DAIRY ACRES - UNIT 2
CONSTRUCTION PLANS
ATASCOSA COUNTY, TEXAS



LOCATION MAP
1:2000

CIVIL SHEET INDEX

Description	Sheet No.
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DRAIN E AND CULVERT CROSSING 2 PLAN AND PROFILE	C1.5
LOT INTERCEPTOR PLAN AND PROFILE	C1.6
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LOCATION MAP
N. T. S.

WATER PLAN SHEET INDEX

Description	Sheet No.
WATER PLAN COVER SHEET	W0.0
WATER DISTRIBUTION PLAN	W1.0
WATER DETAILS (1 OF 2)	W2.0
WATER DETAILS (2 OF 2)	W2.1

OWNER:
TREF LAND, LLC
10223 MCALLISTER FWY #105
SAN ANTONIO, TX 78216
SEPTEMBER 2026

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105348
LICENSED
PROFESSIONAL ENGINEER
F-9155
9/29/2026

RAKOWITZ
Engineering & Surveying

Texas Registered Engineering Firm F-9155
Texas Registered Surveying Firm 101812-00
830-281-4060

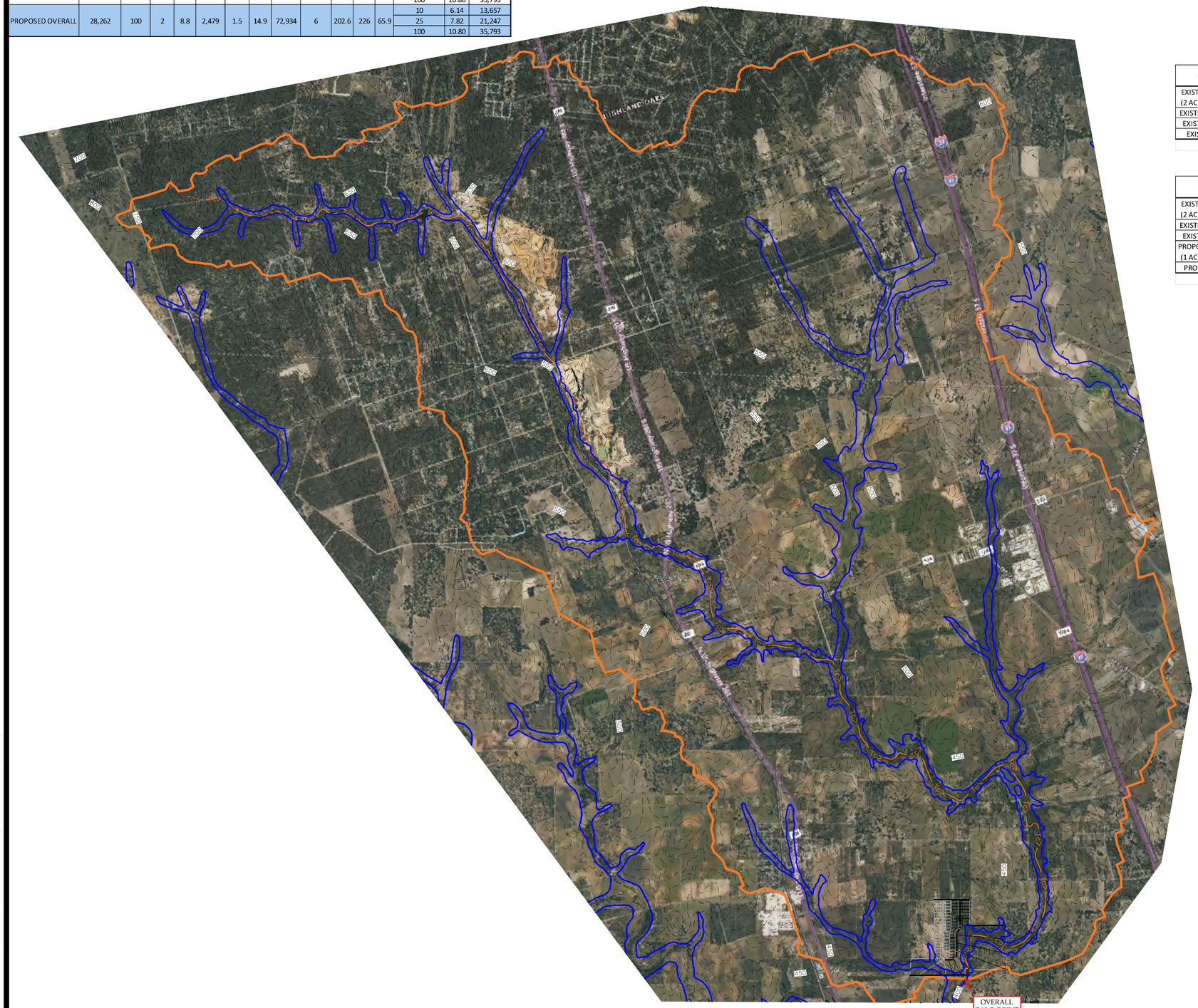
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Date: Sep 29, 2026, 3:56pm User ID: CAD1-2022
File: N:\Projects\2023\23-2979 TREF Land, LLC - Dairy Rd\Civil\UNIT 2\23-2979B COVER SHEET_U2.dwg

OVERALL DRAINAGE AREAS CALCULATION SUMMARY - SCS METHOD															
DRAINAGE AREA	ACRES	OVERLAND FLOW			SHALLOW CONCENTRATED			CHANNEL FLOW			OVERALL		STORM EVENT	P	Q
		LENGTH (ft)	SLOPE (%)	T_c (min)	LENGTH (ft)	SLOPE (%)	T_c (min)	LENGTH (ft)	VELOCITY (ft/s)	T_c (min)	T_c (min)	CN	(yrs)	(in)	(cfs)
EXISTING OVERALL	28,262	100	2	8.8	2,479	0.3	14.9	72,934	6	202.6	226	65.9	10	6.14	13,657
													25	7.82	21,247
													100	10.80	35,793
PROPOSED OVERALL	28,262	100	2	8.8	2,479	1.5	14.9	72,934	6	202.6	226	65.9	10	6.14	13,657
													25	7.82	21,247
													100	10.80	35,793

NOTES:
1) TIME OF CONCENTRATION (T_c) CALCULATED USING HYDRAFLOW HYDROGRAPHS TR-55 METHOD.
2) NRCS SOIL MAPS INDICATE PREDOMINATELY HSG A AND C SOIL TYPES. EFFECTIVE AND WEIGHTED CURVE NUMBERS WERE DETERMINED AS SHOWN ON THE TABLE (THIS SHEET)
3) TOPO SHOWN ON THIS DRAINAGE MAP ARE 10 FT USGS LIDAR CONTOURS AND ARE FOR REFERENCE ONLY.



2,500 0 2,500 5,000
SCALE OF FEET
1" = 2,500'

LEGEND
- OVERALL DRAINAGE AREA
- Tc> TIME OF CONCENTRATION PATH
- EXISTING 10' CONTOUR
- EXISTING 100-YR FLOODPLAIN

COVER TYPE	AREA (SQ FT)	AREA (ACRES)	AREA % OF OVERALL	CURVE NUMBERS A	B	C	D	EFFECTIVE CN
EXISTING RESIDENTIAL (2 ACRE HOMESTEADS)	410,025,707	9,412.9	33.31%	46	65	77	82	63.56
EXISTING COMMERCIAL	31,864,905	731.5	2.59%	89	92	94	95	91.84
EXISTING ROWCROPS	1,816,158	41.7	0.15%	76	85	90	93	83.97
EXISTING NATURAL	787,401,398	18,076.2	63.96%	49	69	79	84	66.01
						EXISTING CN:		65.9

COVER TYPE	AREA (SQ FT)	AREA (ACRES)	AREA % OF OVERALL	CURVE NUMBERS A	B	C	D	EFFECTIVE CN
EXISTING RESIDENTIAL (2 ACRE HOMESTEADS)	410,025,707	9,412.9	33.31%	46	65	77	82	63.56
EXISTING COMMERCIAL	31,864,905	731.5	2.59%	89	92	94	95	91.84
EXISTING ROWCROPS	1,816,158	41.7	0.15%	76	85	90	93	83.97
PROPOSED RESIDENTIAL (1 ACRE HOMESTEADS)	5,288,628	121.4	0.43%	51	68	79	84	66.88
PROPOSED NATURAL	782,112,770	17,954.8	63.53%	49	69	79	84	66.01
						PROPOSED CN:		65.9

SOIL CLASSIFICATION SUMMARY		
A	12360.3	43.7%
B	262.8	0.9%
C	14382.6	50.9%
D	1264.1	4.5%

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DAIRY ACRES - UNIT 2
OVERALL DRAINAGE CONDITIONS
ATASCOSA COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105343
LICENSED
PROFESSIONAL ENGINEER
F-9155
7/29/2026

REV	DATE	DESCRIPTION	BY

JOB NO.	23-2979B
DATE	SEP. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

C1.0

Date: Sep 29, 2026, 3:56pm User ID: CAD1 2022
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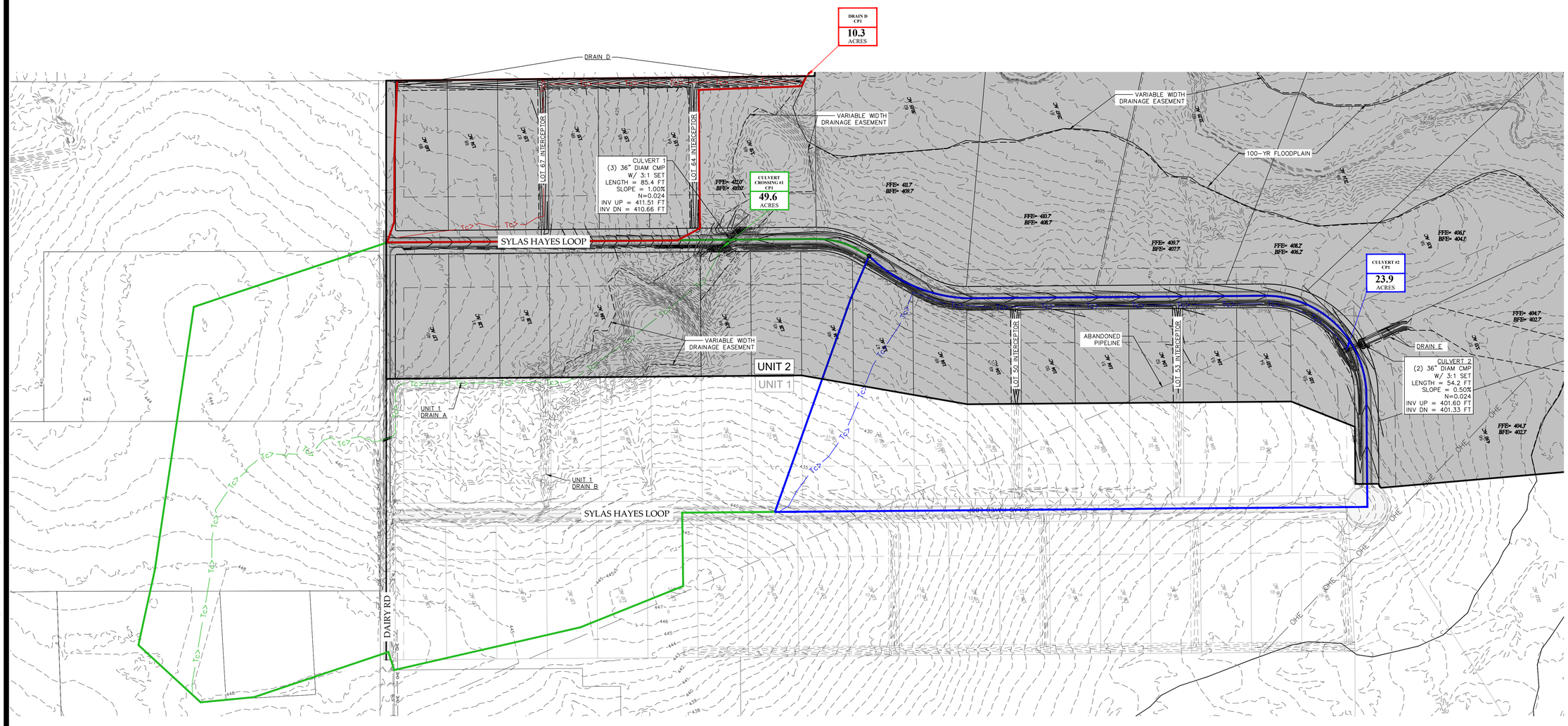
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INTERNAL DRAINAGE AREAS (CHANNELS AND CULVERTS) CALCULATION SUMMARY - RATIONAL METHOD

DRAINAGE AREA	ACRES	OVERLAND FLOW			SHALLOW CONCENTRATED FLOW			CHANNEL FLOW			OVERALL		STORM EVENT	i	Q
		LENGTH (ft)	SLOPE (%)	T_c (min)	LENGTH (ft)	SLOPE (%)	T_c (min)	LENGTH (ft)	VELOCITY (ft/s)	T_c (min)	T_c (min)	C_w	(yrs)	(in/hr)	(cfs)
DAIRY UNIT 2 CC#1 CP1	49.6	100	0.5	15.63	1100	1.26	10.12	1,361	6	3.8	30	0.35	10	4.36	75.66
													25	**5.26**	**91.33**
													100	6.65	115.36
DRAIN D CP1	10.3	100	1	11.85	349	1.7	2.76	1,173	6	3.3	17.9	0.43	10	5.66	25.08
													25	**6.80**	**30.10**
													100	8.52	37.72
DAIRY UNIT 2 CC#2 CP1	23.9	100	0.7	13.67	374	2.3	2.55	201	6	0.6	17	0.43	10	5.97	61.37
													25	**7.16**	**73.57**
													100	8.96	92.04

NOTES:
1) TIME OF CONCENTRATION (Tc) CALCULATED USING HYDRAFLOW HYDROGRAPHS TR-55 METHOD. DETAILED TR-55 CALCULATIONS CAN BE FOUND IN THE DRAINAGE REPORT.
2) RAINFALL INTENSITIES DERIVED FROM NOAA PRECIPITATION DATA FOR ATASCOSA COUNTY.
3) RUNOFF COEFFICIENTS TAKEN FROM TXDOT HYDRAULIC DESIGN MANUAL TABLE 4-10. PER TABLE 4-10, A RUNOFF COEFFICIENT EQUAL TO 0.20 WAS USED FOR ALL EXISTING/UNDEVELOPED AREAS. A PROPOSED WEIGHTED RUNOFF COEFFICIENT EQUAL TO 0.43 WAS USED FOR ONSITE. THIS COEFFICIENT WAS DETERMINED BY ASSUMING 0.25 ACRES OF IMPERVIOUS COVER WITH A MINIMUM LOT SIZE FOR THE DEVELOPMENT OF 1.00 ACRES.



150 0 150 300
SCALE OF FEET
1" = 150'

LEGEND

- PROPERTY BOUNDARY
- 650 EXISTING 5' CONTOUR
- 651 EXISTING 1' CONTOUR
- 654 PROPOSED 5' CONTOUR
- 655 PROPOSED 1' CONTOUR
- CULVERT CROSSING #1 DRAINAGE BOUNDARY
- Tc> CULVERT CROSSING #1 Tc PATH
- CULVERT CROSSING #2 DRAINAGE BOUNDARY
- Tc> CULVERT CROSSING #2 Tc PATH
- DRAIN D DRAINAGE BOUNDARY
- Tc> DRAIN D Tc PATH
- 100-YR FLOODPLAIN PER FEMA MAP #48013C0215C, DATED NOV. 4, 2010
- DRAINAGE EASEMENT BOUNDARY (SEE PLAT)

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830-281-4060

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DAIRY ACRES - UNIT 2
INTERNAL DRAINAGE CHANNELS AND CULVERTS
ATASCOSA COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105343
LICENSED
PROFESSIONAL ENGINEER
F-9155
9/29/2026

REV	DATE	DESCRIPTION	BY

JOB NO.	23-2979B
DATE	SEP. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

C1.1

Date: Sep 29, 2026, 3:59pm User ID: CAD1-2022
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INTERNAL DRAINAGE AREAS (BAR DITCHES AND LOT INTERCEPTORS) CALCULATION SUMMARY - RATIONAL METHOD

DRAINAGE AREA	ACRES	OVERLAND FLOW			SHALLOW CONCENTRATED FLOW			CHANNEL FLOW			OVERALL		STORM EVENT	i	Q
		LENGTH (ft)	SLOPE (%)	T_c (min)	LENGTH (ft)	SLOPE (%)	T_c (min)	LENGTH (ft)	VELOCITY (ft/s)	T_c (min)	T_c (min)	C_w	(yrs)	(in/hr)	(cfs)
LOT 67 INTERCEPTOR CP1	5.05	100	2.00	8.98	350	2.00	2.56	394	6.00	1.09	13	0.43	10	6.51	14.15
													25	**7.79**	**16.92**
													100	9.72	21.12
LOT 64 INTERCEPTOR CP1	5.02	100	2.90	7.74	321	2.90	1.95	376	6.00	1.04	11	0.43	10	6.94	14.99
													25	**8.29**	**17.90**
													100	10.33	22.29
LOT 49 INTERCEPTOR CP1	4.03	100	2.02	8.94	482	2.30	3.28	315	6.00	0.88	13	0.43	10	6.51	11.29
													25	**7.79**	**13.51**
													100	9.72	16.85
LOT 52 INTERCEPTOR CP1	3.95	100	3.12	7.52	408	1.70	3.23	299	6.00	0.83	12	0.43	10	6.72	11.41
													25	**8.04**	**13.65**
													100	10.02	17.01
BAR DITCH CP1	2.18	100	1.32	10.60	127	1.32	1.14	753	6.00	2.09	14	0.43	10	6.32	5.93
													25	**7.57**	**7.09**
													100	9.45	8.86
BAR DITCH CP2	6.02	100	2.90	7.74	732	2.90	4.44	366	6.00	1.02	13	0.43	10	6.51	16.86
													25	**7.79**	**20.17**
													100	9.72	25.17
BAR DITCH CP3	9.38	100	2.80	7.85	677	2.80	4.17	312	6.00	0.87	13	0.43	10	6.51	26.27
													25	**7.79**	**31.43**
													100	9.72	39.22
BAR DITCH CP4	16.40	100	2.80	7.85	677	2.8	4.18	795	6.00	2.21	14	0.43	10	6.32	44.58
													25	**7.57**	**53.37**
													100	9.45	66.65
BAR DITCH CP5	20.00	100	2.80	7.85	677	2.8	4.18	1,348	6.00	3.74	16	0.43	10	5.97	51.36
													25	**7.16**	**61.56**
													100	8.96	77.02
BAR DITCH CP6	3.86	100	1.40	10.36	414	1.4	3.61	259	6.00	0.72	15	0.43	10	6.14	10.19
													25	**7.36**	**12.21**
													100	9.20	15.26

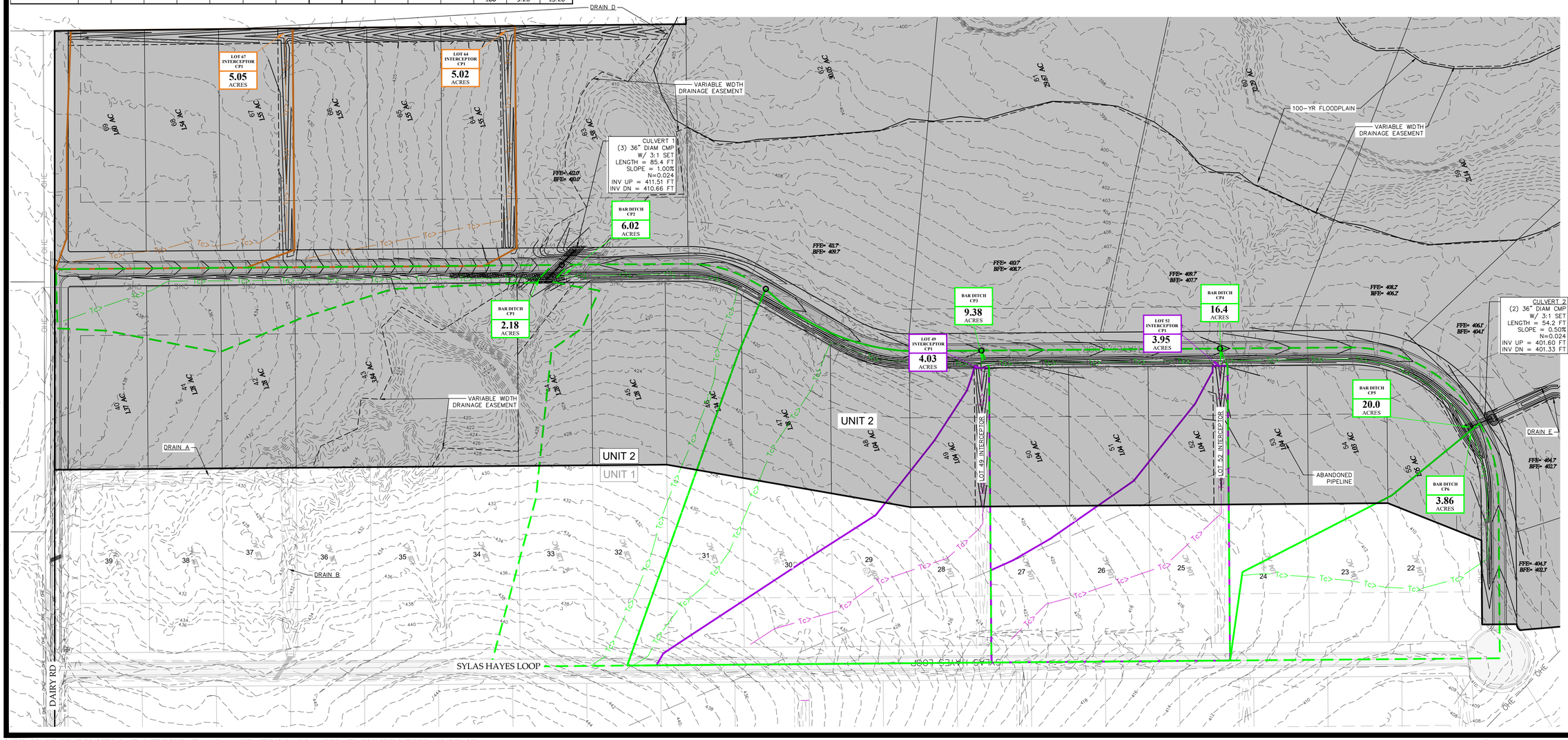
NOTES:
1) TIME OF CONCENTRATION (T_c) CALCULATED USING HYDRAFLOW HYDROGRAPHS TR-55 METHOD. DETAILED TR-55 CALCULATIONS CAN BE FOUND IN THE DRAINAGE REPORT.
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LEGEND

