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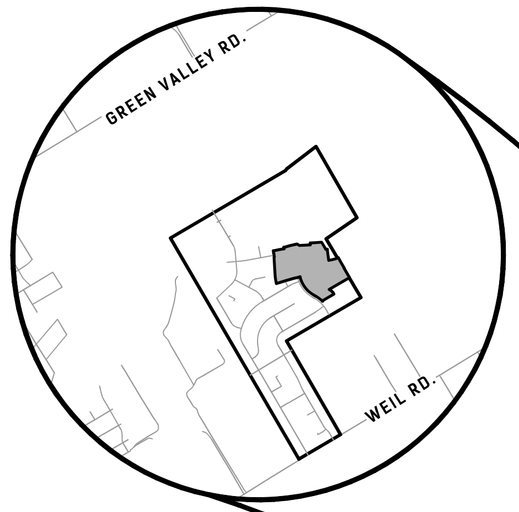
* DENOTES STANDARD DETAILS ADOPTED FOR USE ON THIS PROJECT



LOCATION MAP

VICINITY MAP

GRACE VALLEY RANCH
PHASE 4A

CONSTRUCTION PLANS

DEVELOPER:

LENNAR HOMES OF TEXAS LAND AND CONSTRUCTION, LTD.
CONTACT: RICHARD MOTT, P.E.
100 NE LOOP 410, SUITE 1155
SAN ANTONIO, TEXAS 78216
TEL: (210) 403-6282

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

DRAWN BY	DATE	PLAT NO.
J.F.	09/25/2025	N/A
CHECKED BY	**PROJECT NO.**	**CUDE ENGINEERS**
KYLE HUDEK, P.E.	03346.017	TBPE No. 455 TBPLS No. 10048500

STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED
PROFESSIONAL ENGINEER
10/07/2025

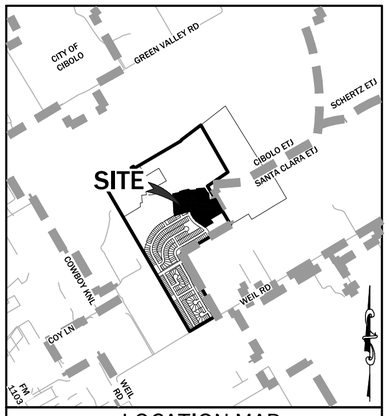
I HAVE REVIEWED THIS PLAN SET FOR QUALITY ASSURANCE AND QUALITY CONTROL PURPOSES.

THIS PLAN SET HAS BEEN PREPARED, DESIGNED AND REVIEWED UNDER MY DIRECT SUPERVISION.

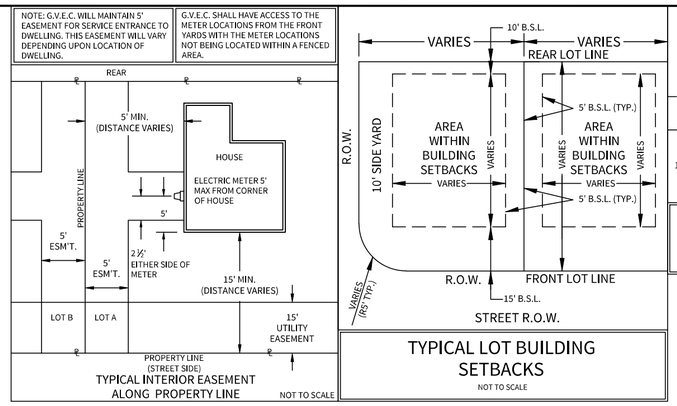
81 RESIDENTIAL LOTS & 1 OPEN SPACE (NON-RESIDENTIAL), IN 9 BLOCKS

FINAL PLAT OF GRACE VALLEY RANCH PHASE 4A

16.025 ACRES OF LAND LOCATED IN THE FRAILAN DE LA GARZA SURVEY 253, ABSTRACT 143, GUADALUPE COUNTY, TEXAS, AND BEING A PORTION OF A CALLED 62.57 ACRE TRACT OF LAND RECORDED IN DOCUMENT 202399016958 OF THE OFFICIAL PUBLIC RECORDS OF GUADALUPE COUNTY, TEXAS.

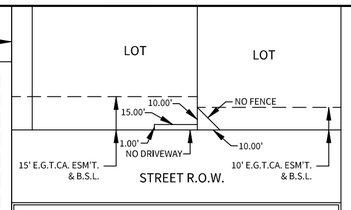


LOCATION MAP N.T.S.

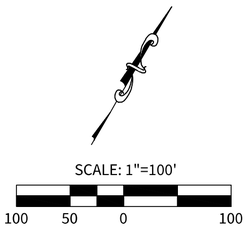


TYPICAL INTERIOR EASEMENT ALONG PROPERTY LINE NOT TO SCALE

TYPICAL LOT BUILDING SETBACKS NOT TO SCALE



NON-FENCE & VEHICULAR NON-ACCESS ESM'T. NOT TO SCALE

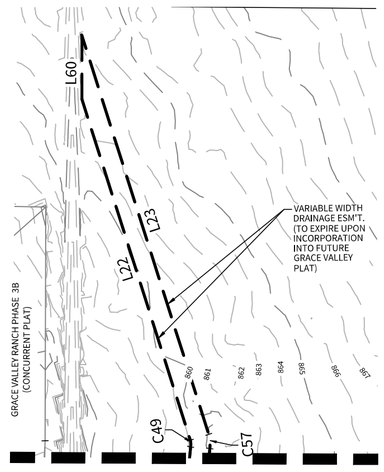


LEGEND

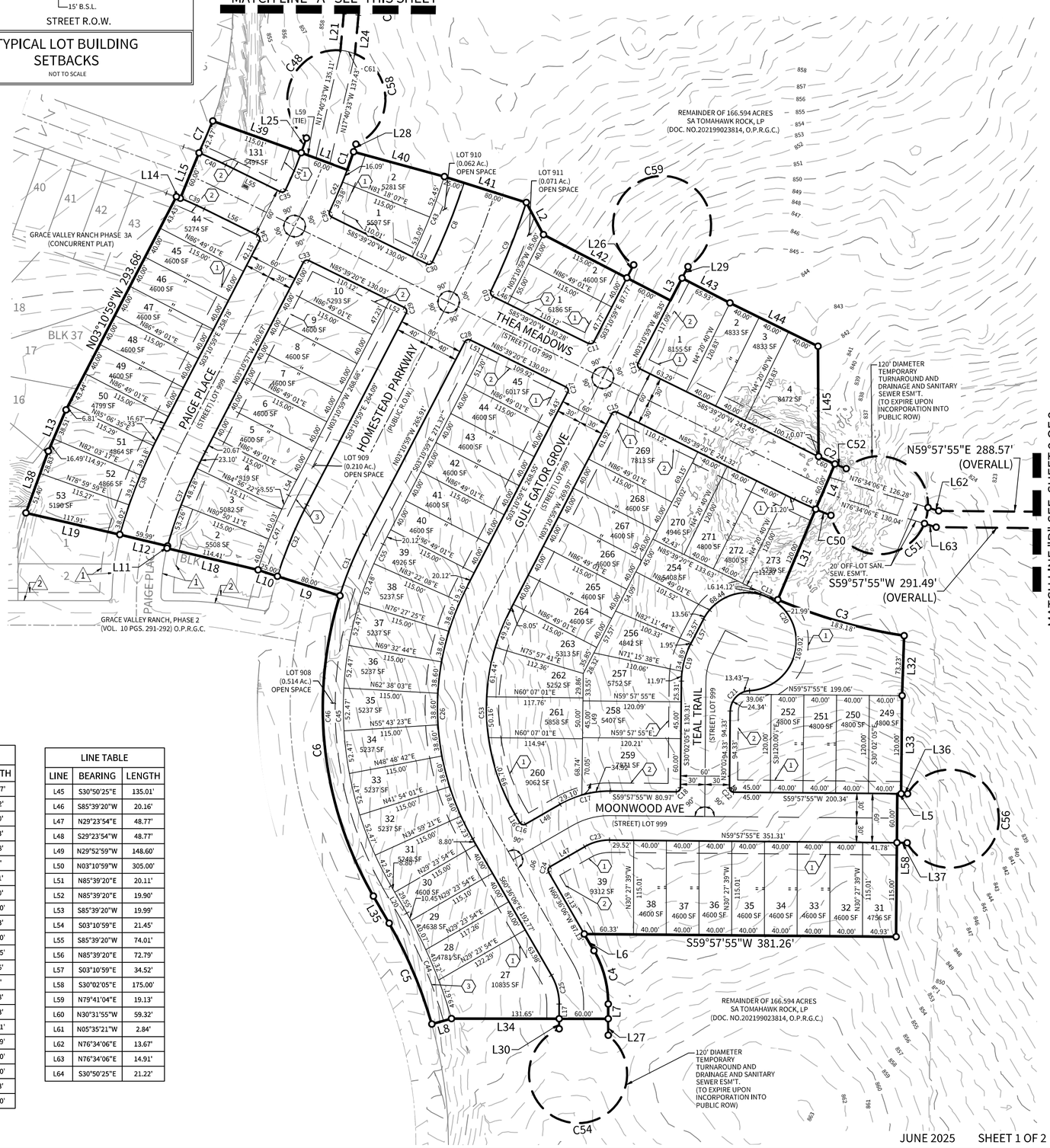
Ac.	= ACRES
BLK.	= BLOCK
B.S.L.	= BUILDING SETBACK LINE
C1	= CURVE NUMBER
DOC.	= DOCUMENT
DRN.	= DRAINAGE
ESM'T.	= EASEMENT
E.G.T.CA.	= ELECTRIC, GAS, TELEPHONE AND CABLE TELEVISION
E.T.J.	= EXTRATERRITORIAL JURISDICTION
G.V.E.C.	= GUADALUPE VALLEY ELECTRIC COOPERATIVE
G.V.S.U.D.	= GREEN VALLEY SPECIAL UTILITY DISTRICT
L1	= LINE NUMBER
L.F.	= LINEAR FEET
MAX.	= MAXIMUM
MIN.	= MINIMUM
NAD	= NORTH AMERICAN DATUM
NO.	= NUMBER
N.T.S.	= NOT TO SCALE
O.P.R.G.C.	= OFFICIAL PUBLIC RECORDS OF GUADALUPE COUNTY, TEXAS
PG.	= PAGE
PGS.	= PAGES
℄	= PROPERTY LINE
R	= RADIUS
RD.	= ROAD
R.O.W.	= RIGHT-OF-WAY
SAN. SEW.	= SAN. SEW.
S.U.D.	= SPECIAL UTILITY DISTRICT
SF	= SQUARE FEET
TYP.	= TYPICAL
UDC	= UNIFIED DEVELOPMENT CODE
VAR.	= VARIABLE
VOL.	= VOLUME
WAT.	= WATER
WID.	= WIDTH
800	= EXISTING GROUND MAJOR CONTOUR
800	= EXISTING GROUND MINOR CONTOUR
	= EXISTING PROPERTY LINE
	= STREET CENTERLINE
	= CITY LIMIT LINE
	= B.S.L.
	= ½" IRON ROD SET WITH PLASTIC CAP STAMPED "CUDE" UNLESS OTHERWISE NOTED

KEYNOTES

1. 15' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE
2. 10' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE
3. 15' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT
1. EXISTING 15' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE (CONCURRENT GRACE VALLEY RANCH PHASE 2)
2. EXISTING 10' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE (CONCURRENT GRACE VALLEY RANCH PHASE 2)



MATCH LINE "A" SEE THIS SHEET



LINE TABLE		
LINE	BEARING	LENGTH
L1	S79°41'04"W	60.00'
L2	N58°34'35"W	44.67'
L3	S03°10'59"E	30.74'
L4	N07°27'34"W	60.00'
L5	N59°57'55"E	4.66'
L6	N60°36'06"W	23.62'
L7	N30°26'30"W	18.01'
L8	N43°38'47"E	25.00'
L9	N76°46'09"E	80.00'
L10	N77°49'55"E	25.00'
L11	S17°08'19"E	2.73'
L12	N72°51'31"E	59.99'
L13	S07°30'59"E	55.01'
L14	S81°26'32"W	5.27'
L15	S08°14'30"E	60.00'
L16	N60°36'06"W	12.03'
L17	S30°26'30"E	18.02'
L18	S72°51'32"W	114.41'
L19	S72°27'55"W	117.91'
L20	S60°36'06"E	38.35'
L21	N25°20'03"W	44.72'
L22	N48°11'46"W	333.34'

LINE TABLE		
LINE	BEARING	LENGTH
L23	N48°11'46"W	389.87'
L24	N25°20'03"W	47.32'
L25	N11°23'19"W	19.10'
L26	N03°10'59"W	17.83'
L27	S30°41'57"E	20.08'
L28	S13°08'32"E	9.64'
L29	S03°10'59"E	15.81'
L30	N30°26'30"W	12.30'
L31	S07°49'35"E	120.00'
L32	S28°30'59"E	73.23'
L33	S30°02'05"E	120.00'
L34	S59°32'35"W	191.65'
L35	S60°36'06"E	38.35'
L36	N59°57'55"E	7.77'
L37	N59°57'55"E	12.38'
L38	S10°33'08"E	80.23'
L39	N79°12'23"E	115.01'
L40	N74°47'33"E	115.09'
L41	N76°54'53"E	105.00'
L42	N86°49'01"E	175.00'
L43	N86°49'01"E	65.93'
L44	N85°39'20"E	120.00'

LINE TABLE		
LINE	BEARING	LENGTH
L45	S30°50'25"E	135.01'
L46	S85°39'20"W	20.16'
L47	N29°23'54"E	48.77'
L48	S29°23'54"W	48.77'
L49	N29°52'59"W	148.60'
L50	N03°10'59"W	305.00'
L51	N85°39'20"E	20.11'
L52	N85°39'20"E	19.90'
L53	S85°39'20"W	19.99'
L54	S03°10'59"E	21.45'
L55	S85°39'20"W	74.01'
L56	N85°39'20"E	72.79'
L57	S03°10'59"E	34.52'
L58	S30°02'05"E	175.00'
L59	N79°41'04"E	19.13'
L60	N30°31'55"W	59.32'
L61	N05°35'21"W	2.84'
L62	N76°34'06"E	13.67'
L63	N76°34'06"E	14.91'
L64	S30°50'25"E	21.22'

OWNER/DEVELOPER:
ESSENTIAL HOUSING ASSET MANAGMENT, LLC
8585 E HARTFORD DR., SUITE 118
SCOTTSDALE, ARIZONA 85255
PHONE: (210) 403-6282
CONTACT PERSON: STEVEN S. BENSON, MANAGER

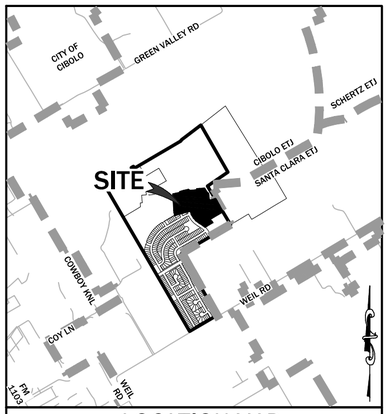
NOTES:
1. PLAT NOTES APPLY TO EVERY PAGE OF THIS MULTIPLE PAGE PLAT.
2. SEE NOTES AND SIGNATURE BLOCKS ON SHEET 2 OF 2.
3. SEE THIS SHEET FOR LINE TABLES AND SHEET 2 OF 2 FOR CURVE TABLES.

CUDE ENGINEERS
4122 POND HILL RD. • SUITE 101
SAN ANTONIO, TEXAS 78231
TEL 210.681.2951 • FAX 210.523.7112
WWW.CUDEENGINEERS.COM
TBPE REGISTERED ENGINEERING FIRM #455
TBPELS #10048500

CONTACT: JEFFREY MCKINNIE, P.E. **PROJECT #** R03346.017

JUNE 2025 SHEET 1 OF 2

P:\03346\01\72-DWG\3-Plat\Phase 4A\00_plat-final_4A.dwg 2025/06/05 1:57pm rbarrera



LOCATION MAP N.T.S.

CUDE ENGINEERS
4122 POND HILL RD. • SUITE 101
SAN ANTONIO, TEXAS 78231
TEL 210.681.2951 • FAX 210.523.7112
WWW.CUDEENGINEERS.COM
TBPE REGISTERED ENGINEERING FIRM #455
TBPELS #10048500

CONTACT: JEFFREY MCKINNIE, P.E. **PROJECT #** R03346.017

OWNER/DEVELOPER:
ESSENTIAL HOUSING ASSET MANAGEMENT, LLC
8585 E HARTFORD DR., SUITE 118
SCOTTSDALE, ARIZONA 85255
PHONE: (210) 403-6282
CONTACT PERSON: STEVEN S. BENSON, MANAGER

NOTES:
1. PLAT NOTES APPLY TO EVERY PAGE OF THIS MULTIPLE PAGE PLAT.
2. SEE NOTES AND SIGNATURE BLOCKS ON THIS SHEET.
3. SEE SHEET 1 OF 2 FOR LINE TABLES AND THIS SHEET FOR CURVE TABLES.

APPROVED ON THIS THIS _____ DAY OF _____, A.D., 2025, BY THE CITY ENGINEER, CITY OF CIBOLO, TEXAS.

BY: _____
CITY ENGINEER, CITY OF CIBOLO

STATE OF TEXAS
COUNTY OF GUADALUPE

I HEREBY CERTIFY THAT PROPER ENGINEERING CONSIDERATION HAS BEEN GIVEN IN THIS PLAT TO THE MATTERS OF STREETS, LOTS AND DRAINAGE LAYOUT. TO THE BEST OF MY KNOWLEDGE THIS PLAT CONFORMS TO ALL REQUIREMENTS OF THE SUBDIVISION REGULATIONS OF THE UNIFIED DEVELOPMENT CODE, EXCEPT FOR THOSE VARIANCES GRANTED BY THE CITY COUNCIL OF THE CITY OF CIBOLO.

_____
REGISTERED PROFESSIONAL ENGINEER
JEFFREY A. MCKINNIE

SWORN TO AND SUBSCRIBED BEFORE ME THIS THE _____ DAY OF _____, A.D., 2025.

_____
NOTARY PUBLIC IN AND FOR THE STATE OF TEXAS

STATE OF TEXAS
COUNTY OF GUADALUPE

I HEREBY CERTIFY THAT THIS PLAT IS TRUE AND CORRECT AND WAS PREPARED FROM AN ACTUAL SURVEY OF THE PROPERTY MADE ON THE GROUND UNDER MY SUPERVISION.

_____
REGISTERED PROFESSIONAL LAND SURVEYOR
CHRIS WALTERSCHEIDT

SWORN TO AND SUBSCRIBED BEFORE ME THIS THE _____ DAY OF _____, A.D., 2025.

_____
NOTARY PUBLIC IN AND FOR THE STATE OF TEXAS

THIS PLAT OF GRACE VALLEY RANCH, PHASE 4A HAS BEEN SUBMITTED TO AND CONSIDERED BY THE PLANNING AND ZONING COMMISSION OF THE CITY OF CIBOLO, TEXAS AND IS HEREBY APPROVED BY SUCH COMMISSION.

DATED THIS _____ DAY OF _____, A.D., 2025.

BY: _____ BY: _____
CHAIR VICE CHAIR

THIS PLAT OF GRACE VALLEY RANCH, PHASE 4A HAS BEEN SUBMITTED TO AND CONSIDERED BY THE CITY COUNCIL OF THE CITY OF CIBOLO, TEXAS AND IS HEREBY APPROVED BY SUCH CITY COUNCIL.

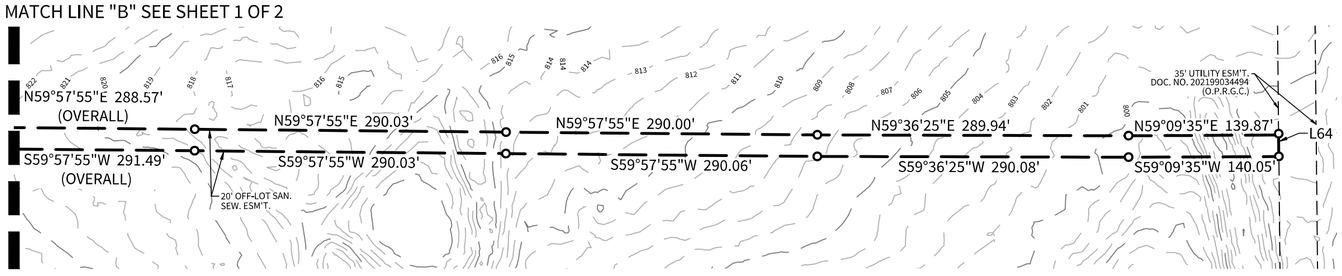
DATED THIS _____ DAY OF _____, A.D., 2025.

BY: _____ BY: _____
MAYOR CITY SECRETARY

NOTES:

1. THE PROPERTY SHOWN HEREON LIES WITHIN THE CITY OF CIBOLO, ETJ.
2. THE PROPERTY SHOWN HEREON IS NOT LOCATED OVER THE EDWARDS AQUIFER RECHARGE ZONE.
3. THE PROPERTY SHOWN HEREON IS LOCATED INSIDE SCHERTZ-CIBOLO-UNIVERSAL CITY SCHOOL DISTRICT.
4. THE PROPERTY SHOWN HEREON WILL HAVE UTILITIES PROVIDED BY THE FOLLOWING
   WATER - GVSUD
   SEWER - GVSUD
   ELECTRICITY - G.V.E.C.
   TELECOMMUNICATION - AT&T AND SPECTRUM
5. NO PORTION OF THE PROPERTY EXCEPT SHOWN HEREON IS LOCATED WITHIN A 1% ANNUAL CHANCE (100-YEAR) FLOOD BOUNDARY AS DEFINED BY FLOOD INSURANCE RATE MAP GUADALUPE COUNTY, TEXAS COMMUNITY PARCEL NUMBER 48187C 0230F, REVISED NOVEMBER 2, 2007.
6. THIS PLAT DOES NOT AMEND, ALTER, RELEASE OR OTHERWISE AFFECT ANY EXISTING ELECTRIC, GAS, WATER, SEWER, DRAINAGE, TELEPHONE, CABLE EASEMENTS OR ANY OTHER EASEMENTS FOR UTILITIES UNLESS THE CHANGES TO SUCH EASEMENTS ARE DESCRIBED ABOVE.
7. ALL UTILITY EASEMENTS ARE FOR THE CONSTRUCTION, MAINTENANCE (INCLUDING BUT NOT LIMITED TO REMOVAL OF TREE AND OTHER OBSTRUCTIONS), READING METERS AND REPAIR OF ALL OVERHEAD AND UNDERGROUND UTILITIES.
8. ALL EXISTING G.V.E.C. OVERHEAD LINES POSSESS A 30' CENTERLINE EASEMENT, 15' EACH SIDE OF LINE.
9. BEARING REFERENCE SOURCE IS THE TEXAS STATE PLANE COORDINATE SYSTEM - SOUTH CENTRAL ZONE (4204), NAD 83 (2011).
10. MONUMENTATION AS SHOWN. IT IS THE PRACTICE OF CUDE ENGINEERS TO MONUMENT ALL CORNERS (IF PRACTICAL) IN THE SUBDIVISION WITH 1/2" REBAR AND PLASTIC CAPS STAMPED "CUDE", UPON COMPLETION OF CONSTRUCTION.
11. HOMEOWNER(S) ASSOCIATION WILL MOW AND MAINTAIN PARKS, LANDSCAPE BUFFERS, OPEN SPACE, GREENBELTS AND DRAINAGE EASEMENTS.
12. THE CITY OF CIBOLO AND/OR GUADALUPE COUNTY RESERVES THE RIGHT TO RENAME STREETS AND/OR CHANGE HOUSE NUMBERS DUE TO INCOMPATIBILITY WITH EXISTING NAME LAYOUT, EMERGENCY VEHICLE RESPONSE, AND MAIL DELIVERY.
13. LOT SQUARE FOOTAGES SHOWN HEREON WERE DERIVED FROM DIMENSIONS SHOWN, BUT DO REFLECT A CERTIFIED INCREASE IN ACREAGE ACCURACY BEYOND THAT OF THE TOTAL ACREAGE SHOWN HEREON (16.025 Ac.).
14. LOTS IN SUBDIVISION PLAT INCLUDE DRAINAGE EASEMENTS AND OPEN SPACE.
15. THIS PLAT CONTAINS APPROXIMATELY 3,638 L.F. OF ROADWAY.
16. SELLING A PORTION OF THIS ADDITION BY METES AND BOUNDS IS A VIOLATION OF THE UNIFIED DEVELOPMENT CODE OF THE CITY OF CIBOLO AND STATE PLATTING STATUTES AND IS SUBJECT TO FINES AND WITHHOLDING OF UTILITIES AND BUILDING PERMITS.
17. PLAT APPROVAL SHALL NOT BE DEEMED TO OR PRESUMED TO GIVE AUTHORITY TO VIOLATE, NULLIFY, VOID, OR CANCEL ANY PROVISIONS OF LOCAL, STATE, OR FEDERAL LAWS, ORDINANCES, OR CODES.
18. THE APPLICANT IS RESPONSIBLE FOR SECURING ANY FEDERAL PERMITS THAT MAY BE NECESSARY AS THE RESULT OF PROPOSED DEVELOPMENT ACTIVITY. THE CITY OF CIBOLO IS NOT RESPONSIBLE FOR DETERMINING THE NEED FOR, OR ENSURING COMPLIANCE WITH ANY FEDERAL PERMIT.
19. APPROVAL OF THIS PLAT DOES NOT CONSTITUTE A VERIFICATION OF ALL DATA, INFORMATION AND CALCULATIONS SUPPLIED BY THE APPLICANT. THE ENGINEER OF RECORD OR REGISTERED PUBLIC LAND SURVEYOR IS SOLELY RESPONSIBLE FOR THE COMPLETENESS, ACCURACY AND ADEQUACY OF HIS/HER SUBMITTAL WHETHER OR NOT THE APPLICATION IS REVIEWED FOR CODE COMPLIANCE BY THE CITY ENGINEERS.
20. ALL RESPONSIBILITY FOR THE ADEQUACY OF THIS PLAT REMAINS WITH THE ENGINEER OR SURVEYOR WHO PREPARED THEM. IN APPROVING THESE PLANS, THE CITY OF CIBOLO MUST RELY ON THE ADEQUACY OF THE WORK OF THE ENGINEER AND/OR SURVEYOR OF RECORD.
21. ROUTINE MAINTENANCE OF WEEDS AND GRASS IN ALL EASEMENTS SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER, HOA, OR PROPERTY OWNER ASSOCIATE ON WHICH THE EASEMENT IS LOCATED IN ACCORDANCE WITH CITY OF CIBOLO UDC AND THE CITY OF CIBOLO BUILDING CODE, EACH OF WHICH AS MAY BE AMENDED, PRIOR TO THE ISSUANCE OF A BUILDING PERMIT.
22. ALL UTILITIES, INCLUDING, BUT NOT LIMITED TO, ELECTRICAL WIRING, NATURAL GAS, TELEPHONE, CABLE, INTERNET, AND SECURITY SYSTEMS, SHALL BE LOCATED IN THE FRONT YARD, SHALL BE INSTALLED UNDERGROUND AND SHALL BE MAINTAINED IN ACCORDANCE WITH ALL APPLICABLE CITY CODES AND REGULATIONS FOR SUCH SYSTEMS. ANY UTILITIES REQUIRED TO BE PLACED ABOVE GROUND MUST BE PLACED ON STEEL POLES OR ANOTHER MATERIAL WITH COMPARABLE STRENGTH AND DURABILITY, AS APPROVED BY THE CITY ENGINEER AND AFFECTED UTILITY PROVIDER, MEETING THE REQUIREMENTS OF THE CITY AND THE APPLICABLE UTILITY PROVIDER. ROUTINE MAINTENANCE OF GRASS AND WEEDS IN ALL EASEMENTS SHALL BE THE RESPONSIBLE OF THE OWNER ON WHOSE PROPERTY THE EASEMENT IS LOCATED, EXPECTED WHERE EXPRESSLY STIPULATED TO BE MAINTAINED BY SOME OTHER PARTY.
23. FINISHED FLOOR ELEVATIONS MUST BE A MINIMUM OF 8 INCHES ABOVE FINISHED ADJACENT GRADE.
24. NO STRUCTURES, FENCES, WALLS, OR OTHER OBSTRUCTIONS THAT IMPEDE DRAINAGE SHALL BE PLACED WITHIN THE LIMITS OF THE DRAINAGE EASEMENTS AND RIGHTS-OF-WAY SHOWN ON THIS PLAT. NO LANDSCAPING OR OTHER TYPE OF MODIFICATIONS, WHICH ALTER THE CROSS-SECTIONS OF THE DRAINAGE EASEMENTS AND RIGHTS-OF-WAY, AS APPROVED, SHALL BE ALLOWED WITHOUT THE APPROVAL OF THE DIRECTOR OF PUBLIC WORKS. THE CITY OF CIBOLO SHALL HAVE THE RIGHT TO INGRESS AND EGRESS OVER THE GRANTOR'S ADJACENT PROPERTY TO REMOVE ANY IMPEDING OBSTRUCTIONS PLACED WITHIN THE LIMITS OF SAID DRAINAGE EASEMENTS AND TO MAKE ANY MODIFICATIONS OR IMPROVEMENTS WITHIN SAID DRAINAGE EASEMENTS.
25. TREE SURVEY WILL BE PROVIDED ON A PHASE TO PHASE BASIS.
26. A GEOTECHNICAL REPORT DEMONSTRATING COMPLIANCE WITH ALL RECOMMENDED PRACTICE FOR THE DESIGN OF RESIDENTIAL FOUNDATIONS, VERSION 1 STANDARDS OF THE TEXAS SECTION OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS, THE GEOTECHNICAL STANDARDS OF THE CITY OF CIBOLO UDC AND THE CITY OF CIBOLO BUILDING CODE, EACH OF WHICH AS MAY BE AMENDED, PRIOR TO THE ISSUANCE OF A BUILDING PERMIT.
27. ALL STREETS ARE DESIGNATED AS A 60' UNDERGROUND AND AT-GRADE INFRASTRUCTURE AND SERVICE FACILITIES EASEMENT FOR PUBLIC ACCESS, GAS, ELECTRIC, STREET LIGHT, TELEPHONE CABLE TELEVISION, DRAINAGE, PEDESTRIAN, PUBLIC WATER, WASTEWATER, RECYCLED WATER MAINS, AND EMERGENCY ACCESS EASEMENT.
28. THE LANDOWNER ASSUMES ALL RISKS ASSOCIATED WITH IMPROVEMENTS LOCATED IN THE RIGHT-OF-WAY, OR ROAD WIDENING EASEMENT. BY PLACING ANYTHING IN THE RIGHT-OF-WAY OR ROAD WIDENING EASEMENTS, THE LANDOWNER IDENTIFIES AND HOLDS THE CITY OF CIBOLO, GUADALUPE COUNTY, THEIR OFFICERS, AGENTS, AND EMPLOYEES HARMLESS FROM ANY LIABILITY OWING TO PROPERTY DEFECTS OR NEGLIGENCE NOT ATTRIBUTABLE TO THEM AND ACKNOWLEDGES THAT THE IMPROVEMENTS MAY BE REMOVED BY THE CITY AND/OR COUNTY AND THAT THE OWNER OF THE IMPROVEMENTS WILL BE RESPONSIBLE FOR THE RELOCATION AND/OR REPLACEMENT OF THE IMPROVEMENTS.
29. THE BUILDING OF ALL STREETS, ROADS, AND OTHER PUBLIC THOROUGHFARES AND ANY BRIDGES OR CULVERTS NECESSARY TO BE CONSTRUCTED OR PLACED IS THE RESPONSIBILITY OF THE OWNERS OF THE TRACT OF LAND COVERED BY THIS PLAT IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS PRESCRIBED BY THE CITY OF CIBOLO AND/OR GUADALUPE COUNTY, TEXAS. NEITHER THE CITY OF CIBOLO NOR GUADALUPE COUNTY ASSUMES ANY OBLIGATION TO THE BRIDGES OR DRAINAGE IMPROVEMENTS IN CONNECTION THEREWITH. NEITHER THE CITY OF CIBOLO NOR GUADALUPE COUNTY ASSUMES ANY RESPONSIBILITY FOR DRAINAGE WAYS OR EASEMENTS IN THE SUBDIVISION, OTHER THAN THOSE DRAINING OR PROTECTING THE PUBLIC ROAD SYSTEM AND PUBLIC STREETS IN THE RESPECTIVE JURISDICTIONS.
30. THE MAINTENANCE OF ALL STREETS, OPEN SPACE, GREENBELTS, PARKS, TREE SAVE AREAS, DRAINAGE EASEMENTS AND EASEMENTS OF ANY OTHER NATURE WITHIN THIS SUBDIVISION SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNERS, OR THE GRACE MEADOWS HOMEOWNERS ASSOCIATION, OR DISTRICT CREATED UNDER TEXAS WATER CODE, OR ITS SUCCESSORS OR ASSIGNS AND NOT THE RESPONSIBILITY OF THE CITY OF CIBOLO OR GUADALUPE COUNTY.
31. THE ROADS SHALL BE MAINTAINED TO SUCH A STANDARD THAT WILL ALLOW EMERGENCY VEHICLES TO ACCESS THE LOTS.
32. EVERY DEED THAT CONVEYS OWNERSHIP OF A LOT MUST CONTAIN NOTICE TO THE GRANTEE THAT ALL STREETS SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNERS, OR THE GRACE MEADOWS HOMEOWNERS ASSOCIATION, OR DISTRICT CREATED UNDER TEXAS WATER CODE, OR ITS SUCCESSORS OR ASSIGNS AND NOT THE RESPONSIBILITY OF THE CITY OF CIBOLO OR GUADALUPE COUNTY. NEITHER THE CITY OF CIBOLO NOR GUADALUPE COUNTY, TEXAS, WILL EVER ACCEPT THE ROADS FOR MAINTENANCE; AND THE QUALITY OF THE ROADS MUST BE MAINTAINED AS TO NOT AFFECT ACCESS BY PUBLIC SERVICE AGENCIES SUCH AS POLICE, FIRE, AND EMERGENCY MEDICAL SERVICES.
33. IMPROVEMENTS WITHIN THE COUNTY ROAD RIGHT-OF-WAY INCLUDING, BUT NOT LIMITED TO, LANDSCAPING, IRRIGATION, DECORATIVE LIGHTING, CUSTOM SIGNS, IS PROHIBITED WITHOUT FIRST OBTAINING AN EXECUTED LICENSE AGREEMENT WITH GUADALUPE COUNTY.
34. THE STREETS SHALL ALWAYS BE OPEN TO EMERGENCY VEHICLES, PUBLIC AND PRIVATE UTILITY SERVICE PERSONNEL, THE U.S. POSTAL SERVICE AND GOVERNMENTAL EMPLOYEES IN PURSUIT OF THEIR OFFICIAL DUTIES.
35. THE AMOUNT OF PARKLAND DEDICATION PROVIDED BY THIS DEVELOPMENT IS 2.83 Ac. MEETING/EXCEEDING THE EIGHT (8%) PERCENT OF THE TOTAL TRACT ACREAGE AS REQUIRED BY SECTION 16.2.2a OF THE UDC.
36. EASEMENTS KEYNOTES 2 AND 5 TO EXPIRE UPON INCORPORATION INTO PLATTED PUBLIC RIGHT-OF-WAY.
37. THE GRACE MEADOWS HOMEOWNERS ASSOCIATION, BY FILING THIS RECORD DOCUMENT, AND ALL FUTURE OWNERS OF THIS PROPERTY, BY PURCHASING SUCH PROPERTY, ACKNOWLEDGE AND AGREE THAT GUADALUPE COUNTY SHALL HAVE NO OBLIGATION WHATSOEVER TO REPAIR OR ACCEPT MAINTENANCE OF THE STREETS SHOWN ON THIS APPROVED DEVELOPMENT PLAT UNTIL AND UNLESS THE GRACE MEADOWS HOMEOWNERS ASSOCIATION AND/OR THE PROPERTY OCCUPANTS OR TENANTS HAVE IMPROVED THE STREETS TO THE THEN CURRENT STANDARDS REQUIRED BY GUADALUPE COUNTY AND THE STREETS HAVE BEEN ACCEPTED FOR MAINTENANCE BY FORMAL, WRITTEN ACTION OF THE COUNTY COMMISSIONS COURT AND THE STREETS, WITH ALL REQUIRED RIGHT-OF-WAY AND BUILDING SETBACKS, HAVE BEEN DEDICATED BY THE OWNERS THEREOF, AND ACCEPTED BY THE COUNTY, AS PUBLIC STREETS. UNTIL SUCH TIME, THE GRACE MEADOWS HOMEOWNERS ASSOCIATION AND ALL FUTURE OWNERS OF PROPERTY WITHIN THE LIMITS OF THE APPROVED DEVELOPMENT PLAT SHALL LOOK SOLELY TO THE OWNER, DEVELOPER OR ENTITY CREATED FOR THAT PURPOSE FOR FUTURE MAINTENANCE AND REPAIR OF THE STREETS INCLUDED IN THE DEVELOPMENT PLAT.

MATCH LINE "B" SEE SHEET 1 OF 2



CURVE TABLE					
CURVE	RADIUS	DELTA	LENGTH	CHORD BEARING	CHORD
C1	570.00'	2°20'29"	23.29'	N11°29'10"W	23.29'
C2	495.70'	2°32'06"	21.93'	N83°50'34"E	21.93'
C3	650.00'	14°12'33"	161.20'	N75°22'06"E	160.78'
C4	130.00'	30°09'36"	68.43'	N45°31'18"W	67.64'
C5	540.00'	14°14'53"	134.29'	N53°28'40"W	133.94'
C6	460.00'	47°22'15"	380.32'	S36°54'59"E	369.58'
C7	395.00'	6°09'36"	42.47'	N07°05'47"W	42.45'
C8	710.00'	8°25'08"	104.33'	N08°52'33"W	104.23'
C9	790.00'	8°27'19"	116.58'	N08°51'27"W	116.48'
C10	5.00'	89°42'52"	7.83'	S49°29'14"E	7.05'
C11	5.00'	88°50'19"	7.75'	N41°14'11"E	7.00'
C12	5.00'	91°09'41"	7.96'	S48°45'49"E	7.14'
C13	650.00'	3°10'58"	36.11'	N84°03'51"E	36.10'
C14	530.00'	3°06'54"	28.81'	N84°05'53"E	28.81'
C15	5.00'	88°50'19"	7.75'	S41°14'11"W	7.00'
C16	5.00'	90°00'00"	7.85'	N74°23'54"E	7.07'
C17	120.00'	30°34'01"	64.02'	S44°40'54"W	63.26'
C18	5.00'	90°00'00"	7.85'	N14°57'55"E	7.07'
C19	100.00'	26°51'07"	46.87'	S16°36'32"E	46.44'
C20	60.00'	239°42'40"	251.02'	N63°19'39"W	104.07'
C21	25.00'	86°33'47"	37.77'	S13°14'48"W	34.28'
C22	5.00'	90°00'00"	7.85'	S75°02'05"E	7.07'

CURVE TABLE					
CURVE	RADIUS	DELTA	LENGTH	CHORD BEARING	CHORD
C23	60.00'	30°34'01"	32.01'	S44°40'54"W	31.63'
C24	5.00'	90°00'00"	7.85'	S15°36'06"E	7.07'
C25	70.00'	30°09'36"	36.85'	N45°31'18"W	36.42'
C26	320.00'	57°25'08"	320.69'	S31°53'33"E	307.44'
C27	5.00'	91°09'41"	7.96'	N48°45'49"W	7.14'
C28	5.00'	88°50'19"	7.75'	S41°14'11"W	7.00'
C29	5.00'	91°09'41"	7.96'	N48°45'49"W	7.14'
C30	5.00'	90°19'19"	7.88'	N40°29'41"E	7.09'
C31	460.00'	10°02'52"	80.67'	S08°12'25"E	80.57'
C32	540.00'	10°02'52"	94.70'	S08°12'25"E	94.58'
C33	5.00'	88°50'19"	7.75'	S41°14'11"W	7.00'
C34	5.00'	91°09'41"	7.96'	N48°45'49"W	7.14'
C35	5.00'	90°26'58"	7.89'	N40°25'51"E	7.10'
C36	5.00'	89°36'19"	7.82'	S49°32'30"E	7.05'
C37	600.00'	11°54'08"	124.64'	S08°40'16"E	124.42'
C38	660.07'	12°07'42"	139.73'	S08°48'44"E	139.46'
C39	470.00'	3°53'31"	31.93'	S83°42'35"W	31.92'
C40	530.00'	3°53'33"	36.01'	S83°42'33"W	36.00'
C41	510.00'	5°31'18"	49.15'	N07°33'17"W	49.13'
C42	570.00'	5°34'35"	55.48'	N07°31'38"W	55.45'
C43	685.00'	8°49'40"	105.54'	N08°40'17"W	105.44'
C44	565.00'	14°14'53"	140.50'	N53°28'40"W	140.14'

CURVE TABLE					
CURVE	RADIUS	DELTA	LENGTH	CHORD BEARING	CHORD
C45	435.00'	57°25'08"	435.93'	S31°53'33"E	417.92'
C46	460.00'	57°25'08"	460.99'	S31°53'33"E	441.94'
C47	565.00'	10°00'03"	98.62'	S08°11'00"E	98.49'
C48	60.00'	147°03'34"	154.00'	N09°20'11"W	115.08'
C49	13.36'	26°45'32"	6.24'	N33°21'55"W	6.19'
C50	530.00'	2°11'11"	20.22'	S81°26'51"W	20.22'
C51	60.00'	299°56'00"	314.09'	S12°27'48"E	60.06'
C52	495.70'	1°43'55"	14.98'	N81°42'33"E	14.98'
C53	260.00'	57°25'08"	260.56'	S31°53'33"E	249.79'
C54	60.01'	299°27'38"	313.66'	S66°56'05"W	60.50'
C55	435.00'	3°26'53"	26.18'	S04°54'25"E	26.17'
C56	60.00'	300°00'00"	314.16'	N30°02'05"W	60.00'
C57	30.15'	25°30'39"	13.42'	N35°11'11"W	13.31'
C58	60.00'	134°24'24"	140.75'	S31°10'04"E	110.63'
C59	60.00'	292°40'05"	306.48'	N61°14'00"E	66.52'
C60	495.80'	2°32'34"	22.00'	N83°50'48"E	22.00'
C61	60.00'	17°26'08"	18.26'	N72°54'40"E	18.19'

81 RESIDENTIAL LOTS & 1 OPEN SPACE (NON-RESIDENTIAL), IN 9 BLOCKS

FINAL PLAT
OF
GRACE VALLEY RANCH PHASE 4A

16.025 ACRES OF LAND LOCATED IN THE FRAILAN DE LA GARZA SURVEY 253, ABSTRACT 143, GUADALUPE COUNTY, TEXAS, AND BEING A PORTION OF A CALLED 62.57 ACRE TRACT OF LAND RECORDED IN DOCUMENT 202399016958 OF THE OFFICIAL PUBLIC RECORDS OF GUADALUPE COUNTY, TEXAS.

STATE OF ARIZONA
COUNTY OF _____

THE OWNER OF LAND SHOWN ON THIS PLAT, IN PERSON OR THROUGH A DULY AUTHORIZED AGENT, DEDICATES TO THE USE OF THE PUBLIC FOREVER ALL STREETS, ALLEYS, PARKS, WATERCOURSES, DRAINS, EASEMENTS, AND PUBLIC SPACES THEREON SHOWN FOR THE PURPOSE AND CONSIDERATION THEREIN EXPRESS.

_____
AG EHC II (LEN) MULTI STATE 4, LLC
A DELAWARE LIMITED LIABILITY COMPANY
BY: ESSENTIAL HOUSING ASSET MANAGEMENT, LLC
AN ARIZONA LIMITED LIABILITY COMPANY,
ITS AUTHORIZED AGENT

BY: _____
STEVEN S. BENSON, ITS MANAGER

STATE OF ARIZONA
COUNTY OF _____

BEFORE ME, THE UNDERSIGNED AUTHORITY ON THIS DAY PERSONALLY APPEARED _____ KNOWN TO ME TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO THE FOREGOING INSTRUMENT, AND ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME FOR THE PURPOSES AND CONSIDERATIONS THEREIN EXPRESSED AND IN THE CAPACITY THEREIN STATED.

GIVEN UNDER MY HAND AND SEAL OF OFFICE THIS _____ DAY OF _____, A.D., 2025.

_____
NOTARY PUBLIC IN AND FOR THE STATE OF TEXAS

GUADALUPE VALLEY E.C. NOTES
"EASEMENT REQUIREMENTS"

1. WHERE UNDERGROUND SERVICES ARE UTILIZED GVEC WILL POSSESS A 5-FOOT-WIDE EASEMENT TO SERVICE METER LOCATION. EASEMENT TO FOLLOW SERVICE LINE AND WILL VARY DEPENDING ON BUILDING OR STRUCTURE.
2. GVEC SHALL HAVE ACCESS TO METER LOCATIONS FROM THE FRONT YARD WITH THE LOCATION NOT WITHIN A FENCED AREA.
3. ANY EASEMENT DESIGNATED AS A GVEC 20' X 20' UTILITY EASEMENT SHALL REMAIN OPEN FOR ACCESS TIMES AND SHALL NOT BE WITHIN A FENCED AREA.
4. ALL UTILITY EASEMENTS ARE FOR THE CONSTRUCTION, UPGRADE, MAINTENANCE (INCLUDING BUT LIMITED TO REMOVAL OF TREES AND OTHER OBSTRUCTIONS), READING OF METERS, AND REPAIR OFOVERHEAD AND UNDERGROUND UTILITIES AND SHALL REMAIN AT FINAL GRADE.
5. ALL LOTS ADJOINING UTILITY LOT OR PRIVATE, CITY, COUNTY, OR STATE RIGHT OF WAY ARE SUBJECT TO A 5'X30'GUY WIRE EASEMENT ALONG SIDE AND REAR LOT LINES.
6. ALL ELECTRIC EASEMENTS, FOR BOTH PRIMARY AND SECONDARY ELECTRIC SERVICE, INCLUDE RIGHTS OF INGRESS AND EGRESS ACROSS THE SUBDIVISION FOR THE PURPOSE OF INSTALLING, SERVICING, UPGRADING AND MAINTAINING THE ELECTRICAL FACILITIES AND SHALL REMAIN AT FINAL GRADE.
7. ANY REQUEST TO SUBSEQUENTLY RELOCATE ANY PORTION OF THE ELECTRIC FACILITIES INSTALLED SUBJECT TO THE COOPERATIVE'S REASONABLE DISCRETION AND THE REQUESTING PARTY SHALL BEAR ASSOCIATED WITH SUCH RELOCATION.
8. THE COOPERATIVE SHALL ONLY BE REQUIRED TO FILL, GRADE, AND RESTORE GROUND COVER BACK TO ORIGINAL GRADE AS A RESULT OF ANY EXCAVATION BY OR ON BEHALF OF THE COOPERATIVE.

THIS SUBDIVISION PLAT OF GRACE VALLEY RANCH PHASE 4A HAS BEEN SUBMITTED TO AND APPROVED BY GUADALUPE VALLEY ELECTRIC COOPERATIVE, INC. FOR EASEMENTS.

