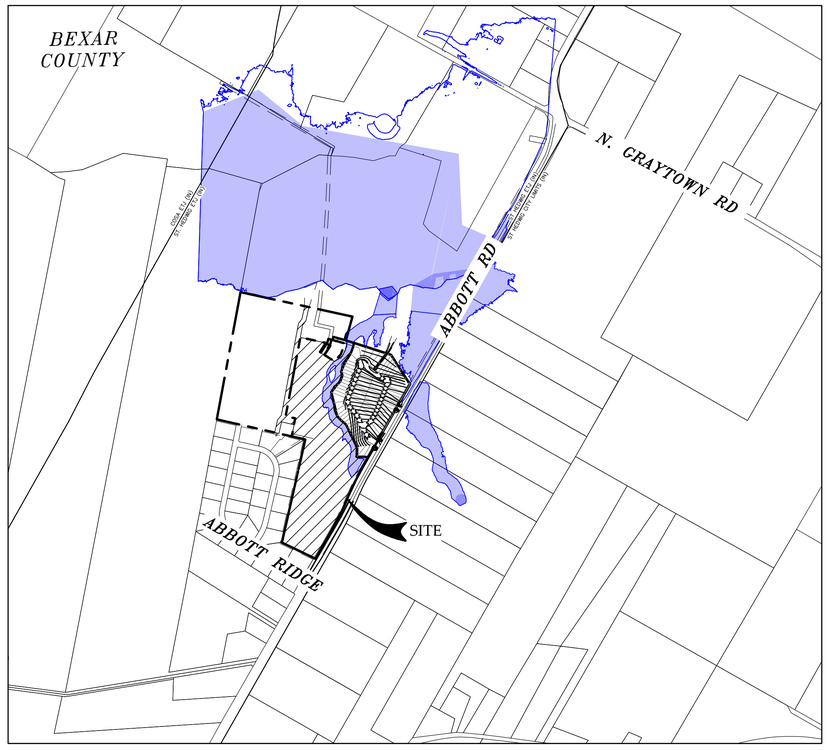
ROSE VALLEY SOUTH - UNIT 2
CONSTRUCTION PLANS
BEXAR COUNTY, TEXAS

CIVIL SHEET INDEX



LOCATION MAP
N. T. S.

CIVIL SHEET INDEX

WATER PLAN SHEET INDEX

DEVELOPER:
LENNAR HOMES OF TEXAS LAND AND CONSTRUCTION, LTD.
100 NE LOOP 410, SUITE 1155
SAN ANTONIO, TX 78216

JANUARY 2026

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105048
LICENSED
PROFESSIONAL ENGINEER
F-9155
1/22/2026

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

C0.0
JOB NO: 23-3159J
PLAT NO: CP202512

PERMIT SET (NOT FOR CONSTRUCTION): 01/22/2026

Date: Jan 22, 2026, 4:51pm User ID: CAD1-2022
File: N:\Projects\2023\23-3159 Rose Valley South U2\Civil\23-3159 COVER SHEET.dwg

INTERNAL DRAINAGE AREAS CALCULATION SUMMARY - RATIONAL METHOD

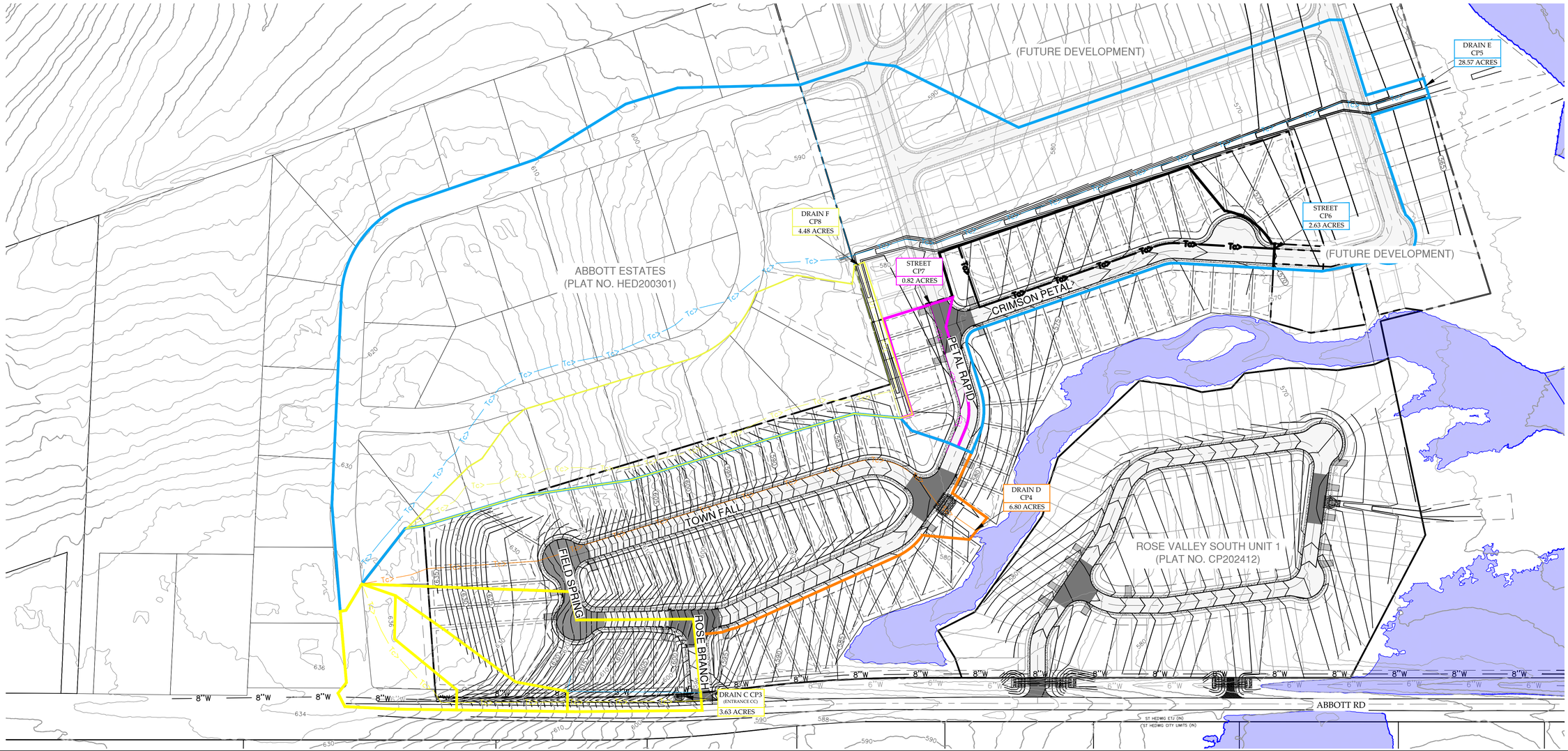
DRAINAGE AREA	ACRES	OVERLAND FLOW			SHALLOW CONCENTRATED FLOW			CHANNEL FLOW			OVERALL		STORM EVENT	i	Q
		LENGTH (ft)	SLOPE (%)	Tc (min)	LENGTH (ft)	SLOPE (%)	Tc (min)	LENGTH (ft)	VELOCITY (ft/s)	Tc (min)	Tc (min)	Cw	(yrs)	(in/hr)	(cfs)
DRAIN C CP3 (ENTRANCE CULVERT CROSSING)	3.63	100	1.00	11.62	192	3.90	1.00	537	6.00	1.49	14	0.80	5	5.46	15.86
													25	**7.52**	**21.83**
													100	9.28	26.96
DRAIN D CP4 (SIDEWALK BOX)	6.80	100	1.00	11.62	267	3.37	1.50	975	6.00	2.71	16	0.84	5	5.14	29.33
													25	**7.06**	**40.34**
													100	8.72	49.81
DRAIN E CP5 (TRAP CHANNEL)	28.57	100	0.50	15.34	1158	4.7	5.52	1210	6.00	3.36	24	0.72	5	4.19	86.08
													25	**5.76**	**118.45**
													100	7.11	146.30
CP6 (STREET CAPACITY UNIT 2 NORTH END)	2.63	100	1.00	11.62	83	2.00	0.61	601	6.00	1.67	14	0.84	5	5.46	12.06
													25	**7.52**	**16.60**
													100	9.28	20.51
CP7 (STREET CAPACITY UNIT 2 WEST END)	0.72	73	2.74	6.04	0	0.00	0.00	312	6.00	0.87	10	0.84	5	6.29	3.80
													25	**8.68**	**5.25**
													100	10.753	6.50
DRAIN F CP8 (OFFSITE LOT INTERCEPTOR)	4.48	100	4.00	6.67	944	5.50	4.16	258	6.00	0.72	12	0.57	5	5.84	14.91
													25	**8.05**	**20.55**
													100	9.95	25.41

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 ATLAS 14 PRECIPITATION DATA FOR BEXAR COUNTY PA-3.
3) WEIGHTED RUNOFF COEFFICIENTS WERE TAKEN FROM THE COSA STORMWATER DESIGN CRITERIA MANUAL TABLE 5.5.3A. PER TABLE 5.5.3A, A RUNOFF COEFFICIENT RANGING FROM TO 0.49 – 0.53 WAS USED FOR ALL EXISTING/UNDEVELOPED AREAS. A PROPOSED WEIGHTED RUNOFF COEFFICIENT EQUAL TO 0.84 WAS USED FOR ON-SITE AREAS.

STREET CAPACITY CHECKS (LOCAL)		
STREET CAPACITY @ TOP OF CURB & 0.5% SLOPE	50	cfs
Resultant Velocity	3.88	fps
STREET CAPACITY @ ROW & 0.5% SLOPE	82.8	cfs
Resultant Velocity	3.29	fps
STREET CAPACITY @ TOP OF CURB & 8.33% SLOPE	205.2	cfs
Resultant Velocity	15.91	fps
STREET CAPACITY @8.33%SLOPE with Velocity Limiting	**69**	**cfs**
Resultant Velocity	**10.0**	**fps**

STREET NAME	MAX SLOPE	MIN SLOPE
PETAL RAPID	8.33%	0.50%
TOWN FALL	8.25%	0.68%
CRIMSON PETAL	1.75%	0.50%
FIELD SPRING	2.00%	2.00%
ROSE BRANCH	3.40%	3.40%

Q_{25} FOR CP3, CP4, CP6, AND CP7 ARE ALL < 50cfs. THEREFORE THE PROPOSED STREETS / ROW HAVE SUFFICIENT CAPACITY TO CONVEY THE Q_5 & Q_{25} DESIGN FLOW WITHOUT EXCEEDING A RESULTANT VELOCITY OF 10.0fps.



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

- DRAIN C BOUNDARY
- DRAIN C Tc FLOW PATH
- DRAIN D BOUNDARY
- DRAIN D Tc FLOW PATH
- DRAIN E BOUNDARY
- DRAIN E Tc FLOW PATH
- STREET CP6 BOUNDARY
- STREET CP6 Tc FLOW PATH
- STREET CP7 BOUNDARY
- STREET CP7 Tc FLOW PATH
- DRAIN F BOUNDARY
- DRAIN F Tc FLOW PATH
- PROPERTY BOUNDARY
- EXISTING 5' CONTOUR
- EXISTING 1' CONTOUR
- PROPOSED 5' CONTOUR
- PROPOSED 1' CONTOUR
- EOP
- LOT LINE

EFFECTIVE FLOODPLAIN PER LOMR-C AS SUBMITTED TO BEXAR COUNTY

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ROSE VALLEY SOUTH - UNIT 2
INTERNAL DRAINAGE

BEXAR COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105048
LICENSED
PROFESSIONAL ENGINEER
F-9155
1/22/2026

REV	DATE	DESCRIPTION	BY

JOB NO.	23-3159J
DATE	JAN. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

C1.0
PLAT NO: CP202512

Date: Jan 22, 2026, 4:51pm User ID: CAD1-2022
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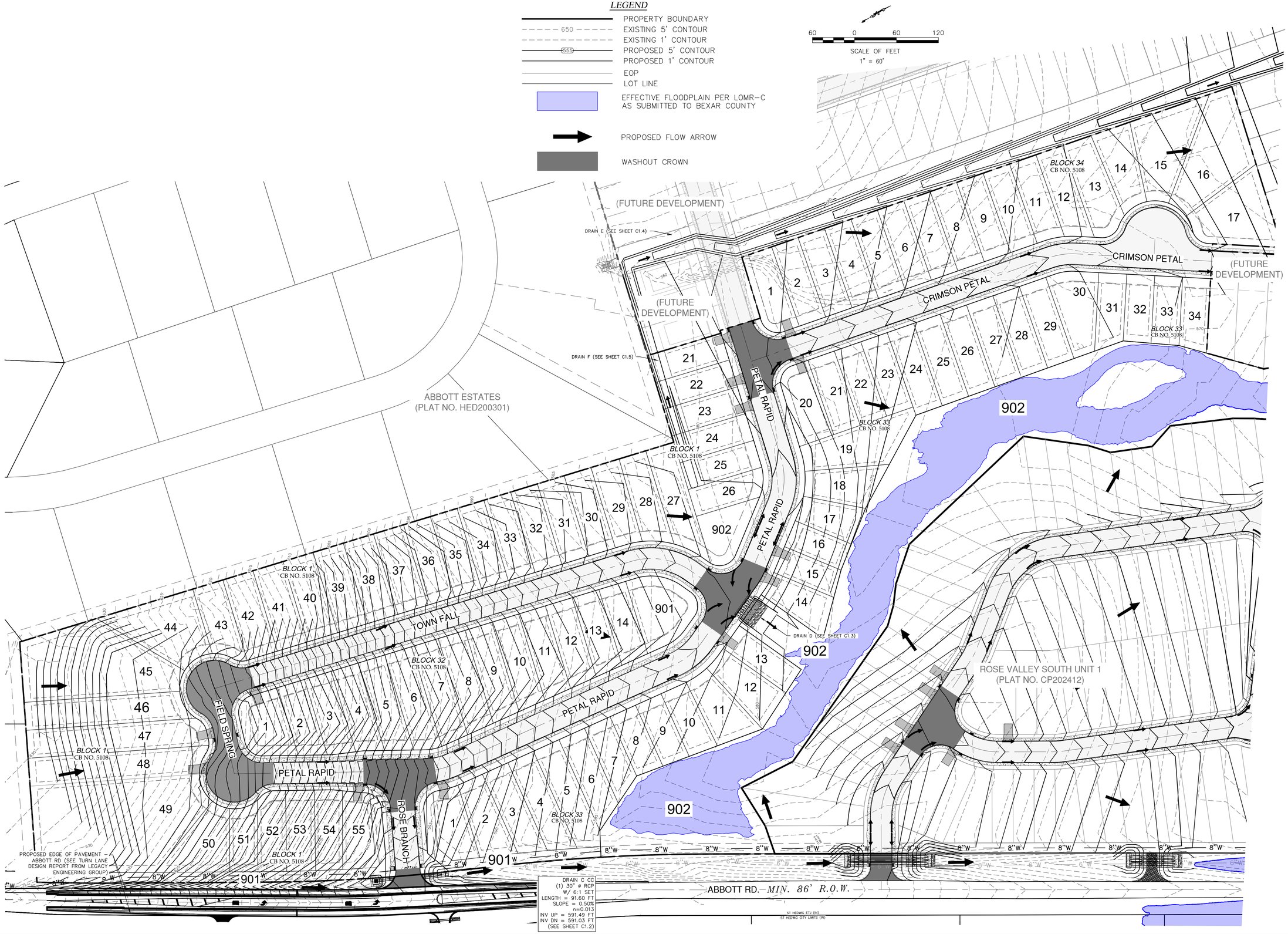
PERMIT SET (NOT FOR CONSTRUCTION): 01/22/2026



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

ROSE VALLEY SOUTH - UNIT 2
DRAINAGE OVERVIEW

BEXAR COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105049
LICENSED PROFESSIONAL ENGINEER
F-9155
1/22/2026

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C1.1
PLAT NO: CP202512

Date: Jan 22, 2026, 4:53pm User ID: CAD1-2022
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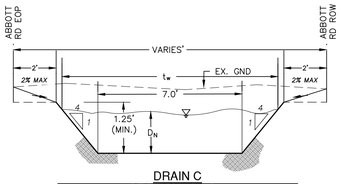
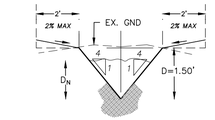
PERMIT SET (NOT FOR CONSTRUCTION): 01/22/2026



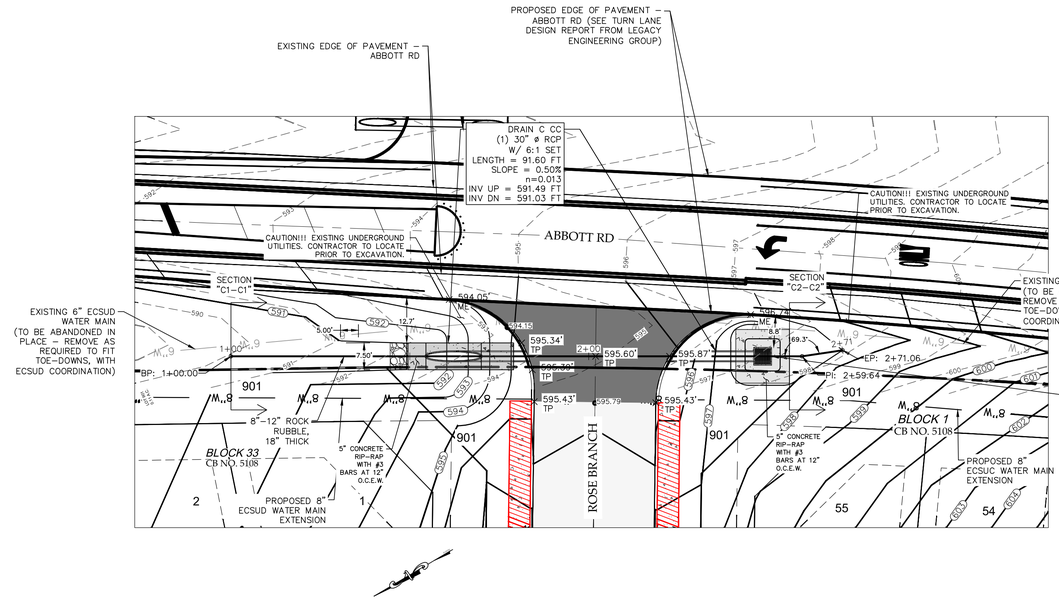
DRAIN C
SECTION "C1-C1"
STA. 1+00.00 - STA 1+44.51
NOT-TO-SCALE

FREQUENCY	Q(CFS)	SLOPE	D_N (ft)	V (fps)	t_w (ft)
25-YR	21.83	1.44%	0.68	3.30	12.4



SECTION "C2-C2"
ABBOTT RD BAR DITCH
(PROPOSED TURN LANE CONSTRUCTION WITH PROPOSED FLOW)
STA. 2+56.11 - END
NOT-TO-SCALE

	FREQUENCY	Q(CFS)	SLOPE	D_N (ft)	V (fps)	t_w (ft)
UPSTREAM	25-YR	21.83	5.00%	0.98	5.68	7.84



ROSE BRANCH CULVERT CROSSING INLET:

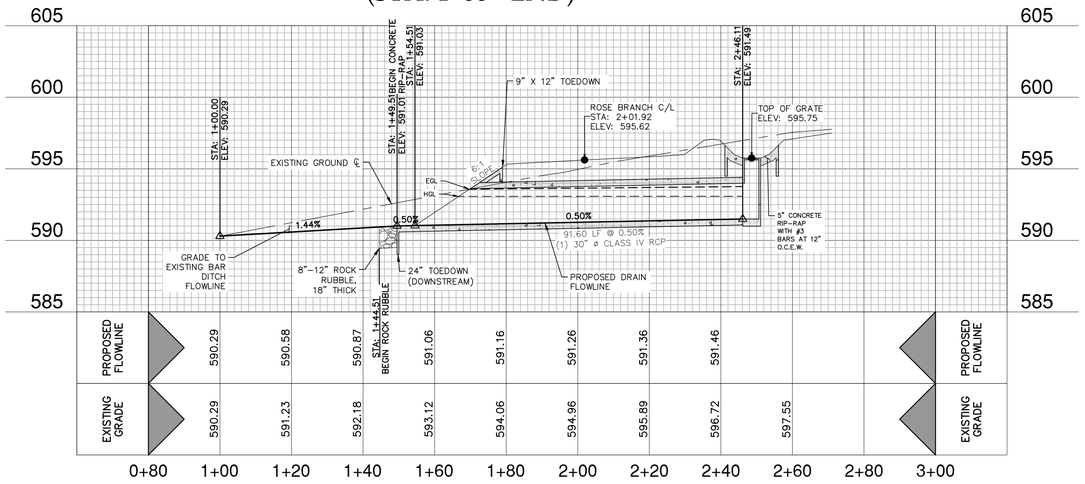
GRATE INLET:
(SEE SHEET C1.6 FOR GRATE INLET AND APRON DETAILS)

AREA REQUIRED FOR 21.83 CFS: 5.49 FT^2
AREA REQUIRED FOR 50% CLOGGING FACTOR: 10.99 FT^2

AREA PER GRATE: 14.63 FT^2
NO. OF GRATES PLANNED FOR DRAIN: 1
TOTAL GRATE AREA: 14.6 FT^2

14.63 FT^2 > 10.99 FT^2

INVERT OF DROP INLET SHALL BE SHAPED WITH CONCRETE FILL TO EFFECTIVELY DRAIN TO OUTLET PIPE (30" RCP CULVERT).



BEXAR COUNTY R.O.W. NOTE:
A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN THE BEXAR COUNTY R.O.W.

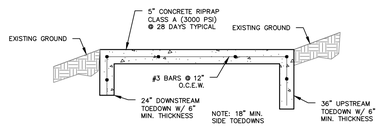
NOTE:
CONTRACTOR SHALL BEGIN MEASURES TO ESTABLISH VEGETATION IMMEDIATELY AFTER CONSTRUCTION OF EARTHEN DRAIN SECTIONS TO MITIGATE CHANNEL EROSION. CONTRACTOR SHALL USE HYDRO-MULCH SEEDING, SOD LINING, OR OTHER APPROVED METHODS.

STANDARD NOTES:

- IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATED BY SEEDING OR SIDING. EIGHTY FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE CITY OF SAN ANTONIO WILL ACCEPT THE CHANNEL FOR MAINTENANCE.
- ALL CONCRETE LINING SHALL DEVELOP A MIN. COMPRESSIVE STRENGTH OF 3,000 PSI IN 28 DAYS.
- FOR NORMAL CONDITIONS, THE CONCRETE LINING SHALL BE A MINIMUM OF FIVE (5) INCHES THICK AND REINFORCED WITH NO. 3 ROUND BARS @12 INCHES ON CENTER EACH WAY. WHERE SURCHARGE, NATURE OF GROUND, HEIGHT AND STEEPNESS OF SLOPE, ETC, BECOME CRITICAL, DESIGN SHALL BE IN ACCORDANCE WITH LATEST STRUCTURAL STANDARDS. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN THREE THOUSAND (3,000) POUNDS PER SQUARE INCH IN TWENTY-EIGHT (28) DAYS. THE DEPTH OF ALL TOE DOWNS SHALL BE 36 INCHES UPSTREAM, 24 INCHES DOWNSTREAM, AND 18 INCHES FOR SIDE SLOPES. THE CITY'S CONSTRUCTION INSPECTOR MAY PERMIT AN 18" TOE DOWN IN ROCK SUBGRADE IN LIEU OF THE ABOVE TOE DOWN REQUIREMENTS. THE HORIZONTAL DIMENSIONS OF TOE DOWNS SHALL NOT BE LESS THAN SIX (6) INCHES.

OPEN EARTHEN CHANNEL NOTE:

- CONTRACTOR SHALL REFERENCE TABLE 9.3.8.1 – "RETARDATION CLASS FOR LINING MATERIALS" PROVIDED ON SHEET C1.6 AND SUPPLIED RETARDANCE CLASS (RC) FOR CHOICE OF COVER WITHIN OPEN EARTHEN CHANNEL CROSS SECTIONS.
- DRAIN C USES RC B, C, OR, D LINING MATERIALS FOR SECTION "C1-C1" AND RC B LINING MATERIALS FOR SECTION "C2-C2".



CONCRETE RIP-RAP DETAIL (TYP.)
NOT-TO-SCALE

SCALE OF FEET
1" = 20'

LEGEND

- PROPERTY BOUNDARY
- SITE LINE
- ROAD CENTERLINE
- 650 EXISTING 1' CONTOUR
- 650 PROPOSED 1' CONTOUR
- WASHOUT CROWN
- SIDEWALK TO BE CONSTRUCTED BY DEVELOPER

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830-281-4060

ROSE VALLEY SOUTH - UNIT 2
ENTRANCE CULVERT CROSSING PLAN AND PROFILE
BEXAR COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105048
LICENSED PROFESSIONAL ENGINEER
F-9155
1/22/2026

REV	DATE	DESCRIPTION	BY

JOB NO.	23-3159J
DATE	JAN. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

C1.2
PLAT NO: CP202512

PERMIT SET (NOT FOR CONSTRUCTION): 01/22/2026

Permissible Shear Stresses for Various Linings

Protective Cover	($lb./sq.ft.$)	t_d (N/m^2)
Retardance Class A Vegetation (See the "Retardation Class for Lining Materials" table above)	3.70	177
Retardance Class B Vegetation (See the "Retardation Class for Lining Materials" table above)	2.10	101
Retardance Class C Vegetation (See the "Retardation Class for Lining Materials" table above)	1.00	48
Retardance Class D Vegetation (See the "Retardation Class for Lining Materials" table above)	0.60	29
Retardance Class E Vegetation (See the "Retardation Class for Lining Materials" table above)	0.35	17
Woven Paper	0.15	7
Jute Net	0.45	22
Single Fiberglass	0.60	29
Double Fiberglass	0.85	41
Straw W/Net	1.45	69
Curled Wood Mat	1.55	74
Synthetic Mat	2.00	96
Gravel, D_{50} = 1 in. or 25 mm	0.40	19
Gravel, D_{50} = 2 in. or 50 mm	0.80	38
Rock, D_{50} = 6 in. or 150 mm	2.50	120
Rock, D_{50} = 12 in. or 300 mm	5.00	239
6-in. or 50-mm Gabions	35.00	1675
4-in. or 100-mm Geoweb	10.00	479
Soil Cement (8% cement)	>45	>2154
Dyoel w/out Grass	>7	>333
Petraflex w/out Grass	>32	>1532
Armorflex w/out Grass	12-20	574-957
Erikamat w/3-in. or 75-mm Asphalt	13-16	622-766
Erikamat w/1-in. or 25 mm Asphalt	<5	<239
Armorflex Class 30 with longitudinal and lateral cables, no grass	>34	>1628
Dyoel 100, longitudinal cables, cells filled with mortar	<12	<574
Concrete construction blocks, granular filter underlayer	>20	>957
Wedge-shaped blocks with drainage slot	>25	>1197

OPEN EARTHEN CHANNEL NOTE:

- CONTRACTOR SHALL REFERENCE TABLE 9.3.8.1 – "RETARDATION CLASS FOR LINING MATERIALS" PROVIDED ON SHEET C1.6 AND SUPPLIED RETARDANCE CLASS (RC) FOR CHOICE OF COVER WITHIN OPEN EARTHEN CHANNEL CROSS SECTIONS.
- DRAIN D USES RC B,C,D,E LINING MATERIALS.

STANDARD NOTES:

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NOTE:
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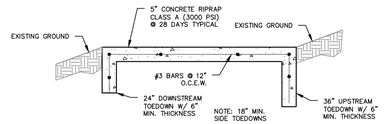


CONCRETE RIP-RAP DETAIL (TYP.)

NOT–TO–SCALE

LEGEND

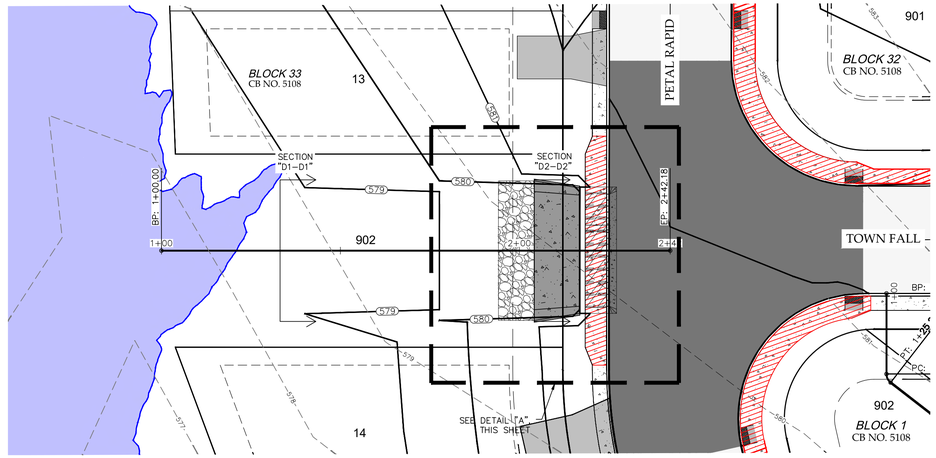
- PROPERTY BOUNDARY
- SITE LINE
- ROAD CENTERLINE
- 650 EXISTING 1' CONTOUR
- 650 PROPOSED 1' CONTOUR
- WASHOUT CROWN

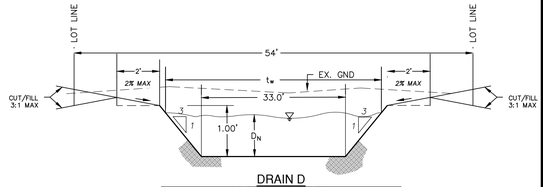
$$Q = CL(h)^{3/2}$$

DRAIN D SIDEWALK BOX

Q25	40.34 cfs
C	3.087
h	0.79 ft
L	18.55 ft

30LF OPENING IN SIDEWALK BOX FOR DRAIN D

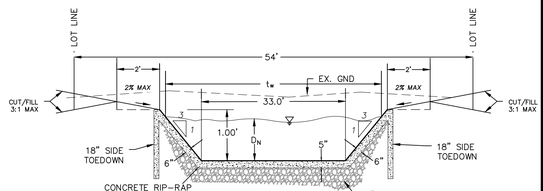




DRAIN D
SECTION "D1-D1"
STA. 1+33.14 - STA 2+04.18

NOT–TO–SCALE

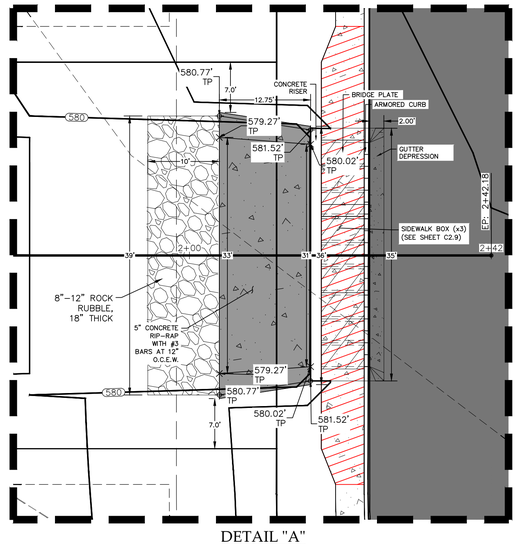
FREQUENCY	Q(CFS)	SLOPE	D_N (ft)	V (fps)	t_w (ft)
25–YR	40.34	1.00%	0.48	2.44	35.88



DRAIN D
SECTION "D2-D2"
STA. 2+04.18 - STA 2+27.18

NOT–TO–SCALE

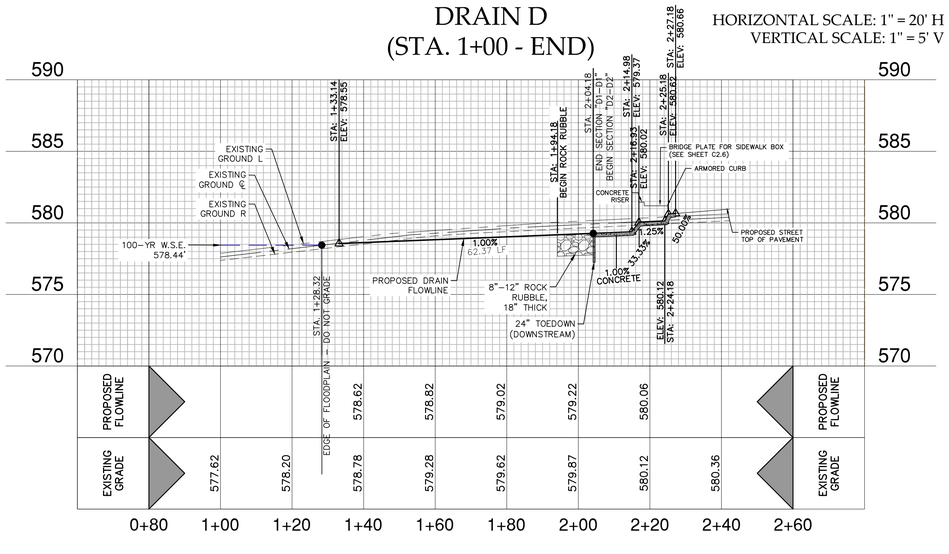
FREQUENCY	Q(CFS)	SLOPE	D_N (ft)	V (fps)	t_w (ft)
25–YR	40.34	1.00%	0.29	4.11	34.74



DETAIL "A"
1":10'

DRAIN D
(STA. 1+00 - END)

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



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ROSE VALLEY SOUTH - UNIT 2
DRAIN D
(STA. 1+00 - END)
BEXAR COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
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C1.3

PLAT NO: CP202512

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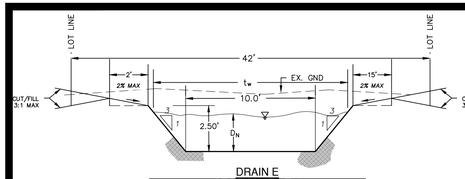
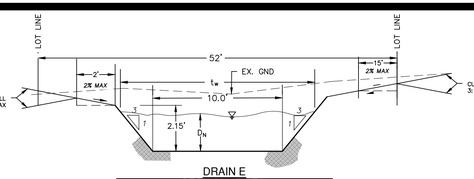


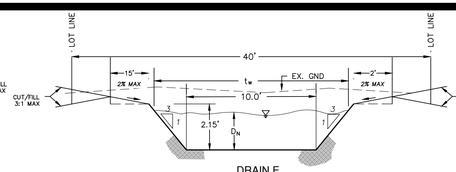
DRAIN E
SECTION "E1-E1"
STA. 3+00.00 - 4+85.60
NOT-TO-SCALE

FREQUENCY	Q(CFS)	SLOPE	D_N (ft)	V (fps)	t_w (ft)
25-YR	118.45	0.50%	1.98	3.75	21.88



DRAIN E
SECTION "E2-E2"
STA. 4+85.60 - 13+41.62
NOT-TO-SCALE

FREQUENCY	Q(CFS)	SLOPE	D_N (ft)	V (fps)	t_w (ft)
25-YR	118.45	1.50%	1.48	5.54	18.88



DRAIN E
SECTION "E3-E3"
STA. 13+41.62 - END
NOT-TO-SCALE

FREQUENCY	Q(CFS)	SLOPE	D_N (ft)	V (fps)	t_w (ft)
25-YR	118.45	1.10%	1.61	4.96	19.66
25-YR	118.45	1.50%	1.48	5.54	18.88

Permissible Shear Stresses for Various Linings

Protective Cover	(lb_f/sq.ft.)	τ_d (N/m^2)
Retardance Class A Vegetation (See the "Retardation Class for Lining Materials" table above)	3.70	177
Retardance Class B Vegetation (See the "Retardation Class for Lining Materials" table above)	2.10	101
Retardance Class C Vegetation (See the "Retardation Class for Lining Materials" table above)	1.00	48
Retardance Class D Vegetation (See the "Retardation Class for Lining Materials" table above)	0.60	29
Retardance Class E Vegetation (See the "Retardation Class for Lining Materials" table above)	0.35	17
Woven Paper	0.15	7
Jute Net	0.45	22
Single Fiberglass	0.60	29
Double Fiberglass	0.85	41
Straw W/Net	1.45	69
Curled Wood Mat	1.55	74
Synthetic Mat	2.00	96
Gravel, D_{50} = 1 in. or 25 mm	0.40	19
Gravel, D_{50} = 2 in or 50 mm	0.80	38
Rock, D_{50} = 6 in. or 150 mm	2.50	120
Rock, D_{50} = 12 in. or 300 mm	5.00	239
6-in. or 50-mm Gabions	13.00	6675
4-in. or 100-mm Geowebs	10.00	479
Soil Cement (0% cement)	>45	>2154
Dryall w/sod Grass	>7	>335
Petraflex w/sod Grass	>32	>1532
Armorflex w/sod Grass	15-20	574-957
Erikamat w/3-in or 75-mm Asphalt	13-16	622-766
Erikamat w/1-in. or 25 mm Asphalt	<5	<239
Armorflex Class 54 w/ib longitudinal and lateral cables, no grass	>54	>1628
Dryall E00, longitudinal cables, cells filled with mortar	>32	>574
Concrete ecostructure blocks, granular filter underlayer	>20	>957
Wedge-shaped blocks with drainage slot	>25	>1197

STANDARD NOTES:

- IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATED BY SEEDING OR SIDING. EIGHTY FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE CITY OF SAN ANTONIO WILL ACCEPT THE CHANNEL FOR MAINTENANCE.
- ALL CONCRETE LINING SHALL DEVELOP A MIN. COMPRESSIVE STRENGTH OF 3,000 PSI IN 28 DAYS.
- FOR NORMAL CONDITIONS, THE CONCRETE LINING SHALL BE A MINIMUM OF FIVE (5) INCHES THICK AND REINFORCED WITH NO. 3 ROUND BARS @12 INCHES ON CENTER EACH WAY. WHERE SURCHARGE, NATURE OF GROUND, HEIGHT AND STEEPNESS OF SLOPE, ETC, BECOME CRITICAL, DESIGN SHALL BE IN ACCORDANCE WITH LATEST STRUCTURAL STANDARDS. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN THREE THOUSAND (3,000) POUNDS PER SQUARE INCH IN TWENTY-EIGHT (28) DAYS. THE DEPTH OF ALL TOE DOWNS SHALL BE 36 INCHES UPSTREAM, 24 INCHES DOWNSTREAM, AND 18 INCHES FOR SIDE SLOPES. THE CITY'S CONSTRUCTION INSPECTOR MAY PERMIT AN 18" TOE DOWN IN ROCK SUBGRADE IN LIEU OF THE ABOVE TOE DOWN REQUIREMENTS. THE HORIZONTAL DIMENSIONS OF TOE DOWNS SHALL NOT BE LESS THAN SIX (6) INCHES.

OPEN EARTHEN CHANNEL NOTE:

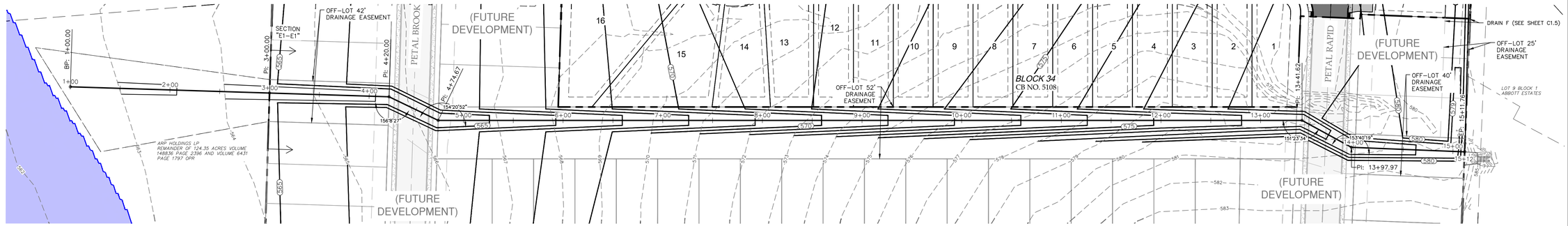
- CONTRACTOR SHALL REFERENCE TABLE 9.3.8.1 – "RETARDATION CLASS FOR LINING MATERIALS" PROVIDED ON SHEET C1.6 AND SUPPLIED RETARDANCE CLASS (RC) FOR CHOICE OF COVER WITHIN OPEN EARTHEN CHANNEL CROSS SECTIONS.
- DRAIN E USES RC B,C,D LINING MATERIALS FOR SECTION "E1-E1", RC B LINING MATERIALS FOR SECTION "E2-E2", AND RC B,C LINING MATERIALS FOR SECTION "E3-E3".

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.

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

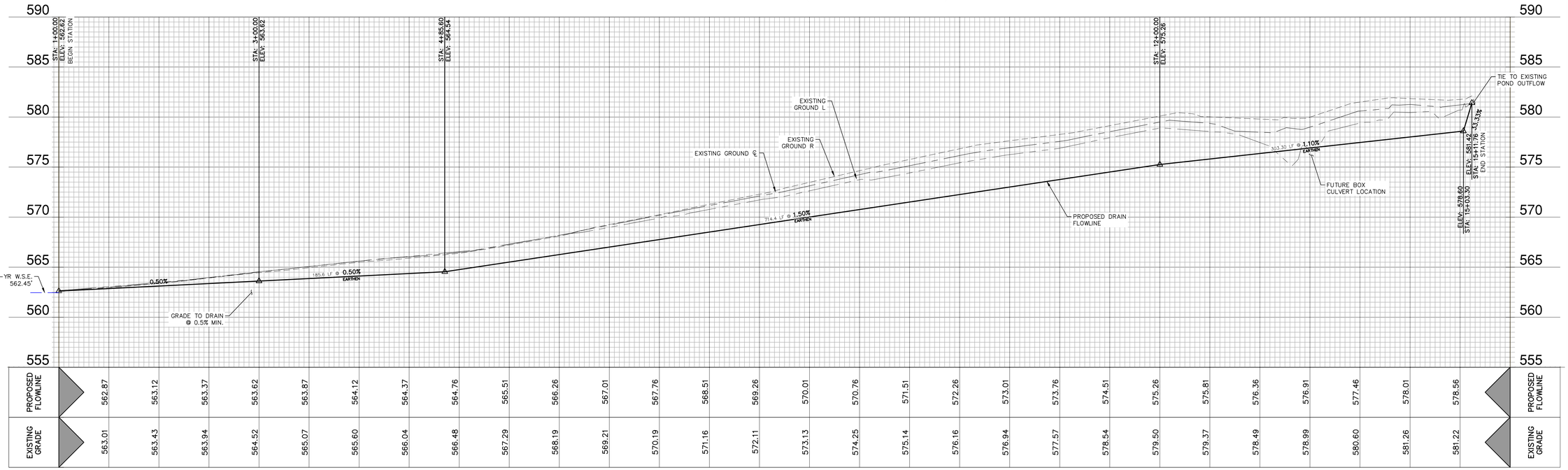
LEGEND

- PROPERTY BOUNDARY
- SITE LINE
- ROAD CENTERLINE
- 650 EXISTING 1' CONTOUR
- 650 PROPOSED 1' CONTOUR
- WASHOUT CROWN



DRAIN E
(STA. 1+00 - END)

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



	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	14+00	14+50	15+00	15+50
PROPOSED FLOWLINE		562.87	563.12	563.37	563.62	563.87	564.12	564.37	564.76	565.51	566.26	567.01	567.76	568.51	569.26	570.01	570.76	571.51	572.26	573.01	573.76	574.51	575.26	575.81	576.36	576.91	577.46	578.01	578.56	
EXISTING GRADE		563.01	563.43	563.94	564.52	565.07	565.60	566.04	566.48	567.29	568.19	569.21	570.19	571.16	572.11	573.13	574.25	575.14	576.16	576.94	577.57	578.54	579.50	579.37	578.49	578.99	580.60	581.26	581.22	

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

ROSE VALLEY SOUTH - UNIT 2
DRAIN E
(STA. 1+00 - END)
BEXAR COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105048
LICENSED
PROFESSIONAL ENGINEER
F-9155
1/22/2026

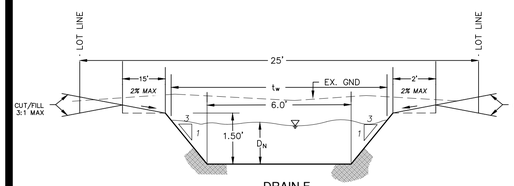
REV	DATE	DESCRIPTION	BY

JOB NO.	23-3159J
DATE	JAN. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

C1.4
PLAT NO: CP202512

Date: Jan 22, 2026, 4:54pm User ID: CAD1-2022
File: N:\Projects\2023\23-3159 Rose Valley South U2\Civil\23-3159 Drain PlsP.dwg

PERMIT SET (NOT FOR CONSTRUCTION): 01/22/2026



DRAIN F
SECTION "F1-F1"
STA. 1+00 - END
NOT-TO-SCALE

FREQUENCY	Q(CFS)	SLOPE	D_N (ft)	V (fps)	t_w (ft)
25-YR	20.55	0.50%	0.97	2.38	11.82

Permissible Shear Stresses for Various Linings

Protective Cover	($lb./sq.ft.$)	t_d (N/m^2)
Retardance Class A Vegetation (See the "Retardation Class for Lining Materials" table above)	3.70	177
Retardance Class B Vegetation (See the "Retardation Class for Lining Materials" table above)	2.10	101
Retardance Class C Vegetation (See the "Retardation Class for Lining Materials" table above)	1.00	48
Retardance Class D Vegetation (See the "Retardation Class for Lining Materials" table above)	0.60	29
Retardance Class E Vegetation (See the "Retardation Class for Lining Materials" table above)	0.35	17
Woven Paper	0.15	7
Jute Net	0.45	22
Single Fiberglass	0.60	29
Double Fiberglass	0.85	41
Straw W/Net	1.45	69
Curled Wood Mat	1.55	74
Synthetic Mat	2.00	96
Gravel, D_{50} = 1 in. or 25 mm	0.40	19
Gravel, D_{50} = 2 in. or 50 mm	0.80	38
Rock, D_{50} = 6 in. or 150 mm	2.50	120
Rock, D_{50} = 12 in. or 300 mm	5.00	239
6-in. or 50-mm Gabions	35.00	1675
4-in. or 100-mm Geoweb	10.00	479
Soil Cement (8% cement)	>45	>2154
Dycel with out Grass	>7	>335
Petraflex w/out Grass	>32	>1532
Armorflex w/out Grass	12-20	574-957
Erikamat w/3-in or 75-mm Asphalt	13-16	622-766
Erikamat w/1-in. or 25 mm Asphalt	<5	<239
Armorflex Class 30 with longitudinal and lateral cables; no grass	>34	>1628
Dycel 100, longitudinal cables, cells filled with mortar	<12	<574
Concrete construction blocks, granular filter underlayer	>20	>957
Wedge-shaped blocks with drainage slot	>25	>1197

OPEN EARTHEN CHANNEL NOTE:

- CONTRACTOR SHALL REFERENCE TABLE 9.3.8.1 – "RETARDATION CLASS FOR LINING MATERIALS" PROVIDED ON SHEET C1.6 AND SUPPLIED RETARDANCE CLASS (RC) FOR CHOICE OF COVER WITHIN OPEN EARTHEN CHANNEL CROSS SECTIONS.
- DRAIN F USES RC B,C,D,E LINING MATERIALS.

STANDARD NOTES:

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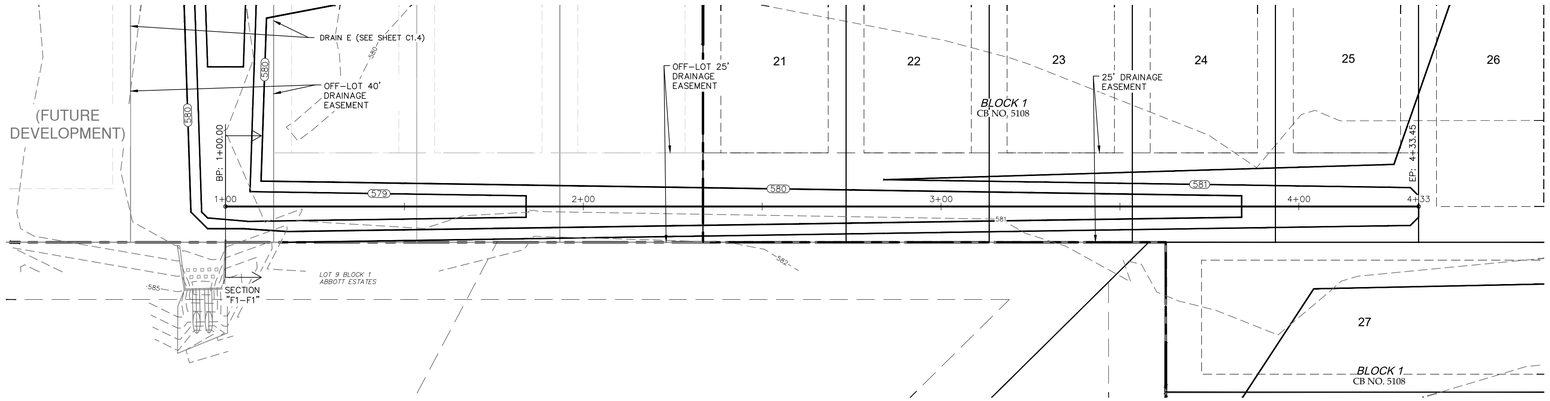
EXISTING GROUND

20 0 20 40
SCALE OF FEET
1" = 20'

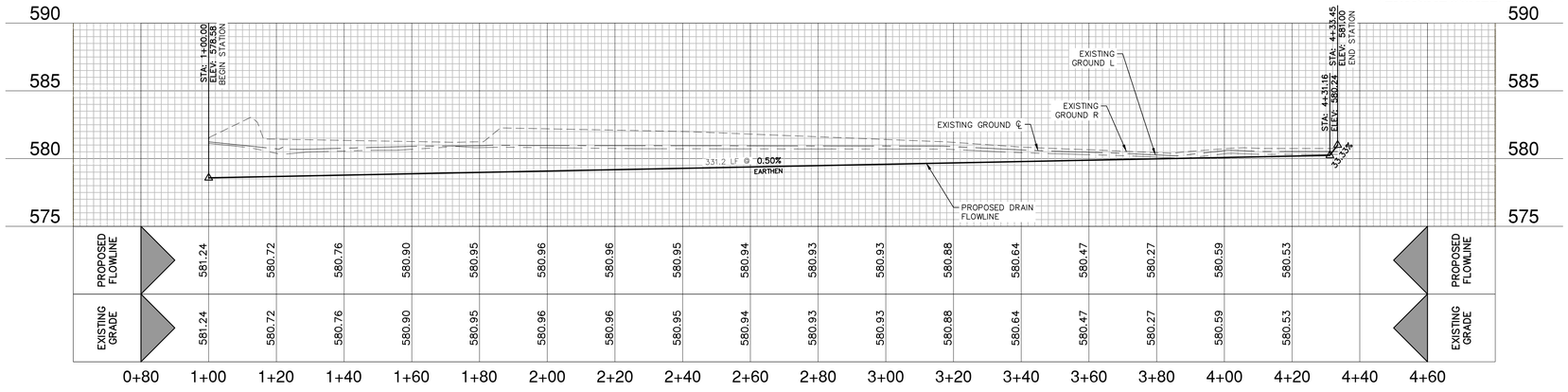
LEGEND

- PROPERTY BOUNDARY
- SITE LINE
- ROAD CENTERLINE
- 650 EXISTING 1' CONTOUR
- 650 PROPOSED 1' CONTOUR
- WASHOUT CROWN



DRAIN F
(STA. 1+00 - END)

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



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

ROSE VALLEY SOUTH - UNIT 2
DRAIN F
(STA. 1+00 - END)
BEXAR COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105048
LICENSED
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F-9155
1/22/2026

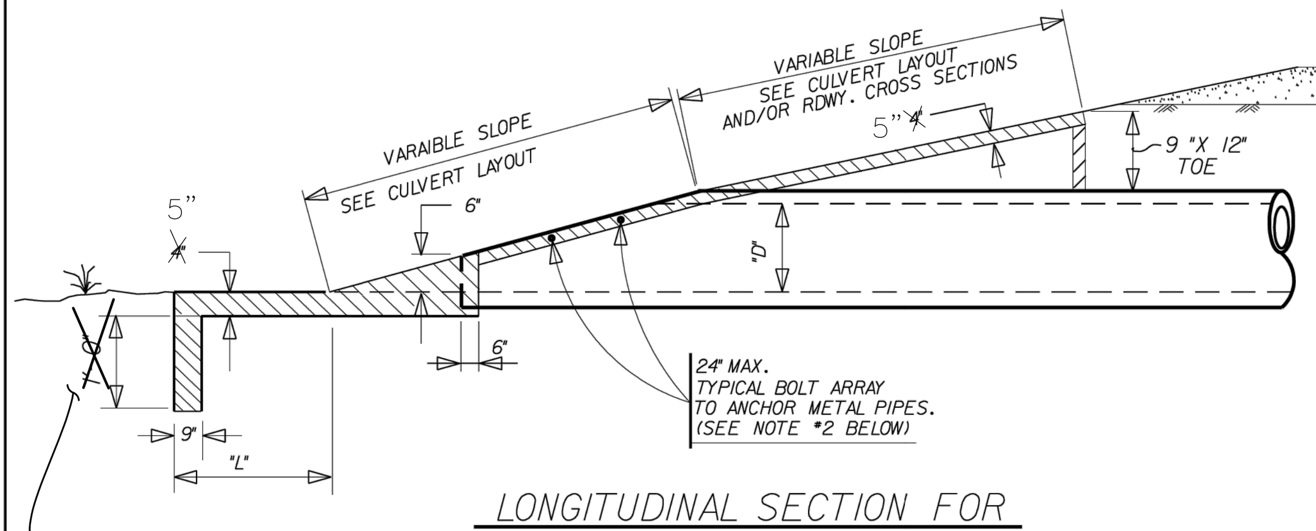
REV	DATE	DESCRIPTION	BY

JOB NO.	23-3159J
DATE	JAN. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

C1.5
PLAT NO: CP202512

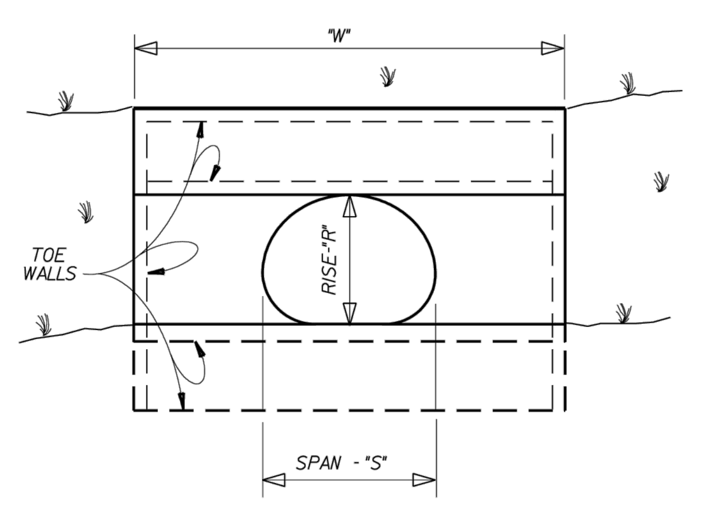
Date: Jan 22, 2026, 4:52pm User ID: CADI-2022
File: N:\Projects\2023\23-3159 Rose Valley South U2\Civil\23-3159 Drain F&P.dwg