- PROPERTY BOUNDARY
- 650 EXISTING 5' CONTOUR
- 651 EXISTING 1' CONTOUR
- 654 PROPOSED 5' CONTOUR
- 659 PROPOSED 1' CONTOUR
- BAR DITCH DRAINAGE BOUNDARY
- Tc> BAR DITCH Tc PATH
- LOT INTERCEPTORS DRAINAGE BOUNDARY 1
- Tc> LOT INTERCEPTORS BOUNDARY 1 Tc PATH
- LOT INTERCEPTORS DRAINAGE BOUNDARY 2
- Tc> LOT INTERCEPTORS BOUNDARY 2 Tc PATH
- 100-YR FLOODPLAIN PER FEMA MAP #48013C0215C, DATED NOV. 4, 2010
- DRAINAGE EASEMENT BOUNDARY (SEE PLAT)

SCALE OF FEET
100 0 100 200
1" = 100'

Most Relevant Drainage Calc. Point	*~Q25 (cfs)*	*MIN SLOPE*	*MAX SLOPE*	V-CHANNEL w/ 3:1 SS D_N MAX	WITH FREEBOARD	MAX. VELOCITY (ft/s)	CHANNEL DEPTH CHOSEN	START ROAD STATION	END ROAD STATION
BD CP1	*7.09*	*1.75%*	*3.75%*	0.88	1.38	4.09	**1.5**	01+00.00	11+26.45
BD CP2	*20.17*	*0.50%*	*0.50%*	1.64	2.14	2.50	**2.25**	11+26.45	15+50.00
BD CP3	*31.43*	*0.80%*	*0.80%*	1.77	2.27	3.34	**2.50**	15+50.00	20+16.65
BD CP4	*53.37*	*0.80%*	*0.80%*	2.16	2.66	3.81	**2.80**	20+16.65	24.99.57
BD CP5	*61.56*	*0.80%*	*0.80%*	2.27	2.77	3.98	**2.80**	24.99.57	30+81.48
BD CP6	*12.21*	*0.75%*	*0.75%*	1.26	1.76	2.56	**2.00**	30+81.48	END



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DAIRY ACRES - UNIT 2
INTERNAL DRAINAGE
LOT INTERCEPTORS AND BAR DITCHES
ATASCOSA COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105343
LICENSED
PROFESSIONAL ENGINEER
F-9155
9/29/2026

REV	DATE	DESCRIPTION	BY

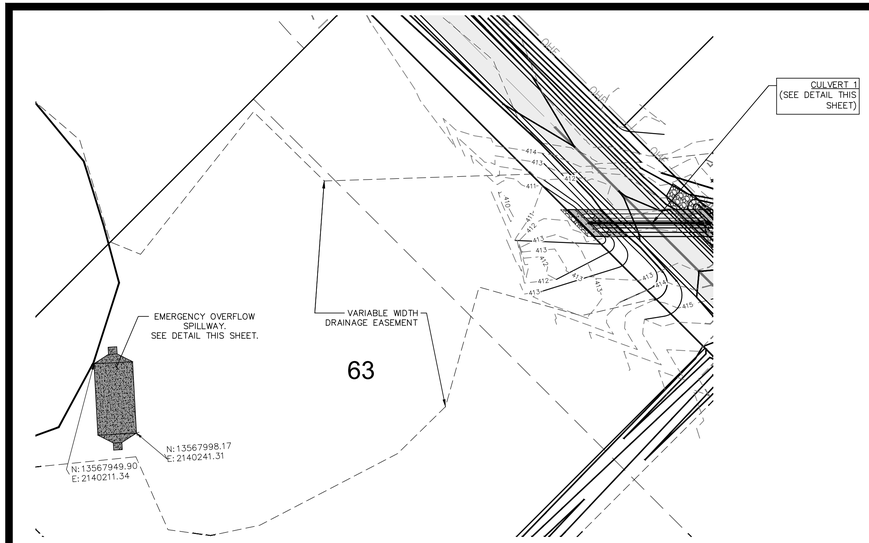
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DATE	SEP. 2026
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DRAWN	CT

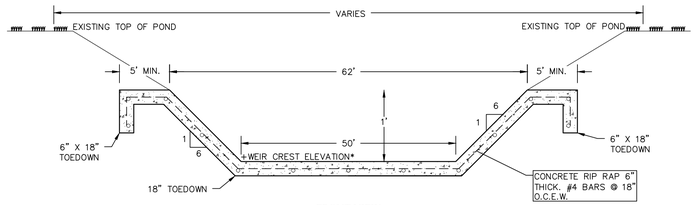
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FRONT VIEW

EMERGENCY SPILLWAY DETAIL

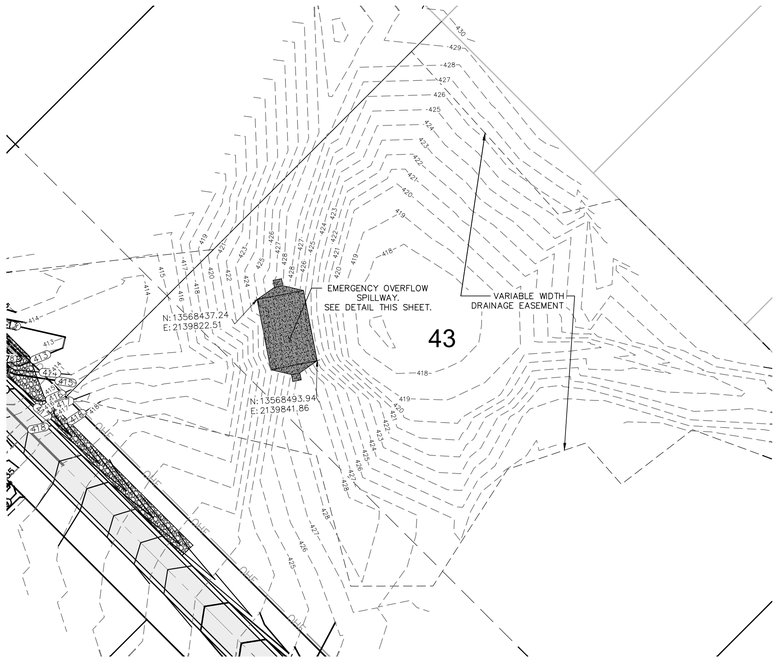
N.T.S.

*LOT 63 POND WEIR CREST ELEVATION: 411.00'
*LOT 43 POND WEIR CREST ELEVATION: 424.00'

EMERGENCY SPILLWAY CALCULATIONS

N.T.S.

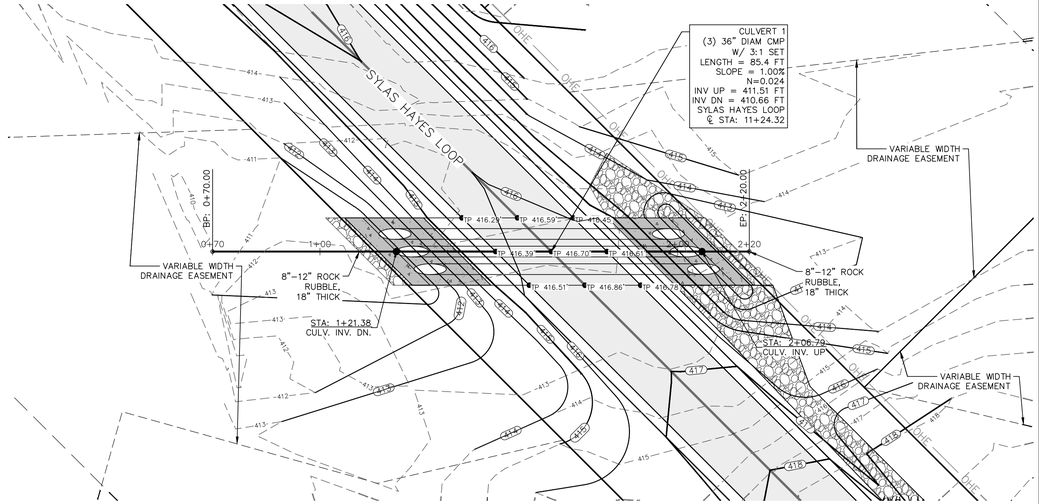
$Q_{weir} = CLH^{1.5} = 3.09*50*1.00^{1.5} = 154.5$ CFS
$Q_{100} = 115.4$ CFS
$Q_{weir} > Q_{100}$ (OK)





LEGEND

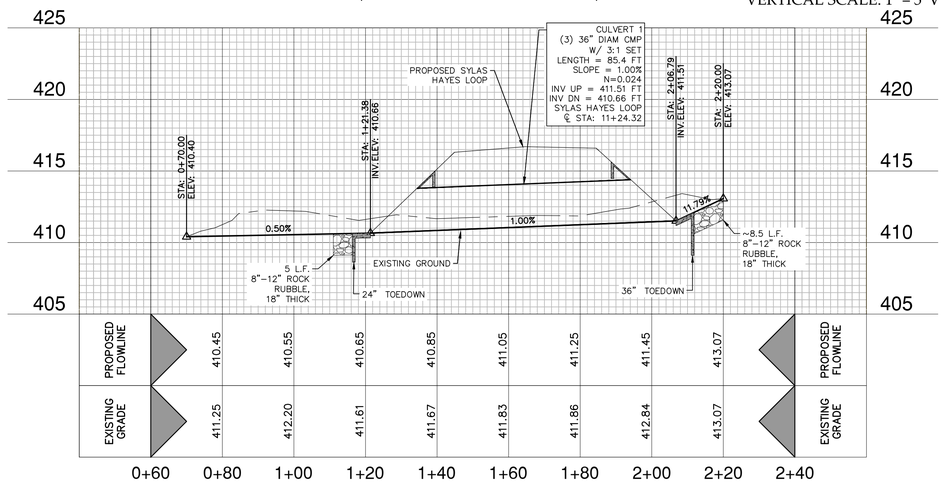
	PROPERTY BOUNDARY
650	EXISTING 5' CONTOUR
651	EXISTING 1' CONTOUR
654	PROPOSED 5' CONTOUR
655	PROPOSED 1' CONTOUR



NOTE:
CONTRACTOR SHALL BEGIN MEASURES TO ESTABLISH VEGETATION IMMEDIATELY AFTER CONSTRUCTION OF EARTHEN DRAIN SECTIONS TO MITIGATE CHANNEL EROSION. CONTRACTOR SHALL USE HYDRO–MULCH SEEDING, SOD LINING, OR OTHER APPROVED METHODS.

CULVERT CROSSING 1
(STA. 1 + 00 TO END)

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



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Texas Registered Surveying Firm 101812-00
830-281-4060

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DAIRY ACRES - UNIT 2
CULVERT CROSSING 1 P&P
AND EXISTING POND
EMERGENCY OVERFLOWS
ATASCOSA COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
SHADLEYA KOETHER
105043
LICENSED
PROFESSIONAL ENGINEER
F-9155
7/29/2026

REV	DATE	DESCRIPTION	BY

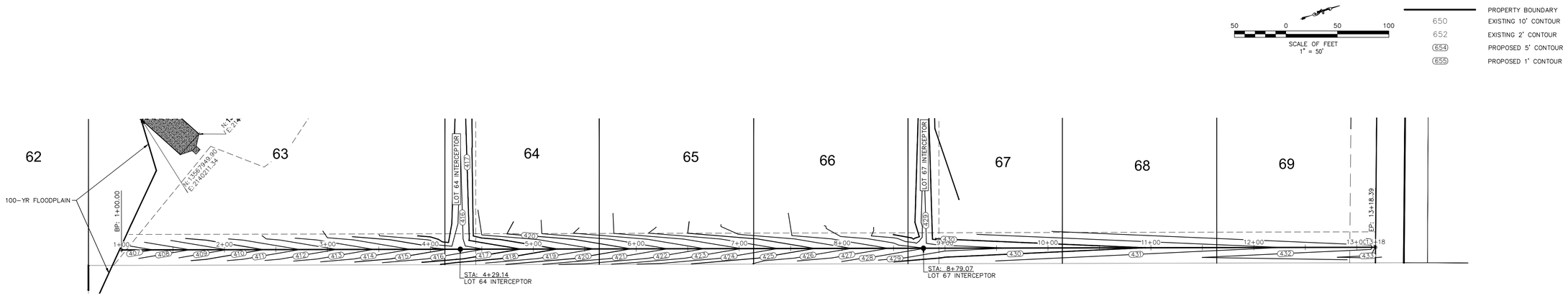
JOB NO.	23-2979B
DATE	SEP. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

C1.3

Date: Sep 29, 2026, 3:59pm User ID: CAD1-2022
File N:\Projects\2023\23-2979 TREF Land, LLC - Dairy Rd\CIVIL\UNIT 2\23-2979B Drainage P&P_U2.dwg

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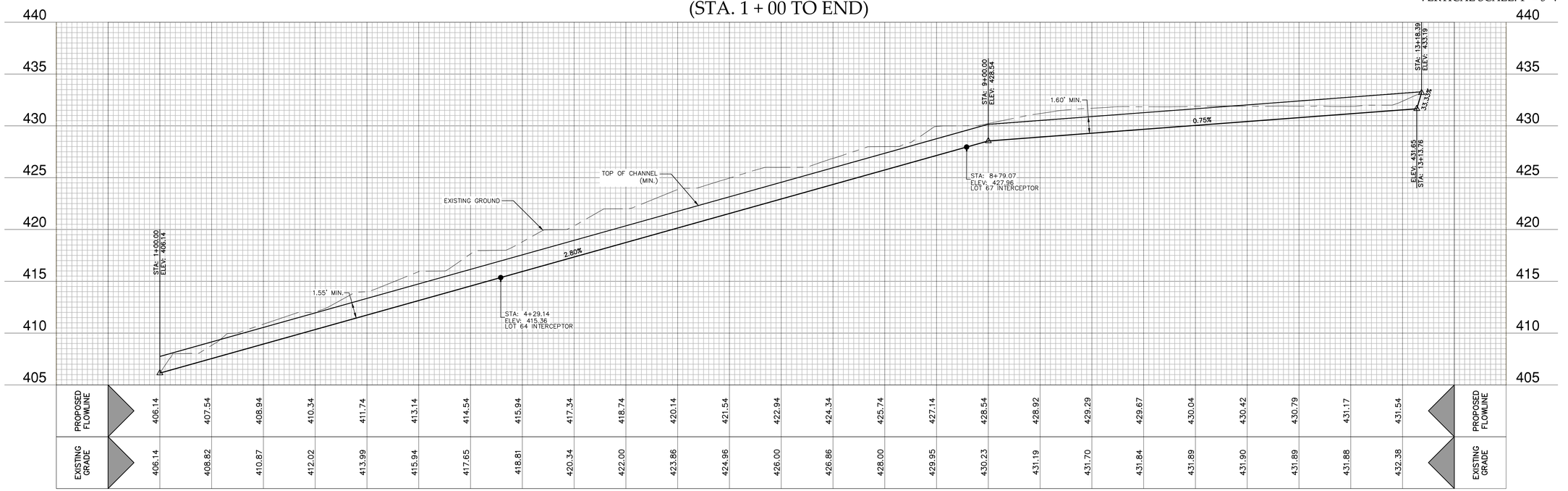
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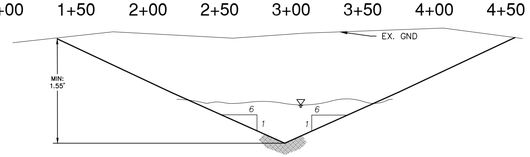


NOTE:
CONTRACTOR SHALL BEGIN MEASURES TO ESTABLISH VEGETATION IMMEDIATELY AFTER CONSTRUCTION OF EARTHEN DRAIN SECTIONS TO MITIGATE CHANNEL EROSION. CONTRACTOR SHALL USE HYDRO-MULCH SEEDING, SOD LINING, OR OTHER APPROVED METHODS.

DRAIN D
(STA. 1 + 00 TO END)

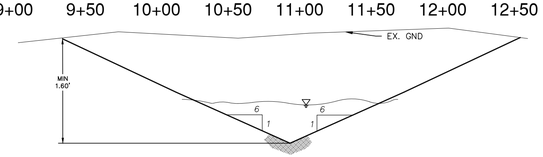
HORIZONTAL SCALE: 1" = 50' H
VERTICAL SCALE: 1" = 5' V





DRAIN D - V-CHANNEL
TYPICAL SECTION STA. 1+00 TO 9+00
NOT-TO-SCALE

NAME	Q25 (cfs)	SLOPE	D_N (ft)	VELOCITY (ft/s)	N-VALUE	CHANNEL DEPTH (ft)
DRAIN D V-CHANNEL	30.10	2.80%	1.05	4.55	0.035	**1.55**
	16.92	0.75%	1.09	2.37	0.035	**1.60**



DRAIN C - V-CHANNEL
TYPICAL SECTION STA. 9+00 TO END
NOT-TO-SCALE

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830-281-4060

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DAIRY ACRES - UNIT 2
DRAIN D
PLAN AND PROFILE
ATASCOSA COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105343
LICENSED
PROFESSIONAL ENGINEER
F-9155
7/29/2026

REV	DATE	DESCRIPTION	BY

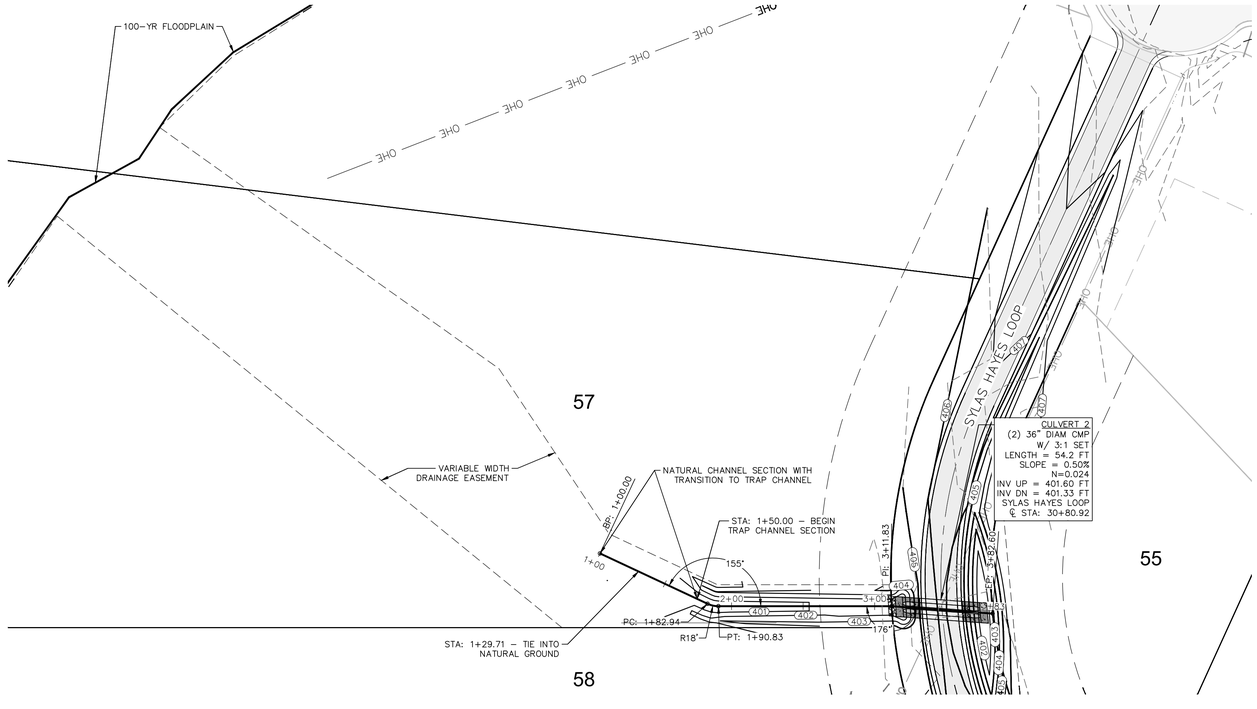
JOB NO.	23-2979B
DATE	SEP. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

C1.4

Date: Sep 29, 2026, 3:38pm User ID: CAD1-2022
File: N:\Projects\2023\23-2979 TREF Land, LLC - Dairy Ranch\UNIT 2\23-2979B Drainage PKP U2.dwg

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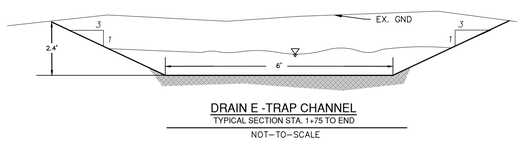
50 0 50 100

SCALE OF FEET
1" = 50'

LEGEND

———	PROPERTY BOUNDARY
650	EXISTING 5' CONTOUR
651	EXISTING 1' CONTOUR
654	PROPOSED 5' CONTOUR
655	PROPOSED 1' CONTOUR

NOTE:
CONTRACTOR SHALL BEGIN MEASURES TO ESTABLISH VEGETATION IMMEDIATELY AFTER CONSTRUCTION OF EARTHEN DRAIN SECTIONS TO MITIGATE CHANNEL EROSION. CONTRACTOR SHALL USE HYDRO-MULCH SEEDING, SOD LINING, OR OTHER APPROVED METHODS.