BY: _____
AGENT FOR GUADALUPE VALLEY ELECTRIC COOPERATIVE, INC.

GREEN VALLEY SPECIAL UTILITY DISTRICT
"PLAT NOTES"

1. GREEN VALLEY SPECIAL UTILITY DISTRICT (GVSUD) IS HEREBY DEDICATED THE EASEMENTS AND RIGHTS-OF-WAY IN THE AREAS DESIGNATED ON THIS PLAT AS "WATER" OR "SANITARY SEWER" FOR THE PURPOSE OF INSTALLING, CONSTRUCTING, RECONSTRUCTING, OPERATING, MAINTAINING, INSPECTING, REPAIRING, REMOVING, AND RELOCATING BURIED AND/OR EXPOSED WATER AND/OR WASTEWATER FACILITIES AND APPURTENANCES.
2. TOGETHER WITH THE RIGHT OF INGRESS AND EGRESS, GVSUD SHALL HAVE THE RIGHT TO REMOVE SAID WATER EASEMENT OF ALL TREES OR PARTS THEREOF, OR ANY OTHER OBSTRUCTIONS WHICH MAY ENDANGER, OR INTERFERE WITH MAINTENANCE OF, THE FACILITIES AND APPURTENANCES.
3. OTHER UTILITIES, STRUCTURES, GRADING, DRAINAGE CHANNELS, DETENTION/RETENTION PONDS, LANDSCAPING, TREES, ROADS, PARKING LOTS, FENCES, WALLS, CONSTRUCTION OF ANY TYPE, OR ANY OTHER IMPROVEMENTS OR OBSTRUCTIONS, ARE NOT ALLOWED WITHIN GVSUD EASEMENTS. OTHER UTILITIES, DRAINAGE CHANNELS, ROADS, AND FENCES MAY CROSS GVSUD UTILITY EASEMENTS AT OR NEAR A 90-DEGREE ANGLE TO THE LONGITUDINAL SIDE OF THE EASEMENT. DESIGNS FOR ANY PROPOSED ALTERATIONS OR CROSSINGS OF GVSUD EASEMENTS MUST BE APPROVED IN WRITING BY GVSUD AND THE INSTALLATION OF SUCH MUST BE INSPECTED AND APPROVED BY GVSUD.
4. THE PROPERTY OWNER MUST INSTALL 16-FOOT GATES IN ANY FENCES THAT CROSS GVSUD EASEMENTS. GATES MUST BE CENTERED ACROSS GVSUD UTILITIES.
5. MAINTENANCE OF EASEMENTS IS THE RESPONSIBILITY OF THE PROPERTY OWNER; HOWEVER, GVSUD MAY ELECT TO MAINTAIN THE EASEMENT AS PROVIDED IN THE EASEMENT AGREEMENT.
6. GVSUD MAY REMOVE ALL TREES AND SHRUBBERY FROM EASEMENTS WITHOUT NOTICE OR COMPENSATION.

THIS PROPOSED DEVELOPMENT HAS BEEN REVIEWED AND APPROVED BY THE GREEN VALLEY S.U.D. (G.V.S.U.D.) FOR WASTEWATER TREATMENT PLANT CAPACITY AND EASEMENTS. ALL FEES DUE FOR IMPACT TO THE SYSTEM AT TIME OF CONNECTION WILL BE CALCULATED AT SUBMITTAL OF BUILDING PERMIT APPLICATION.

BY: _____
AGENT FOR GREEN VALLEY S.U.D.

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STREET AND DRAINAGE GENERAL NOTES:

1. ALL WORK IS TO BE INSTALLED IN ACCORDANCE WITH STANDARDS OF THE CITY OF CIBOLO MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS CONTRACT WILL CONFORM TO APPLICABLE CITY OF CIBOLO SUBDIVIONS REGULATIONS AND, STANDARD SPECIFICATIONS AND DETAILS.

2. FOR ALL REFERENCES TO THE TEXAS DEPARTMENT OF TRANSPORTATION (TXDOT), THE CONTRACTOR SHALL SEE THEIR CURRENT STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS, AND BRIDGES, WHICH IS ALSO LOCATED AT WWW.TXDOT.GOV.

3. ALL CONCRETE SHALL BE AS DETAILED ON THE PLAN SHEETS AND MEET MATERIAL REQUIREMENTS OF GUADALUPE COUNTY.

4. ALL REINFORCING STEEL SHALL BE GRADE 60, MEET THE MATERIAL AND CONSTRUCTION REQUIREMENTS OF GUADALUPE COUNTY.

5. CONCRETE CURING SHALL BE WITH AN IMPERVIOUS MEMBRANE APPLICATION AND SHALL MEET THE MATERIAL AND APPLICATION REQUIREMENTS OF THE CITY OF SAN ANOTNIO'S "MEMBRANE CURING" AND BE LISTED ON THE GUADALUPE COUNTY APPROVED LIST OF SUPPLIERS IN ADDITION TO THE CONTRACTOR APPLYING THE CURING COMPOUND THEY ARE TO INSTALL CONTRACTION/EXPANSION JOINTS ON CONCRETE WORK.

6. ALL CONCRETE CONSTRUCTION AND FINISHING SHALL MEET THE REQUIREMENTS OF GUADALUPE COUNTY.

7. THE CONTRACTOR IS REQUIRED TO ATTEND A PRE-CONSTRUCTION CONFERENCE AND SHALL SCHEDULE IT WITH THE CITY PLANNING AND ENGINEERING DEPARTMENT (RUDY KLEIN A1 (210) 658-9900 EXT 3139) A MINIMUM OF ONE (1) WEEK PRIOR TO BEGINNING CONSTRUCTION.

8. MANHOLES SHALL BE BROKEN BELOW THE FINISH GRADE LEVEL UNTIL THE BASE IS COMPLETED AND THEN RESTORED.

9. THE ENGINEER WILL STAKE THE STREET ONE TIME ONLY AND FURNISH CUT SHEETS TO THE STREET CONTRACTOR; ANY CONSTRUCTION STAKES REMOVED OR DESTROYED BY THE CONTRACTOR OR HIS EMPLOYEES WILL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

10. AN INDEPENDENT TESTING LABORATORY APPROVED BY THE CITY OF CIBOLO SHALL PERFORM ALL "FIELD AND LABORATORY TESTING". THE CITY REQUIRES ALL INSPECTION AND/OR TESTING FIRMS TO BE ACCREDITED, QUALIFIED, AND IN COMPLIANCE WITH THE REQUIREMENTS OF ASTM E329, "STANDARD SPECIFICATION FOR AGENCIES ENGAGED IN CONSTRUCTION INSPECTION AND/OR TESTING". FIRMS MUST PRESENT A COPY OF THEIR CURRENT, OFFICIAL ACCREDITATION BY THE AMERICAN ASSOCIATION FOR LABORATORY ACCREDITATION (A2LA) OR THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) AND CURRENT AMRL AND CCRL PROFICIENCY RESULTS. THE FIRMS SHALL BE ACCREDITED IN ALL MATERIAL TEST PROCEDURES REQUIRED TO BE PERFORMED FOR EACH PROJECT.

11. THE DEVELOPER WILL HIRE A THIRD PARTY FOR CONSTRUCTION MATERIAL TESTING IN WHICH THE CONTRACTOR WILL REQUIRE TO COORDINATE AND PROVIDE NECESSARY INFORMATION TO THEM. THE FOLLOWING TEST SCHEDULE SHALL BE ADHERE TO:

    A. ALL IMPORT FILL PLACED IN THE STREET'S SUBGRADE SHALL BE SELECT MATERIAL, WITH A PLASTICITY INDEX LESS THAN TWENTY (20), AND COMPACTED IN MAXIMUM EIGHT (8) INCH LIFTS TO 98% DENSITY OF TXDOT'S TEST METHOD TEX 113-E. PROVIDE TESTING ON EACH EIGHT (8) INCH COMPACTED LIFT. SUBGRADE MOISTURE DENSITY TESTING SHALL BE AT THE MINIMUM FREQUENCY OF THREE (3) PER BLOCK AND SHALL NOT TO EXCEED FIVE HUNDRED (500) FOOT SPACING.

    B. FLEXIBLE BASE TESTING SHALL INCLUDE – P.I., L.L., GRADATION, AND WET BALL MILL OF MATERIAL SHALL BE TESTED UPON DELIVERY TO THE PROJECT AND AS DIRECTED BY THE CITY. MOISTURE DENSITY TESTING SHALL BE AT THE MINIMUM RATE OF THREE (3) PER BLOCK AND SHALL NOT TO EXCEED FIVE HUNDRED (500) FOOT SPACING. THE QUALITY CONTROL TEST ON THE MATERIALS SHALL BE PERFORMED BY THE CONTRACTOR'S CITY APPROVED TESTING FIRM. IN-PLACE DENSITY SHALL MEET THE REQUIREMENTS DETAILED IN THE CITY'S SUBDIVISION REGULATIONS.

    C. HOT AND WARM MIX ASPHALTIC CONCRETE (HMAC/WMAC) DENSITY – IN PLACE DENSITY TESTING SHALL RESULT BETWEEN 92% AND 97% OF THE MAXIMUM THEORETICAL GRAVITY PER TEX 207-F. A SET OF TWO (2) CORES SHALL BE RANDOMLY SAMPLED AT A DISTANCE NOT TO EXCEED FIVE HUNDRED (500) FOOT SPACING PER BLOCK. ALL QUALITY CONTROL NUCLEAR TESTING OF THE IN-PLACE HMAC/WMAC IS FOR QUALITY CONTROL INFORMATION ONLY. THE HMAC/WMAC THICKNESS IS REQUIRED TO BE MEASUREMENT BY CORE. FIELD QUALITY CONTROL PERSONNEL SHALL BE TXDOT LEVEL IB CERTIFIED AND BE PRESENT AT START AND THROUGH THE DURATION OF THE PLACEMENT OPERATONS OF THE HMAC/WMAC TO DOCUMENT DENSITY, THICKNESS, AND COMPACTION AND PLACEMENT OPERATIONS. THE CITY WILL DETERMINE THE REMOVAL AND REPLACEMENT OF ALL FAILED PRODUCTION AND PLACEMENT HMAC/WMAC TEST RESULTS.

    D. RECYCLED ASPHALT SHINGLES (RAS) AND RECYCLED ASPHALT PAVEMENT (RAP) SHALL NOT BE USED IN ANY HMAC OR WMAC MIXES.

    E. CONCRETE STRUCTURES – A MINIMUM OF ONE (1) SET OF COMPRESSIVE CONCRETE STRENGTH TEST OF 4, SIX (6) INCH DIAMETER CYLINDERS EACH WILL BE TESTED PER EACH STRUCTURE AND THE FREQUNCY SHALL BE NO LESS THAN ONE (1) SET PER SIXTY (60) CUBIC YARDS OF CONCRETE PLACED AND AT LEAST ONE (1) SET PER DAY.

    F. CONCRETE CURB AND SIDEWALK – PROVIDE ONE (1) SET OF FOUR (4), SIX (6) INCH DIAMETER CYLINDERS PER EACH 500 LINEAR FEET OF CURB AND/OR SIDEWALK AND AT LEAST ONE (1) SET PER DAY.

    G. THE CONTRACTOR SHALL SUBMIT CONCRETE, WMAC, AND HMAC DESIGNS A MINIMUM OF 2 WEEKS PRIOR TO THE PLACEMENT OF THE MATERIAL.

12. PROOF ROLLING – ALL SUBGRADE AND EACH LIFT OF BASE MATERIAL SHALL BE PROOF–ROLLED TO THE SATISFACTION OF THE CITY. THE CONTRACTOR SHALL PROVIDE THE NECESSARY EQUIPMENT AND OPERATORS FOR PROOF-ROLLING AS DIRECTED BY THE CITY. SOFT AND YIELDING AREAS DISCOVERED SHALL BE CORRECTED BY THE CONTRACTOR AT THEIR EXPENSE.

13. SURFACE STRUCTURES SUCH AS MAILBOXES, STREET SIGNS, FENCES, DRIVEWAYS, SIDEWALKS, LANDSCAPING, CONCRETE ISLANDS, CURBS OR CONCRETE DRIVEWAYS, ETC., VISIBLE AT THE TIME OF THE SURVEY ARE SHOWN ON THE PLANS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SAFEGUARD AND MAINTAIN ANY AND ALL SURFACE STRUCTURES DURING THE COURSE OF WORK AND TO REPLACE OR REPAIR THOSE ITEMS WHICH ARE DAMAGED BY THE CONTRACTOR WITH LIKE OR BETTER QUALITY AND SHALL BE RESPONSIBLE FOR RESTORING TO ITS ORIGINAL OR BETTER CONDITION (NO SEPARATE PAY ITEM).

14. LOCATIONS AND DEPTHS OF EXISTING UTILITIES SHOWN ON THE PLANS ARE UNDERSTOOD TO BE APPROXIMATE. ACTUAL LOCATIONS MUST BE FIELD VERIFIED BY THE CONTRACTOR AT LEAST 48 HOURS PRIOR TO CONSTRUCTION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL UTILITIES, PROTECT THEM DURING CONSTRUCTION AND REPAIR ANY DAMAGE TO OTHER UTILITIES AT NO COST TO THE CITY OF CIBOLO.

15. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SEE THAT ALL SIGNS AND BARRICADES ARE PROPERLY INSTALLED AND MAINTAINED. ALL LOCATIONS AND DISTANCES WILL BE DECIDED UPON IN THE FIELD BY THE CONTRACTOR, USING THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. THE CITY'S CONSTRUCTION INSPECTOR/TRAFFIC ENGINEERING REPRESENTATIVE WILL ONLY BE RESPONSIBLE TO INSPECT BARRICADES AND SIGNS. IF IN THE OPINION OF THE TRAFFIC ENGINEERING REPRESENTATIVE/ CONSTRUCTION INSPECTOR, THE TRAFIC CONTROL DEVICES DO NOT CONFORM TO ESTABLISHED STANDARDS, ARE INCORRECTLY PLACED OR INSUFFICIENT IN QUANTITY TO PROTECT THE TRAVELING GENERAL PUBLIC, THE CONSTRUCTION INSPECTOR WILL HAVE THE OPTION OF STOPPING THE OPERATIONS UNTIL SUCH TIME AS THE CONDITIONS ARE CORRECTED AT NO EXPENSE TO THE CITY OF CIBOLO.

16. DEVELOPER/CONTRACTOR TO INSTALL ALL STREET NAME SIGNS, STOP SIGNS, SPEED LIMIT, YIELD SIGNS, ETC. SIGNS & STREET NAMES SHALL MEET TEXAS MUTCD STANDARDS.

17. THE STREET CONTRACTOR IS REQUIRED TO ADJUST ALL EXISTING MANHOLES (SEE "ADJUSTING EXISTING MANHOLES" OF THE SPECIFICATION) AND WATER VALVES TO MATCH THE GRADE OF THE STREET SECTION OR THE ELEVATION SPECIFIED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

18. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.181 ACCESS TO GAS VALVES MUST BE MAINTAINED AT ALL TIMES. THE CONTRACTOR MUST PROTECT AND WORK AROUND ANY GAS VALVES THAT ARE IN THE PROJECT AREA.

19. CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF UNDERGROUND UTILITIES AND OTHER UNDERGROUND STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. CONTRACTOR WILL NOTIFY ALL UTILITY COMPANIES AT LEAST 72 HOURS PRIOR TO EXCAVATION.

CITY OF CIBOLO	(210) 658-9900
GVSUD	(830) 914-2330
GVTC	(830) 885-4411
GVEC	1-800-401-8345
DIG TESS	1-800-344-8377
TEXAS STATE WIDE ONE CALL LOCATORS	1-800-545-6005 OR 811

TIME WARNER CABLE
AT&T
MCI
VERIZON

20. CONCRETE CURB SHALL BE CONSTRUCTED WITH A MAXIMUM OF EIGHTY (80) FEET BETWEEN EXPANSION JOINTS AND MARKED AT TEN (10) FOOT INTERVALS WITH APPROVED STEEL MARKING TOOLS. EXPANSION JOINTS SHALL BE PLACED AT THE BEGINNING OF ALL RADII AND AT A MAXIMUM OF EIGHTY (80) FOOT INTERVALS AS DIRECTED BY THE ENGINEER.

21. THE CONTRACTOR SHALL NOTIFY THE CITY PLANNING AND ENGINEERING DEPARTMENT (RUDY KLEIN A1 (210) 658-9900 EXT 3139) PRIOR TO PLACING BACKFILL OR CONCRETE AND PRIOR TO ANY TESTING. CONTRACTOR SHALL REQUEST INSPECTIONS A MINIMUM OF 24 HOURS IN ADVANCE. NO INSPECTIONS ARE AVAILABLE BETWEEN 12:00 P.M. AND 1:00 P.M. OR AFTER 4:00 PM DAILY, ON WEEKENDS, OR ON CITY HOLIDAYS.

22. CONCRETE SIDEWALKS SHALL HAVE TOOLED WEAKENED PLANE JOINTS EVERY FOUR (4) FEET AND DOWELED EXPANSION JOINT WITH ONE QUARTER INCH (¼) BITUMASTIC MATERIAL FORTY FEET (40) ON CENTER AND ABUTTING EXISTING STRUCTURES.

23. ALL WORKMANSHIP AND MATERIAL SHALL CONFORM TO THE CITY OF CIBOLO ORDINANCES FOR PUBLIC WORKS CONSTRUCTION AND GUADALUPE COUNTY

24. CONTRACTOR SHALL INSTALL CURB FOR HANDICAP RAMPS AS SHOWN ON THE PLANS AND ADA STANDARD PLAN SHEETS.

25. CONTRACTOR SHALL PROVIDE BRASS KEYS TO BE USED TO OPEN LOCKING MANHOLE COVERS ON DRAINAGE STRUCTURES DURING PRELIMINARY INSPECTION FOR ACCEPTANCE OF PROJECT.

26. EXISTING STREETS TRENCHES ARE TO BE BACKFILLED WITH FLOWABLE FILL FROM THE TOP OF THE BEDDING MATERIAL TO WITHIN TWO (2) INCHES OF THE FINISHED GRADE ALLOWING FOR THE SURFACE HMAC/WMAC.

CERTIFICATE OF APPROVAL BY CITY ENGINEER:

APPROVED ON THIS THE ____ DAY OF _____, 20 ____, BY THE CITY ENGINEER, CITY OF CIBOLO, TEXAS.

_____
CITY ENGINEER, CITY OF CIBOLO

"RELEASE OF THIS APPLICATION DOES NOT CONSTITUTE A VERIFICATION OF ALL DATA, INFORMATION AND CALCULATIONS SUPPLIED BY THE APPLICANT. THE ENGINEER OF RECORD IS SOLELY RESPONSIBLE FOR THE COMPLETENESS, ACCURACY AND ADEQUACY OF HIS/HER SUBMITTAL, WHETHER OR NOT THE APPLICATION IS REVIEWED FOR CODE COMPLIANCE BY THE CITY ENGINEER."

"ALL RESPONSIBILITY FOR THE ADEQUACY OF THESE PLANS REMAINS WITH THE ENGINEER WHO PREPARED THEM. IN APPROVING THESE PLANS, THE CITY OF CIBOLO MUST RELY UPON THE ADEQUACY OF THE WORK OF THE DESIGN ENGINEER."

27. REMOVE EXISTING CURB ON ALL NEW DRIVEWAYS AND PLACE THE COMPLETE PAVEMENT THICKNESS WITH A MINIMUM OF FIVE (5) INCHES THICKNESS ON RESIDENTIAL AND SIX (6) INCHES MINIMUM ON COMMERCIAL; DEPENDING ON TRAFFIC WEIGHT.

28. CONCRETE PLACED IN NEW DRIVEWAYS INCLUDING ALLEY'S SHALL MEET A MINIMUM 3,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.

29. EXCESS MATERIAL IS TO BE DISPOSED OF AS DIRECTED BY THE ENGINEER. NO EXCESS MATERIAL SHALL BE DUMPED OR ALLOWED TO ENTER ANY WATERWAY, CULVERT OR OTHER DRAINAGE STRUCTURE. THE CONTRACTOR SHALL NOT PLACE ANY MATERIAL IN THE 100-YEAR FLOODPLAIN WITHOUT OBTAINING AN APPROVED FLOOD PLAIN PERMIT.

30. ANY WORK COMPLETED WITHOUT PRIOR AUTHORIZATION WHETHER INCLUDED IN THE PLANS AND SPECIFICATIONS OR NOT, SHALL NOT BE COMPENSATED BY THE CITY OF UNIVERSAL CITY.

31. PRIOR TO THE COMMENCEMENT OF ANY WORK, THE COUNTY MUST ATTEND A PRE-CONSTRUCTION MEETING INCLUDING (BUT NOT LIMITED TO) THE CITY, ENGINEER, CONTRACTOR, DEVELOPER'S INSPECTION REPRESENTATIVE, AND DEVELOPER'S CONSTRUCTION MATERIAL TESTING REPRESENTATIVE.

32. DURING CONSTRUCTION, NOTIFY THE COUNTY AT CONSTRUCTION@CO.GUADALUPE.TX.US AT LEAST 48 HOURS IN ADVANCE OF ANY WORK TO BE PERFORMED AFFECTING SUBGRADE, BASE, OR PAVEMENT INCLUDING BACKFILL OF ANY PROPOSED UTILITIES UNDERNEATH THE PAVEMENT AND FILL AREAS UPON WHICH PAVEMENT IS PROPOSED TO BE PLACED. SUCH NOTIFICATION IS ALSO REQUIRED BEFORE IMPLEMENTING ANY APPROVED TRAFFIC CONTROL PLANS ON EXISTING COUNTY-MAINTAINED ROADS. FULL CLOSURE OF COUNTY ROADS REQUIRES AT LEAST ONE MONTH ADVANCE NOTICE AND IS SUBJECT TO THE DISCRETION OF THE COUNTY ENGINEER AND POSSIBLE APPROVAL BY GUADALUPE COUNTY COMMISSIONERS COURT PER TRANSPORTATION CODE, CHAPTER 251.

33. DURING CONSTRUCTION, PROVIDE ALL INSPECTION AND TESTING REPORTS TO THE COUNTY AT CONSTRUCTION@CO.GUADALUPE.TX.US AS SOON AVAILABLE FOR IDENTIFICATION AND CORRECTION OF ANY EMERGING DEFICIENCIES.

34. AT THE COMPLETION OF CONSTRUCTION, PROVIDE AS-BUILT DRAWINGS.

MISCELLANEOUS NOTES:

1. ACCESS TO THIS SITE IS PROVIDED THROUGH TWO PROPOSED DRIVEWAYS ALONG GREEN VALLEY RD.

2. DRIVEWAYS ARE SHOWN FOR ILLUSTRATIVE PURPOSES ONLY TO DENOTE A POTENTIAL CONFLICT WITH DRAINAGE FACILITY AND/OR ADA RAMP. ALL DRIVEWAYS WILL BE BUILT WITH HOMEBUILDING.

3. ALL REQUIRED ADA RAMPS ARE SHOWN ON THE PLANS. ONLY ADA RAMPS WITHOUT RESIDENTIAL LOT FRONTAGE SHALL BE BUILT WITH THE STREET INFRASTRUCTURE.

4. CONTRACTOR SHALL REFERENCE TREE PLAN AND PRIVATE GRADING PLAN FOR CLEARING AND GRADING LIMITS.

5. PRIOR TO THE INSTALLATION OF STREET BASE MATERIAL, CONTRACTOR SHALL COORDINATE WITH ENGINEER AND UTILITY PROVIDERS TO INSTALL NECESSARY CONDUITS FOR UTILITY INSTALLATION.

6. CONTRACTOR IS RESPONSIBLE FOR ENSURING POSITIVE SITE DRAINAGE AT ALL TIMES DURING AND UPON COMPLETION OF INFRASTRUCTURE.

7. CONTRACTOR IS REQUIRED TO NOTIFY ENTERPRISE UTILITIES WHEN ENCROACHING UPON THE EXISTING GAS EASEMENT ON SITE.

CITY OF CIBOLO NOTES:

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CITY OF CIBOLO DESIGN AND CONSTRUCTION MANUAL AND THE UNIFIED DEVELOPMENT CODE, HERE AFTER REFERRED TO THE UDC.

2. APPROVAL OF THESE CONSTRUCTION PLANS BY THE CITY OF CIBOLO DOES NOT CONSTITUTE A VERIFICATION OF ALL DATA, INFORMATION AND CALCULATIONS SUPPLIED BY THE APPLICANT. THE ENGINEER OF RECORD IS SOLELY RESPONSIBLE FOR THE COMPLETENESS, ACCURACY AND ADEQUACY OF HIS/HER SUBMITTAL WHETHER OR NOT THE APPLICATION IS REVIEWED FOR CODE COMPLIANCE BY THE CITY ENGINEER.

3. ALL RESPONSIBILITY FOR THE ADEQUACY OF THESE PLANS REMAINS WITH THE ENGINEER WHO PREPARED THEM. IN APPROVING THESE PLANS, THE CITY OF CIBOLO MUST RELY ON THE ADEQUACY OF THE WORK OF THE ENGINEER.

4. DESIGN PROCEDURES ARE IN COMPLETE COMPLIANCE WITH THE CITY OF CIBOLO DESIGN AND CONSTRUCTION MANUAL. IT IS THE RESPONSIBILITY OF THE ENGINEER TO REQUEST A WAIVER FROM ANY ASPECT OF THESE PLANS THAT DO NOT COMPLY WITH THE UDC.

5. A MINIMUM OF TWO EXISTING BENCH MARKS TIED TO CITY OF CIBOLO GRID SHOULD BE SHOWN ON THE PLANS. IN ADDITION TWO PERMANENT BENCHMARKS PER SUBDIVISION SHALL BE INSTALLED IN EACH SUBDIVISION TO INCLUDE DESCRIPTION, LOCATION, AND ELEVATION AND TIE TO CITY OF CIBOLO STANDARDS WHEN POSSIBLE.

6. CAST BRONZE SURVEY MARKERS SHALL BE PLACED IN CONCRETE IN PERMANENT, ACCESSIBLE LOCATIONS AT THE TIME OF CONSTRUCTION. THE LOCATIONS OF THE MARKERS SHALL BE INDICATED ON THE CONSTRUCTION PLANS. A MINIMUM OF ONE MARKER SHALL BE PLACED FOR EACH 20 ACRES OF THE PROJECT.

7. PRIOR TO BEGINNING CONSTRUCTION, THE OWNER OR HIS AUTHORIZED REPRESENTATIVE SHALL CONVENE A PRE-CONSTRUCTION CONFERENCE BETWEEN THE CITY OF CIBOLO, CONSULTING ENGINEER, CONTRACTOR, AND ANY OTHER AFFECTED PARTIES. NOTIFY THE CITY OF CIBOLO AT LEAST 48 HOURS PRIOR TO THE TIME OF THE CONFERENCE AND 48 HOURS PRIOR TO THE BEGINNING OF CONSTRUCTION.

8. THE CONTRACTOR SHALL GIVE THE CITY A MINIMUM OF 48 HOURS NOTICE BEFORE BEGINNING EACH PHASE OF CONSTRUCTION.

9. BARRICADES, BUILT TO CITY OF CIBOLO SPECIFICATIONS, SHALL BE CONSTRUCTED ON ALL DEAD-END STREETS AND AS NECESSARY DURING CONSTRUCTION TO MAINTAIN JOB SAFETY. (STREETS, ETC. MAY BE LISTED IN ADDITION TO OR INSTEAD OF NOTE.)

10. IF BLASTING IS PLANNED BY THE CONTRACTOR, A BLASTING PERMIT MUST BE SECURED PRIOR TO COMMENCEMENT OF ANY BLASTING.

11. ANY EXISTING PAVEMENT, CURBS, AND/ OR SIDEWALKS DAMAGED OR REMOVED WILL BE REPAIRED BY THE CONTRACTOR AT HIS EXPENSE BEFORE ACCEPTANCE OF THE SUBDIVISION.

12. THE LOCATION OF ANY WATER AND / OR WASTEWATER LINES SHOWN ON THE PLANS MUST BE VERIFIED BY THE PUBLIC WORKS DEPARTMENT.

13. USE ONE CALL UTILITY SYSTEM: DIAL 1-800-344-8377, 48 HOURS BEFORE YOU DIG.

14. ALL STORM SEWER PIPES TO BE CLASS III RCP UNLESS NOTED OTHERWISE.

GENERAL NOTES:

FOR ROADS INTENDED FOR MAINTENANCE BY GUADALUPE COUNTY:

1. PRIOR TO THE COMMENCEMENT OF ANY WORK, THE COUNTY SHALL ATTEND A PRECONSTRUCTION MEETING INCLUDING (BUT NOT LIMITED TO) THE CITY, ENGINEER, CONTRACTOR, DEVELOPER'S INSPECTION REPRESENTATIVE, AND DEVELOPER'S CONSTRUCTION MATERIAL TESTING REPRESENTATIVE.

2. DURING CONSTRUCTION, NOTIFY THE COUNTY AT CONSTRUCTION@CO.GUADALUPE.TX.US AT LEAST 48 HOURS IN ADVANCE OF ANY WORK TO BE PERFORMED AFFECTING SUBGRADE, BASE, OR PAVEMENT INCLUDING BACKFILL OF ANY PROPOSED UTILITIES UNDERNEATH THE PAVEMENT AND FILL AREAS UPON WHICH PAVEMENT IS PROPOSED TO BE PLACED. SUCH NOTIFICATION IS ALSO REQUIRED BEFORE IMPLEMENTING ANY APPROVED TRAFFIC CONTROL PLANS ON EXISTING COUNTY-MAINTAINED ROADS. FULL CLOSURE OF COUNTY ROADS REQUIRES AT LEAST ONE MONTH ADVANCE NOTICE AND IS SUBJECT TO THE DISCRETION OF THE COUNTY ENGINEER AND POSSIBLE APPROVAL BY GUADALUPE COUNTY COMMISSIONERS COURT PER TRANSPORTATION CODE, CHAPTER 251.

3. DURING CONSTRUCTION, PROVIDE ALL INSPECTION AND TESTING REPORTS TO THE COUNTY AT CONSTRUCTION@CO.GUADALUPE.TX.US AS SOON AS AVAILABLE FOR IDENTIFICATION AND CORRECTION OF ANY EMERGING DEFICIENCIES.

4. AT THE COMPLETION OF CONSTRUCTION, PROVIDE AS-BUILT DRAWINGS AND A LETTER SIGNED AND SEALED BY THE ENGINEER OF RECORD CERTIFYING THAT:

    - ALL IMPROVEMENTS WERE MADE IN ACCORDANCE WITH THE APPROVED IMPROVEMENT PLANS AND COUNTY REGULATIONS.
    - ANY CHANGED IMPROVEMENTS WERE MADE IN ACCORDANCE WITH THE COUNTY'S REGULATIONS.
    - THE ELEVATIONS AND GRADES WERE TAKEN BY AN ON-SITE SURVEY ON A DATE SPECIFIED TO ENSURE THAT ALL PAVEMENT, INLETS, MANHOLES, AND APPURTENANCES ARE CONSTRUCTED TO GRADE AS SHOWN ON THE RECORD DRAWINGS AND ARE IN COMPLIANCE WITH THE APPROVED PLANS AND SPECIFICATIONS.
    - ALL TRUNK STORM SEWERS AND LEADS ARE OF THE PROPER SIZED AND AND THAT ALL IMPROVEMENTS ARE CAPABLE OF PERFORMANCE AS DESIGNED AND APPROVED.

FOR ROADS INTENDED FOR PRIVATE MAINTENANCE:

1. PRIOR TO THE COMMENCEMENT OF ANY WORK, THE COUNTY SHALL ATTEND A PRECONSTRUCTION MEETING INCLUDING (BUT NOT LIMITED TO) THE CITY, ENGINEER, CONTRACTOR, DEVELOPER'S INSPECTION REPRESENTATIVE, AND DEVELOPER'S CONSTRUCTION MATERIAL TESTING REPRESENTATIVE.

2. DURING CONSTRUCTION, NOTIFY THE COUNTY AT CONSTRUCTION@CO.GUADALUPE.TX.US AT LEAST 48 HOURS IN ADVANCE OF ANY WORK TO BE PERFORMED AFFECTING SUBGRADE, BASE, OR PAVEMENT INCLUDING BACKFILL OF ANY PROPOSED UTILITIES UNDERNEATH THE PAVEMENT AND FILL AREAS UPON WHICH PAVEMENT IS PROPOSED TO BE PLACED. SUCH NOTIFICATION IS ALSO REQUIRED BEFORE IMPLEMENTING ANY APPROVED TRAFFIC CONTROL PLANS ON EXISTING COUNTY-MAINTAINED ROADS. FULL CLOSURE OF COUNTY ROADS REQUIRES AT LEAST ONE MONTH ADVANCE NOTICE AND IS SUBJECT TO THE DISCRETION OF THE COUNTY ENGINEER AND POSSIBLE APPROVAL BY GUADALUPE COUNTY COMMISSIONERS COURT PER TRANSPORTATION CODE, CHAPTER 251.

3. DURING CONSTRUCTION, PROVIDE ALL INSPECTION AND TESTING REPORTS TO THE COUNTY AT CONSTRUCTION@CO.GUADALUPE.TX.US AS SOON AS AVAILABLE FOR IDENTIFICATION AND CORRECTION OF ANY EMERGING DEFICIENCIES.

4. AT THE COMPLETION OF CONSTRUCTION, PROVIDE AS-BUILT DRAWINGS.

CONSTRUCTION SEQUENCING: (LIST PROCESS ON CONSTRUCTION PLAN SET)

1. CALL THE PLANNING AND ENGINEERING DEPARTMENT 48 HOURS PRIOR TO BEGINNING ANY WORK AND SCHEDULE A RECONSTRUCTION MEETING WITH THE CITY AND ALL AFFECTED UTILITY PROVIDERS, THE GENERAL CONTRACTOR, THE DEVELOPER AND THE DEVELOPER'S ENGINEER.
2. OBTAIN A SITE DEVELOPMENT PERMIT FROM THE PLANNING AND ENGINEERING DEPARTMENT.
3. PROVIDE THE PLANNING AND ENGINEERING DEPARTMENT WITH EVIDENCE ALL TCEQ LICENSES AND REQUIREMENTS ARE UP TO DATE.
4. INSTALL TEMPORARY EROSION CONTROLS AND TREE PROTECTION FENCING PRIOR TO ANY CLEARING AND GRUBBING. NOTIFY THE CITY WHEN INSTALLED.
5. ROUGH-CUT ALL REQUIRED OR NECESSARY PONDS. EITHER THE PERMANENT OUTLET STRUCTURE OR A TEMPORARY OUTLET MUST BE CONSTRUCTED PRIOR TO DEVELOPMENT OF ANY EMBANKMENT OR EXCAVATION THAT LEADS TO PONDING CONDITIONS. THE OUTLET SYSTEM MUST CONSIST OF A LOW-LEVEL OUTLET AND AN EMERGENCY OVERFLOW MEETING THE REQUIREMENTS OF THE UDC. THE OUTLET SYSTEM SHALL BE PROTECTED FROM EROSION AND SHALL BE MAINTAINED THROUGHOUT THE COURSE OF CONSTRUCTION UNTIL FINAL RESTORATION IS ACHIEVED.
6. DELIVER APPROVED ROUGH CUT SHEETS TO THE CITY ENGINEER PRIOR TO CLEARING AND GRUBBING.
7. ROUGH GRADE STREETS. NO DEVELOPMENT OF EMBANKMENT WILL BE PERMITTED AT THIS TIME.
8. INSTALL ALL UTILITIES TO BE LOCATED UNDER THE PROPOSED PAVEMENT OR WITHIN THE ROAD RIGHT-OF-WAY.
9. DELIVER STORM SEWER CUT SHEETS TO THE CITY ENGINEER.
10. BEGIN INSTALLATION OF STORM SEWER LINES. UPON COMPLETION, RESTORE AS MUCH DISTURBED AREA AS POSSIBLE, PARTICULARLY CHANNELS AND LARGE OPEN AREAS.
11. DELIVER FINAL GRADE CUT SHEETS TO THE CITY ENGINEER.
12. RE-GRADE STREETS TO SUB-GRADE.
13. ENSURE THAT UNDERGROUND UTILITY CROSSINGS ARE COMPLETED. LAY 1ST COURSE BASE MATERIAL ON STREETS.
14. INSTALL CURB AND GUTTER.
15. LAY FINAL BASE COURSE ON ALL STREETS.
16. LAY ASPHALT.
17. COMPLETE FINAL GRADING AND RESTORATION OF DETENTION, SEDIMENTATION / FILTRATION PONDS.
18. COMPLETE PERMANENT EROSION CONTROL AND RESTORATION OF SITE VEGETATION.
19. REMOVE AND DISPOSE OF TEMPORARY EROSION CONTROLS.
20. COMPLETE ANY NECESSARY FINAL DRESS UP OF AREAS DISTURBED.

CUDEENGINEERS.COM

CUDE ENGINEERS

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

GRACE VALLEY RANCH
PHASE 4A

GENERAL NOTES

DATE
08/01/2025

PROJECT NO.
03346.017

DRAWN BY
AG/JF

CHECKED BY
K.M.H.

REVISIONS
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3.
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5.
6.
7.
8.
9.

STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED
PROFESSIONAL ENGINEER
08/14/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C0.00

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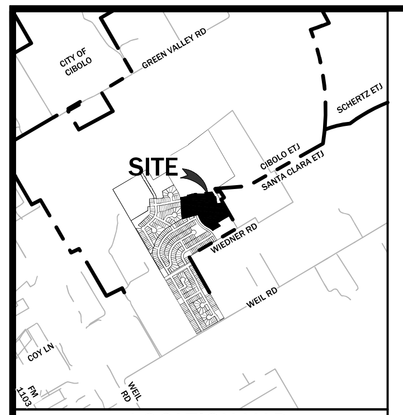
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



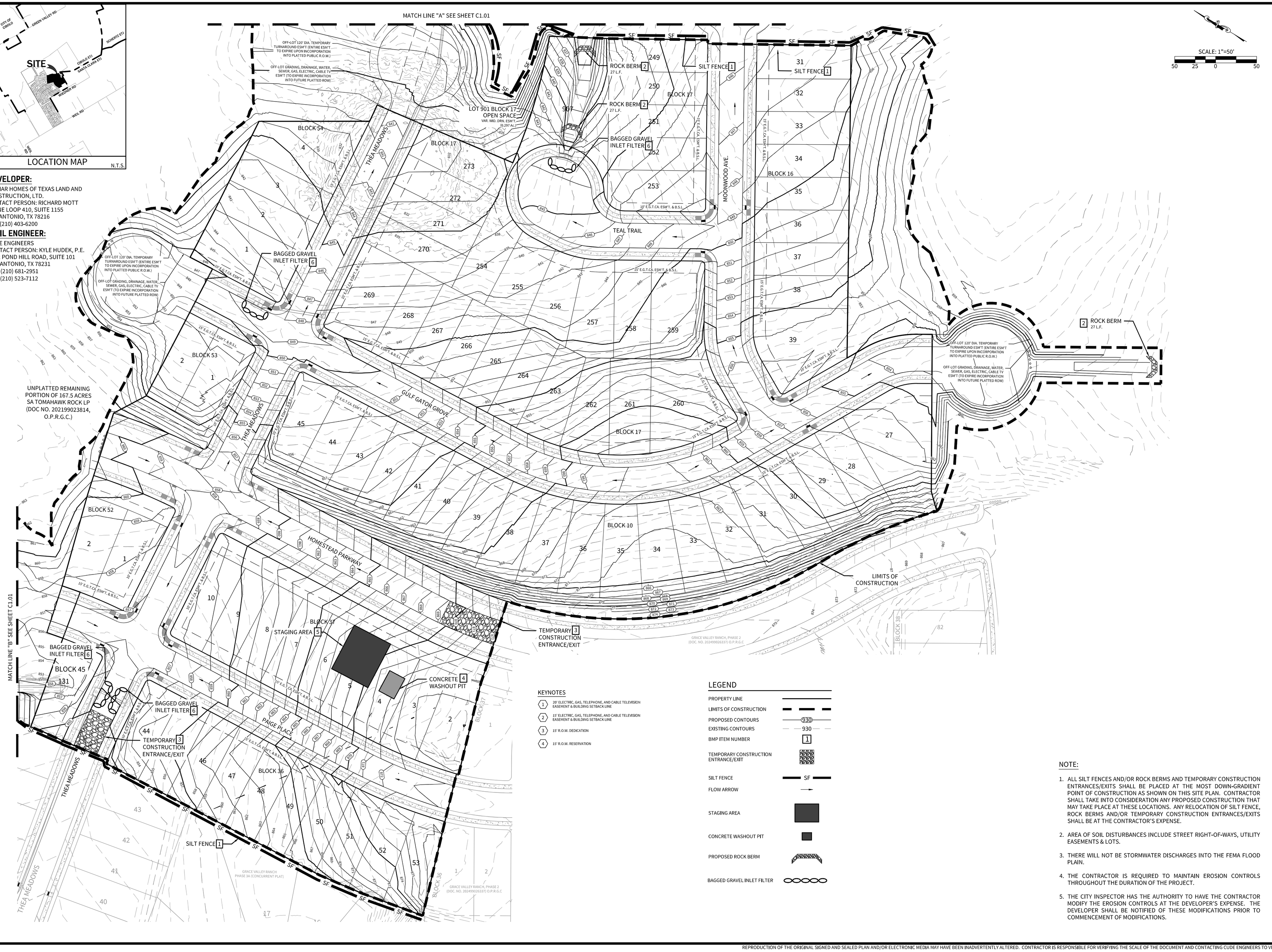
LOCATION MAP N.T.S.

DEVELOPER:

LENNAR HOMES OF TEXAS LAND AND CONSTRUCTION, LTD.
CONTACT PERSON: RICHARD MOTT
100 NE LOOP 410, SUITE 1155
SAN ANTONIO, TX 78216
TEL: (210) 403-6200

CIVIL ENGINEER:

CUDE ENGINEERS
CONTACT PERSON: KYLE HUDEK, P.E.
4122 POND HILL ROAD, SUITE 101
SAN ANTONIO, TX 78231
TEL: (210) 681-2951
FAX: (210) 523-7112



KEYNOTES

1. 20' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE
2. 15' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE
3. 15' R.O.W. DEDICATION
4. 15' R.O.W. RESERVATION

LEGEND

- PROPERTY LINE
- LIMITS OF CONSTRUCTION
- PROPOSED CONTOURS 930
- EXISTING CONTOURS 930
- BMP ITEM NUMBER 1
- TEMPORARY CONSTRUCTION ENTRANCE/EXIT
- SILT FENCE SF
- FLOW ARROW
- STAGING AREA
- CONCRETE WASHOUT PIT
- PROPOSED ROCK BERM
- BAGGED GRAVEL INLET FILTER

NOTE:

1. ALL SILT FENCES AND/OR ROCK BERMS AND TEMPORARY CONSTRUCTION ENTRANCES/EXITS SHALL BE PLACED AT THE MOST DOWN-GRADIENT POINT OF CONSTRUCTION AS SHOWN ON THIS SITE PLAN. CONTRACTOR SHALL TAKE INTO CONSIDERATION ANY PROPOSED CONSTRUCTION THAT MAY TAKE PLACE AT THESE LOCATIONS. ANY RELOCATION OF SILT FENCE, ROCK BERMS AND/OR TEMPORARY CONSTRUCTION ENTRANCES/EXITS SHALL BE AT THE CONTRACTOR'S EXPENSE.
2. AREA OF SOIL DISTURBANCES INCLUDE STREET RIGHT-OF-WAYS, UTILITY EASEMENTS & LOTS.
3. THERE WILL NOT BE STORMWATER DISCHARGES INTO THE FEMA FLOOD PLAIN.
4. THE CONTRACTOR IS REQUIRED TO MAINTAIN EROSION CONTROLS THROUGHOUT THE DURATION OF THE PROJECT.
5. THE CITY INSPECTOR HAS THE AUTHORITY TO HAVE THE CONTRACTOR MODIFY THE EROSION CONTROLS AT THE DEVELOPER'S EXPENSE. THE DEVELOPER SHALL BE NOTIFIED OF THESE MODIFICATIONS PRIOR TO COMMENCEMENT OF MODIFICATIONS.

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CUDE ENGINEERS EST. 1980

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

GRACE VALLEY RANCH PHASE 4A

STORMWATER POLLUTION PREVENTION PLAN

DATE 10/02/2025
PROJECT NO. 03346.017
DRAWN BY AG/JF
CHECKED BY K.M.H.

REVISIONS

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

STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED
PROFESSIONAL ENGINEER
10/07/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C1.00

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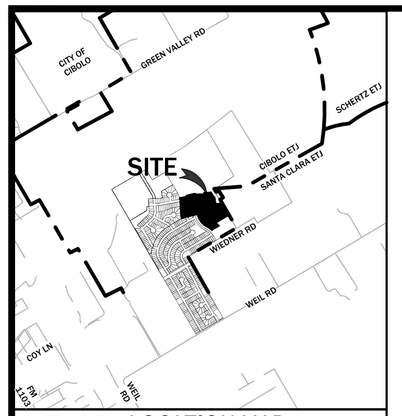

LOCATION MAP N.T.S.

LEGEND

- PROPERTY LINE
- LIMITS OF CONSTRUCTION
- PROPOSED CONTOURS 930
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- TEMPORARY CONSTRUCTION ENTRANCE/EXIT
- SILT FENCE SF
- FLOW ARROW
- STAGING AREA
- CONCRETE WASHOUT PIT
- PROPOSED ROCK BERM
- BAGGED GRAVEL INLET FILTER
- EARTHEN BERM

KEYNOTES

1. 20' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE
2. 15' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE
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3. THERE WILL NOT BE STORMWATER DISCHARGES INTO THE FEMA FLOOD PLAIN.
4. THE CONTRACTOR IS REQUIRED TO MAINTAIN EROSION CONTROLS THROUGHOUT THE DURATION OF THE PROJECT.
5. THE CITY INSPECTOR HAS THE AUTHORITY TO HAVE THE CONTRACTOR MODIFY THE EROSION CONTROLS AT THE DEVELOPER'S EXPENSE. THE DEVELOPER SHALL BE NOTIFIED OF THESE MODIFICATIONS PRIOR TO COMMENCEMENT OF MODIFICATIONS.