PERMIT SET (NOT FOR CONSTRUCTION): 01/22/2026

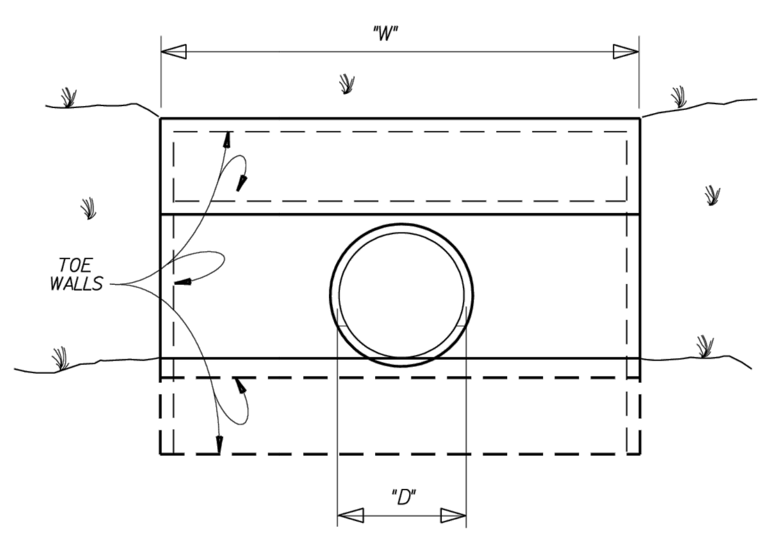


PER BEXAR COUNTY CRITERIA, 36" MIN. UPSTREAM & 24" MIN. DOWNSTREAM TOEDOWN

LONGITUDINAL SECTION FOR CIRCULAR & ARCH PIPES



SINGLE C.M.P. ARCH PIPE CULVERT



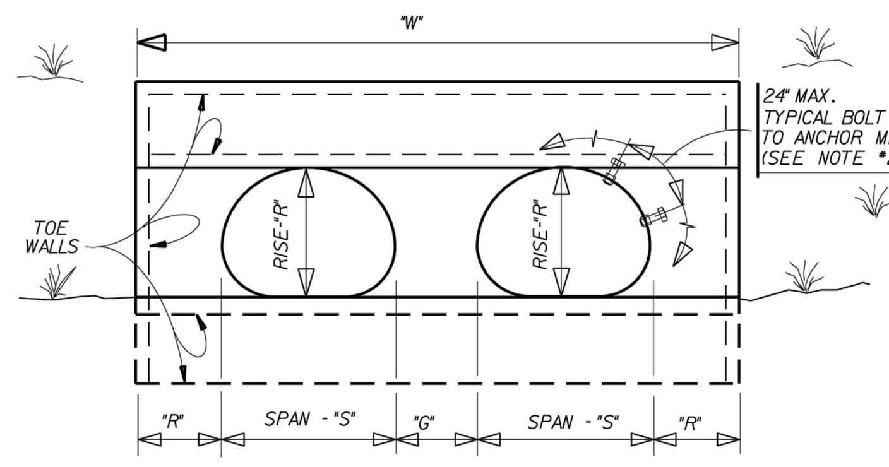
SINGLE CIRCULAR PIPE CULVERT

(CMP or RCP)

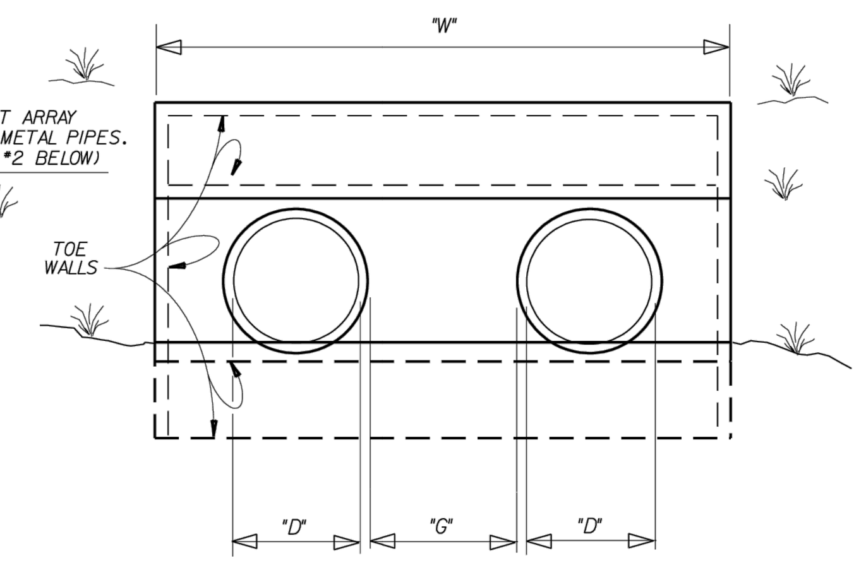
DIMENSIONS FOR CIRCULAR (CMP and RCP) PIPE CULVERTS

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

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



MULTIPLE C.M.P. ARCH PIPE CULVERT



MULTIPLE CIRCULAR PIPE CULVERT

(CMP or RCP)

DIMENSIONS FOR C.M.P. ARCH PIPE CULVERTS

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

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

STRUCTURE DESIGN
/BRIDGE/STDS/Drhl5hdwl.dgn

NOTES:

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

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

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

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

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

SAN ANTONIO DISTRICT STANDARD
RIPRAP HEADWALL

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

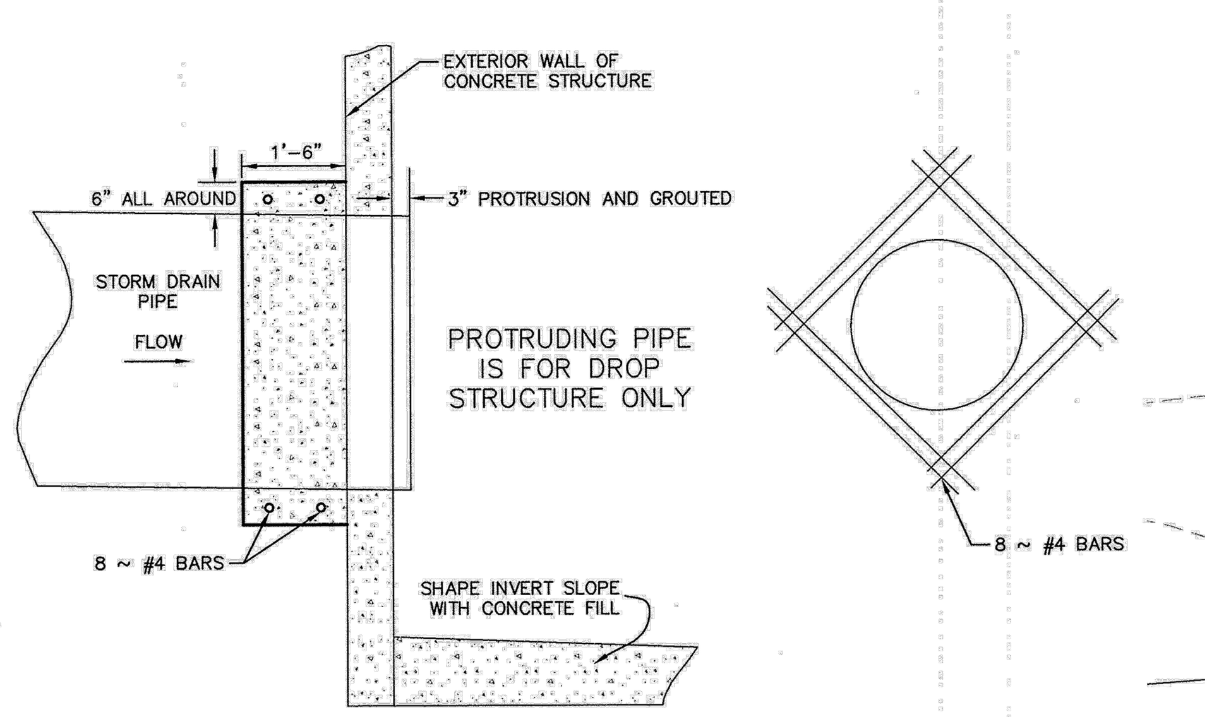
10/95

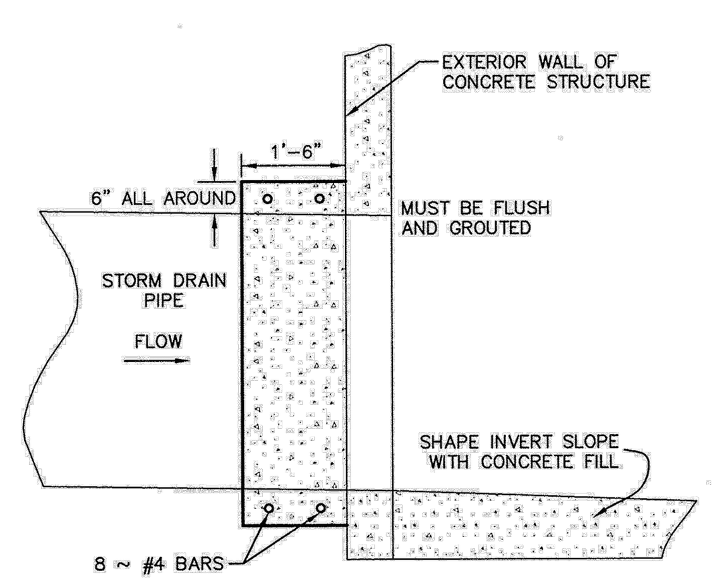
Permissible Shear Stresses for Various Linings

Protective Cover	(lb./sq.ft.)	t_p (N/m^2)
Retardance Class A Vegetation (See the "Retardation Class for Lining Materials" table above)	3.70	177
Retardance Class B Vegetation (See the "Retardation Class for Lining Materials" table above)	2.10	101
Retardance Class C Vegetation (See the "Retardation Class for Lining Materials" table above)	1.00	48
Retardance Class D Vegetation (See the "Retardation Class for Lining Materials" table above)	0.60	29
Retardance Class E Vegetation (See the "Retardation Class for Lining Materials" table above)	0.35	17
Woven Paper	0.15	7
Jute Net	0.45	22
Single Fiberglass	0.60	29
Double Fiberglass	0.85	41
Straw W/Net	1.45	69
Curled Wood Mat	1.55	74
Synthetic Mat	2.00	96
Gravel, D_{50} = 1 in. or 25 mm	0.40	19
Gravel, D_{50} = 2 in. or 50 mm	0.80	38
Rock, D_{50} = 6 in. or 150 mm	2.50	120
Rock, D_{50} = 12 in. or 300 mm	5.00	239
6-in. or 50-mm Gabions	35.00	1675
4-in. or 100-mm Geoweb	10.00	479
Soil Cement (8% cement)	>45	>2154
Dycel w/out Grass	>7	>335
Petraflex w/out Grass	>32	>1532
Armorflex w/out Grass	12-20	574-957
Erikamat w/3-in or 75-mm Asphalt	13-16	622-766
Erikamat w/1-in. or 25 mm Asphalt	<5	<239
Armorflex Class 30 with longitudinal and lateral cables, no grass	>34	>1628
Dycel 100, longitudinal cables, cells filled with mortar	<12	<574
Concrete construction blocks, granular filter underlayer	>20	>957
Wedge-shaped blocks with drainage slot	>25	>1197

Retardation Class for Lining Materials

Retardance Class	Cover	Condition
A	Weeping Lovegrass	Excellent stand, tall (average 30 in. or 760 mm)
	Yellow Bluestem Ischaemum	Excellent stand, tall (average 36 in. or 915 mm)
B	Kudzu	Very dense growth, uncut
	Bermuda grass	Good stand, tall (average 12 in. or 305 mm)
	Native grass mixture little bluestem, bluestem, blue gamma, other short and long stem midwest grasses	Good stand, unmowed
	Weeping lovegrass	Good Stand, tall (average 24 in. or 610 mm)
	Lespedeza sericea	Good stand, not woody, tall (average 19 in. or 480 mm)
	Alfalfa	Good stand, uncut (average 11 in or 280 mm)
	Weeping lovegrass	Good stand, unmowed (average 13 in. or 330 mm)
	Kudzu	Dense growth, uncut
	Blue gamma	Good stand, uncut (average 13 in. or 330 mm)
C	Crabgrass	Fair stand, uncut (10-to-48 in. or 55-to-1220 mm)
	Bermuda grass	Good stand, mowed (average 6 in. or 150 mm)
	Common lespedeza	Good stand, uncut (average 11 in. or 280 mm)
	Grass-legume mixture: summer (orchard grass redtop, Italian ryegrass, and common lespedeza)	Good stand, uncut (6-8 in. or 150-200 mm)
	Centipedegrass	Very dense cover (average 6 in. or 150 mm)
	Kentucky bluegrass	Good stand, headed (6-12 in. or 150-305 mm)
D	Bermuda grass	Good stand, cut to 2.5 in. or 65 mm
	Common lespedeza	Excellent stand, uncut (average 4.5 in. or 115 mm)
	Buffalo grass	Good stand, uncut (3-6 in. or 75-150 mm)
	Grass-legume mixture: fall, spring (orchard grass Italian ryegrass, and common lespedeza	Good Stand, uncut (4-5 in. or 100-125 mm)
	Lespedeza sericea	After cutting to 2 in. or 50 mm (very good before cutting)
E	Bermuda grass	Good stand, cut to 1.5 in. or 40 mm
	Bermuda grass	Burned stubble

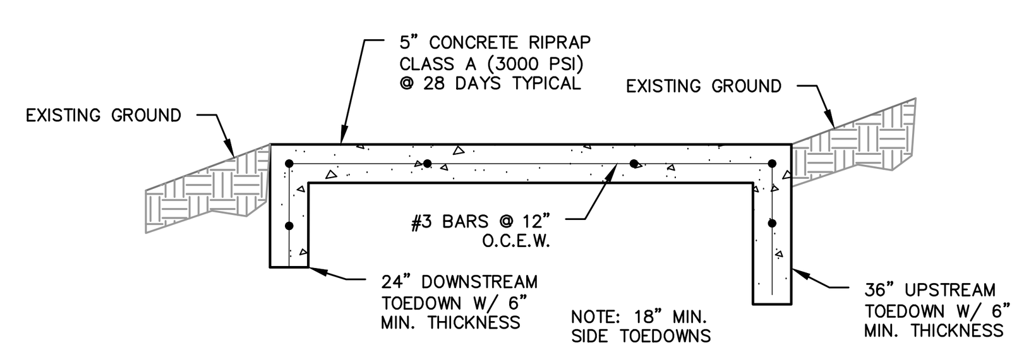




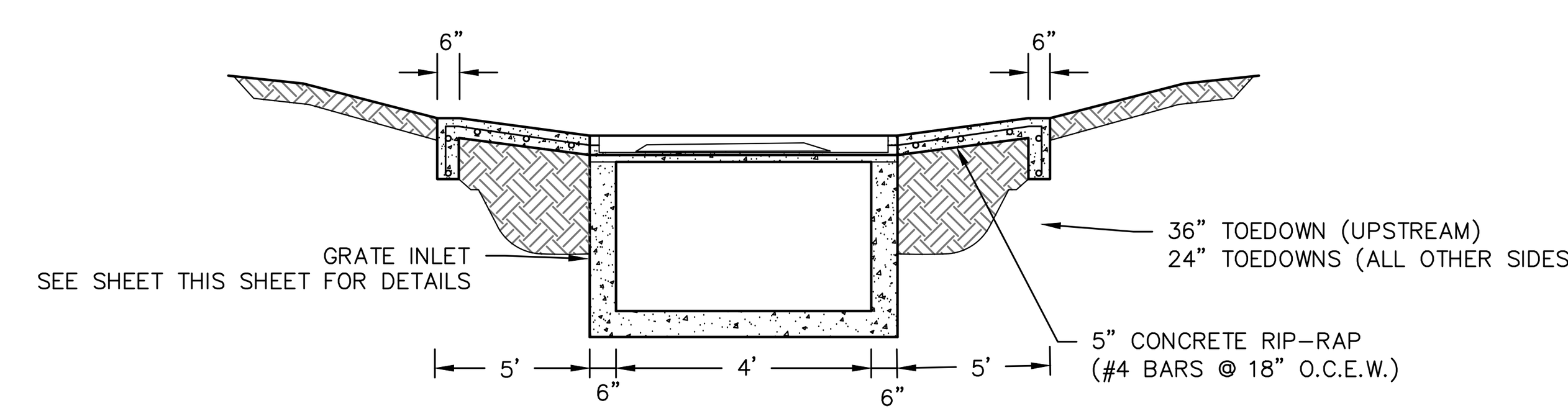
PIPE FLUSH WITH INVERT

NOTES:
1. CONCRETE FOR STRUCTURE SHALL BE CLASS "A," 3,000 P.S.I. AT 28 DAYS.
2. ALL EXPOSED EDGES SHALL BE CHAMFERED 3/4".
3. REINFORCING STEEL SHALL BE NEW BILLET STEEL, INTERMEDIATE GRADE, ASTM. A-15. THE DEFORMATION SHALL CONFORM TO ASTM. A-305.
4. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS.
5. ALL BARS INTERCEPTING MANHOLE OPENING AND REINFORCED CONCRETE PIPE SHALL BE FIELD-CUT.
6. WHERE LAPPING OF BARS IS REQUIRED, A MINIMUM LAP OF 33 DIAMETERS SHALL BE USED.
7. INVERT OF JUNCTION BOX TO BE SHAPED WITH CONCRETE FILL (3,000 P.S.I. MIN.) TO EFFECT DRAINAGE TO OUTLET PIPE. COST SUBSIDIARY TO CLASS "A" CONCRETE (JUNCTION BOXES).

CONCRETE COLLAR DETAIL
NOT-TO-SCALE
PROVIDE AT CONNECTION TO ALL STRUCTURES



CONCRETE RIP-RAP DETAIL (TYP.)
NOT-TO-SCALE



GRATE INLET APRON
N.T.S.

ALL CONCRETE SHALL HAVE A 28 DAY COMPRESSIVE STRENGTH OF 4500 psi.

REINFORCING STEEL SHALL COMPLY WITH ASTM A615 GRADE 60, A706 GRADE 60 OR A497 GRADE 70. BAR BENDING AND PLACEMENT SHALL COMPLY WITH THE LATEST ACI STANDARDS

STANDARD STRUCTURAL DESIGN IS BASED ON AASHTO HS 20 WHEEL LOADING

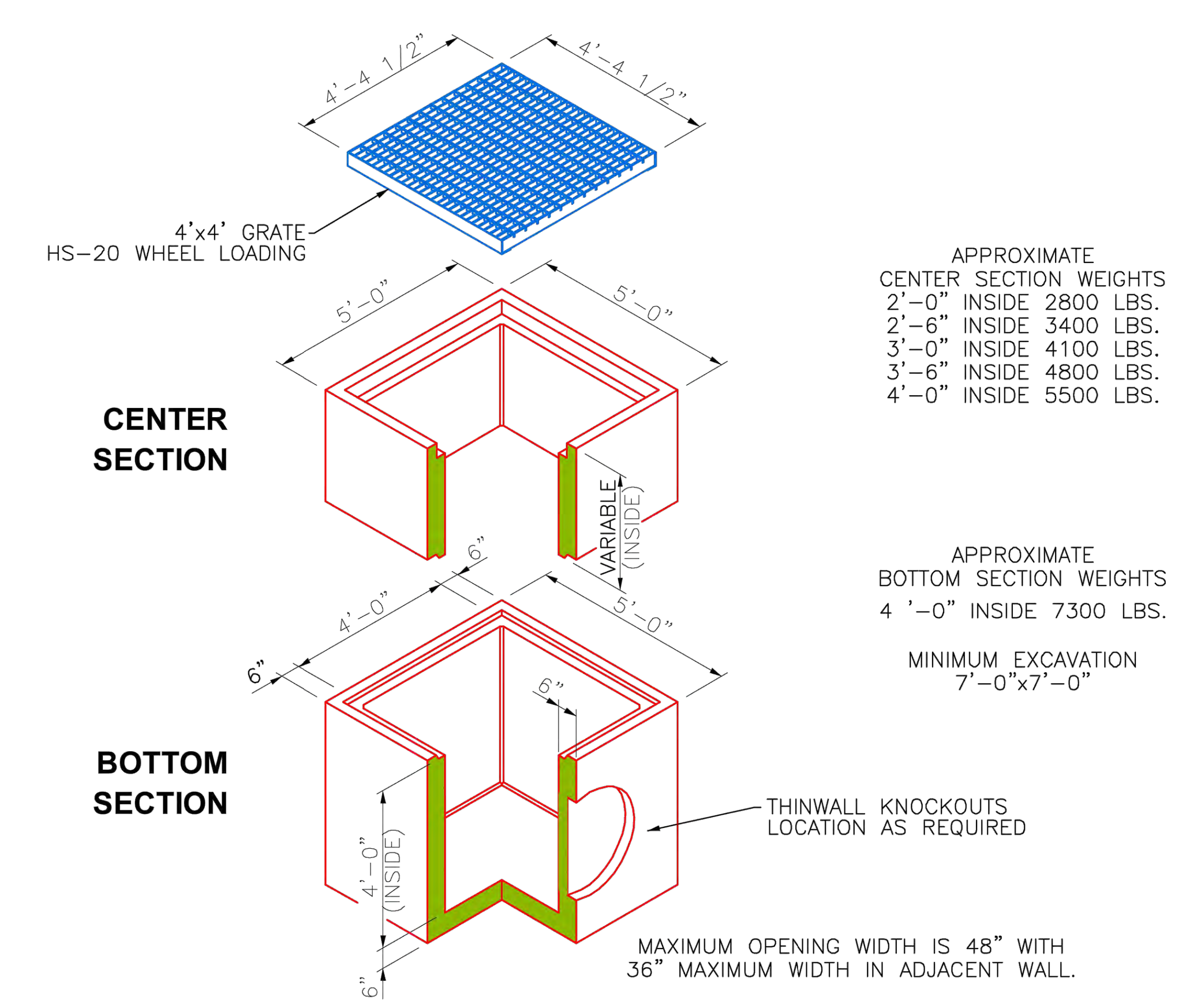
WATER TABLE IS AT 3'-0" BELOW GRADE FOR STANDARD STRUCTURAL DESIGN

THE STANDARD DESIGN IS BASED ON THE TOP AT GRADE AND THE BASE AT 8'-0" MAX. BELOW GRADE.

THE STRUCTURE SHALL BE PLACED ON A COMPACTED GRANULAR BASE TO INSURE UNIFORM DISTRIBUTION OF SOIL PRESSURES.

SPECIAL DESIGNS BASED ON OTHER LOADINGS OR DEEPER INSTALLATION DEPTHS ARE AVAILABLE ON REQUEST.

KNOCKOUTS OR PIPE OPENINGS OR CAN BE PROVIDED IN THE SIZE AND LOCATIONS REQUIRED.



APPROXIMATE CENTER SECTION WEIGHTS
2'-0" INSIDE 2800 LBS.
2'-6" INSIDE 3400 LBS.
3'-0" INSIDE 4100 LBS.
3'-6" INSIDE 4800 LBS.
4'-0" INSIDE 5500 LBS.

APPROXIMATE BOTTOM SECTION WEIGHTS
4'-0" INSIDE 7300 LBS.

MINIMUM EXCAVATION
7'-0"x7'-0"

MAXIMUM OPENING WIDTH IS 48" WITH 36" MAXIMUM WIDTH IN ADJACENT WALL.

Oldcastle Precast®	GI44	4'-0"x4'-0" GRATE INLET
1900 Rilling Road San Antonio, TX 78214 Phone: (210) 923-4523 Fax: (210) 921-0473	FILE NAME: 44GI.dwg ISSUE DATE: March, 2005 www.oldcastlesanantonio.com	Copyright 2005 Oldcastle Precast All Rights Reserved

RAKOWITZ
Engineering & Surveying
Texas Registered Engineering Firm F-9155
Texas Registered Surveying Firm 10181200
830-281-4060

ROSE VALLEY SOUTH - UNIT 2
DRAINAGE DETAILS
BEXAR COUNTY, TEXAS

STATE OF TEXAS
BRADLEY A. KOETHER
105048
LICENSED PROFESSIONAL ENGINEER
RAKOWITZ ENGINEERING, LLC
F-9155
1/22/2026

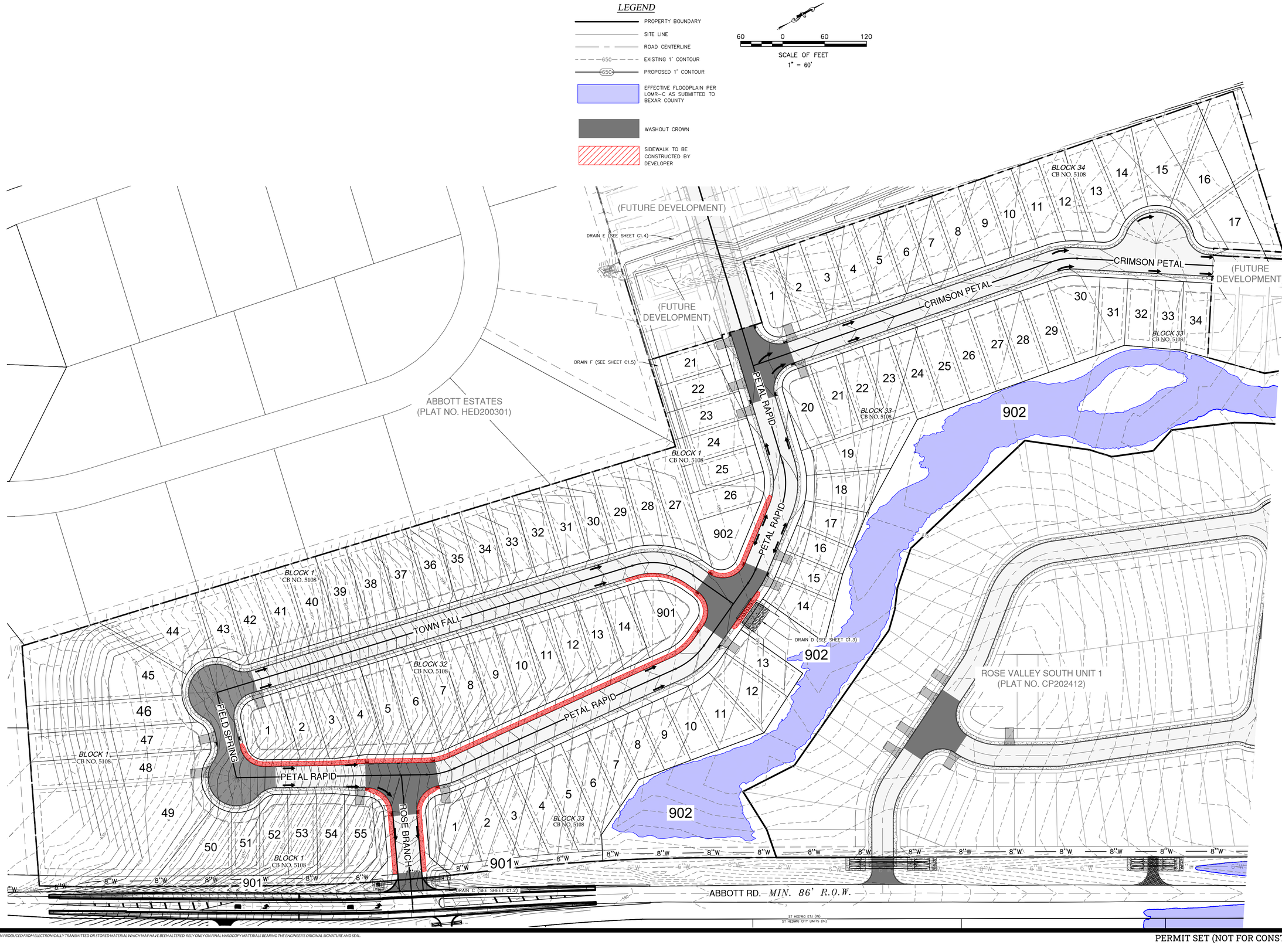
REV.	DATE	DESCRIPTION	BY

JOB NO.	23-3159J
DATE	JAN. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

C1.6
PLAT NO: CP202512

Date: Jan 22, 2026, 4:53pm User ID: CAD1 2022
File: N:\Projects\2023\23-3159 Rose Valley South U2\Civil\23-3159 Drainage Details.dwg

PERMIT SET (NOT FOR CONSTRUCTION): 01/22/2026



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

ROSE VALLEY SOUTH - UNIT 2
OVERALL ROAD LAYOUT

BEXAR COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105048
LICENSED
PROFESSIONAL ENGINEER
F-9155
1/22/2026

REV	DATE	DESCRIPTION	BY

JOB NO.	23-3159J
DATE	JAN. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

C2.0
PLAT NO: CP202512

Date: Jan 22, 2026, 4:52pm User ID: CAD1 2022
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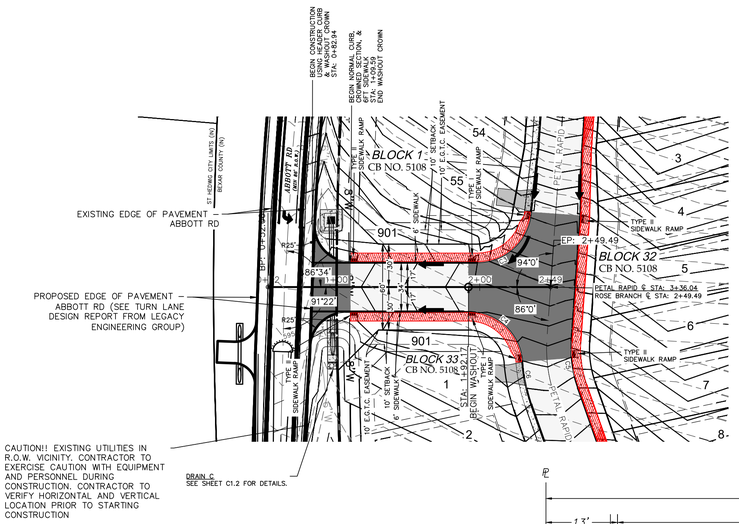
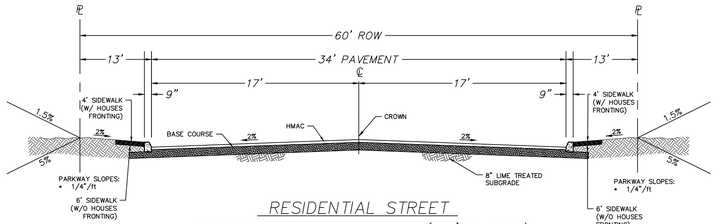
PERMIT SET (NOT FOR CONSTRUCTION): 01/22/2026





RESIDENTIAL STREET
TYPICAL STREET SECTION (60' R.O.W.)
(NOT TO SCALE)

CURVE TABLE					
CURVE	RADIUS	DELTA	CHORD BEARING	CHORD	LENGTH
C3	38.00'	085°59'53"	N71°51'12"E	51.83'	57.04'
C4	38.00'	085°35'54"	N22°20'55"W	51.64'	56.77'
C5	83.00'	023°20'50"	N17°10'50"E	33.59'	33.82'
C6	117.00'	014°56'37"	N12°58'44"E	30.43'	30.52'

NOTES:
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 PER BEXAR COUNTY SPECIFICATIONS.
3. CONTRACTOR TO SALVAGE & STOCKPILE 4 INCHES OF EXISTING TOPSOIL FOR FINAL DRESSING OF RIGHT-OF-WAY PRIOR TO SEEDING.
4. CONTRACTOR TO FOLLOW GEOTECH REPORT FOR PROPER PAVEMENT CONSTRUCTION.
5. TESTING TO BE PROVIDED BY OWNER'S QUALIFIED AGENT TO ASSURE COMPLIANCE TO SPECIFICATIONS OUTLINED IN GEOTECH REPORT.

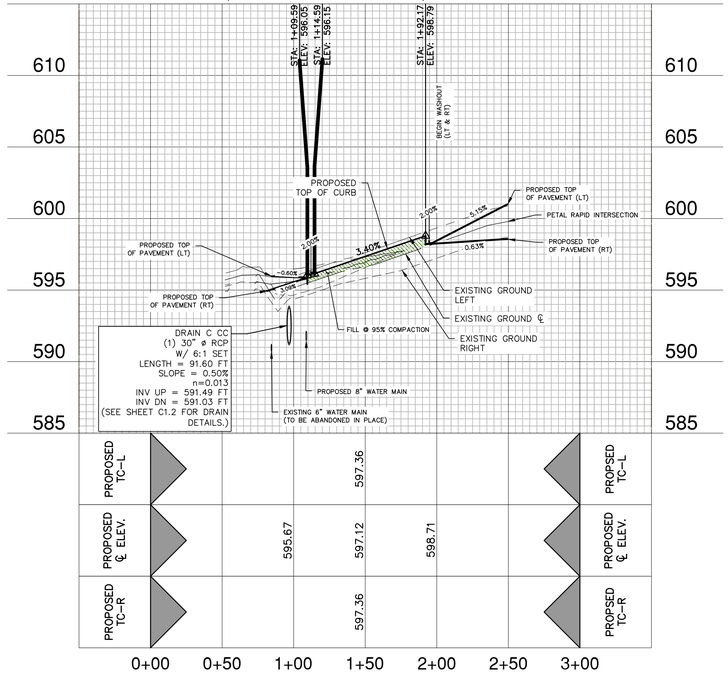
- SUBGRADE TO BE TESTED PER TEX-114-E D698 @ 95% DENSITY, 1 PER 10,000 SQ. FT.
- BASE TO BE PLACED IN MAXIMUM 8" THICK LOOSE LIFTS, COMPACTED, & TESTED PER TEX-113-E @ 95% DENSITY, 1 PER 5,000 SQ FT.

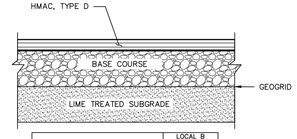
NOTE:
EROSION CONTROL MEASURES SUCH AS FLAT BOTTOM DITCHES, GRASS RETARDS, ROCK FILTER DAMS, AND SILT SCREENS SHALL BE UTILIZED AS NEEDED TO CONTROL SOIL EROSION IN BAR DITCHES.

BEXAR COUNTY R.O.W. NOTE
A BEXAR COUNTY R.O.W. PERMIT MUST BE OBTAINED PRIOR TO WORKING WITHIN EXISTING BEXAR COUNTY R.O.W.

ROSE BRANCH
(STA. 1+00 - END)

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





PAVEMENT MATERIAL	LOCAL B (60' ROW)
HMAC, TYPE D SURFACE COURSE	4"
TYPE "A" FLEX BASE	16"
FLEXIBLE BASE IN CONJUCTION WITH TENSAR+ NX750	YES
LIME TREATED SUBGRADE	8"

PROPOSED PAVEMENT SECTION

REFERENCE GEOTECH REPORT 0312-3441 PREPARED BY INTERTEK PSI, DATED JANUARY 30, 2025 FOR PAVEMENT MATERIALS AND CONSTRUCTION REQUIREMENTS. CONTRACTOR SHALL MEET OR EXCEED ALL PAVING RECOMMENDATIONS. ADDITIONAL PAVEMENT SECTIONS ARE AVAILABLE IN THE GEOTECH REPORT. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING MATERIAL TESTING. TESTING TO BE PAID BY OWNER.

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

LEGEND

- PROPERTY BOUNDARY
- SITE LINE
- ROAD CENTERLINE
- 650 EXISTING 1' CONTOUR
- 650 PROPOSED 1' CONTOUR
- EFFECTIVE FLOODPLAIN PER LOMR-C AS SUBMITTED TO BEXAR COUNTY
- WASHOUT CROWN
- SIDEWALK TO BE CONSTRUCTED BY DEVELOPER

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

ROSE VALLEY SOUTH - UNIT 2
ROSE BRANCH
STA. 1+00 - END
BEXAR COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105048
LICENSED
PROFESSIONAL ENGINEER
F-9155
1/22/2026

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C2.1
PLAT NO: CP202512

Date: Jan 22, 2026, 4:53pm User ID: CAD1-2022
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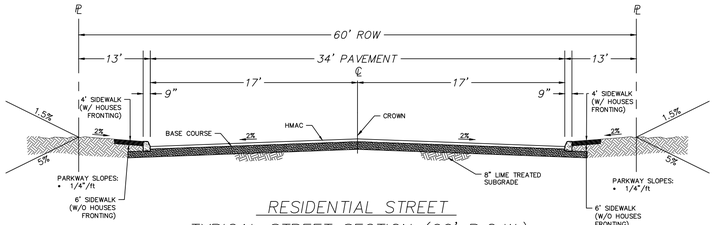
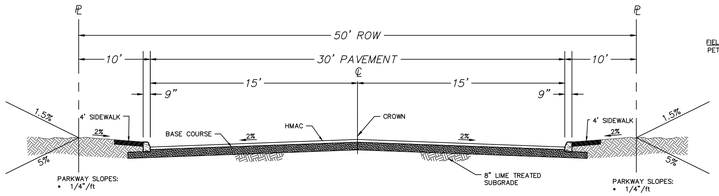
PERMIT SET (NOT FOR CONSTRUCTION): 01/22/2026



RESIDENTIAL STREET
TYPICAL STREET SECTION (60' R.O.W.)
(NOT TO SCALE)
PETAL RAPID: STA. 1+00 – STA. 2+39.75



RESIDENTIAL STREET
TYPICAL STREET SECTION (50' R.O.W.)
(NOT TO SCALE)
PETAL RAPID: STA. 2+39.75 – END

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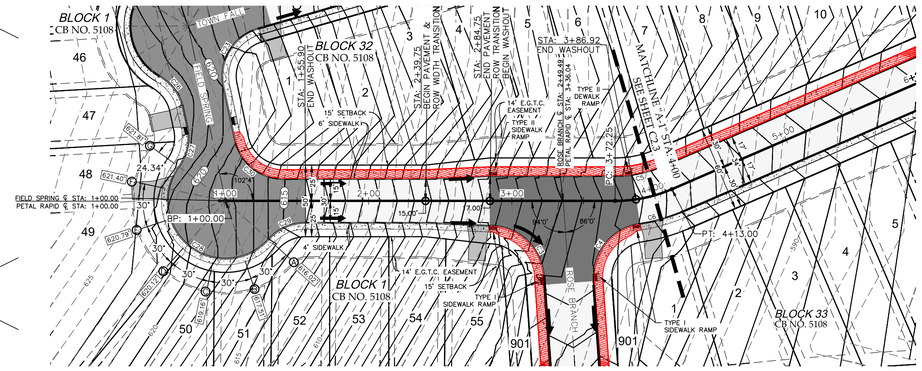
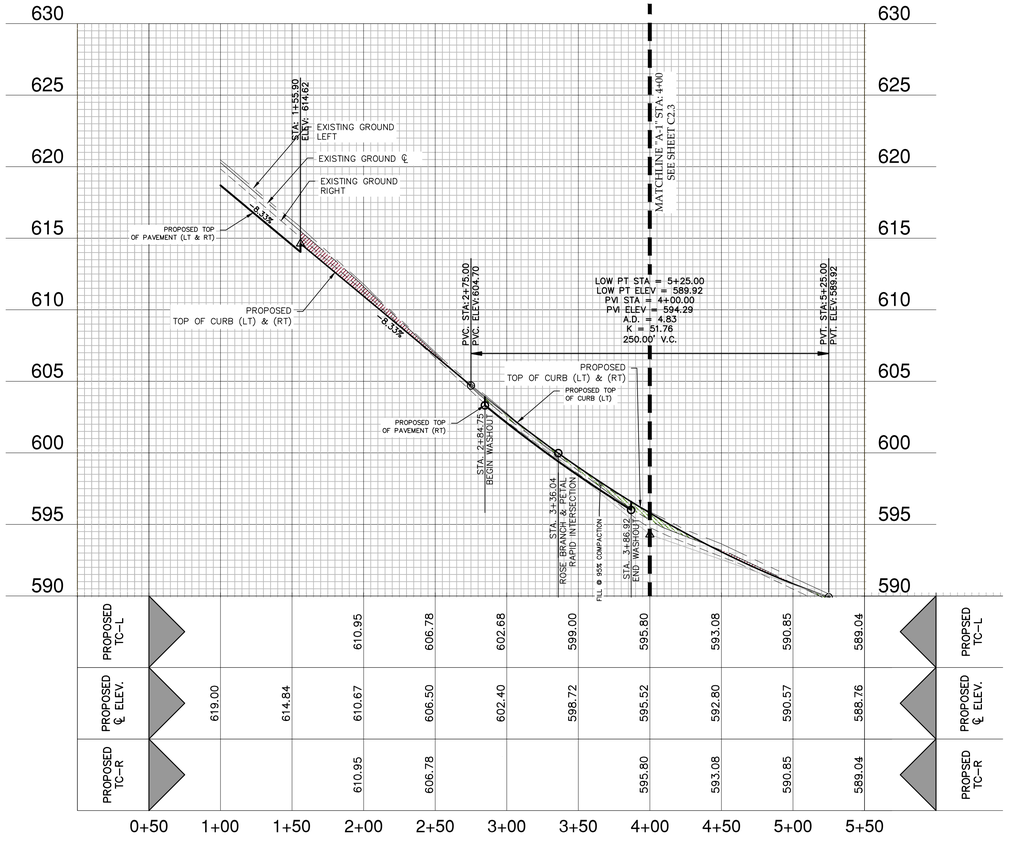
NOTE:
EROSION CONTROL MEASURES SUCH AS FLAT BOTTOM DITCHES, GRASS RETARDS, ROCK FILTER DAMS, AND SILT SCREENS SHALL BE UTILIZED AS NEEDED TO CONTROL SOIL EROSION IN BAR DITCHES.

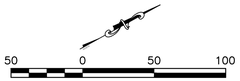
BEXAR COUNTY R.O.W. NOTE
A BEXAR COUNTY R.O.W. PERMIT MUST BE OBTAINED PRIOR TO WORKING WITHIN EXISTING BEXAR COUNTY R.O.W.



PETAL RAPID
(STA. 1+00 - 4+00)

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

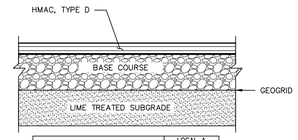




LEGEND

- PROPERTY BOUNDARY
- SITE LINE
- ROAD CENTERLINE
- 650 EXISTING 1' CONTOUR
- 650 PROPOSED 1' CONTOUR
- EFFECTIVE FLOODPLAIN PER LOMR-C AS SUBMITTED TO BEXAR COUNTY
- WASHOUT CROWN
- 568.65 PROPOSED TOP OF CURB IN KNUCKLE
- SIDEWALK TO BE CONSTRUCTED BY DEVELOPER

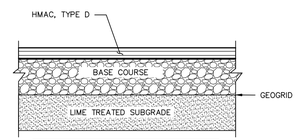
CURVE TABLE					
CURVE	RADIUS	DELTA	CHORD BEARING	CHORD	LENGTH
C3	38.00'	085°59'53"	N71°51'12"E	51.83'	57.04'
C4	38.00'	085°35'54"	N22°20'55"W	51.64'	56.77'
C5	83.00'	023°20'50"	N17°10'50"E	33.59'	33.82'
C6	117.00'	014°56'37"	N12°58'44"E	30.43'	30.52'
C23	35.00'	085°59'01"	S30°12'58"E	47.73'	52.52'
C26	35.00'	048°11'23"	N82°41'50"E	28.58'	29.44'
C27	35.00'	048°11'23"	S49°06'47"E	28.58'	29.44'
C28	40.00'	174°19'03"	N67°49'23"E	79.90'	121.70'
C29	35.00'	048°11'23"	N04°45'33"E	28.58'	29.44'
C30	35.00'	077°56'17"	N67°49'23"E	44.02'	47.61'



PAVEMENT MATERIAL	LOCAL A (50' ROW)
HMAC, TYPE D SURFACE COURSE	2"
TYPE "A" FLEX BASE	8"
FLEXIBLE BASE IN CONJUCTION WITH TENSAR+ NX750	YES
LIME TREATED SUBGRADE	8"

PROPOSED PAVEMENT SECTION

REFERENCE GEOTECH REPORT 0312-3441 PREPARED BY INTERTEK PSI, DATED JANUARY 30, 2025 FOR PAVEMENT MATERIALS AND CONSTRUCTION REQUIREMENTS. CONTRACTOR SHALL MEET OR EXCEED ALL PAVING RECOMMENDATIONS. ADDITIONAL PAVEMENT SECTIONS ARE AVAILABLE IN THE GEOTECH REPORT. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING MATERIAL TESTING. TESTING TO BE PAID BY OWNER.



PAVEMENT MATERIAL	LOCAL B (60' ROW)
HMAC, TYPE D SURFACE COURSE	4"
TYPE "A" FLEX BASE	16"
FLEXIBLE BASE IN CONJUCTION WITH TENSAR+ NX750	YES
LIME TREATED SUBGRADE	8"

PROPOSED PAVEMENT SECTION

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

ROSE VALLEY SOUTH - UNIT 2
PETAL RAPID
STA. 1+00 - 4+00
BEXAR COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105048
LICENSED PROFESSIONAL ENGINEER
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1/22/2026

REV	DATE	DESCRIPTION	BY

JOB NO.	23-3159J
DATE	JAN. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

C2.2
PLAT NO: CP202512

Date: Jan 22, 2026, 4:51pm User ID: CADD1-2022
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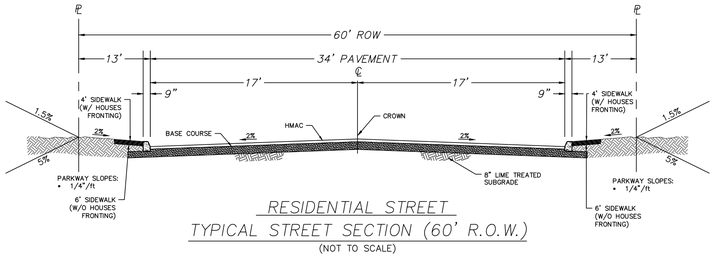

RESIDENTIAL STREET
TYPICAL STREET SECTION (60' R.O.W.)
(NOT TO SCALE)

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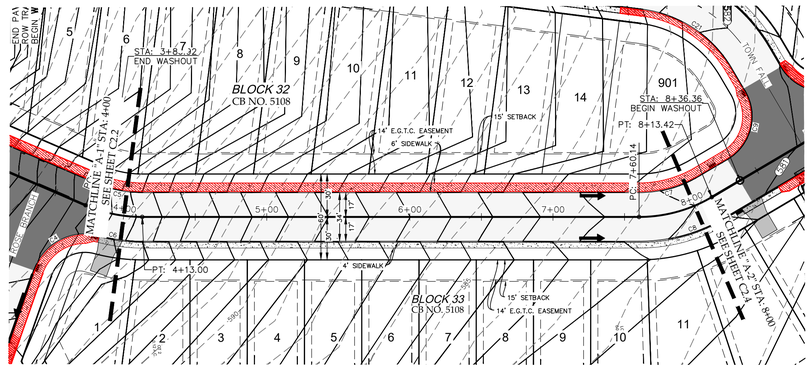
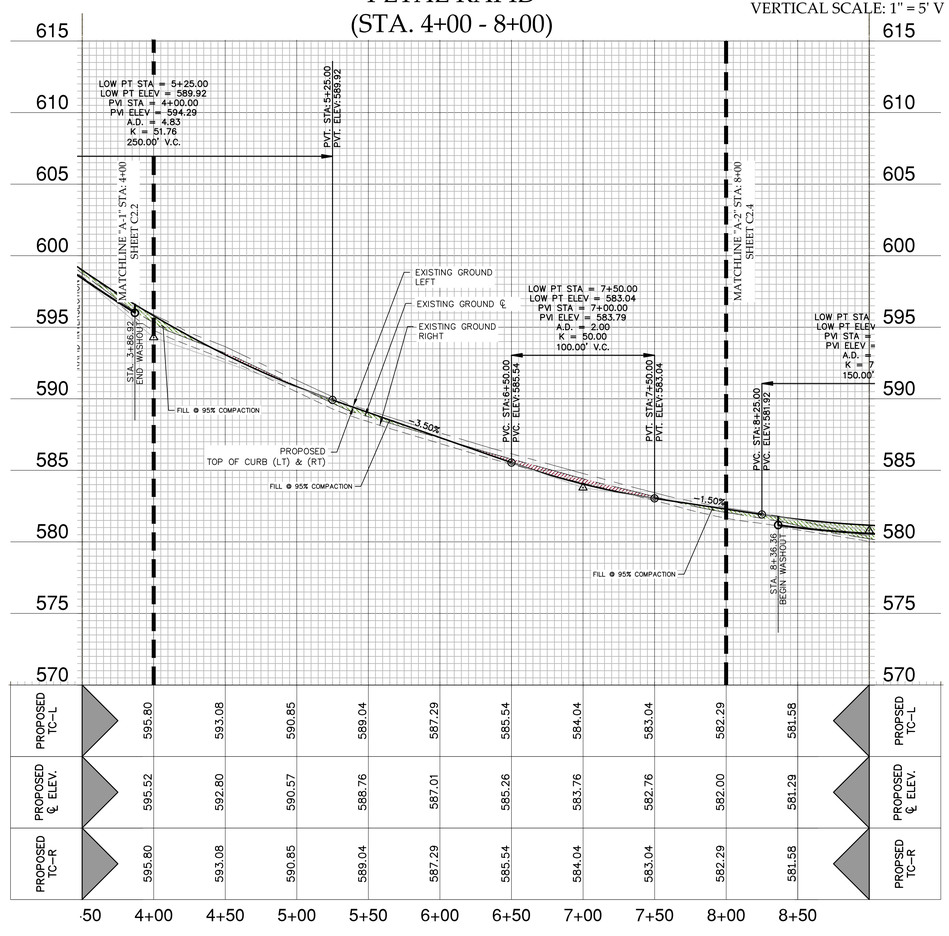
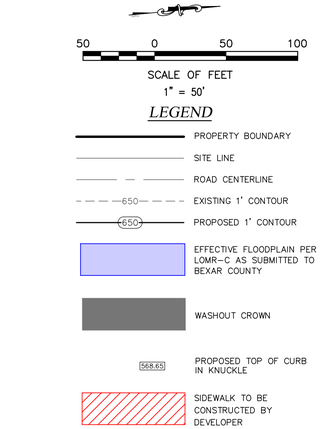
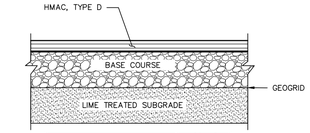






CURVE TABLE					
CURVE	RADIUS	DELTA	CHORD BEARING	CHORD	LENGTH
C4	38.00'	085°35'54"	N22°20'55"W	51.64'	56.77'
C5	83.00'	023°20'50"	N17°10'50"E	33.59'	33.82'
C6	117.00'	014°56'37"	N12°58'44"E	30.43'	30.52'
C7	83.00'	030°31'39"	N09°45'25"W	43.70'	44.22'
C8	117.00'	030°31'39"	N09°45'25"W	61.60'	62.34'
C9	35.00'	090°00'00"	N70°01'14"W	49.50'	54.98'
C21	85.00'	052°12'13"	S38°52'39"W	74.79'	77.45'



PAVEMENT MATERIAL	LOCAL B (60' ROW)
HMAC, TYPE D SURFACE COURSE	4"
TYPE "A" FLEX BASE	16"
FLEXIBLE BASE IN CONJUCTION WITH TENSAR+ NX750	YES
LIME TREATED SUBGRADE	8"

PROPOSED PAVEMENT SECTION

REFERENCE GEOTECH REPORT G312-3441 PREPARED BY INTERTEK PSI, DATED JANUARY 30, 2025 FOR PAVEMENT MATERIALS AND CONSTRUCTION REQUIREMENTS. CONTRACTOR SHALL MEET OR EXCEED ALL PAVING RECOMMENDATIONS. ADDITIONAL PAVEMENT SECTIONS ARE AVAILABLE IN THE GEOTECH REPORT. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING MATERIAL TESTING. TESTING TO BE PAID BY OWNER.

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ROSE VALLEY SOUTH - UNIT 2
PETAL RAPID
STA. 4+00 - 8+00
BEXAR COUNTY, TEXAS

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BRADLEY A. KOETHER
105049
LICENSED
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1/22/2026

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DATE	JAN. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

C2.3
PLAT NO: CP202512

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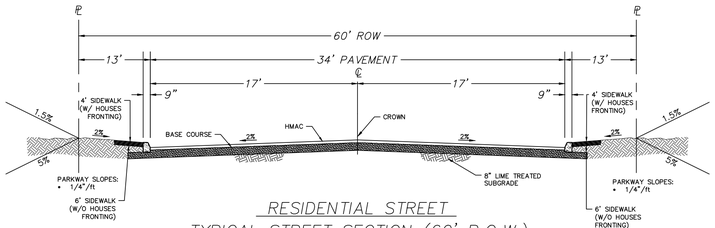
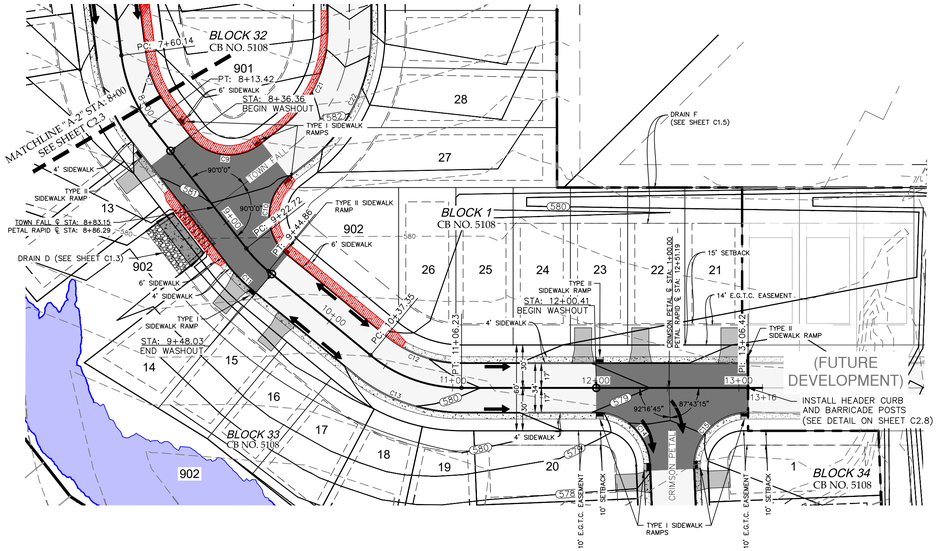
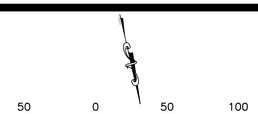


RESIDENTIAL STREET

TYPICAL STREET SECTION (60' R.O.W.)

(NOT TO SCALE)





LEGEND

- PROPERTY BOUNDARY
- SITE LINE
- ROAD CENTERLINE
- 650 EXISTING 1' CONTOUR
- 650 PROPOSED 1' CONTOUR
- EFFECTIVE FLOODPLAIN PER LOMR-C AS SUBMITTED TO BEXAR COUNTY
- WASHOUT CROWN
- 568.65 PROPOSED TOP OF CURB IN KNUCKLE
- SIDEWALK TO BE CONSTRUCTED BY DEVELOPER

CURVE TABLE					
CURVE	RADIUS	DELTA	CHORD BEARING	CHORD	LENGTH
C7	83.00'	030°31'39"	N09°45'25"W	43.70'	44.22'
C9	35.00'	090°00'00"	N70°01'14"W	49.50'	54.98'
C10	35.00'	102°41'00"	S13°38'16"W	54.66'	62.73'
C11	117.00'	012°41'00"	N31°21'44"W	25.85'	25.90'
C12	83.00'	039°28'04"	S57°26'15"E	56.05'	57.17'
C13	117.00'	039°28'04"	N57°26'15"W	79.01'	80.59'
C14	38.00'	087°43'15"	N33°18'40"W	52.66'	58.18'
C15	38.00'	092°16'45"	N56°41'20"E	54.80'	61.20'
C21	85.00'	052°12'13"	S38°52'39"W	74.79'	77.45'
C22	115.00'	052°12'13"	S38°52'39"W	101.19'	104.78'

NOTES:

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 PER BEXAR COUNTY SPECIFICATIONS.
3. CONTRACTOR TO SALVAGE & STOCKPILE 4 INCHES OF EXISTING TOPSOIL FOR FINAL DRESSING OF RIGHT-OF-WAY PRIOR TO SEEDING.
4. CONTRACTOR TO FOLLOW GEOTECH REPORT FOR PROPER PAVEMENT CONSTRUCTION.
5. TESTING TO BE PROVIDED BY OWNER'S QUALIFIED AGENT TO ASSURE COMPLIANCE TO SPECIFICATIONS OUTLINED IN GEOTECH REPORT.