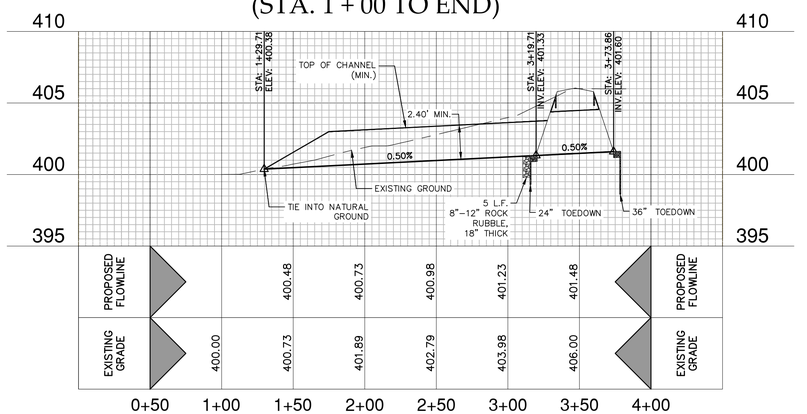


DRAIN E -TRAP CHANNEL
TYPICAL SECTION STA. 1+75 TO END
NOT-TO-SCALE

NAME	Q25 (cfs)	SLOPE	BOTTOM WIDTH (ft)	D_N (ft)	VELOCITY (ft/s)	N-VALUE	CHANNEL DEPTH (ft)
DRAIN E TRAP CHANNEL	73.57	0.50%	6.00	1.87	3.39	0.035	**2.40**

DRAIN E / CULVERT CROSSING 2
(STA. 1 + 00 TO END)

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



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DRAIN E AND CULVERT CROSSING 2 PLAN AND PROFILE
ATASCOSA COUNTY, TEXAS

RAKOWITZ ENGINEERING LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105343
LICENSED
PROFESSIONAL ENGINEER
F-9155
9/29/2026

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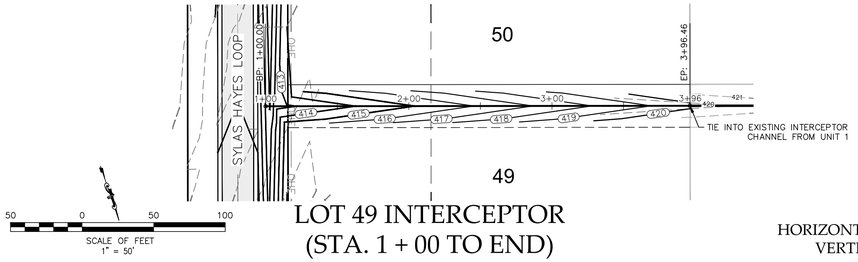
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DATE	SEP. 2026
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Date: Sep 29, 2026, 3:56pm User ID: CAD1-2022
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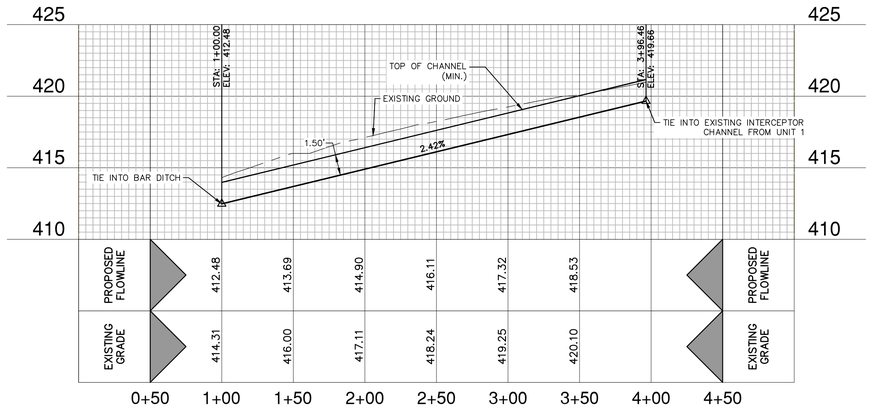
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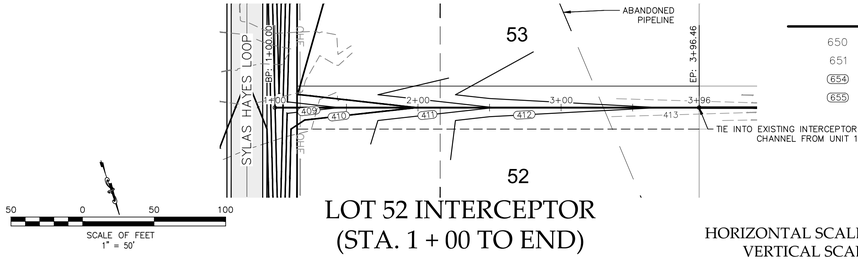
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LOT 49 INTERCEPTOR (STA. 1 + 00 TO END)

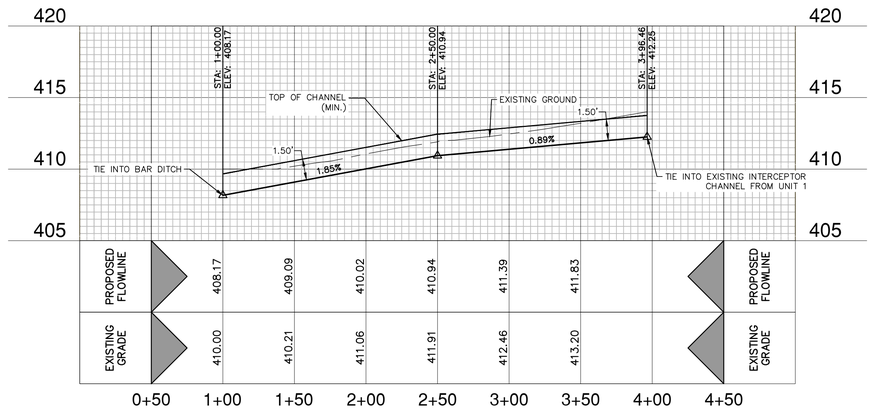
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VERTICAL SCALE: 1" = 5' V





LOT 52 INTERCEPTOR (STA. 1 + 00 TO END)

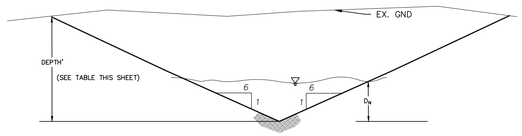
HORIZONTAL SCALE: 1" = 50' H
VERTICAL SCALE: 1" = 5' V



LEGEND

	PROPERTY BOUNDARY
650	EXISTING 5' CONTOUR
651	EXISTING 1' CONTOUR
654	PROPOSED 5' CONTOUR
655	PROPOSED 1' CONTOUR

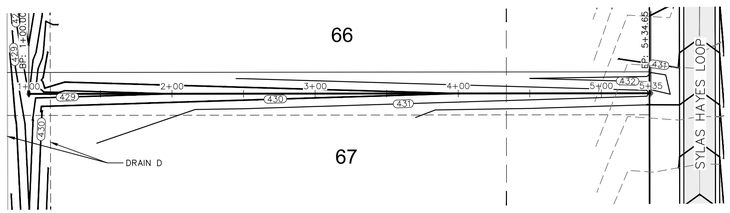
NOTE:
CONTRACTOR SHALL BEGIN MEASURES TO ESTABLISH VEGETATION IMMEDIATELY AFTER CONSTRUCTION OF EARTHEN DRAIN SECTIONS TO MITIGATE CHANNEL EROSION. CONTRACTOR SHALL USE HYDRO-MULCH SEEDING, SOD LINING, OR OTHER APPROVED METHODS.



LOT INTERCEPTOR - V-CHANNEL
TYPICAL SECTION STA. 1+00 TO END

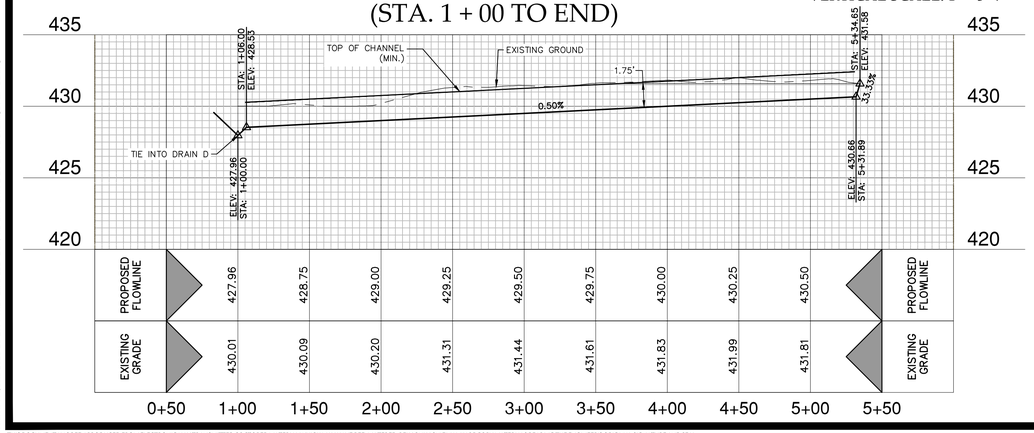
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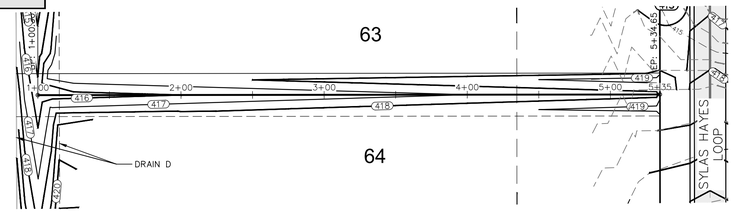
NAME	Q25 (cfs)	MIN SLOPE	D_N (ft)	VELOCITY (ft/s)	N-VALUE	CHANNEL DEPTH (ft)
LOT67 INTERCEPTOR	16.92	0.50%	1.17	2.06	0.035	1.75
LOT64 INTERCEPTOR	17.90	0.50%	1.20	2.07	0.035	1.75
LOT49 INTERCEPTOR	13.51	2.42%	0.80	3.52	0.035	1.5
LOT52 INTERCEPTOR	13.65	1.85%	0.85	3.15	0.035	1.5
		0.89%	0.97	2.42		



LOT 67 INTERCEPTOR (STA. 1 + 00 TO END)

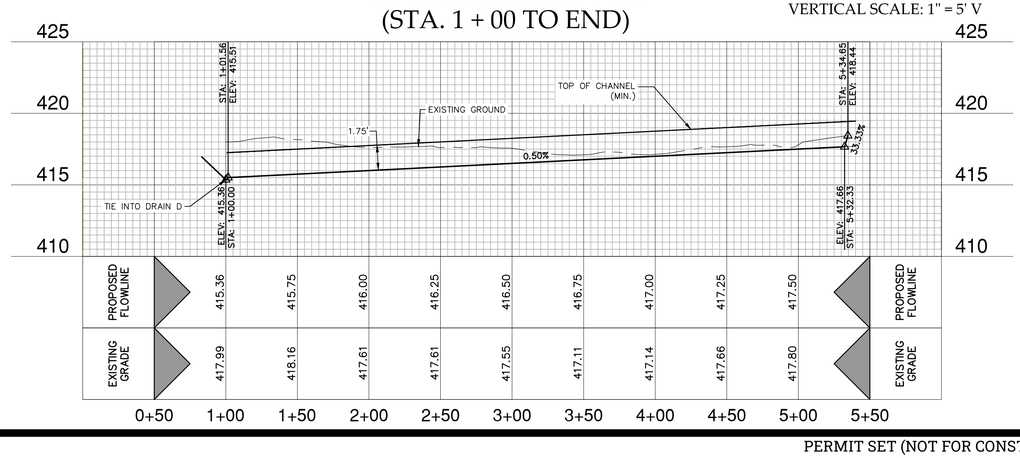
HORIZONTAL SCALE: 1" = 50' H
VERTICAL SCALE: 1" = 5' V





LOT 64 INTERCEPTOR (STA. 1 + 00 TO END)

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



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ATASCOSA COUNTY, TEXAS

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BRADLEY A. KOETHER
105343
LICENSED
PROFESSIONAL ENGINEER
F-9155
7/29/2026

REV	DATE	DESCRIPTION	BY

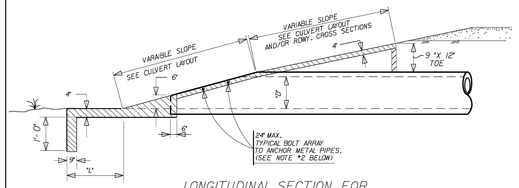
JOB NO.	23-2979B
DATE	SEP. 2026
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CHECKED	BK
DRAWN	CT

C1.6

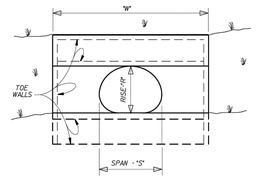
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Date: Sep 29, 2026, 3:37pm User ID: CAD1-2022
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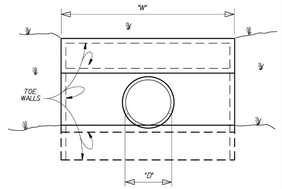
PERMIT SET (NOT FOR CONSTRUCTION): 09/29/2026



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

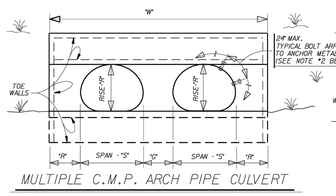
"D" INSIDE DIA. of PIPE	"L"	"S"		SINGLE	DOUBLE	TRIPLE	QUADRUPLE
		CGM	RCP	"W"			
18"	2'-0"	1'-2"	0'-9"	4'-6"	7'-2"	9'-10"	12'-6"
21"	2'-6"	1'-3"	0'-10"	5'-3"	8'-4"	11'-4"	13'-4"
24"	3'-0"	1'-5"	0'-11"	6'-0"	9'-5"	12'-10"	16'-3"
30"	4'-0"	1'-8"	1'-1"	7'-6"	11'-8"	15'-10"	20'-0"
36"	5'-0"	1'-11"	1'-3"	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"

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

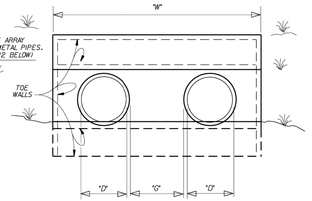
DIMENSIONS FOR C.M.P. ARCH PIPE CULVERTS

DESIGN SIZE	APPROX. ARCH DIM.		"L"	"S"	SINGLE	DOUBLE	TRIPLE	QUADRUPLE
	SPAN "S"	RISE "R"			"W"			
2	23"	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
"D" IS MEASURED BETWEEN THE OUTER SURFACES OF THE PIPES.



MULTIPLE C.M.P. ARCH PIPE CULVERT



MULTIPLE CIRCULAR PIPE CULVERT
(CMP or RCP)

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

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

10/95

ULTRA FLO®

Heights of Cover

Galvanized, ALUMINIZED STEEL Type 2 or Polymer-Coated Steel ULTRA FLO® H 20 and H 25 Live Load**

Diameter (in.)	Minimum/Maximum Cover (ft.) Specified Thickness (in.) and Gage (0.064) 16	(0.079) 14	(0.109) 12	(0.138) 10
18	1.0 / 108	1.0 / 151		
21	1.0 / 93	1.0 / 130	1.0 / 216	
24	1.0 / 81	1.0 / 113	1.0 / 189	
30	1.0 / 65	1.0 / 91	1.0 / 151	
36	1.0 / 54	1.0 / 75	1.0 / 126	
42	1.0 / 46	1.0 / 65	1.0 / 108	
48	1.0 / 40	1.0 / 56	1.0 / 94	1.0 / 137
54	1.25 / 36	1.25 / 50	1.0 / 84	1.0 / 122
60	1.25*/32**	1.25 / 45	1.0 / 75	1.0 / 109
66		1.5 / 41	1.25 / 68	1.25 / 99
72		1.5*/37*	1.25 / 63	1.25 / 91
78		1.75*/34*	1.5 / 58	1.5 / 84
84			1.75 / 54	1.75 / 78
90			2.0*/50*	2.0 / 73
96			2.0*/47*	2.0 / 68
102			2.5*/43*	2.5 / 61
108				2.5*/54*
114				2.5*/49*
120				2.5*/43*

Galvanized, ALUMINIZED STEEL Type 2 or Polymer-Coated Steel ULTRA FLO® E 80 Live Load**

Diameter (in.)	Minimum/Maximum Cover (ft.) Specified Thickness (in.) and Gage (0.064) 16	(0.079) 14	(0.109) 12	(0.138) 10
18	1.0 / 93	1.0 / 130		
21	1.0 / 79	1.0 / 111	1.0 / 186	
24	1.0 / 69	1.0 / 97	1.0 / 162	
30	1.0 / 55	1.0 / 78	1.0 / 130	
36	1.5 / 46	1.25 / 65	1.0 / 108	
42	1.5 / 39	1.5 / 55	1.25 / 93	
48	2.0 / 34	1.75 / 48	1.5 / 81	1.5 / 118
54	3.0*/ 28*	2.0 / 43	1.5 / 72	1.5 / 104
60		2.0 / 39	1.75 / 65	1.75 / 94
66		2.5* / 35*	2.0 / 58	2.0 / 85
72			2.0 / 49	2.0 / 78
78			2.5 / 42	2.5 / 72
84			2.75* / 36*	2.5 / 67
90				2.5 / 62
96				2.5* / 58*
102				3.0* / 52*

Notes

1. *The tables for Steel H 20 and H 25 loading are based on the NCSPA Design Manual, 2018 and were calculated using a load factor of K=0.86. The tables for Steel E 80 loading are based on the AREMA Manual. The tables for Aluminum HL 93 loading are based on AASHTO LRFD Design Criteria.*
2. *The haunch areas of a pipe-arch are the most critical zone for backfilling. Extra care should be taken to provide good material and compaction to a point above the spring line.*
3. *E 80 minimum cover is measured from top of pipe to bottom of tie.*
4. *H 20, H 25 and HL 93 minimum cover is measured from top of pipe to bottom of flexible pavement or top of rigid pavement.*
5. *The pipe-arch tables are based on the corner bearing pressures as shown. These values may increase or decrease with changes in allowable corner bearing pressures. Consider the use of a round pipe in cases where the height of cover exceeds 8'.*
6. *Larger size pipe-arches may be available on special order.*
7. *M.L. (Heavier gage is required to prevent crimping at the haunches.)*
8. *For construction loads, see Page 15.*
9. *Sewer gage (trench conditions) tables for corrugated steel pipe can be found in the AISI book "Modern Sewer Design," 4th Edition, 1999. These tables may reduce the minimum gage (GA) due to a higher flexibility factor allowed for a trench condition.*

Galvanized, ALUMINIZED STEEL Type 2 or Polymer-Coated Steel ULTRA FLO® Pipe-Arch H 20 and H 25 Live Load**

Round Equivalent (in.)	Size Span x Rise (in.)	Minimum/Maximum Cover (ft.) Specified Thickness (in.) and Gage (0.064) 16	(0.079) 14	(0.109) 12
18	20 x 16	1.0 / 16		
21	23 x 19	1.0 / 15		
24	27 x 21	1.0 / 13		
30	33 x 26	1.0 / 13	1.0 / 13	
36	40 x 31	1.0 / 13	1.0 / 13	
42	46 x 36	M.L.*	M.L.*	1.0 / 13
48	53 x 41	M.L.*	M.L.*	1.25 / 13
54	60 x 46	M.L.*	M.L.*	1.25 / 13
60	66 x 51	M.L.*	M.L.*	1.25 / 13

Galvanized, ALUMINIZED STEEL Type 2 or Polymer-Coated Steel ULTRA FLO® Pipe-Arch E 80 Live Load**

Round Equivalent (in.)	Size Span x Rise (in.)	Minimum/Maximum Cover (ft.) Specified Thickness (in.) and Gage (0.064) 16	(0.109) 12
18	20 x 16	2.0 / 22	
21	23 x 19	2.0 / 21	
24	27 x 21	2.0 / 18	
30	33 x 26	2.0 / 18	
36	40 x 31	2.0 / 17	
42	46 x 36		2.0 / 18
48	53 x 41		2.0 / 18
54	60 x 46		2.0 / 18
60	66 x 51		2.0 / 18



Polymer-coated ULTRA FLO® provides added durability.

10. All heights of cover are based on trench conditions. If embankment conditions exist, there may be restriction on gages for the large diameters. Your Contech Sales Representative can provide further guidance for a project in embankment conditions.

11. All steel ULTRA FLO® is installed in accordance with ASTM A798 "Installing Factory-Made Corrugated Steel Pipe for Sewers and Other Applications."

** These sizes and gage combinations are installed in accordance with ASTM A796 paragraphs 18.2.3 and ASTM A798. For aluminum ULTRA FLO® refer to ASTM B790 and B788.*

*** Contact your local Contech representative for more specific information on Polymer-Coated ULTRA FLO® for 12 GA and 10 GA.*

****Consult your Contech Sales Representative for E 80 Live Loads for Aluminum ULTRA FLO®.*

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DAIRY ACRES - UNIT 2
DRAINAGE DETAILS

ATASCOSA COUNTY, TEXAS

RAKOWITZ ENGINEERING LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105343
LICENSED
PROFESSIONAL ENGINEER
F-9155
7/29/2026

REV	DATE	DESCRIPTION	BY

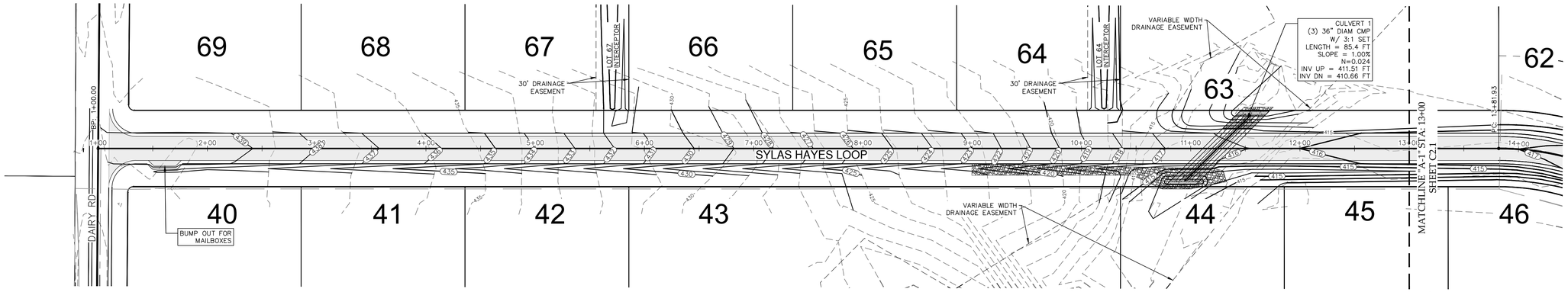
JOB NO.	23-2979B
DATE	SEP. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

C1.7

Date: Sep 29, 2026, 4:00pm User ID: CAD1-2022
File: N:\Projects\2023\23-2979 TREF Land, LLC - Dairy Ranch\Civil\UNIT 2\23-2979B Drainage Details_U2.dwg

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PERMIT SET (NOT FOR CONSTRUCTION): 09/29/2026

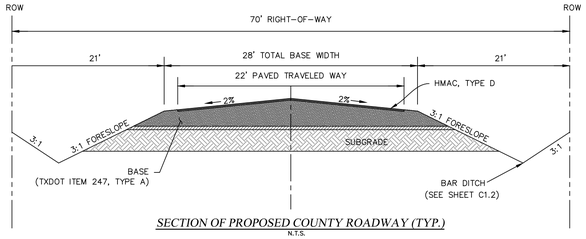


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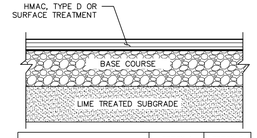
1. EXISTING TOPOGRAPHIC CONTOURS DERIVED FROM ON THE GROUND SURVEY DATA WITHIN THE LIMITS OF THE PROPOSED ROADWAY CONSTRUCTION. THE CONTRACTOR SHALL VERIFY THE EXISTING CONDITIONS PRIOR TO CONSTRUCTION AND NOTIFY ENGINEER OF ANY DISCREPANCIES.
2. CONTRACTOR SHALL REVEGETATE RIGHT-OF-WAY TO REDUCE EROSION AS SPECIFIED IN ATASCOSA COUNTY CODE. REFER TO TXDOT ITEM 164 FOR APPROPRIATE SEED MIX.
3. CONTRACTOR TO SALVAGE & STOCKPILE 4 INCHES OF EXISTING TOPSOIL FOR FINAL DRESSING OF RIGHT-OF-WAY PRIOR TO SEEDING.
4. CONTRACTOR TO GRADE BAR DITCHES ALONG ROADWAY TO CONVEY RIGHT-OF-WAY DRAINAGE. REFER TO BAR DITCH CALCULATIONS FOR DEPTH.
5. CONTRACTOR TO FOLLOW GEOTECH REPORT FOR PROPER PAVEMENT CONSTRUCTION.
6. TESTING TO BE PROVIDED BY OWNER'S QUALIFIED AGENT TO ASSURE COMPLIANCE TO SPECIFICATIONS OUTLINED IN GEOTECH REPORT.