DEVELOPER:

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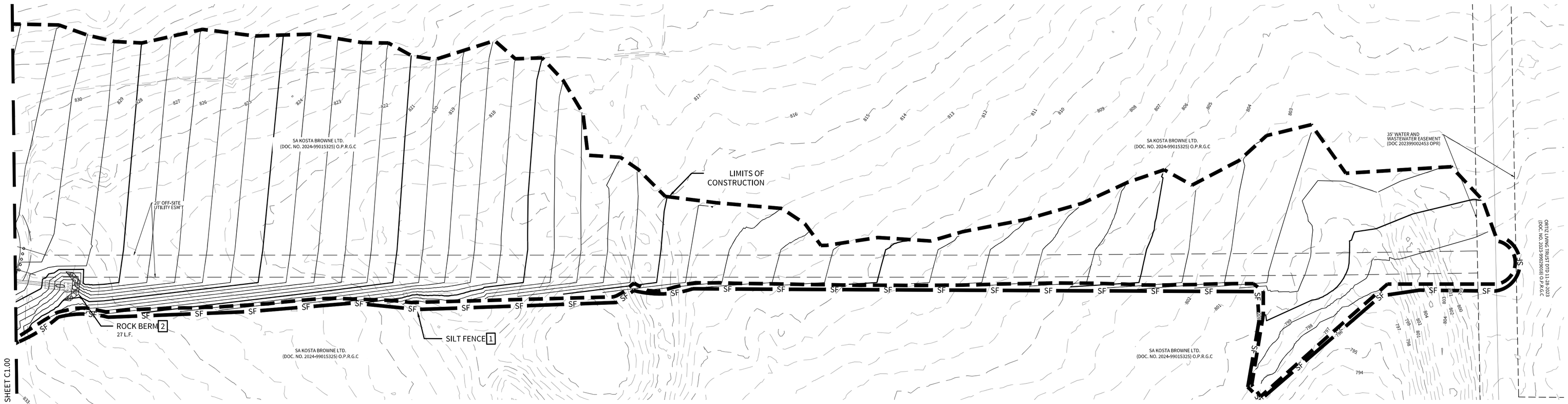
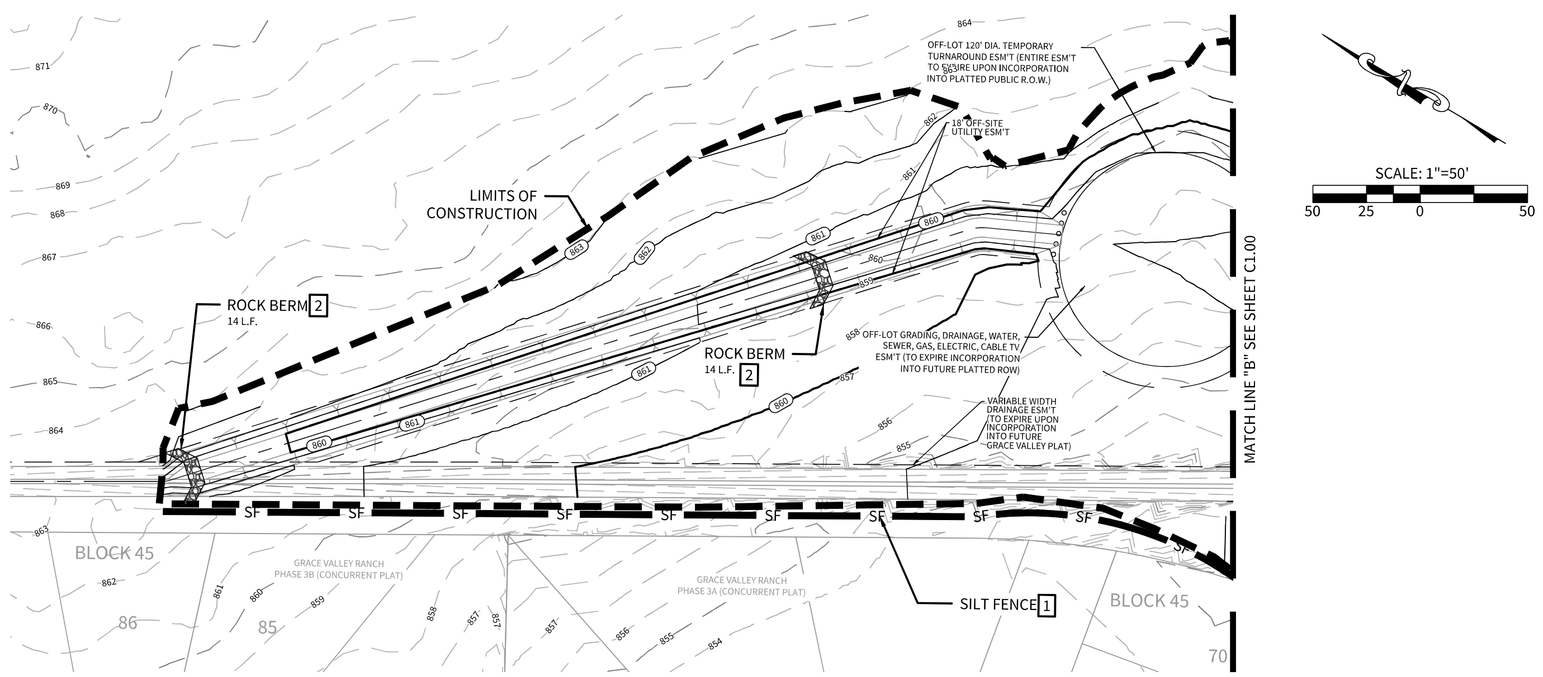
FAX: (210) 523-7112





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GRACE VALLEY RANCH PHASE 4A

STORMWATER POLLUTION PREVENTION PLAN

DATE 10/02/2025
PROJECT NO. 03346.017
DRAWN BY AG/JF
CHECKED BY K.M.H.

REVISIONS

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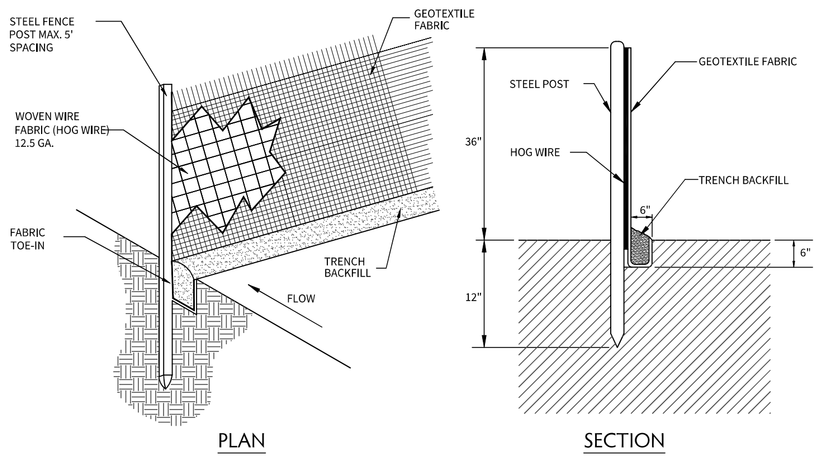
STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED PROFESSIONAL ENGINEER
10/07/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C1.01

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

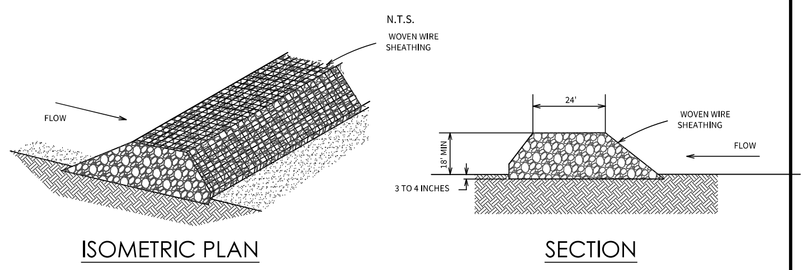


NOTES:

1. SILT FENCE MATERIAL SHOULD BE POLYPROPYLENE, POLYETHYLENE OR POLYAMIDE WOVEN OR NON WOVEN FABRIC. THE FABRIC WIDTH SHOULD BE 36 INCHES, WITH A MINIMUM UNIT WEIGHT OF 4.5 OZ/YD, MULLEN BURST STRENGTH EXCEEDING 190 LB/IN 2 , ULTRAVIOLET STABILITY EXCEEDING 70%, AND MINIMUM APPARENT OPENING SIZE OF U.S. SIEVE NO. 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 NOMINAL WEIGHT 1.25 LB/FT 2 , AND BRINDELL HARDNESS EXCEEDING 140.
3. WOVEN WIRE BACKING TO SUPPORT THE FABRIC SHOULD BE GALVANIZED 2" X 4" WELDED WIRE, 12.5 GAUGE MINIMUM.
4. STEEL POSTS, WHICH SUPPORT THE SILT FENCE, SHOULD BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF 1 FOOT DEEP AND SPACED NOT MORE THAN 5 FEET ON CENTER.
5. 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.
6. 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.
7. 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.
8. 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.
9. SILT FENCE SHOULD BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
10. REMOVE SEDIMENT WHEN BUILDUP REACHES 6 INCHES, OR INSTALL A SECOND LINE OF FENCING PARALLEL TO THE OLD FENCE.
11. REPLACE ANY TORN FABRIC OR INSTALL A SECOND LINE OF FENCING PARALLEL TO THE TORN SECTION.
12. REPLACE OR REPAIR ANY 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.

1 SILT FENCE DETAIL

SCALE: NONE

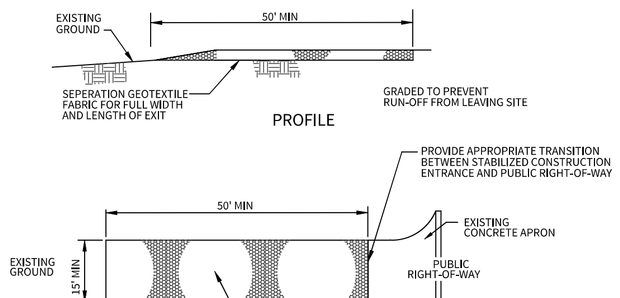


NOTES:

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 TO 5-INCH DIAMETER ROCK SHOULD BE USED, EXCEPT IN AREAS WHERE HIGH VELOCITIES OR LARGE VOLUMES OF FLOW ARE EXPECTED, WHERE 5-TO 8-INCH DIAMETER ROCKS MAY BE USED.
3. LAY OUT THE WOVEN WIRE SHEATHING PERPENDICULAR TO THE FLOW LINE.
4. BERM SHOULD HAVE A TOP WIDTH OF 2 FEET MINIMUM WITH SIDE SLOPES BEING 2:1 (H:V) OR FLATTER.
5. PLACE THE ROCK ALONG THE SHEATHING TO A HEIGHT NOT LESS THAN 18".
6. 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.
7. BERM SHOULD BE BUILT ALONG THE CONTOUR AT ZERO PERCENT GRADE OR AS NEAR AS POSSIBLE.
8. 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.
9. INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL BY THE RESPONSIBLE PARTY. FOR INSTALLATIONS IN STREAMBEDS, ADDITIONAL DAILY INSPECTIONS SHOULD BE MADE. THE BERM SHOULD BE RESHAPED AS NEEDED DURING INSPECTION.
10. REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6 INCHES AND DISPOSE OF THE ACCUMULATED SILT OF IN AN APPROVED MANNER AND REPAIR ANY LOOSE WIRE SHEATHING.
11. 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.
12. THE ROCK BERM SHOULD BE LEFT IN PLACE UNTIL ALL UPSTREAM AREAS ARE STABILIZED AND ACCUMULATED SILT REMOVED.

2 ROCK BERM DETAIL

SCALE: NONE



GENERAL NOTES

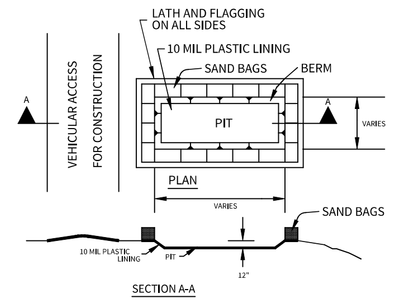
1. LENGTH SHALL BE AS SHOWN ON THE CONSTRUCTION DRAWINGS BUT NOT LESS THAN 50 FEET.
2. THICKNESS SHALL BE NOT LESS THAN 8 INCHES.
3. WIDTH SHALL BE NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS.
4. STABILIZED AREA MAY BE WIDENED OR LENGTHENED TO ACCOMODATE A TRUCK WASHING AREA WHEN SHOWN ON THE CONSTRUCTION DRAWING. AN OUTLET SEDIMENT TRAP MUST BE PROVIDED FOR THE TRUCK WASHING AREA.
5. STONE MATERIAL SHALL CONSIST OF 3 TO 5 INCH OPEN GRADED ROCK AND SHALL BE PLACED IN A LAYER OF AT LEAST 8 INCHES THICKNESS.

NOTES:

1. THE AGGREGATE SHOULD CONSIST OF 4 TO 8 INCH WASHED STONE OVER A STABLE FOUNDATION.
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. AVOID CURVES ON PUBLIC ROADS AND STEEP SLOPES. REMOVE VEGETATION AND OTHER OBJECTIONABLE MATERIAL FROM THE FOUNDATION AREA. GRADE CROWN FOUNDATION FOR POSITIVE DRAINAGE.
5. THE MINIMUM WIDTH OF THE ENTRANCE/EXIT SHOULD BE 12 FEET OR THE FULL WIDTH OF EXIT ROADWAY, WHICHEVER IS GREATER.
6. THE CONSTRUCTION ENTRANCE SHOULD BE AT LEAST 50 FEET LONG.
7. PLACE GEOTEXTILE FABRIC AND GRADE FOUNDATION TO IMPROVE STABILITY, ESPECIALLY WHERE WET CONDITIONS ARE ANTICIPATED.
8. PLACE STONE TO DIMENSIONS AND GRADE SHOWN. LEAVE SURFACE SMOOTH AND SLOPE FOR DRAINAGE.
9. 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.
10. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ON TO PUBLIC RIGHTS-OF-WAY SHOULD BE REMOVED IMMEDIATELY BY CONTRACTOR.
11. WHEN NECESSARY, WHEELS SHOULD BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
12. 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.
13. ALL SEDIMENT SHOULD BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATER COURSE.

3 TEMPORARY CONSTRUCTION ENTRANCE / EXIT

SCALE: NONE

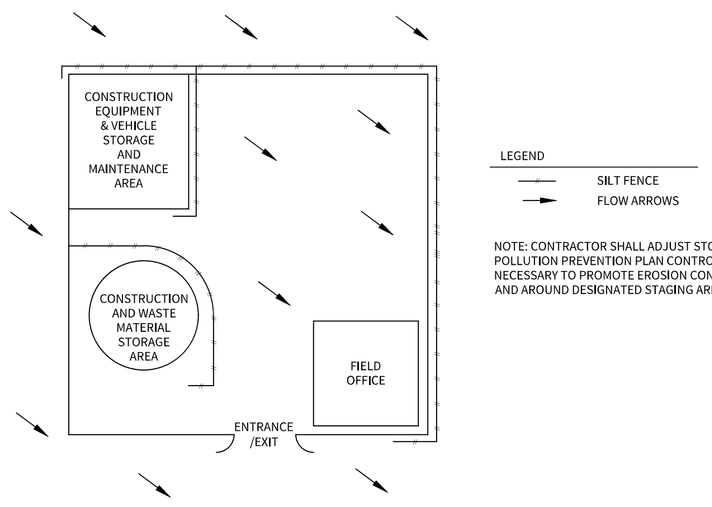


NOTES:

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 CONCRETE TRUCK WASHOUT PIT

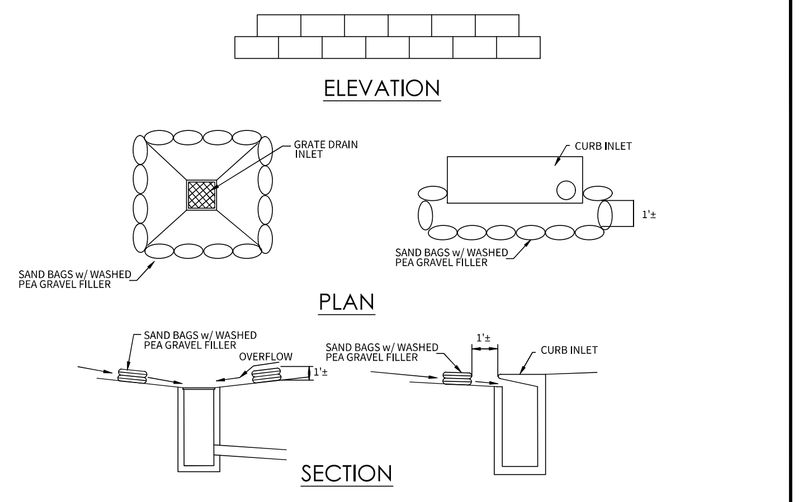
SCALE: NONE



NOTE: CONTRACTOR SHALL ADJUST STORM WATER POLLUTION PREVENTION PLAN CONTROLS AS NECESSARY TO PROMOTE EROSION CONTROL IN AND AROUND DESIGNATED STAGING AREA.

5 TYP. CONSTRUCTION STAGING AREA

SCALE: NONE



BAGGED GRAVEL INLET FILTER NOTES

1. THE GRAVEL BAG MATERIAL SHOULD BE POLYPROPYLENE, POLYETHYLENE, POLYAMIDE OR COTTON BURLAP WOVEN FABRIC, MINIMUM UNIT WEIGHT 4 OZ/YD 2 , MULLEN BURST STRENGTH EXCEEDING 300 PSI AND ULTRAVIOLET STABILITY EXCEEDING 70 PERCENT.
2. THE BAG LENGTH SHOULD BE 24 INCHES, WIDTH SHOULD BE 18 INCHES AND THICKNESS SHOULD BE 6 INCHES.
3. THE GRAVEL BAGS SHOULD BE FILLED WITH ½" GRAVEL .
4. WHEN A GRAVEL BAG IS FILLED WITH GRAVEL, THE OPEN END OF THE GRAVEL BAG SHOULD BE STAPLED OR TIED WITH NYLON OR POLY CORD.
5. THE GRAVEL BAGS SHOULD BE PLACED AS SHOWN ON THE DETAIL. THE GRAVEL BAGS SHALL BE STACKED TO FORM A CONTINUOUS BARRIER AROUND THE INLETS. THE BAGS SHOULD BE TIGHTLY ABUTTED AGAINST EACH OTHER TO PREVENT RUNOFF FROM FLOWING BETWEEN THE BAGS.
6. INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL. REPAIR OR REPLACEMENT SHOULD BE MADE PROMPTLY AS NEEDED BY THE CONTRACTOR.
7. CHECK PLACEMENT OF DEVICE TO PREVENT GAPS BETWEEN DEVICE AND CURB.
8. REMOVE SEDIMENT WHEN BUILDUP REACHES A DEPTH OF 3 INCHES. REMOVED SEDIMENT SHOULD BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
9. STRUCTURES SHOULD BE REMOVED AND THE AREA STABILIZED ONLY AFTER THE REMAINING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

6 BAGGED GRAVEL INLET FILTER

SCALE: NONE

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GRACE VALLEY RANCH PHASE 4A

STORMWATER POLLUTION PREVENTION PLAN DETAILS

DATE 08/01/2025

PROJECT NO. 03346.017

DRAWN BY AG/JF

CHECKED BY K.M.H.

REVISIONS

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STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED PROFESSIONAL ENGINEER
08/14/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C1.D1

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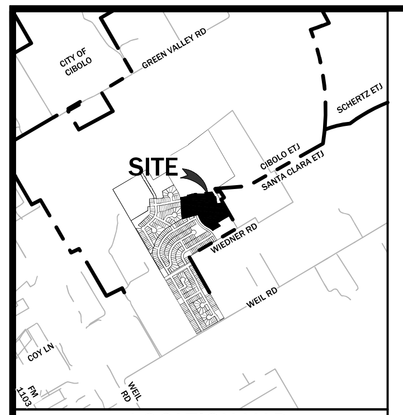
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



LOCATION MAP N.T.S.

MATCH LINE "A" SEE SHEET C2.01

MATCH LINE "B" SEE SHEET C2.01

SCALE: 1"=50'
50 25 0 50

DEVELOPER:

LENNAR HOMES OF TEXAS LAND AND CONSTRUCTION, LTD.
CONTACT PERSON: RICHARD MOTT
100 NE LOOP 410, SUITE 1155
SAN ANTONIO, TX 78216
TEL: (210) 403-6200

CIVIL ENGINEER:

CUDE ENGINEERS
CONTACT PERSON: KYLE HUDEK, P.E.
4122 POND HILL ROAD, SUITE 101
SAN ANTONIO, TX 78231
TEL: (210) 681-2951
FAX: (210) 523-7112

UNPLATTED REMAINING PORTION OF 167.5 ACRES SA TOMAHAWK ROCK LP (DOC NO. 202199023814, O.P.R.G.C.)

LOT 901 BLOCK 17 OPEN SPACE
VAR. WID. DRN. ESMT.
(0.297 Ac.)

OFF-LOT 120' DIA. TEMPORARY TURNAROUND ESM'T (ENTIRE ESM'T TO EXPIRE UPON INCORPORATION INTO PLATTED PUBLIC R.O.W.)

OFF-LOT GRADING, DRAINAGE, WATER, SEWER, GAS, ELECTRIC, CABLE TV ESM'T (TO EXPIRE INCORPORATION INTO FUTURE PLATTED ROW)

BLOCK 54 · BLOCK 17 · BLOCK 53 · BLOCK 52 · BLOCK 45 · BLOCK 37 · BLOCK 36 · BLOCK 10 · BLOCK 38 · BLOCK 16

THEA MEADOWS · THEA TRAIL · MOONWOOD AVE. · GULF GATOR GROVE · PAIGE PLACE · HOMESTEAD PARKWAY

GRACE VALLEY RANCH, PHASE 2 (DOC. NO. 202499026337) O.P.R.G.C

GRACE VALLEY RANCH PHASE 3A (CONCURRENT PLAT)

GRACE VALLEY RANCH, PHASE 2 (DOC. NO. 202499026337) O.P.R.G.C

OFF-LOT 120' DIA. TEMPORARY TURNAROUND ESM'T TO EXPIRE UPON INCORPORATION INTO PLATTED PUBLIC R.O.W.

OFF-LOT GRADING, DRAINAGE, WATER, SEWER, GAS, ELECTRIC, CABLE TV ESM'T (TO EXPIRE INCORPORATION INTO FUTURE PLATTED ROW)

LEGEND

- PROPOSED CONTOUR — 1000
- EXISTING CONTOUR — 1000
- PROPOSED ELEVATION — 297.58
- PROPOSED TOP OF WALL ELEVATION — 297.58 TW
- PROPOSED BOTTOM OF WALL ELEVATION — 297.58 BW
- EXISTING ELEVATION — 672.00E
- GRADE BREAK — GRADE BREAK
- BUILDING SETBACK
- SWALE
- RETAINING WALL
- KEYNOTE — 1

NOTE:

LOT GRADING BASED ON SLABS BEING 20' BEHIND FRONT PROPERTY LINE.

ALL ELEVATIONS AT FRONT PROPERTY LINE ARE 0.30' ABOVE CURB ELEVATION ON MINOR STREETS.

TYPICAL PAD SIZES ARE 80' x 30' ON MINOR STREETS.

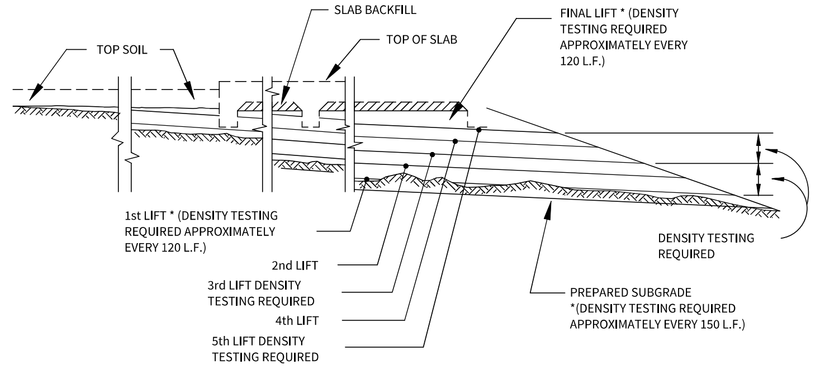
CONTOURS SHOWN ON STREET ARE TOP OF STREET.

CAUTION!!!

THE CONTRACTOR SHALL BE AWARE THAT EXISTING UTILITIES ARE WITHIN THE SITE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.

TRENCH EXCAVATION SAFETY PROTECTION

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



DENSITY TEST FREQUENCY

NOT TO SCALE

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GRACE VALLEY RANCH PHASE 4A

GRADING PLAN

DATE
11/18/2025

PROJECT NO.
03346.017

DRAWN BY
AG/JF

CHECKED BY
K.M.H.

REVISIONS
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STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED
PROFESSIONAL ENGINEER
11/18/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C2.00

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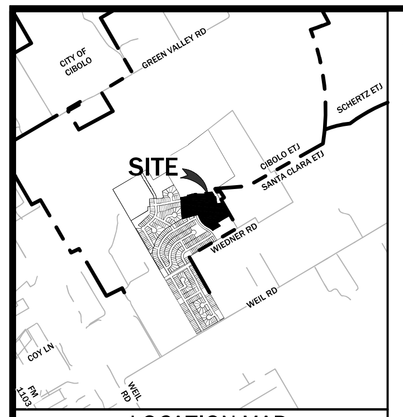
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



LOCATION MAP N.T.S.

LEGEND

PROPOSED CONTOUR 1000
EXISTING CONTOUR 1000
PROPOSED ELEVATION 1237.58
PROPOSED TOP OF WALL ELEVATION 1297.58 TW
PROPOSED BOTTOM OF WALL ELEVATION 1237.58 BW
EXISTING ELEVATION 672.00E
GRADE BREAK (GRADE BREAK)
BUILDING SETBACK
SWALE
RETAINING WALL
KEYNOTE 1

DEVELOPER:

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CONTACT PERSON: RICHARD MOTT
100 NE LOOP 410, SUITE 1155
SAN ANTONIO, TX 78216
TEL: (210) 403-6200

CIVIL ENGINEER:

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CONTACT PERSON: KYLE HUDEK, P.E.
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SAN ANTONIO, TX 78231
TEL: (210) 681-2951
FAX: (210) 523-7112

GENERAL SPECIFICATIONS FOR SITE PREPARATION

1. GENERAL DESCRIPTION

THIS ITEM SHALL CONSIST OF ALL CLEARING AND GRUBBING, DEMOLITION, PREPARATION OF LAND TO BE FILLED, FILLING OF THE LAND, SPREADING, COMPACTION TESTING AND INSPECTION OF THE FILL, AND ALL SUBSIDIARY WORK NECESSARY TO COMPLETE THE GRADING OF THE CUT AND FILL AREAS TO CONFORM WITH THE LINES, GRADES AND SLOPES AS SHOWN ON THE APPROVED PLANS.

2. CLEARING THE AREA TO BE FILLED

ALL TIMBER, LOGS, TREES, BRUSH AND RUBBISH SHALL BE REMOVED FROM THE SITE.

3. SCARIFYING THE AREA TO BE FILLED

ALL ORGANIC MATTER SHALL BE REMOVED FROM THE SURFACE UPON WHICH THE FILL IS TO BE PLACED, AND THE SURFACE SHALL THEN BE DISKED OR SCARIFIED TO A MINIMUM DEPTH OF SIX INCHES (6"), ALL SURFACE RUTS OR OTHER UNEVEN FEATURES WILL BE LEVELED PRIOR TO FIELD DENSITY TESTING.

4. COMPACTING THE AREA TO BE FILLED

FOLLOWING THE CLEARING AND DISKING OR SCARIFYING OF THE FILL AREA, IT SHALL BE BLADED UNTIL IT IS UNIFORM AND FREE FROM LARGE CLODS. THE AREA SHALL BE BROUGHT TO THE ADEQUATE MOISTURE CONTENT AND COMPACTED (TYPICALLY) TO NOT LESS THAN NINETY PERCENT (90%) OF MAXIMUM DENSITY IN ACCORDANCE WITH THE CURRENT ASTM D 1557 COMPACTION PROCEDURE, OR 95% OF MAXIMUM DENSITY IN ACCORDANCE WITH THE CURRENT THD–TEX–113–E COMPACTION PROCEDURE.

5. FILL MATERIALS

THE MATERIALS USED SHALL BE FREE FROM ORGANIC MATTER AND OTHER DELETERIOUS SUBSTANCES, SUCH AS TREES, BRUSH AND RUBBISH.

6. DEPTH AND MIXING OF FILL LAYERS

THE SELECTED FILL MATERIAL SHALL BE PLACED IN LEVEL, UNIFORM LAYERS WHICH, WHEN COMPACTED, SHALL HAVE A DENSITY CONFORMING TO THAT STIPULATED ABOVE. EACH LAYER SHALL BE THOROUGHLY MIXED DURING THE SPREADING TO ENSURE UNIFORMITY OF MATERIAL IN EACH LAYER. COMPACTED LAYER THICKNESS MAY VARY DEPENDING ON THE COMPACTION EQUIPMENT OF DEMONSTRATED CAPABILITY. THE MAXIMUM LOOSE DEPTH FOR ANY MATERIAL SHALL NOT EXCEED TWELVE INCHES (12"). FOR TESTING REQUIREMENTS OF FILL MATERIAL, SEE DENSITY TESTING.

7. ROCK

WHEN FILL MATERIAL INCLUDES ROCK, THE MAXIMUM ROCK SIZE SHALL BE AS APPROVED BY THE GEOTECHNICAL ENGINEER. NO LARGE ROCKS SHALL BE ALLOWED TO NEST AND ALL VOIDS MUST BE FILLED WITH SMALL STONES OR SOIL AND ADEQUATELY COMPACTED. NO LARGE ROCKS WILL BE PERMITTED WITHIN EIGHTEEN INCHES (18") OF THE FINISHED GRADE.

8. COMPACTION OF FILL LAYER

COMPACTION EQUIPMENT SHALL BE CAPABLE OF COMPACTING THE FILL TO THE SPECIFIED DENSITY. COMPACTION SHALL BE ACCOMPLISHED WHILE THE FILL MATERIAL IS AT OR NEAR THE APPROPRIATE MOISTURE CONTENT. COMPACTION OF EACH LAYER SHALL BE CONTINUOUS OVER THE ENTIRE STRUCTURAL AREA (BENEATH PROPOSED STRUCTURES).

9. COMPACTION OF SLOPES

THE FACES OF FILL SLOPES SHALL BE COMPACTED. COMPACTING OPERATIONS SHALL BE CONTINUED UNTIL THE SLOPE FACES ARE STABLE BUT NOT TOO DENSE FOR PLANTING ON THE SLOPES. COMPACTION OF THE SLOPE FACES MAY BE DONE PROGRESSIVELY IN INCREMENTS OF THREE TO FIVE FEET (3' TO 5') IN FILL HEIGHT AS THIS FILL PROGRESSES OR AFTER THE FILL HAS BEEN BROUGHT TO ITS TOTAL HEIGHT.

10. MOISTURE CONTENT

THE FILL MATERIAL SHALL BE COMPACTED AT THE APPROPRIATE MOISTURE CONTENT SPECIFIED FOR THE SOILS BEING USED. APPROPRIATE MOISTURE CONTENT IS DEFINED, TYPICALLY, AS OPTIMUM MOISTURE CONTENT; HOWEVER, FOR EXPANSIVE SOILS IT MAY BE GREATER THAN OPTIMUM MOISTURE CONTENT, AND OTHER MOISTURE CONTENTS MAY BE NECESSARY TO PRODUCE THE DESIRED RESULTS WITH CERTAIN SOILS.

11. DENSITY TESTS

FIELD DENSITY TESTS SHALL BE PERFORMED ON LAYERS OF FILL WHEN THE FILL IS BEING PLACED AS DIRECTED BY THE GEOTECHNICAL ENGINEER. THE MAXIMUM FILL HEIGHT BETWEEN DENSITY TESTING SHALL BE EIGHTEEN INCHES (18"). ALL TESTING SHALL BE REQUESTED BY THE CONTRACTOR TO MEET THE CONTRACTOR'S CONSTRUCTION SCHEDULE. NOTIFICATION BY THE CONTRACTOR TO CONDUCT TESTS SHALL BE AT LEAST THE DAY BEFORE. THIS NOTIFICATION SHALL INCLUDE THE FILL AREA LOCATION (LOT AND BLOCK), THE LIFT OR HEIGHT OF FILL AND APPROXIMATE DESIRED TIME OF TESTING. WHEN THESE TESTS INDICATE THAT THE DENSITY OF ANY LAYER OF FILL OR PORTION THEREOF IS BELOW THE REQUIRED DENSITY, THE PARTICULAR LAYER OR PORTION SHALL BE REWORKED AND RETESTED AT THE EXPENSE OF THE CONTRACTOR UNLESS THE CONTRACTOR CAN SHOW EVIDENCE THAT CIRCUMSTANCES BEYOND HIS CONTROL REQUIRED THE RETESTING. GENERALLY, THE SPECIFIC TESTING WILL BE AS FOLLOWS AND CONDUCTED BY GEOTECHNICAL ENGINEER.

1. THE LAND TO BE FILLED (PREPARED SUBGRADE) SHALL BE PREPARED AND TESTED AT A FREQUENCY AS DETERMINED BY THE GEOTECHNICAL ENGINEER.
2. THE FIRST LIFT OF COMPACTED FILL (GENERALLY 8 TO 12-IN.) SHALL BE TESTED AS DETERMINED BY THE GEOTECHNICAL ENGINEER. ANY AREAS SUPPORTING THE PROPOSED STRUCTURES REQUIRING FILL SHALL BE TESTED FOR DENSITY COMPLIANCE.
3. FILLS SHALL BE TESTED A MAXIMUM OF EACH EIGHTEEN INCHES (18") OF FILL.
4. TEST RESULTS WILL BE PROVIDED BY THE FIELD TECHNICIAN TO THE CONTRACTOR WHEN POSSIBLE; HOWEVER, ALL TEST RESULTS ARE TO BE REVIEWED BY THE GEOTECHNICAL ENGINEER FOR COMPLIANCE. THE ENGINEER WILL NOTIFY THE CONTRACTOR OF ALL THE TEST RESULTS.

NOTE:

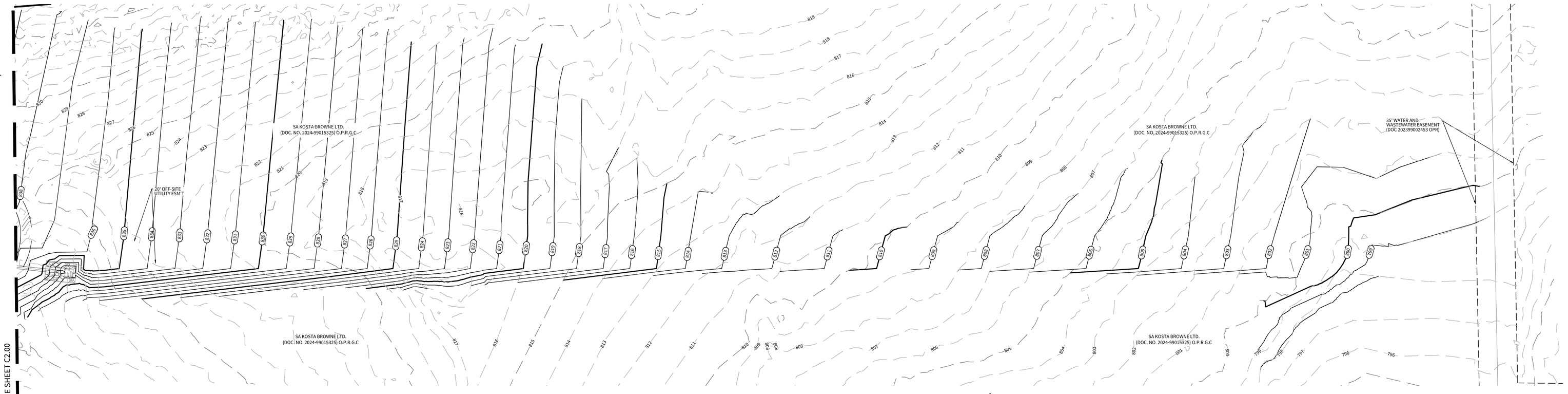
LOT GRADING BASED ON SLABS BEING 20' BEHIND FRONT PROPERTY LINE.

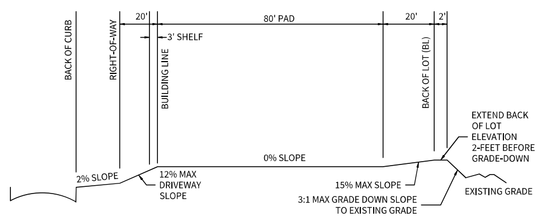
ALL ELEVATIONS AT FRONT PROPERTY LINE ARE 0.30' ABOVE CURB ELEVATION ON MINOR STREETS.

TYPICAL PAD SIZES ARE 80' x 30' ON MINOR STREETS.

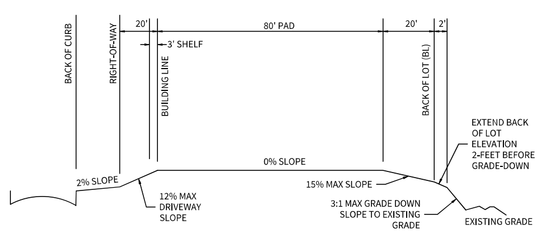
CONTOURS SHOWN ON STREET ARE TOP OF STREET.

SCALE: 1"=50'
50 25 0 50

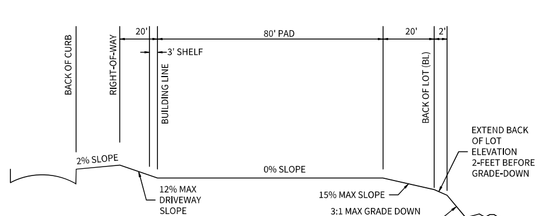




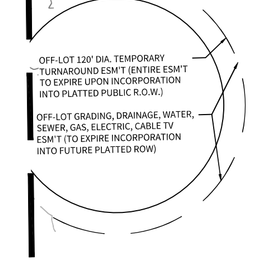
TYPICAL "A-LOT" GRADING DETAIL
(NOT TO SCALE)



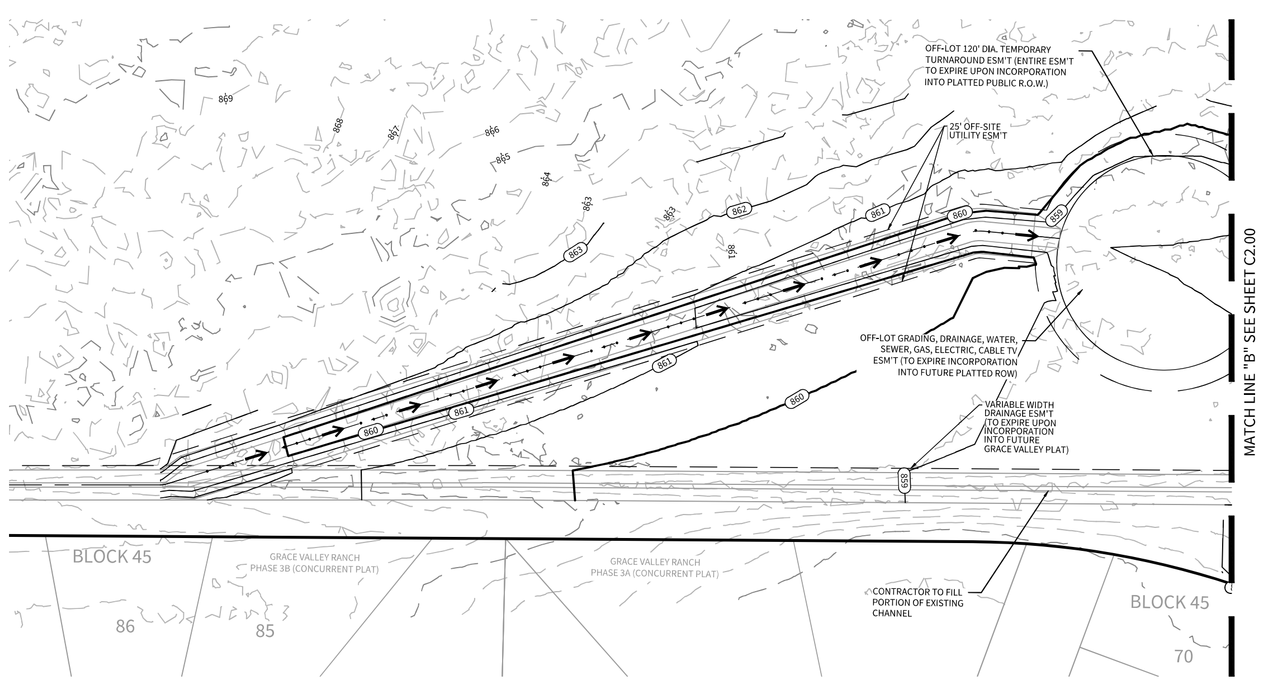
TYPICAL "B-LOT" GRADING DETAIL
(NOT TO SCALE)

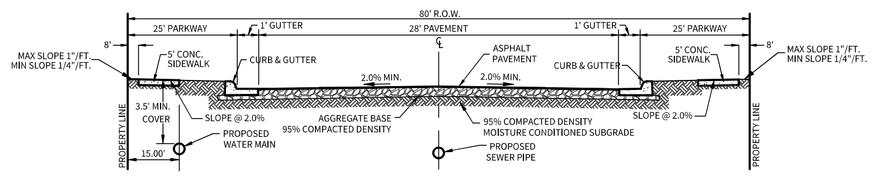


TYPICAL "C-LOT" GRADING DETAIL
(NOT TO SCALE)

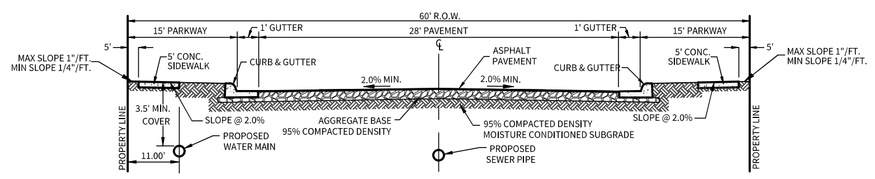


SCALE: 1"=50'
50 25 0 50

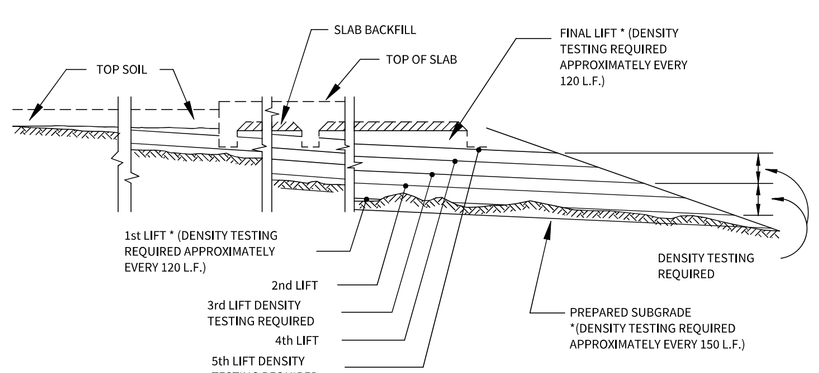




COLLECTOR STREET CROSS-SECTION
N.T.S.



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



DENSITY TEST FREQUENCY
NOT TO SCALE

CAUTION!!!

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TRENCH EXCAVATION SAFETY PROTECTION

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

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

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

GRACE VALLEY RANCH PHASE 4A

GRADING PLAN

DATE
11/18/2025

PROJECT NO.
03346.017

DRAWN BY
AG/JF

CHECKED BY
K.M.H.

REVISIONS
1.
2.
3.
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5.
6.
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9.

STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED
PROFESSIONAL ENGINEER
11/18/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C2.01

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GRACE VALLEY RANCH
PHASE 4A

UTILITY LAYOUT PLAN

DEVELOPER:
LENNAR HOMES OF TEXAS LAND AND CONSTRUCTION, LTD.
CONTACT PERSON: RICHARD MOTT
100 NE LOOP 410, SUITE 1155
SAN ANTONIO, TX 78216
TEL: (210) 403-6200

CIVIL ENGINEER:
CUDE ENGINEERS
CONTACT PERSON: KYLE HUDEK, P.E.
4122 POND HILL ROAD, SUITE 101
SAN ANTONIO, TX 78231
TEL: (210) 681-2951
FAX: (210) 523-7112

LEGEND

EXISTING SANITARY SEWER	8"S
PROPOSED SANITARY SEWER	8"S
EXISTING SANITARY SEWER MANHOLE	
PROPOSED SANITARY SEWER MANHOLE	
EXISTING WATER MAIN	8"W
PROPOSED WATER MAIN	8"W
EXISTING STANDARD FIRE HYDRANT	
PROPOSED STANDARD FIRE HYDRANT	
EXISTING STANDARD GATE VALVE	
PROPOSED STANDARD GATE VALVE	
EXISTING PERMANENT BLOWOFF	
PROPOSED PERMANENT BLOWOFF	
ELECTRIC, GAS, TELEPHONE, & CABLE T.V. EASEMENT	E,G,T,CA ESMT
BUILDING SETBACK LINE	B.S.L.

UNPLATTED REMAINING PORTION OF 167.5 ACRES SA TOMAHAWK ROCK LP (DOC NO. 20139023834, O.P.R.R.P.C.)

CAUTION!!!

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TRENCH EXCAVATION SAFETY PROTECTION

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NOTE

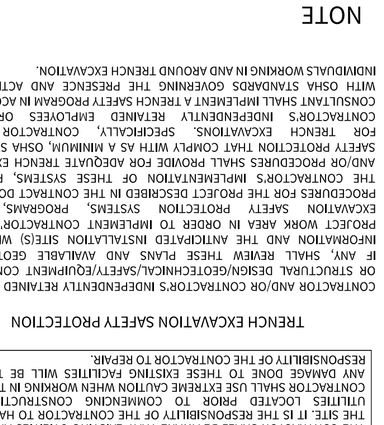
WATER METERS TO BE PLACED WITHIN RIGHT-OF-WAY TO AVOID CONFLICT WITH TRANSFORMERS/SECONDARY ENCLOSURE ELECTRIC SERVICE.

GVEC REQUIREMENTS FOR ELECTRIC UTILITY ROAD CROSSINGS

1. ONLY 3/4 INCH SCHEDULE 40 GRAY ELECTRICAL CONDUIT IS TO BE USED AND IS SUPPLIED BY THE DEVELOPER. ALL JOINTS MUST BE GLUED.
2. ROAD CROSSINGS MUST BE INSTALLED 3 FT. BELOW FINAL SUB-GRADE OR 4 FT. FROM FINAL GRADE ON NON-WATER SIDE. WHEN ELECTRICAL CROSSINGS ARE REQUIRED TO CROSS WATER MAINS, THEY MUST BE 2 FT. BELOW OR 2 FT ABOVE WATER MAINS, BUT REQUIRED BY SOME WATER UTILITIES.
3. ALL CONDUIT PIPES SHOULD BE LAID IN THE DITCH, SIDE BY SIDE, NOT STACKED OR TWISTED. IF MORE THAN TWO PIPES ARE IN A DITCH YOU MUST NUMBER THE INSIDE, BOTTOM OF EACH PIPE (EX: 1, 2, 3, ETC.)
4. ALL OTHER UTILITIES MUST MAINTAIN A MINIMUM OF 3 FT. OF SEPARATION FROM ELECTRICAL CROSSING DITCH.
5. NO OTHER UTILITY CROSSINGS SHOULD BE STUBBED OUT IN FRONT OF ELECTRICAL TRANSFORMERS OR SWITCHES.
6. NO OTHER UTILITIES ARE TO BE PLACED IN THE SAME DITCH AS THE ELECTRICAL CROSSING.
7. ALL CROSSINGS ARE TO BE INSTALLED AT THE PROPERTY LINE UNLESS THESE ARE WATER METERS EXISTING ON EACH SIDE OF THE PROPERTY LINE AT THE CROSSING CROSSING MUST BE MOVED 7' FROM THE PROPERTY LINE TO AVOID WATER METERS. LOCATION. AT LOCATIONS WHERE WATER METER CONFLICTS EXIST, THE ELECTRICAL PROPERTY LINE.
8. ALL CROSSINGS MUST BE INSPECTED BY A GVEC REPRESENTATIVE BEFORE THEY ARE BACKFILLED. PLEASE PROVIDE ONE WEEK NOTICE AS TO WHEN INSPECTIONS WILL BE NEEDED.
9. ALL UTILITY CONDUIT LOCATIONS SHALL BE PROVIDED ON A SEPARATE EXHIBIT THAT MUST BE REQUESTED BY THE CONTRACTOR TO THE ENGINEER.