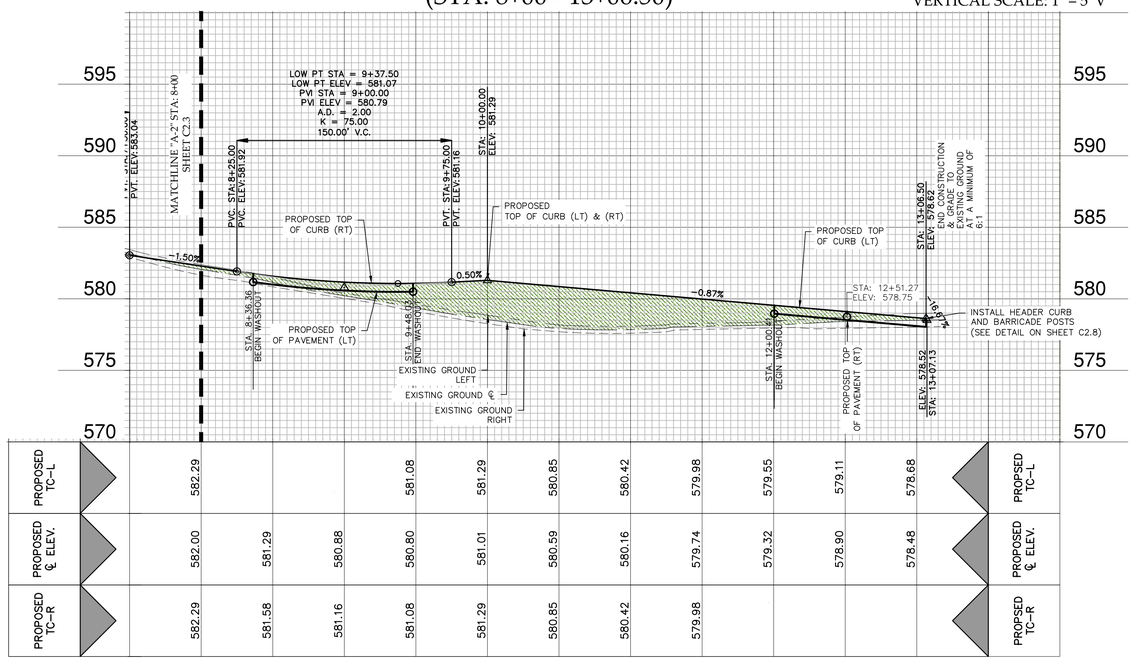
- SUBGRADE TO BE TESTED PER TEX-114-E D698 @ 95% DENSITY, 1 PER 10,000 SQ. FT.
- BASE TO BE PLACED IN MAXIMUM 8" THICK LOOSE LIFTS, COMPACTED, & TESTED PER TEX-113-E @ 95% DENSITY, 1 PER 5,000 SQ FT.

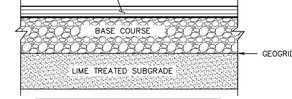
NOTE:
EROSION CONTROL MEASURES SUCH AS FLAT BOTTOM DITCHES, GRASS RETARDS, ROCK FILTER DAMS, AND SILT SCREENS SHALL BE UTILIZED AS NEEDED TO CONTROL SOIL EROSION IN BAR DITCHES.

BEXAR COUNTY R.O.W. NOTE
A BEXAR COUNTY R.O.W. PERMIT MUST BE OBTAINED PRIOR TO WORKING WITHIN EXISTING BEXAR COUNTY R.O.W.

PETAL RAPID
(STA. 8+00 - 13+06.50)

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





PAVEMENT MATERIAL	LOCAL B (60' ROW)
HMAC, TYPE D SURFACE COURSE	4"
TYPE "A" FLEX BASE	16"
FLEXIBLE BASE IN CONJUCTION WITH TENSAR® NX750	YES
LIME TREATED SUBGRADE	8"

PROPOSED PAVEMENT SECTION

REFERENCE GEOTECH REPORT 0312-3441 PREPARED BY INTERTEK PSI, DATED JANUARY 30, 2025 FOR PAVEMENT MATERIALS AND CONSTRUCTION REQUIREMENTS. CONTRACTOR SHALL MEET OR EXCEED ALL PAVING RECOMMENDATIONS. ADDITIONAL PAVEMENT SECTIONS ARE AVAILABLE IN THE GEOTECH REPORT. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING MATERIAL TESTING. TESTING TO BE PAID BY OWNER.

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

ROSE VALLEY SOUTH - UNIT 2
PETAL RAPID
STA. 8+00 - 13+06.50
BEXAR COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105048
LICENSED
PROFESSIONAL ENGINEER
F-9155
1/22/2026

REV	DATE	DESCRIPTION	BY

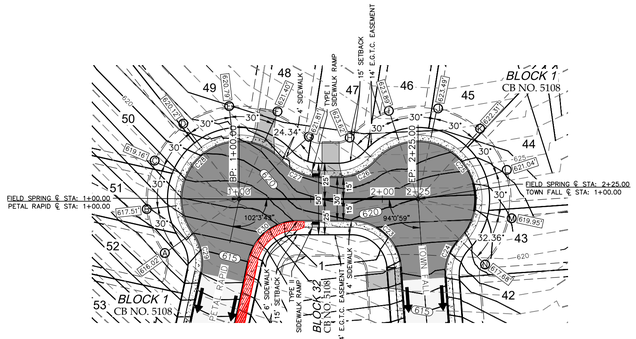
JOB NO.	23-3159J
DATE	JAN. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

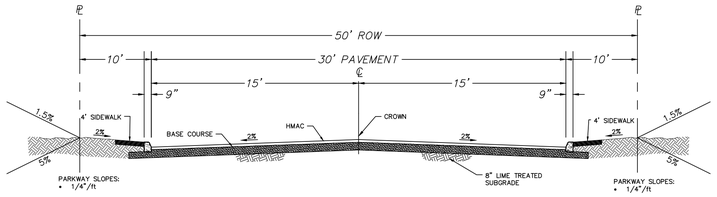
C2.4

PLAT NO: CP202512

Date: Jan 22, 2026, 4:52pm User ID: CAD1 2022
File: N:\Projects\2023\23-3159 Rose Valley South U2\Civil\23-3159 Road Plans.dwg

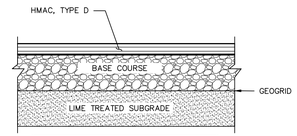
PERMIT SET (NOT FOR CONSTRUCTION): 01/22/2026





RESIDENTIAL STREET
TYPICAL STREET SECTION (50' R.O.W.)
(NOT TO SCALE)

CURVE TABLE					
CURVE	RADIUS	DELTA	CHORD BEARING	CHORD	LENGTH
C23	35.00'	085°59'01"	S30°12'58"E	47.73'	52.52'
C24	35.00'	048°11'13"	S36°52'09"W	28.58'	29.44'
C25	40.00'	182°21'47"	S30°12'54"E	79.98'	127.31'
C26	35.00'	048°11'23"	N82°41'50"E	28.58'	29.44'
C27	35.00'	048°11'23"	S49°06'47"E	28.58'	29.44'
C28	40.00'	174°19'03"	N67°49'23"E	79.90'	121.70'
C29	35.00'	048°11'23"	N04°45'33"E	28.58'	29.44'
C30	35.00'	077°56'17"	N67°49'23"E	44.02'	47.61'



PAVEMENT MATERIAL	LOCAL A (50' ROW)
HMAC, TYPE D SURFACE COURSE	2"
TYPE "A" FLEX BASE	8"
FLEXIBLE BASE IN CONJUCTION WITH TENSAR+ NX750	YES
LIME TREATED SUBGRADE	8"

PROPOSED PAVEMENT SECTION

REFERENCE GEOTECH REPORT 0312-3441 PREPARED BY INTERTEK PSI, DATED JANUARY 30, 2025 FOR PAVEMENT MATERIALS AND CONSTRUCTION REQUIREMENTS. CONTRACTOR SHALL MEET OR EXCEED ALL PAVING RECOMMENDATIONS. ADDITIONAL PAVEMENT SECTIONS ARE AVAILABLE IN THE GEOTECH REPORT. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING MATERIAL TESTING. TESTING TO BE PAID BY OWNER.

NOTES:
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NOTE:
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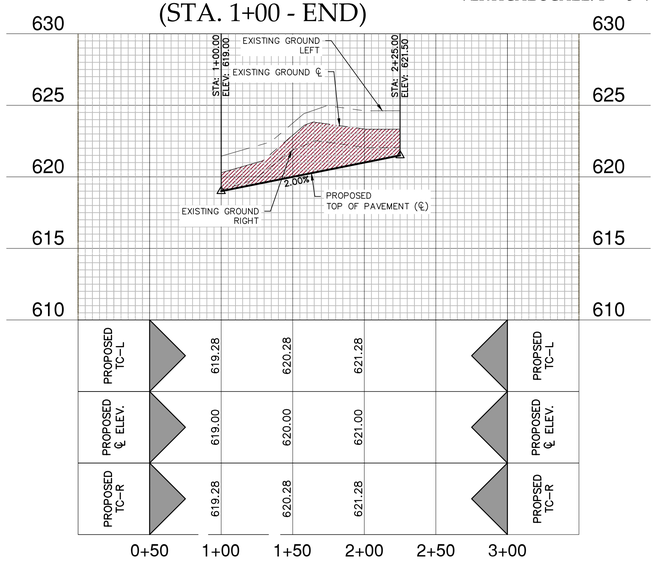
BEXAR COUNTY R.O.W. NOTE
A BEXAR COUNTY R.O.W. PERMIT MUST BE OBTAINED PRIOR TO WORKING WITHIN EXISTING BEXAR COUNTY R.O.W.

FIELD SPRING (STA. 1+00 - END)

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



LEGEND

- PROPERTY BOUNDARY
- SITE LINE
- ROAD CENTERLINE
- 650 EXISTING 1' CONTOUR
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830-281-4060

ROSE VALLEY SOUTH - UNIT 2
FIELD SPRING
STA. 1+00 - END
BEXAR COUNTY, TEXAS

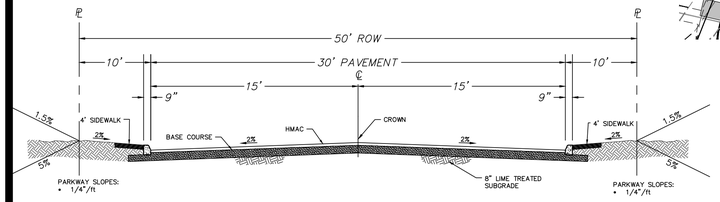
RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105048
LICENSED PROFESSIONAL ENGINEER
F-9155
1/22/2026

REV	DATE	DESCRIPTION	BY

JOB NO.	23-3159J
DATE	JAN. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

C2.5
PLAT NO. CP202512

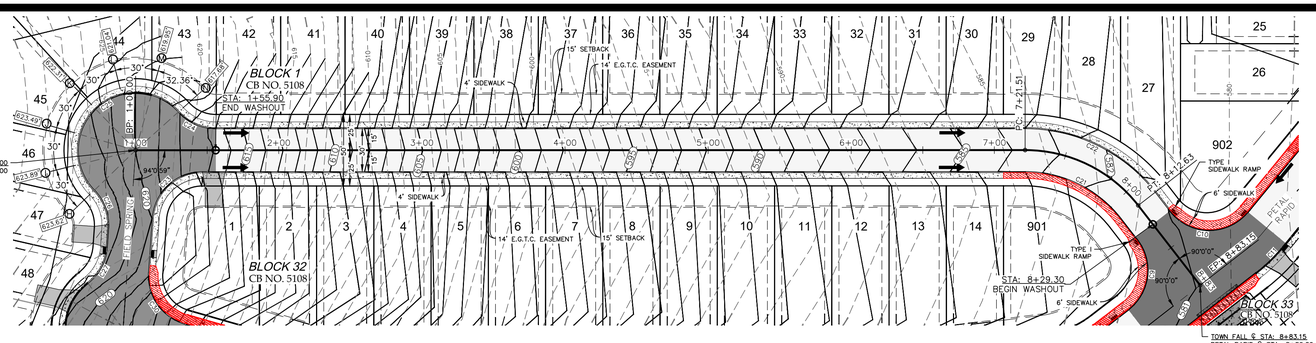
PERMIT SET (NOT FOR CONSTRUCTION): 01/22/2026

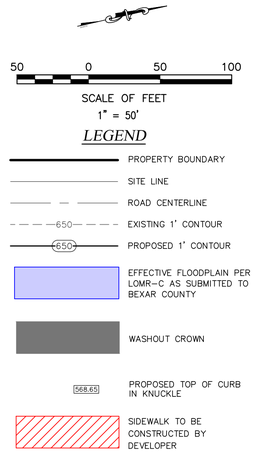


RESIDENTIAL STREET

TYPICAL STREET SECTION (50' R.O.W.)

(NOT TO SCALE)





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NOTE:
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BEXAR COUNTY R.O.W. NOTE
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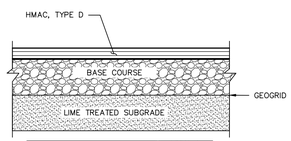
CURVE TABLE

CURVE	RADIUS	DELTA	CHORD BEARING	CHORD	LENGTH
C9	35.00'	090°00'00"	N70°01'14"W	49.50'	54.98'
C10	35.00'	102°41'00"	S13°38'16"W	54.66'	62.73'
C11	117.00'	012°41'00"	N31°21'44"W	25.85'	25.90'
C21	85.00'	052°12'13"	S38°52'39"W	74.79'	77.45'
C22	115.00'	052°12'13"	S38°52'39"W	101.19'	104.78'
C23	35.00'	085°59'01"	S30°12'58"E	47.73'	52.52'
C24	35.00'	048°11'13"	S36°52'09"W	28.58'	29.44'
C25	40.00'	182°21'47"	S30°12'54"E	79.98'	127.31'
C26	35.00'	048°11'23"	N82°41'50"E	28.58'	29.44'
C27	35.00'	048°11'23"	S49°06'47"E	28.58'	29.44'
C30	35.00'	077°56'17"	N67°49'23"E	44.02'	47.61'



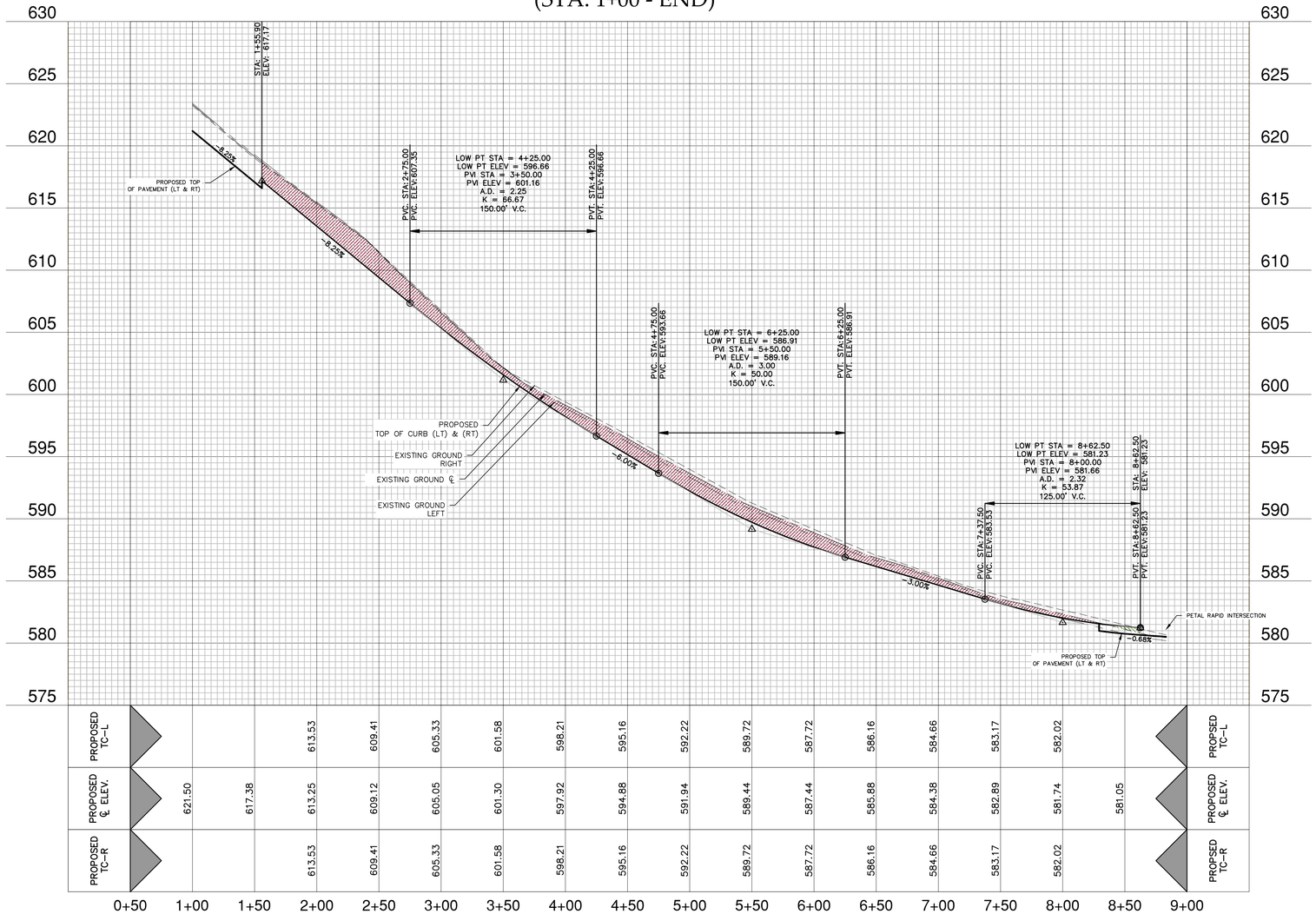
PAVEMENT MATERIAL	LOCAL A (50' ROW)
HMAC, TYPE D SURFACE COURSE	2"
TYPE "A" FLEX BASE	8"
FLEXIBLE BASE IN CONJUCTION WITH TENSAR+ NX750	YES
LIME TREATED SUBGRADE	8"

PROPOSED PAVEMENT SECTION

REFERENCE GEOTECH REPORT 0312-3441 PREPARED BY INTERTEK PSI, DATED JANUARY 30, 2025 FOR PAVEMENT MATERIALS AND CONSTRUCTION REQUIREMENTS. CONTRACTOR SHALL MEET OR EXCEED ALL PAVING RECOMMENDATIONS. ADDITIONAL PAVEMENT SECTIONS ARE AVAILABLE IN THE GEOTECH REPORT. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING MATERIAL TESTING. TESTING TO BE PAID BY OWNER.

TOWN FALL
(STA. 1+00 - END)

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



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

ROSE VALLEY SOUTH - UNIT 2
TOWN FALL
STA. 1+00 - END
BEXAR COUNTY, TEXAS

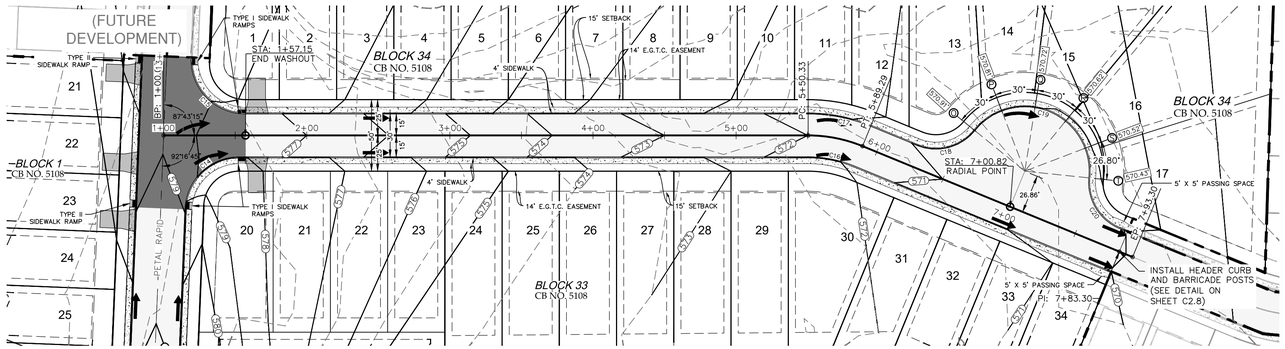
RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105048
LICENSED
PROFESSIONAL ENGINEER
F-9155
1/22/2026

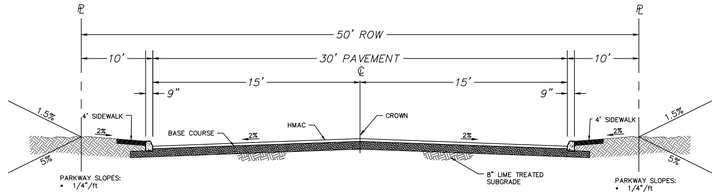
REV	DATE	DESCRIPTION	BY

JOB NO.	23-3159J
DATE	JAN. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

C2.6
PLAT NO: CP202512

PERMIT SET (NOT FOR CONSTRUCTION): 01/22/2026





RESIDENTIAL STREET
TYPICAL STREET SECTION (50' R.O.W.)
(NOT TO SCALE)

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

LEGEND

- PROPERTY BOUNDARY
- SITE LINE
- ROAD CENTERLINE
- 650 EXISTING 1' CONTOUR
- 650 PROPOSED 1' CONTOUR
- EFFECTIVE FLOODPLAIN PER LOMR-C AS SUBMITTED TO BEXAR COUNTY
- WASHOUT CROWN
- 568.65 PROPOSED TOP OF CURB IN KNUCKLE
- SIDEWALK TO BE CONSTRUCTED BY DEVELOPER

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NOTE:
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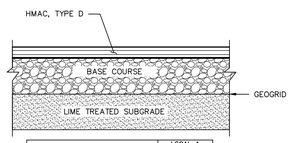
BEXAR COUNTY R.O.W. NOTE
A BEXAR COUNTY R.O.W. PERMIT MUST BE OBTAINED PRIOR TO WORKING WITHIN EXISTING BEXAR COUNTY R.O.W.

CURVE TABLE					
CURVE	RADIUS	DELTA	CHORD BEARING	CHORD	LENGTH
C14	38.00'	087°43'15"	N33°18'40"W	52.66'	58.18'
C15	38.00'	092°16'45"	N56°41'20"E	54.80'	61.20'
C16	85.00'	022°19'12"	N21°42'34"E	32.90'	33.11'
C17	115.00'	022°19'12"	N21°42'34"E	44.52'	44.80'
C18	35.00'	073°11'19"	N03°43'29"W	41.73'	44.71'
C19	45.00'	146°22'39"	N32°52'10"E	86.15'	114.96'
C20	35.00'	073°11'19"	N69°27'50"E	41.73'	44.71'



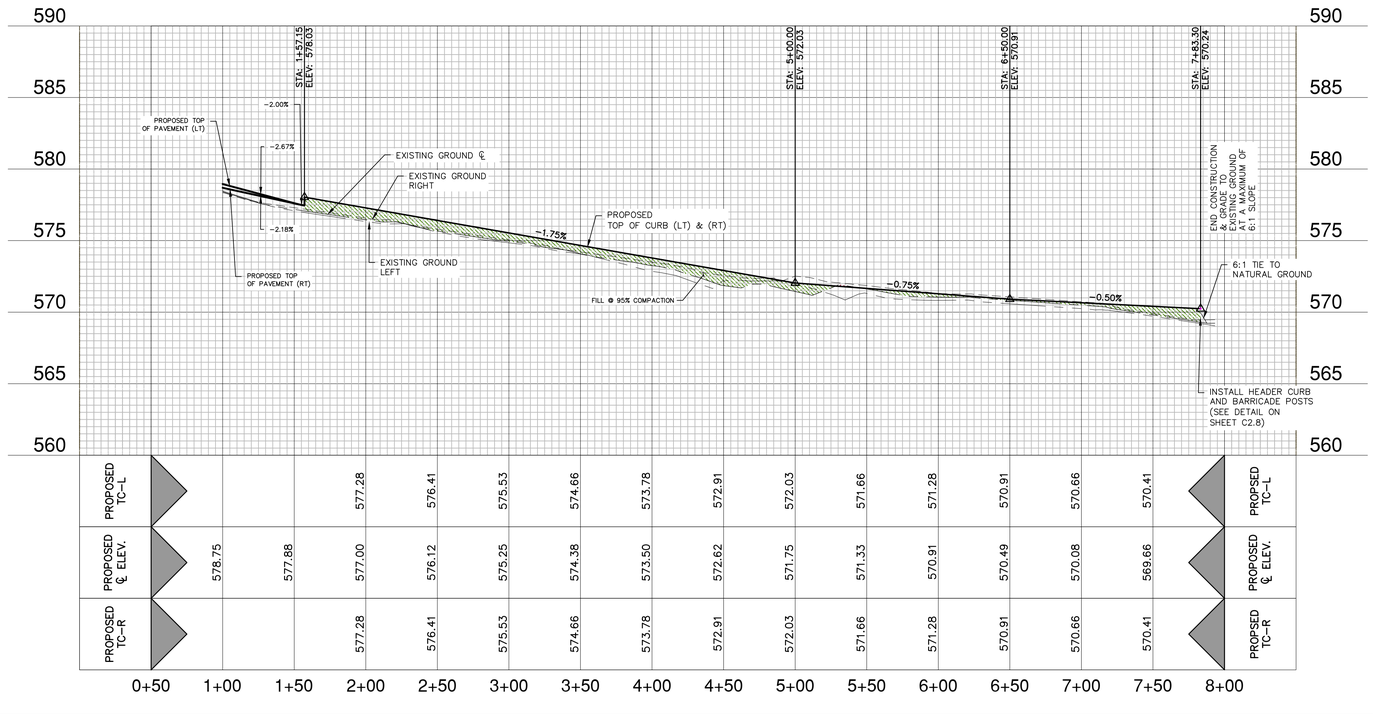
PAVEMENT MATERIAL	LOCAL A (50' ROW)
HMAC, TYPE D SURFACE COURSE	2"
TYPE "A" FLEX BASE	8"
FLEXIBLE BASE IN CONJUCTION WITH TENSAR+ NX750	YES
LIME TREATED SUBGRADE	8"

PROPOSED PAVEMENT SECTION

REFERENCE GEOTECH REPORT 0312-3441 PREPARED BY INTERTEK PSI, DATED JANUARY 30, 2025 FOR PAVEMENT MATERIALS AND CONSTRUCTION REQUIREMENTS. CONTRACTOR SHALL MEET OR EXCEED ALL PAVING RECOMMENDATIONS. ADDITIONAL PAVEMENT SECTIONS ARE AVAILABLE IN THE GEOTECH REPORT. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING MATERIAL TESTING. TESTING TO BE PAID BY OWNER.

CRIMSON PETAL
(STA. 1+00 - 7+83.30)

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



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

ROSE VALLEY SOUTH - UNIT 2
CRIMSON PETAL
STA. 1+00 - 7+83.30
BEXAR COUNTY, TEXAS

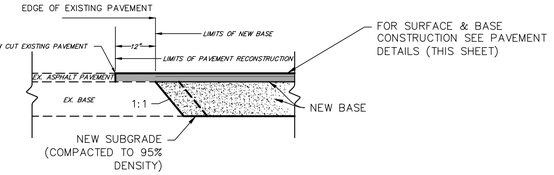
RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105049
LICENSED
PROFESSIONAL ENGINEER
F-9155
1/22/2026

REV	DATE	DESCRIPTION	BY

JOB NO.	23-3159J
DATE	JAN. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

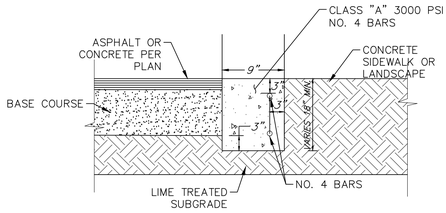
C2.7
PLAT NO: CP202512

PERMIT SET (NOT FOR CONSTRUCTION): 01/22/2026



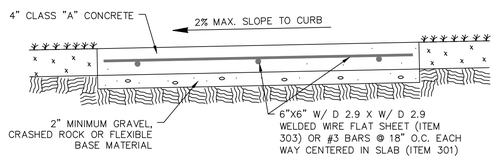
PAVEMENT JUNCTION DETAIL

N.T.S.



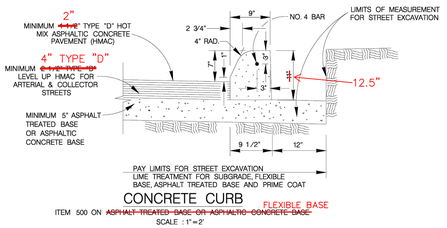
HEADER CURB DETAIL

NOT-TO-SCALE



CONCRETE SIDEWALK SECTION

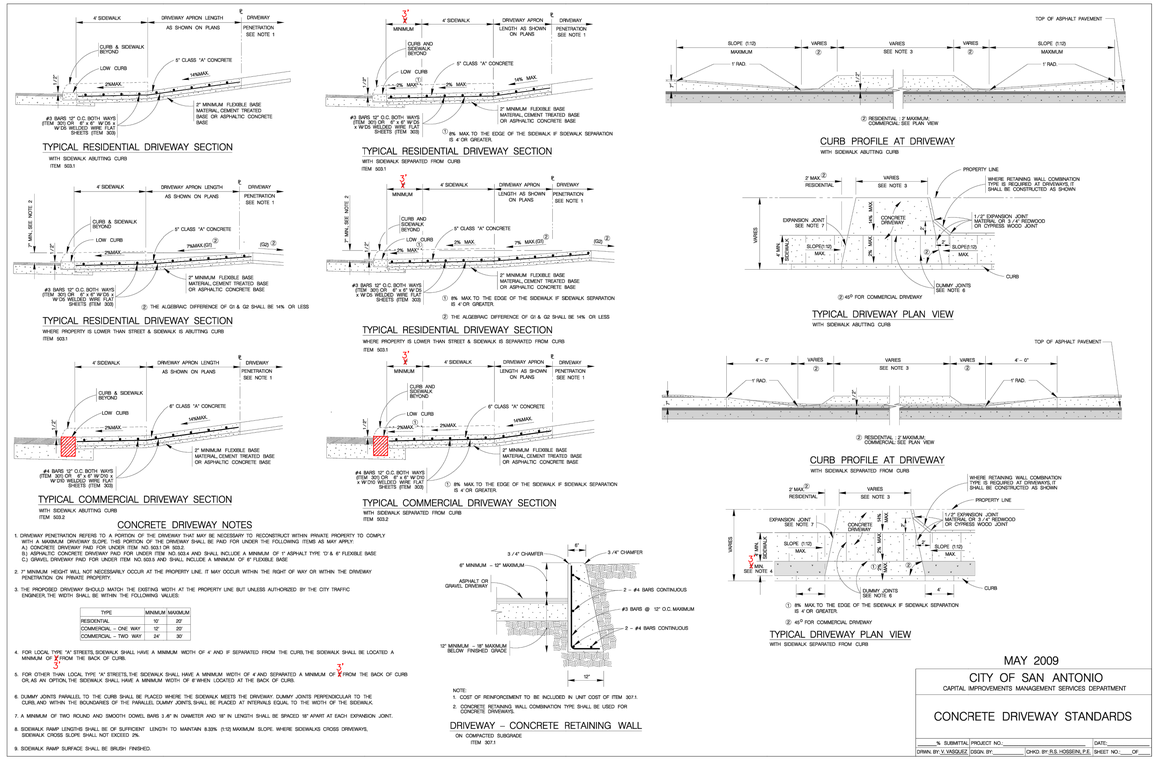
(NOT TO SCALE)



CONCRETE CURB

ITEM 500 ON ASPHALT TREATED BASE OR ASPHALTIC CONCRETE BASE

SCALE : 1" = 2'



CONCRETE DRIVEWAY NOTES

1. DRIVEWAY PENETRATION REFERS TO A PORTION OF THE DRIVEWAY THAT MAY BE NECESSARY TO RECONSTRUCT WITHIN PRIVATE PROPERTY TO COMPLY WITH A MAXIMUM DRIVEWAY SLOPE. THIS PORTION OF THE DRIVEWAY SHALL BE PAID FOR UNDER THE FOLLOWING ITEMS AS MAY APPLY:
   A.) CONCRETE DRIVEWAY PAD FOR UNDER ITEM NO. 503.1 OR 503.2
   B.) ASPHALTIC CONCRETE DRIVEWAY PAD FOR UNDER ITEM NO. 503.4 AND SHALL INCLUDE A MINIMUM OF 1" ASPHALT TYPE 'D' & 4" FLEXIBLE BASE
   C.) GRAVEL DRIVEWAY PAD FOR UNDER ITEM NO. 503.5 AND SHALL INCLUDE A MINIMUM OF 6" FLEXIBLE BASE
2. 7" MINIMUM HEIGHT WILL NOT NECESSARILY OCCUR AT THE PROPERTY LINE. IT MAY OCCUR WITHIN THE RIGHT OF WAY OR WITHIN THE DRIVEWAY PENETRATION ON PRIVATE PROPERTY.
3. THE PROPOSED DRIVEWAY SHOULD MATCH THE EXISTING WIDTH AT THE PROPERTY LINE BUT UNLESS AUTHORIZED BY THE CITY TRAFFIC ENGINEER, THE WIDTH SHALL BE WITHIN THE FOLLOWING VALUES:

TYPE	MINIMUM	MAXIMUM
RESIDENTIAL	10'	20'
COMMERCIAL – ONE WAY	12'	25'
COMMERCIAL – TWO WAY	24'	30'

4. FOR LOCAL TYPE "A" STREETS,SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 4' AND IF SEPARATED FROM THE CURB,THE SIDEWALK SHALL BE LOCATED A MINIMUM OF 2' FROM THE BACK OF CURB.
5. FOR OTHER THAN LOCAL TYPE "A" STREETS,THE SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 4'AND SEPARATED A MINIMUM OF 2' FROM THE BACK OF CURB OR,AS AN OPTION,THE SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 6'WHEN LOCATED AT THE BACK OF CURB.
6. DUMMY JOINTS PARALLEL TO THE CURB SHALL BE PLACED WHERE THE SIDEWALK MEETS THE DRIVEWAY. DUMMY JOINTS PERPENDICULAR TO THE CURB,AND WITHIN THE BOUNDARIES OF THE PARALLEL DUMMY JOINTS,SHALL BE PLACED AT INTERVALS EQUAL TO THE WIDTH OF THE SIDEWALK
7. A MINIMUM OF TWO ROUND AND SMOOTH DOWEL BARS 1.4" IN DIAMETER AND 18" IN LENGTH SHALL BE SPACED 18" APART AT EACH EXPANSION JOINT.
8. SIDEWALK RAMP LENGTHS SHALL BE OF SUFFICIENT LENGTH TO MAINTAIN 8.33% (1:12) MAXIMUM SLOPE WHERE SIDEWALKS CROSS DRIVEWAYS. SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2%.
9. SIDEWALK RAMP SURFACE SHALL BE BRUSH FINISHED.

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

DRIVEWAY – CONCRETE RETAINING WALL

ON COMPACTED SUBGRADE

ITEM 307.1

MAY 2009

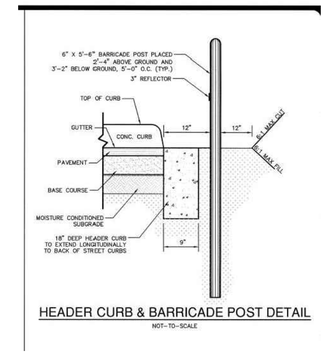
CITY OF SAN ANTONIO

CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

CONCRETE DRIVEWAY STANDARDS

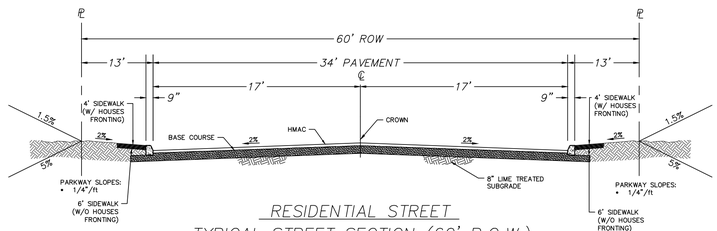
N. SUBMITTAL	PROJECT NO.:	DATE:
DRWN. BY: V. VASQUEZ	DSGN. BY:	CHKD. BY: R.S. HOSSEINI, P.E.

SHEET NO.: ___ OF ___



HEADER CURB & BARRICADE POST DETAIL

NOT-TO-SCALE



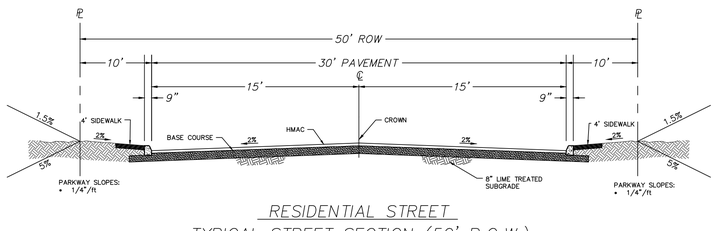
RESIDENTIAL STREET

TYPICAL STREET SECTION (60' R.O.W.)

(NOT TO SCALE)

ROSE BRANCH: STA. 1+00 – END

PETAL RAPID: STA. 2+39.75 – END



RESIDENTIAL STREET

TYPICAL STREET SECTION (50' R.O.W.)

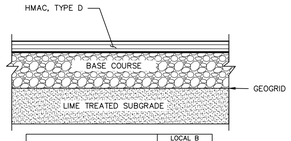
(NOT TO SCALE)

TOWN FALL: STA. 1+00 – END

FIELD SPRING: STA. 1+00 – END

CRIMSON PETAL: STA. 1+00 – END

PETAL RAPID: STA. 1+00 – STA. 2+39.75

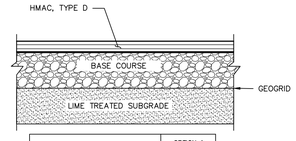


PAVEMENT MATERIAL	LOCAL B (60' ROW)
HMAC, TYPE D SURFACE COURSE	4"
TYPE "A" FLEX BASE	16"
FLEXIBLE BASE IN CONJUCTION WITH TENSAR+ NX750	YES
LIME TREATED SUBGRADE	8"

PROPOSED PAVEMENT SECTION

REFERENCE GEOTECH REPORT 0312–3441 PREPARED BY INTERTEK PSI, DATED JANUARY 30, 2025 FOR PAVEMENT MATERIALS AND CONSTRUCTION REQUIREMENTS. CONTRACTOR SHALL MEET OR EXCEED ALL PAVING RECOMMENDATIONS. ADDITIONAL PAVEMENT SECTIONS ARE AVAILABLE IN THE GEOTECH REPORT. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING MATERIAL TESTING. TESTING TO BE PAID BY OWNER.

- LIME TREATMENT WILL REQUIRE APPLICATION RATE OF ABOUT 22.8 POUNDS PER SQUARE YARD FOR 8–INCHES OF TREATMENT.
- TENSAR+ NX750 GEOGRID TO BE INSTALLED PER THE TENSAR INTERAX INSTALLATION GUIDE FOUND AT TENSARCORP.COM



PAVEMENT MATERIAL	OPTION 1
HMAC, TYPE D SURFACE COURSE	2"
TYPE "A" FLEX BASE	8"
FLEXIBLE BASE IN CONJUCTION WITH TENSAR+ NX750	YES
LIME TREATED SUBGRADE	8"

PROPOSED PAVEMENT SECTION

REFERENCE GEOTECH REPORT 0312–3441 PREPARED BY INTERTEK PSI, DATED JANUARY 30, 2025 FOR PAVEMENT MATERIALS AND CONSTRUCTION REQUIREMENTS. CONTRACTOR SHALL MEET OR EXCEED ALL PAVING RECOMMENDATIONS. ADDITIONAL PAVEMENT SECTIONS ARE AVAILABLE IN THE GEOTECH REPORT. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING MATERIAL TESTING. TESTING TO BE PAID BY OWNER.

- LIME TREATMENT WILL REQUIRE APPLICATION RATE OF ABOUT 22.8 POUNDS PER SQUARE YARD FOR 8–INCHES OF TREATMENT.
- TENSAR+ NX750 GEOGRID TO BE INSTALLED PER THE TENSAR INTERAX INSTALLATION GUIDE FOUND AT TENSARCORP.COM

TABLE 4.7: COMPACTION AND TESTING RECOMMENDATIONS FOR PAVEMENT AREAS

Location	Material	Density Test Method	Soil Type	Percent Compaction	Optimum Moisture Content	Testing Frequency
Pavement Areas	Subgrade, General Fill Soil, Low PI Material	Tex-114-E	PI ≥ 25	94% to 98%	0 to +4%	1 per 10,000 SF; min. 3 tests
			PI < 25	≥ 95%	0 to +4%	
	Flexible Base Material	TEX-113-E	COSA Item 200	≥ 95%	±3%	1 per 5,000 SF; min. 3 per lift

TABLE 4.6: PAVEMENT DESIGN AND CONSTRUCTION RECOMMENDATIONS

Minimum Undercut Depth	6 inches or as needed to remove roots
Reuse Excavated Soils	Must be free of roots and debris and meet material requirements of intended use
Exposed Subgrade Treatment	**Proof-roll with rubber-tired vehicle weighing at least 20 tons. A representative of the Geotechnical Engineer should be present during proof-roll.**
Proof-Rolled Pumping and Rutting Areas	Excavate to firmer materials and replace with compacted general or select fill under direction of a representative of the Geotechnical Engineer
General Fill	Materials free of roots, debris, and other deleterious materials with a maximum rock size of 4 inches with a CBR greater than 3
Minimum General Fill Thickness	As required to achieve grade
Maximum General Fill Loose Lift Thickness	9 Inches
Flexible Base	TxDOT Item 247, Type A, Grade 1-2
Maximum Flexible Base Loose Lift Thickness	9 Inches
Lime Treated Subgrade	In accordance with "Cement Stabilization" item per Bexar County flexible pavement design criteria or COSA Standard Specifications for Construction Item 108 Lime Treated Subgrade. Estimate 4% by dry weight or 22.8 lbs per square yard.
Geogrid	Geogrid specification in accordance with "Mechanically Stabilized Layers" item per Bear County flexible pavement design criteria.
Hot Mix Asphaltic Concrete	TxDOT Item 340, Type D
Minimum and Maximum lift thickness (HMAC Type D)	**Table 6-3: TxDOT Lift Thickness Requirements** Minimum lift thickness: 1.5 inches Maximum lift thick thickness: 3.0 inches Placement Requirement: HMAC must be placed in equal lifts, not exceeding the maximum lift thickness.

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

ROSE VALLEY SOUTH - UNIT 2
ROAD DETAILS
(1 OF 2)
BEXAR COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105048
LICENSED PROFESSIONAL ENGINEER
F-9155
1/22/2026

REV	DATE	DESCRIPTION	BY

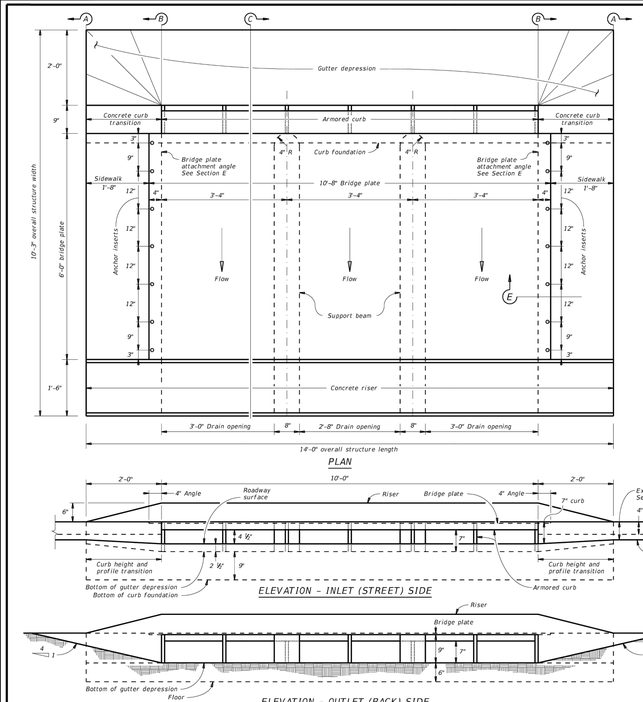
JOB NO.	23-3159J
DATE	JAN. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

C2.8

PLAT NO: CP202512

Date: Jan 22, 2026, 4:52pm User ID: CAD1.2022
File: N:\Projects\2023\23-3159 Rose Valley South U2\Civil\23-3159 Road Details.dwg

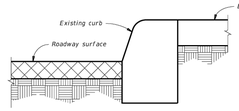
PERMIT SET (NOT FOR CONSTRUCTION): 01/22/2026



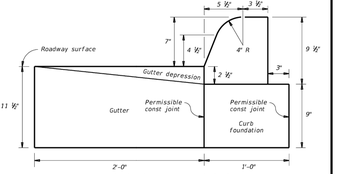
PLAN

ELEVATION – INLET (STREET) SIDE

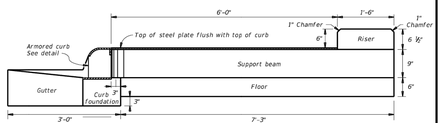
ELEVATION – OUTLET (BACK) SIDE



SECTION A



SECTION B DIMENSIONS



SECTION C DIMENSIONS

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

Contractor is responsible for verifying all dimensions and quantities in the field before beginning work.

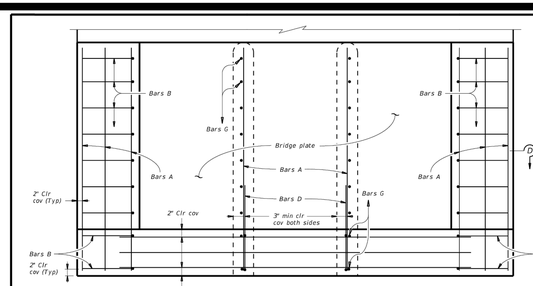
SHEET 1 OF 3

Texas Department of Transportation
San Antonio District (Structural Design)
Prepared by and for the use of TxDOT

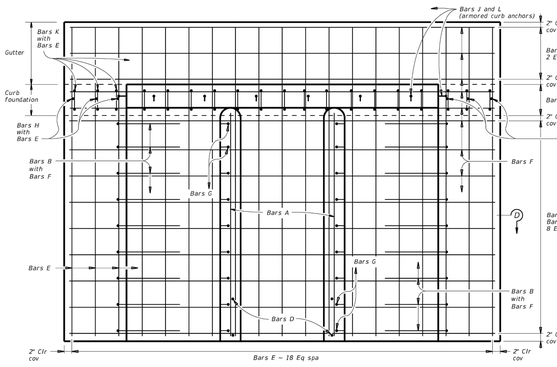
SIDEWALK BRIDGE
SAN ANTONIO DISTRICT STANDARD

DN: BCL	CK:	FILENAME: SA District Sidewalk Bridge.dgn	
DW: SRF	CK:	ORIGINAL DRAWING DATE: January 2020	
DIST	COUNTY	FEDERAL AID PROJECT NO.	COUNTY
SAT	6		COUNTY
CONTROL	SECTION	JOB	SHEET NO.	ROUTE
0000	00	000	000	ROUTE

REVISIONS:



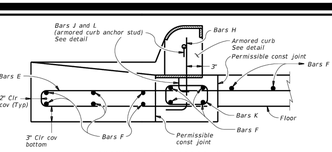
PLAN – TOP REINFORCEMENT



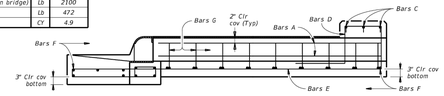
PLAN – BOTTOM REINFORCEMENT

TABLE OF ESTIMATED QUANTITIES
For Contractor information only.

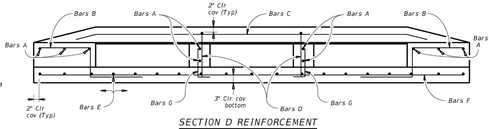
Bar	No.	Size	Length	Weight
A	10	#4	7'-2"	48
B	18	#4	4'-2"	52
C	3	#4	11'-4"	23
D	2	#4	5'-6"	8
E	19	#4	12'-10"	163
F	14	#4	13'-8"	128
G	18	#4	1'-6"	18
H	6	#4	1'-10"	8
I	6	#4	0'-8"	3
J	2	#4	0'-9"	1
K	19	#3	2'-6"	18
L	6	#4	0'-5"	2
Struct. steel (Misc. non bridge)			Lb	2100
Reinforcing Steel			Lb	472
Class "C" Concrete			CY	4.9



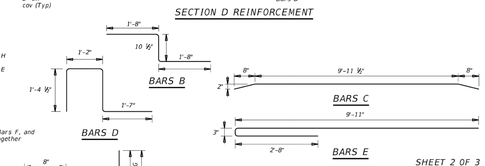
SECTION B REINFORCEMENT

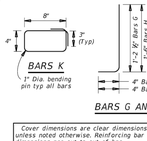


SECTION C REINFORCEMENT



SECTION D REINFORCEMENT





Bars B, Bars F, and Bars G together 8 Eq spa

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

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SHEET 2 OF 3

Texas Department of Transportation
San Antonio District (Structural Design)
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SIDEWALK BRIDGE
SAN ANTONIO DISTRICT STANDARD

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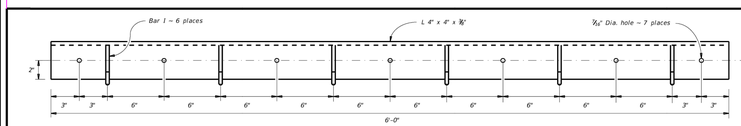
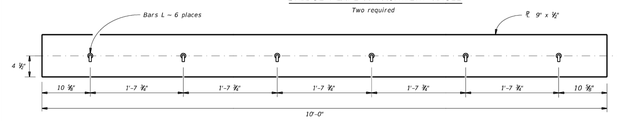
SAT	6		COUNTY
CONTROL	SECTION	JOB	SHEET NO.	ROUTE
0000	00	000	000	ROUTE

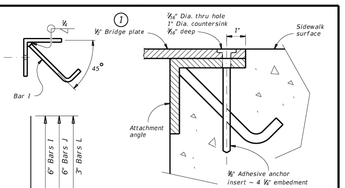
REVISIONS:



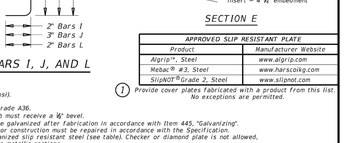
BRIDGE PLATE ATTACHMENT ANGLE



FLOOR PLATE



SECTION E



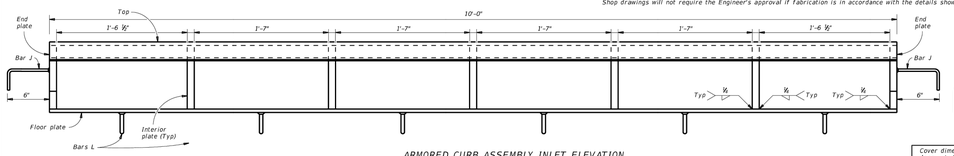
BARS I, J, AND L

APPROVED SLIP RESISTANT PLATE	
Product	Manufacturer Website
Atgrip™, Steel	www.atgrip.com
Mebac® #3, Steel	www.harscoilg.com
SlipNOT® Grade 2, Steel	www.slipnot.com

1 Provide cover plates fabricated with a product from this list. No exceptions are permitted.

GENERAL NOTES:

Provide Class A concrete (f'c = 3000 psi).
Provide Grade 60 reinforcing steel.
Structural steel components must be Grade A36.
All exposed edges of the armored curb must receive a ¼" bevel.
All structural steel components must be galvanized after fabrication in accordance with Item 445, "Galvanizing".
Galvanizing damaged during transport or construction must be repaired in accordance with the Specification.
The bridge plate must be hot-dip galvanized slip resistant steel (see table). Checker or diamond plate is not allowed, nor are slip resistant tapes, films, or non-metallic coatings.
Adhesive anchor system must be HIT HY 150 H.I.S. internally threaded inserts as furnished by Hilti, Inc., Tulsa, OK, or approved equivalent.
Sidewalk bridge, including all labor, armored curb, bridge plate, and other material complete and in place must be paid for under Item 465, "Inlet (Conp) (Ty Sidewalk Bridge" by location.
Shop drawings will not require the Engineer's approval if fabrication is in accordance with the details shown.



