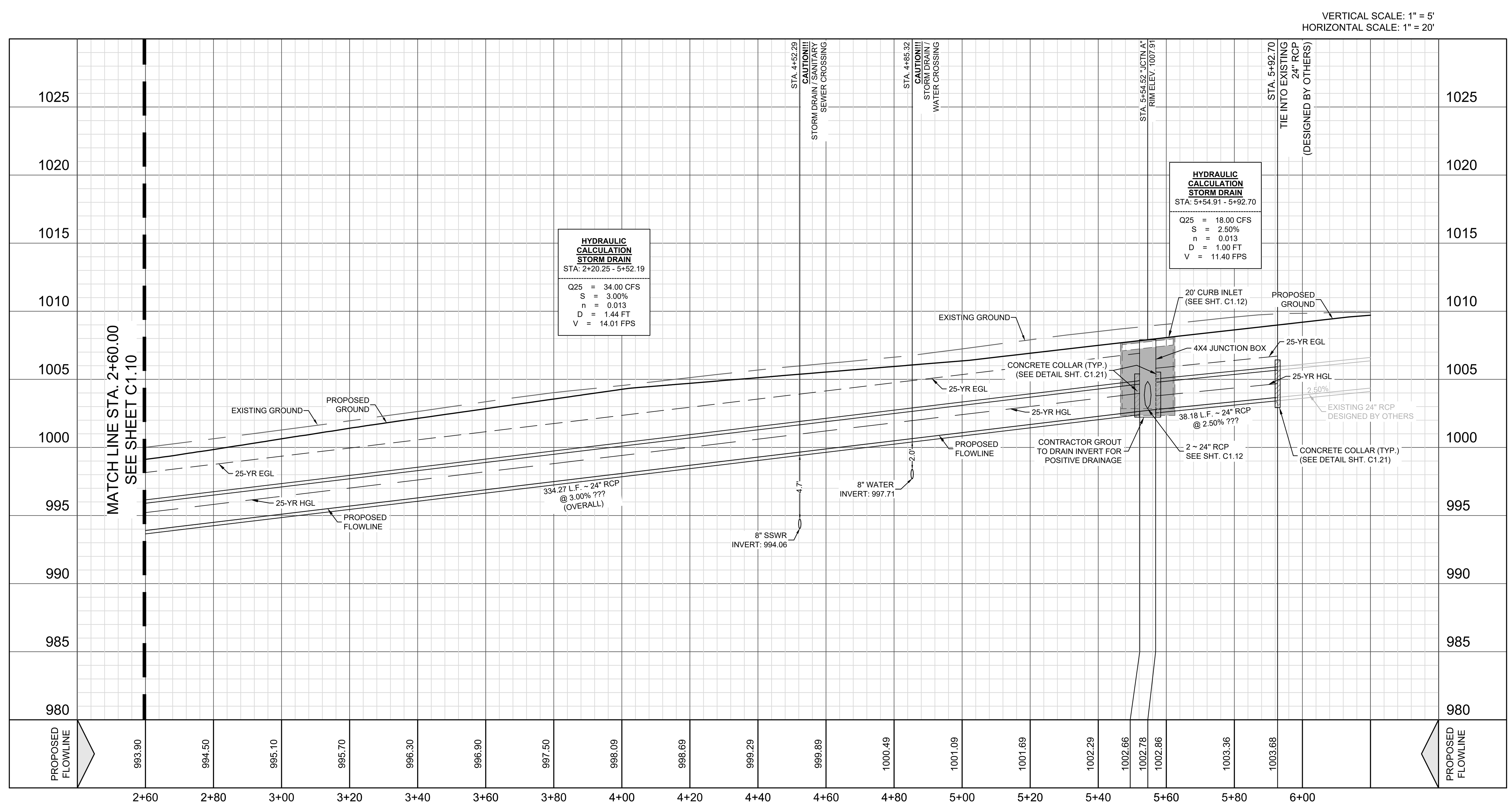




LEGEND (DRAIN)	
985	EXISTING CONTOUR
1002	PROPOSED CONTOUR
	PROJECT LIMITS
	PROPOSED WATER
	PROPOSED SEWER
	PROPOSED MANHOLE
	FIRE HYDRANTS
	PROPOSED WYE & LATERAL
	SINGLE WATER SERVICE
	DUEL WATER SERVICE
	STREET LIGHTS
GETCTV	GAS, ELECTRIC, TELEPHONE & CABLE TELEVISION EASEMENT
	DRIVEWAY
TOC	TOP OF CURB
GTTR	GUTTER
FL	FLOWLINE

DRAIN A
2+60.00 - 5+92.70

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



CPS NOTES:

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REV	DATE	DESCRIPTION

DOC. # XXXXXXXXXXX

REDBIRD RANCH UNIT 2M-2

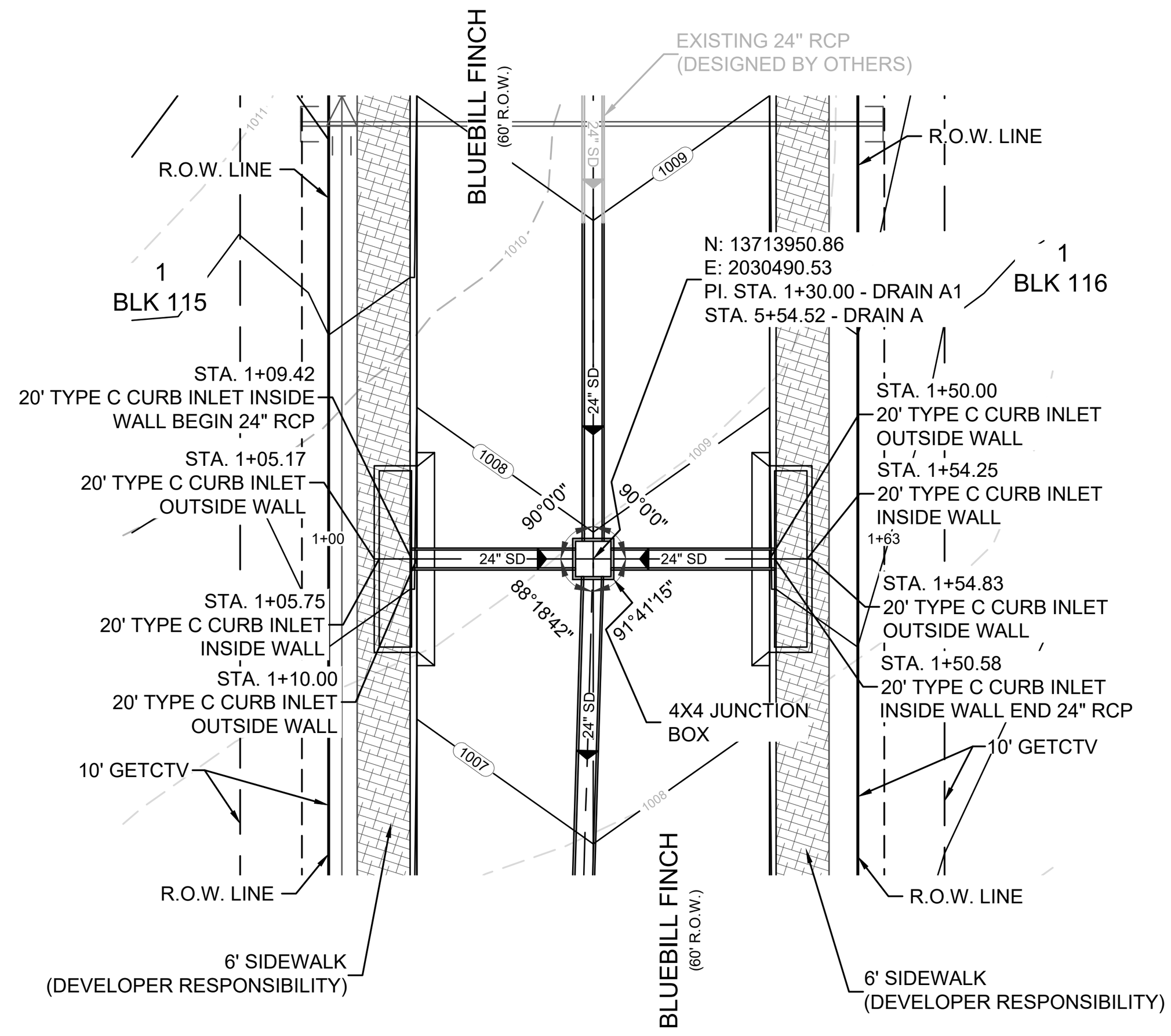
3/20/2024
STATE OF TEXAS
VANCE L. WEYNAND
99269
LICENSED PROFESSIONAL ENGINEER
Vance Weynand

DHI Engineering, LLC.
5419 N. LOOP 1604 EAST
SAN ANTONIO, TX 78247
(210) 496-2668 | dhiengineering.com
TBPE REG. NO. F-19561
DHI

REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX

DRAIN A - STA. 2+60.00 - END

DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	3/20/2024
JOB NO.:	05000-200
SHEET NO.	C1.11



HYDRAULIC CALCULATION 1-20' ON-GRADE CURB INLET

$Q_{25}/2$ = 12 CFS

S = 2.83%
L = 20' INLETS

$Q_{CAPTURED}$ = 8 CFS
$Q_{BYPASSED}$ = 4 CFS

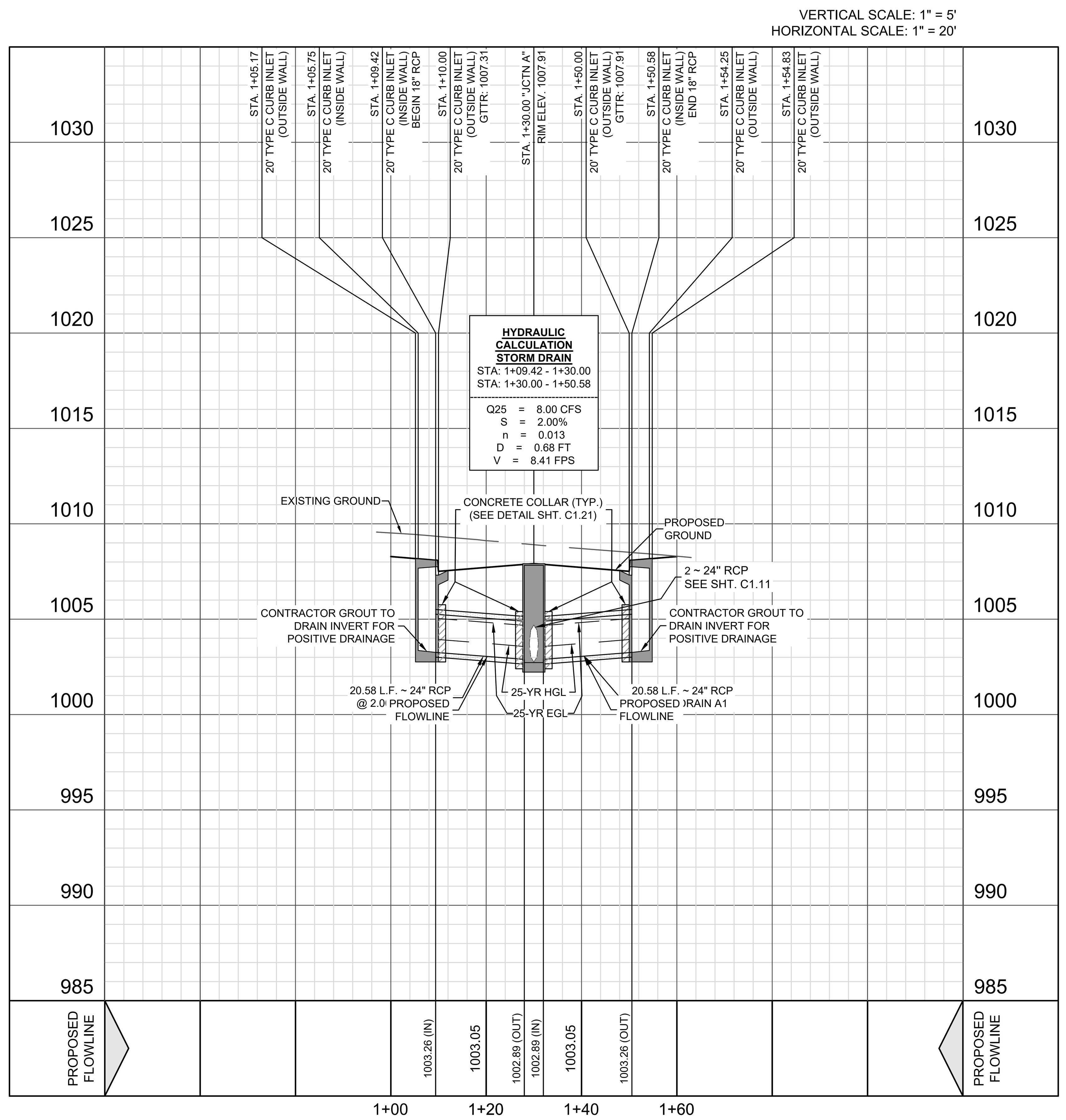
0 20' 40'

LEGEND (DRAIN)

- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROJECT LIMITS
- PROPOSED WATER
- PROPOSED SEWER
- PROPOSED MANHOLE
- FIRE HYDRANTS
- PROPOSED WYE & LATERAL
- SINGLE WATER SERVICE
- DUEL WATER SERVICE
- STREET LIGHTS
- GETCTV — GAS, ELECTRIC, TELEPHONE & CABLE TELEVISION EASEMENT
- DRIVEWAY
- TOC — TOP OF CURB
- GTTR — GUTTER
- FL — FLOWLINE

DRAIN A1
1+00.00 - 1+54.83

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



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REV	DATE	DESCRIPTION

3/20/2024
STATE OF TEXAS — VANCE L. WEYNAND — 99269 — LICENSED PROFESSIONAL ENGINEER
Vance Weynand

DHI Engineering, LLC.
5419 N. LOOP 1604 EAST
SAN ANTONIO, TX 78247
(210) 496-2668 | dhiengineering.com
TBPE REG. NO. F-19561

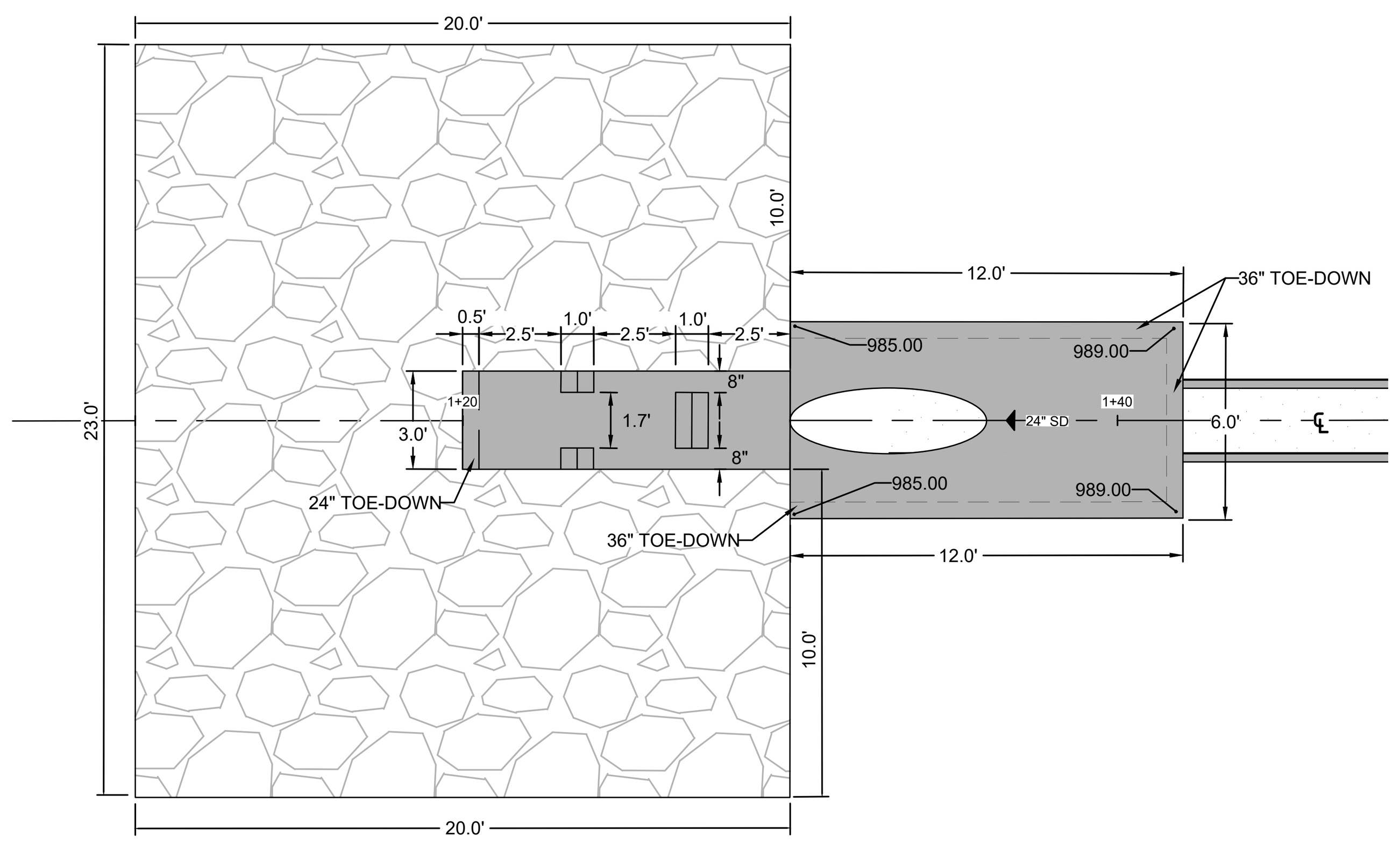
DHI

REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX

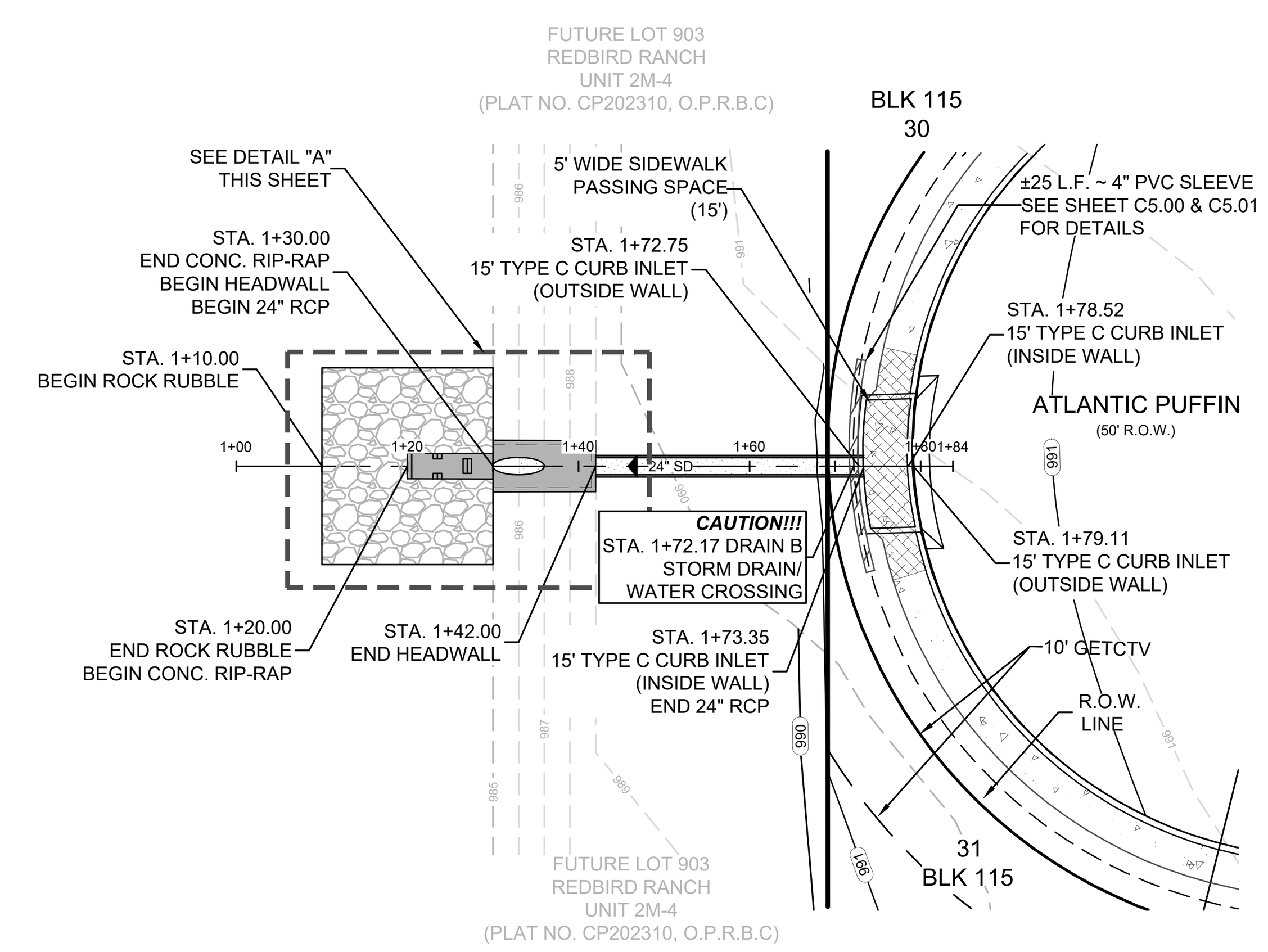
DRAIN A1 - STA. 1+00.00 TO END

DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	3/20/2024
JOB NO.:	05000-200
SHEET NO.	C1.12

DOC. # XXXXXXXXXXXX



DETAIL "A"
STA. 1+10.00 - STA. 1+42.00
N.T.S.



HYDRAULIC CALCULATION 1-15' CURB INLET
$L = \frac{Q_{25}\ (CFS)}{C(h^{3/2})}$
$L = \frac{27.00}{3.087(0.79^{3/2})}$
L = 12.46'
*USE INLETS WITH A TOTAL LENGTH OF 15' OPENING MIN

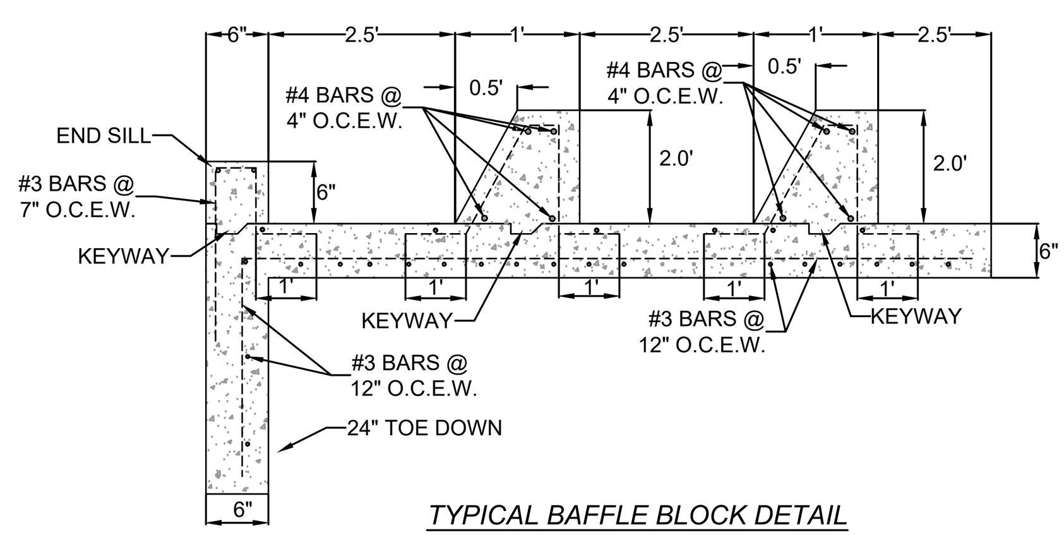
0 20' 40'

N

LEGEND (DRAIN)

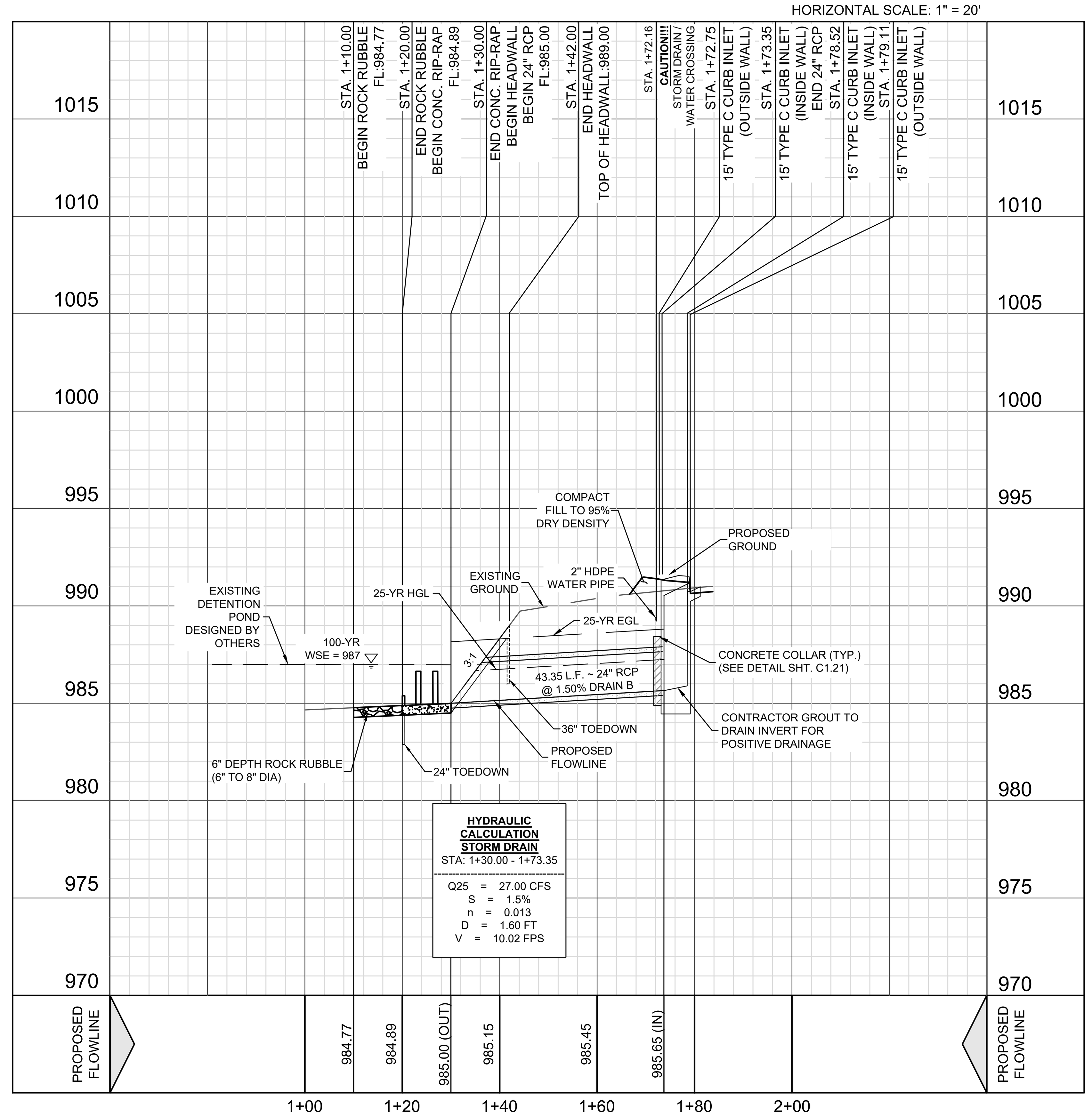
985	EXISTING CONTOUR
1002	PROPOSED CONTOUR
	PROJECT LIMITS
	PROPOSED WATER
	PROPOSED SEWER
S	PROPOSED MANHOLE
	FIRE HYDRANTS
	PROPOSED WYE & LATERAL
	SINGLE WATER SERVICE
	DUEL WATER SERVICE
	STREET LIGHTS
GETCTV	GAS, ELECTRIC, TELOPHONE & CABLE TELEVISION EASEMENT
	DRIVEWAY
TOC	TOP OF CURB
GTTR	GUTTER
FL	FLOWLINE

DRAIN B
1+00.00 - 1+79.11



TYPICAL BAFFLE BLOCK DETAIL
N.T.S.

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



DRAIN 'B' DISSIPATER CALCULATIONS				
Q (cfs)=	**27.00**		Wb (Basin Width)	3.00
Froud Number (Fr)=	1.396		Lb (Length of Basin)	6.95
Culvert Span or Bottom Width of Channel (ft)	**3**		Bw (Width of Baffle Block)	1.2
Culvert Rise or Top of Channel (ft)	**3**		Space Between Blocks	1.2
Number of Barrels	**1**		Nb (Number Of Blocks)	1
n	**0.013**		Height of Blocks	1.60
Slope (ft/ft)	**0.015**		Distance to Floor Blocks	2.32
Velocity (ft/s)	**10.02**		Depth of Tail Water above the Stilling Basin Floor	2.34
Y1 (Depth Before Jump)	**1.6**		Height of Max Tail Water	3.06
Y2 (Sequent Depth Downstream)	2.16		Velocity after Baffle Blocks (fps)	3.85
C	1.08		Height of Sill End	0.14
Y2'	2.34		Thinkness of Baffle Blocks	0.32
z	0.72		C=1.1-((Fr)^2/120)	When 1.7< Fr<5.5
			C=0.85	When 5.5< Fr<11
			C=1.0-((Fr)^2/800)	When 11< Fr<17

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99269
LICENSED PROFESSIONAL ENGINEER
Vance Weynand

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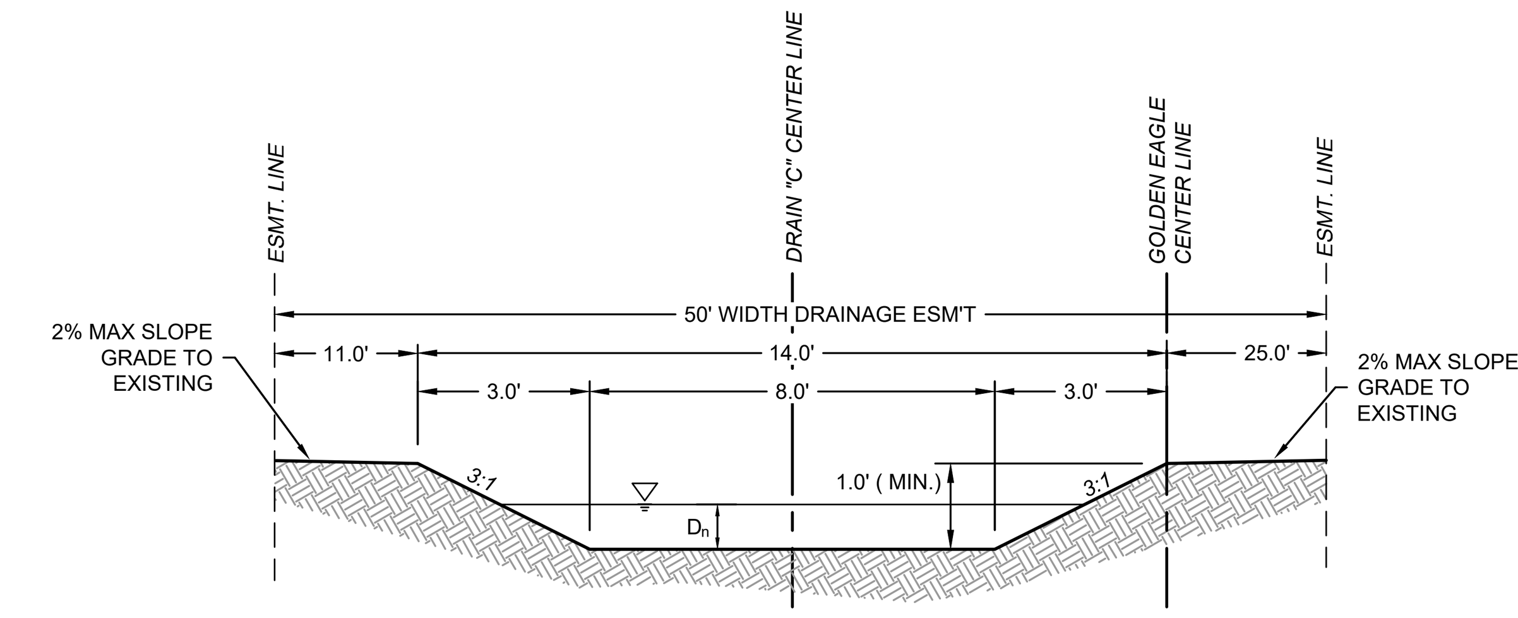
5419 N. LOOP 1604 EAST
SAN ANTONIO, TX 78247
(210) 496-2668 | dhiengineering.com
TBPE REG. NO. F-19561
DHI

REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX
DRAIN B - STA. 1+00.00 - 1+79.11

DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	3/20/2024
JOB NO.:	05000-200
SHEET NO.	C1.13

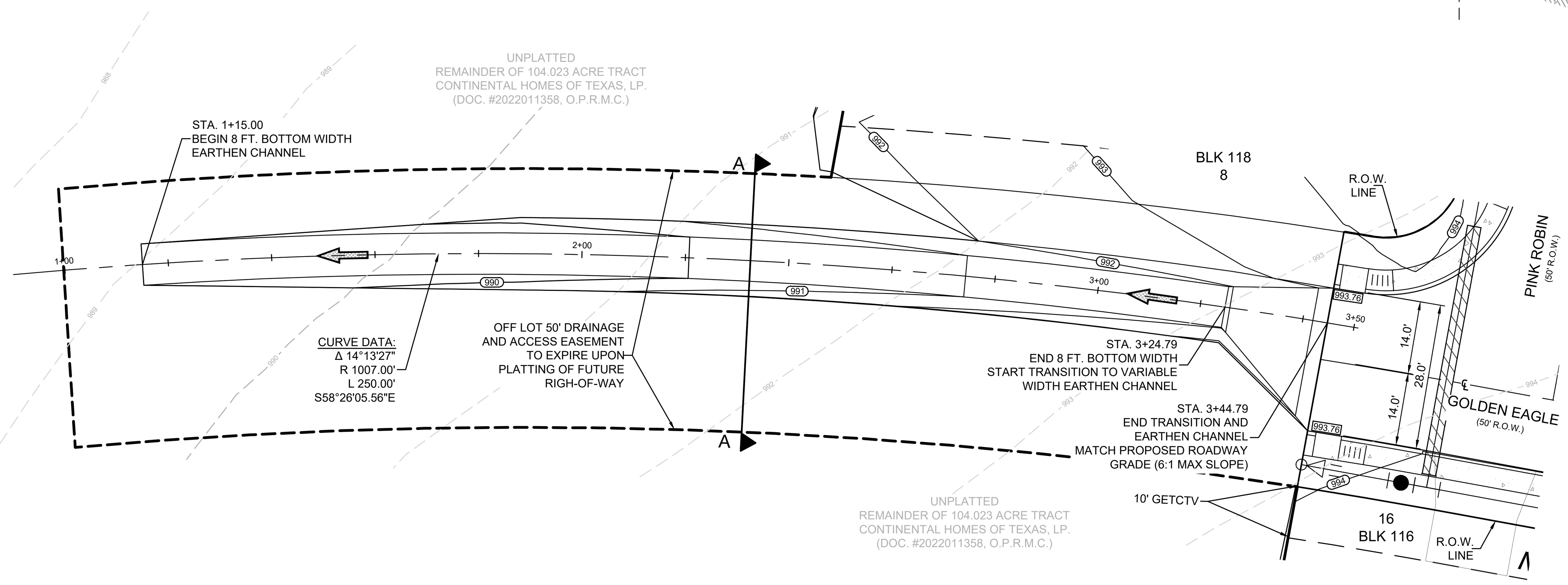
DOC. # XXXXXXXXXXX
REDBIRD RANCH UNIT 2M-2



SECTION "A-A"

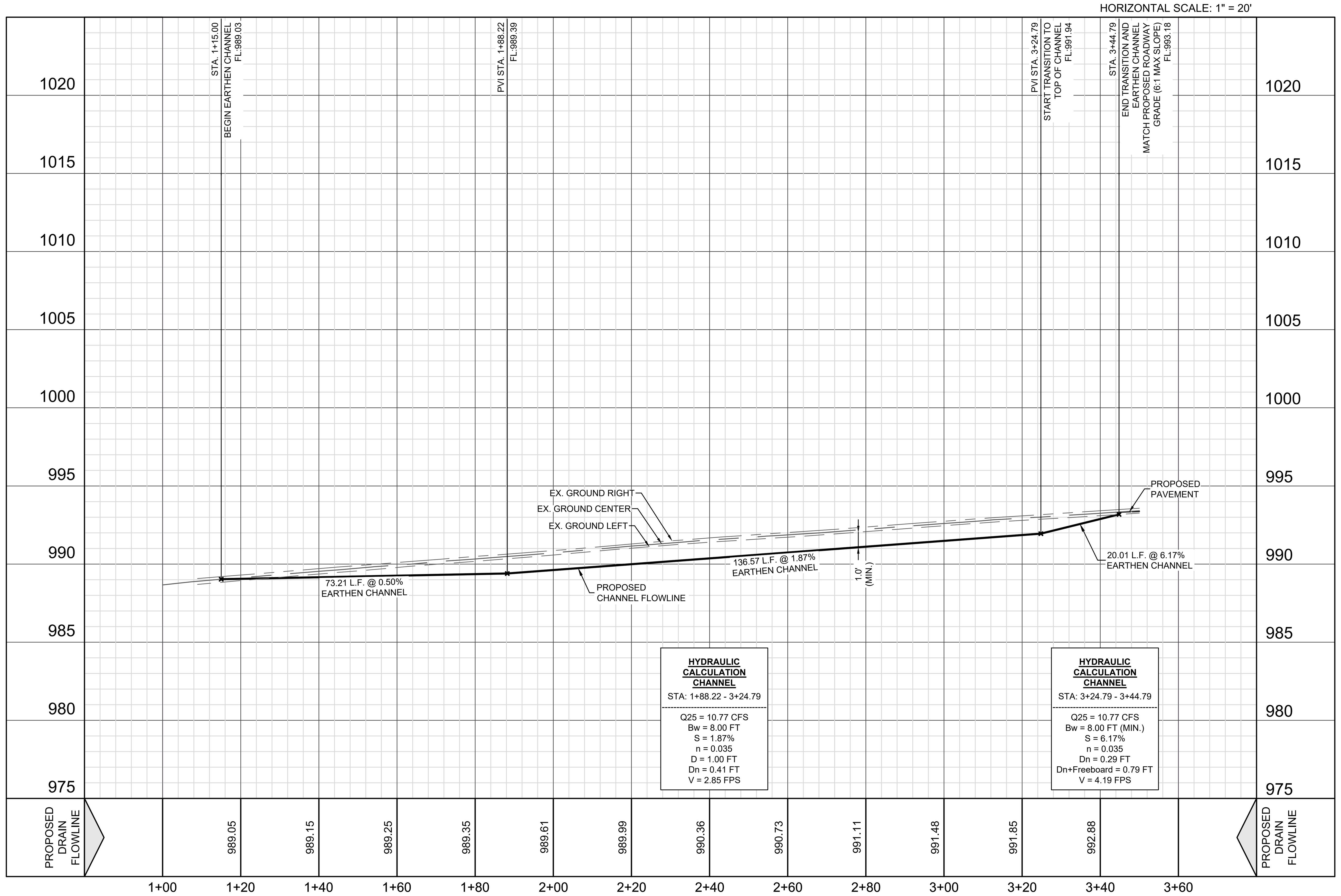
STA. 1+88.22 - STA. 3+24.79
N.T.S.

	LEGEND (DRAIN)
	EXISTING CONTOUR
	PROPOSED CONTOUR
	PROJECT LIMITS
	PROPOSED WATER
	PROPOSED SEWER
	PROPOSED MANHOLE
	FIRE HYDRANTS
	PROPOSED WYE & LATERAL
	SINGLE WATER SERVICE
	DUEL WATER SERVICE
	STREET LIGHTS
GETCTV	GAS, ELECTRIC, TELOPHONE & CABLE TELEVISION EASEMENT
	DRIVEWAY
TOC	TOP OF CURB
GTTR	GUTTER
FL	FLOWLINE



DRAIN C
1+15.00 - 3+44.79

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



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LICENSED PROFESSIONAL ENGINEER
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TBPE REG. NO. F-19561

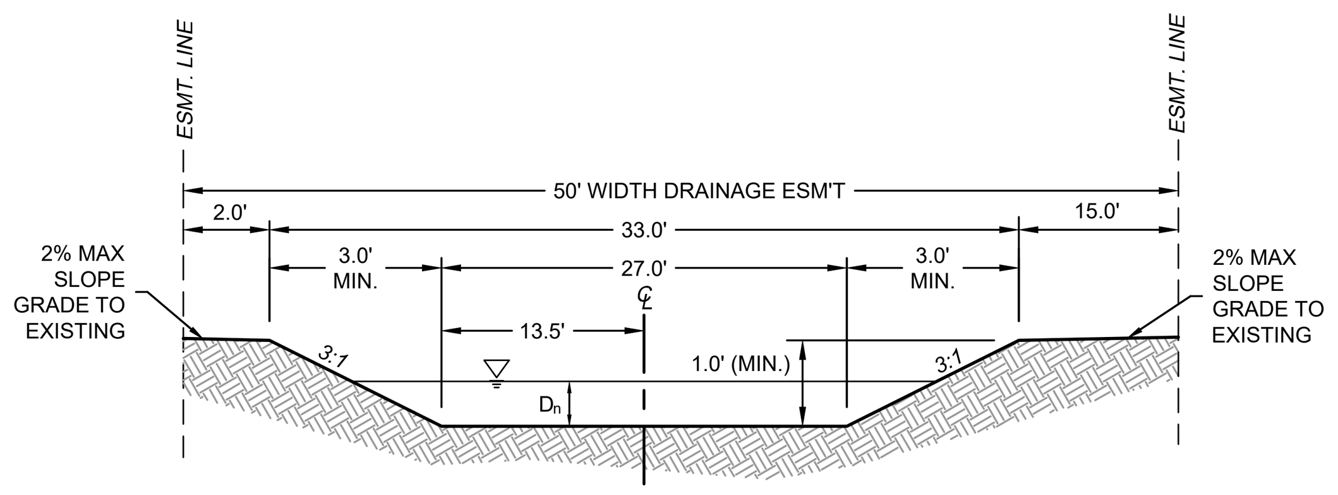
DHI

REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX

DRAIN C - STA. 1+15.00 - 3+44.79

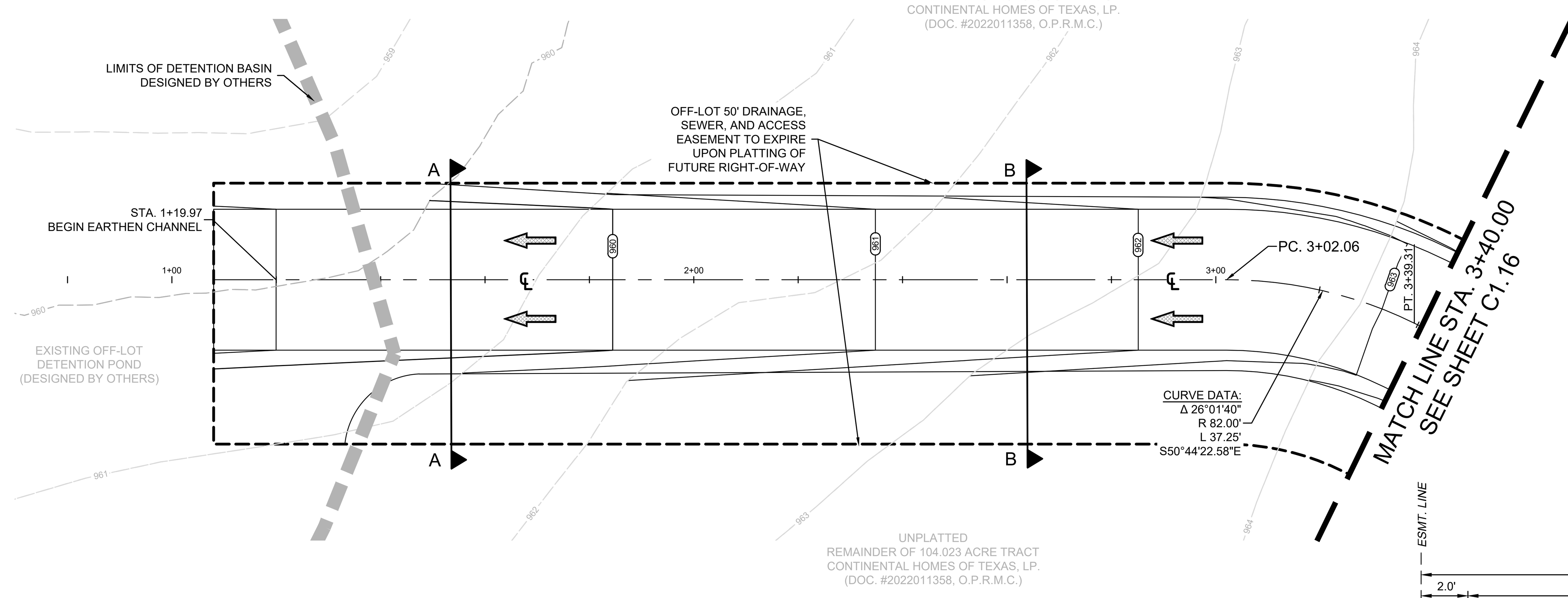
DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	3/20/2024
JOB NO.:	05000-200
SHEET NO.	C1.14

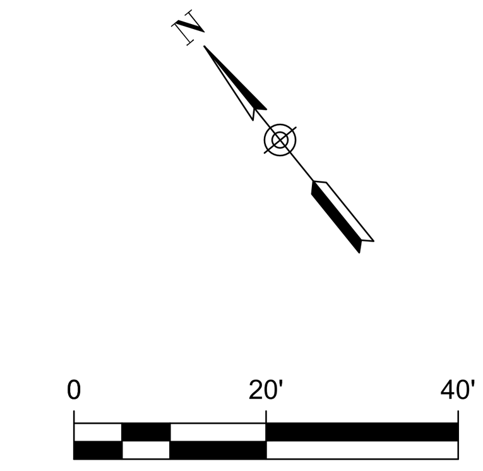
DOC. # XXXXXXXXXXXX



SECTION "A-A"

STA. 1+19.97 - STA. 1+80.00
N.T.S.





LEGEND (DRAIN)	
	EXISTING CONTOUR
	PROPOSED CONTOUR
	PROJECT LIMITS
	PROPOSED WATER
	PROPOSED SEWER
	PROPOSED MANHOLE
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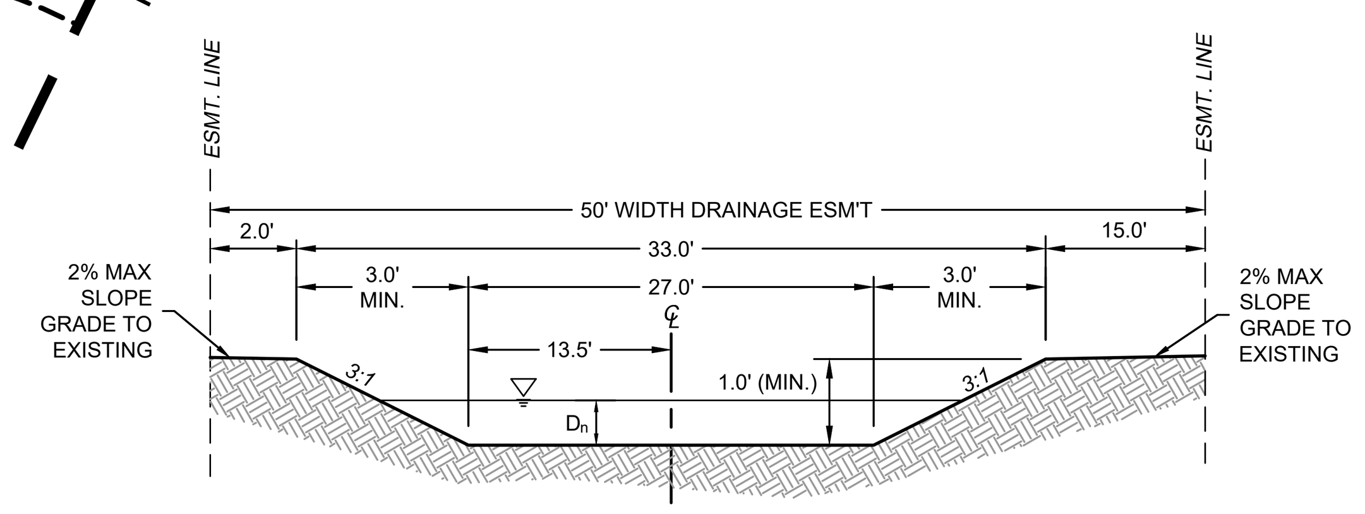
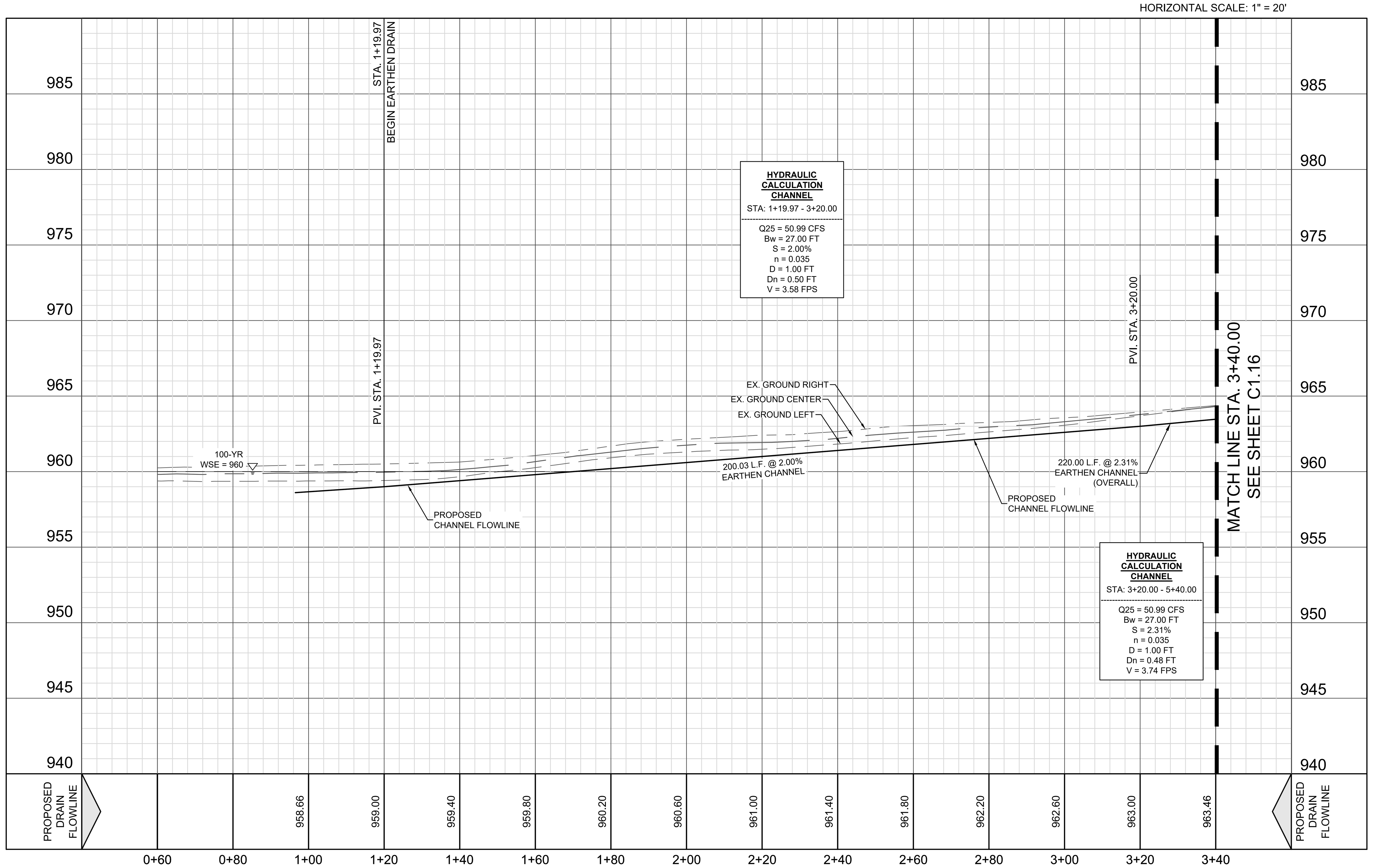


SECTION "B-B"

STA. 1+80.00 - STA. 3+20.00
N.T.S.

DRAIN D
1+19.97 - 3+40.00

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



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2. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION TO VERIFY SIZE, GRADE, AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR, AT HIS EXPANSE.
3. ALL CONCRETE FOR TXDOT DRAINAGE STRUCTURES SHALL MEET TXDOT SPECIFICATIONS. ALL OTHER CONCRETE SHALL BE CLASS "A" 3000 PSI CYLINDER STRENGTH IN 28 DAYS.
4. REFERENCE DRAINAGE DETAILS FOR PIPE TRENCH DETAILS, BOX CULVERT, HEADWALL WINGWALL CONSTRUCTION DETAILS, AND BOX CULVERT BEDDING AND EXCAVATION LIMITS.
5. CONTRACTOR SHALL GROUT ALL CURB INLETS AND JUNCTION BOXES TO PROVIDE FOR POSITIVE DRAINAGE.
6. EARTHEN CHANNELS WILL BE VEGETATED BY SEEDING OR SODDING 85% OF THE CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION BEFORE BEXAR COUNTY WILL ACCEPT.
7. CONTRACTOR SHALL MATCH TOP OF CHANNEL TO NATURAL GROUND AND MAINTAIN A MINIMUM CHANNEL DEPTH OF "0" AS SHOWN IN THE PROFILE.

TRENCH EXCAVATION PROTECTION

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

CAUTION!!!

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REV	DATE	DESCRIPTION

3/20/2024
STATE OF TEXAS
VANCE L. WEYNAND
99269
LICENSED PROFESSIONAL ENGINEER
Vance Weynand

DHI Engineering, LLC.
5419 N. LOOP 1604 EAST
SAN ANTONIO, TX 78247
(210) 496-2668 | dhiengineering.com
TBPE REG. NO. F-19561

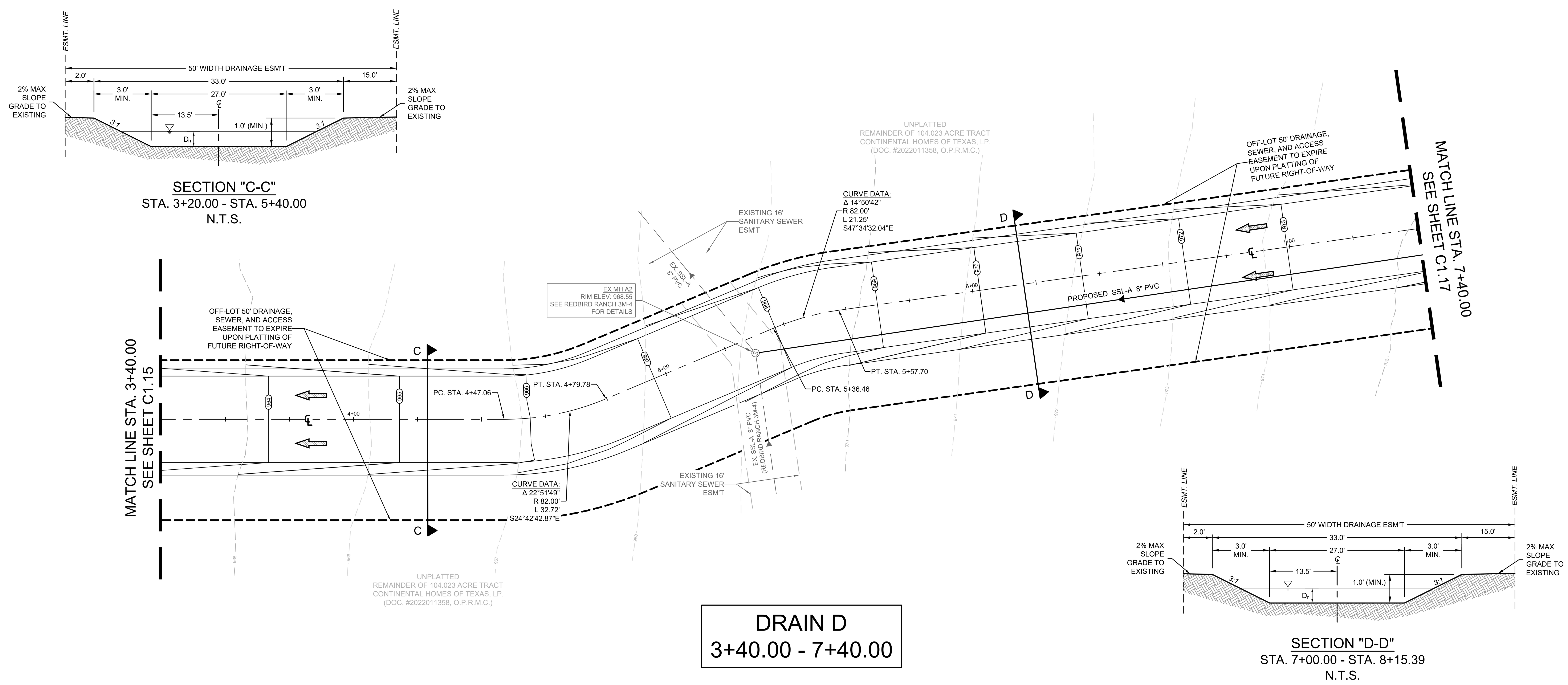
DHI

REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX

DRAIN D - STA. 1+00.00 - 3+40.00

DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	3/20/2024
JOB NO.:	05000-200
SHEET NO.	C1.15

DOC. # XXXXXXXXXXX
REDBIRD RANCH UNIT 2M-2



LEGEND (DRAIN)	
985	EXISTING CONTOUR
1002	PROPOSED CONTOUR
	PROJECT LIMITS
	PROPOSED WATER
	PROPOSED SEWER
	PROPOSED MANHOLE
	FIRE HYDRANTS
	PROPOSED WYE & LATERAL
	SINGLE WATER SERVICE
	DUEL WATER SERVICE
	STREET LIGHTS
GETCTV	GAS, ELECTRIC, TELOPHONE & CABLE TELEVISION EASEMENT
	DRIVEWAY
TOC	TOP OF CURB
GTTR	GUTTER
FL	FLOWLINE

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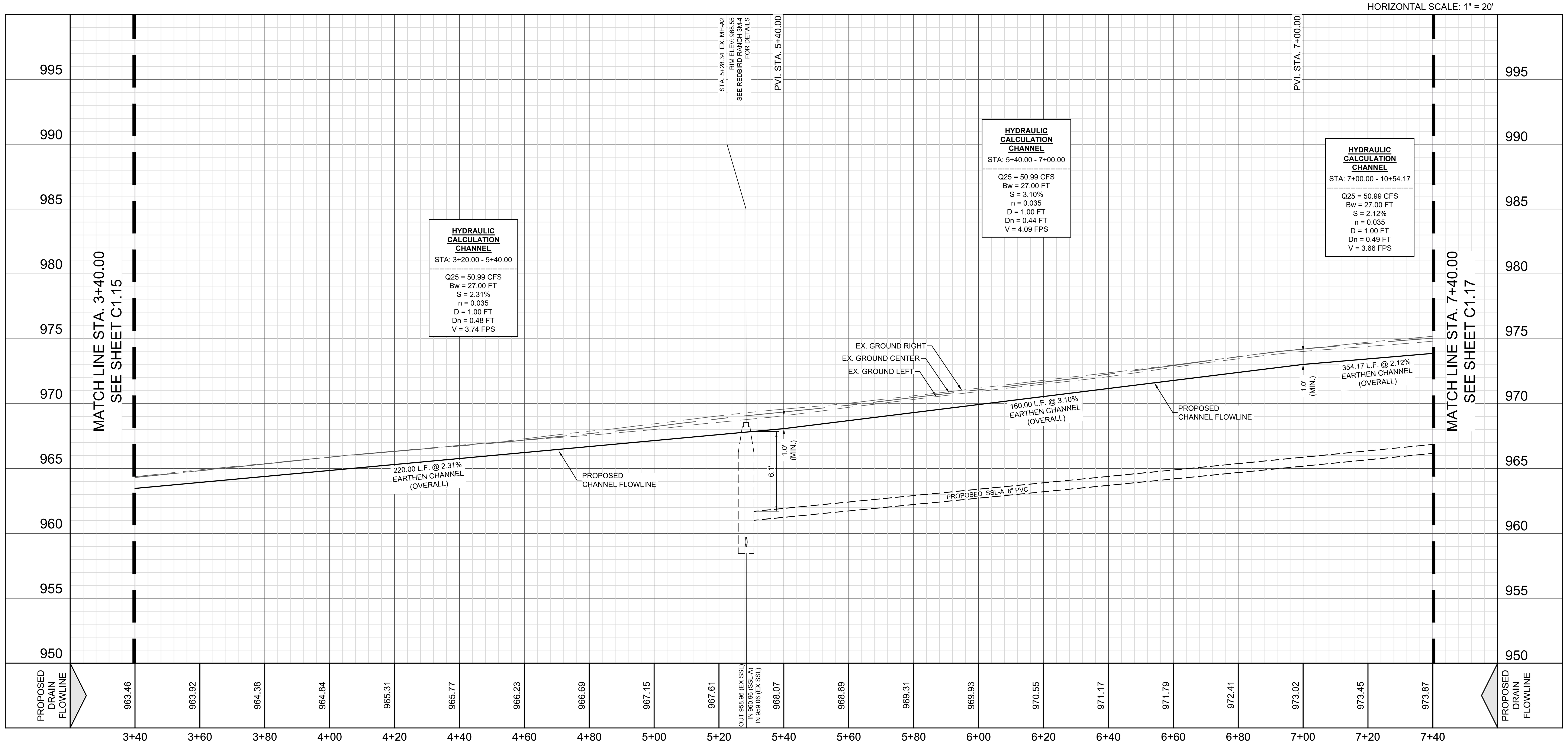

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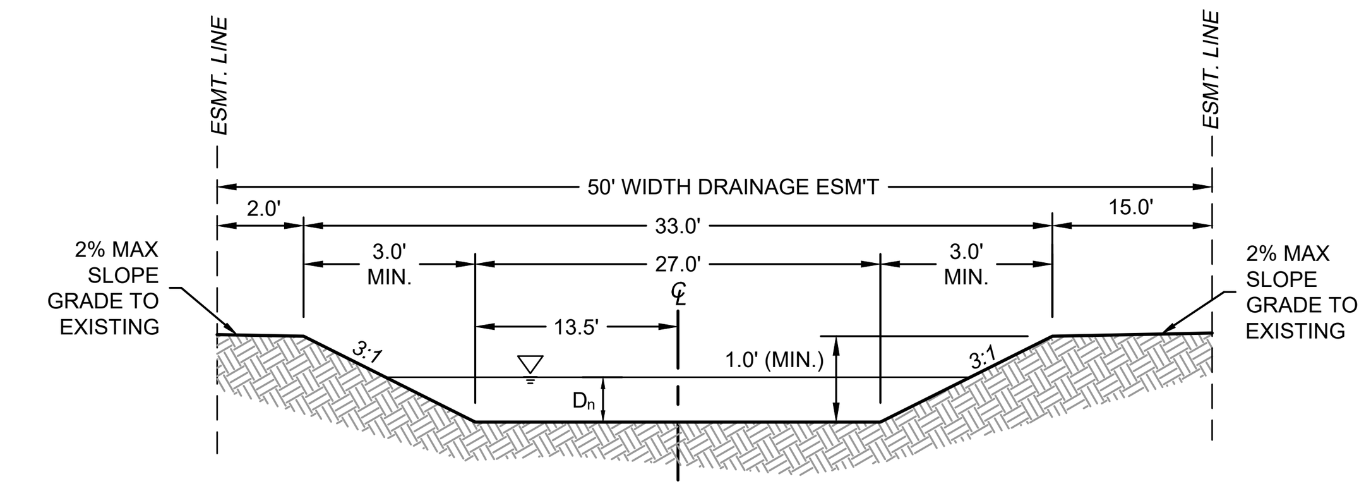
SAN ANTONIO, TX

DRAIN D - STA. 3+40.00 - 7+40.00

DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	3/20/2024
JOB NO.:	05000-200
SHEET NO.	C1.16

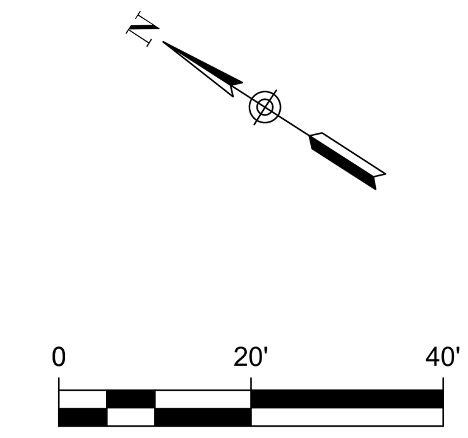
DOC. # XXXXXXXXXXXX
REDBIRD RANCH UNIT 2M-2

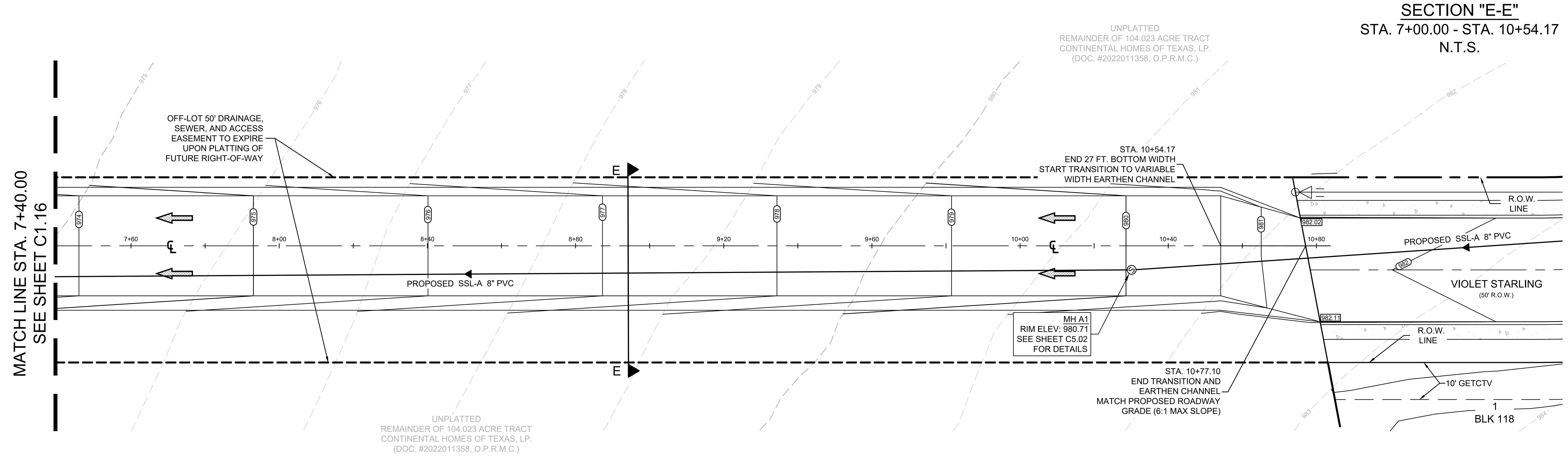


SECTION "E-E"

STA. 7+00.00 - STA. 10+54.17

N.T.S.