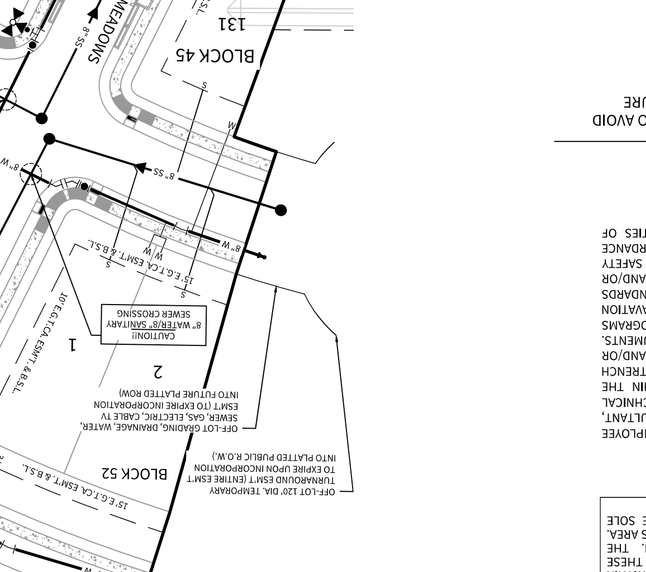
LOCATION MAP

N.T.S.



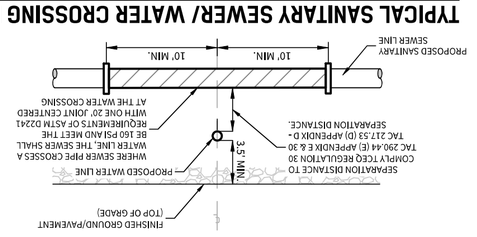
WATER METER BOX LOCATION (60' R.O.W.)

N.T.S.



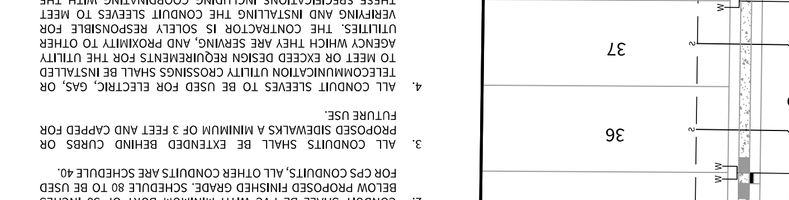
TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.



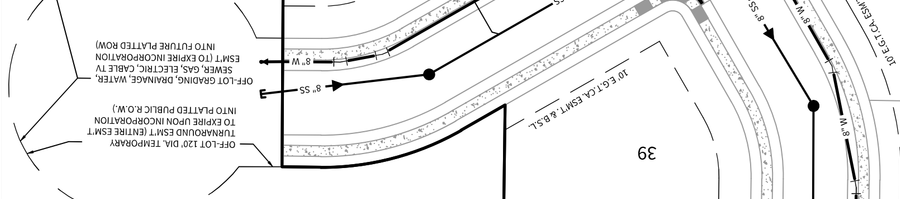
COLLECTOR STREET CROSS-SECTION

N.T.S.



LOCAL "A" STREET CROSS-SECTION

N.T.S.



CONDUIT NOTES:

1. CONTRACTOR SHALL INSTALL PERMANENT MARKERS IN PROPOSED CUBE WHERE CONDUITS CROSS THE ROAD (BOTH SIDES).
2. CONDUIT SHALL BE PVC WITH MINIMUM DEPTH OF 36 INCHES BELOW PROPOSED FINISHED GRADE. SCHEDULE 80 TO BE USED FOR CPS CONDUITS, ALL OTHER CONDUITS ARE SCHEDULE 40.
3. ALL CONDUITS SHALL BE EXTENDED BEHIND CURBS OR PROPOSED SIDEWALKS A MINIMUM OF 3 FEET AND CAPPED FOR FUTURE USE.
4. ALL CONDUIT SLEEVES TO BE USED FOR ELECTRIC, GAS, OR TELECOMMUNICATION UTILITY CROSSINGS SHALL BE INSTALLED TO MEET OR EXCEED DESIGN REQUIREMENTS FOR THE UTILITY AGENCY WHICH THEY ARE SERVING, AND PROXIMITY TO OTHER UTILITIES. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR VERIFYING AND INSTALLING THE CONDUIT SLEEVES TO MEET THESE SPECIFICATIONS INCLUDING COORDINATING WITH THE UTILITY AGENCY FOR ANY REQUIRED INSPECTIONS.

MATCH LINE "A" SEE SHEET C3.01

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

DATE	11/13/2025
PROJECT NO.	0334.6.017
DRAWN BY	AG/JF
CHECKED BY	K.M.H.

REVISIONS	
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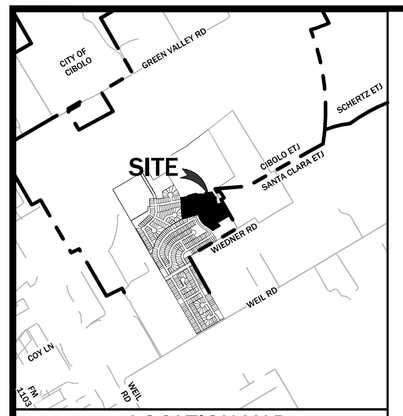
11/17/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10045500

C3.00



LOCATION MAP

LEGEND

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PROPOSED SANITARY SEWER	8"SS
EXISTING SANITARY SEWER MANHOLE	
PROPOSED SANITARY SEWER MANHOLE	
EXISTING WATER MAIN	EX.8"W
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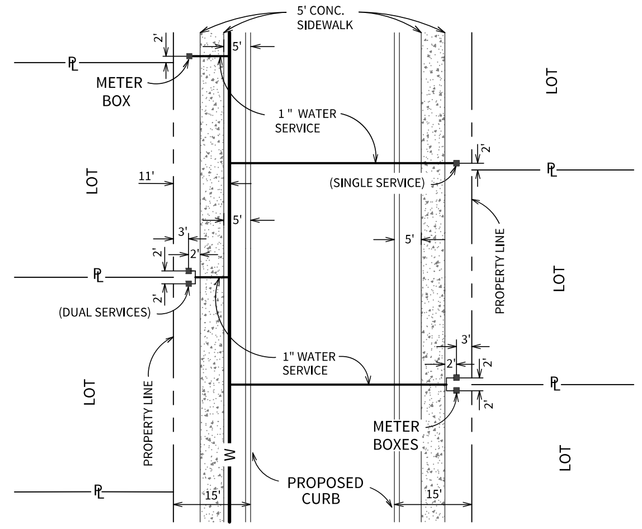
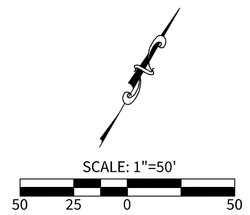


WATER METER BOX LOCATION (60' R.O.W.)
N.T.S.



DEVELOPER:

LENNAR HOMES OF TEXAS LAND AND CONSTRUCTION, LTD.
CONTACT PERSON: RICHARD MOTT
100 NE LOOP 410, SUITE 1155
SAN ANTONIO, TX 78216
TEL: (210) 403-6200

CIVIL ENGINEER:

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CONTACT PERSON: KYLE HUDEK, P.E.
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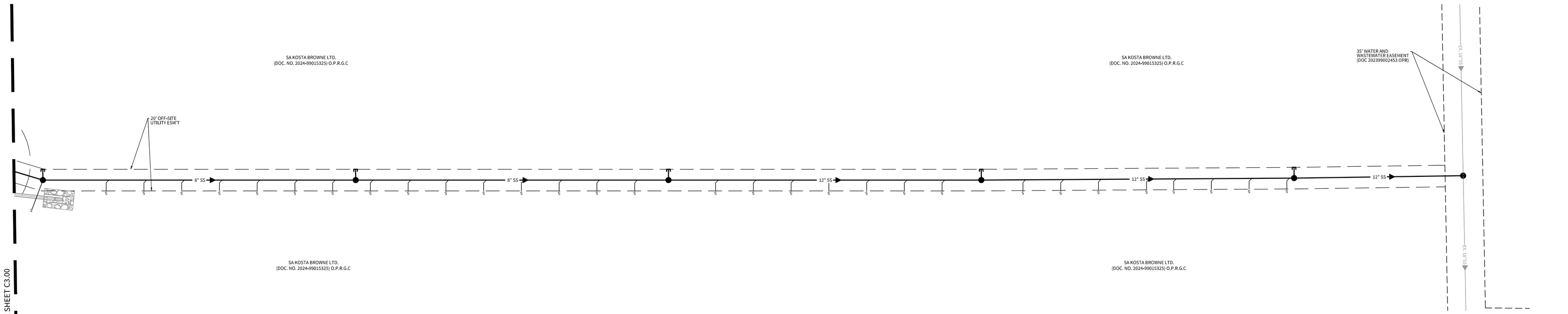
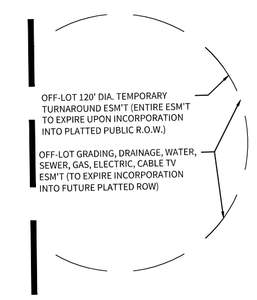
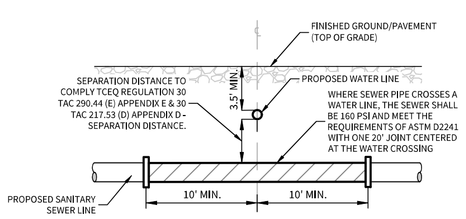
FAX: (210) 523-7112



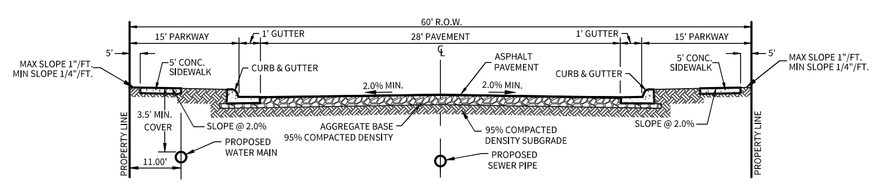


GVEC REQUIREMENTS FOR ELECTRIC UTILITY ROAD CROSSINGS

1. ONLY 2 ½ INCH SCHEDULE 40 GRAY ELECTRICAL CONDUIT IS TO BE USED AND IS TO BE SUPPLIED BY THE DEVELOPER. ALL JOINTS MUST BE GLUED.
2. ROAD CROSSINGS MUST BE INSTALLED 3 FT. BELOW FINAL SUB-GRADE OR 4 FT. FROM FINAL GRADE ON NON-WATER SIDE. WHEN ELECTRICAL CROSSINGS ARE REQUIRED TO CROSS WATER MAINS, THEY MUST BE 2 FT. BELOW OR 2 FT ABOVE WATER MAINS, BUT NOT LESS THAN 48 INCHES OF COVER BELOW FINAL GRADE (PIT SAND MAY BE REQUIRED BY SOME WATER UTILITIES).
3. ALL CONDUIT PIPES SHOULD BE LAID FLAT IN THE DITCH, SIDE BY SIDE, NOT STACKED OR TWISTED. IF MORE THAN TWO PIPES ARE IN A DITCH YOU MUST NUMBER THE INSIDE, BOTTOM OF EACH PIPE (EX: 1, 2, 3, ETC.)
4. ALL OTHER UTILITIES MUST MAINTAIN A MINIMUM OF 3 FT. OF SEPARATION FROM THE ELECTRICAL CROSSING DITCH.
5. NO OTHER UTILITY CROSSINGS SHOULD BE STUBBED OUT IN FRONT OF ELECTRICAL TRANSFORMERS OR SWITCHES.
6. NO OTHER UTILITIES ARE TO BE PLACED IN THE SAME DITCH AS THE ELECTRICAL CROSSING.
7. ALL CROSSINGS ARE TO BE INSTALLED AT THE PROPERTY LINE UNLESS THERE ARE WATER METERS EXISTING ON EACH SIDE OF THE PROPERTY LINE AT THE CROSSING LOCATION. AT LOCATIONS WHERE WATER METER CONFLICTS EXIST, THE ELECTRICAL CROSSING MUST BE MOVED 7' FROM THE PROPERTY LINE TO AVOID WATER METERS. ALL OTHER UTILITY CROSSINGS MUST BE LOCATED 3 FT. ON OPPOSITE SIDE OF PROPERTY LINE.
8. ALL CROSSINGS MUST BE INSPECTED BY A GVEC REPRESENTATIVE BEFORE THEY ARE BACKFILLED. PLEASE PROVIDE ONE WEEK NOTICE AS TO WHEN INSPECTIONS WILL BE NEEDED.
9. ALL UTILITY CONDUIT LOCATIONS SHALL BE PROVIDED ON A SEPARATE EXHIBIT THAT MUST BE REQUESTED BY THE CONTRACTOR TO THE ENGINEER.



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



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

CUDEENGINEERS.COM

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

GRACE VALLEY RANCH PHASE 4A

UTILITY LAYOUT PLAN

DATE
11/14/2025

PROJECT NO.
03346.017

DRAWN BY
AG/JF

CHECKED BY
K.M.H.

REVISIONS

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STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED
PROFESSIONAL ENGINEER
11/17/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C3.01

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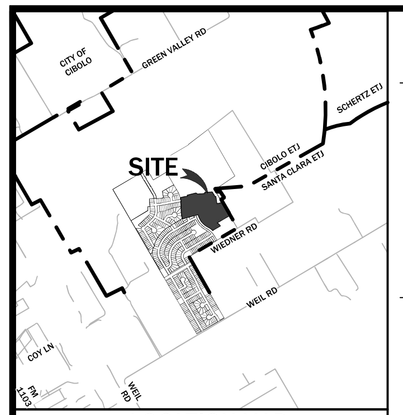
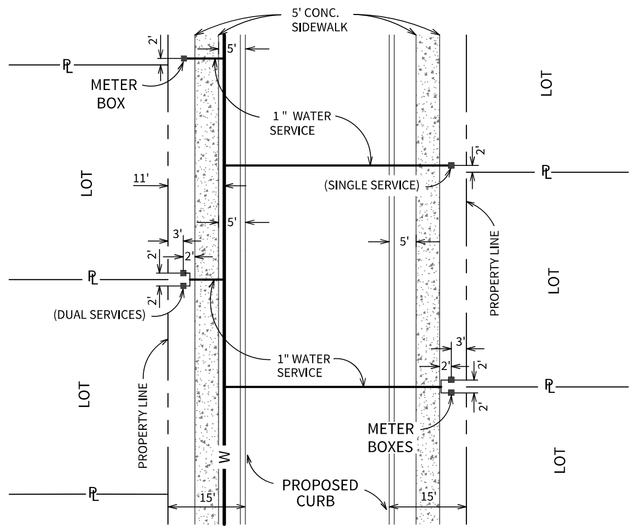
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



LOCATION MAP N.T.S.



WATER METER BOX LOCATION (60' R.O.W.)
N.T.S.

DEVELOPER:

LENNAR HOMES OF TEXAS LAND AND CONSTRUCTION, LTD.
CONTACT PERSON: RICHARD MOTT
100 NE LOOP 410, SUITE 1155
SAN ANTONIO, TX 78216
TEL: (210) 403-6200

CIVIL ENGINEER:

CUDE ENGINEERS
CONTACT PERSON: KYLE HUDEK, P.E.
4122 POND HILL ROAD, SUITE 101
SAN ANTONIO, TX 78231
TEL: (210) 681-2951
FAX: (210) 523-7112

LEGEND

EXISTING SANITARY SEWER	EX.8"SS
PROPOSED SANITARY SEWER	8"SS
EXISTING SANITARY SEWER MANHOLE	
PROPOSED SANITARY SEWER MANHOLE	
EXISTING WATER MAIN	EX.8"W
PROPOSED WATER MAIN	8"W
PROPOSED STANDARD FIRE HYDRANT	
PROPOSED SANITARY SEWER LATERAL	
ELECTRIC, GAS, TELEPHONE, & CABLE T.V. EASEMENT	E.G.T.CA. ESM'T
EXISTING MAJOR CONTOURS	850
EXISTING MINOR CONTOURS	857

CAUTION!!!

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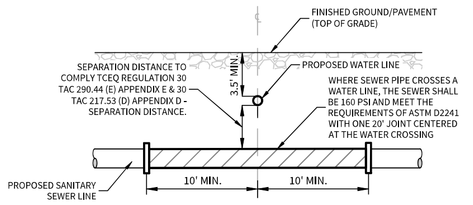
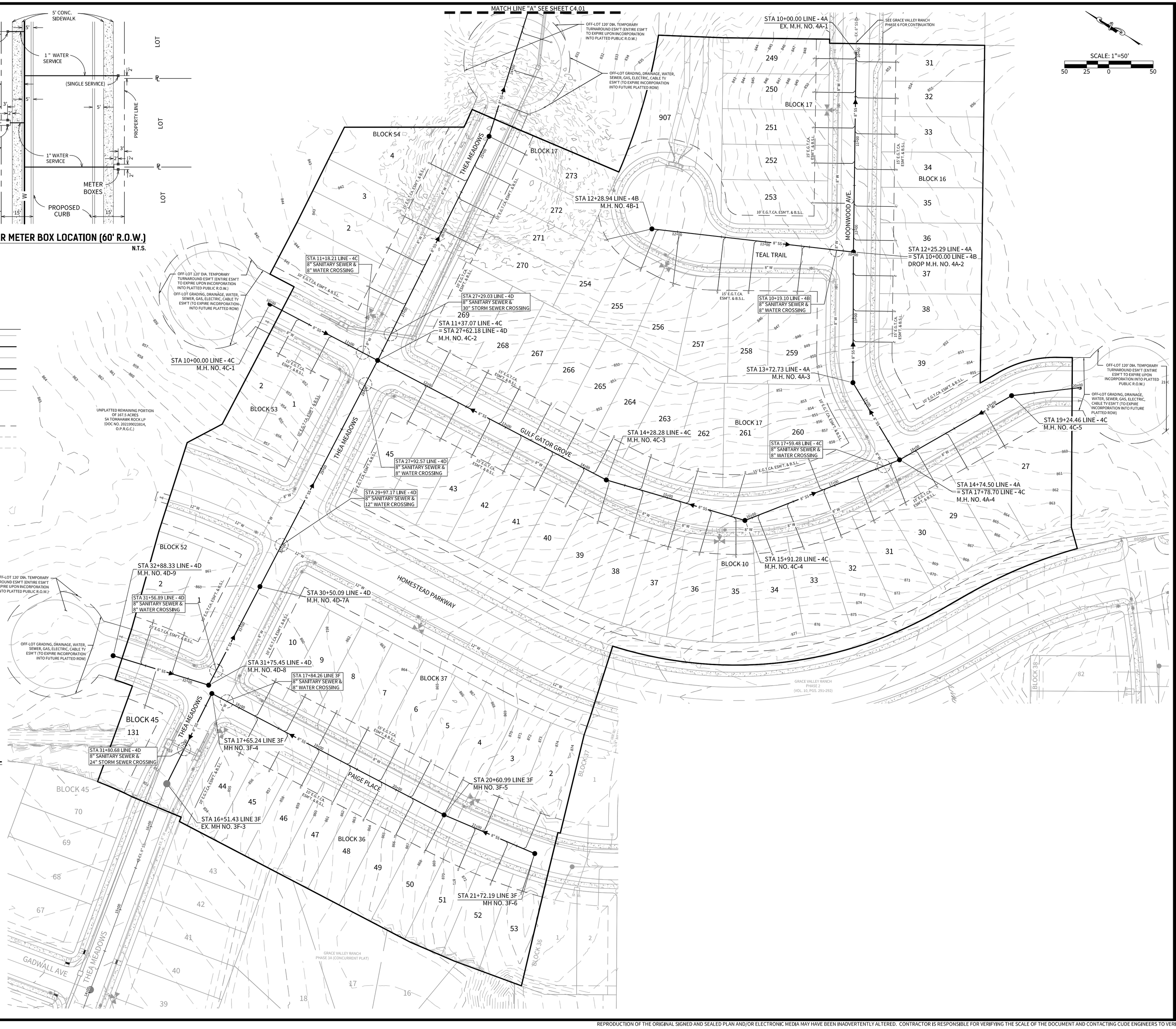


TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL
N.T.S.



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4122 Pond Hill Road, Suite 101
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P:(210) 681.2951 F: (210)523.7112

GRACE VALLEY RANCH PHASE 4A

SANITARY SEWER MASTER PLAN

DATE
11/13/2025

PROJECT NO.
03346.017

DRAWN BY
AG/JF

CHECKED BY
K.M.H.

REVISIONS
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STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED
PROFESSIONAL ENGINEER
11/17/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C4.00

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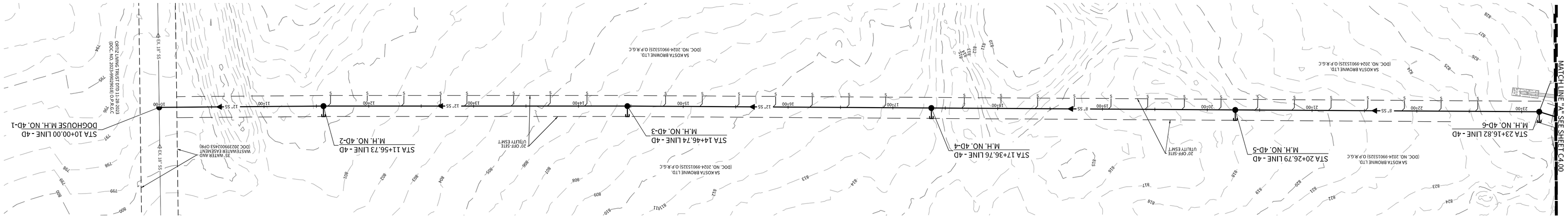

LEGEND

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PROPOSED SANITARY SEWER	8"SS
EXISTING SANITARY SEWER MANHOLE	
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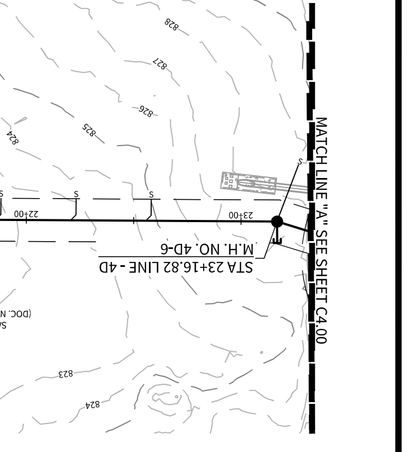
LOCATION MAP N.T.S.



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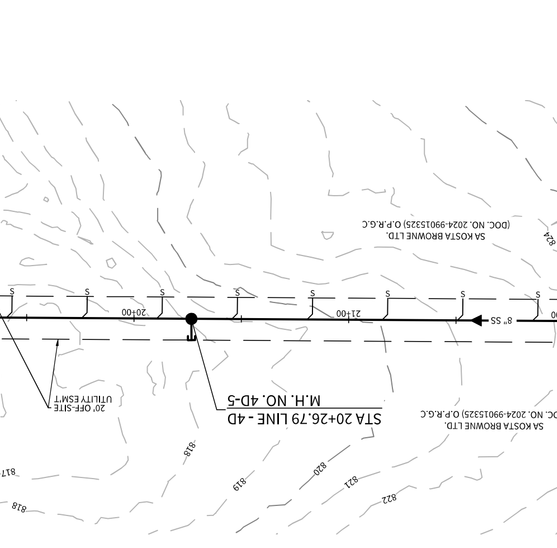

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL
N.T.S.

TRENCH EXCAVATION SAFETY PROTECTION

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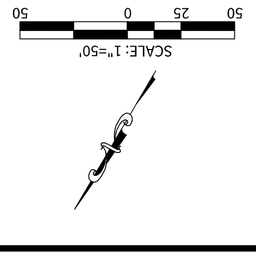

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500
4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210)523.7112

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GRACE VALLEY RANCH
PHASE 4A

SANITARY SEWER MASTER PLAN

REVISIONS
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CHECKED BY
K.M.H.

DRAWN BY
AG/JF

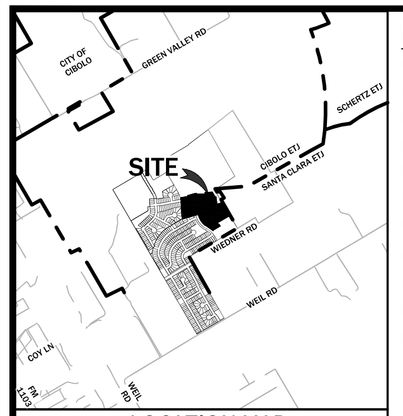
PROJECT NO.
0346.017

DATE
11/14/2025

11/17/2025

C4.01

2025/0346.017 - Grace Valley Ranch - 4A\CAD\Sheets\Grace Valley Ranch 4A - SS Master Plan.dwg 11/17/2025 1:31:51 PM - Agustin Gonzalez



LOCATION MAP N.T.S.

LEGEND

- EXISTING SANITARY SEWER — EX.8"SS
- PROPOSED SANITARY SEWER — 8"SS
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
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- PROPOSED SANITARY SEWER LATERAL
- ELECTRIC, GAS, TELEPHONE, & CABLE T.V. EASEMENT — E.G.T.CA. ESM'T
- EXISTING MAJOR CONTOURS — 850
- EXISTING MINOR CONTOURS — 857

DEVELOPER:

LENNAR HOMES OF TEXAS LAND AND CONSTRUCTION, LTD.
CONTACT PERSON: RICHARD MOTT
100 NE LOOP 410, SUITE 1155
SAN ANTONIO, TX 78216
TEL: (210) 403-6200

CIVIL ENGINEER:

CUDE ENGINEERS
CONTACT PERSON: KYLE HUDEK, P.E.
4122 POND HILL ROAD, SUITE 101
SAN ANTONIO, TX 78231
TEL: (210) 681-2951
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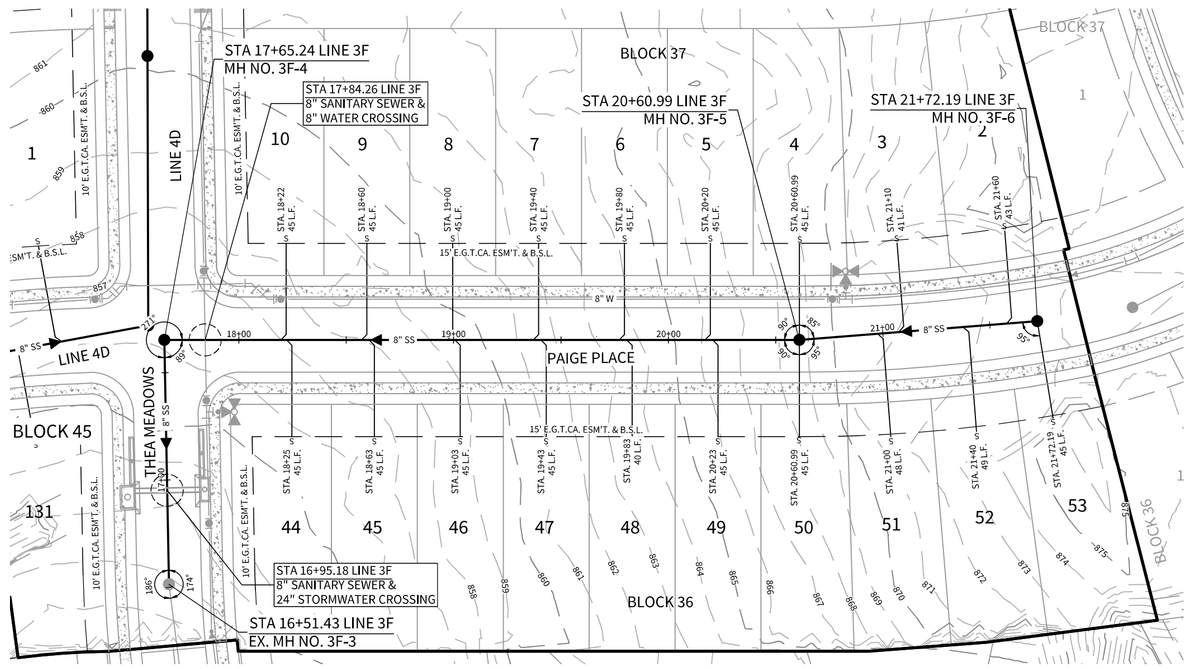
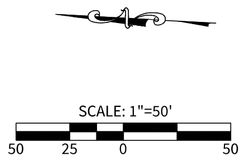
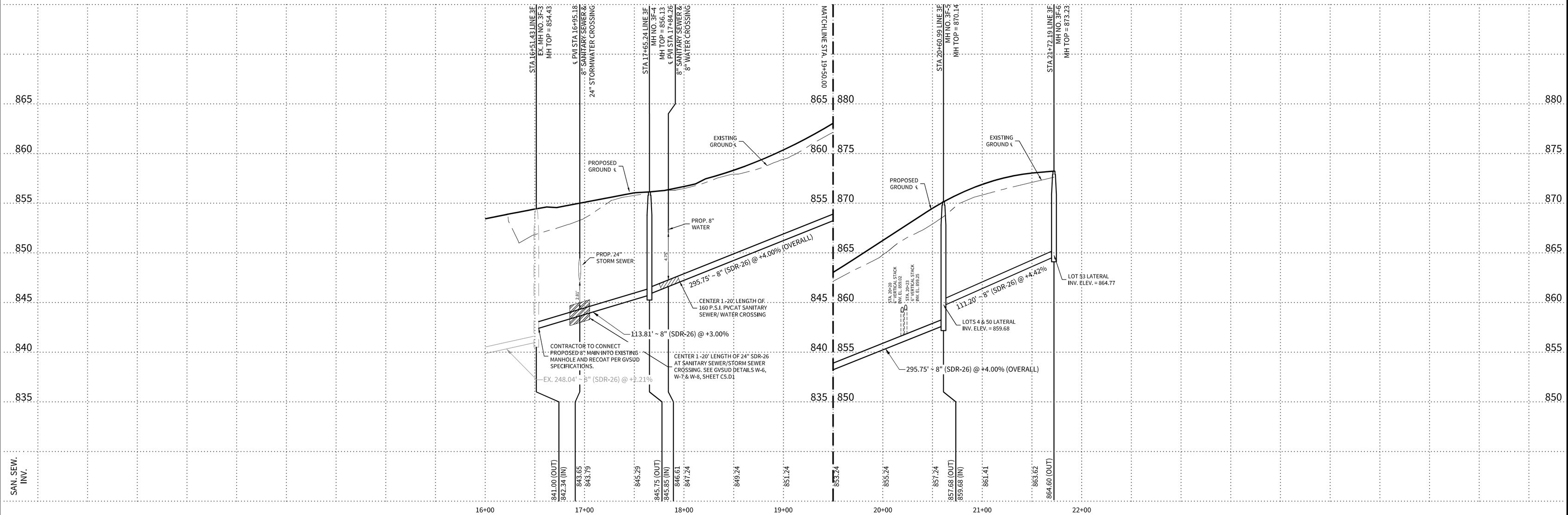




LINE 3F

STA. 16+51.43 TO STA. 21+72.19

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



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CUDE ENGINEERS

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

GRACE VALLEY RANCH
PHASE 4A

SANITARY SEWER PLAN AND PROFILE - LINE 3F

DATE
10/06/2025

PROJECT NO.
03346.017

DRAWN BY
AG/JF

CHECKED BY
K.M.H.

REVISIONS
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STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED PROFESSIONAL ENGINEER
10/07/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C4.02

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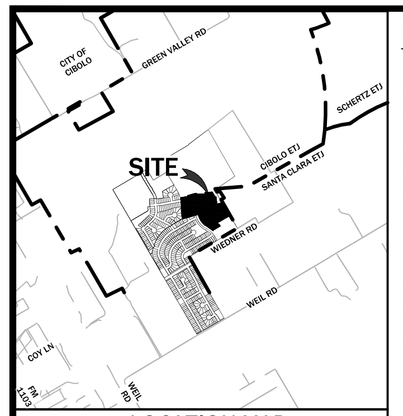

LOCATION MAP N.T.S.

LEGEND

- EXISTING SANITARY SEWER — EX.8"SS
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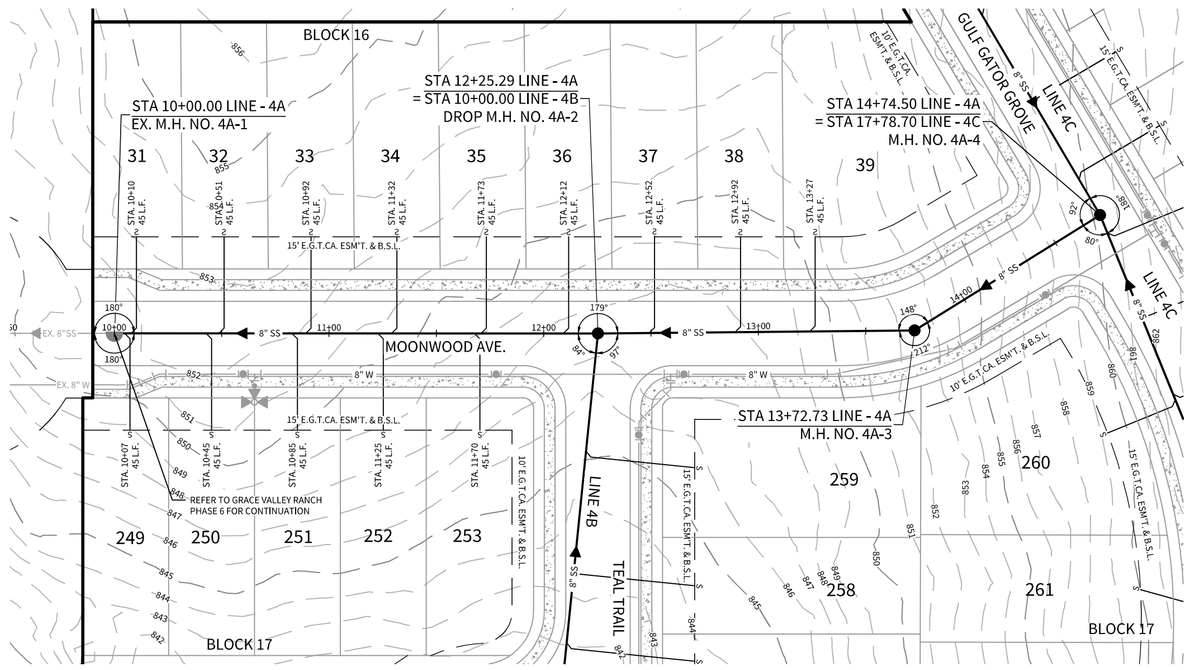
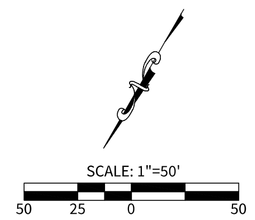
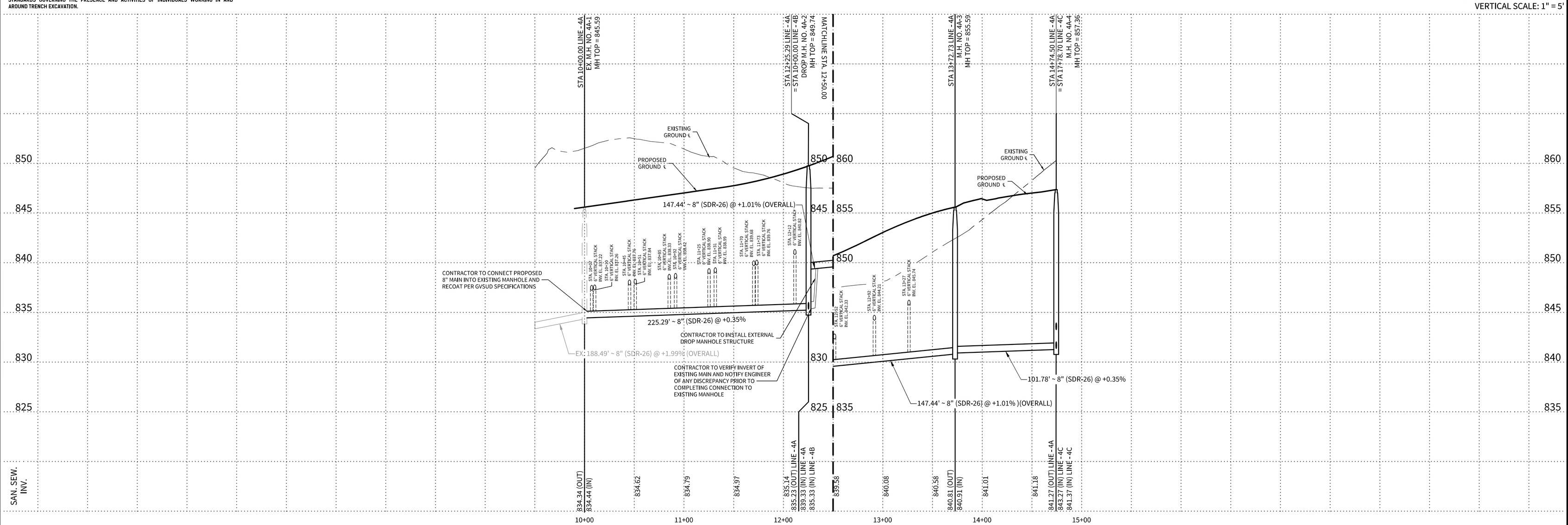




LINE 4A

STA. 10+00.00 TO STA. 14+74.50

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



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

GRACE VALLEY RANCH PHASE 4A

SANITARY SEWER PLAN AND PROFILE - LINE 4A

DATE
11/17/2025

PROJECT NO.
03346.017

DRAWN BY
AG/JF

CHECKED BY
K.M.H.

REVISIONS
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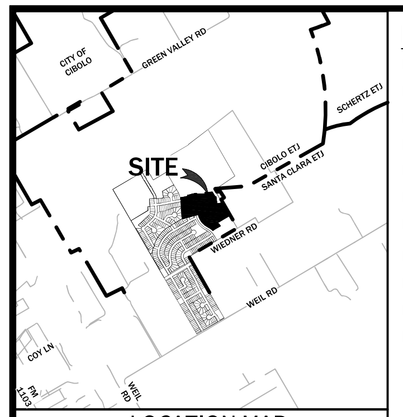
STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED
PROFESSIONAL ENGINEER
11/17/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C4.03

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



LOCATION MAP N.T.S.

LEGEND

EXISTING SANITARY SEWER	EX.8"SS
PROPOSED SANITARY SEWER	8"SS
EXISTING SANITARY SEWER MANHOLE	
PROPOSED SANITARY SEWER MANHOLE	
EXISTING WATER MAIN	EX.8"W
PROPOSED WATER MAIN	8"W
PROPOSED STANDARD FIRE HYDRANT	
PROPOSED SANITARY SEWER LATERAL	
ELECTRIC, GAS, TELEPHONE, & CABLE T.V. EASEMENT	E.G.T.CA. ESM'T
EXISTING MAJOR CONTOURS	850
EXISTING MINOR CONTOURS	857

DEVELOPER:
LENNAR HOMES OF TEXAS LAND AND CONSTRUCTION, LTD.
CONTACT PERSON: RICHARD MOTT
100 NE LOOP 410, SUITE 1155
SAN ANTONIO, TX 78216
TEL: (210) 403-6200

CIVIL ENGINEER:
CUDE ENGINEERS
CONTACT PERSON: KYLE HUDEK, P.E.
4122 POND HILL ROAD, SUITE 101
SAN ANTONIO, TX 78231
TEL: (210) 681-2951
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TRENCH EXCAVATION SAFETY PROTECTION

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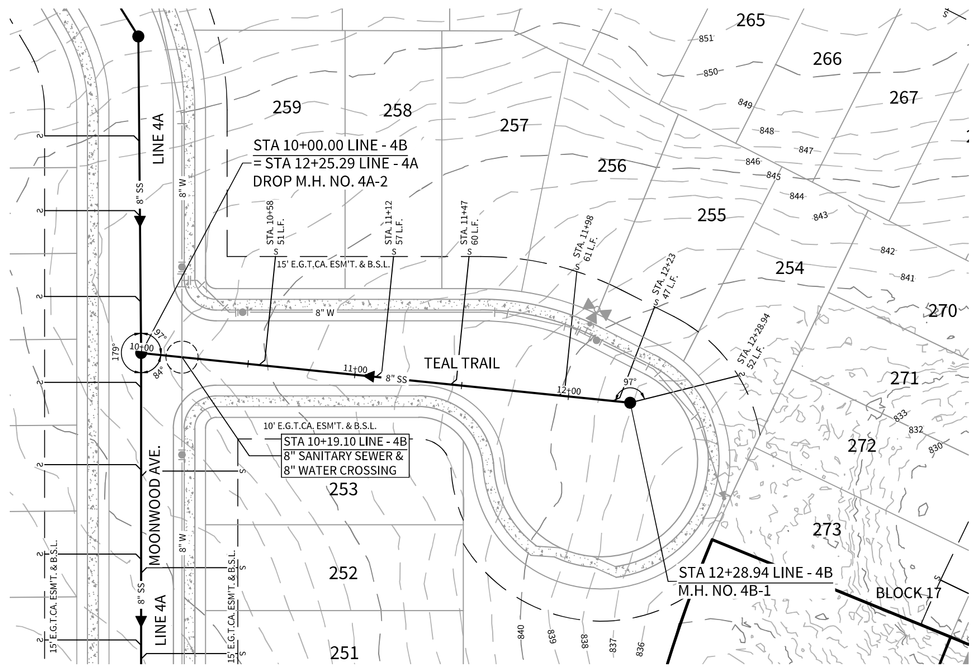
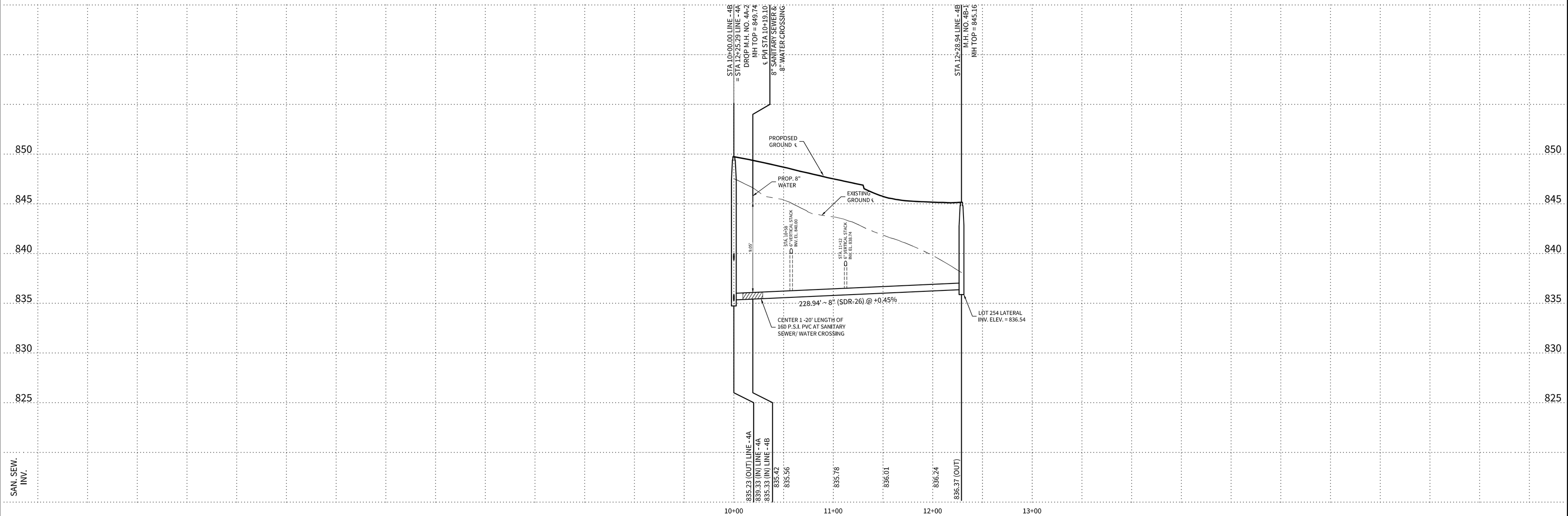


LINE 4B

STA. 10+00.00 TO STA. 12+31.92

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



SCALE: 1"=50'
50 25 0 50

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GRACE VALLEY RANCH
PHASE 4A

SANITARY SEWER PLAN AND PROFILE - LINE 4B

DATE
11/13/2025

PROJECT NO.
03346.017

DRAWN BY
AG/JF

CHECKED BY
K.M.H.

REVISIONS
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STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED
PROFESSIONAL ENGINEER
11/17/2025

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TBPE No. 455
TBPLS No. 10048500

C4.04

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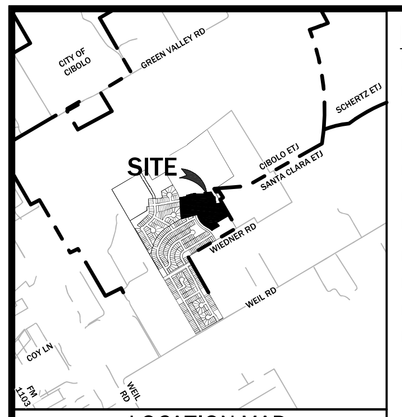

LOCATION MAP N.T.S.