- SUBGRADE TO BE TESTED PER ASTM D698 @ 95% DENSITY, 1 PER 500 FT OF STREET
- BASE TO BE PLACED IN MAXIMUM 8" THICK LOOSE LIFTS, COMPACTED, & TESTED PER ASTM D1557 @ 95% DENSITY, 1 PER 500 FT OF STREET

NOTE:
EROSION CONTROL MEASURES SUCH AS FLAT BOTTOM DITCHES, GRASS RETARDS, ROCK FILTER DAMS, AND SILT SCREENS SHALL BE UTILIZED AS NEEDED TO CONTROL SOIL EROSION IN BAR DITCHES.



SECTION OF PROPOSED COUNTY ROADWAY (TYP.)
N.T.S.



PAVEMENT MATERIAL	OPTION 1	OPTION 2
HMAC, TYPE D	2"	----
2 COURSE SURFACE TREATMENT	----	YES
CRUSHED LIMESTONE BASE MATERIAL	8.5"	9.0"
LIME TREATED SUBGRADE	6"	6"

PROPOSED PAVEMENT SECTION

REFERENCE GEOTECH REPORT PREPARED BY InTEC DATED JULY 27, 2023 AND ADDENDUMS DATED OCTOBER 27, 2023 AND MARCH 16, 2026, RESPECTIVELY, FOR PAVEMENT MATERIALS AND CONSTRUCTION REQUIREMENTS. CONTRACTOR SHALL MEET OR EXCEED ALL PAVING RECOMMENDATIONS. ADDITIONAL PAVEMENT SECTIONS ARE AVAILABLE IN THE GEOTECH REPORT.

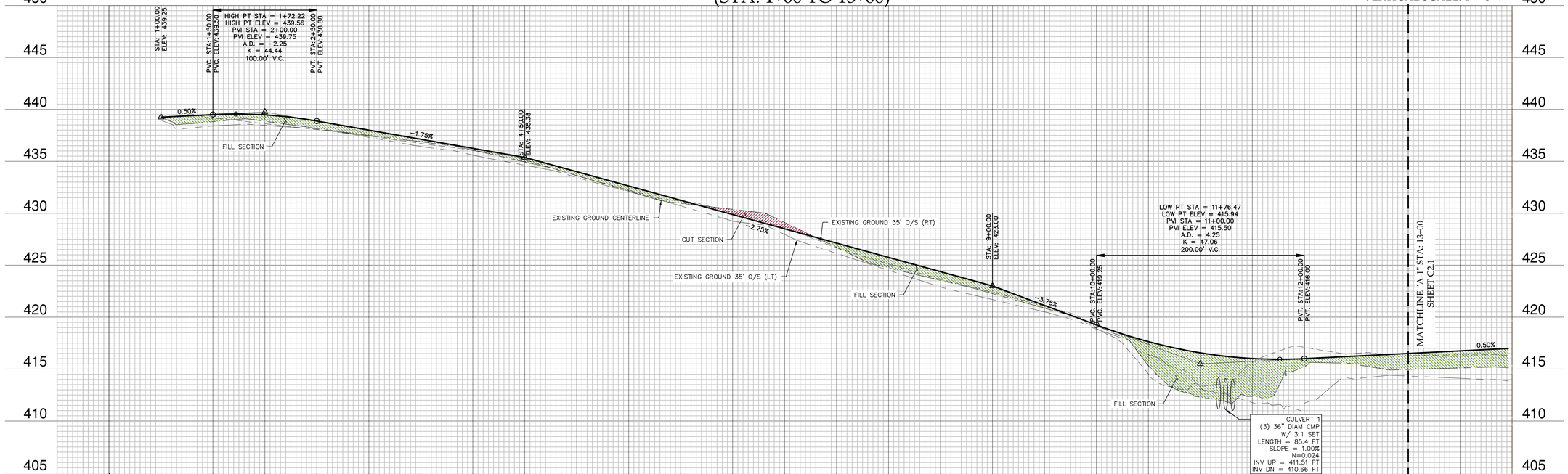
50 0 50 100
SCALE OF FEET
1" = 50'

LEGEND

- PROPERTY BOUNDARY
- RIGHT-OF-WAY
- LOT LINE
- ROAD CENTERLINE
- DRAINAGE EASEMENT
- UTILITY EASEMENT
- 650 EXISTING 1' CONTOUR
- 650 PROPOSED 1' CONTOUR

SYLAS HAYES LOOP - UNIT 2
(STA. 1+00 TO 13+00)

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



	0+50	1+00	1+50	2+00	2+50	3+00	3+50	4+00	4+50	5+00	5+50	6+00	6+50	7+00	7+50	8+00	8+50	9+00	9+50	10+00	10+50	11+00	11+50	12+00	12+50	13+00	13+50
PROPOSED ℄ GRADE		439.25	439.50	439.47	438.88	438.00	437.13	436.25	435.38	434.00	432.63	431.25	429.88	428.50	427.13	425.75	424.38	423.00	421.13	419.25	417.64	416.56	416.02	416.00	416.25	416.50	416.75
EXISTING ℄ GRADE		439.25	438.81	438.85	438.17	437.49	436.88	436.08	434.94	433.64	432.13	430.96	430.38	429.11	426.71	424.74	423.54	422.27	420.87	419.19	415.31	412.29	412.36	415.18	415.43	414.96	415.10

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Engineering & Surveying
Texas Registered Engineering Firm F-9155
Texas Registered Surveying Firm 101812-00
830-281-4060

DAIRY ACRES - UNIT 2
SYLAS HAYES LOOP
STA. 1+00 TO STA. 13+00
ATASCOSA COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105340
LICENSED
PROFESSIONAL ENGINEER
F-9155
7/29/2026

REV	DATE	DESCRIPTION	BY

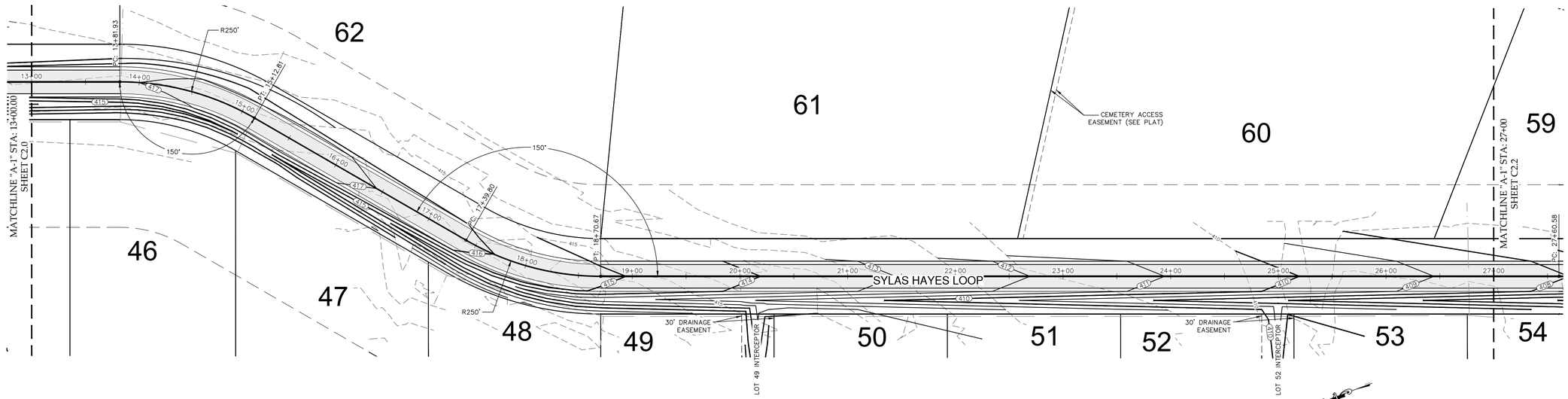
JOB NO.	23-2979B
DATE	SEP. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

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Date: Sep 29, 2026, 3:37am User ID: CAD1-2022
File: N:\Projects\2023\23-2979 REP Land, LLC - Dairy Rd\Civil\UNIT 2\23-2979B ROAD PLAN_Unit 2.dwg

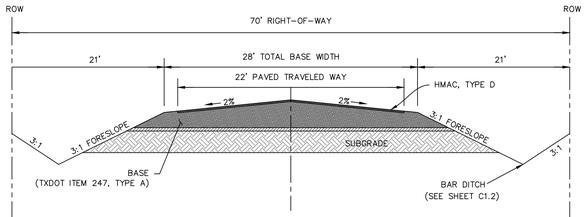
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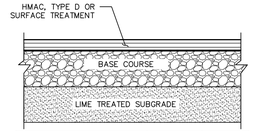


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SECTION OF PROPOSED COUNTY ROADWAY (TYP.)
N.T.S.



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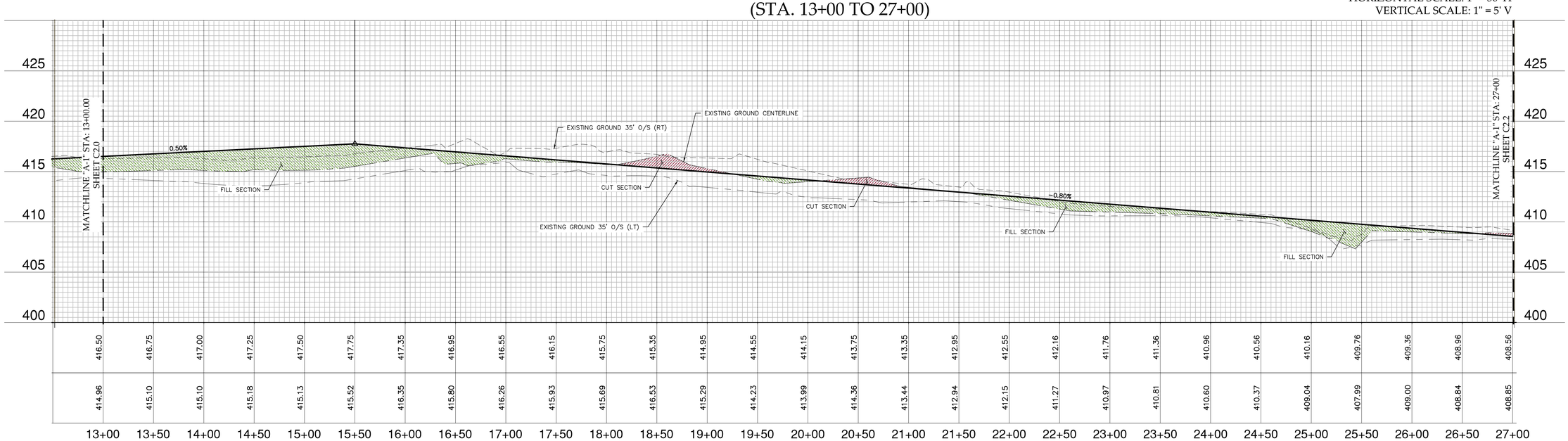
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SCALE OF FEET
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SYLAS HAYES LOOP - UNIT 2
(STA. 13+00 TO 27+00)

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RAKOWITZ
Engineering & Surveying
Texas Registered Engineering Firm F-9155
Texas Registered Surveying Firm 101812-00
830-281-4040

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DAIRY ACRES - UNIT 2
SYLAS HAYES LOOP
STA. 13+00 TO STA. 27+00
ATASCOSA COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105343
LICENSED
PROFESSIONAL ENGINEER
F-9155
7/29/2026

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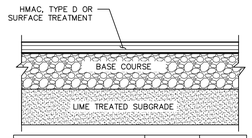
JOB NO.	23-2979B
DATE	SEP. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

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Date: Sep 29, 2026, 4:01am User ID: CAD1-2022
File: N:\Projects\2023\23-2979 REF Land, LLC - Dairy Rd\Civil\UNIT 2\23-2979B ROAD PLAN_Unit 2.dwg

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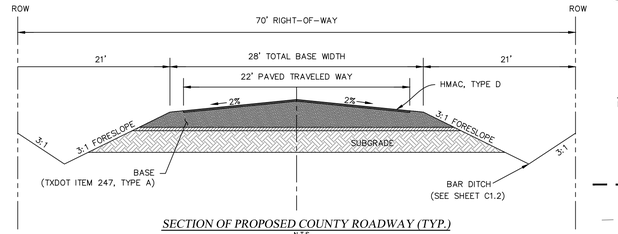
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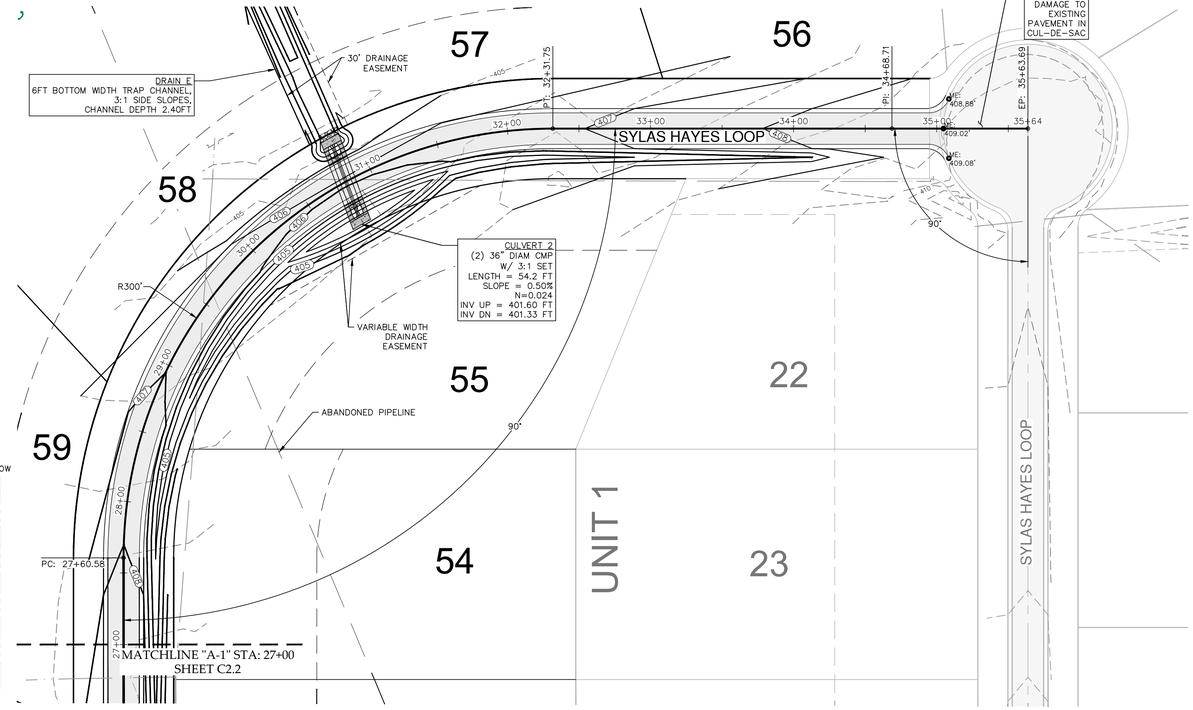
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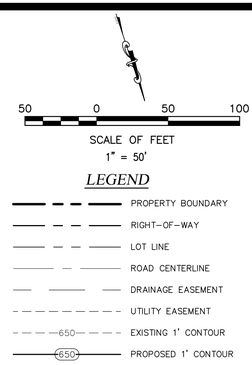
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SECTION OF PROPOSED COUNTY ROADWAY (TYP.)
N.T.S.



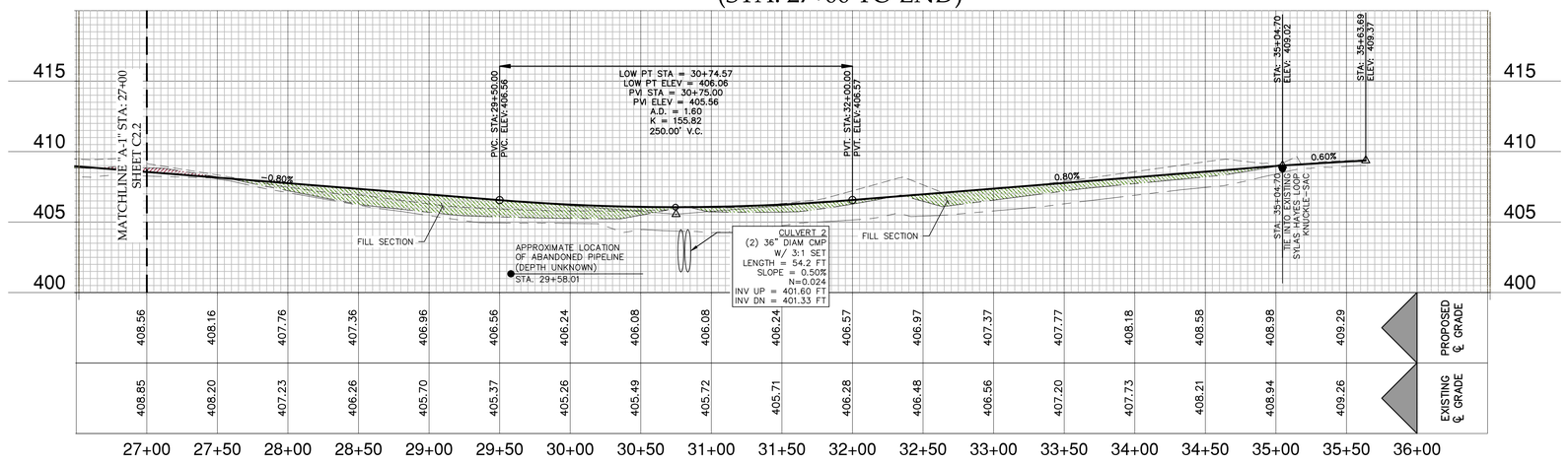


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SYLAS HAYES LOOP - UNIT 2
(STA. 27+00 TO END)



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Engineering & Surveying
Texas Registered Engineering Firm F-9155
Texas Registered Surveying Firm 101812-00
830-281-4060

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DAIRY ACRES - UNIT 2
SYLAS HAYES LOOP
STA. 27+00 TO END
ATASCOSA COUNTY, TEXAS

RAKOWITZ ENGINEERING LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105343
LICENSED
PROFESSIONAL ENGINEER
F-9155
7/29/2026

REV	DATE	DESCRIPTION	BY

JOB NO.	23-2979B
DATE	SEP. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

C2.2

Date: Sep 29, 2026, 3:59pm User ID: CAD1-2022
File: N:\Projects\2023\23-2979 TREF Land, LLC - Dairy Ranch\UNIT 2\23-2979B ROAD PLAN, Unit 2.dwg

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PERMIT SET (NOT FOR CONSTRUCTION): 09/29/2026

NOTE:
CONTRACTOR SHALL BEGIN MEASURES TO ESTABLISH VEGETATION IMMEDIATELY AFTER CONSTRUCTION OF EARTHEN DRAIN SECTIONS, BAR DITCHES AND DETENTION PONDS TO MITIGATE CHANNEL EROSION. CONTRACTOR SHALL USE HYDRO-MULCH SEEDING, SOD LINING, OR OTHER APPROVED METHODS.