DRAIN D
7+40.00 - 10+77.10

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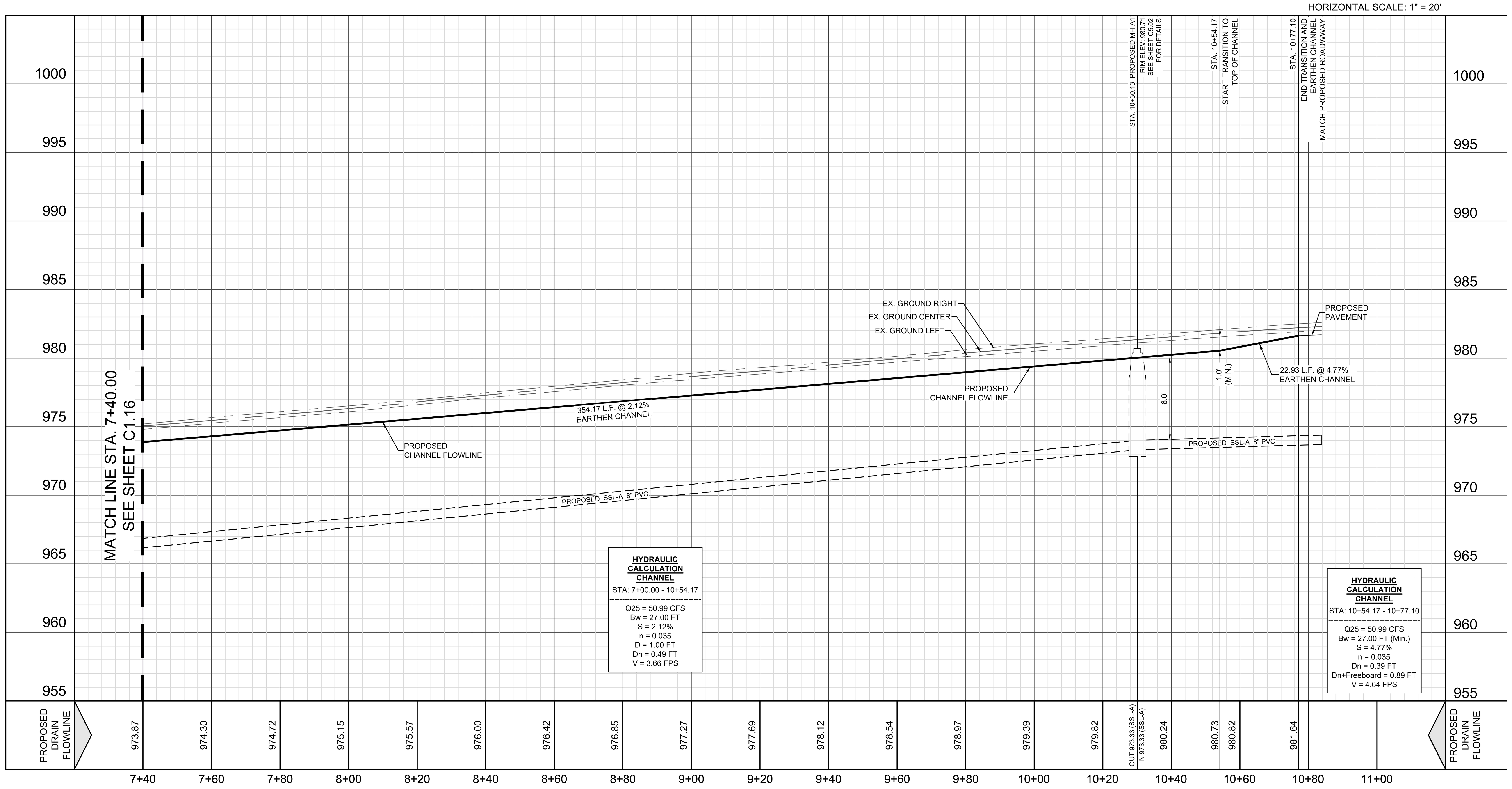

LEGEND (DRAIN)

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REDBIRD RANCH UNIT 2M-2

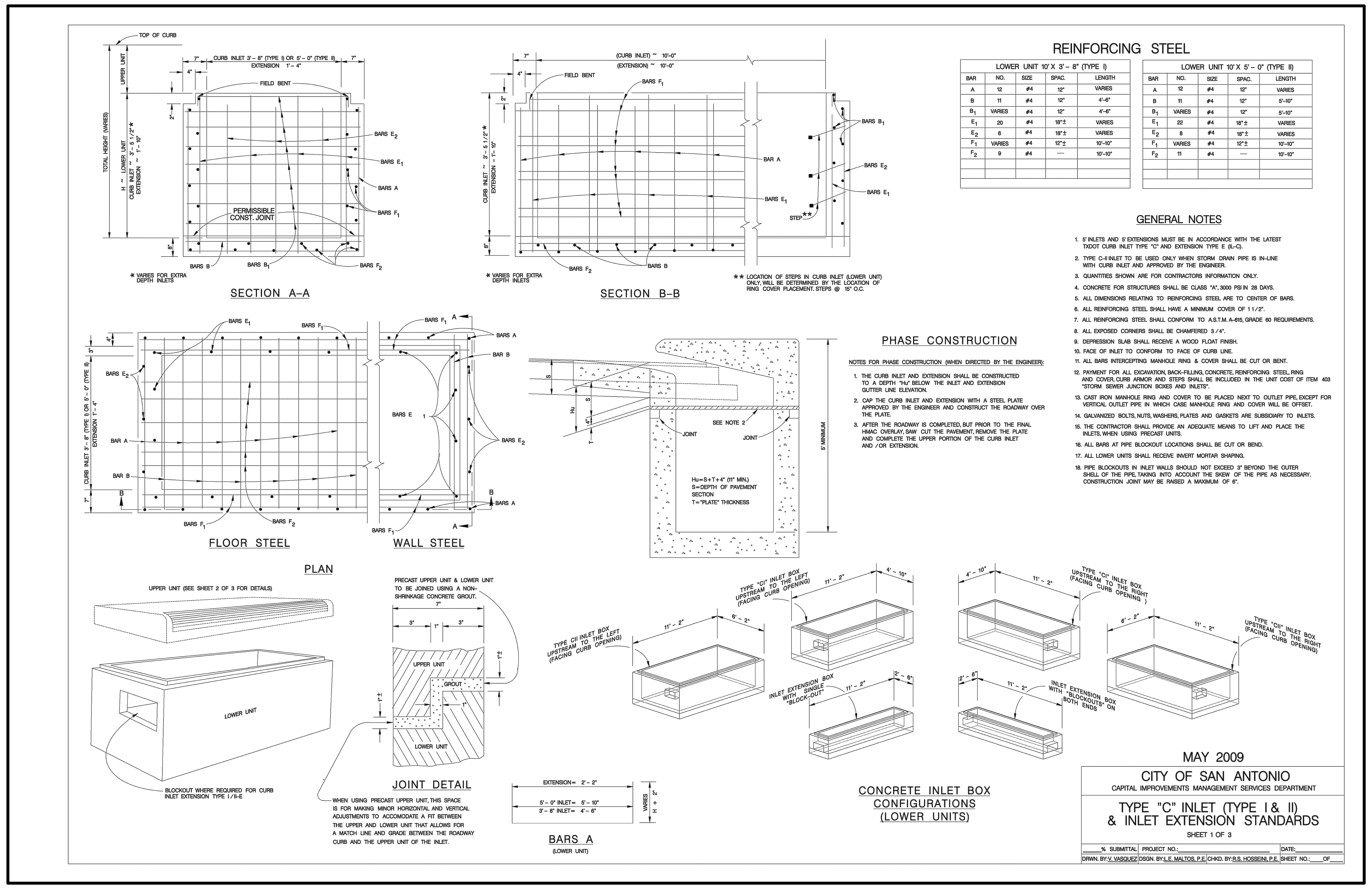
SAN ANTONIO, TX

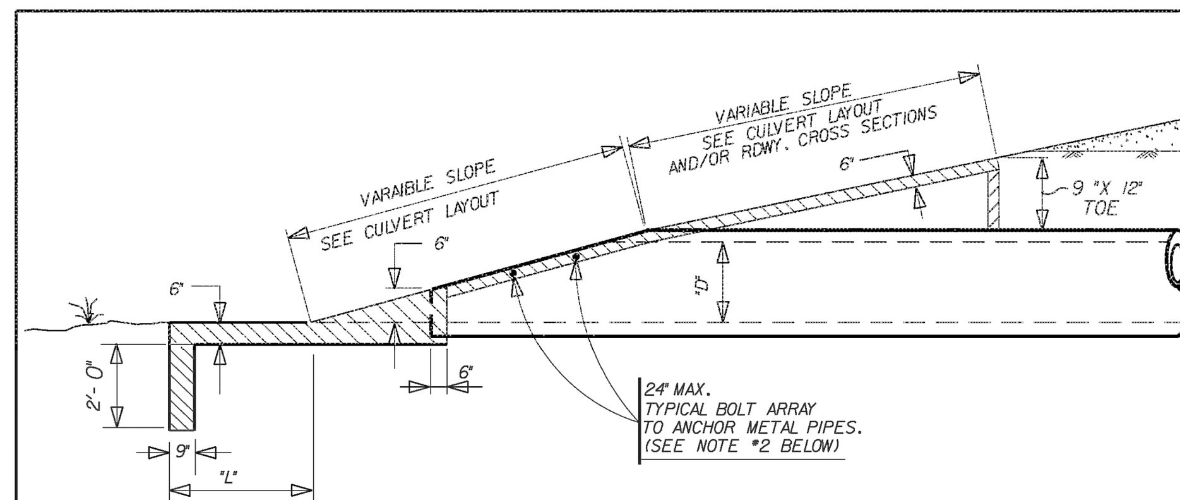
DRAIN D - STA. 7+40.00 - 10+77.10

DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	3/20/2024
JOB NO.:	05000-200
SHEET NO.	C1.17

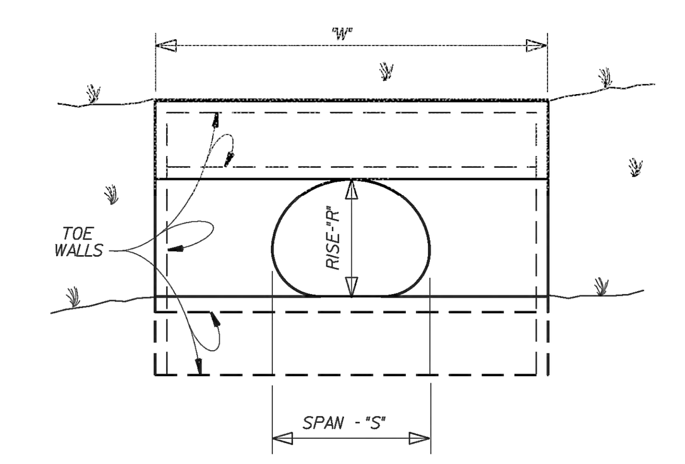
DOC. # XXXXXXXXXXXX

REDBIRD RANCH UNIT 2M-2

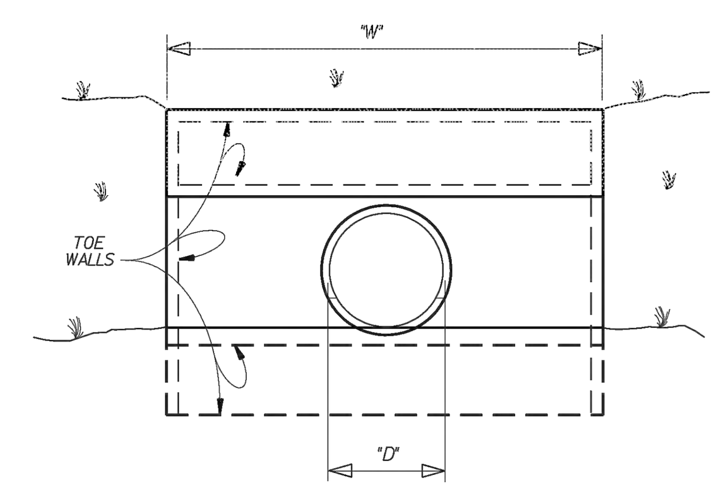




LONGITUDINAL SECTION FOR CIRCULAR & ARCH PIPES



SINGLE C.M.P. ARCH PIPE CULVERT



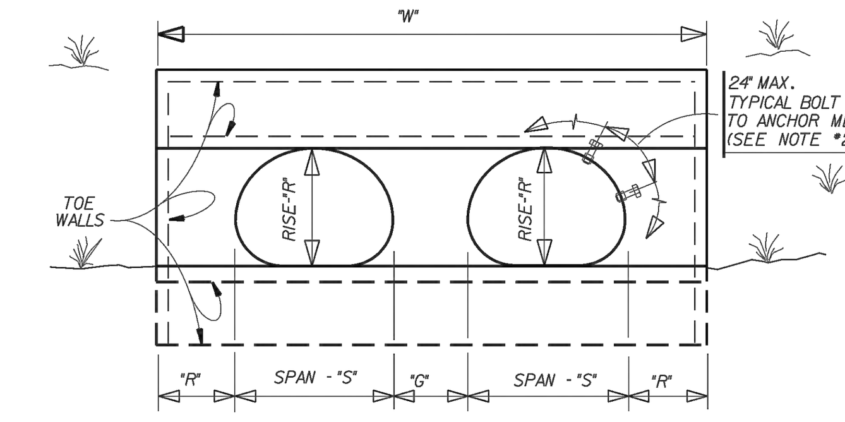
SINGLE CIRCULAR PIPE CULVERT

(CMP or RCP)

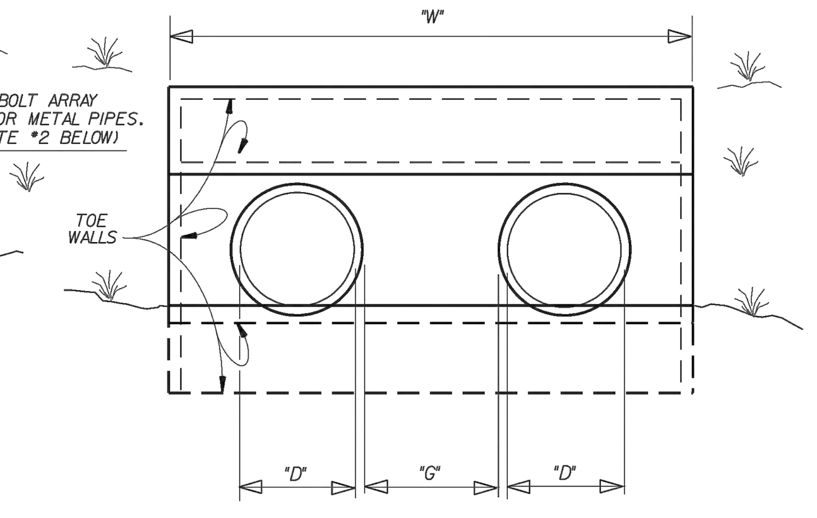
DIMENSIONS FOR CIRCULAR (CMP and RCP) PIPE CULVERTS

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

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



MULTIPLE C.M.P. ARCH PIPE CULVERT



MULTIPLE CIRCULAR PIPE CULVERT

(CMP or RCP)

DIMENSIONS FOR C.M.P. ARCH PIPE CULVERTS

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

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

STRUCTURE DESIGN
/BRIDGE/STDS/Drhl5hdwl.dgn

NOTES:

1.) FOR RIPRAP QUANTITIES AND SLOPES, SEE CULVERT LAYOUT SHEET. CONCRETE SHALL BE CLASS B UNLESS OTHERWISE SHOWN IN THE PLANS.

2.) ALL METAL PIPES (CIRCULAR AND/OR ARCH) SHALL HAVE 5/8" X 6" GALVANIZED BOLTS WITH 2 HEX NUTS AT 24" CENTERS TO ANCHOR THE PIPE TO THE CONCRETE. THIS WORK WILL BE SUBSIDIARY TO THE RIPRAP HEADWALL.

3.) FOR CONCRETE ARCH PIPES, THE CMP ARCH PIPE CULVERT DIMENSIONS WILL HAVE TO BE ADJUSTED FOR THE PIPE WALL THICKNESS.

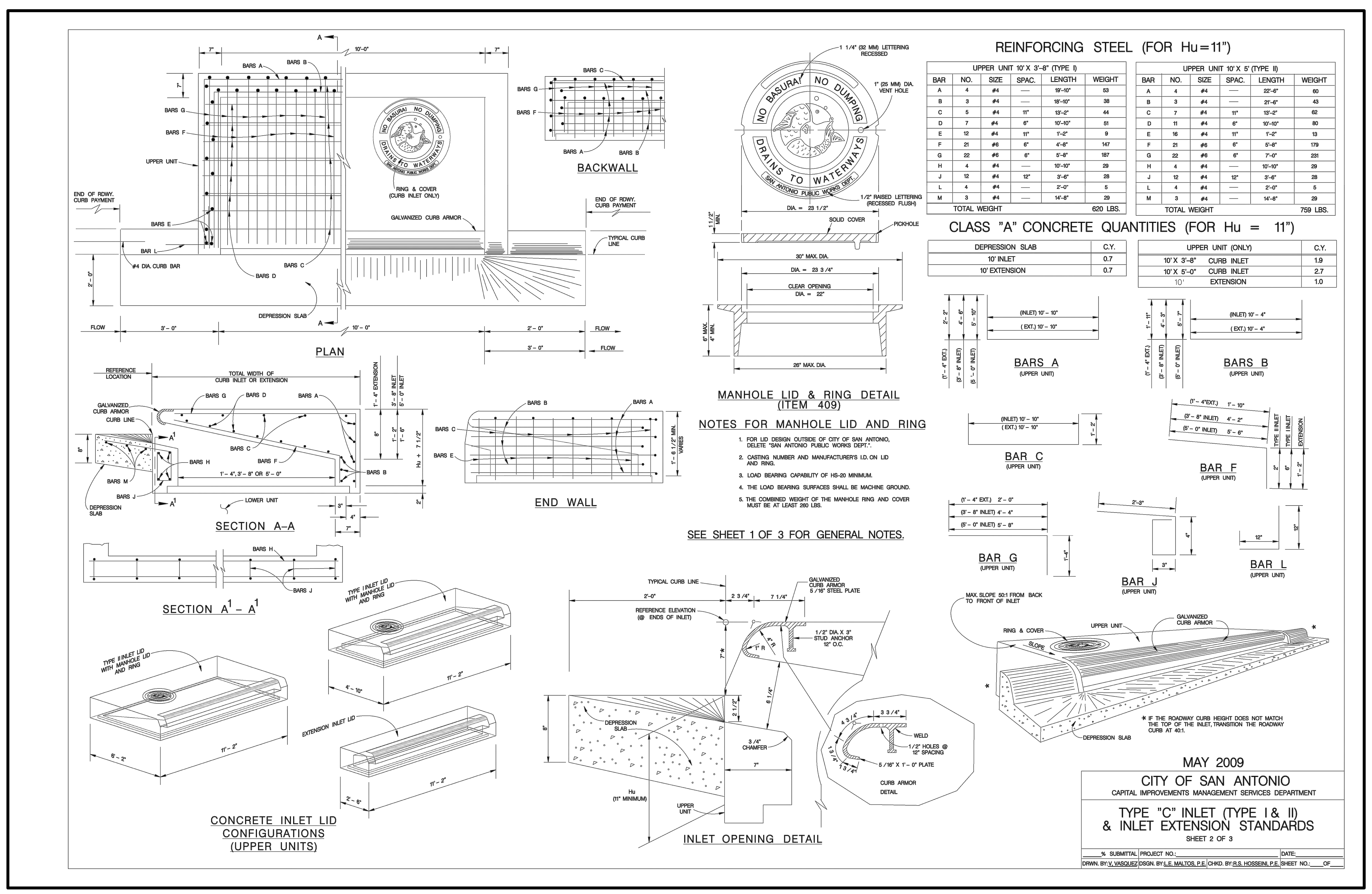
4.) FOR PIPES LARGER THAN SHOWN, USE THE CLEAR DISTANCE BETWEEN PIPES SHOWN IN ITEMS 460 AND/OR 464.

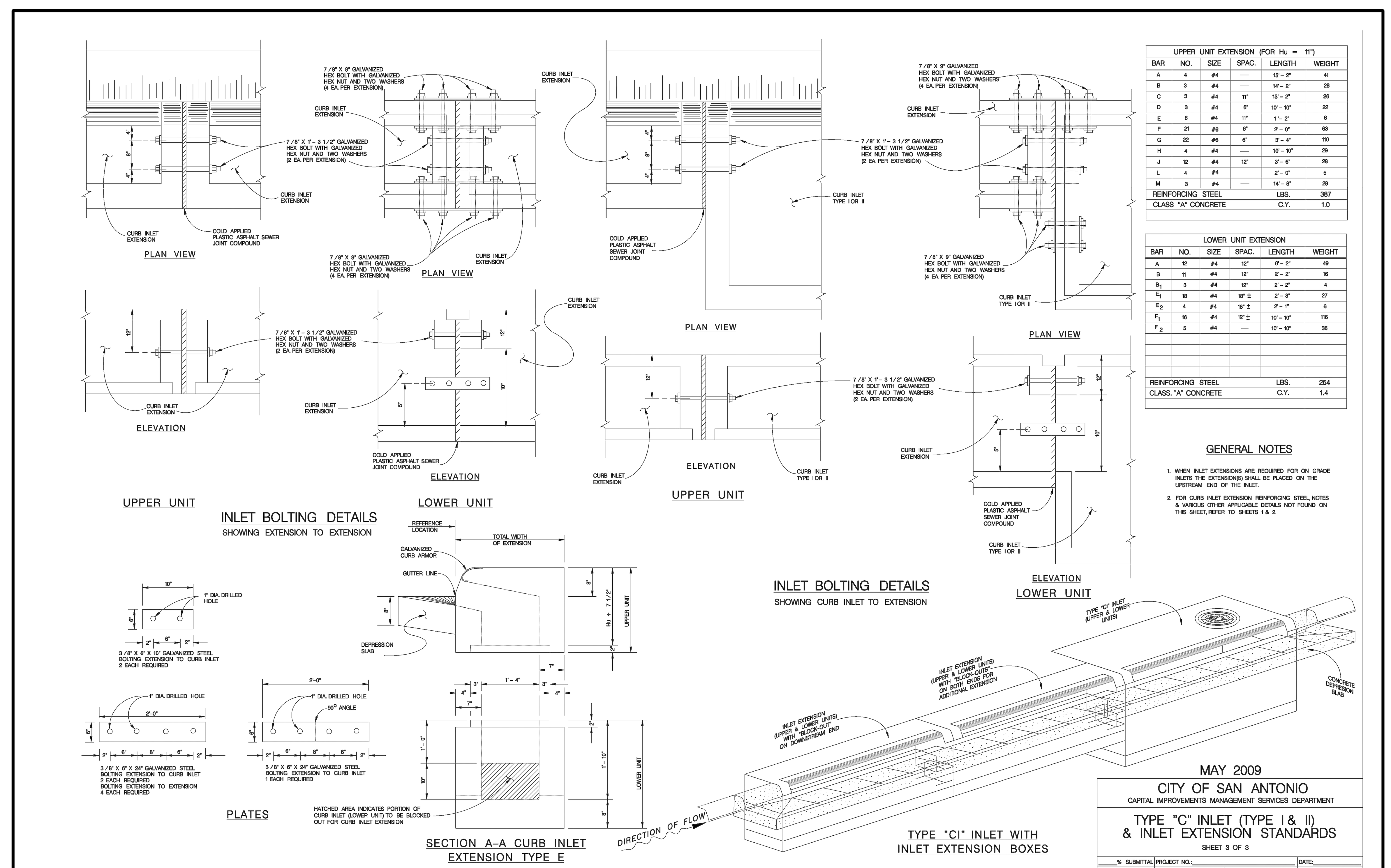
5.) IF THE SIDES OF THE HEADWALL IS ADJACENT TO A RIPRAP SLOPE AND IF THE TOP OF THE HEADWALL IS ADJACENT TO THE ROADWAY FOUNDATION OR RIPRAP SLOPE, THE SIDE AND TOP TOE WALLS MAY BE ELIMINATED IF APPROVED BY THE ENGINEER.

SAN ANTONIO
DISTRICT STANDARD
RIPRAP HEADWALL

FED.RD. DIV.NO.	PROJECT NO.			SHEET NO.
6				
STATE	STATE DISTRICT	COUNTY		
TEXAS	SAT			
CONT.	SECT.	JOB	HIGHWAY NO.	

10/95





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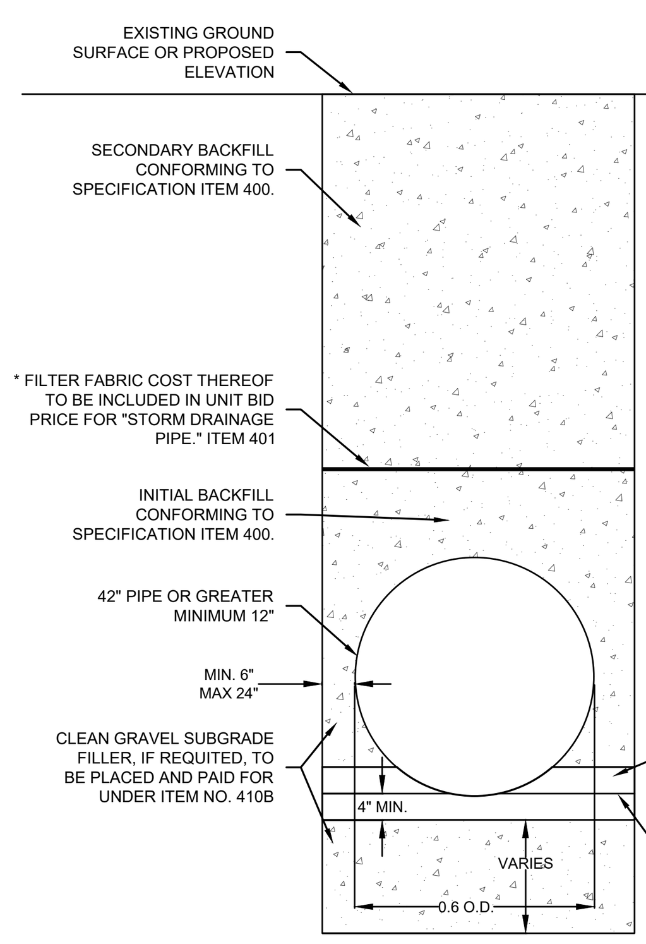
REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX

DRAINAGE DETAILS

DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	3/20/2024
JOB NO.:	05000-200
SHEET NO.	C1.20

Date: Mar 20, 2024, 2:01pm User ID: AMSiller File: \\drhorton.com\tex-sant\HBGROUPS\Engineering_PROJECT\05000\200\900 - Design\930 - Sheets\C1.20 DRAINAGE DETAILS.dwg

TYPICAL DETAIL FOR C.M.P. AND S.R.C.M.P.



* SPECIAL PROVISION TO ITEM 400

"EXCAVATION, TRENCHING AND BACKFILLING"

SECTION "BACKFILLING 2(B)", ADD THE FOLLOWING:

"A FILTER FABRIC SHOULD BE PLACED BETWEEN THE TOP OF THE GRAVEL BACKFILL (INITIAL BACK FILL) AND THE SECONDARY BACKFILL. THE FILTER FABRIC SHALL COVER THE TOTAL WIDTH AND LENGTH OF THE TRENCH AND SHALL COVER THE TOTAL WIDTH AND LENGTH OF THE TRENCH AND SHALL BE INSTALLED AS PER THE MANUFACTURER'S RECOMMENDATION. THE FILTER MATERIAL SHALL HAVE AN APPARENT OPENING SIZE OF U.S. STANDARD SIEVE NO. 40."

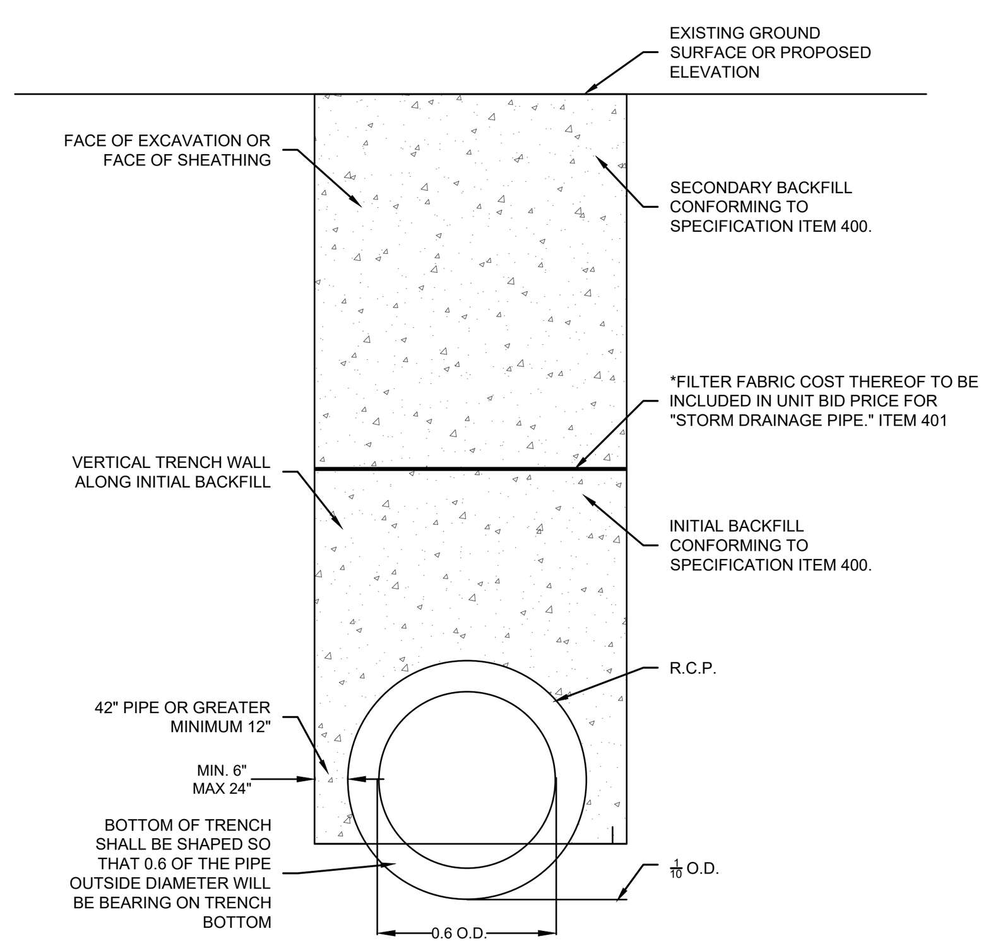
" NO DIRECT PAYMENT SHALL BE MADE FOR PLACEMENT OF FILTER FABRIC AND ALL COST IN CONNECTION THEREWITH SHALL BE INCLUDED IN THE APPLICABLE CONTRACT PRICE FOR THE ITEM TO WHICH THE WORK PERTAINS." VERTICAL TRENCH WALL ALONG INITIAL BACKFILL

GRAVEL BEDDING (CONFIRMING TO SPEC. & GRADATION OF CLEAN GRAVEL SUBGRADE FILLER, ITEM 410B). COST THEREOF TO BE INCLUDED IN UNIT BID PRICE FOR "STORM DRAINAGE PIPE" ITEM 401.

$\frac{1}{10}$ O.D.

NOTE:
SEE SPECIFICATION ITEM 400 FOR OPTIONAL BACKFILL METHOD AND OTHER REQUIREMENTS.

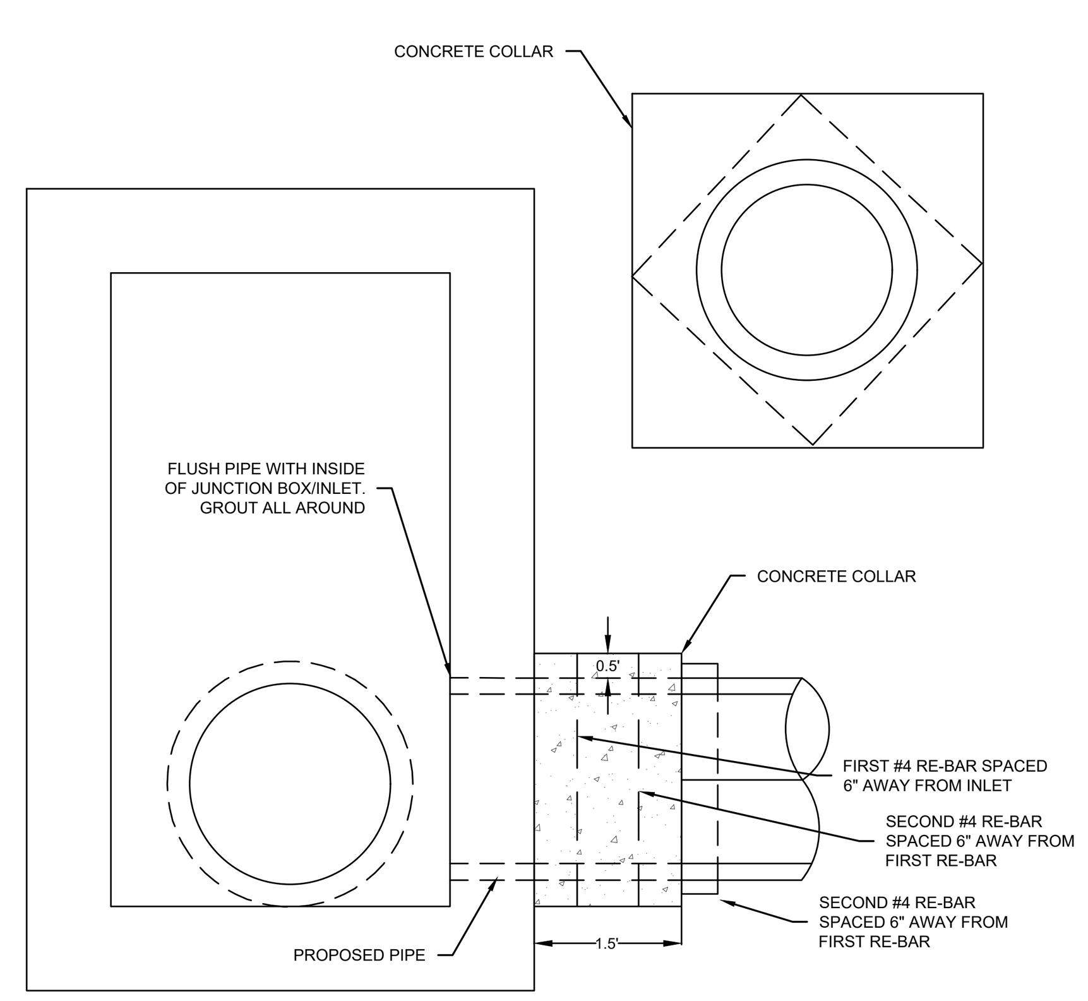
TYPICAL DETAIL



NOTE:
HYDRO FLOW PIPE HAS TO BE BRACED PRIOR TO BACKFILLING. (NO LARGE ROCKS ALLOWED)

PIPE BEDDING AND BACKFILL DETAILS

NOT TO SCALE

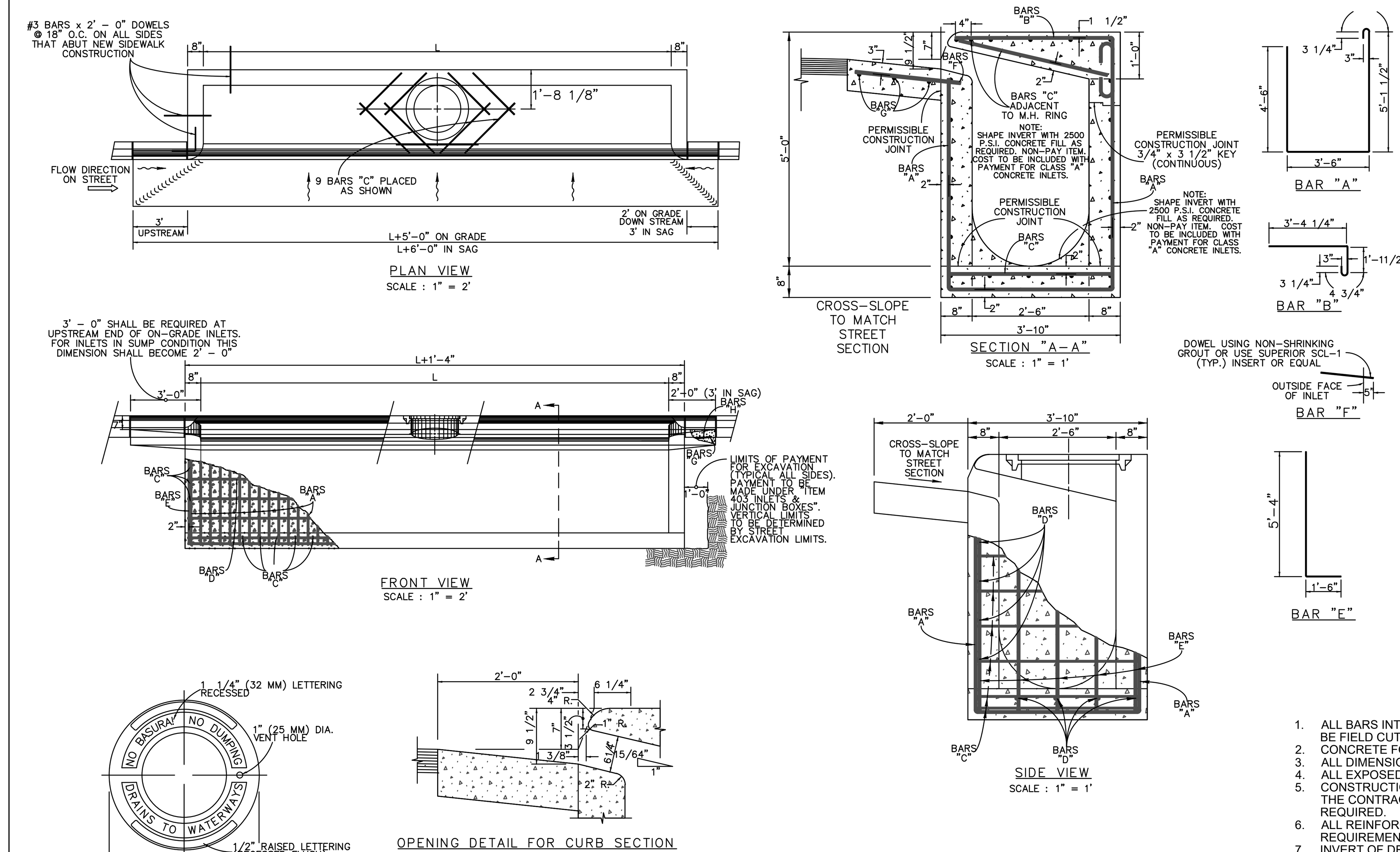


NOTE:

CONTRACTOR MAY SUBSTITUTE FLOWABLE FILL IN LIEU OF REINFORCED CONCRETE COLLAR ONLY WHEN APPROVED BY THE OWNER.

CONCRETE COLLAR DETAIL

NOT TO SCALE



L = 5'-0"
* CONCRETE TOTAL=3.53 CU. YDS.
M.H. CASTING=260 LBS.
STEEL TOTAL=438 LBS.

BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
A	15	4	5" O.C.	13'-9 1/2"	138
B	15	4	5" O.C.	5'-1 3/4"	52
C	30	4	9" O.C.	3'-6"	70
D	22	4	10" O.C.	6'-1"	89
E	10	4	10 1/2" O.C.	6'-10"	46
F	6	5	12" O.C.	2'-3"	27
G	3	4	12" O.C.	9'-8"	20
H	5	5	12" O.C.	1'-8"	9

L = 10'-0"
* CONCRETE TOTAL=5.75 CU. YDS.
M.H. CASTING=260 LBS.
STEEL TOTAL=704 LBS.

BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
A	27	4	5" O.C.	13'-9 1/2"	249
B	27	4	5" O.C.	5'-1 3/4"	93
C	37	4	9" O.C.	3'-6"	87
D	22	4	10" O.C.	11'-1"	163
E	10	4	10 1/2" O.C.	6'-10"	46
F	12	5	12" O.C.	2'-3"	27
G	3	4	12" O.C.	14'-8"	30
H	5	5	12" O.C.	1'-8"	9

L = 15'-0"
* CONCRETE TOTAL=7.97 CU. YDS.
M.H. CASTING=260 LBS.
STEEL TOTAL=963 LBS.

BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
A	39	4	5" O.C.	13'-9 1/2"	359
B	39	4	5" O.C.	5'-1 3/4"	134
C	43	4	9" O.C.	3'-6"	101
D	22	4	10" O.C.	16'-1"	236
E	10	4	10 1/2" O.C.	6'-10"	46
F	17	5	12" O.C.	2'-3"	38
G	3	4	12" O.C.	19'-8"	40
H	5	5	12" O.C.	1'-8"	9

L = 20'-0"
* CONCRETE TOTAL=10.19 CU. YDS.
M.H. CASTING=260 LBS.
STEEL TOTAL=1227 LBS.

BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
A	51	4	5" O.C.	13'-9 1/2"	470
B	51	4	5" O.C.	5'-1 3/4"	175
C	50	4	9" O.C.	3'-6"	117
D	22	4	10" O.C.	21'-1"	310
E	10	4	10 1/2" O.C.	6'-10"	46
F	22	5	12" O.C.	2'-3"	50
G	3	4	12" O.C.	24'-8"	50
H	5	5	12" O.C.	1'-8"	9

L = 25'-0"
* CONCRETE TOTAL=12.41 CU. YDS.
M.H. CASTING=260 LBS.
STEEL TOTAL=1489 LBS.

BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
A	63	4	5" O.C.	13'-9 1/2"	580
B	63	4	5" O.C.	5'-1 3/4"	217
C	57	4	9" O.C.	3'-6"	133
D	22	4	10" O.C.	26'-1"	383
E	10	4	10 1/2" O.C.	6'-10"	46
F	27	5	12" O.C.	2'-3"	61
G	3	4	12" O.C.	24'-8"	60
H	5	5	12" O.C.	1'-8"	9

L = 30'-0"
* CONCRETE TOTAL=14.63 CU. YDS.
M.H. CASTING=260 LBS.
STEEL TOTAL=1750 LBS.

BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
A	75	4	5" O.C.	13'-9 1/2"	691
B	75	4	5" O.C.	5'-1 3/4"	258
C	63	4	9" O.C.	3'-6"	147
D	22	4	10" O.C.	31'-1"	457
E	10	4	10 1/2" O.C.	6'-10"	46
F	32	5	12" O.C.	2'-3"	72
G	3	4	12" O.C.	34'-8"	70
H	5	5	12" O.C.	1'-8"	9

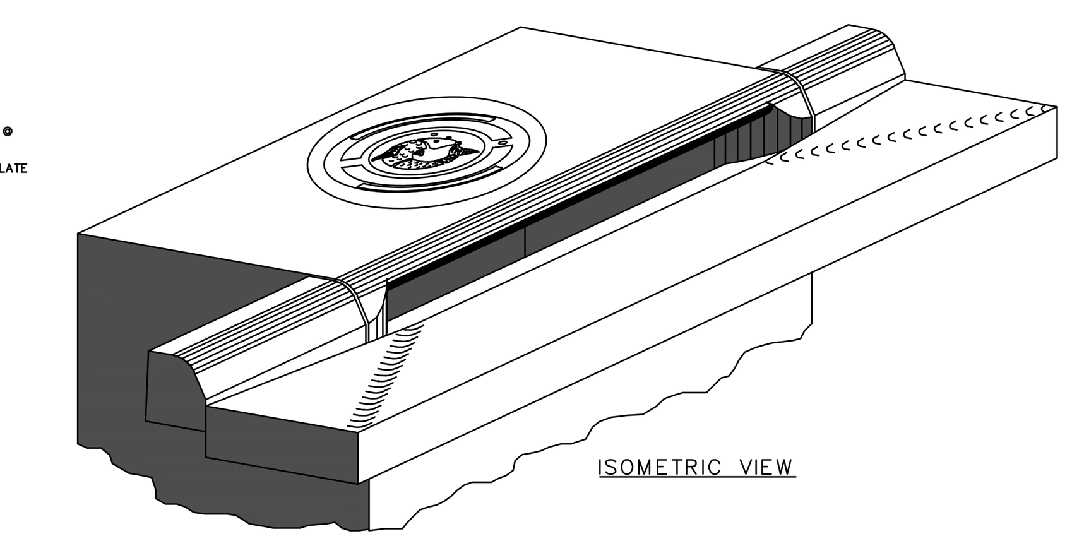
* THESE FIGURES DO NOT EXCLUDE CONCRETE & STEEL INTERCEPTED BY MANHOLE AND REINFORCED CONC. PIPE.
* INCLUDES CONCRETE GUTTER FOR ON GRADE INLET. REDUCE BY .05 C.Y. FOR INLETS IN SUMP.

GENERAL NOTES

1. ALL BARS INTERCEPTING MANHOLE RING & REINFORCING CONCRETE PIPE SHALL BE FIELD CUT.
2. CONCRETE FOR STRUCTURES SHALL BE CLASS "A", 3000 PSI IN 28 DAYS.
3. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER BARS.
4. ALL EXPOSED CORNERS SHALL BE CHAMFERED TO 3 / 4"
5. CONSTRUCTION JOINT SHOWN AT FLOWLINE MAY BE RAISED A MAXIMUM OF 6" AT THE CONTRACTOR'S DISCRETION. ADJUST LENGTH OF VERTICAL STEEL AS REQUIRED.
6. ALL REINFORCING STEEL SHALL CONFORM TO A.S.T.M. A-615, GRADE 60 REQUIREMENTS.
7. INVERT OF DROP INLET TO BE SHAPED WITH CONCRETE FILL TO AFFECT DRAINAGE TO OUTLET PIPE.
8. DELETE 4 "C" BARS FROM SCHEDULE QUANTITIES IF MANHOLE RING AND COVER ARE PLACED AT END OF INLET.
9. CAST IRON MANHOLE RING AND COVER TO BE PLACED NEXT TO OUTLET PIPE, EXCEPT FOR VERTICAL OUTLET PIPE IN WHICH CASE MANHOLE RING AND COVER WILL BE OFFSET.
10. PAYMENT FOR ALL EXCAVATION, BACK FILLING, CONCRETE, REINFORCING STEEL, RING AND COVER SHALL BE INCLUDED IN THE UNIT COST OF ITEM 403 "STORM SEWER JUNCTION BOXES AND INLETS".

NOTES FOR MANHOLE LID AND RING

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



TYPE "C" INLET STANDARDS

DOC. # XXXXXXXXXXXX

REDBIRD RANCH UNIT 2M-2

REV	DATE	DESCRIPTION

3/20/2024

STATE OF TEXAS
VANCE L. WEYNAND
99269
LICENSED
PROFESSIONAL ENGINEER

Vance Weynand

DHI Engineering, LLC.
5419 N. LOOP 1604 EAST
SAN ANTONIO, TX 78247
(210) 496-2668 | dhiengineering.com
TBPE REG. NO. F-19561

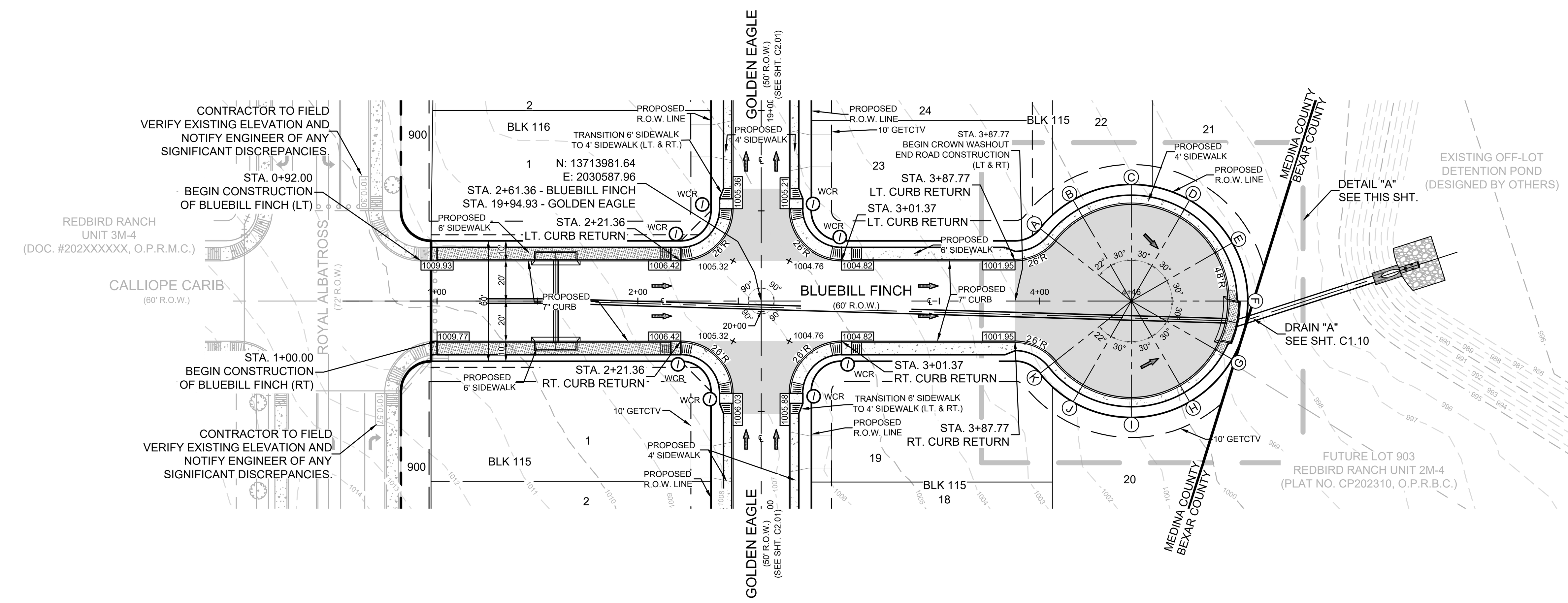
DHI

REDBIRD RANCH UNIT 2M-2

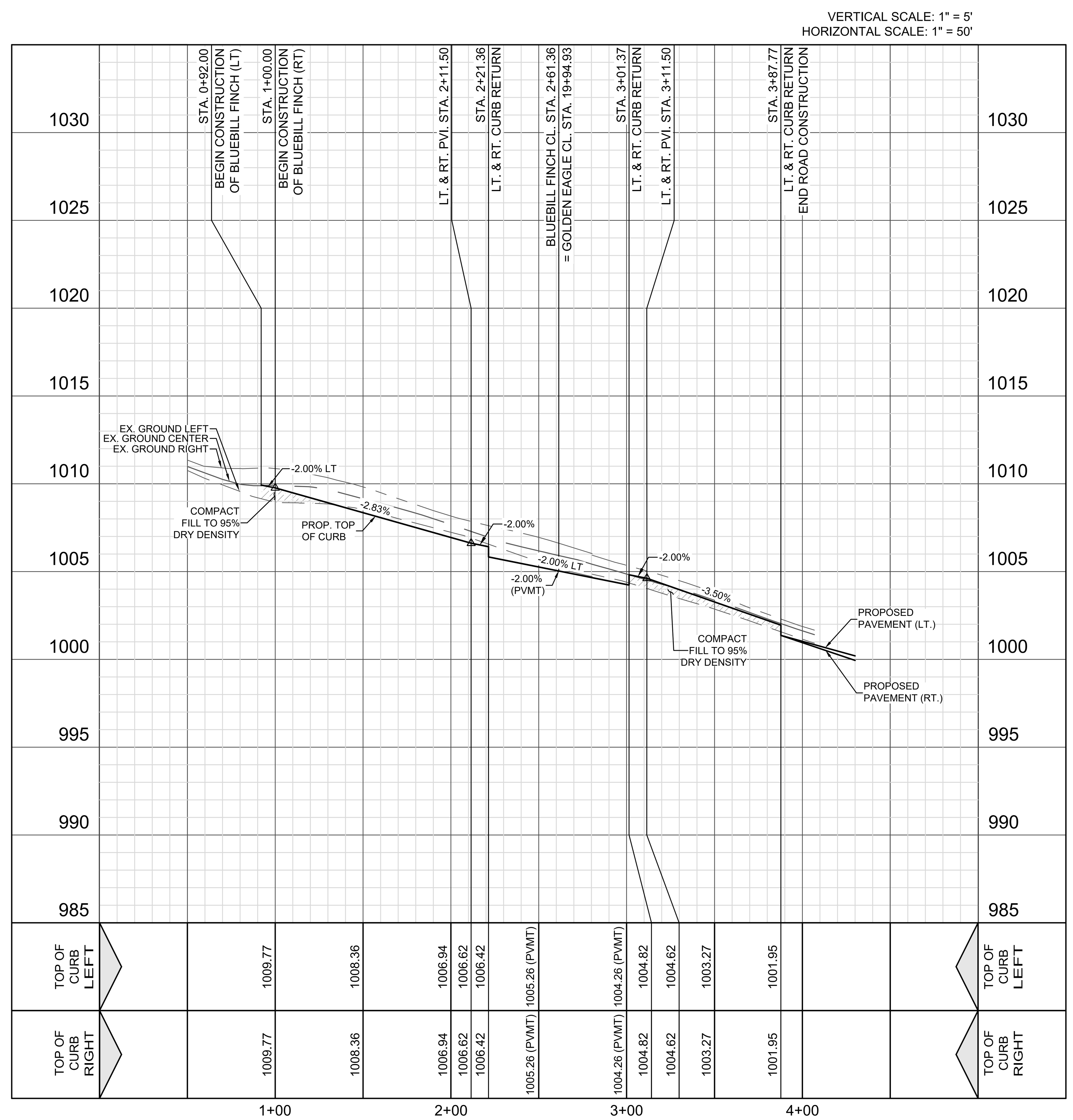
SAN ANTONIO, TX

DRAINAGE DETAILS

DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	3/20/2024
JOB NO.:	05000-200
SHEET NO.	C1.21

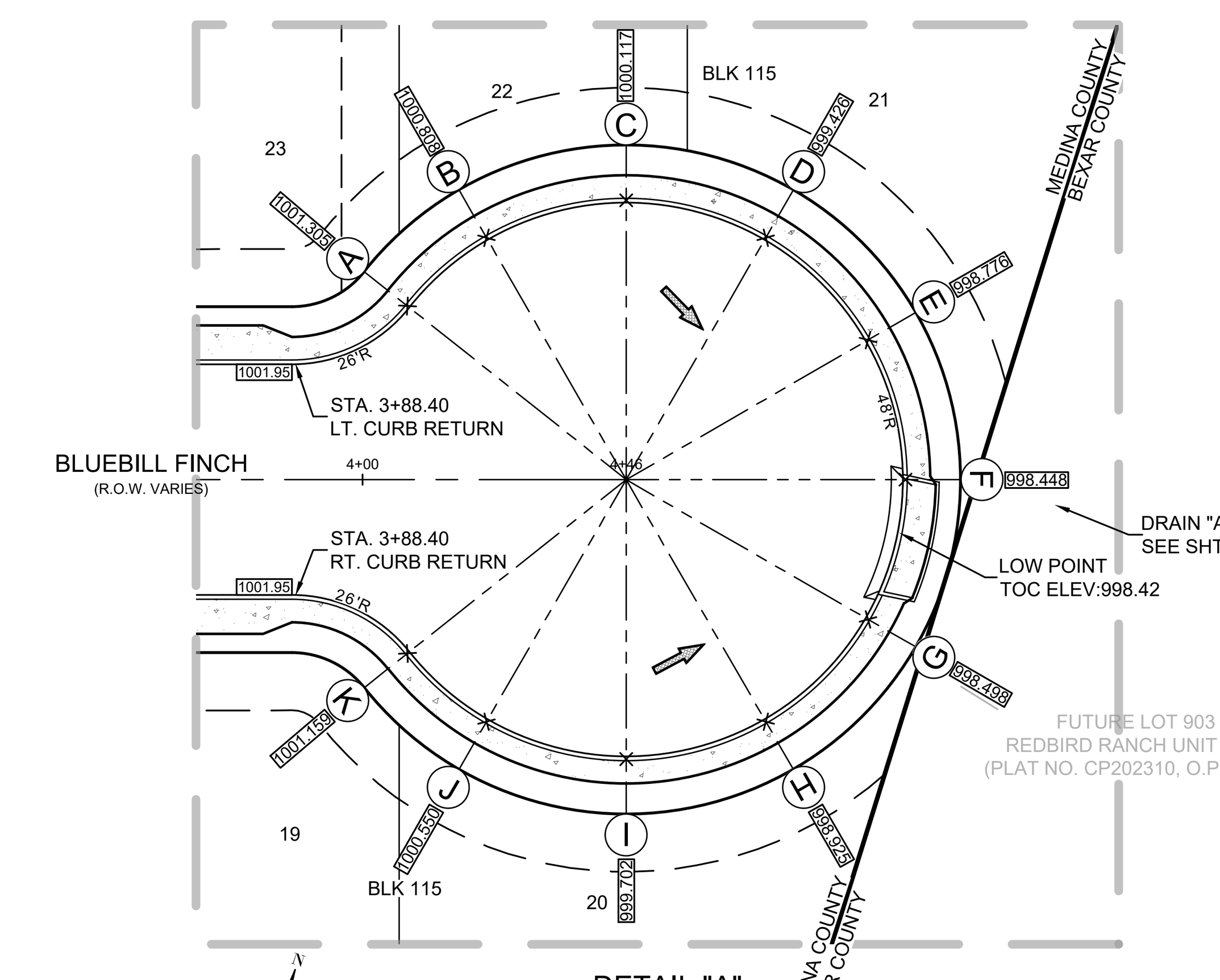


BLUEBILL FINCH
STA. 1+00.00 TO 3+87.77



LEGEND (STREET)

	PROJECT LIMITS
985	EXISTING CONTOUR
1002	PROPOSED CONTOUR
1 WCR	WHEELCHAIR RAMP TYPE
PC	POINT OF CURVATURE
PT	POINT OF TANGENCY
	DRAINAGE FLOW ARROW
1022.64	TOP OF CURB ELEVATION
1022.237	PAVEMENT ELEVATION
	CROWN WASHOUT
	DRIVEWAY
	SIDEWALK (DEVELOPER RESPONSIBILITY)
	SIDEWALK (HOMEBUILDER RESPONSIBILITY)



DETAIL "A"
SCALE: 1" = 30'

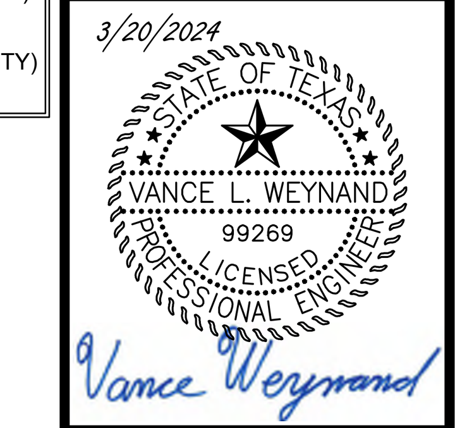
STREET NOTES:

1. A MEDINA COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN MEDINA COUNTY ROW. CONTRACTOR SHALL COORDINATE A TRAFFIC CONTROL PLAN FOR ALL WORK WITHIN THE ROW. ADDITIONAL WARNING SIGNS MAY BE RECOMMENDED BY THE ENGINEER ONCE THE ROADWAYS ARE CONSTRUCTED.
2. CONTRACTOR SHALL MATCH EXISTING PAVEMENT AT TIE-IN. IF EXISTING PAVEMENT ELEVATION DIFFERS SIGNIFICANTLY, CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO CONTINUING WORK.
3. SIDEWALKS SHALL BE CONSTRUCTED A MINIMUM OF 3 FT. FROM THE BACK OF CURB FOR ALL LOCATIONS WHERE THE SIDEWALK IS SHOWN OFFSET. REFER TO STREET DETAIL SHEET FOR SIDEWALK AND RAMP DETAILS.
4. NO PERMANENT STRUCTURES HIGHER THAN 3 FT., AND LOWER THAN 8 FT. ABOVE THE PAVEMENT INCLUDING STRUCTURES, WALLS, FENCES, AND VEGETATION, SHALL BE CONSTRUCTED OR ALLOWED WITHIN THE CLEAR VISION EASEMENT. CONTRACTOR SHALL GRADE AREAS WITHIN CLEAR VISION EASEMENTS SUCH THAT THE ELEVATION WITHIN HE CLEAR VISION EASEMENT IS NOT HIGHER THAN 3 FT. ABOVE THE ADJACENT TOP OF PAVEMENT.
5. DRIVEWAYS SHOWN ON THIS PLAN ARE FOR THE SOLE PURPOSE OF INDICATION A POTENTIAL CONFLICT WITH CURB RAMP, DRAINAGE INFRASTRUCTURE, OR OTHER CONFLICT. DRIVEWAY LOCATION IS SUBJECT TO CHANGE BASED ON HOME SELECTION AND FINAL LOT DESIGN.
6. CHANGES IN THE SIDEWALK LOCATION FOR A MAXIMUM LINEAR DISTANCE OF TWO HUNDRED (200) FEET ARE PERMITTED TO BE APPROVED BY THE FIELD INSPECTOR WITHOUT AMENDING THE STREET PLAN OR UTILITY LAYOUT PER UDC SECTION 35-506 (Q)(6).
7. ALL RAMPS AND ANY PROPOSED SIDEWALKS THAT DO NOT FRONT PROPOSED RESIDENTIAL LOTS ARE REQUIRED TO BE CONSTRUCTED WITH STREET CONSTRUCTION

Point Table			
Point	Top of Curb Elevation	Northing	Easting
A	1001.305	13714054.4578	2030718.5102
B	1000.808	13714069.8833	2030728.0326
C	1000.117	13714083.3692	2030749.1770
D	999.426	13714084.4762	2030774.2315
E	998.776	13714072.9075	2030796.4828
F	998.448	13714051.7632	2030809.9686
G	998.498	13714026.7087	2030811.0756
H	998.925	13714004.4574	2030799.5070
I	999.702	13713990.9716	2030778.3626
J	1000.550	13713989.8646	2030753.3081
K	1001.159	13713997.0214	2030736.6527

REV	DATE	DESCRIPTION

3/20/2024



DHI Engineering, LLC.
5419 N. LOOP 1604 EAST
SAN ANTONIO, TX 78247
(210) 496-2668 | dhiengineering.com
TBPE REG. NO. F-19561

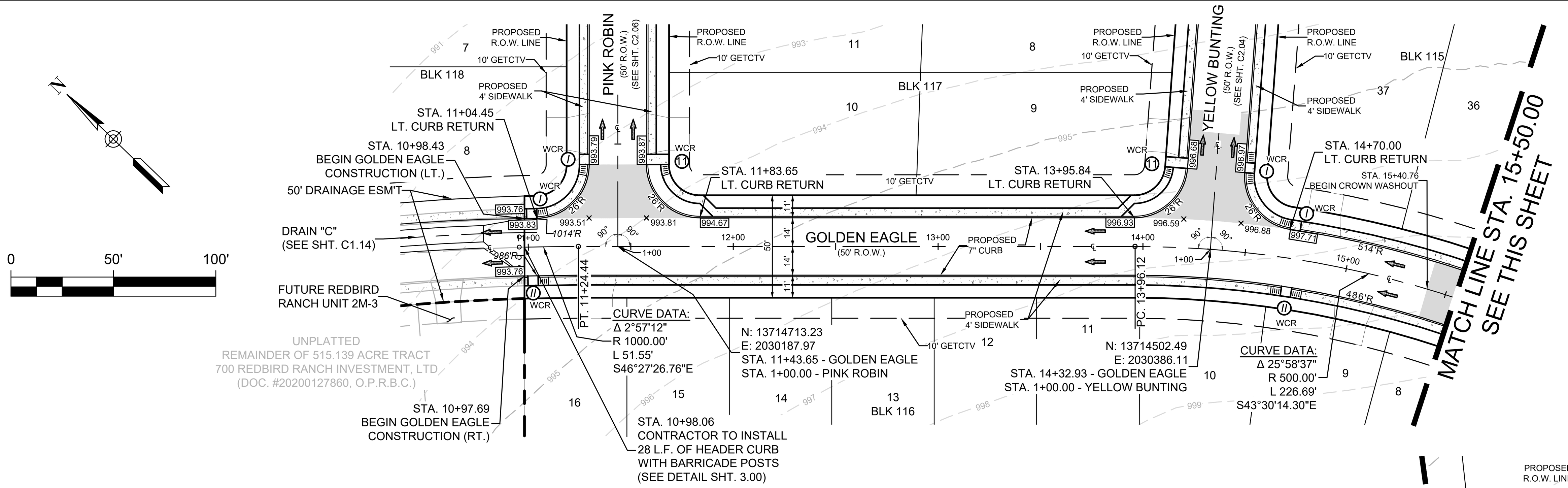
DHI

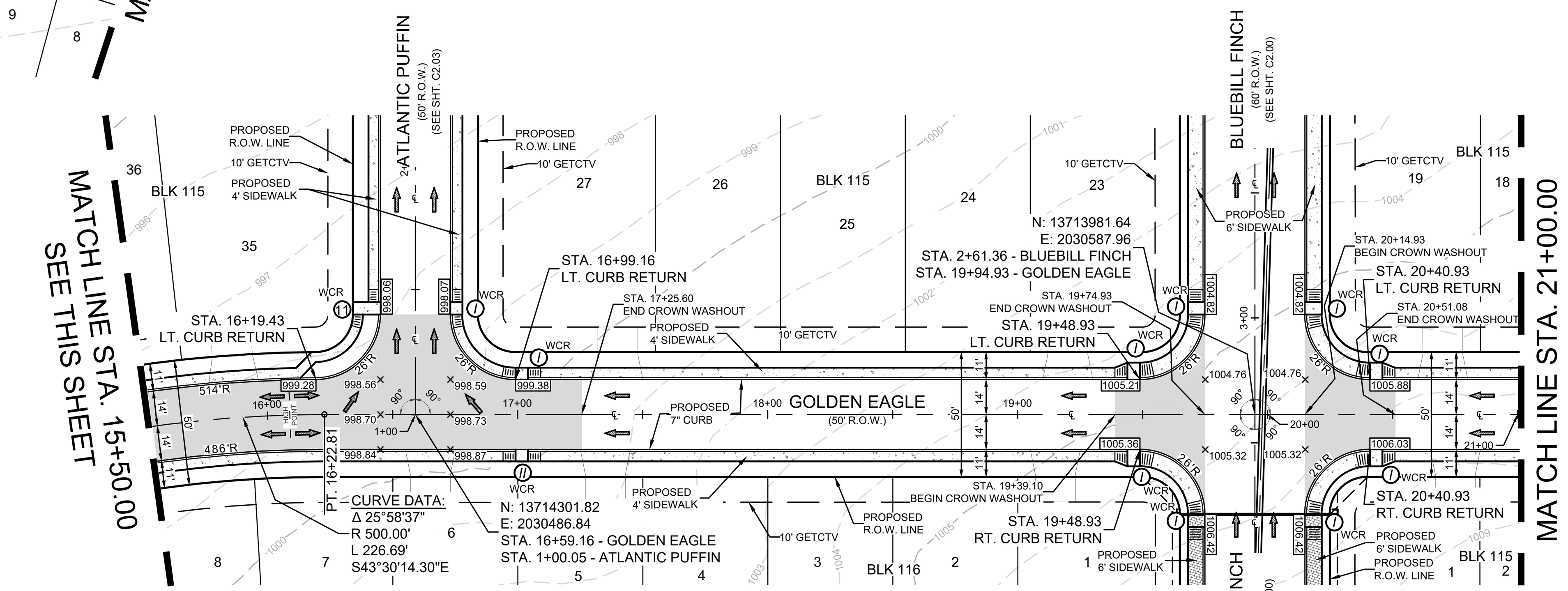
REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX

BLUEBILL FINCH - STA. 1+00.00 - 3+87.77

DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	3/20/2024
JOB NO.:	05000-200
SHEET NO.	C2.00

DOC. # XXXXXXXXXXXX
REDBIRD RANCH UNIT 2M-2





STREET NOTES:

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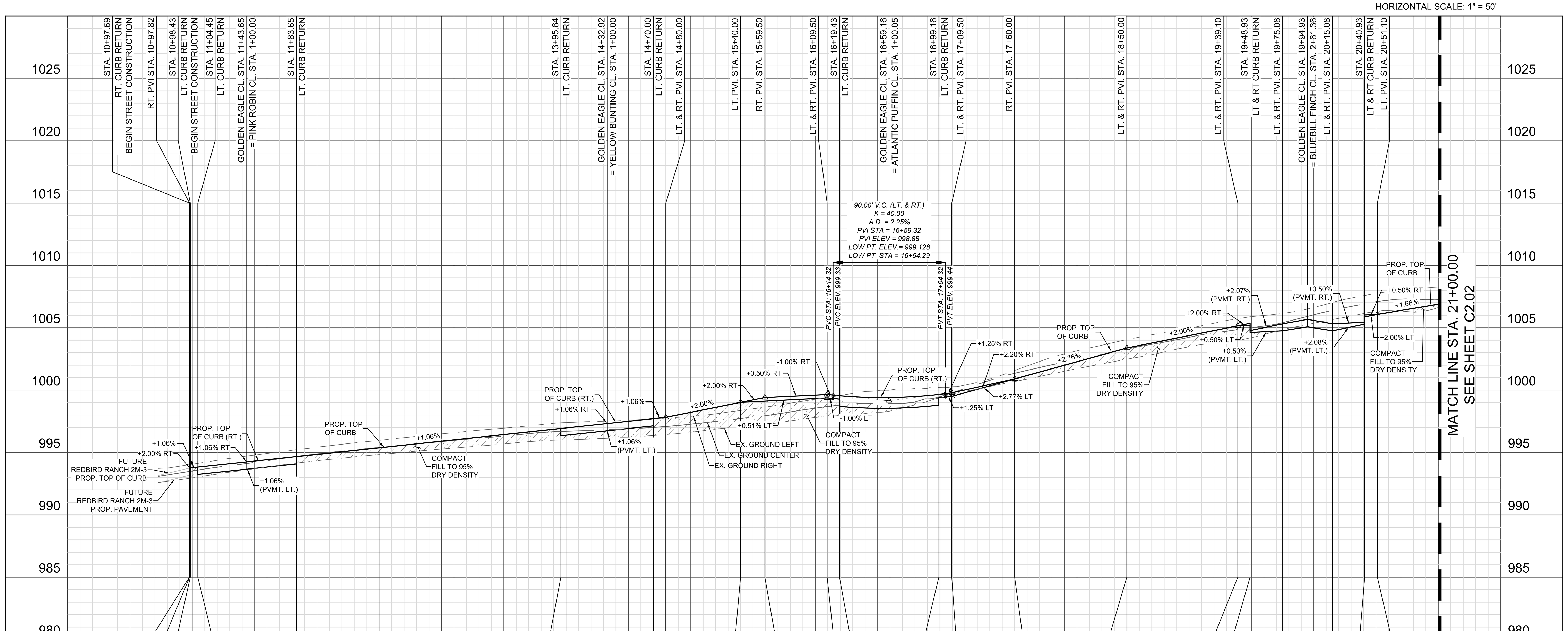
5. DRIVEWAYS SHOWN ON THIS PLAN ARE FOR THE SOLE PURPOSE OF INDICATION A POTENTIAL CONFLICT WITH CURB RAMP, DRAINAGE INFRASTRUCTURE, OR OTHER CONFLICT. DRIVEWAY LOCATION IS SUBJECT TO CHANGE BASED ON HOME SELECTION AND FINAL LOT DESIGN.
6. CHANGES IN THE SIDEWALK LOCATION FOR A MAXIMUM LINEAR DISTANCE OF TWO HUNDRED (200) FEET ARE PERMITTED TO BE APPROVED BY THE FIELD INSPECTOR WITHOUT AMENDING THE STREET PLAN OR UTILITY LAYOUT PER UDC SECTION 35-506 (Q)(6).
7. ALL RAMPS AND ANY PROPOSED SIDEWALKS THAT DO NOT FRONT PROPOSED RESIDENTIAL LOTS ARE REQUIRED TO BE CONSTRUCTED WITH STREET CONSTRUCTION

LEGEND (STREET)

- PROJECT LIMITS
- EXISTING CONTOUR
- PROPOSED CONTOUR
- WHEELCHAIR RAMP TYPE
- POINT OF CURVATURE
- POINT OF TANGENCY
- DRAINAGE FLOW ARROW
- TOP OF CURB ELEVATION
- PAVEMENT ELEVATION
- CROWN WASHOUT
- DRIVEWAY
- SIDEWALK (DEVELOPER RESPONSIBILITY)
- SIDEWALK (HOMEBUILDER RESPONSIBILITY)

GOLDEN EAGLE
STA. 10+97.69 TO 21+00.00

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



TOP OF CURB LEFT	TOP OF CURB RIGHT
	993.76
	993.76
993.76	993.76
993.78	993.78
993.83	993.83
993.73 (PVMT)	994.31
994.67	994.67
994.84	994.84
995.38	995.38
995.91	995.91
996.44	996.44
996.93	996.93
996.39 (PVMT)	996.97
996.92 (PVMT)	997.50
997.71	997.71
997.82	997.82
998.22	998.22
999.02	999.02
999.07	999.22
999.12	999.41
999.33	999.61
999.38	999.66
999.28	999.56
998.55 (PVMT)	999.41
999.38	999.66
999.39	999.67
999.51	999.79
1000.62	1000.68
1000.90	1000.90
1002.00	1002.00
1003.38	1003.38
1003.38	1003.38
1004.38	1004.38
1005.16	1005.16
1005.21	1005.36
1004.63 (PVMT)	1004.80 (PVMT)
1004.76 (PVMT)	1005.32 (PVMT)
1005.00 (PVMT)	1005.59 (PVMT)
1004.76 (PVMT)	1005.32 (PVMT)
1005.88	1006.03
1006.06	1006.08
1006.08	1006.08
1006.89	1006.89

11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00

REV	DATE	DESCRIPTION

3/20/2024
STATE OF TEXAS
VANCE L. WEYNAND
99269
LICENSED PROFESSIONAL ENGINEER
Vance Weynand

DHI Engineering, LLC.
5419 N. LOOP 1604 EAST
SAN ANTONIO, TX 78247
(210) 496-2668 | dhiengineering.com
TBPE REG. NO. F-19561