LEGEND

- EXISTING SANITARY SEWER — EX.8"SS
- PROPOSED SANITARY SEWER — 8"SS
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- PROPOSED SANITARY SEWER MANHOLE
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- PROPOSED STANDARD FIRE HYDRANT
- PROPOSED SANITARY SEWER LATERAL
- ELECTRIC, GAS, TELEPHONE, & CABLE T.V. EASEMENT — E.G.T.CA. ESM'T
- EXISTING MAJOR CONTOURS — 850
- EXISTING MINOR CONTOURS — 857

DEVELOPER:

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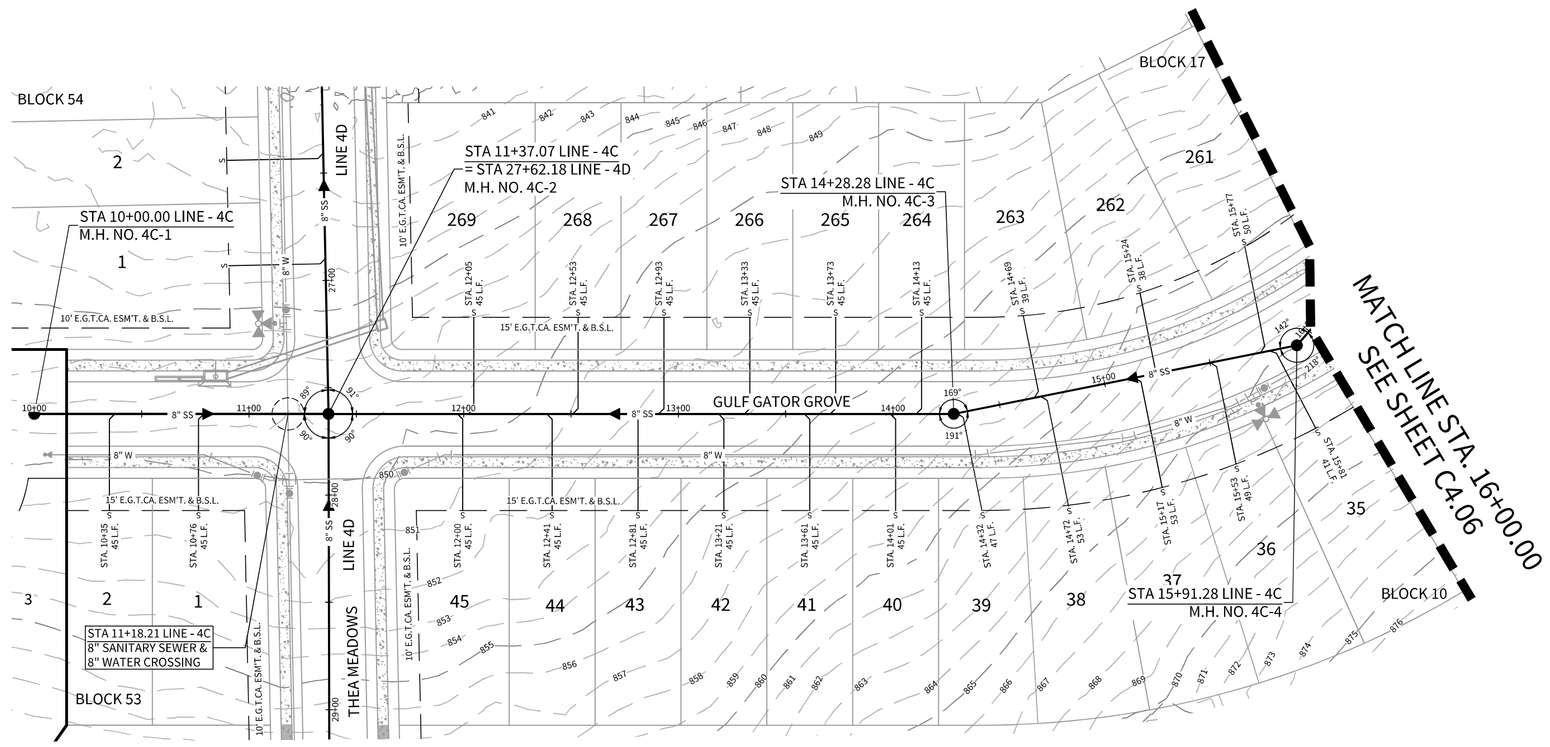
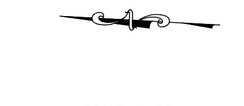
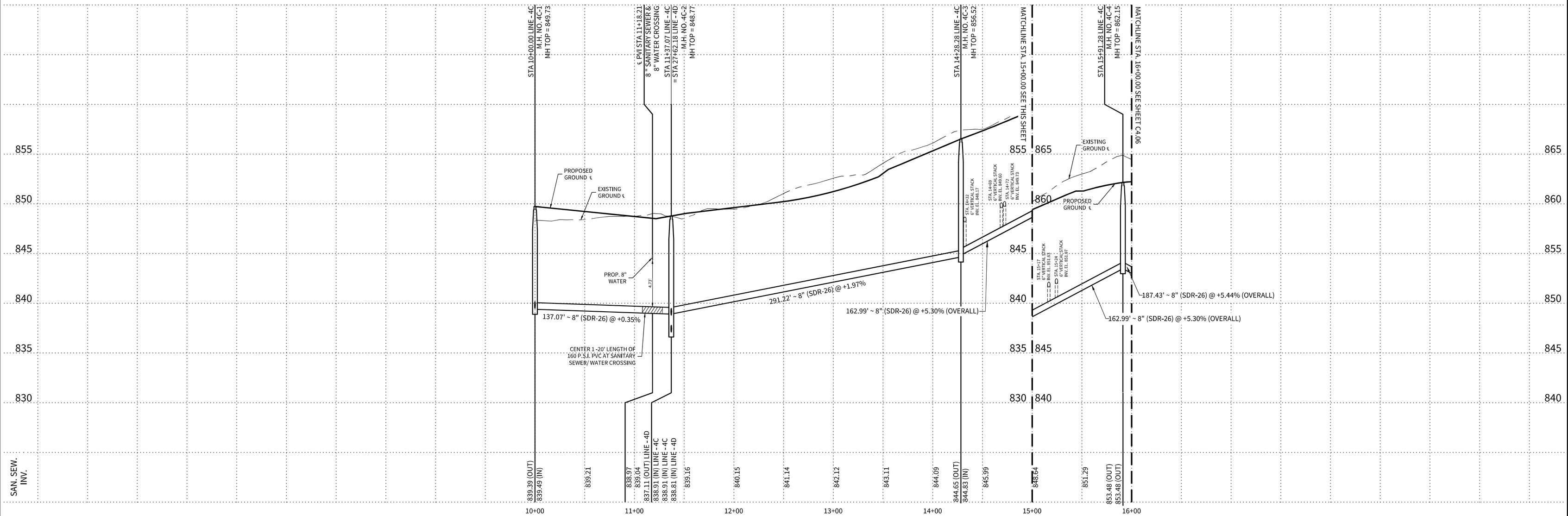




LINE 4C

STA. 10+00.00 TO STA. 16+00.00

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



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GRACE VALLEY RANCH
PHASE 4A

SANITARY SEWER PLAN AND PROFILE - LINE 4C

DATE
11/13/2025

PROJECT NO.
03346.017

DRAWN BY
AG/JF

CHECKED BY
K.M.H.

REVISIONS
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STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED
PROFESSIONAL ENGINEER
11/17/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C4.05

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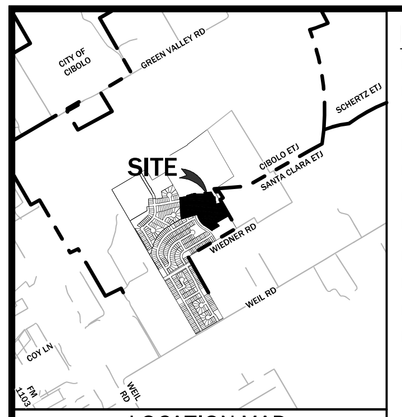

LOCATION MAP N.T.S.

LEGEND

- EXISTING SANITARY SEWER — EX.8"SS
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- EXISTING MAJOR CONTOURS — 850
- EXISTING MINOR CONTOURS — 857

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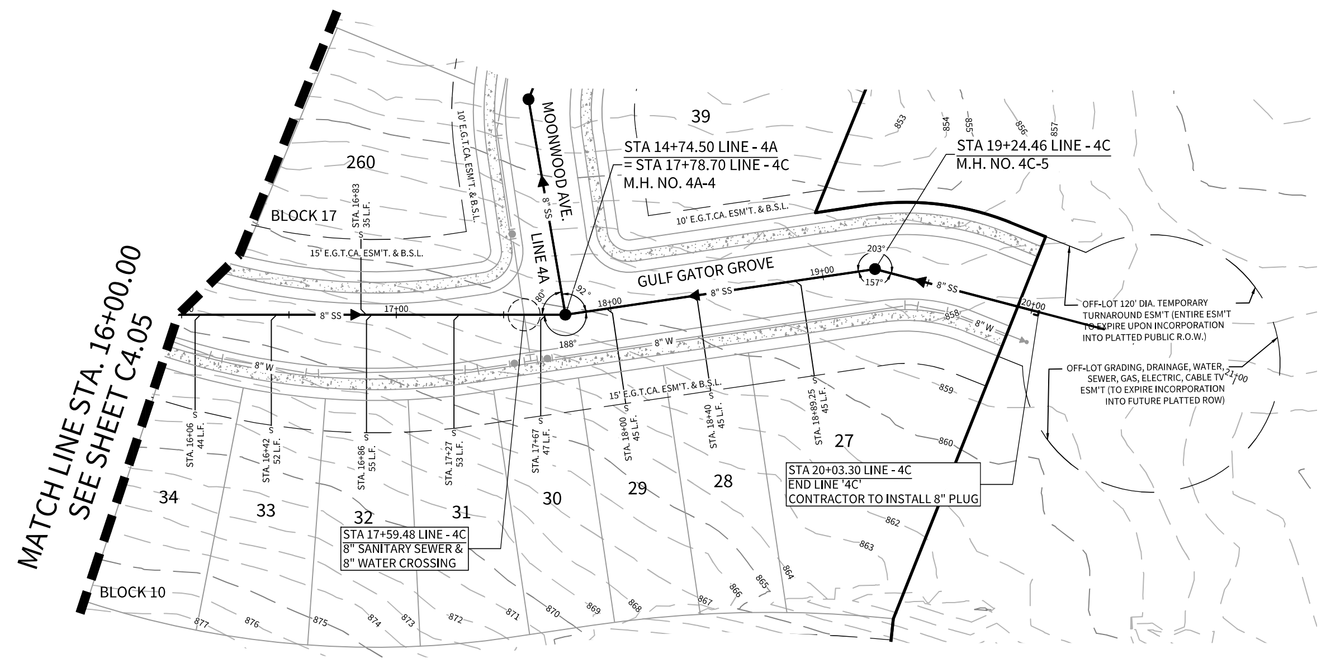
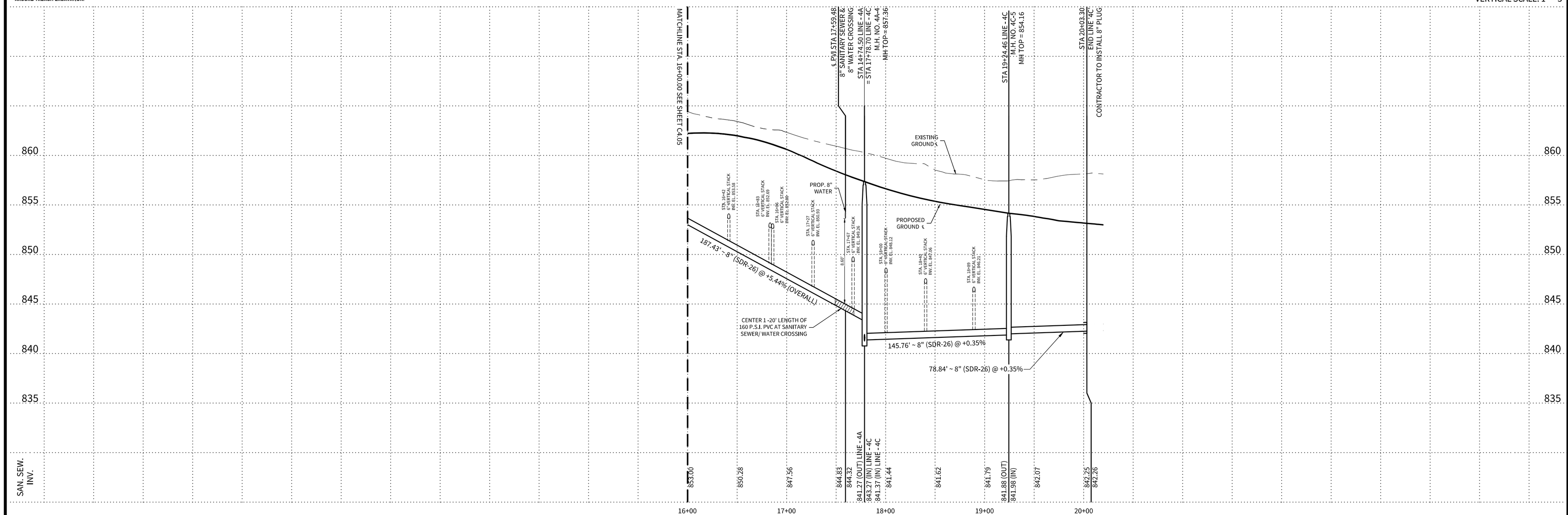


LINE 4C

STA. 16+00.00 TO STA. 18+89.25

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



SCALE: 1"=50'
50 25 0 50

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GRACE VALLEY RANCH
PHASE 4A

SANITARY SEWER PLAN AND PROFILE - LINE 4C

DATE
11/17/2025

PROJECT NO.
03346.017

DRAWN BY
AG/JF

CHECKED BY
K.M.H.

REVISIONS
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STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED
PROFESSIONAL ENGINEER
11/17/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C4.06

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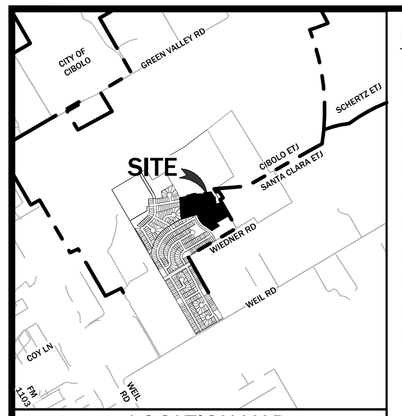

LOCATION MAP N.T.S.

LEGEND

- EXISTING SANITARY SEWER — EX.8"SS
- PROPOSED SANITARY SEWER — 8"SS
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- PROPOSED WATER MAIN — 8"W
- PROPOSED STANDARD FIRE HYDRANT
- PROPOSED SANITARY SEWER LATERAL — LS
- ELECTRIC, GAS, TELEPHONE, & CABLE T.V. EASEMENT — E.G.T.CA. ESM'T
- EXISTING MAJOR CONTOURS — 850
- EXISTING MINOR CONTOURS — 857

KEYNOTES

(A) INSTALL 6" SANITARY SEWER WYE AT 2.0% SLOPE AND SANITARY SEWER LATERAL. (AND VERTICAL STACKS IF REQUIRED SEE PROFILE)

SCALE: 1"=50'
50 25 0 50

DEVELOPER:
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CIVIL ENGINEER:
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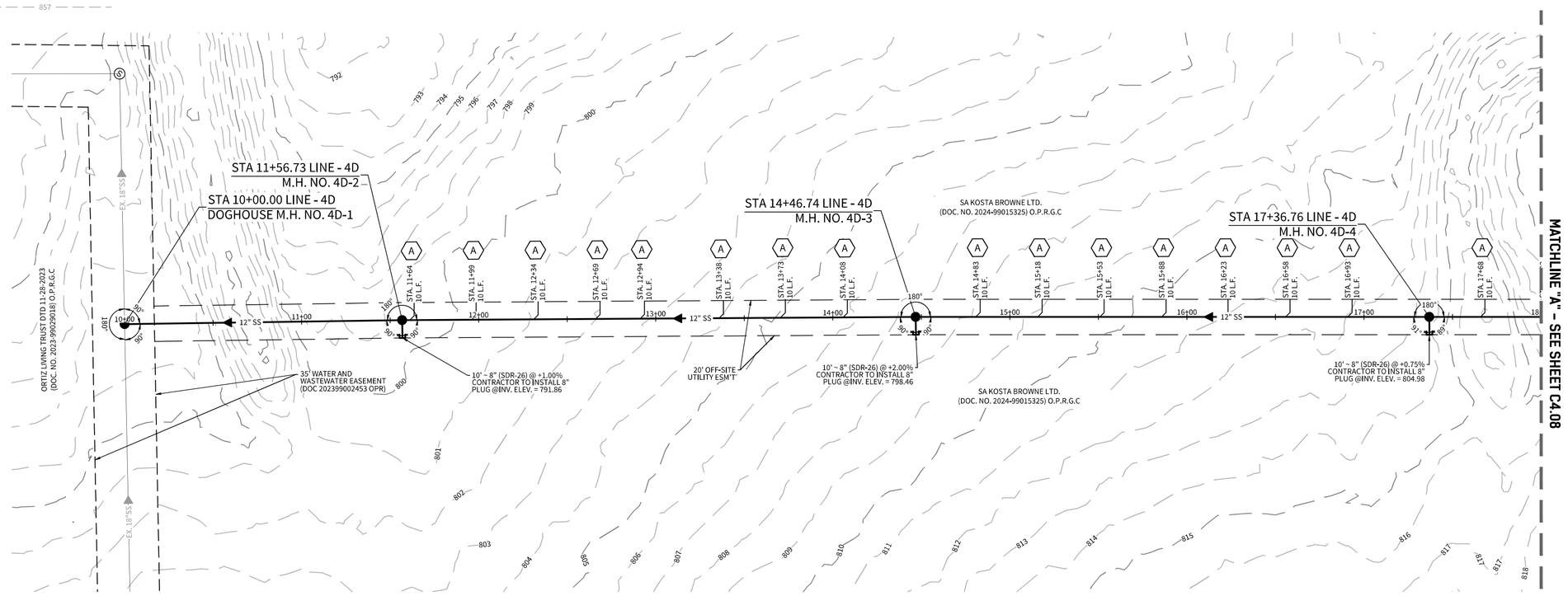
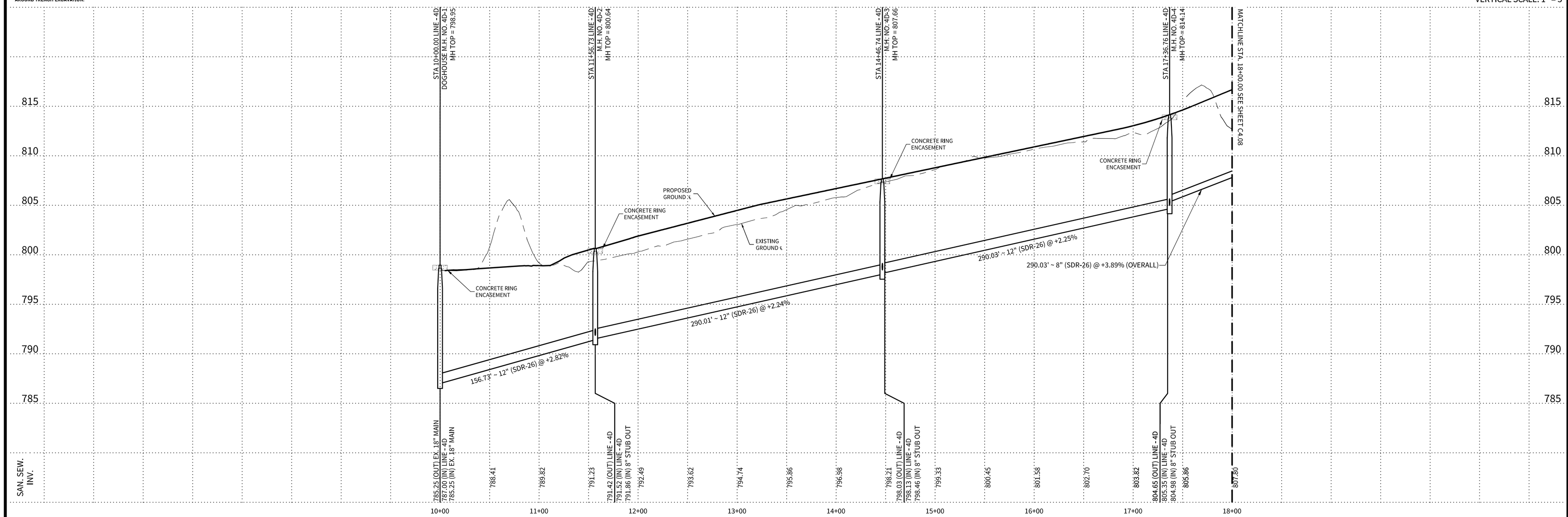


LINE 4D

STA. 10+00.00 TO STA. 18+00.00

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



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GRACE VALLEY RANCH
PHASE 4A

SANITARY SEWER PLAN AND PROFILE - LINE 4D

DATE
11/14/2025

PROJECT NO.
03346.017

DRAWN BY
AG/JF

CHECKED BY
K.M.H.

REVISIONS
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C4.07

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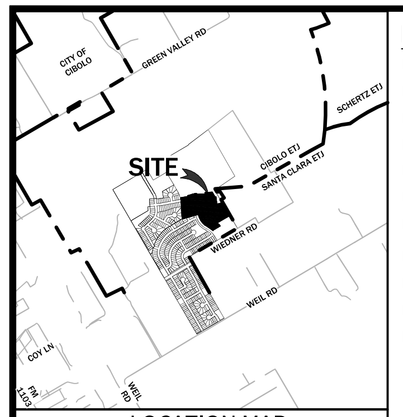

LOCATION MAP N.T.S.

LEGEND

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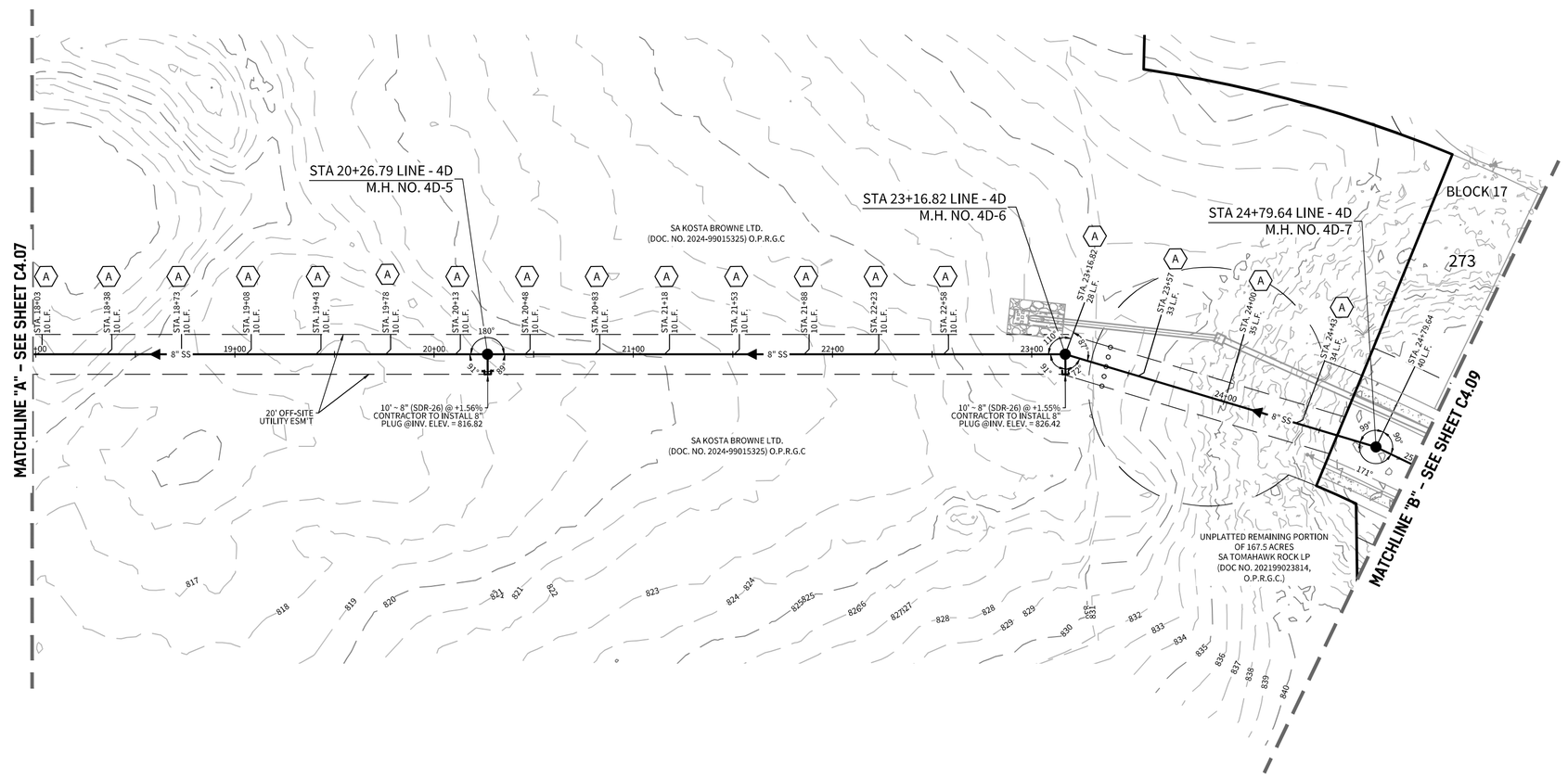
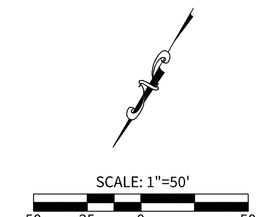
KEYNOTES

(A) INSTALL 6" SANITARY SEWER WYE AT 2.0% SLOPE AND SANITARY SEWER LATERAL. (AND VERTICAL STACKS IF REQUIRED SEE PROFILE)

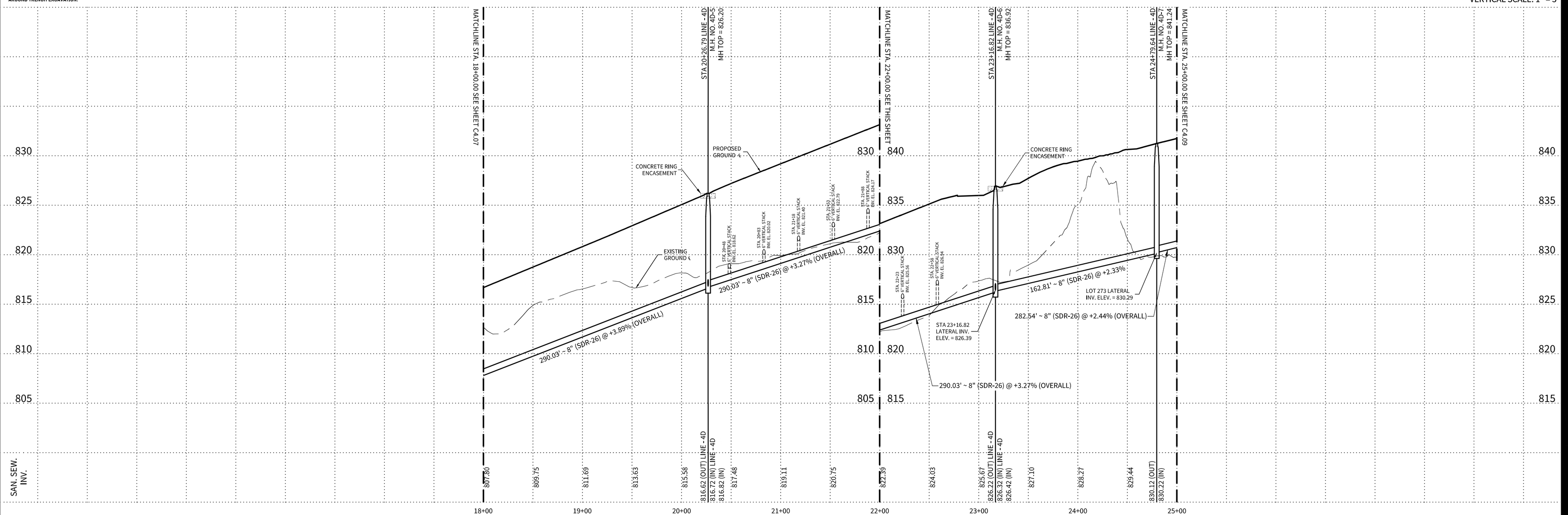




LINE 4D

STA. 18+00.00 TO STA. 25+00.00

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



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CUDE ENGINEERS EST. 1980

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

GRACE VALLEY RANCH
PHASE 4A

SANITARY SEWER PLAN AND PROFILE - LINE 4D

DATE
11/13/2025

PROJECT NO.
03346.017

DRAWN BY
AG/JF

CHECKED BY
K.M.H.

REVISIONS
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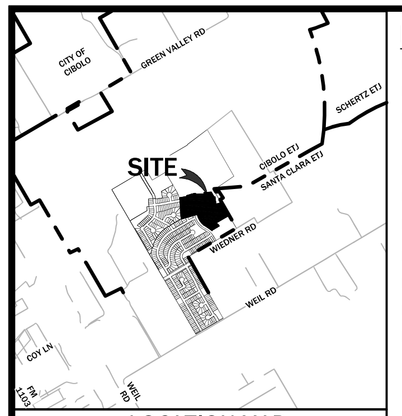
STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED PROFESSIONAL ENGINEER
11/17/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C4.08

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



LOCATION MAP N.T.S.

LEGEND

- EXISTING SANITARY SEWER — EX.8"SS
- PROPOSED SANITARY SEWER — 8"SS
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- EXISTING WATER MAIN — EX.8"W
- PROPOSED WATER MAIN — 8"W
- PROPOSED STANDARD FIRE HYDRANT
- PROPOSED SANITARY SEWER LATERAL
- ELECTRIC, GAS, TELEPHONE, & CABLE T.V. EASEMENT — E.G.T.CA. ESM'T
- EXISTING MAJOR CONTOURS — 850
- EXISTING MINOR CONTOURS — 857

KEYNOTES

(A) INSTALL 6" SANITARY SEWER WYE AT 2.0% SLOPE AND SANITARY SEWER LATERAL. (AND VERTICAL STACKS IF REQUIRED SEE PROFILE)

SCALE: 1"=50'
50 25 0 50

DEVELOPER:

LENNAR HOMES OF TEXAS LAND AND CONSTRUCTION, LTD.
CONTACT PERSON: RICHARD MOTT
100 NE LOOP 410, SUITE 1155
SAN ANTONIO, TX 78216
TEL: (210) 403-6200

CIVIL ENGINEER:

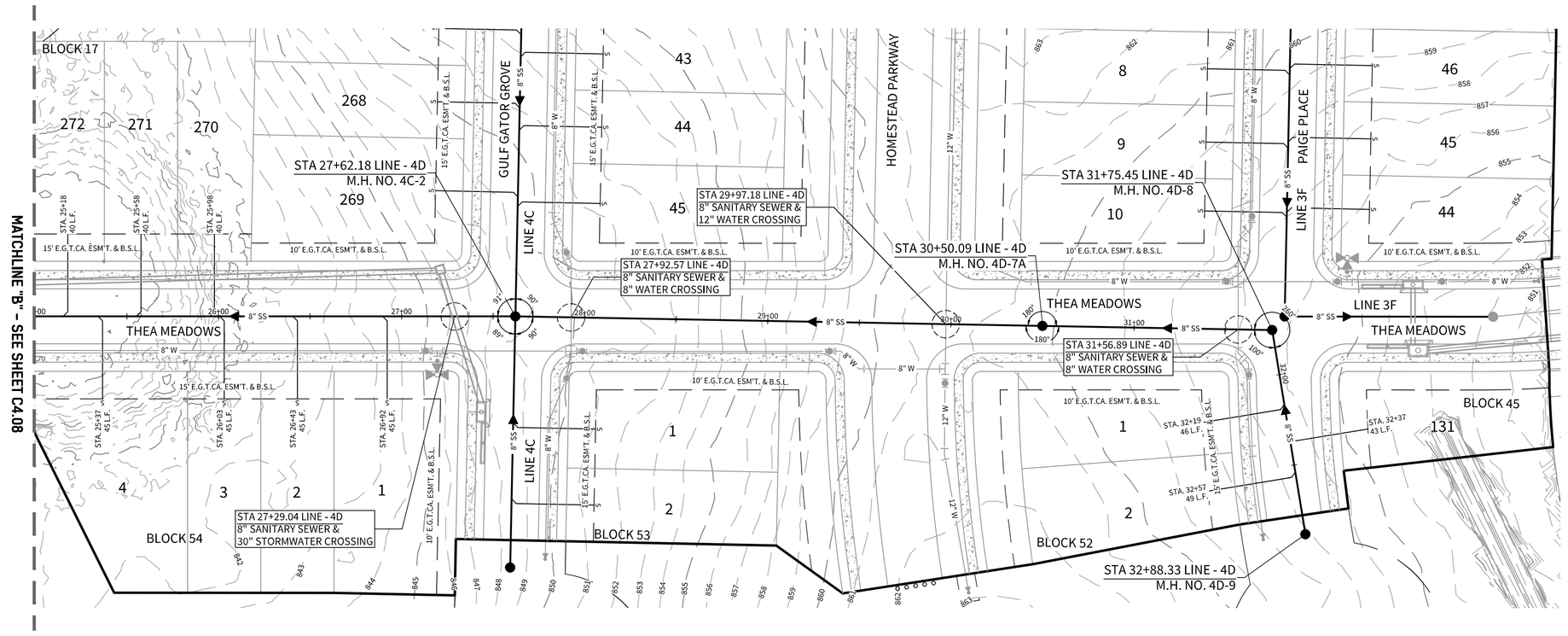
CUDE ENGINEERS
CONTACT PERSON: KYLE HUDEK, P.E.
4122 POND HILL ROAD, SUITE 101
SAN ANTONIO, TX 78231
TEL: (210) 681-2951
FAX: (210) 523-7112

CAUTION!!!

THE CONTRACTOR SHALL BE AWARE THAT EXISTING UTILITIES ARE WITHIN THE SITE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.

TRENCH EXCAVATION SAFETY PROTECTION

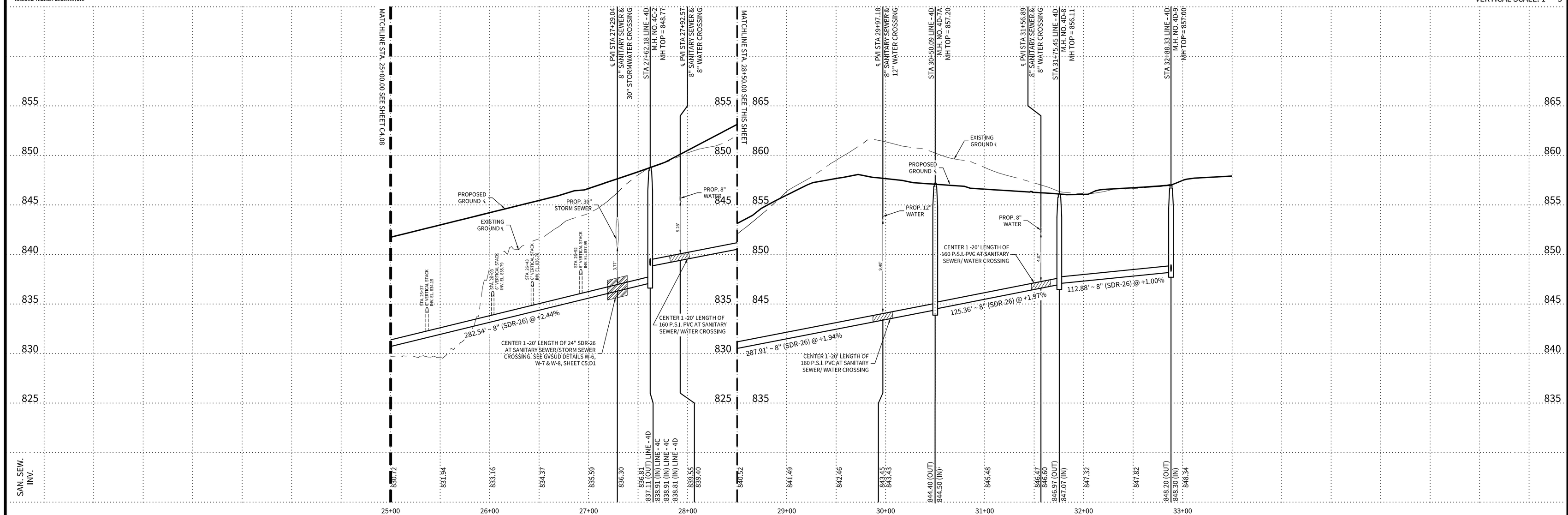
CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S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



LINE 4D

STA. 25+00.00 TO STA. 32+88.33

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



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GRACE VALLEY RANCH
PHASE 4A

SANITARY SEWER PLAN AND PROFILE - LINE 4D

DATE
10/06/2025

PROJECT NO.
03346.017

DRAWN BY
AG/JF

CHECKED BY
K.M.H.

REVISIONS
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STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED
PROFESSIONAL ENGINEER
10/07/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C4.09

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

GVSUD WASTEWATER NOTES

General:

1. Noise and odor impacts shall be considered in design.
2. Piping friction losses shall be calculated with a Hazen-Williams coefficient no greater than 130.
3. Sanitary tapping saddles are not allowed.
4. Low pressure sanitary sewer collection systems are not allowed.
5. Force mains, and valves shall be located outside of roadways, pavement, curbs, etc., unless specifically approved otherwise.
6. All force mains to be installed 4-feet minimum behind back of curb.
7. Force mains shall be installed in a 20-foot dedicated GVSUD sanitary sewer easement. Installation in ROW will not be allowed.
8. Gravity wastewater mains may be installed within roadways.
9. All piping shall be designed in straight alignment. Pipe deflection is not allowed. Gravity mains shall not be more than 20-feet below finished grade as measured from pipe invert to finished grade.
10. All sanitary sewer mains and laterals entering manholes at a distance of 24-inches or greater from penetration to invert shall be external drop manholes.
11. Wastewater pipe joints shall be centered at crossings with all other utilities. Both pipe joints shall be centered where water crosses wastewater 10-feet in either direction, including wastewater laterals.
12. Maintain a minimum of 10-feet horizontal and 24-inch vertical clearance between water/wastewater and other utilities. Shared trenches are not allowed.
13. Wastewater piping (including mains, services, and laterals) shall be sleeved if located under box culverts, single barrel, or multiple barrel storm sewer crossings regardless of size.
14. Profile all water, wastewater, and storm piping regardless of size. Show all utility crossings on all profiles. Show wastewater service laterals on storm. Show/overlay water and storm profiles onto wastewater piping profiles.
15. Air release valves shall be provided for all force mains regardless of main size.
16. Force main deflection is not allowed. All bends shall be MJ restrained and coated per TAC guidelines.
17. Force main plug valves shall be installed every 2,000-feet minimum.
18. Force mains shall be 4-inch minimum diameter.
19. Service laterals shall be 6-inch minimum diameter.
20. Service lateral stubouts for home shall be 2-feet and capped.
21. Cleanouts are to be centered in lot and on property line.
22. Cleanouts to be protected by utility defender shroud or approved equivalent.
23. All manholes are to be flow filled 6-inches minimum.
24. Provide restraint lengths at all bends.

Materials:

1. Gravity wastewater pipe and fittings shall be green color gasketed ASTM D3034 SDR26. All sanitary sewer and water crossings shall be SDR26 of at least 150 PSI pressure class.
2. Sanitary tapping saddles are not allowed.
3. Force main piping shall be green color C900 DR18 minimum. Fittings shall be AWWA C153 compact mechanical joint ductile iron with Ford Uni-Flange Series 1500 restraints or approved equivalent. Pipe bell joint restraints shall be Ford Uni-Flange Series 1300 or approved equivalent.
4. All fasteners shall be 304 stainless-steel (e.g. hardware, screws, anchor bolts, rods, flange bolts and nuts, etc.). All bolts and nuts shall be heavy hex. Field-apply nickel anti-seize compound prior to assembly. Bolts and nuts shall not be painted.
5. All buried metal pipe, fittings, and valves shall be wrapped with 8mil poly.
6. Paint shall be high-build epoxy with topcoat of polyurethane.
7. Manhole coatings shall be SewperCoat or approved equivalent. Concrete additives may be substituted in lieu of coatings per GVSUD approval.

Testing:

1. All testing shall be arranged and paid for by the contractor and witnessed by GVSUD.
2. All testing must be complete prior to paving streets.
3. The Contractor shall provide GVSUD copies of all test results prior to acceptance of the project.
4. All testing must be complete prior to performing tie-ins to existing wastewater systems.
5. All other utilities must be complete and offsite prior to performing wastewater pressure testing.
6. Contractor shall perform pre-testing to verify passing results prior to requesting GVSUD inspection. Provide connection point for GVSUD digital test gauge (quick connect).
7. Perform trench backfill density testing at intervals specified by the design engineer, exact locations to be designated by inspector. Schedule with GVSUD to witness 48 hours prior to test. Provide copies of reports to GVSUD.
8. All gravity wastewater piping shall be subject to low pressure air testing in accordance with TCEQ requirements. Infiltration and exfiltration testing are not allowed.
9. Mandrel shall be pulled by hand through all gravity wastewater mains prior to installation of corrosion resistant manhole lining, but no earlier than 30 days after backfilling is complete.
10. All manholes, regardless of vehicular traffic detouring, shall be vacuum tested after completion of backfill, compaction, and final grading of road base but prior to installation of asphalt paving and prior to installation of corrosion resistant manhole lining. Vacuum testing shall be performed with a plate type test head placed on top of completed manhole metal casting ring which has been installed and encased in concrete at final grade. Manholes shall be tested at 10-inches of mercury for 2 minutes duration. Allowable loss is 1-inch of mercury. Infiltration and exfiltration testing are not allowed.
11. Wiping of internal seams is not allowed.
12. Perform video inspection of gravity wastewater piping after application of corrosion resistant manhole lining. Flood system with water immediately prior to performing video inspection. Hang and drag a golf ball in front of camera. Pipe grade is out of tolerance if water level is more than a full golf ball. Schedule GVSUD to witness video inspection. Provide PDF and written reports to GVSUD.
13. Follow TCEQ pipe testing procedures and allowable leakage for force mains. Test every valve section (i.e. test against every valve in closed position). Test pressure shall be the maximum rating of material installed.

Construction Notes:

1. All work shall be in accordance with GVSUD standards as published at the following website: http://www.gvsud.org/
2. Material submittals shall be provided for GVSUD review and approval. Allow 21 calendar days for review.
3. All wastewater installations must be inspected and approved by GVSUD prior to backfilling or otherwise covering the work. GVSUD will reject anything backfilled prior to GVSUD approval. This includes crossings of water and wastewater by other utilities. GVSUD will perform a maximum of one (1) inspection daily for one (1) hour duration between 7:30am and 4:00pm excluding weekends and holidays. Call to schedule inspections (48-hours advance notice is required for all inspections).
4. Trench excavation and pipe installation will not be permitted until subgrade has been established. Survey staking must be installed prior to and maintained during trench excavation and pipe installation. Survey staking shall include horizontal and vertical control at a minimum of 50-foot station intervals. Survey staking shall be performed by the contractor.
5. Proper shoring and/or benching must be present at all times for anything 4-feet in depth or deeper. GVSUD will stop work until proper safety protocols have been established.
6. Backflow prevention in the form of a reduced pressure zone backflow assembly must be provided for temporary connections to existing water lines. Backflow prevention assemblies shall be tested and submitted to GVSUD by a licensed backflow prevention assembly tester.
7. Sanitary tapping saddles are not allowed.
8. All manhole sections shall be grouted. Gator tape shall not be permitted.
9. Pipe bells shall be installed in upstream direction.
10. All piping shall be installed in straight alignment. Pipe deflection is not allowed.
11. Install concrete thrust blocking and mechanical joint restraints for pressure piping systems.
12. Wastewater pipe shall be installed below all water and all joints shall be centered at crossings with all other utilities. Pipe joints shall be centered where water crosses wastewater 10-feet in either direction, including wastewater laterals.
13. Maintain a minimum of 10-feet horizontal and 24-inch vertical clearance between water and wastewater and other utilities. Shared trenches are not allowed.
14. Wastewater piping shall be sleeved if located under box culverts, single barrel, or multiple barrel storm sewer crossings regardless of size.
15. Valve boxes and appurtenances shall be painted. Provide painted curb cut markings at valves and services. Safety green for sewer, safety purple for reclaimed.
16. All exposed vertical and horizontal concrete edges shall be formed with ¾" chamfer strips. Concrete in unpaved areas shall be 2-inches above finish grade.
17. Existing manholes that are disturbed shall be restored to be in full compliance with current standards including testing, corrosion resistant lining, rings and covers, etc.
18. The contractor shall provide a competent and qualified superintendent to supervise all work. The superintendent shall be present during all construction activities, including inspections.
19. No separate pay will be given to de-water trenches or other excavated areas.

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GRACE VALLEY RANCH
PHASE 4A

SANITARY SEWER GENERAL NOTES AND STANDARD DETAILS

DATE
11/05/2025

PROJECT NO.
03346.017

DRAWN BY
AG/JF

CHECKED BY
K.M.H.