ARMORED CURB ASSEMBLY INLET ELEVATION

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SHEET 3 OF 3

Texas Department of Transportation
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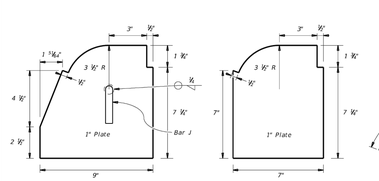
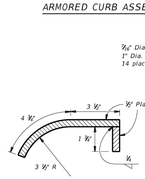
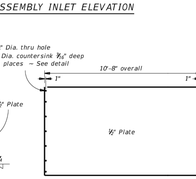


END PLATE
Two required

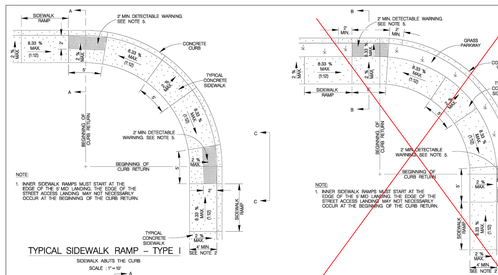
INTERIOR PLATE
Five required



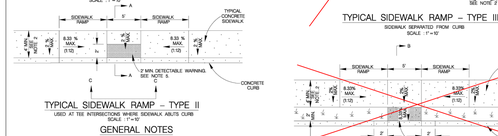
TOP (SECTION)
10'-0" length



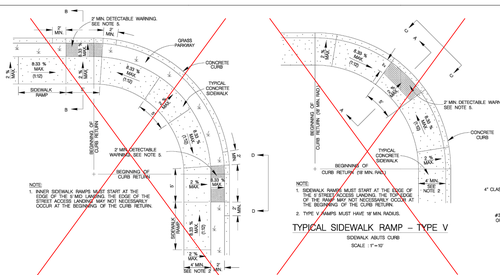
1 BRIDGE PLATE
Hole location dimensions to center of hole



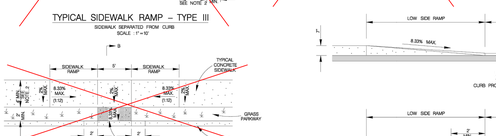
TYPICAL SIDEWALK RAMP – TYPE I
SIDEWALK ABUTS THE CURB
SCALE: 1" = 10'



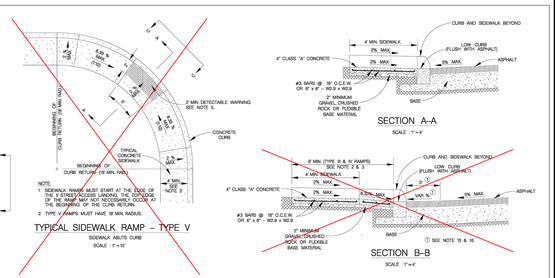
TYPICAL SIDEWALK RAMP – TYPE II
USED AT TEE INTERSECTIONS WHERE SIDEWALK ABUTS CURB
SCALE: 1" = 10'



TYPICAL SIDEWALK RAMP – TYPE III
SIDEWALK SEPARATED FROM CURB
SCALE: 1" = 10'



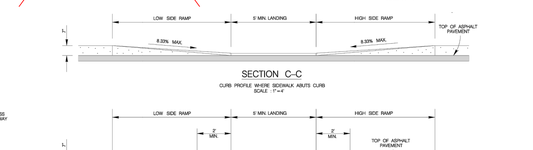
TYPICAL SIDEWALK RAMP – TYPE IV
USED AT TEE INTERSECTIONS WHERE SIDEWALK IS SEPARATED FROM CURB
SCALE: 1" = 10'



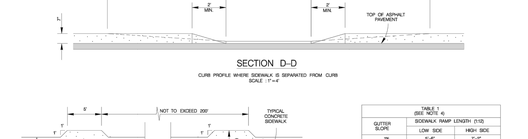
TYPICAL SIDEWALK RAMP – TYPE V
SIDEWALK ABUTS CURB
SCALE: 1" = 10'

SECTION A–A
SCALE: 1" = 4"

SECTION B–B
SCALE: 1" = 4"



SECTION C–C
CURB PROFILE WHERE SIDEWALK ABUTS CURB
SCALE: 1" = 4"

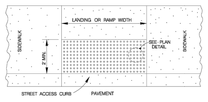


SECTION D–D
CURB PROFILE WHERE SIDEWALK IS SEPARATED FROM CURB
SCALE: 1" = 4"

GENERAL NOTES

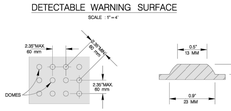
1. WHEN POSSIBLE SIDEWALKS SHOULD BE PLACED NEXT TO THE PROPERTY LINE ALLOWING A MINIMUM OF 1 FOOT BUFFER ZONEBTION OF THE PATHWAY FROM A STRAIGHT LINE IS ENCOURAGED TO AVOID TREES OR OTHER OBSTRUCTIONS.
2. FOR LOCAL TYPE "A" STREETS, SIDEWALKS SHALL HAVE A MINIMUM UNOBSTRUCTED WIDTH OF 4' AND BE SEPARATED A MINIMUM OF 2' FROM THE BACK OF CURB OR AS AN OPTION, THE SIDEWALK SHALL BE LOCATED A MINIMUM OF 2' FROM THE BACK OF CURB.
3. FOR OTHER THAN LOCAL TYPE "A" STREETS, SIDEWALKS SHALL HAVE A MINIMUM UNOBSTRUCTED WIDTH OF 4' AND BE SEPARATED A MINIMUM OF 6' FROM THE BACK OF CURB OR AS AN OPTION, THE SIDEWALK SHALL BE LOCATED A MINIMUM OF 2' FROM THE BACK OF CURB.
4. SIDEWALK RAMP LENGTHS PRESENTED IN TABLE 1 ARE GUIDELINES ONLY. SIDEWALK RAMP LENGTHS SHALL BE OF SUFFICIENT LENGTH TO MAINTAIN SLOPE, 2-1/2 MAXIMUM SLOPE.
5. ALL CURB RAMPS OR LANDINGS ABUTTING THE CROSSWALK SHALL HAVE A DETECTABLE WARNING 24 INCHES DEEP IN THE DIRECTION OF PEDESTRIAN TRAVEL AND EXTENDING THE FULL WIDTH OF THE CURB RAMP OR LANDING. THE DETECTABLE WARNING SHALL CONSIST OF RAISED, TRUNCATED DOMES ALIGNED IN A GRID PATTERN WITH A DIAMETER OF A NOMINAL 0.9 INCHES (23 MM), A HEIGHT OF NOMINAL 0.2 INCHES (5 MM), AND A CENTER-TO-CENTER SPACING OF NOMINAL 2.35 INCHES (60 MM). DETECTABLE WARNING SURFACES SHALL BE CAST-IN-PLACE TRUE CONFORMING TO TDLR 16 TAC 68.102, OR TDLR STANDARD SPECIFICATIONS OR PAVERS CONFORMING TO TDDT STANDARD PED-DL-PEDESTRIAN FACILITIES.
6. DETECTABLE WARNINGS SHALL CONTRAST VISUALLY WITH ALLOWING SURFACES EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT THE MATERIAL USED TO PROVIDE CONTRAST SHALL BE AN INTEGRAL PART OF THE WALKING SURFACE.
7. SIDEWALK RAMP TYPE V SHALL BE USED ONLY WHERE THERE IS SIGNIFICANT RESTRICTION WITHIN THE PARKWAY TO CONSTRUCT TYPE I OR TYPE III RAMPS.
8. CONSTRUCTION OF ALL WHEELCHAIR RAMPS TO BE INCLUDED UNDER ITEMS "500 – CONCRETE CURB, GUTTER, AND CONCRETE CURB AND GUTTER" AND / OR "520 – CONCRETE SIDEWALKS". RAMP SURFACE SHALL BE BRUSH FINISHED.
9. THESE DETAILS ARE FOR REFERENCE ONLY. ACTUAL LOCATIONS OF WHEELCHAIR RAMPS TO BE SHOWN ON THE PLANS. CONSULT PLANS, CITY CONSTRUCTION INSPECTOR OR ADJACENT LOCATIONS FOR SAFETY OR UTILITY CLEARANCE.
10. SIDEWALKS LESS THAN 5 FEET IN WIDTH SHALL BE PROVIDED WITH A PASSING SPACE AT A MAXIMUM SPACING OF 200 FEET.
11. WHEELCHAIR RAMP SHALL BE CONSTRUCTED WITH 4" CLASS "A" CONCRETE AND 2" MINIMUM GRAVEL, CRUSHED ROCK OR FLEXIBLE BASE MATERIAL.
12. REINFORCING STEEL SHALL BE #3 BARS AT 16" O.C.E.W. OR 6" x 6" – W2.9 x W2.9 WIRE MESH.
13. SIDEWALK GRADES SHALL NOT EXCEED THE GRADE ESTABLISHED FOR THE ADJACENT ROADWAY. ANY SIDEWALK GRADE THAT EXCEEDS 5% OR ANY RAMP GRADE THAT EXCEEDS 8.33% OR ANY CROSS SLOPE THAT EXCEEDS 2% OTHER THAN THE EXISTING ROADWAY WILL REQUIRE RAMPS, HANDRAILS AND RESTING PLATFORMS TO BE CONSTRUCTED IN ACCORDANCE WITH ADA AND TAS STANDARDS.
14. SIDEWALK CROSS GRADE SHALL HAVE A MAXIMUM SLOPE OF 2% LANDINGS SHALL HAVE A MAXIMUM SLOPE OF 2% IN ANY DIRECTION.
15. THE CHANGE OF GRADE BETWEEN ADJACENT SURFACES SHALL BE LESS THAN 11%. THE CHANGE OF GRADE SHALL BE DEFINED AS THE ALGEBRAIC DIFFERENCE OF THE ADJACENT SURFACE SLOPES. IN THE CASE OF A CURB RAMP WITH A 8.33% MAXIMUM SLOPE AND A 8.33% MAXIMUM SLOPE THE ADJACENT PAVEMENT CROSS SLOPE SHALL BE LESS THAN 2.67% (I.E. 8.33+8.33=11%). IN ADDITION, THE ADJACENT PAVEMENT CROSS SLOPE SHALL BE LESS THAN OR EQUAL TO 2%.
16. IF THE CHANGE OF GRADE BETWEEN ADJACENT SURFACES IS GREATER THAN OR EQUAL TO 11%, A LEVELING STRIP, 2 FEET IN LENGTH, SHALL BE PROVIDED TO TRANSITION THE ADJACENT SURFACES.
17. ADA COMPLIANCE IN ALTERATIONS INCLUDE ONLY THAT WORK WITHIN THE LIMITS, BOUNDARIES OR SCOPE OF A PLANNED PROJECT.

TABLE 1 (SEE NOTE 4)		
GUTTER SLOPE	SIDEWALK RAMP LENGTH (1:12)	
	LOW SIDE	HIGH SIDE
1%	5'-6"	7'-0"
2%	5'-0"	8'-4"
3%	4'-6"	10'-0"
4%	4'-2"	12'-8"
5%	3'-10"	16'-8"

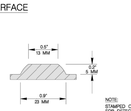


DETECTABLE WARNING SURFACE
SCALE: 1" = 4"

SIDEWALK PASSING SPACE
SCALE: 1" = 10'



PLAN DETAIL
NO SCALE



DOME SECTION
NO SCALE

NOTE:
STAMPED CONCRETE TRUNCATED DOMES WILL NOT BE ALLOWED TO BE USED FOR DETECTABLE WARNING ON WHEELCHAIR RAMPS. CONTRACTOR MUST SUBMIT TRUNCATED DOME INFORMATION THAT IS TO BE USED ON WHEELCHAIR RAMPS TO THE PROJECT MANAGER FOR APPROVAL AT LEAST 30 DAYS PRIOR TO INSTALLATION.

MAY 2009
CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

WHEELCHAIR RAMP STANDARDS

% SUBMITTAL PROJECT NO.		DATE:
DRWN. BY: J. VASQUEZ	TRACED BY:	CHKD. BY: B.S. HOSSEINI, P.E. SHEET NO.	OF

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105045
LICENSED PROFESSIONAL ENGINEER
F-9155
12/22/2026

REV	DATE	DESCRIPTION	BY

JOB NO.	23-3159J
DATE	JAN. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

C2.9
PLAT NO: CP202512

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

ROSE VALLEY SOUTH - UNIT 2
ROAD DETAILS
(2 OF 2)
BEXAR COUNTY, TEXAS

PERMIT SET (NOT FOR CONSTRUCTION): 01/22/2026

Date: Jan 22, 2026, 4:54pm User ID: CADI-2022
File: N:\Projects\2023\23-3159J Rose Valley South UT\Civil\23-3159J Road Details.dwg

INTERSECTION SIGHT DISTANCE CALCULATION
INTERSECTION CASE B1 (LEFT TURN) – PASSENGER CAR

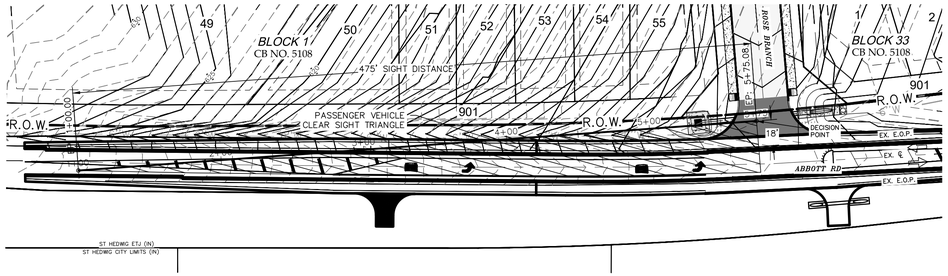
40 MPH DESIGN SPEED FOR ABBOTT RD PER 2023 COSA UDC
(SECONDARY ARTERIAL PER 2025 COSA MAJOR THOROUGHFARE PLAN)

ISD = 1.47 * V_{MAJOR} * t_g

t_g (PASSENGER CARS) = 8.0 SEC. (CROSSING TWO LANES TO MAKE LEFT)

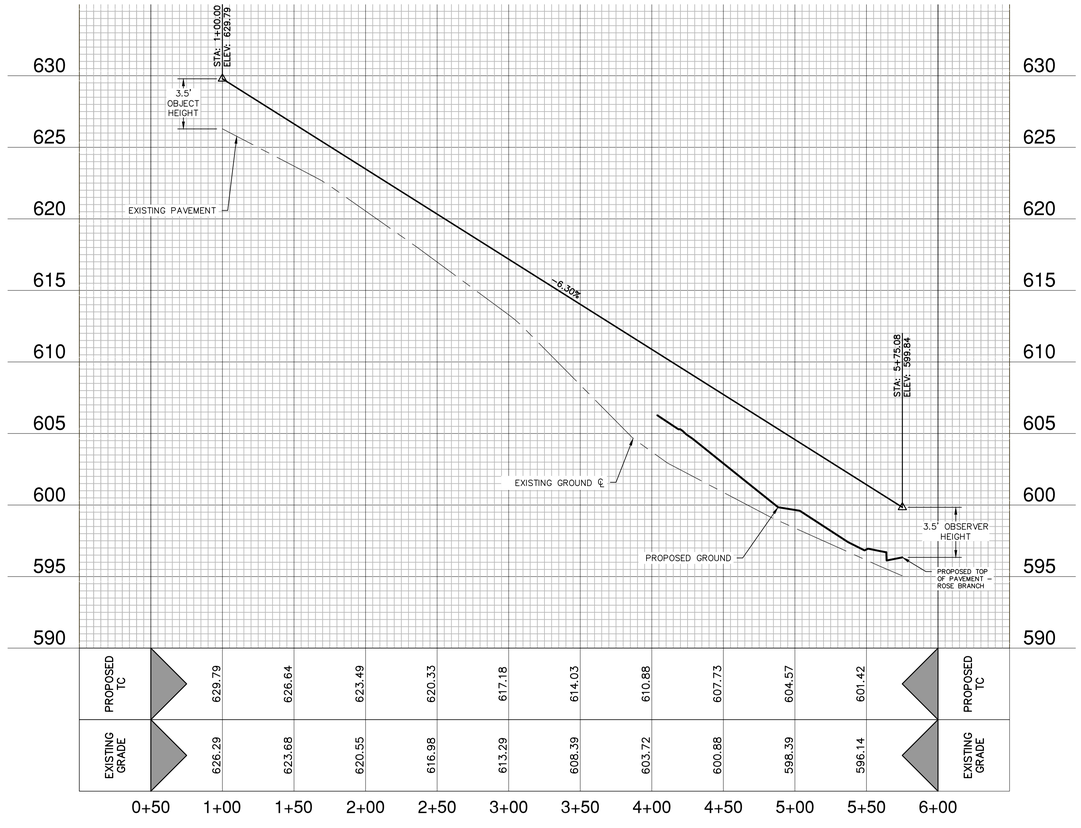
ISD = 1.47 * 40 MPH * 8.0 SEC.

ISD = 475 FT



LEFT TURN - VERTICAL SIGHT DISTANCE
(STA. 1+00 - END)

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



INTERSECTION SIGHT DISTANCE CALCULATION
INTERSECTION CASE B2 (RIGHT TURN) – PASSENGER CAR

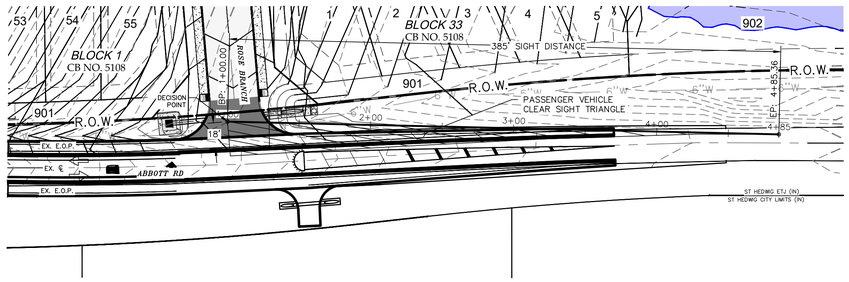
40 MPH DESIGN SPEED FOR ABBOTT RD PER 2023 COSA UDC
(SECONDARY ARTERIAL PER 2025 COSA MAJOR THOROUGHFARE PLAN)

ISD = 1.47 * V_{MAJOR} * t_g

t_g (PASSENGER CARS) = 6.5 SEC.

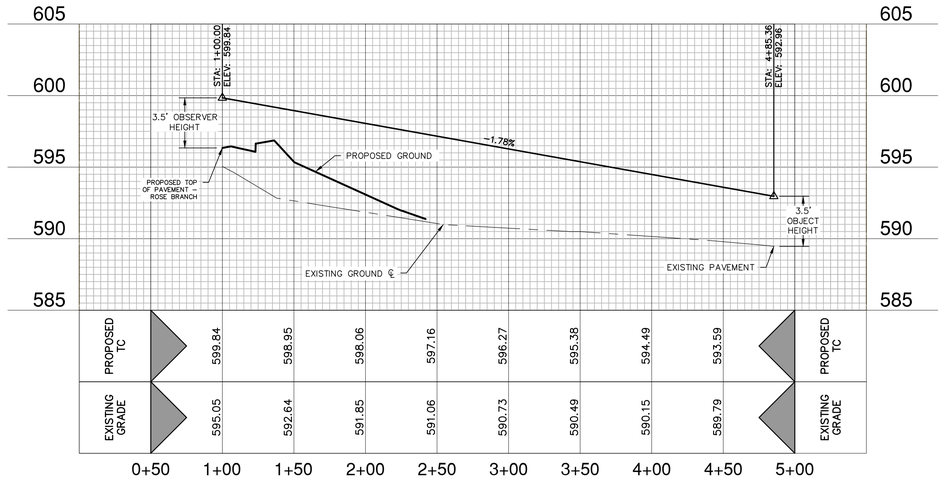
ISD = 1.47 * 40 MPH * 6.5 SEC.

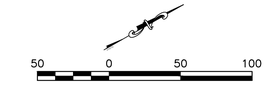
ISD = 385 FT



RIGHT TURN - VERTICAL SIGHT DISTANCE
(STA. 1+00 - END)

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





LEGEND

- PROPERTY BOUNDARY
- SITE LINE
- ROAD CENTERLINE
- 650 EXISTING 1' CONTOUR
- 650 PROPOSED 1' CONTOUR
- EFFECTIVE FLOODPLAIN PER LOMR-C AS SUBMITTED TO BEXAR COUNTY
- WASHOUT CROWN

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

ROSE VALLEY SOUTH - UNIT 2
ROSE BRANCH PASSENGER VEHICLE SIGHT DISTANCE
BEXAR COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105048
LICENSED PROFESSIONAL ENGINEER
F-9155
1/22/2026

REV	DATE	DESCRIPTION	BY

JOB NO.	23-3159J
DATE	JAN. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

C2.10
PLAT NO: CP202512

PERMIT SET (NOT FOR CONSTRUCTION): 01/22/2026

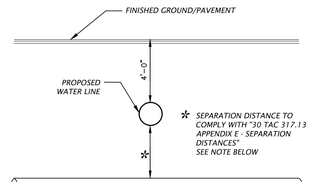
Date: Jan 22, 2026, 4:54pm User ID: CAD1-2022
File: N:\Projects 2023\23-3159 Rose Valley South UT\Civil\23-3159 Clear Vision.dwg

100 0 100 200

SCALE OF FEET
1" = 100'

LEGEND

- PROPERTY BOUNDARY
- RIGHT-OF-WAY
- SITE LINE
- PAVEMENT LIMITS
- DRAINAGE EASEMENT
- –650– EXISTING 1' CONTOUR
- PROPOSED SEWER LINE
- PROPOSED SEWER TIE-IN
- EFFECTIVE FLOODPLAIN PER LOMR-C AS SUBMITTED TO BEXAR COUNTY



NOTE:
WHERE WASTEWATER AND WATER LINES ARE PARALLEL, THEY SHOULD BE INSTALLED NO CLOSER THAN 9'. IF A 9' SEPARATION IS NOT POSSIBLE, THE FOLLOWING GUIDELINES APPLY:
A. IF PARALLEL WASTEWATER AND WATER LINES ARE INSTALLED CLOSER THAN 9' TO ONE ANOTHER, THE WASTEWATER LINE SHALL BE CONSTRUCTED OF SDR 26 PRESSURE RATED PVC. HORIZONTAL SEPARATION SHALL BE A MINIMUM OF 4'. THE VERTICAL SEPARATION SHALL BE A MINIMUM OF 2'. THE WASTEWATER LINE SHALL BE BELOW THE WATER LINE IF AT ALL POSSIBLE.
B. WHERE A WASTEWATER LINE CROSSES A WATER LINE, A VERTICAL SEPARATION OF 2' SHALL BE MAINTAINED IF POSSIBLE. IF NOT, AN ABSOLUTE MINIMUM 6" SEPARATION MUST BE MAINTAINED AND THE WASTEWATER LINE SHALL BE ENCASED IN CEMENT STABILIZED SAND FOR 18 LF CENTERED ON THE WATER LINE. THE WASTEWATER LINE SHALL BE BELOW THE WATER LINE IF AT ALL POSSIBLE.
C. WHERE A WASTEWATER LINE CROSSES OVER A WATER LINE. THE WASTEWATER LINE SHALL BE CONSTRUCTED OF SDR 26 PRESSURE RATED PVC PIPE, AND ONE LENGTH OF THE PRESSURE WASTEWATER PIPE SHALL BE CENTERED ON THE WATER LINE. ADDITIONALLY, IF THE VERTICAL SEPARATION IS LESS THAN 2', THE WASTEWATER LINE SHALL BE ENCASED IN CEMENT STABILIZED SAND AS DESCRIBED ABOVE.

TYPICAL WATER/SANITARY SEWER CROSSING DETAIL

NOT TO SCALE

GENERAL 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 SAN ANTONIO RIVER AUTHORITY SPECIFICATIONS.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR TAPPING PUBLIC SEWER MAINS.
4. ALL SANITARY MAINS AND SERVICES ARE SDR 26 PVC IN SIZE SHOWN.
5. MANHOLES SHALL BE CONSTRUCTED SO THAT THE TOP RING IS LOCATED 4" ABOVE FINISHED GRADE OF THE SURROUNDING GROUND EXCEPT WHEN LOCATED IN PAVED AREAS. IN PAVED AREAS THE MANHOLE RING SHALL BE FLUSH WITH THE PAVEMENT SURFACE.
6. ALL MANHOLES SHALL BE WATER TIGHT.
7. ALL SERVICE LATERALS TO EXTEND A MINIMUM OF 5' INTO PROPOSED LOT.
8. CLEANOUTS TO BE LOCATED OUTSIDE OF DRIVEWAY AND SIDEWALKS. CONTRACTOR TO PREDETERMINE DRIVEWAY LOCATIONS FOR EACH LOT.

GRAVITY SEWER MAIN NOTE:
ALL GRAVITY SEWER PIPE SHALL BE SDR 26 PVC PIPE.

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
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 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.

OVERHEAD ELECTRIC
THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT OVERHEAD ELECTRIC LINES MAY BE IN THE VICINITY OF SOME OR ALL OF THE WORK AREAS. THE CONTRACTOR SHOULD EXERCISE CAUTION IN THESE AREAS WITH CONSTRUCTION EQUIPMENT AND CONSTRUCTION PERSONNEL. THE CONTRACTOR IS RESPONSIBLE FOR ANY RELOCATION OR DAMAGE TO EXISTING ELECTRIC LINES, WHETHER SHOWN ON THESE PLANS OR NOT.

VERTICAL STACK NOTE:
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RAKOWITZ
Engineering & Surveying
Texas Registered Engineering Firm F-9155
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830-281-4060

ROSE VALLEY SOUTH - UNIT 2
SANITARY SEWER
OVERALL LAYOUT
BEXAR COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
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REV	DATE	DESCRIPTION	BY

JOB NO.	23-3159J
DATE	JAN. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

C3.0
PLAT NO: CP202512

Date: Jan 22, 2026, 4:53pm User ID: CAD1 2022
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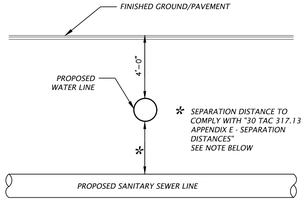
PERMIT SET (NOT FOR CONSTRUCTION): 01/22/2026



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TYPICAL WATER/SANITARY SEWER CROSSING DETAIL

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VERTICAL STACK NOTE:
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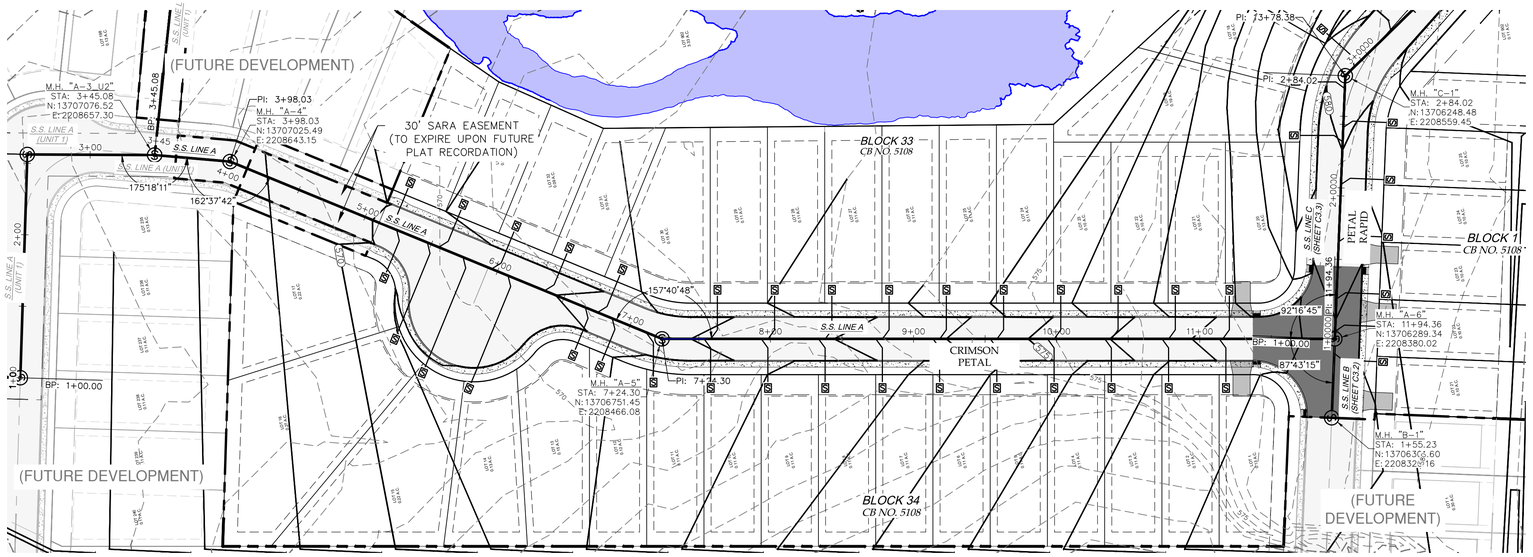

50 0 50 100
SCALE OF FEET
1" = 50'

LEGEND

- PROPERTY BOUNDARY
- RIGHT-OF-WAY
- SITE LINE
- PAVEMENT LIMITS
- DRAINAGE EASEMENT
- 650 EXISTING 1' CONTOUR
- PROPOSED SEWER LINE
- PROPOSED SEWER TIE-IN
- EFFECTIVE FLOODPLAIN PER LOMR-C AS SUBMITTED TO BEXAR COUNTY

GENERAL NOTES:
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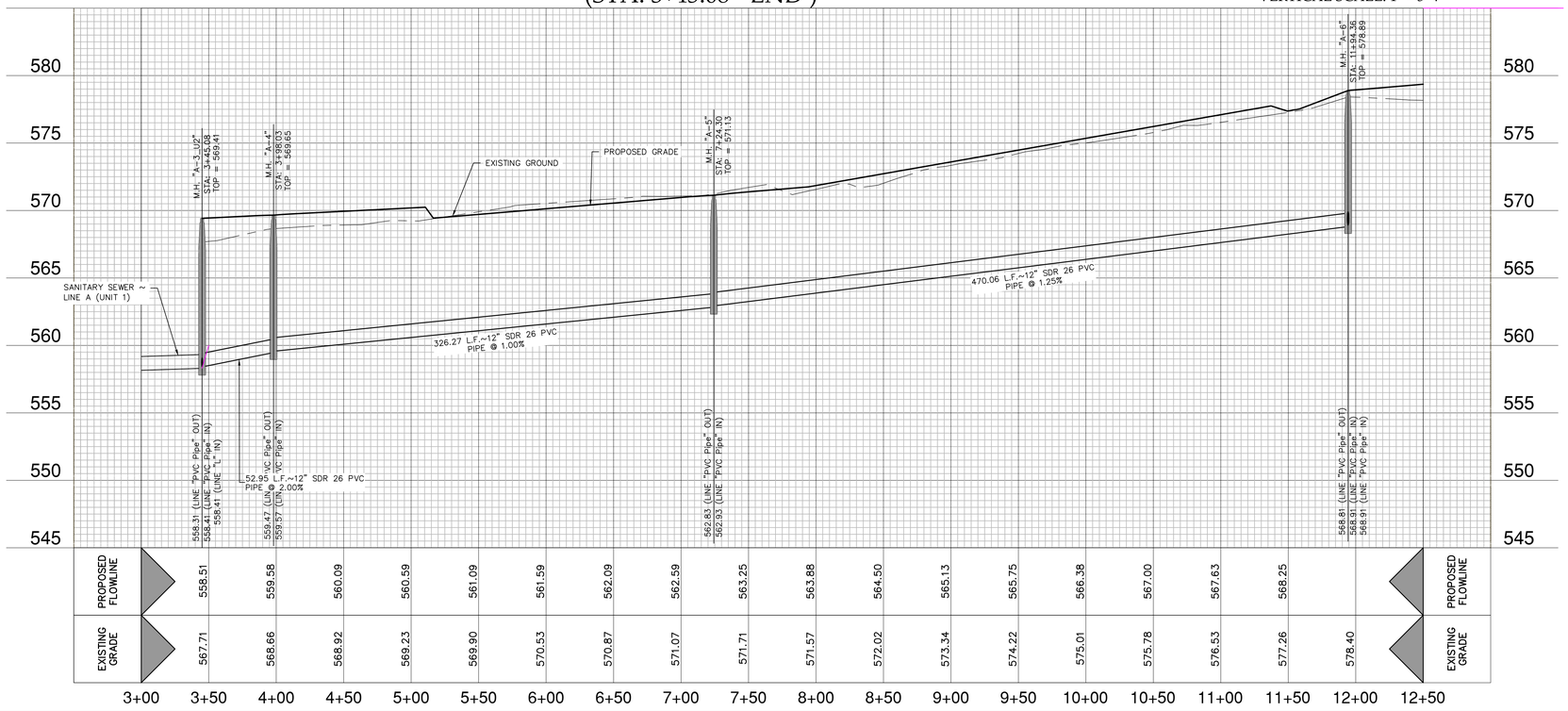
SANITARY SEWER ~ ON-SITE (A)
(STA. 3+45.08 - END)

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



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

ROSE VALLEY SOUTH - UNIT 2
SANITARY SEWER (A)
STA. 3+45.08 TO END
BEXAR COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105048
LICENSED PROFESSIONAL ENGINEER
F-9155
1/22/2026

REV	DATE	DESCRIPTION	BY

JOB NO.	23-3159J
DATE	JAN. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

C3.1
PLAT NO: CP202512

Date: Jan 22, 2026, 4:54pm User ID: CAD1.2022
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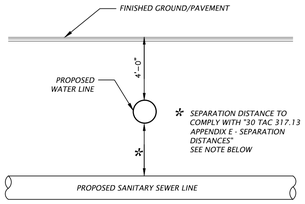

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TYPICAL WATER/SANITARY SEWER CROSSING DETAIL

NOT TO SCALE

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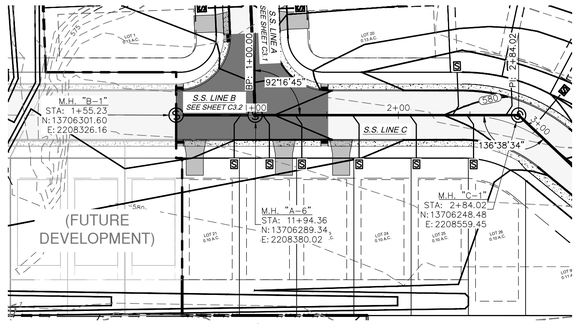

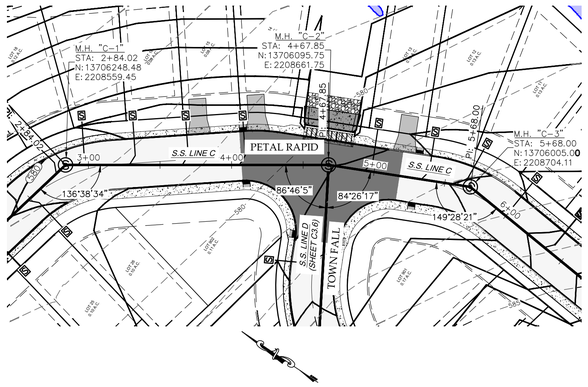

SANITARY SEWER ~ (C)
(STA. 1+00 - STA. 6+00)

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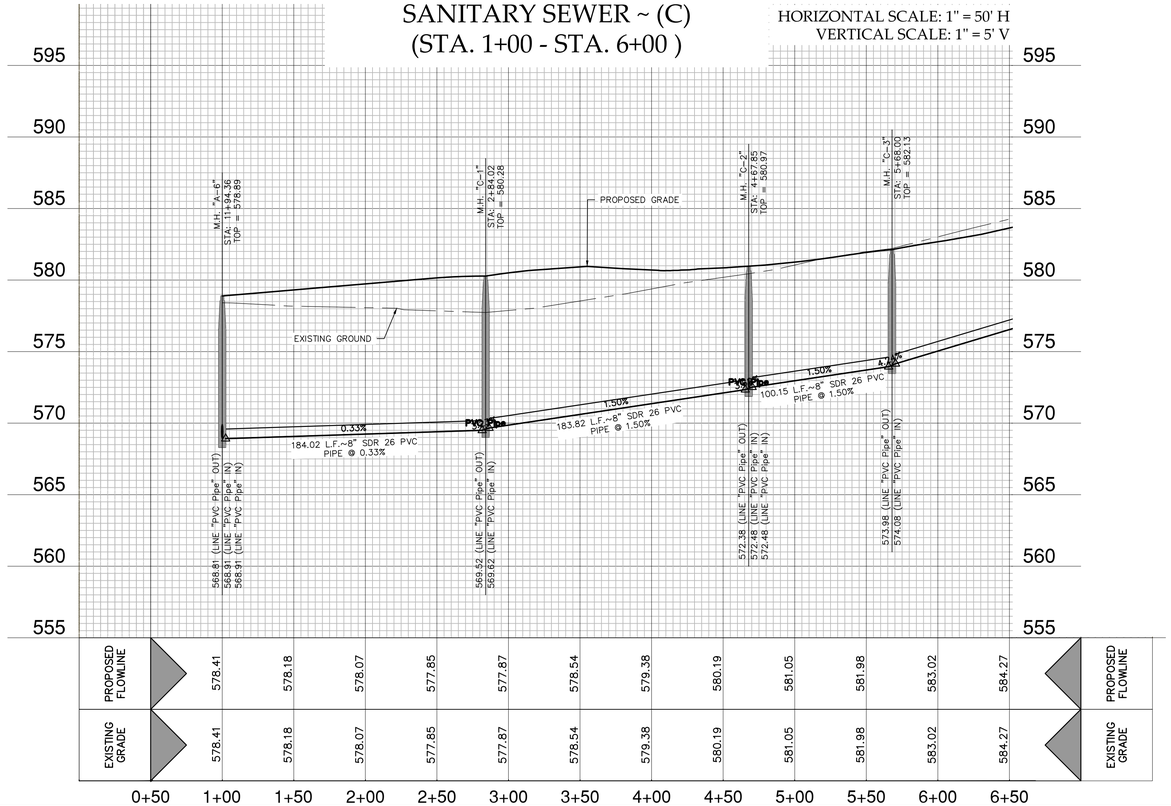

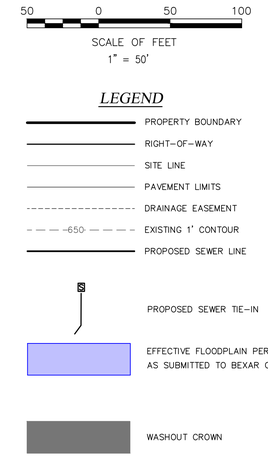

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ROSE VALLEY SOUTH - UNIT 2
SANITARY SEWER (A)
STA. 1+00 TO STA. 6+00
BEXAR COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105048
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1/22/2026

REV	DATE	DESCRIPTION	BY

JOB NO.	23-3159J
DATE	JAN. 2026
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DRAWN	CT

C3.3
PLAT NO: CP202512

Date: Jan 22, 2026, 4:53pm User ID: CADD 2022
File: N:\Projects\2023\23-3159 Rose Valley South UZ\Civil\23-3159 Sewer Plan.dwg

PERMIT SET (NOT FOR CONSTRUCTION): 01/22/2026

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 PREVENTION 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.

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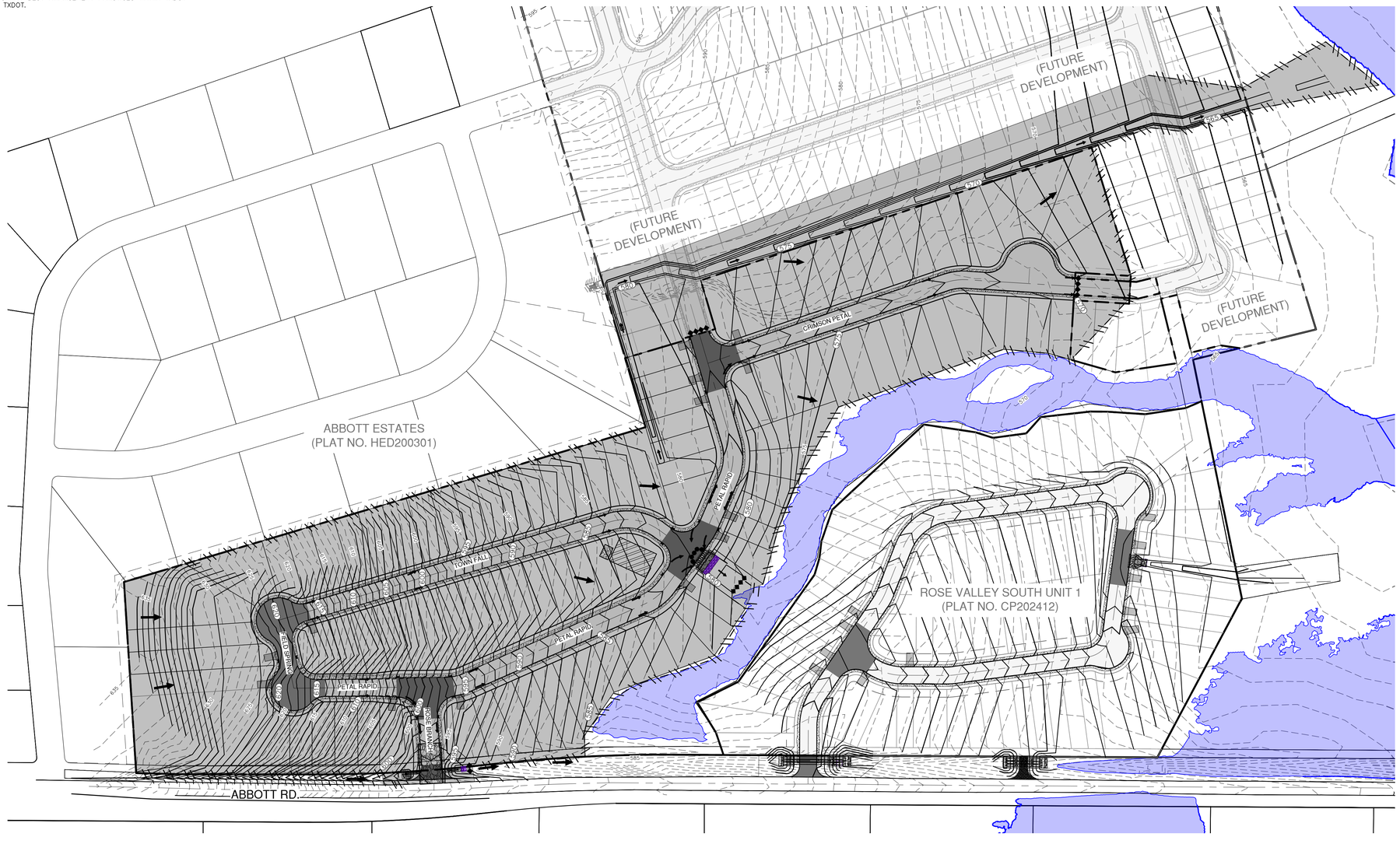
FLOODPLAIN STAKING:
1. FLOODPLAIN TO BE STAKED.

BEXAR COUNTY R.O.W. NOTE:
A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN THE BEXAR COUNTY R.O.W.



LEGEND

- PROPERTY BOUNDARY
- SITE LINE
- PAVEMENT LIMITS
- CENTERLINE
- EFFECTIVE FLOODPLAIN PER LOMR-C AS SUBMITTED TO BEXAR COUNTY
- EXISTING FLOW ARROW
- PROPOSED FLOW ARROW
- SILT FENCE (±4,230 LF)
- ROCK BERM
- STABILIZED CONSTRUCTION ENTRANCE/EXIT
- CONSTRUCTION EQUIPMENT, VEHICLE & MATERIAL STORAGE
- CONCRETE WASH-OUT PIT
- 8"-12" ROCK RUBBLE
- GRAVEL FILTER BAGS
- DISTURBANCE AREA

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.

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.

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.

THE ENGINEERING SEAL HAS BEEN FIXED TO THIS SHEET ONLY FOR THE PURPOSE OF DEMONSTRATING COMPLIANCE WITH THE TPDES-STORM WATER POLLUTION PREVENTION PLAN (SWP3) REGULATIONS.

THIS SHEET HAS BEEN PREPARED FOR PURPOSES OF THE SWP3 ONLY. ALL OTHER CIVIL ENGINEERING RELATED INFORMATION SHOULD BE ACQUIRED FROM THE APPROPRIATE SHEET IN THE CIVIL IMPROVEMENT PLANS.

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

ROSE VALLEY SOUTH - UNIT 2
EROSION CONTROL PLAN

BEXAR COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105048
LICENSED PROFESSIONAL ENGINEER
F-9155
1/22/2026

REV	DATE	DESCRIPTION	BY

JOB NO.	23-3159J
DATE	JAN. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

C5.0
PLAT NO: CP202512

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Date: Jan 26, 2026, 5:08pm User ID: CAD1.2022
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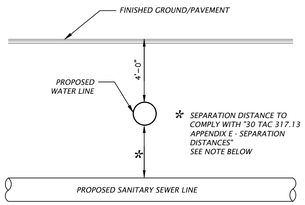

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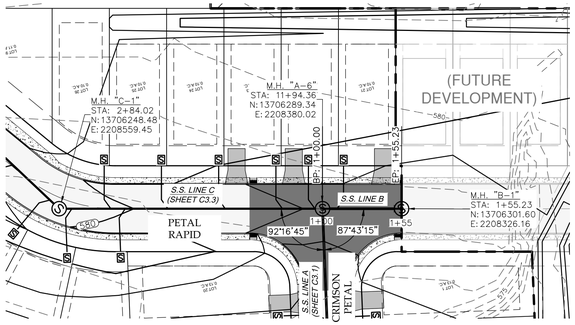

SANITARY SEWER ~ (B)
(STA. 1+00.00 - 1+55.23)

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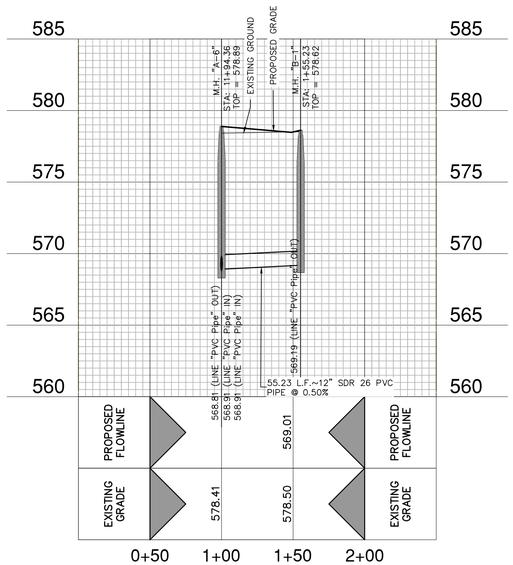

LEGEND

- PROPERTY BOUNDARY
- RIGHT-OF-WAY
- SITE LINE
- PAVEMENT LIMITS
- DRAINAGE EASEMENT
- -650- EXISTING 1' CONTOUR
- PROPOSED SEWER LINE
- PROPOSED SEWER TIE-IN
- EFFECTIVE FLOODPLAIN PER LOMR-C AS SUBMITTED TO BEXAR COUNTY
- WASHOUT CROWN

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ROSE VALLEY SOUTH - UNIT 2
SANITARY SEWER (B)
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BEXAR COUNTY, TEXAS

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BRADLEY A. KOETHER
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C3.2
PLAT NO: CP202512

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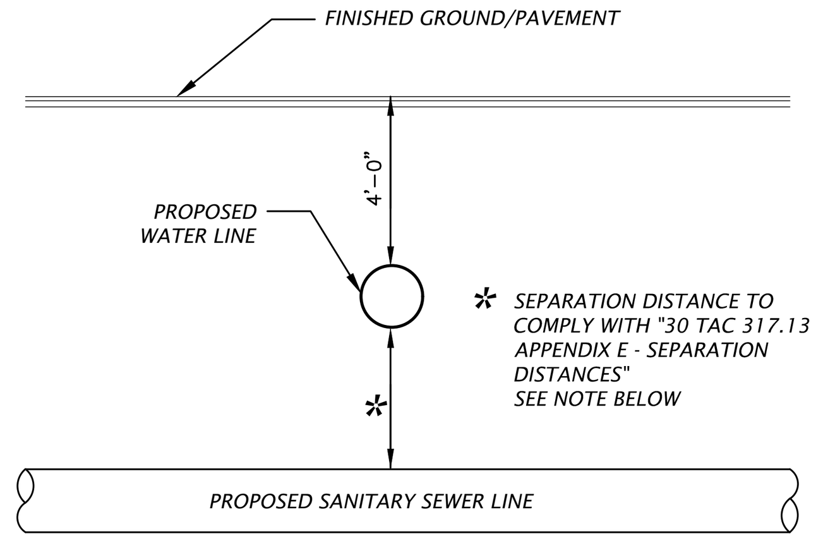

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NOT TO SCALE

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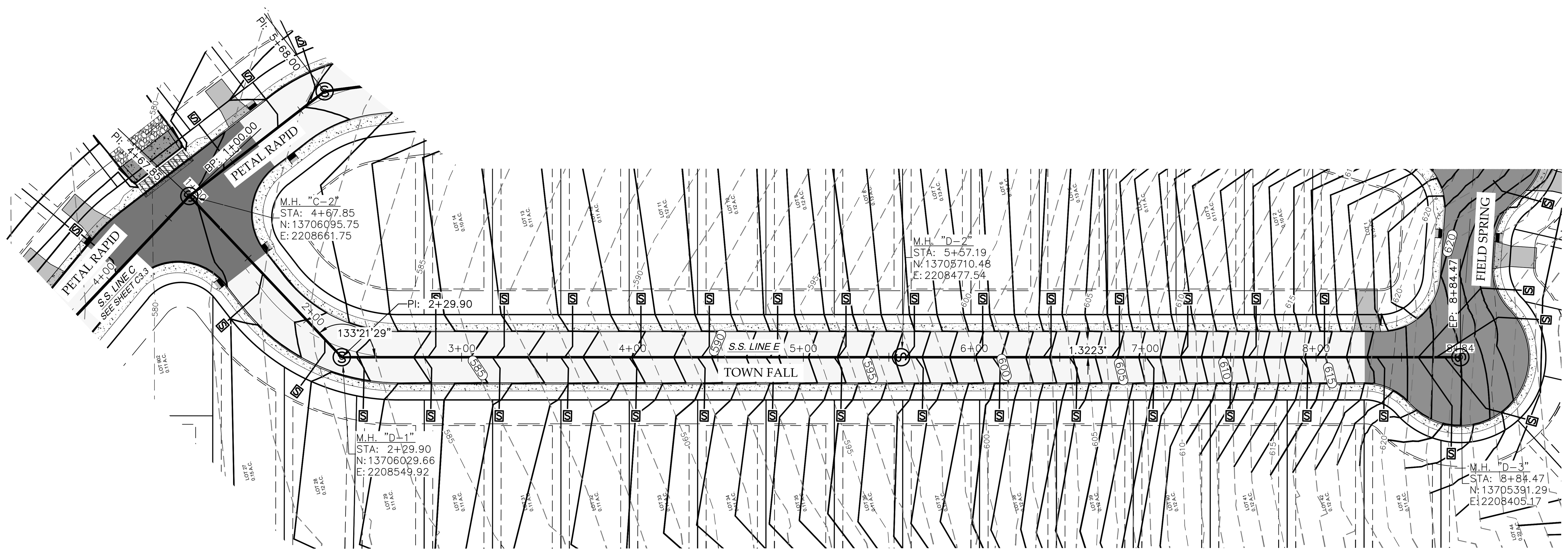
CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S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

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 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.

OVERHEAD ELECTRIC
THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT OVERHEAD ELECTRIC LINES MAY BE IN THE VICINITY OF SOME OR ALL OF THE WORK AREAS. THE CONTRACTOR SHOULD EXERCISE CAUTION IN THESE AREAS WITH CONSTRUCTION EQUIPMENT AND CONSTRUCTION PERSONNEL. THE CONTRACTOR IS RESPONSIBLE FOR ANY RELOCATION OR DAMAGE TO EXISTING ELECTRIC LINES, WHETHER SHOWN ON THESE PLANS OR NOT.

VERTICAL STACK NOTE:
ALL 6" SERVICES DEEPER THAN 8.5' SHALL USE A VERTICAL STACK.



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

LEGEND

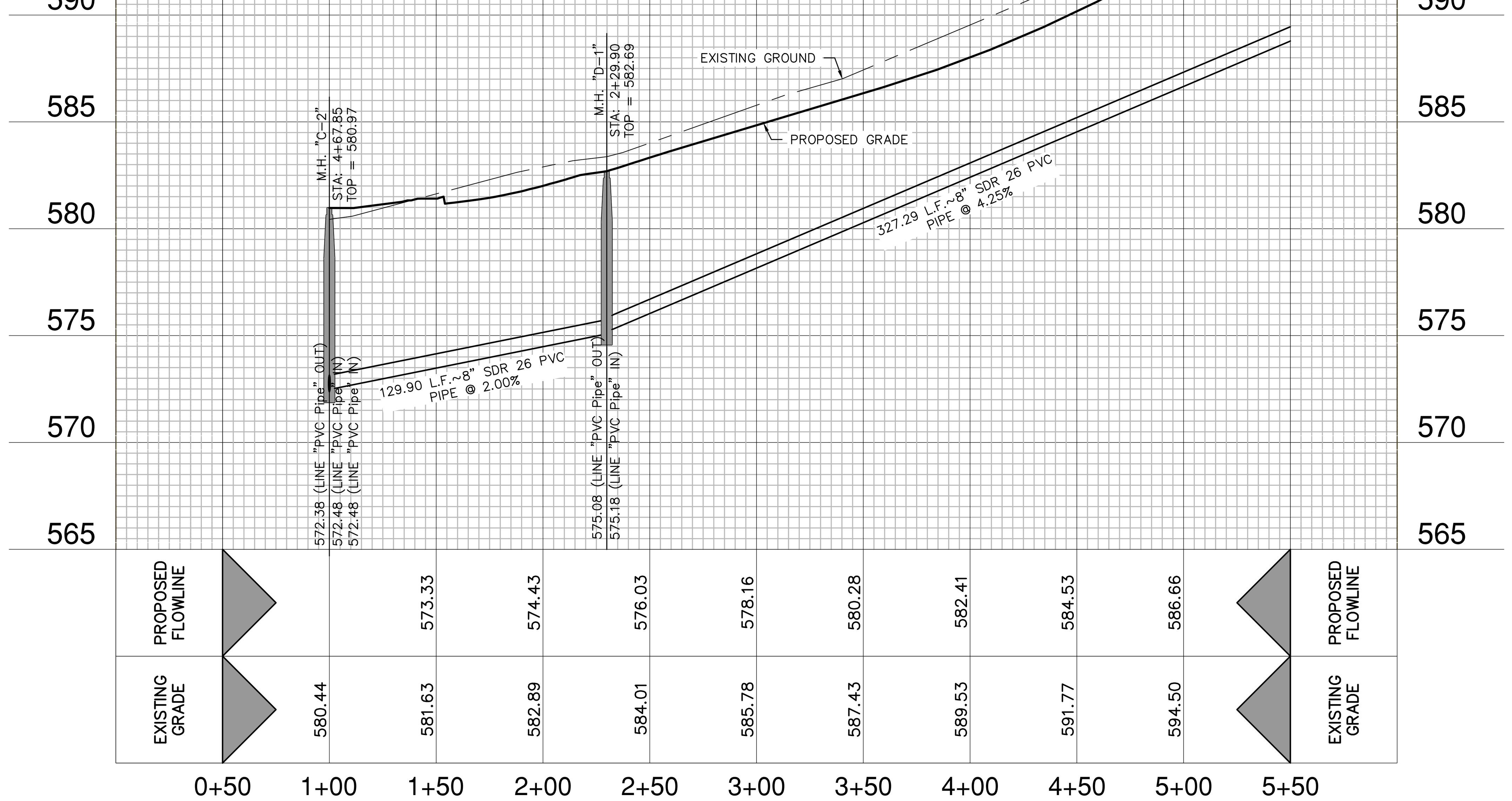
- PROPERTY BOUNDARY
- RIGHT-OF-WAY
- SITE LINE
- PAVEMENT LIMITS
- DRAINAGE EASEMENT
- EXISTING 1' CONTOUR
- PROPOSED SEWER LINE
- PROPOSED SEWER TIE-IN
- EFFECTIVE FLOODPLAIN PER LOMR-C AS SUBMITTED TO BEXAR COUNTY
- WASHOUT CROWN

GENERAL 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 SAN ANTONIO RIVER AUTHORITY SPECIFICATIONS.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR TAPPING PUBLIC SEWER MAINS.
4. ALL SANITARY MAINS AND SERVICES ARE SDR 26 PVC IN SIZE SHOWN.
5. MANHOLES SHALL BE CONSTRUCTED SO THAT THE TOP RING IS LOCATED 4" ABOVE FINISHED GRADE OF THE SURROUNDING GROUND EXCEPT WHEN LOCATED IN PAVED AREAS. IN PAVED AREAS THE MANHOLE RING SHALL BE FLUSH WITH THE PAVEMENT SURFACE.
6. ALL MANHOLES SHALL BE WATER TIGHT.
7. ALL SERVICE LATERALS TO EXTEND A MINIMUM OF 5' INTO PROPOSED LOT.
8. CLEANOUTS TO BE LOCATED OUTSIDE OF DRIVEWAY AND SIDEWALKS. CONTRACTOR TO PREDETERMINE DRIVEWAY LOCATIONS FOR EACH LOT.

GRAVITY SEWER MAIN NOTE:
ALL GRAVITY SEWER PIPE SHALL BE SDR 26 PVC PIPE.