DHI

REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX

GOLDEN EAGLE - STA. 10+97.69 - 21+00.00

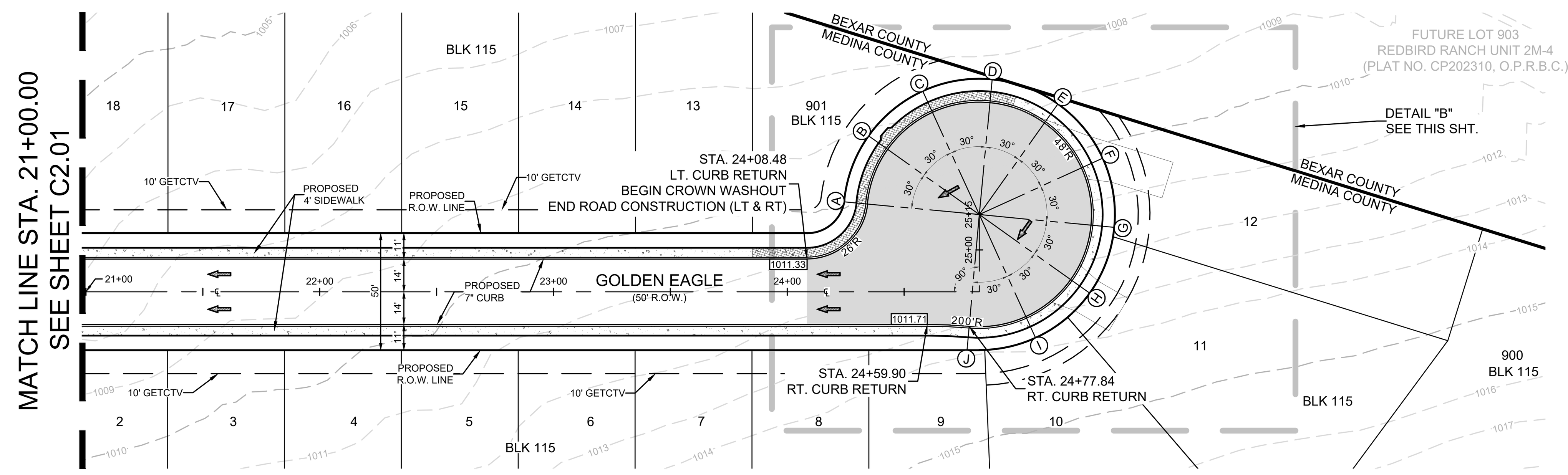
DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	3/20/2024
JOB NO.:	05000-200
SHEET NO.	C2.01

DOC. # XXXXXXXXXXX
REDBIRD RANCH UNIT 2M-2

LEGEND (STREET)

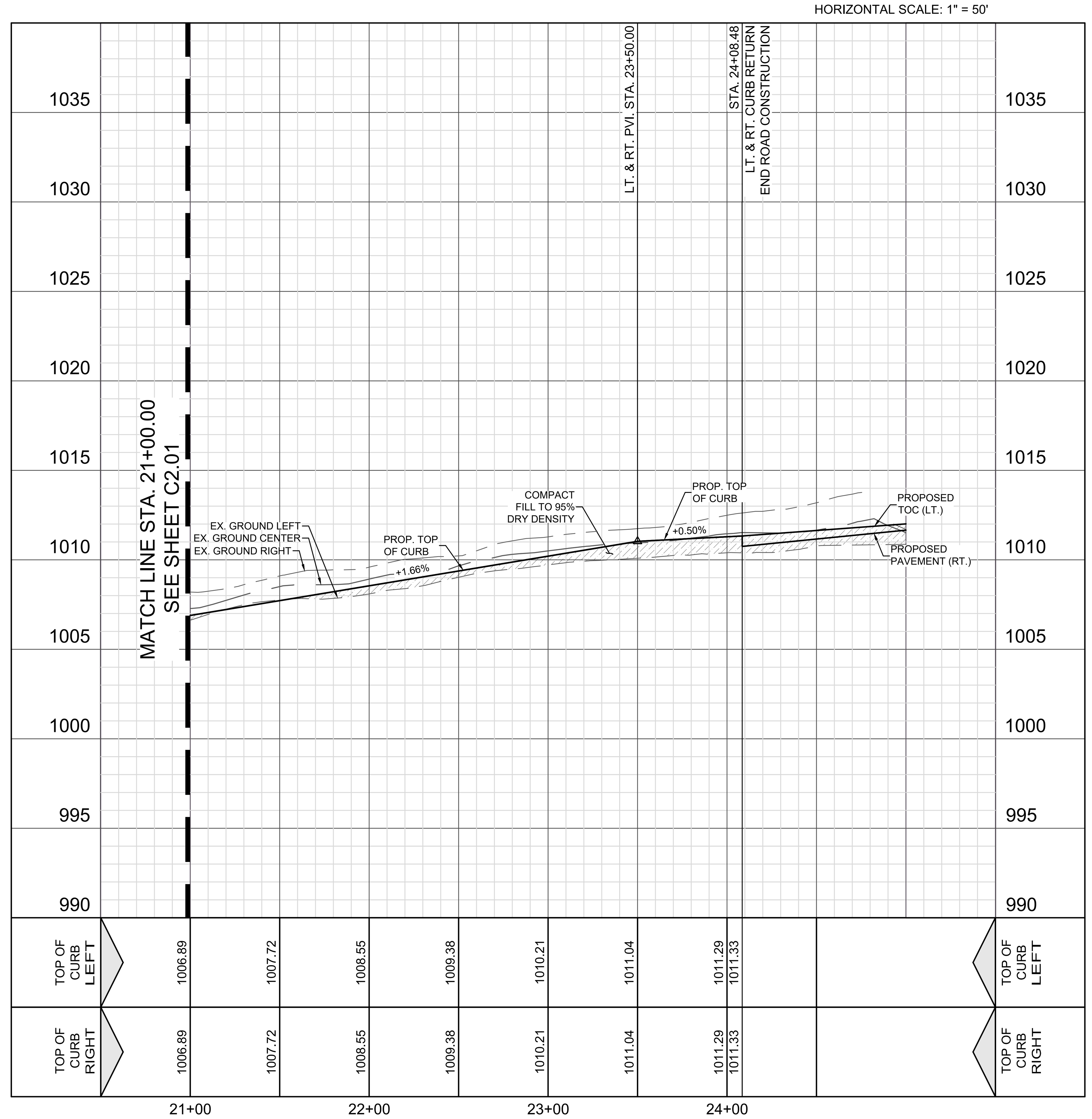
Symbol	Description
	PROJECT LIMITS
985	EXISTING CONTOUR
1002	PROPOSED CONTOUR
1 WCR	WHEELCHAIR RAMP TYPE
PC	POINT OF CURVATURE
PT	POINT OF TANGENCY
	DRAINAGE FLOW ARROW
1022.64	TOP OF CURB ELEVATION
1022.237	PAVEMENT ELEVATION
	CROWN WASHOUT
	DRIVEWAY
	SIDEWALK (DEVELOPER RESPONSIBILITY)
	SIDEWALK (HOMEBUILDER RESPONSIBILITY)

0 50' 100'



GOLDEN EAGLE
STA. 21+00.00 TO 24+08.48

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



STREET NOTES:

1. A MEDINA COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN MEDINA COUNTY ROW. CONTRACTOR SHALL COORDINATE A TRAFFIC CONTROL PLAN FOR ALL WORK WITHIN THE ROW. ADDITIONAL WARNING SIGNS MAY BE RECOMMENDED BY THE ENGINEER ONCE THE ROADWAYS ARE CONSTRUCTED.
2. CONTRACTOR SHALL MATCH EXISTING PAVEMENT AT TIE-IN. IF EXISTING PAVEMENT ELEVATION DIFFERS SIGNIFICANTLY, CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO CONTINUING WORK.
3. SIDEWALKS SHALL BE CONSTRUCTED A MINIMUM OF 3 FT. FROM THE BACK OF CURB FOR ALL LOCATIONS WHERE THE SIDEWALK IS SHOWN OFFSET. REFER TO STREET DETAIL SHEET FOR SIDEWALK AND RAMP DETAILS.
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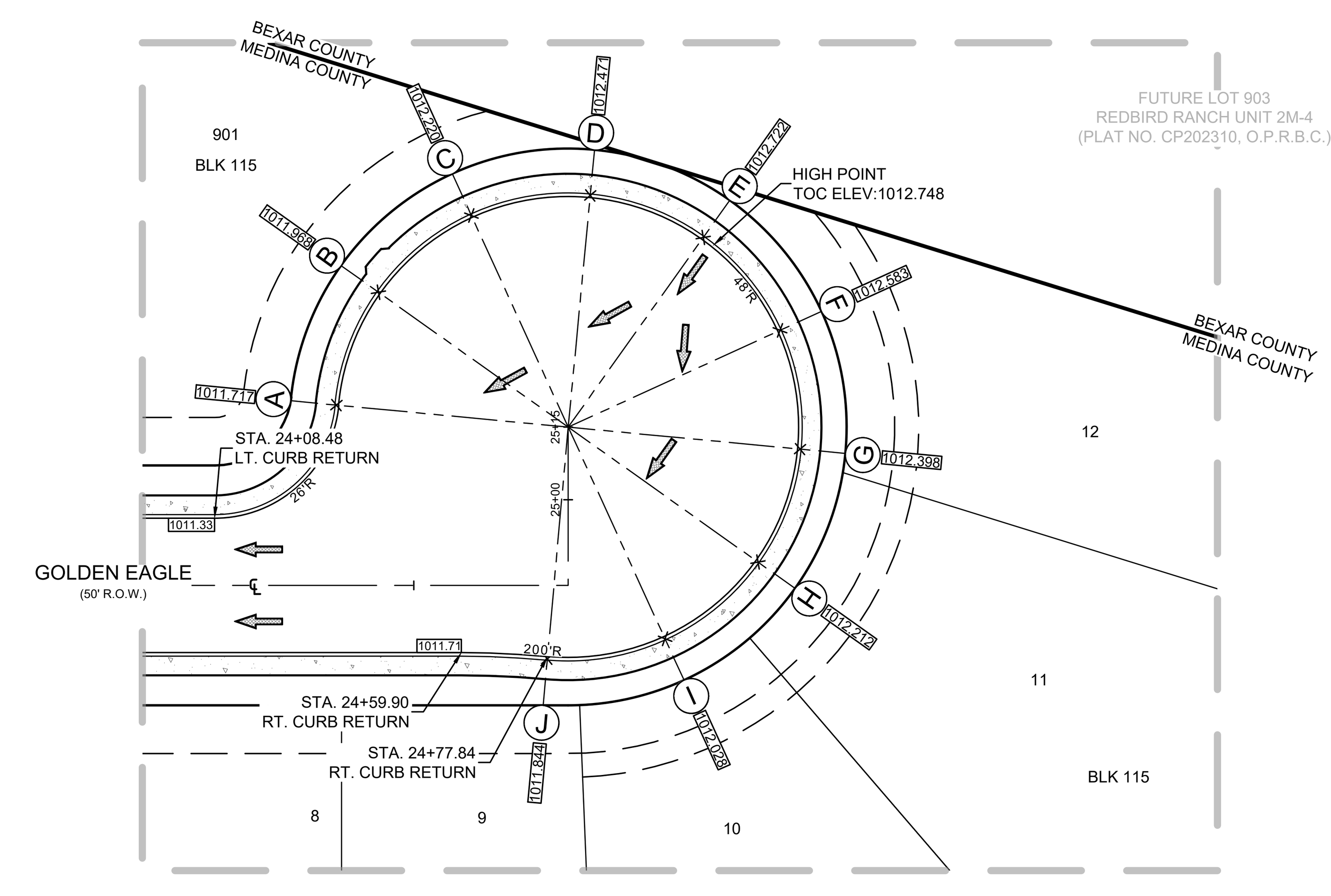


DETAIL "B"
SCALE: 1" = 30'

Point Table			
Point	Top of Curb Elevation	Northing	Easting
A	1011.717	13713574.3933	2030755.9945
B	1011.968	13713573.1228	2030781.0647
C	1012.220	13713559.4874	2030802.1410
D	1012.471	13713537.1407	2030813.5759
E	1012.722	13713512.0704	2030812.3054
F	1012.583	13713490.9941	2030798.6700
G	1012.398	13713479.5593	2030776.3232
H	1012.212	13713480.8297	2030751.2530
I	1012.028	13713494.4652	2030730.1767

REV	DATE	DESCRIPTION

3/20/2024
STATE OF TEXAS
VANCE L. WEYNAND
99269
LICENSED PROFESSIONAL ENGINEER
Vance Weynand

DHI Engineering, LLC.
5419 N. LOOP 1604 EAST
SAN ANTONIO, TX 78247
(210) 496-2668 | dhiengineering.com
TBPE REG. NO. F-19561

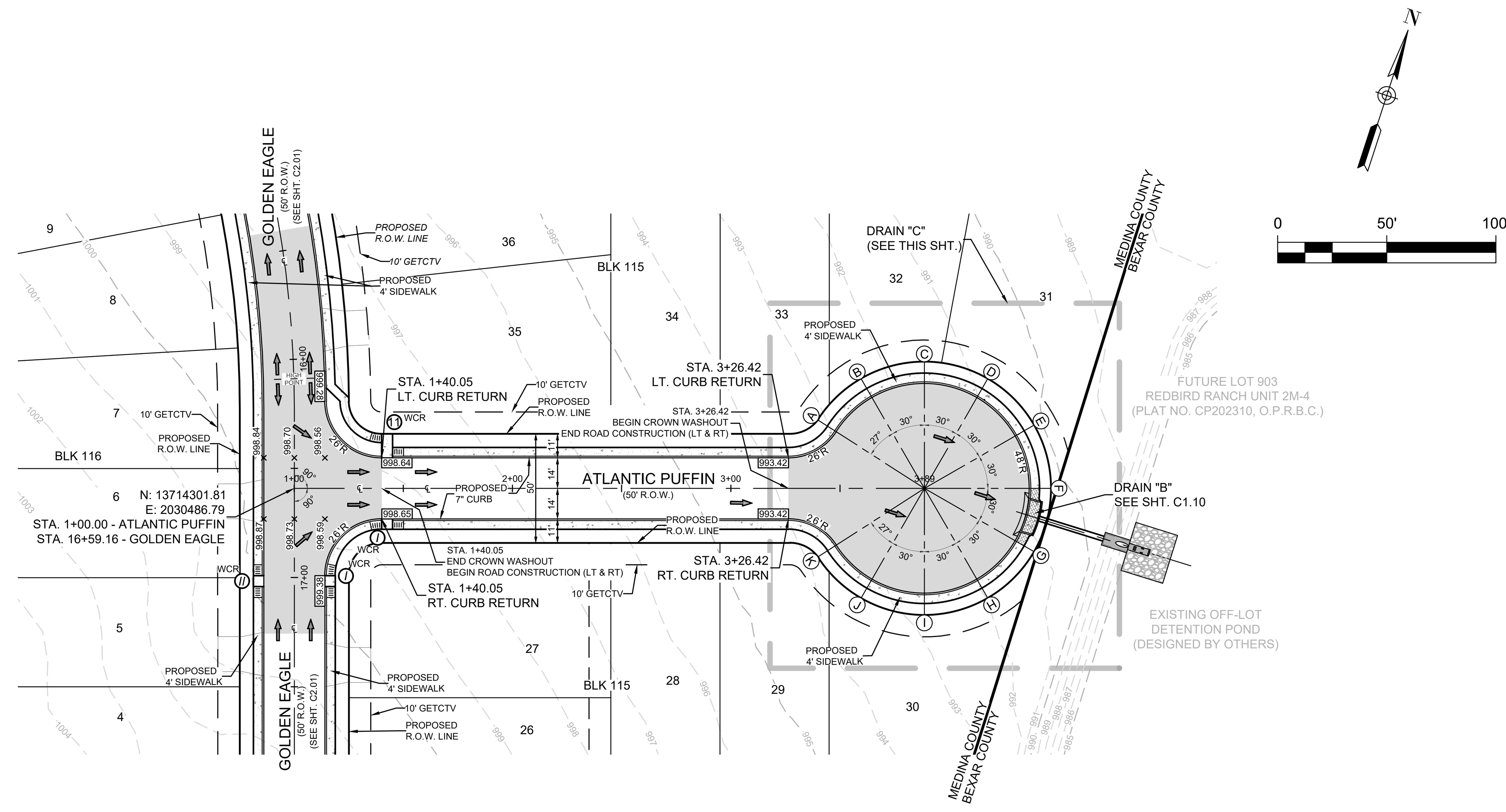
DHI

REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX

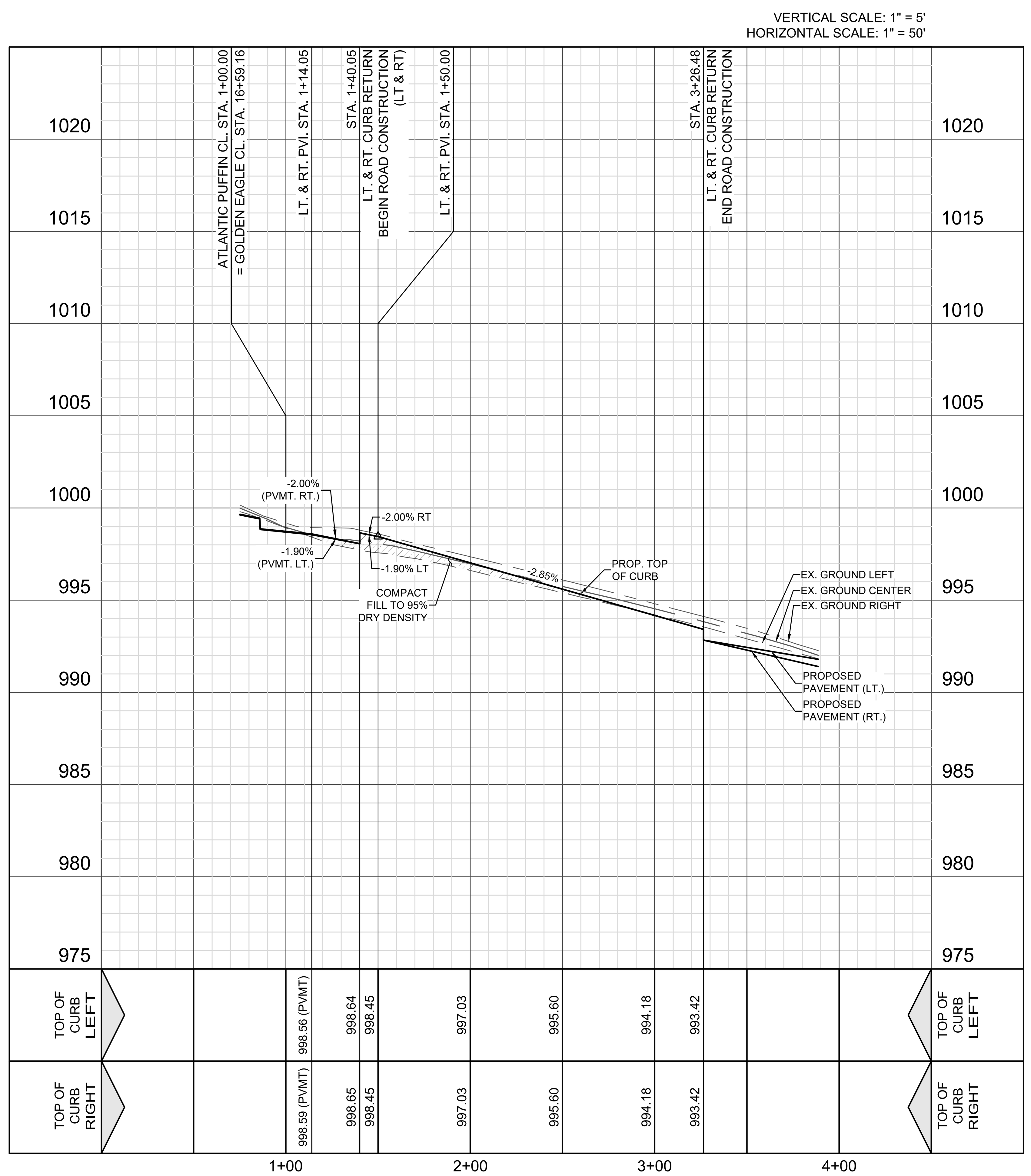
GOLDEN EAGLE - STA. 21+00.00 - 24+08.48

DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	3/20/2024
JOB NO.:	05000-200
SHEET NO.	C2.02

DOC. # XXXXXXXXXXXX
REDBIRD RANCH UNIT 2M-2



ATLANTIC PUFFIN
STA. 1+00.00 TO 3+26.48



STREET NOTES:

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2. CONTRACTOR SHALL MATCH EXISTING PAVEMENT AT TIE-IN. IF EXISTING PAVEMENT ELEVATION DIFFERS SIGNIFICANTLY, CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO CONTINUING WORK.
3. SIDEWALKS SHALL BE CONSTRUCTED A MINIMUM OF 3 FT. FROM THE BACK OF CURB FOR ALL LOCATIONS WHERE THE SIDEWALK IS SHOWN OFFSET. REFER TO STREET DETAIL SHEET FOR SIDEWALK AND RAMP DETAILS.
4. NO PERMANENT STRUCTURES HIGHER THAN 3 FT., AND LOWER THAN 8 FT. ABOVE THE PAVEMENT INCLUDING STRUCTURES, WALLS, FENCES, AND VEGETATION, SHALL BE CONSTRUCTED OR ALLOWED WITHIN THE CLEAR VISION EASEMENT. CONTRACTOR SHALL GRADE AREAS WITHIN CLEAR VISION EASEMENTS SUCH THAT THE ELEVATION WITHIN HE CLEAR VISION EASEMENT IS NOT HIGHER THAN 3 FT. ABOVE THE ADJACENT TOP OF PAVEMENT.
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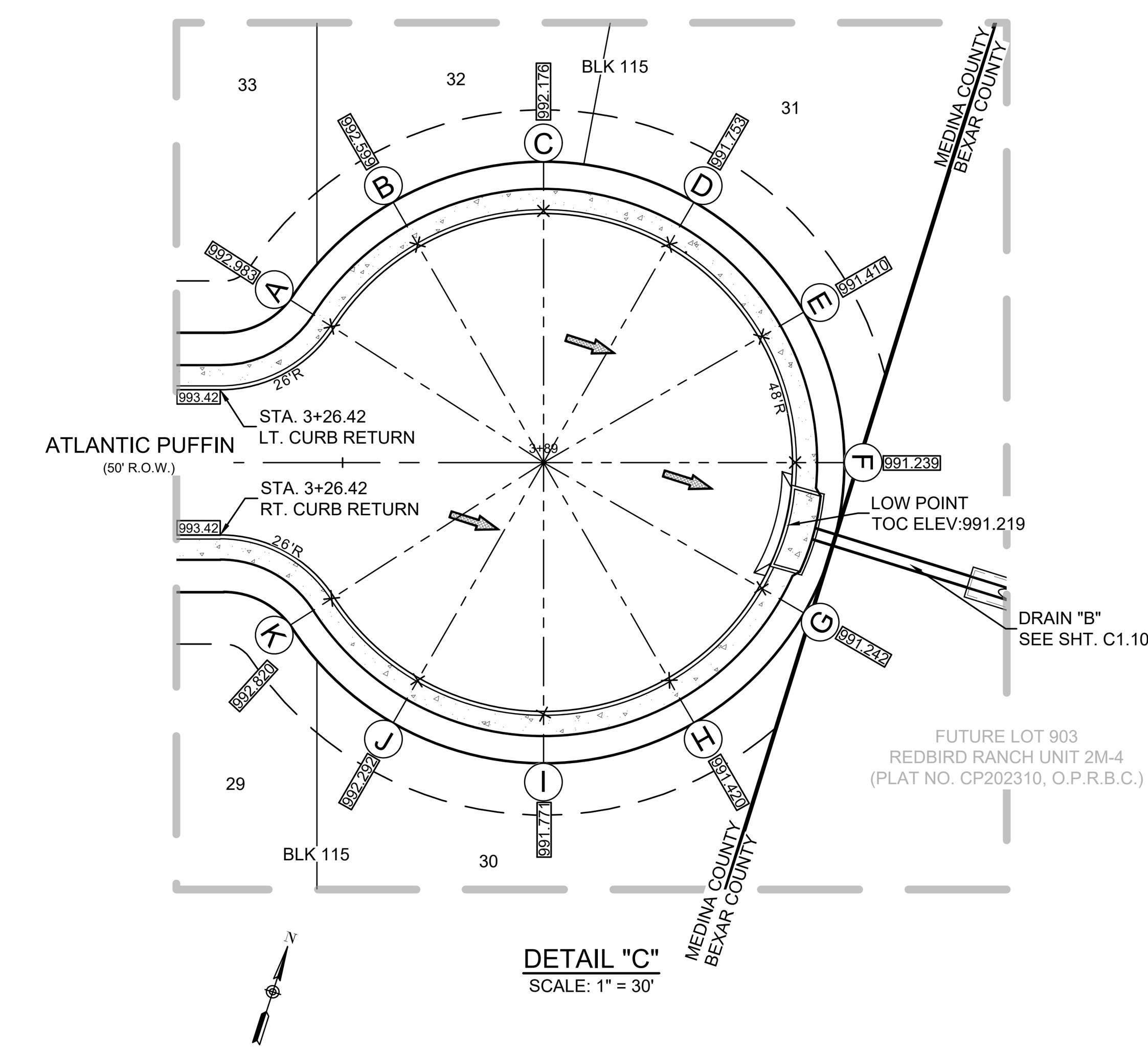
7. ALL RAMPS AND ANY PROPOSED SIDEWALKS THAT DO NOT FRONT PROPOSED RESIDENTIAL LOTS ARE REQUIRED TO BE CONSTRUCTED WITH STREET CONSTRUCTION

LEGEND (STREET)

- PROJECT LIMITS
- EXISTING CONTOUR
- PROPOSED CONTOUR
- WHEELCHAIR RAMP TYPE
- PC — POINT OF CURVATURE
- PT — POINT OF TANGENCY
- DRAINAGE FLOW ARROW
- 1022.64 — TOP OF CURB ELEVATION
- 1022.237 — PAVEMENT ELEVATION
- CROWN WASHOUT
- DRIVEWAY
- SIDEWALK (DEVELOPER RESPONSIBILITY)
- SIDEWALK (HOMEBUILDER RESPONSIBILITY)



DETAIL "C"
SCALE: 1" = 30'

Point Table			
Point	Top of Curb Elevation	Northing	Easting
A	992.984	13714401.4741	2030715.3029
B	992.599	13714421.5193	2030726.3381
C	992.176	13714435.0230	2030747.5126
D	991.753	13714436.1302	2030772.6021
E	991.410	13714424.5443	2030794.8838
F	991.239	13714403.3698	2030808.3875
G	991.243	13714378.2803	2030809.4947
H	991.420	13714355.9986	2030797.9088
I	991.772	13714342.4949	2030776.7343
J	992.293	13714341.3877	2030751.6448
K	992.821	13714351.4590	2030731.0985

REV	DATE	DESCRIPTION

3/20/2024
STATE OF TEXAS
VANCE L. WEYNAND
99269
LICENSED
PROFESSIONAL ENGINEER
Vance Weynand

DHI Engineering, LLC.
5419 N. LOOP 1604 EAST
SAN ANTONIO, TX 78247
(210) 496-2668 | dhiengineering.com
TBPE REG. NO. F-19561

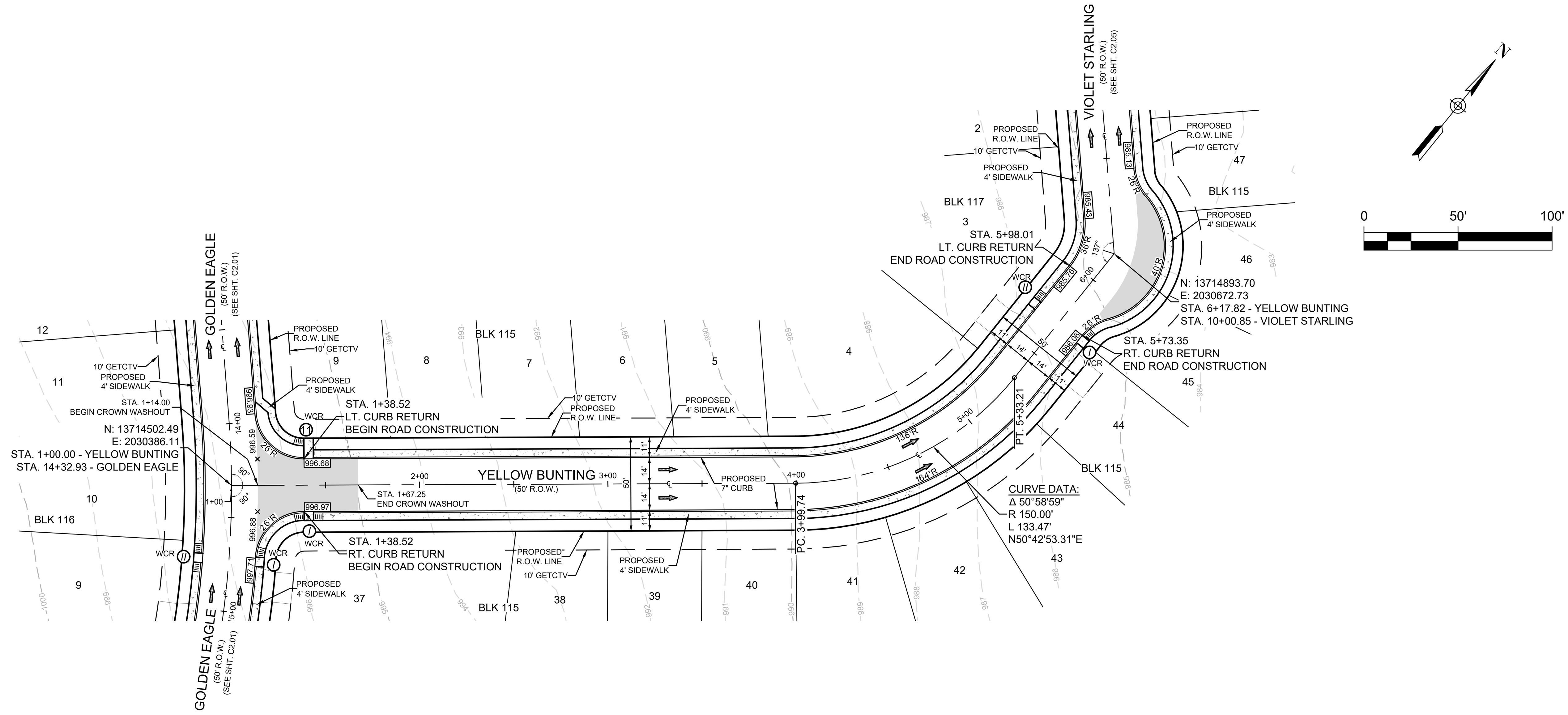
DHI

REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX

ATLANTIC PUFFIN - STA. 1+00.00 - 3+26.48

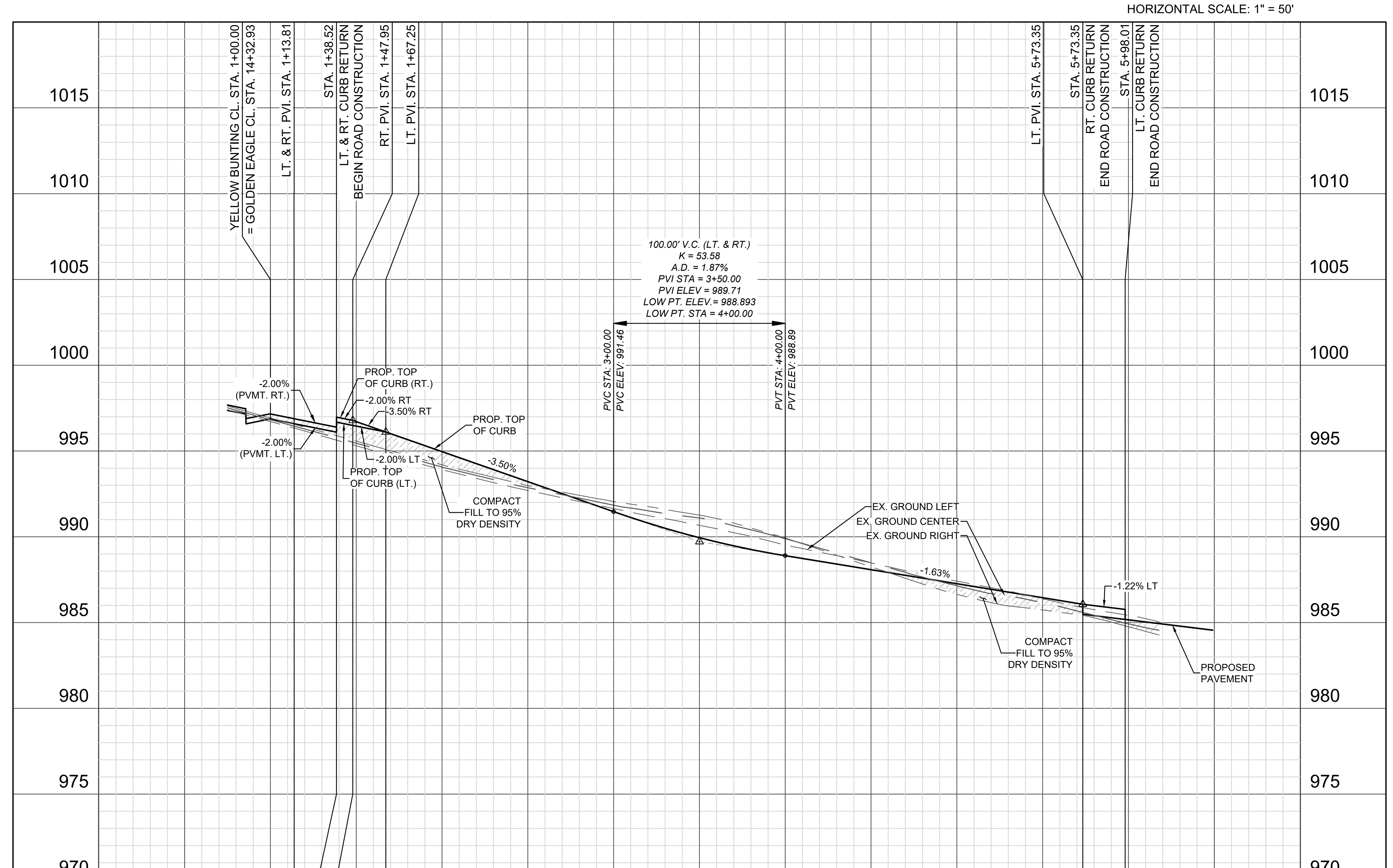
DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	3/20/2024
JOB NO.:	05000-200
SHEET NO.	C2.03

DOC. # XXXXXXXXXXXX
REDBIRD RANCH UNIT 2M-2



YELLOW BUNTING
STA. 1+00.00 TO 5+98.01

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



TOP OF CURB LEFT	996.59 (PVMT)	996.68	996.49	996.45	996.11	994.96	993.21	991.46	989.94	988.89	988.08	987.26	986.44	986.06	985.76
TOP OF CURB RIGHT	996.88 (PVMT)	996.97	996.78	996.71	996.11	994.96	993.21	991.46	989.94	988.89	988.08	987.26	986.44	986.06	

STREET NOTES:

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LEGEND (STREET)

Symbol	Description
— — —	PROJECT LIMITS
— 985 —	EXISTING CONTOUR
—(1002)—	PROPOSED CONTOUR
(I) WCR	WHEELCHAIR RAMP TYPE
PC	POINT OF CURVATURE
PT	POINT OF TANGENCY
←	DRAINAGE FLOW ARROW
1022.641	TOP OF CURB ELEVATION
1022.237	PAVEMENT ELEVATION
	CROWN WASHOUT
	DRIVEWAY
	SIDEWALK (DEVELOPER RESPONSIBILITY)
	SIDEWALK (HOMEBUILDER RESPONSIBILITY)

REV	DATE	DESCRIPTION

3/20/2024
STATE OF TEXAS
VANCE L. WEYNAND
99269
LICENSED PROFESSIONAL ENGINEER
Vance Weynand

DHI Engineering, LLC.
5419 N. LOOP 1604 EAST
SAN ANTONIO, TX 78247
(210) 496-2668 | dhiengineering.com
TBPE REG. NO. F-19561
DHI

REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX

YELLOW BUNTING - STA. 1+00.00 - 5+98.01

DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	3/20/2024
JOB NO.:	05000-200
SHEET NO.	C2.04

DOC. # XXXXXXXXXXXX
REDBIRD RANCH UNIT 2M-2

LEGEND (STREET)

Symbol	Description
	PROJECT LIMITS
985	EXISTING CONTOUR
1002	PROPOSED CONTOUR
1 WCR	WHEELCHAIR RAMP TYPE
PC	POINT OF CURVATURE
PT	POINT OF TANGENCY
	DRAINAGE FLOW ARROW
1022.64	TOP OF CURB ELEVATION
1022.237	PAVEMENT ELEVATION
	CROWN WASHOUT
	DRIVEWAY
	SIDEWALK (DEVELOPER RESPONSIBILITY)
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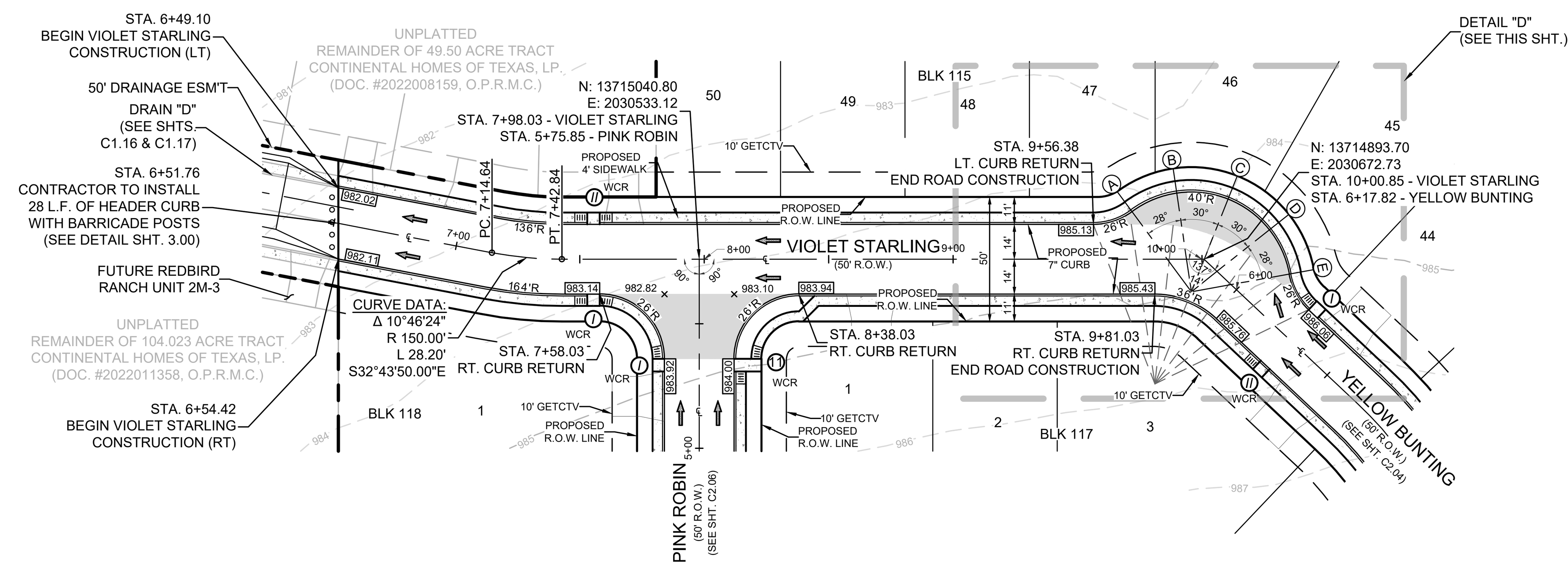
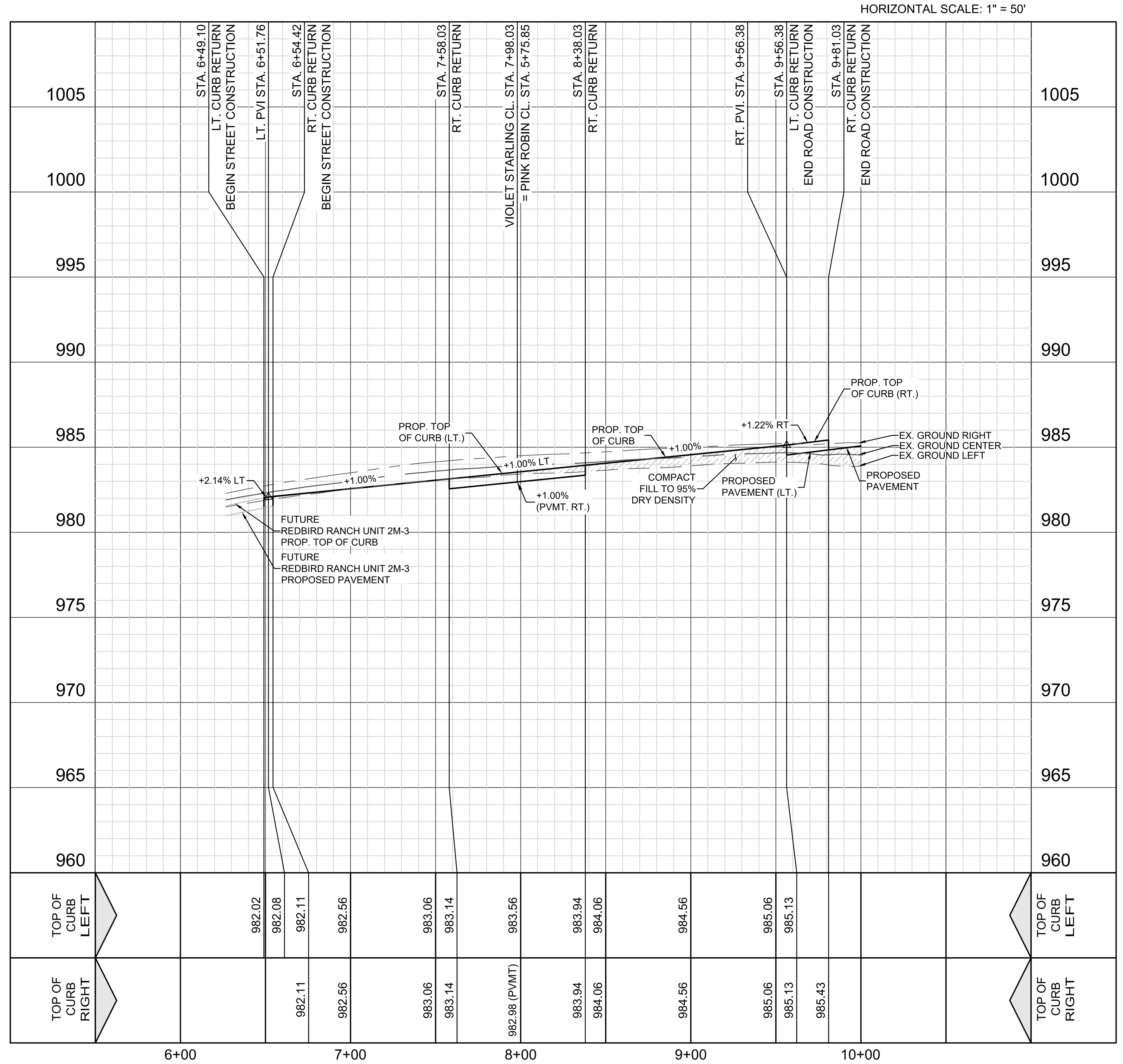


0 50' 100'

VIOLET STARLING
STA. 6+51.76 TO 9+81.03

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



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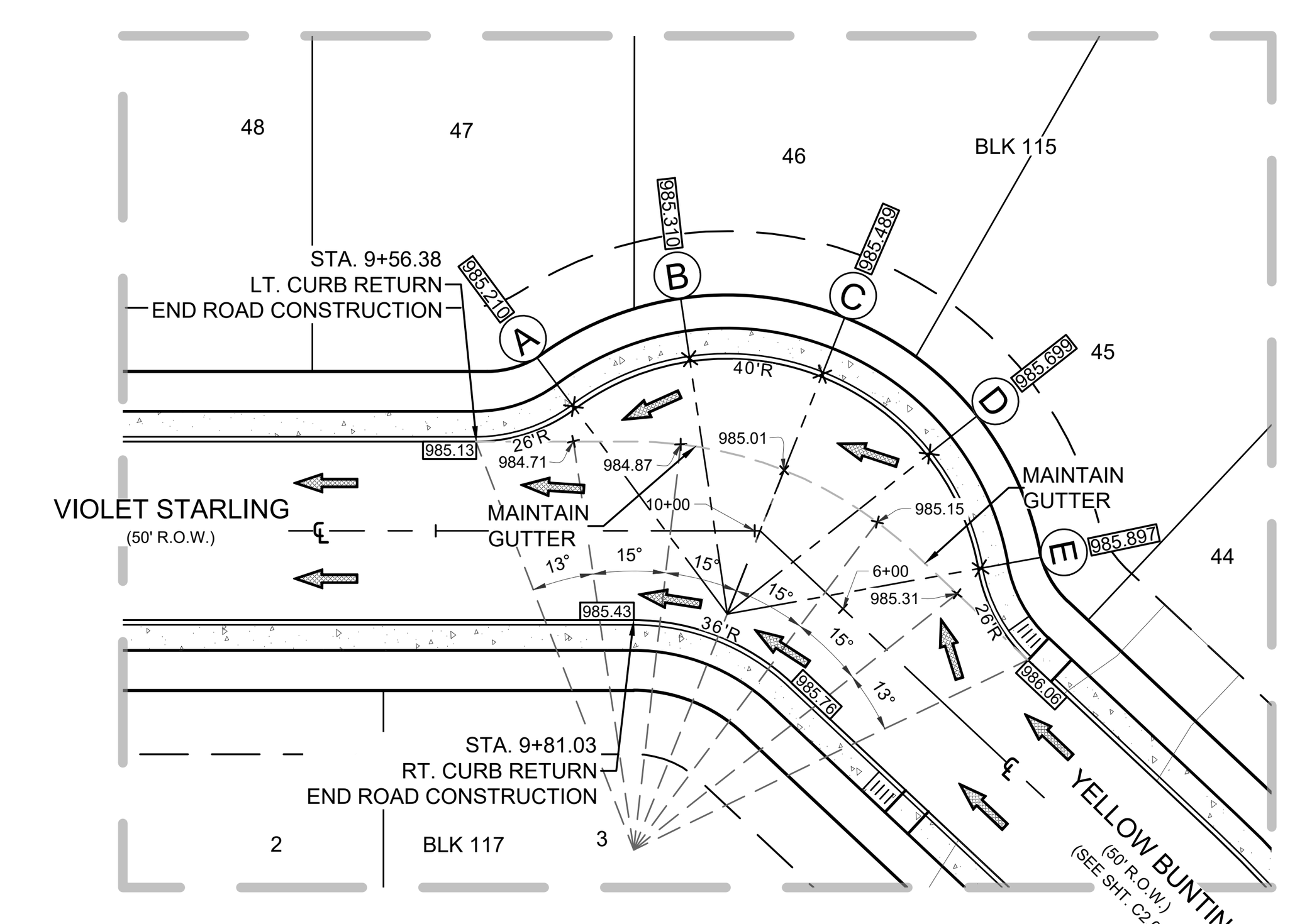

DETAIL "D"
SCALE: 1" = 30'

Point	Top of Curb Elevation	Northing	Easting
A	985.210	13714928.3572	2030666.7315
B	985.310	13714920.3178	2030684.7212
C	985.489	13714903.5506	2030697.2623
D	985.699	13714882.7784	2030699.7273
E	985.897	13714864.5968	2030692.2684

Point Table

REV	DATE	DESCRIPTION

3/20/2024
STATE OF TEXAS
VANCE L. WEYNAND
99269
LICENSED
PROFESSIONAL ENGINEER
Vance Weynand

DHI Engineering, LLC.
5419 N. LOOP 1604 EAST
SAN ANTONIO, TX 78247
(210) 496-2668 | dhiengineering.com
TBPE REG. NO. F-19561

DHI

REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX
VIOLET STARLING - STA. 6+51.76 - 9+81.03

DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	3/20/2024
JOB NO.:	05000-200
SHEET NO.	C2.05

DOC. # XXXXXXXXXXXX
REDBIRD RANCH UNIT 2M-2

DHI ENGINEERING, LLC.

LEGEND (STREET)

— — —	PROJECT LIMITS
— 985 —	EXISTING CONTOUR
1002	PROPOSED CONTOUR
① WCR	WHEELCHAIR RAMP TYPE
PC	POINT OF CURVATURE
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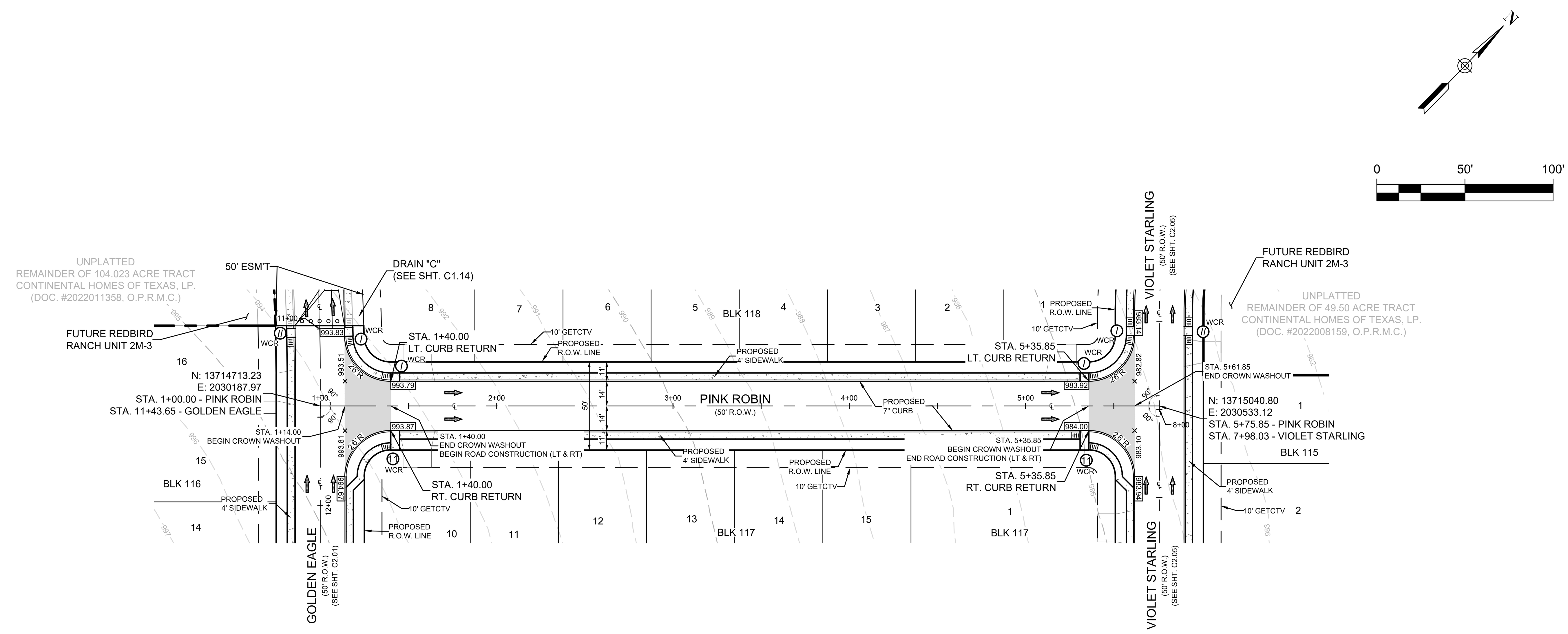
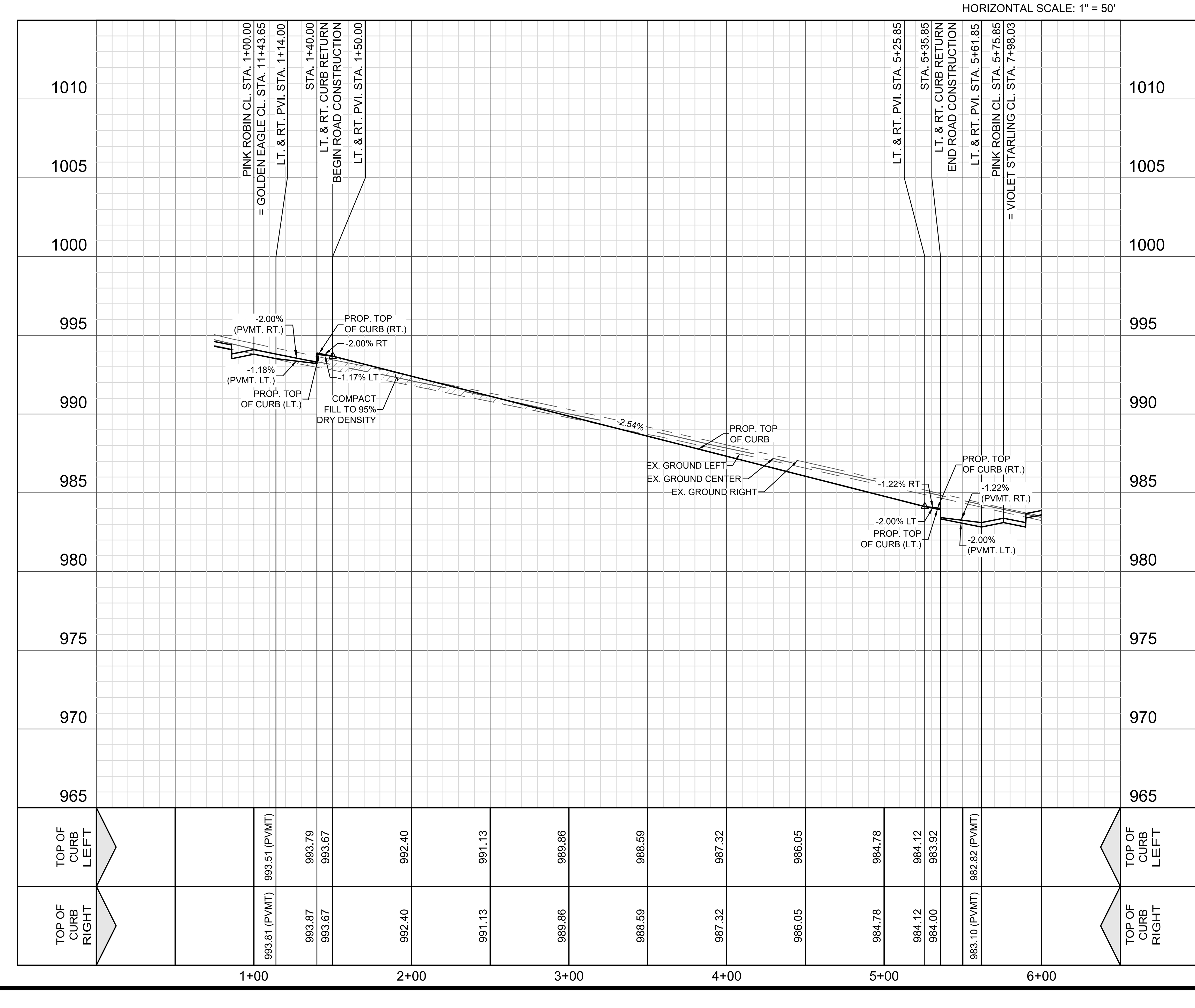


PINK ROBIN
STA. 1+00.00 TO 5+75.85

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



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LICENSED PROFESSIONAL ENGINEER

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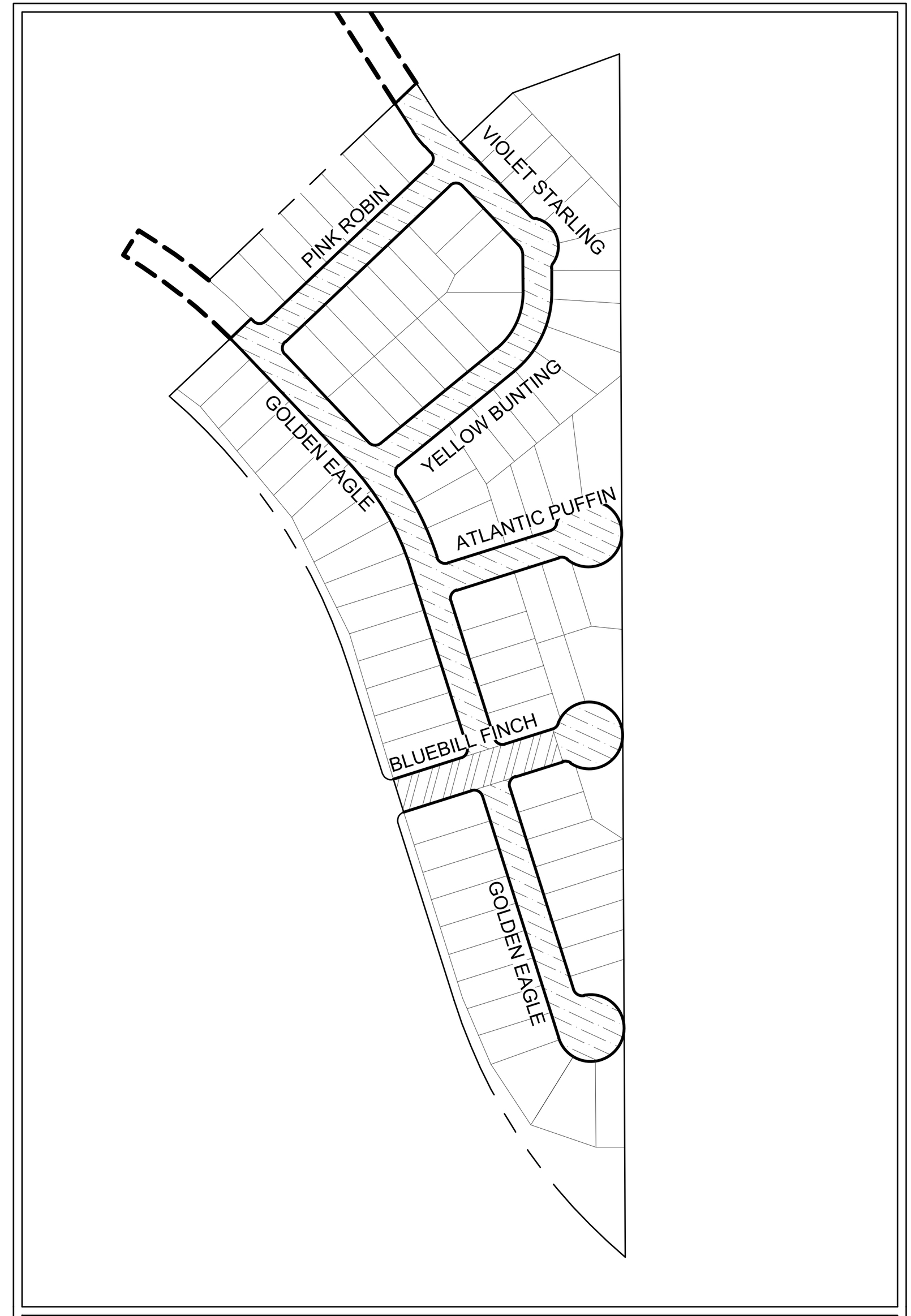
DHI

REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX
PINK ROBIN - STA. 1+00.00 - 5+75.85

DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	3/20/2024
JOB NO.:	05000-200
SHEET NO.	C2.06

DOC. # XXXXXXXXXXXX
REDBIRD RANCH UNIT 2M-2



STREET CLASSIFICATION SCHEMATIC N.T.S.

NOTE:
REFERENCE GEOTECHNICAL REPORT (S231193) FOR BORING INFORMATION AND CBR LOCATIONS.

LEGEND:

LOCAL "A"

LOCAL "B"

PAVEMENT SECTION DESIGN								
STREET NAME	STATION	TYPE "C" HMAC	TYPE "D" HMAC	FLEXIBLE/ AGGREGATE BASE	STABILIZED LIME SUBGRADE	GEOGRID (TENSAR TRIAX TX5)	CBR	STRUCTURAL NUMBER
BLUEBILL FINCH (LOCAL "B")	0+92.00 TO 3+87.77	2"	2"	16"	8"	NO	2.5	4.64
GOLDEN EAGLE (LOCAL "A")	10+97.69 TO 24+08.48	--	2"	10"	6"	NO	2.5	2.76
ATLANTIC PUFFIN (LOCAL "A")	1+14.00 TO 3+26.48	--	2"	10"	6"	NO	2.5	2.76
YELLOW BUNTING (LOCAL "A")	1+14.00 TO 5+98.01	--	2"	10"	6"	NO	2.5	2.76
VIOLET STARLING (LOCAL "A")	6+49.10 TO 9+81.03	--	2"	10"	6"	NO	2.5	2.76
PINK ROBIN (LOCAL "A")	1+14.00 TO 5+75.85	--	2"	10"	6"	NO	2.5	2.76
CONTRACTOR SHALL REFERENCE GEOTECH STUDY/REPORT BY InTEC, DATED 09/13/2023, PROJECT NO. S231193.								

GENERAL NOTES:

1. CONTRACTOR SHALL REFERENCE THE PROJECT PAVEMENT DESIGN REPORT **NO.S231193** PREPARED BY **InTEC** DATED **09/13/2023**.
2. CONTRACTOR SHALL RETAIN A GEOTECHNICAL ENGINEER TO VERIFY THE SUB GRADE CONDITION PRIOR TO PLACING ANY BASE MATERIAL. GEOTECHNICAL ENGINEER SHALL DETERMINE THE SUB GRADE CONDITION AND IF LIME STABILIZATION IS REQUIRED.
3. GEOTECHICAL ENGINEER SHOULD VERIFY THE STREET SUBGRADE AT THE TIME OF CONSTRUCTION PRIOR TO PLACEMENT OF AGGREGATE BASE.
4. THE FLEXIBLE BASE COURSE SHOULD BE CRUSHED LIMESTONE CONFORMING TO TXDOT STANDARD SPECIFICATIONS, ITEM 247, TYPE A, GRADES 1 OR 2.
5. THE MOISTURE CONTENT OF THE FILL SHOULD BE MAINTAINED WITHIN THE RANGE OF OPTIMUM WATER CONTENT TO 2 PERCENTAGE POINTS ABOVE THE OPTIMUM WATER CONTENT UNTIL PERMANENTLY COVERED.
6. IN THE EVENT THAT THE CLAY FILL USED IS DIFFERENT THAN THE EXISTING SUBGRADE, THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT COULD BE INVALIDATED AND THE DESIGN ENGINEER MUST BE CONSULTED TO DETERMINE IF ADDITIONAL CBR TESTING AND THICKER PAVEMENT SECTIONS ARE REQUIRED.
7. WHERE PAVEMENT SUBGRADE IS LOCATED WITHIN 2 FT. OF THE EXISTING GROUND SURFACE (STRATUM 1 CLAYS), MOISTURE CONDITIONED SUBGRADE WILL BE REQUIRED. GEOTECHNICAL ENGINEER SHOULD VERIFY THE STREET SUBGRADE AT THE TIME OF CONSTRUCTION PRIOR TO PLACEMENT OF AGGREGATE BASE TO DETERMINE WHERE THE MOISTURE CONDITIONED SUBGRADE IS NEEDED. REFERENCE GEOTECHNICAL ENGINEERING REPORT FOR MORE INFORMATION.
8. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL MATERIAL TESTING WITH THE PROJECT GEOTECHNICAL ENGINEER. TESTING SHALL BE PAID FOR BY THE OWNER.

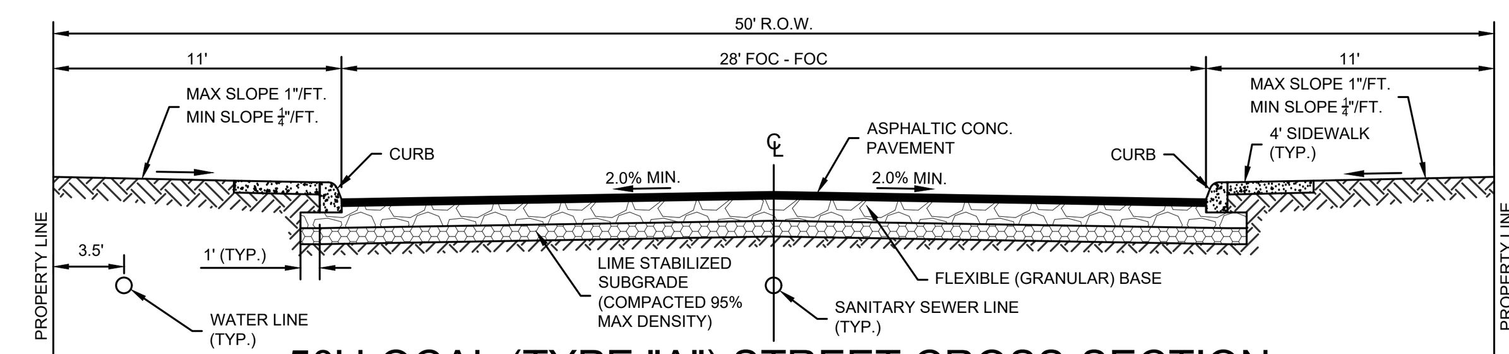
SUBGRADE NOTES:

1. THE SUBGRADE PLASTICITY INDEX VALUE IS EXPECTED TO BE LESS THAN OR EQUAL TO 20 OR GREATER THAN 20.
2. IF THE SUBGRADE PLASTICITY INDEX VALUES ARE LESS THAN OR EQUAL TO 20, AS PER CITY OF SAN ANTONIO OR BEXAR COUNTY REQUIREMENTS, SUBGRADE STABILIZATION IS NOT NEEDED.
3. IF THE FINAL STREET SUBGRADE PLASTICITY INDEX VALUES ARE GREATER THAN 20, THEN THE SUBGRADE SHOULD BE LIME STABILIZED.
4. LIME STABILIZED TO A DEPTH OF 6 OR 8 INCHES AS NOTED ABOVE BASED ON AN APPLICATION RATE OF 7% OF THE DRY WEIGHT (INITIAL RECOMMENDATIONS) OF THE SOIL TO BE STABILIZED. THE LIME APPLICATION RATE WILL BE PRESENTED AFTER THE FIELD TESTS ARE COMPLETED.
5. THE SUBGRADE SOILS SHOULD BE TESTED FOR SOIL SULFATE CONTENT PRIOR TO STABILIZATION. IF THE SOIL SULFATE CONTENT IS HIGHER THAN 3000 PPM PER PAVEMENT DESIGN REPORT **NO. S231193**, AN ALTERNATIVE PROCEDURE WILL BE NEEDED.
6. LIME APPLICATION RATE OF 32 LBS. PER SQUARE YARD FOR 6 INCH DEPTH OF STABILIZATION IS RECOMMENDED.
7. LIME APPLICATION RATE OF 43 LBS. PER SQUARE YARD FOR 8 INCH DEPTH OF STABILIZATION IS RECOMMENDED.
8. THE SUBGRADE SHOULD BE PROOF ROLLED TO IDENTIFY SOFT AREAS BEFORE STABILIZATION.
9. IF FILL IS USED TO RAISE THE GRADE, APPROVED FILL MATERIAL UNDERNEATH THE PAVEMENT SHOULD BE USED. THE FILL SHOULD BE FREE OF DELETERIOUS MATERIAL, THE GRAVEL SIZE SHOULD NOT EXCEED 3 INCHES IN SIZE, WITH A MINIMUM CBR VALUE OF 2.5, AND A MAXIMUM PLASTICITY INDEX VALUE OF 60. LIME APPLICATION RATES SHOULD BE RE-EVALUATED AND SULFATE CONTENT TESTED FOR THE FILL MATERIAL. THE MATERIAL SHOULD BE PLACED AS PER APPLICABLE CITY OR COUNTY GUIDELINES

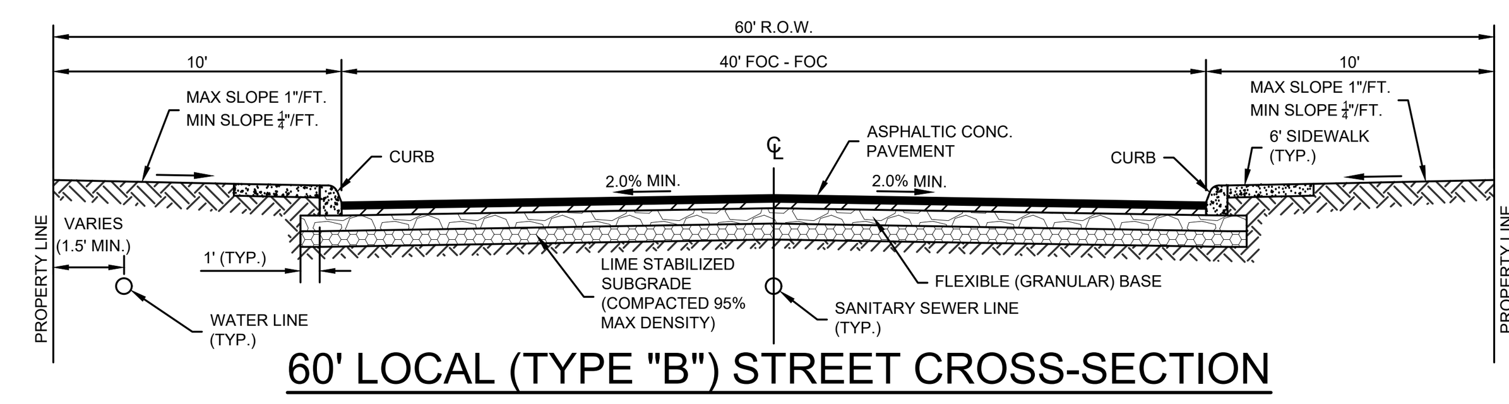
LIME NOTES:

FOR LIME STABILIZATION CONSTRUCTION VERIFICATION THE FOLLOWING SHALL BE CONDUCTED ON THE FIELD:

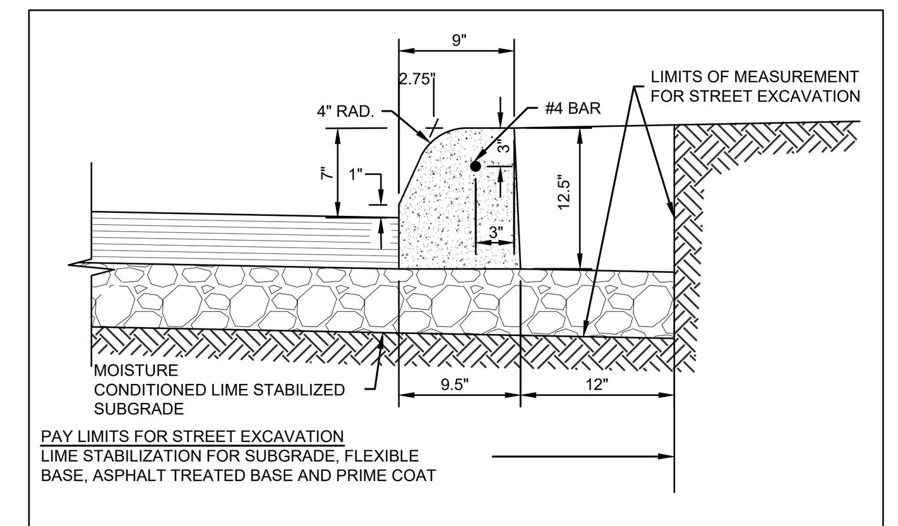
1. AFTER INITIAL MIXING THE SOIL-LIME MIXTURE SHALL MELLOW FOR A PERIOD OF TWO TO THREE DAYS. MAINTAIN MOISTURE DURING MELLOWING.
2. AFTER MELLOWING AND FINAL MIXING, THE PULVERIZATION SHALL BE CHECKED USING THE FOLLOWING CRITERIA (REMOVE NON-SLAKING AGGREGATES RETAINED ON THE ¾ INCH SIEVE FROM THE SAMPLE):
   * MINIMUM PASSING 1 ¾" SIEVE 100
   * MINIMUM PASSING ¾ " SIEVE 85
   * MINIMUM PASSING NO.4 SIEVE 60
3. SAMPLE SOIL-LIME MIXTURE FOR DETERMINATION OF MAXIMUM DRY DENSITY (MDD). IN THE LABORATORY, MOLD SPECIMENS TO 95% OF MDD AT OPTIMUM MOISTURE CONTENT AND VERIFY UCS TO BE AT LEAST 160 PSI IN ACCORDANCE WITH PROCEDURE OUTLINED IN THE BEXAR COUNTY FLEXIBLE PAVEMENT DESIGN CRITERIA GUIDE FOR MIXTURE DESIGN.
4. COMPACT AND CHECK FIELD DENSITY (MIN. OF 95% OF MDD REQUIRED).
5. CURE FOR AN ADDITIONAL 2 TO 5 DAYS (TOTAL MELLOWING AND CURING TIME SHOULD TOTAL AT LEAST 5 DAYS).
6. VERIFY DEPTH OF LIME STABILIZED LAYER TO DEPTH AS NOTED ON PLAN TO WITHIN +/- 1.0 INCH.
7. LIME APPLICATION RATE OF 43 LBS. PER SQUARE YARD FOR 8 INCH DEPTH OF STABILIZATION IS RECOMMENDED.
8. THE SUBGRADE SHOULD BE PROOF ROLLED TO IDENTIFY SOFT AREAS BEFORE STABILIZATION.