REVISIONS
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STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED
PROFESSIONAL ENGINEER
11/17/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C4.D1

P:\03346\017-Civil\Cad\Plans\Phase 4A\C4.D1_SSGP.dwg 2025/11/05 1:45pm Aurelia

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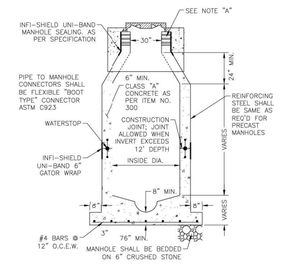
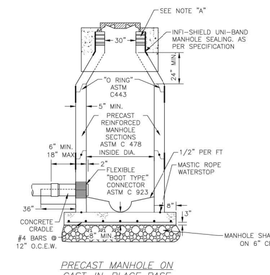
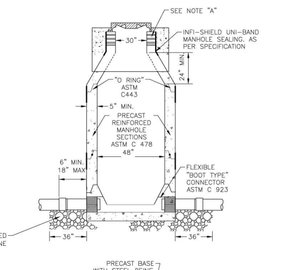


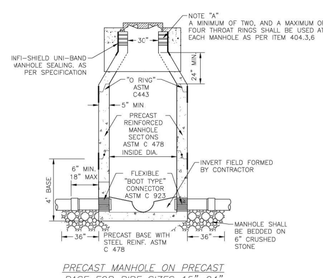
CAST-IN-PLACE MANHOLE



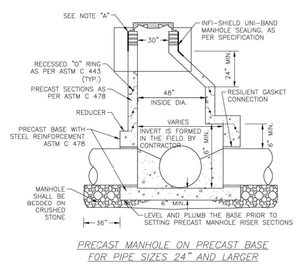
PRECAST MANHOLE ON CAST-IN-PLACE BASE



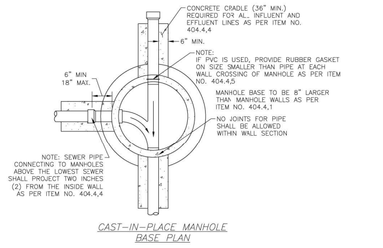
PRECAST MANHOLE ON PRECAST BASE FOR PIPE SIZES 15"-24"



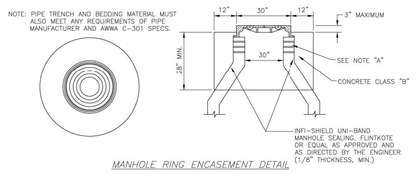
PRECAST MANHOLE ON PRECAST BASE FOR PIPE SIZES 8"-12"



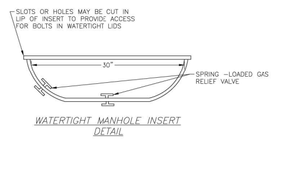
PRECAST MANHOLE ON PRECAST BASE FOR PIPE SIZES 24" AND LARGER



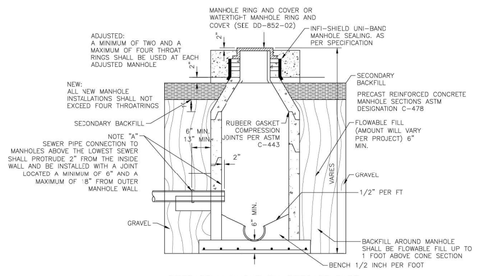
CAST-IN-PLACE MANHOLE BASE PLAN



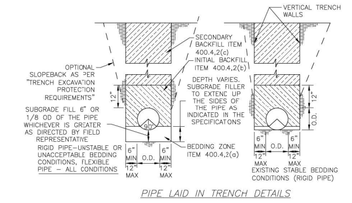
MANHOLE RING ENCASEMENT DETAIL



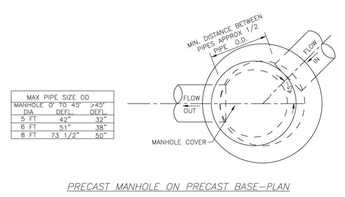
WATERTIGHT MANHOLE INSERT DETAIL



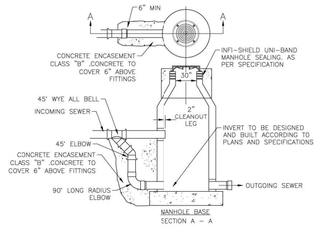
PRECAST MANHOLE ON PRECAST BASE



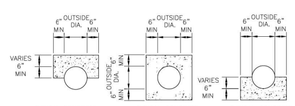
PIPE LAID IN TRENCH DETAILS

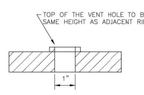


PRECAST MANHOLE ON PRECAST BASE-PLAN



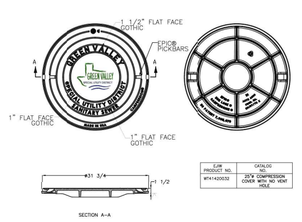
OUTSIDE DROP MANHOLE





VENT HOLE DETAIL SECTION A — A

GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	SANITARY SEWER SYSTEM STANDARD DETAILS (1 OF 2)	
REVISED: OCTOBER 2021	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. S-1

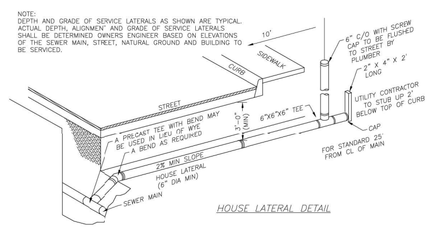


COMPRESSION COVER WITH NO HOLE

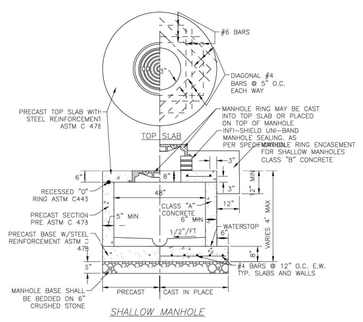
COMPRESSION COVER WITH HOLE

COMPRESSION ASSEMBLY WITH NO HOLE

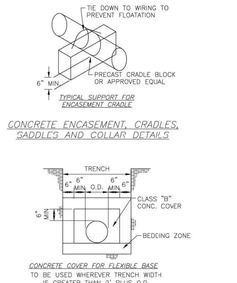
COMPRESSION ASSEMBLY WITH HOLE

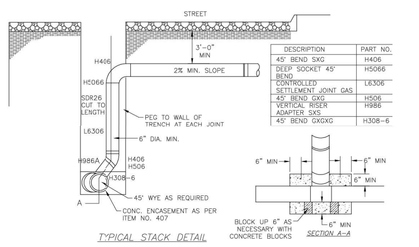


HOUSE LATERAL DETAIL

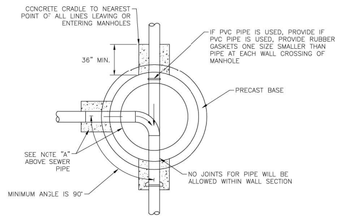


SHALLOW MANHOLE





TYPICAL STACK DETAIL



MANHOLE FLOOR PLAN

SANITARY SEWER GENERAL NOTES

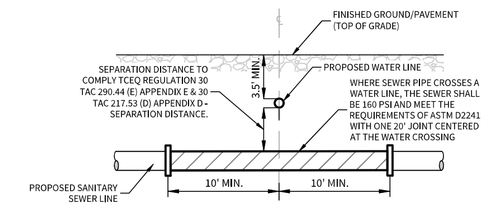
ALL NEW EXISTING SANITARY SEWER MAINS AND MANHOLES IN THIS PROJECT SHALL BE TESTED FOR EXFILTRATION AND VISUALLY INSPECTED. ALL LINES AND MANHOLES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED OR RECONSTRUCTED BY THE CONTRACTOR AT NO ADDITIONAL COST. NOTIFY GVSUD'S UTILITY INSPECTORS AT (210)372-2223 PRIOR TO ENDING.

THE EXISTING CONDITIONS OF SEWER MAINS AND MANHOLES HAVE BEEN DOCUMENTED BY GVSUD'S PRE-CONSTRUCTION VIDEO. THE SEWER LINES AND MANHOLES SHALL BE RESTORED TO THE PRE-EXISTING CONDITIONS. PRE-EXISTING CONDITION OF THE SEWER SYSTEM. IF POST CONSTRUCTION INSPECTION WORK SHOWS PORTIONS OF SANITARY SEWER MAINS OR MANHOLES DAMAGED BY THE CONTRACTOR, THE CONTRACTOR SHALL REPAIR OR REPLACE THE SEWER MAIN OR MANHOLE FOR EXPENSE, TO THE APPROVAL OF GVSUD'S INSPECTORS OR ENGINEER.

GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	SANITARY SEWER SYSTEM STANDARD DETAILS (2 OF 2)	
REVISED: OCTOBER 2021	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. S-2

ENGINEER SANITARY SEWER GENERAL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR REPLACING ANY FENCING THAT IS REMOVED OR DAMAGED DURING CONSTRUCTION TO EXISTING OR BETTER CONDITION.
2. CONTRACTOR IS TO NOTIFY ENGINEER OF ANY DISCREPANCIES OR UTILITY CONFLICTS.
3. CONTRACTOR SHALL REFERENCE TREE PLAN AND PRIVATE GRADING PLAN FOR CLEARING AND GRADING LIMITS.
4. CONTRACTOR SHALL REVEGETATE ALL DISTURBED AREAS WITHIN EASEMENT LIMITS UPON COMPLETION OF INFRASTRUCTURE



TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.

TRENCH EXCAVATION PROTECTION

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

TCEQ - 30 TAC290.44(e)

(e) LOCATION OF WATERLINES. THE FOLLOWING RULES APPLY TO INSTALLATIONS OF WATERLINES, WASTEWATER MAINS OR LATERALS, AND OTHER CONVEYANCES/APPURTENANCES IDENTIFIED AS POTENTIAL SOURCES OF CONTAMINATION. FURTHERMORE, ALL RATINGS SPECIFIED SHALL BE DEFINED BY ASTM OR AWWA STANDARDS UNLESS STATED OTHERWISE. NEW MAINS, SERVICE LINES, OR LATERALS ARE THOSE THAT ARE INSTALLED WHERE NO MAIN, SERVICE LINE, OR LATERAL PREVIOUSLY EXISTED, OR WHERE EXISTING MAINS, SERVICE LINES, OR LATERALS ARE REPLACED WITH PIPES OF DIFFERENT SIZE OR MATERIAL.

(1) WHEN NEW POTABLE WATER DISTRIBUTION LINES ARE CONSTRUCTED, THEY SHALL BE INSTALLED NO CLOSER THAN NINE FEET IN ALL DIRECTIONS TO WASTEWATER COLLECTION FACILITIES. ALL SEPARATION DISTANCES SHALL BE MEASURED FROM THE OUTSIDE SURFACE OF EACH OF THE RESPECTIVE PIECES.

(2) POTABLE WATER DISTRIBUTION LINES AND WASTEWATER MAINS OR LATERALS THAT FORM PARALLEL UTILITY LINES SHALL BE INSTALLED IN SEPARATE TRENCHES.

(3) NO PHYSICAL CONNECTION SHALL BE MADE BETWEEN A DRINKING WATER SUPPLY AND A SEWER LINE. ANY APPURTENANCE SHALL BE DESIGNED AND CONSTRUCTED SO AS TO PREVENT ANY POSSIBILITY OF SEWAGE ENTERING THE DRINKING WATER SYSTEM.

(4) WHERE THE NINE-FOOT SEPARATION DISTANCE CANNOT BE ACHIEVED, THE FOLLOWING CRITERIA SHALL APPLY.

(A) NEW WATERLINE INSTALLATION - PARALLEL LINES.

(i) WHERE A NEW POTABLE WATERLINE PARALLELS AN EXISTING, NON-PRESSURE OR PRESSURE RATED WASTEWATER MAIN OR LATERAL AND THE LICENSED PROFESSIONAL ENGINEER LICENSED IN THE STATE OF TEXAS IS ABLE TO DETERMINE THAT THE EXISTING WASTEWATER MAIN OR LATERAL IS NOT LEAKING, THE NEW POTABLE WATERLINE SHALL BE LOCATED AT LEAST TWO FEET ABOVE THE EXISTING WASTEWATER MAIN OR LATERAL, MEASURED VERTICALLY, AND AT LEAST FOUR FEET AWAY, MEASURED HORIZONTALLY, FROM THE EXISTING WASTEWATER MAIN OR LATERAL. EVERY EFFORT SHALL BE EXERTED NOT TO DISTURB THE BEDDING AND BACKFILL OF THE EXISTING WASTEWATER MAIN OR LATERAL.

(ii) WHERE A NEW POTABLE WATERLINE PARALLELS AN EXISTING PRESSURE-RATED WASTEWATER MAIN OR LATERAL AND IT CANNOT BE DETERMINED BY THE LICENSED PROFESSIONAL ENGINEER IF THE EXISTING LINE IS LEAKING, THE EXISTING WASTEWATER MAIN OR LATERAL SHALL BE REPLACED WITH AT LEAST 150 PSI PRESSURE-RATED PIPE. THE NEW POTABLE WATERLINE SHALL BE LOCATED AT LEAST TWO FEET ABOVE THE NEW WASTEWATER LINE, MEASURED VERTICALLY, AND AT LEAST FOUR FEET AWAY, MEASURED HORIZONTALLY, FROM THE REPLACED WASTEWATER MAIN OR LATERAL.

(iii) WHERE A NEW POTABLE WATERLINE PARALLELS A NEW WASTEWATER MAIN, THE WASTEWATER MAIN OR LATERAL SHALL BE CONSTRUCTED OF AT LEAST 150 PSI PRESSURE-RATED PIPE. THE NEW POTABLE WATERLINE SHALL BE LOCATED AT LEAST TWO FEET ABOVE THE WASTEWATER MAIN OR LATERAL, MEASURED VERTICALLY, AND AT LEAST FOUR FEET AWAY, MEASURED HORIZONTALLY, FROM THE WASTEWATER MAIN OR LATERAL.

(B) NEW WATERLINE INSTALLATION - CROSSING LINES.

(i) WHERE A NEW POTABLE WATERLINE CROSSES ABOVE A WASTEWATER MAIN OR LATERAL, THE SEGMENT OF THE WATERLINE PIPE SHALL BE CENTERED OVER AND MUST BE PERPENDICULAR TO THE WASTEWATER MAIN OR LATERAL SUCH THAT THE JOINTS OF THE WATERLINE PIPE ARE EQUIDISTANT AND AT LEAST NINE FEET HORIZONTALLY FROM THE CENTERLINE OF THE WASTEWATER MAIN OR LATERAL. WHEN CROSSING AN EXISTING WASTEWATER MAIN OR LATERAL AND IT IS DISTURBED OR SHOWS SIGNS OF LEAKING, THE WASTEWATER MAIN OR LATERAL SHALL BE REPLACED FOR AT LEAST NINE FEET IN BOTH DIRECTIONS (18 FEET TOTAL) WITH AT LEAST 150 PSI PRESSURE-RATED PIPE EMBEDDED IN CEMENT STABILIZED SAND (SEE CLAUSE (V) OF THIS SUBPARAGRAPH) FOR THE TOTAL LENGTH OF ONE PIPE SEGMENT PLUS 12 INCHES BEYOND THE JOINT ON EACH END.

(II) THE POTABLE WATERLINE SHALL BE AT LEAST TWO FEET ABOVE AN EXISTING, NON-PRESSURE RATED WASTEWATER MAIN OR LATERAL.

(III) THE POTABLE WATERLINE SHALL BE AT LEAST SIX INCHES ABOVE AN EXISTING, PRESSURE-RATED WASTEWATER MAIN OR LATERAL.

(ii) WHERE A NEW POTABLE WATERLINE CROSSES A NEW, NON-PRESSURE RATED WASTEWATER MAIN OR LATERAL, THE SEGMENT OF THE WATERLINE PIPE SHALL BE CENTERED OVER AND SHALL BE PERPENDICULAR TO THE WASTEWATER MAIN OR LATERAL SUCH THAT THE JOINTS OF THE WATERLINE PIPE ARE EQUIDISTANT AND AT LEAST NINE FEET HORIZONTALLY FROM THE CENTERLINE OF THE WASTEWATER MAIN OR LATERAL. THE POTABLE WATERLINE SHALL BE AT LEAST TWO FEET ABOVE THE WASTEWATER MAIN OR LATERAL. WHENEVER POSSIBLE, THE CROSSING SHALL BE CENTERED BETWEEN THE JOINTS OF THE WASTEWATER MAIN OR LATERAL. THE WASTEWATER PIPE SHALL HAVE A MINIMUM PIPE STIFFNESS OF 115 PSI AT 5.0% DEFLECTION. THE WASTEWATER MAIN OR LATERAL SHALL BE EMBEDDED IN CEMENT STABILIZED SAND (SEE CLAUSE (V) OF THIS SUBPARAGRAPH) FOR THE TOTAL LENGTH OF ONE PIPE SEGMENT PLUS 12 INCHES BEYOND THE JOINT ON EACH END. THE MATERIALS AND METHOD OF INSTALLATION SHALL CONFORM TO ONE OF THE FOLLOWING OPTIONS:

(I) WITHIN NINE FEET HORIZONTALLY OF EITHER SIDE OF THE WATERLINE, THE WASTEWATER PIPE AND JOINTS SHALL BE CONSTRUCTED WITH PIPE MATERIAL HAVING A MINIMUM PRESSURE RATING OF AT LEAST 150 PSI, AN ABSOLUTE MINIMUM VERTICAL SEPARATION DISTANCE OF TWO FEET SHALL BE PROVIDED. THE WASTEWATER MAIN OR LATERAL SHALL BE LOCATED BELOW THE WATERLINE.

CUDEENGINEERS.COM

CUDE ENGINEERS

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

GRACE VALLEY RANCH PHASE 4A

SANITARY SEWER GENERAL NOTES AND STANDARD DETAILS

DATE 06/02/2025

PROJECT NO. 03346.017

DRAWN BY AG/JF

CHECKED BY K.M.H.

REVISIONS

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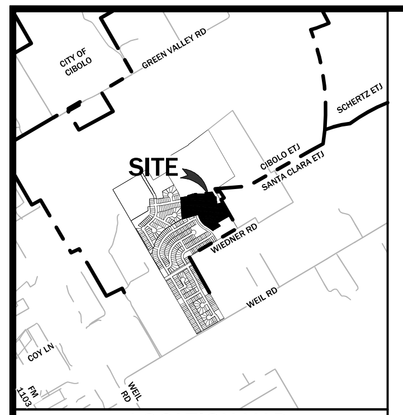
STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED
PROFESSIONAL ENGINEER
06/05/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C4.D2

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



LOCATION MAP N.T.S.

DEVELOPER:

LENNAR HOMES OF TEXAS LAND AND CONSTRUCTION, LTD.
CONTACT PERSON: RICHARD MOTT
100 NE LOOP 410, SUITE 1155
SAN ANTONIO, TX 78216
TEL: (210) 403-6200

CIVIL ENGINEER:

CUDE ENGINEERS
CONTACT PERSON: KYLE HUDEK, P.E.
4122 POND HILL ROAD, SUITE 101
SAN ANTONIO, TX 78231
TEL: (210) 681-2951
FAX: (210) 523-7112

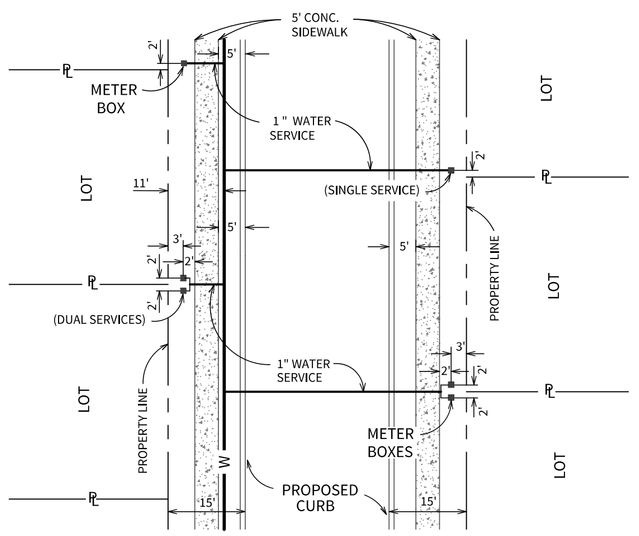
LEGEND

EXISTING SANITARY SEWER	EX.8"SS
PROPOSED SANITARY SEWER	8"SS
EXISTING WATER MAIN	EX.8"W
PROPOSED WATER MAIN	8"W
EXISTING STANDARD FIRE HYDRANT	
PROPOSED STANDARD FIRE HYDRANT	
EXISTING STANDARD GATE VALVE	
PROPOSED STANDARD GATE VALVE	
EXISTING PERMANENT BLOWOFF	
PROPOSED PERMANENT BLOWOFF	
ELECTRIC, GAS, TELEPHONE, & CABLE T.V. EASEMENT	E.G.T.C.A. ESM'T
BUILDING SETBACK LINE	B.S.L.

TRENCH EXCAVATION SAFETY PROTECTION

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

Developer's Name	LENNAR HOMES OF TEXAS LAND AND CONSTRUCTION, LTD
Developer's Address	100 NE LOOP 410, SUITE 1155
City	SAN ANTONIO State TEXAS Zip 78216
Phone #	(210) 403-6282 Fax # -
Total EDU's	82.5 Total Acreage 16
Total Linear Footage of Pipe	8" W - 3,242 L.F. 12"W - 545 L.F. Plat No. N/A
Meter Size	81 - 5/8" METER , 1 - 3/4" METER (BRR)
Number of Lots	81 Job No. N/A

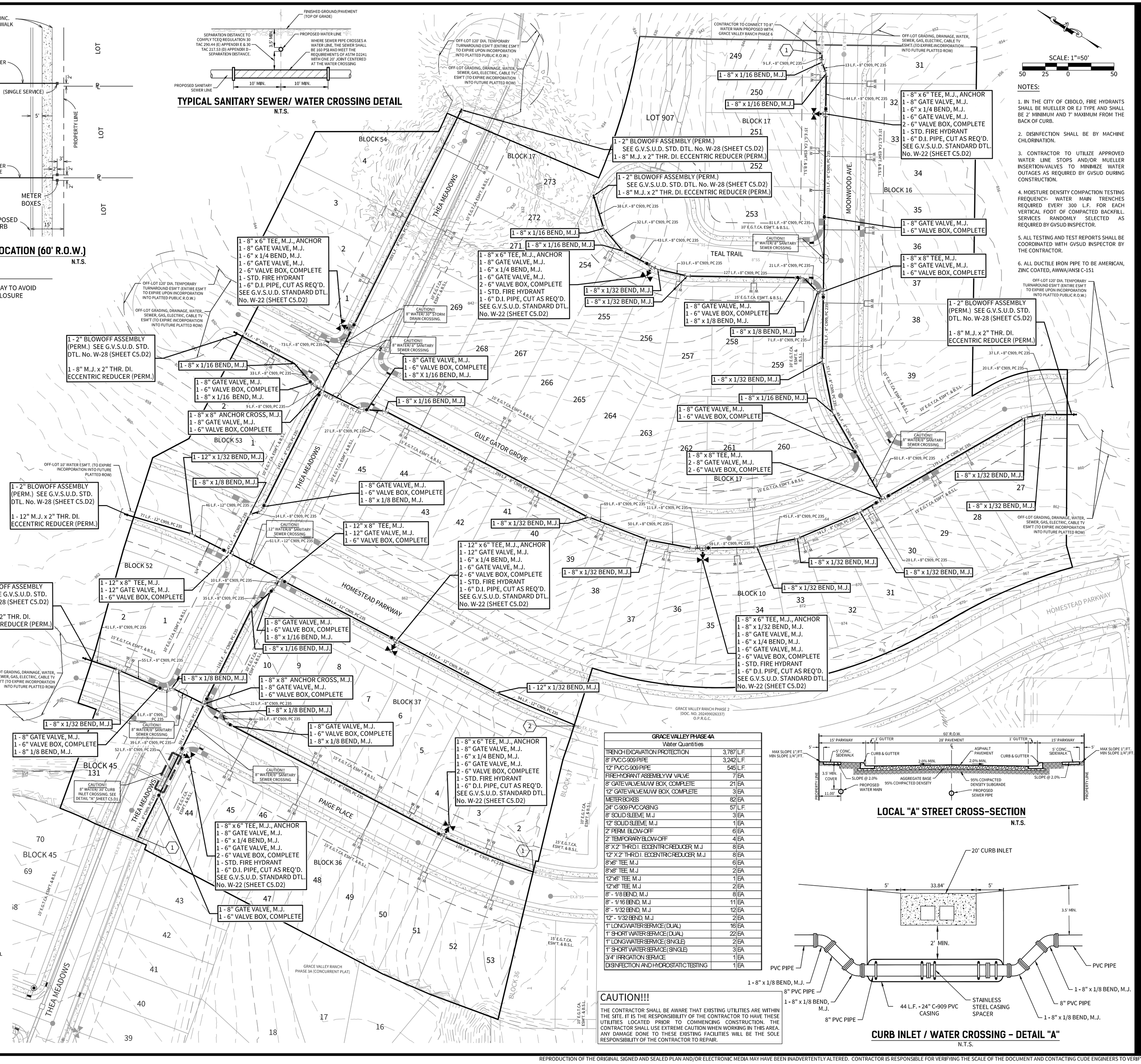


WATER METER BOX LOCATION (60' R.O.W.) N.T.S.

NOTE

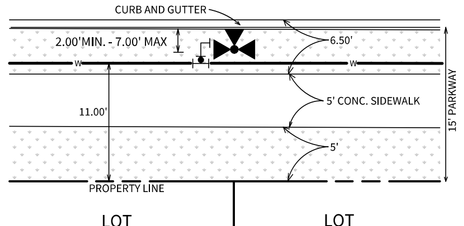
WATER METERS TO BE PLACED WITHIN RIGHT-OF-WAY TO AVOID CONFLICT WITH TRANSFORMERS/SECONDARY ENCLOSURE ELECTRIC SERVICE.

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



KEY NOTES:

1. AFTER RELEASED FOR SERVICE, CONTRACTOR TO TIE NEW 8" WATER MAIN INTO EXIST. 8" WATER MAIN. CUT AS REQUIRED. VALVE TO REMAIN CLOSED UNTIL AFTER DISINFECTION & ACCEPTANCE BY GVSUD.
   CONTRACTOR TO REMOVE:
   2" BLOW-OFF ASSEMBLY (PERM.)
   8" M.J.X2" THR. D.I. ECCENTRIC REDUCER (PERM.)
   CONTRACTOR TO INSTALL:
   1 - 8" M.J. X 2" THR. D.I. ECCENTRIC REDUCER (TEMP.)
   1 - 2" BLOW-OFF ASSEMBLY (TEMP.)
   TO BE REMOVED FOR TIE-IN AFTER NEW MAIN IS TESTED AND ACCEPTED.
   1 - 8" SOLID SLEEVE, M.J.
2. AFTER RELEASED FOR SERVICE, CONTRACTOR TO TIE NEW 12" WATER MAIN INTO EXIST. 12" WATER MAIN. CUT AS REQUIRED. VALVE TO REMAIN CLOSED UNTIL AFTER DISINFECTION & ACCEPTANCE BY GVSUD.
   CONTRACTOR TO REMOVE:
   2" BLOW-OFF ASSEMBLY (PERM.)
   12" M.J.X2" THR. D.I. ECCENTRIC REDUCER (PERM.)
   CONTRACTOR TO INSTALL:
   1 - 12" M.J. X 2" THR. D.I. ECCENTRIC REDUCER (TEMP.)
   1 - 2" BLOW-OFF ASSEMBLY (TEMP.)
   TO BE REMOVED FOR TIE-IN AFTER NEW MAIN IS TESTED AND ACCEPTED.
   1 - 12" SOLID SLEEVE, M.J.



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

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

GRACE VALLEY PHASE 4A Water Quantities	
TRENCH EXCAVATION PROTECTION	3,787 L.F.
8" PVC C-909 PIPE	3,242 L.F.
12" PVC C-909 PIPE	545 L.F.
FIRE HYDRANT ASSEMBLY W/ VALVE	7 EA
8" GATE VALVE MJ W/ BOX, COMPLETE	21 EA
12" GATE VALVE MJ W/ BOX, COMPLETE	3 EA
METER BOXES	82 EA
24" C-909 PVC CASING	57 L.F.
8" SOLID SLEEVE, M.J	3 EA
12" SOLID SLEEVE, M.J	1 EA
2" PERM. BLOW-OFF	6 EA
2" TEMPORARY BLOW-OFF	4 EA
8" X 2" THRD.I. ECCENTRIC REDUCER, M.J	8 EA
12" X 2" THRD.I. ECCENTRIC REDUCER, M.J	8 EA
8"x6" TEE, M.J	6 EA
8"x8" TEE, M.J	2 EA
12"x6" TEE, M.J	1 EA
12"x8" TEE, M.J	2 EA
8" - 1/8 BEND, M.J	8 EA
8" - 1/16 BEND, M.J	11 EA
8" - 1/32 BEND, M.J	12 EA
12" - 1/32 BEND, M.J	2 EA
1" LONG WATER SERVICE (DUAL)	16 EA
1" SHORT WATER SERVICE (DUAL)	22 EA
1" LONG WATER SERVICE (SINGLE)	2 EA
1" SHORT WATER SERVICE (SINGLE)	3 EA
3/4" IRRIGATION SERVICE	1 EA
DISINFECTION AND HYDROSTATIC TESTING	1 EA

CAUTION!!!

THE CONTRACTOR SHALL BE AWARE THAT EXISTING UTILITIES ARE WITHIN THE SITE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.

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

CURB INLET / WATER CROSSING - DETAIL "A" N.T.S.

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

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

GRACE VALLEY RANCH PHASE 4A

WATER DISTRIBUTION PLAN

DATE 11/13/2025
PROJECT NO. 03346.017
DRAWN BY AG/JF
CHECKED BY K.M.H.

REVISIONS
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STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED PROFESSIONAL ENGINEER
11/17/2025
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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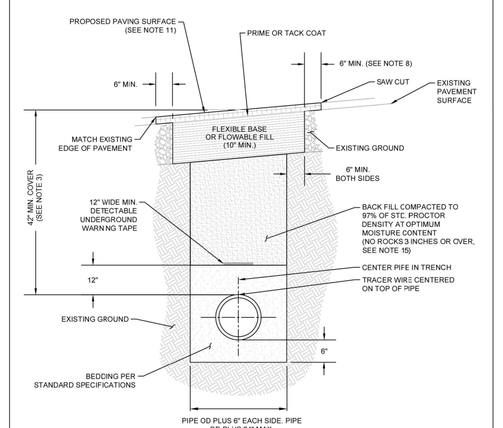
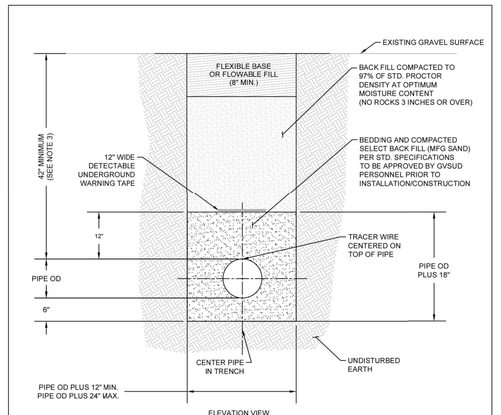


GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	TRENCH DETAIL FOR PAVED AREAS (1 OF 2)	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-1

NOTES:

1. ALL WASTEWATER PVC PIPING SHALL BE GREEN IN COLOR. NO WATER DESIGNATED PIPE SHALL BE USED IN WASTEWATER WITHOUT PRIOR APPROVAL FROM THE ENGINEER.
2. ALL WATER PIPING SHALL HAVE A MINIMUM PRESSURE CLASS OF 235 PSI WATER PVC PIPING SHALL BE BLUE IN COLOR.
3. ALL WATER LINES AND WASTEWATER FORCEMAIN SHALL HAVE 42 INCH MINIMUM COVER AND 72 INCH MAXIMUM COVER. WASTEWATER GRAVITY LINES SHALL HAVE +2 INCH MINIMUM COVER AND 15 FOOT MAXIMUM COVER.
4. GENERAL CONTRACTOR SHALL CONTACT THE APPROPRIATE STREET OWNER AND PROCESS, POST FISCAL SURETY, AND HAVE STREET CUT PERMIT ISSUED IN THEIR NAME.
5. CONTRACTOR TO REPAIR PAVED AREA TO STREET OWNER'S ROAD STANDARDS FOR ALL DISTURBED AREA. GREEN VALLEY SPECIAL UTILITY DISTRICT PAYS FOR/QUANTITY OF REPAIR SHOWN IN DETAIL.
6. CONTRACTOR SHALL NOT EXCEED THE MAXIMUM TRENCH ALLOWED AS INDICATED IN THE PLANS AND SPECIFICATIONS.
7. ANY CONCRETE PAVING SHALL BE CUT 6 INCHES WIDER THAN UNDISTURBED SIDES OF EXCAVATION.
8. IF EXCAVATION AREA IS OPEN FOR TEMPORARY PUBLIC USE, THE SURFACE SHALL BE MAINTAINED LEVEL WITH ADJACENT RIDING SURFACE WITH TEMPORARY COLD MIX ASPHALT CONCRETE OR TEMPORARY HOT MIXED ASPHALT CONCRETE. TEMPORARY MIX SHALL BE PLACED OVER FLEXIBLE BASE.
9. FLEXIBLE BASE SHALL BE REPLACED IN KIND WITH BASE AND PAVEMENT THICKNESS WITH BASE EQUAL TO EXISTING BASE THICKNESS PLUS 3 INCHES, BUT IN NO CASE LESS THAN 10 INCHES.
10. DAMAGED PAVEMENT OUTSIDE THE TRENCH CUT SHALL BE REMOVED AND REPLACED WITH A MINIMUM OF 2 INCHES HOT MIXED ASPHALT CONCRETE AND A BASE OF 10 INCHES OR A THICKNESS MATCHING EXISTING, WHICHEVER IS GREATER.
11. TACK COAT ALL EXPOSED EDGES AND SURFACES.
12. TYPE AND THICKNESS OF PROPOSED PAVING SURFACE SHALL BE AS FOLLOWS:
    - TWO COURSE SURFACE TREATMENT: SHALL MATCH EXISTING SURFACE AND SHALL BE IN ACCORDANCE WITH SPECIFICATION 02775.
    - ASPHALT PAVING: SHALL BE IN ACCORDANCE WITH SPECIFICATION 02740. HOT MIXED ASPHALT CONCRETE SHALL BE PLACED IN TWO COURSES WITH A MINIMUM OF 1.5 INCHES OF TYPE D MIX FOR THICKNESS OVER 2 INCHES AND UP TO 3 INCHES. LIFT THICKNESS SHALL NOT BE MORE THAN 3 INCHES.
13. DETECTABLE UNDERGROUND WARNING TAPE SHALL BE PLACED DIRECTLY ABOVE THE CENTERLINE OF THE PIPE AND ABOVE BEDDING, IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS. THE TAPE SHALL CONFORM TO THE SPECIFICATIONS AND COLOR CODED IN ACCORDANCE WITH APWA UNIFORM COLOR CODE.
14. PIPE BEDDING PLACED BEFORE PIPING IS LAID UP TO BOTTOM OF PIPE COMPACTED TO 95% ASHTO DENSITY.
15. PLACE PIPE BEDDING IN 12 INCH LIFTS AFTER PIPE IS LAID TO 12 INCHES ABOVE THE PIPE.
16. SELECT BACKFILL MATERIAL PLACED TO REQUIRED HEIGHT IN 6 INCH LIFTS.

GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	TRENCH DETAIL FOR PAVED AREAS (2 OF 2)	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-1

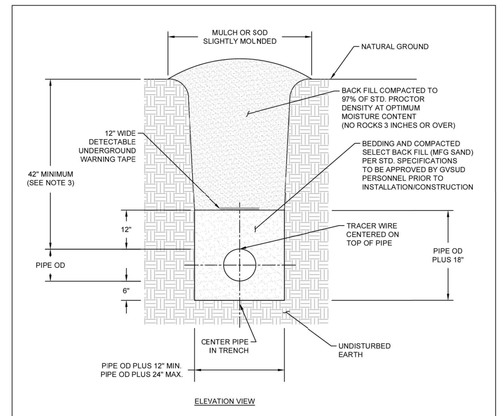


ELEVATION VIEW

NOTES:

1. ALL WASTEWATER PVC PIPING SHALL BE GREEN IN COLOR. NO WATER DESIGNATED PIPE WILL BE USED IN WASTEWATER.
2. ALL WATER PIPING SHALL HAVE A MINIMUM PRESSURE CLASS OF 235 PSI. WATER PVC PIPING SHALL BE COLOR CODED BLUE.
3. ALL WATER LINES AND WASTEWATER FORCEMAIN SHALL HAVE 42 INCHES MINIMUM COVER AND 72 INCHES MAXIMUM COVER. WASTEWATER GRAVITY LINES SHALL HAVE 42 INCHES MINIMUM COVER AND 15 FEET MAXIMUM COVER.
4. CONTRACTOR SHALL NOT EXCEED THE MAXIMUM TRENCH ALLOWED AS INDICATED IN THE PLANS AND SPECIFICATIONS.
5. DETECTABLE UNDERGROUND WARNING TAPE SHALL BE PLACED DIRECTLY ABOVE THE CENTERLINE OF THE PIPE AND ABOVE BEDDING, IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS. THE TAPE SHALL CONFORM TO THE SPECIFICATIONS AND COLOR CODED IN ACCORDANCE WITH APWA UNIFORM COLOR CODE.
6. PIPE BEDDING PLACED BEFORE PIPING IS LAID UP TO BOTTOM OF PIPE COMPACTED TO 95% ASHTO DENSITY.
7. PLACE IN 12 INCH LIFTS AFTER PIPE IS LAID TO 12 INCHES ABOVE THE PIPE.
8. SELECT BACKFILL MATERIAL PLACED TO REQUIRED HEIGHT IN 6 INCH LIFTS.

GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	TRENCH DETAIL FOR GRAVEL SURFACED AREAS	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-2

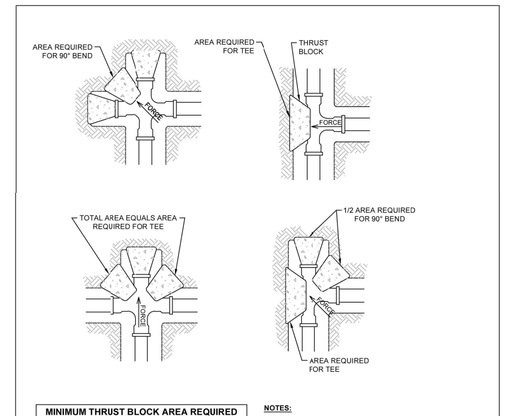


ELEVATION VIEW

NOTES:

1. ALL WASTEWATER PVC PIPING SHALL BE GREEN IN COLOR. NO WATER DESIGNATED PIPE WILL BE USED IN WASTEWATER.
2. ALL WATER PIPING SHALL HAVE A MINIMUM PRESSURE CLASS OF 235 PSI WATER PVC PIPING SHALL BE COLOR CODED BLUE.
3. ALL WATER LINES AND WASTEWATER FORCEMAIN SHALL HAVE 42 INCHES MINIMUM COVER AND 72 INCHES MAXIMUM COVER. WASTEWATER GRAVITY LINES SHALL HAVE 42 INCHES MINIMUM COVER AND 15 FEET MAXIMUM COVER.
4. CONTRACTOR SHALL NOT EXCEED THE MAXIMUM TRENCH ALLOWED AS INDICATED IN THE PLANS AND SPECIFICATIONS.
5. DETECTABLE UNDERGROUND WARNING TAPE SHALL BE PLACED DIRECTLY ABOVE THE CENTERLINE OF THE PIPE AND ABOVE BEDDING, IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS. THE TAPE SHALL CONFORM TO THE SPECIFICATIONS AND COLOR CODED IN ACCORDANCE WITH APWA UNIFORM COLOR CODE.
6. PIPE BEDDING PLACED BEFORE PIPING IS LAID UP TO BOTTOM OF PIPE COMPACTED TO 95% ASHTO DENSITY.
7. PLACE IN 12 INCH LIFTS AFTER PIPE IS LAID TO 12 INCHES ABOVE THE PIPE.
8. SELECT BACKFILL MATERIAL PLACED TO REQUIRED HEIGHT IN 6 INCH LIFTS.

GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	TRENCH DETAIL FOR NON-PAVED AREAS	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-3

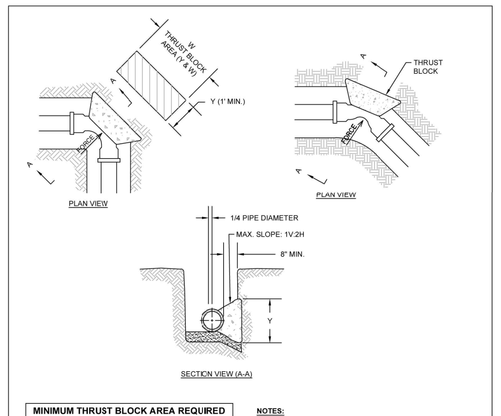


MINIMUM THRUST BLOCK AREA REQUIRED (Y AND W)		
PIPE SIZE	WATER PIPE	
	TEE, DEAD END, 90° BEND	45° AND 22.5° BENDS
4" & LESS	3 SQ. FEET	3 SQ. FEET
6"	4 SQ. FEET	3 SQ. FEET
8"	6 SQ. FEET	3 SQ. FEET
10"	9 SQ. FEET	5 SQ. FEET
12"	13 SQ. FEET	7 SQ. FEET
16"	23 SQ. FEET	12 SQ. FEET
18"	29 SQ. FEET	15 SQ. FEET

NOTES:

1. TABLE IS BASED ON SOILS WITH A MINIMUM BEARING CAPACITY OF 3,000 PSF. IT CONDITIONS ARE FOUND TO INDICATE SOIL BEARING IS LESS, THE AREAS SHALL BE INCREASED ACCORDINGLY.
2. AREAS FOR PIPE LARGER THAN 18 INCHES SHALL BE RESTRAINED.
3. THRUST BLOCKS SHALL EXTEND TO UNDISTURBED GROUND. CONCRETE SHALL BE CLASS "C" MIN. 2,500 PSI.
4. FITTINGS SHALL BE DUCTILE IRON MECHANICAL JOINT WITH A MINIMUM PRESSURE RATING OF 250 PSI AND SHALL CONFORM TO THE REQUIREMENTS OF ANSI/AWWA A21.10/C110 OR A21.53/C153.

GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	CONCRETE THRUST BLOCKING (1 OF 2)	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-4

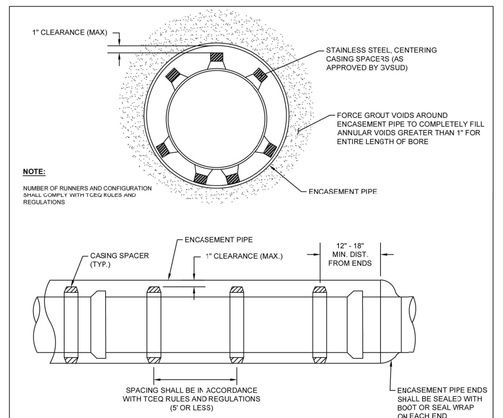


MINIMUM THRUST BLOCK AREA REQUIRED (Y AND W)		
PIPE SIZE	WATER PIPE	
	TEE, DEAD END, 90° BEND	45° AND 22.5° BENDS
4" & LESS	3 SQ. FEET	3 SQ. FEET
6"	4 SQ. FEET	3 SQ. FEET
8"	6 SQ. FEET	3 SQ. FEET
10"	9 SQ. FEET	5 SQ. FEET
12"	13 SQ. FEET	7 SQ. FEET
16"	23 SQ. FEET	12 SQ. FEET
18"	29 SQ. FEET	15 SQ. FEET

NOTES:

1. TABLE IS BASED ON SOILS WITH A MINIMUM BEARING CAPACITY OF 3,000 PSF. IT CONDITIONS ARE FOUND TO INDICATE SOIL BEARING IS LESS, THE AREAS SHALL BE INCREASED ACCORDINGLY.
2. AREAS FOR PIPE LARGER THAN 18 INCHES SHALL BE RESTRAINED.
3. THRUST BLOCKS SHALL EXTEND TO UNDISTURBED GROUND. CONCRETE SHALL BE CLASS "C" MIN. 2,500 PSI.
4. FITTINGS SHALL BE DUCTILE IRON MECHANICAL JOINT WITH A MINIMUM PRESSURE RATING OF 250 PSI AND SHALL CONFORM TO THE REQUIREMENTS OF ANSI/AWWA A21.10/C110 OR A21.53/C153.

GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	CONCRETE THRUST B_OCKING (2 OF 2)	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-4

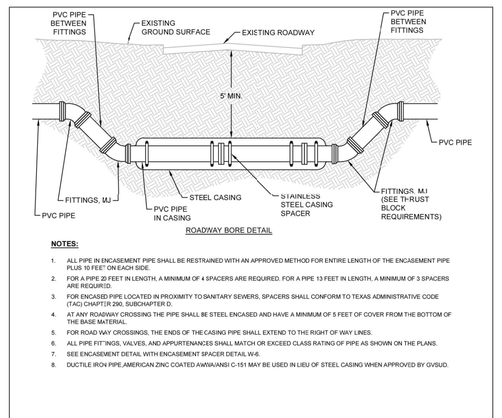


NOTE:
NUMBER OF RUNNERS AND CONFIGURATION TO BE IN ACCORDANCE WITH TCEQ RULES AND REGULATIONS

NOTES:

1. TCEQ RULES AND REGULATIONS ON SANITARY SEWER, STORM SEWER AND WATER MAIN CROSSING AND SEPARATIONS WILL BE STRICTLY ENFORCED TO TAC, CHAPTER 290, SUBCHAPTER D.
2. ALL PIPE IN ENCASEMENT PIPE SHALL BE RESTRAINED AT JOINTS FOR ENTIRE LENGTH OF THE ENCASEMENT PIPE PLUS 10 FEET ON EACH SIDE.
3. AT ANY CREEK CROSSING OR DRAINAGE DITCH THE PIPE SHALL BE ENCASED IN STEEL PIPE AND HAVE A MINIMUM OF 3 FEET OF COVER FROM THE BOTTOM OF THE BASE MATERIAL.
4. AT ANY ROADWAY CROSSING THE MAIN SHALL BE STEEL ENCASED AND HAVE A MINIMUM OF 5 FEET OF COVER FROM THE BOTTOM OF THE BASE MATERIAL.
5. BORE SHALL HAVE SUFFICIENT ROOM FOR 2" PVC O.D. (MIN) FOR FORCE GROUTING AS REQUIRED.

GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	ENCASEMENT DETAIL WITH ENCASEMENT SPACERS	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-6



ROADWAY BORE DETAIL

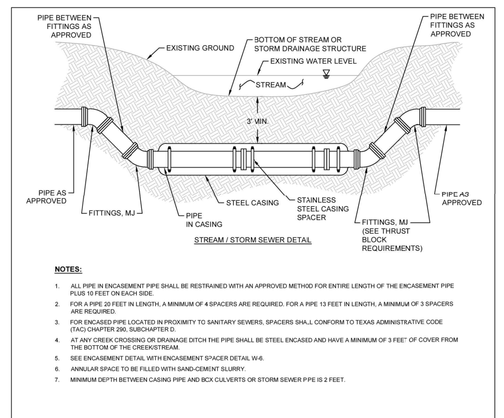
NOTES:

1. ALL PIPE IN ENCASEMENT PIPE SHALL BE RESTRAINED WITH AN APPROVED METHOD FOR ENTIRE LENGTH OF THE ENCASEMENT PIPE PLUS 10 FEET ON EACH SIDE.
2. FOR A PIPE 20 FEET IN LENGTH, A MINIMUM OF 4 SPACERS ARE REQUIRED. FOR A PIPE 13 FEET IN LENGTH, A MINIMUM OF 3 SPACERS ARE REQUIRED.
3. FOR ENCASED PIPE LOCATED IN PROXIMITY TO SANITARY SEWERS, SPACERS SHALL CONFORM TO TEXAS ADMINISTRATIVE CODE (TAC) CHAPTER 290, SUBCHAPTER D.
4. AT ANY ROADWAY CROSSING THE PIPE SHALL BE STEEL ENCASED AND HAVE A MINIMUM OF 5 FEET OF COVER FROM THE BOTTOM OF THE BASE MATERIAL.
5. FOR ROAD WAY CROSSINGS, THE ENDS OF THE CASING PIPE SHALL EXTEND TO THE RIGHT OF WAY LINES.
6. ALL PIPE FITTINGS, VALVES, AND APPURTENANCES SHALL MATCH OR EXCEED CLASS RATING OF PIPE AS SHOWN ON THE PLANS.
7. SEE ENCASEMENT DETAIL WITH ENCASEMENT SPACER DETAIL W-6.
8. DUCTILE IRON PIPE (AMERICAN ZINC COATED AMERICAN) C-151 MAY BE USED IN LIEU OF STEEL CASING WHEN APPROVED BY GVSUD.