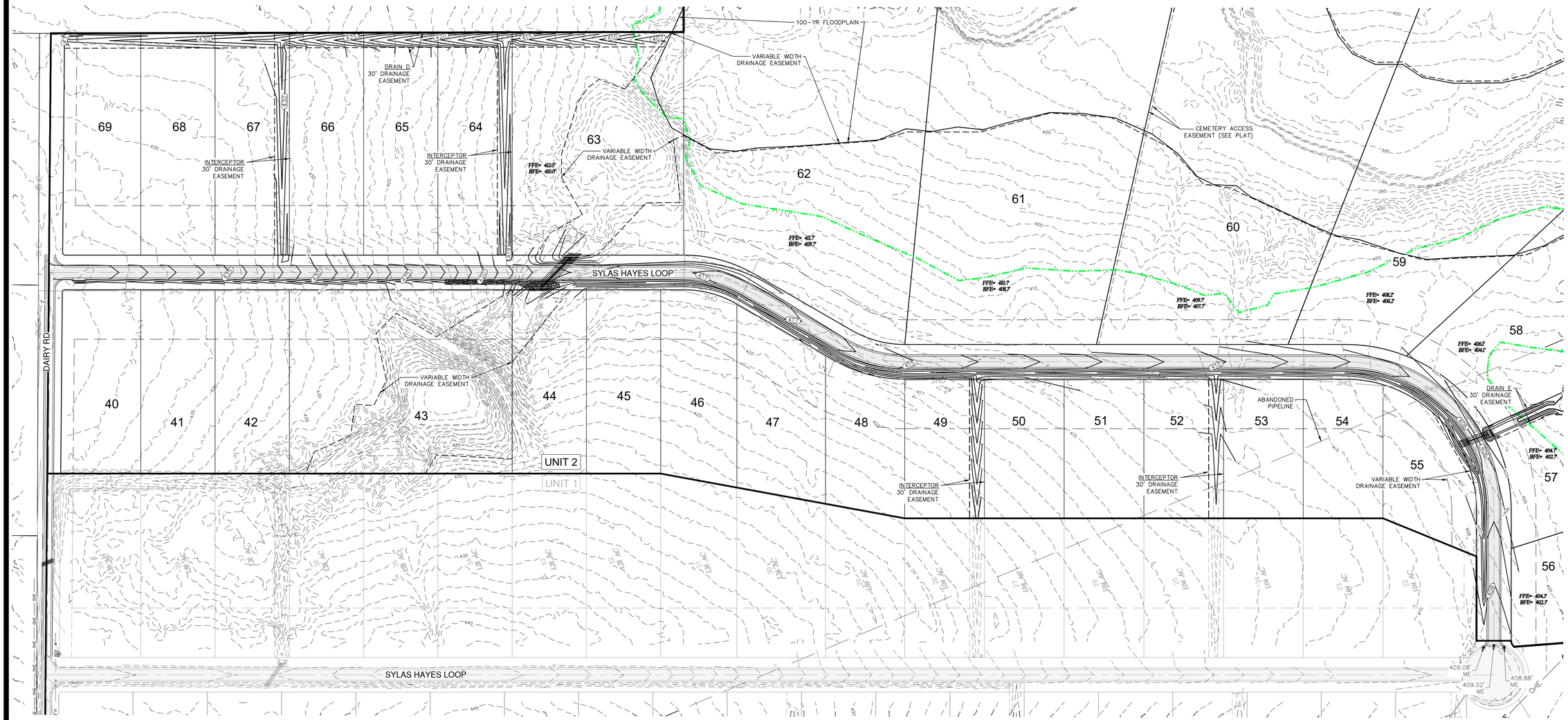
GENERAL NOTES:
1. CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UNDERGROUND CABLES AND UTILITIES PRIOR TO EXCAVATION. CONTRACTOR IS ALSO RESPONSIBLE FOR ANY DAMAGE TO THE EXISTING UTILITIES.
2. LOCATION OF ALL EXISTING UTILITIES IS BASED ON BEST AVAILABLE INFORMATION. CONTRACTOR TO VERIFY HORIZONTAL AND VERTICAL LOCATION PRIOR TO THE START OF CONSTRUCTION. CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES.

FILL COMPACTION NOTE:

FILL MATERIAL REQUIRED TO ACHIEVE SPECIFIED GRADES FOR DETENTION POND EMBANKMENT, DRAINAGE CHANNEL EMBANKMENT AND/OR BAR DITCH EMBANKMENT SHALL BE COMPACTED IN PLACE IN 6" LIFTS AT 95% MAXIMUM DENSITY.

FILL MATERIAL UTILIZED TO DRESS AND FINISH GRADE LOTS SHALL BE PLACED IN 12" LIFTS AT 90% MAXIMUM DENSITY.

GRADING NOTES:
1. ALL MATERIALS AND PROCEDURES WITHIN THIS SCOPE OF WORK WHERE NOTE SPECIFICALLY COVERED IN THE SPECIFICATIONS OR GEOTECHNICAL REPORT SHALL CONFORM TO ALL APPLICABLE CITY, COUNTY, AND TXDOT STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. SITE PREPARATION, GRADING, EXCAVATION, AND FILL SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT GEOTECHNICAL REPORT AND SPECIFICATIONS.
3. ALL SELECT FILL MATERIAL PROVIDED SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACING AND COMPACTING.
4. ALL ELEVATIONS AND PROPOSED CONTOUR SHOWN ON THIS GRADING PLAN REFLECT FINISHED GRADES. THE THICKNESS OF PAVING, BASE, GRASS, TOPSOIL, AND MULCH IS TO BE SUBTRACTED TO OBTAIN SUBGRADE ELEVATIONS.
5. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY QUESTIONS THAT MAY ARISE CONCERNING 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 COMMENCEMENT OF CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING ALL PERMITS, TESTS, APPROVALS, AND ACCEPTANCES REQUIRED TO COMPLETE CONSTRUCTION OF THIS PROJECT.
8. THE CONTRACTOR SHALL REMOVE TOP SOIL, GRASS, ROOTS, DEBRIS, ETC. AND DISPOSE OFF SITE THOSE MATERIALS NOT SUITABLE FOR EMBANKMENT AND TOPSOIL. CLEAN STRIPPINGS AND TOPSOIL MAY BE STOCKPILED ON SITE FOR REUSE IN A LOCATION SPECIFIED BY THE OWNER.
9. THE SITE CONTRACTOR SHALL BE RESPONSIBLE FOR SITE STABILIZATION. ALL DISTURBED AREAS SHALL BE REVEGETATED IN ACCORDANCE WITH PROJECT SPECIFICATIONS AND TPDES/SWPPP REQUIREMENTS. REFERENCE THE LANDSCAPE ARCHITECTS PLAN IF APPLICABLE. AT A MINIMUM, CONTRACTOR SHALL HYDROMULCH DISTURBED AREAS AND SOD DRAINAGE SWALES.
10. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS (USE OF SILT FENCES, ETC.) TO KEEP DRAINAGE AND SILT FROM WASHING ONTO ADJACENT PROPERTY, STREETS, OR DRAINAGE WAYS. CONTRACTOR SHALL IMMEDIATELY REMOVE SILT/DEBRIS WHICH WASHED OFFSITE OR INTO EXISTING DRAINAGE SYSTEMS. (SEE SWPPP PLANS & TPDES BOOK).
11. THE CONTRACTOR SHALL OBTAIN GRADES SHOWN HEREON WITHIN +/- ONE-TENTH FOOT (0.10').
12. IN PROPOSED PAVING AREAS, IT IS INTENDED THAT THE MINIMUM GRADE IS 1%. ALL EARTHEN SLOPES SHALL BE A MAXIMUM OF 3:1 AND A MINIMUM OF 1% UNLESS SHOWN OTHERWISE.
13. THE CONTRACTOR SHALL PROVIDE A SMOOTH TRANSITION BETWEEN EXISTING SITE AND PROPOSED IMPROVEMENTS.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING TO ITS ORIGINAL, OR BETTER, CONDITION OF ANY DAMAGE DONE TO EXISTING TREES, BUILDING, UTILITIES, FENCES, PAVEMENT, CURBS, OR DRIVEWAYS. (NO SEPARATE PAY ITEMS)
15. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHEN WORKING NEAR UTILITIES, GAS LINES, SEWER, OR EXISTING APPURTENANCES. PRIOR TO PERFORMING ANY EXCAVATION, THE 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 DISCOVERED.
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 LOCATION OF ALL UTILITIES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION AND VERIFY SIZE, GRADE, AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO THE BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTORS RESPONSIBILITY TO REPAIR AT HIS OWN EXPENSE.
17. POSITIVE DRAINAGE SHALL BE MAINTAINED THROUGHOUT THE THE SCOPE OF THE PROJECT. DRAINAGE SHALL BE DIRECTED AWAY FROM BUILDING FOUNDATIONS. THE CONTRACTOR SHOULD TAKE PRECAUTIONS NOT TO ALLOW ANY PONDING OF WATER.
18. FOR FILL PLACEMENT ON HILL SIDES OR STEEP SLOPE AREAS, THE CONTRACTOR SHALL REFERENCE THE PROJECT SPECIFICATIONS AND GEOTECHNICAL REPORT FOR SPECIAL INSTRUCTIONS REGARDING BENCHING.
19. NO WORK SHALL BE PERFORMED IN A PUBLIC RIGHT-OF-WAY WITHOUT PROPER PERMIT.
20. CONTRACTOR IS CAUTIONED THAT ROCK BOULDERS MAY BE ENCOUNTERED AS EXPERIENCED ON OTHER PROJECTS IN THE AREA AND CONTRACTOR IS RESPONSIBLE FOR EXCAVATION/REMOVAL AT THEIR EXPENSE.



100 0 100 200
SCALE OF FEET
1" = 100'

LEGEND

- PROPERTY BOUNDARY
- RIGHT-OF-WAY
- LOT LINE
- ROAD CENTERLINE
- DRAINAGE EASEMENT
- UTILITY EASEMENT
- 650 EXISTING 5' CONTOUR
- 650 PROPOSED 5' CONTOUR
- 100-YR FLOODPLAIN PER FEMA MAP #48013C0215C, DATED NOV. 4, 2010
- APPROXIMATE 100-YR FLOOD AREA PER FEMA BFE VIEWER
- DRAINAGE EASEMENT BOUNDARY (SEE PLAT)

RAKOWITZ
Engineering & Surveying
Texas Registered Engineering Firm F-9155
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830-281-4060

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DAIRY ACRES - UNIT 2
GRADING PLAN

ATASCOSA COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
103249
LICENSED
PROFESSIONAL ENGINEER
F-9155
7/29/2026

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C3.0

Date: Sep 29, 2026, 3:39pm User ID: CAD1.2022
File: N:\Projects\2023\23-2979 FIEF Land, LLC - Dairy Rd\Civil\UNIT 2\23-2979B C3.0 GRADING PLAN_U2.dwg

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PERMIT SET (NOT FOR CONSTRUCTION): 09/29/2026

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 THE 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.
6. STORM WATER POLLUTION PREVETION STRUCTURES SHOULD BE CONSTRUCTED WITHIN THE SITE BOUNDARIES. SOME OF THESE FEATURES MAY BE SHOWN OUTSIDE THE SITE BOUNDARIES FOR VISUAL CLARITY.
7. AS SOON AS PRACTICAL, ALL DISTURBED SOIL THAT WILL NOT BE COVERED BY IMPERVIOUS COVER SUCH AS PARKWAY AREAS, EASEMENTS, EMBANKMENT SLOPES, ETC WILL BE STABILIZED PER APPLICABLE PROJECT SPECIFICATIONS.
8. BEST MANAGEMENT PRACTICES MAY BE INSTALLED IN STAGES TO COINCIDE WITH THE DISTURBANCE OF UPGRADIENT AREAS.
9. BEST MANAGEMENT PRACTICES MAY BE REMOVED IN STAGED ONCE THE WATERSHED FOR THAT PORTION CONTROLLED BY THE BEST MANAGEMENT PRACTICES HAS BEEN STABILIZED IN ACCORDANCE WITH TPDES REQUIREMENTS.
10. UPON COMPLETION OF THE PROJECT, INCLUDING SITE STABILIZATION, AND BEFORE FINAL PAYMENT IS ISSUED, CONTRACTOR SHALL REMOVE ALL SEDIMENT AND EROSION CONTROL MEASURES, PAYING SPECIAL ATTENTION TO ROCK BERMS IN DRAINAGE FEATURES.
11. WHERE VEGETATED FILTER STRIPS ARE INDICATED, CONTRACTOR SHALL VERIFY THAT SUFFICIENT VEGETATION EXISTS, OTHERWISE CONTRACTOR SHALL PLACE SILT FENCING IN LIEU OF VEGETATED FILTER STRIP.
12. SHADED AREA DENOTED LIMITS OF DISTURBED AREAS. OTHER AREAS WITHIN THE PROJECT LIMITS, WITH THE EXCEPTION OF A CONSTRUCTION EQUIPMENT AND MATERIAL STORAGE YARD, ARE NOT PART OF THIS TPDES STORM WATER POLLUTION PREVENTION PLAN (SWP3) AND WILL NOT BE DISTURBED BY CIVIL CONSTRUCTION ACTIVITIES.
13. PRIOR TO BEGINNING CONSTRUCTION, CONTRACTOR SHALL COORDINATE PLACEMENT OF TEMPORARY BEST MANAGEMENT PRACTICES WITHIN TXDOT RIGHT-OF-WAY WITH TXDOT.

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

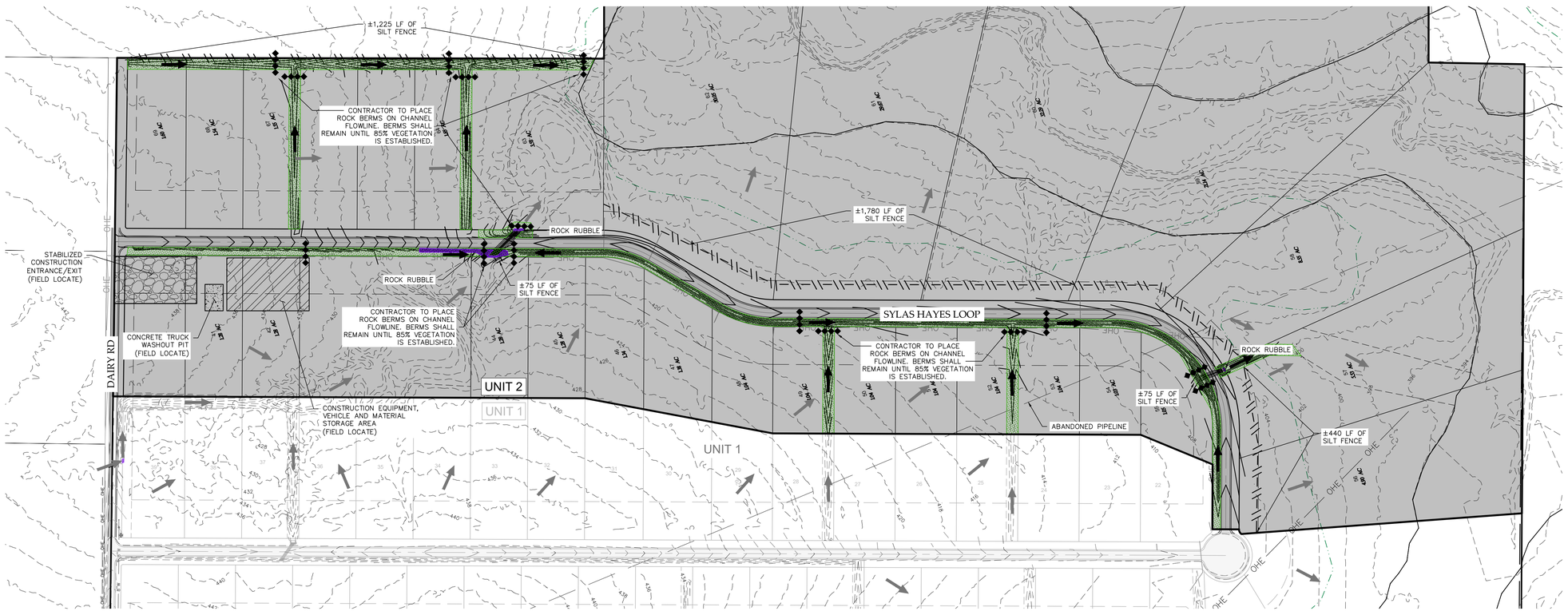
NOTE: STATE LAW REQUIRES THE SUBMITTAL OF A NOTICE OF INTENT (NOI) TO TCEQ FOR FOR ALL CONSTRUCTION DISTURBANCES GREATER THAN 1 ACRE, AND ADDITIONAL MEASURES FOR PROJECT DISTURBANCES GREATER THAN 5 ACRES. THIS IS THE RESPONSIBILITY OF THE CONTRACTOR.

THE ENGINEER'S SEAL HAS BEEN FIXED TO THIS SHEET ONLY FOR THE PURPOSE OF DEMONSTRATING COMPLIANCE WITH THE TPDES-STORM WATER POLLUTION PREVENTION PLAN (SW3P) REGULATIONS.

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 IMPROVEMENT PLANS.

NOTE:
EROSION CONTROL MEASURES SUCH AS FLAT BOTTOM DITCHES, GRASS RETARDS, ROCK FILTER DAMS, AND SILT SCREENS SHALL BE UTILIZED AS NEEDED TO CONTROL SOIL EROSION ON ROAD GRADES GREATER THAN TWO (2) PERCENT.

NOTE:
CONTRACTOR SHALL BEGIN MEASURES TO ESTABLISH VEGETATION IMMEDIATELY AFTER CONSTRUCTION OF EARTHEN DRAIN SECTIONS AND DETENTION PONDS TO MITIGATE CHANNEL EROSION. CONTRACTOR SHALL USE HYDRO-MULCH SEEDING, SOD LINING, OR OTHER APPROVED METHODS.



150 0 150 300

SCALE OF FEET
1" = 150'

LEGEND

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- 100-YR FLOODPLAIN PER FEMA MAP #48013C0215C, DATED NOV. 4, 2010
- APPROXIMATE 100-YR FLOOD AREA PER FEMA BFE VIEWER
- EXISTING FLOW ARROW
- PROPOSED FLOW ARROW
- SILT FENCE (±3,595 LF)
- ROCK BERM
- STABILIZED CONSTRUCTION ENTRANCE/EXIT
- CONSTRUCTION EQUIPMENT, VEHICLE & MATERIAL STORAGE
- CONCRETE WASH-OUT PIT
- 8"-12" ROCK RUBBLE
- SLOPE STABILIZATION

NOTE: AREAS SPECIFICALLY INDICATED ON THIS PLAN BY THIS HATCH MUST BE REVEGETATED EITHER BY SOD LINING OR HYDROMULCH TO STABILIZE EARTHEN EMBANKMENTS AND PREVENT EROSION AND/OR SEDIMENTATION. CONTRACTOR TO HAVE 70% VEGETATIVE COVER ESTABLISHED IN THESE AREAS FOR SUBSTANTIAL COMPLETION.

RAKOWITZ
Engineering & Surveying
Texas Registered Engineering Firm F-9155
Texas Registered Surveying Firm 101812-00
830-281-4060

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DAIRY ACRES - UNIT 2
EROSION CONTROL PLAN
ATASCOSA COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105343
LICENSED
PROFESSIONAL ENGINEER
F-9155
7/29/2026

REV	DATE	DESCRIPTION	BY

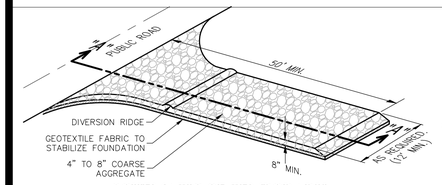
JOB NO.	23-2979B
DATE	SEP. 2026
DESIGNER	CT
CHECKED	BK
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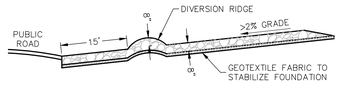
Date: Sep 29, 2026, 3:38pm User ID: CAD1-2022
File: N:\Projects\2023\23-2979 TREF Land, LLC - Dairy Ranch\Civil\UNIT 2\23-2979B EROSION CONTROL U2.dwg

THIS DOCUMENT HAS BEEN PRODUCED FROM ELECTRONICALLY TRANSMITTED OR STORED MATERIAL WHICH MAY HAVE BEEN ALTERED. RELY ONLY ON FINAL HARDCOPY MATERIALS BEARING THE ENGINEER'S ORIGINAL SIGNATURE AND SEAL.

PERMIT SET (NOT FOR CONSTRUCTION): 09/29/2026



SCHEMATIC OF TEMPORARY CONSTRUCTION ENTRANCE/EXIT



SECTION "A-A" OF A CONSTRUCTION ENTRANCE/EXIT

MATERIALS

1. THE AGGREGATE SHOULD CONSIST OF 4–INCH TO 8–INCH WASHED STONE OVER A STABLE FOUNDATION AS SPECIFIED IN THE PLAN.

2. THE AGGREGATE SHOULD BE PLACED WITH A MINIMUM THICKNESS OF 8–INCHES.

3. THE GEOTEXTILE FABRIC SHOULD BE DESIGNED SPECIFICALLY FOR USE AS A SOIL FILTRATION MEDIA WITH AN APPROXIMATE WEIGHT OF 6 OZ/YD^2, A MULLEN BURST RATING OF 140 LB/IN^2, AND AN EQUIVALENT OPENING SIZE GREATER THAN A NUMBER 50 SIEVE.

4. IF A WASHING FACILITY IS REQUIRED, A LEVEL AREA WITH A MINIMUM OF 4–INCH DIAMETER WASHED STONE OR COMMERCIAL ROCK SHOULD BE INCLUDED IN THE PLANS. DIVERT WASTEWATER TO A SEDIMENT TRAP OR BASIN.

INSTALLATION

1. AVOID CURVES ON PUBLIC ROADS AND STEEP SLOPES. REMOVE VEGETATION AND OTHER OBJECTIONABLE MATERIAL FROM THE FOUNDATION AREA. GRADE CROWN FOUNDATION FOR POSITIVE DRAINAGE.

2. THE MINIMUM WIDTH OF THE ENTRANCE/EXIT SHOULD BE 12 FEET OR THE FULL WIDTH OF EXIT ROADWAY, WHICHEVER IS GREATER.

3. THE CONSTRUCTION ENTRANCE SHOULD BE AT LEAST 50 FEET LONG.

4. IF THE SLOPE TOWARD THE ROAD EXCEEDS 2%, CONSTRUCT A RIDGE, 6–INCHES TO 8–INCHES HIGH WITH 3:1 (H:V) SIDE SLOPES, ACROSS THE FOUNDATION APPROXIMATELY 15 FEET FROM THE ENTRANCE TO DIVERT RUNOFF AWAY FROM THE PUBLIC ROAD.

5. PLACE GEOTEXTILE FABRIC AND GRADE FOUNDATION TO IMPROVE STABILITY, ESPECIALLY WHERE WET CONDITIONS ARE ANTICIPATED.

6. PLACE STONE TO DIMENSIONS AND GRADE SHOWN ON PLANS. LEAVE SURFACE SMOOTH AND SLOPE FOR DRAINAGE.

7. DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM THE STONE PAD TO A SEDIMENT TRAP OR BASIN.

8. INSTALL PIPE UNDER PAD AS NEEDED TO MAINTAIN PROPER PUBLIC ROAD DRAINAGE.

COMMON TROUBLE POINTS

1. INADEQUATE RUNOFF CONTROL–SEDIMENT WASHES ONTO PUBLIC ROAD.

2. STONE TOO SMALL OR GEOTEXTILE FABRIC ABSENT, RESULTS IN MUDDY CONDITION AS STONE IS PRESSED INTO SOIL.

3. PAD TOO SHORT FOR HEAVY CONSTRUCTION TRAFFIC–EXTEND PAD BEYOND THE MINIMUM 50–FOOT LENGTH AS NECESSARY.

4. PAD NOT FLARED SUFFICIENTLY AT ROAD SURFACE, RESULTS IN MUD BEING TRACKED ON TO ROAD AND POSSIBLE DAMAGE TO ROAD.

5. UNSTABLE FOUNDATION – USE GEOTEXTILE FABRIC UNDER PAD AND/OR IMPROVE FOUNDATION DRAINAGE.

INSPECTION AND MAINTENANCE GUIDELINES

1. THE ENTRANCE SHOULD BE MAINTAINED IN A CONDITION, WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.

2. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS–OF–WAY SHOULD BE REMOVED IMMEDIATELY BY CONTRACTOR.