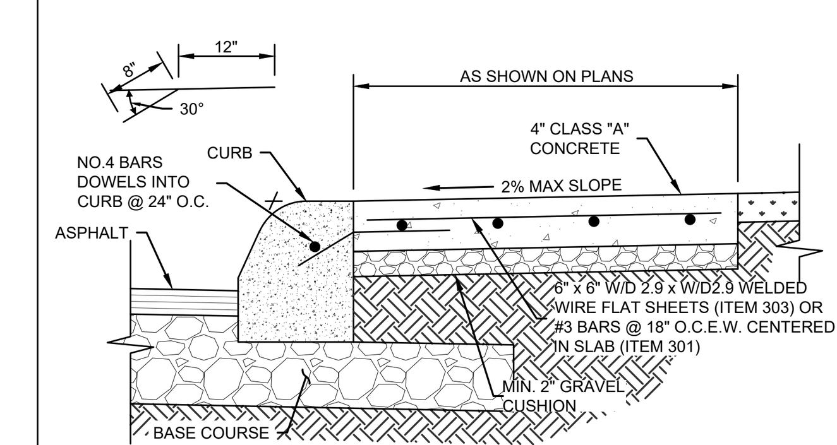
50' LOCAL (TYPE "A") STREET CROSS-SECTION
N.T.S.



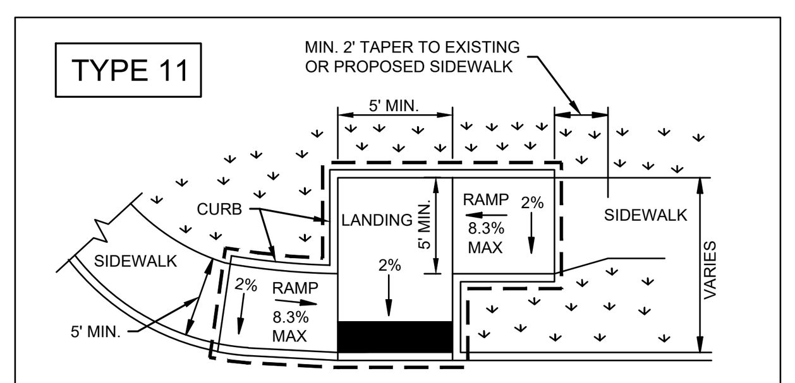
60' LOCAL (TYPE "B") STREET CROSS-SECTION
N.T.S.



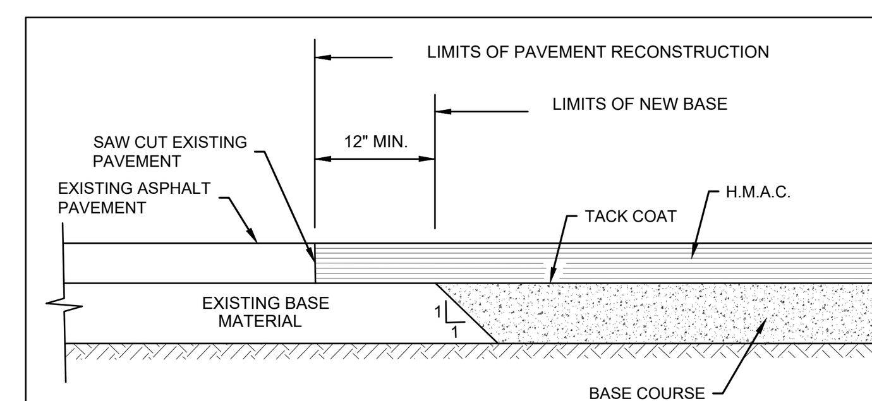
CITY OF SAN ANTONIO
CONCRETE CURB DETAIL
N.T.S.



SIDEWALK DETAIL
N.T.S.



OFFSET PARALLEL CURB
RAMP DETAIL
N.T.S.



PAVEMENT JUNCTION DETAILS
N.T.S.

REV	DATE	DESCRIPTION

3/20/2024
STATE OF TEXAS
VANCE L. WEYNAND
99269
LICENSED
PROFESSIONAL ENGINEER
Vance Weynand

DHI Engineering, LLC.
5419 N. LOOP 1604 EAST
SAN ANTONIO, TX 78247
(210) 496-2668 | dhiengineering.com
TBPE REG. NO. F-19561

DHI

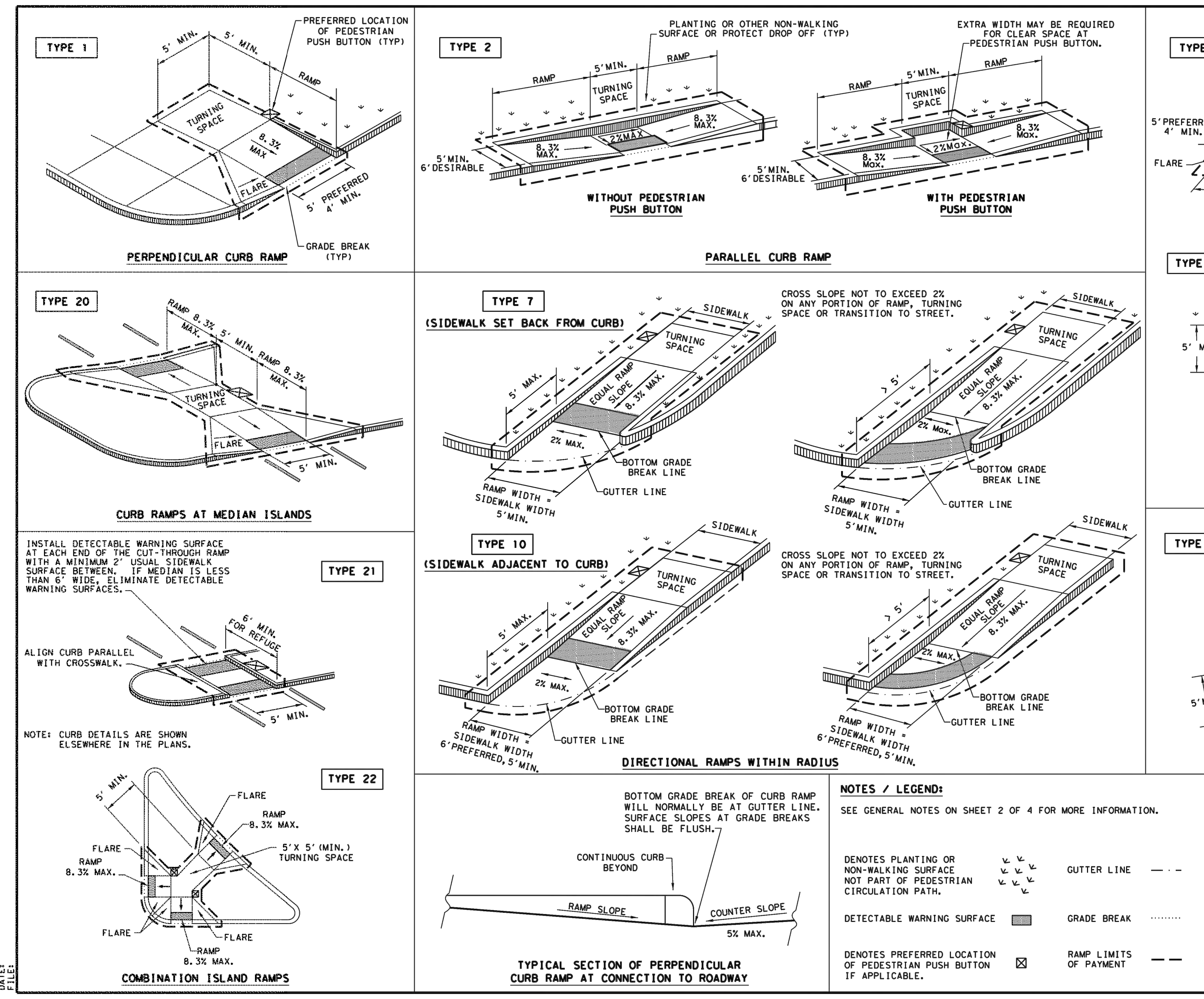
REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX

TYPICAL STREET DETAILS

DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	3/20/2024
JOB NO.:	05000-200
SHEET NO.	C2.20

DOC. # XXXXXXXXXXXX

REDBIRD RANCH UNIT 2M-2



SHEET 1 OF 4

Texas Department of Transportation — Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

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

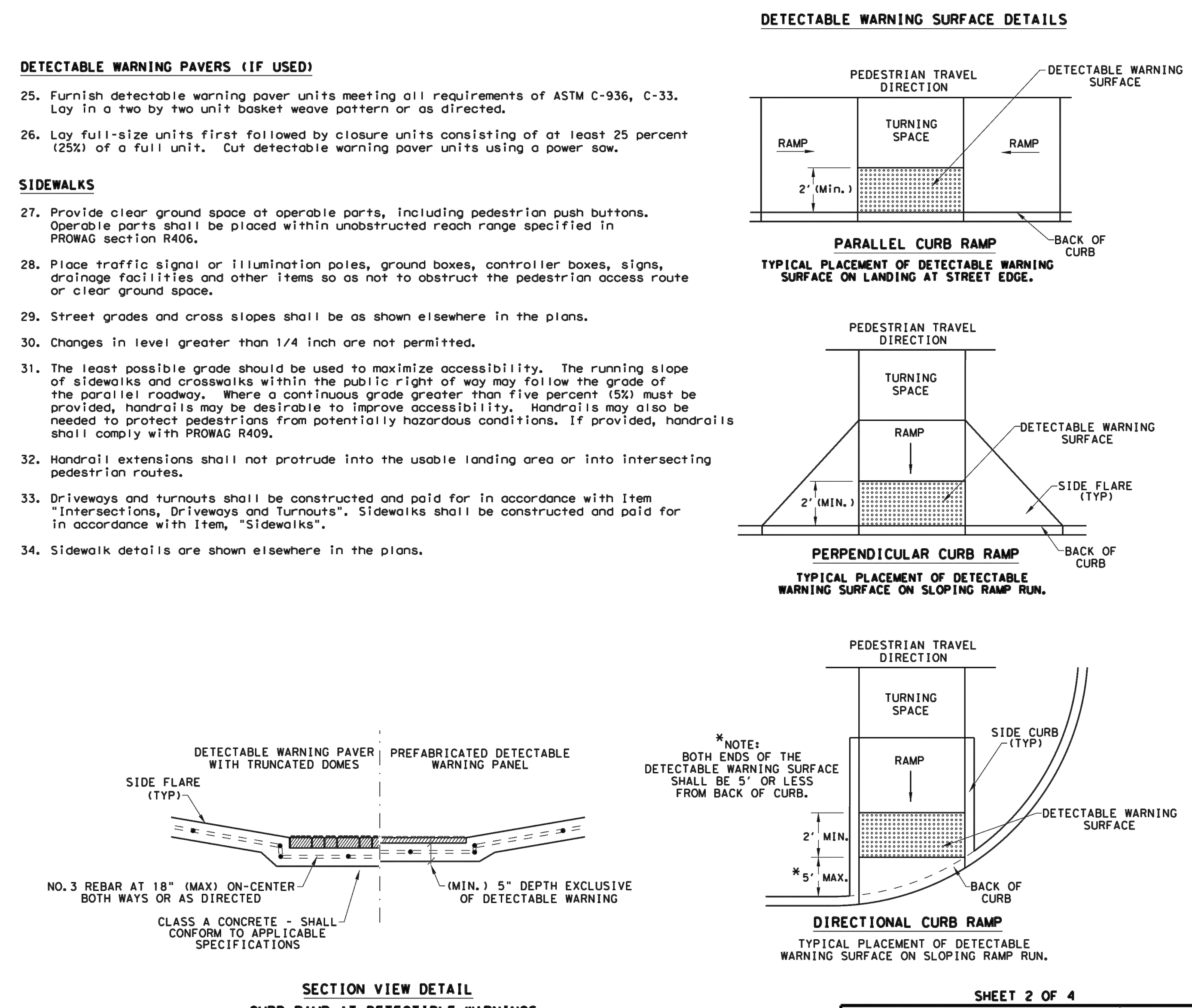
19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material 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 5 feet from the back of curb. Detectable warning surfaces may be curved along the corner radius.
24. Shaded areas on Sheet 1 of 4 indicate the approximate location for the detectable warning surface for each curb ramp type.

DETECTABLE WARNING PAVERS (IF USED)

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

SIDEWALKS

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

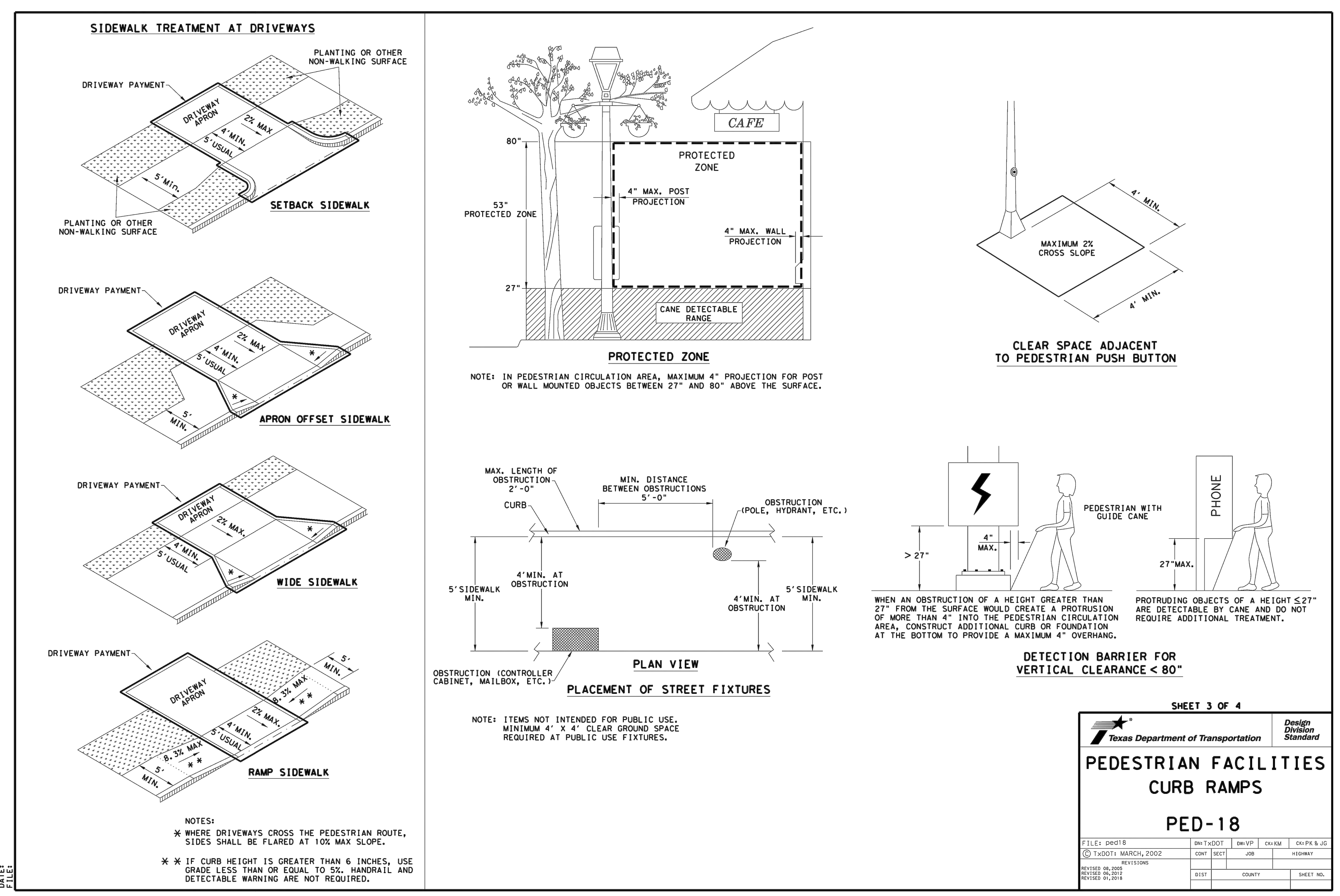


SHEET 2 OF 4

Texas Department of Transportation — Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

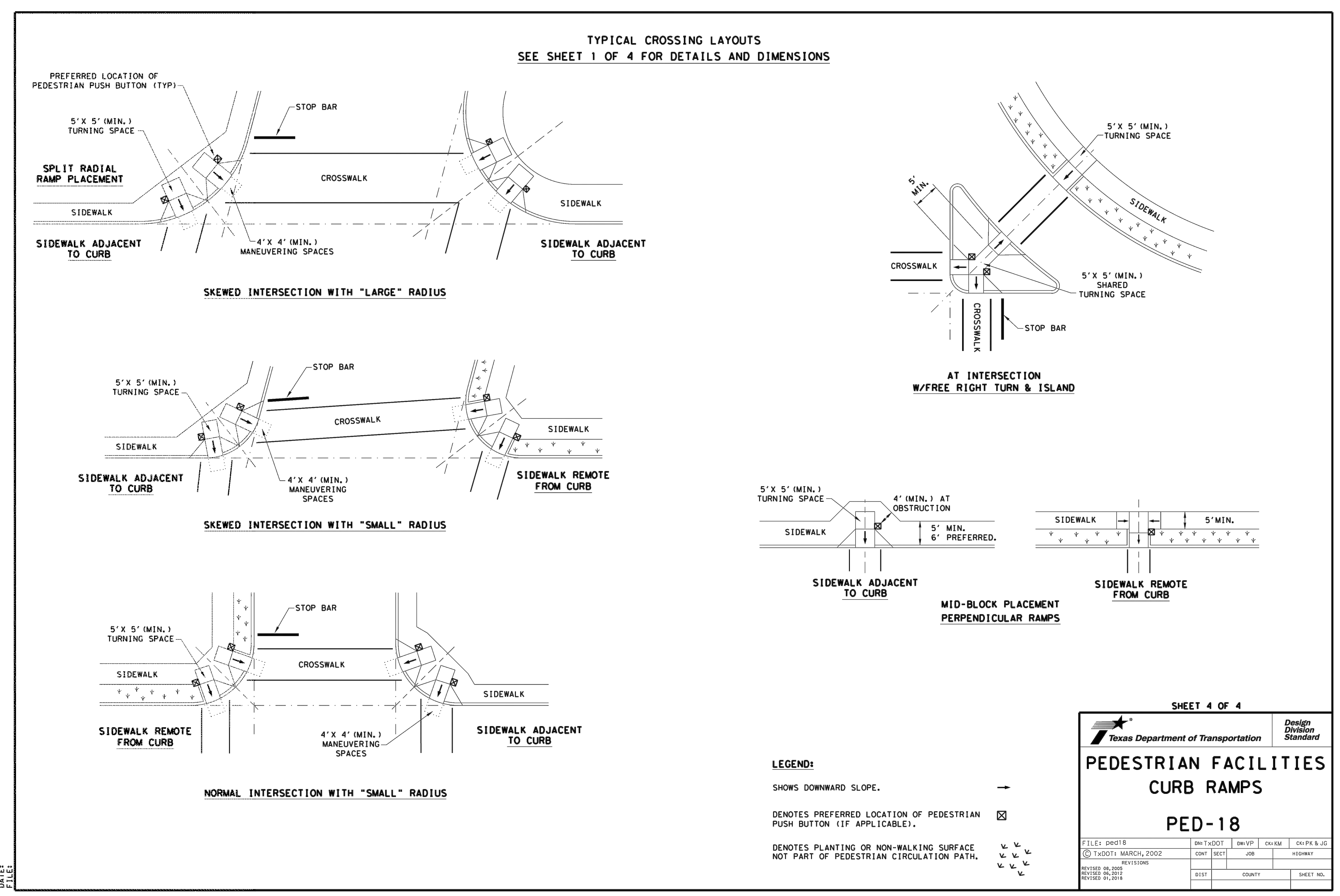


SHEET 3 OF 4

Texas Department of Transportation — Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18



SHEET 4 OF 4

Texas Department of Transportation — Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

REV	DATE	DESCRIPTION

3/20/2024 — STATE OF TEXAS — VANCE L. WEYNAND — 99269 — LICENSED PROFESSIONAL ENGINEER

Vance Weynand

DHI Engineering, LLC.
5419 N. LOOP 1604 EAST
SAN ANTONIO, TX 78247
(210) 496-2668 | dhiengineering.com
TBPE REG. NO. F-19561

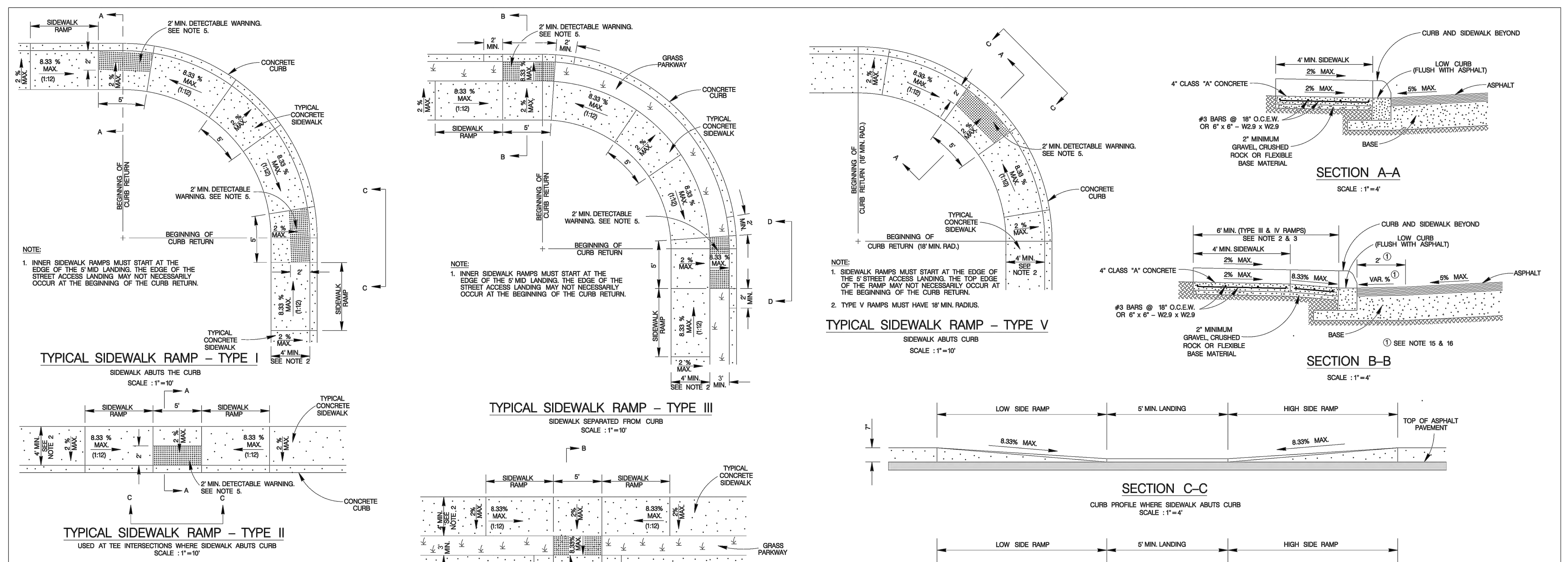
DHI

REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX

TYPICAL STREET DETAILS

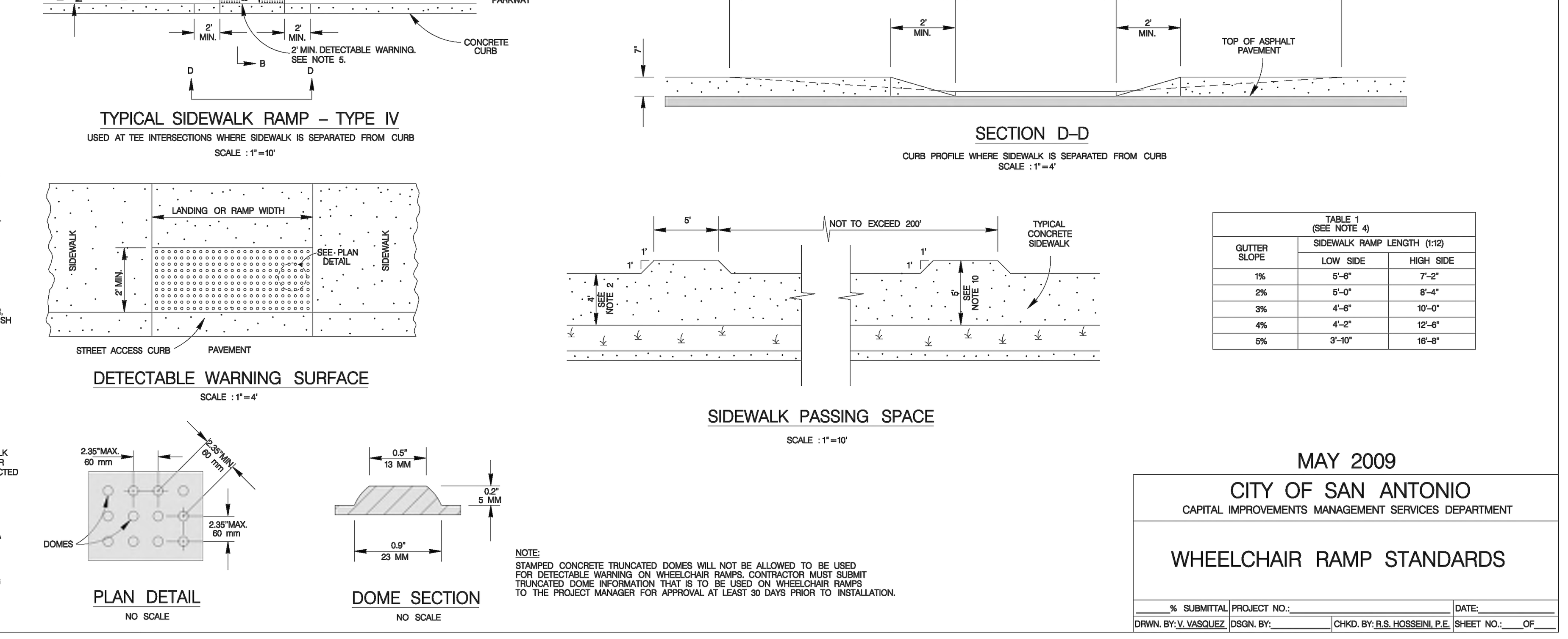
DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	3/20/2024
JOB NO.:	05000-200
SHEET NO.	C2.21

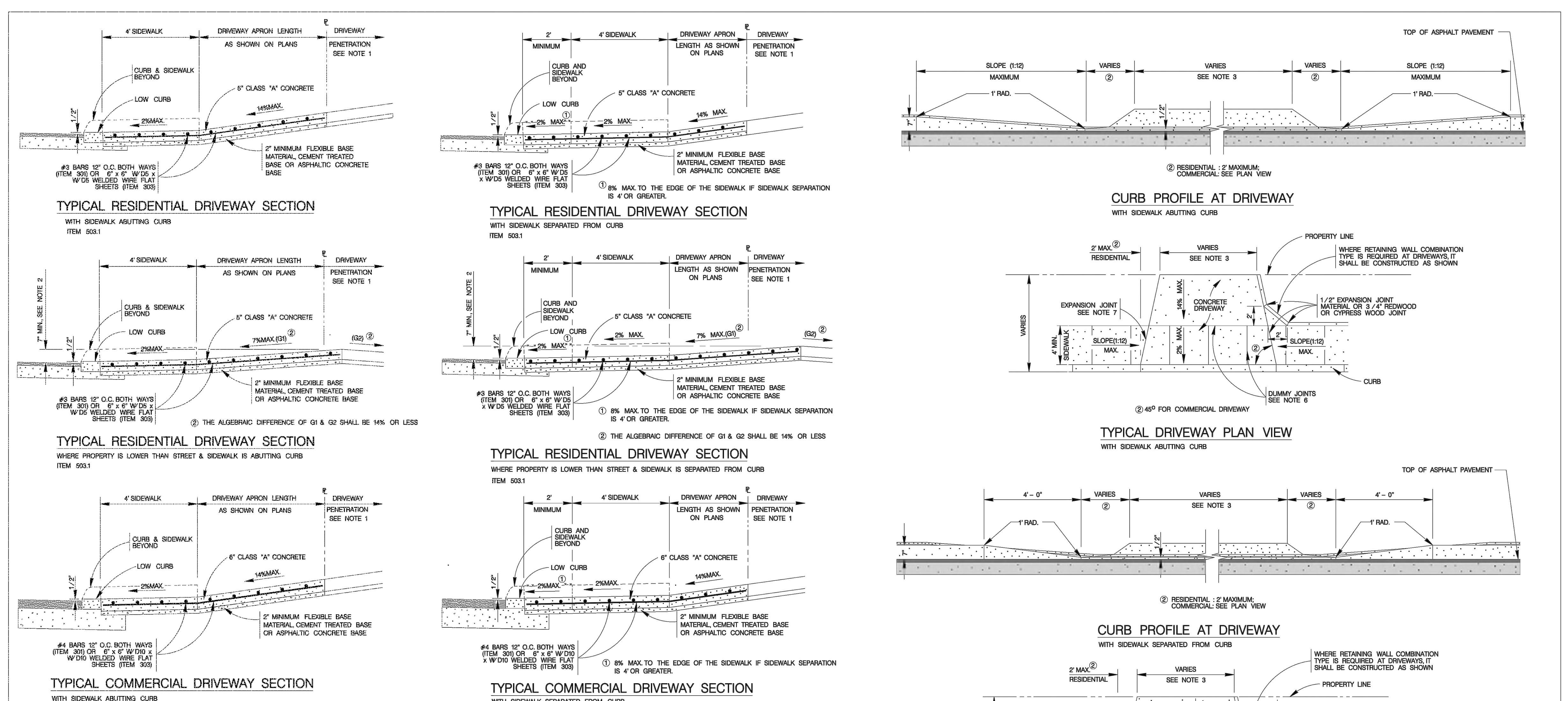
REDBIRD RANCH UNIT 2M-2 DOC. # XXXXXXXXXXXX



GENERAL NOTES

1. WHEN POSSIBLE SIDEWALKS SHOULD BE PLACED NEXT TO THE PROPERTY LINE, ALLOWING A MININMUM OF 1 FOOT BUFFER. DEVIATION OF THE PATHWAY FROM A STRAIGHT LINE IS ENCOURAGED TO AVOID TREES OR OTHER OBSTRUCTIONS.
2. FOR LOCAL TYPE "A" STREETS, SIDEWALKS SHALL HAVE A MINIMUM UNOBSTRUCTED WIDTH OF 4' AND IF SEPARATED FROM THE CURB, THE SIDEWALK SHALL BE LOCATED A MINIMUM OF 3' FROM THE BACK OF CURB.
3. FOR OTHER THAN LOCAL TYPE "A" STREETS, SIDEWALKS SHALL HAVE A MINIMUM UNOBSTRUCTED WIDTH OF 4' AND SEPARATED A MINIMUM OF 3' FROM THE BACK OF CURB OR AS AN OPTION, THE SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 6' WHEN LOCATED AT THE BACK OF CURB.
4. SIDEWALK RAMP LENGTHS PRESENTED IN TABLE 1 ARE GUIDELINES ONLY. SIDEWALK RAMP LENGTHS SHALL BE OF SUFFICIENT LENGTH TO MAINTAIN 8.33% (1:12) MAXIMUM SLOPE.
5. ALL CURB–RAMPS OR LANDINGS ABUTTING THE CROSSWALK SHALL HAVE A DETECTABLE WARNING 24 INCHES DEEP (IN THE DIRECTION OF PEDESTRIAN TRAVEL) AND EXTENDING THE FULL WIDTH OF THE CURB RAMP OR LANDING. THE DETECTABLE WARNING SHALL CONSIST OF RAISED TRUNCATED DOMES, ALIGNED IN A GRID PATTERN WITH A DIAMETER OF A NOMINAL 0.9 INCHES (23 MM), A HEIGHT OF NOMINAL 0.2 INCHES (5 MM) AND A CENTER–TO–CENTER SPACING OF NOMINAL 2.35 INCHES (60 MM). THE DETECTABLE WARNING SURFACE SHALL BE A CAST–IN–PLACE TILE CONFORMING TO THE CITY OF SAN ANTONIO STANDARD SPECIFICATIONS OR PAVERS CONFORMING TO TXDOT STANDARD PED–05, PEDESTRIAN FACILITIES.
6. DETECTABLE WARNINGS SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES, EITHER LIGHT–ON–DARK, OR DARK–ON–LIGHT. THE MATERIAL USED TO PROVIDE CONTRAST SHALL BE AN INTEGRAL PART OF THE WALKING SURFACE.
7. SIDEWALK RAMP TYPE V SHALL BE USED ONLY WHERE THERE IS SIGNIFICANT RESTRICTION WITHIN THE PARKWAY TO CONSTRUCT TYPE I OR TYPE III RAMPS.
8. CONSTRUCTION OF ALL WHEELCHAIR RAMPS TO BE INCLUDED UNDER ITEMS "500 – CONCRETE CURB, GUTTER, AND CONCRETE CURB AND GUTTER" AND / OR "502 – CONCRETE SIDEWALKS". RAMP SURFACE SHALL BE BRUSH FINISHED.
9. THESE DETAILS ARE FOR REFERENCE ONLY. ACTUAL LOCATIONS OF WHEELCHAIR RAMPS TO BE SHOWN ON CONSTRUCTION PLANS. CITY CONSTRUCTION INSPECTOR CAN ADJUST LOCATIONS FOR SAFETY OR UTILITY CLEARANCE.
10. SIDEWALKS LESS THAN 5 FEET IN WIDTH SHALL BE PROVIDED WITH A PASSING SPACE AT A MAXIMUM SPACING OF 200 FEET.
11. WHEELCHAIR RAMP SHALL BE CONSTRUCTED WITH 4" CLASS "A" CONCRETE AND 2" MINIMUM GRAVEL, CRUSHED ROCK OR FLEXIBLE BASE MATERIAL.
12. REINFORCING STEEL SHALL BE #3 BARS AT 18" O.C.E.W. OR 6" x 6" – W2.9 x W2.9 WIRE MESH.
13. SIDEWALK GRADES SHALL NOT EXCEED THE GRADE ESTABLISHED FOR THE ADJACENT ROADWAY, ANY SIDEWALK CONSTRUCTION THAT DEVIATES FROM THE NATURAL GRADE OF THE ROADWAY TO CREATE A GRADE STEEPER THAN THE EXISTING ROADWAY WILL REQUIRE RAMPS, HANDRAILS AND RESTING PLATFORMS TO BE CONSTRUCTED IN ACCORDANCE WITH ADA AND TAS STANDARDS.
14. SIDEWALK CROSS GRADE SHALL HAVE A MAXIMUM SLOPE OF 2%. LANDINGS SHALL HAVE A MAXIMUM SLOPE OF 2% IN ANY DIRECTION.
15. THE CHANGE OF GRADE BETWEEN ADJACENT SURFACES SHALL BE LESS THAN 11%. THE CHANGE OF GRADE SHALL BE DEFINED AS THE ALGEBRAIC DIFFERENCE OF THE ADJACENT SURFACE SLOPES. IN THE CASE OF A STREET ACCESS RAMP DESIGNED AT THE 8.33% MAXIMUM SLOPE, THE ADJACENT PAVEMENT CROSS SLOPE SHALL BE LESS THAN 2.67% (I.E. 8.33–(–2.67) = 11). IN ADDITION, THE ADJACENT PAVEMENT CROSS SLOPE SHALL BE LESS THAN OR EQUAL TO 5%.
16. IF THE CHANGE OF GRADE BETWEEN ADJACENT SURFACES IS GREATER THAN OR EQUAL TO 11%, A LEVELING STRIP, 2 FEET IN LENGTH, SHALL BE PROVIDED TO TRANSITION THE ADJACENT SURFACES.
17. ADA COMPLIANCE IN ALTERATIONS INCLUDE ONLY THAT WORK WITHIN THE LIMITS, BOUNDARIES OR SCOPE OF A PLANNED PROJECT.



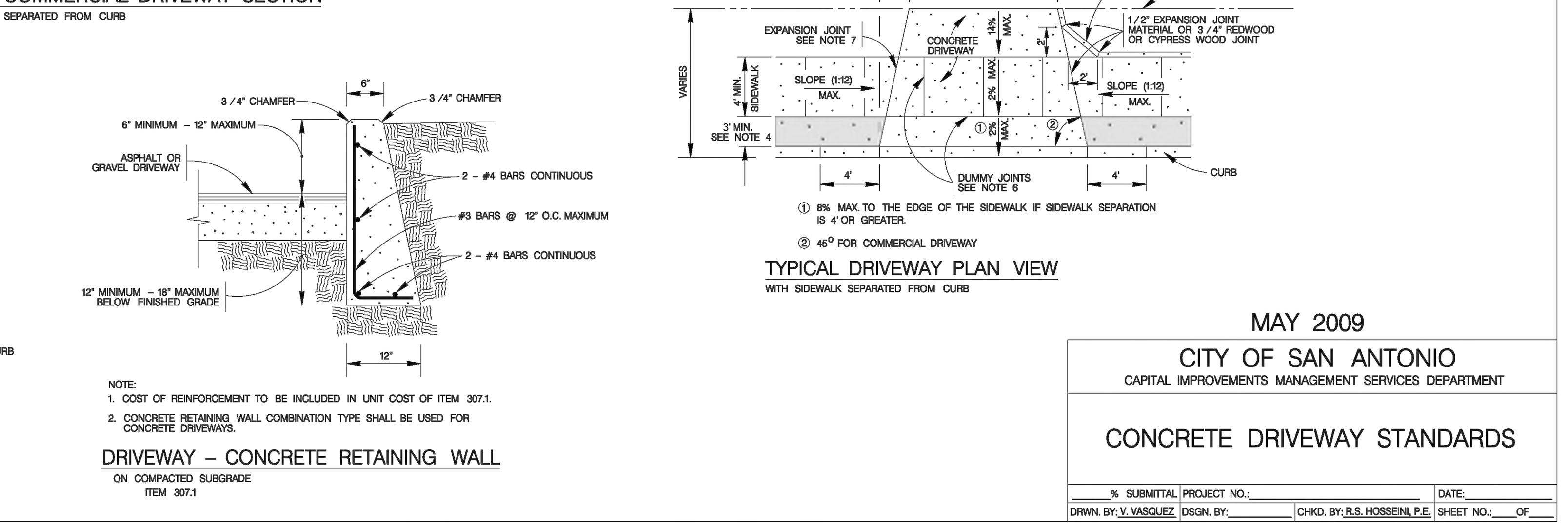


CONCRETE DRIVEWAY NOTES

1. DRIVEWAY PENETRATION REFERS TO A PORTION OF THE DRIVEWAY THAT MAY BE NECESSARY TO RECONSTRUCT WITHIN PRIVATE PROPERTY TO COMPLY WITH A MAXIMUM DRIVEWAY SLOPE. THIS PORTION OF THE DRIVEWAY SHALL BE PAID FOR UNDER THE FOLLOWING ITEMS AS MAY APPLY:
   A.) CONCRETE DRIVEWAY PAID FOR UNDER ITEM NO. 503.1 OR 503.2.
   B.) ASPHALTIC CONCRETE DRIVEWAY PAID FOR UNDER ITEM NO. 503.4 AND SHALL INCLUDE A MINIMUM OF 1" ASPHALT TYPE 'D' & 6" FLEXIBLE BASE
   C.) GRAVEL DRIVEWAY PAID FOR UNDER ITEM NO. 503.5 AND SHALL INCLUDE A MINIMUM OF 6" FLEXIBLE BASE
2. 7" MINIMUM HEIGHT WILL NOT NECESSARILY OCCUR AT THE PROPERTY LINE. IT MAY OCCUR WITHIN THE RIGHT OF WAY OR WITHIN THE DRIVEWAY PENETRATION ON PRIVATE PROPERTY.
3. THE PROPOSED DRIVEWAY SHOULD MATCH THE EXISTING WIDTH AT THE PROPERTY LINE BUT UNLESS AUTHORIZED BY THE CITY TRAFFIC ENGINEER, THE WIDTH SHALL BE WITHIN THE FOLLOWING VALUES:

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

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



REV	DATE	DESCRIPTION

3/20/2024
STATE OF TEXAS — VANCE L. WEYNAND — 99269 — LICENSED PROFESSIONAL ENGINEER
Vance Weynand

DHI Engineering, LLC.
5419 N. LOOP 1604 EAST
SAN ANTONIO, TX 78247
(210) 496-2668 | dhiengineering.com
TBPE REG. NO. F-19561

REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX

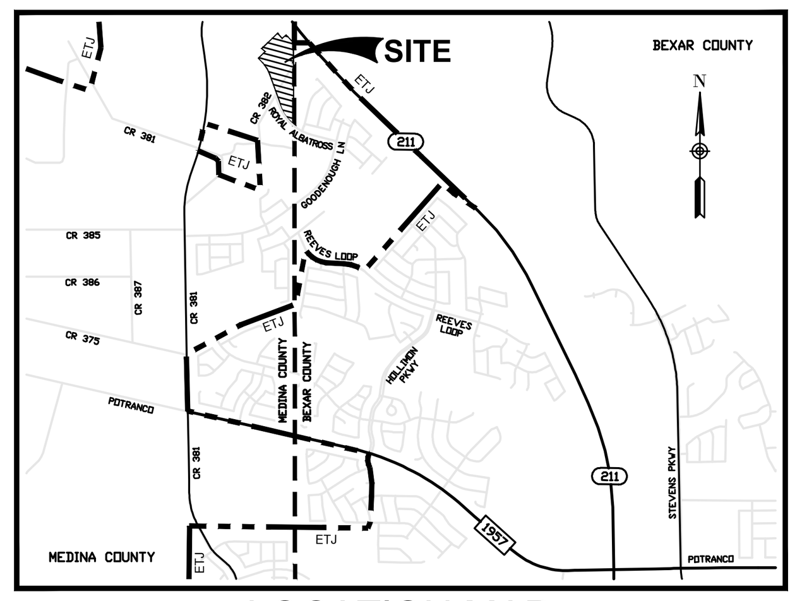
TYPICAL STREET DETAILS

DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	3/20/2024
JOB NO.:	05000-200
SHEET NO.	C2.22

REDBIRD RANCH UNIT 2M-2 DOC. # XXXXXXXXXXXXX

Date: Mar 20, 2024, 2:03pm User ID: AMSiller File: \\drhorton.com\tex-sant\HBGROUPS\Engineering_PROJECT\05000\200\900 – Design\930 – Sheets\C2.22 TYPICAL STREET DETAILS.dwg

DHI ENGINEERING, LLC.



LOCATION MAP
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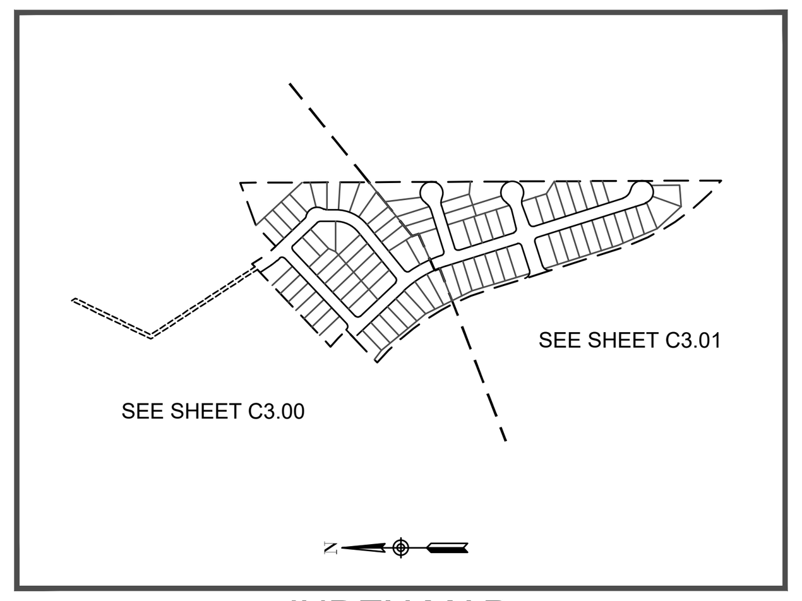

INDEX MAP
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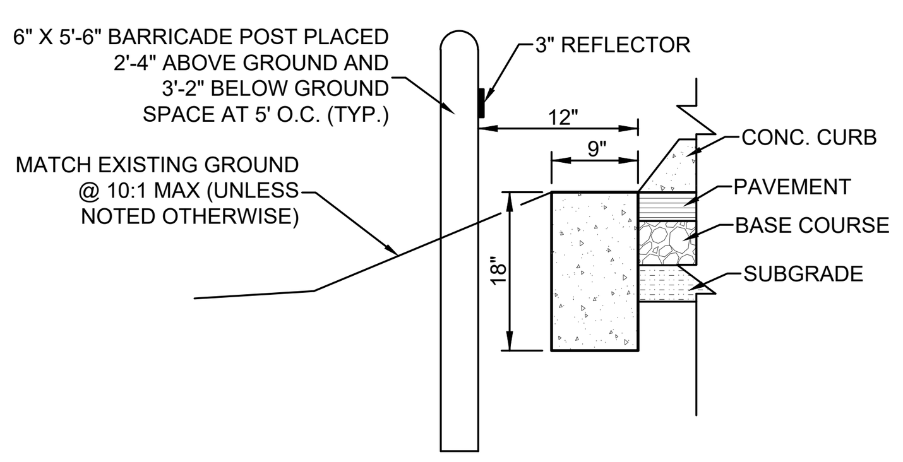
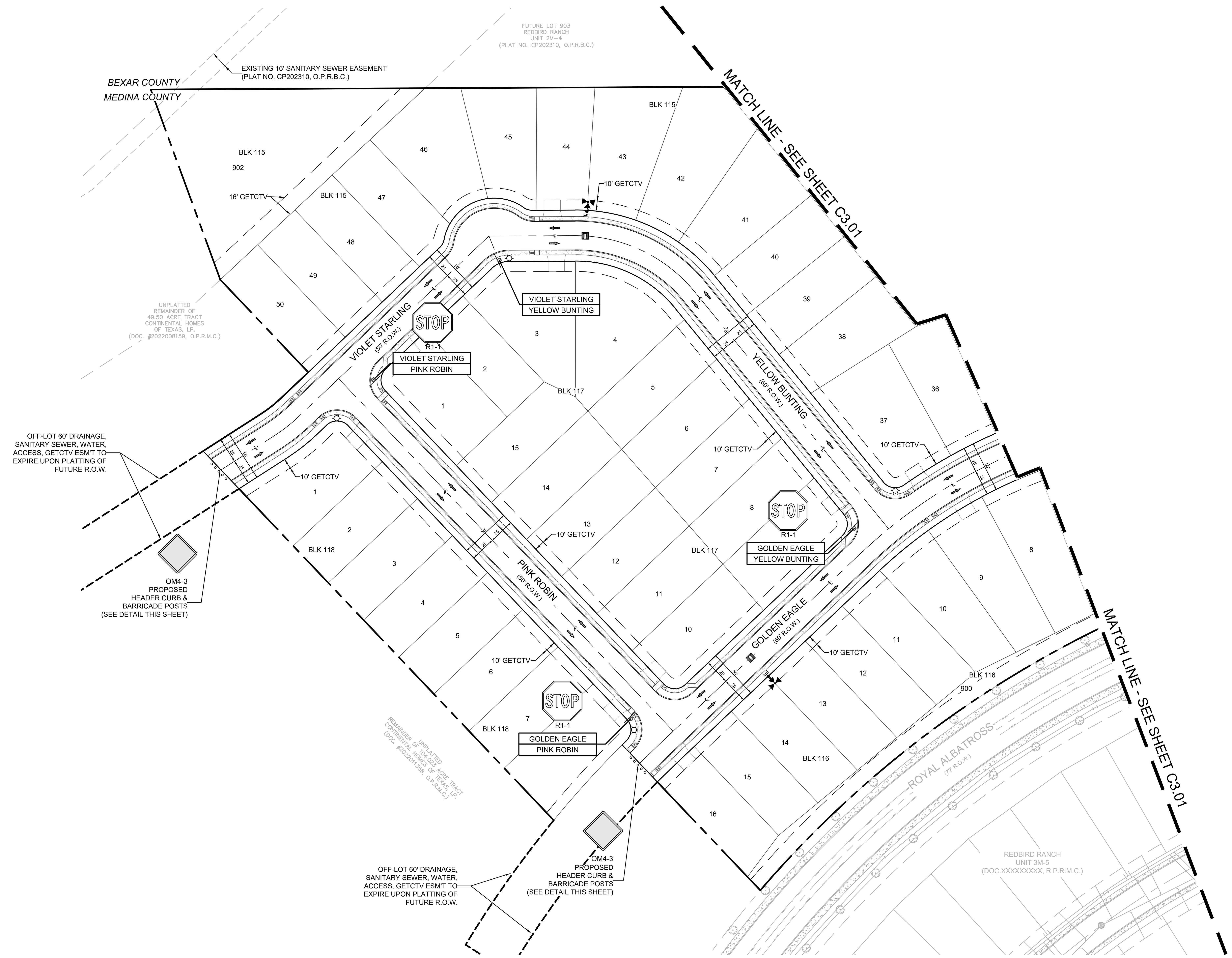
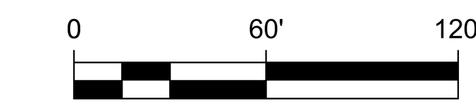


HEADER CURB DETAIL
N.T.S.





LEGEND (SIGNS)

(dashed line)	PROJECT LIMITS
(curb inlet symbol)	CURB INLET
STREET NAME 1 / STREET NAME 2	STREET NAMES SIGN ITEM NO. 531.57
STOP R1-1	STOP SIGN (30" X 30") SIGN ITEM NO. 531.3
(marker symbol)	TYPE II BLUE PVMT MARKER
(hatched)	SIDEWALK (DEVELOPER RESPONSIBILITY)
(hatched)	SIDEWALK (HOMEBUILDER RESPONSIBILITY)
(diamond)	OM4-3 (531.56) END OF ROAD MARKER
DEAD END → W14-1a	DEAD END STREET MARKER SIGN ITEM NO. 531.58

DRIVEWAY NOTE:
DRIVEWAYS SHOWN ON THIS PLAN ARE FOR THE SOLE PURPOSE OF INDICATION A POTENTIAL CONFLICT WITH CURB RAMP, DRAINAGE INFRASTRUCTURE, OR OTHER CONFLICT. DRIVEWAY LOCATION IS SUBJECT TO CHANGE BASED ON HOME SELECTION AND FINAL LOT DESIGN.

CAUTION!!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO : WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

TRENCH EXCAVATION PROTECTION

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

REV	DATE	DESCRIPTION

3/20/2024
STATE OF TEXAS
VANCE L. WEYNAND
99269
LICENSED PROFESSIONAL ENGINEER
Vance Weynand

DHI Engineering, LLC.
5419 N. LOOP 1604 EAST
SAN ANTONIO, TX 78247
(210) 496-2668 | dhiengineering.com
TBPE REG. NO. F-19561

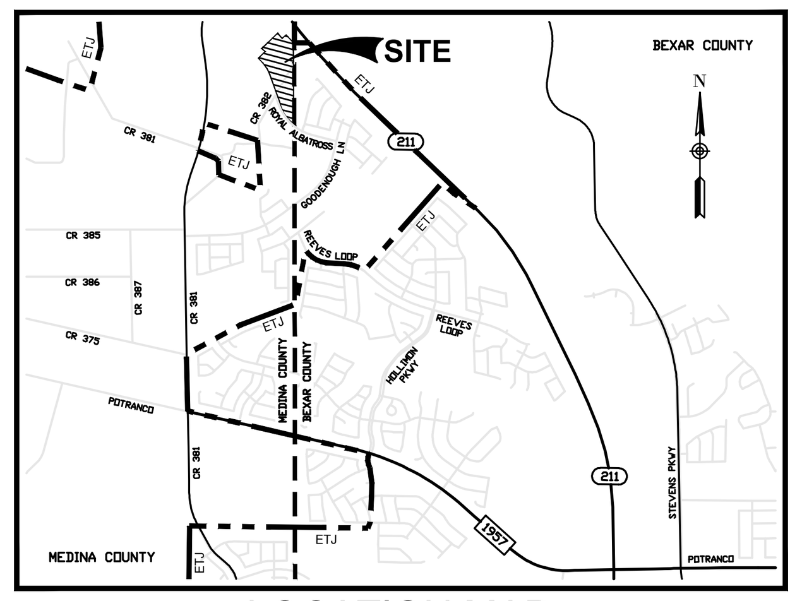
DHI

REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX

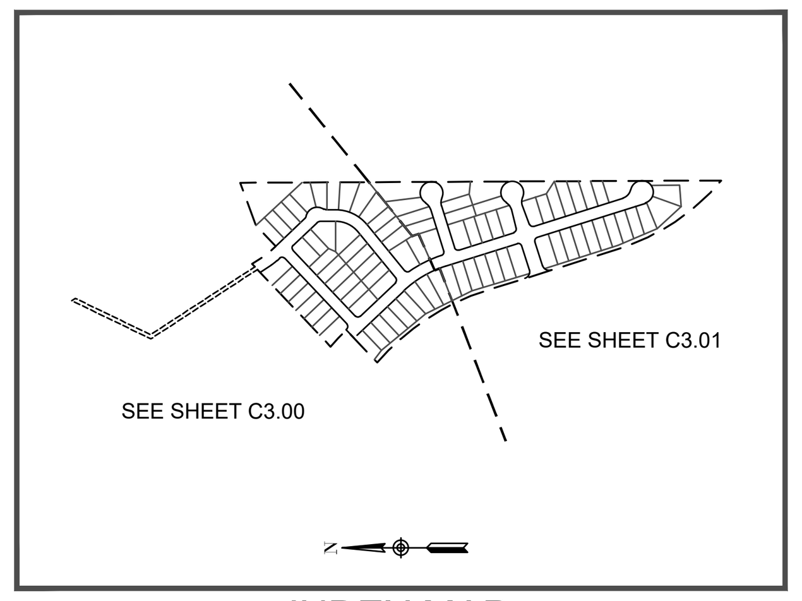
OVERALL SIGNAGE PLAN

DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	3/20/2024
JOB NO.:	05000-200
SHEET NO.	C3.00

REDBIRD RANCH UNIT 2M-2 DOC. # XXXXXXXXXXXX



LOCATION MAP
NOT-TO-SCALE



INDEX MAP
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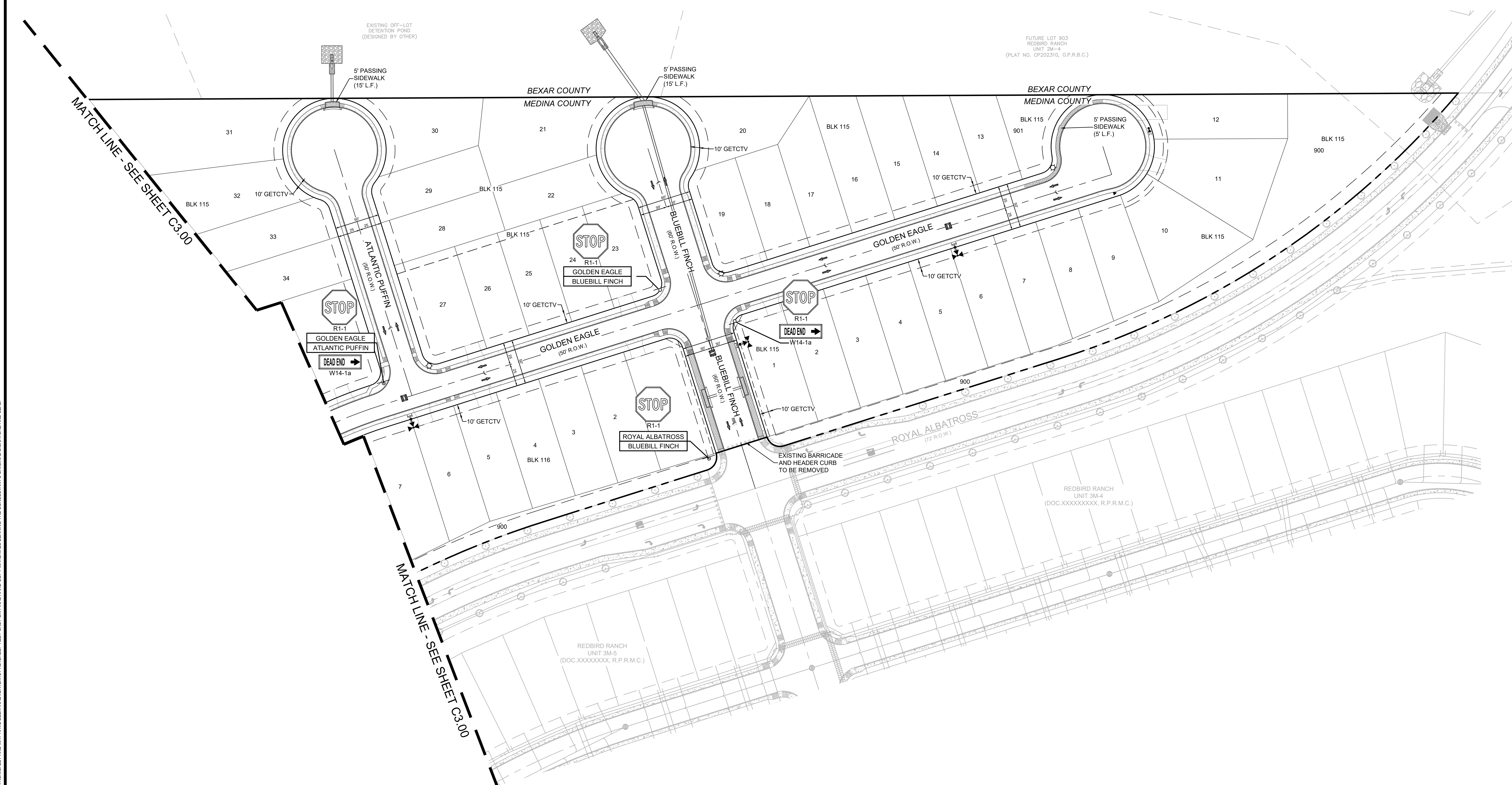


LEGEND (SIGNS)

⸺ ⸺	PROJECT LIMITS
(symbol)	CURB INLET
STREET NAME 1 / STREET NAME 2	STREET NAMES SIGN ITEM NO. 531.57
STOP R1-1	STOP SIGN (30" X 30") SIGN ITEM NO. 531.3
(symbol)	TYPE II BLUE PVMT MARKER
(hatch)	SIDEWALK (DEVELOPER RESPONSIBILITY)
(hatch)	SIDEWALK (HOMEBUILDER RESPONSIBILITY)
(symbol)	OM4-3 (531.56) END OF ROAD MARKER
DEAD END W14-1a	DEAD END STREET MARKER SIGN ITEM NO. 531.58

DRIVEWAY NOTE:
DRIVEWAYS SHOWN ON THIS PLAN ARE FOR THE SOLE PURPOSE OF INDICATION A POTENTIAL CONFLICT WITH CURB RAMP, DRAINAGE INFRASTRUCTURE, OR OTHER CONFLICT. DRIVEWAY LOCATION IS SUBJECT TO CHANGE BASED ON HOME SELECTION AND FINAL LOT DESIGN.

CAUTION!!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO : WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

TRENCH EXCAVATION PROTECTION

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

REV	DATE	DESCRIPTION

3/20/2024
STATE OF TEXAS
VANCE L. WEYNAND
99269
LICENSED PROFESSIONAL ENGINEER
Vance Weynand

DHI Engineering, LLC.
5419 N. LOOP 1604 EAST
SAN ANTONIO, TX 78247
(210) 496-2668 | dhiengineering.com
TBPE REG. NO. F-19561

DHI

REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX

OVERALL SIGNAGE PLAN

DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	3/20/2024
JOB NO.:	05000-200
SHEET NO.	C3.01

DHI ENGINEERING, LLC.

SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

SM RD SGN ASSM TY XXXXX(X)XX(X-XXXX)

Post Type

- FRP = Fiberglass Reinforced Plastic Pipe (see SMD(FRP))
- TWT = Thin-Walled Tubing (see SMD(TWT))
- 10BWG = 10 BWG Tubing (see SMD(SLIP-1) to (SLIP-3))
- S80 = Schedule 80 Pipe (see SMD(SLIP-1) to (SLIP-3))

Number of Posts (1 or 2)

Anchor Type

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

Sign Mounting Designation

- P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
- T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
- U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))

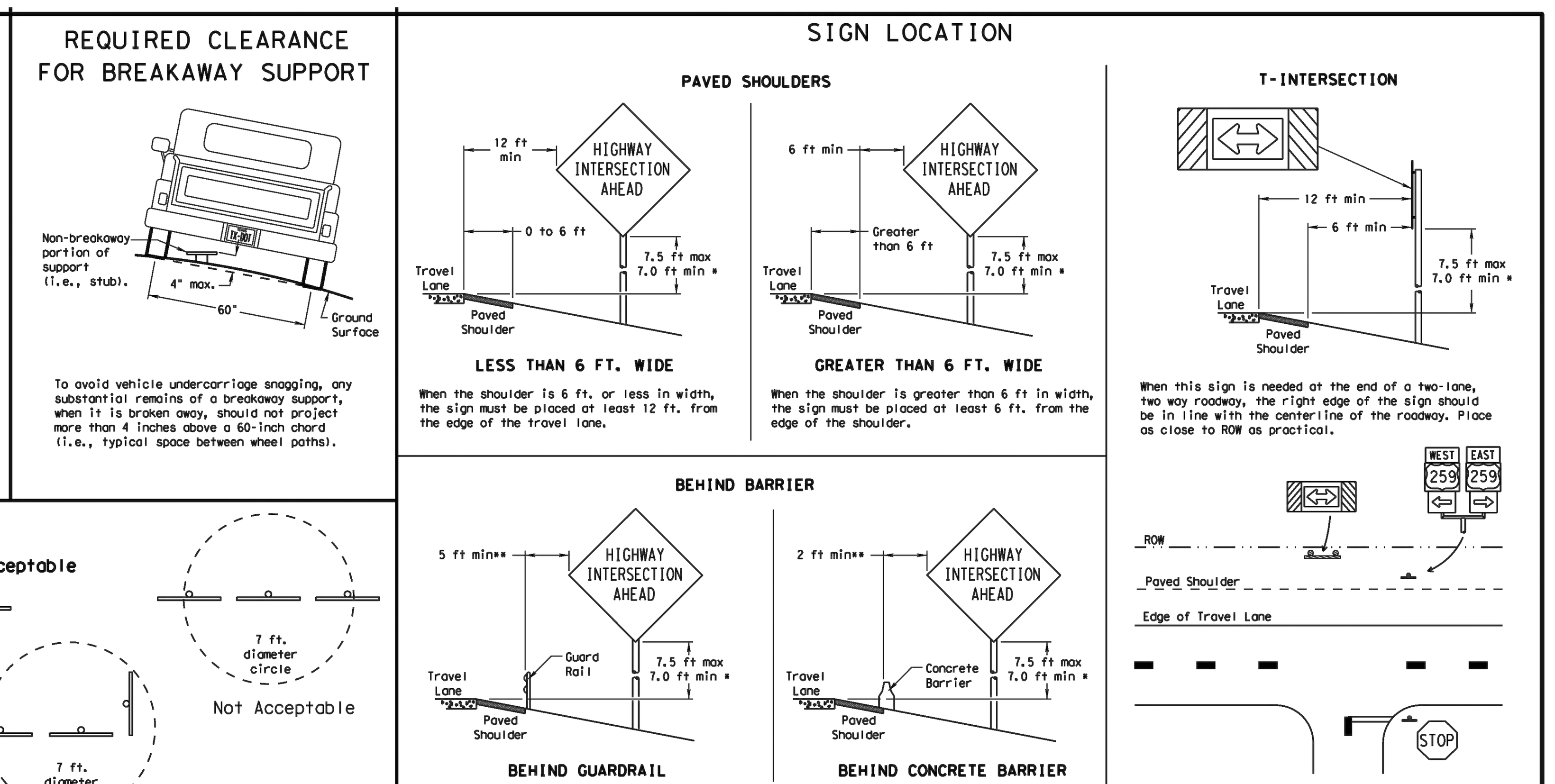
IF REQUIRED

- 1EXT or 2EXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
- BM = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))
- WC = 1.12 #/ft Wing Channel (see SMD(SLIP-1) to (SLIP-3))
- EXAL = Extruded Aluminum Sign Panels (see SMD(SLIP-3))

REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT

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

SIGN LOCATION



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.

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.

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.

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

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

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

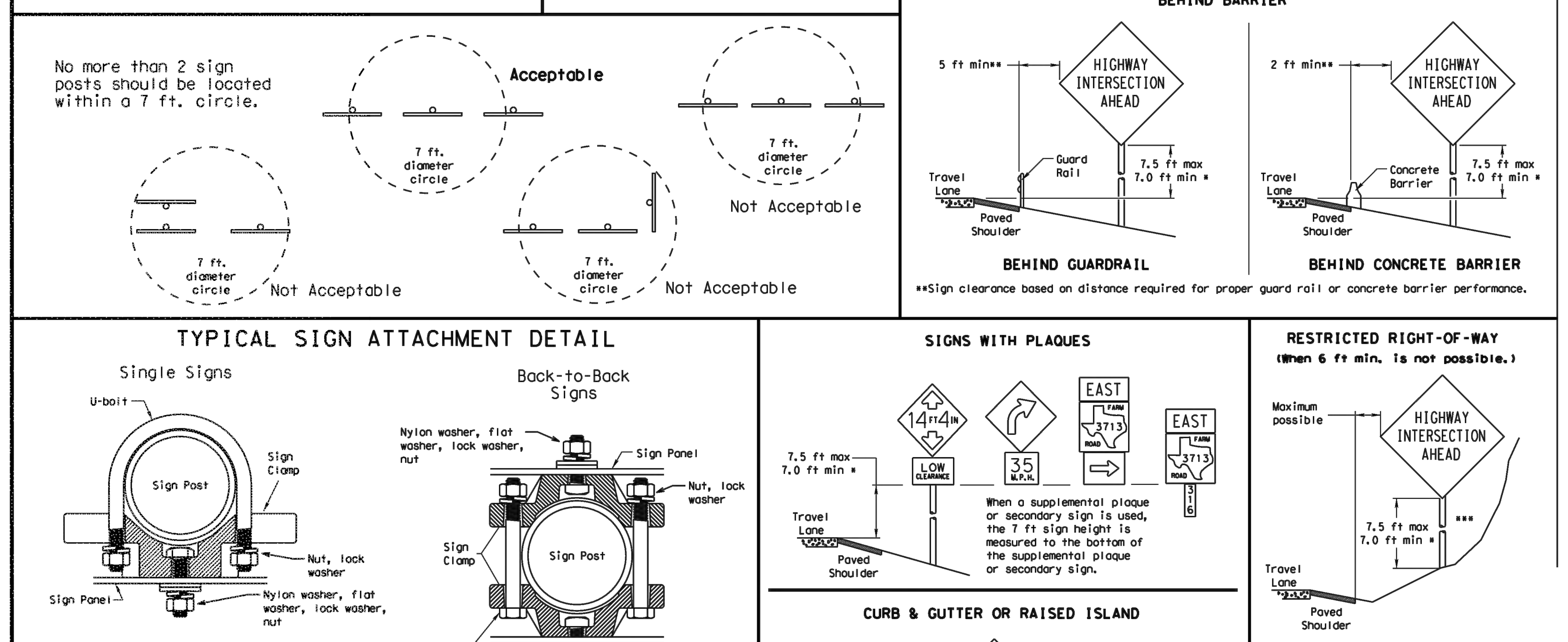
(2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

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

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

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

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



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

When two sign clamps are used to mount signs back-to-back, use a 5/16-18 UNC galvanized hex head per ASTM A307 with nut and helical-spring lock washer. The approximate bolt lengths for various post sizes and sign clamp types are given in the table at right. The bolt length may need to be adjusted depending upon field conditions.

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

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

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.