WATER LINE IN ENCASEMENT PIPE

WATER LINE SIZE (INCHES)	NOM. DIA. STEEL (INCHES)	ENCASEMENT PIPE THICKNESS (INCHES)	PIPE WEIGHT (LBS./F.T.)
6	18	0.375	70.59
8	24	0.375	94.62
12	24	0.375	94.62
16	30	0.375	118.65
20	36	0.438	166.19
24	42	0.438	194.02
30	48	0.50	259.02
36	54	0.50	291.07

GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	INSTALLATION OF PIPE IN STEEL ENCASEMENT UNDER ROADS	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-7



STREAM / STORM SEWER DETAIL

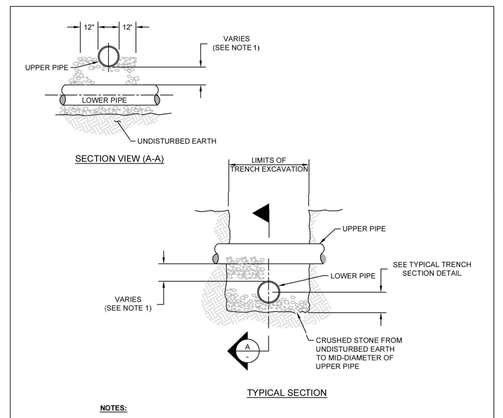
NOTES:

1. ALL PIPE IN ENCASEMENT PIPE SHALL BE RESTRAINED WITH AN APPROVED METHOD FOR ENTIRE LENGTH OF THE ENCASEMENT PIPE PLUS 10 FEET ON EACH SIDE.
2. FOR A PIPE 20 FEET IN LENGTH, A MINIMUM OF 4 SPACERS ARE REQUIRED. FOR A PIPE 13 FEET IN LENGTH, A MINIMUM OF 3 SPACERS ARE REQUIRED.
3. FOR ENCASED PIPE LOCATED IN PROXIMITY TO SANITARY SEWERS, SPACERS SHALL CONFORM TO TEXAS ADMINISTRATIVE CODE (TAC) CHAPTER 290, SUBCHAPTER D.
4. AT ANY CREEK CROSSING OR DRAINAGE DITCH THE PIPE SHALL BE STEEL ENCASED AND HAVE A MINIMUM OF 3 FEET OF COVER FROM THE BOTTOM OF THE CREEK/STREAM.
5. SEE ENCASEMENT DETAIL WITH ENCASEMENT SPACER DETAIL W-6.
6. ANNULAR SPACE TO BE FILLED WITH SAND-CEMENT SLURRY.
7. MINIMUM DEPTH BETWEEN CASING PIPE AND BOX CULVERTS OR STORM SEWER PIPE IS 2 FEET.

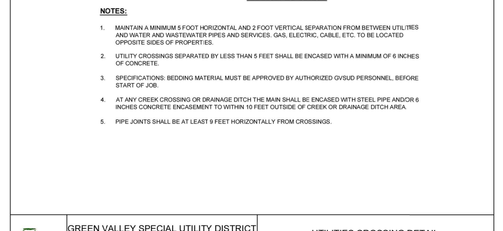
WATER LINE IN ENCASEMENT PIPE

WATER LINE SIZE (INCHES)	NOM. DIA. STEEL (INCHES)	ENCASEMENT PIPE THICKNESS (INCHES)	PIPE WEIGHT (LBS./F.T.)
6	18	0.375	70.59
8	24	0.375	94.62
12	24	0.375	94.62
16	30	0.375	118.65
20	36	0.438	166.19
24	42	0.438	194.02
30	48	0.50	259.02
36	54	0.50	291.07

GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	INSTALLATION OF PIPE IN STEEL ENCASEMENT UNDER STREAMS / STORM SEWERS	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-8



SECTION VIEW (A-A)

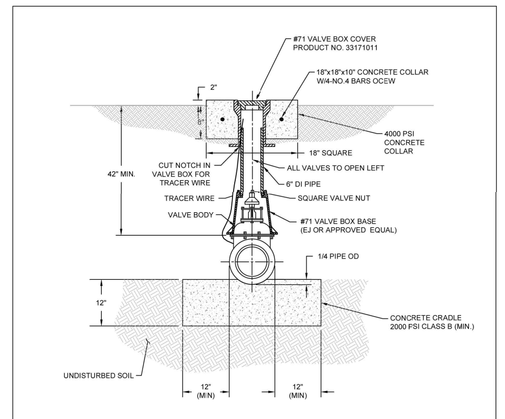


TYPICAL SECTION

NOTES:

1. MAINTAIN A MINIMUM 6 FOOT HORIZONTAL AND 2 FOOT VERTICAL SEPARATION FROM BETWEEN UTILITIES AND WATER AND WASTEWATER PIPES AND SERVICES: GAS, ELECTRIC, CABLE, ETC. TO BE LOCATED OPPOSITE SIDES OF PROPERTIES.
2. UTILITY CROSSINGS SEPARATED BY LESS THAN 6 FEET SHALL BE ENCASED WITH A MINIMUM OF 6 INCHES OF CONCRETE.
3. SPECIFICATIONS: BEDDING MATERIAL MUST BE APPROVED BY AUTHORIZED GVSUD PERSONNEL, BEFORE START OF JOB.
4. AT ANY CREEK CROSSING OR DRAINAGE DITCH THE MAIN SHALL BE ENCASED WITH STEEL PIPE AND/OR 6 INCHES CONCRETE ENCASEMENT TO WITHIN 10 FEET OUTSIDE OF CREEK OR DRAINAGE DITCH AREA
5. PIPE JOINTS SHALL BE AT LEAST 5 FEET HORIZONTALLY FROM CROSSINGS.

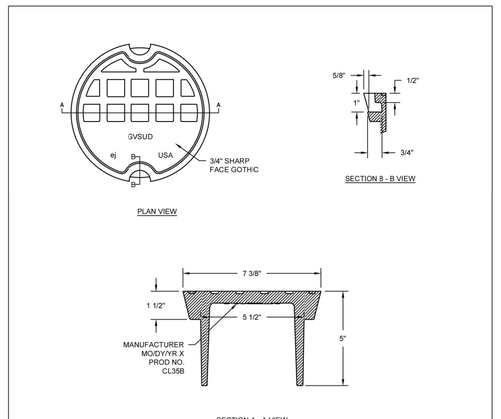
GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	UTILITIES CROSSING DETAIL	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-10



NOTES:

1. WELD 2 1/2 INCH X 2 INCH DEEP SOCKET TO 1 INCH (SCHEDULE 40) ROUND STEM EXTENSION AND ON OPERATING NUT. FOR PIPE EXTENSIONS OVER 10 FEET, STEM EXTENSION SHALL BE A SCHATTLE AT 80 PSI.
2. VALVE EXTENSIONS ARE REQUIRED ON ALL VALVES THAT EXCEED 3 FEET DEEP FROM FINISHED GRADE. VALVE EXTENSIONS SHALL BE PLACED SUCH THAT THE EXTENSION NUT IS BETWEEN 18 TO 24 INCHES FROM FINISHED GRADE.
3. CONCRETE COLLARS TO BE INSTALLED ON ALL VALVE BOXES LOCATED OUTSIDE PAVEMENT. SEE APPROPRIATE VALVE BOX ADJUSTMENT DETAILS.
4. GATE VALVES SHALL BE MUELLER TYPE OR APPROVED EQUAL.
5. FOR VALVE DEEPER THAN 8 FEET, ADD EXTENSION.
6. VALVE TURNS UNDERNEATH CAP.

GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	NON-RISING STEM VERTICAL GATE VALVE WITH BOX ASSEMBLY	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-11

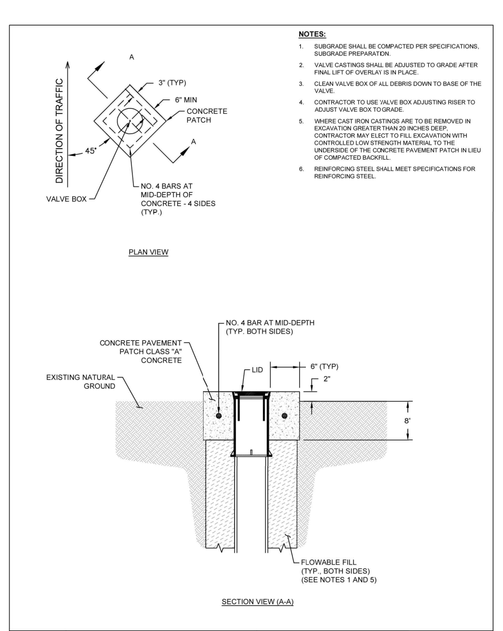


SECTION A - A VIEW

NOTES:

1. VALVE BOX COVER SHALL BE EJ GROUP, INC. STI VALVE BOX COVER PRODUCT NUMBER 3371011, OR APPROVED EQUIVALENT WITH GVSUD LOGO.
2. TYPICAL FILLET IS 3/16 INCH RADIUS.
3. LETTERING SHALL BE 3/4 INCH SHARP FACE GOTHIC AND LOCATED AS SHOWN.
4. LID REQUIRES TWO (2) PICK SLOTS.
5. THE MANUFACTURER'S IDENTIFICATION, CASTING NUMBER, AND THE COUNTRY WHERE CAST, SHALL BE DISTINCTLY CAST ONTO EACH LID.
6. DRAFT AND SHRINKAGE ALLOWANCE SHALL BE IN ACCORDANCE WITH NORMAL FOUNDRY PRACTICE.
7. FINISH BY REMOVING FINS AND FLASHING AND PAINT WITH BLACK ASPHALT COATING.

GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	VALVE BOX CASTING LID	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-12



PLAN VIEW

NOTES:

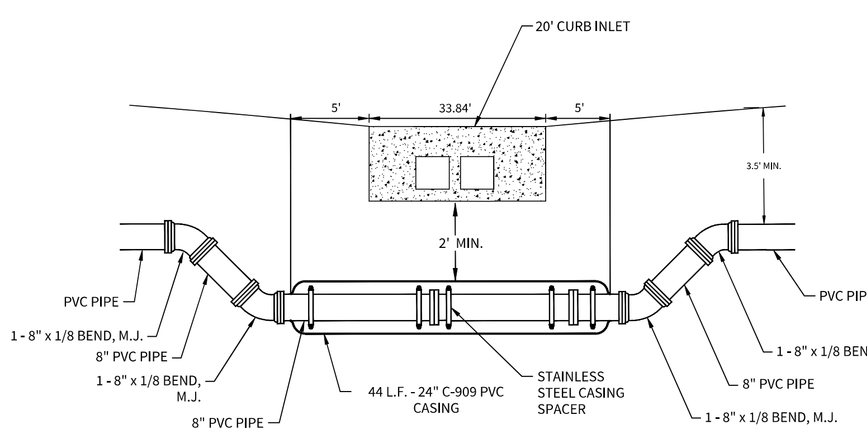
1. SUBGRADE SHALL BE COMPACTED PER SPECIFICATIONS. SUBGRADE PREPARATION.
2. VALVE CASTINGS SHALL BE ADJUSTED TO GRADE AFTER FINAL LIFT OF OVERLAY IS IN PLACE.
3. CLEAN VALVE BOX OF ALL DEBRIS DOWN TO BASE OF THE BOX.
4. CONTRACTOR TO USE VALVE BOX ADJUSTING RISER TO ADJUST VALVE BOX TO GRADE.
5. WHERE CAST IRON CASTINGS ARE TO BE REMOVED IN EXCAVATION GREATER THAN 25 INCHES DEEP BELOW THE TOP OF THE CASTING, FILL WITH CONCRETE WITH CONTROLLED LOW STRENGTH MATERIAL TO THE UNDERSIDE OF THE CONCRETE PAVEMENT PATCH IN LIEU OF COMPACTED BACKFILL.
6. REINFORCING STEEL SHALL MEET SPECIFICATIONS FOR REINFORCING STEEL.

SECTION VIEW (A-A)

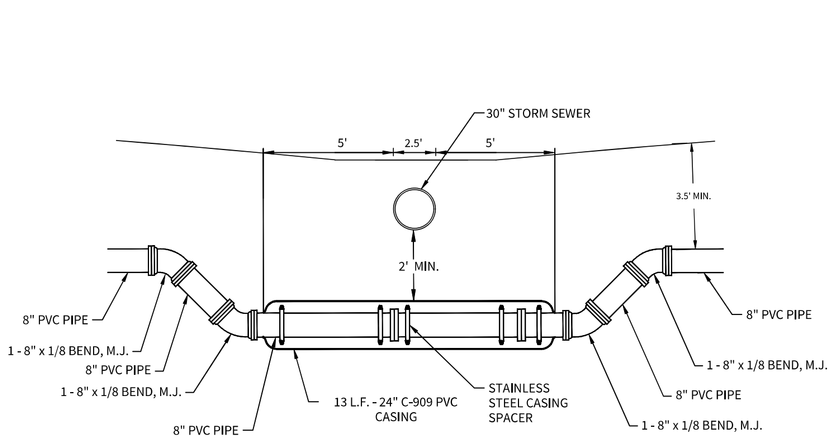
GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	VALVE BOX ADJUSTMENT OUTSIDE OF PAVEMENT	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-14

NOTES:

1. LICENSED CONTRACTOR TO OBTAIN ALL REQUIRED PERMITS FROM THE GUADALUPE COUNTY FIRE MARSHAL'S OFFICE PRIOR TO THE INSTALLATION OF THE UNDERGROUND FIRE LINE.
2. CONTRACTOR TO SUBMIT ALL UNDERGROUND FIRE LINE MATERIAL SUBMITTALS TO GUADALUPE COUNTY FIRE MARSHAL'S OFFICE FOR REVIEW AND APPROVAL.
3. CONTRACTOR TO COORDINATE UNDERGROUND FIRE LINE INSPECTIONS WITH THE GUADALUPE COUNTY FIRE MARSHAL'S OFFICE. FIRE MARSHAL INSPECTION IS REQUIRED OF ALL UNDERGROUND FIRE LINE WHEN CONSTRUCTED IN THE TRENCH PRIOR TO BACKFILLING. STAGED INSPECTIONS ARE ACCEPTABLE.
4. UNDERGROUND FIRE LINE TO BE TESTED TO GUADALUPE COUNTY FIRE MARSHAL REQUIREMENTS. CONTRACTOR TO CONTACT FIRE MARSHAL'S OFFICE WHEN READY TO PERFORM HYDROSTATIC TESTING AND FLOW RATE VERIFICATION PROCEDURES.



CURB INLET / WATER CROSSING - DETAIL "A"
N.T.S.



STORM SEWER / WATER CROSSING - DETAIL "B"
N.T.S.

CUDEENGINEERS.COM

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

GRACE VALLEY RANCH PHASE 4A

WATER DISTRIBUTION STANDARD NOTES & DETAILS

DATE
10/06/2025

PROJECT NO.
03346.017

DRAWN BY
AG/JF

CHECKED BY
K.M.H.

REVISIONS
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STATE OF TEXAS
KYLE M. HUDEK
138755
LICENSED
PROFESSIONAL ENGINEER
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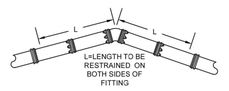


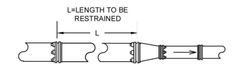
RESTRAINED LENGTH FOR BENDS

PIPE SIZE (INCHES)	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	63
16	45	25
16	22.5	13
16	11.25	7
24	90	85
24	45	35
24	22.5	17
24	11.25	9

NOTES:

1. RESTRAINED LENGTH CALCULATIONS FOR P.V.C PIPE BEDDED IN COMPACTED GRANULAR MATERIAL EXTENDING TO THE TOP OF THE PIPE; NATIVE SOIL MATERIAL IS ASSUMED TO BE INORGANIC CLAY OF HIGH PLASTICITY, DEPTH OF BURY IS ASSUMED TO BE 4 FEET.
2. THESE CALCULATIONS ARE PROVIDED FOR REFERENCE. THE RESTRAINED LENGTH SHALL BE DESIGNED BASED UPON THE CONDITIONS ENCOUNTERED DURING INSTALLATION.
3. CONTRACTOR SHALL RESTRAIN ALL JOINTS WITHIN THE REQUIRED RESTRAINT DISTANCE PLUS THE NEXT JOINT OUTSIDE THE REQUIRED RESTRAINT DISTANCE.

GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	BEND RESTRAINED LENGTH DESIGN	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-18



RESTRAINED LENGTH FOR REDUCERS

PIPE SIZE (INCHES)	SMALL SIZE (INCHES)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 PSI
6	4	32
8	4	55
8	6	32
12	4	95
12	6	80
12	8	58
16	4	131
16	6	120
16	8	104
16	12	60
24	16	110

NOTES:

1. RESTRAINED LENGTH CALCULATIONS FOR P.V.C PIPE BEDDED IN COMPACTED GRANULAR MATERIAL EXTENDING TO THE TOP OF THE PIPE; NATIVE SOIL MATERIAL IS ASSUMED TO BE INORGANIC CLAY OF HIGH PLASTICITY, DEPTH OF BURY IS ASSUMED TO BE 4 FEET.
2. THESE CALCULATIONS ARE PROVIDED FOR REFERENCE. THE RESTRAINED LENGTH SHALL BE DESIGNED BASED UPON THE CONDITIONS ENCOUNTERED DURING INSTALLATION.
3. CONTRACTOR SHALL RESTRAIN ALL JOINTS WITHIN THE REQUIRED RESTRAINT DISTANCE PLUS THE NEXT JOINT OUTSIDE THE REQUIRED RESTRAINT DISTANCE.

GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	REDUCER RESTRAINED LENGTH DESIGN	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-19

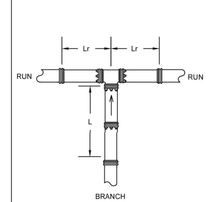
RESTRAINED LENGTH FOR DEAD END/INLINE VALVES

PIPE SIZE (INCHES)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 PSI
4	42
6	59
8	77
12	109
15	142
24	202

NOTES:

1. RESTRAINED LENGTH CALCULATIONS FOR P.V.C PIPE BEDDED IN COMPACTED GRANULAR MATERIAL EXTENDING TO THE TOP OF THE PIPE; NATIVE SOIL MATERIAL IS ASSUMED TO BE INORGANIC CLAY OF HIGH PLASTICITY, DEPTH OF BURY IS ASSUMED TO BE 4 FEET.
2. THESE CALCULATIONS ARE PROVIDED FOR REFERENCE. THE RESTRAINED LENGTH SHALL BE DESIGNED BASED UPON THE CONDITIONS ENCOUNTERED DURING INSTALLATION.
3. CONTRACTOR SHALL RESTRAIN ALL JOINTS WITHIN THE REQUIRED RESTRAINT DISTANCE PLUS THE NEXT JOINT OUTSIDE THE REQUIRED RESTRAINT DISTANCE.

GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	VALVE AND DEAD END RESTRAINED LENGTH DESIGN	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-20



Lr=LENGTH OF PIPE ALONG THE RUN FREE OF JOINTS.
Lb=LENGTH TO BE RESTRAINED

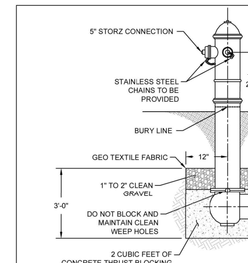
RESTRAINED LENGTH FOR TEES

PIPE SIZE (INCHES)	BRANCH SIZE (INCHES)	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	7
8	4	10	1
8	6	0	59
8	6	5	35
8	6	10	11
8	8	0	77
8	8	5	53
8	8	10	30
8	8	15	6
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
16	4	0	42
16	4	5	1
16	6	0	59
16	6	5	1
16	8	0	78
16	8	5	39
16	8	10	1
16	12	0	110
16	12	5	84
16	12	10	59
16	12	15	33
16	12	20	7
16	16	0	142
16	16	5	123
16	16	10	104
16	16	15	85
16	16	20	65
24	24	5	169
24	24	10	136
24	24	15	103
24	24	20	70

NOTES:

1. RESTRAINED LENGTH CALCULATIONS FOR P.V.C PIPE BEDDED IN COMPACTED GRANULAR MATERIAL EXTENDING TO THE TOP OF THE PIPE; NATIVE SOIL MATERIAL IS ASSUMED TO BE INORGANIC CLAY OF HIGH PLASTICITY, DEPTH OF BURY IS ASSUMED TO BE 4 FEET.
2. THESE CALCULATIONS ARE PROVIDED FOR REFERENCE. THE RESTRAINED LENGTH SHALL BE DESIGNED BASED UPON THE CONDITIONS ENCOUNTERED DURING INSTALLATION.
3. CONTRACTOR SHALL RESTRAIN ALL JOINTS WITHIN THE REQUIRED RESTRAINT DISTANCE PLUS THE NEXT JOINT OUTSIDE THE REQUIRED RESTRAINT DISTANCE.

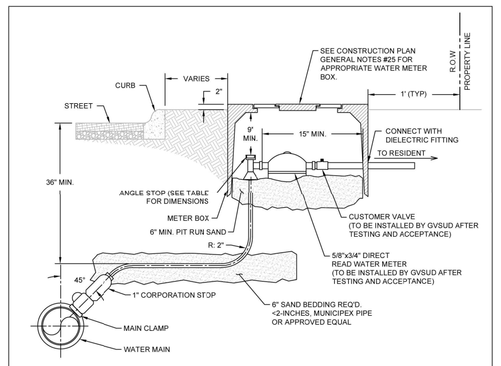
GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	TEE RESTRAINED LENGTH DESIGN	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-21



NOTES:

1. HYDRANT ASSEMBLY INCLUDES FIRE HYDRANT, VALVE, DIP, DI FITTINGS, ANCHOR RESTRAINERS, AND PIPE TO DISTRIBUTION SYSTEM
2. FIRE HYDRANTS SHALL HAVE A MINIMUM OF 7 FEET OF CLEARANCE SURROUNDING HYDRANT.
3. HYDRANTS SHALL BE A MINIMUM DISTANCE OF 5 FEET BEHIND THE CURB OR 3 FEET FROM THE R.O.W. UNDER NO CIRCUMSTANCES SHALL VALVES OR HYDRANTS BE PLACED IN A CURB OR SIDEWALK. IN AREAS WITHOUT CURBS OR SIDEWALKS, HYDRANT SHALL BE PLACED 3-6 FEET FROM THE DISTRIBUTION SYSTEM.
4. FOR BURY DEPTHS GREATER THAN 5 FEET, ONE BARREL EXTENSION NOT EXCEEDING 3 FEET IN LENGTH SHALL BE INSTALLED DIRECTLY BELOW THE FIRE HYDRANT.
5. 1 CU FOOT (MIN) OF CRUSHED STONE OR GRAVEL SHALL BE PLACED AROUND WEEP HOLE FOR A RADIUS OF 12 INCHES AND EXTEND 12 INCHES ABOVE THE OUTLET.
6. VALVE, DUCTILE IRON PIPE, AND STANDARD FIRE HYDRANT SYSTEM SHALL BE RESTRAINT JOINT CONTINUOUSLY TOGETHER.
7. FIRE HYDRANT SHALL BE 6 INCH (3) WAY HYDRANT WITH BREAK AWAY BOLTS (SHOE TYPE) PROVIDED WITH STORZ CONNECTION. DEPTH OF BURY SHALL BE 42 INCHES MINIMUM. FIRE HYDRANTS MUST BE SET PLUMB. HOSE CONNECTION MUST FACE ROADWAY.
8. HYDRANT ASSEMBLY SHALL BE RESTRAINED FROM TEE TO HYDRANT.
9. IN THE CITY OF CIBOLO'S CITY LIMITS, FIRE HYDRANTS SHALL BE MUELLER TYPE KMD SHALL BE 1 FOOT MINIMUM AND 7 FEET MAXIMUM FROM THE BACK OF CURB.
10. HYDRANTS UPPER BARREL SHALL BE FACTORY PAINTED RED WITH BONNET AND CAPS COATED PER CURRENT NFPA 291 STANDARDS.
11. HYDRANTS LOCATED IN RURAL AREAS SHALL HAVE 6" TALL POLLARD WATER FLEXFLAG #PFR6802.

GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	STANDARD HYDRANT ASSEMBLY INSTALLATION	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-22



MAIN SIZE	METER SIZE	MAIN SADDLE	CORPORATION	ANGLE STOP
<1/2"	5/8" OR 3/4"	S-91804 IP	H-15028 IP 1"	B-24258N: 1"x 3/4"
<1/2"	1"	S-91804 IP	H-15028 IP 1"	B-24258N: 1"X1"

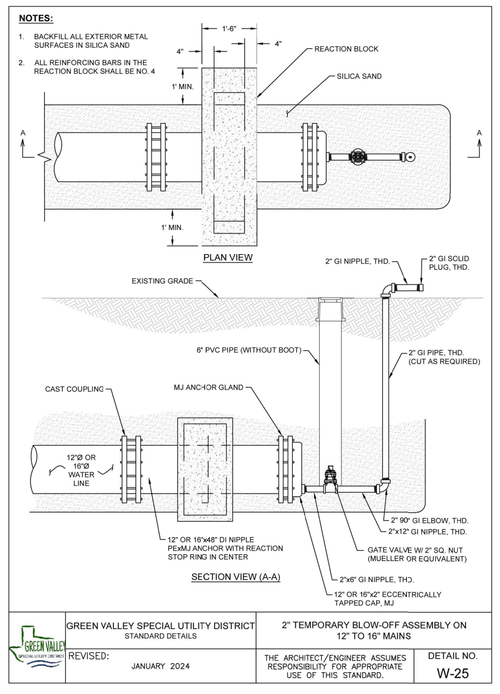
NOTES:

1. FITTINGS SHALL BE MUELLER OR APPROVED EQUAL
2. A TRACER WIRE SHALL BE INSTALLED ON THE SERVICE LINE TAPED AT 10-INCH INCREMENTS

GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	STANDARD SERVICE CONNECTION	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-23

NOTES:

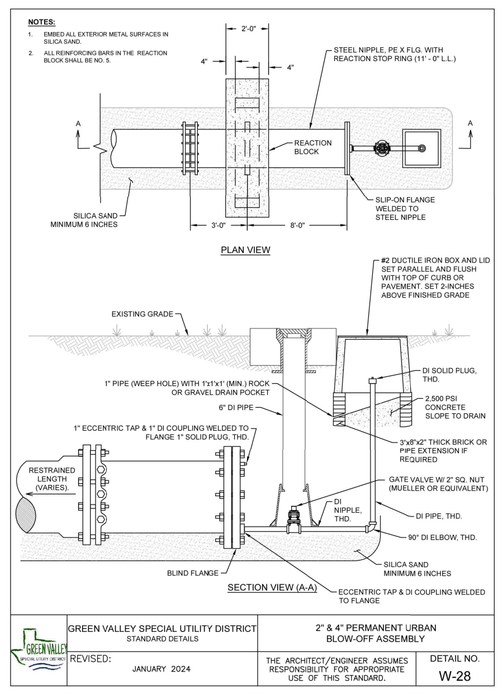
1. BACKFILL ALL EXTERIOR METAL SURFACES IN SILICA SAND
2. ALL REINFORCING BARS IN THE REACTION BLOCK SHALL BE NO. 4



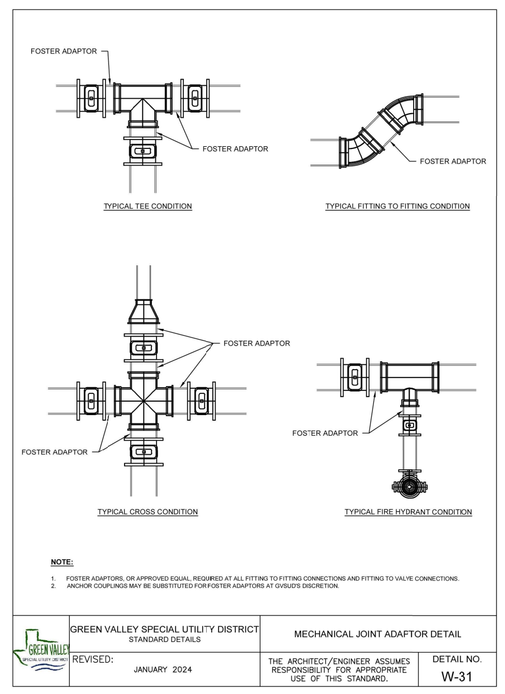
GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	2" TEMPORARY BLOW-OFF ASSEMBLY ON 12" TO 16" MAINS	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-25

NOTES:

1. EMBED ALL EXTERIOR METAL SURFACES IN SILICA SAND.
2. ALL REINFORCING BARS IN THE REACTION BLOCK SHALL BE NO. 5



GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	2" & 4" PERMANENT URBAN BLOW-OFF ASSEMBLY	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-28



NOTE:

1. FOSTER ADAPTORS, OR APPROVED EQUAL, REQUIRED AT ALL FITTING TO FITTING CONNECTIONS AND FITTING TO VALVE CONNECTIONS.
2. ANCHOR COUPLINGS MAY BE SUBSTITUTED FOR FOSTER ADAPTORS AT GVSUD'S DISCRETION.

GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	MECHANICAL JOINT ADAPTOR DETAIL	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-31

GVSUD WATER NOTES

General:

1. PVC mains 12-inches and below shall conform to AWWA C-909 pressure class 235 or above. PVC main greater than 12-inches shall conform to AWWA C-900 DR 18 or above. Water mains shall have an absolute minimum depth of 48-inches in all areas.
2. All water pipe shall be installed minimum 4-feet beyond back of curb.
3. All water mains to be installed 4-feet minimum behind back of curb.
4. No pressurized fittings under roadways, pavement, or sidewalks.
5. All water main ductile iron fittings shall be mechanical joint and conform to ANSI/AWWA C-153 or C-110. All bolts shall have copper anti-seize corrosion resistant coating. Valves shall be attached to tees by foster adaptor or anchor nipple. Foster adapter, anchor nipple, or Ford Uni-Flange retainer glands and thrust blocks shall be used on all fittings and valves.
6. Tracer wire shall be installed on all pipelines including service lines and brought into valve and meter boxes for locating purposes. Insulated water proof connectors shall be used to splice wires together. A 6-inch or 12-inch-wide detectable metal tape shall be placed above bedding initial backfill.
7. Over inserting bell joints and passing the insertion reference mark is prohibited and will require removal and reinstallation.
8. Standard fire hydrant shall include hydrant, 6-inch resilient wedge gate valve and box, anchor fittings, ductile iron pipe, and all appurtenances. Hydrants shall be limited to those manufactured by Mueller, AVK, American Flow, Clow, Or East Jordan. Only Mueller hydrants and EJ shall be used in City of Cibolo's jurisdiction. Hydrant upper barrel shall be factory painted red. Hydrants shall have a Stortz connection on steamer nozzle. Fittings for plug shall be fully restrained and tied to valve.
9. All fire hydrant assemblies shall have an in-line upstream and downstream valve.
10. All tees shall include three (3) valves.
11. Valves shall be AWWA approved resilient wedge seated gate valve, open left, and limited to those manufactured by Mueller, AVK, American Flow, Clow, Or East Jordan.
12. Valves are prohibited in ADA ramps, curbs, and roadways. Valves are prohibited in sidewalks in City of New Braunfels.
13. Meter boxes are prohibited in any sidewalks, driveways, or roadways.
14. Small service taps shall be 1-inch Rehau Municipex with CTS 200 PSI plastic insert or 2-inch Yelomine PVC ASTM D1784 with Harco fittings or approved equivalent. Small service taps to be made with single brass strap tapping saddle or dual banded stainless-steel flat-strap epoxy saddle with iron pipe threads.
15. Casing required for all long small services. 1-inch service requires 3-inch casing and 2-inch service requires 4-inch casing. Casing shall be white color PVC schedule 40 or approved equal.
16. 5/8" & ¾" meter boxes shall be DFW36C 16" x 11". All meter boxes shall be plastic with lids and knockout.
17. Dual services are not permitted.
18. Tapping machines must retain coupon.
19. Contractor to curb cut v's for valves and x's for meters and paint blue.
20. Water lines crossing cul-de-sacs shall be fully restrained under pavement and cased.
21. All street crossings are to be cased from edge of impermeable cover to edge of impermeable cover.
22. All bends, fittings, and valves shall have one (1) restraint upstream and downstream regardless of length.
23. Contractor shall chlorinate new mains per TCEQ and ANSI/AWWA C651 and dechlorinate during flushing per ANSI/AWWA C655; the contractor shall coordinate with the GVSUD inspector to witness chlorinating and pressure testing of new mains. All test results must be provided to GVSUD,
24. Operation of existing valves in the GVSUD water distribution system shall be operated by GVSUD personnel only, unless approved by GVSUD inspector.
25. New water mains and appurtenances shall pass pressure testing and pass the minimum public health standards for bacteriological quality testing prior to any tie in to the existing GVSUD water system as required by TCEQ and ANSI/AWWA.
26. Hydrostatic pressure testing shall be every 1200 LF (max) of water line or as approved by the engineer. All errors of workmanship shall be corrected immediately. All parts of the pipeline shall be backfilled and braced sufficiently to prevent movement under pressure.
27. The contractor shall provide the engineer with all the information as required so that the engineer can supply GVSUD the GIS package for approval.
28. A final walk through for field acceptance will be scheduled with the contractor after the preliminary walk-through punch list items have been completed.
29. Provide restraint lengths at all bends, valves, tees, and all other fittings.
30. All master metered distribution lines shall be protected by an RPZ backflow preventer.
31. All non-chemical fire lines shall be protected by a DCDA backflow preventer.
32. All chemically injected fire lines shall be protected by an RPZ backflow preventer.

Materials:

1. PVC mains 12 inches and below shall conform to AWWA C-909 pressure class 235 or above. PVC main greater than 12 inches shall conform to AWWA C-900 DR 18 or above. Water mains shall have an absolute minimum depth of 48 inches in all areas.
2. 2-inch service crossings shall be Yelomine ASTM D2241 or approved equivalent.
3. Tapping saddles shall be single brass strap or dual banded stainless-steel flat-strap epoxy saddle with iron pipe threads.
4. All fasteners shall be 304 stainless-steel (e.g. hardware, screws, anchor bolts, rods, flange bolts and nuts, etc.). All bolts and nuts shall be heavy hex. Field-apply nickel anti-seize compound prior to assembly. Bolts and nuts shall not be painted.
5. All buried metal pipe, fittings, and valves shall be wrapped with 8mil poly.
6. Paint shall be high-build epoxy with topcoat of polyurethane.
7. All fire hydrant leads shall be ductile iron C151 or approved equivalent.

Testing:

1. All testing shall be arranged and paid for by the contractor and witnessed by GVSUD.
2. All testing must be complete prior to paving streets.
3. The Contractor shall provide GVSUD copies of all test results prior to acceptance of the project.
4. All testing must be complete prior to performing tie-ins to existing water systems.
5. All other utilities must be complete and offsite prior to performing hydrostatic pressure testing.
6. Contractor shall perform spike test at 200 PSI for 15 minutes then reduce pressure to 150 PSI for 2 hours.
7. Contractor shall perform pre-testing to verify passing results prior to requesting GVSUD inspection. Provide connection point for GVSUD digital test gauge (quick connect).
8. Perform trench backfill density testing at intervals specified by the design engineer, exact locations to be designated by inspector. Schedule with GVSUD to witness 48 hours prior to test. Provide copies of reports to GVSUD.
9. Hydrostatic pressure testing shall be every 1200 LF (max) of water line or as approved by the engineer. All errors of workmanship shall be corrected immediately. All parts of the pipeline shall be backfilled and braced sufficiently to prevent movement under pressure.

Construction Notes:

1. All work shall be in accordance with GVSUD standards as published at the following website: http://www.gvsud.org/
2. Material submittals shall be provided for GVSUD review and approval. Allow 21 calendar days for review.
3. All water installations must be inspected and approved by GVSUD prior to backfilling or otherwise covering the work. GVSUD will reject anything backfilled prior to GVSUD approval. This includes crossings of water and wastewater by other utilities. GVSUD will perform a maximum of one (1) inspection daily for one (1) hour duration between 7:30am and 4:00pm excluding weekends and holidays. Call to schedule inspections (48-hours advance notice is required for all inspections).
4. Trench excavation and pipe installation will not be permitted until subgrade has been established. Survey staking must be installed prior to and maintained during trench excavation and pipe installation. Survey staking shall include horizontal and vertical control at a minimum of 50-foot station intervals. Survey staking shall be performed by the contractor.
5. Proper shoring and/or benching must be present at all times for anything 4-feet in depth or deeper. GVSUD will stop work until proper safety protocols have been established.
6. Backflow prevention in the form of a reduced pressure zone backflow prevention assembly must be provided for temporary connections to existing water lines. Backflow prevention assemblies shall be tested by a licensed backflow prevention assembly tester.
7. All piping shall be installed in straight alignment. Pipe deflection is not allowed.
8. Install concrete thrust blocking and mechanical restraints for pressurized piping systems.
9. Water pipe shall be installed above wastewater and all pipe joints shall be centered at crossings with all other utilities. Both pipe joints shall be centered where water crosses wastewater mains and laterals 10-feet in either direction.
10. Maintain a minimum of 10-feet horizontal and 24-inch vertical clearance between water and wastewater and other utilities. Shared trenches are not allowed.
11. Water piping shall be sleeved if located under box culverts, single barrel, or multiple barrel storm sewer crossings regardless of size.
12. Valve boxes and appurtenances shall be painted. Provide painted curb cut markings at valves and services.
13. All exposed vertical and horizontal concrete edges shall be formed with ¾" chamfer strips. Concrete in unpaved areas shall be 2" above finish grade.
14. The contractor shall provide a competent and qualified superintendent to supervise all work. The superintendent shall be present during all construction activities, including inspections.

No separate pay will be given to de-water trenches or other excavated areas.

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CUDE ENGINEERS

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GRACE VALLEY RANCH PHASE 4A

WATER DISTRIBUTION STANDARD NOTES & DETAILS

DATE 09/25/2025

PROJECT NO. 03346.017

DRAWN BY AG/JF

CHECKED BY K.M.H.

REVISIONS

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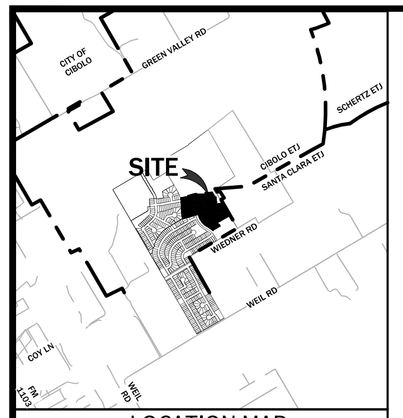
STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED PROFESSIONAL ENGINEER
10/07/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C5.D2

P:\03346\2017-2-000\04-Plans\Phase 4A\C5.D2_C5.D3 - GVSUD Dwg 2025-09-25 4:53pm Gabriela

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



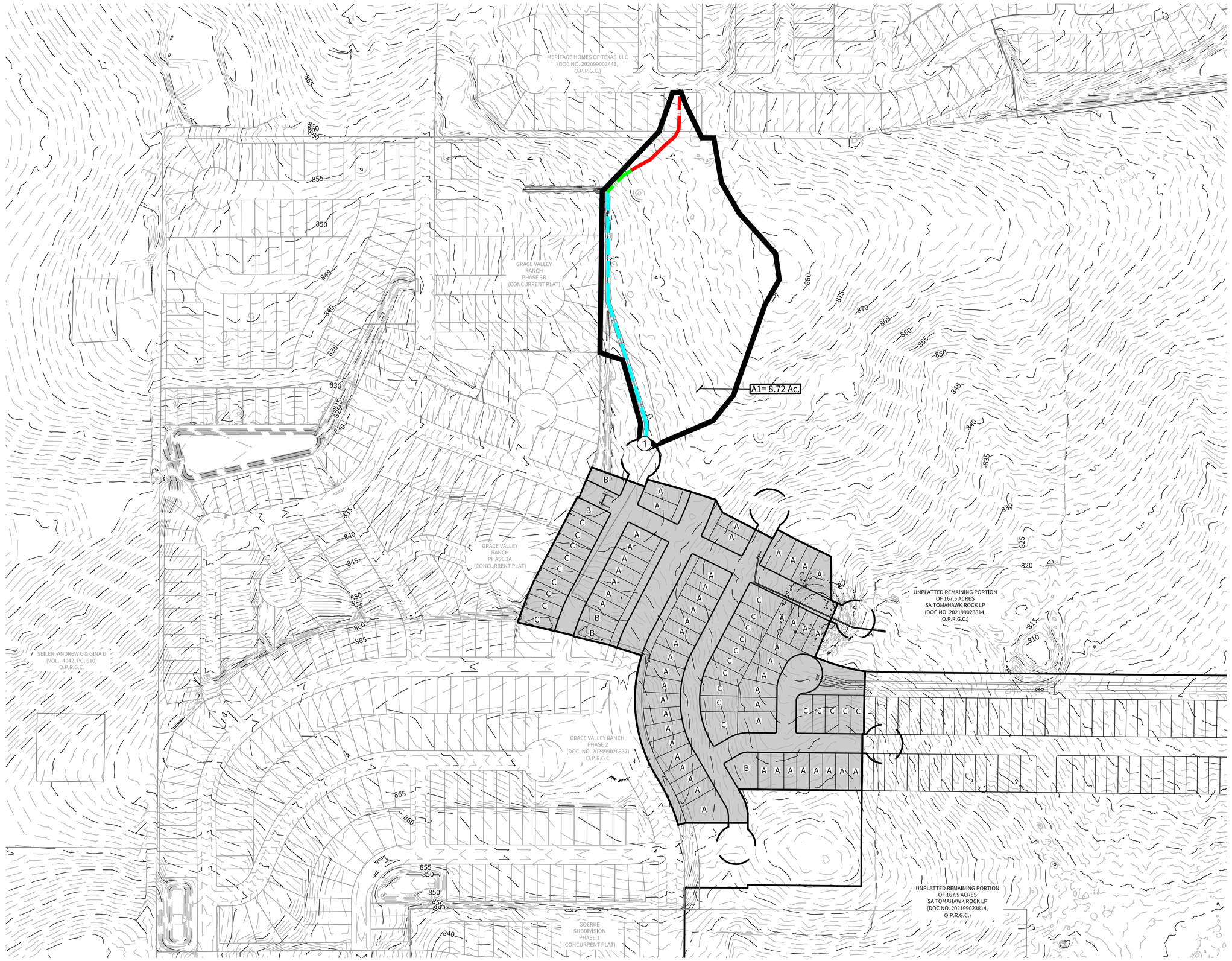
LOCATION MAP N.T.S.

LEGEND

- = UNIT BOUNDARY
- = DRAINAGE BOUNDARY
- = SHEET FLOW Tc LINE
- = SHALLOW CONCENTRATED Tc LINE
- = CONCENTRATED Tc LINE
- = ACCUMULATION POINT

Project Name: Grace Valley Phase 4A — Preci — **PA2**
Calculation Summary for Time of Concentrations & Ultimate Flow

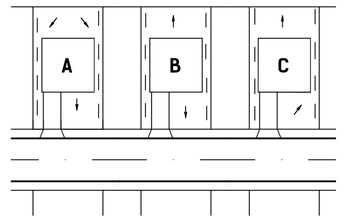
HYDROLOGY				Sheet Flow Tc Compuations						Shallow Conc. Tc Compuations					Concentrated Tc Computations			Overall	INTENSITY			Q FLOW			
Drainage Shed	Shed Area (Ac.)	AREA OF ACCUMULATION (Ac.)	C (100-YR)	*Length = 300'*	Paved (Y or N)	Upstream Elev.	Downstream Elev	Slope	Time of Concentration		Paved (Y or N)	Downstream Elev	Slope	Time of Concentration	*Length*	Velocity (fps)	Time of Concentration	Time of Concentration (min)	I5	I25	I100	Q5	Q25	Q100	Drainage Shed
A1	8.72	=A1	0.50	*300.00*	N	880.69	870.91	3.26%	18.00	*99.86*	N	866.12	4.79%	0.47	*790.13*	6	2.19	20.00	4.73	6.60	8.32	20.46	28.56	36.00	A1



SCALE: 1"=200'
200 100 0 200

DEVELOPER:
LENNAR HOMES OF TEXAS LAND AND CONSTRUCTION, LTD.
CONTACT PERSON: RICHARD MOTT
100 NE LOOP 410, SUITE 1155
SAN ANTONIO, TX 78216
TEL: (210) 403-6200

CIVIL ENGINEER:
CUDE ENGINEERS
CONTACT PERSON: KYLE HUDEK, P.E.
4122 POND HILL ROAD, SUITE 101
SAN ANTONIO, TX 78231
TEL: (210) 681-2951
FAX: (210) 523-7112



TYPICAL LOT SITE PLAN
N.T.S.

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San Antonio, Texas 78231
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GRACE VALLEY RANCH PHASE 4A

OVERALL DRAINAGE MASTER PLAN - PROPOSED CONDITIONS

DATE 05/29/2025
PROJECT NO. 03346.017
DRAWN BY AG/JF
CHECKED BY K.M.H.

REVISIONS
1.
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9.

STATE OF TEXAS — KYLE M. HUDEK — 138753 — LICENSED PROFESSIONAL ENGINEER
05/30/2025
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C6.00

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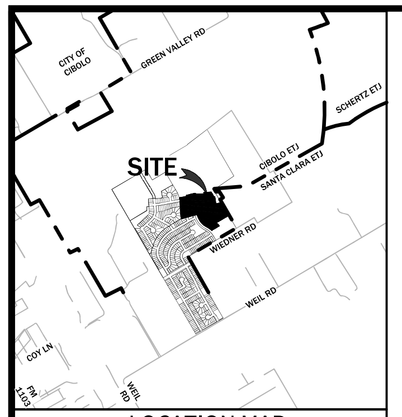


LOCATION MAP N.T.S.

LEGEND

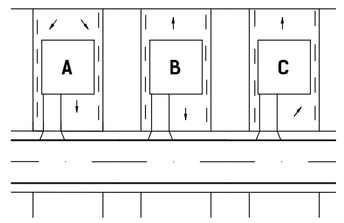
- = UNIT BOUNDARY
- = DRAINAGE BOUNDARY
- = SHEET FLOW Tc LINE
- = SHALLOW CONCENTRATED Tc LINE
- = CONCENTRATED Tc LINE
- = ACCUMULATION POINT

DEVELOPER:

LENNAR HOMES OF TEXAS LAND AND CONSTRUCTION, LTD.
CONTACT PERSON: RICHARD MOTT
100 NE LOOP 410, SUITE 1155
SAN ANTONIO, TX 78216
TEL: (210) 403-6200

CIVIL ENGINEER:

CUDE ENGINEERS
CONTACT PERSON: KYLE HUDEK, P.E.
4122 POND HILL ROAD, SUITE 101
SAN ANTONIO, TX 78231
TEL: (210) 681-2951
FAX: (210) 523-7112



TYPICAL LOT SITE PLAN
N.T.S.

SCALE: 1"=300'
300 150 0 300

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San Antonio, Texas 78231
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GRACE VALLEY RANCH PHASE 4A

OVERALL DRAINAGE MASTER PLAN - ULTIMATE CONDITIONS

DATE
08/01/2025

PROJECT NO.
03346.017

DRAWN BY
AG/JF

CHECKED BY
K.M.H.

REVISIONS
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9.

STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED
PROFESSIONAL ENGINEER
08/14/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C6.01

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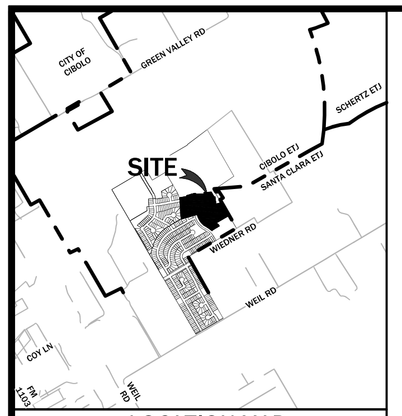

LOCATION MAP N.T.S.