SANITARY SEWER ~ ON-SITE (E)
(STA. 1+00 - STA. 5+00)

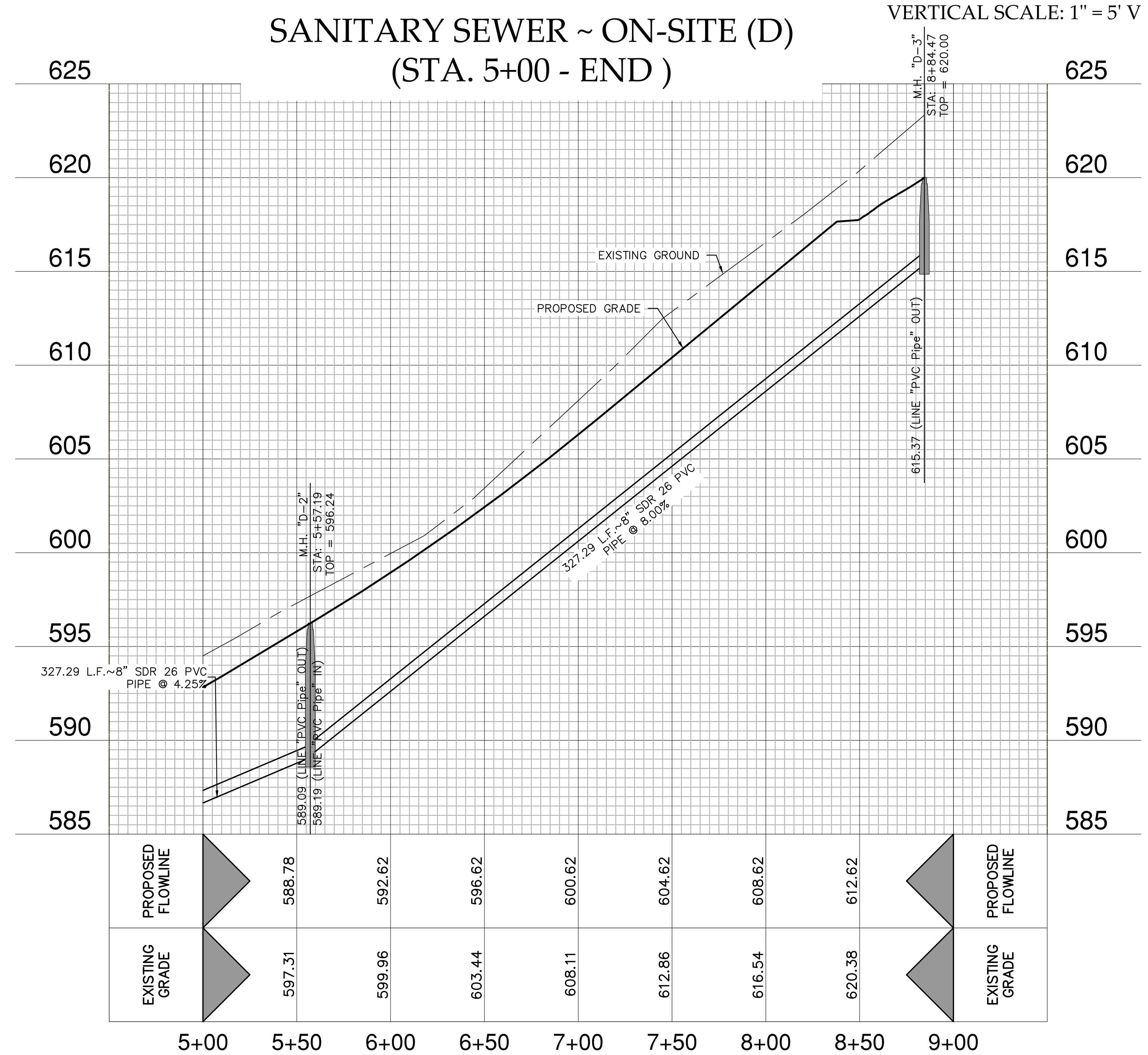
HORIZONTAL SCALE: 1" = 50' H
VERTICAL SCALE: 1" = 5' V



	0+50	1+00	1+50	2+00	2+50	3+00	3+50	4+00	4+50	5+00	5+50
PROPOSED FLOWLINE			573.33	574.43	576.03	578.16	580.28	582.41	584.53	586.66	
EXISTING GRADE		580.44	581.63	582.89	584.01	585.78	587.43	589.53	591.77	594.50	

SANITARY SEWER ~ ON-SITE (D)
(STA. 5+00 - END)

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



	5+00	5+50	6+00	6+50	7+00	7+50	8+00	8+50	9+00
PROPOSED FLOWLINE		588.78	592.62	596.62	600.62	604.62	608.62	612.62	
EXISTING GRADE		597.31	599.96	603.44	608.11	612.86	616.54	620.38	

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

ROSE VALLEY SOUTH - UNIT 2
SANITARY SEWER (D)
STA. 1+00 TO END
BEXAR COUNTY, TEXAS

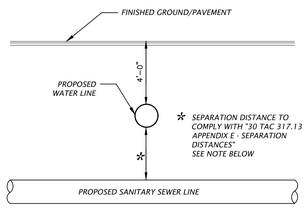
REV	DATE	DESCRIPTION	BY

JOB NO.	23-3159J
DATE	JAN. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

C3.6

PLAT NO: CP202512

PERMIT SET (NOT FOR CONSTRUCTION): 01/22/2026



NOTE:
WHERE WASTEWATER AND WATER LINES ARE PARALLEL, THEY SHOULD BE INSTALLED NO CLOSER THAN 9'. IF A 9' SEPARATION IS NOT POSSIBLE, THE FOLLOWING GUIDELINES APPLY:
A. IF PARALLEL WASTEWATER AND WATER LINES ARE INSTALLED CLOSER THAN 9' TO ONE ANOTHER, THE WASTEWATER LINE SHALL BE CONSTRUCTED OF SDR 26 PRESSURE RATED PVC. HORIZONTAL SEPARATION SHALL BE A MINIMUM OF 4'. THE VERTICAL SEPARATION SHALL BE A MINIMUM OF 2'. THE WASTEWATER LINE SHALL BE BELOW THE WATER LINE IF AT ALL POSSIBLE.
B. WHERE A WASTEWATER LINE CROSSES A WATER LINE, A VERTICAL SEPARATION OF 2' SHALL BE MAINTAINED IF POSSIBLE. IF NOT, AN ABSOLUTE MINIMUM 6" SEPARATION MUST BE MAINTAINED AND THE WASTEWATER LINE SHALL BE ENCASED IN CEMENT STABILIZED SAND FOR 18 LF CENTERED ON THE WATER LINE. THE WASTEWATER LINE SHALL BE BELOW THE WATER LINE IF AT ALL POSSIBLE.
C. WHERE A WASTEWATER LINE CROSSES OVER A WATER LINE. THE WASTEWATER LINE SHALL BE CONSTRUCTED OF SDR 26 PRESSURE RATED PVC PIPE, AND ONE LENGTH OF THE PRESSURE WASTEWATER PIPE SHALL BE CENTERED ON THE WATER LINE. ADDITIONALLY, IF THE VERTICAL SEPARATION IS LESS THAN 2', THE WASTEWATER LINE SHALL BE ENCASED IN CEMENT STABILIZED SAND AS DESCRIBED ABOVE.

TYPICAL WATER/SANITARY SEWER CROSSING DETAIL

NOT TO SCALE

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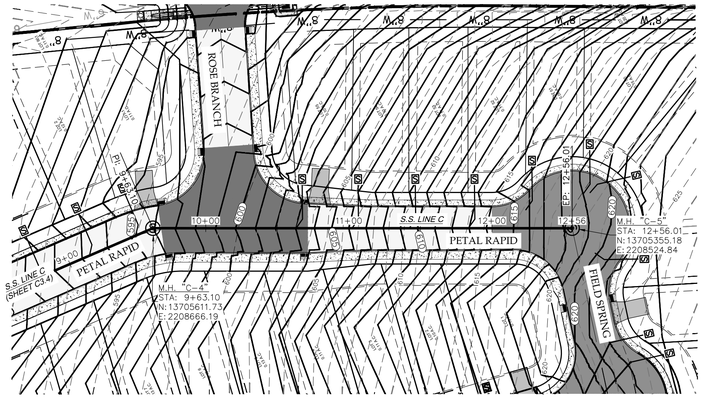
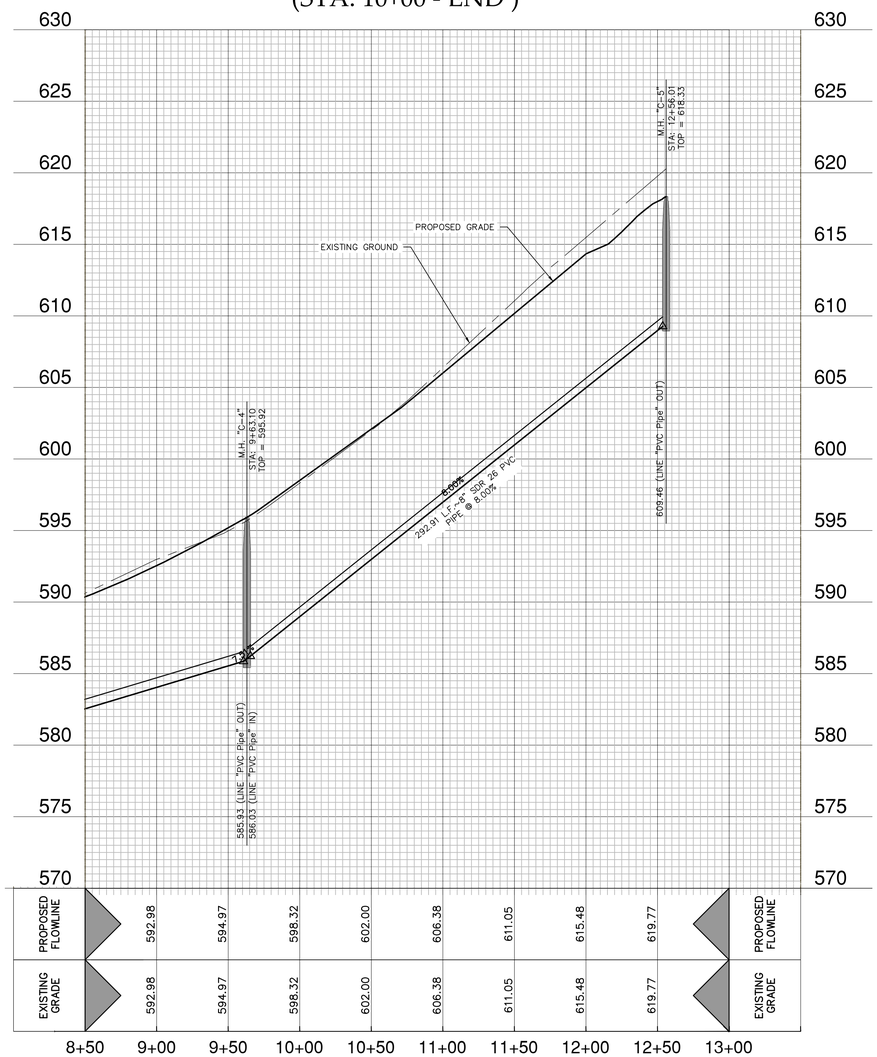
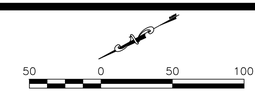


SANITARY SEWER ~ (C)
(STA. 10+00 - END)

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





LEGEND

- PROPERTY BOUNDARY
- RIGHT-OF-WAY
- SITE LINE
- PAVEMENT LIMITS
- DRAINAGE EASEMENT
- -650- EXISTING 1' CONTOUR
- PROPOSED SEWER LINE
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RAKOWITZ
Engineering & Surveying
Texas Registered Engineering Firm F-9155
Texas Registered Surveying Firm 101812-00
830-281-4060

ROSE VALLEY SOUTH - UNIT 2
SANITARY SEWER (C)
STA. 10+00 TO END
BEXAR COUNTY, TEXAS

RAKOWITZ ENGINEERING LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105048
LICENSED
PROFESSIONAL ENGINEER
F-9155
1/22/2026

REV	DATE	DESCRIPTION	BY

JOB NO.	23-3159J
DATE	JAN. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

C3.5
PLAT NO: CP202512

Date: Jan 22, 2026, 4:52pm User ID: CAD1.2022
File: N:\Projects\2023\23-3159 Rose Valley South U2\Civil\23-3159 Sewer Planding

PERMIT SET (NOT FOR CONSTRUCTION): 01/22/2026

GENERAL NOTES:

1. SAN ANTONIO RIVER AUTHORITY (RIVER AUTHORITY) STANDARD SPECIFICATIONS AND STANDARD DETAILS ARE PROVIDED FOR DESIGN AND CONSTRUCTION OF SEWER COLLECTION SYSTEMS MANAGED BY THE RIVER AUTHORITY.
2. AT ANY TIME, THESE STANDARD SPECIFICATIONS AND DETAILS MAY BE ALTERED OR SUPERSEDED BY THE GENERAL CONDITIONS, SUPPLEMENTAL CONDITIONS, PLANS OR PROJECT SPECIFICATIONS WITHIN THE CONTRACT DOCUMENT PER DIRECTION FROM THE RIVER AUTHORITY.
3. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS CONTRACT SHALL BE APPROVED BY THE RIVER AUTHORITY AND COMPLY WITH THE CONTRACT DOCUMENTS AND THE FOLLOWING AS APPLICABLE:
   - 3.1. CURRENT TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) "DESIGN CRITERIA FOR DOMESTIC WASTEWATER SYSTEM", TEXAS ADMINISTRATIVE CODE (TAC) TITLE 30, PART 1, CHAPTER 217.
   - 3.2. CURRENT TEXAS DEPARTMENT OF TRANSPORTATION (TXDOT), "STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS AND DRAINAGE".
   - 3.3. CURRENT RIVER AUTHORITY "STANDARD SPECIFICATIONS FOR SANITARY SEWER CONSTRUCTION".
   - 3.4. CURRENT CITY OF SAN ANTONIO "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION". CURRENT CITY OF SAN ANTONIO "UTILITY EXCAVATION CRITERIA MANUAL".
4. THE CONTRACTOR IS TO NOTIFY AND MAKE ARRANGEMENTS WITH THE RIVER AUTHORITY INSPECTIONS DIVISION AT (210) 302-4200 FORTY EIGHT (48) HOURS PRIOR TO ANY EXCAVATION. CONTRACTOR SHALL ALSO PROVIDE PROCEDURES THAT WILL BE USED TO NOTIFY AFFECTED RESIDENTS AND/OR PROPERTY OWNERS 48 HOURS PRIOR TO ANY EXCAVATION OR CONSTRUCTION, A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD BEFORE START OF PROJECT.
5. WORK SHALL NOT BE PERFORMED ON SATURDAYS, SUNDAYS, FEDERAL HOLIDAYS, RIVER AUTHORITY HOLIDAYS, BEFORE 7:30 AM, OR AFTER 4:30 PM, UNLESS PRIOR APPROVAL IS GRANTED BY THE RIVER AUTHORITY ENGINEER. REQUEST TO PERFORM WORK DURING THESE TIMES MUST BE EMAILED 48 HOURS IN ADVANCE TO UTILITIESDEVELOPMENT@SARIVERAUTHORITY.ORG.
6. NO EXTRA PAYMENT SHALL BE ALLOWED FOR WORK CALLED FOR IN THE PLANS BUT NOT INCLUDED IN THE BID SCHEDULE. THIS INCIDENTAL WORK WILL BE REQUIRED AND SHALL BE INCLUDED UNDER THE PAY ITEM WHICH IT RELATES TO.
7. WORK COMPLETED BY CONTRACTOR WHICH HAS NOT RECEIVED A WORK ORDER OR THE CONSENT OF RIVER AUTHORITY WILL BE SUBJECT TO REMOVAL AND REPLACEMENT AT THE EXPENSE OF THE CONTRACTOR.
8. LOCATIONS AND DEPTHS OF EXISTING UTILITIES AND SERVICE LATERALS SHOWN ON THE PLANS ARE UNDERSTOOD TO BE APPROXIMATE. ACTUAL LOCATIONS AND DEPTHS MUST BE FIELD VERIFIED BY THE CONTRACTOR AT LEAST 48 HOURS PRIOR TO CONSTRUCTION REGARDLESS OF ILLUSTRATION ON THE PLANS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE UTILITY SERVICE LINES AS REQUIRED FOR CONSTRUCTION AND TO PROTECT THEM DURING CONSTRUCTION AT NO COST TO RIVER AUTHORITY. CONTRACTOR WILL BE RESPONSIBLE FOR ANY DAMAGES TO EXISTING UTILITIES AND REPAIRS WILL BE AT CONTRACTOR'S EXPENSE.
9. CERTAIN PORTIONS OF THE PROJECT MAY PARALLEL AND/OR CROSS EXISTING UTILITIES, AND CONTRACTOR IS REQUIRED TO PROTECT THESE UTILITIES. ADDITIONAL SUPPORTIVE SHORING MAY BE REQUIRED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROTECT ALL PERSONNEL ON SITE, EXISTING UTILITIES, AND FINISHED WORK THROUGHOUT THE PROJECT. CONTRACTOR WILL BE RESPONSIBLE FOR ANY DAMAGES, AND REPAIRS WILL BE AT CONTRACTOR'S FULL EXPENSE.
10. WHERE WATER LINES AND NEW SEWER LINES ARE INSTALLED WITH A SEPARATION DISTANCE LESS THAN 9 FEET (I.E. WATER LINES CROSSING WASTEWATER LINES, WATER LINES PARALLELING WASTEWATER LINES OR WATER LINES NEXT TO MANHOLES), THE INSTALLATION MUST MEET THE REQUIREMENTS OF 30 TAC 217 AND 30 TAC 290.
11. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.161, CPS MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT AND WORK AROUND VALVES THAT ARE IN THE PROJECT AREAS.
12. A SAFE OVERHEAD CLEARANCE MUST BE MAINTAINED BETWEEN ALL OVERHEAD EQUIPMENT AND PERSONNEL. THE CONTRACTOR SHALL NOTIFY CPS AT LEAST 48 HOURS PRIOR TO ANY CONSTRUCTION IN THE VICINITY OF CPS OVERHEAD LINES. CONTRACTOR SHALL MAINTAIN CPS RECOMMENDED CLEARANCE REQUIREMENTS.
13. ALL WORK IN THE TEXAS DEPARTMENT OF TRANSPORTATION (TXDOT) RIGHT-OF-WAY SHALL PROCEED DURING WORKING HOURS AGREED UPON BY RIVER AUTHORITY AND TXDOT INSPECTORS.
14. BEFORE THE START OF ANY CONSTRUCTION, CONTRACTOR SHALL FULLY DOCUMENT THE SITE WITH PHOTOS AND DIGITAL VIDEO WITH ONE COPY SUBMITTED TO RIVER AUTHORITY PRIOR TO STARTING WORK. THE PRE-CON SITE VIDEO SHALL PROVIDE ACCURATE DOCUMENTATION OF EXISTING CONDITIONS.
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING EXISTING FENCES, CURBS, STREETS, DRIVEWAYS, SIDEWALKS, LANDSCAPING AND STRUCTURES TO ORIGINAL OR BETTER CONDITION AS A RESULT OF DAMAGE DONE DURING THE PROJECT CONSTRUCTION.
16. ANY AND ALL FENCING, INCLUDING ELECTRIC FENCE, WHETHER OR NOT IDENTIFIED ON THE PLANS, MUST BE MAINTAINED AT ALL TIMES. ANY AND ALL DAMAGES DIRECTLY ATTRIBUTED TO THE CONTRACTOR MUST BE REPLACED TO EQUAL OR BETTER CONDITION AT THE CONTRACTOR'S EXPENSE AND AS APPROVED BY THE RIVER AUTHORITY INSPECTOR. GATES, OR GAPS IN THE FENCING IF APPROVED, MUST BE PROVIDED AT ALL LOCATIONS WHERE THE SEWER LINE EASEMENT CROSSES FENCING. FENCING REQUIRED TO MAINTAIN LIVESTOCK MUST BE MAINTAINED AT ALL TIMES. ALL GATES SHALL BE APPROVED PRIOR TO INSTALLATION.
17. CONTRACTOR MUST AVOID DAMAGE TO ADJACENT LAND OUTSIDE THE IDENTIFIED CONSTRUCTION LIMITS OR EASEMENTS. ANY CLAIMS DIRECTLY ATTRIBUTED TO THE CONTRACTOR RESULTING FROM STRAYING BEYOND THE CONSTRUCTION LIMITS MUST BE SETTLED BY THE CONTRACTOR TO THE SATISFACTION OF RIVER AUTHORITY AND THE APPROPRIATE LANDOWNER.
18. CONTRACTOR MUST MAINTAIN ACCESS FOR PRIVATE INDIVIDUALS AND BUSINESSES AT ALL TIMES. IF NORMAL ACCESS IS DAMAGED DURING CONSTRUCTION, THE CONTRACTOR MUST REPLACE THE ACCESS TO EQUAL OR BETTER CONDITION AT THE CONTRACTOR'S EXPENSE AND AS APPROVED BY RIVER AUTHORITY.
19. CONTRACTOR MUST COMPLY WITH TEXAS GOVERNMENT CODE SECTION 2166.303 UNIFORM TRENCH SAFETY CONSTRUCTIONS.
20. CONTRACTOR SHALL NOT BACKFILL ANY TRENCHES UNTIL INSPECTION CAN BE CONDUCTED BY THE RIVER AUTHORITY. NO OPEN TRENCHES SHALL BE PERMITTED OVERNIGHT. ALL ENDS OF OPEN PIPE SHALL BE PLUGGED OVERNIGHT.
21. CONTRACTOR SHALL HAVE THE LATEST APPROVED COPY OF PLANS AND SPECIFICATIONS ON SITE AT ALL TIMES FOR REFERENCE.
22. NO TREES SHALL BE REMOVED AS PART OF THIS PROJECT UNLESS OTHERWISE SPECIFIED IN THE PLANS.
23. FOR PORTIONS OF THE CONSTRUCTION THAT ARE WITHIN THE LIMITS OF THE 100-YEAR FLOODPLAIN, THE CONTRACTOR IS REQUIRED TO KEEP THE CHANNEL CLEAR OF POTENTIAL OBSTRUCTIONS TO FLOOD FLOWS. POTENTIAL OBSTRUCTIONS INCLUDE HEAVY CONSTRUCTION EQUIPMENT, TEMPORARY ROADS ACROSS CHANNEL, EXCAVATED MATERIAL, STOCKPILED DEBRIS, AND ALL OTHER ITEMS DEEMED UNACCEPTABLE BY RIVER AUTHORITY. UNDER THREATENING WEATHER CONDITIONS AND WHERE FLOODING IS LIKELY, OBSTRUCTIONS SHALL BE IMMEDIATELY REMOVED BY THE CONTRACTOR AT NO ADDITIONAL COST TO RIVER AUTHORITY. THE CONTRACTOR ASSUMES ALL RISK FOR UNFINISHED WORK. NO EQUIPMENT OR MATERIALS SHALL BE STOCKPILED IN THE 100-YEAR FLOODPLAIN OVERNIGHT.
24. NO WASTE MATERIAL SHALL BE PLACED IN EXISTING DRAINAGE AREAS THAT WILL BLOCK OR ALTER FLOW LIMITS OR NATURAL DRAINAGE.
25. IF A THREATENED OR ENDANGERED PLANT OR ANIMAL SPECIES AND/OR CULTURAL/ARCHAEOLOGICAL RESOURCES ARE ENCOUNTERED DURING CONSTRUCTION, THE CONTRACTOR SHALL STOP WORK IMMEDIATELY AND NOTIFY THE APPROPRIATE PERSONNEL.

SEWER NOTES:

26. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT NO SANITARY SEWER OVERFLOW (SSO) OCCURS AS A RESULT OF THE WORK. ALL PERSONNEL RESPONSIBLE FOR SSO PREVENTION AND CONTROL SHALL BE TRAINED ON THE PROPER RESPONSE. SHOULD AN SSO OCCUR, THE CONTRACTOR SHALL:
   - 26.1. IDENTIFY THE SOURCE OF THE SSO AND ATTEMPT TO ELIMINATE ANY ADDITIONAL SPILLAGE.
   - 26.2. NOTIFY RIVER AUTHORITY CONSTRUCTION INSPECTIONS DIVISION AT (210) 302-4200 AND ATTEMPT TO ELIMINATE THE SOURCE OF THE SSO.
   - 26.3. CONTAIN SEWAGE FROM THE SSO TO PREVENT CONTAMINATION OF WATERWAYS.
   - 26.4. CLEAN UP THE SPILL AREA AND REMOVE CONTAMINATED MATERIALS.
   - 26.5. DISINFECT THE AREA OF THE SPILL THE PROPER MIXTURE OF HTH CHLORINE AND WATER.
   - 26.6. CLEAN THE AFFECTED SEWER LINE AND REMOVE ANY DEBRIS.
   - 26.7. IDENTIFY AND TRAIN PERSONNEL RESPONSIBLE FOR SPILLAGE PREVENTION AND CONTROL.
   - 26.8. NO SEPARATE MEASUREMENT OR PAYMENT SHALL BE MADE FOR THIS WORK. ALL WORK SHALL BE DONE ACCORDING TO GUIDELINES SET BY THE TCEQ AND RIVER AUTHORITY.
27. THE CONTRACTOR SHALL PROVIDE BYPASS PUMPING OF SEWAGE AROUND EACH SEGMENT OF PIPE TO BE REPLACED. CONTRACTOR SHALL HAVE STANDBY PUMPS AVAILABLE TO BYPASS FLOW IN CASE PRIMARY PUMP FAILS. THE CONTRACTOR SHALL PROVIDE A SEQUENCE OF BYPASS PUMPING FOR REVIEW AND APPROVAL BY RIVER AUTHORITY. THE CONTRACTOR SHALL ALSO PROVIDE A DETAILED SKETCH SHOWING THE LOCATION OF BYPASS PUMPING; SPECIFICATIONS FOR THE PUMPING EQUIPMENT; AND TYPE, SIZE, CAPACITY AND NUMBER OF PUMPS REQUIRED TO HANDLE THE PEAK WET WEATHER FLOW.
28. CONTRACTOR WILL MAINTAIN SERVICE TO ALL EXISTING SANITARY SEWERS AT ALL TIMES DURING CONSTRUCTION. CONTRACTOR WILL CLEAN ALL DEBRIS, GRAVEL, DIRT, ETC. OUT OF MANHOLES AND FIX ANY STOPPAGES CAUSED BY DEBRIS DURING CONSTRUCTION AT CONTRACTOR'S EXPENSE. ANY DAMAGE TO EXISTING MANHOLES OR SEWER MAIN WILL BE CORRECTED AT CONTRACTOR'S EXPENSE. CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES TO PREVENT DAMAGE TO EXISTING OR NEW RINGS, COVERS, OR CONES FROM EQUIPMENT AND MATERIALS USED OR TAKEN THROUGH THE WORK AREA. IF AN EXISTING OR NEW MANHOLE COVER, RING, OR CONE IS DAMAGED BY THE CONTRACTOR, IT SHALL BE REPLACED AS DIRECTED BY THE RIVER AUTHORITY INSPECTOR. MANHOLES WILL NEED TO BE RESEALED WITH RIVER AUTHORITY APPROVED SEALANT IF SEAL COATING IS COMPROMISED. CONTRACTOR WILL HAVE MANHOLE RECOATED AND RESEAL ALL LEAKS AT CONTRACTOR EXPENSE.
29. CONTRACTOR TO ENSURE ALL PLUGS USED TO PLUG SEWER LINES WHILE TESTING THE PROJECT ARE LABELED, MARKED OR TAGGED. THE CONTRACTOR SHALL RECORD HOW MANY PLUGS ARE BEING USED, AS WELL AS THE LOCATION AND IDENTIFICATION OF EACH PLUG. CONTRACTOR WILL REPORT TO PROJECT INSPECTOR OF ANY LOST OR UNRESTRAINED PLUGS. CONTRACTOR SHALL ONLY BE ALLOWED TO USE SCREW TYPE PLUG ON PROJECT.
30. CONTRACTOR WILL BE HELD LIABLE FOR ANY DAMAGE TO SEWER COLLECTION SYSTEM, WASTEWATER TREATMENT EQUIPMENT, STOPPAGES, OVER-FLOWS, OR BACKUPS INTO HOMES CAUSED BY LOST OR RUNAWAY SEWER PLUGS.
31. RIVER AUTHORITY IS NOT RESPONSIBLE FOR ANY ABNORMALITIES ON STUB OUT, INVERT, GRADE OR SLOPE FOR ANY EXISTING MANHOLE TIE-IN OR SERVICE LATERALS. CONTRACTOR SHALL BE RESPONSIBLE FOR RE-CONSTRUCTION, IF NECESSARY.

MANHOLE NOTES:

32. ALL MANHOLES SHALL BE CONSTRUCTED PER LATEST DETAILED DRAWINGS AND SPECIFICATIONS, UNLESS AN EXCEPTION IS NOTED.
33. PENETRATION INTO THE MANHOLE WILL BE CORE DRILLED. ANY DAMAGE TO EXISTING MANHOLE WILL BE REPAIRED AT CONTRACTOR'S EXPENSE. IF EXISTING SEWER MANHOLE SEAL COATING IS COMPROMISED, ALL OF THE MANHOLE WILL BE RESEALED AND RECOATED PER CURRENT SPECIFICATIONS AND APPROVED PRODUCT LIST.
34. IF ANY EXISTING MANHOLES CONNECTED WITH THIS PROJECT ARE FOUND TO HAVE INFILTRATION, THE MANHOLES SHALL BE SEALED AND TESTED AT CONTRACTORS EXPENSE.
35. UPON REQUEST FROM THE RIVER AUTHORITY, CONTRACTOR SHALL PROVIDE SAMPLE VERIFYING PROPER INSTALLATION OF FLOWABLE BACKFILL, INCLUDING, BUT NOT LIMITED TO CORE SAMPLES.

SANITARY SEWER PIPING:

36. THE TYPE AND DESCRIPTION OF THE PIPE IS SHOWN ON THE PLANS. REFER TO RIVER AUTHORITY SPECIFICATIONS AND APPROVED PRODUCT LIST.
37. SIZES AND GRADES FOR SANITARY SEWER SHALL BE AS REQUIRED BY THE RIVER AUTHORITY ENGINEER.
38. NO SANITARY SEWERS, OTHER THAN LATERALS AND FORCE MAINS, SHALL BE LESS THAN EIGHT (8) INCH IN DIAMETER.

SEWER SERVICE LATERALS:

39. WHEN SEWER LATERALS ARE TO BE CONNECTED TO EXISTING SEWER MAINS AND NO STUB-OUT HAS BEEN PROVIDED, THE CONNECTION MUST BE CONDUCTED PER THE LATEST RIVER AUTHORITY STANDARD DETAILS AND APPROVED PRODUCT LIST. REFER TO THE RIVER AUTHORITY APPROVED PRODUCTS LIST FOR ACCEPTABLE FITTINGS AND CONNECTIONS.
40. ALL RESIDENTIAL SERVICE LATERALS SHALL BE SDR 26 PVC WITH RATING OF 115 PSI OR 160 PSI, DETERMINED BY RIVER AUTHORITY SPECIFICATION. LINE SHALL BE EXTENDED TO THE PROPERTY LINE AND CAPPED AND SEALED, ATTACH SEWER BURIAL TAPE TO THE END OF ALL SEWER LATERALS AND BRING UP TO THE GROUND LEVEL FOR MARKER (GREEN). (SEE HOUSE LATERALS DETAILS).
41. UPON REQUEST FROM THE SAN ANTONIO RIVER AUTHORITY, CONTRACTOR SHALL PROVIDE SAMPLE VERIFYING PROPER INSTALLATION OF FLOWABLE BACKFILL, INCLUDING, BUT NOT LIMITED TO CORE SAMPLES.

SANITARY SEWER PIPING:

42. THE TYPE AND DESCRIPTION OF THE PIPE IS SHOWN ON THE PLANS. REFER TO LATEST RIVER AUTHORITY SPECIFICATIONS AND APPROVED PRODUCT LIST FOR MATERIALS, STIFFNESS, AND TYPE.
43. SIZES AND GRADES FOR SANITARY SEWER SHALL BE AS REQUIRED BY THE RIVER AUTHORITY ENGINEER.
44. NO SANITARY SEWERS, OTHER THAN LATERALS AND FORCE MAINS, SHALL BE LESS THAN EIGHT (8) INCH IN DIAMETER.

SANITARY SEWER TESTING:

45. TESTING SHALL NOT BE CONDUCTED UNTIL ALL OTHER UTILITIES TO CONTRACTOR'S DENSITY OF SANITARY SEWER ARE FULLY INSTALLED.
46. TESTING SHALL BE CONDUCTED PER LATEST RIVER AUTHORITY SPECIFICATIONS AND SHALL NOT BEGIN WITHOUT 48 HOURS NOTICE TO RIVER AUTHORITY INSPECTOR.
47. A COPY OF ALL TESTING REPORTS, INCLUDING BACKFILL COMPACTION, SHALL BE FORWARDED TO THE RIVER AUTHORITY IMMEDIATELY.
48. DENSITY TESTING WILL BE REQUIRED ON ALL SANITARY SEWER TRENCHES INCLUDING SERVICE LATERALS. TESTING FOR SERVICE LATERALS TO BE IDENTIFIED BY RIVER AUTHORITY INSPECTOR AT RANDOM. DENSITY TESTING FOR SERVICE LATERALS SHALL NOT EXCEED 25% OF TOTAL NUMBER OF LATERALS.

EXCAVATION:

49. 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 CONTRACTORS TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIALLY, CONTRACTOR AND/OR CONTRACTORS INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.
50. IF A SAFETY VIOLATION IS NOTED BY A RIVER AUTHORITY INSPECTOR, THE RIVER AUTHORITY RESERVES THE RIGHT TO STOP WORK.
51. CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF ALL WASTE MATERIALS UPON PROJECT COMPLETION.
52. CONTRACTOR IS RESPONSIBLE FOR UPDATING AND MAINTAINING ALL FIELD UTILITY MARKINGS.

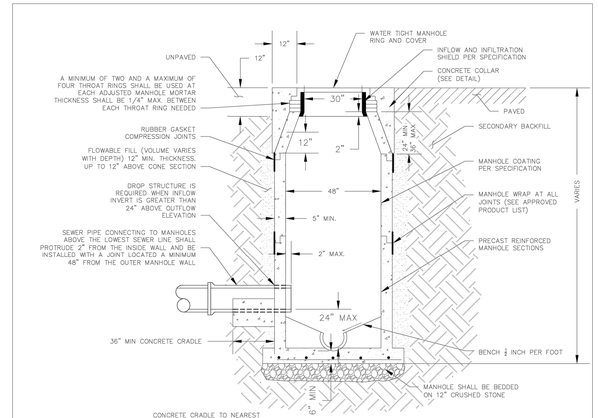
SAN ANTONIO RIVER AUTHORITY
100 E. GUENTHER STREET
SAN ANTONIO, TEXAS 78204

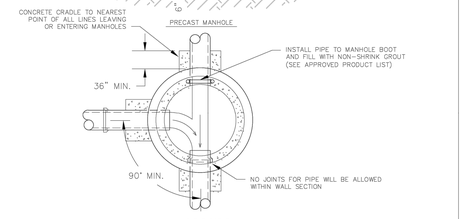
NO.	DESCRIPTION	DATE	BY
	REVISED 3/31/2024		

DESIGNED BY:
DRAWN BY:
CHECKED BY:
APPROVED BY:
DATE:
FILE:

GENERAL NOTES

SHEET 1 OF 1



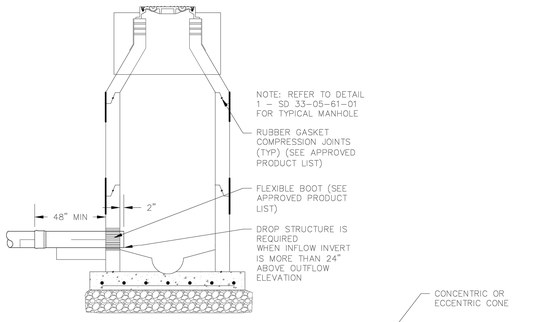


MANHOLE FLOOR PLAN

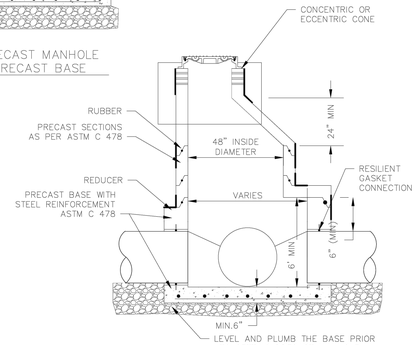
GENERAL NOTES:

1. STEPS SHALL NOT BE INSTALLED IN ANY MANHOLE.
2. SANITARY SEWER PIPE MATERIAL MUST BE THE SAME FROM MANHOLE TO MANHOLE. CHANGES IN TYPE OF PIPE SHALL ONLY BE MADE AT MANHOLES, OR SPECIAL STRUCTURES, EXCEPT AS APPROVED BY THE RIVER AUTHORITY.
3. ADAPTORS AND CONCRETE COLLARS SHALL BE USED AS DIRECTED BY THE RIVER AUTHORITY.
4. WATERTIGHT MANHOLE RINGS AND COVERS SHALL BE IN ACCORDANCE WITH THE APPROVED PRODUCT LIST.
5. THE MINIMUM ANGLE OF FLOW FOR A CONNECTING SEWER TO THE DIRECTION OF FLOW DEFINED BY A COLLECTION SYSTEM IS 90 DEGREES.

SAN ANTONIO RIVER AUTHORITY	PRECAST MANHOLE PRECAST BASE TYPICAL DETAIL	APPROVED APRIL 2012	REVISED MAY 2024
		SD 33-05-61-01	SHEET 1 OF 28

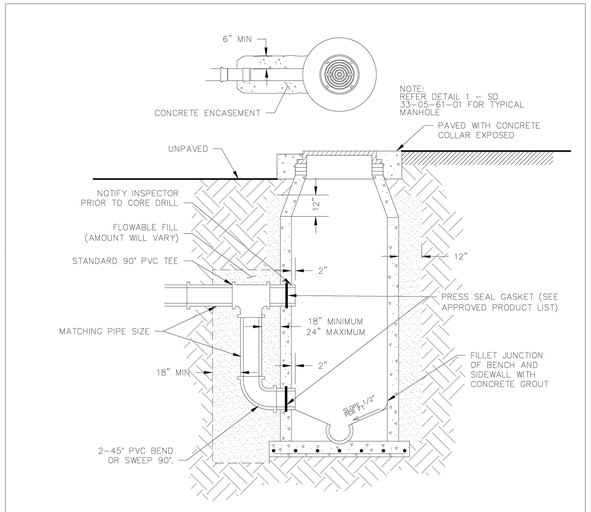


PRECAST MANHOLE
PRECAST BASE



PRECAST MANHOLE ON PRECAST BASE
FOR PIPE SIZES 24" AND LARGER

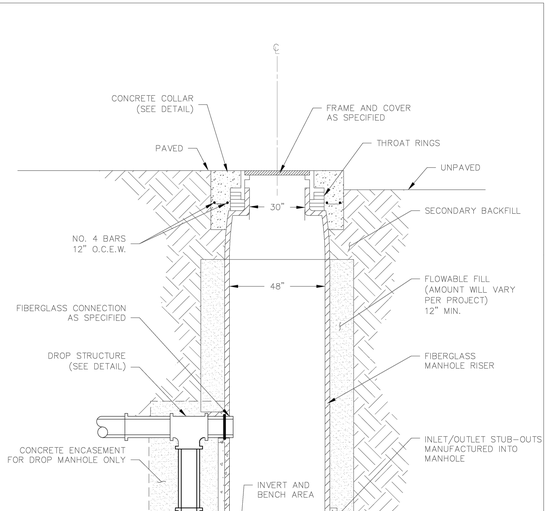
SAN ANTONIO RIVER AUTHORITY	PRECAST MANHOLES	APPROVED APRIL 2012	REVISED MAY 2024
		SD 33-05-61-02	SHEET 2 OF 28



NOTES:

1. PRICE FOR DROP FITTINGS AND ENCASEMENT TO BE INCLUDED WITH THE PRICE OF MANHOLE.
2. CONCRETE FOR DROP STRUCTURES SHALL BE FORMED ON ALL SIDES.
3. ALL MANHOLE PENETRATIONS SHALL BE MADE BY CORE DRILLING, AND INSPECTOR SHALL BE NOTIFIED PRIOR TO WORK BEING PERFORMED.
4. ALL INTERIOR COATING SHALL BE REPAIRED AS NECESSARY.
5. DROP STRUCTURES SHALL BE APPROVED, IN WRITING, BY RIVER AUTHORITY.

SAN ANTONIO RIVER AUTHORITY	OUTSIDE DROP MANHOLE	APPROVED APRIL 2012	REVISED MAY 2024
		SD 33-05-61-03	SHEET 3 OF 28



SAN ANTONIO RIVER AUTHORITY	TYPICAL FIBERGLASS MANHOLE DETAIL	APPROVED APRIL 2012	REVISED MAY 2024
		SD 33-05-61-04	SHEET 4 OF 28

ROSE VALLEY SOUTH - UNIT 2
SAN ANTONIO RIVER AUTHORITY - SEWER NOTES & DETAILS
BEXAR COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105048
LICENSED PROFESSIONAL ENGINEER
F-9155
1/22/2026

REV	DATE	DESCRIPTION	BY

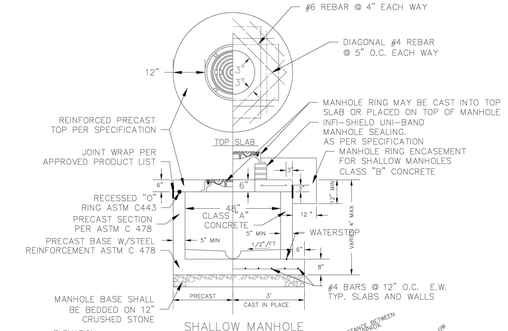
JOB NO.	23-3159J
DATE	JAN. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

C3.7
PLAT NO: CP202512

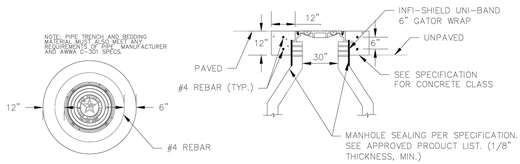
RAKOWITZ
Engineering & Surveying
Texas Registered Engineering Firm F-9155
Texas Registered Surveying Firm 101812-00
830-281-4060

PERMIT SET (NOT FOR CONSTRUCTION): 01/22/2026

Date: Jan 22, 2026, 4:54pm User ID: CAD1-2022
File: N:\Projects\2023\23-3159 Rose Valley South U2\Civil\23-3159 SARA SEWER DETAILS AND NOTES.dwg

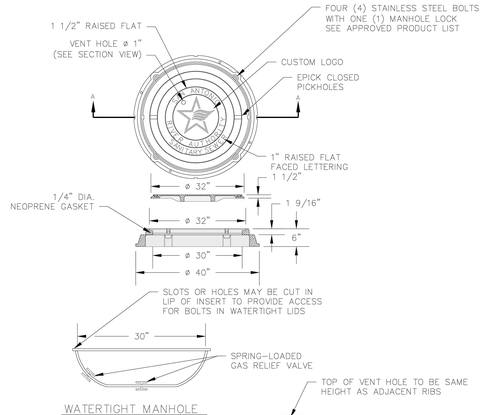


MAX PIPE SIZE OD		
MANHOLE DIA	0° To 45° DEFL.	45° DEFL.
5 FT	42"	32"
6 FT	51"	38"
8 FT	73 1/2"	50"



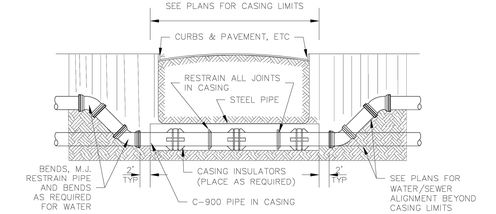
MANHOLE RING ENCASEMENT (COLLAR) DETAIL

SAN ANTONIO RIVER AUTHORITY	MISCELLANEOUS MANHOLE DETAILS	APPROVED	REVISED
		APRIL 2012	MAY 2024
		SD 33-05-61-05	SHEET 5 OF 28



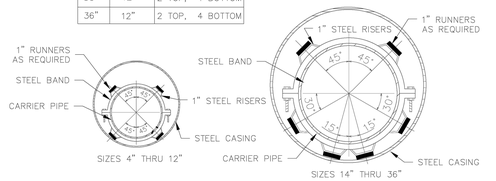
NOTE:
1. MANHOLE RING ENCASEMENT (COLLAR) REQUIRED ON ALL MANHOLES. SEE DETAIL.

SAN ANTONIO RIVER AUTHORITY	VENTED MANHOLE RING AND COVER	APPROVED	REVISED
		APRIL 2012	MAY 2024
		SD 33-05-61-06	SHEET 6 OF 28

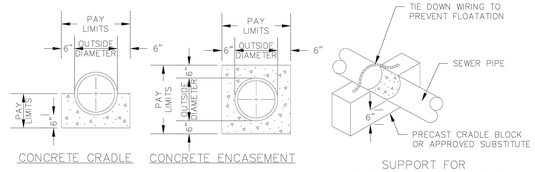


SIZE	BAND WIDTH	NO.RUNNERS PER TIE
8"	8"	2 TOP, 2 BOTTOM
12"	8"	2 TOP, 2 BOTTOM
16"	8"	2 TOP, 4 BOTTOM
20"	8"	2 TOP, 4 BOTTOM
24"	8"	2 TOP, 4 BOTTOM
30"	12"	2 TOP, 4 BOTTOM
36"	12"	2 TOP, 4 BOTTOM

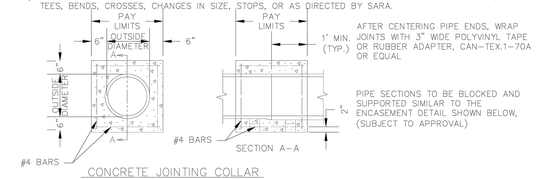
NOTES:
1. FITTINGS SHALL BE PAID FOR BY SEPARATE ITEM. JOINT RESTRAINTS SHALL BE APPROVED AS SPECIFIED IN STANDARD MATERIAL SPECIFICATION ITEM NO. 800
2. CASING INSULATORS IN ACCORDANCE TO STANDARD MATERIAL SPECIFICATION NO. 800 CONTRACTOR SHALL DETERMINE ENTRY AND EXIT PIT
3. PIT LOCATIONS. NOT SHOWN.

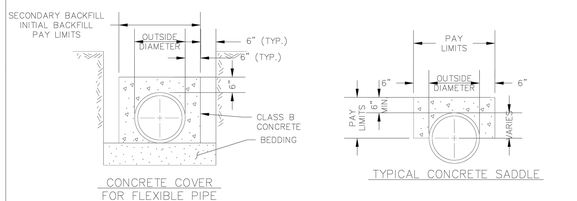


SAN ANTONIO RIVER AUTHORITY	INSTALLATION OF PIPE IN BORE	APPROVED	REVISED
		APRIL 2012	MAY 2024
		SD 33-05-07-01	SHEET 7 OF 28



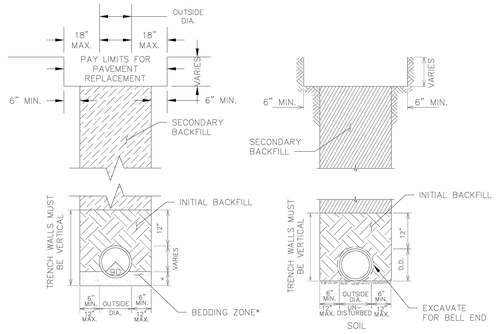
NOTES:
1) ALL CONCRETE ENCASEMENT SHALL BE POURED AT A PLANE 6" ABOVE THE PIPE BETWEEN EXCAVATED TRENCH WALLS.
2) ALL SEWER PIPE WITH LESS THAN 3' OF COVER TO SUBGRADE SHALL BE CONCRETE ENCASED.
3) ALL FORCE MAINS SHALL BE PROVIDED WITH THRUST BLOCKS, WHERE CHANGES IN DIRECTION OCCUR, AT TEES, BENDS, CROSSES, CHANGES IN SIZE, STOPS, OR AS DIRECTED BY SARA.





TO BE USED WHEREVER TRENCH WIDTH IS GREATER THAN TWO FEET (2') PLUS O.D.

SAN ANTONIO RIVER AUTHORITY	TYPICAL CONCRETE DETAILS	APPROVED	REVISED
		APRIL 2012	MAY 2024
		SD 33-06-08-01	SHEET 8 OF 28



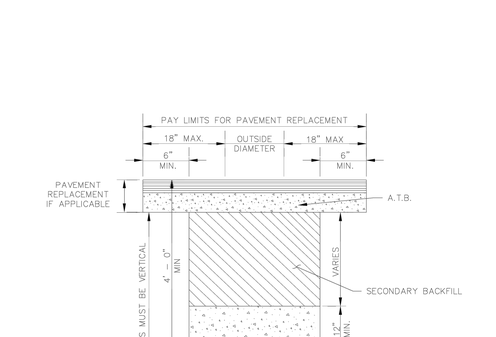
* SEWER GRAVEL 12" MIN. OR 1/8 O.D. OF THE PIPE, WHICHEVER IS GREATER AS DIRECTED BY THE RIVER AUTHORITY

1) RIGID PIPE - UNSTABLE OR UNACCEPTABLE CONDITIONS FLEXIBLE PIPE - ALL CONDITIONS

* IN AREAS OF OVER EXCAVATION, ENCASEMENT SHALL EXTEND FROM TRENCH WALL TO TRENCH WALL. PAY LIMITS SHALL NOT EXCEED 12" MAX. AS SHOWN ON DETAIL. ADDITIONAL ENCASEMENT SHALL BE INCIDENTAL.

2) RIGID PIPE - EXISTING STABLE BEDDING CONDITIONS

SAN ANTONIO RIVER AUTHORITY	SANITARY SEWER TRENCH DETAIL	APPROVED	REVISED
		APRIL 2012	MAY 2024
		SD 33-05-05-01	SHEET 9 OF 28



SAN ANTONIO RIVER AUTHORITY	TYPICAL UTILITY TRENCH DETAIL	APPROVED	REVISED
		APRIL 2012	MAY 2024
		SD 33-05-05-02	SHEET 10 OF 28

ROSE VALLEY SOUTH - UNIT 2
SAN ANTONIO RIVER AUTHORITY - SEWER DETAILS
BEXAR COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105048
LICENSED PROFESSIONAL ENGINEER
F-9155
1/22/2026

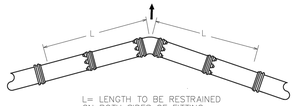
REV	DATE	DESCRIPTION	BY

JOB NO.	23-3159J
DATE	JAN. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

C3.8
PLAT NO: CP202512

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

PERMIT SET (NOT FOR CONSTRUCTION): 01/22/2026



L= LENGTH TO BE RESTRAINED
ON BOTH SIDES OF FITTING

PIPE SIZE (INCH)	BEND ANGLE (DEG)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 150 psi
6	90	23	17
6	45	9	7
6	22.5	5	3
6	11.25	2	2
8	90	30	22
8	45	12	9
8	22.5	6	4
8	11.25	3	2
12	90	43	32
12	45	18	13
12	22.5	8	6
12	11.25	4	3

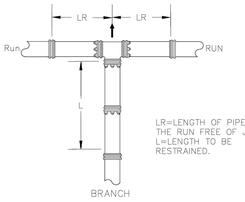
RESTRAINED LENGTH DESIGN
RESTRAINED LENGTH CALCULATIONS ARE FOR P.V.C PIPE BEDDED IN COMPACTED GRANULAR MATERIAL EXTENDING TO THE TOP OF THE PIPE. THE NATIVE SOIL MATERIAL IS ASSUMED TO BE INORGANIC CLAY OF HIGH PLASTICITY. DEPTH OF BURY IS ASSUMED TO BE 4 FEET.

NOTE:
THESE CALCULATIONS ARE PROVIDED FOR REFERENCE. THE RESTRAINED LENGTH SHALL BE DESIGNED BY A LICENSED ENGINEER BASED UPON THE CONDITIONS ENCOUNTERED DURING THE INSTALLATION.

SAN ANTONIO RIVER AUTHORITY	RESTRAINED LENGTHS FOR HORIZONTAL BENDS	APPROVED	REVISED
		APRIL 2012	MAY 2024
		SD 33-31-00-01	SHEET 11 OF 28

RESTRAINED LENGTH DESIGN
RESTRAINED LENGTH CALCULATIONS ARE FOR P.V.C PIPE BEDDED IN COMPACTED GRANULAR MATERIAL EXTENDING TO THE TOP OF THE PIPE. THE NATIVE SOIL MATERIAL IS ASSUMED TO BE INORGANIC CLAY OF HIGH PLASTICITY. DEPTH OF BURY IS ASSUMED TO BE 4 FEET.

NOTE:
THESE CALCULATIONS ARE PROVIDED FOR REFERENCE. THE RESTRAINED LENGTH SHALL BE DESIGNED BY A LICENSED ENGINEER BASED UPON THE CONDITIONS ENCOUNTERED DURING THE INSTALLATION.



LR=LENGTH OF PIPE ALONG THE RUN FREE OF JOINTS.
L=LENGTH TO BE RESTRAINED.

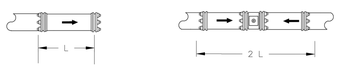
RESTRAINED LENGTH FOR TEES

PIPE SIZE (inch)	BRANCH SIZE (inch)	LENGTH OF RUN (ft.)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 150 psi
6	4	0	42	31
6	4	5	7	1
6	4	10	1	1
6	6	0	59	44
6	6	5	35	20
6	6	10	11	1
8	4	0	42	31
8	4	5	1	1
8	6	0	59	44
8	6	5	28	13
8	6	10	1	1
8	8	0	77	58
8	8	5	53	34
8	8	10	30	11
8	8	15	6	1

RESTRAINED LENGTH FOR TEES (CONT'D)

PIPE SIZE (inch)	BRANCH SIZE (inch)	LENGTH OF RUN (ft.)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 150 psi
12	4	0	42	31
12	4	5	1	1
12	6	0	59	44
12	6	5	13	1
12	6	10	1	1
12	8	0	77	58
12	8	5	42	23
12	8	10	7	1
12	8	15	1	1
12	12	0	109	82
12	12	5	86	59
12	12	10	63	35
12	12	15	39	12

SAN ANTONIO RIVER AUTHORITY	RESTRAINED LENGTHS FOR TEES	APPROVED	REVISED
		APRIL 2012	MAY 2024
		SD 33-31-00-02	SHEET 12 OF 28



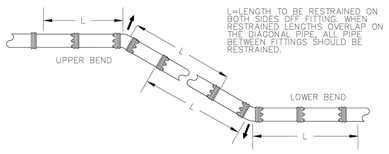
L=LENGTH TO BE RESTRAINED

PIPE SIZE (inch)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 150 psi
6	59	44
8	77	58
10	93	69
12	109	82

RESTRAINED LENGTH DESIGN
RESTRAINED LENGTH CALCULATIONS ARE FOR P.V.C PIPE BEDDED IN COMPACTED GRANULAR MATERIAL EXTENDING TO THE TOP OF THE PIPE. THE NATIVE SOIL MATERIAL IS ASSUMED TO BE INORGANIC CLAY OF HIGH PLASTICITY. DEPTH OF BURY IS ASSUMED TO BE 4 FEET.

NOTE: THESE CALCULATIONS ARE PROVIDED FOR REFERENCE. THE RESTRAINED LENGTH SHALL BE DESIGNED BASED UPON THE CONDITIONS ENCOUNTERED DURING THE INSTALLATION.

SAN ANTONIO RIVER AUTHORITY	RESTRAINED LENGTHS FOR DEAD END/ INLINE VALVES	APPROVED	REVISED
		APRIL 2012	MAY 2024
		SD 33-31-00-04	SHEET 13 OF 28



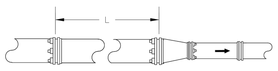
L=LENGTH TO BE RESTRAINED ON BOTH SIDES OFF FITTING. WHEN RESTRAINED LENGTHS OVERLAP ON THE DIAGONAL PIPE, ALL PIPE BETWEEN FITTINGS SHOULD BE RESTRAINED.

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

RESTRAINED LENGTH DESIGN
RESTRAINED LENGTH CALCULATIONS ARE FOR P.V.C PIPE BEDDED IN COMPACTED GRANULAR MATERIAL EXTENDING TO THE TOP OF THE PIPE. THE NATIVE SOIL MATERIAL IS ASSUMED TO BE INORGANIC CLAY OF HIGH PLASTICITY. DEPTH OF BURY IS ASSUMED TO BE 4 FEET.

NOTE: THESE CALCULATIONS ARE PROVIDED FOR REFERENCE. THE RESTRAINED LENGTH SHALL BE DESIGNED BY A LICENSED ENGINEER BASED UPON THE CONDITIONS ENCOUNTERED DURING THE INSTALLATION.

SAN ANTONIO RIVER AUTHORITY	RESTRAINED LENGTHS FOR VERTICAL OFFSETS	APPROVED	REVISED
		APRIL 2012	MAY 2024
		SD 33-31-00-04	SHEET 14 OF 28



L=LENGTH TO BE RESTRAINED

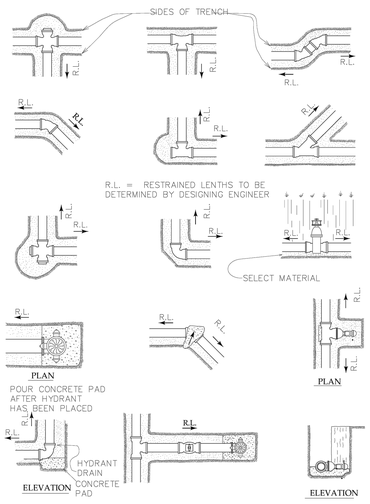
PIPE SIZE (inch)	SMALL SIZE (inch)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 150 psi
6	4	30	23
8	4	55	42
8	6	32	24
12	4	95	71
12	6	80	60
12	8	58	43

RESTRAINED LENGTH DESIGN

RESTRAINED LENGTH CALCULATIONS ARE FOR P.V.C PIPE BEDDED IN COMPACTED GRANULAR MATERIAL EXTENDING TO THE TOP OF THE PIPE. THE NATIVE SOIL MATERIAL IS ASSUMED TO BE INORGANIC CLAY OF HIGH PLASTICITY. DEPTH OF BURY IS ASSUMED TO BE 4 FEET.

NOTE: THESE CALCULATIONS ARE PROVIDED FOR REFERENCE. THE RESTRAINED LENGTH SHALL BE DESIGNED BY A LICENSED ENGINEER BASED UPON THE CONDITIONS ENCOUNTERED DURING THE INSTALLATION.