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

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

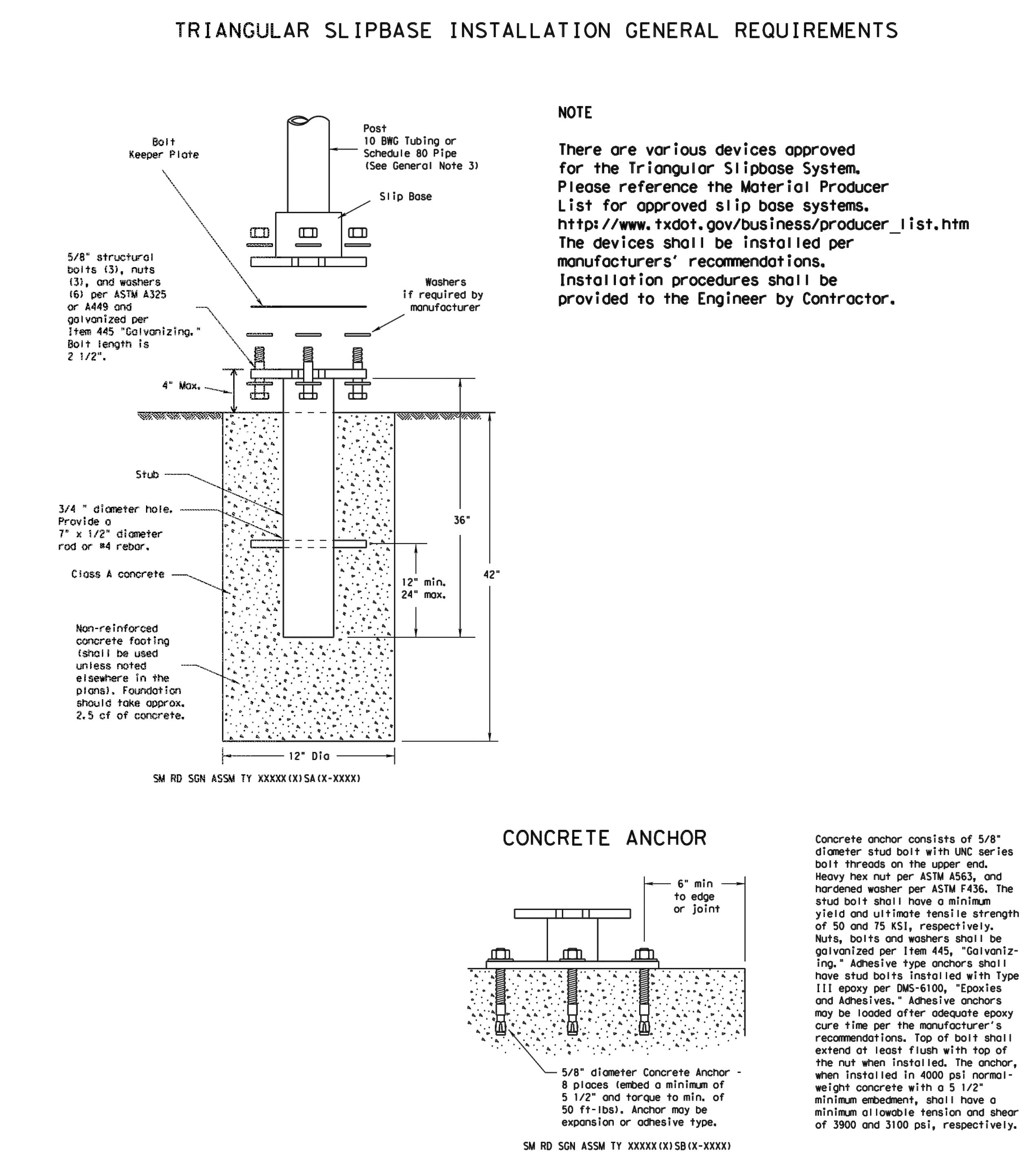
*** Post may be shorter if protected by guardrail or if Engineer determines the post could not be hit due to extreme slope.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

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. https://www.txdot.gov/business/producer_list.htm The devices shall be installed per manufacturers' recommendations. Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

1. Slip base shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
2. Material used as post with this system shall conform to the following specifications:
   10 BWG Tubing (2.875" outside diameter)
   0.134" nominal wall thickness
   Seamless or electric-resistance welded steel tubing or pipe
   Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   Other steels may be used if they meet the following:
   55,000 PSI minimum yield strength
   70,000 PSI minimum tensile strength
   20% minimum elongation in 2"
   Wall thickness (uncoated) shall be within the range of 0.122" to 0.138"
   Outside diameter (uncoated) shall be within the range of 2.867" to 2.883"
   Galvanization per ASTM A123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
   Schedule 80 Pipe (2.875" outside diameter)
   0.276" nominal wall thickness
   Steel tubing per ASTM A500 Gr C
   Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the 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 0.248" to 0.304"
   Outside diameter (uncoated) shall be within the range of 2.855" to 2.895"
   Galvanization per ASTM A123
3. See the Traffic Operations Division website for detailed drawings of sign clamps and Texas Universal Triangular Slipbase System components. The website address is:
   http://www.txdot.gov/publications/traffic.htm
4. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

ASSEMBLY PROCEDURE

Foundation

1. Prepare 12-inch diameter by 42-inch deep hole. If solid rock is encountered, the depth of the foundation may be reduced such that it is embedded a minimum of 18 inches into the solid rock.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, 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. Push the pipe end of the slip base stub into the center of the concrete. Rotate the stub back and forth while pushing it down into the concrete to assure good contact between the concrete and stub. Continue to work the stub into the concrete until it is between 2 to 4 inches above the ground.
4. Plumb the stub. Allow a minimum of 4 days to set, unless otherwise directed by the Engineer.
5. The triangular slipbase system is multidirectional and is designed to release when struck from any direction.

Support

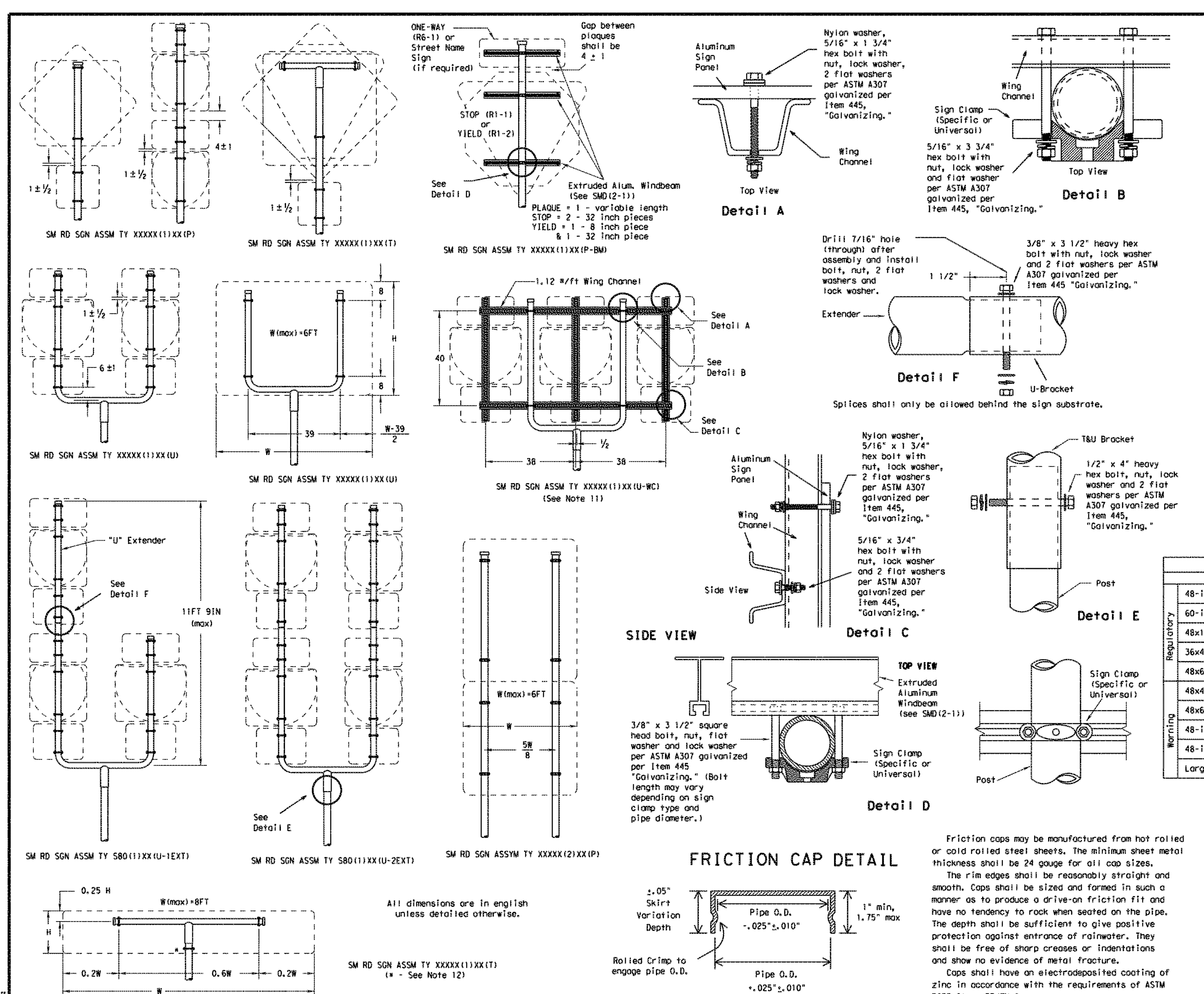
1. Cut support so that the bottom of the sign will be 7 to 7.5 feet above the edge of the travelway (i.e., edge of the closest lane) when slip plate is below the edge of pavement or 7 to 7.5 feet above slip plate when the slip plate is above the edge of the travelway. The cut shall be plumb and straight.
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) for clearances based on sign types.

Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. Heavy hex nut per ASTM A563, and hardened washer per ASTM F436. The stud bolt shall have a minimum yield and ultimate tensile strength of 50 and 75 KSI, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations. Top of bolt shall extend at least flush with top of the nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 5 1/2" minimum embedment, shall have a minimum allowable tension and shear of 3900 and 3100 psi, respectively.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08



GENERAL NOTES:

1.

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

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

REQUIRED SUPPORT		
	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
Regulatory	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
Regulatory	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
Regulatory	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
Regulatory	48x60-inch signs	TY S80(1)XX(T)
Warning	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
Warning	48x60-inch signs	TY S80(1)XX(T)
Warning	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
Warning	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
Warning	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)

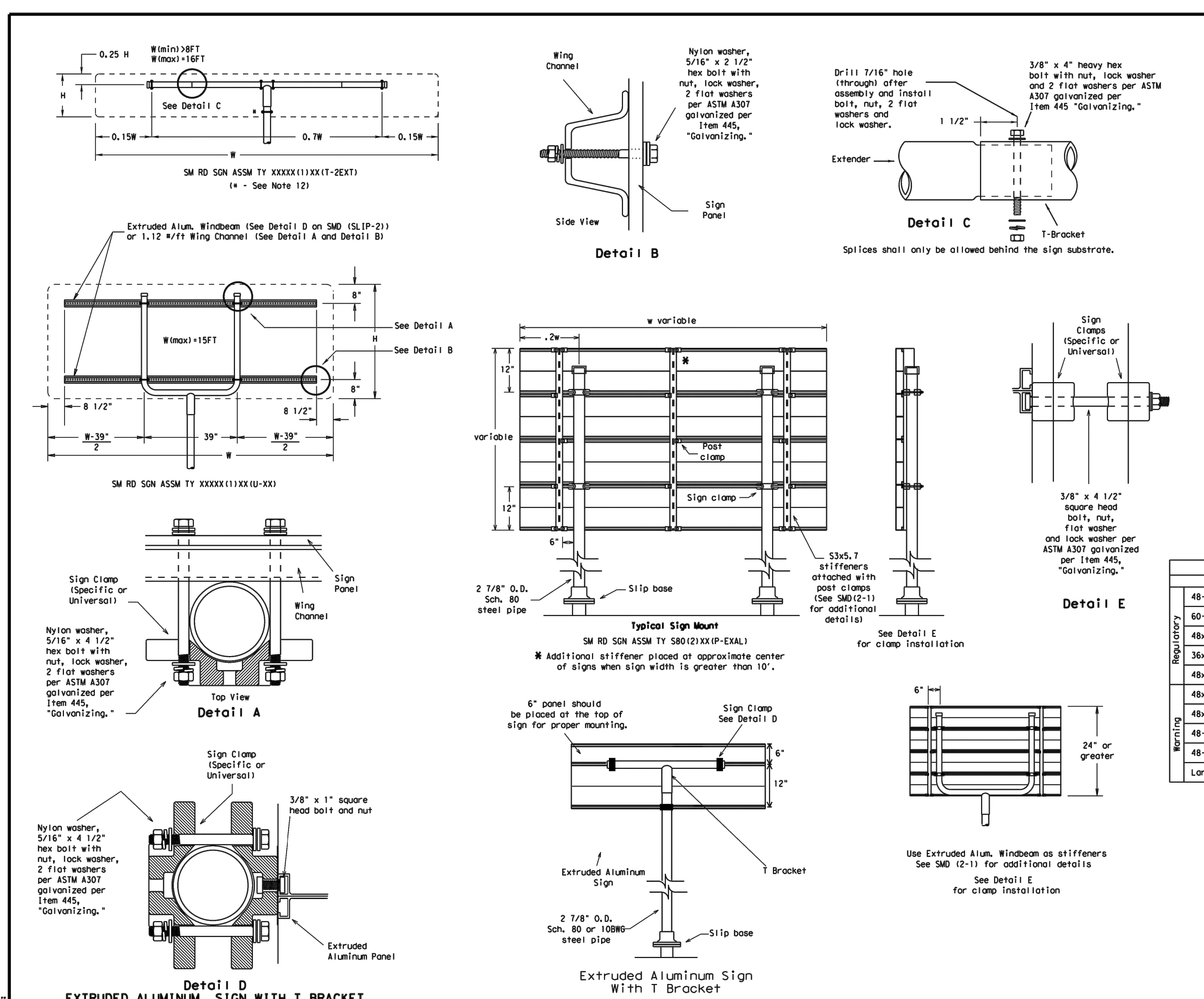
Friction caps may be manufactured from hot rolled or cold rolled steel sheets. The minimum sheet metal thickness shall be 24 gauge for all cap sizes. The rim edges shall be reasonably straight and smooth. Caps shall be sized and formed in such a manner as to produce a drive-on friction fit and have no tendency to rock when seated on the pipe. The depth shall be sufficient to give positive protection against entrance of rainwater. They shall be free of sharp creases or indentations and show no evidence of metal fracture. Caps shall have an electrodeposited coating of zinc in accordance with the requirements of ASTM B633 Class FE/ZN 8.

All dimensions are in english unless detailed otherwise.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-2)-08



GENERAL NOTES:

1.

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

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

REQUIRED SUPPORT		
	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
Regulatory	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
Regulatory	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
Regulatory	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
Regulatory	48x60-inch signs	TY S80(1)XX(T)
Warning	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
Warning	48x60-inch signs	TY S80(1)XX(T)
Warning	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
Warning	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
Warning	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-3)-08

VANCE L. WEYNAND
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LICENSED PROFESSIONAL ENGINEER
3/20/2024

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TBPE REG. NO. F-19561

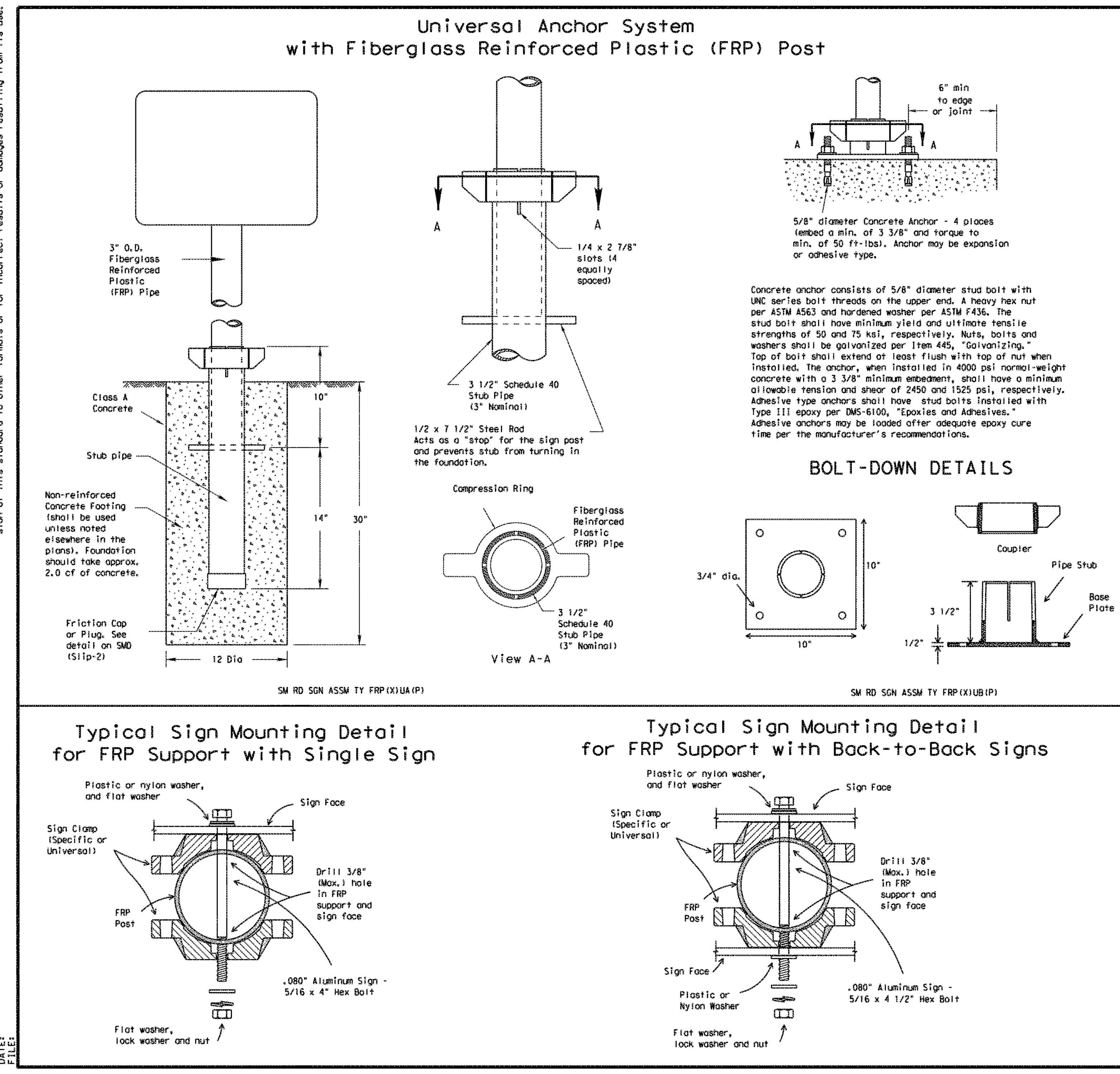
REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX

TXDOT SIGN MOUNTING DETAILS

DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	3/20/2024
JOB NO.:	05000-200
SHEET NO.	C3.10

REDBIRD RANCH UNIT 2M-2 — DOC. # XXXXXXXXXXXXX

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 and including 16 square feet. Dual post installation may be used for signs up to and including 32 square feet.
2. All nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing."
3. See the Traffic Operations Division website for detailed drawings of sign clamps. The website address is: http://www.txdot.gov/publications/traffic.htm

FRP POST REQUIREMENTS

1. Materials shall conform to the requirements of Departmental Material Specification DMS-4410 and will be furnished in a yellow or gray color as specified elsewhere in the plans.
2. Thickness of FRP sign support is 0.125" + 0.031", - 0.0".
3. FRP sign supports are prequalified by the Traffic Operations Division. Prequalification procedures are obtained by writing:
   Texas Department of Transportation
   Traffic Operations Division
   125 East 11th Street
   Austin, Texas 78701-2483

UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURES

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
3. Insert base post in foundation hole to depths shown and fill hole with concrete. Cut base post from bottom and ensure a minimum of 18" embedment if installed in solid rock.
4. Level and plumb the base post with coupler using a torpedo level and let concrete set a minimum of 4 days, unless otherwise directed by Engineer. Bottom of base post slots shall be above the concrete footing.
5. Attach sign to FRP post.
6. Insert sign post into base post. Lower until the post comes to rest on the steel rod.
7. Use hammer to ensure the coupler is firmly seated. Top of coupler should be level with top of base post in most instances.
8. Check sign to ensure there is no twist. If loose, increase the tightening of coupler.

BOLT DOWN SIGN SUPPORT

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

Texas Department of Transportation
Traffic Operations Division

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

SMD(FRP)-08

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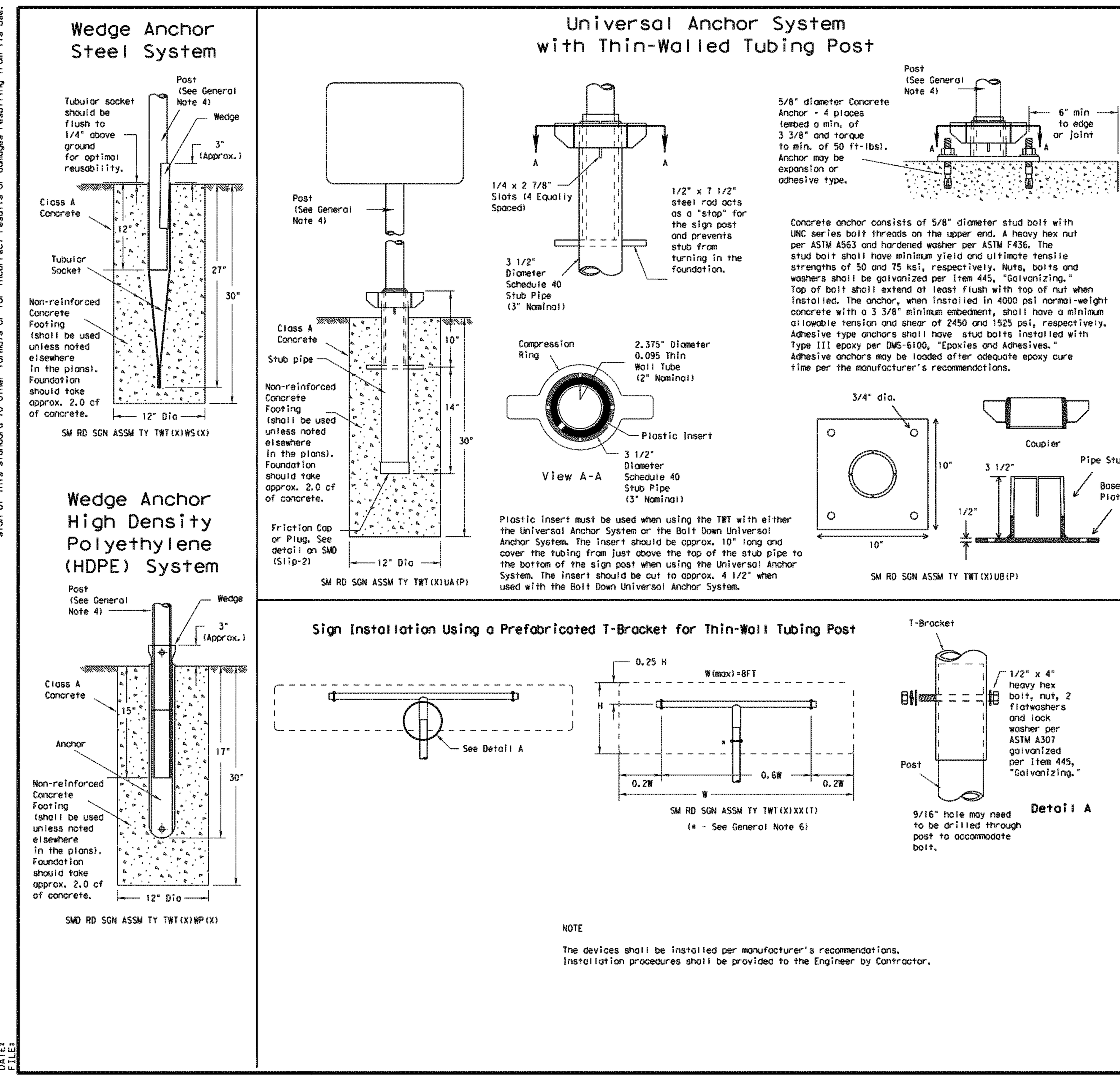
Wedge Anchor Steel System / Universal Anchor System with Thin-Walled Tubing Post



GENERAL NOTES:

1. The Wedge Anchor System and the Universal Anchor System with thin wall tubing post may be used to support up to 10 square feet of sign area.
2. The tubular socket, wedge and prefabricated T-bracket shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to the approval of the TxDOT Traffic Standards Engineer.
3. Except for posts (13 BWG Tubing), clamps, nuts and bolts, all components shall be prequalified. A list of prequalified vendors may be obtained from the Material Producer List web page. The website address is: http://www.txdot.gov/business/producer list.htm
4. Material used as 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 electric-resistance welded steel tubing
   Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   Other steels may be used if they meet the following:
   55,000 PSI minimum yield strength
   70,000 PSI minimum tensile strength
   18% minimum elongation in 2"
   Wall thickness (uncoated) shall be within the range of .083" to .099"
   Outside diameter (uncoated) shall be within the range of 2.369" to 2.381"
   Galvanization per ASTM 123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
5. Sign blanks shall be the sizes and shapes shown on the plans.
6. Additional sign clamp required on the "T-bracket" post for 24" high signs. Place clamp at least 3" above bottom of sign when possible.
7. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
8. See the Traffic Operations Division website for detailed drawings of sign clamps and Wedge Anchor System components. The website address is: http://www.txdot.gov/publications/traffic.htm

WEDGE ANCHOR SYSTEM INSTALLATION PROCEDURE

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Place concrete into hole until it is approximately flush with the ground. Concrete shall be Class A.
3. Insert tubular socket into concrete until top of socket is approximaely 1/4 " above the concrete footing.
4. Plumb the socket. Allow a minimum 4 days for concrete to set, unless otherwise directed by Engineer..
5. Attach the sign to the sign post.
6. Insert the sign post into socket and align sign face with roadway.
7. Drive the wedge into the socket to secure post. This will leave approximately 3 inches of the wedge exposed.

UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURE

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. Insert base post in hole to depths shown and backfill hole with concrete.
3. Level and plumb the base post using a torpedo level and allow concrete adequate time to set. The bottom of the slots provided in the stub pipe shall remain above the top of the concrete foundation.
4. Attach the sign to the sign post.
5. Install plastic insert around bottom of post.
6. Insert sign post into base post. Lower until the post comes to rest on steel rod.
7. Seat compression ring using a hammer. Typically, the top of compression ring will be approximately level with top of stub post when optimally installed.
8. Check sign post by hand to ensure it is unable to turn. If loose, increase the tightening of the compression ring.

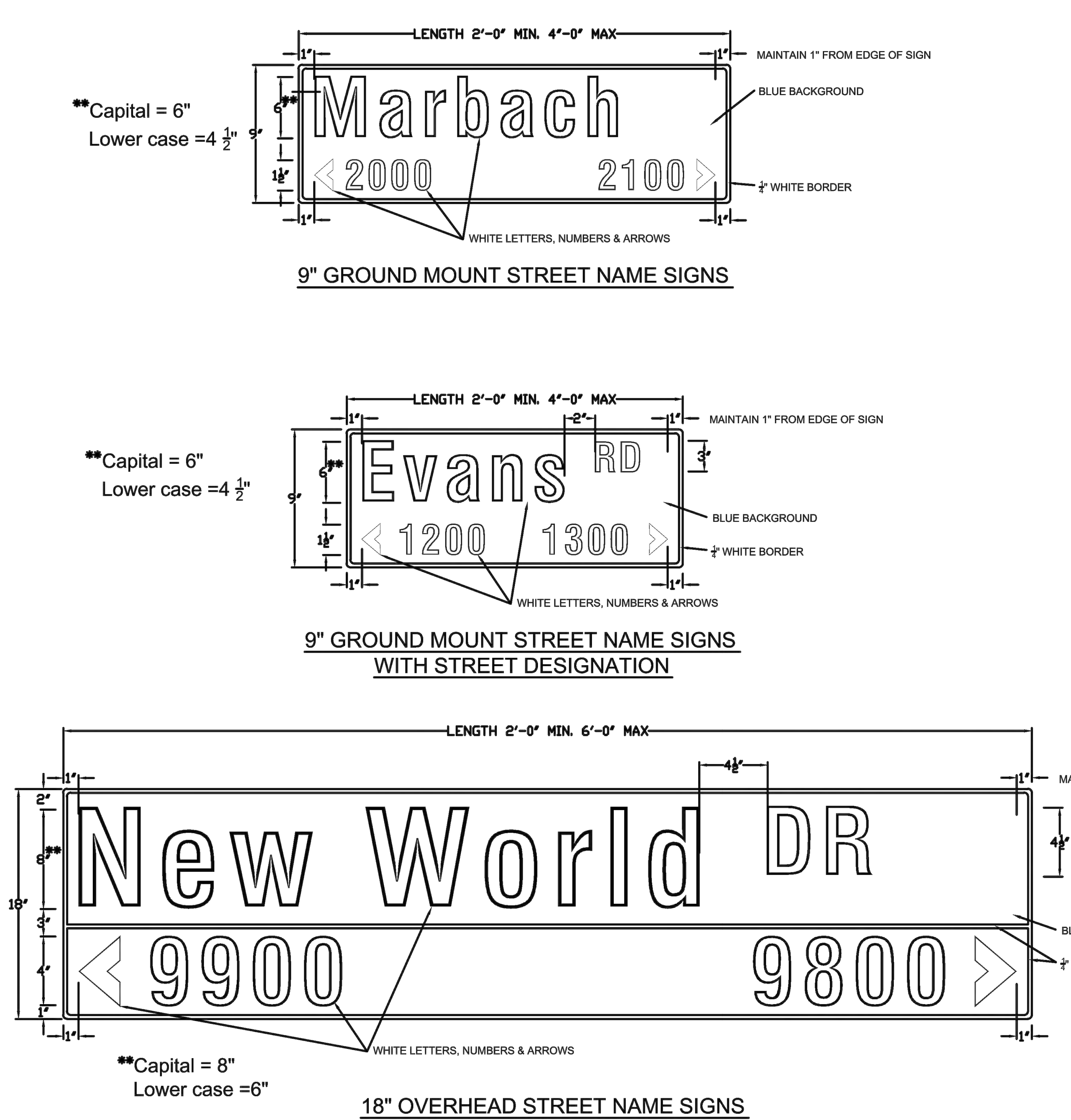
Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS WEDGE & UNIVERSAL ANCHOR WITH THIN WALL TUBING POST

SMD(TWT)-08

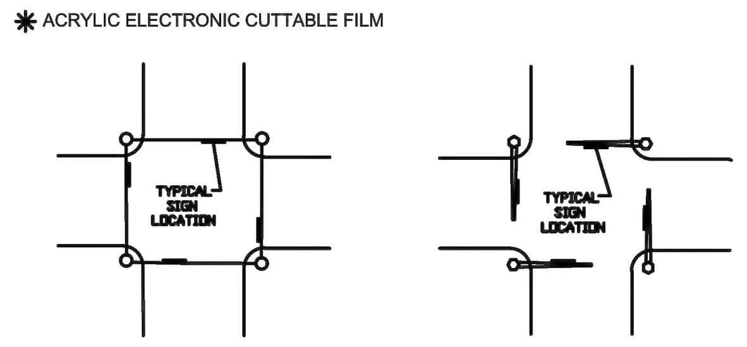
©TxDOT July 2002 — 9-08

Street Name Sign Details



	18" OVERHEAD SIGN	9" GROUND MOUNT SIGNS
HEIGHT	18" (381 mm)	9" (228 mm)
LENGTH	48" (1200 mm) MIN. 72" (1800 mm) MAX. 1' (300mm) INCREMENTS OF LENGTH	24" (600 mm) MIN. 48" (1200 mm) MAX. 6" (150mm) INCREMENTS OF LENGTH
THICKNESS	0.125" (3 mm)	
SUBSTRATE	ALUMINUM ALLOY, 5052-H38 (ASTM B-209 GOLD CHROMATE FINISH	
SIGN FACE MATERIALS	BLUE FILM ✱ OVER DIAMOND GRADE - ASTM Type XI Non-Fluorescent	BLUE FILM ✱ OVER HIGH INTENSITY PRISMATIC- ASTM Type IV
LEGENDS AND SYMBOLS	SERIES D, B OR C IF NAME OTHERWISE EXCEEDS MAXIMUM SIGN LENGTH	
COLOR	WHITE LEGEND ON BLUE BACKGROUND	
LETTER TRACKING	17% (USUAL) 10% (MIN.)	10%

✱ ACRYLIC ELECTRONIC CUTTABLE FILM



SIGN FACE MATERIALS SHALL CONFORM TO:

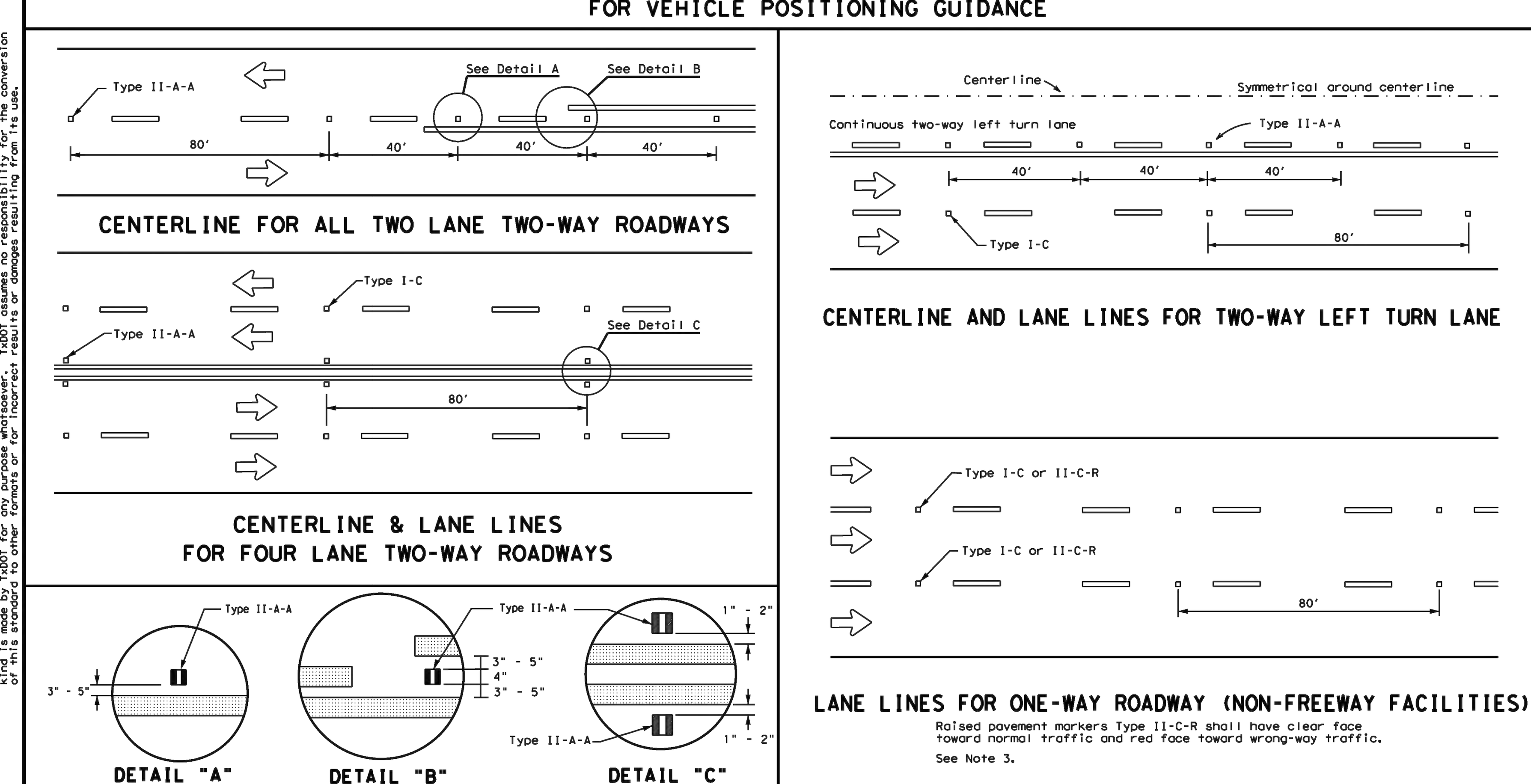
1. STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS & BRIDGES ON FEDERAL HIGHWAY PROJECTS - FP-03 U.S. CUSTOMARY UNITS SECTION 718
2. GENERAL SERVICES ADMINISTRATION FEDERAL SPECIFICATIONS L-S-300C
3. ASTM D 4956 - 09e1

Bexar County Public Works

Street Name Sign Details

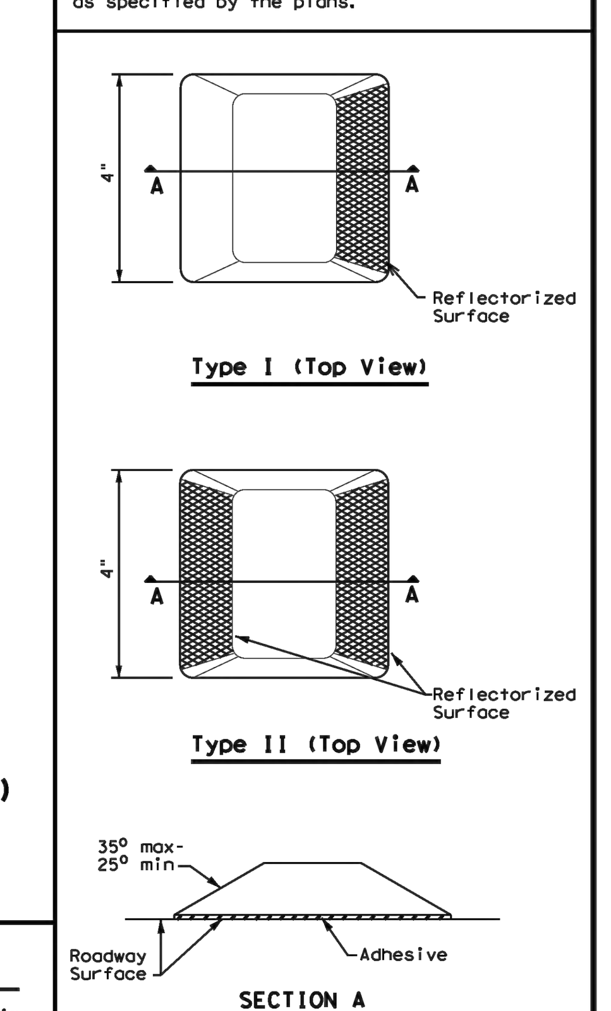
SHEET 1

Reflective Raised Pavement Markers for Vehicle Positioning Guidance

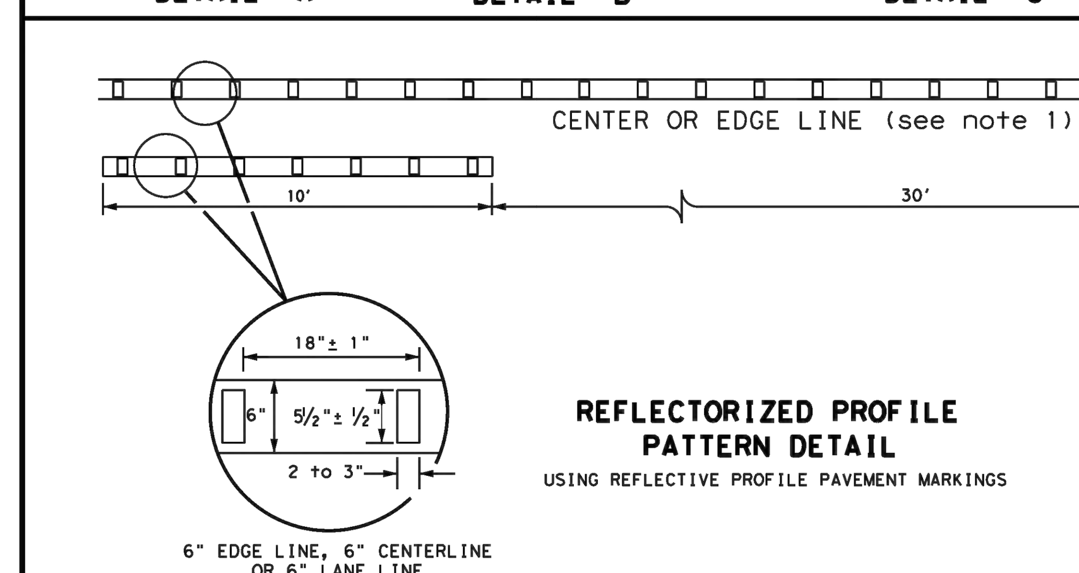


MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

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



RAISED PAVEMENT MARKERS



REFLECTORIZED PROFILE PATTERN DETAIL

USING REFLECTIVE PROFILE PAVEMENT MARKINGS

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

NOTES

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

GENERAL NOTES

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

Texas Department of Transportation — Traffic Safety Division Standard

POSITION GUIDANCE USING RAISED MARKERS REFLECTORIZED PROFILE MARKINGS

PM(2)-22

Title Block

DHI Engineering, LLC.
5419 N. LOOP 1604 EAST
SAN ANTONIO, TX 78247
(210) 496-2668 | dhiengineering.com
TBPE REG. NO. F-19561

REV	DATE	DESCRIPTION

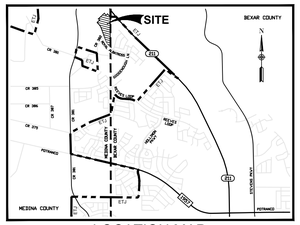
STATE OF TEXAS — VANCE L. WEYNAND — 99269 — LICENSED PROFESSIONAL ENGINEER — 3/20/2024

REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX
TXDOT SIGN MOUNTING DETAILS

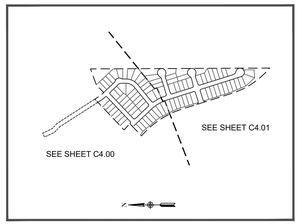
DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	3/20/2024
JOB NO.:	05000-200
SHEET NO.	C3.11

DOC. # XXXXXXXXXXXX

REDBIRD RANCH UNIT 2M-2



LOCATION MAP
NOT-TO-SCALE



INDEX MAP
NOT-TO-SCALE

TRENCH EXCAVATION PROTECTION

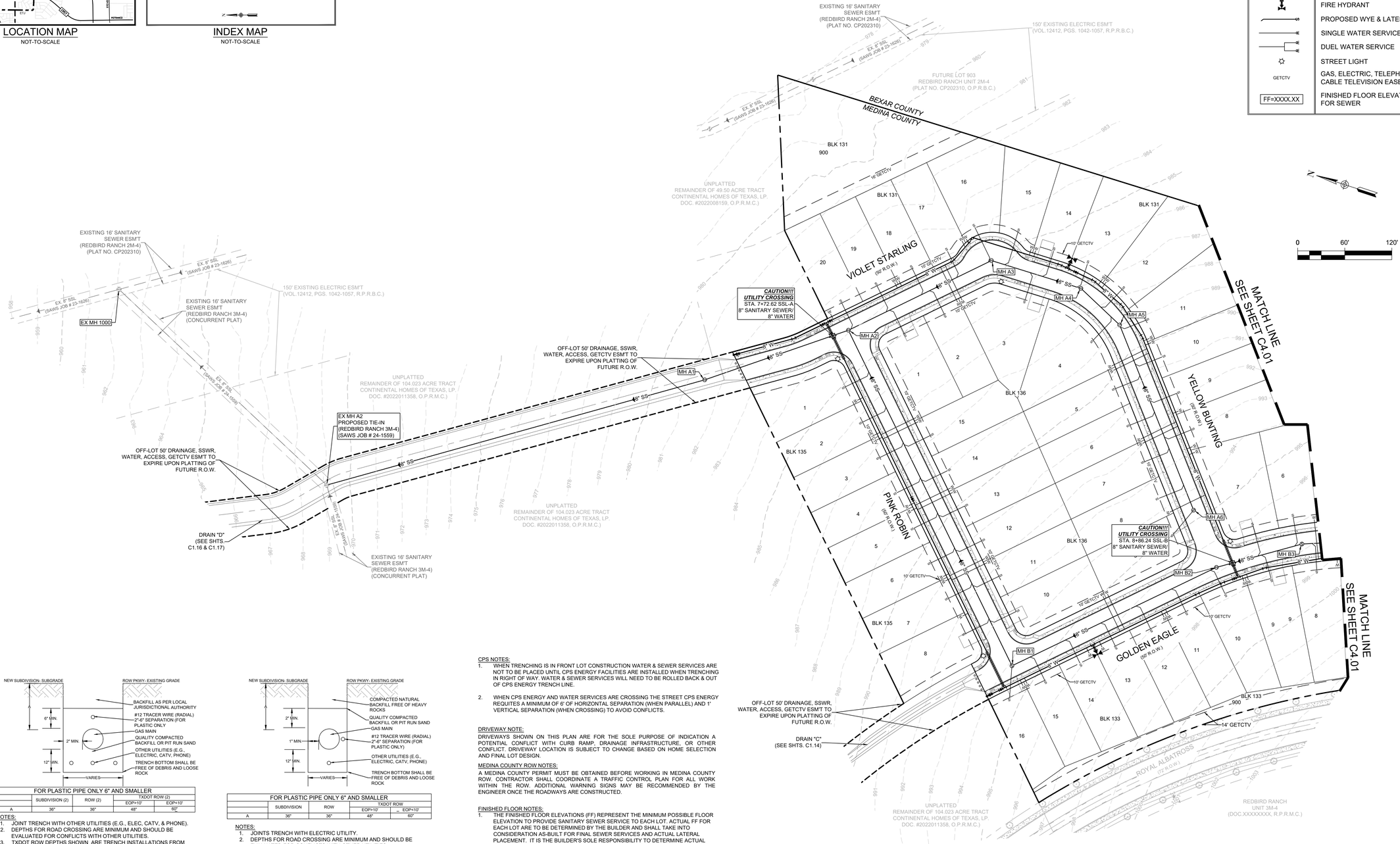
CONTRACTOR AND CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN, GEOTECHNICAL, SAFETY, EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE WITHIN THE PROJECT'S WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S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

CAUTION!!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO : WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

LEGEND (UTILITY)

	PROJECT LIMITS
	PROPOSED WATER
	PROPOSED SEWER
	EXISTING WATER
	EXISTING SEWER
	PROPOSED MANHOLE
	EXISTING MANHOLE
	FIRE HYDRANT
	PROPOSED WYE & LATERAL
	SINGLE WATER SERVICE
	DUEL WATER SERVICE
	STREET LIGHT
GETCTV	GAS, ELECTRIC, TELEPHONE & CABLE TELEVISION EASEMENT
FF=XXXX.XX	FINISHED FLOOR ELEVATION FOR SEWER



FOR PLASTIC PIPE ONLY 6" AND SMALLER				
	SUBDIVISION (2)	ROW (2)	TXDOT ROW (2)	
			EOP>10'	EOP<10'
A	36"	36"	48"	60"

NOTES:
1. JOINT TRENCH WITH OTHER UTILITIES (E.G., ELEC, CATV, & PHONE).
2. DEPTHS FOR ROAD CROSSING ARE MINIMUM AND SHOULD BE EVALUATED FOR CONFLICTS WITH OTHER UTILITIES.
3. TXDOT ROW DEPTHS SHOWN ARE TRENCH INSTALLATIONS FROM THE EDGE OF PAVEMENT (EOP) OF STATE ROAD
4. DIMENSIONS SHOWN FOR PROJECTS IN COSA AND COUNTY ROW SHOULD BE VERIFIED WITH JURISDICTIONAL ENTITY.
5. APPROVED EXCEPTIONS FOR DEPTH REQUIREMENTS MUST BE MADE BY A SUPERVISOR AND BE IN ACCORDANCE WITH RRC REGULATIONS & O&M PROCEDURES. (MINIMUM 2' IF COVER)

TRENCHING AND BACKFILL DETAIL OF PLASTIC GAS MAIN CONSTRUCTION

NOT TO SCALE

FOR PLASTIC PIPE ONLY 6" AND SMALLER				
	SUBDIVISION	ROW	TXDOT ROW	
			EOP>10'	_ EOP<10'
A	36"	36"	48"	60"

NOTES:
1. JOINTS TRENCH WITH ELECTRIC UTILITY.
2. DEPTHS FOR ROAD CROSSING ARE MINIMUM AND SHOULD BE EVALUATED FOR CONFLICTS WITH OTHER UTILITIES.
3. TXDOT ROW DEPTHS SHOWN ARE TRENCH INSTALLATIONS FROM THE EDGE OF PAVEMENT (EOP) OF STATE ROAD.
4. DIMENSIONS SHOWN FOR PROJECTS IN COSA AND COUNTY ROW SHOULD BE VERIFIED WITH JURISDICTIONAL ENTITY.
5. SUBDIVISION- INSTALLATION FOR SERVICES FOR NEW SUBDIVISIONS.

RESIDENTIAL SERVICE JOINT TRENCH & BACKFILL

NOT TO SCALE

CPS NOTES:
1. WHEN TRENCHING IS IN FRONT LOT CONSTRUCTION WATER & SEWER SERVICES ARE NOT TO BE PLACED UNTIL CPS ENERGY FACILITIES ARE INSTALLED WHEN TRENCHING IN RIGHT OF WAY. WATER & SEWER SERVICES WILL NEED TO BE ROLLED BACK & OUT OF CPS ENERGY TRENCH LINE.
2. WHEN CPS ENERGY AND WATER SERVICES ARE CROSSING THE STREET CPS ENERGY REQUITES A MINIMUM OF 6' OF HORIZONTAL SEPARATION (WHEN PARALLEL) AND 1' VERTICAL SEPARATION (WHEN CROSSING) TO AVOID CONFLICTS.

DRIVEWAY NOTE:
DRIVEWAYS SHOWN ON THIS PLAN ARE FOR THE SOLE PURPOSE OF INDICATION A POTENTIAL CONFLICT WITH CURB RAMP, DRAINAGE INFRASTRUCTURE, OR OTHER CONFLICT. DRIVEWAY LOCATION IS SUBJECT TO CHANGE BASED ON HOME SELECTION AND FINAL LOT DESIGN.

MEDINA COUNTY ROW NOTES:
A MEDINA COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN MEDINA COUNTY ROW. CONTRACTOR SHALL COORDINATE A TRAFFIC CONTROL PLAN FOR ALL WORK WITHIN THE ROW. ADDITIONAL WARNING SIGNS MAY BE RECOMMENDED BY THE ENGINEER ONCE THE ROADWAYS ARE CONSTRUCTED.

FINISHED FLOOR NOTES:
1. THE FINISHED FLOOR ELEVATIONS (FF) REPRESENT THE MINIMUM POSSIBLE FLOOR ELEVATION TO PROVIDE SANITARY SEWER SERVICE TO EACH LOT. ACTUAL FF FOR EACH LOT ARE TO BE DETERMINED BY THE BUILDER AND SHALL TAKE INTO CONSIDERATION AS-BUILT FOR FINAL SEWER SERVICES AND ACTUAL LATERAL PLACEMENT. IT IS THE BUILDER'S SOLE RESPONSIBILITY TO DETERMINE ACTUAL FINISHED FLOOR ELEVATIONS FOR EACH LOT PRIOR TO THE START OF THE HOME FOUNDATION CONSTRUCTION TAKING INTO CONSIDERATION SITE DRAINAGE, STREET ACCESS AND SANITARY SEWER SERVICE ELEVATION.
2. THE MINIMUM SANITARY SEWER LATERAL GRADES WERE BASED UPON THE MINIMUM FINISHED FLOOR ELEVATIONS FOR THE LOTS LOCATED ON THE DOWNHILL SIDES OF THE PROPOSED ROADWAYS.

DEVELOPER'S NAME: *CONTINENTAL HOMES OF TEXAS, L.P.*
ADDRESS: *5419 N. LOOP 1604 EAST*
CITY: *SAN ANTONIO* STATE: *TEXAS* ZIP: *78247*
PHONE #: *(210) 496-2668* FAX #: *(210) 496-2668*
SAWS BLOCK MAP #: *062586, 062588* TOTAL EDU'S: *89* TOTAL ACREAGE: *20.795*
TOTAL LINEAR FOOTAGE OF PIPE: *3,625 L.F. (8")* DOC. NO: *(MEDINA COUNTY)*
NUMBER OF LOTS: *89* SAWS JOB NO: *24-1513*

REV	DATE	DESCRIPTION

DOC. # XXXXXXXXXXX

REDBIRD RANCH UNIT 2M-2

8/21/2024
STATE OF TEXAS
VANCE L. WEYNAND
99269
LICENSED
PROFESSIONAL ENGINEER
Vance Weynand

DHI Engineering, LLC.
5419 N. LOOP 1604 EAST
SAN ANTONIO, TX 78247
(210) 496-2668 (210) 496-2668
TBPE REG. NO. F-19561

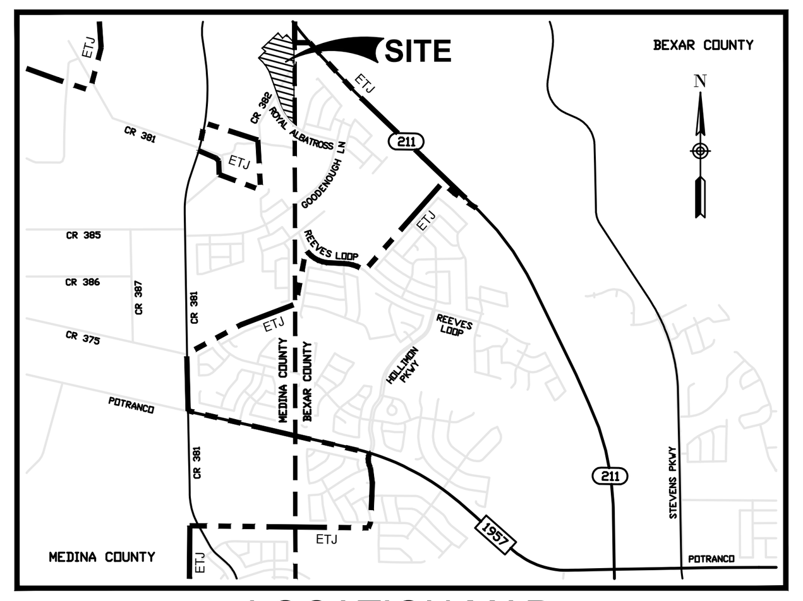
DHI

REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX

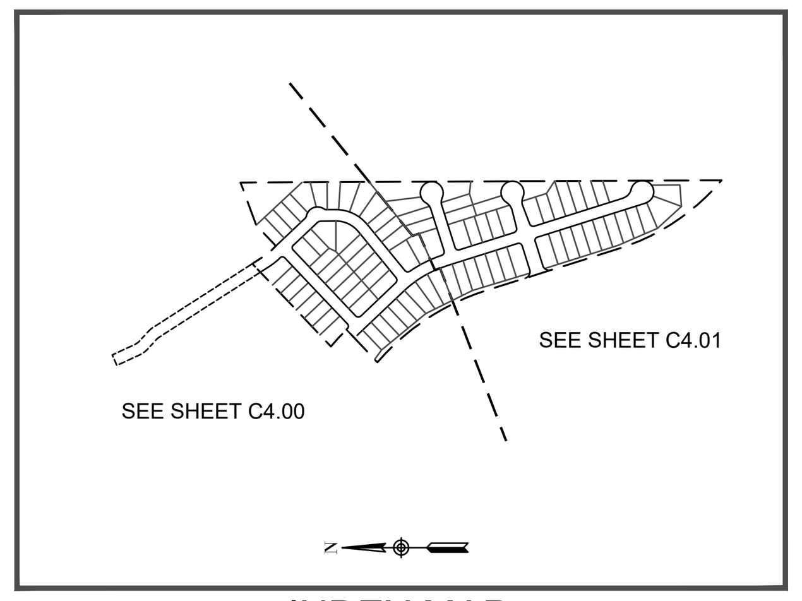
OVERALL UTILITY PLAN

DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	8/21/2024
JOB NO.:	05000-200
SHEET NO.	C4.00

Date: Aug 21, 2024, 2:04pm User ID: SQVin File: E:_PROJECTS\05000\200\900 - Design\100 - Sheets\C4.01 OVERALL UTILITY PLAN.dwg



LOCATION MAP
NOT-TO-SCALE



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LEGEND (UTILITY)

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	PROPOSED MANHOLE
	EXISTING MANHOLE
	FIRE HYDRANT
	PROPOSED WYE & LATERAL
	SINGLE WATER SERVICE
	DUEL WATER SERVICE
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GETCTV	GAS, ELECTRIC, TELEPHONE & CABLE TELEVISION EASEMENT
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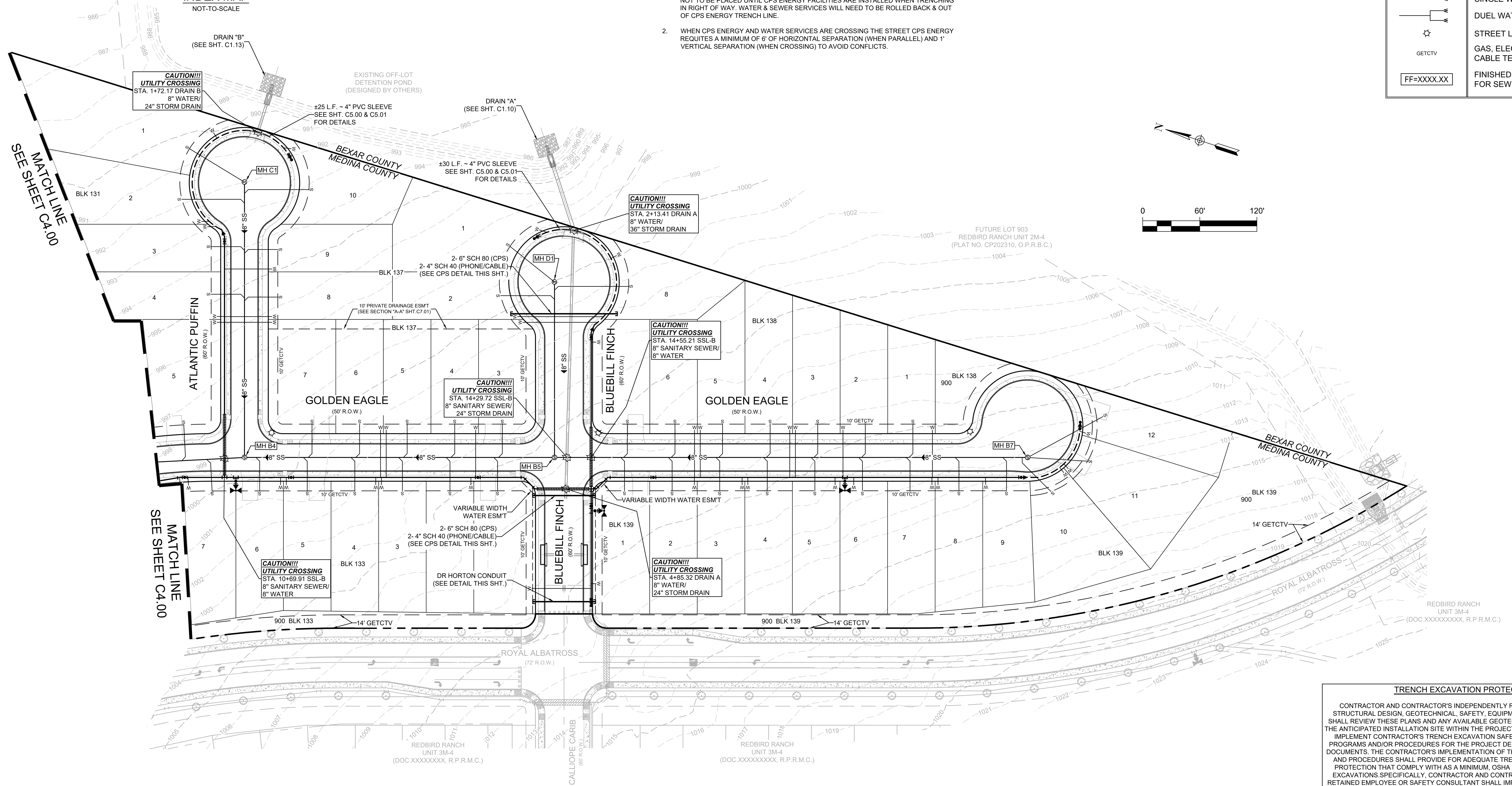
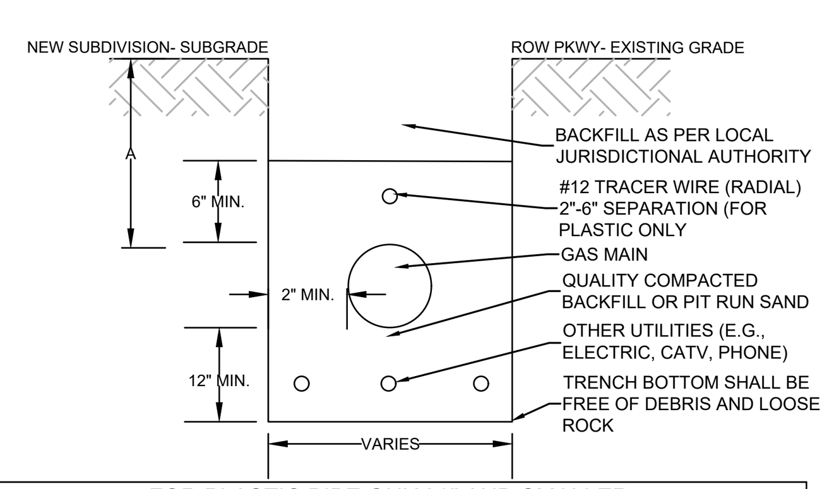


0 60' 120'



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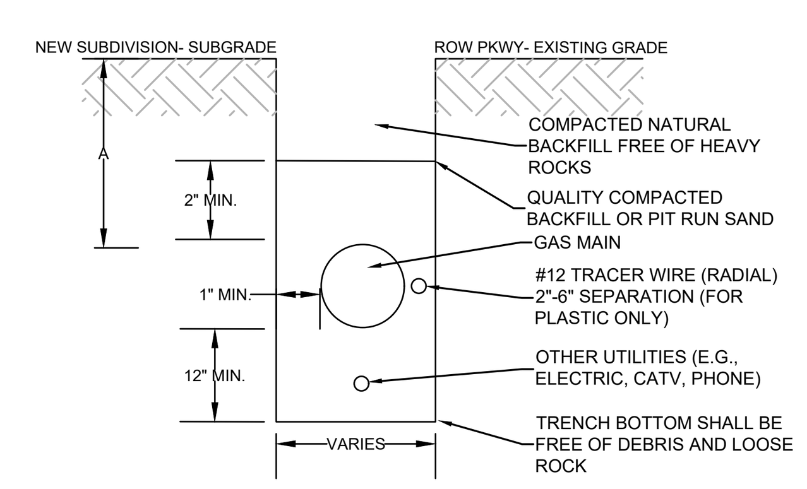
TRENCHING AND BACKFILL DETAIL OF PLASTIC GAS MAIN CONSTRUCTION

NOT TO SCALE



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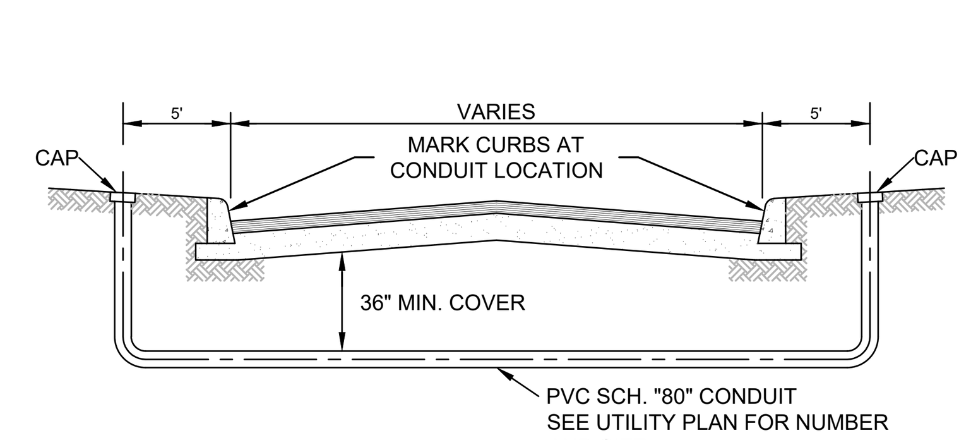
RESIDENTIAL SERVICE JOINT TRENCH & BACKFILL

NOT TO SCALE



TYPICAL CONDUIT DETAIL (CPS)

NOT TO SCALE

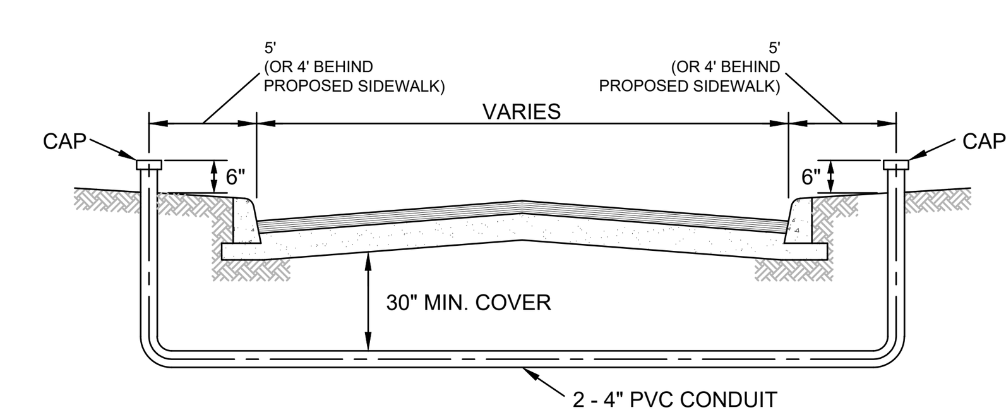
NOTES:

CONTRACTOR SHALL INSTALL PERMANENT MARKERS IN PROPOSED CURB WHERE CONDUIT CROSS THE ROADWAY (BOTH SIDES).

ALL CONDUIT SHALL BE P.V.C. SCHEDULE 80 WITH MINIMUM BURY OF 30 INCHES.

ALL CONDUIT SHALL BE EXTENDED BEHIND CURBS OR PROPOSED SIDEWALKS A MINIMUM OF 3 FEET AND CAPPED FOR FUTURE USE.

A NYLON " PULL STRING" SHALL BE LEFT IN PLACE IN ALL CONDUITS AFTER FINAL ACCEPTANCE OF CONDUIT WORK. THE NYLON "PULL STRING" SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100 LBS.



TYPICAL CONDUIT DETAIL (D.R. HORTON)

NOT TO SCALE

NOTE:

IN ADDITION TO ANY CONDUIT REQUIRED FOR CPS, AT&T, AND/OR SPECTRUM CABLE UTILITY CROSSINGS, D.R. HORTON REQUIRES THE FOLLOWING CONDUITS TO BE INSTALLED AT ALL STREET CROSSINGS:

1. 2 ~ 4" P.V.C. SCHEDULE 40 CONDUITS, GRAY WITH LONG SWEEPS, UNLESS OTHERWISE NOTED.