3. WHEN NECESSARY, WHEELS SHOULD BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT–OF–WAY.

4. WHEN WASHING IS REQUIRED, IT SHOULD BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.

5. ALL SEDIMENT SHOULD BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATER COURSE BY USING APPROVED METHODS.

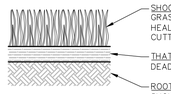
STABILIZED CONSTRUCTION ENTRANCE/EXIT DETAIL

NOT–TO–SCALE

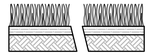


LAY SOD IN A STAGGERED PATTERN. BUTT THE STRIPS TIGHTLY AGAINST EACH OTHER. DO NOT LEAVE SPACES AND DO NOT OVERLAP. A SHARPENED MASON'S TROWEL IS A HANDY TOOL FOR TUCKING DOWN THE ENDS AND TRIMMING PIECES.

BUTTING – ANGLED ENDS CAUSED BY THE AUTOMATIC SOD CUTTER MUST BE MATCHED CORRECTLY.



APPEARANCE OF GOOD SOD

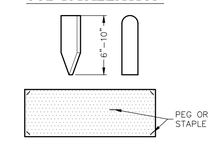


NOTES:
1. ROLL SOD IMMEDIATELY TO ACHIEVE FIRM CONTACT WITH THE SOIL.

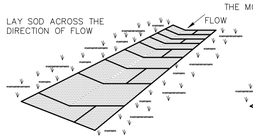
2. WATER TO A DEPTH OF 4" AS NEEDED. WATER WELL AS SOON AS THE SOD IS LAID.

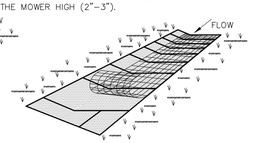
3. MOW WHEN THE SOD IS ESTABLISHED – IN 2–3 WEEKS. SET THE MOWER HIGH (2"–3").

SOD ISTALLATION



USE PEGS OR STAPLES TO FASTEN SOD FIRMLY – AT THE ENDS OF STRIPS AND IN THE CENTER, OR EVERY 3–4 FEET IF THE STRIPS ARE LONG. WHEN READY TO MOW, DRIVE PEGS OR STAPLES FLUSH WITH THE GROUND.





IN CRITICAL AREAS, SECURE SOD WITH NETTING. USE STAPLES.

MATERIALS

1. SOD SHOULD BE MACHINE CUT AT A UNIFORM SOIL THICKNESS OF 3/4" INCH (± 1/4" INCH) AT THE TIME OF CUTTING. THIS THICKNESS SHOULD EXCLUDE 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 ACCEPTABLE.

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. PRIOR TO SOIL PREPARATION, AREAS TO BE SODDED SHOULD BE BROUGHT TO FINAL GRADE IN ACCORDANCE WITH THE APPROVED PLAN.

2. THE SURFACE SHOULD BE CLEARED OF ALL TRASH, DEBRIS AND OF ALL ROOTS, BRUSH, WIRE, GRADE STAKES AND OTHER OBJECTS THAT WOULD INTERFERE WITH PLANTING, FERTILIZING OR MAINTENANCE OPERATIONS.

3. FERTILIZE ACCORDING TO SOIL TESTS. FERTILIZER NEEDS CAN BE DETERMINED BY A SOIL TESTING LABORATORY OR REGIONAL RECOMMENDATIONS CAN BE MADE BY COUNTY AGRICULTURAL EXTENSION AGENTS. FERTILIZER SHOULD BE WORKED INTO THE SOIL TO A DEPTH OF 3 INCHES WITH A DISC, SPRINGTOOTH HARROW OR OTHER SUITABLE EQUIPMENT. ON SLOPING LAND, THE FINAL HARROWING OR DISCING OPERATION SHOULD BE ON THE CONTOUR.

INSTALLATION IN CHANNELS

1. SOD STRIPS IN WATERWAYS SHOULD BE LAID PERPENDICULAR TO THE DIRECTION OF FLOW. CARE SHOULD BE TAKEN TO BUTT ENDS OF STRIPS TIGHTLY (SEE FIGURE ABOVE).

2. AFTER ROLLING OR TAMPING, SOD SHOULD BE PEGGED OR STAPLED TO RESIST WASHOUT DURING THE ESTABLISHMENT PERIOD. MESH OR OTHER NETTING MAY BE PEGGED OVER THE SOD FOR EXTRA PROTECTION IN CRITICAL AREAS.

GENERAL INSTALLATION (VA. DEPT. OF CONSERVATION, 1992)

1. SOD SHOULD NOT BE CUT OR LAID IN EXCESSIVELY WET OR DRY WEATHER. SOD ALSO SHOULD NOT BE LAID ON SOIL SURFACES THAT ARE FROZEN.

2. DURING PERIODS OF HIGH TEMPERATURE, THE SOIL SHOULD BE LIGHTLY IRRIGATED IMMEDIATELY PRIOR TO LAYING THE SOD, TO COOL THE SOIL AND REDUCE ROOT BURNING AND DIEBACK.

3. THE FIRST ROW OF SOD SHOULD BE LAID IN A STRAIGHT LINE WITH SUBSEQUENT ROWS PLACED PARALLEL TO AND BUTTING TIGHTLY AGAINST EACH OTHER. LATERAL JOINTS SHOULD BE STAGGERED TO PROMOTE MORE UNIFORM GROWTH AND STRENGTH. CARE SHOULD BE EXERCISED TO ENSURE THAT SOD IS NOT STRETCHED OR OVERLAPPED AND THAT ALL JOINTS ARE BUTTED TIGHT IN ORDER TO PREVENT VOIDS WHICH WOULD CAUSE DRYING OF THE ROOTS (SEE FIGURE ABOVE).

4. ON SLOPES 3:1 OR GREATER, OR WHEREVER EROSION MAY BE A PROBLEM, SOD SHOULD BE LAID WITH STAGGERED JOINTS AND SECURED BY STAPLING OR OTHER APPROVED METHODS. SOD SHOULD BE INSTALLED WITH THE LENGTH PERPENDICULAR TO THE SLOPE (ON CONTOUR).

5. AS SODDING OF CLEARLY DEFINED AREAS IS COMPLETED, SOD SHOULD BE ROLLED OR TAMPED TO PROVIDE FIRM CONTACT BETWEEN ROOTS AND SOIL.

6. AFTER ROLLING, SOD SHOULD BE IRRIGATED TO A DEPTH SUFFICIENT THAT THE UNDERSIDE OF THE SOD PAD AND THE SOIL 4 INCHES BELOW THE SOD IS THOROUGHLY WET.

7. UNTIL SUCH TIME A GOOD ROOT SYSTEM BECOMES DEVELOPED, IN THE ABSENCE OF ADEQUATE RAINFALL, WATERING SHOULD BE PERFORMED AS OFTEN AS NECESSARY TO MAINTAIN MOIST SOIL TO A DEPTH OF AT LEAST 4 INCHES.

8. THE FIRST MOWING SHOULD NOT BE ATTEMPTED UNTIL THE SOD IS FIRMLY ROOTED, USUALLY 2–3 WEEKS. NOT MORE THAN ONE THIRD OF THE GRASS LEAF SHOULD BE REMOVED AT ANY ONE CUTTING.

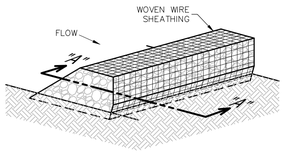
INSPECTION AND MAINTENANCE GUIDELINES

1. SOD SHOULD BE INSPECTED WEEKLY AND AFTER EACH RAIN EVENT TO LOCATE AND REPAIR ANY DAMAGE.

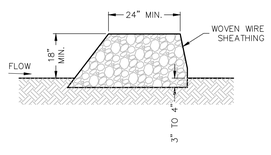
2. DAMAGE FROM STORMS OR NORMAL CONSTRUCTION ACTIVITIES SUCH AS TIRE RUTS OR DISTURBANCE OF SWALE STABILIZATION SHOULD BE REPAIRED AS SOON AS PRACTICAL.

SOD INSTALLATION DETAIL

NOT–TO–SCALE



ISOMETRIC PLAN VIEW



SECTION "A-A"

ROCK BERMS

THE PURPOSE OF A ROCK BERM IS TO SERVE AS A CHECK DAM IN AREAS OF CONCENTRATED FLOW, TO INTERCEPT SEDIMENT–LADEN RUNOFF, DETAIN THE SEDIMENT AND RELEASE THE WATER IN SHEET FLOW. THE ROCK BERM SHOULD BE USED WHEN THE CONTRIBUTING DRAINAGE AREA IS LESS THAN 5 ACRES. ROCK BERMS ARE USED IN AREAS WHERE THE VOLUME OF RUNOFF IS TOO GREAT FOR A SILT FENCE TO CONTAIN. THEY ARE LESS EFFECTIVE FOR SEDIMENT REMOVAL THAN SILT FENCES, PARTICULARLY FOR FINE PARTICLES, BUT ARE ABLE TO WITHSTAND HIGHER FLOWS THAN A SILT FENCE, AS SUCH, ROCK BERMS ARE OFTEN USED IN AREAS OF CHANNEL FLOWS (DITCHES, GULLIES, ETC.). ROCK BERMS ARE MOST EFFECTIVE AT REDUCING BED LOAD IN CHANNELS AND SHOULD NOT BE SUBSTITUTED FOR OTHER EROSION AND SEDIMENT CONTROL MEASURES FARTHER UP THE WATERSHED.

INSPECTION AND MAINTENANCE GUIDELINES

1. INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL BY THE RESPONSIBLE PARTY. FOR INSTALLATIONS IN STREAMBEDS, ADDITIONAL DAILY INSPECTIONS SHOULD BE MADE.

2. REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6 INCHES AND DISPOSE OF THE ACCUMULATED SILT IN AN APPROVED MANNER THAT WILL NOT CAUSE ANY ADDITIONAL SILTATION.

3. REPAIR ANY LOOSE WIRE SHEATHING.

4. THE BERM SHOULD BE RESHAPED AS NEEDED DURING INSPECTION.

5. THE BERM SHOULD BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.

6. THE ROCK BERM SHOULD BE LEFT IN PLACE UNTIL ALL UPSTREAM AREAS ARE STABILIZED AND ACCUMULATED SILT REMOVED.

MATERIALS

1. THE BERM STRUCTURE SHOULD BE SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM OPENING OF 1 INCH AND A MINIMUM WIRE DIAMETER OF 20 GAUGE GALVANIZED AND SHOULD BE SECURED WITH SHOAT RINGS.

2. CLEAN, OPEN GRADED 3–INCH TO 5–INCH DIAMETER ROCK SHOULD BE USED, EXCEPT IN AREAS WHERE HIGH VELOCITIES OR LARGE VOLUMES OF FLOW ARE EXPECTED, WHERE 5–INCH TO 8–INCH DIAMETER ROCKS MAY BE USED.

INSTALLATION

1. LAY OUT THE WOVEN WIRE SHEATHING PERPENDICULAR TO THE FLOW LINE. THE SHEATHING SHOULD BE 20 GAUGE WOVEN WIRE MESH WITH 1 INCH OPENINGS.

2. BERM SHOULD HAVE A TOP WIDTH OF 2 FEET MINIMUM WITH SIDE SLOPES BEING 2:1 (H:V) OR FLATTER.

3. PLACE THE ROCK ALONG THE SHEATHING AS SHOWN IN THE DIAGRAM TO A HEIGHT NOT LESS THAN 18".

4. WRAP THE WIRE SHEATHING AROUND THE ROCK AND SECURE WITH TIE WIRE SO THAT THE ENDS OF THE SHEATHING OVERLAP AT LEAST 2 INCHES, AND THE BERM RETAINS ITS SHAPE WHEN WALKED UPON.

5. BERM SHOULD BE BUILT ALONG THE CONTOUR AT ZERO PERCENT GRADE OR AS NEAR AS POSSIBLE.

6. THE ENDS OF THE BERM SHOULD BE TIED INTO EXISTING UPSLOPE GRADE AND THE BERM SHOULD BE BURIED IN A TRENCH APPROXIMATELY 3 TO 4 INCHES DEEP TO PREVENT FAILURE OF THE CONTROL.

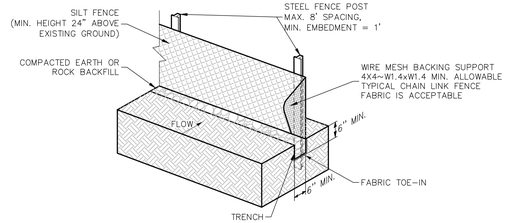
COMMON TROUBLE POINTS

1. INSUFFICIENT BERM HEIGHT OR LENGTH (RUNOFF QUICKLY ESCAPES OVER THE TOP OR AROUND THE SIDES OF BERM).

2. BERM NOT INSTALLED PERPENDICULAR TO FLOW LINE (RUNOFF ESCAPING AROUND ONE SIDE).

ROCK BERM DETAIL

NOT–TO–SCALE



ISOMETRIC PLAN VIEW

SILT FENCE

A SILT FENCE IS A BARRIER CONSISTING OF GEOTEXTILE FABRIC SUPPORTED BY METAL POSTS TO PREVENT SOIL AND SEDIMENT LOSS FROM A SITE. WHEN PROPERLY USED, SILT FENCES CAN BE HIGHLY EFFECTIVE AT CONTROLLING SEDIMENT FROM DISTURBED AREAS. THEY CAUSE RUNOFF TO POND, ALLOWING HEAVIER SOLIDS TO SETTLE OUT, IF NOT PROPERLY INSTALLED, SILT FENCES ARE NOT LIKELY TO BE EFFECTIVE.

THE PURPOSE OF A SILT FENCE IS TO INTERCEPT AND DETAIN WATER–BORN SEDIMENT FROM UNPROTECTED AREAS OF A LIMITED EXTENT. SILT FENCE IS USED DURING THE PERIOD OF CONSTRUCTION NEAR THE PERIMETER OF A DISTURBED AREA TO INTERCEPT SEDIMENT WHILE ALLOWING WATER TO PERCOLATE THROUGH. THIS FENCE SHOULD REMAIN IN PLACE UNTIL THE DISTURBED AREA IS PERMANENTLY STABILIZED. SILT FENCE SHOULD NOT BE USED WHERE THERE IS A CONCENTRATION OF WATER IN A CHANNEL OR DRAINAGE WAY. IF CONCENTRATED FLOW OCCURS AFTER INSTALLATION, CORRECTIVE ACTION MUST BE TAKEN SUCH AS PLACING A ROCK BERM IN THE AREAS OF CONCENTRATED FLOW.

SILT FENCING WITHIN THE SITE MAY BE TEMPORARILY MOVED DURING THE DAY TO ALLOW CONSTRUCTION ACTIVITY PROVIDED IT IS REPLACED AND PROPERLY ANCHORED TO THE GROUND AT THE END OF THE DAY. SILT FENCES ON THE PERIMETER OF THE SITE OR AROUND DRAINAGE WAYS SHOULD NOT BE MOVED AT ANY TIME.

MATERIALS

1. SILT FENCE MATERIAL SHOULD BE POLYPROPYLENE, POLYETHYLENE, OR POLYAMIDE WOVEN OR NON–WOVEN FABRIC. THE FABRIC SHOULD BE 36 INCHES, WITH A MINIMUM UNIT WEIGHT OF 4.5 OZ/YD, MULLEN BURST STRENGTH EXCEEDING 190 LB/IN2, ULTRAVIOLET STABILITY EXCEEDING 70%, AND MINIMUM APPARENT OPENING SIZE OF U.S. SIEVE NUMBER 30.

2. FENCE POSTS SHOULD BE MADE OF HOT ROLLED STEEL, AT LEAST 4 FEET LONG WITH TEE OR Y–BAR CROSS SECTION, SURFACE PAINTED OR GALVANIZED, MINIMUM WEIGHT 1.25 LB/FT, AND BRINDELL HARDNESS EXCEEDING 140.

3. WOVEN WIRE BACKING TO SUPPORT THE FABRIC SHOULD BE GALVANIZED 2" X 4" WELDED WIRE, 12 GAUGE MINIMUM.

INSTALLATION

1. STEEL POSTS, WHICH SUPPORT THE SILT FENCE, SHOULD BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POSTS MUST BE EMBEDDED A MINIMUM OF 1–FOOT DEEP AND SPACED NOT MORE THAN 8 FEET ON CENTER. WHERE WATER CONCENTRATES, THE MAXIMUM SPACING SHOULD BE 6 FEET.

2. LAY OUT FENCING DOWN–SLOPE OF DISTURBED AREA, FOLLOWING THE CONTOUR AS CLOSELY AS POSSIBLE. THE FENCE SHOULD BE SITED SO THAT THE MAXIMUM DRAINAGE AREA IS ¼ ACRE/100 FEET OF FENCE.

3. THE TOE OF THE SILT FENCE SHOULD BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWN–SLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. WHERE FENCE CANNOT BE TRENCHED IN (E.G., PAVEMENT OR ROCK OUTCROP), WEIGHT FABRIC FLAP WITH 3 INCHES OF PEA GRAVEL ON UPHILL SIDE TO PREVENT FLOW FROM SEEPING UNDER FENCE.

4. THE TRENCH MUST BE A MINIMUM OF 6 INCHES DEEP AND 6 INCHES WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.

5. SILT FENCE SHOULD BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE, WHICH IS IN TURN ATTACHED TO THE STEEL FENCE POST. THERE SHOULD BE A 3–FOOT OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET.

6. SILT FENCE SHOULD BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

COMMON TROUBLE POINTS

1. FENCE NOT INSTALLED ALONG THE CONTOUR CAUSING WATER TO CONCENTRATE AND FLOW OVER THE FENCE.

2. FABRIC NOT SEATED SECURELY TO GROUND (RUNOFF PASSING UNDER FENCE).

3. FENCE NOT INSTALLED PERPENDICULAR TO FLOW LINE (RUNOFF ESCAPING AROUND SIDES).

4. FENCE TREATING TOO LARGE AN AREA, OR EXCESSIVE CHANNEL FLOW (RUNOFF OVERTOPS OR COLLAPSES FENCE).

INSPECTION AND MAINTENANCE GUIDELINES

1. INSPECT ALL FENCING WEEKLY, AND AFTER RAINFALL.

2. REMOVE SEDIMENT WHEN BUILDUP REACHES 6 INCHES.

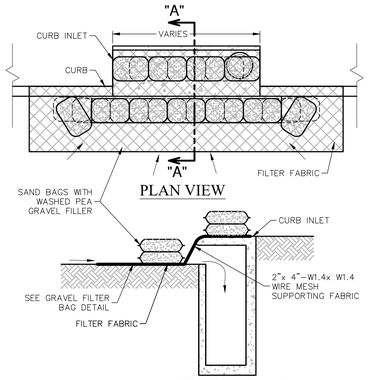
3. REPLACE TORN FABRIC OR INSTALL A SECOND LINE OF FENCING PARALLEL TO THE TORN SECTION.

4. REPLACE OR REPAIR SECTIONS CRUSHED OR COLLAPSED IN THE COURSE OF CONSTRUCTION ACTIVITY. IF A SECTION OF FENCE IS OBSTRUCTING VEHICULAR ACCESS, CONSIDER RELOCATING IT TO A SPOT WHERE IT WILL PROVIDE EQUAL PROTECTION, BUT WILL NOT OBSTRUCT VEHICLES. A TRIANGULAR FILTER DIKE MAY BE PREFERABLE TO A SILT FENCE AT COMMON VEHICLE ACCESS POINTS.

5. WHEN CONSTRUCTION IS COMPLETE, THE SEDIMENT SHOULD BE DISPOSED OF IN A MANNER THAT WILL NOT CAUSE ADDITIONAL SILTATION AND THE PRIOR LOCATION OF THE SILT FENCE SHOULD BE REVEGETATED. THE FENCE ITSELF SHOULD BE DISPOSED OF IN AN APPROVED LANDFILL.

SILT FENCE DETAIL

NOT–TO–SCALE



SECTION "A-A"

GENERAL NOTES

1. CONTRACTOR TO INSTALL 2"x4"–W1.4xW1.4 WIRE MESH SUPPORTING FILTER FABRIC OVER THE INLET OPENING. FABRIC MUST BE SECURED TO WIRE BACKING WITH CLIPS OR WIRE TIES AT THIS LOCATION. SAND BAGS FILLED WITH WASHED PEA GRAVEL SHOULD BE PLACED ON TOP OF WIRE MESH ON TOP OF THE INLET AS SHOWN ON THIS DETAIL TO HOLD WIRE MESH IN PLACE. SANDBAGS FILLED WITH WASHED PEA GRAVEL SHOULD ALSO BE PLACED ALONG THE GUTTER AS SHOWN ON THIS DETAIL TO HOLD WIRE MESH IN PLACE. SAND BAGS TO BE STACKED TO FORM A CONTINUOUS BARRIER AROUND INLETS.

2. THE BAGS SHOULD BE TIGHTLY ABUTTED AGAINST EACH OTHER TO PREVENT RUNOFF FROM FLOWING BETWEEN THE BAGS.

INSPECTION AND MAINTENANCE GUIDELINES

1. INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL. REPAIR OR REPLACEMENT SHOULD BE MADE PROMPTLY AS NEEDED BY THE CONTRACTOR.

2. REMOVE SEDIMENT WHEN BUILDUP REACHES A DEPTH OF 3 INCHES. REMOVED SEDIMENT SHOULD BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.

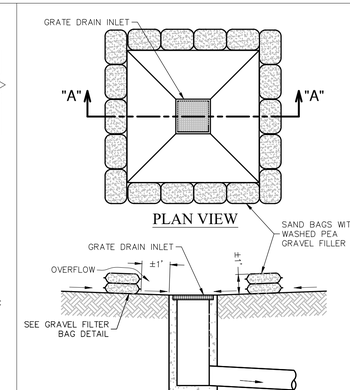
3. CHECK PLACEMENT OF DEVICE TO PREVENT GAPS BETWEEN DEVICE AND CURB.