SAN ANTONIO RIVER AUTHORITY	RESTRAINED LENGTHS FOR REDUCERS	APPROVED	REVISED
		APRIL 2012	MAY 2024
		SD 33-31-00-05	SHEET 15 OF 28



NOTE: ALL NEW PRESSURIZED PIPELINES SHALL USE RESTRAINED JOINTS ONLY. THIS DETAIL IS TO ACCOMMODATE EXISTING PRESSURED PIPELINES AS DIRECTED.

SAN ANTONIO RIVER AUTHORITY	JOINT RESTRAINTS FOR FITTINGS	APPROVED	REVISED
		APRIL 2012	MAY 2024
		SD 33-31-00-06	SHEET 16 OF 28

ROSE VALLEY SOUTH - UNIT 2
SAN ANTONIO RIVER AUTHORITY - SEWER DETAILS
BEXAR COUNTY, TEXAS

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

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105048
LICENSED
PROFESSIONAL ENGINEER
F-9155
1/22/2026

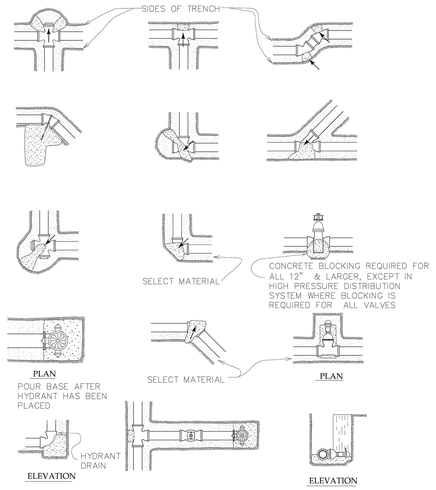
REV	DATE	DESCRIPTION	BY

JOB NO.	23-3159J
DATE	JAN. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

C3.9
PLAT NO: CP202512

Date: Jan 22, 2026, 4:54pm User ID: CAD1-2022
File: N:\Projects\2023\23-3159 Rose Valley South UT2\Civil\23-3159J SARA SEWER DETAILS AND NOTES.dwg

PERMIT SET (NOT FOR CONSTRUCTION): 01/22/2026



NOTE:
ALL NEW PRESSURIZED PIPELINES SHALL USE RESTRAINED JOINTS ONLY. THIS DETAIL IS TO ACCOMODATE EXISTING PRESSURED PIPELINES AS DIRECTED.

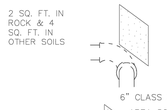
SAN ANTONIO RIVER AUTHORITY	RESTRAINED LENGTHS FOR VERTICAL OFFSETS	APPROVED	REVISED
		APRIL 2012	MAY 2024
		SD 33-31-00-04	SHEET 17 OF 28

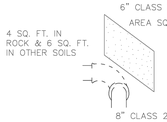
THRUST BLOCKING DESIGN

ON BASIS OF 200 PSI WATER PRESSURE USED FOR TESTS, THE BLOCKING REQUIRED FOR TWO TYPES OF SOILS ARE NOTED BELOW. IN ONE CASE, A SOIL PRESSURE OF 5000 PSI IS USED FOR ROCK EXCAVATION AND FOR SOILS OTHER THAN ROCK A 3000 PSI BEARING SOIL PRESSURE IS USED. THE DISTRIBUTION ON SYSTEM IS DESIGNED TO OPERATE WITH A MAXIMUM WATER PRESSURE OF 175 PSI. ALL CALCULATIONS APPLY TO A.C. PIPE CLASS 200 AND DUCTILE IRON PIPE CLASS 2. PVC PIPE CLASS 200 (SDR 13.5)

SQUARE FEET OF BLOCKING REQUIRED FOR ROCK EXCAVATION

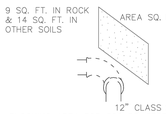
SIZE PIPE	TEES & DEAD ENDS	90° BENDS	45° BENDS	22° 1/2 BENDS
6"	2	2	1	1
8"	3	4	2	1
12"	6	9	5	2
16"	11	15	8	4





SQUARE FEET OF BLOCKING REQUIRED FOR OTHER THAN ROCK EXCAVATION

SIZE PIPE	TEES & DEAD ENDS	90° BENDS	45° BENDS	22° 1/2 BENDS
6"	3	4	2	1
8"	4	6	4	2
12"	10	14	8	4
16"	18	25	14	7



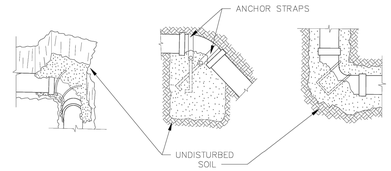
BLOCKING AREA FOR 200 PSI TESTS & 175 PSI WORKING PRESSURES.

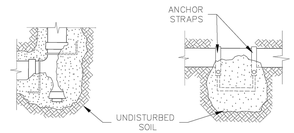
ANCHORAGE AND BLOCKING SHALL BE PROVIDED IN A MANNER AS INDICATED BY DD-839-01 AND DD-839-02 IN ACCORDANCE WITH SECTION 5.4 ANCHORING BLOCKING STANDARD SPECIFICATIONS FOR WATER WORKS CONSTRUCTION EXCEPT THAT 2500 PSI WILL BE REQUIRED.

TRANSIT 2500 PSI CONCRETE MIX SHALL BE USED HOWEVER FOR SMALL VOLUME REQUIREMENTS CONCRETE MIXED AT JOB SITE WILL BE ACCEPTABLE ONLY IF A CONCRETE MIXER IS USED, ALL AGGREGATE SHALL BE CLEAN AND THE FIELD MIX SHALL BE IN THE RATIO OF 1:3:4 AND CONTAIN NOT LESS THAN 4 SACKS OF CEMENT PER cu. YD.

NOTE:
ALL NEW PRESSURIZED PIPELINES SHALL USE RESTRAINED JOINTS ONLY. THIS DETAIL IS TO ACCOMODATE EXISTING PRESSURED PIPELINES AS DIRECTED.

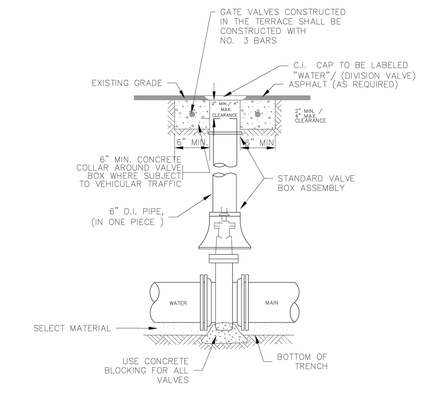
SAN ANTONIO RIVER AUTHORITY	THRUST BLOCKS FOR HIGH PRESSURE SYSTEM	APPROVED	REVISED
		APRIL 2012	MAY 2024
		SD 33-31-00-08	SHEET 18 OF 28



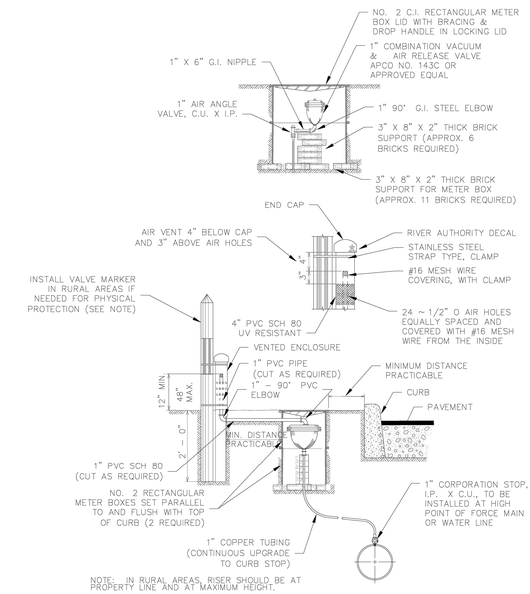


NOTE:
ALL NEW SEWER SYSTEMS SHALL USE RESTRAINED JOINTS ONLY. THIS DETAIL IS TO ACCOMODATE EXISTING PRESSURE SEWER SYSTEMS UNLESS INDICATED OTHERWISE. ALL CONCRETE USED FOR THRUST BLOCKING SHALL HAVE A MINIMUM CONCRETE STRENGTH OF 3500 PSI

SAN ANTONIO RIVER AUTHORITY	THRUST BLOCKS FOR HIGH PRESSURE SYSTEM	APPROVED	REVISED
		APRIL 2012	MAY 2024
		SD 33-31-00-09	SHEET 19 OF 28

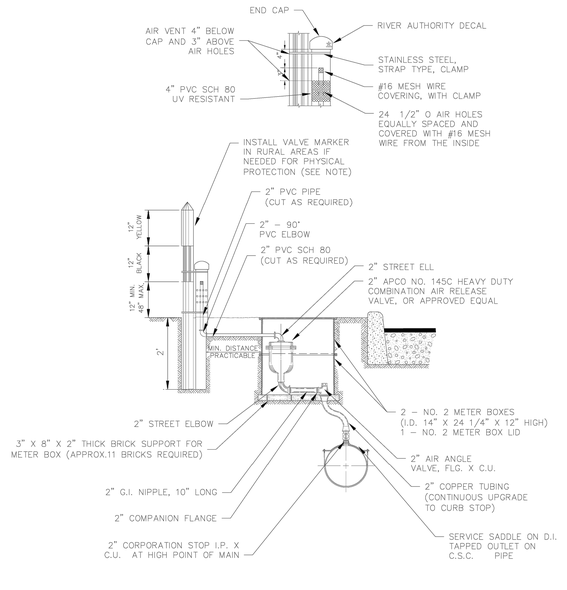


SAN ANTONIO RIVER AUTHORITY	NON-GEARED GATE VALVE WITH VALVE BOX AND EXTENSION	APPROVED	REVISED
		APRIL 2012	MAY 2024
		SD 33-31-00-10	SHEET 20 OF 28



NOTE: IN RURAL AREAS, RISER SHOULD BE AT PROPERTY LINE AND AT MAXIMUM HEIGHT.

SAN ANTONIO RIVER AUTHORITY	INSTALLATION OF 1" AIR RELEASE VALVE	APPROVED	REVISED
		APRIL 2012	MAY 2024
		SD 33-31-00-11	SHEET 21 OF 28



NOTE: IN RURAL AREAS, RISER SHOULD BE AT PROPERTY LINE AND AT MAXIMUM HEIGHT.

SAN ANTONIO RIVER AUTHORITY	INSTALLATION OF 2" AIR RELEASE VALVE	APPROVED	REVISED
		APRIL 2012	MAY 2024
		SD 33-31-00-12	SHEET 22 OF 28

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

ROSE VALLEY SOUTH - UNIT 2
SAN ANTONIO RIVER AUTHORITY - SEWER DETAILS
BEXAR COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105049
LICENSED PROFESSIONAL ENGINEER
F-9155
1/22/2026

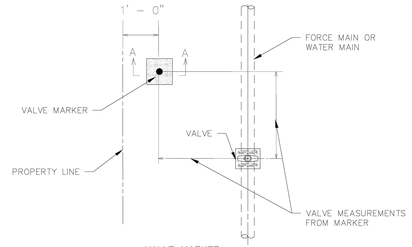
REV	DATE	DESCRIPTION	BY

JOB NO.	23-3159J
DATE	JAN. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

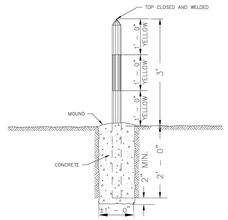
C3.10
PLAT NO: CP202512

Date: Jan 22, 2026, 4:52pm User ID: CAD1-2022
File: N:\Projects\2023\23-3159 Rose Valley South U2\Civil\23-3159J SARA SEWER DETAILS AND NOTES.dwg

PERMIT SET (NOT FOR CONSTRUCTION): 01/22/2026

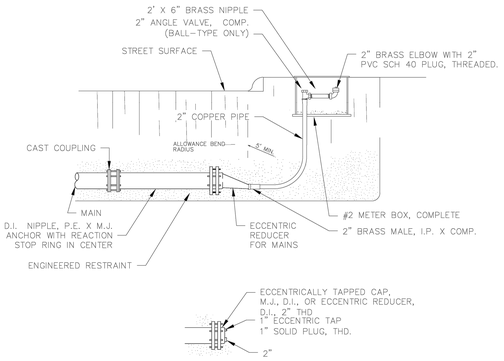


VALVE MARKER



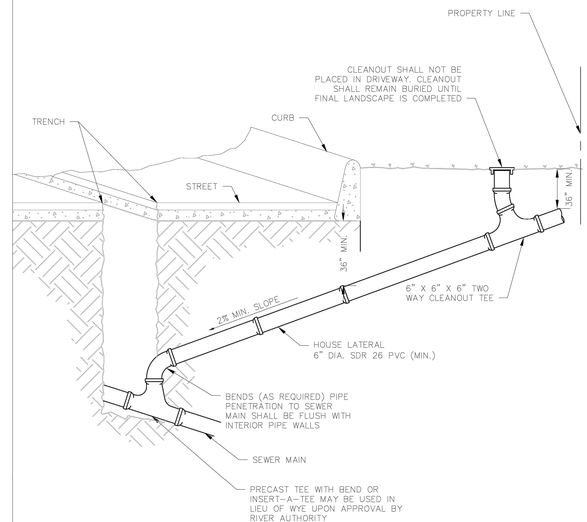
NOTES:
1. VALVE MARKER IS 3" STEEL PIPE PAINTED AS SHOWN
2. VALVE MEASUREMENTS SHALL BE REFERENCED TO MARKER
3. SARA DECAL SHALL BE NOTED ON THE MARKER AND FACING THE DIRECTION OF THE VALVE.

SAN ANTONIO RIVER AUTHORITY	VALVE MARKER	APPROVED	REVISED
		APRIL 2012	MAY 2024
		SD 33-31-00-13	SHEET 23 OF 28



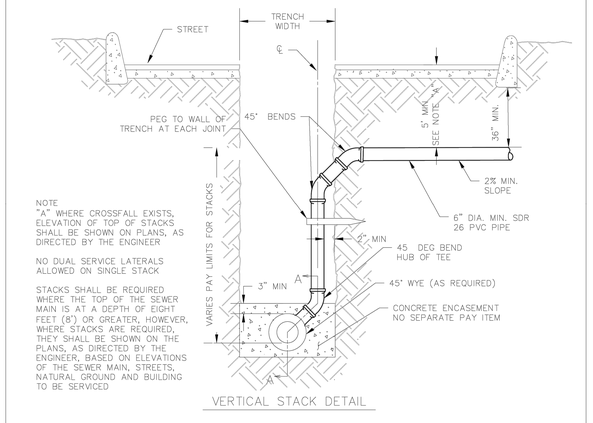
NOTE:
1. EXCEPT AS DIRECTED BY THE ENGINEER, ANTI CORROSION EMBEDMENT SHALL BE PROVIDED FOR ALL DUCTILE-IRON PIPE FITTINGS, AND VALVES, AND AT ALL VALVE FITTINGS, OR OUTLETS FOR NON-FERROUS OR REINFORCED CONCRETE STEEL CYLINDER PIPE. THE EMBEDDING MATERIAL SHOULD BE MODIFIED GRADE 5 GRAVEL WASHED SAND.

SAN ANTONIO RIVER AUTHORITY	2" PERMANENT BLOW-OFF ASSEMBLY	APPROVED	REVISED
		APRIL 2012	MAY 2024
		SD 33-31-00-14	SHEET 24 OF 28



NOTES:
1. A MINIMUM OF 36" OF COVER FROM GRADE IS REQUIRED. IF 36" OF COVER CANNOT BE OBTAINED, THEN CONCRETE ENCASEMENT WILL BE REQUIRED.
2. DEPTH AND GRADE OF SERVICE LATERALS AS SHOWN, ARE TYPICAL AND NOT TO SCALE. ACTUAL DEPTH, ALIGNMENT AND GRADE OF SERVICE LATERALS SHALL BE DETERMINED BY THE ENGINEER BASED ON THE ELEVATIONS OF THE SEWER MAIN, STREET, NATURAL GROUND AND BUILDING TO BE SERVICED.

SAN ANTONIO RIVER AUTHORITY	HOUSE LATERAL DETAIL	APPROVED	REVISED
		APRIL 2012	MAY 2024
		SD 33-31-00-15	SHEET 25 OF 28

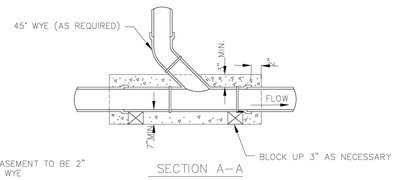


NOTE
"A" WHERE CROSSFALL EXISTS, ELEVATION OF TOP OF STACKS SHALL BE SHOWN ON PLANS, AS DIRECTED BY THE ENGINEER

NO DUAL SERVICE LATERALS ALLOWED ON SINGLE STACK

STACKS SHALL BE REQUIRED WHERE THE TOP OF THE SEWER MAIN IS AT A DEPTH OF EIGHT FEET (8') OR GREATER, HOWEVER, WHERE STACKS ARE REQUIRED, THEY SHALL BE SHOWN ON THE PLANS, AS DIRECTED BY THE ENGINEER, BASED ON ELEVATIONS OF THE SEWER MAIN, STREETS, NATURAL GROUND AND BUILDING TO BE SERVICED

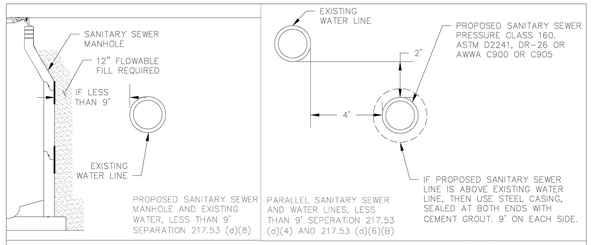
VERTICAL STACK DETAIL



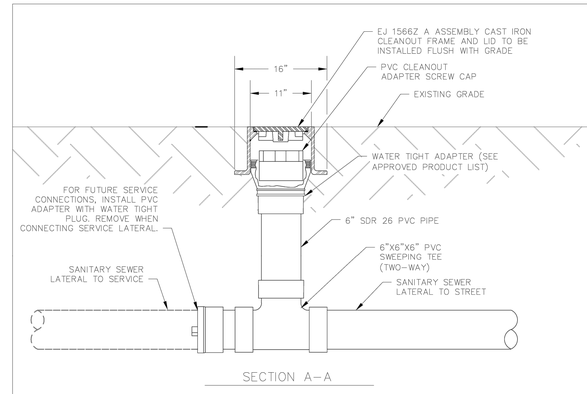
NOTE:
CONCRETE ENCASEMENT TO BE 2" PAST JOINT OF WYE

SECTION A-A

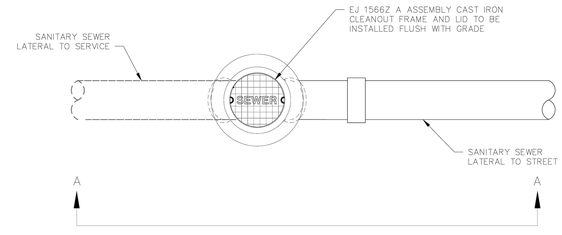
SAN ANTONIO RIVER AUTHORITY	VERTICAL STACK DETAIL	APPROVED	REVISED
		APRIL 2012	MAY 2024
		SD 33-31-00-16	SHEET 26 OF 28



SAN ANTONIO RIVER AUTHORITY	TCEQ WASTEWATER SEPARATION REQUIREMENTS	APPROVED	REVISED
		APRIL 2012	MAY 2024
		SD 33-31-00-17	SHEET 27 OF 28



SECTION A-A



PLAN VIEW

SAN ANTONIO RIVER AUTHORITY	STANDARD CLEANOUT DETAIL	APPROVED	REVISED
		APRIL 2012	MAY 2024
		SD 33-05-61-01	SHEET 28 OF 28

ROSE VALLEY SOUTH - UNIT 2
SAN ANTONIO RIVER AUTHORITY - SEWER DETAILS
BEXAR COUNTY, TEXAS

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

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105048
LICENSED PROFESSIONAL ENGINEER
F-9155
1/22/2026

REV	DATE	DESCRIPTION	BY

JOB NO.	23-3159J
DATE	JAN. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

C3.11
PLAT NO: CP202512

Date: Jan 22, 2026, 4:54pm User ID: CAD1-2022
File: N:\Projects\2023\23-3159 Rose Valley South U2\Civil\23-3159 SARA SEWER DETAILS AND NOTES.dwg

PERMIT SET (NOT FOR CONSTRUCTION): 01/22/2026

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.

BEXAR COUNTY R.O.W. NOTE:
A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN THE BEXAR COUNTY R.O.W.

80 0 80 160
SCALE OF FEET
1" = 80'

LEGEND
- Ⓐ Ⓑ Ⓒ — LOT GRADE TYPE
- → — FLOW DIRECTION ARROW
- × 476.86 PG — PROPOSED GRADING SPOT ELEVATION
- PROPERTY BOUNDARY
- SITE LINE
- ROAD CENTERLINE
- 650 — EXISTING 1' CONTOUR
- 650 — PROPOSED 1' CONTOUR
- EFFECTIVE FLOODPLAIN PER LOMR-C AS SUBMITTED TO BEXAR COUNTY
- WASHOUT CROWN

(FUTURE DEVELOPMENT)
ABBOTT ESTATES (PLAT NO. HED200301)
ROSE VALLEY SOUTH UNIT 1 (PLAT NO. CP202412)
BLOCK 34 CB NO. 5108
BLOCK 1 CB NO. 5108
BLOCK 32 CB NO. 5108
BLOCK 33 CB NO. 5108
CRIMSON PETAL
PETAL RAPID
TOWN FALL
FIELD SPRING
ROSE BRANCH
ABBOTT RD.
PROPOSED EDGE OF PAVEMENT - ABBOTT RD (SEE TURN LANE DESIGN REPORT FROM LEGACY ENGINEERING GROUP)
902
901

TYPE 'A' LOT GRADING

TYPE 'B' LOT GRADING

TYPE 'C' LOT GRADING

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

ROSE VALLEY SOUTH - UNIT 2
OVERALL GRADING PLAN
BEXAR COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105048
LICENSED PROFESSIONAL ENGINEER
F-9155
1/22/2026

REV	DATE	DESCRIPTION	BY

JOB NO.	23-3159J
DATE	JAN. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

C4.0
PLAT NO: CP202512

Date: Jan 22, 2026, 4:52pm User ID: CAD1-2022
File: N:\Projects\2023\23-3159 Rose Valley South UZC\Civil\23-3159 Overall Grading Plan.dwg

PERMIT SET (NOT FOR CONSTRUCTION): 01/22/2026

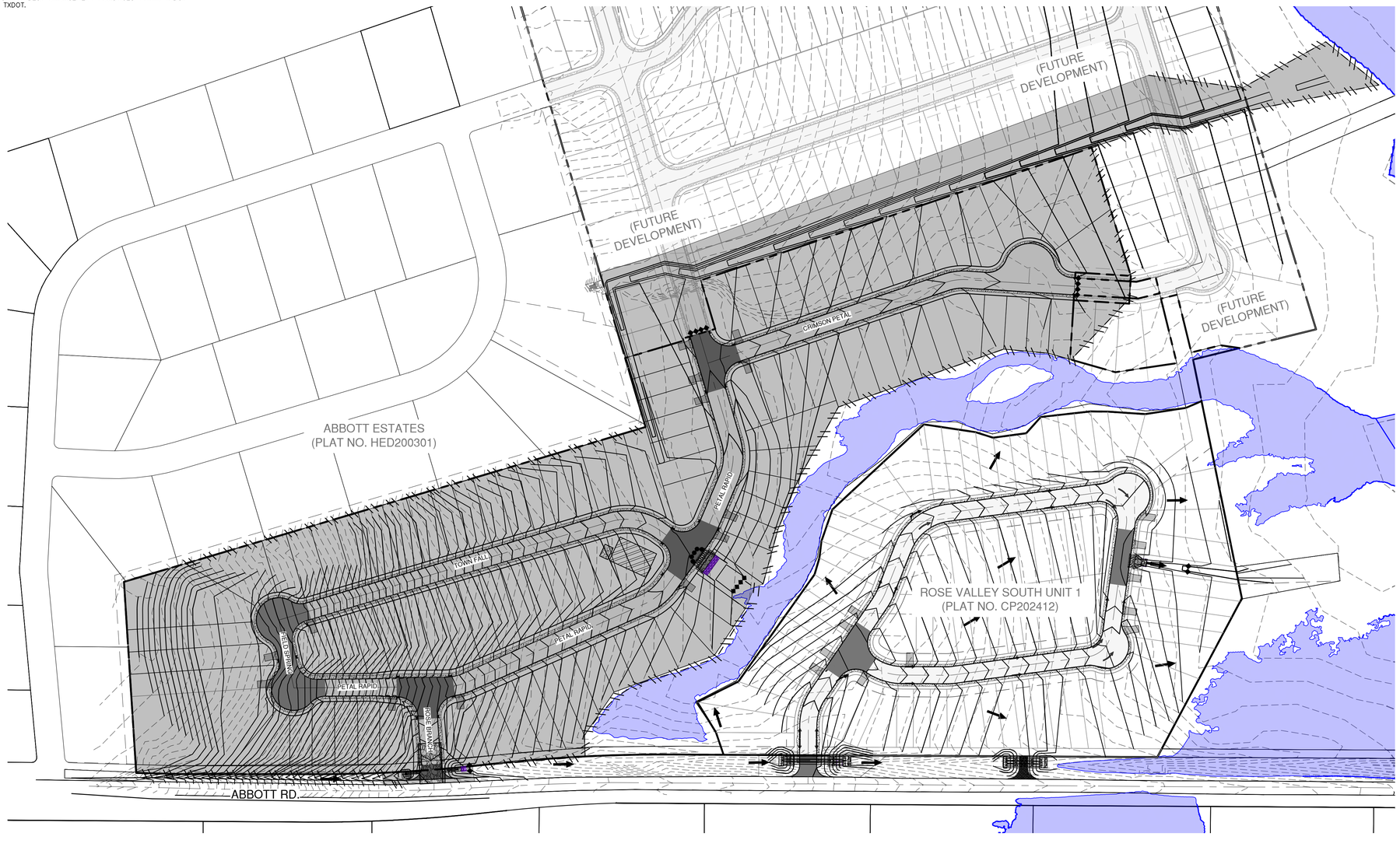
GENERAL NOTES:

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 PREVENTION 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.

FLOODPLAIN STAKING:
1. FLOODPLAIN TO BE STAKED.

BEXAR COUNTY R.O.W. NOTE:
A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN THE BEXAR COUNTY R.O.W.



100 0 100 200

SCALE OF FEET
1" = 100'

LEGEND

- PROPERTY BOUNDARY
- SITE LINE
- PAVEMENT LIMITS
- CENTERLINE
- FLOODPLAIN
- EXISTING FLOW ARROW
- PROPOSED FLOW ARROW
- SILT FENCE (±4,230 LF)
- ROCK BERM
- STABILIZED CONSTRUCTION ENTRANCE/EXIT
- CONSTRUCTION EQUIPMENT, VEHICLE & MATERIAL STORAGE
- CONCRETE WASH-OUT PIT
- 8"-12" ROCK RUBBLE
- GRAVEL FILTER BAGS
- DISTURBANCE AREA

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.

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.

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.

THE ENGINEERING SEAL HAS BEEN FIXED TO THIS SHEET ONLY FOR THE PURPOSE OF DEMONSTRATING COMPLIANCE WITH THE TPDES-STORM WATER POLLUTION PREVENTION PLAN (SWP3) REGULATIONS.

THIS SHEET HAS BEEN PREPARED FOR PURPOSES OF THE SWP3 ONLY. ALL OTHER CIVIL ENGINEERING RELATED INFORMATION SHOULD BE ACQUIRED FROM THE APPROPRIATE SHEET IN THE CIVIL IMPROVEMENT PLANS.

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

ROSE VALLEY SOUTH - UNIT 2
EROSION CONTROL PLAN

BEXAR COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105048
LICENSED PROFESSIONAL ENGINEER
F-9155
1/22/2026

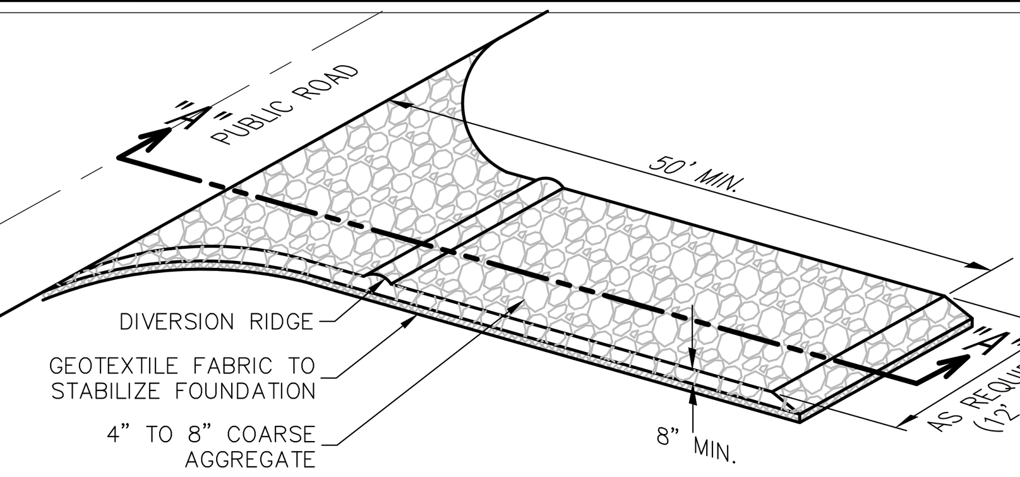
REV	DATE	DESCRIPTION	BY

JOB NO.	23-3159J
DATE	JAN. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

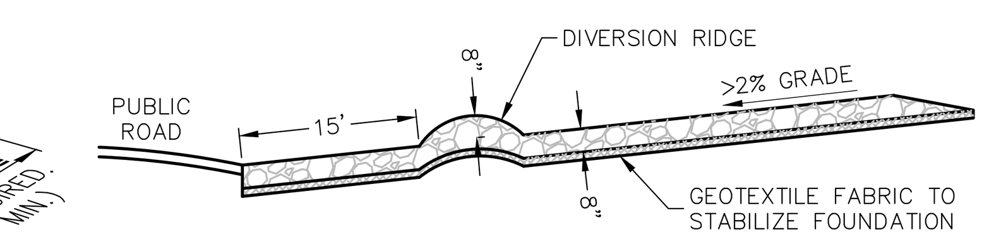
C5.0
PLAT NO: CP202512

Date: Jan 22, 2026, 4:54pm User ID: CAD1-2022
File: N:\Projects 2023\23-3159 Rose Valley South UT\Civil\23-3159 Erosion Control Planning

PERMIT SET (NOT FOR CONSTRUCTION): 01/22/2026



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.

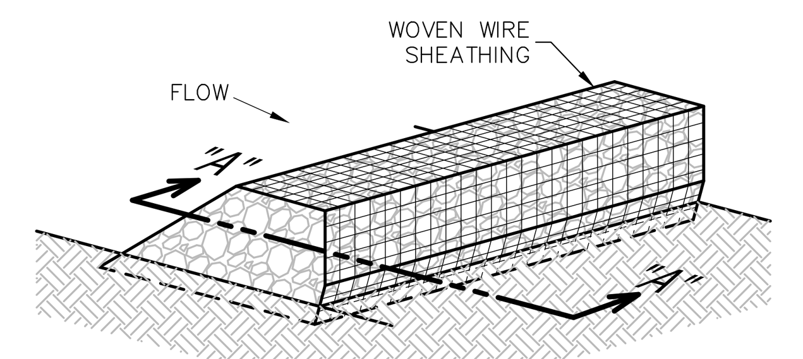
3. WHEN NECESSARY, WHEELS SHOULD BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.

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.

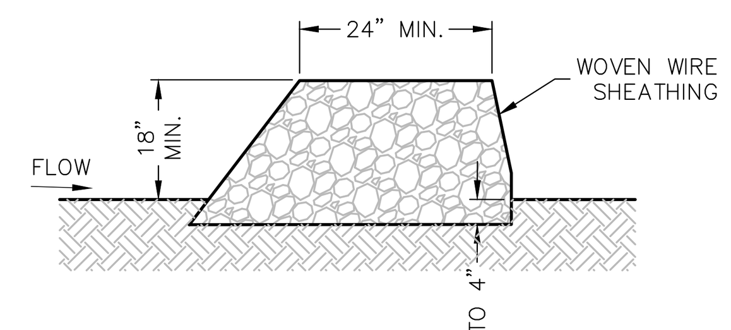
5. ALL SEDIMENT SHOULD BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATER COURSE BY USING APPROVED METHODS.

STABILIZED CONSTRUCTION ENTRANCE/EXIT DETAIL

NOT-TO-SCALE



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.

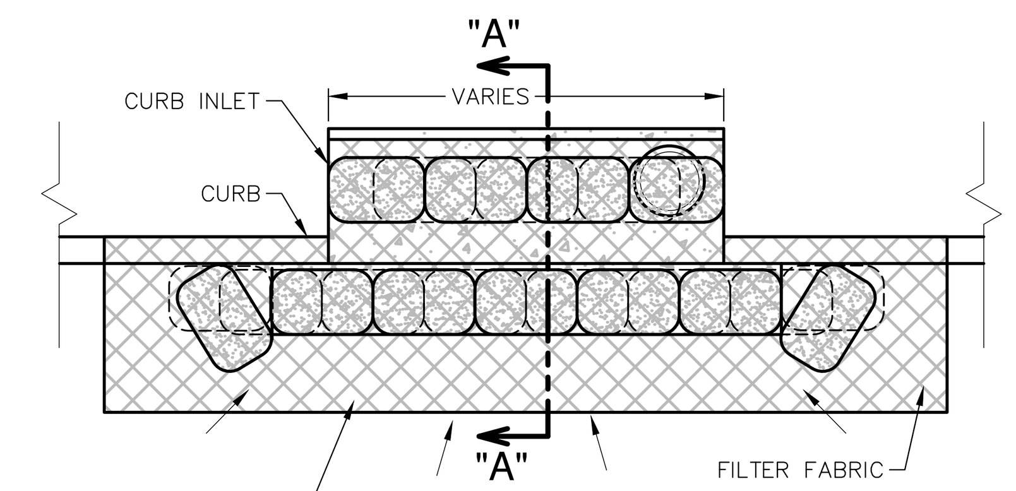
COMMON TROUBLE POINTS

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

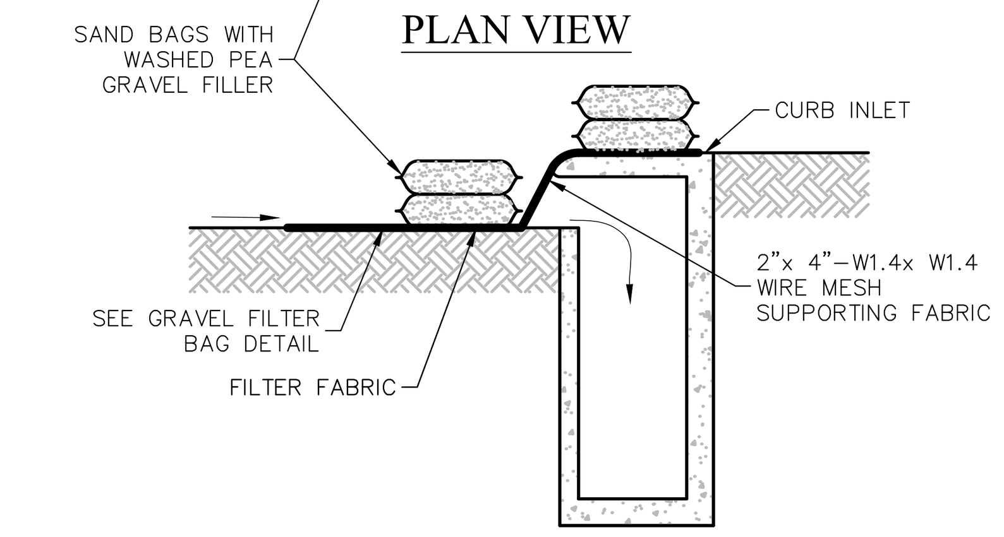
2. BERM NOT INSTALLED PERPENDICULAR TO FLOW LINE (RUNOFF ESCAPING AROUND ONE SIDE).

ROCK BERM DETAIL

NOT-TO-SCALE



PLAN VIEW



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.

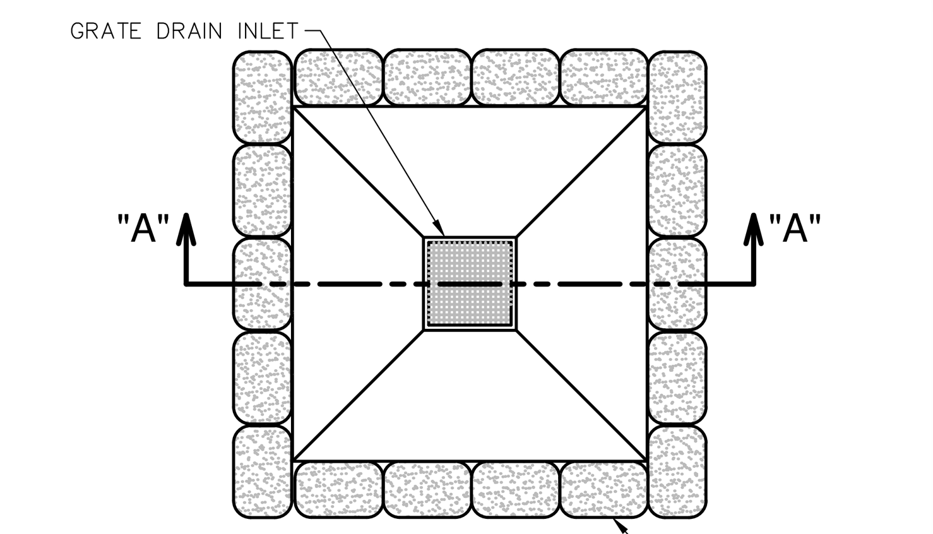
3. CHECK PLACEMENT OF DEVICE TO PREVENT GAPS BETWEEN DEVICE AND CURB.

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

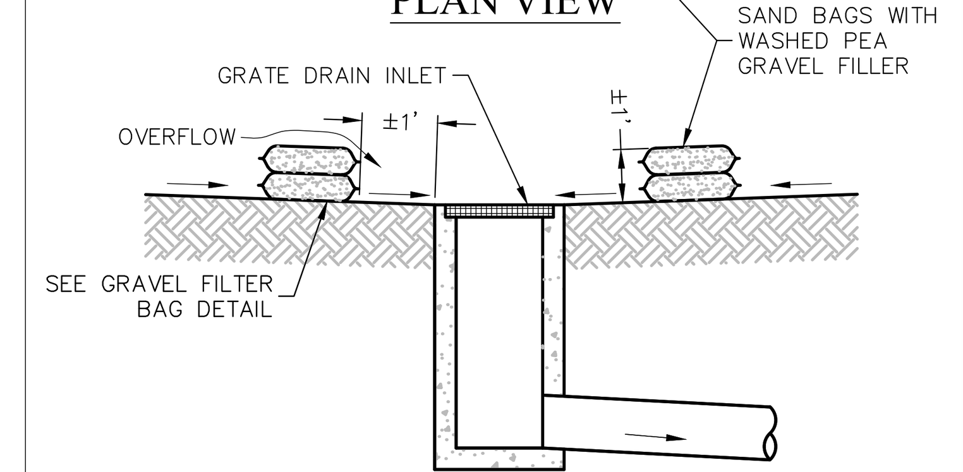
5. STRUCTURES SHOULD BE REMOVED AND THE AREA STABILIZED ONLY AFTER THE REMAINING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

BAGGED GRAVEL CURB INLET PROTECTION DETAIL

NOT-TO-SCALE



PLAN VIEW



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 MATTER THAT IT WILL NOT ERODE.

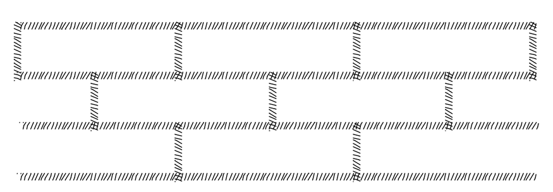
3. CHECK PLACEMENT OF DEVICE TO PREVENT GAPS BETWEEN DEVICE AND CURB.

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.

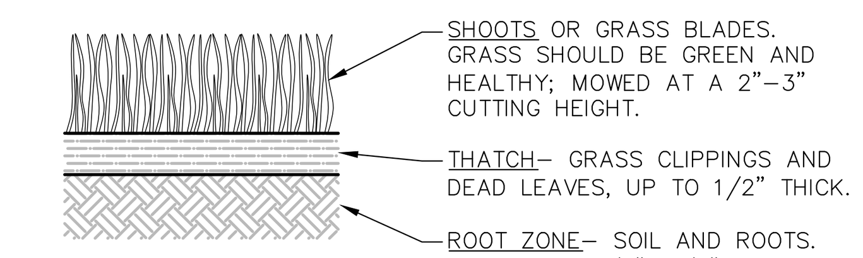
BAGGED GRATE INLET PROTECTION DETAIL

NOT-TO-SCALE



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.

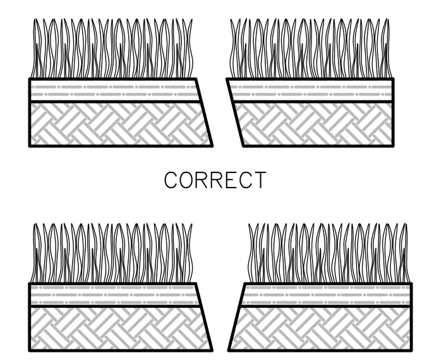


APPEARANCE OF GOOD SOD

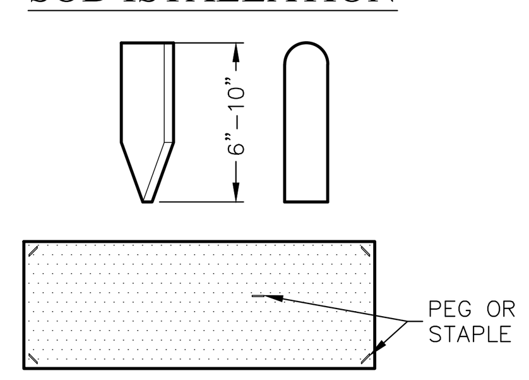
NOTES:
1. ROLL SOD IMMEDIATELY TO ACHIEVE FIRM CONTACT WITH THE SOIL.

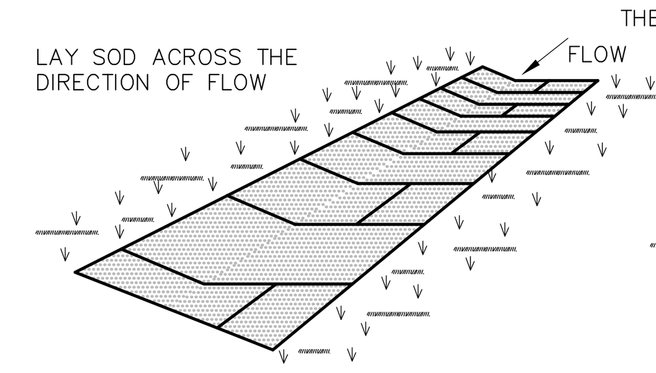
2. WATER TO A DEPTH OF 4" AS NEEDED. WATER WELL AS SOON AS THE SOD IS LAID.

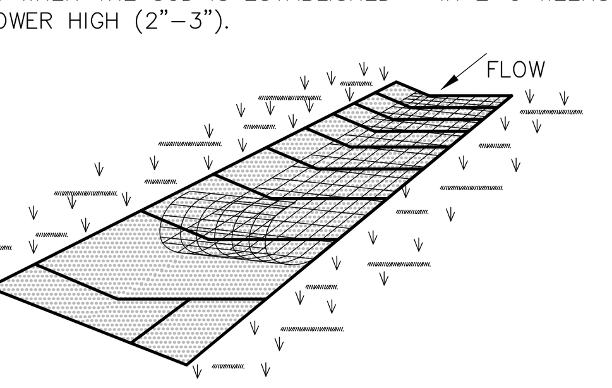
3. MOW WHEN THE SOD IS ESTABLISHED - IN 2-3 WEEKS. SET THE MOWER HIGH (2"-3").



SOD ISTALLATION







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

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.

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.

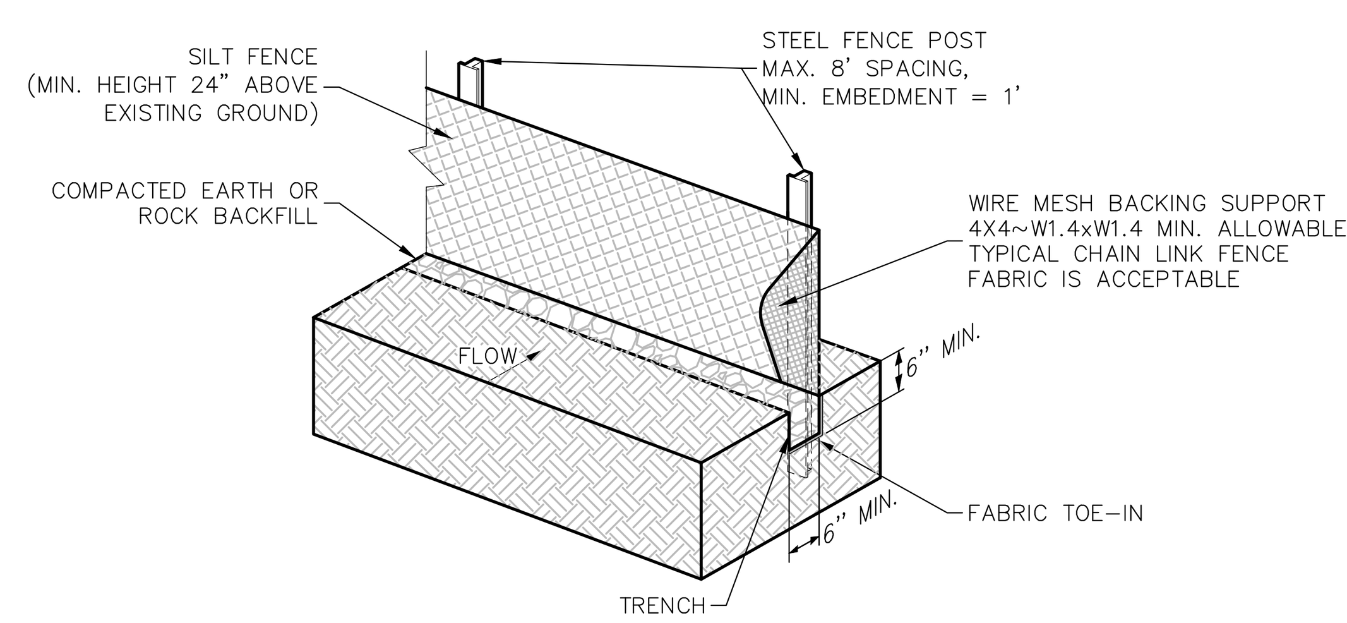
INSPECTION AND MAINTENANCE GUIDELINES

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

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.

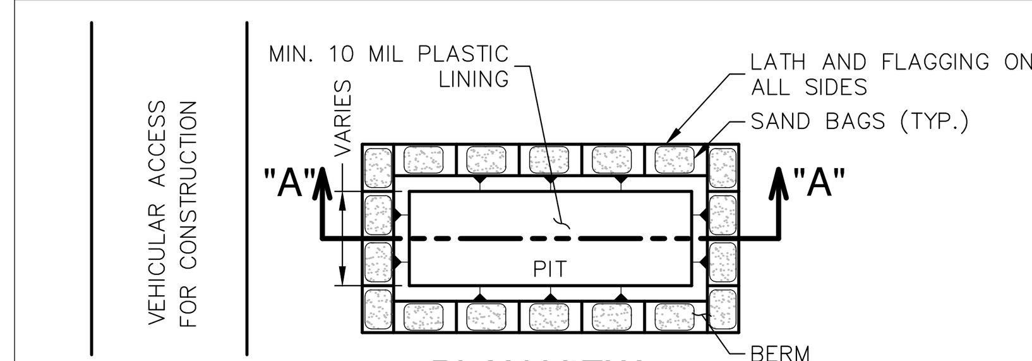
3. REPLACE TORN FABRIC OR INSTALL A SECOND LINE OF FENCING PARALLEL TO THE TORN SECTION.

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.

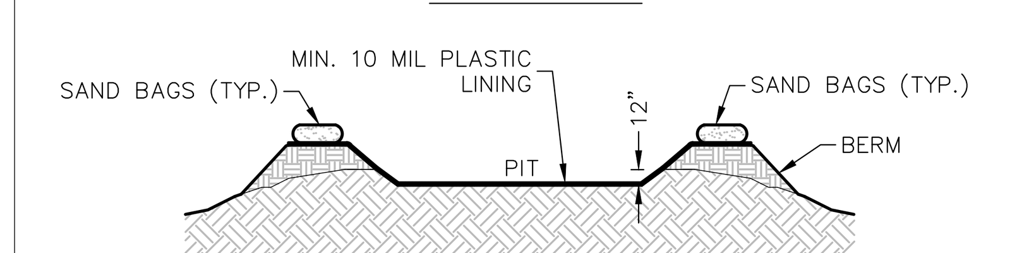
5. WHEN CONSTRUCTION IS COMPLETE, THE SEDIMENT SHOULD BE DISPOSED OF IN A MANNER THAT WILL NOT CAUSE ADDITIONAL SILTATION AND THE PRIOR LOCATION OF THE SILT FENCE SHOULD BE REVEGETATED. THE FENCE ITSELF SHOULD BE DISPOSED OF IN AN APPROVED LANDFILL.

SILT FENCE DETAIL

NOT-TO-SCALE



PLAN VIEW



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

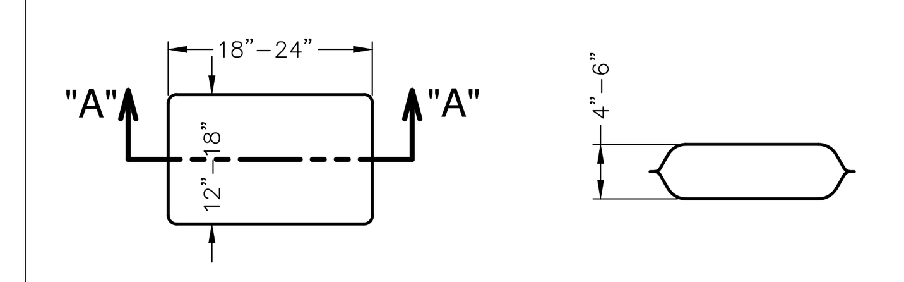
1. WHEN TEMPORARY CONCRETE WASHOUT FACILITIES ARE NO LONGER REQUIRED FOR THE WORK, THE HARDENED CONCRETE SHOULD BE REMOVED AND DISPOSED OF.

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



PLAN VIEW

SECTION "A-A"

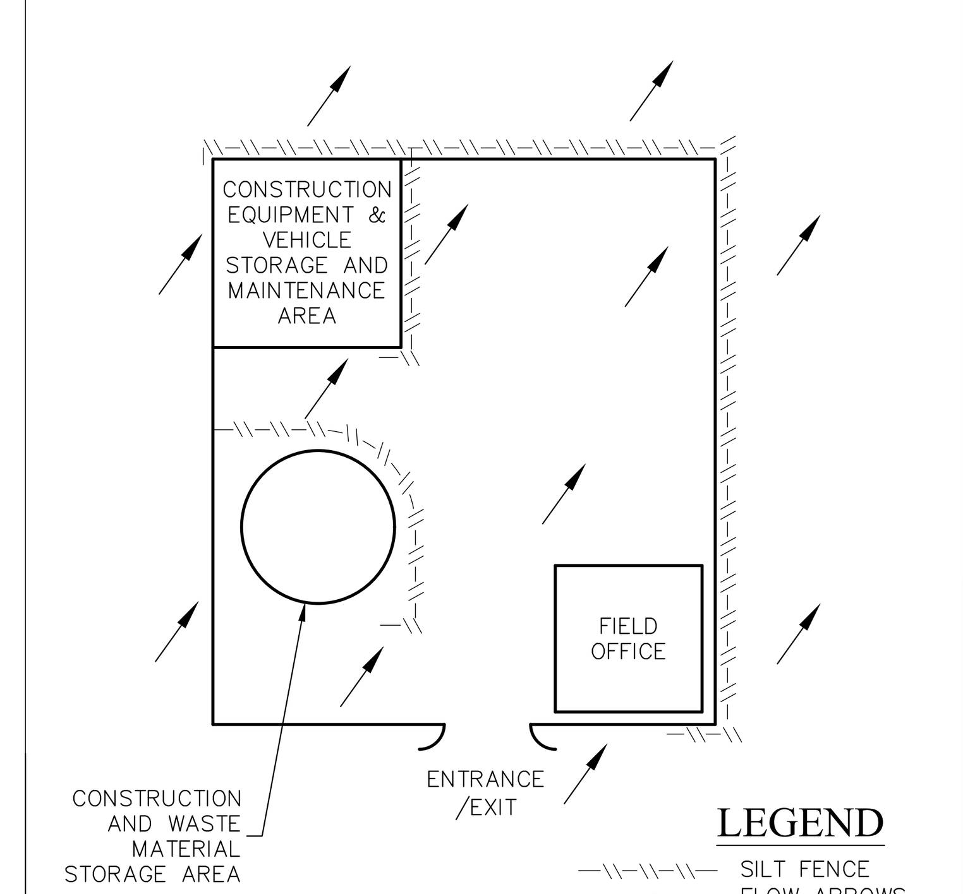
NOTES:
1. THE FILTER BAG MATERIAL SHALL BE MADE OF POLYPROPYLENE, POLYETHYLENE OR POLYAMIDE WOVEN FABRIC, MIN. UNIT WEIGHT OF 4 OUNCES/SY, HAVE A MULLEN BURST STRENGTH EXCEEDING 300 PSI AND ULTRAVIOLET STABILITY EXCEEDING 70%.