TRENCH EXCAVATION PROTECTION

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DEVELOPER'S NAME: CONTINENTAL HOMES OF TEXAS, L.P.
ADDRESS: 5419 N. LOOP 1604 EAST
CITY: SAN ANTONIO STATE: TEXAS ZIP: 78247
PHONE # (210) 496-2668 FAX # (210) 496-2668
SAWS BLOCK MAP # 062586 062588 TOTAL EDU'S: 89 TOTAL ACREAGE: 20.795
TOTAL LINEAR FOOTAGE OF PIPE: 3,625 L.F. (8") DOC. NO: (MEDINA COUNTY)
NUMBER OF LOTS: 89 SAWS JOB NO: 24-1513

REV	DATE	DESCRIPTION

8/21/2024
STATE OF TEXAS
VANCE L. WEYNAND
99269
LICENSED PROFESSIONAL ENGINEER
Vance Weynand

DHI Engineering, LLC.
5419 N. LOOP 1604 EAST
SAN ANTONIO, TX 78247
(210) 496-2668 | dhiengineering.com
TBPE REG. NO. F-19561
DHI

REDBIRD RANCH UNIT 2M-2

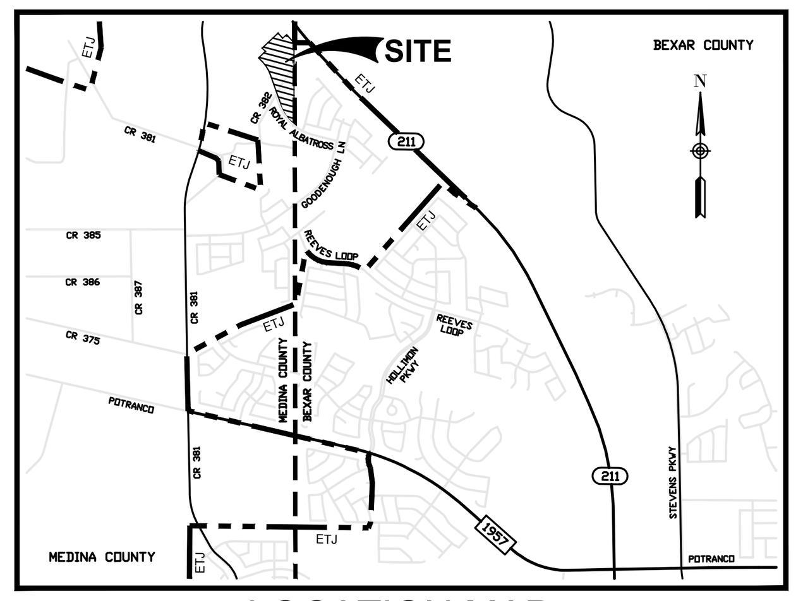
SAN ANTONIO, TX

OVERALL UTILITY PLAN

DOC. # XXXXXXXXXXX

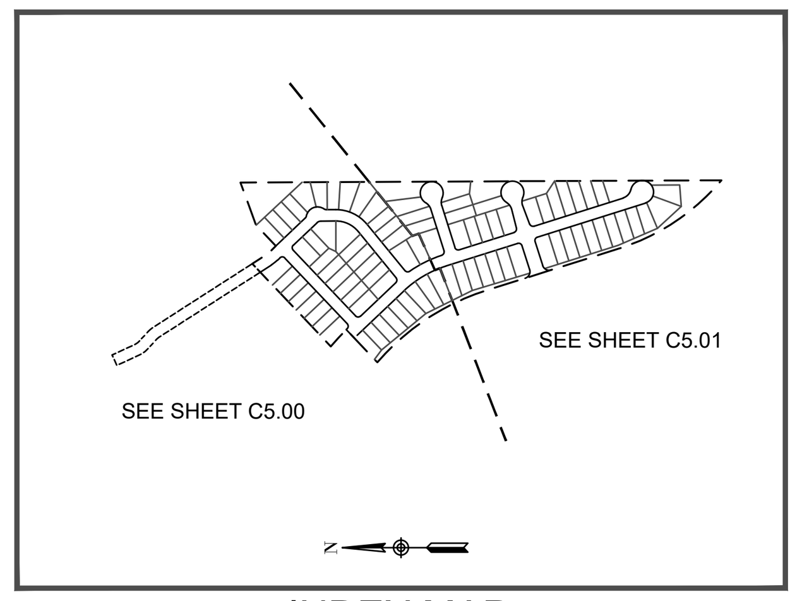
REDBIRD RANCH UNIT 2M-2

DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	8/21/2024
JOB NO.:	05000-200
SHEET NO.	C4.01



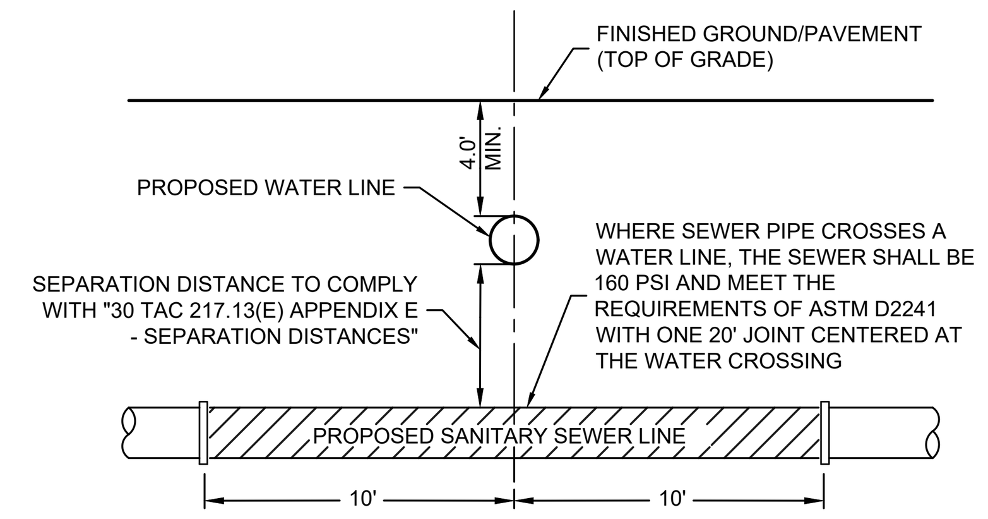
LOCATION MAP

NOT-TO-SCALE



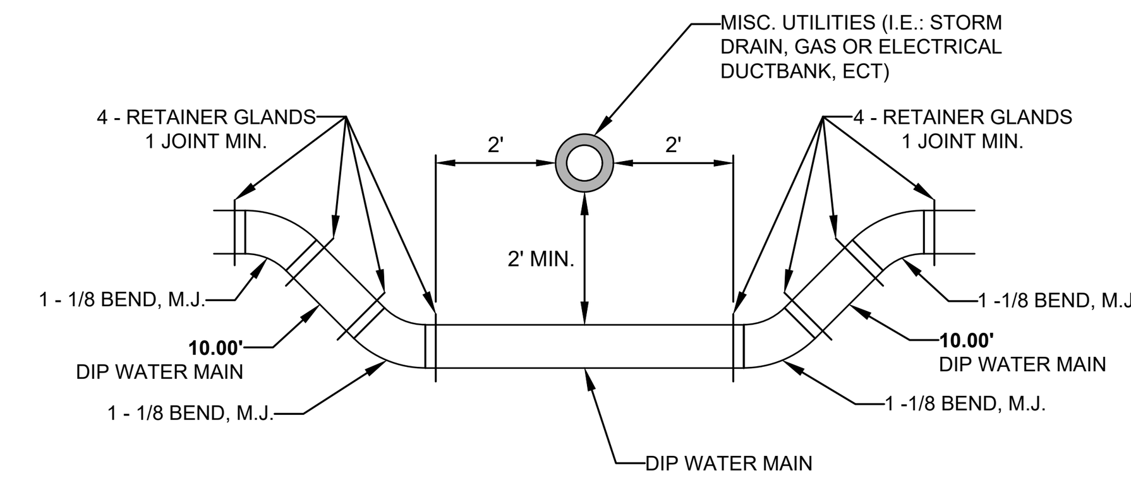
INDEX MAP

NOT-TO-SCALE



TYPICAL SANITARY SEWER/WATER CROSSING DETAIL

NOT-TO-SCALE



TYPICAL UTILITIES/WATER CROSSING DETAIL

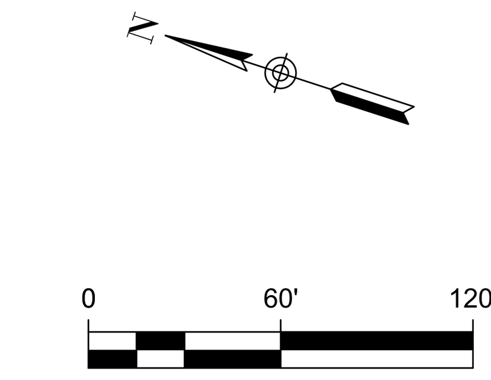
NOT TO SCALE

TRENCH EXCAVATION PROTECTION

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

CAUTION!!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO : WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

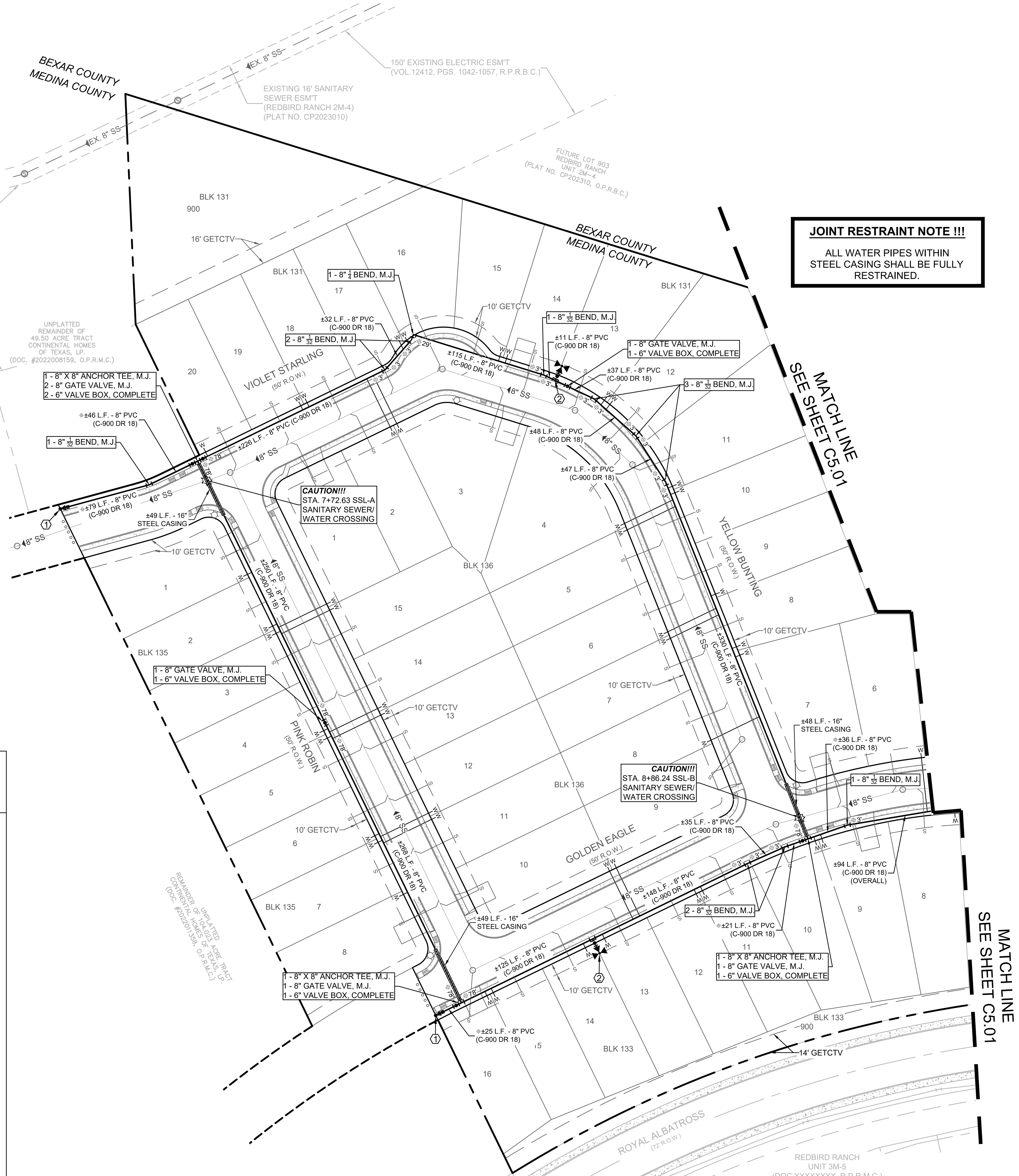


LEGEND (WATER DISTRIBUTION)

- PROJECT LIMITS
- PROPOSED WATER
- PROPOSED SEWER
- EXISTING WATER
- EXISTING SEWER
- MANHOLE
- FIRE HYDRANT
- PROPOSED WYE & LATERAL
- PROPOSED 3/4" SINGLE SERVICE WITH 5/8" METER
- PROPOSED 1" DUAL SERVICE WITH 5/8" METER
- STREET LIGHT
- GETCTV — GAS, ELECTRIC, TELEPHONE & CABLE TELEVISION EASEMENT
- JOINT RESTRAINT

JOINT RESTRAINT NOTE !!!

ALL WATER PIPES WITHIN STEEL CASING SHALL BE FULLY RESTRAINED.



ESTIMATED WATER QUANTITIES

ITEM	DESCRIPTION	UNIT	QUANTITY
1	TRENCH PROTECTION	LF	3780
2	8" PIPE, D.I. OR P.V.C. C-900	LF	3291
3	DUAL WATER SERVICE – SHORT	EA	20
4	DUAL WATER SERVICE – LONG	EA	12
5	SINGLE WATER SERVICE – SHORT	EA	19
6	DUAL WATER SERVICE – LONG	EA	6
7	8" GATE VALVE MJ WITH BOX	EA	14
8	METER BOX	EA	89
9	STANDARD FIRE HYDRANT	EA	5
10	D.I. FITTINGS	TON	1.4
11	TIE-IN OR TAPPING SLEEVE & VALVE	EA	1
12	HYDROSTATIC TEST	EA	1
13	2" BLOWOFF, TEMPORARY	EA	2
14	2" BLOWOFF, PERMANENT	EA	3
15	16" STEEL CASING	LF	327
16	JOINT RESTRAINTS	LS	1
17	2" HDPE DR9 200 PSI	LF	489
18	TEST STATION	EA	5
19	4" PVC SLEEVE	LF	55

FIRE FLOW NOTE:

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PRESSURE REDUCING VALVE NOTE:

PRESSURE REDUCING VALVE TO BE INSTALLED ON CUSTOMER'S SIDE OF METER BY HOMEBUILDER.

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①	FOR CHLORINATION INJECTION • 2- 1" CORPORATION STOP, C.C.XI.P • 1- 1" COPPER TUBING, CUT AS REQUITED • 2- 1" COMP. 1 1/4 COUPLING, CORP. STOP • 2- 1 1/4 THD. SOLID CAPS, THR. UPON SUCCESSFUL HYDROSTATIC TESTING, DISINFECTION OF THE NEW MAIN AND ACCEPTANCE BY YANCEY W.S.C., THE CONSTRACTOR SHALL TIE INTO EXISTING 8" WATER MAIN. 1- 2" TEMPORARY BLOWOFF ASSEMBLY (SEE YANCEY DETAIL DWG. W-31 SHEET C5.11)
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③	1- 2" PERMANENT BLOWOFF ASSEMBLY (SEE YANCEY DETAIL DWG. W-32 SHEET C5.11)

REV	DATE	DESCRIPTION

DOC. # XXXXXXXXXXX

REDBIRD RANCH UNIT 2M-2

8/21/2024

STATE OF TEXAS
VANCE L. WEYNAND
99269
LICENSED
PROFESSIONAL ENGINEER

Vance Weynand

DHI Engineering, LLC.
5419 N. LOOP 1604 EAST
SAN ANTONIO, TX 78247
(210) 496-2668 | dhiengineering.com
TBPE REG. NO. F-19561

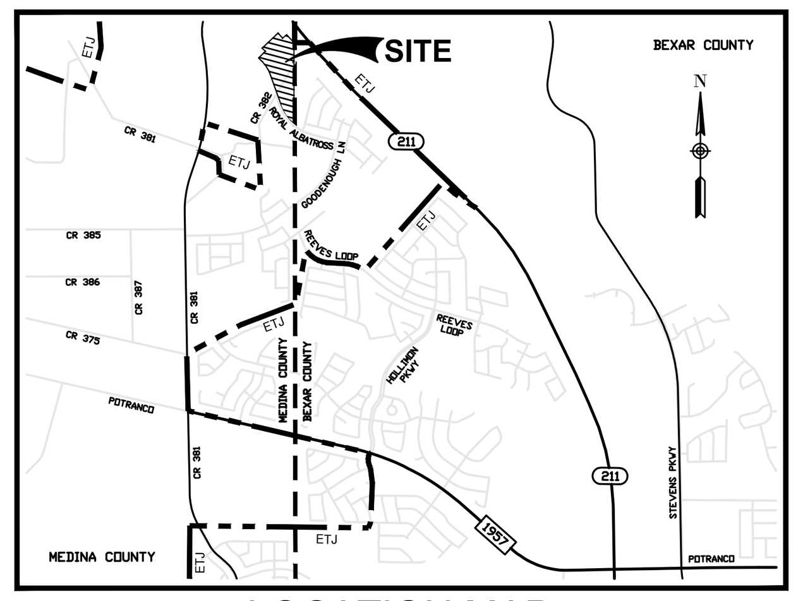
DHI

REDBIRD RANCH UNIT 2M-2

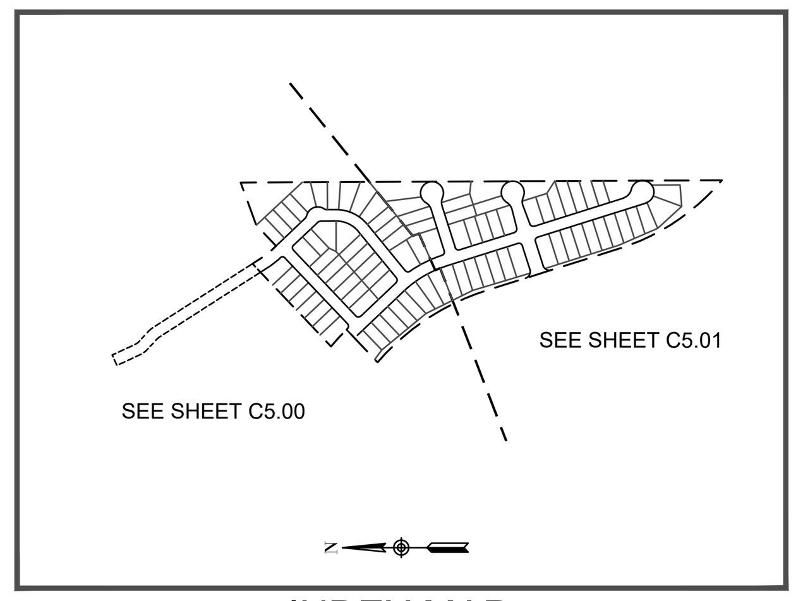
SAN ANTONIO, TX

WATER DISTRIBUTION PLAN

DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	8/21/2024
JOB NO.:	05000-200
SHEET NO.	C5.00



LOCATION MAP
NOT-TO-SCALE



INDEX MAP
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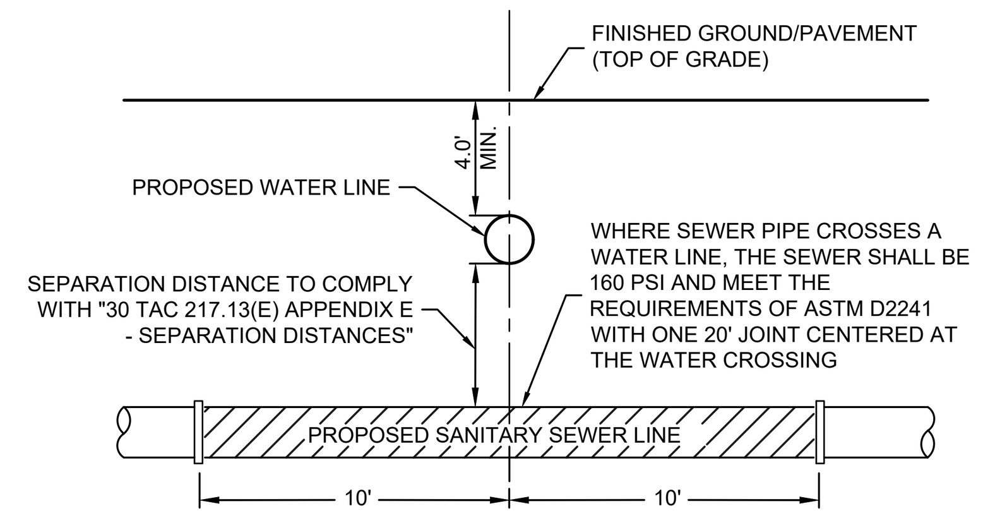

TYPICAL SANITARY SEWER/WATER CROSSING DETAIL
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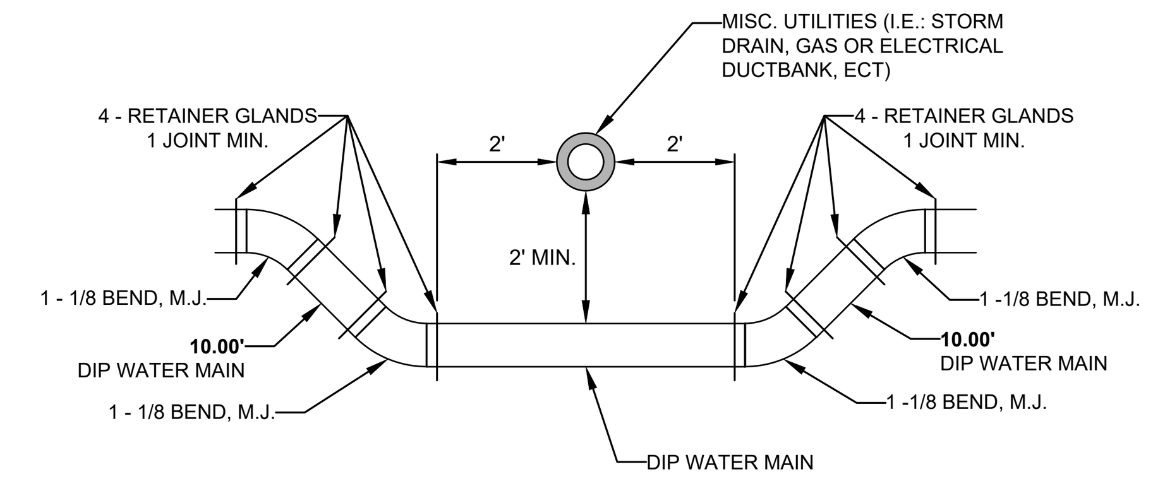

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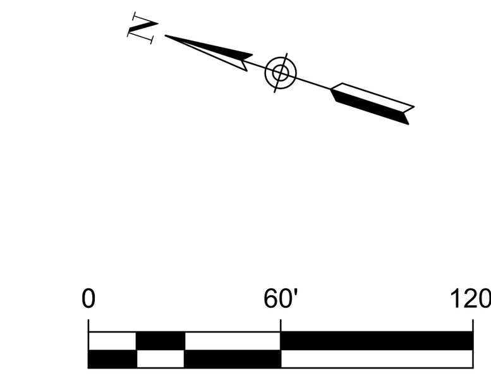

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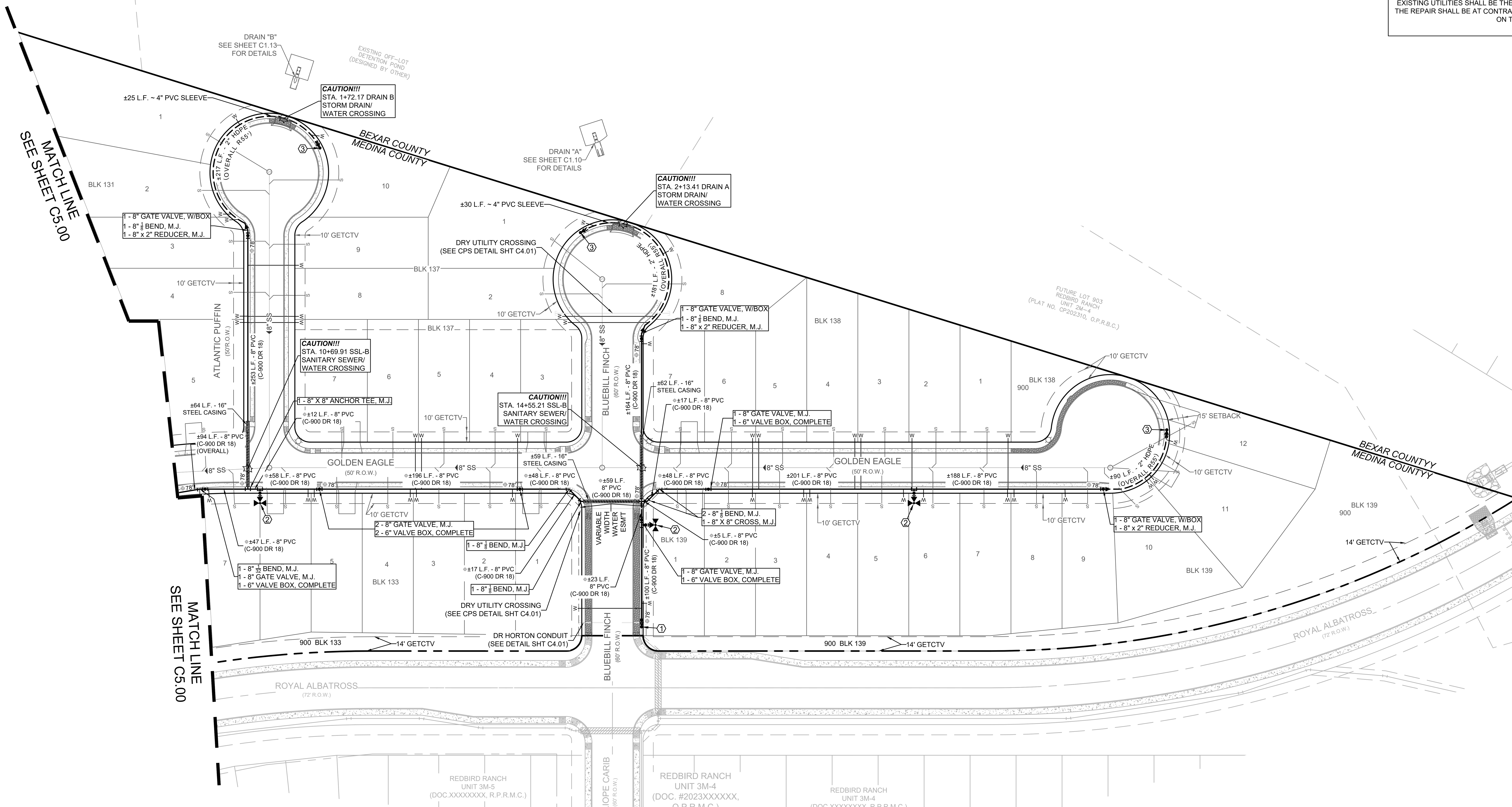

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REV	DATE	DESCRIPTION

8/21/2024
STATE OF TEXAS
VANCE L. WEYNAND
99269
LICENSED
PROFESSIONAL ENGINEER
Vance Weynand

DHI Engineering, LLC.
5419 N. LOOP 1604 EAST
SAN ANTONIO, TX 78247
(210) 496-2668 | dhiengineering.com
TBPE REG. NO. F-19561

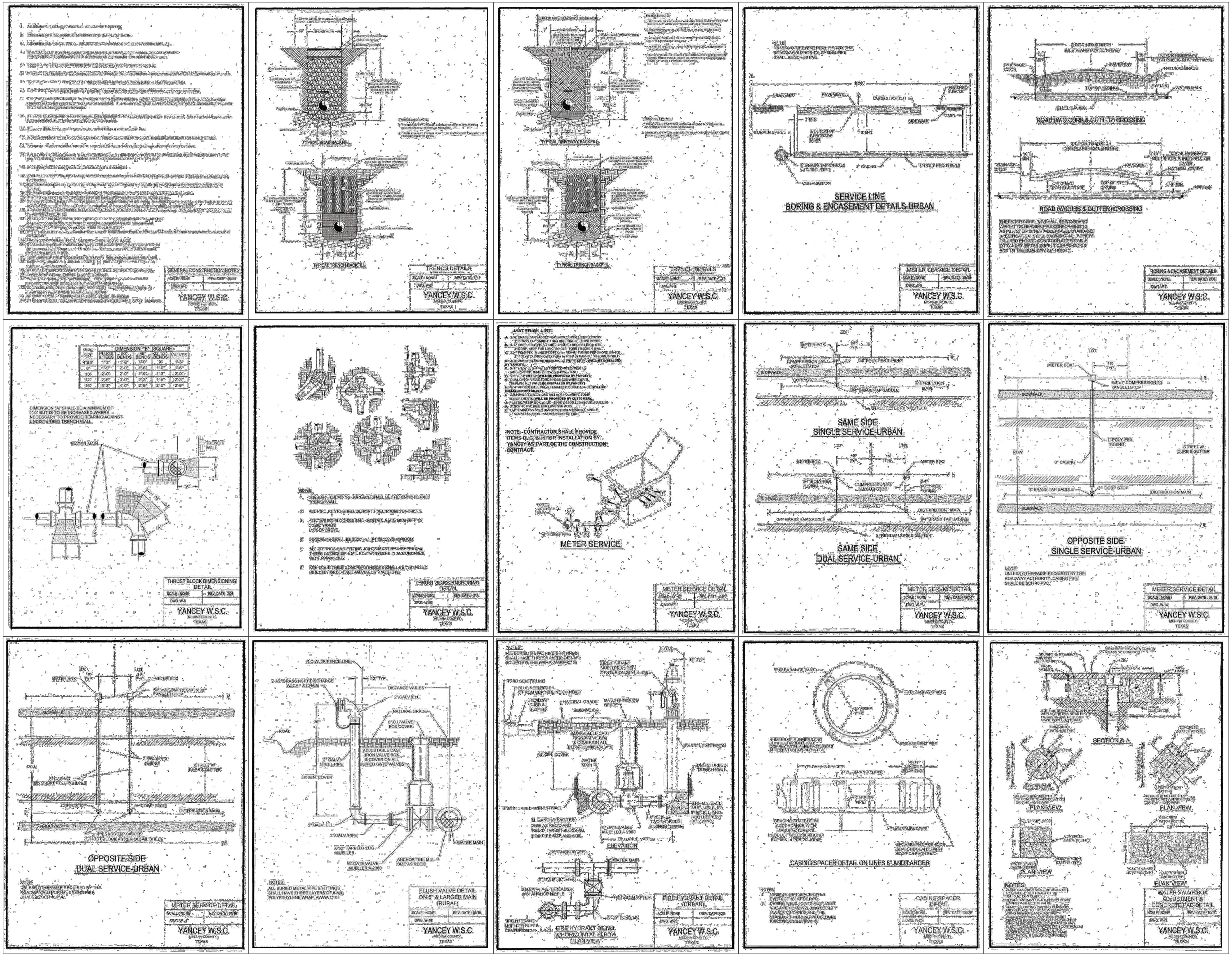
DHI

REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX

WATER DISTRIBUTION PLAN

DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	8/21/2024
JOB NO.:	05000-200
SHEET NO.	C5.01

REDBIRD RANCH UNIT 2M-2 DOC. # XXXXXXXXXXXXX



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SAN ANTONIO, TX

WATER DISTRIBUTION NOTES & DETAILS

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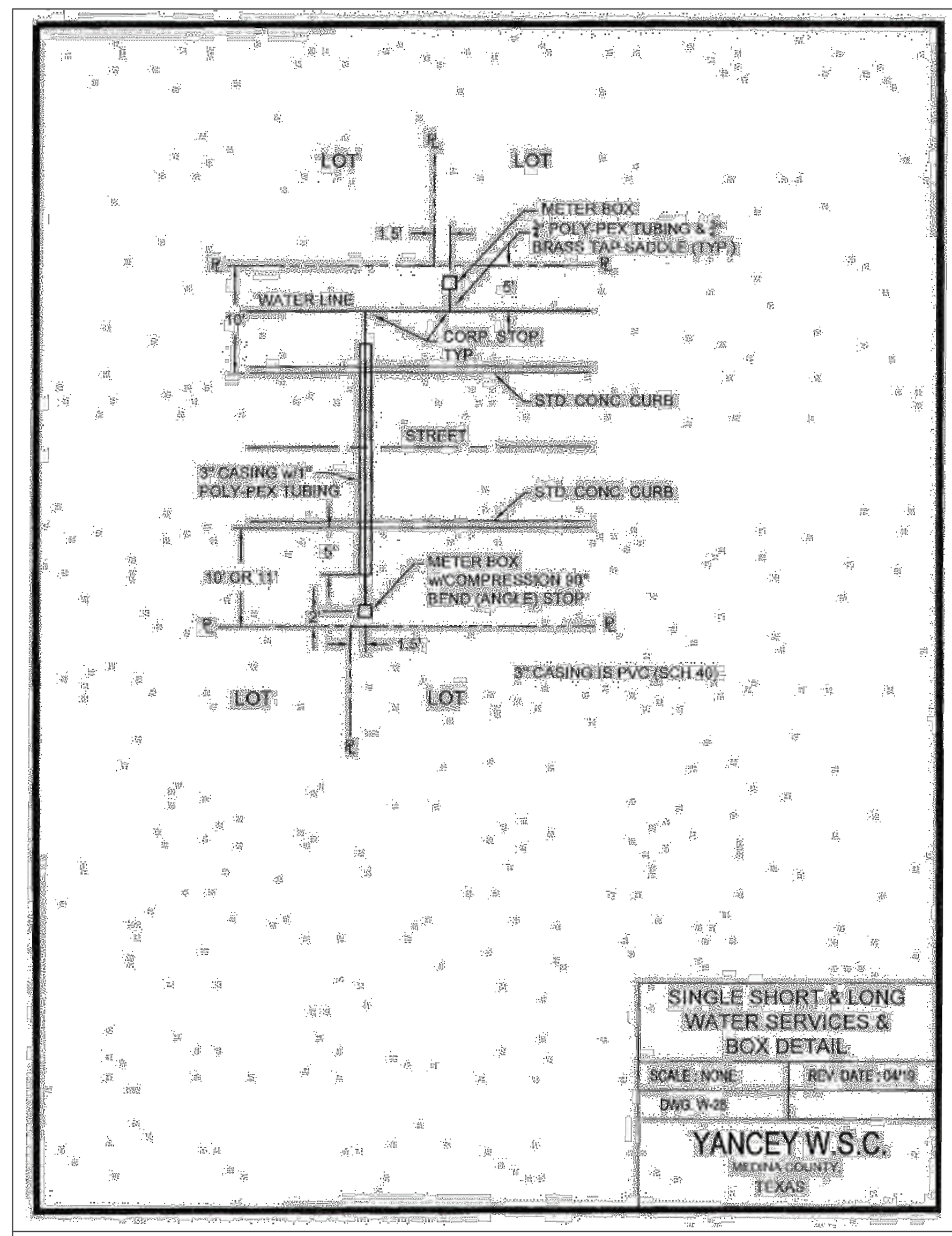
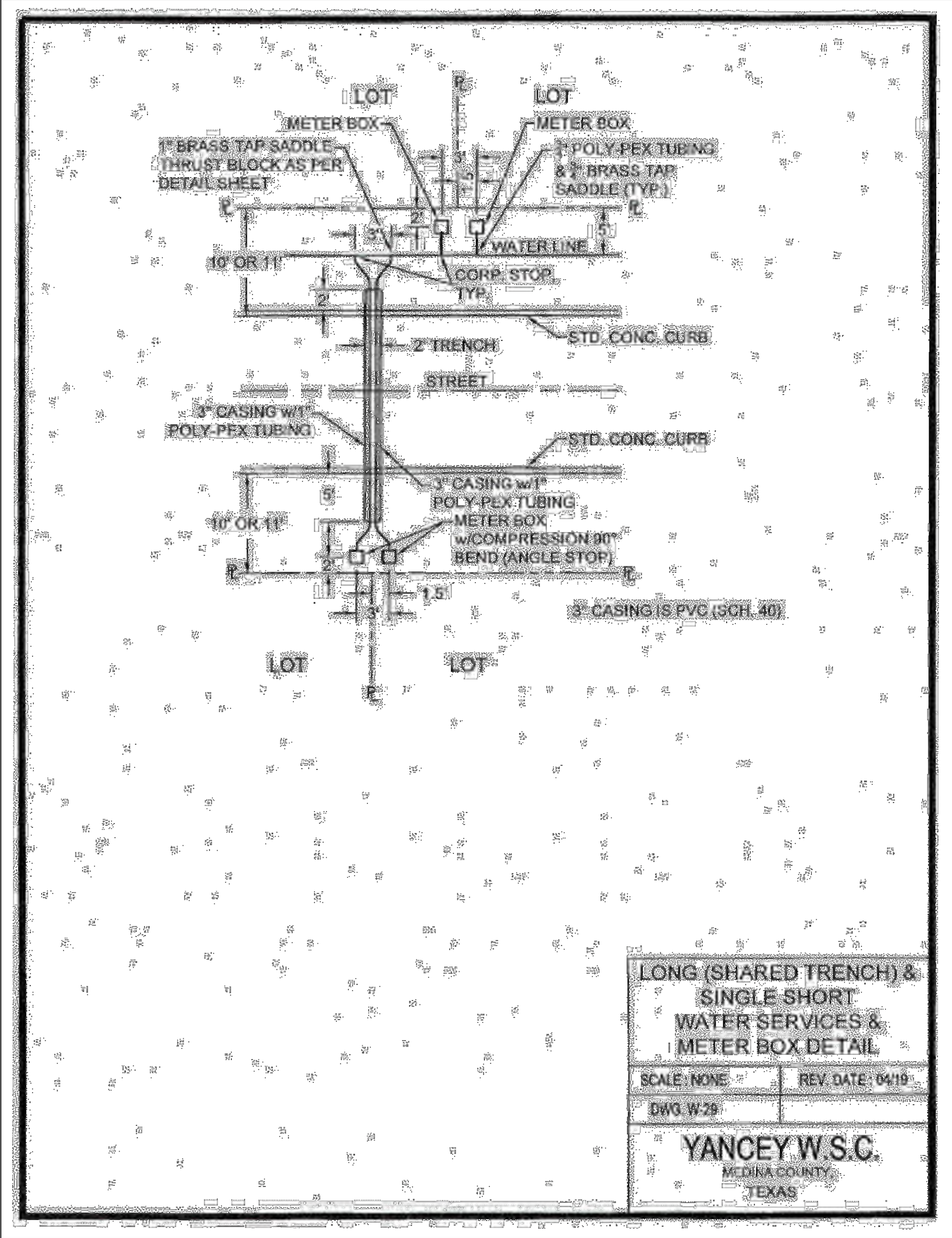
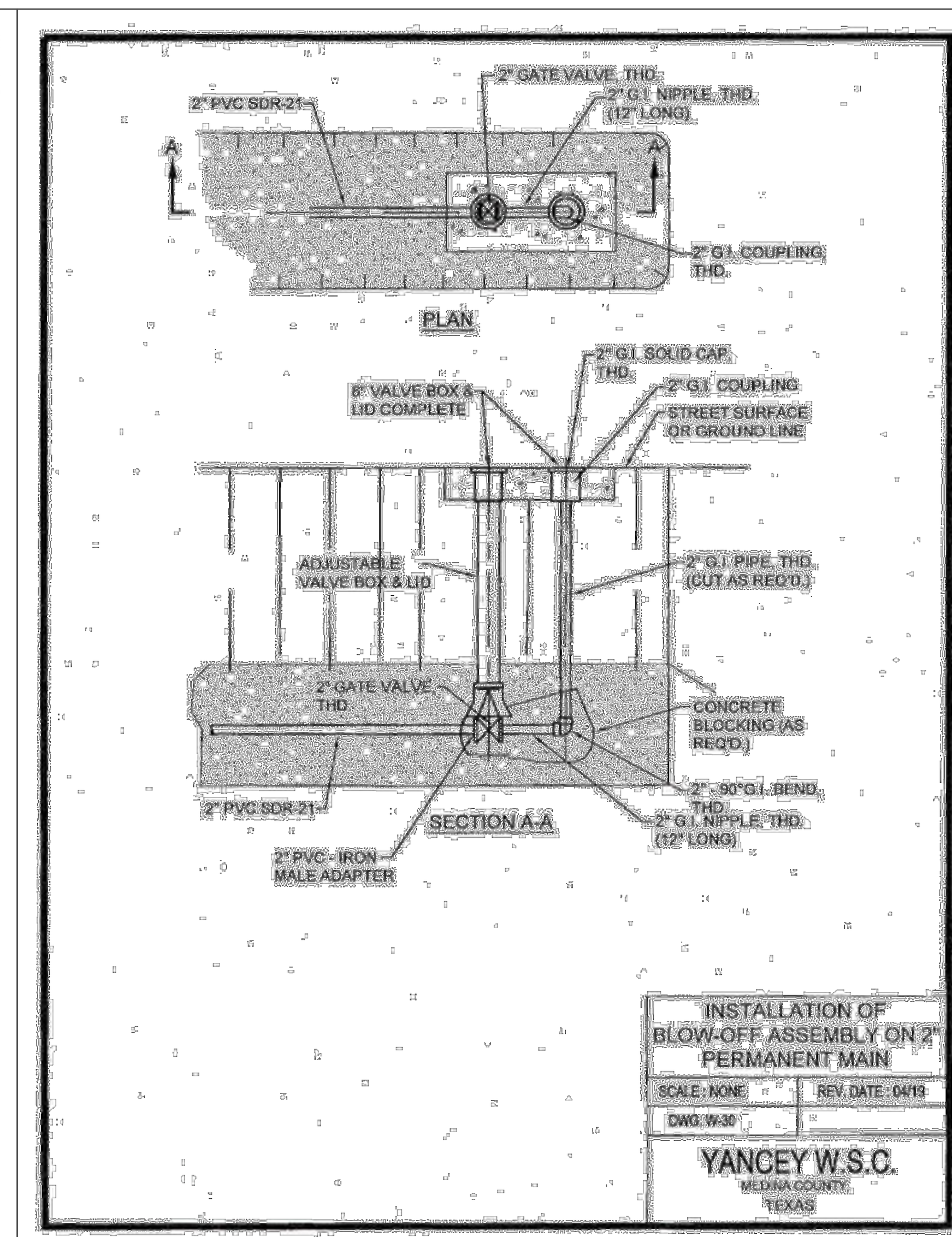
DATE:	8/21/2024
JOB NO.:	05000-200
SHEET NO.	C5.10

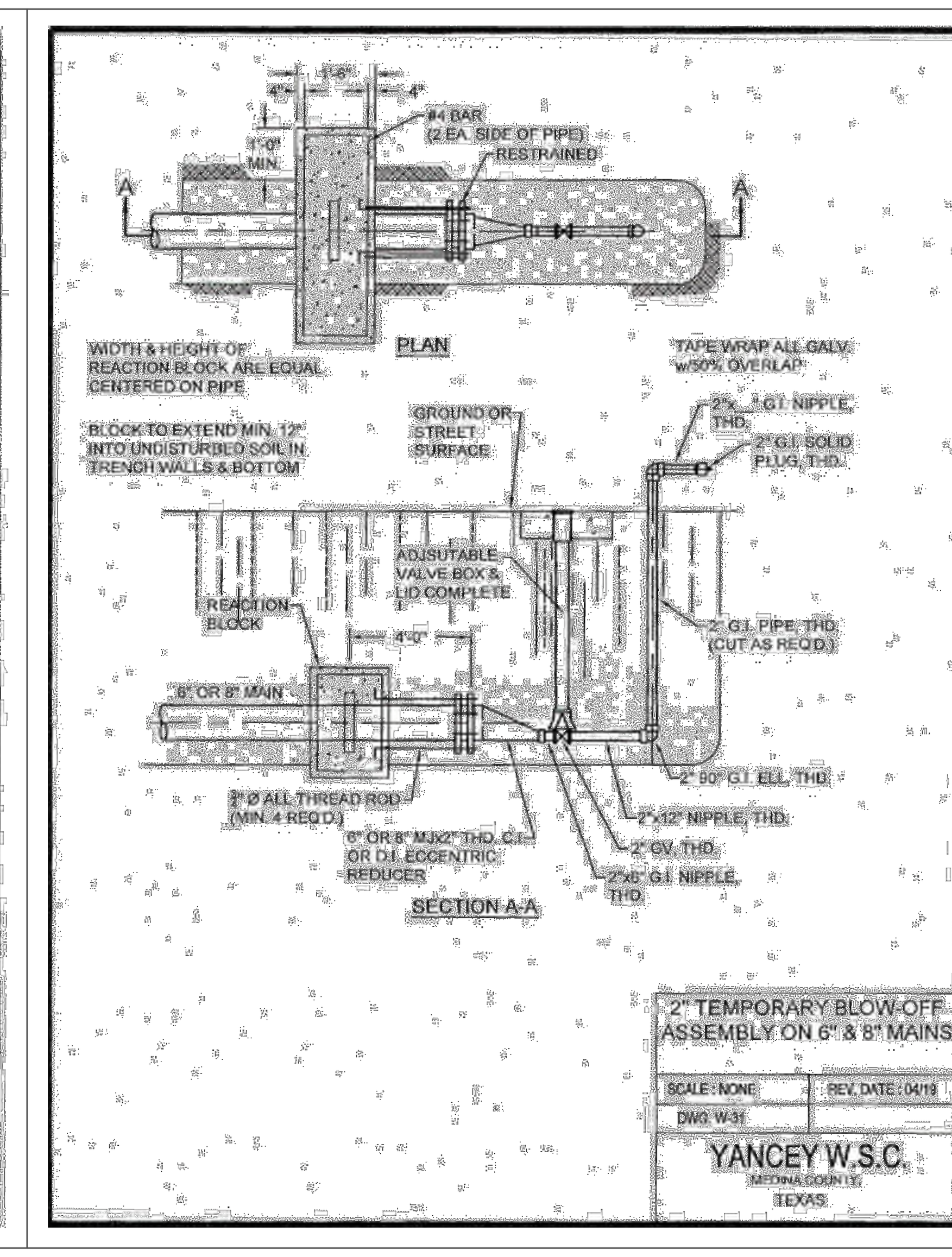
REDBIRD RANCH UNIT 2M-2 DOC. # XXXXXXXXXXXXX

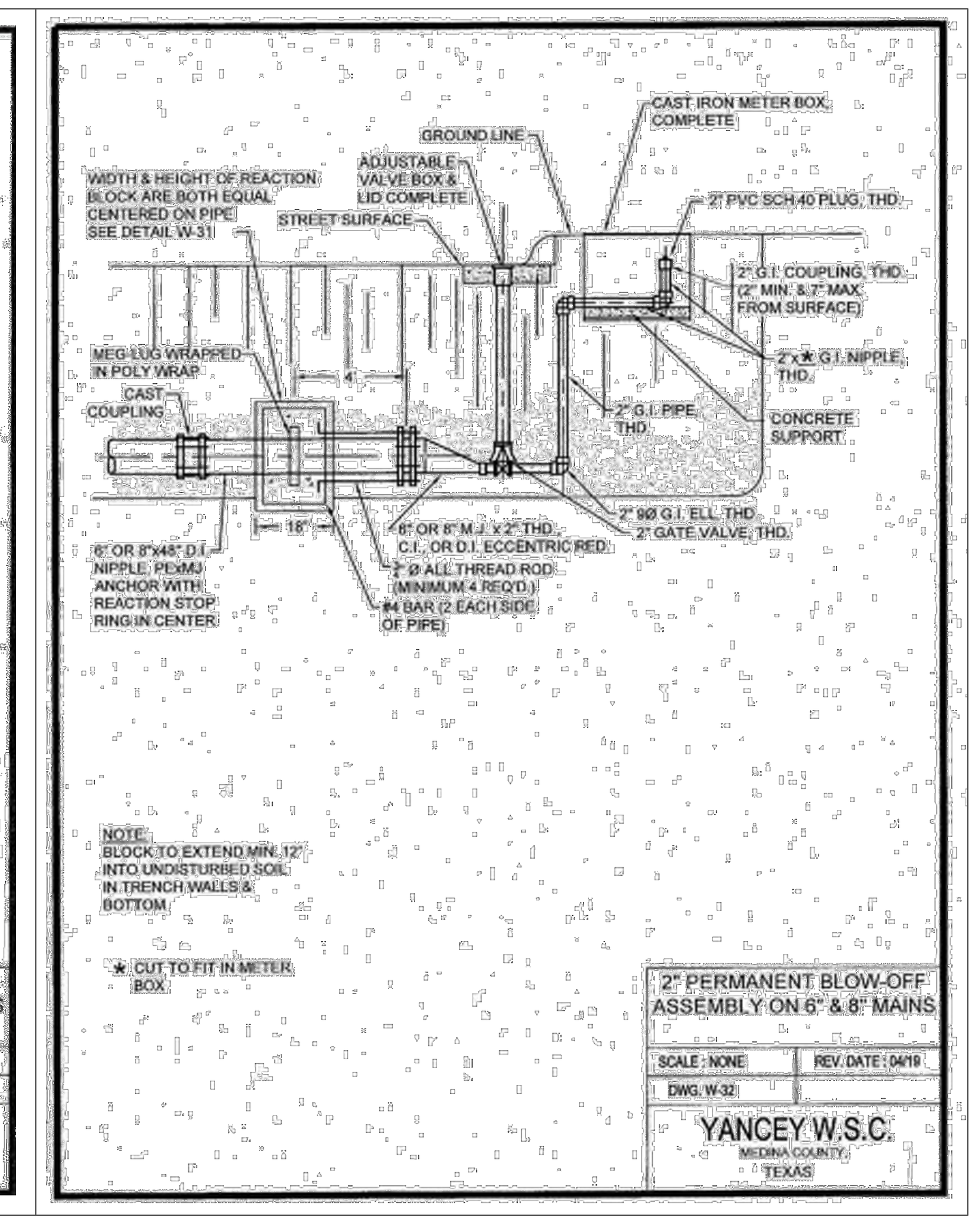
Date: Aug 21, 2024, 2:19pm User ID: SQVu File: E:_PROJECT\05000\200\900 - Design\930 - Sheets\C5.10 WATER DISTRIBUTION NOTES & DETAILS.dwg

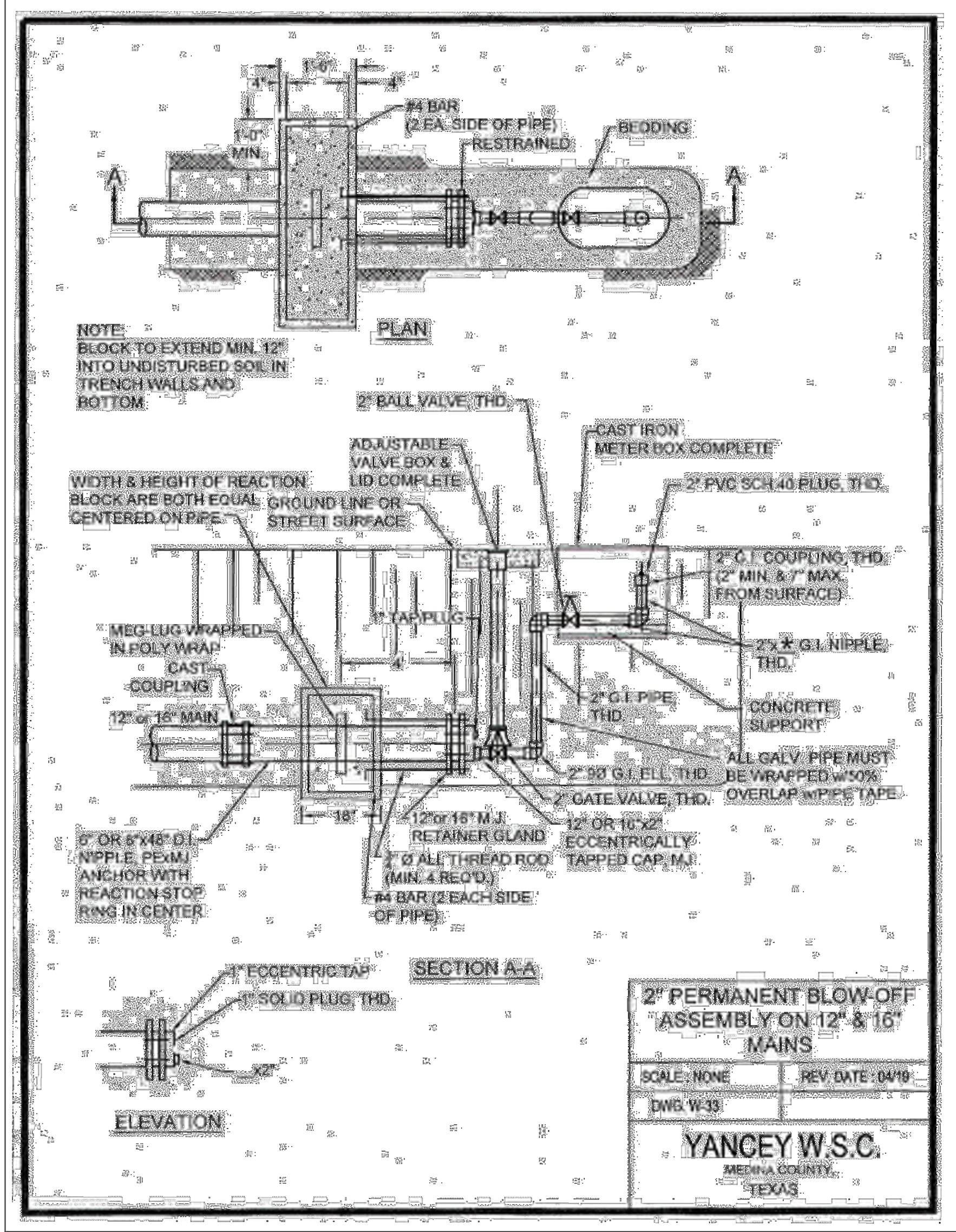








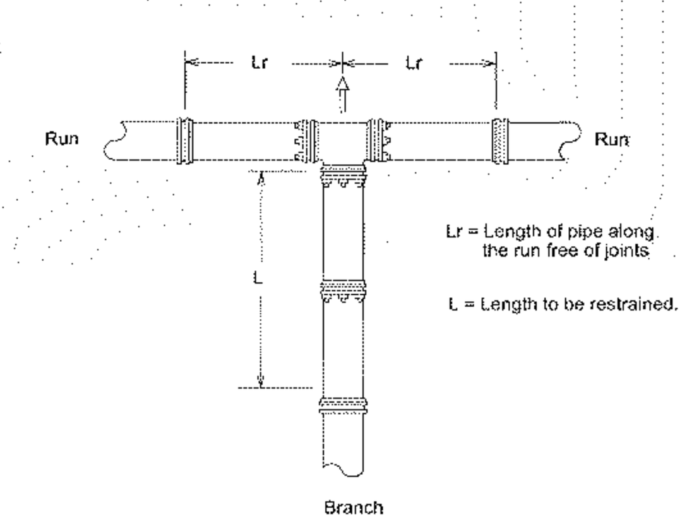




RESTRAINT LENGTH DESIGN

RESTRAINT LENGTH WERE CALCULATED USING EBAA RESTRAINT DESIGN CALCULATION SOFTWARE v7.1.3
THE FOLLOWING PARAMETERS WERE USED:

SOIL TYPE .... CH, Gran. Fill
TRENCH TYPE 5
SAFETY FACTOR .... 1.5 to 1
DEPTH OF BURY 4
TEST PRESSURE .... 200 PSI



Lr = Length of pipe along the run free of joints.

L = Length to be restrained.

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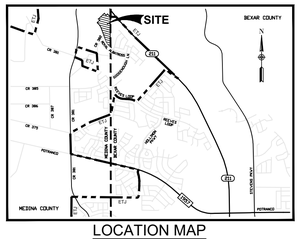
REDBIRD RANCH UNIT 2M-2 DOC. # XXXXXXXXXXXX

DHI ENGINEERING, LLC.



LOCATION MAP
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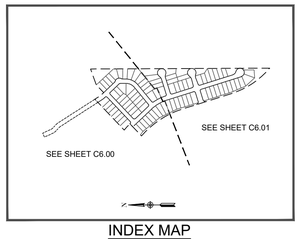

INDEX MAP
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LEGEND (SANITARY SEWER)

	PROJECT LIMITS
	OFFSITE EASEMENT
	PROPOSED WATER
	PROPOSED 2" HDPE WATER
	PROPOSED SEWER
	EXISTING WATER
EX. 8" SSL	EXISTING SANITARY SEWER LINE
S	PROPOSED MANHOLE
S	EXISTING MANHOLE
	FIRE HYDRANT
S	PROPOSED WYE & LATERAL
W	SINGLE WATER SERVICE
W	DUEL WATER SERVICE
	STREET LIGHT
GETCTV	GAS, ELECTRIC, TELEPHONE & CABLE TELEVISION EASEMENT
FF=XXXX.XX	FINISHED FLOOR ELEVATION FOR SEWER

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

FINISHED FLOOR NOTES:
1. THE FINISHED FLOOR ELEVATIONS (FF) REPRESENT THE MINIMUM POSSIBLE FLOOR ELEVATION TO PROVIDE SANITARY SEWER SERVICE TO EACH LOT. ACTUAL FF FOR EACH LOT ARE TO BE DETERMINED BY THE BUILDER AND SHALL TAKE INTO CONSIDERATION AS-BUILT FOR FINAL SEWER SERVICES AND ACTUAL LATERAL PLACEMENT. IT IS THE BUILDER'S SOLE RESPONSIBILITY TO DETERMINE ACTUAL FINISHED FLOOR ELEVATIONS FOR EACH LOT PRIOR TO THE START OF THE HOME FOUNDATION CONSTRUCTION TAKING INTO CONSIDERATION SITE DRAINAGE, STREET ACCESS AND SANITARY SEWER SERVICE ELEVATION.
2. THE MINIMUM SANITARY SEWER LATERAL GRADES WERE BASED UPON THE MINIMUM FINISHED FLOOR ELEVATIONS FOR THE LOTS LOCATED ON THE DOWNHILL SIDES OF THE PROPOSED ROADWAYS.

DRIVEWAY NOTE:
DRIVEWAYS SHOWN ON THIS PLAN ARE FOR THE SOLE PURPOSE OF INDICATION A POTENTIAL CONFLICT WITH CURB RAMP, DRAINAGE INFRASTRUCTURE, OR OTHER CONFLICT. DRIVEWAY LOCATION IS SUBJECT TO CHANGE BASED ON HOME SELECTION AND FINAL LOT DESIGN.

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SEWER: SAWS MEDIO CREEK WRC

DEVELOPER'S NAME:	CONTINENTAL HOMES OF TEXAS, L.P.
ADDRESS:	5419 N. LOOP 1604 EAST
CITY: SAN ANTONIO	STATE: TEXAS ZIP: 78247
PHONE #	(210) 496-2668 FAX # (210) 496-2668
SAWS BLOCK MAP # 062586 062588	TOTAL EDU'S: 89 TOTAL ACREAGE: 20.795
TOTAL LINEAR FOOTAGE OF PIPE:	3,625 L.F. (8") DOC. NO: (MEDINA COUNTY)
NUMBER OF LOTS: 89	SAWS JOB NO: 24-1513

REV	DATE	DESCRIPTION

DOC. # XXXXXXXXXXX

REDBIRD RANCH UNIT 2M-2

5/31/2024
STATE OF TEXAS
VANCE L. WEYNAND
99269
LICENSED
PROFESSIONAL ENGINEER
Vance Weynand

DHI Engineering, LLC.
5419 N. LOOP 1604 EAST
SAN ANTONIO, TX 78247
(210) 496-2668 (210) 496-2668
TBPE REG. NO. F-19561

DHI

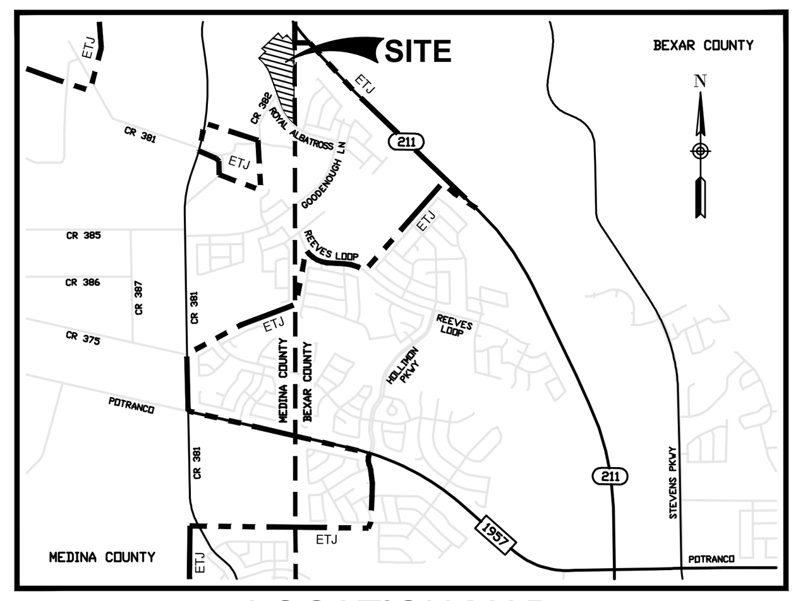
REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX

OVERALL SANITARY SEWER PLAN

DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	5/31/2024
JOB NO.:	05000-200
SHEET NO.	C6.00

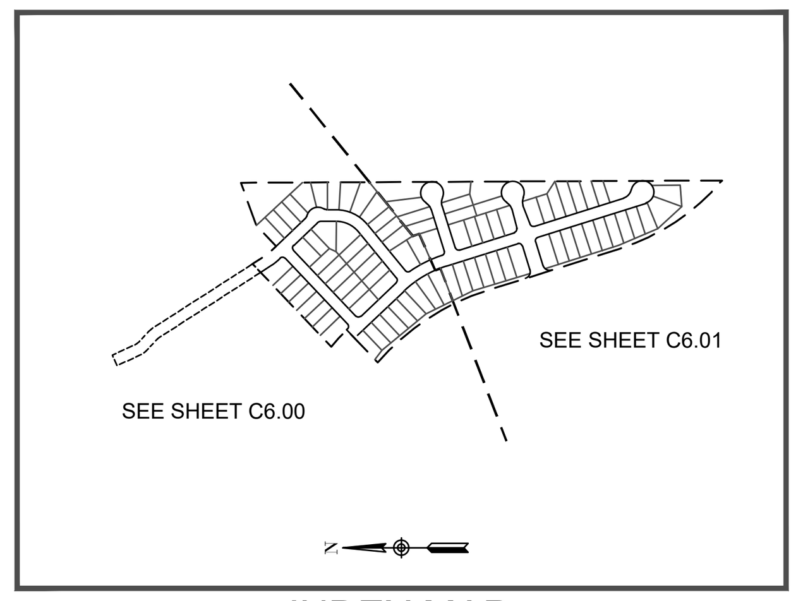
Date: May 31, 2024, 4:47pm User ID: JWSmith File: E:_PROJECTS\05000-200\900 - Design\930 - Sheets\C6.00 OVERALL SANITARY SEWER PLAN.dwg

DHI ENGINEERING, LLC.



LOCATION MAP

NOT-TO-SCALE



INDEX MAP

NOT-TO-SCALE

TRENCH EXCAVATION PROTECTION

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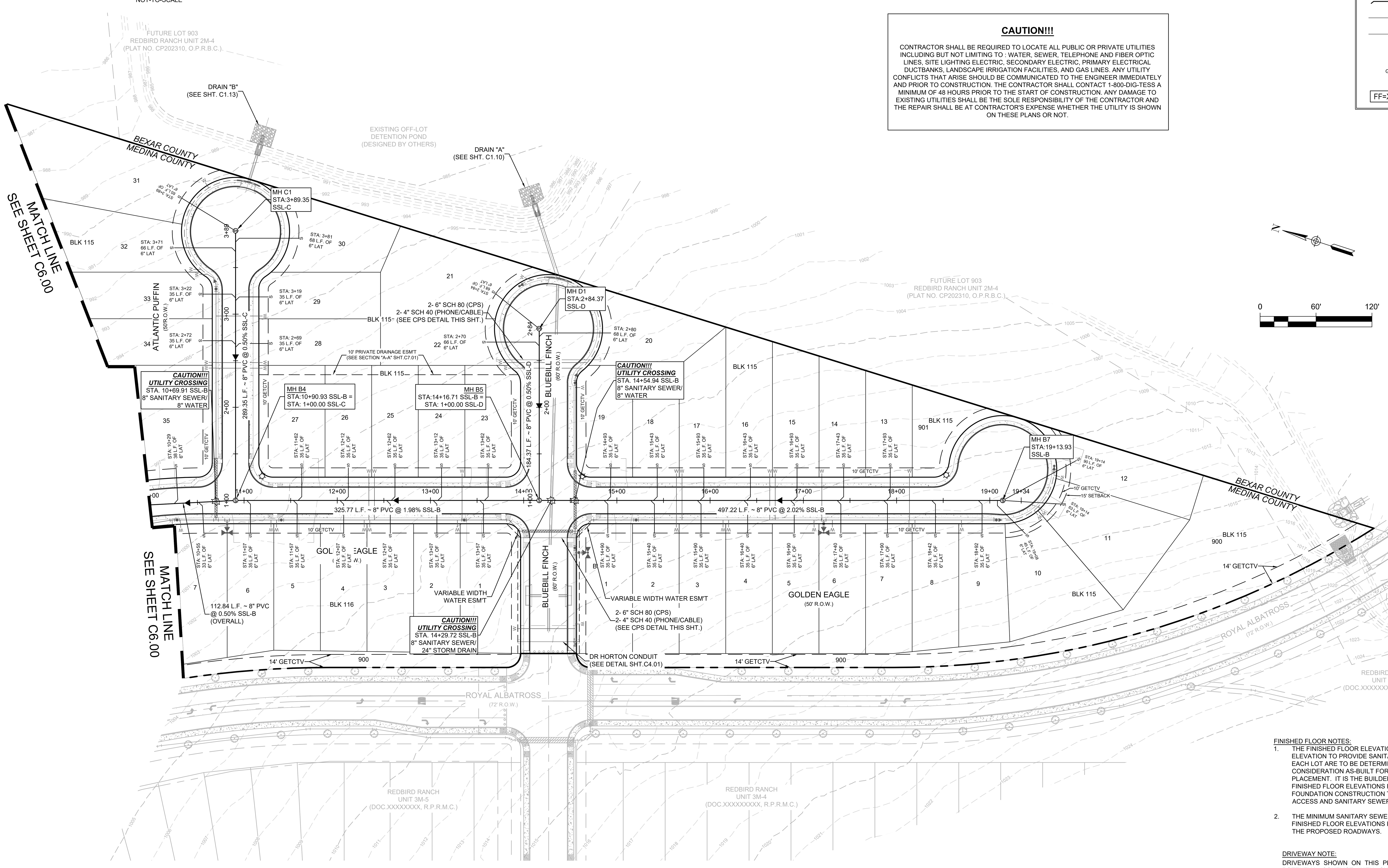
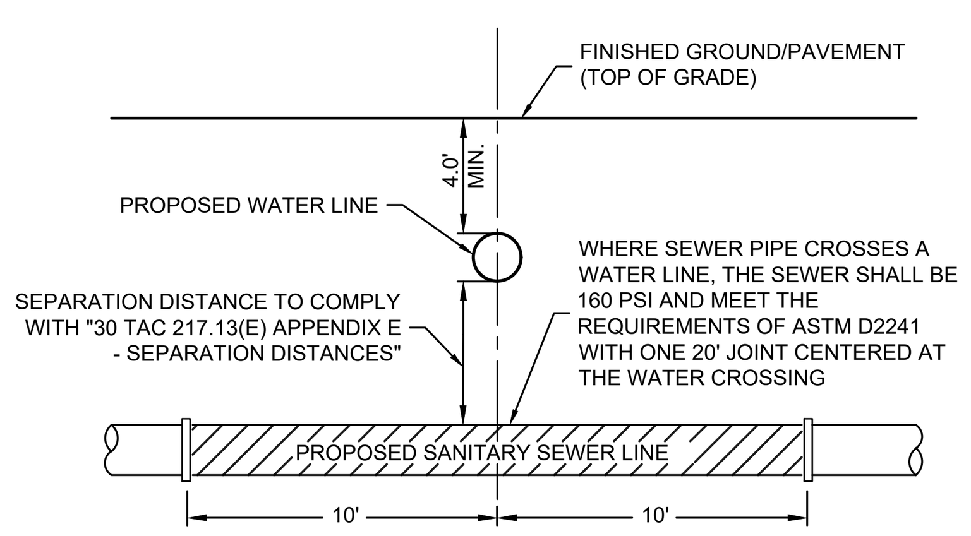
LEGEND (SANITARY SEWER)

Symbol	Description
— — —	PROJECT LIMITS
- - - -	OFFSITE EASEMENT
———	PROPOSED WATER
⌒	PROPOSED 2" HDPE WATER
———	PROPOSED SEWER
— — —	EXISTING WATER
— - EX. 8" SSL - —	EXISTING SANITARY SEWER LINE
Ⓢ	PROPOSED MANHOLE
Ⓢ	EXISTING MANHOLE
	FIRE HYDRANT
	PROPOSED WYE & LATERAL
	SINGLE WATER SERVICE
	DUEL WATER SERVICE
☼	STREET LIGHT
GETCTV	GAS, ELECTRIC, TELEPHONE & CABLE TELEVISION EASEMENT
FF=XXXX.XX	FINISHED FLOOR ELEVATION FOR SEWER





TYPICAL SANITARY SEWER/WATER CROSSING DETAIL

NOT-TO-SCALE

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REV	DATE	DESCRIPTION

5/31/2024

STATE OF TEXAS
VANCE L. WEYNAND
99269
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PROFESSIONAL ENGINEER

Vance Weynand

DHI Engineering, LLC.
5419 N. LOOP 1604 EAST
SAN ANTONIO, TX 78247
(210) 496-2668 | dhiengineering.com
TBPE REG. NO. F-19561

DHI

REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX
OVERALL SANITARY SEWER PLAN

DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	5/31/2024
JOB NO.:	05000-200
SHEET NO.	C6.01

REDBIRD RANCH UNIT 2M-2 DOC. # XXXXXXXXXXXXX

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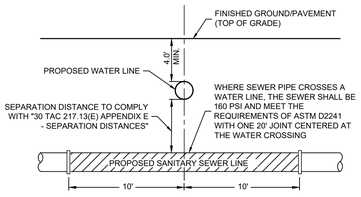
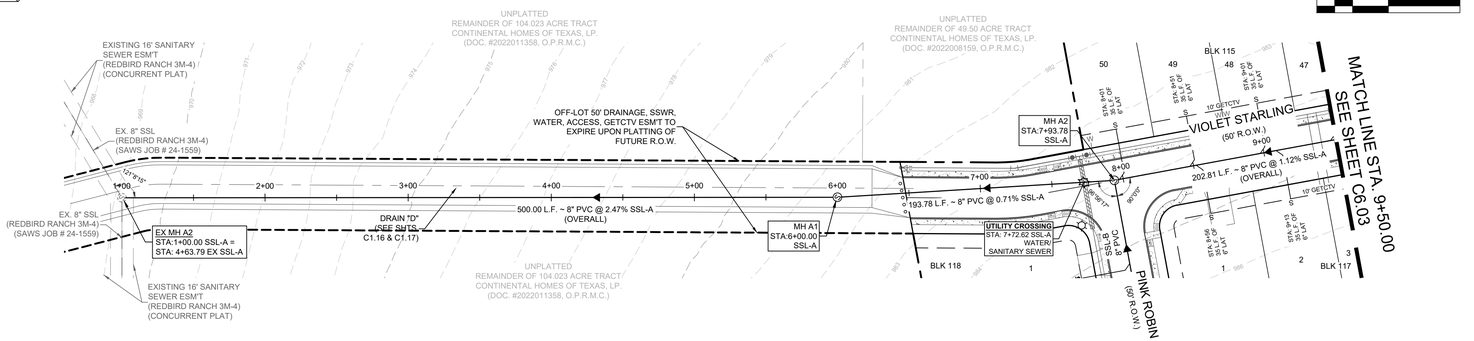


TYPICAL SANITARY SEWER/WATER CROSSING DETAIL

NOT-TO-SCALE



SSL-A
STA. 1+00.00 TO 9+50.00

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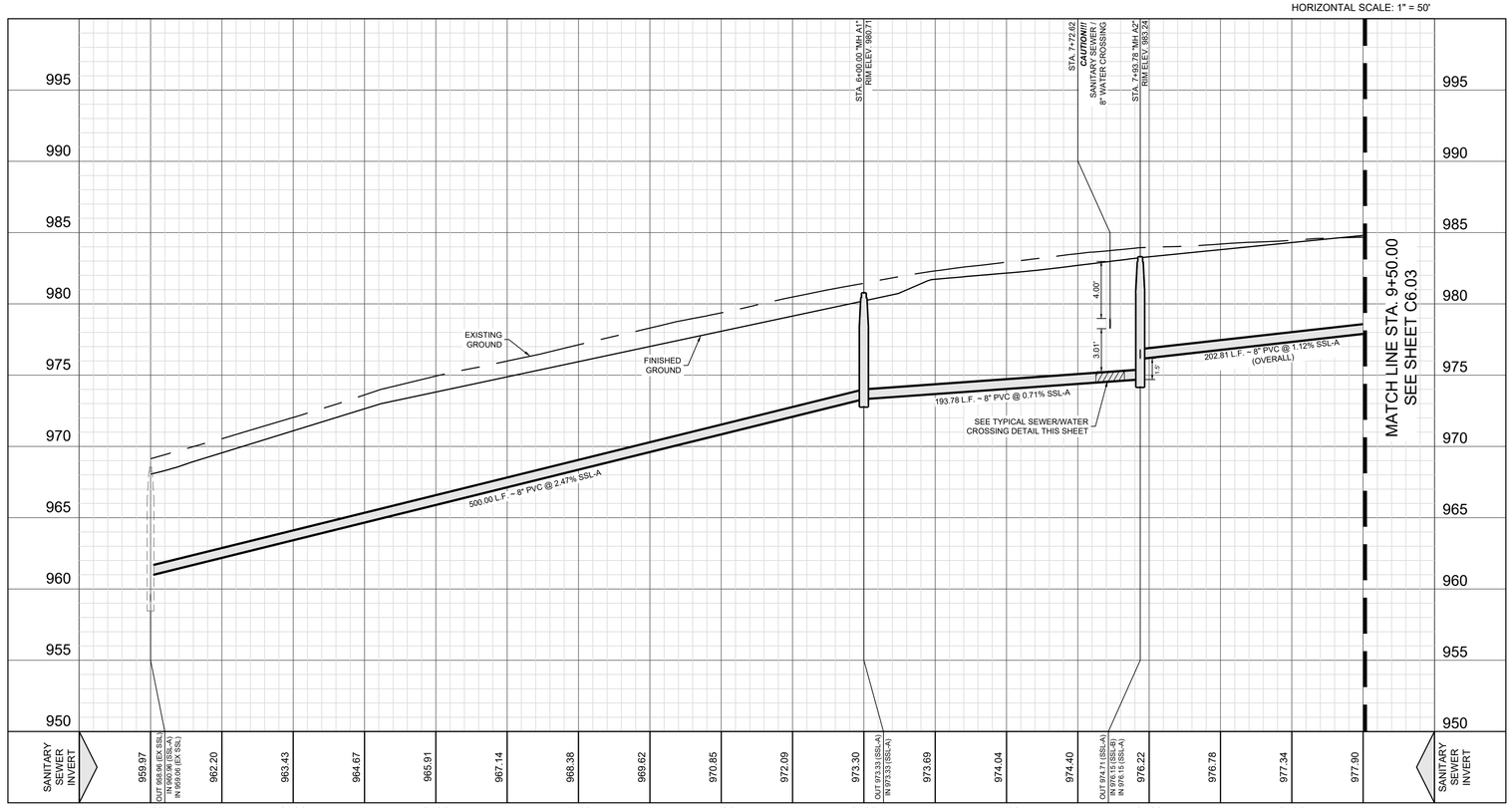

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- PROJECT LIMITS
- OFFSITE EASEMENT
- PROPOSED WATER
- PROPOSED 2" HDPE WATER
- PROPOSED SEWER
- EXISTING WATER
- EXISTING SEWER
- PROPOSED MANHOLE
- EXISTING MANHOLE
- FIRE HYDRANT
- DUEL WATER SERVICE
- SINGLE WATER SERVICE
- PROPOSED WYE & LATERAL
- VERTICAL STACK (2.00')

REV	DATE	DESCRIPTION

DOC. # XXXXXXXXXXX

REDBIRD RANCH UNIT 2M-2

5/21/2024

STATE OF TEXAS
VANCE L. WEYNAND
99269
LICENSED
PROFESSIONAL ENGINEER

Vance Weynand

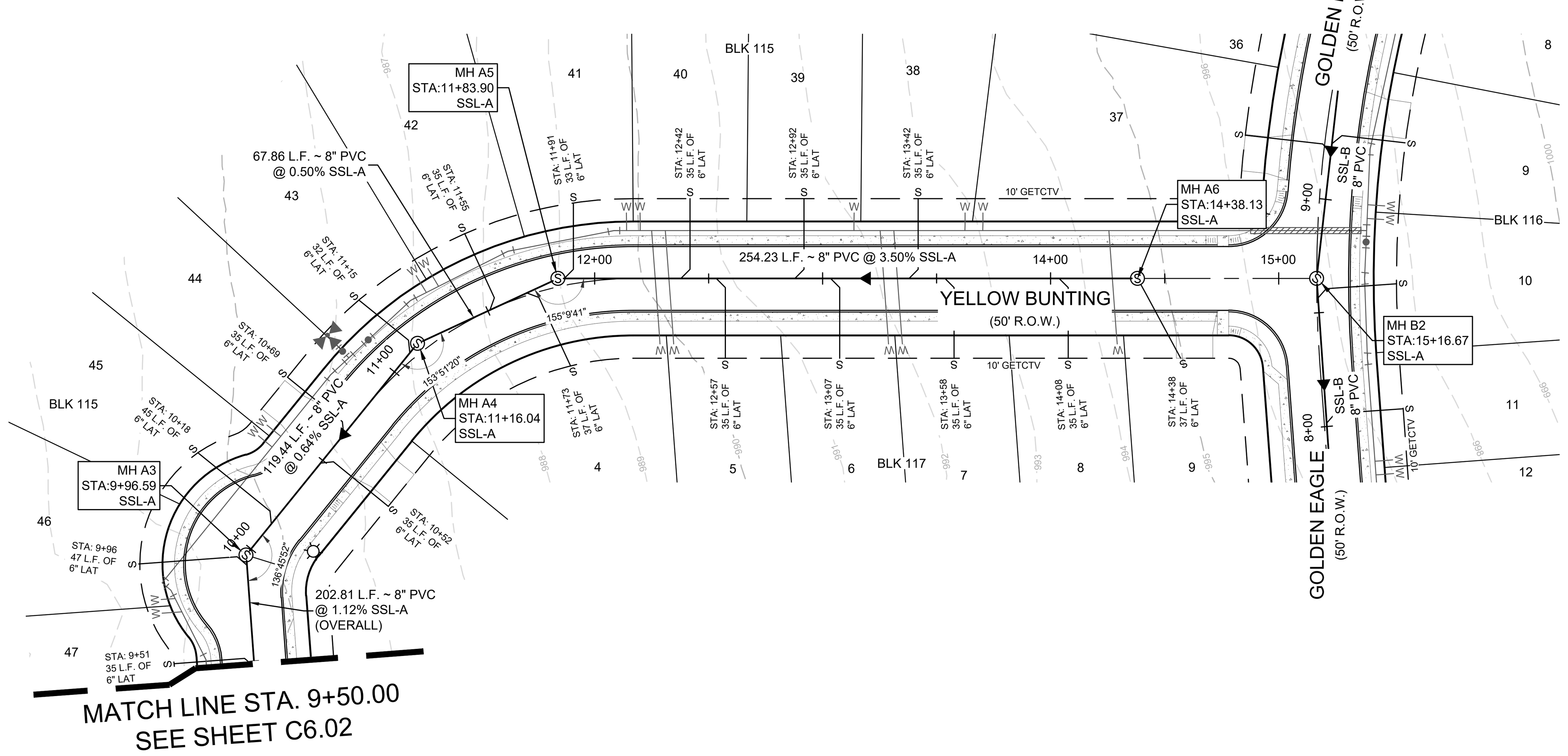
DHI Engineering, LLC.
5419 N. LOOP 1604 EAST
SAN ANTONIO, TX 78247
(210) 496-2668
TBPE REG. NO. F-19561

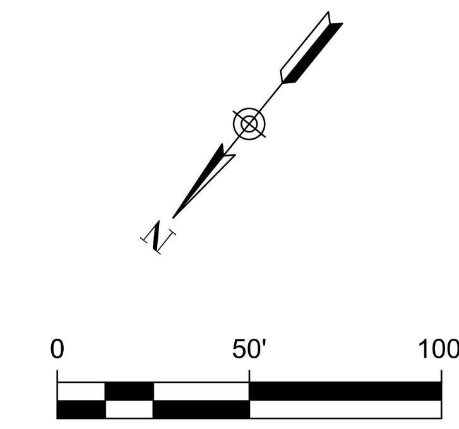
DHI

REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX
SANITARY SEWER LINE A - STA. 1+00.00 - 9+50.00

DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	5/21/2024
JOB NO.:	05000-200
SHEET NO.	C6.02

DHI ENGINEERING, LLC.