4. INSPECT FILTER FABRIC AND PATCH OR REPLACE IF TORN OR MISSING.

5. STRUCTURES SHOULD BE REMOVED AND THE AREA STABILIZED ONLY AFTER THE REMAINING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

BAGGED GRAVEL CURB INLET PROTECTION DETAIL

NOT–TO–SCALE



SECTION "A-A"

GENERAL NOTES

1. THE SANDBAGS SHOULD BE FILLED WITH WASHED PEA GRAVEL AND STACKED TO FORM A CONTINUOUS BARRIER ABOUT 1 FOOT HIGH AROUND INLETS.

2. THE BAGS SHOULD BE TIGHTLY ABUTTED AGAINST EACH OTHER TO PREVENT RUNOFF FROM FLOWING BETWEEN THE BAGS.

INSPECTION AND MAINTENANCE GUIDELINES

1. INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL. REPAIR OR REPLACEMENT SHOULD BE MADE PROMPTLY AS NEEDED BY THE CONTRACTOR.

2. REMOVE SEDIMENT WHEN BUILDUP REACHES A DEPTH OF 3 INCHES. REMOVED SEDIMENT SHOULD BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.

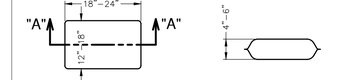
3. CHECK PLACEMENT OF DEVICE TO PREVENT GAPS BETWEEN DEVICE AND CURB.

4. INSPECT FILTER FABRIC AND PATCH OR REPLACE IF TORN OR MISSING.

5. STRUCTURES SHOULD BE REMOVED AND THE AREA STABILIZED ONLY AFTER THE REMAINING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

BAGGED GRATE INLET PROTECTION DETAIL

NOT–TO–SCALE



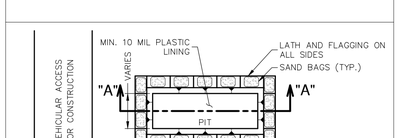
NOTES:
1. THE FILTER BAG MATERIAL SHALL BE MADE OF POLYPROPYLENE, POLYETHYLENE OR POLYAMIDE WOVEN FABRIC, MIN. UNIT WEIGHT OF 4 OUNCES/SY, HAVE A MULLEN BURST STRENGTH EXCEEDING 300 PSI AND ULTRAVIOLET STABILITY EXCEEDING 70%.

2. THE FILTER BAG SHALL BE FILLED WITH CLEAN, MEDIUM WASHED PEA GRAVEL TO COARSE GRAVEL (0.31 TO 0.75 INCH DIAMETER).

3. SAND SHALL NOT BE USED TO FILL THE FILTER BAGS.

GRAVEL FILTER BAG DETAIL

NOT–TO–SCALE



SECTION "A-A"

GENERAL NOTES

1. DETAIL ABOVE ILLUSTRATES MINIMUM DIMENSIONS. PIT CAN BE INCREASED IN SIZE DEPENDING ON EXPECTED FREQUENCY OF USE.

2. WASHOUT PIT SHALL BE LOCATED IN AN AREA EASILY ACCESSIBLE TO CONSTRUCTION TRAFFIC.

3. WASHOUT PIT SHALL NOT BE LOCATED IN AREAS SUBJECT TO INUNDATION FROM STORM WATER RUNOFF.

4. LOCATE WASHOUT AREA AT LEAST 50 FEET FROM SENSITIVE FEATURES, STORM DRAINS, OPEN DITCHES OR WATER BODIES.

5. TEMPORARY CONCRETE WASHOUT FACILITY SHOULD BE CONSTRUCTED WITH SUFFICIENT QUANTITY AND VOLUME TO CONTAIN ALL LIQUID AND CONCRETE WASTE GENERATED BY WASHOUT OPERATIONS.

MATERIALS

PLASTIC LINING MATERIAL SHOULD BE A MINIMUM OF 10 MIL IN POLYETHYLENE SHEETING AND SHOULD BE FREE OF HOLES, TEARS, OR OTHER DEFECTS THAT COMPROMISE THE IMPERMEABILITY OF THE MATERIAL.

MAINTENANCE

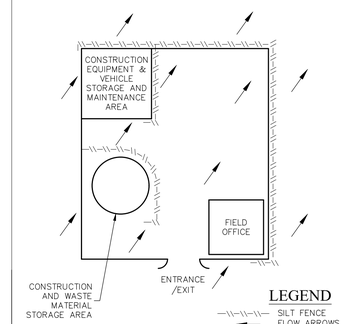
1. WHEN TEMPORARY CONCRETE WASHOUT FACILITIES ARE NO LONGER REQUIRED FOR THE WORK, THE HARDENED CONCRETE SHOULD BE REMOVED AND DISPOSED OF.

2. MATERIALS USED TO CONSTRUCT TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE REMOVED FROM THE SITE OF THE WORK AND DISPOSED OF.

3. HOLES, DEPRESSIONS OR OTHER GROUND DISTURBANCES CAUSED BY THE REMOVAL OF THE TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE BACKFILLED AND REPAIRED.

CONCRETE TRUCK WASHOUT PIT DETAIL

NOT–TO–SCALE



CONSTRUCTION STAGING AREA

NOT–TO–SCALE

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DAIRY ACRES - UNIT 2
EROSION CONTROL DETAILS

ATASCOSA COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105343
LICENSED PROFESSIONAL ENGINEER
F-9155
9/29/2026

REV	DATE	DESCRIPTION	BY

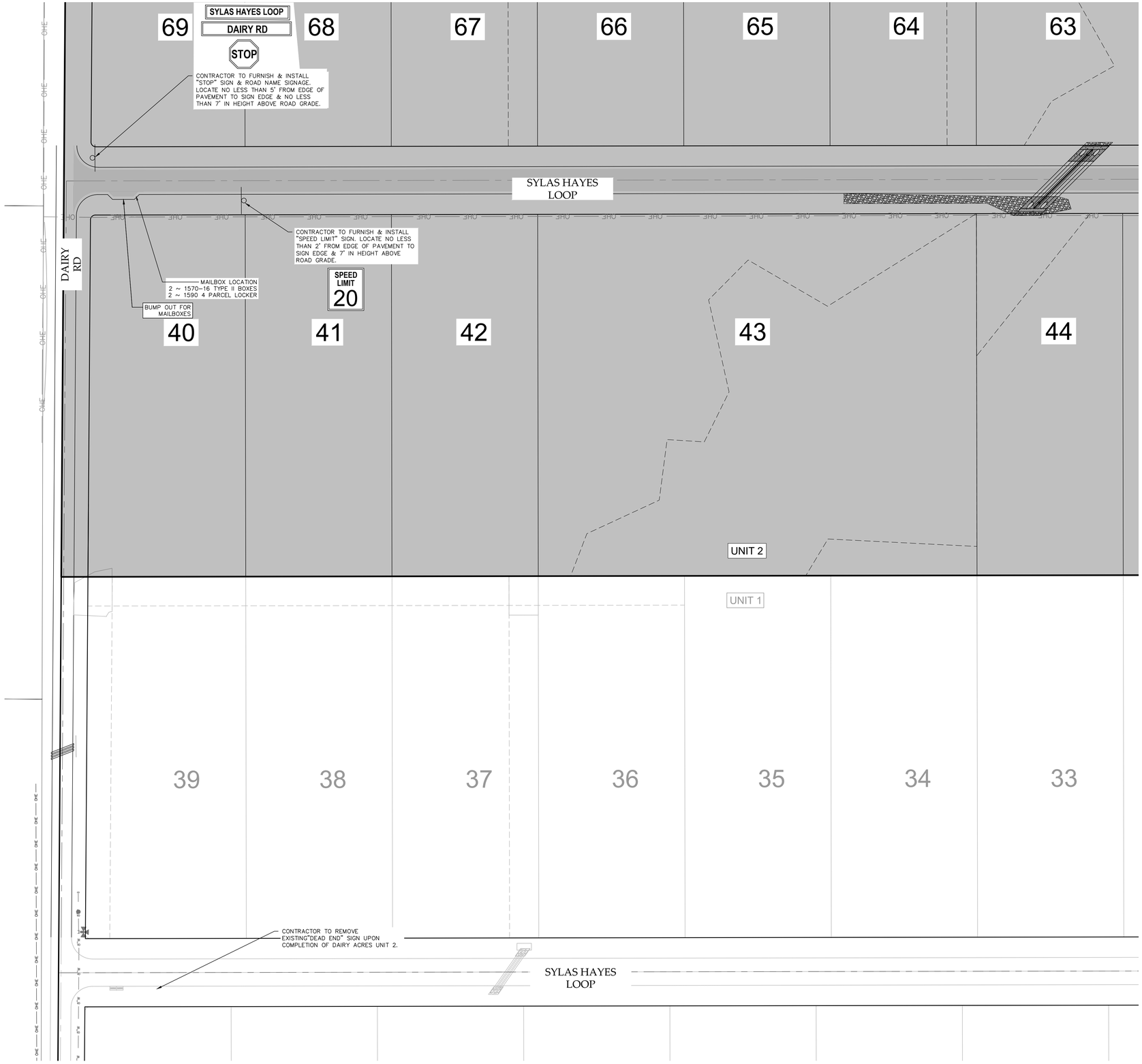
JOB NO.	23-2979B
DATE	SEP. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

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Date: Sep 29, 2026, 4:00pm User ID: CAD1.2022
File: N:\Projects\2023\23-2979 TREF Land LLC - Dairy Rd\Civil\UNIT 2\23-2979B EROSION CONTROL U2.dwg

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50 0 50 100

SCALE OF FEET
1" = 50'

LEGEND

- RIGHT-OF-WAY
- LOT LINE
- PAVEMENT LIMITS
- STOP — STOP SIGN R1-1, 30" X 30"
- SPEED LIMIT 20 — SPEED LIMIT SIGN R2-1, 18" X 24"
- Street Name — STANDARD COUNTY ROAD NAME SIGN D3-4T

SIGNAGE NOTES:

1. CONTACT COUNTY ROAD ADMINISTRATOR FOR APPROVAL OF SIGNAGE.
2. UNDERGROUND UTILITIES EXIST WITHIN THE PROJECT. CONTRACTOR SHALL HAVE THE UTILITIES MARKED PRIOR TO INSTALLATION OF THE SIGN POSTS. SIGN LOCATIONS ILLUSTRATED ON THE PLANS ARE APPROXIMATE. CONTRACTOR SHALL LOCATE SIGNS TO AVOID UTILITIES. CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES BEFORE COMMENCING WORK.
3. IN ACCORDANCE WITH THE UNDERGROUND FACILITY DAMAGE PREVENTION ACT, THE TELEPHONE NUMBER FOR A UTILITY LOCATOR IS 1-800-545-6005. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAKE ARRANGEMENTS FOR UTILITY LOCATORS, AS NEEDED.
4. WHEN PREPARING HOLES FOR POSTS, CARE SHALL BE TAKEN SO AS NOT TO RUPTURE EXISTING DRAINAGE STRUCTURES, TELECOMMUNICATION FACILITIES, ELECTRICAL CONDUITS, & PUBLIC UTILITIES.
5. ALL SIGNS SHALL COMPLY WITH THE SIGN DESIGNS PRESENTED IN STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS.
6. LOCATIONS ILLUSTRATED ON THE PLANS ARE APPROXIMATE. PLACEMENT OF SIGNS SHALL BE AT PROPERTY LINES AND SHALL BE LOCATED IN THE FIELD TO PROVIDE APPROPRIATE FUNCTIONALITY. SIGN LOCATIONS SHALL COMPLY WITH THE GUIDELINES AND REQUIREMENTS PRESENTED IN THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
7. CONTRACTOR SHALL FURNISH AND MAINTAIN ALL TRAFFIC CONTROL DEVICES, LIGHTING, OR WARNING DEVICES REQUIRED TO COMPLETE THE WORK. ALL CONSTRUCTION SIGNS AND TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
8. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS PROJECT SHALL CONFORM TO APPLICABLE COUNTY STANDARDS FOR PUBLIC WORKS CONSTRUCTION, TXDOT SPECIFICATIONS AS WELL AS PROVISIONS APPLICABLE TO THE PROJECT AND AS OTHER SAFETY CODES AND INSPECTION REQUIREMENTS OF THE FIRE DEPARTMENT.
9. MATERIALS FURNISHED BY THE CONTRACTOR SHALL BE NEW, UN-DEPRECIATED STOCK. ALL EQUIPMENT SHALL BE NEW, UNLESS NOTED OTHERWISE ON THE PLANS.
10. CONTRACTOR SHALL FURNISH AND INSTALL ALL PERMANENT SIGNS ILLUSTRATED ON THE PLANS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY HARDWARE FOR MOUNTING. ALL SIGNS WITH A WHITE BACKGROUND SHALL BE FABRICATED WITH ENGINEER GRADE REFLECTIVE SHEETING (TXDOT TYPE A). ALL SIGNS WITH NON-WHITE BACKGROUNDS SHALL BE FABRICATED WITH HIGH SPECIFIC INTENSITY REFLECTIVE SHEETING (TXDOT TYPE C).
11. CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING TO ORIGINAL CONDITION, OR BETTER, ANY DAMAGE DONE TO EXISTING UTILITIES, FENCES, DRIVEWAYS, PAVEMENT (NO SEPARATE PAY ITEM). CONTRACTOR SHALL RESTORE CONSTRUCTION AREA TO ORIGINAL CONDITION, OR BETTER, PRIOR TO FINAL INSPECTION.

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Engineering & Surveying
Texas Registered Engineering Firm F-9155
Texas Registered Surveying Firm 101812-00
830-281-4060

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DAIRY ACRES - UNIT 2
SIGNAGE PLAN

ATASCOSA COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105343
LICENSED
PROFESSIONAL ENGINEER
F-9155
9/29/2026

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JOB NO.	23-2979B
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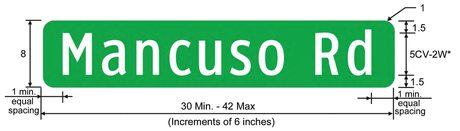
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File: N:\Projects\2023\23-2979 TREP Land, LLC - Dairy Rd\Civil\UNIT 2\23-2979B SIGNAGE PLAN, Unit 2.dwg

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D3-4T

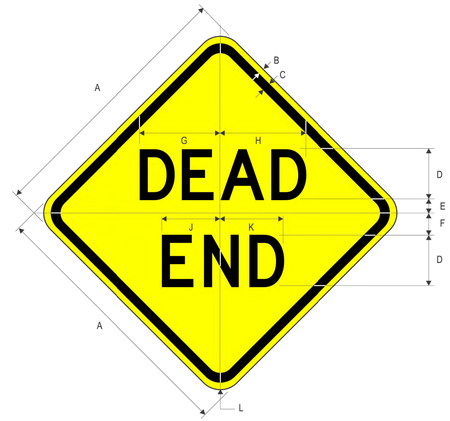


D3-4aT

* Reduce spacing to fit.

NOTE
Vertical spacing can be adjusted when there is a conflict with descenders and ascenders.

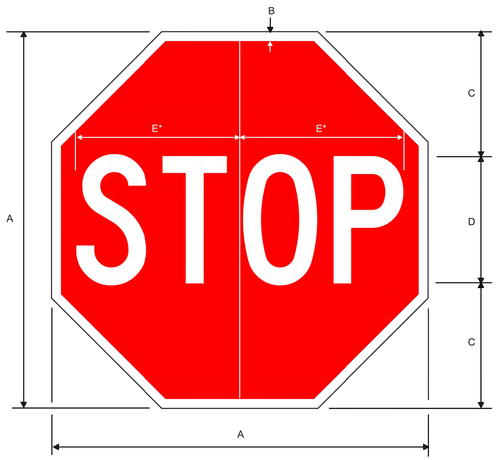
COLORS: LEGEND - WHITE
BACKGROUND - GREEN



W14-1

A	B	C	D	E	F	G	H	J	K	L
24	.375	.625	5 D	1	2	8.25	8.563	5.625	6.25	1.5
30	.5	.75	6 D	1.5	2.5	9.75	10.25	6.75	7.5	1.875
36	.625	.875	7 D	2	3	11.375	11.938	7.875	8.75	2.25
48	.75	1.25	10 D	2	4	16.5	17.126	11.25	12.5	3

COLORS: LEGEND - BLACK
BACKGROUND - YELLOW



R1-1

* Reduce spacing 40%

A	B	C	D	E
18	.375	6	6C	7.75
30	.75	10	10C	12.5
36	.875	12	12C	15
48	1.25	16	16C	20

COLORS: LEGEND - WHITE
BACKGROUND - RED



R2-1

* Optically space numerals about centerline.

A	B	C	D	E	F	G	H	J	K	L
18	24	0.375	0.625	3	3 E	2	8 E	7.052	5.491	1.5
24	30	0.375	0.625	4	4 E	2	10 E	9.403	7.321	1.5
30	36	0.5	0.75	4.5	5 E	2.5	12 E	11.754	9.151	1.875
36	48	0.625	0.875	6	6 E	5	14 E	14.105	10.981	2.25
48	60	0.75	1.25	8	8 E	6	16 E	18.806	14.642	3

COLORS: LEGEND - BLACK
BACKGROUND - WHITE

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DAIRY ACRES - UNIT 2
SIGNAGE PLAN DETAILS
ATASCOSA COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105343
LICENSED
PROFESSIONAL ENGINEER
F-9155
7/29/2026

REV	DATE	DESCRIPTION	BY

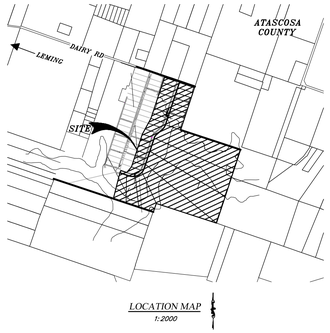
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Date: Sep 29, 2026, 3:57pm User ID: CAD1 2022
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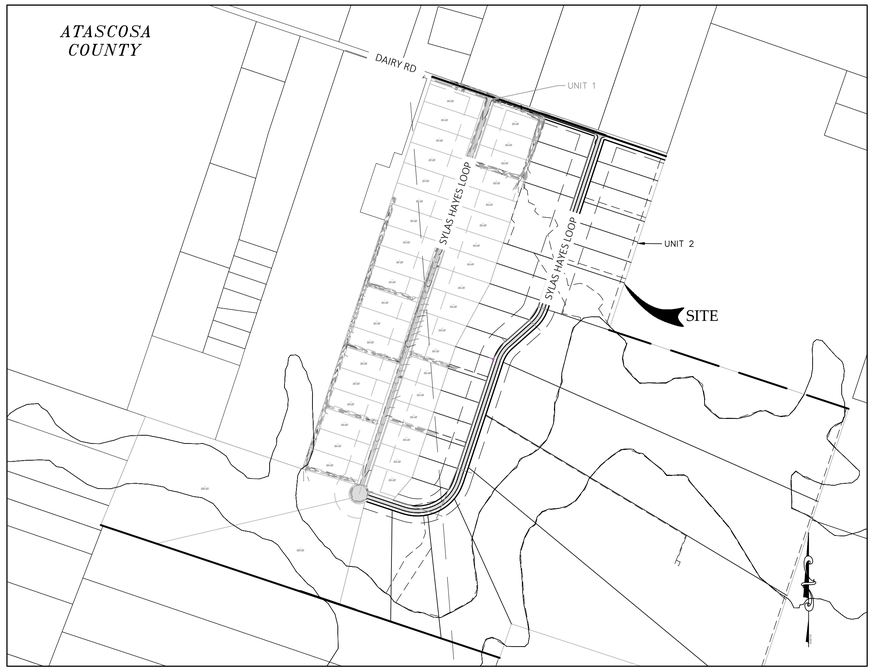
DAIRY ACRES - UNIT 2
WATER DISTRIBUTION PLANS
ATASCOSA COUNTY, TEXAS



LOCATION MAP
1:2000

SHEET INDEX

Description	Sheet No.
COVER SHEET	W0.0
WATER DISTRIBUTION PLAN	W1.0
WATER DETAILS (1 OF 2)	W2.0
WATER DETAILS (2 OF 2)	W2.1



LOCATION MAP
N.T.S.

RAKOWITZ ENGINEERING LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105043
LICENSED
PROFESSIONAL ENGINEER
F-9155
7/29/2026

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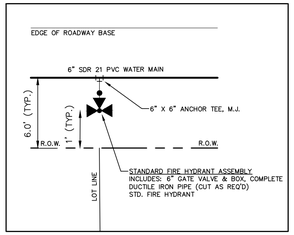
UNDERGROUND UTILITIES
THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION & ELEVATION OF EXISTING UTILITIES SHOWN ON THE PLANS ARE OBTAINED FROM UTILITY COMPANY RECORDS AND WHERE POSSIBLE, FIELD MEASUREMENTS. THE PROVIDED INFORMATION IS NOT TO BE RELIED ON AS EXACT OR COMPLETE. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL EXISTING UTILITIES & SHALL NOTIFY THE APPROPRIATE UTILITY COMPANY 48 HOURS PRIOR TO ANY EXCAVATION AND REQUEST EXACT FIELD LOCATIONS OF UTILITIES. THE CONTRACTOR IS RESPONSIBLE FOR ANY RELOCATION OR DAMAGE TO UTILITIES, WHETHER SHOWN ON THESE PLANS OR NOT.

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

UNDERGROUND UTILITIES
USE CAUTION WHEN EXCAVATING NEAR OR ABOVE EXISTING GAS UTILITY LINE DUE TO POSSIBILITY OF LINE CONTAINING RESIDUALS FROM PRIOR USE.

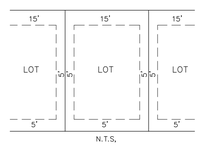
NOTE
THE WATER DISTRIBUTION SYSTEM HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY, MCCOY WSC, AND RULES OF THE TEXAS INSURANCE COMMISSION.