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



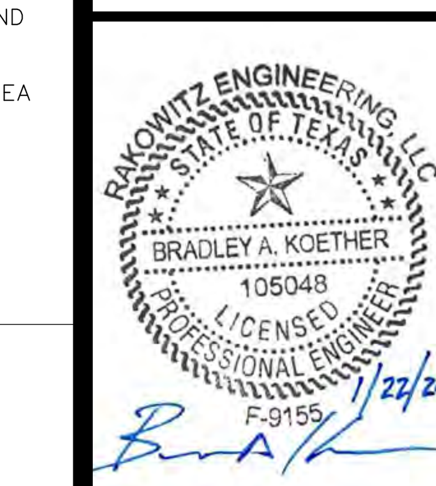
LEGEND
—\\—\\—\\— SILT FENCE
← FLOW ARROWS

CONSTRUCTION STAGING AREA

NOT-TO-SCALE

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

ROSE VALLEY SOUTH - UNIT 2
EROSION CONTROL PLAN
DETAILS
BEXAR COUNTY, TEXAS



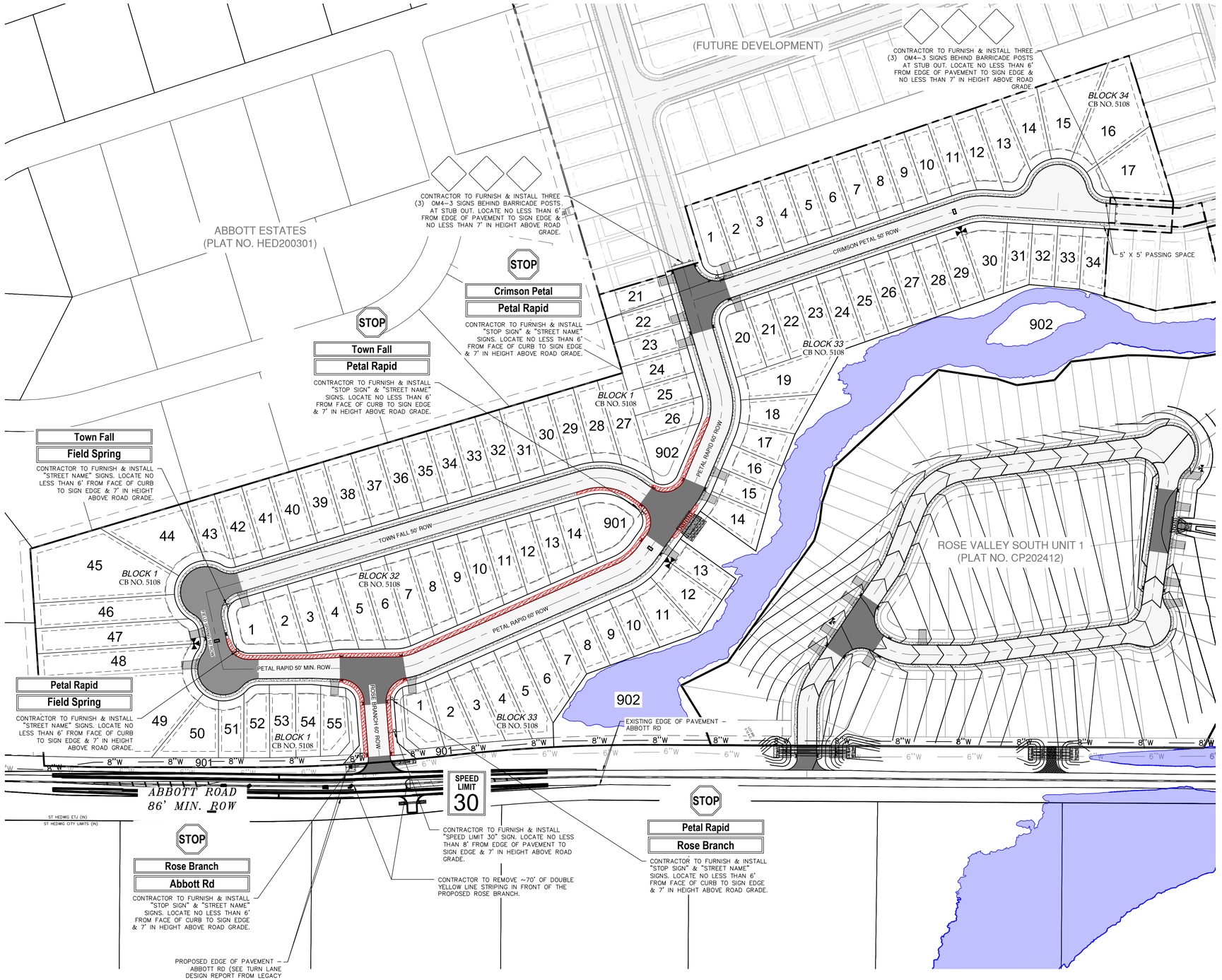
REV.	DATE	DESCRIPTION	BY

JOB NO.	23-3159J
DATE	JAN. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

C5.2
PLAT NO: CP202512

Date: Jan 22, 2026, 4:54pm User ID: CAD1-2022
File: N:\Projects\2023\23-3159J Rose Valley South U2\Civil\23-3159J Erosion Control Plan.dwg

PERMIT SET (NOT FOR CONSTRUCTION): 01/22/2026



80 0 80 160

SCALE OF FEET
1" = 80'

LEGEND

- PROPERTY BOUNDARY
- SITE LINE
- PAVEMENT LIMITS
- CENTERLINE
- STOP SIGN R1-1, 30" X 30" 531.3
- SPEED LIMIT 30 SIGN R2-1, 24" X 30" 531.6
- STANDARD COUNTY STREET NAME SIGN D3-4T, 9" X 24"-48" 531.57
- END OF ROAD MARKER OM4-3, 18" X 18" 531.56
- TYPE II BLUE RAISED PAVEMENT MARKER
- FIRE HYDRANT
- EFFECTIVE FLOODPLAIN PER LOMR-C AS SUBMITTED TO BEXAR COUNTY
- WASHOUT CROWN
- SIDEWALK TO BE CONSTRUCTED BY DEVELOPER

BEXAR COUNTY R.O.W. NOTE:
A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN THE BEXAR COUNTY R.O.W.

SIGNAGE NOTES:

1. CONTACT BEXAR COUNTY PUBLIC WORKS / 9-1-1-ADDRESSING 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 UNDEROROUND UTILITIES BEFORE COMMENCING WORK.
3. IN ACCORDANCE WITH THE UNDERGROUND FACILITY DAMAGE PREVENTION ACT, THE TELEPHONE NUMBER FOR A UTILITY LOCATOR IS 1-800-344-8377. 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 THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
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 CITY AND/OR 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.
12. SIGNS SHALL NOT IMPEDE DRAINAGE FLOW. CONTRACTOR TO ADJUST LOCATIONS AS NEEDED OR NOTIFY ENGINEER OF DISCREPANCY.

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

ROSE VALLEY SOUTH - UNIT 2
SIGNAGE PLAN

BEXAR COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105048
LICENSED
PROFESSIONAL ENGINEER
F-9155
1/22/2026

REV	DATE	DESCRIPTION	BY

JOB NO.	23-3159J
DATE	JAN. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

C6.0

PLAT NO: CP202512

Date: Jan 22, 2026, 4:51pm User ID: CAD1 2022
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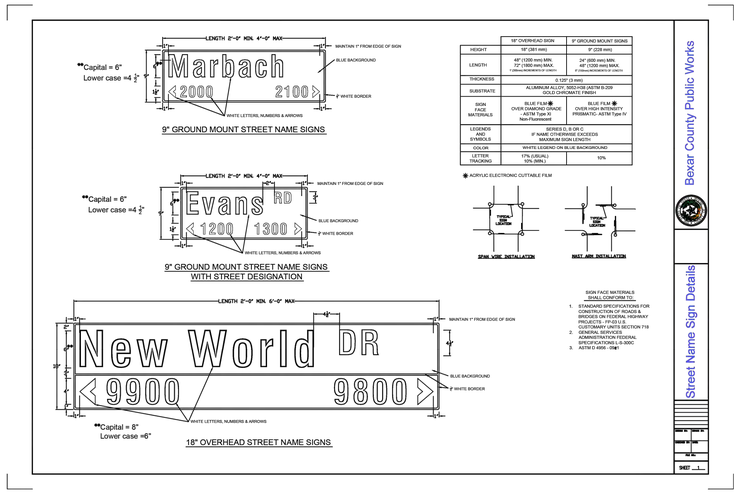
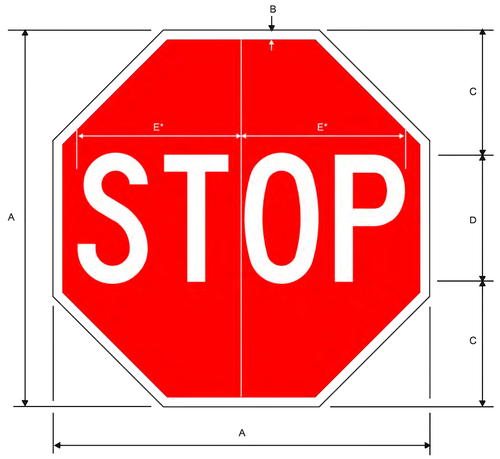


	18" OVERHEAD SIGN	9" GROUND MOUNT SIGNS
HEIGHT	18" (381 mm)	9" (229 mm)
LENGTH	48" (1200 mm) MIN. 72" (1800 mm) MAX.	24" (600 mm) MIN. 48" (1200 mm) MAX.
THICKNESS	.8 (20" (2 mm)	
SUBSTRATE	ALUMINUM ALLOY 5052-H38 (ASTM B 209 GOLD CHROMATE FINISH	
SIGN FACE MATERIALS	BLUE FILM ✱ OVER DIAMOND GRADE (ASTM Type III) Non-Fluorescent	BLUE FILM ✱ OVER HIGH INTENSITY PRISMATIC- ASTM Type IV
LEGENDS AND SYMBOLS	SERIES B, S OR C 9" NAME OTHERWISE EXCEEDS MAXIMUM SIGN LENGTH	
COLOR	WHITE LEGEND ON BLUE BACKGROUND	
LETTER TRACKING	17% (LB/LC) 10% (WBL)	10%

✱ ACRYLIC ELECTRONIC CUTTABLE FILM

SIGN FACE MATERIALS SHALL CONFORM TO:
1. STANDARD SPECIFICATIONS FOR CONSTRUCTION AND REPAIR OF BRIDGES ON FEDERAL HIGHWAY PROJECTS - FP-03 U.S. CUSTOMARY UNITS SECTION 718
2. GENERAL SERVICES ADMINISTRATION FEDERAL SPECIFICATIONS L-S-300C
3. ASTM D 4956 - 03e1



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

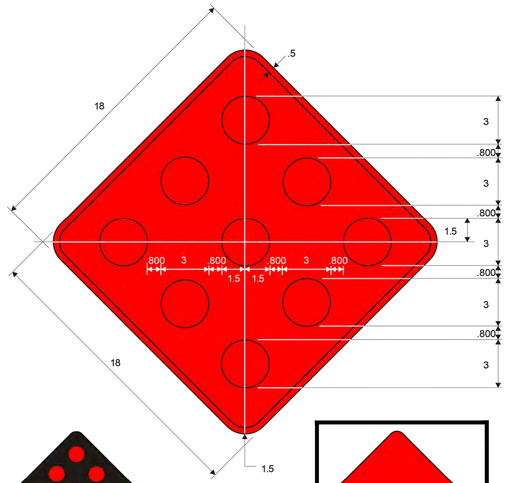
COLORS: LEGEND - WHITE
BACKGROUND - RED

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



OM4-1

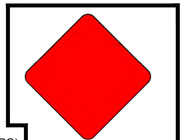
OM4-1 COLORS:

REFLECTORS — RED (RETRO)
BACKGROUND — RED
BORDER — RED (RETRO)

OM4-2

OM4-2 COLORS:

REFLECTORS — RED (RETRO)
BACKGROUND — BLACK



OM4-3

OM4-3 COLORS:

SIGN PANEL — RED (RETRO)

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

ROSE VALLEY SOUTH - UNIT 2
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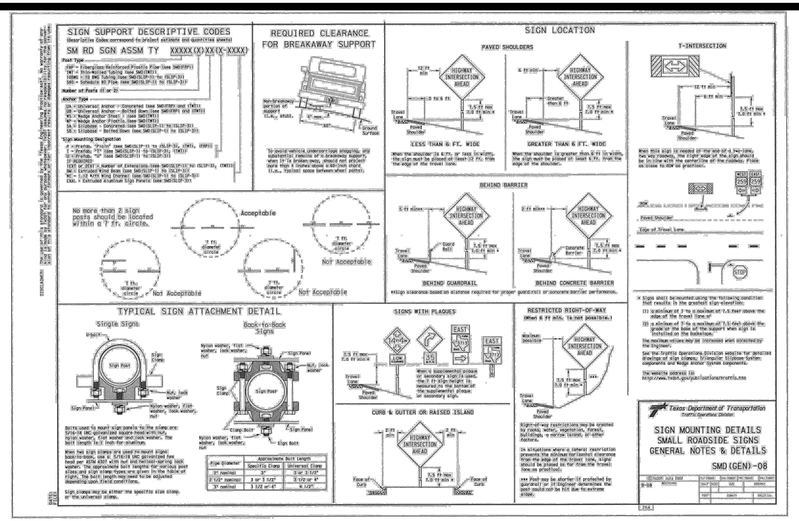
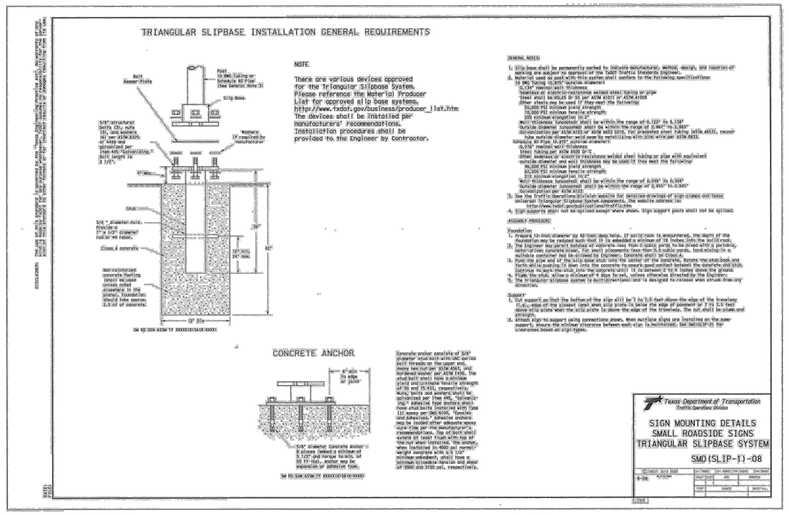
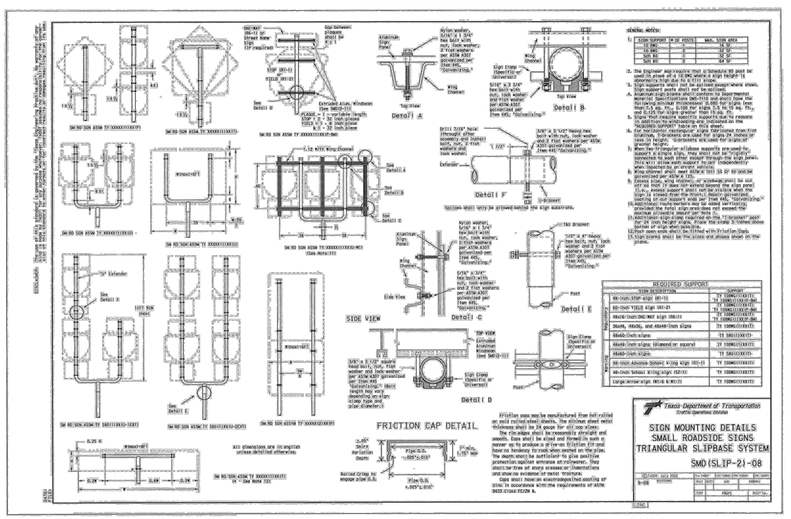
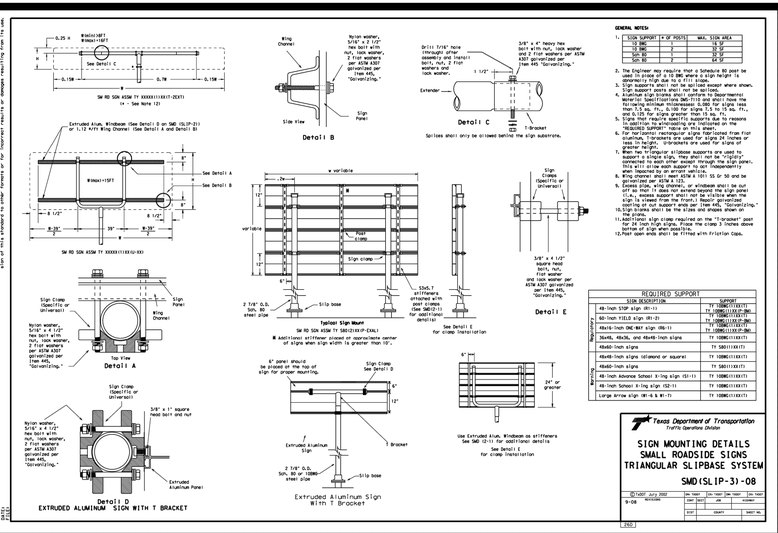
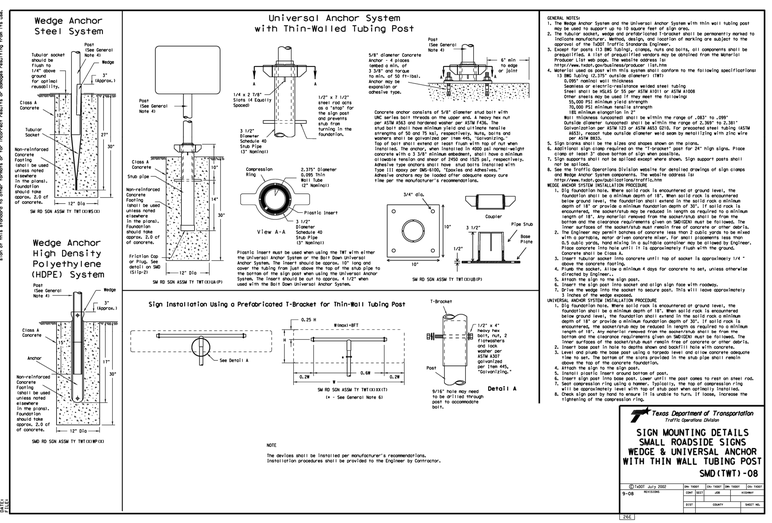
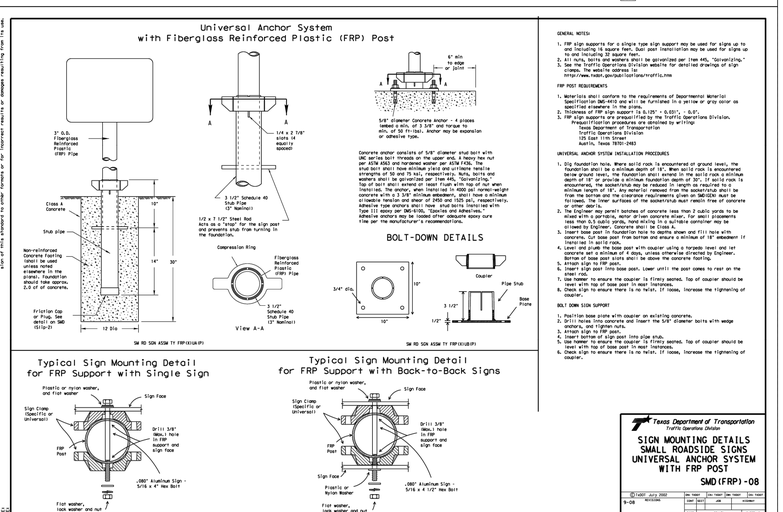












RAKOWITZ
Engineering & Surveying
Texas Registered Engineering Firm F-9155
Texas Registered Surveying Firm 101812-00
830-281-4060

ROSE VALLEY SOUTH - UNIT 2
SIGN MOUNTING DETAILS

BEXAR COUNTY, TEXAS

REV	DATE	DESCRIPTION	BY

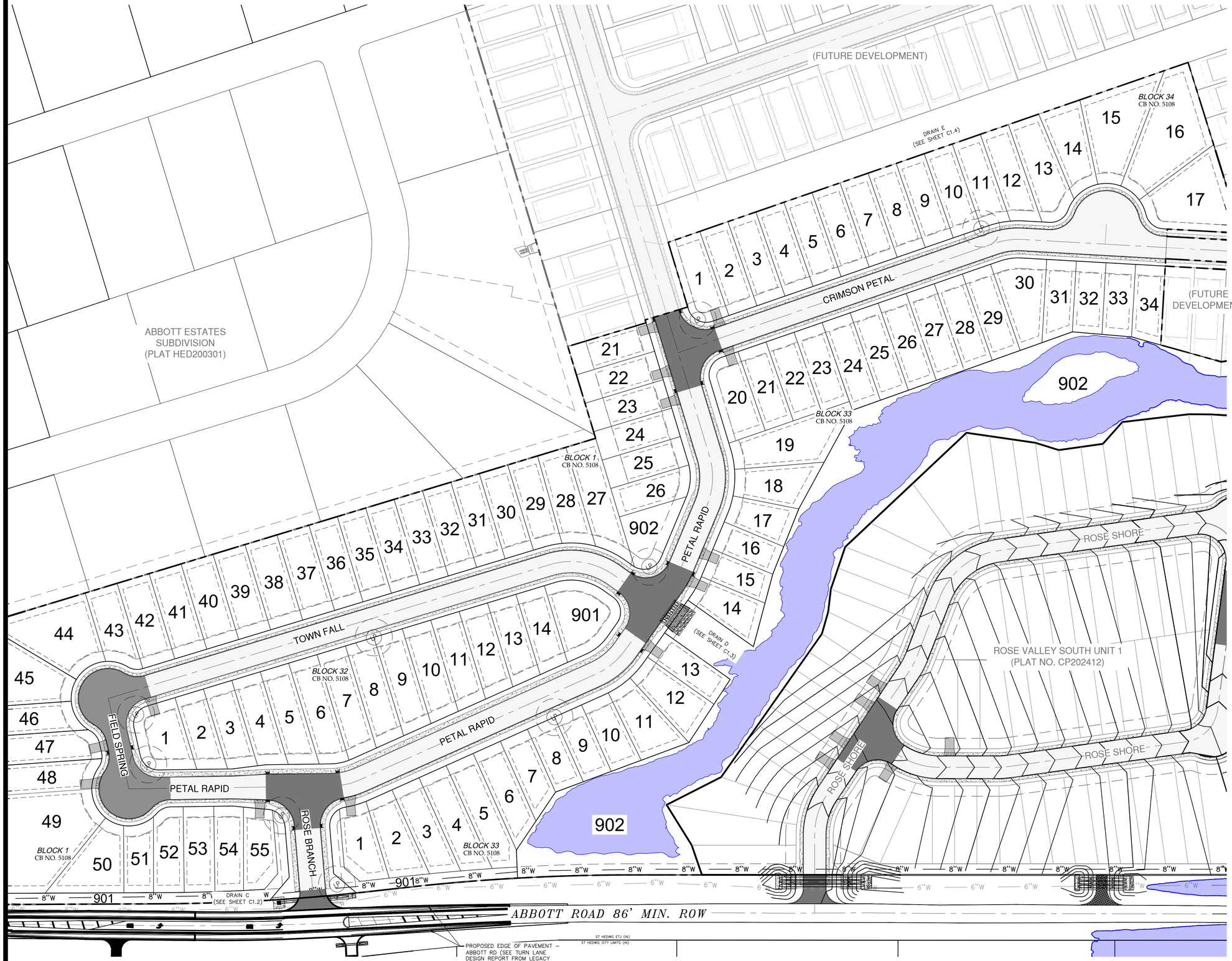
JOB NO.	23-3159J
DATE	JAN. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

C6.2

PLAT NO: CP202512

PERMIT SET (NOT FOR CONSTRUCTION): 01/22/2026

Date: Jan 22, 2026, 4:53pm User ID: CAD1-2022
File: N:\Projects\2023\23-3159J Rose Valley South Unit 2\Civil\23-3159J SIGNAGE PLAN.dwg



60 0 60 120

SCALE OF FEET
1" = 60'

LEGEND

- PROPERTY BOUNDARY
- SITE LINE
- PAVEMENT LIMITS
- CENTERLINE
- (LP) PROPOSED LIGHT POLE (N.T.S.) *PLEASE NOTE: ALL POLES SHALL BE LOCATED BEHIND SIDEWALKS
- APPROXIMATE LIGHT POLE COVERAGE (25' RADIUS TYP.)

BEXAR COUNTY R.O.W. NOTE:
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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.

Date: Jan 22, 2026, 4:53pm User ID: CAD1-2022
File: N:\Projects\20\23\23-3159 Rose Valley South UZC\Civil\23-3159 Streetlight Plan.dwg

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

ROSE VALLEY SOUTH - UNIT 2
STREETLIGHT PLAN

BEXAR COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105048
LICENSED
PROFESSIONAL ENGINEER
F-9155
1/22/2026

REV	DATE	DESCRIPTION	BY

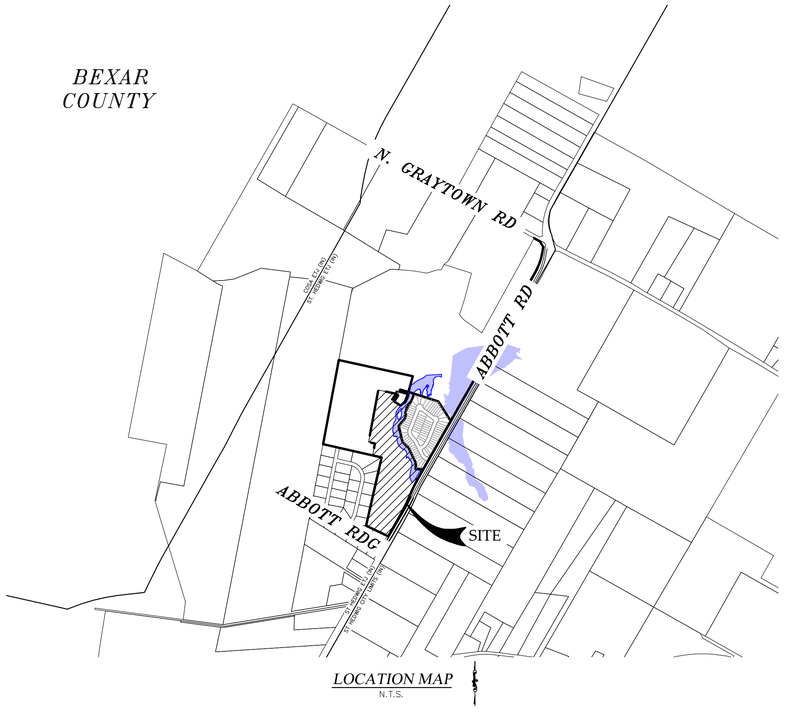
JOB NO.	23-3159J
DATE	JAN. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

C7.0

PLAT NO: CP202512

PERMIT SET (NOT FOR CONSTRUCTION): 01/22/2026

ROSE VALLEY SOUTH - UNIT 2
WATER PLANS
BEXAR COUNTY, TEXAS



WATER DISTRIBUTION PLANS - SHEET INDEX

WATER SYSTEM
EAST CENTRAL
SPECIAL UTILITY DISTRICT

DEVELOPER:
LENNAR HOMES OF TEXAS LAND AND CONSTRUCTION, LTD.
100 NE LOOP 410, SUITE 1155
SAN ANTONIO, TX 78216

JANUARY 2026

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105048
LICENSED
PROFESSIONAL ENGINEER
F-9155
1/22/2026

RAKOWITZ
Engineering & Surveying

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W0.0
JOB NO: 23-3159J

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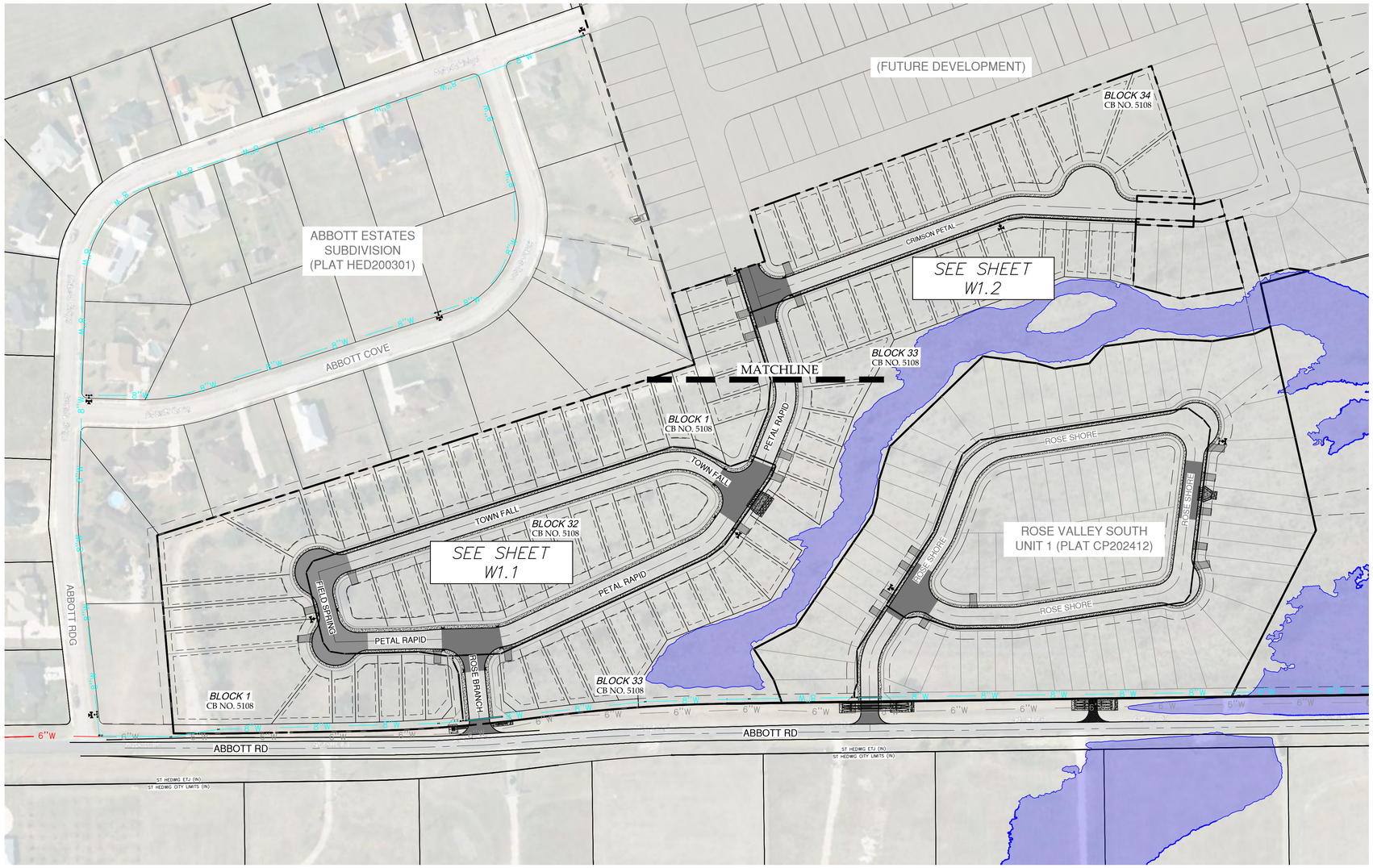

100 0 100 200

SCALE OF FEET
1" = 100'

LEGEND

- PROPERTY BOUNDARY
- 6"W — EXISTING 6" WATER MAIN (TO REMAIN)
- 6"W — EXISTING 6" WATER MAIN (TO BE ABANDONED IN PLACE)
- 8"W — EXISTING 8" WATER MAIN
- EASEMENT
- FO — EXISTING FIBER OPTIC
- OHE — EXISTING ELECTRIC
- X — EXISTING FENCE
- PROPOSED 8" WATER MAIN
- EFFECTIVE FLOODPLAIN PER LOMR-C AS SUBMITTED TO BEXAR COUNTY
- FIRE HYDRANT 500' RADIUS
- S — PROPOSED SEWER
- ARV — AIR RELEASE VALVE
- WSP — WATER SAMPLING PORT

*NOTE:
CONTRACTOR TO VERIFY EXISTING WATER SERVICES AND RECONNECT TO NEW WATER MAIN. CONTRACTOR TO CALL 811 FOR UTILITY LOCATES PRIOR TO EXCAVATION.

BEXAR COUNTY R.O.W. NOTE:
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Texas Registered Engineering Firm F-9155
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ROSE VALLEY SOUTH - UNIT 2
OFFSITE WATER MAIN
EXTENSION (1 OF 3)
BEXAR COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105048
LICENSED
PROFESSIONAL ENGINEER
F-9155
1/22/2026

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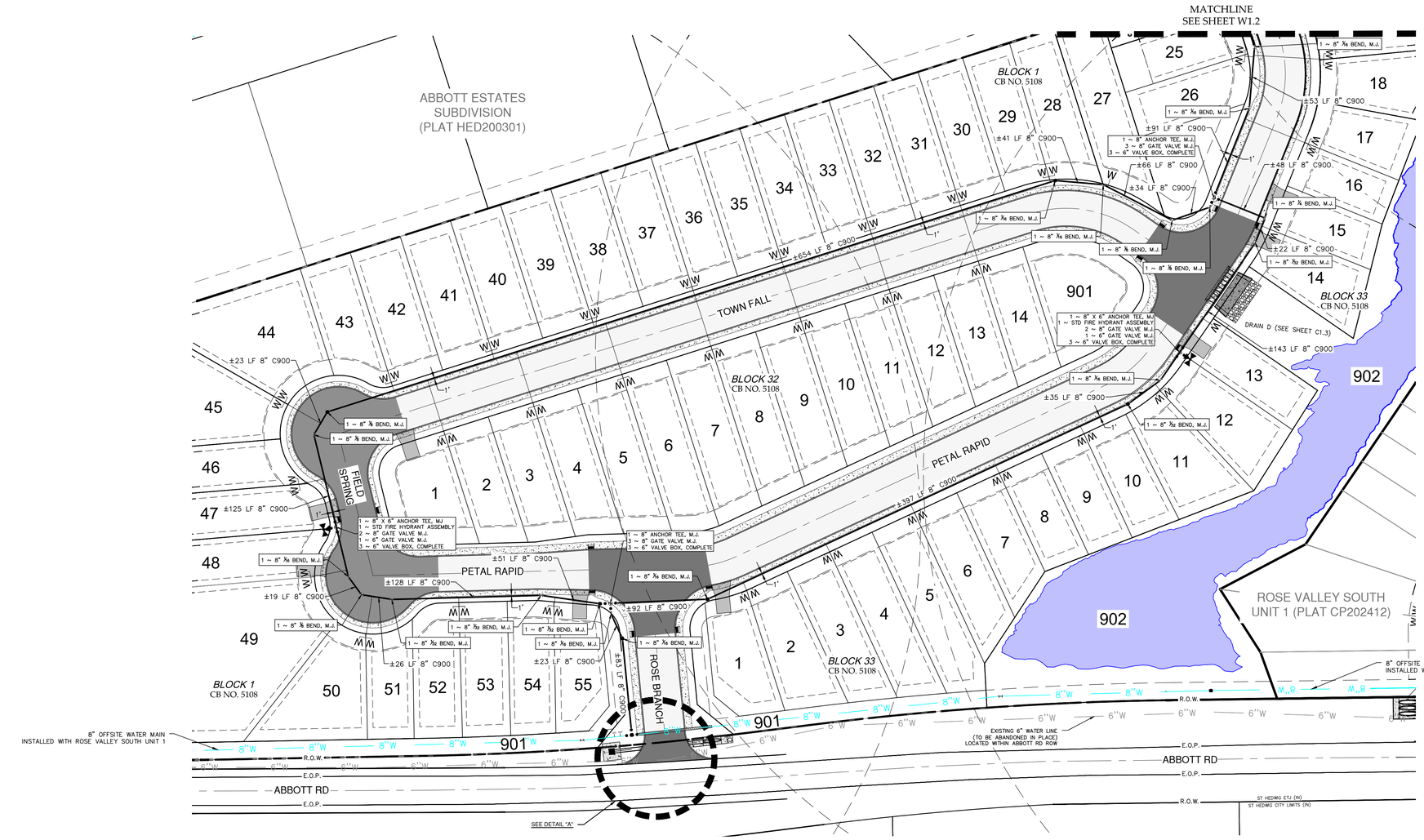
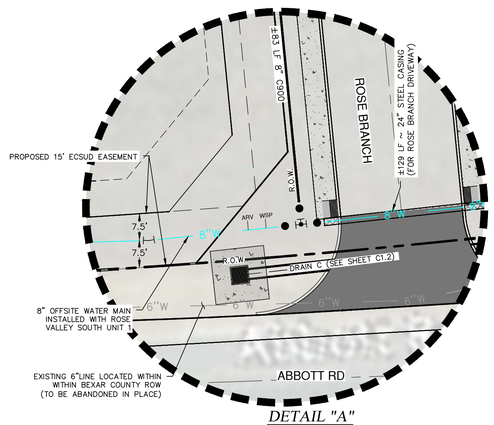
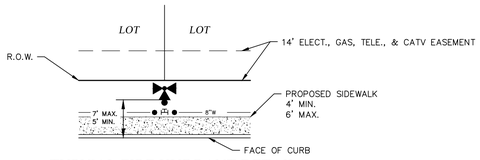




DETAIL "A"
NOT TO SCALE



TYPICAL FIRE HYDRANT DETAIL
N.T.S.

BEXAR COUNTY R.O.W. NOTE:
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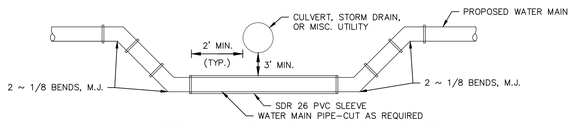

WATER MAIN CROSSING UNDER CULVERT
N.T.S.

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
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 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.

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

LEGEND

- PROPERTY BOUNDARY
- 6"W — EXISTING 6" WATER MAIN (TO BE ABANDONED IN PLACE)
- 8"W — EXISTING 8" WATER MAIN
- EASEMENT
- FO — FO — EXISTING FIBER OPTIC
- OHE — OHE — EXISTING ELECTRIC
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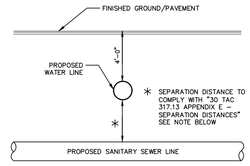
- EFFECTIVE FLOODPLAIN PER LOMR–C AS SUBMITTED TO BEXAR COUNTY
- S — S — PROPOSED SEWER
- ARV — AIR RELEASE VALVE
- WSP — WATER SAMPLING PORT

GENERAL 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 EAST CENTRAL SPECIAL UTILITY DISTRICT SPECIFICATIONS UNLESS DIRECTED OTHERWISE BY BEXAR COUNTY (SEE SHEETS W2.0, W2.1, AND W2.2).
3. CONTRACTOR SHALL BE RESPONSIBLE FOR TAPPING PUBLIC WATER MAINS. CONTACT EAST CENTRAL SPECIAL UTILITY DISTRICT FOR DETAILS.
4. ALL SERVICE LINES SHALL BE 1–INCH IN DIAMETER.



NOTE:
WHERE WASTEWATER AND WATER LINES ARE PARALLEL, THEY SHOULD BE INSTALLED NO CLOSER THAN 9'. IF A 9' SEPARATION IS NOT POSSIBLE, THE FOLLOWING GUIDELINES APPLY:
A. IF PARALLEL WASTEWATER AND WATER LINES ARE INSTALLED CLOSER THAN 9' TO ONE ANOTHER, THE WASTEWATER LINE SHALL BE CONSTRUCTED OF SDR 26 PRESSURE RATED PVC. HORIZONTAL SEPARATION SHALL BE A MINIMUM OF 4'. THE VERTICAL SEPARATION SHALL BE A MINIMUM OF 2'. THE WASTEWATER LINE SHALL BE BELOW THE WATER LINE IF AT ALL POSSIBLE.
B. WHERE A WASTEWATER LINE CROSSES A WATER LINE, A VERTICAL SEPARATION OF 2' SHALL BE MAINTAINED IF POSSIBLE. IF NOT, AN ABSOLUTE MINIMUM 6" SEPARATION MUST BE MAINTAINED AND THE WASTEWATER LINE SHALL BE ENCASED IN CEMENT STABILIZED SAND FOR 18 LF CENTERED ON THE WATER LINE. THE WASTEWATER LINE SHALL BE BELOW THE WATER LINE IF AT ALL POSSIBLE.
C. WHERE A WASTEWATER LINE CROSSES OVER A WATER LINE, THE WASTEWATER LINE SHALL BE CONSTRUCTED OF SDR 26 PRESSURE RATED PVC PIPE, AND ONE LENGTH OF THE PRESSURE WASTEWATER PIPE SHALL BE CENTERED ON THE WATER LINE. ADDITIONALLY, IF THE VERTICAL SEPARATION IS LESS THAN 2', THE WASTEWATER LINE SHALL BE ENCASED IN CEMENT STABILIZED SAND AS DESCRIBED ABOVE.

TYPICAL WATER/SANITARY SEWER CROSSING DETAIL
NOT TO SCALE

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

ROSE VALLEY SOUTH - UNIT 2
ONSITE WATER PLAN

BEXAR COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105048
LICENSED
PROFESSIONAL ENGINEER
1/22/2026
F-9155

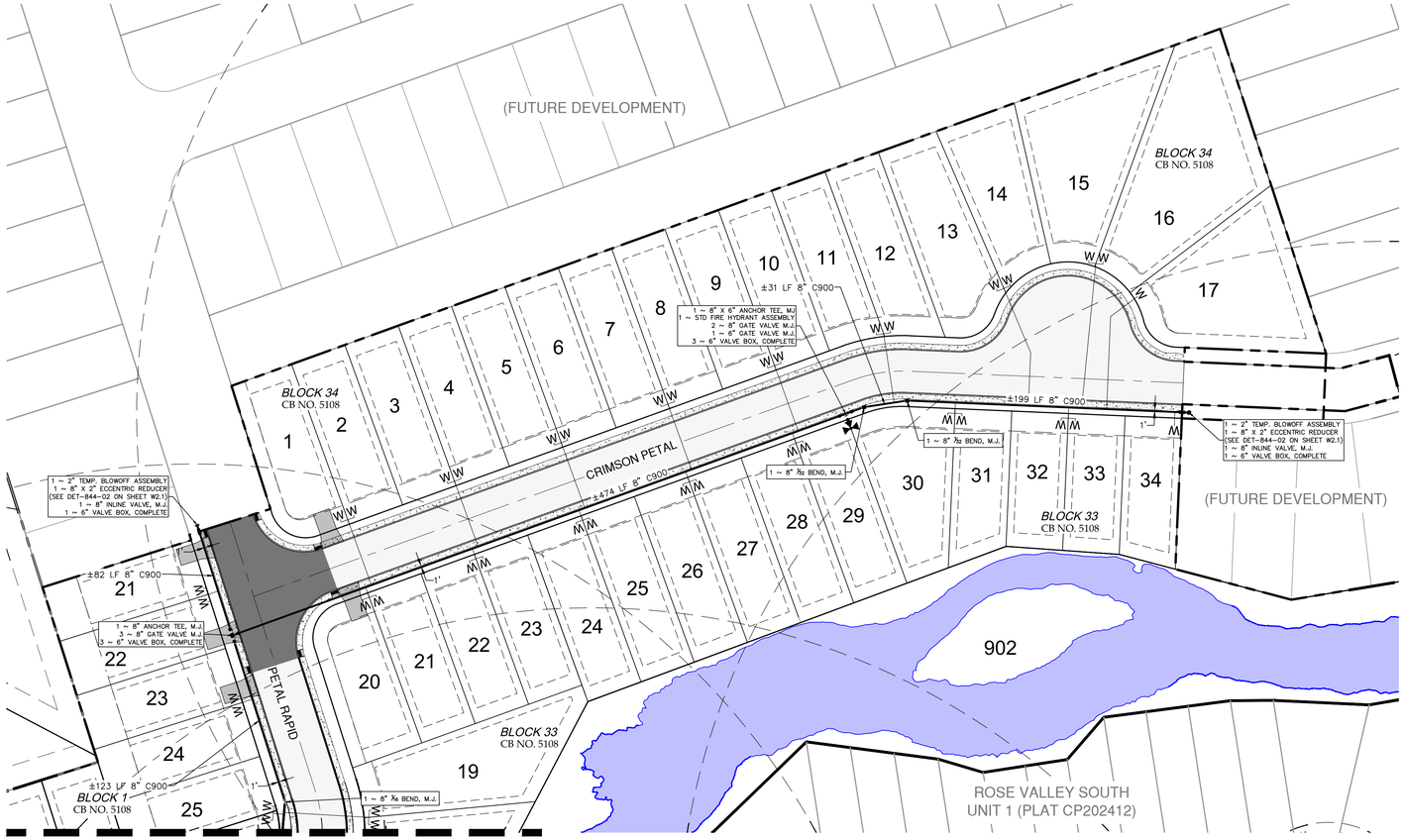
REV	DATE	DESCRIPTION	BY

JOB NO.	23-3159J
DATE	JAN. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

W1.1
PLAT NO: CP202512

Date: Jan 22, 2026, 4:54pm User ID: CAD1.2022
File: N:\Projects\2023\23-3159 Rose Valley South U2\Civil\23-3159 Water Plans.dwg

PERMIT SET (NOT FOR CONSTRUCTION): 01/22/2026



MATCHLINE
SEE SHEET W1.1

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

LEGEND

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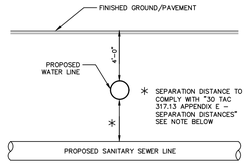

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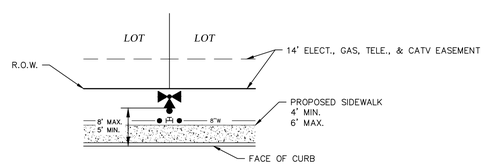
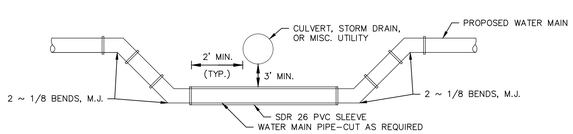
TYPICAL WATER/SANITARY SEWER CROSSING DETAIL
NOT TO SCALE



TYPICAL FIRE HYDRANT DETAIL
N.T.S.



WATER MAIN CROSSING UNDER CULVERT
N.T.S.

BEXAR COUNTY R.O.W. NOTE:
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RAKOWITZ
Engineering & Surveying
Texas Registered Engineering Firm F-9155
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830-281-4060

ROSE VALLEY SOUTH - UNIT 2
ONSITE WATER PLAN

BEXAR COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105048
LICENSED
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1/22/2026

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W1.2
PLAT NO: CP202512

Date: Jan 22, 2026, 4:54pm User ID: CAD1 2022
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PERMIT SET (NOT FOR CONSTRUCTION): 01/22/2026

TESTING OF PRESSURE PIPELINES

1.0 DESCRIPTION

This item shall govern the furnishing of all labor, materials, tools, equipment and related items required to perform hydrostatic testing of Ductile Iron and Polyvinyl Chloride (PVC) pressure pipelines for integrity and leakage.

2.0 MATERIALS

Not applicable.

3.0 CONSTRUCTION METHODS

A. For Ductile Iron Pipe, make hydrostatic pressure and leakage tests on entire pipeline in accordance with AWWA Standard C600-99, Section 5.2.

B. For PVC Pipe, make hydrostatic pressure and leakage tests on entire pipeline in accordance with AWWA Standard C605-94, Section 7.3.

C. Furnish all labor equipment, including test pump with regulated by-pass meters and gauges required for conducting pipeline tests. Furnish equipment and necessary piping as required to transport water used in testing from source to test location.

D. Schedule time and sequence of testing, subject to observation and approval by the Owner or Owner's Representative. Provide adequate labor, tools and equipment to operate valves and to locate and repair leaks discovered during the initial filling of the pipeline prior to actual testing or during the course of the tests.

E. After the pipe has been laid and backfilled and the backfill has been jetted or otherwise consolidated, subject all newly laid pipe or valved section thereof to the hydrostatic pressure specified below for the particular type of pipe. The duration of each pressure test shall be at least four hours, unless otherwise specified or required by the Owner's Representative, during which time the pressure shall be maintained within the pipeline system and which might be damaged if subjected to the specified test pressure. Cap or plug the ends of the branch lines during the testing procedures.

F. Fill each valved (capped or plugged) section of pipe slowly with water and expel all air. If permanent air vents are not located at all high points, install corporation or blow-off cocks at such points so that the air can be expelled as filling takes place. After verification that all air has been expelled, close the cocks and keep the pipe filled until tested. Examine interposed pipe, fittings, valves, hydrants and joints while under test pressure. Visible leaks shall be stopped. Remove and replace cracked or defective pipe, fittings, valves or hydrants discovered during testing. Replacement shall be with sound material. Repeat the test until specified requirements are achieved.

G. Where any section of a pipeline is proved with concrete thrust blocking, do not make hydrostatic pressure test until at least five days have elapsed after installation of the blocking.

H. Pressure/Leakage Tests

1. The duration of the hydrostatic test shall be a minimum of four (4) hours.
2. The pipeline shall be tested so that the pressure at the highest point in the test section is not less than 250 psi.
3. The maximum allowable leakage is the number of gallons per hour as determined by the following formulas.

a. For Ductile Iron Pipe:

$$L = \frac{SD\sqrt{P}}{133,200}$$

Where:
L = allowable leakage, in gallons per hour
S= number of joints in the length tested
D= nominal diameter of the pipe, in inches
P = 200, in psig

b. For PVC Pipe:

$$L = \frac{SD\sqrt{P}}{7,400}$$

Where:
L = allowable leakage, in gallons per hour
S= number of joints in the length of pipeline tested
D= nominal diameter of the pipe, in inches
P = 200, in psig

H. Final Acceptance

1. No pipe installation will be accepted until known leaks have been repaired, whether or not leakage is within allowable limits. Locate and repair leaks at no additional cost to the Owner.
2. The Contractor will certify that all required pressure and leakage tests have been successfully completed before the pipeline is accepted.

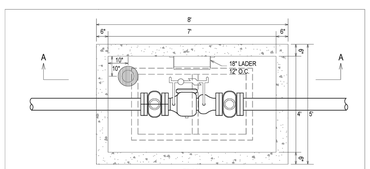
I. Special Project Requirements

Water Source. Obtaining water for testing purposes shall be the responsibility of the Contractor. The Contractor shall provide all equipment and labor required to transport water from the source to the test point.

4.0 MEASUREMENT AND PAYMENT

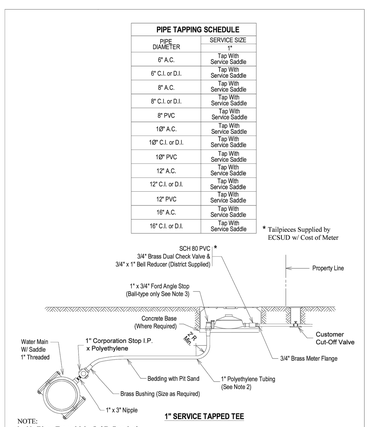
No direct measurement or payment will be made for the work to be done or the equipment to be furnished under this item, but shall be considered subsidiary to the particular items of work for which unit prices are required in the proposal.

East Central	TESTING FOR PRESSURE PIPELINES	APPROVED JULY 2022	REVISED	SHEET 1 OF 1
		DET-100-Ø1		



East Central	6" DOUBLE CHECK DETECTOR ASSEMBLY WITH 5'x8' CONCRETE VAULT BOX	APPROVED JULY 2022	REVISED	SHEET 1 OF 1
		DET-808-Ø1		

PIPE TAPPING SCHEDULE	
PIPE DIAMETER	SERVICE SIZE 1"
6" A.C.	Tap With Service Saddle
6" C.I. or D.I.	Tap With Service Saddle
8" A.C.	Tap With Service Saddle
8" C.I. or D.I.	Tap With Service Saddle
8" PVC	Tap With Service Saddle
10" A.C.	Tap With Service Saddle
10" C.I. or D.I.	Tap With Service Saddle
10" PVC	Tap With Service Saddle
12" A.C.	Tap With Service Saddle
12" C.I. or D.I.	Tap With Service Saddle
12" PVC	Tap With Service Saddle
16" A.C.	Tap With Service Saddle
16" C.I. or D.I.	Tap With Service Saddle

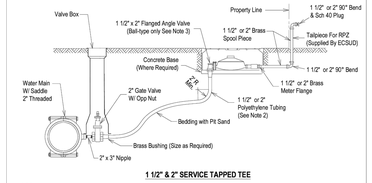


NOTE:
1. No Direct Tap to Main, Saddle Required
2. Polyethylene Shall be 250 psi Rated - Color Blue
3. FORD Angle Stop BA43-342-WNL
4. Meter Box Shall be DFW 36C
5. 2" HDPE Main Will Use FORD 2" CT's x 1" FIPT Tee (T441-774NL)
FOR PERFERRED MANUFACTURERS SEE STANDARD SPECIFICATIONS

1" SERVICE TAPPED TEE

East Central	1" SERVICE INSTALLATION TAPPING SCHEDULE	APPROVED FEBRUARY 2025	REVISED	SHEET 1 OF 1
		DET-824-Ø1		

PIPE TAPPING SCHEDULE		
PIPE DIAMETER	SERVICE SIZE 1 1/2"	2"
6" A.C.	Tap With Service Saddle	Tap With Service Saddle
6" C.I. or D.I.	Tap With Service Saddle	Tap With Service Saddle
8" A.C.	Tap With Service Saddle	Tap With Service Saddle
8" C.I. or D.I.	Tap With Service Saddle	Tap With Service Saddle
8" PVC	Tap With Service Saddle	Tap With Service Saddle
10" A.C.	Tap With Service Saddle	Tap With Service Saddle
10" C.I. or D.I.	Tap With Service Saddle	Tap With Service Saddle
10" PVC	Tap With Service Saddle	Tap With Service Saddle
12" A.C.	Tap With Service Saddle	Tap With Service Saddle
12" C.I. or D.I.	Tap With Service Saddle	Tap With Service Saddle
12" PVC	Tap With Service Saddle	Tap With Service Saddle
16" A.C.	Tap With Service Saddle	Tap With Service Saddle
16" C.I. or D.I.	Tap With Service Saddle	Tap With Service Saddle

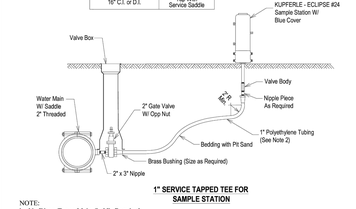


NOTE:
1. No Direct Tap to Main, Saddle Required
2. Polyethylene Shall be 250 psi Rated - Color Blue
3. Anything Greater Than 1 1/2" Will Use a Angle x Flange
4. Meter Box Shall be DFW 1324 C
5. Tracer wire to be Installed and Taped in 8' Intervals from Main to Meter Box. See DET-828-01

1 1/2" & 2" SERVICE TAPPED TEE

East Central	1 1/2" & 2" SERVICE INSTALLATION TAPPING SCHEDULE	APPROVED FEBRUARY 2025	REVISED	SHEET 2 OF 2
		DET-824-Ø2		

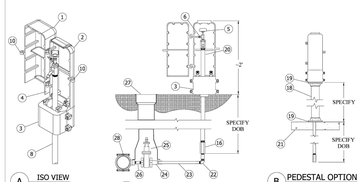
PIPE TAPPING SCHEDULE	
PIPE DIAMETER	SERVICE SIZE 1"
6" A.C.	Tap With Service Saddle
6" C.I. or D.I.	Tap With Service Saddle
8" A.C.	Tap With Service Saddle
8" C.I. or D.I.	Tap With Service Saddle
8" PVC	Tap With Service Saddle
10" A.C.	Tap With Service Saddle
10" C.I. or D.I.	Tap With Service Saddle
10" PVC	Tap With Service Saddle
12" A.C.	Tap With Service Saddle
12" C.I. or D.I.	Tap With Service Saddle
12" PVC	Tap With Service Saddle
16" A.C.	Tap With Service Saddle
16" C.I. or D.I.	Tap With Service Saddle



NOTE:
1. No Direct Tap to Main, Saddle Required
2. Polyethylene Shall be 250 psi Rated - Color Blue
3. 2" HDPE Main Will Use FORD 2" CT's x 1" FIPT Tee (T441-774NL)
FOR PERFERRED MANUFACTURERS SEE STANDARD SPECIFICATIONS
5. Tracer wire to be Installed and Taped in 8' Intervals from Main to Sample Station. See DET-828-01

1" SERVICE TAPPED TEE FOR SAMPLE STATION

East Central	1" SERVICE INSTALLATION TAPPING SCHEDULE FOR SAMPLE STATIONS ONLY	APPROVED FEBRUARY 2025	REVISED	SHEET 1 OF 1
		DET-824-Ø3		



GENERAL SPECIFICATIONS	
MAXIMUM OPERATING PRESSURE:	250 PSI
STATION MATERIALS:	303, 304, 316, & 18-8 STAINLESS STEEL, BUNA-N
ENCLOSURE MATERIAL: ENCLOSURE COLOR:	CAST 319 ALUMINUM BLUE
WETTED MATERIALS:	BUNA-N RUBBER, 303, 304, 316 & 18-8 STAINLESS STEEL
DEPTH OF BURY: WEIGHT:	36" 350 LBS @ 7 DOB ~315 LBS @ 7 DOB
ADDITIONAL PEDESTAL WEIGHT:	~30 LBS FOR 3' PEDESTAL
CUSTOM LOGO: NSF CERT:	

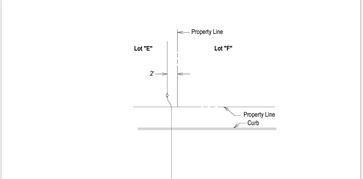
ITEM	DESCRIPTION	NOTES
1	8# FRONT DOOR (COVER A)	
2	8# REAR DOOR (COVER B)	
3	#8 BASE	2 PIECES
4	1/2" UNTHREADED NOZZLE	
5	OPERATING HANDLE	
6	DRAIN HOSE BARB	
7	DRAIN CAP	
8	1" S.S. BARREL	
9	S.S. OPERATING ROD	NOT SHOWN
10	LOCKING HOLE	
11	VALVE SEAT	NOTE 3
12	VALVE SEAT CARRIER	NOTE 3
13	OPERATING SCREW	NOTE 3
14	SEAT O-RING	NOTE 1

ITEM	DESCRIPTION	NOTES
15	WATER PATH	
16	SENSUS OMNI	
17	INLET HOLES	
18	PEDESTAL	
19	PEDESTAL GASKET	
20	PACKING NUT	
21	CONCRETE	
22	3/4" S.S. ELBOW	
23	3/4" S.S. PIPE	AS REQ.
24	BRASS BUSHING	2" x 3"
25	2" x 3" NIPPLE OR OPP NUT	
26	2" x 4" NIPPLE	BRASS
27	VALVE BOX	
28	SADDLE CLAMP	2" THREAD

Sampling Station shall be _____ bury, with a 1" FIP inlet, and 1/2" unthreaded blow off and sampling bibb.
Station shall be enclosed in a lockable, cast aluminum box with hinged openings.
When open, the station shall require no key for operation, and all water flow shall pass thru an all stainless steel waterway. All operational components shall be of stainless steel and service/dri / replaceable from above ground with no digging or excavation needed.
The operating screw shall be located underground and inside of the valve body. The operating screw, when turned via the handle, shall raise and lower a valve seat carrier, for controlling the flow of water through the hydrant. The station shall utilize an o-ring for sealing of the valve core to valve seat carrier to shut off the flow of water. The operating rod shall be supported on both ends, via the packing nut and the valve seat carrier to prevent the station from vibrating/pulsing under high pressures and to ensure smooth operation.
When open, the water shall flow through the 6 openings of the valve seat carrier, up and around the valve cores, up the stand pipe and out through the nozzle.
The operating rod shall be hollow. A secondary drain port shall be located on the hollow operating rod, underneath the handle and when open shall allow for evacuation of any water remaining inside the station, via pump or compressed air blow off, to prevent freezing.
The station shall be model #24 as manufactured by Kupferle Water Solutions, St. Louis MO. 63102 or approved equal.