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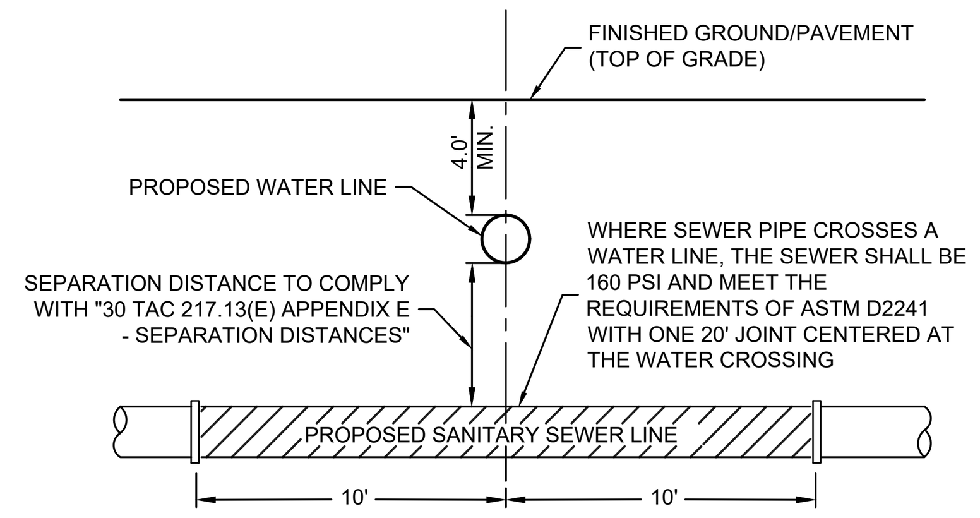
	EXISTING MANHOLE
	FIRE HYDRANT
	DUEL WATER SERVICE
	SINGLE WATER SERVICE
	PROPOSED WYE & LATERAL
	VERTICAL STACK



TYPICAL SANITARY SEWER/WATER CROSSING DETAIL

NOT-TO-SCALE

SSL-A
STA. 9+50.00 TO 14+38.13

VERTICAL SCALE: 1" = 5'
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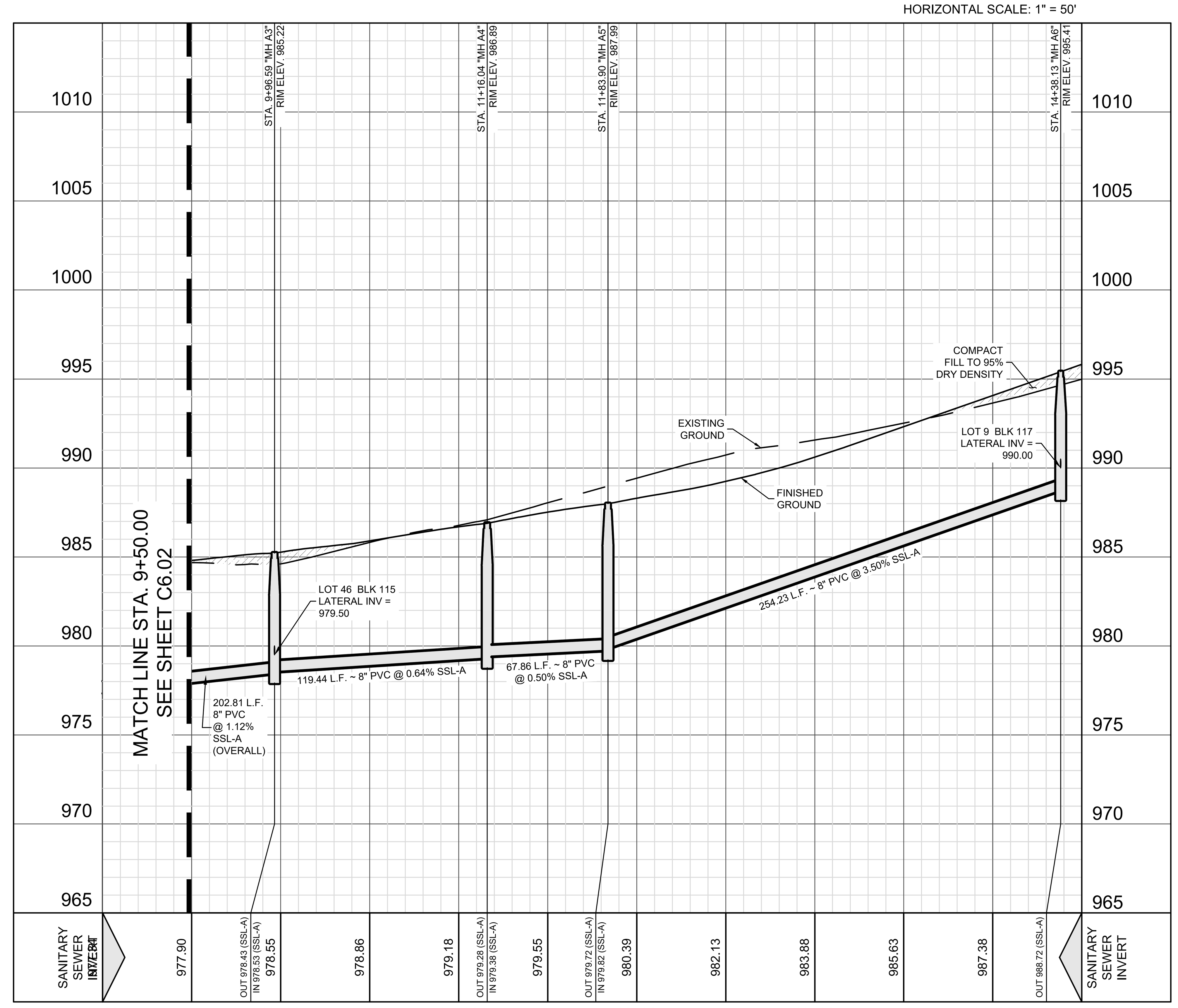

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REDBIRD RANCH UNIT 2M-2

3/20/2024

STATE OF TEXAS
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99269
LICENSED PROFESSIONAL ENGINEER

Vance Weynand

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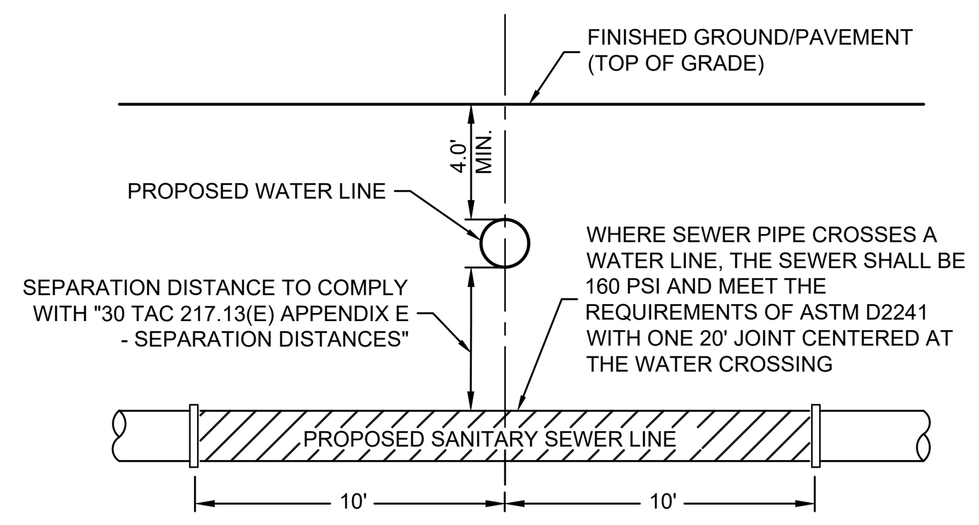
REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX

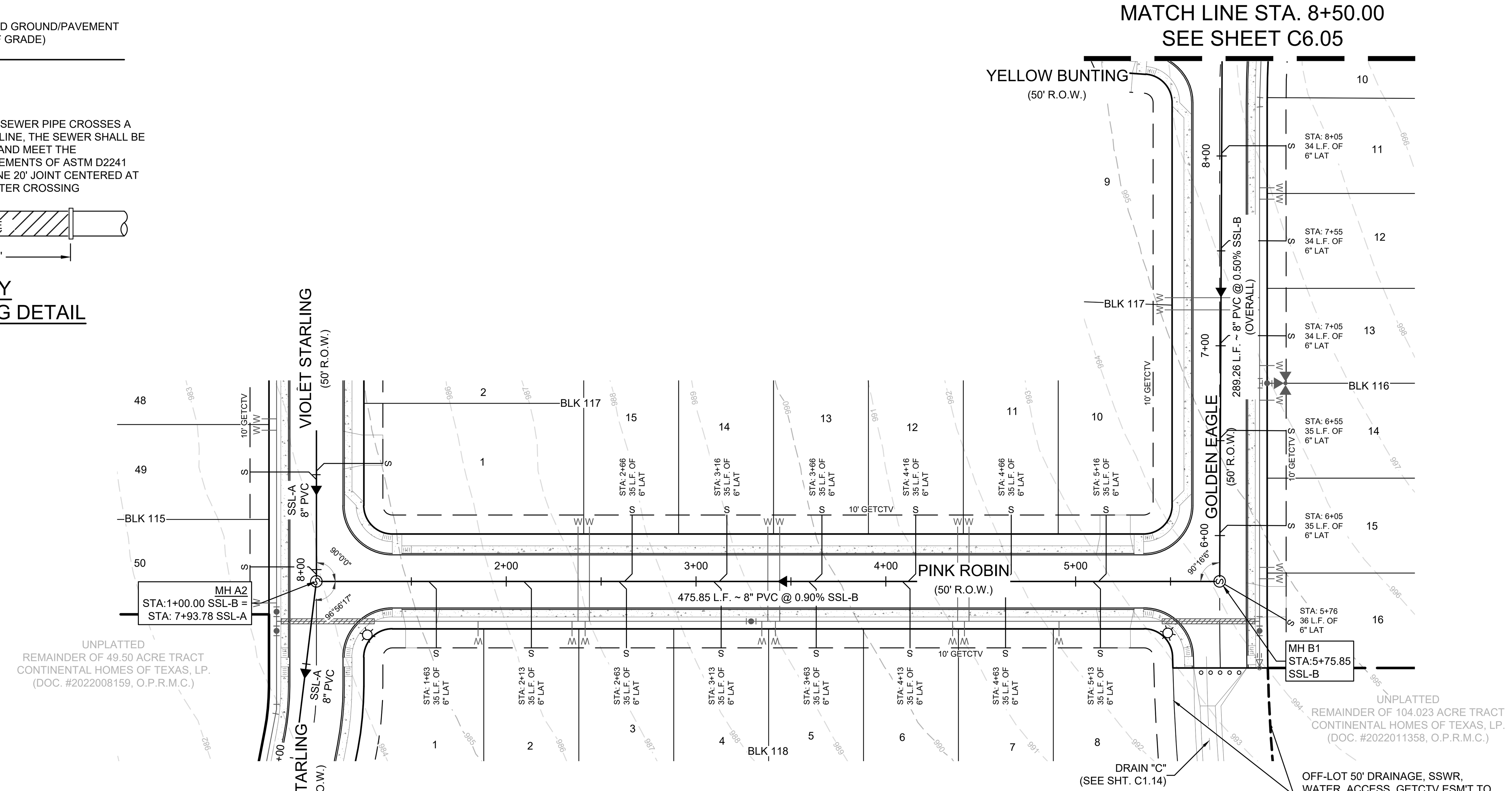
SANITARY SEWER LINE A - STA. 9+50.00 - 14+38.13

DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	3/20/2024
JOB NO.:	05000-200
SHEET NO.	C6.03

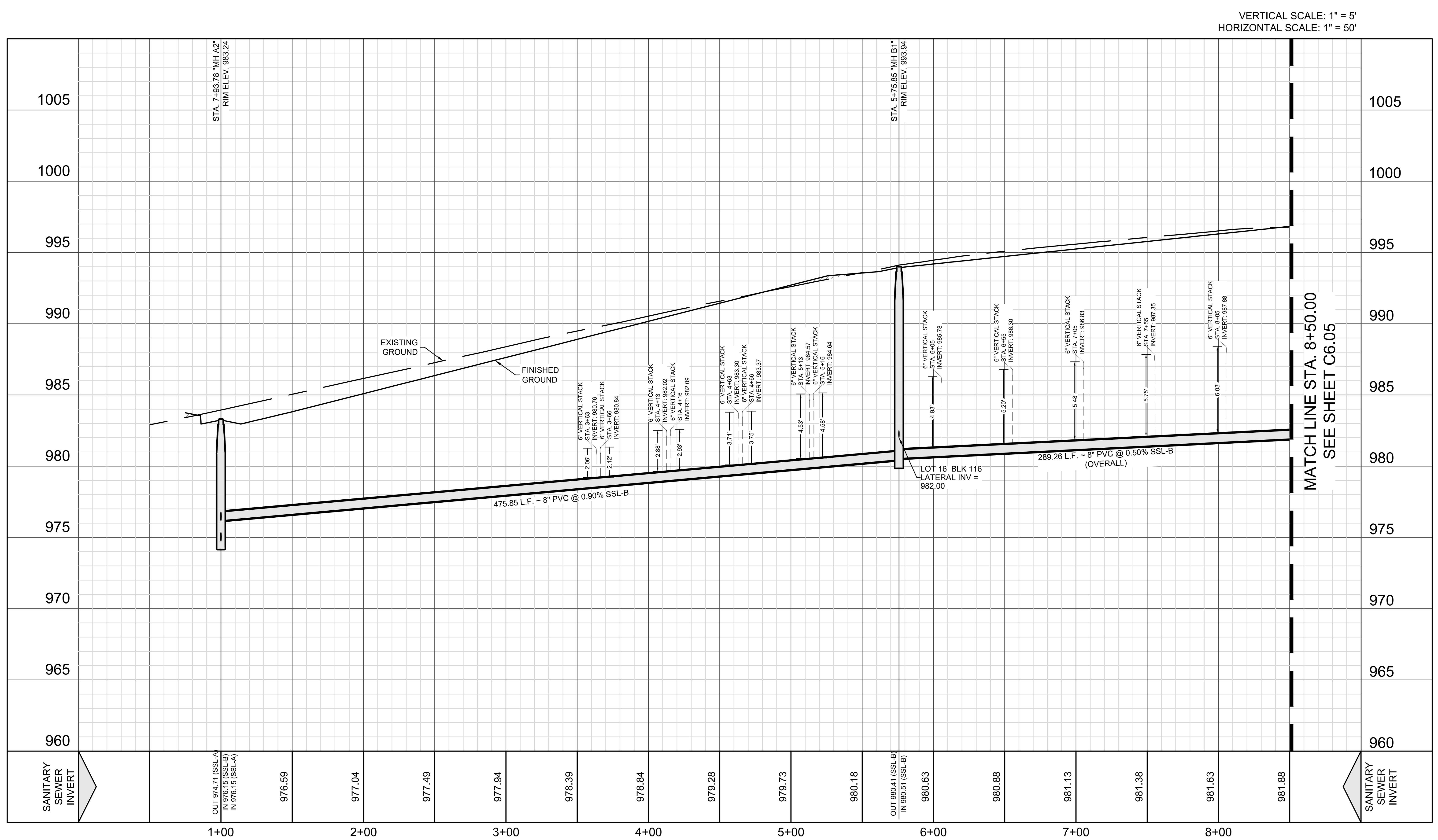


TYPICAL SANITARY SEWER/WATER CROSSING DETAIL

NOT-TO-SCALE



SSL-B
STA. 1+00.00 TO 8+50.00



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- PROJECT LIMITS
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SEWER: SAWS MEDIO CREEK WRC

DEVELOPER'S NAME: CONTINENTAL HOMES OF TEXAS, L.P.
ADDRESS: 5419 N. LOOP 1604 EAST
CITY: SAN ANTONIO STATE: TEXAS ZIP: 78247
PHONE # (210) 496-2668 FAX # (210) 496-2668
SAWS BLOCK MAP # 062586 062588 TOTAL EDU'S: 89 TOTAL ACREAGE: 20.795
TOTAL LINEAR FOOTAGE OF PIPE: 3,625 L.F. (8") DOC. NO: (MEDINA COUNTY)
NUMBER OF LOTS: 89 SAWS JOB NO: 24-1513

REV	DATE	DESCRIPTION

3/20/2024

STATE OF TEXAS
VANCE L. WEYNAND
99269
LICENSED
PROFESSIONAL ENGINEER

Vance Weynand

DHI Engineering, LLC.
5419 N. LOOP 1604 EAST
SAN ANTONIO, TX 78247
(210) 496-2668 | dhiengineering.com
TBPE REG. NO. F-19561

DHI

REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX

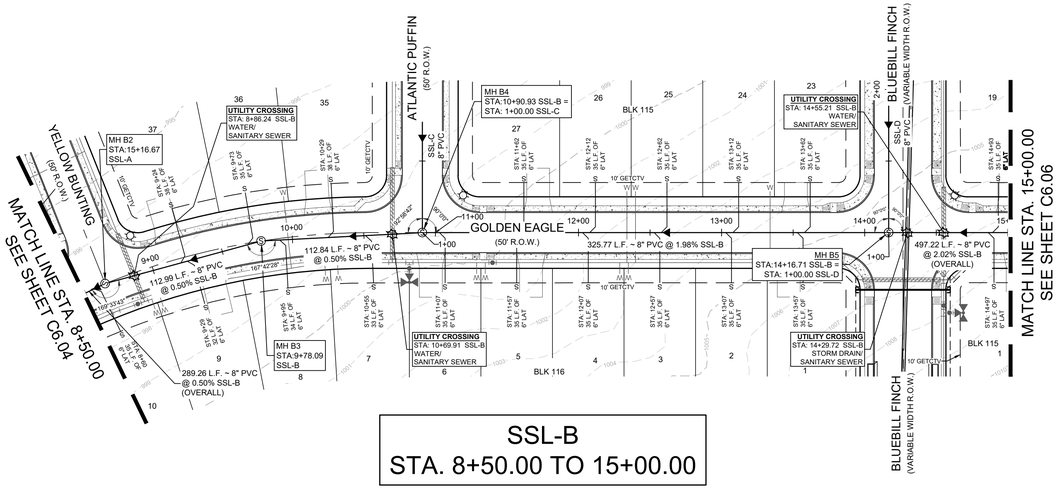
SANITARY SEWER LINE B - STA. 1+00.00 - 8+50.00

DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	3/20/2024
JOB NO.:	05000-200
SHEET NO.	C6.04

DOC. # XXXXXXXXXXXX

REDBIRD RANCH UNIT 2M-2

DHI ENGINEERING, LLC.



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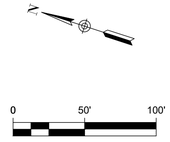
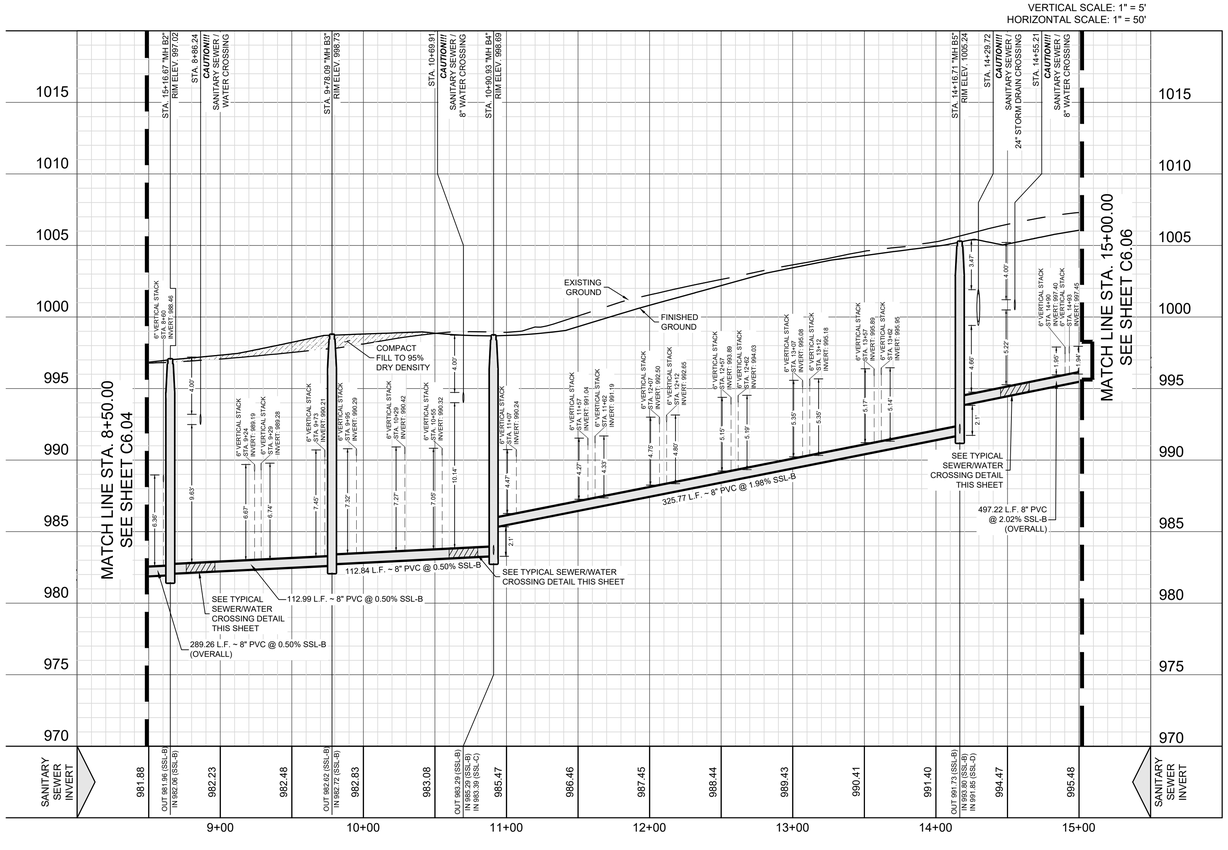
STA. 8+50.00 TO 15+00.00

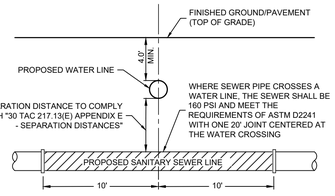


LEGEND (SANITARY SEWER)

- PROJECT LIMITS
- OFFSITE EASEMENT
- PROPOSED WATER
- PROPOSED 2" HDPE WATER
- PROPOSED SEWER
- EXISTING WATER
- EXISTING SEWER
- PROPOSED MANHOLE
- EXISTING MANHOLE
- FIRE HYDRANT
- DUEL WATER SERVICE
- SINGLE WATER SERVICE
- PROPOSED WYE & LATERAL
- VERTICAL STACK (2.00')

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





TYPICAL SANITARY
SEWER/WATER CROSSING DETAIL

NOT-TO-SCALE

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CAUTION!!!

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NUMBER OF LOTS: 89	SAWS JOB NO: 24-1513

REV	DATE	DESCRIPTION

DOC. # XXXXXXXXXXX

REDBIRD RANCH UNIT 2M-2

5/31/2024
STATE OF TEXAS
VANCE L. WEYNAND
99269
LICENSED
PROFESSIONAL ENGINEER
Vance Weynand

DHI Engineering, LLC.
5419 N. LOOP 1604 EAST
SAN ANTONIO, TX 78247
(210) 496-2668 (210) 496-2668
TBPE REG. NO. F-19561

REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX
SANITARY SEWER LINE B - STA. 8+50.00 - 15+00.00

DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	5/31/2024
JOB NO.:	05000-200
SHEET NO.	C6.05

Date: May 31, 2024, 8:26am User ID: JWSmon File: E:_PROJECT\05000-200\100 - Design\300 - Sheets\C6.05 SANITARY SEWER LINE B - STA. 8+50.00 - 15+00.00.dwg

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- PROJECT LIMITS
- OFFSITE EASEMENT
- PROPOSED WATER
- PROPOSED 2" HDPE WATER
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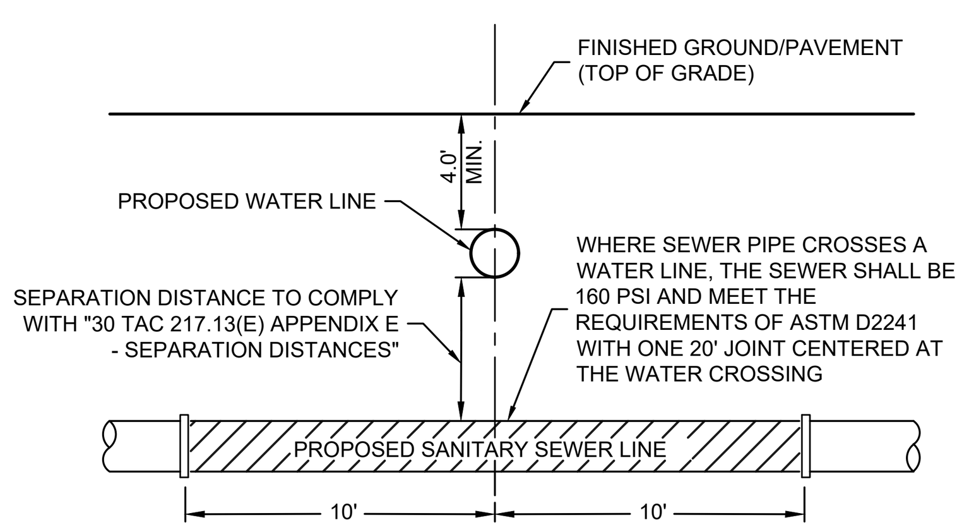
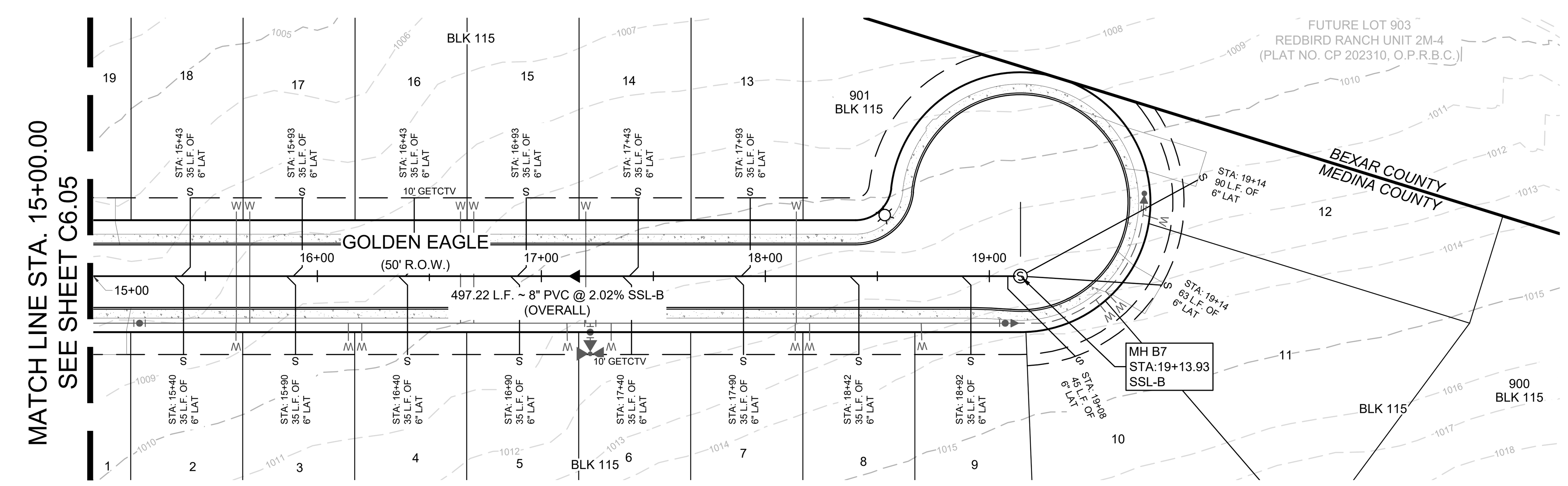


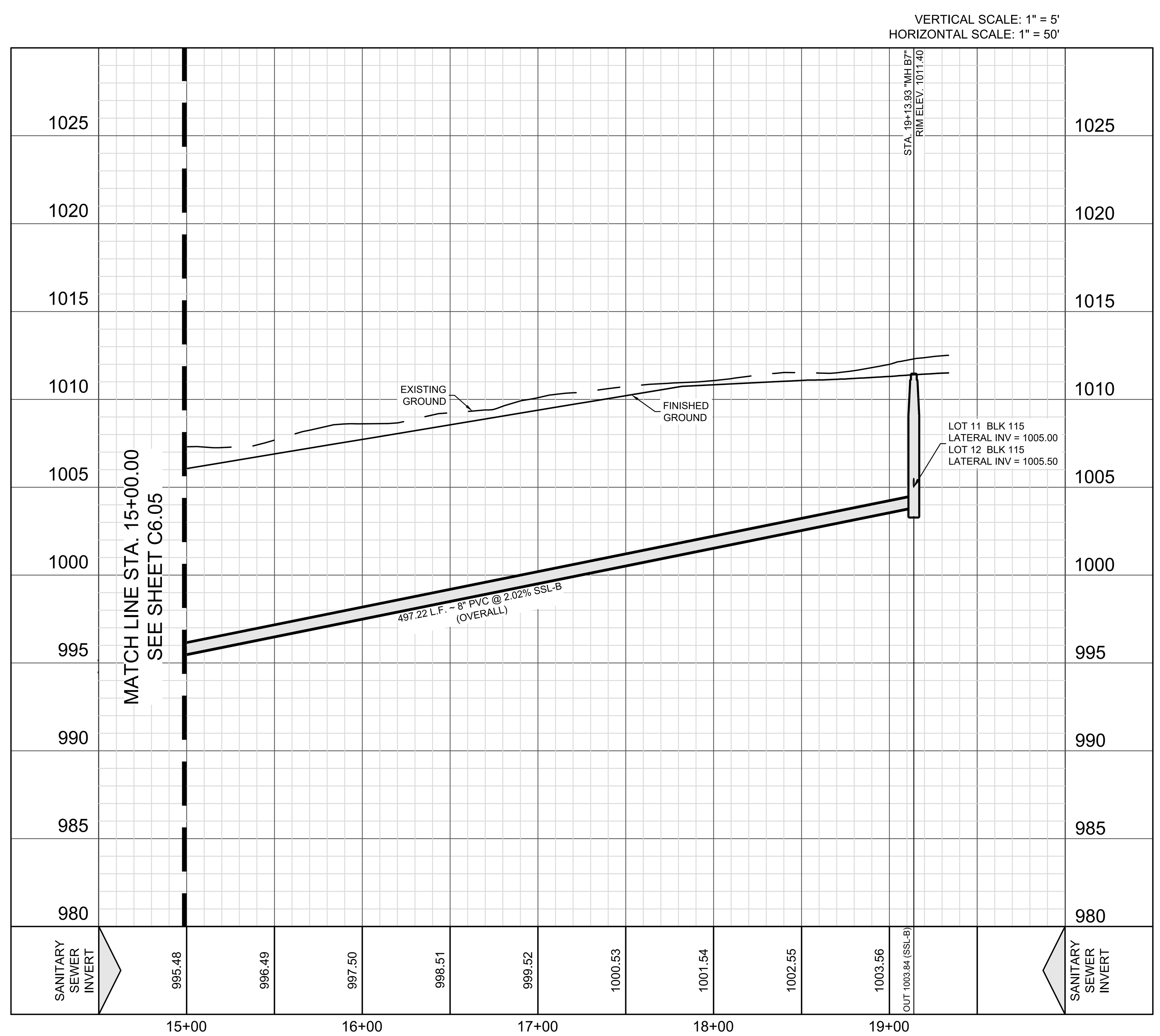
TYPICAL SANITARY SEWER/WATER CROSSING DETAIL

NOT-TO-SCALE



SSL-B
STA. 15+00.00 TO 19+13.93

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



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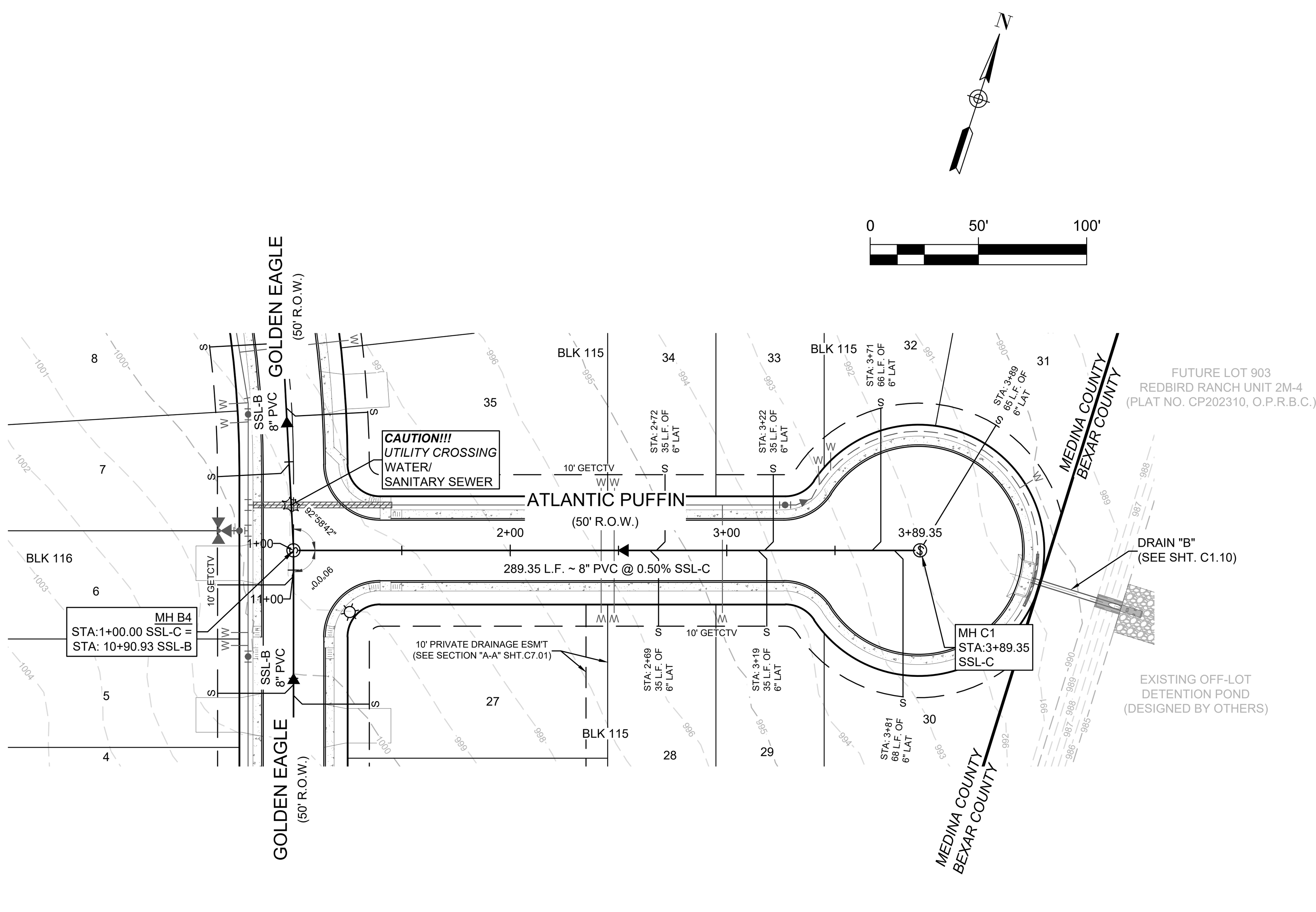
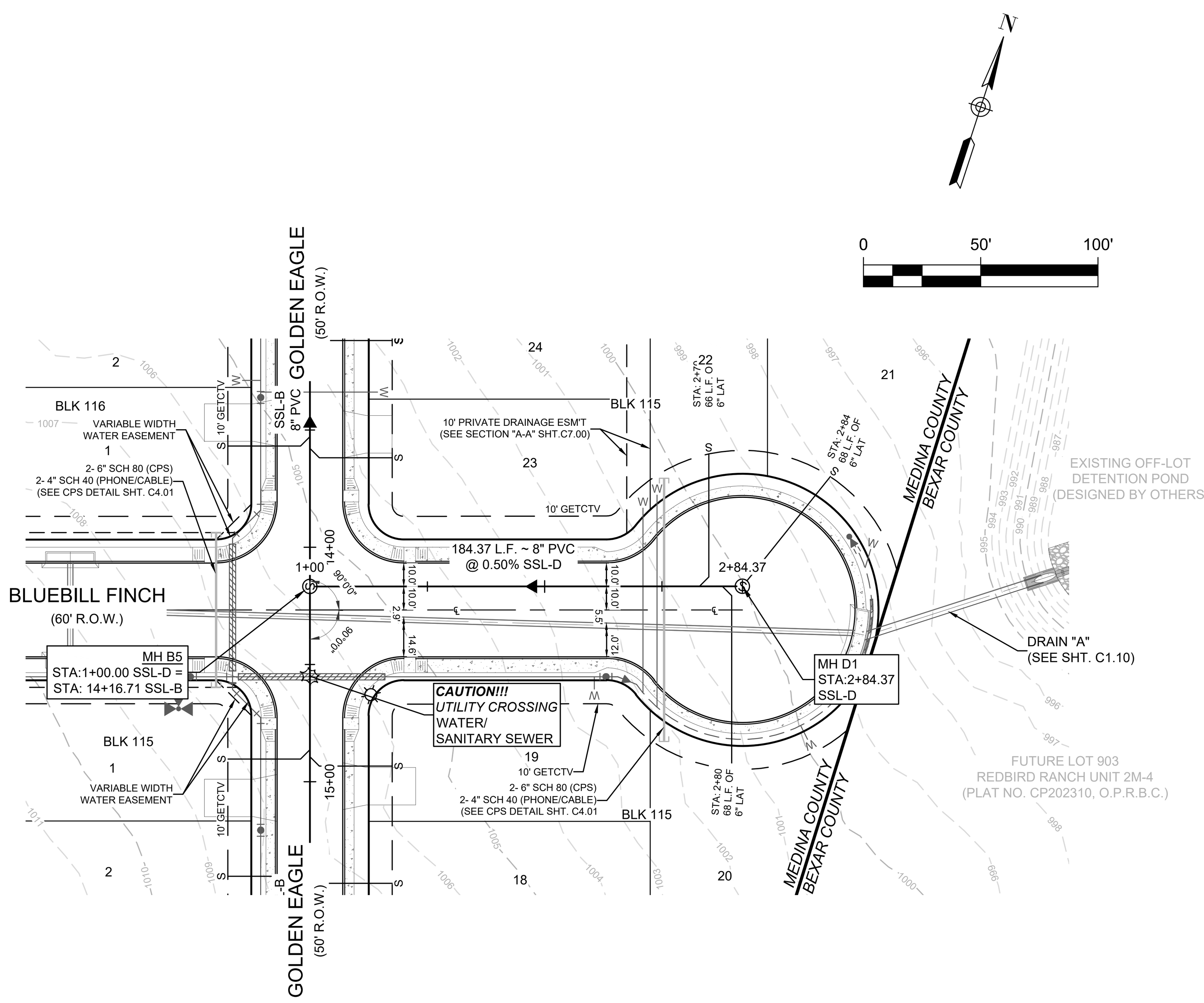
REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX

SANITARY SEWER LINE B - STA. 15+00.00 - 19+13.93

DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	3/20/2024
JOB NO.:	05000-200
SHEET NO.	C6.06

DOC. # XXXXXXXXXXXXX
REDBIRD RANCH UNIT 2M-2





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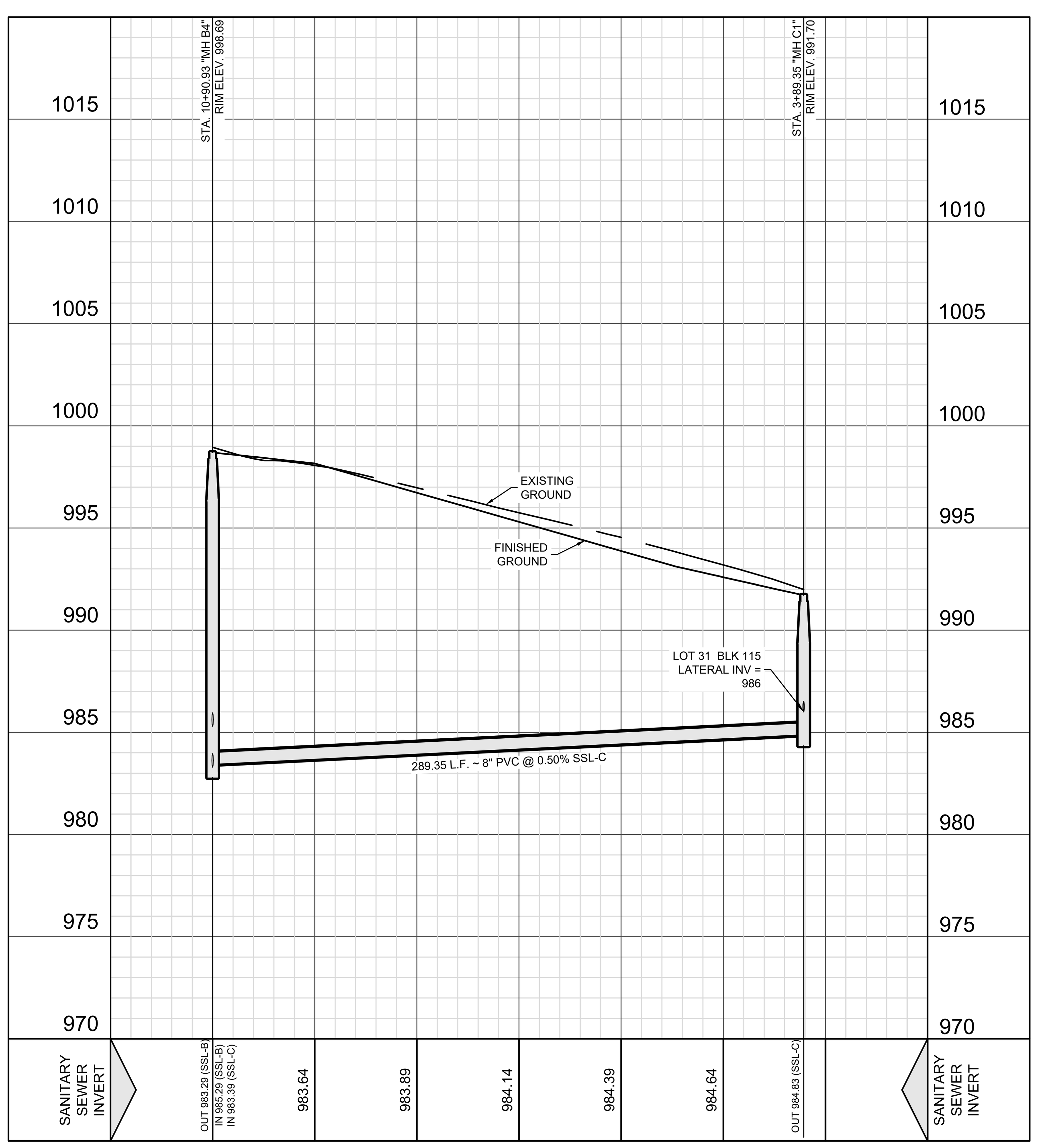
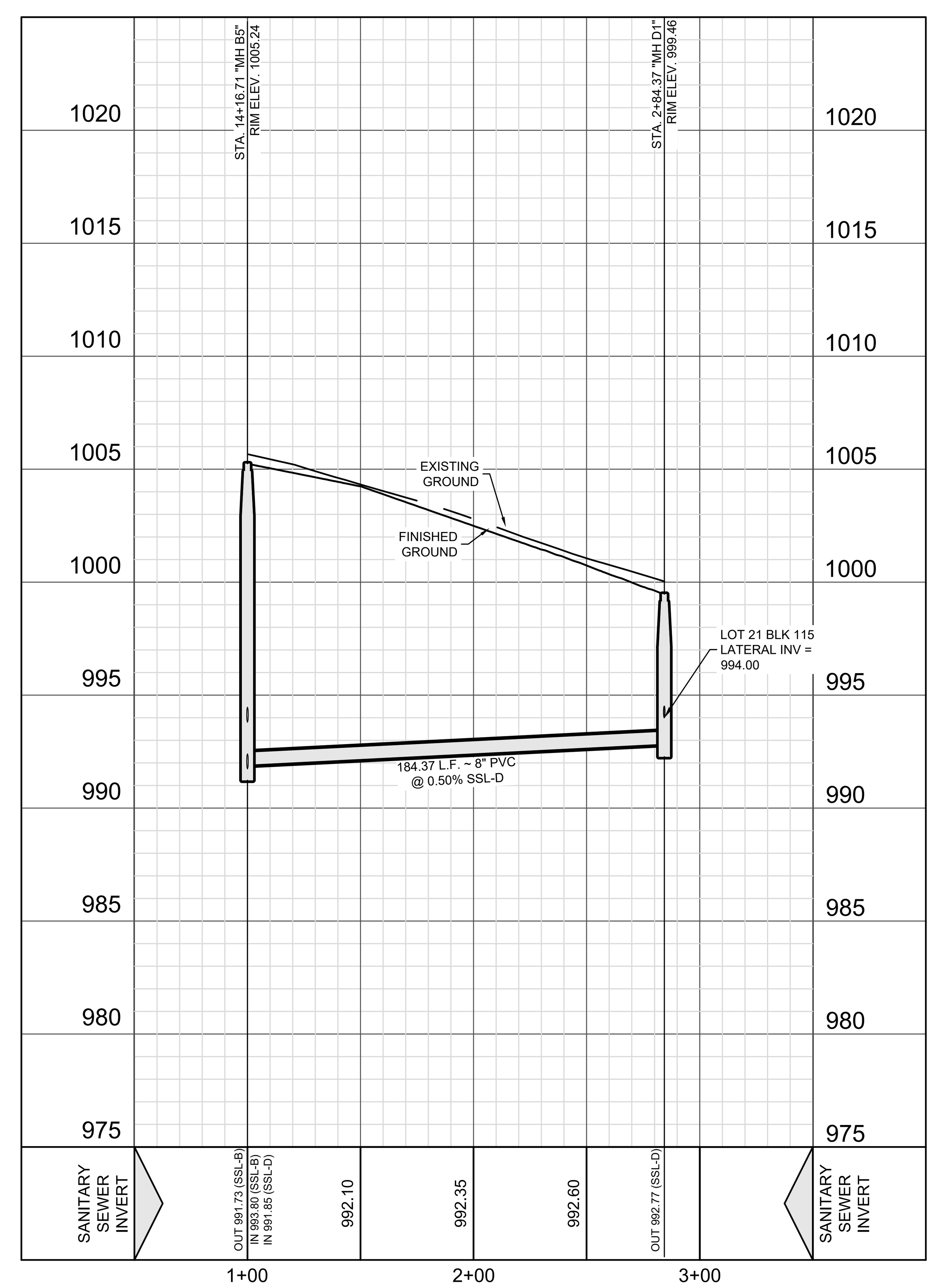
SSL-D
STA. 1+00.00 TO 2+84.37





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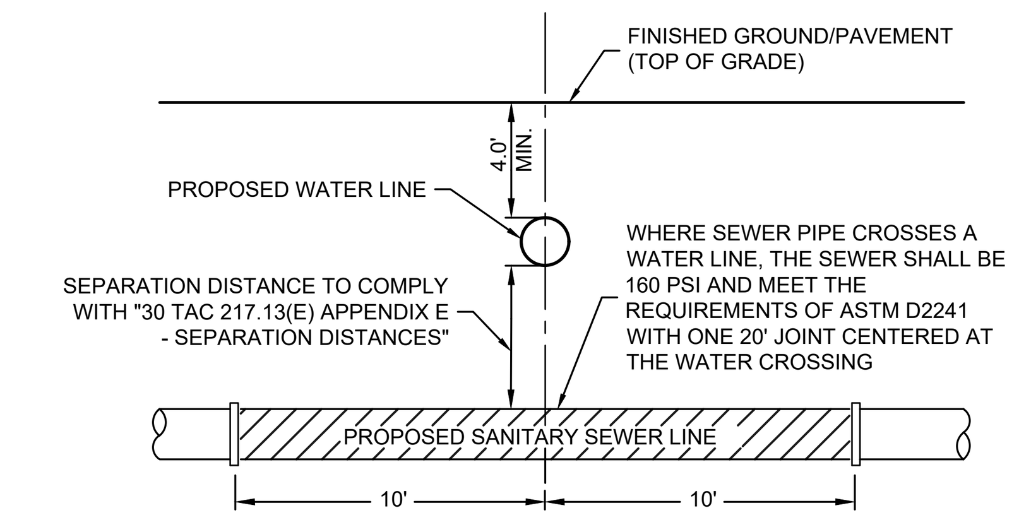

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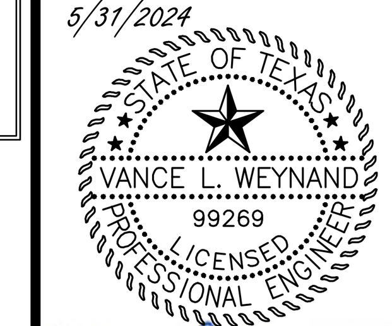

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DHI

REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX

SANITARY SEWER LINE C & SANITARY SEWER LINE D

DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	5/31/2024
JOB NO.:	05000-200
SHEET NO.	C6.07

REDBIRD RANCH UNIT 2M-2 DOC. # XXXXXXXXXXXX

SAWS STANDARD GENERAL CONSTRUCTION NOTES ASSOCIATED WITH 2021 SAWS STANDARD SPECS

Updated December 14, 2021

SAWS GENERAL CONSTRUCTION

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 CONSTRUCTION."
   E. CURRENT CITY OF SAN ANTONIO "UTILITY EXCAVATION CRITERIA MANUAL" (UECM).

2. THE CONTRACTOR SHALL OBTAIN SAWS STANDARD DETAILS FROM SAWS WEBSITE, HTTPS://APPS.SAWS.ORG/BUSINESS_CENTER/SPECS/CONSTSPECS/ UNLESS OTHERWISE NOTED WITHIN DESIGN PLANS.

3. THE CONTRACTOR IS TO NOTIFY AND MAKE ARRANGEMENTS WITH THE SAWS CONSTRUCTION INSPECTION DIVISION AT 210-233-3500 (DURING REGULAR SAWS WORKING HOURS) AND PROVIDE NOTIFICATION PROCEDURES THE CONTRACTOR WILL USE TO NOTIFY AFFECTED HOME RESIDENTS AND/OR PROPERTY OWNERS TWO (2) WEEKS PRIOR TO EXCAVATION. OUTSIDE OF REGULAR SAWS WORKING HOURS THE SAWS EOC SHOULD BE CONTACTED AT 210-704-7297.

4. IF NECESSARY, CONTRACTOR WILL COORDINATE USE OF SAWS PREMISES AT NO ADDITIONAL COST TO SAWS. SUCH EFFORTS INCLUDE, BUT ARE NOT LIMITED TO, OBTAINING SECURITY IDENTIFICATION BADGES REQUIRED FOR ACCESS TO SAWS FACILITIES.

5. LOCATIONS AND DEPTHS 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 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 PRIOR TO CONSTRUCTION WHETHER SHOWN ON PLANS OR NOT. AS-BUILTS FOR SAWS INFRASTRUCTURE CAN BE OBTAINED AT WEBSITE BELOW. CONTRACTOR SHALL COORDINATE PHYSICAL LOCATES FOR SAWS INFRASTRUCTURE THROUGH THE SAWS INSPECTOR. PLEASE ALLOW UP TO 7 BUSINESS DAYS FOR LOCATES REQUESTING PIPE LOCATION MARKERS ON SAWS INFRASTRUCTURE. THE FOLLOWING CONTACT INFORMATION ARE SUPPLIED FOR VERIFICATION PURPOSES:

   SAN ANTONIO WATER SYSTEM:
   REQUEST AS-BUILTS: HTTPS://WWW.SAWS.ORG/SERVICE/LOCATES-SERVICE/
   COSA DRAINAGE 210-206-8433
   COSA TRAFFIC SIGNAL OPERATIONS 210-207-7720
   TEXAS STATEWIDE 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 AS A RESULT OF DAMAGES DONE BY THE PROJECT'S CONSTRUCTION.

8. CONTRACTOR SHALL NOT MAKE USE OF DUMPSTERS OR WASTE BINS THAT ARE INTENDED TO SERVE RESIDENTS AND/OR BUSINESSES.

9. ALL WORK IN TEXAS DEPARTMENT OF TRANSPORTATION AND BEXAR COUNTY RIGHT-OF-WAY SHALL BE DONE IN ACCORDANCE WITH RESPECTIVE CONSTRUCTION SPECIFICATIONS AND PERMIT.

10. THE CONTRACTOR SHALL COMPLY WITH CITY OF SAN ANTONIO OR OTHER GOVERNING MUNICIPALITY'S TREE ORDINANCES WHEN EXCAVATING NEAR TREES.

11. ALL WORK WITHIN THE 100-YEAR FLOODPLAIN SHALL BE DONE IN ACCORDANCE WITH FLOODPLAIN DEVELOPMENT PERMIT.

12. ANY WORK COMPLETED WITHOUT PRIOR WRITTEN AUTHORIZATION WHICH IS NOT INCLUDED IN THESE PLANS AND SPECIFICATIONS WILL NOT BE COMPENSATED BY THE SAN ANTONIO WATER SYSTEM.

13. HOLIDAY WORK: CONTRACTORS WILL NOT BE ALLOWED TO PERFORM SAWS WORK ON SAWS RECOGNIZED HOLIDAYS.

    WEEKEND WORK: CONTRACTORS ARE REQUIRED TO SUBMIT REQUEST TO THE SAWS INSPECTION CONSTRUCTION DEPARTMENT BY 12:00PM ON THE WEDNESDAY PRIOR TO THE WEEKEND BEING REQUESTED. REQUEST SHOULD BE SENT TO CONSTWORKREQ@SAWS.ORG.

    ANY AND ALL SAWS UTILITY WORK INSTALLED WITHOUT WEEKEND APPROVAL WILL BE SUBJECT TO BE UNCOVERED FOR PROPER INSPECTION AT NO COST TO SAWS.

14. PRE-CON SITE VIDEO: BEFORE THE START OF ANY CONSTRUCTION. THE SITE MUST BE VIDEO RECORDED BY THE CONTRACTOR WITH ONE COPY SUBMITTED TO SAWS INSPECTIONS. A PRE-SITE VIDEO WILL PROVIDE ACCURATE DOCUMENTATION OF THE EXISTING CONDITIONS (NSPI).

15. POWER POLE BRACING: CONTRACTORS SHOULD BE ADVISED THAT THERE ARE EXISTING OVERHEAD UTILITY POLES ALONG THE PROJECT CORRIDOR. CONTRACTORS SHOULD FURTHER BE ADVISED THAT IF THE DISTANCE FROM THE OUTSIDE FACE OF A UTILITY TRENCH TO THE FACE OF A UTILITY POLE IS LESS THAN 5 FEET, SAID UTILITY POLE IS SUBJECT TO BRACING, BASED ON A DETERMINATION MADE BY UTILITY POLE OWNER. COSTS INCURRED BY CONTRACTOR FOR BRACING OF THESE UTILITY POLES IS SUBSIDIARY TO THAT RESPECTIVE UTILITY COMPANY'S WORK. IT IS ADVISABLE FOR THE CONTRACTOR TO REVIEW THE CONSTRUCTION DOCUMENTS AND VISIT THE CONSTRUCTION SITE TO DETERMINE POTENTIAL IMPACTS.

16. CONSTRUCTION SEQUENCING: IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO SCHEDULE SEQUENCING FOR REMOVAL AND INSTALLATION OF EXISTING AND PROPOSED SAWS UTILITIES IN CONJUNCTION WITH GENERAL PROJECT CONSTRUCTION. SEQUENCE OF CONSTRUCTION ACTIVITIES SHALL BE CONSIDERED IN ORDER TO MINIMIZE THE EXTENT AND DURATION OF DISTURBANCES.

17. CONTRACTOR SHALL COMPLY WITH APPLICABLE REGULATIONS INCLUDING, BUT NOT LIMITED TO, THOSE OVERSEEN BY THE U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA). OSHA INFORMATION AND RELATED MATERIALS MAY BE OBTAINED AT HTTPS://WWW.OSHA.GOV/ OR AT THE OSHA SAN ANTONIO OFFICE LOCATED AT FOUNTAINHEAD TOWER, SUITE 605 8200 W. INTERSTATE 10 SAN ANTONIO, TX 78230 WHICH IS ALSO REACHABLE BY PHONE AT (210) 472-5040.

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

SAWS SEWER

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

    A. IDENTIFY THE SOURCE OF THE SSO AND NOTIFY SAWS EMERGENCY OPERATIONS CENTER (EOC) IMMEDIATELY AT 210-704-SAWS (210-704-7297). PROVIDE THE ADDRESS OF THE SPILL AND AN ESTIMATED VOLUME OR FLOW.
    B. ATTEMPT TO ELIMINATE THE SOURCE OF THE SSO.
    C. CONTAIN SEWAGE FROM THE SSO TO THE EXTENT OF PREVENTING A POSSIBLE CONTAMINATION OF WATERWAYS.
    D. CLEAN UP SPILL SITE (RETURN CONTAINED SEWAGE TO THE COLLECTION SYSTEM IF POSSIBLE) AND PROPERLY DISPOSE OF CONTAMINATED SOIL/MATERIALS.
    E. CLEAN THE AFFECTED SEWER MAINS AND REMOVE ANY DEBRIS.
    F. MEET ALL POST-SSO REQUIREMENTS AS PER THE EPA CONSENT DECREE, INCLUDING LINE CLEANING AND TELEVISING THE AFFECTED SEWER MAINS (AT SAWS DIRECTION) WITHIN 24 HOURS.

    SHOULD THE CONTRACTOR FAIL TO ADDRESS AN SSO IMMEDIATELY AND TO SAWS SATISFACTION, THEY WILL BE RESPONSIBLE FOR ALL COSTS INCURRED BY SAWS, INCLUDING ANY FINES FROM EPA.

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

20. THE CONTRACTOR SHALL PROVIDE BYPASS PUMPING OF SEWAGE AROUND EACH SEGMENT OF PIPE TO BE REPLACED, IN ACCORDANCE WITH SAWS STANDARD SPECIFICATION ITEM NO. 865, "BYPASS PUMPING SMALL DIAMETER SANITARY SEWER MAINS" AND STANDARD SPECIFICATION ITEM NO. 864, "BYPASS PUMPING LARGE DIAMETER SANITARY SEWER MAINS" AS APPLICABLE. PAYMENT FOR SUCH WORK WILL BE MADE UNDER THE APPROPRIATE BID ITEM ASSOCIATED WITH SANITARY SEWER BYPASS PUMPING IN ACCORDANCE WITH SAWS STANDARD SPECIFICATIONS 865 AND 864.

21. PRIOR TO TIE-INS, ANY SHUTDOWNS OF EXISTING FORCE MAINS OF ANY SIZE MUST BE COORDINATED WITH THE SAWS CONSTRUCTION INSPECTION DIVISION AT 210-233-3500 AND/OR SAWS PRODUCTION GROUPS AT LEAST TWO WEEKS OR MORE 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.

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

23. MANHOLE REMOVAL: WHERE EXISTING MANHOLES ARE TO BE REPLACED BY THE CONTRACTOR, THE EXISTING MANHOLES SHALL BE REMOVED. (NSPI)

24. SMART MANHOLE COVERS: THE CONTRACTOR SHALL NOTIFY SAWS EOC AT 210-704SAWS (210-233-7297) AND EITHER AMERICA ESPINOZA AT 210-233-2934 OR JOSE A. MARTINEZ AT 210-233-3071 A MINIMUM OF 72 HOURS, NOT COUNTING WEEKENDS OR SAWS HOLIDAYS, BEFORE WORKING ON THE PIPE OR MANHOLE, IN ORDER TO HAVE SAWS REMOVE THE SMART COVER. ANY DAMAGE DONE TO THE SMART COVER WILL BE CHARGED TO THE CONTRACTOR THROUGH A CHANGE ORDER.

25. FLOW METERS IN MANHOLES: THE CONTRACTOR SHALL NOTIFY BOBBY JOHNSON AT 210233-3493 OR ABEL BORUNDA AT 210-233-3704 A MINIMUM OF 72 HOURS, NOT COUNTING WEEKENDS OR SAWS HOLIDAYS, BEFORE WORKING ON THE PIPE OR MANHOLE, IN ORDER TO HAVE SAWS REMOVE THE FLOW METER IN THE MANHOLE. ANY DAMAGE DONE TO THE FLOW METER WILL BE CHARGED TO THE CONTRACTOR THROUGH A CHANGE ORDER.

PROJECT SEWER NOTES

1. ALL RESIDENTIAL SEWER SERVICE LATERALS ARE 6" DIA. AND SHALL BE EXTENDED TO 10' PAST THE PROPERTY LINE AND CAPPED AND SEALED. CONTRACTOR SHALL INSTALL A 2" X 4" STAKE, FOUR FEET LONG AND 2 FEET DEEP INTO THE GROUND AT THE END OF EACH SERVICES. NO SEPARATE PAY ITEM.

2. CONTRACTOR TO INSTALL CLEANOUTS AT THE END OF ALL SEWER LATERALS, PER LATERAL DETAIL SHEET C6.21.

3. NO VERTICAL STACKS ALLOWED FOR ANY LOTS UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.

4. ALL 6" SEWER LATERALS WILL BE SET AT 2% GRADE FROM THE MAIN TO THE PROPERTY LINE.

5. WHEN HORIZONTAL DISTANCE BETWEEN SEWER PIPES AND WATER MAIN IS LESS THAN 9 FOOT SEPARATION, SEWER MAIN SHALL BE INSTALLED WITH 150 PSI (MIN) PRESSURE PIPE AND FITTINGS IN ACCORDANCE WITH SAWS CONSTRUCTION CRITERIA FOR CONSTRUCTION OF SEWER MAINS IN THE VICINITY OF WATER MAINS.

6. CONTRACTOR SHALL ENSURE THAT MANHOLES OUTSIDE OF PAVED AREAS ARE SET WITH TOP ELEVATION 6" ABOVE FINISHED GRADE WITH CONCRETE RING ENCASEMENT.

7. ALL SEWER PIPES SHALL BE 8" PVC(SDR 26), UNLESS OTHERWISE NOTED.

8. CONTRACTOR IS TO VERIFY EXISTING INVERT OF EXISTING SANITARY SEWER MAINS AND ALERT ENGINEER IMMEDIATELY OF ANY DIFFERENCE FROM INVERT SHOWN ON PLANS.

9. CONTRACTOR SHALL PROTECT ALL EXISTING FENCES, ANY FENCE DAMAGE BY THE CONTRACTOR SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR EXPENSE.

10. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION TO VERIFY SIZE, GRADE, AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR, AT HIS EXPENSE.

11. CONCRETE RING ENCASEMENT TO BE INSTALLED ON ALL MANHOLES AND, WITHIN LIMITS OF PLACEMENT, BE INSTALLED TO THE TOP OF THE BASE LAYER WITH A MINIMUM OF 2" OF ASPHALT ON TOP OF THE RING ENCASEMENT.

12. MANHOLE OPENING INCREASED TO 630" AS PER TAC CHAPTER 217.55.

13. ALL SEWER PIPE LATERALS SHALL BE SDR 26 (CLASS 160) PVC PIPE.

14. IF THE GIVEN TOP OF MANHOLE ELEVATION DOES NOT AGREE ON ACTUAL GROUND SURFACE OR FINISHED PAVEMENT, THE CONTRACTOR SHALL ADJUST ELEVATIONS SUCH THAT THE TOP OF THE MANHOLE SHALL BE 0.5' ABOVE EXISTING GROUND, OR FLUSH TO FINISH ASPHALT PAVEMENT.