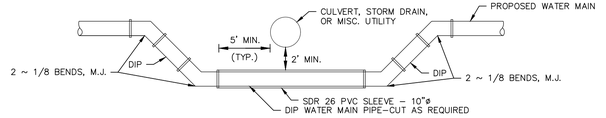
NOTES:
1. LOCATION OF EXISTING UTILITIES BASED ON BEST AVAILABLE INFORMATION. CONTRACTOR TO VERIFY HORIZONTAL AND VERTICAL LOCATION PRIOR TO INSTALLING ONSITE FACILITIES. CONTRACTOR TO NOTIFY ENGINEER OF ANY DISCREPANCIES BETWEEN SHOWN AND ACTUAL LOCATIONS.
2. CONTRACTOR TO USE MCCOY WSC SPECIFICATIONS UNLESS DIRECTED OTHERWISE BY MCCOY WSC. CONTRACTOR TO VERIFY SPECIFICATIONS WITH MCCOY WSC PRIOR TO CONSTRUCTION.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR TAPPING PUBLIC WATER MAINS. CONTACT MCCOY CITY WSC FOR DETAILS.
4. ALL WATER MAINS ARE ASTM D2214 – SDR=21 PVC IN SIZE SHOWN. ALL WATER SERVICES ARE POLY, OR AS SHOWN ON SERVICE DETAIL, TO METER BOX.
5. ALL ROAD CROSSINGS (INCLUDING SERVICES) SHALL BE ENCASED IN PVC PIPE. SLEEVE TO EXTEND 10' BEYOND EDGE OF ROAD.
6. ALL TRENCHES SHALL BE BACKFILLED AND COMPACTED TO 95% MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D 1157 AT A MOISTURE CONTENT OF –2% TO 3% OF THE OPTIMUM MOISTURE CONTENT.
7. MINIMUM 3' OF COVER ON ALL MAINS AND SERVICES.
8. CONTRACTOR TO VERIFY LOCATION OF ALL METERS PRIOR TO ACCEPTANCE BY MCCOY WSC.



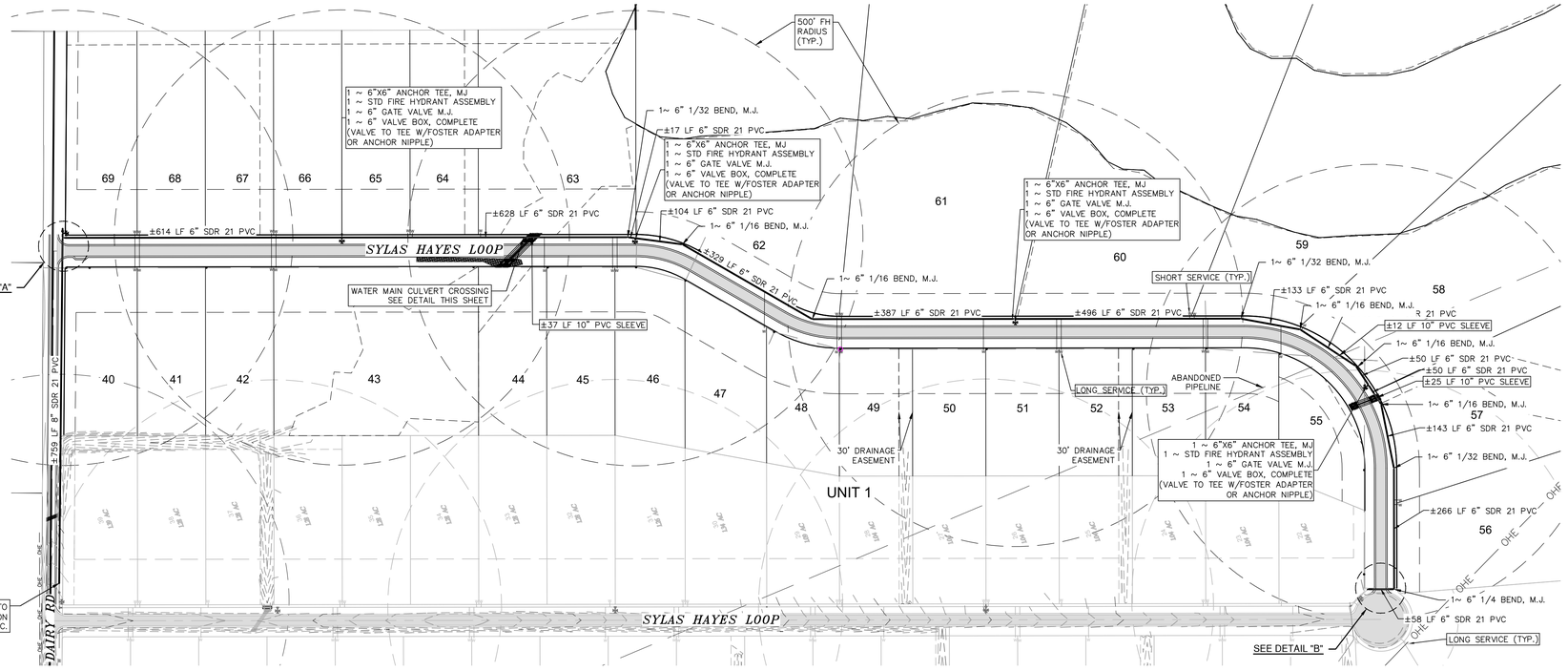
FIRE HYDRANT DETAIL
NOT-TO-SCALE

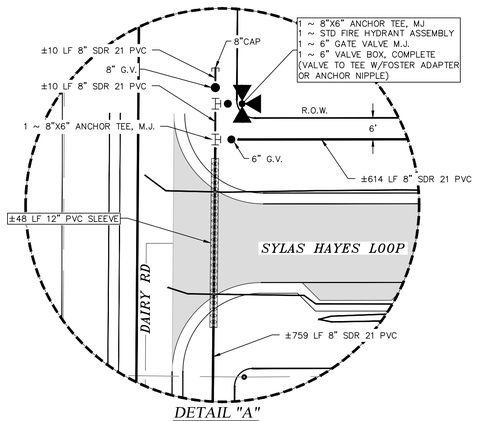
TYPICAL LOT WITH MINIMUM UTILITY EASEMENT



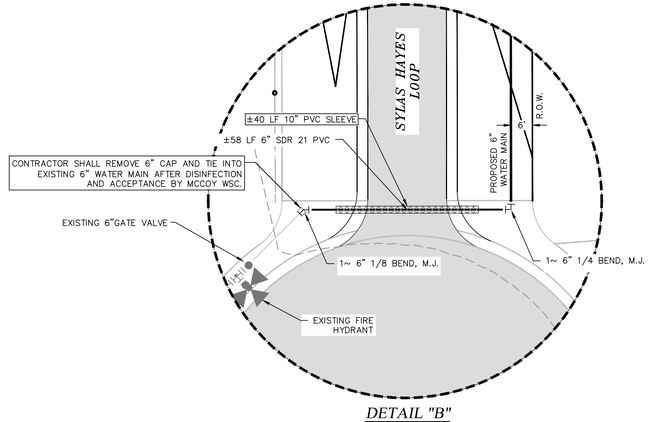


WATER MAIN CROSSING UNDER CULVERT
N.T.S.





DETAIL "A"
NOT TO SCALE



DETAIL "B"
NOT TO SCALE



LEGEND
- PROPERTY BOUNDARY
- RIGHT-OF-WAY
- LOT LINE
- UTILITY EASMENT
- PROPOSED 8" WATER MAIN
- FLOODLINE PER FEMA BFE VIEWER
- FLOODLINE PER FEMA MAP 48013C0215C, DATED NOVEMBER 4, 2010
- FIRE HYDRANT
- WATER SERVICES
  - LONG SERVICES ENCASED IN 2" PVC SCH. 40
- PP = PROPERTY LINE
- 8"W — EXISTING 8" WATER MAIN

RAKOWITZ
Engineering & Surveying
Texas Registered Engineering Firm F-9155
Texas Registered Surveying Firm 101812-00
830-281-4060

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DAIRY ACRES - UNIT 2
WATER DISTRIBUTION PLAN
ATASCOSA COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105343
LICENSED
PROFESSIONAL ENGINEER
F-9155
7/29/2026

REV	DATE	DESCRIPTION	BY

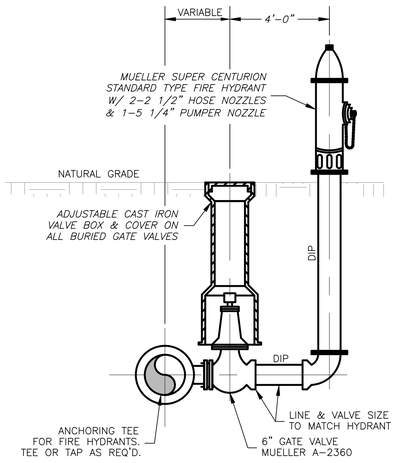
JOB NO.	23-2979B
DATE	SEP. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

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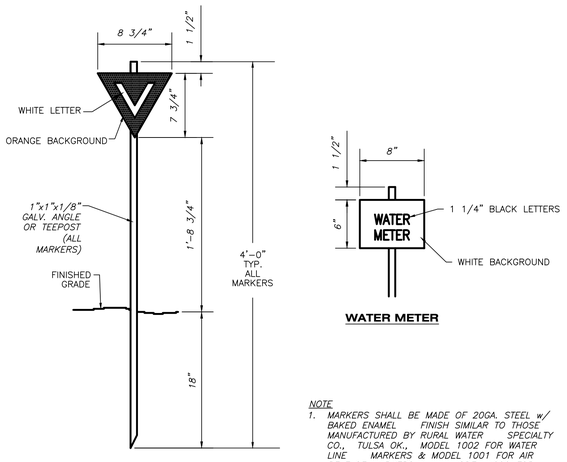
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File: N:\Projects\2023\23-2979 TREF Land, LLC - Dairy Rd\Civil\UNIT 2\23-2979B WATER PLAN U2.dwg

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FIRE HYDRANT DETAIL

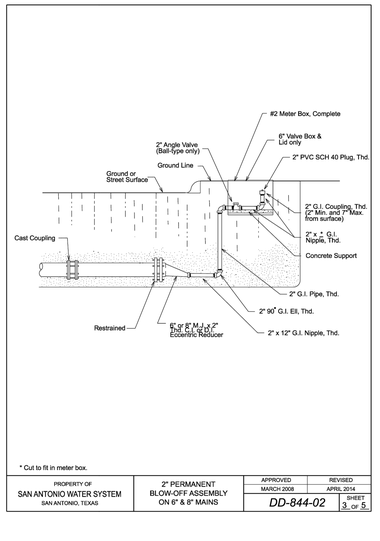


VALVE

WATER METER

NOTE
1. MARKERS SHALL BE MADE OF 20GA. STEEL w/ BAKED ENAMEL FINISH SIMILAR TO THOSE MANUFACTURED BY RURAL WATER SPECIALTY CO., TULSA OK., MODEL 1002 FOR WATER LINE MARKERS & MODEL 1001 FOR AIR RELEASE MARKERS & MODEL 1000 FOR VALVE MARKERS.
2. MARKERS SHALL BE PLACED AT ALL GATE VALVES, FLUSHING VALVES, AIR RELEASE VALVES, & WATER METERS.
3. PLASTIC OR PLEXIGLASS MARKERS MAY NOT BE SUBSTITUTED FOR STEEL.

MARKER DETAIL



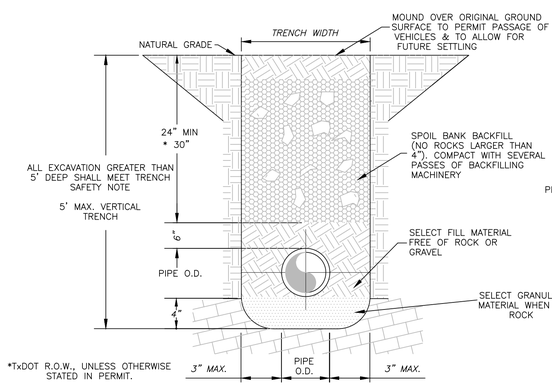
PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	2" PERMANENT BLOW-OFF ASSEMBLY ON 6" & 8" MAINS	MARCH 2008	APRIL 2014
		DD-844-02	SHEET 3 OF 5

TRENCHING NOTES

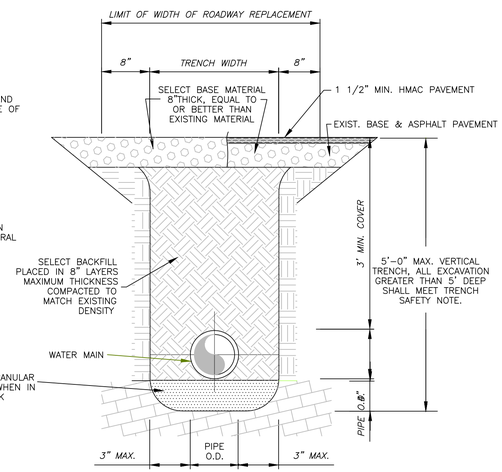
1. ADEQUATE BARRICADES & WARNING SIGNS SHALL BE ERECTED BEFORE ANY WORK IS STARTED IN PUBLIC RIGHT-OF-WAY.
2. THE ROADWAY SHALL BE CUT ONLY WHERE REQUIRED BY THE ENGINEER.
3. NO MORE THAN HALF OF THE WIDTH OF THE ROAD SHALL BE CUT & OPENED AT ONE TIME.
4. REFER TO SPECIFICATIONS FOR ANY SPECIAL REQUIREMENTS OR CONDITIONS.
5. BACKFILL SHALL BE COMPLETED IMMEDIATELY AFTER PIPELINE LAYING WITHIN PUBLIC RIGHT-OF-WAYS OR CROSSING PUBLIC RIGHT-OF-WAYS & PRIVATE DRIVEWAYS.

TRENCH SAFETY NOTE

1. TRENCH SAFETY SYSTEM, SHORING OR SIDE SLOPE TO BE IN ACCORDANCE WITH OSHA STANDARDS.
2. TRENCH SAFETY SYSTEM PLAN TO BE PROVIDED BY CONTRACTOR PRIOR TO CONSTRUCTION.



TYPICAL TRENCH BACKFILL



TYPICAL ROAD & DRIVEWAY BACKFILL

TRENCH DETAILS

RAKOWITZ
Engineering & Surveying
Texas Registered Engineering Firm F-9155
Texas Registered Surveying Firm 101812-00
830-281-4060

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DAIRY ACRES - UNIT 2
WATER DETAILS (1 OF 2)

ATASCOSA COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105343
LICENSED
PROFESSIONAL ENGINEER
F-9155
7/29/2026

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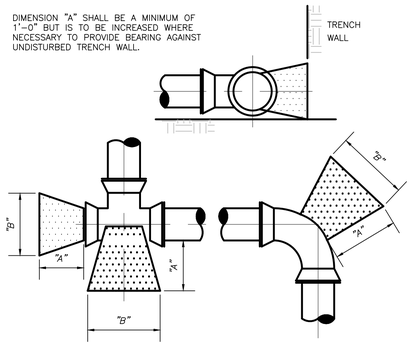
JOB NO.	23-2979B
DATE	SEP. 2026
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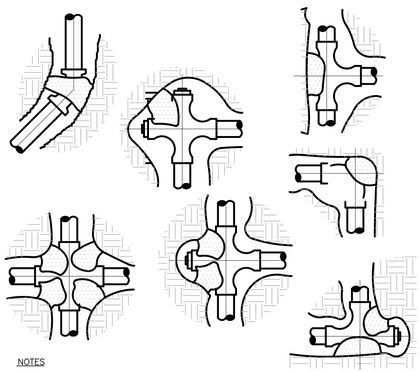
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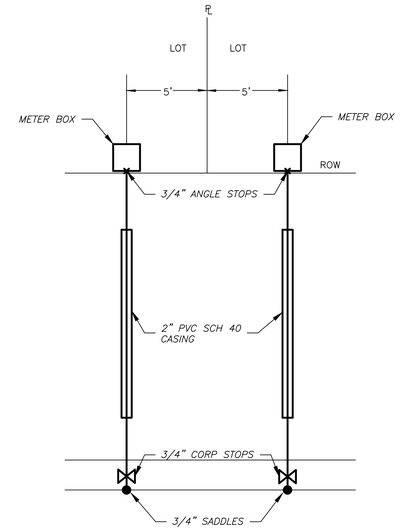
PIPE SIZE	DIMENSION "B" (SQUARE)				
	PLUGS & TEES	90° BENDS	45° BENDS	22 1/2° BENDS	VALVES
4"&6"	1'-3"	1'-6"	1'-0"	9"	1'-3"
8"	1'-9"	2'-0"	1'-6"	1'-0"	1'-6"
10"	2'-0"	2'-0"	1'-9"	1'-3"	2'-0"
12"	2'-6"	3'-0"	2'-3"	1'-6"	2'-3"
16"	3'-3"	4'-0"	2'-9"	2'-0"	2'-9"
20"	3'-9"	4'-6"	3'-3"	2'-3"	3'-3"



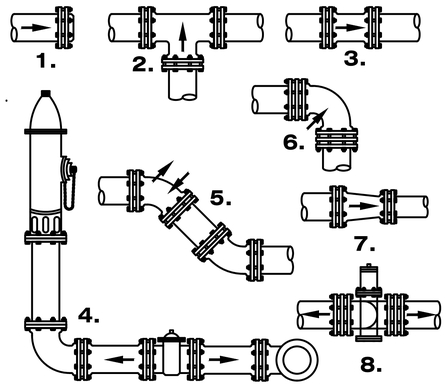
NOTES

1. THE EARTH BEARING SURFACE SHALL BE THE UNDISTURBED TRENCH WALL.
2. ALL PIPE JOINTS SHALL BE KEPT FREE FROM CONCRETE.
3. ALL THRUST BLOCKS SHALL CONTAIN A MINIMUM OF 1 1/2 CUBIC FEET OF CONCRETE.
4. CONCRETE SHALL BE 2000 p.s.i. AT 28 DAYS MINIMUM.

CONCRETE THRUST BLOCKS



ROAD CROSSING SERVICE DETAIL



TYPES OF THRUST RESTRAINT

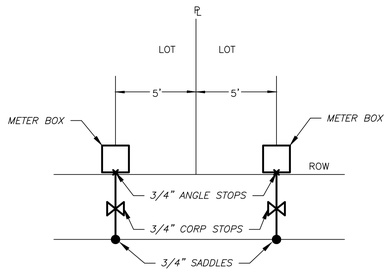
1. DEAD-END (CAP/PLUG)
2. TEES
3. THRU LINE CONNECTION (SLEEVE)
4. HYDRANT STUB-OUT
5. VERTICAL OFFSET
6. HORIZONTAL BEND
7. REDUCER
8. VALVE

PIPE SIZE	RESTRAINED LENGTH					
	PLUGS & VALVES	90° ELLS	45° ELLS	22 1/2° ELLS	12" X __ REDUCERS	16" X __ REDUCERS
4"	65.3'	36.1'	14.9'	7.2'	145.1'	197.8'
6"	92.2'	50.6'	20.9'	10.1'	121.6'	180.5'
8"	118.8'	64.7'	26.8'	12.9'	88.6'	156.2'
12"	167.3'	90.2'	37.4'	17.9'	–	90.9'
16"	214.1'	114.1'	47.3'	22.7'	–	–

NOTES

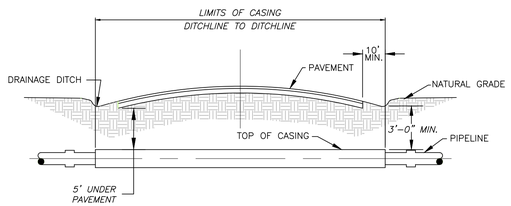
1. THE ASSUMED DEPTH OF COVER IS 2.5 FEET.
2. SOIL TYPE IS INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS.
3. PIPE BEDDED IN 4" MINIMUM LOOSE SOIL.
4. BACKFILL LIGHTLY CONSOLIDATED TO TOP OF PIPE.
5. TEST PRESSURE OF 150 PSI.

RESTRAINED LENGTHS



SAME SIDE SERVICE DETAIL

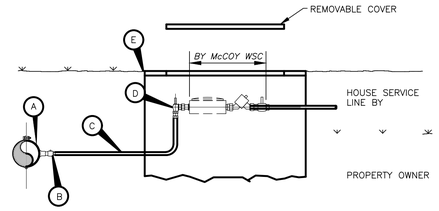
CASING SCHEDULE	
CARRIER SIZE	CASING SIZE
3/4"	2"
1"	2"
1 1/2"	4"
2"	4"
2 1/2"	6"
3"	6"
4"	8"
6"	10"
8"	12"
10"	14"
12"	18"
14"	20"
16"	24"
18"	–
24"	–



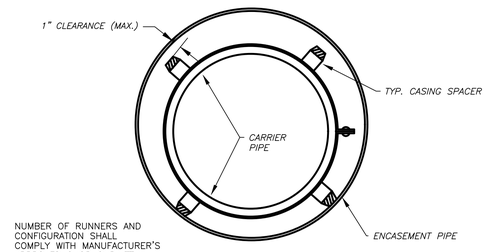
PAVEMENT CROSSING BORING & ENCASEMENT DETAIL

MATERIAL LIST

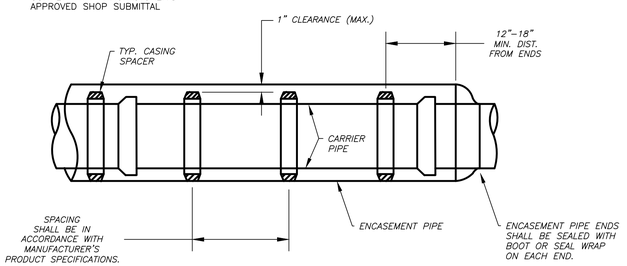
A. 3/4" SERVICE SADDLE, FORD S71 OR S91 W/ FEMALE I.P. THREAD
B. 3/4" CORP. STOP, FORD F1101 W/ MALE I.P. THREAD x PE PIPE PACK JOINT
C. 3/4" POLYETHYLENE C901 SERVICE LINE, SDR 9, 200 PSI
D. 3/4" LOCK WING ANGLE STOP, FORD BA63 W/ PE PIPE PACK JOINT x METER SWIVEL NUT
E. METER BOX, PLASTIC, DFW MODEL D-1300



METER SERVICE DETAIL



NUMBER OF RUNNERS AND CONFIGURATION SHALL COMPLY WITH MANUFACTURER'S APPROVED SHOP SUBMITTAL



CASING SPACER DETAIL

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Engineering & Surveying
Texas Registered Engineering Firm F-9155
Texas Registered Surveying Firm 101812-00
830-281-4060

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DRAWN	CT

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Date: Sep 29, 2026, 4:09am User ID: CAD1 2022
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