Notes:
1.) The color shall be Blue, check with the manufacturer for color options, and specify accordingly.
2.) When installed on or with concrete, Kupferle recommends the use of a gasket or barrier between the enclosure/pedestal and the concrete surface. when purchasing the station, if concrete install is specified on the order Kupferle will provide said gasket. the enclosure clamp on the bottom of the enclosure base will fit inside a 4" pvc pipe.
3.) Prolonged exposure to strong chlorides which can be present in concrete, cleaning agents, and sometime even potable water can lead to possible enclosure corrosion. regular maintenance and drying the station after use are the best methods for optimal station longevity.
4.) In corrosive solids the buried pipe should be prepared for additional resistance to corrosion. Kupferle recommends spraying all underground piping and fittings with bituminous epoxy tar, allowing proper time to dry, and then wrapping the parts.

East Central	#24 SAMPLING STATION SPEC SHEET	APPROVED FEBRUARY 2025	REVISED	SHEET 1 OF 1
		DET-824-Ø4		

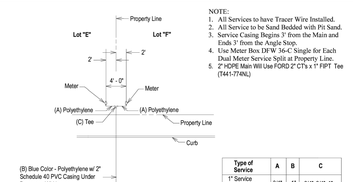


NOTE:
1. All Services to have Tracer Wire Installed.
2. All Service to be Sand Bedded with Pit Sand.
3. Service Casing Begins 3' from the Main and Ends 3' from the Angle Stop.
4. Use Meter Box DFW 36-C Single for Each Dual Meter Service Split at Property Line.
5. 2" HDPE Main Will Use FORD 2" CT's x 1" FIPT Tee (T441-774NL)

Type of Service	A	B	C
1" Service 2 - 3/4" Meters	3/4"	1"	3/4"x3/4"x1"
1" Service 2 - 1" Meters	1"	1"	1"x 1"x 1"

SINGLE SERVICE LINE - DUAL METER

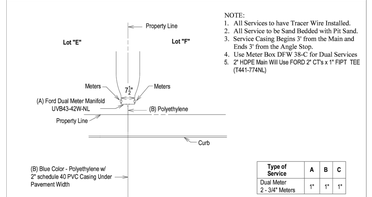
East Central	TYPICAL RURAL SERVICE ARRANGEMENT	APPROVED FEBRUARY 2025	REVISED	SHEET 2 OF 4
		DET-824-Ø5		



NOTE:
1. All Services to have Tracer Wire Installed.
2. All Service to be Sand Bedded with Pit Sand.
3. Service Casing Begins 3' from the Main and Ends 3' from the Angle Stop.
4. Use Meter Box DFW 36-C for Single Services
5. 2" HDPE Main Will Use FORD 2" CT's x 1" FIPT Tee (T441-774NL)

SINGLE SERVICE LINE - SINGLE METER

East Central	TYPICAL SERVICE ARRANGEMENT	APPROVED FEBRUARY 2025	REVISED	SHEET 1 OF 4
		DET-824-Ø5		

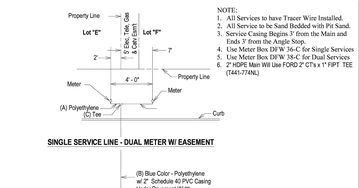


NOTE:
1. All Services to have Tracer Wire Installed.
2. All Service to be Sand Bedded with Pit Sand.
3. Service Casing Begins 3' from the Main and Ends 3' from the Angle Stop.
4. Use Meter Box DFW 36-C for Dual Services
5. 2" HDPE Main Will Use FORD 2" CT's x 1" FIPT TEE (T441-774NL)

Type of Service	A	B	C
Dual Meter 2 - 3/4" Meters	1"	1"	1"

SINGLE SERVICE LINE - DUAL METER

East Central	TYPICAL HIGH DENSITY RESIDENTIAL SERVICE ARRANGEMENT	APPROVED FEBRUARY 2025	REVISED	SHEET 3 OF 4
		DET-824-Ø5		

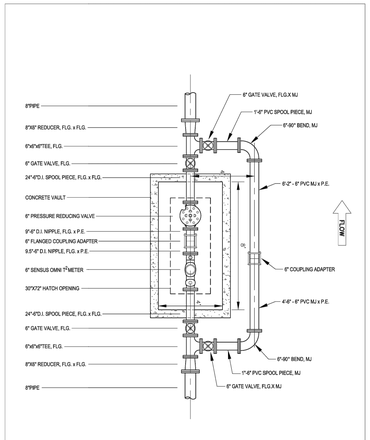


NOTE:
1. All Services to have Tracer Wire Installed.
2. All Service to be Sand Bedded with Pit Sand.
3. Service Casing Begins 3' from the Main and Ends 3' from the Angle Stop.
4. Use Meter Box DFW 36-C for Single Services
5. Use Meter Box DFW 38-C for Dual Services
6. 2" HDPE Main Will Use FORD 2" CT's x 1" FIPT TEE (T441-774NL)

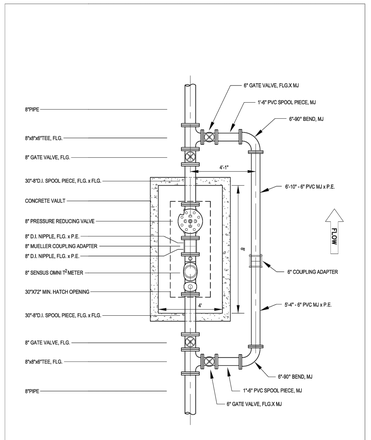
SINGLE SERVICE LINE - DUAL METER W/ EASEMENT

Type of Service	A	B	C
1" Service 2 - 3/4" Meters	3/4"	1"	3/4"x3/4"x1"
1" Service 2 - 1" Meters	1"	1"	1"x 1"x 1"

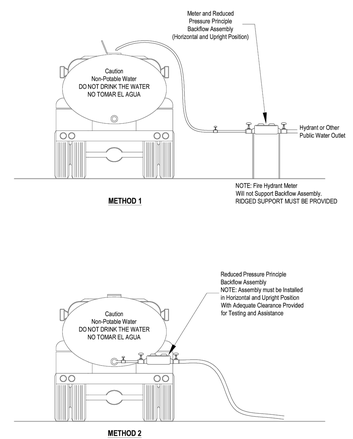
East Central	TYPICAL SERVICE ARRANGEMENT	APPROVED FEBRUARY 2025	REVISED	SHEET 4 OF 4
		DET-824-Ø5		



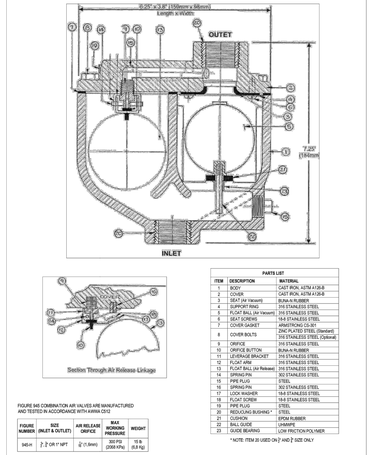
East Central	6" TURBO METER DETAIL WITH 4'x8' CONCRETE VAULT BOX	APPROVED JULY 2022	REVISED	SHEET 1 OF 1
		DET-825-Ø1		



East Central	8" TURBO METER DETAIL WITH 4'x8' CONCRETE VAULT BOX	APPROVED JULY 2022	REVISED	SHEET 1 OF 1
		DET-825-Ø2		



East Central	BACKFLOW PREVENTION PREVENTION FOR WATER HAULING EQUIPMENT AND/OR MIXING TANKS	APPROVED FEBRUARY 2025	REVISED	SHEET 1 OF 1
		DET-826-Ø1		



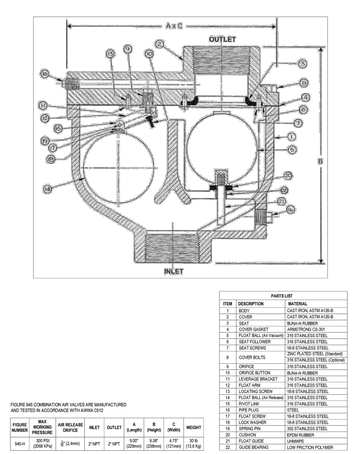
PARTS LIST		
ITEM	DESCRIPTION	MATERIAL
1	BODY	CAST IRON, ASTM A126-B
2	COVER	CAST IRON, ASTM A126-B
3	SEAT (Air Inlet/orifice)	BUNA-N RUBBER
4	SUPPORT RING	316 STAINLESS STEEL
5	FLOAT BALL (Air Valve/orifice)	316 STAINLESS STEEL
6	SEAT SCREWS	18-8 STAINLESS STEEL
7	COVER GASKET	ARMSTRONG CS-561
8	COVER BOLTS	ZINC PLATED STEEL (Standard) 316 STAINLESS STEEL (Optional)
9	ORIFICE	316 STAINLESS STEEL
10	ORIFICE BUTTON	BUNA-N RUBBER
11	LEVERAGE BRACKET	316 STAINLESS STEEL
12	FLOAT ARM	316 STAINLESS STEEL
13	FLOAT BALL (Air Release)	316 STAINLESS STEEL
14	SPRING PIN	302 STAINLESS STEEL
15	PIPE PLUG	STEEL
16	SPRING PIN	302 STAINLESS STEEL
17	LOCK WASHER	18-8 STAINLESS STEEL
18	PIVOT PIN	316 STAINLESS STEEL
19	PIPE PLUG	STEEL
20	REDUCING BUSHING *	STEEL
21	CUSHION	EPDM RUBBER
22	BALL GUIDE	UHMWPE
23	GUIDE BEARING	LOW FRICTION POLYMER

* NOTE: ITEM 20 USED ON 2" AND 3" SIZE ONLY

FIGURE 945 COMBINATION AIR VALVES ARE MANUFACTURED AND TESTED IN ACCORDANCE WITH AWWA C512

FIGURE NUMBER	MAX WORKING PRESSURE	AIR RELEASE ORIFICE	INLET	OUTLET	A (Length)	B (Height)	C (Width)	WEIGHT
945-H	300 PSI (2068 KPa)	3/32" (2.4mm)	2"NPT	2" NPT	9.00" (229mm)	5.38" (136mm)	4.75" (121mm)	30 lb (13.6 kg)

East Central	GA INDUSTRIES, a VAG Brand COMPACT KINETIC COMBINATION AIR VALVE FIGURE 945-H	APPROVED FEBRUARY 2025	REVISED	SHEET 1 OF 1
		DET-827-Ø1		



PARTS LIST		
ITEM	DESCRIPTION	MATERIAL
1	BODY	CAST IRON, ASTM A126-B
2	COVER	CAST IRON, ASTM A126-B
3	SEAT	BUNA-N RUBBER
4	COVER GASKET	ARMSTRONG CS-561
5	FLOAT BALL (Air Valve/orifice)	316 STAINLESS STEEL
6	SEAT SCREWS	18-8 STAINLESS STEEL
7	COVER BOLTS	18-8 STAINLESS STEEL ZINC PLATED STEEL (Standard) 316 STAINLESS STEEL (Optional)
8	ORIFICE	316 STAINLESS STEEL
9	ORIFICE BUTTON	BUNA-N RUBBER
10	LEVERAGE BRACKET	316 STAINLESS STEEL
11	FLOAT ARM	316 STAINLESS STEEL
12	LOCATING SCREW	18-8 STAINLESS STEEL
13	FLOAT BALL (Air Release)	316 STAINLESS STEEL
14	PIVOT PIN	316 STAINLESS STEEL
15	PIPE PLUG	STEEL
16	SPRING PIN	302 STAINLESS STEEL
17	LOCK WASHER	18-8 STAINLESS STEEL
18	SPRING PIN	302 STAINLESS STEEL
19	CUSHION	EPDM RUBBER
20	FLOAT GUIDE	UHMWPE
21	GUIDE BEARING	LOW FRICTION POLYMER

FIGURE 945 COMBINATION AIR VALVES ARE MANUFACTURED AND TESTED IN ACCORDANCE WITH AWWA C512

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945-H	300 PSI (2068 KPa)	3/32" (2.4mm)	2"NPT	2" NPT	9.00" (229mm)	5.38" (136mm)	4.75" (121mm)	30 lb (13.6 kg)

East Central	GA INDUSTRIES, a VAG Brand 2" - COMPACT KINETIC COMBINATION AIR VALVE FIGURE 945-H	APPROVED FEBRUARY 2025	REVISED	SHEET 1 OF 1
		DET-827-Ø2		

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

ROSE VALLEY SOUTH - UNIT 2
WATER DETAILS
(1 OF 3)
BEXAR COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105048
LICENSED
PROFESSIONAL ENGINEER
F-9155
01/22/2026

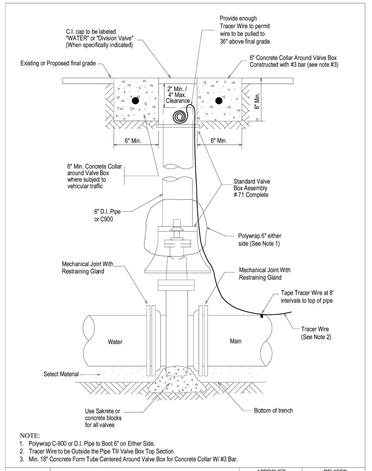
REV	DATE	DESCRIPTION	BY

JOB NO.	23-3159J
DATE	JAN. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

W2.0
PLAT NO: CP202512

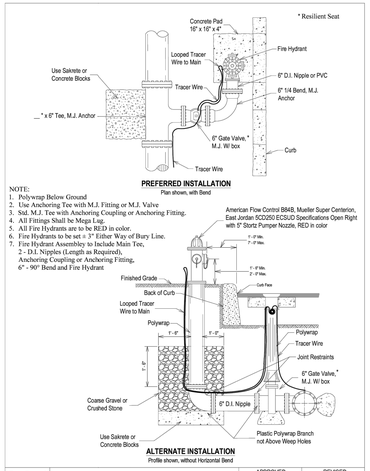
Date: Jan 22, 2026, 4:52pm User ID: CAD1-2022
File: N:\Projects\2023\23-3159J Rose Valley South U2\Civil\23-3159J Water Plans.dwg

PERMIT SET (NOT FOR CONSTRUCTION): 01/22/2026



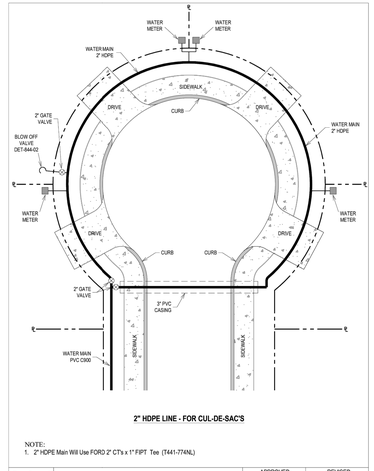
NOTE:
1. Polywrap C-900 or D.I. Pipe to Boot 6" on Either Side.
2. Tracer Wire to be Outside the Pipe Till Valve Box Top Section.
3. Min. 18" Concrete Form Tube Centered Around Valve Box for Concrete Collar W/ #3 Bar.

East Central	INSTALLATION OF NON-GEARED GATE VALVE WITH VALVE BOX AND EXTENSION	APPROVED	REVISED
		JULY 2022	
		DET-828-Ø1	SHEET 1 OF 1



NOTE:
1. Polywrap Below Ground
2. Use Anchoring Tee with M.J. Fitting or M.J. Valve
3. Std. M.J. Tee with Anchoring Coupling or Anchoring Fitting.
4. All Fittings Shall be Mega Lug.
5. All Fire Hydrants are to be RED in color.
6. Fire Hydrants to be set + 3" Either Way of Bury Line.
7. Fire Hydrant Assembly to Include Main Tee, 2 - D.I. Nipples (Length as Required), Anchoring Coupling or Anchoring Fitting, 6" - 90° Bend and Fire Hydrant

East Central	FIRE HYDRANT INSTALLATION	APPROVED	REVISED
		FEBRUARY 2025	
		DET-834-Ø1	SHEET 1 OF 1

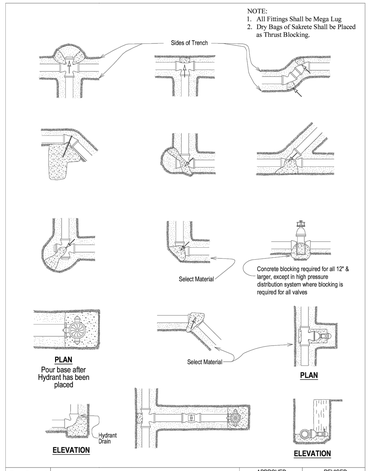


2" HDPE LINE - FOR CUL-DE-SAC'S

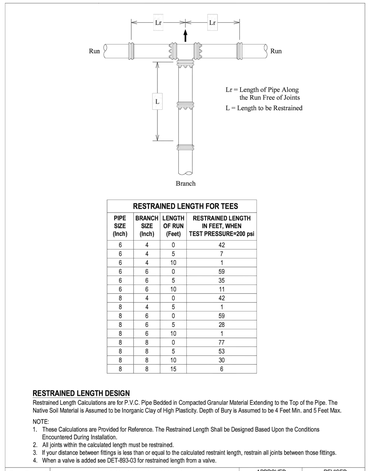
NOTE:
1. 2" HDPE Main Will Use FORD 2" CT's x 1" FIPT. Tee (T441-774NL)

East Central	TYPICAL CUL-DE-SAC LAYOUT WITH 2" HDPE WATER LINE	APPROVED	REVISED
		FEBRUARY 2025	
		DET-835-Ø1	SHEET 1 OF 1

NOTE:
1. All Fittings Shall be Mega Lug
2. Dry Bags of Sakrete Shall be Placed as Thrust Blocking.



East Central	THRUST BLOCKS FOR FITTINGS (WATER ONLY)	APPROVED	REVISED
		FEBRUARY 2025	
		DET-839-Ø1	SHEET 1 OF 1



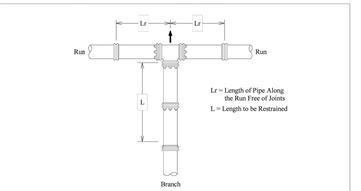
PIPE SIZE (Inch)	BRANCH SIZE (Inch)	LENGTH OF RUN (Feet)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE<200 psi
6	4	0	42
6	4	5	7
6	4	10	1
6	6	0	59
6	6	5	35
6	6	10	11
8	4	0	42
8	4	5	1
8	6	0	59
8	6	5	28
8	6	10	1
8	8	0	77
8	8	5	53
8	8	10	30
8	8	15	6

RESTRAINED LENGTH DESIGN

Restrained Length Calculations are for P.V.C. Pipe Bedded in Compacted Granular Material Extending to the Top of the Pipe. The Native Soil Material is Assumed to be Inorganic Clay of High Plasticity. Depth of Bury is Assumed to be 4 Feet Min. and 5 Feet Max.

NOTE:
1. These Calculations are Provided for Reference. The Restrained Length Shall be Designed Based Upon the Conditions Encountered During Installation.
2. All joints within the calculated length must be restrained.
3. If your distance between fittings is less than or equal to the calculated restraint length, restrain all joints between those fittings.
4. When a valve is added see DET-803-03 for restrained length from a valve.

East Central	RESTRAINED LENGTHS FOR TEES INSTALLED ON 6" TO 8" MAINS	APPROVED	REVISED
		FEBRUARY 2025	
		DET-839-02	SHEET 1 OF 4



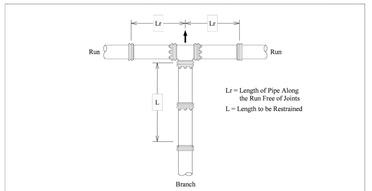
PIPE SIZE (Inch)	BRANCH SIZE (Inch)	LENGTH OF RUN (Feet)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE<200 psi
12	4	0	42
12	4	5	1
12	6	0	59
12	6	5	13
12	6	10	1
12	8	0	77
12	8	5	42
12	8	10	7
12	8	15	1
12	12	0	109
12	12	5	86
12	12	10	63
12	12	15	39

RESTRAINED LENGTH DESIGN

Restrained Length Calculations are for P.V.C. Pipe Bedded in Compacted Granular Material Extending to the Top of the Pipe. The Native Soil Material is Assumed to be Inorganic Clay of High Plasticity. Depth of Bury is Assumed to be 4 Feet Min. and 5 Feet Max.

NOTE:
1. These Calculations are Provided for Reference. The Restrained Length Shall be Designed Based Upon the Conditions Encountered During Installation.
2. All joints within the calculated length must be restrained.
3. If your distance between fittings is less than or equal to the calculated restraint length, restrain all joints between those fittings.
4. When a valve is added see DET-803-03 for restrained length from a valve.

East Central	RESTRAINED LENGTHS FOR TEES INSTALLED ON 12" MAINS	APPROVED	REVISED
		FEBRUARY 2025	
		DET-839-02	SHEET 2 OF 4



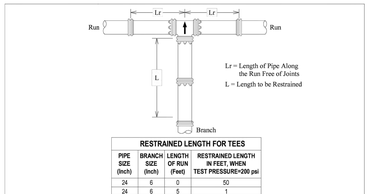
PIPE SIZE (Inch)	BRANCH SIZE (Inch)	LENGTH OF RUN (Feet)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE<200 psi
16	6	0	50
16	6	5	2
16	6	10	1
16	6	15	1
16	8	0	64
16	8	5	28
16	8	10	1
16	8	15	1
16	12	0	94
16	12	5	69
16	12	10	45
16	12	15	21
16	16	0	117
16	16	5	97
16	16	10	78
16	16	15	59

RESTRAINED LENGTH DESIGN

Restrained Length Calculations are for P.V.C. Pipe Bedded in Compacted Granular Material Extending to the Top of the Pipe. The Native Soil Material is Assumed to be Inorganic Clay of High Plasticity. Depth of Bury is Assumed to be 4 Feet Min. and 5 Feet Max..

NOTE:
1. These Calculations are Provided for Reference. The Restrained Length Shall be Designed Based Upon the Conditions Encountered During Installation.
2. All joints within the calculated length must be restrained.
3. If your distance between fittings is less than or equal to the calculated restraint length, restrain all joints between those fittings.
4. When a valve is added see DET-803-03 for restrained length from a valve.

East Central	RESTRAINED LENGTHS FOR TEES INSTALLED ON 16" MAINS	APPROVED	REVISED
		FEBRUARY 2025	
		DET-839-02	SHEET 3 OF 4



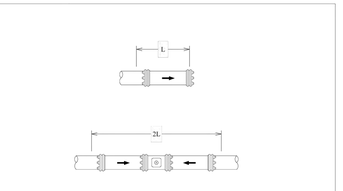
PIPE SIZE (Inch)	BRANCH SIZE (Inch)	LENGTH OF RUN (Feet)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE<200 psi
24	6	0	50
24	6	5	1
24	6	10	1
24	6	15	1
24	8	0	64
24	8	5	7
24	8	10	1
24	8	15	1
24	12	0	94
24	12	5	56
24	12	10	18
24	12	15	1
24	16	0	117
24	16	5	87
24	16	10	57
24	16	15	27
24	20	0	145
24	20	5	121
24	20	10	97
24	20	15	73
24	24	0	172
24	24	5	152
24	24	10	133
24	24	15	113

RESTRAINED LENGTH DESIGN

Restrained Length Calculations are for P.V.C. Pipe Bedded in Compacted Granular Material Extending to the Top of the Pipe. The Native Soil Material is Assumed to be Inorganic Clay of High Plasticity. Depth of Bury is Assumed to be 4 Feet Min. and 5 Feet Max.

NOTE:
1. These Calculations are Provided for Reference. The Restrained Length Shall be Designed Based Upon the Conditions Encountered During Installation.
2. All joints within the calculated length must be restrained.
3. If your distance between fittings is less than or equal to the calculated restraint length, restrain all joints between those fittings.
4. When a valve is added see DET-803-03 for restrained length from a valve.

East Central	RESTRAINED LENGTHS FOR TEES INSTALLED ON 24" MAINS	APPROVED	REVISED
		FEBRUARY 2025	
		DET-839-02	SHEET 4 OF 4



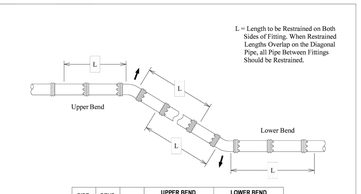
PIPE SIZE (Inch)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE<200 psi
6	59
8	77
10	93
12	109
16	117
20	145
24	172

RESTRAINED LENGTH DESIGN

Restrained Length Calculations are for P.V.C. Pipe Bedded in Compacted Granular Material Extending to the Top of the Pipe. The Native Soil Material is Assumed to be Inorganic Clay of High Plasticity. Depth of Bury is Assumed to be 4 Feet Min. and 5 Feet Max.

NOTE:
1. These Calculations are Provided for Reference. The Restrained Length Shall be Designed Based Upon the Conditions Encountered During Installation.
2. All joints within the calculated length must be restrained.
3. If your distance between fittings is less than or equal to the calculated restraint length, restrain all joints between those fittings.

East Central	RESTRAINED LENGTHS FOR DEAD ENDS / INLINE VALVES ON 6" THRU 24" MAINS	APPROVED	REVISED
		FEBRUARY 2025	
		DET-839-03	SHEET 1 OF 1



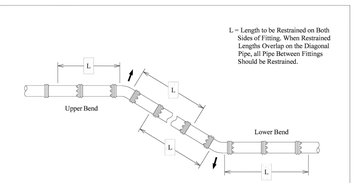
PIPE SIZE (Inch)	BEND ANGLE (deg.)	LOW SIDE DEPTH	UPPER BEND RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE<200 psi	LOWER BEND RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE<200 psi
6	45	5	24	8
6	22.5	5	12	4
6	11.25	5	6	2
6	45	10	24	5
6	22.5	10	12	2
6	11.25	10	6	1
8	45	5	32	11
8	22.5	5	15	5
8	11.25	5	8	3
8	45	10	32	7
8	22.5	10	15	3
8	11.25	10	8	2
12	45	5	45	16
12	22.5	5	22	7
12	11.25	5	11	4
12	45	10	45	10
12	22.5	10	22	5
12	11.25	10	11	2

RESTRAINED LENGTH DESIGN

Restrained Length Calculations are for P.V.C. Pipe Bedded in Compacted Granular Material Extending to the Top of the Pipe. The Native Soil Material is Assumed to be Inorganic Clay of High Plasticity. Depth of Bury is Assumed to be 4 Feet Min. and 5 Feet Max.

NOTE:
1. These Calculations are Provided for Reference. The Restrained Length Shall be Designed Based Upon the Conditions Encountered During Installation.
2. All joints within the calculated length must be restrained.
3. If your distance between fittings is less than or equal to the calculated restraint length, restrain all joints between those fittings.
4. When a valve is added see DET-803-03 for restrained length from a valve.

East Central	RESTRAINED LENGTHS VERTICAL OFFSETS INSTALLED ON 6" THRU 12" MAINS	APPROVED	REVISED
		FEBRUARY 2025	
		DET-839-04	SHEET 1 OF 2



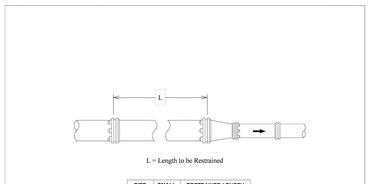
PIPE SIZE (Inch)	BEND ANGLE (deg.)	LOW SIDE DEPTH	UPPER BEND RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE<200 psi	LOWER BEND RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE<200 psi
16	45	5	70	22
16	22.5	5	34	11
16	11.25	5	17	6
16	45	10	70	14
16	22.5	10	34	7
16	11.25	10	17	4
24	45	5	102	32
24	22.5	5	49	16
24	11.25	5	25	8
24	45	10	102	21
24	22.5	10	49	10
24	11.25	10	25	5

RESTRAINED LENGTH DESIGN

Restrained Length Calculations are for P.V.C. Pipe Bedded in Compacted Granular Material Extending to the Top of the Pipe. The Native Soil Material is Assumed to be Inorganic Clay of High Plasticity. Depth of Bury is Assumed to be 4 Feet Min. and 5 Feet Max.

NOTE:
1. These Calculations are Provided for Reference. The Restrained Length Shall be Designed Based Upon the Conditions Encountered During Installation.
2. All joints within the calculated length must be restrained.
3. If your distance between fittings is less than or equal to the calculated restraint length, restrain all joints between those fittings.
4. When a valve is added see DET-803-03 for restrained length from a valve.

East Central	RESTRAINED LENGTHS VERTICAL OFFSETS INSTALLED ON 16" THRU 24" MAINS	APPROVED	REVISED
		FEBRUARY 2025	
		DET-839-04	SHEET 2 OF 2



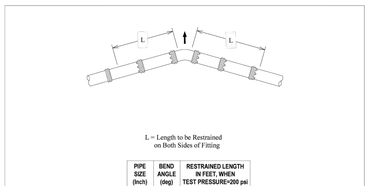
PIPE SIZE (Inch)	SMALL SIZE (Inch)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE<200 psi
6	4	30
8	4	55
8	6	32
12	4	95
12	6	80
12	8	58
16	6	97
16	8	83
16	12	43
24	6	159
24	8	150
24	12	134
24	16	96
24	20	53

RESTRAINED LENGTH DESIGN

Restrained Length Calculations are for P.V.C. Pipe Bedded in Compacted Granular Material Extending to the Top of the Pipe. The Native Soil Material is Assumed to be Inorganic Clay of High Plasticity. Depth of Bury is Assumed to be 4 Feet Min. and 5 Feet Max.

NOTE:
1. These Calculations are Provided for Reference. The Restrained Length Shall be Designed Based Upon the Conditions Encountered During Installation.
2. All joints within the calculated length must be restrained.
3. If your distance between fittings is less than or equal to the calculated restraint length, restrain all joints between those fittings.
4. When a valve is added see DET-803-03 for restrained length from a valve.

East Central	RESTRAINED LENGTHS FOR REDUCERS ON 6" THRU 24" MAINS	APPROVED	REVISED
		FEBRUARY 2025	
		DET-839-05	SHEET 1 OF 1



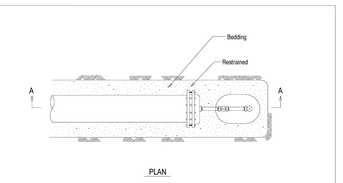
PIPE SIZE (Inch)	BEND ANGLE (deg)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE<200 psi
6	90	23
6	45	9
6	22.5	5
6	11.25	2
8	90	30
8	45	12
8	22.5	6
8	11.25	3
12	90	43
12	45	18
12	22.5	8
12	11.25	4
16	90	59
16	45	25
16	22.5	12
16	11.25	6
24	90	86
24	45	36
24	22.5	17
24	11.25	9

RESTRAINED LENGTH DESIGN

Restrained Length Calculations are for P.V.C. Pipe Bedded in Compacted Granular Material Extending to the Top of the Pipe. The Native Soil Material is Assumed to be Inorganic Clay of High Plasticity. Depth of Bury is Assumed to be 4 Feet Min. and 5 Feet Max.

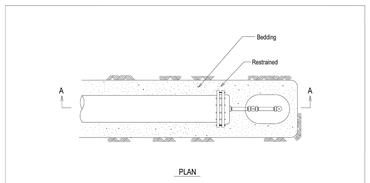
NOTE:
1. These Calculations are Provided for Reference. The Restrained Length Shall be Designed Based Upon the Conditions Encountered During Installation.
2. All joints within the calculated length must be restrained.
3. If your distance between fittings is less than or equal to the calculated restraint length, restrain all joints between those fittings.
4. When a valve is added see DET-803-03 for restrained length from a valve.

East Central	RESTRAINED LENGTHS FOR HORIZONTAL BENDS ON 6" THRU 24" MAINS	APPROVED	REVISED
		FEBRUARY 2025	
		DET-839-06	SHEET 1 OF 1



* Cut to Fit in Meter Box

East Central	2" PERMANENT BLOW-OFF ASSEMBLY ON 6" AND 8" MAINS	APPROVED	REVISED
		JANUARY 2025	JULY 2025
		DET-844-02	SHEET 1 OF 2



* Cut to Fit in Meter Box

East Central	2" PERMANENT BLOW-OFF ASSEMBLY ON 12" AND 16" MAINS	APPROVED	REVISED
		JANUARY 2025	JULY 2025
		DET-844-02	SHEET 2 OF 2

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

ROSE VALLEY SOUTH - UNIT 2
WATER DETAILS
(2 OF 3)
BEXAR COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105049
LICENSED PROFESSIONAL ENGINEER
F-9155
1/21/2026

REV	DATE	DESCRIPTION	BY

JOB NO.	23-3159J
DATE	JAN. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

W2.1
PLAT NO: CP202512

Date: Jan 22, 2026, 4:52pm User ID: CAD1-2022
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PERMIT SET (NOT FOR CONSTRUCTION): 01/22/2026

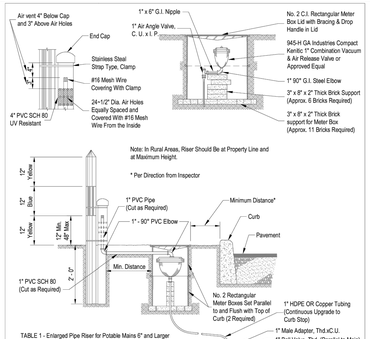


TABLE 1 - Enlarged Pipe Riser for Potable Mains 6" and Larger

D. Nominal Diameter of Main, In.	Minimum d. In.	Minimum h. In.	Comments
6	6.0	6.0	6" MJ x 6" MJ x 6" FLG DI TEE
8	8.0	8.0	8" MJ x 8" MJ x 8" FLG DI TEE
12	12.0	12.0	12" MJ x 12" MJ x 12" FLG DI TEE
16	12.0	9.6	16" MJ x 16" MJ x 12" FLG DI TEE
24	18.0	14.4	24" MJ x 24" MJ x 18" FLG DI TEE
30	18.0	18.0	30" MJ x 30" MJ x 18" FLG DI TEE
36	24.0	21.6	36" MJ x 36" MJ x 24" FLG DI TEE
42	24.0	25.2	42" MJ x 42" MJ x 24" FLG DI TEE
48	24.0	28.8	48" MJ x 48" MJ x 24" FLG DI TEE
54	30.0	32.4	Welded-on FLG Outlet
60	36.0	36.0	Welded-on FLG Outlet
66	24.0	23.1	Welded-on FLG Outlet
72	24.0	25.2	Welded-on FLG Outlet

Air Collection Traps in Air Valve Piping Notes:
1. Dimensions Derived from AWWA Manual 2nd Edition: Chapter 6 M51 Air Valves: Air-Release, Air/Vacuum & Combination

East Central Steel — INSTALLATION OF 1" AIR RELEASE VALVE

APPROVED	REVISED
FEBRUARY 2025	
DET-846-Ø1	SHEET 1 OF 1

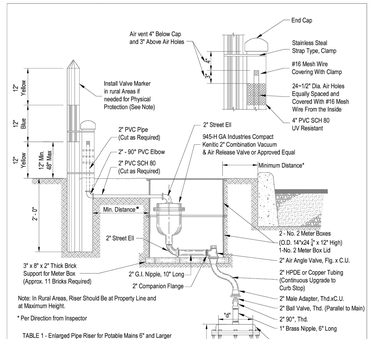


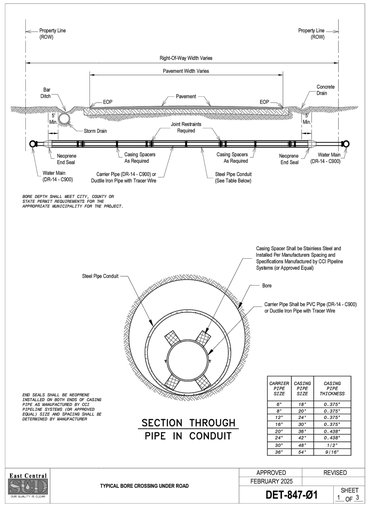
TABLE 1 - Enlarged Pipe Riser for Potable Mains 6" and Larger

D. Nominal Diameter of Main, In.	Minimum d. In.	Minimum h. In.	Comments
6	6.0	6.0	6" MJ x 6" MJ x 6" FLG DI TEE
8	8.0	8.0	8" MJ x 8" MJ x 8" FLG DI TEE
12	12.0	12.0	12" MJ x 12" MJ x 12" FLG DI TEE
16	12.0	9.6	16" MJ x 16" MJ x 12" FLG DI TEE
24	18.0	14.4	24" MJ x 24" MJ x 18" FLG DI TEE
30	18.0	18.0	30" MJ x 30" MJ x 18" FLG DI TEE
36	24.0	21.6	36" MJ x 36" MJ x 24" FLG DI TEE
42	24.0	25.2	42" MJ x 42" MJ x 24" FLG DI TEE
48	24.0	28.8	48" MJ x 48" MJ x 24" FLG DI TEE
54	30.0	32.4	Welded-on FLG Outlet
60	36.0	36.0	Welded-on FLG Outlet
66	24.0	23.1	Welded-on FLG Outlet
72	24.0	25.2	Welded-on FLG Outlet

Air Collection Traps in Air Valve Piping Notes:
1. Dimensions Derived from AWWA Manual 2nd Edition: Chapter 6 M51 Air Valves: Air-Release, Air/Vacuum & Combination

East Central Steel — INSTALLATION OF 2" AIR RELEASE VALVE

APPROVED	REVISED
FEBRUARY 2025	
DET-846-Ø2	SHEET 1 OF 1

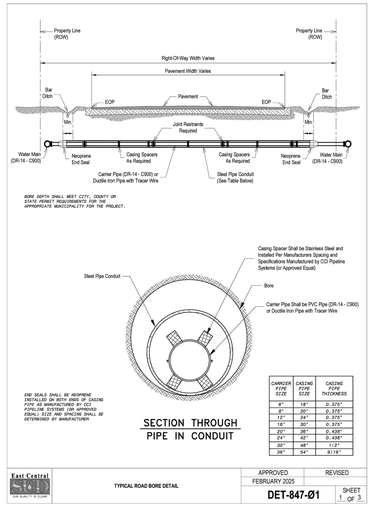


CARRIER PIPE SIZE	CASING PIPE SIZE	CASING PIPE THICKNESS
6"	18"	0.375"
8"	20"	0.375"
12"	24"	0.375"
16"	30"	0.375"
20"	36"	0.438"
24"	42"	0.438"
30"	48"	1/2"
36"	54"	9/16"

SECTION THROUGH PIPE IN CONDUIT

East Central Steel — TYPICAL BORE CROSSING UNDER ROAD

APPROVED	REVISED
FEBRUARY 2025	
DET-847-Ø1	SHEET 1 OF 3

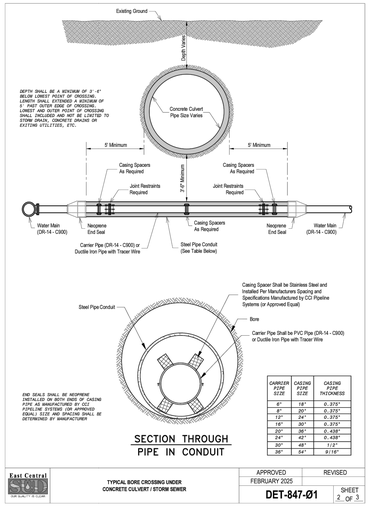


CARRIER PIPE SIZE	CASING PIPE SIZE	CASING PIPE THICKNESS
6"	18"	0.375"
8"	20"	0.375"
12"	24"	0.375"
16"	30"	0.375"
20"	36"	0.438"
24"	42"	0.438"
30"	48"	1/2"
36"	54"	9/16"

SECTION THROUGH PIPE IN CONDUIT

East Central Steel — TYPICAL ROAD BORE DETAIL

APPROVED	REVISED
FEBRUARY 2025	
DET-847-Ø1	SHEET 1 OF 3

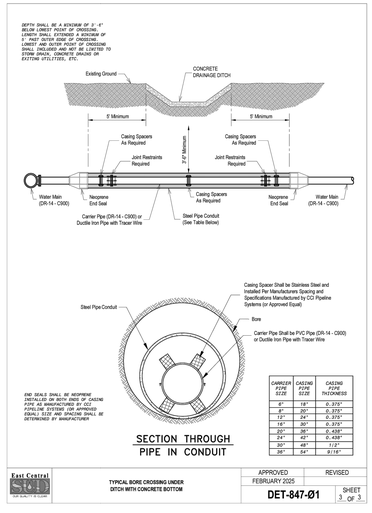


CARRIER PIPE SIZE	CASING PIPE SIZE	CASING PIPE THICKNESS
6"	18"	0.375"
8"	20"	0.375"
12"	24"	0.375"
16"	30"	0.375"
20"	36"	0.438"
24"	42"	0.438"
30"	48"	1/2"
36"	54"	9/16"

SECTION THROUGH PIPE IN CONDUIT

East Central Steel — TYPICAL BORE CROSSING UNDER CONCRETE CULVERT / STORM SEWER

APPROVED	REVISED
FEBRUARY 2025	
DET-847-Ø1	SHEET 2 OF 3



CARRIER PIPE SIZE	CASING PIPE SIZE	CASING PIPE THICKNESS
6"	18"	0.375"
8"	20"	0.375"
12"	24"	0.375"
16"	30"	0.375"
20"	36"	0.438"
24"	42"	0.438"
30"	48"	1/2"
36"	54"	9/16"

SECTION THROUGH PIPE IN CONDUIT

East Central Steel — TYPICAL BORE CROSSING UNDER DITCH WITH CONCRETE BOTTOM

APPROVED	REVISED
FEBRUARY 2025	
DET-847-Ø1	SHEET 3 OF 3

GENERAL NOTES

1. ALL VALVES SHALL REMAIN CLOSED UNTIL MAINS HAVE BEEN DISINFECTED, FLUSHED, AND RELEASED FOR PUBLIC USE BY THE ENGINEER.
2. EXISTING UTILITIES SHOWN ARE TAKEN FROM VARIOUS UTILITY COMPANY RECORDS. CONTRACTORS SHALL VERIFY THE EXACT LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND DRAINAGE STRUCTURES, WHETHER SHOWN ON THE PLANS OR NOT, PRIOR TO BEGINNING CONSTRUCTION. CONTRACTORS SHALL BE RESPONSIBLE FOR THE PROTECTION OF EXISTING UTILITIES AND DRAINAGE STRUCTURES DURING CONSTRUCTION.
3. ALL EXCAVATION SHALL BE UNCLASSIFIED REGARDLESS OF MATERIAL ENCOUNTERED.
4. BIDDERS ARE NOTIFIED TO MAKE SUBSURFACE INVESTIGATIONS AS THEY DEEM NECESSARY. NO ADDITIONAL PAYMENT WILL BE MADE FOR WATER, SAND, GRAVEL OR OTHER UNSTABLE CONDITIONS ENCOUNTERED IN EXCAVATIONS.
5. DETOUR OF TRAFFIC AROUND WORK ACTIVITIES, MAINTENANCE OF TRAFFIC CONTROL SIGNS, AND FLAGMEN ARE THE CONTRACTOR'S RESPONSIBILITY. NO SEPARATE PAYMENT WILL BE MADE.
6. THE CONTRACTOR SHALL PROTECT ALL OPEN EXCAVATIONS AND EQUIPMENT FROM CHILDREN, PEDESTRIANS, AND VEHICLES IN THE AREA.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE RESTORATION OF ALL FENCES IN THE WORK AREA TO THEIR ORIGINAL CONDITION PRIOR TO COMPLETION OF THE CONTRACT. THIS SHALL APPLY TO ALL FENCES IN THE WORK AREA WHETHER THEY ARE SHOWN ON THE PLANS OR NOT.
8. CONTRACTOR SHALL PRESERVE ALL CONSTRUCTION STAKES, MARKS, ETC. ANY CONSTRUCTION STAKES, MARKS, ETC., DESTROYED OR REMOVED BY THE CONTRACTOR OR HIS EMPLOYEES SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
9. THE CONTRACTOR SHALL CONFER WITH EACH INDIVIDUAL PROPERTY OWNER AS TO THE LOCATION OF EACH INDIVIDUAL METER BOX.
10. CONTRACTOR SHALL DISINFECT ALL NEW WATER MAINS BEFORE TYING INTO EXISTING WATER MAINS.
11. ALL VALVES SHALL BE PERMANENTLY MARKED BY THE USE OF A VALVE MARKER. NO SEPARATE PAY ITEM.
12. 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 SITES(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.
13. CONTRACTOR SHALL MAINTAIN FENCING FOR THE CONTAINMENT OF LIVESTOCK DURING CONSTRUCTION. ALL FENCES REMOVED FOR CONSTRUCTION SHALL BE REPLACED. ALL REQUIRED FENCING SHALL BE INCIDENTAL TO CONSTRUCTION AND NOT A SEPARATE PAY ITEM.
14. ALL DRIVEWAYS, INCLUDING DRAIN PIPES, CULVERTS AND HEADWALLS, DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED BY THE CONTRACTOR TO EQUAL OR BETTER THAN PRECONSTRUCTION CONDITION. ASPHALT DRIVES ARE NOT ALLOWED TO BE CUT WITHOUT OWNERS PERMISSON. INSTALLATION OF WATER MAINS CROSSING CONCRETE DRIVES WILL BE BORED. ALL DRAIN PIPE, CULVERT AND HEADWALL REPAIR SHALL BE INCIDENTAL TO CONSTRUCTION AND NOT A SEPARATE PAY ITEM. DRIVEWAY PAVEMENT REPAIR SHALL BE PAID FOR AS PER ITEM NO. 02950, "CUTTING AND PATCHING ASPHALT PAVEMENT, ASPHALT DRIVES, CONCRETE DRIVES, OR GRAVEL ROADS AND DRIVES". PAYMENT FOR BORES UNDER CONCRETE DRIVES DRIVES SHALL BE PAID FOR AS PER ITEM 02445 "BORING AND CASING PIPE UNDER HIGHWAYS, RAILROADS, OR OTHER AREAS".
15. LOCATIONS OF COMBINATION AIR VALVES WHERE SHOWN ON PLANS ARE APPROXIMATE. FINAL LOCATIONS TO BE ADJUSTED IN FIELD AT TIME OF CONSTRUCTION AT THE DIRECTION OF THE ENGINEER.
16. ALL WORK SHALL BE SCHEDULED TO TAKE PLACE ON MONDAY THROUGH FRIDAY, DURING NORMAL WORK HOURS. CONTRACTOR SHALL NOTIFY MWSC 48 HOURS PRIOR TO SERVICE SHUT OFF AFFECTING CUSTOMERS. SERVICE SHALL NOT BE SHUT OFF FOR MORE THAN EIGHT (8) HOURS AT A TIME.
17. THE CONTRACTOR SHALL IMMEDIATELY REPAIR OR REPLACE ANY PHYSICAL DAMAGE TO PROPERTY, INCLUDING, BUT NOT LIMITED TO, FENCES, PAVEMENT, DRIVEWAYS, LAWNS, CULVERTS, AND TREES, AT NO COST TO THE OWNER.
18. THE CONTRACTOR SHALL PROVIDE EROSION CONTROL AT ALL CULVERT, STREAM AND DRAINAGE SWALES CROSSINGS. EROSION CONTROL MEASURES SHALL INCLUDE AS A MINIMUM SILT FENCES. SILT FENCES SHALL BE INSTALLED PRIOR TO DISTURBANCE OF THE WORK AREAS AND SHALL REMAIN IN PLACE UNTIL FINAL STABILIZATION OF THE DISTURBED AREAS UPSTREAM. EROSION CONTROL SHALL BE COORDINATED WITH THE ENGINEER.
19. THE CONTRACTOR SHALL REMOVE AND REPLACE ANY MAILBOXES, TRAFFIC OR ROAD SIGNS ENCOUNTERED. NO SEPARATE PAY ITEM.
20. CONTRACTOR SHALL SUBMIT TO ENGINEER PROPOSED CONSTRUCTION SEQUENCE PRIOR TO BEGINNING CONSTRUCTION.
21. ALL FITTINGS ARE TO BE DUCTILE IRON, MECHANICAL JOINT TYPE, UNLESS OTHERWISE NOTED ON PLANS.
22. ALL THRUST BLOCKS SHALL BE INSPECTED BY OWNER AND/OR ENGINEER PRIOR TO BACKFILLING.
23. ALL EXISTING VALVES SHOWN ON PLANS TO BE ABANDONED, SHALL HAVE BOXES REMOVED AND SHALL BE BACKFILLED ACCORDING TO SPECIFICATIONS. NO SEPARATE PAY ITEM.
24. CONTRACTOR SHALL CONTAIN ALL CONSTRUCTION AND STAGING WITHIN EXISTING UTILITY EASEMENTS, UNLESS OTHER ARRANGEMENTS ARE MADE WITH OWNER AND/OR TxDOT.
25. WHERE THE NEW WATER MAIN SHOWN ON THE PLANS REQUIRES CROSSING AN EXISTING WATER MAIN OR OTHER UTILITY, THE CONTRACTOR SHALL VERTICALLY DEFLECT THE PROPOSED WATER MAIN. DEFLECTION SHALL BE IN ACCORDANCE WITH THE PIPE MANUFACTURE'S RECOMMENDATIONS. FITTINGS ARE NOT PERMISSIBLE, UNLESS OTHERWISE SHOWN ON THE PLANS. NO SEPARATE PAY ITEM.
26. WATER MAINS SHALL BE INSTALLED WITH 48" MINIMUM COVER OVER THE TOP OF THE PIPE AND A MAXIMUM DEPTH OF BURY OF 60", UNLESS OTHERWISE NOTED ON THE PLANS OR DIRECTED BY THE ENGINEER.
27. CONTRACTOR TO PROVIDE POSITIVE DRAINAGE AWAY FROM ALL CONCRETE FOUNDATIONS, VAULT BOXES AND OVERFLOW BOXES THROUGHOUT THE PROJECT SITE.
28. BUY AMERICAN STANDARDS SHALL BE ADHERED TO CONCERNING ALL STEEL OR IRON BASED MATERIALS.
29. ALL GATE VALVES SHALL "OPEN RIGHT".
30. AN AIR RELEASE VALVE SHALL BE INSTALLED AT THE HIGHEST ELEVATION POINT(S) OF THE WATER DISTRIBUTION SYSTEM LOCATED WITHIN A DEVELOPMENT. THE EXACT LOCATION SHALL BE COORDINATED IN THE FIELD AND VERIFIED AGAINST THE FINAL GRADING PLAN. INSTALLATION SHALL BE IN ACCORDANCE WITH THE ECSUD STANDARDS AND THE MANUFACTURER'S RECOMMENDATIONS. PROVIDE A VALVE BOX OR APPROVED ENCLOSURE FOR ACCESS AND MAINTENANCE.
31. A MINIMUM OF ONE (1) WATER SAMPLE STATION SHALL BE INSTALLED WITHIN A DEVELOPMENT TO ALLOW FOR ROUTINE WATER QUALITY MONITORING. THE SAMPLE STATION SHALL BE LOCATED NEAR THE SUBDIVISION ENTRANCE OFF A WATER MAIN IN A PUBLICLY ACCESSIBLE AREA, OR AT A REPRESENTATIVE LOCATION APPROVED BY ECSUD. THE STATION SHALL BE INSTALLED PER ECSUD STANDARDS, MANUFACTURER'S SPECIFICATIONS AND IN COMPLIANCE WITH ALL APPLICABLE HEALTH AND SAFETY REGULATIONS. COORDINATE FINAL LOCATION WITH ECSUD PRIOR TO INSTALLATION. ALL COMPONENTS SHALL BE SUITABLE FOR POTABLE WATER USE, AND THE STATION SHALL BE PROTECTED FROM FREEZING, TAMPERING, AND OTHER ENVIRONMENTAL FACTORS.
32. WHEN INSTALLING A CUT-IN TEE TO TIE INTO AN EXISTING WATER MAIN, MECHANICAL BELL JOINT RESTRAINTS SHALL BE PROVIDED ON ALL ADJACENT EXISTING PIPE JOINTS TO PREVENT SEPARATION DUE TO THRUST FORCES. RESTRAINTS SHALL BE INSTALLED ON A MINIMUM OF ONE FULL LENGTH OF PIPE ON EACH SIDE OF THE NEW TEE, OR AS REQUIRED BY ECSUD STANDARDS. ALL RESTRAINT DEVICES SHALL BE COMPATIBLE WITH THE EXISTING PIPE MATERIAL AND PRESSURE CLASS, AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. COORDINATE WITH ECSUD FOR FINAL APPROVAL OF RESTRAINT TYPE AND EXTENT.
33. ALL CONNECTIONS TO EXISTING WATER MAINS SHALL BE PERFORMED USING THE HIGH TEST HYPOCHLORITE (HTH) METHOD IN ACCORDANCE WITH AWWA C651 DISINFECTION PROCEDURES. THE HTH METHOD SHALL INVOLVE THE APPLICATION OF A CHLORINE SOLUTION DIRECTLY TO ALL INTERIOR SURFACES OF THE NEW FITTINGS, PIPE, AND APPURTENANCES IMMEDIATELY PRIOR TO INSTALLATION. THIS INCLUDES SWABBING OR SPRAYING WITH A MINIMUM 1% CHLORINE SOLUTION. NO OTHER DISINFECTION METHOD WILL BE ACCEPTED FOR TIE-INS. ALL WORK SHALL BE PERFORMED UNDER THE SUPERVISION OF ECSUD AND IN COMPLIANCE WITH THEIR STANDARDS. PROPER FLUSHING AND BACTERIOLOGICAL TESTING SHALL FOLLOW PRIOR TO PLACING THE MAIN INTO SERVICE.

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

ROSE VALLEY SOUTH - UNIT 2 WATER DETAILS (3 OF 3)

BEXAR COUNTY, TEXAS

RAKOWITZ ENGINEERING, LLC
STATE OF TEXAS
BRADLEY A. KOETHER
105048
LICENSED
PROFESSIONAL ENGINEER
F-9155
1/22/2026

REV	DATE	DESCRIPTION	BY

JOB NO.	23-3159J
DATE	JAN. 2026
DESIGNER	CT
CHECKED	BK
DRAWN	CT

W2.2
PLAT NO. CP202512

Date: Jan 22, 2026, 4:54pm User ID: CAD1.2022
File: N:\Projects\2023\23-3159 Rose Valley South U2\Civil\23-3159 Water Plans.dwg

PERMIT SET (NOT FOR CONSTRUCTION): 01/22/2026