15. ALL MANHOLES CONSTRUCTED OVER THE EDWARDS AQUIFER RECHARGE ZONE SHOULD BE WATERTIGHT.

SEWER: SAWS MEDIO CREEK WRC

DEVELOPER'S NAME: *CONTINENTAL HOMES OF TEXAS, L.P.*
ADDRESS: *5419 N. LOOP 1604 EAST*
CITY: *SAN ANTONIO* STATE: *TEXAS* ZIP: *78247*
PHONE # *(210) 496-2668* FAX # *(210) 496-2668*
SAWS BLOCK MAP # *062586 062588* TOTAL EDU'S: *89* TOTAL ACREAGE: *20.795*
TOTAL LINEAR FOOTAGE OF PIPE: *3,625 L.F. (8")* DOC. NO: *(MEDINA COUNTY)*
NUMBER OF LOTS: *89* SAWS JOB NO: *24-1513*

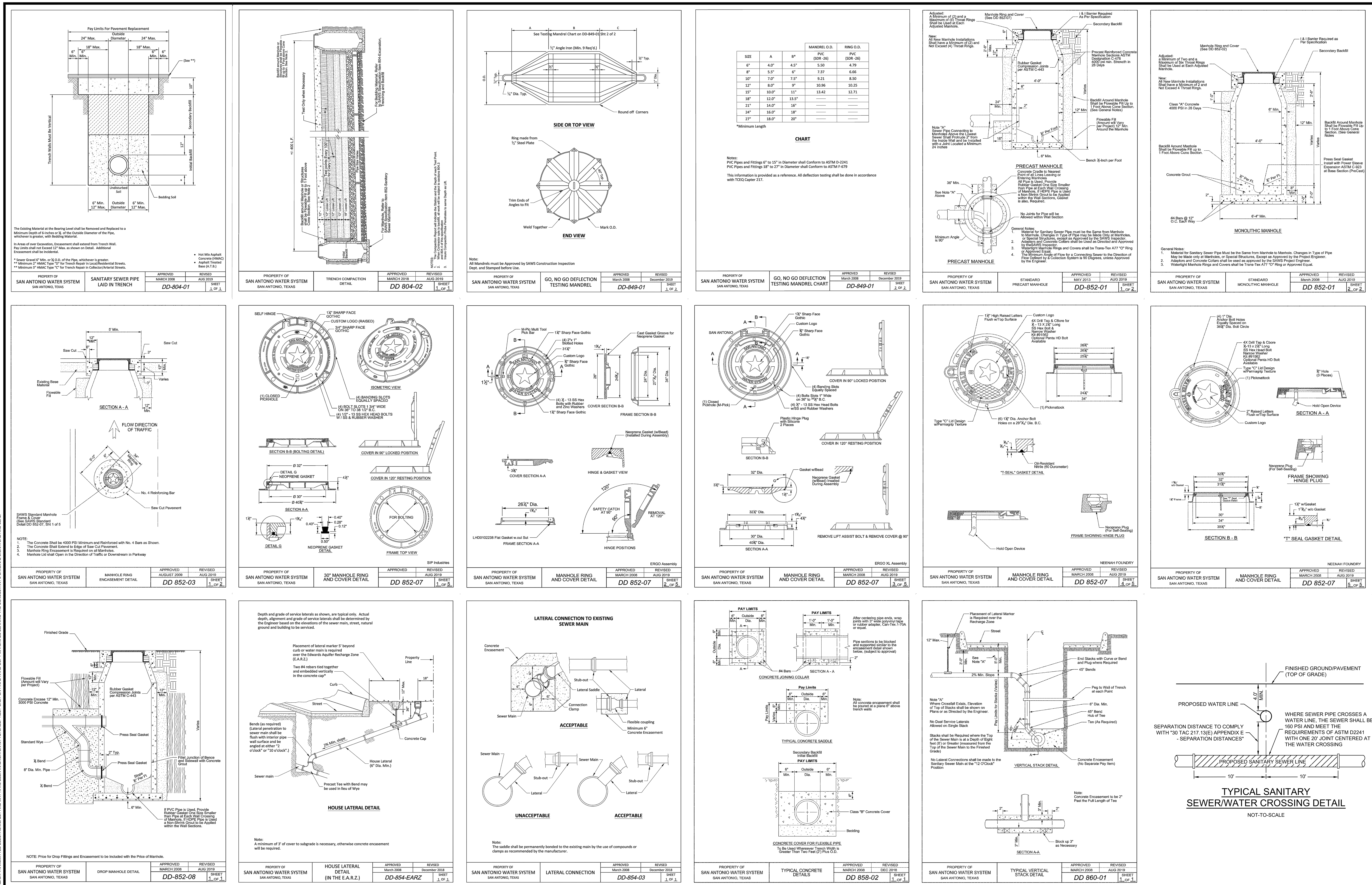
REV	DATE	DESCRIPTION

3/20/2024
STATE OF TEXAS
VANCE L. WEYNAND
99269
LICENSED PROFESSIONAL ENGINEER
Vance Weynand

DHI Engineering, LLC.
5419 N. LOOP 1604 EAST
SAN ANTONIO, TX 78247
(210) 496-2668 | dhiengineering.com
TBPE REG. NO. F-19561
DHI

REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX
SANITARY SEWER NOTES

DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	3/20/2024
JOB NO.:	05000-200
SHEET NO.	C6.20



DHI ENGINEERING, LLC.

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SEWER: SAWS MEDIO CREEK WRC

DEVELOPER'S NAME:	CONTINENTAL HOMES OF TEXAS, L.P.
ADDRESS:	5419 N. LOOP 1604 EAST
CITY:	SAN ANTONIO
STATE:	TEXAS
ZIP:	78247
PHONE #	(210) 496-2668
FAX #	(210) 496-2668
SAWS BLOCK MAP #	062586 062588
TOTAL EDU'S:	89
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NUMBER OF LOTS:	89
SAWS JOB NO:	24-1513

DOC. # XXXXXXXXXXXXX

REDBIRD RANCH UNIT 2M-2

REV	DATE	DESCRIPTION

3/20/2024

STATE OF TEXAS
VANCE L. WEYNAND
99269
LICENSED
PROFESSIONAL ENGINEER

Vance Weynand

DHI Engineering, LLC.
5419 N. LOOP 1604 EAST
SAN ANTONIO, TX 78247
(210) 496-2668 | dhiengineering.com
TBPE REG. NO. F-19561

DHI

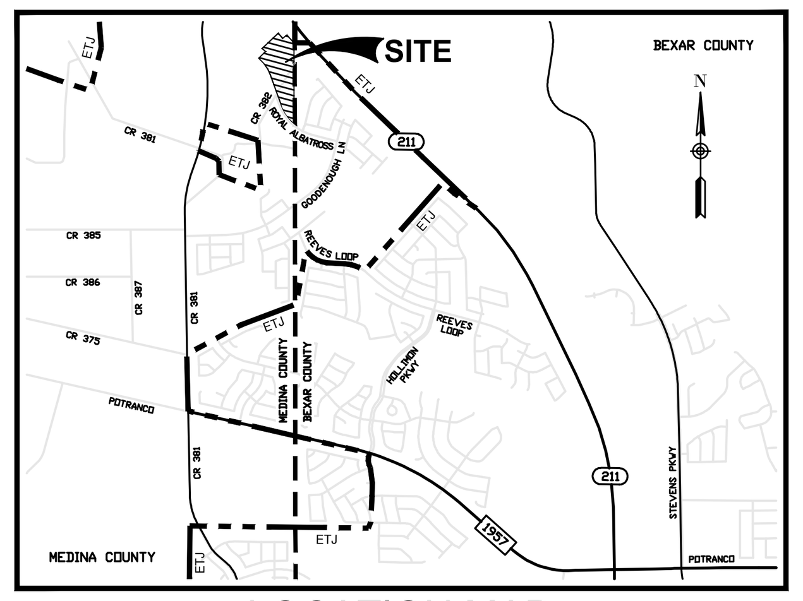
REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX

SANITARY SEWER DETAILS

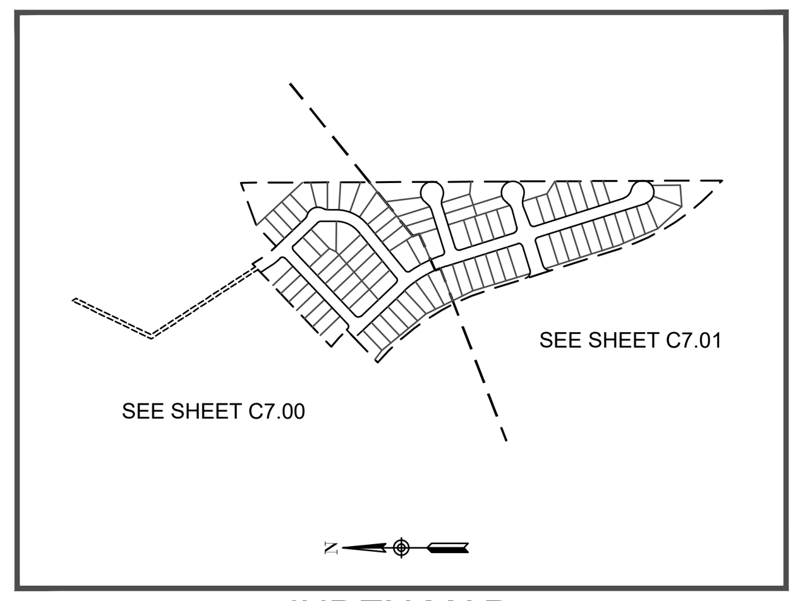
DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	3/20/2024
JOB NO.:	05000-200
SHEET NO.	C6.21

Date: Mar 20, 2024, 2:10pm User ID: AMSiller File: \\drhorton.com\tex-sant\HBGROUPS\Engineering_PROJECT\05000\200\900 - Design\930 - Sheets\C6.21 SANITARY SEWER DETAILS.dwg

DHI ENGINEERING, LLC.



LOCATION MAP
NOT-TO-SCALE



INDEX MAP
NOT-TO-SCALE

GENERAL GRADING NOTES:

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2. SITE PREPARATION AND GRADING SHALL BE COMPLETED IN ACCORDANCE WITH THE PROJECTS GEOTECHNICAL REPORT AND SPECIFICATIONS.
3. ALL SELECT FILL MATERIALS PROVIDED SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACING AND COMPACTING.
4. ALL ELEVATIONS AND PROPOSED CONTOURS SHOWN ON THIS PLAN REFLECTS FINISHED GRADES. THE THICKNESS OF PAVEMENT, BASE, GRASS, AND TOP SOIL MUST BE SUBTRACTED TO OBTAINED SUBGRADE ELEVATIONS.
5. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY QUESTIONS THEY HAVE REGARDING THE INTENT, PLACEMENT, OR LIMITS OF DIMENSIONS OR GRADES NECESSARY FOR CONSTRUCTION OF THIS PROJECT.
6. THE CONTRACTOR SHALL VERIFY THE SUITABILITY OF ALL EXISTING AND PROPOSED SITE CONDITIONS INCLUDING GRADES AND DIMENSIONS BEFORE THE START OF CONSTRUCTION. IF THERE ARE ANY DISCREPANCIES, CONTACT THE ENGINEER.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING ALL PERMITS, TEST, APPROVALS AND ACCEPTANCES REQUITED TO COMPLETE CONSTRUCTION OF THIS PROJECT.
8. THE CONTRACTOR SHALL REMOVE TOP SOIL, GRASS, ROOTS, DEBRIS, ETC. AND DISPOSE OF THOSE ITEMS THAT ARE NOT SUITABLE FOR EMBANKMENT AND TOPSOIL. CLEAN STRIPPING AND TOPSOIL MAY BE STOCKPILED ON SITE FOR REUSE IN A LOCATION SPECIFIED BY THE OWNER.
9. THE CONTRACTOR IS RESPONSIBLE FOR REVEGETATE ALL DISTURBED AREAS IN ACCORDANCE WITH PROJECT SPECIFICATION AND TPDES/SWPPP REQUIREMENTS. REFER TO THE LANDSCAPE ARCHITECT'S PLAN IF APPLICABLE.
10. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO KEEP DRAINAGE AND SILT FROM WASHING ONTO ADJACENT PROPERTY, STREETS, OR DRAINAGE WAY. CONTRACTOR SHALL IMMEDIATELY REMOVE SILT/DEBRIS THAT WASHES OFFSITE OR INTO EXISTING STORM DRAIN SYSTEMS. REFER TO THE SWPPP PLAN.
11. THE CONTRACTOR SHALL OBTAIN GRADES SHOWN HERON WITHIN ± ONE TENTH OF A FOOT.
12. IN PROPOSED PAVED AREAS AND STREET DESIGN PLANS SHALL CONTROL. ALL EARTHEN SLOPES SHALL BE A MAXIMUM OF 3:1 AND A MINIMUM OF 1.0% UNLESS OTHERWISE STATED.
13. THE CONTRACTOR SHALL PROVIDE A SMOOTH TRANSITION BETWEEN EXISTING AND PROPOSED SITE CONDITIONS.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING ANY DAMAGE DONE TO EXISTING TREES, BUILDINGS, UTILITIES, FENCES, PAVEMENT, CURBS, OR DRIVEWAYS BACK TO EXISTING CONDITIONS OR BETTER. (NO SEPARATE PAY ITEMS.)
15. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION IN WORKING NEAR UTILITIES, GAS LINES, SEWER, OR EXITING APPURTENANCES PRIOR TO PERFORMING ANY EXCAVATION. CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES AND ASSURE HIMSELF THAT ALL UTILITIES HAVE BEEN ADEQUATELY LOCATED AND IDENTIFIED. THE ENGINEER SHALL BE NOTIFIED IF ANY UTILITY CONFLICTS ARE IDENTIFIED.
16. UTILITIES SHOWN ON THE PLANS ARE FROM INFORMATION SOURCES AVAILABLE AT THE TIME OF DESIGN BUT MAY NOT REPRESENT ALL EXISTING UTILITIES ON SITE. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATIONS OF ALL UTILITIES, WEATHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES BEFORE CONSTRUCTION TO CONFIRM SIZE, GRADE AND LOCATION AND WILL CONTACT THE ENGINEER OF ANY DEVIATIONS FROM THE PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES WHETHER SHOWN ON THE PLANS OR NOT SHALL BE THE CONTRACTORS RESPONSIBILITY TO REPAIR AND THEIR OWN EXPENSE.
17. POSITIVE DRAINAGE SHALL BE MAINTAINED THROUGHOUT THE SCOPE OF THE PROJECT. DRAINAGE SHALL BE DIRECTED AWAY FROM ALL BUILDING FOUNDATIONS. CONTRACTOR SHALL TAKE PRECAUTIONS NOT TO ALLOW ANY PONDING OF WATER.
18. FILL PLACED ON HILL SIDES OR STEEP SLOPED AREAS, THE CONTRACTOR SHALL REFER TO THE PROJECT'S SPECIFICATIONS AND GEOTECHNICAL REPORT FOR SPECIAL INSTRUCTION REGARDING BENCHING.
19. NO WORK SHALL BE PERFORMED IN A PUBLIC RIGHT-OF-WAY WITHOUT A PERMIT.

LEGEND (GRADING)

Symbol	Description
— — —	PROJECT LIMITS
- - - - -	OFFSITE EASEMENT
— —985— —	EXISTING CONTOUR
—(1002)—	PROPOSED CONTOUR
→	FLOW ARROW
(A)(B)(C)	TYPICAL LOT GRADING
×1022.23	PROPOSED ELEVATION
▬ ▬ ▬	GRADE BREAK

TRENCH EXCAVATION PROTECTION

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

CAUTION!!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO : WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

TYPE 'A' LOT GRADING

TYPE 'B' LOT GRADING

TYPE 'C' LOT GRADING

NOTE: THIS IS THE TYPICAL LOT GRADING PLAN BASED ON THE TYPE OF LOT BEING PROPOSED.

- **TYPE A** LOTS IS GRADED SO THE OVERLAND FLOW OF RUNOFF WILL DRAIN TOWARDS THE STREET.
- **TYPE B** LOTS IS GRADED SO THE OVERLAND FLOW OF RUNOFF WILL DRAIN TOWARDS THE STREET AND THE BACK OF THE LOT. (AWAY FROM THE HOUSE)
- **TYPE C** LOTS IS GRADED SO THE OVERLAND FLOW OF RUNOFF WILL DRAIN TOWARDS THE BACK OF THE LOT.

TYPICAL LOT GRADING
NOT TO SCALE

REV	DATE	DESCRIPTION

3/20/2024

STATE OF TEXAS
VANCE L. WEYNAND
99269
LICENSED
PROFESSIONAL ENGINEER

Vance Weynand

DHI Engineering, LLC.
5419 N. LOOP 1604 EAST
SAN ANTONIO, TX 78247
(210) 496-2668 | dhiengineering.com
TBPE REG. NO. F-19561

DHI

REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX

OVERALL GRADING PLAN

DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	3/20/2024
JOB NO.:	05000-200
SHEET NO.	C7.00

REDBIRD RANCH UNIT 2M-2 DOC. # XXXXXXXXXXXXX

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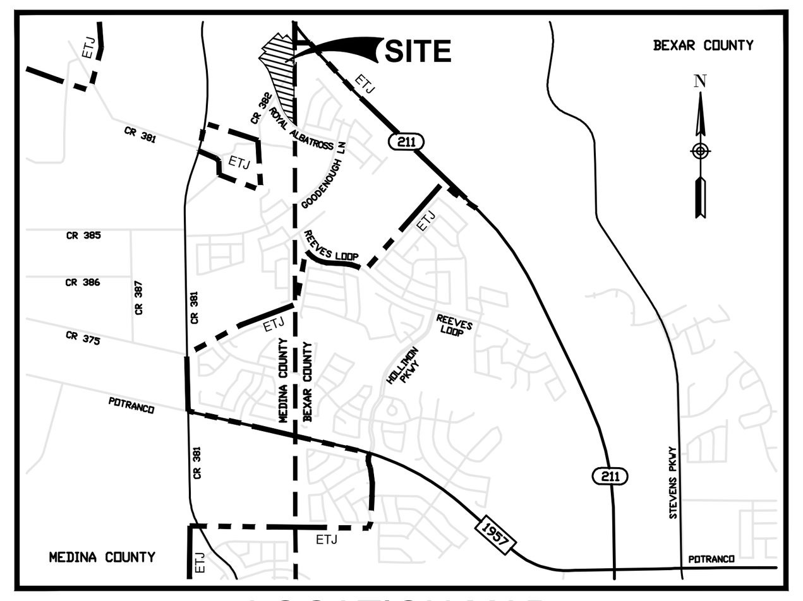
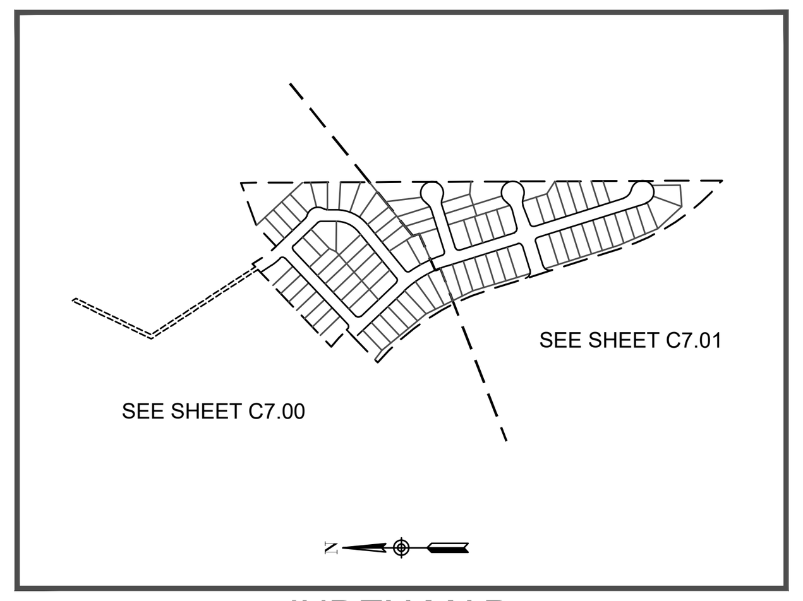


LOCATION MAP
NOT-TO-SCALE



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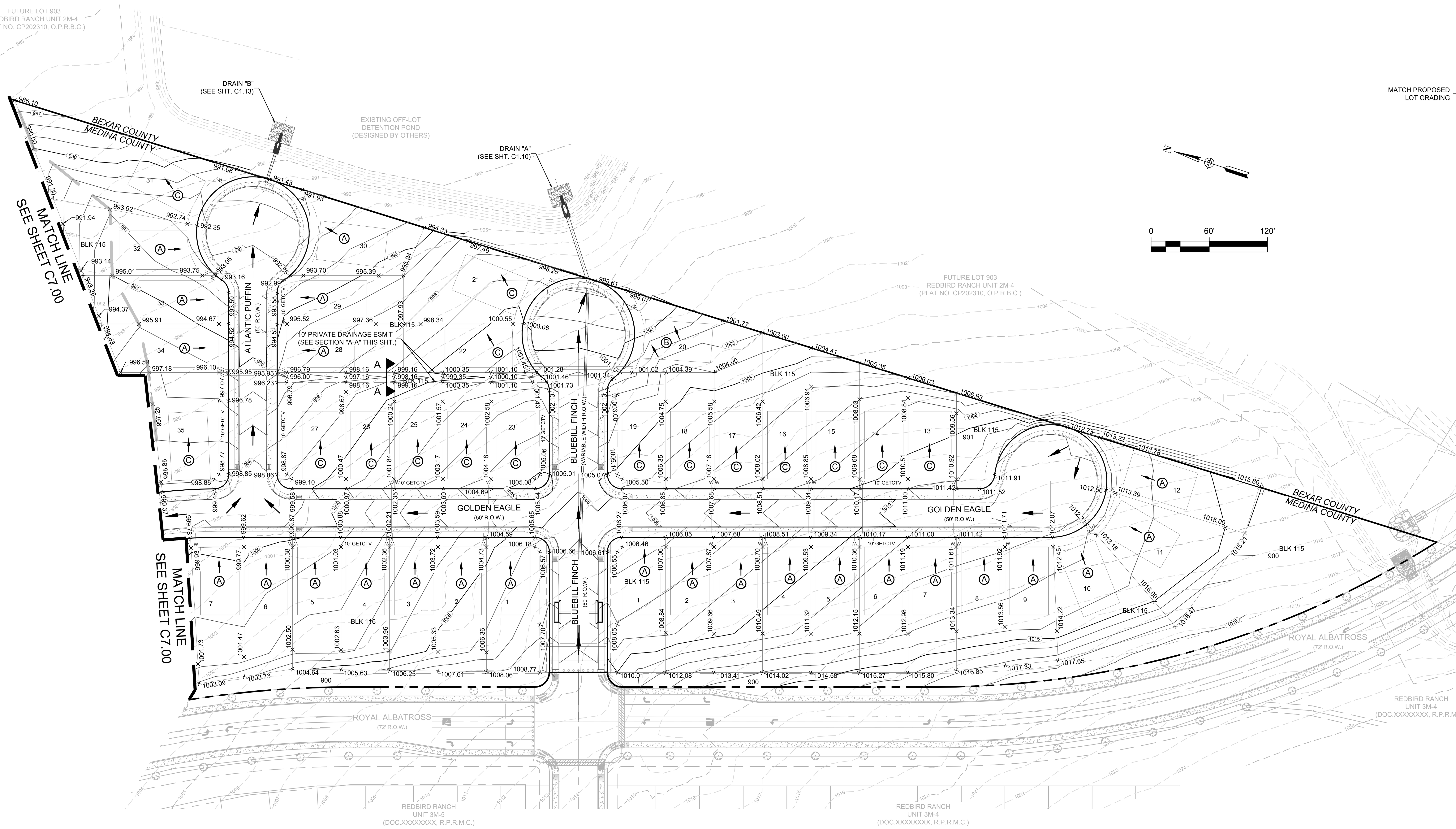
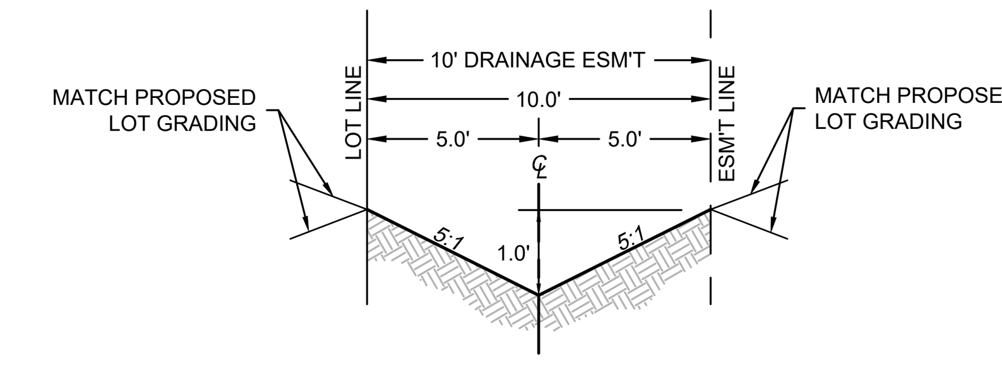
13. THE CONTRACTOR SHALL PROVIDE A SMOOTH TRANSITION BETWEEN EXISTING AND PROPOSED SITE CONDITIONS.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING ANY DAMAGE DONE TO EXISTING TREES, BUILDINGS, UTILITIES, FENCES, PAVEMENT, CURBS, OR DRIVEWAYS BACK TO EXISTING CONDITIONS OR BETTER. (NO SEPARATE PAY ITEMS.)
15. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION IN WORKING NEAR UTILITIES, GAS LINES, SEWER, OR EXITING APPURTENANCES PRIOR TO PERFORMING ANY EXCAVATION. CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES AND ASSURE HIMSELF THAT ALL UTILITIES HAVE BEEN ADEQUATELY LOCATED AND IDENTIFIED. THE ENGINEER SHALL BE NOTIFIED IF ANY UTILITY CONFLICTS ARE IDENTIFIED.
16. UTILITIES SHOWN ON THE PLANS ARE FROM INFORMATION SOURCES AVAILABLE AT THE TIME OF DESIGN BUT MAY NOT REPRESENT ALL EXISTING UTILITIES ON SITE. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATIONS OF ALL UTILITIES, WEATHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES BEFORE CONSTRUCTION TO CONFIRM SIZE, GRADE AND LOCATION AND WILL CONTACT THE ENGINEER OF ANY DEVIATIONS FROM THE PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES WHETHER SHOWN ON THE PLANS OR NOT SHALL BE THE CONTRACTORS RESPONSIBILITY TO REPAIR AND THEIR OWN EXPENSE.
17. POSITIVE DRAINAGE SHALL BE MAINTAINED THROUGHOUT THE SCOPE OF THE PROJECT. DRAINAGE SHALL BE DIRECTED AWAY FROM ALL BUILDING FOUNDATIONS. CONTRACTOR SHALL TAKE PRECAUTIONS NOT TO ALLOW ANY PONDING OF WATER.
18. FILL PLACED ON HILL SIDES OR STEEP SLOPED AREAS, THE CONTRACTOR SHALL REFER TO THE PROJECT'S SPECIFICATIONS AND GEOTECHNICAL REPORT FOR SPECIAL INSTRUCTION REGARDING BENCHING.
19. NO WORK SHALL BE PERFORMED IN A PUBLIC RIGHT-OF-WAY WITHOUT A PERMIT.

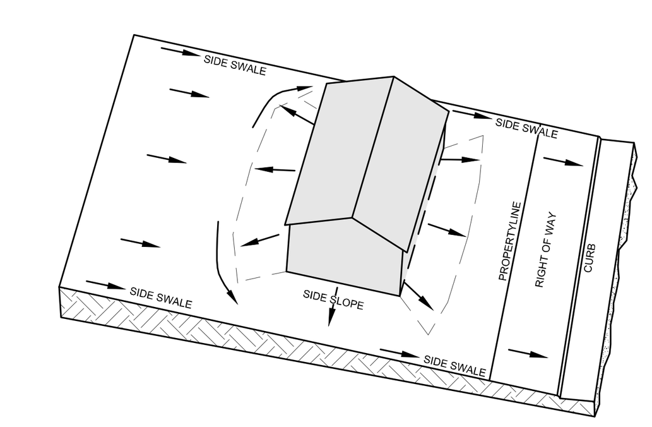
LEGEND (GRADING)

▬ ▬ ▬	PROJECT LIMITS
- - - - -	OFFSITE EASEMENT
— — 985— — —	EXISTING CONTOUR
—(1002)—	PROPOSED CONTOUR
──►	FLOW ARROW
Ⓐ Ⓑ Ⓒ	TYPICAL LOT GRADING
×1022.23	PROPOSED ELEVATION
▬ ▬ ▬ (grey)	GRADE BREAK

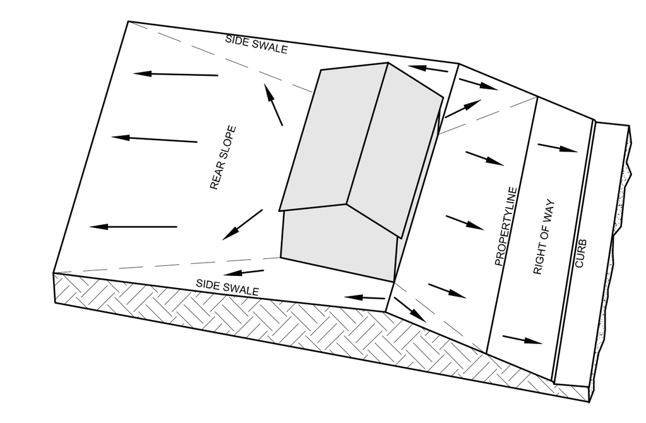




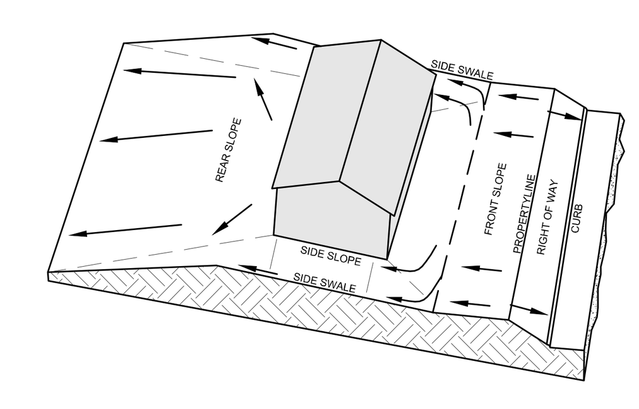
SECTION "A-A"
N.T.S.



TYPE 'A' LOT GRADING



TYPE 'B' LOT GRADING



TYPE 'C' LOT GRADING

NOTE: THIS IS THE TYPICAL LOT GRADING PLAN BASED ON THE TYPE OF LOT BEING PROPOSED.

- **TYPE A** LOTS IS GRADED SO THE OVERLAND FLOW OF RUNOFF WILL DRAIN TOWARDS THE STREET.
- **TYPE B** LOTS IS GRADED SO THE OVERLAND FLOW OF RUNOFF WILL DRAIN TOWARDS THE STREET AND THE BACK OF THE LOT. (AWAY FROM THE HOUSE)
- **TYPE C** LOTS IS GRADED SO THE OVERLAND FLOW OF RUNOFF WILL DRAIN TOWARDS THE BACK OF THE LOT.

TYPICAL LOT GRADING
NOT TO SCALE

TRENCH EXCAVATION PROTECTION

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

CAUTION!!!

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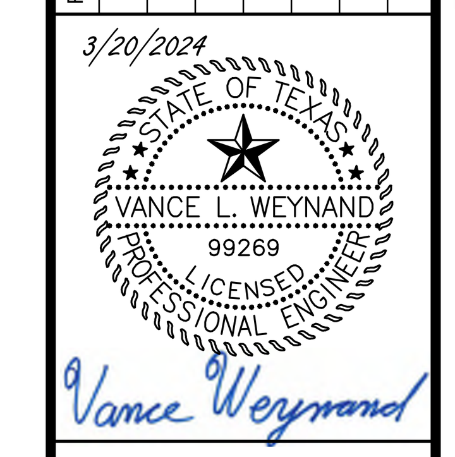
REV	DATE	DESCRIPTION

3/20/2024



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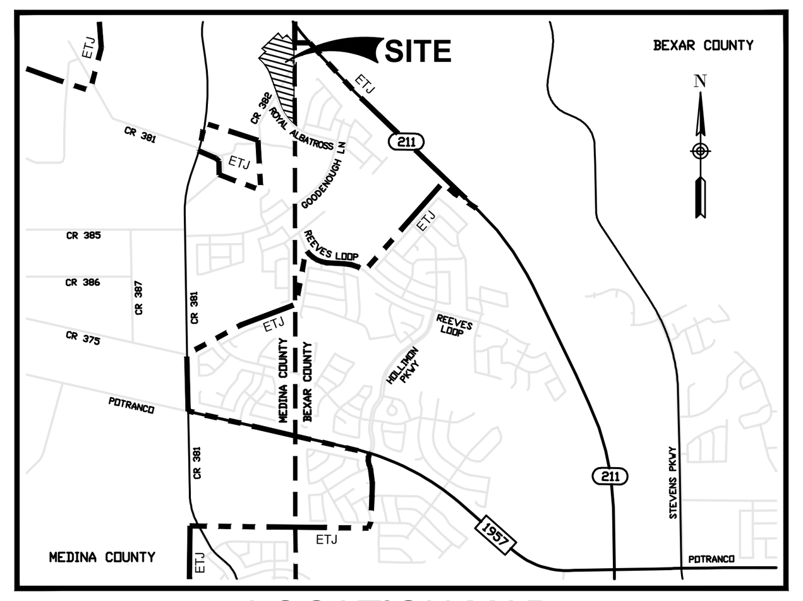
TBPE REG. NO. F-19561

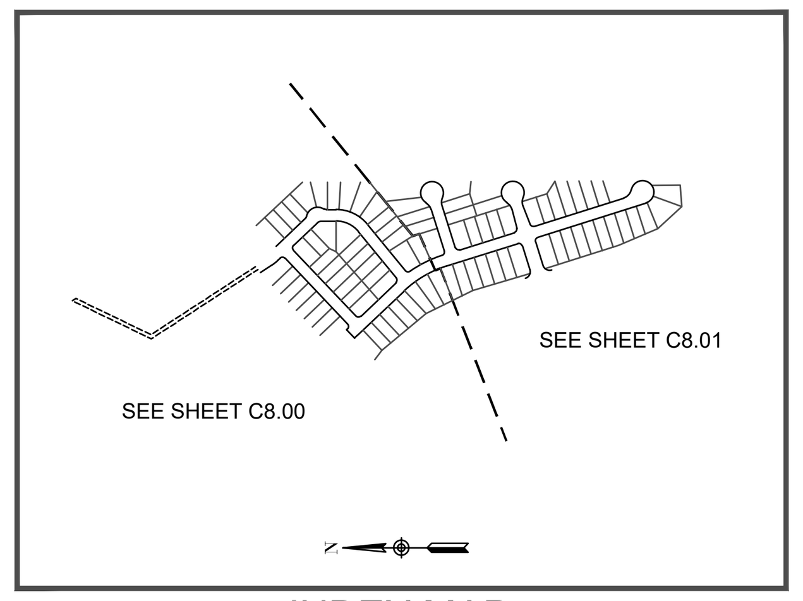
DHI

REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX
OVERALL GRADING PLAN

DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	3/20/2024
JOB NO.:	05000-200
SHEET NO.	C7.01



LOCATION MAP
NOT-TO-SCALE



INDEX MAP
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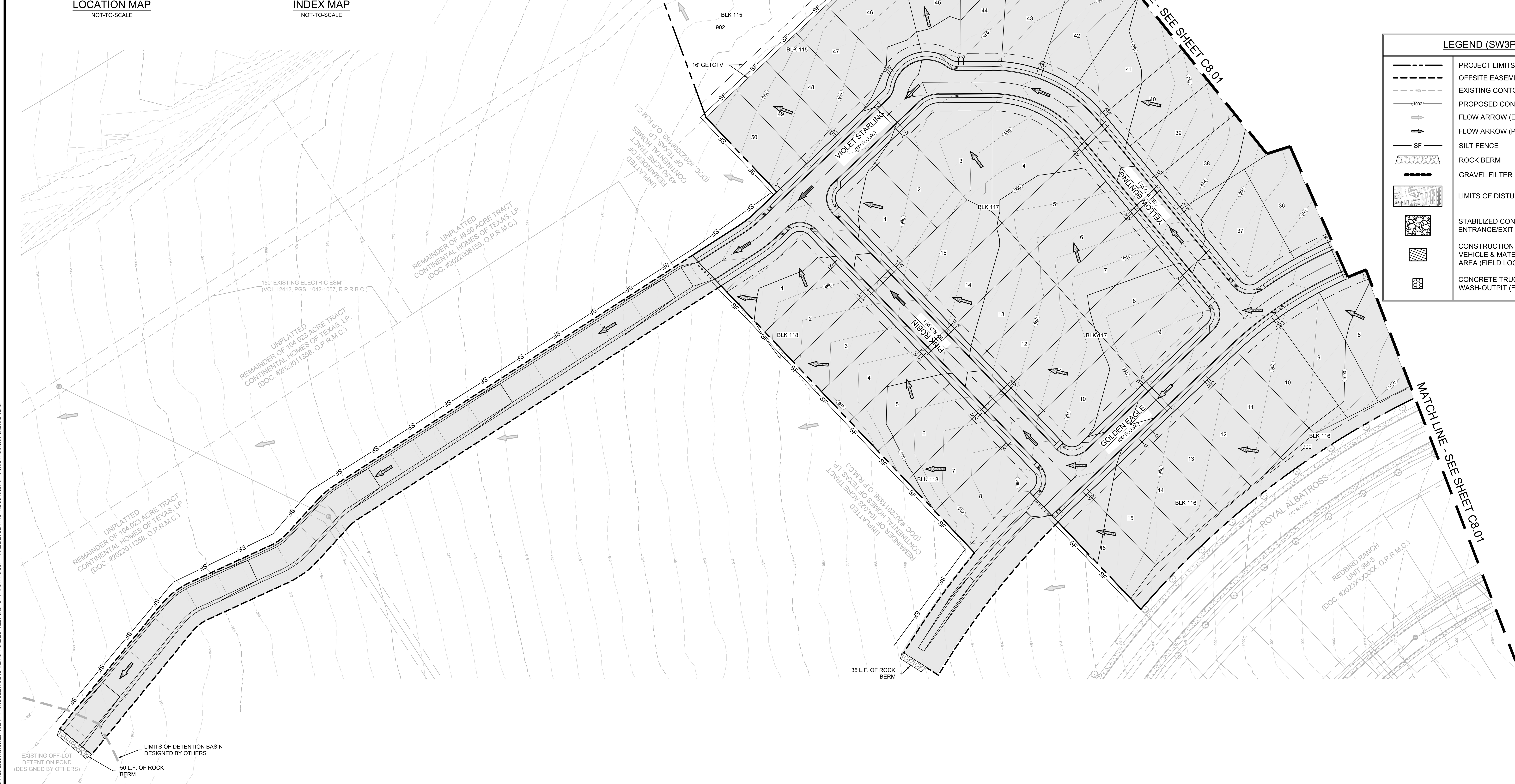

LEGEND (SW3P)

- PROJECT LIMITS
- OFFSITE EASEMENTS
- EXISTING CONTOUR
- PROPOSED CONTOUR
- FLOW ARROW (EXISTING)
- FLOW ARROW (PROPOSED)
- SILT FENCE
- ROCK BERM
- GRAVEL FILTER BAGS
- LIMITS OF DISTURBED AREA
- STABILIZED CONSTRUCTION ENTRANCE/EXIT (FIELD LOCATE)
- CONSTRUCTION EQUIPMENT, VEHICLE & MATERIALS STORAGE AREA (FIELD LOCATE)
- CONCRETE TRUCK WASH-OUTPIT (FIELD LOCATE)

SW3P MODIFICATIONS

DATE	SIGNATURE	DESCRIPTION

GENERAL NOTES:

1. DO NOT DISTURB VEGETATED AREAS (TREES, GRASS, WEEDS, BRUSH, ETC.) ANY MORE THAN NECESSARY FOR CONSTRUCTION.
2. CONSTRUCTION ENTRANCE/EXIT LOCATION, CONCRETE WASH-OUT PIT, AND CONSTRUCTION EQUIPMENT AND MATERIAL STORAGE YARD TO BE DETERMINED IN THE FIELD.
3. STORM WATER POLLUTION PREVENTION CONTROLS MAY NEED TO BE MODIFIED IN THE FIELD TO ACCOMPLISH THE DESIRED EFFECT. ALL MODIFICATIONS ARE TO BE NOTED ON THIS EXHIBIT AND SIGNED AND DATED BY THE RESPONSIBLE PARTY.
4. RESTRICT ENTRY/EXIT TO PROJECT SITE TO DESIGNATED LOCATIONS BY USE OF ADEQUATE FENCING IF NECESSARY.
5. ALL STORM WATER POLLUTION PREVENTION CONTROLS ARE TO BE MAINTAINED AND IN WORKING CONDITIONS AT ALL TIMES.
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7. STORM WATER POLLUTION PREVENTION STRUCTURES SHOULD BE CONSTRUCTED WITHIN THE SITE BOUNDARIES. SOME OF THESE FEATURES MAY BE SHOWN OUTSIDE THE SITE BOUNDARIES ON THIS PLAN FOR VISUAL CLARITY.
8. AS SOON AS POSSIBLE, ALL DISTURBED SOIL THAT WILL NOT BE COVERED BY IMPERVIOUS COVER SUCH AS PARKWAY AREAS, EASEMENTS AREAS, EMBANKMENT SLOPES, ETC. WILL BE STABILIZED PER APPLICABLE PROJECT SPECIFICATIONS.
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16. THE ENGINEERING SEAL HAS BEEN AFFIXED TO THIS SHEET ONLY FOR THE PURPOSE OF DEMONSTRATING COMPLIANCE WITH THE TPDES-STORM WATER POLLUTION PREVENTION PLAN (SW3P) REGULATIONS.
17. THIS SHEET HAS BEEN PREPARED FOR PURPOSES OF THE SW3P ONLY. ALL OTHER CIVIL ENGINEERING RELATED INFORMATION SHOULD BE ACQUIRED FROM THE APPROPRIATE SHEET IN THE CIVIL IMPROVEMENTS PLANS.

CAUTION!!!

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TRENCH EXCAVATION PROTECTION

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REV	DATE	DESCRIPTION

3/20/2024
STATE OF TEXAS
VANCE L. WEYNAND
99269
LICENSED PROFESSIONAL ENGINEER
Vance Weynand

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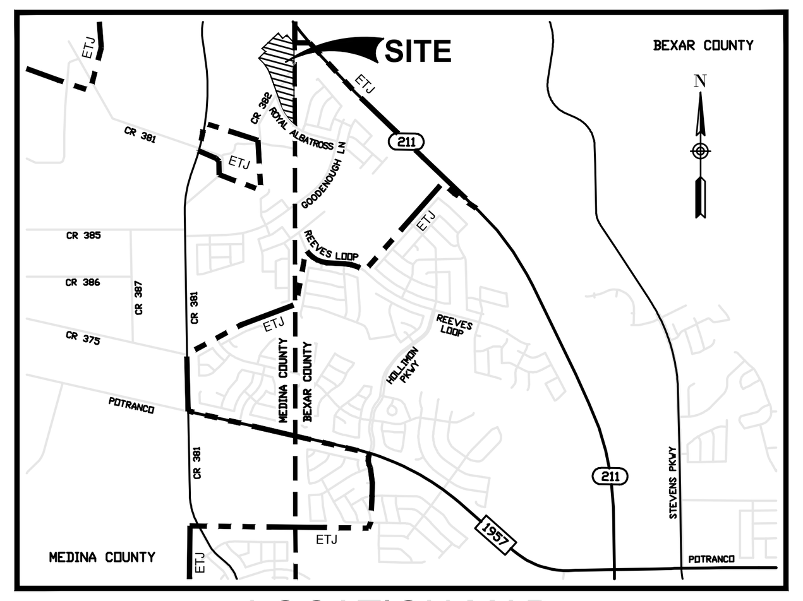
TBPE REG. NO. F-19561
DHI

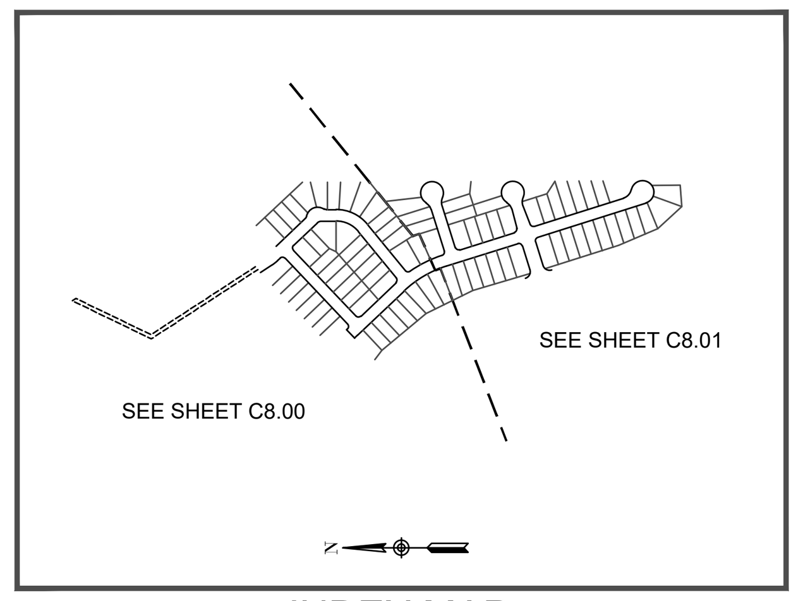
REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX
STORM WATER POLLUTION PREVENTION PLAN

DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	3/20/2024
JOB NO.:	05000-200
SHEET NO.	C8.00

REDBIRD RANCH UNIT 2M-2
DOC. # XXXXXXXXXXXX



LOCATION MAP
NOT-TO-SCALE



INDEX MAP
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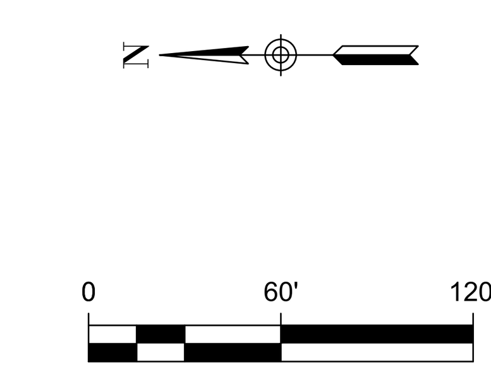

LEGEND (SW3P)

— - —	PROJECT LIMITS
- - -	OFFSITE EASEMENTS
— 985 —	EXISTING CONTOUR
—1002—	PROPOSED CONTOUR
⇨	FLOW ARROW (EXISTING)
⇨	FLOW ARROW (PROPOSED)
— SF —	SILT FENCE
	ROCK BERM
	GRAVEL FILTER BAGS
	LIMITS OF DISTURBED AREA
	STABILIZED CONSTRUCTION ENTRANCE/EXIT (FIELD LOCATE)
	CONSTRUCTION EQUIPMENT, VEHICLE & MATERIALS STORAGE AREA (FIELD LOCATE)
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SW3P MODIFICATIONS

DATE	SIGNATURE	DESCRIPTION

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REV	DATE	DESCRIPTION

3/20/2024

STATE OF TEXAS — VANCE L. WEYNAND — 99269 — LICENSED PROFESSIONAL ENGINEER

Vance Weynand

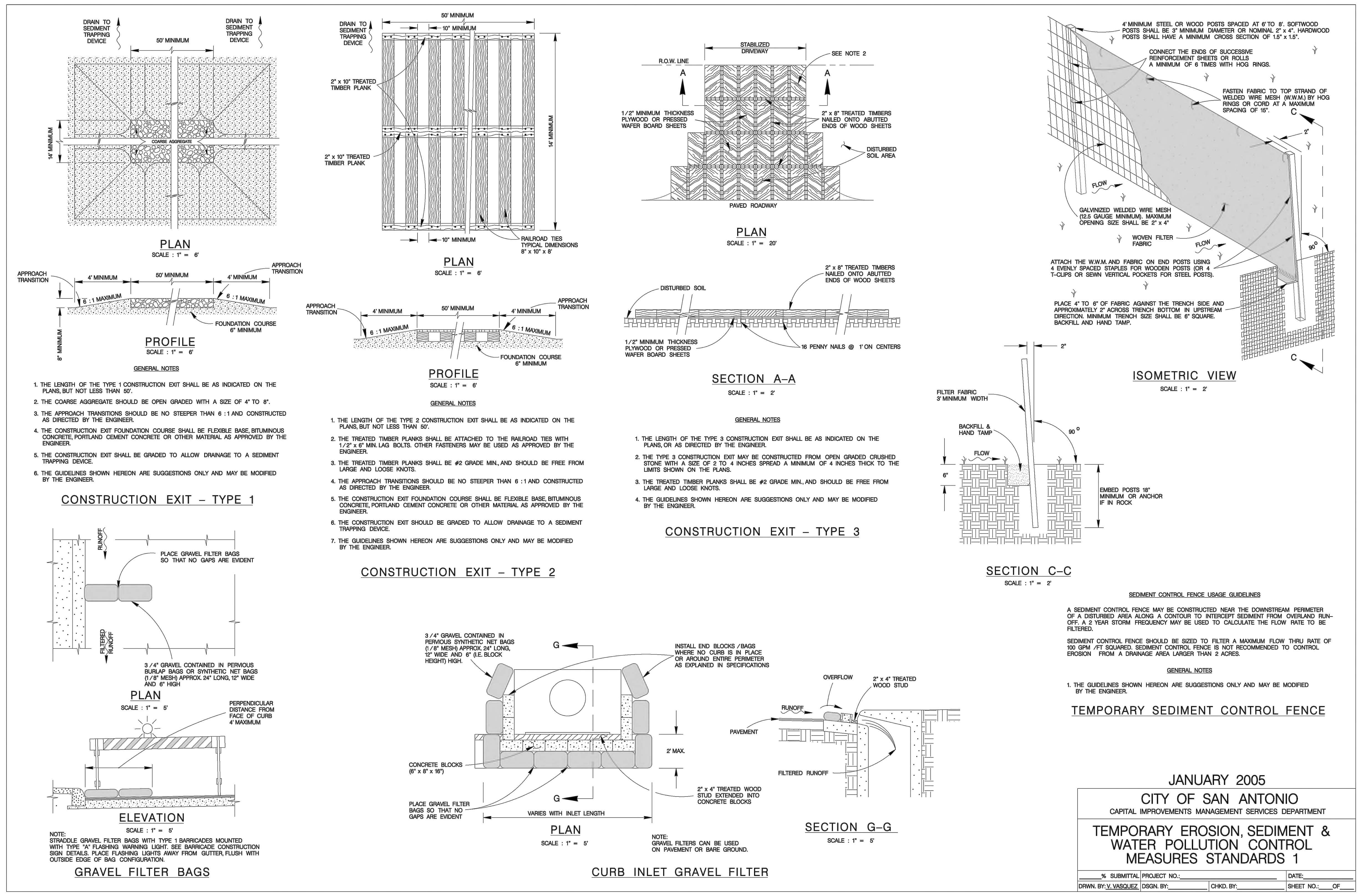
DHI Engineering, LLC.
5419 N. LOOP 1604 EAST
SAN ANTONIO, TX 78247
(210) 496-2668 | dhiengineering.com
TBPE REG. NO. F-19561

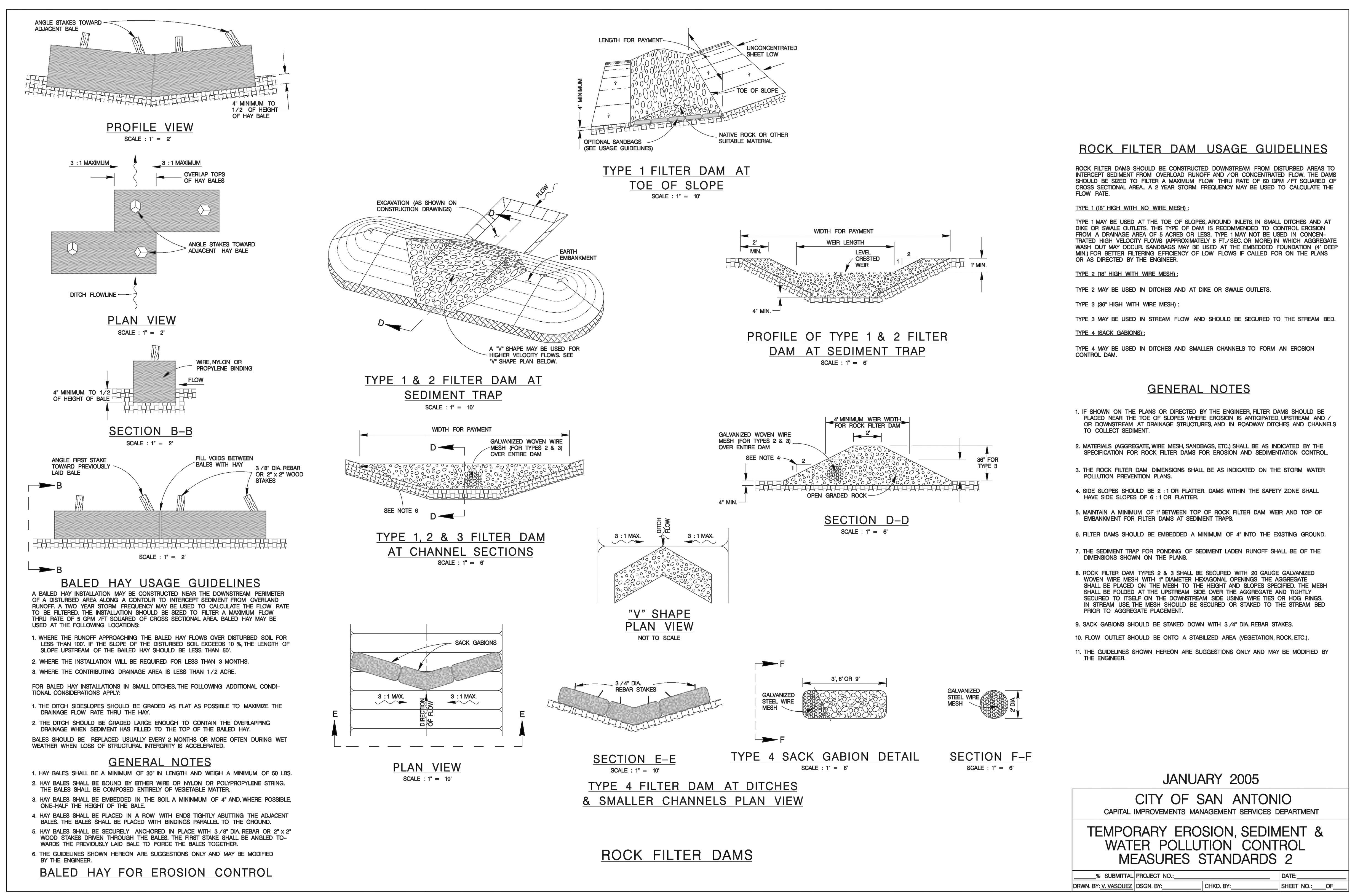
REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX
STORM WATER POLLUTION PREVENTION PLAN

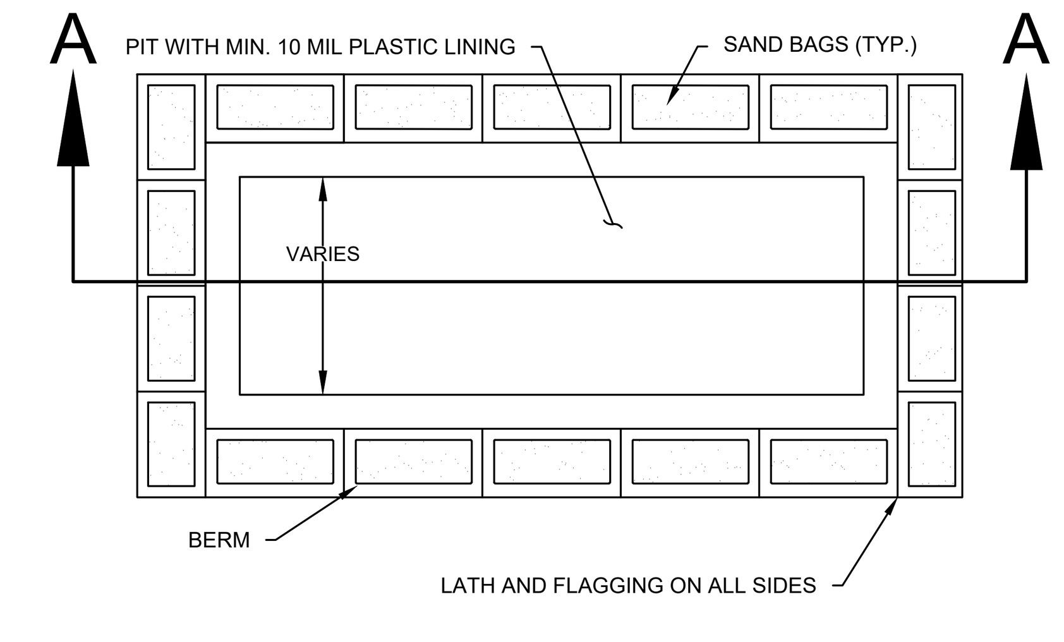
DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	3/20/2024
JOB NO.:	05000-200
SHEET NO.	C8.01

REDBIRD RANCH UNIT 2M-2 DOC. # XXXXXXXXXXXXX

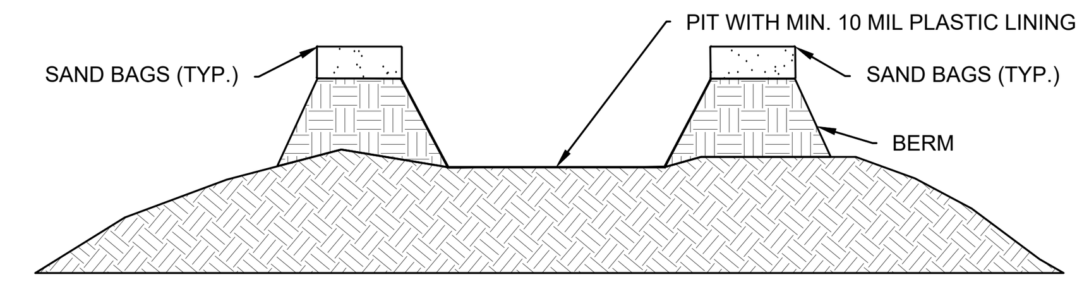
Date: Mar 20, 2024, 2:11pm User ID: AMSiller File: \\drhorton.com\tex-sant\HBGROUPS\Engineering_PROJECT\05000\200\900 – Design\930 – Sheets\C8.00 STORM WATER POLLUTION PREVENTION PLAN.dwg







PLAN VIEW



SECTION "A-A"

MATERIALS:
A IMPERMEABLE POLYETHYLENE LINING SHEET (MIN. 10 MIL) SHOULD BE INSTALLED WITH NO DEFECTS IN ORDER TO PREVENT LEAKS.

GENERAL NOTES:
1. DETAIL ABOVE ILLUSTRATES MINIMUM DIMENSIONS AND CAN BE RESIZED DEPENDING ON EXPECTED FREQUENCY OF USE.

2. WASHOUT PIT SHALL BE LOCATED AS DESIGNATED ON PLANS UNLESS A MORE SUITABLE LOCATION IS FOUND ONSITE.

3. WASHOUT PIT SHALL BE LOCATED IN AN AREA EASILY ACCESSIBLE TO CONSTRUCTION TRAFFIC; BUT OUT OF THE WAY OF STORM WATER RUNOFF

4. WASHOUT PIT SHALL BE LOCATED 50 FEET WAY FROM ANY SITE SENSITIVE FEATURES, RECEIVING BODIES OF WATER, OR DRAINAGE STRICTURES.

5. WASHOUT PIT SHALL BE SIZED TO CONTAIN THE QUANTITY AND VOLUME TO REQUIRED TO CONTAIN THE WASTE GENERATED BY WASHOUT OPERATIONS.

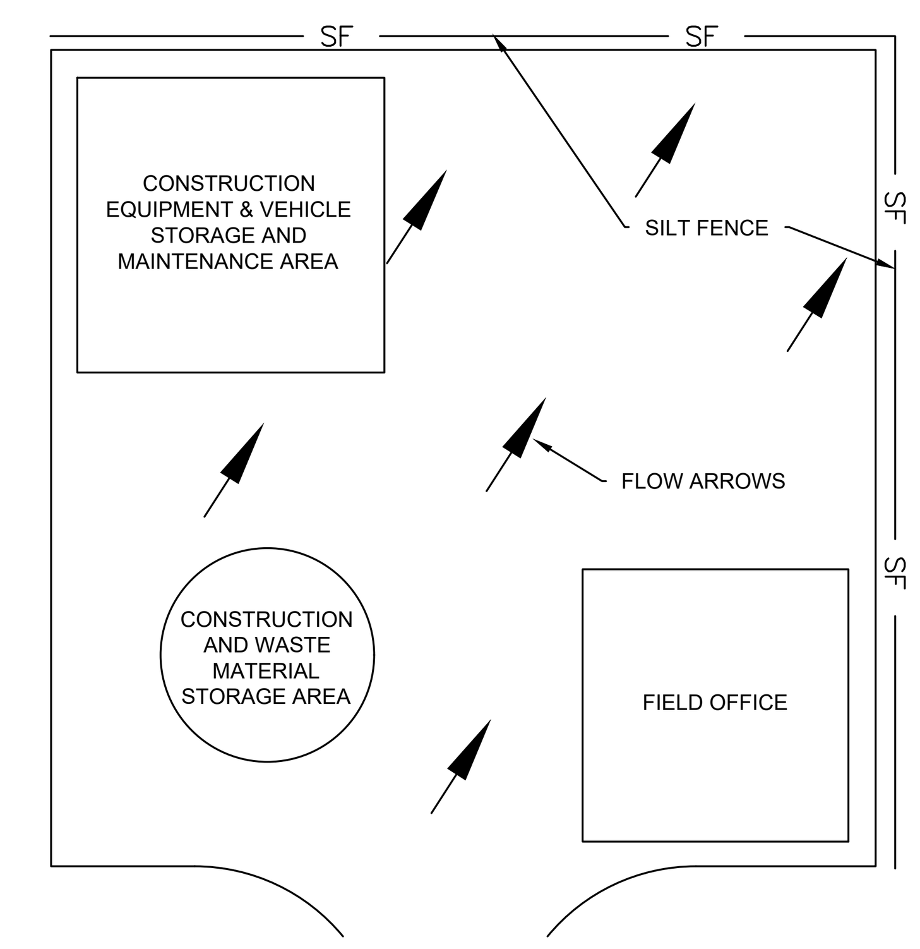
MAINTENANCE:
1. REMOVE AND DISPOSE HARDENED CONCRETE LEFT IN THE WASHOUT PIT ONCE THE PROJECT IS COMPLETED.

2. DECONSTRUCT THE WASHOUT PIT AND DISPOSED OF THE MATERIALS USED ONCE THE PROJECT IS COMPLETED.

3. BACKFILL AND REPAIR ANY GROUND DISTURBANCES CAUSED BY THE REMOVAL OF THE WASHOUT PIT.

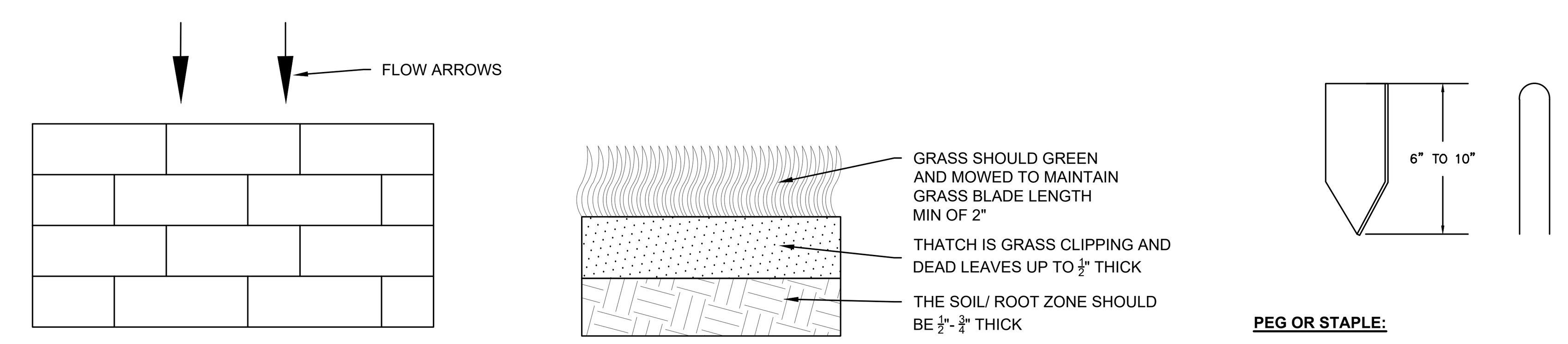
CONCRETE TRUCK WASHOUT PIT DETAIL

NOT TO SCALE



CONSTRUCTION STAGING AREA

NOT TO SCALE



GENERAL NOTE:

1. PLACE SOD IN A STAGGERED PATTERED, TIGHTLY AGAINST EACH OTHER WITH NO OVERLAP.
2. LAY SOD PERPENDICULAR TO THE DIRECTION OF SURFACE FLOW. IN AREAS WHERE EROSION IS A CONCERN, APPLY ADDITIONAL ANCHORING METHODS TO SECURE SOD.

TYPICAL SOD DETAIL NOTES:

1. ROLL OUT SOD ONCE RECEIVED AND WATER TO A DEPTH OF 4" ONCE LAID.
2. ONLY MOW SOD ONCE WELL ESTABLISHED (AFTER 2 TO 3 WEEK)

PEG OR STAPLE:

1. USE PEGS OR STAPLES TO FASTEN SOD IN AREAS THAT HAVE HIGH EROSION.
2. USE FASTENER AT THE FOUR CORNERS AND CENTER OF EACH STRIP; OR EVERY 3 TO 4 FEET IF THE STRIPS ARE LONG.
3. MAKE SURE THE PEGS AND STAPLES ARE LUSH WITH THE GROUND BEFORE MOWING.

GENERAL NOTES:

1. SOD SHOULD NOT BE PLACE ON EXCESSIVELY WET, DRY, OR FROZEN SOIL.

2. DURING HIGH TEMPERATURE, SOIL MUST BE LIGHTLY IRRIGATED, PRIOR TO INSTALLING SOD FOR BETTER ACCLIMATION.

3. THE FIRST ROW AND SUBSEQUENT ROWS OF SOD SHALL BE PLACED PARALLEL AND TIGHTLY AGAINST EACH OTHER TO PREVENT VOIDS, PERPENDICULAR TO THE FLOW OF RUNOFF. SOD SHOULD BE INSTALLED WITH LATERAL JOINTS SHOULD BE STAGGERED ON IMPROVE GROWTH AND STABILITY.

4. SOD SHOULD BE INSTALLED WITH LATERAL JOINTS AND ADDITIONAL APPROVED ANCHORING METHODS (MESH OR NETTING) AS NEEDED WHEN INSTALLED ON SLOPES EQUAL TO OR GRATER THAN 3:1 OR WHERE EROSION IS FORESEEN TO BE A CONCERN (CHANNELS).

5. SOD SHOULD BE ROLLED OR TAMPED TO PROMOTE GROWTH AND ROOT ESTABLISHMENT. THE SOD SHOULD THEN BE IRRIGATED TO WET THE FIRST 4 INCH AT A MIN. THIS WILL NEED TO BE MAINTAINED, IN THE ABSENCE OF RAINFALL, UNTIL A GOOD ROOT SYSTEM IS ESTABLISHED.

6. NO MOWING OF THE SOD SHOULD BE DONE UNTIL ROOT SYSTEM IS ESTABLISHED AND THEN ONLY MAX $\frac{1}{3}$ OF THE GRASS SHALL BE REMOVED. THIS USUALLY TAKES 2-3 WEEKS.

INSPECTION MAINTENANCE:

1. INSPECT SOD WEEKLY AND AFTER EACH RAINFALL EVENT TO REPAIR.

2. DAMAGE DUE TO ENVIRONMENTAL CIRCUMSTANCES OR CONSTRUCTION ACTIVITIES SHOULD BE REPAIRED AS SOON AS POSSIBLE.

MATERIALS:

1. SOD SHOULD BE MACHINE CUT AT A UNIFORM SOIL THICKNESS OF $\frac{3}{4}$" ($\pm\frac{1}{4}$") AT THE TIME OF CUTTING, EXCLUDING SHOOT GROWTH AND THATCH.

2. PIECES OF SOD SHOULD BE CUT TO THE SUPPLIER'S STANDARD WIDTH AND LENGTH, WITH A MAXIMUM ALLOWABLE DEVIATION IN ANY DIMENSION OF 5%. TORN OR UNEVEN PADS SHOULD NOT BE ACCEPTED.

3. STANDARD SIZE SECTIONS OF SOD SHOULD BE STRONG ENOUGH TO SUPPORT THEIR OWN WEIGHT AND RETAIN THEIR SIZE AND SHAPE WHEN SUSPENDED FROM A FIRM GRASP ON ONE END OF THE SECTION.

4. SOD SHOULD BE HARVESTED, DELIVERED, AND INSTALLED WITHIN A PERIOD OF 36 HOURS.

SITE PREPARATION:

1. AREA TO BE SIDED SHOULD BE BROUGHT TO FINAL GRADE BEFORE INSTALLATION ACCORDING TO THE ENGINEERING PLANS.

2. THE SITE SHOULD BE CLEARED OF ALL DEBRIS AND OBJECTS THAT WOULD HINDER THE PLANTING, FERTILIZING AND MAINTENANCE OF THE SOD INSTALLED.

3. FERTILIZE THE SOIL BASED ON SOIL TESTS OR REGIONAL RECOMMENDATIONS FROM THE COUNTY AGRICULTURAL EXTENSION AGENTS. FERTILIZATION NEEDS TO BE WORKED INTO THE SOIL AT A MINIMUM DEPTH OF 3".

SOD INSTALLATION DETAIL

NOT TO SCALE

REV	DATE	DESCRIPTION

3/20/2024
STATE OF TEXAS
VANCE L. WEYNAND
99269
LICENSED
PROFESSIONAL ENGINEER
Vance Weynand

DHI Engineering, LLC.
5419 N. LOOP 1604 EAST
SAN ANTONIO, TX 78247
(210) 496-2668 | dhiengineering.com
TBPE REG. NO. F-19561
DHI

REDBIRD RANCH UNIT 2M-2
SAN ANTONIO, TX
STORM WATER POLLUTION PREVENTION PLAN DETAILS

DESIGNED BY:	JWS
DRAWN BY:	SQV/JWS
DATE:	3/20/2024
JOB NO.:	05000-200
SHEET NO.	C8.10

REDBIRD RANCH UNIT 2M-2 DOC. # XXXXXXXXXXXXX