DEVELOPER:

LENNAR HOMES OF TEXAS LAND AND CONSTRUCTION, LTD.
CONTACT PERSON: RICHARD MOTT
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ULTIMATE CONDITIONS

Project Name: Grace Valley Phase 4A — **Preci** — **PA2**
Calculation Summary for Time of Concentrations & Ultimate Flow

HYDROLOGY				Sheet Flow Tc Compuations						Shallow Conc. Tc Compuations					Concentrated Tc Computations			Overall	INTENSITY			Q FLOW			
Drainage Shed	Shed Area (Ac.)	AREA OF ACCUMULATION (Ac.)	C	*Length < 300'*	Paved (Y or N)	Upstream Elev.	Downstream Elev	Slope	Time of Concentration	*Length < 650'*	Paved (Y or N)	Downstream Elev	Slope	Time of Concentration	*Length*	Velocity (fps)	Time of Concentration	Time of Concentration (min)	I5	I25	I100	Q5	Q25	Q100	Drainage Shed
OS-A1	224.39	=OS-A1	0.53	*300.00*	N	897.15	885.41	3.91%	18.00	*154.58*	N	872.88	8.10%	0.56	*5993.79*	6	16.65	35.00	3.47	4.83	6.06	411.29	572.49	718.28	OS-A1
OS-A2	12.15	=OS-A2	0.52	*300.00*	N	794.00	783.69	3.44%	18.00	*650.00*	N	763.67	3.08%	3.83	*766.33*	6	2.13	23.00	4.42	6.15	7.74	27.71	38.55	48.52	OS-A2
OS-A3	11.22	=OS-A3	0.49	*300.00*	N	795.01	785.81	3.06%	18.00	*542.48*	N	766.45	3.57%	2.55	*909.33*	6	2.53	23.00	4.42	6.15	7.74	24.30	33.81	42.55	OS-A3
OS-A4	34.79	=OS-A4	0.49	*300.00*	N	825.00	823.36	0.55%	20.00	*650.00*	N	802.31	3.24%	3.72	*1777.70*	6	4.94	28.00	3.89	5.41	6.79	66.31	92.22	115.75	OS-A4
OS-A5	29.13	=OS-A5	0.49	*300.00*	N	800.00	791.22	2.93%	18.15	*650.00*	N	770.00	3.26%	3.70	*613.23*	6	1.70	23.00	4.42	6.15	7.74	63.09	87.78	110.48	OS-A5
OS-A6	8.69	=OS-A6	0.50	*300.00*	N	796.00	789.17	2.28%	19.44	*650.00*	N	759.28	4.60%	3.11	*106.98*	6	0.30	22.00	4.52	6.30	7.94	19.70	27.46	34.61	OS-A6
OS-A7	22.14	=OS-A7	0.49	*300.00*	N	800.00	791.39	2.87%	18.26	*650.00*	N	772.70	2.88%	3.57	*1061.30*	6	2.95	25.00	4.21	5.85	7.36	45.67	63.46	79.85	OS-A7
OS-A8	6.26	=OS-A8	0.49	*300.00*	N	780.00	766.05	4.65%	17.35	*396.93*	N	750.38	3.95%	2.06	*53.72*	6	0.15	19.00	4.84	6.75	8.51	14.85	20.70	26.10	OS-A8
OS-A9	2.44	=OS-A9	0.49	*300.00*	N	778.00	761.74	5.42%	16.58	*313.28*	N	749.24	3.99%	1.62	*39.09*	6	0.11	18.00	4.94	6.89	8.70	5.91	8.24	10.40	OS-A9
OS-A10	1.91	=OS-A10	0.49	*300.00*	N	784.00	779.12	1.63%	20.00	*496.67*	N	749.01	6.06%	2.68	*27.57*	6	0.08	22.00	4.52	6.30	7.94	4.23	5.90	7.43	OS-A10
OS-A11	10.63	=OS-A11	0.56	*300.00*	N	825.32	816.44	2.96%	18.08	*650.00*	N	788.23	4.34%	3.21	*240.56*	6	0.67	21.00	4.63	6.45	8.13	27.73	38.64	48.70	OS-A11
OS-A12	12.63	=OS-A12	0.52	*300.00*	N	830.75	821.51	3.08%	18.00	*650.00*	N	794.89	4.10%	3.32	*723.72*	6	2.01	23.00	4.42	6.15	7.74	28.89	40.20	50.59	OS-A12
A1	4.47	=A1	0.64	*93.80*	N	766.40	764.63	1.89%	13.22						*948.00*	6	2.63	15.00	5.26	7.34	9.27	14.95	20.86	26.34	A1
A2	4.10	=A2	0.60	*124.33*	N	763.00	760.16	2.28%	13.65						*686.68*	6	1.91	15.00	5.26	7.34	9.27	12.93	18.04	22.79	A2
A3	2.48	=A3	0.74	*75.00*	N	758.85	757.45	1.86%	13.27						*473.63*	6	1.32	14.00	5.46	7.64	9.68	10.02	14.02	17.76	A3
A4	6.45	=A4	0.71	*156.41*	N	757.14	755.00	1.37%	17.08						*623.26*	6	1.73	18.00	4.94	6.89	8.70	22.78	31.77	40.12	A4
A5	3.79	=A5	0.72	*133.26*	N	756.26	753.26	2.25%	14.17						*511.42*	6	1.42	15.00	5.26	7.34	9.27	14.28	19.93	25.17	A5
A6	1.54	=A6	0.72	*132.58*	N	750.19	748.42	1.33%	15.96						*268.45*	6	0.75	16.00	5.15	7.19	9.08	5.75	8.02	10.13	A6
A7	7.21	=A7	0.74	*212.50*	N	786.67	774.47	5.74%	14.16						*806.55*	6	2.24	16.00	5.15	7.19	9.08	27.48	38.36	48.45	A7
A8	4.64	=A8	0.74	*211.23*	N	786.76	777.90	4.19%	15.37						*976.26*	6	2.71	18.00	4.94	6.89	8.70	16.96	23.66	29.87	A8
A9	3.19	=A9	0.74	*95.00*	N	780.30	778.04	2.38%	12.25						*796.20*	6	2.21	14.00	5.46	7.64	9.68	12.89	18.03	22.85	A9
A10	6.18	=A10	0.74	*215.64*	N	785.30	776.44	4.11%	15.68						*951.51*	6	2.64	18.00	4.94	6.89	8.70	22.59	31.51	39.79	A10
A11	5.03	=A11	0.74	*211.07*	N	777.52	769.96	3.58%	15.74						*974.26*	6	2.71	18.00	4.94	6.89	8.70	18.39	25.65	32.38	A11
A12	4.58	=A12	0.74	*297.19*	N	799.49	785.84	4.59%	17.27						*523.17*	6	1.45	18.00	4.94	6.89	8.70	16.74	23.35	29.49	A12
A13	7.30	=A13	0.74	*230.00*	N	800.46	788.38	5.25%	14.87						*877.48*	6	2.44	17.00	5.05	7.04	8.89	27.28	38.03	48.02	A13
A14	6.54	=A14	0.74	*230.00*	N	805.31	799.85	2.37%	17.50						*1107.28*	6	3.08	20.00	4.73	6.60	8.32	22.89	31.94	40.27	A14
A15	4.92	=A15	0.74	*212.34*	N	805.00	800.11	2.30%	16.77						*724.75*	6	2.01	18.00	4.94	6.89	8.70	17.99	25.09	31.67	A15
A16	1.67	=A16	0.74	*67.50*	N	806.81	805.79	1.50%	13.99						*711.97*	6	1.98	15.00	5.26	7.34	9.27	6.50	9.07	11.46	A16
A17	7.24	=A17	0.74	*207.09*	N	807.29	803.86	1.65%	17.94						*1167.72*	6	3.24	21.00	4.63	6.45	8.13	24.81	34.56	43.56	A17
A18	5.80	=A18	0.74	*222.62*	N	806.00	793.22	5.74%	14.36						*594.41*	6	1.65	16.00	5.15	7.19	9.08	22.10	30.86	38.97	A18
A19	7.23	=A19	0.74	*240.00*	N	818.40	811.28	2.97%	17.07						*1133.27*	6	3.15	20.00	4.73	6.60	8.32	25.31	35.31	44.51	A19
A20	5.81	=A20	0.74	*230.00*	N	817.79	807.30	4.56%	15.44						*764.57*	6	2.12	17.00	5.05	7.04	8.89	21.71	30.27	38.22	A20
A21	5.56	=A21	0.74	*227.71*	N	823.72	818.56	2.27%	17.39						*784.91*	6	2.18	19.00	4.84	6.75	8.51	19.91	27.77	35.01	A21
A22	4.78	=A22	0.74	*138.72*	N	823.40	821.02	1.71%	15.51						*785.03*	6	2.18	17.00	5.05	7.04	8.89	17.86	24.90	31.45	A22
A23	5.33	=A23	0.74	*230.00*	N	796.00	790.55	2.37%	17.50						*526.50*	6	1.46	18.00	4.94	6.89	8.70	19.48	27.18	34.31	A23
A24	4.98	=A24	0.74	*240.00*	N	798.20	788.96	3.85%	16.15						*378.61*	6	1.05	17.00	5.05	7.04	8.89	18.61	25.94	32.76	A24
A25	9.29	=A25	0.74	*172.13*	N	830.48	827.74	1.59%	16.75						*1092.14*	6	3.03	19.00	4.84	6.75	8.51	33.27	46.40	58.50	A25
A26	6.36	=A26	0.74	*230.00*	N	820.63	814.71	2.58%	17.35						*659.42*	6	1.83	19.00	4.84	6.75	8.51	22.78	31.77	40.05	A26
A27	4.74	=A27	0.74	*245.00*	N	826.41	819.23	2.93%	17.14						*501.60*	6	1.39	18.00	4.94	6.89	8.70	17.33	24.17	30.52	A27
A28	5.68	=A28	0.74	*197.76*	N	829.34	824.64	2.38%	16.22						*422.10*	6	1.17	17.00	5.05	7.04	8.89	21.23	29.59	37.37	A28
A29	9.16	=A29	0.74	*177.21*	N	830.22	828.00	1.25%	17.93						*1511.81*	6	4.20	22.00	4.52	6.30	7.94	30.64	42.70	53.82	A29
A30	6.80	=A30	0.65	*156.38*	N	818.00	808.94	5.80%	12.82						*778.12*	6	2.16	14.00	5.46	7.64	9.68	24.19	33.84	42.88	A30
A31	8.36	=A31	0.69	*168.58*	N	825.29	815.51	5.80%	13.08						*1233.96*	6	3.43	16.00	5.15	7.19	9.08	29.80	41.60	52.53	A31
A32	5.68	=A32	0.59	*240.79*	N	846.31	840.00	2.62%	17.76						*1018.09*	6	2.83	20.00	4.73	6.60	8.32	15.87	22.14	27.91	A32
A33	6.68	=A33	0.74	*135.61*	N	849.87	845.14	3.49%	12.89						*1143.38*	6	3.18	16.00	5.15	7.19	9.08	25.46	35.54	44.88	A33
A34	6.71	=A34	0.72	*240.00*	N	849.61	846.08	1.47%	20.00						*578.77*	6	1.61	21.00	4.63	6.45	8.13	22.51	31.35	39.52	A34
A35	7.93	=A35	0.74	*143.68*	N	870.00	856.76	9.21%	11.14						*1362.99*	6	3.79	14.00	5.46	7.64	9.68	32.04	44.83	56.80	A35
A36	3.88	=A36	0.74	*134.64*	N	873.00	862.72	7.63%	10.83						*626.93*	6	1.74	12.00	5.87	8.25	10.49	16.85	23.69	30.12	A36
A37	7.20	=A37	0.74	*229.71*	N	857.95	849.73	3.58%	16.20						*798.91*	6	2.22	18.00	4.94	6.89	8.70	26.32	36.71	46.35	A37
A38	8.21	=A38	0.74	*144.96*	N	880.25	877.33	2.02%	14.98						*1494.95*	6	4.15	19.00	4.84	6.75	8.51	29.40	41.01	51.70	A38
A38a	8.21	=A38a+A39co	0.74	*145.0*	N	880.3	877.3	2.02%	14.98						*1494.95*	6	4.15	19.00	4.84	6.75	8.51	29.40	41.16	52.81	A38a
A39	3.50	=A39	0.72	*115.00*	N	872.36	869.64	2.37%	13.01						*646.37*	6	1.80	14.00	5.46	7.64	9.68	13.68	19.14	24.25	A39
A40	6.43	=A40	0.73	*230.00*	N	880.00	872.14	3.42%	16.29						*946.85*	6	2.63	18.00	4.94	6.89	8.70	23.05	32.14	40.59	A40
A41	9.20	=A41	0.74	*230.00*	N	878.47	871.78	2.91%	16.68						*1359.12*	6	3.78	20.00	4.73	6.60	8.32	32.20	44.93	56.64	A41
A42	9.24	=A42	0.74	*230.00*	N	872.08	864.00	3.51%	16.24						*1210.50*	6	3.36	19.00	4.84	6.75	8.51	33.09	46.15	58.19	A42
A43	6.82	=A43	0.74	*212.38*	N	863.91	859.03	2.30%	16.77						*1208.80*	6	3.36	20.00	4.73	6.60	8.32	23.87	33.31	41.99	A43
A44	8.44	=A44	0.74	*230.00*	N	859.42	850.71	3.79%	16.11						*1253.16*	6	3.48	19.00	4.84	6.75	8.51	30.23	42.16	53.15	A44
A45	8.68	=A45	0.74	*230.00*	N	851.27	839.83	4.97%	15.03						*1295.78*	6	3.60	18.00	4.94	6.89	8.70	31.73	44.26	55.88	A45
A46	5.06	=A46	0.67	*162.06*	N	848.28	845.78	1.54%	16.84						*698.18*	6	1.94	18.00	4.94	6.89	8.70	16.83	23.47	29.64	A46
A47	5.55	=A47	0.68	*145.59*	N	817.11	814.00	2.13%	14.81						*725.71*	6	2.02	16.00	5.15	7.19	9.08	19.42	27.11	34.23	A47
A48	9.28	=A48	0.74	*272.66*	N	880.60	876.72	1.42%	20.00						*1131.58*	6	3.14	23.00	4.42	6.15	7.74	30.35	42.23	53.15	A48
A49	7.80	=A49	0.74	*300.0*	N	867.35	852.43	4.98%	17.03	*10.76*	N	852.33	0.91%	0.12	*471.05*	6	1.31	18.00	4.94	6.89	8.70	28.51	39.77	50.22	A49
*CP1	332.95	=OS-A1+CP2O+A14+A17+A18	0.61	*300.00*	N	897.15	885.41	3.91%	18.00	*154.58*	N	864.42	13.58%	0.43	*5993.79*	6	16.65	35.00	3.47	4.83	6.06	704.93	981.22	1231.09	*CP1
*CP2	360.79	=OS-A2 + OS-A3 + A1 + CP1	0.60	*300.00*	N	897.15	885.41	3.91%	18.00	*154.58*	N	856.76	18.53%	0.37	*6515.50*	6	18.10	36.00	3.43	4.77	5.99	746.91	1038.71	1304.37	*CP2
CP3	76.71	=A2 + CP22	0.50	*300.00*	N	825.00	823.36	0.55%	20.00	*650.00*	N	802.31	3.24%	3.72	*2589.84*	6	7.19	30.00	3.68	5.11	6.41	140.35	194.88	244.46	CP3
CP4	30.84	=OS-A7 + OS-A8 + OS-A9	0.49	*300.00*	N	800.00	791.39	2.87%	18.26	*650.00*	N	772.70	2.88%	3.57	*1061.30*	6	2.95	25.00	4.21	5.85	7.36	63.62	88.40	111.22	CP4
CP5	34.63	=A5+CP4	0.51	*300.00*	N	800.00	791.39	2.87%	18.26	*650.00*	N	772.70	2.88%	3.57	*1447.58*	6	4.02	26.00	4.10	5.70	7.17	73.09	101.61	127.82	CP5
CP6	8.90	=A16+A19	0.74	*240.00*	N	818.40	811.28	2.97%	17.07						*1440.11*	6	4.00	21.00	4.63	6.45	8.13	30.49	42.48	53.54	CP6
CP7	13.82	=A15+CP6	0.74	*240.00*	N	818.40	811.28	2.97%	17.07						*1742.66*	6	4.84	21.00	4.63	6.45	8.13	47.35	65.96	83.14	CP7
CP8	18.40	=A12+CP7	0.74	*240.00*	N	818.40	811.28	2.97%	17.07						*1959.18*	6	5.44	22.00	4.52	6.30	7.94	61.54	85.78	108.11	CP8
CP9	23.43	=A11+CP8	0.74	*240.00*	N	818.40	811.28	2.97%	17.07						*3069.04*	6	8.53	25.00	4.21	5.85	7.36	72.99	101.43	127.61	CP9
CP10	10.11	=A22+A23	0.74	*138.72*	N	823.40	821.02	1.71%	15.51						*1343.95*	6	3.73	19.00	4.84	6.75	8.51	36.21	50.50	63.67	CP10
CP11	14.27	=A24+A25	0.74	*172.13*	N	830.48	827.74	1.59%	16.75						*1474.05*	6	4.09	20.00	4.73	6.60	8.32	49.95	69.69	87.86	CP11
CP12	20.32	=A28+A34+A35	0.74	*240.00*	N	849.61	846.08	1.47%	20.00						*878.01*	6	2.44	22.00	4.52	6.30	7.94	67.97	94.73	119.39	CP12
CP13	17.52	=A29+A31	0.72	*177.21*	N	830.22	828.00	1.25%	17.93						*1511.81*	6	4.20	22.00	4.52	6.30	7.94	56.79	79.15	99.76	CP13
CP14	27.12	=A30+CP12	0.72	*240.00*	N	849.61	846.08	1.47%	20.00						*1725.42*	6	4.79	24.00	4.31	6.00	7.55	83.90	116.80	146.97	CP14
CP15	11.10	=A26+A27	0.74	*245.00*	N	826.41	819.23	2.93%	17.14						*858.69*	6	2.39	19.00	4.84	6.75	8.51	39.76	55.44	69.90	CP15
CP16	26.35	=A38+A39+A40	0.50	*144.96*	N	880.25	877.33	2.02%	14.98						*1494.95*	6	4.15	19.00	4.84	6.75	8.51	64.11	89.41	112.72	CP16
CP17	16.06	=A42+A43	0.74	*212.38*	N	863.91	859.03	2.30%	16.77						*1439.34*	6	4.00	20.00	4.73	6.60	8.32	56.21	78.44	98.88	CP17
CP18	25.00	=A36+A46+CP16	0.73	*144.96*	N	880.25	877.33	2.02%	14.98						*1889.96*	6	5.25	20.00	4.73	6.60	8.32	85.91	119.87	151.11	CP18
CP19	61.69	=A37+A44+A45+A47+CP17+CP18	0.84	*144.96*	N	880.25	877.33	2.02%	14.98						*2643.41*	6	7.34	22.00	4.52	6.30	7.94	234.20	326.43	411.40	CP19
CP20	88.98	=OS-A11 + A21+CP15+CP19	0.79	*144.96*	N	880.25	877.33	2.02%	14.98						*3244.06*	6	9.01	23.00	4.42	6.15	7.74	309.99	431.32	542.83	CP20
CP21	101.61	=OS-A12 + CP20	0.75	*144.96*	N	880.25	877.33	2.02%	14.98						*3700.88*	6	10.28	25.00	4.21	5.85	7.36	322.78	448.51	564.28	CP21
CP22	72.61	=OS-A4 + OS-A5 + OS-A6	0.49	*300.0*	N	825.0	823.4	0.55%	20.00	*650.00*	N	802.31	3.24%	3.72	*1777.70*	6	4.94	28.00	3.89	5.41	6.79	138.79	193.03	242.26	CP22
CP23	17.08	=A48+A49	0.74	*272.7*	N	880.6	876.7	1.42%	20.00						*1660.11*	6	4.61	24.00	4.31	6.00	7.55	54.47	75.84	95.43	CP23

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GRACE VALLEY RANCH
PHASE 4A

OVERALL DRAINAGE MASTER PLAN
CALCULATIONS - ULTIMATE CONDITIONS

DATE
08/07/2025

PROJECT NO.
03346.017

DRAWN BY
AG/JF

CHECKED BY
K.M.H.

REVISIONS
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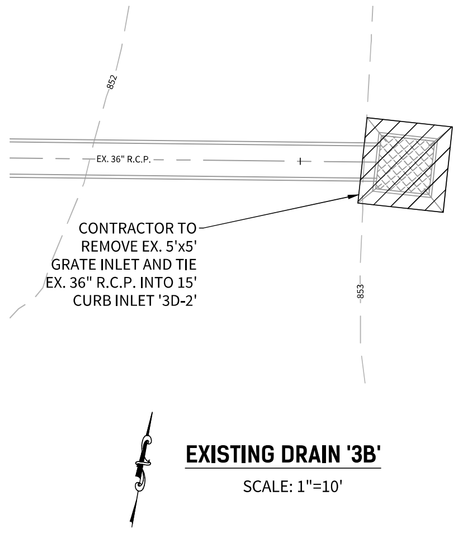
STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED PROFESSIONAL ENGINEER
08/14/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C6.02

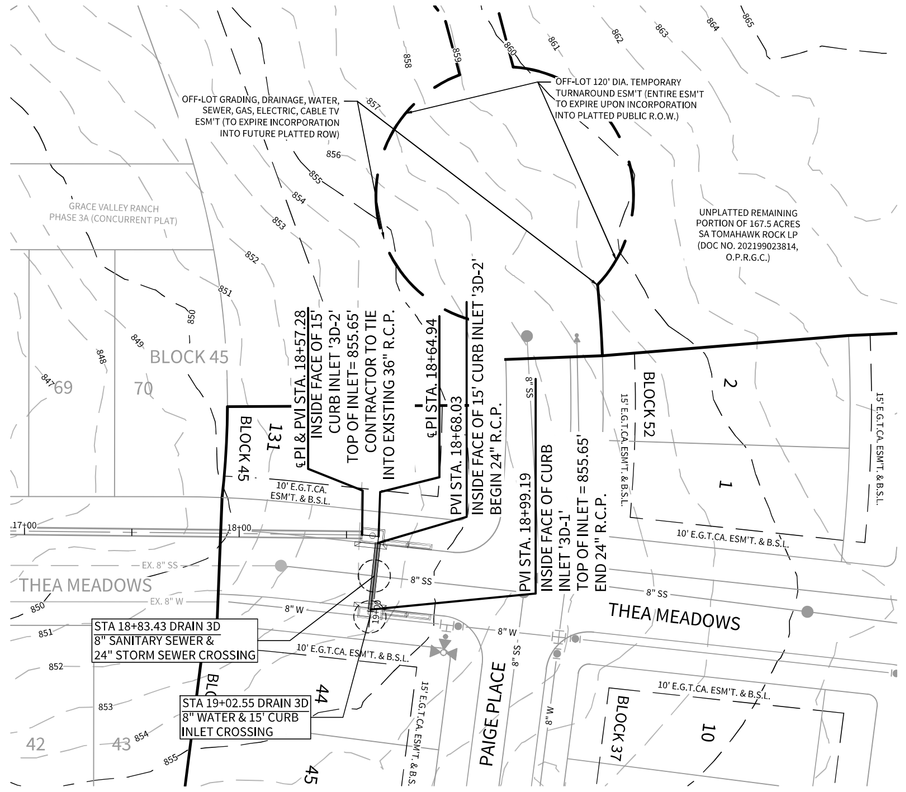
P:\03346\03-17-25\01-Civil\Exhibits\Phase 4A\GRA_DRAIN.dwg, 8/5/2025 9:37:33 AM, Blueline

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



EXISTING DRAIN '3B'

SCALE: 1"=10'

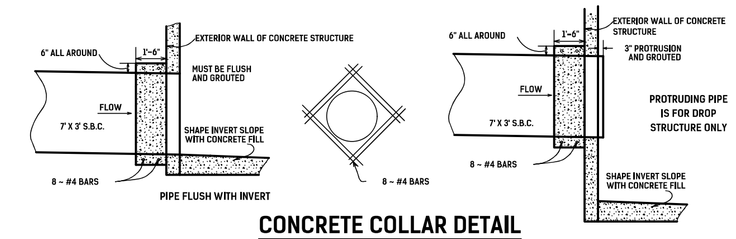


DRAIN "3D"

STA. 18+57.28 TO STA. 18+99.19

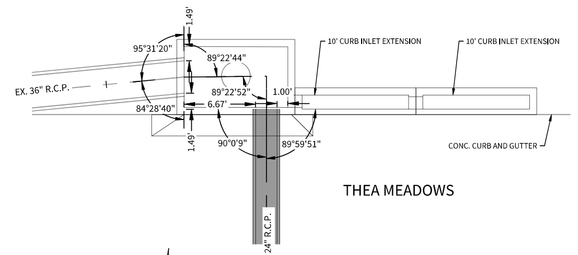
SCALE: 1"=50'

50 25 0 50



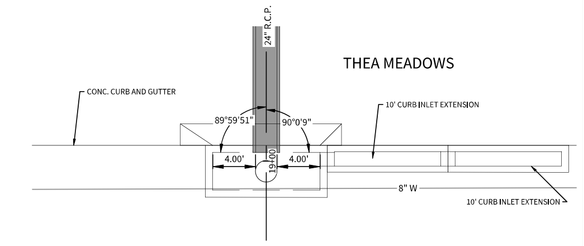
CONCRETE COLLAR DETAIL

(N.T.S.)



CURB INLET '3D-2' DETAIL

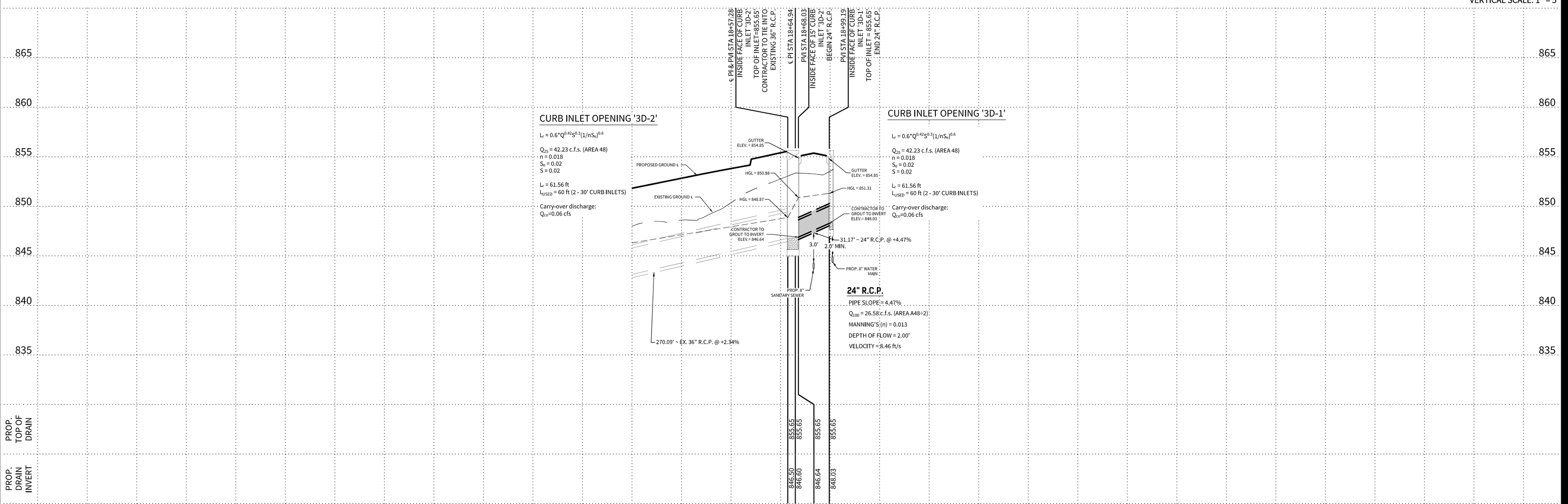
SCALE: 1"=10'



CURB INLET '3D-1' DETAIL

SCALE: 1"=10'

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



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GRACE VALLEY RANCH PHASE 4A

DRAINAGE PLAN & PROFILE - DRAIN '3D'

DATE
08/01/2025

PROJECT NO.
03346.017

DRAWN BY
AG/JF

CHECKED BY
K.M.H.

REVISIONS
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STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED PROFESSIONAL ENGINEER
08/14/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C6.03

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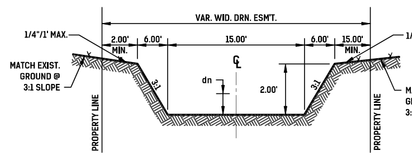
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

LEGEND

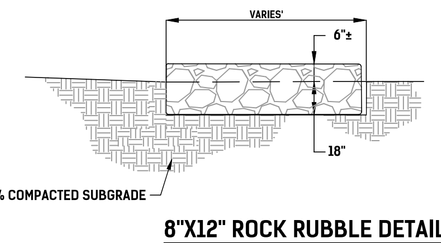
CONCRETE RIP-RAP

8"x12" ROCK RUBBLE



EX. DRAIN "A-1" SECTION (N.T.S.)

	"A-1"
Q_{100ULT} (cfs)	151.11
B_W (ft)	15.00'
z	3:1
n	0.035
S (%)	5.29
d_n (ft)	0.98
V (fps)	8.59



8"X12" ROCK RUBBLE DETAIL

N.T.S.

NOTES:

1. **ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 3000 PSI IN 28 DAYS.**
2. **85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY THE CITY OF CIBOLO & GUADALUPE COUNTY. HYDROMULCH PAY ITEM TO INCLUDE SOIL SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.**
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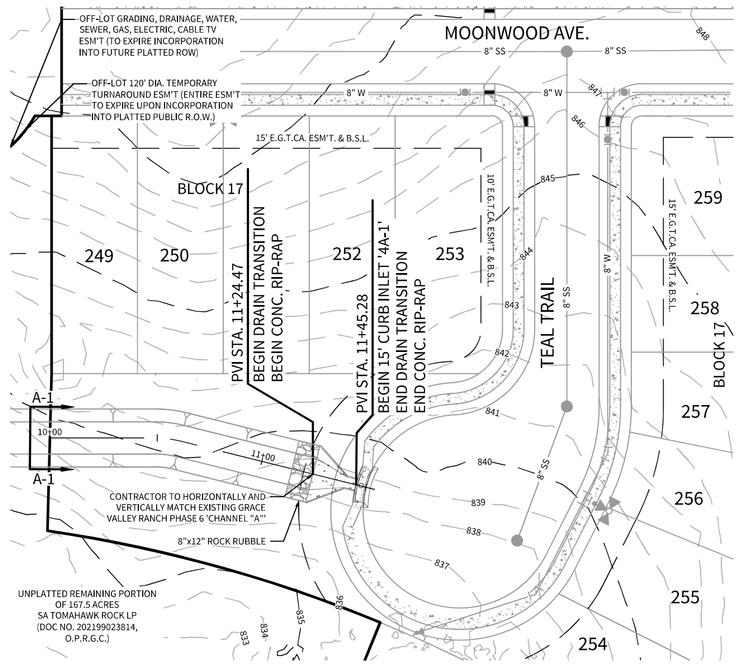
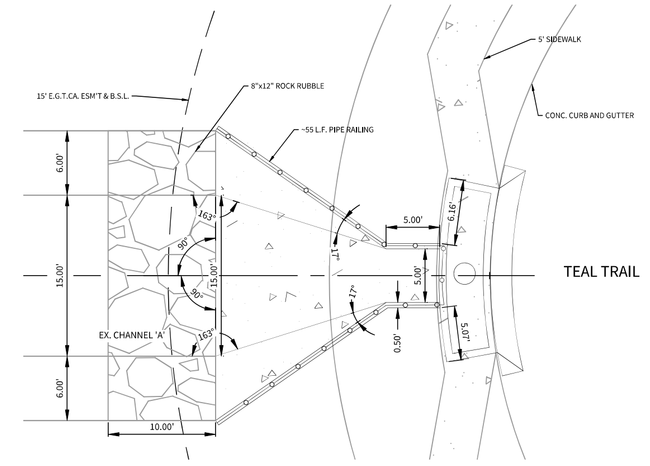


DRAIN "4A-1"

STA. 10+00.00 TO STA 11+45.28

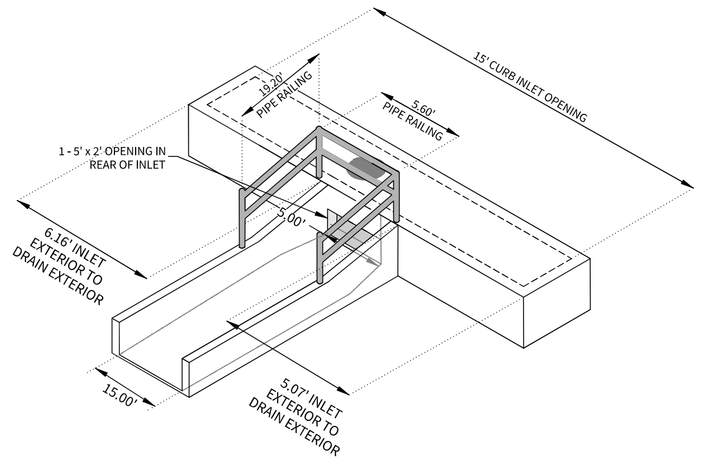
SCALE: 1"=50'

50 25 0 50



CURB INLET '4A-1' DETAIL

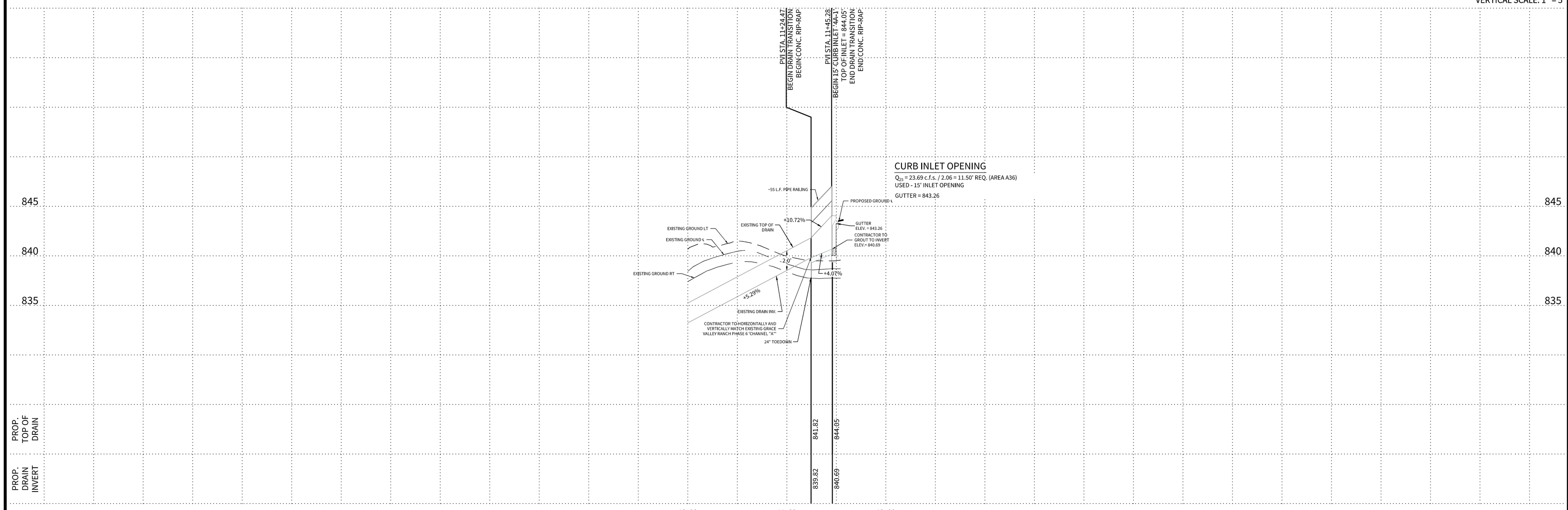
SCALE: 1"=10'



CURB INLET '4A-1' REAR OPENING DETAIL

N.T.S.

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



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GRACE VALLEY RANCH PHASE 4A

DRAINAGE PLAN & PROFILE - DRAIN '4A-1'

DATE
05/30/2025

PROJECT NO.
03346.017

DRAWN BY
AG/JF

CHECKED BY
K.M.H.

REVISIONS
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STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED
PROFESSIONAL ENGINEER
05/30/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C6.04

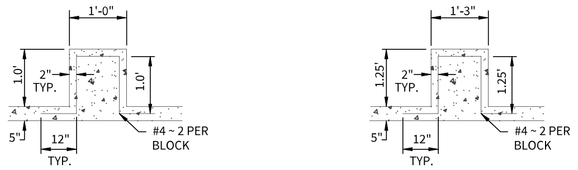
P:\03346017.17-DWGs\Plans\Phase 4A\CAD\C_SHEET_DRAIN 4A_1.dwg 2025/05/29 3:03am Ramirez

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

LEGEND

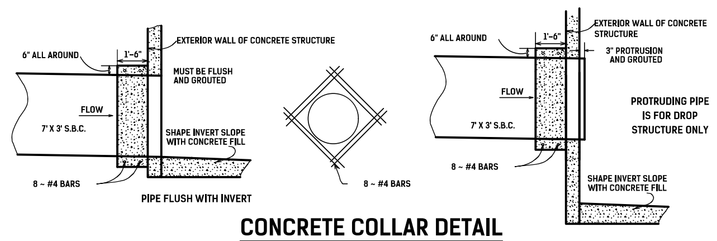
CONCRETE RIP-RAP

8"x12" ROCK RUBBLE



1'X1'X1' BAFFLE BLOCK REINFORCEMENT

1.25'X1.25'X1.25' BAFFLE BLOCK REINFORCEMENT



CONCRETE COLLAR DETAIL
(N.T.S.)

BAFFLE BLOCK CALCULATIONS

$Y_1 = 1.35$ FT $V_1 = 8.96$ FPS $F_1 = 1.36$

$V_2 = 1.61$ FPS

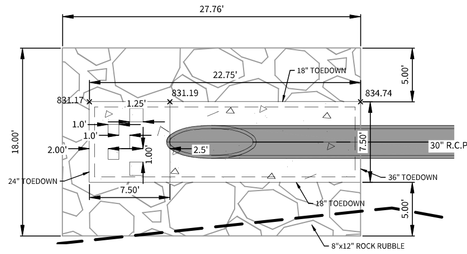
$Y_2/Y_1 = \frac{1}{2}(\sqrt{1+8(F1)^2}-1) = 1.49$

$Y_2 = 2.01$ FT

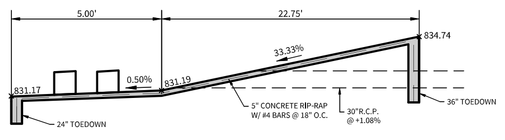
$L_b = 4.5(Y_2) / (F_1)^{0.76} = 7.15$ FT

$= 7.5$ FT (USED)

$L_b / 3 = 2.50$ FT



DRAIN '4A-2' OUTFALL DETAIL
SCALE: 1"=10'



DRAIN '4A-2' OUTFALL DETAIL
(N.T.S.)

NOTES:

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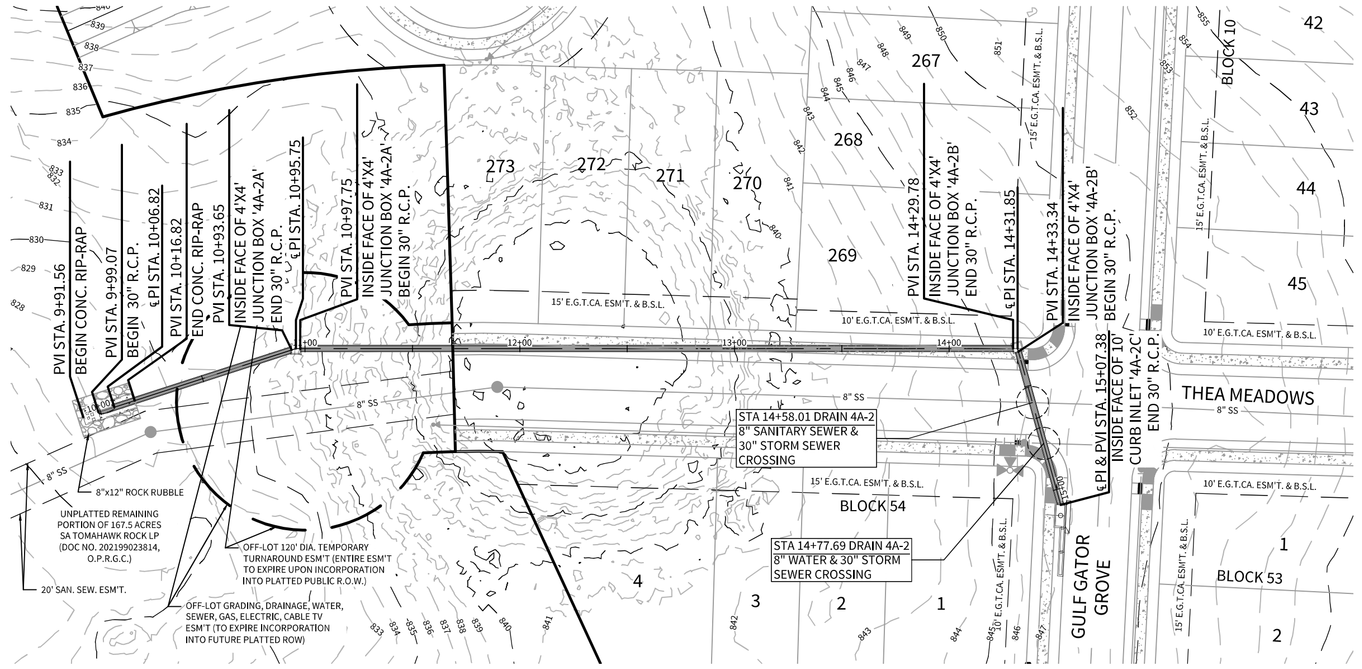
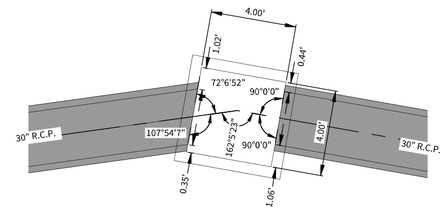


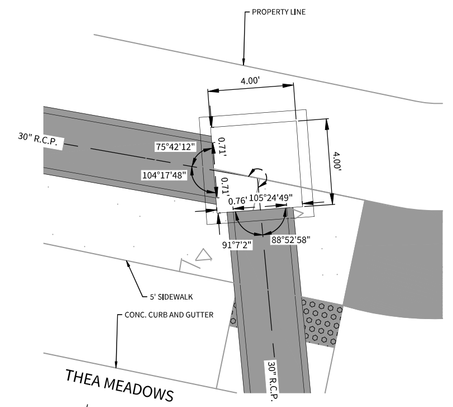
DRAIN "4A-2"

STA. 9+91.56 TO STA 15+07.38

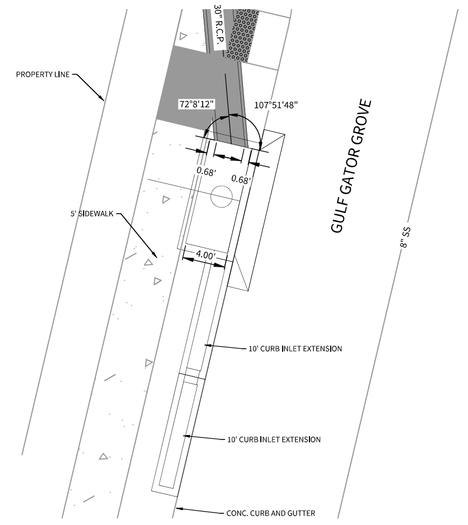
SCALE: 1"=50'
50 25 0 50



JUNCTION BOX '4A-2A' DETAIL
SCALE: 1"=5'

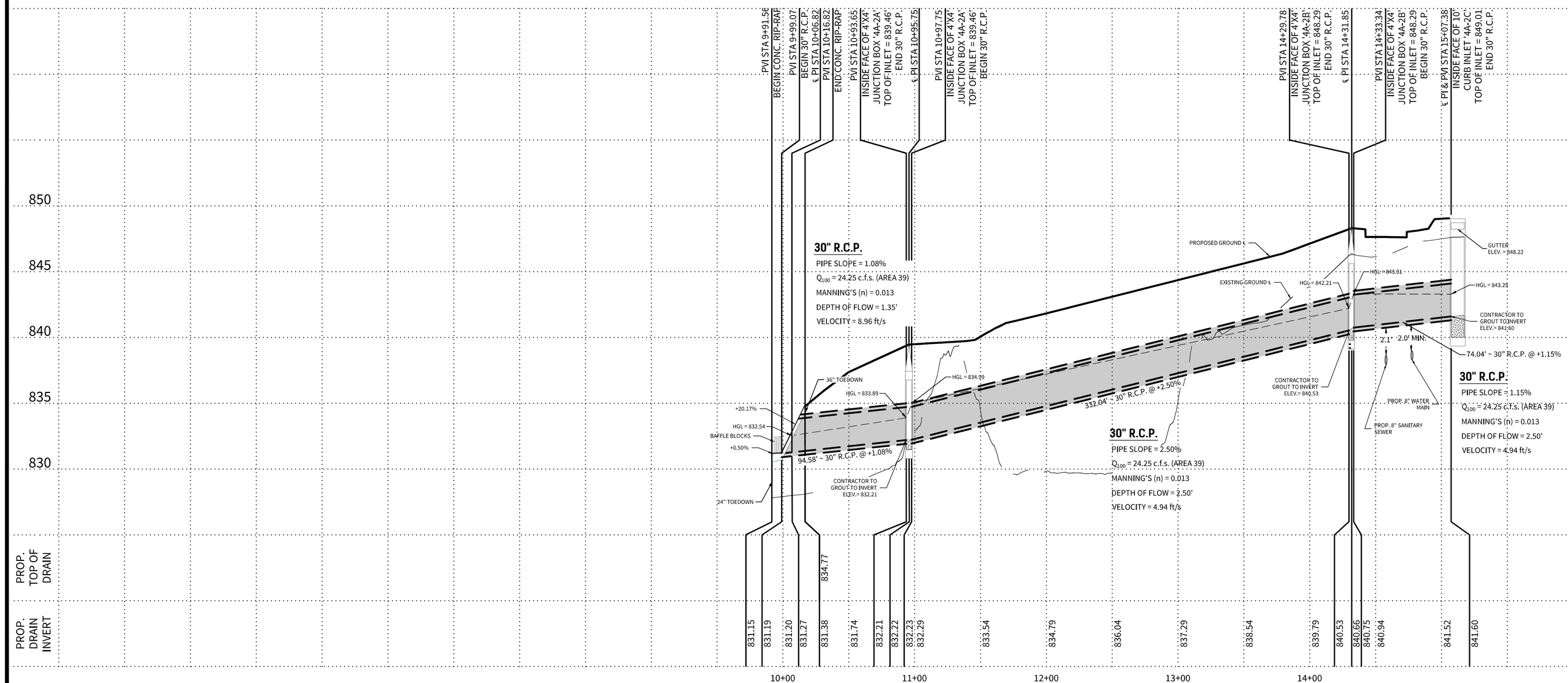


JUNCTION BOX '4A-2B' DETAIL
SCALE: 1"=5'



CURB INLET '4A-2C' DETAIL
SCALE: 1"=10'

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



CURB INLET OPENING '4A-2C'

$L_T = 0.6 * Q^{0.42} S^{0.3} (1/nS_x)^{0.6}$

Q_{25} = 19.14 c.f.s. (AREA 39)
n = 0.018
S_x = 0.0261
S = 0.0128

L_T = 32.2 ft
L_{USED} = 30 ft

Carry-over discharge:
Q_{CO} = 0.15 c.f.s.

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GRACE VALLEY RANCH PHASE 4A

DRAINAGE PLAN & PROFILE - DRAIN '4A-2'

DATE
08/12/2025

PROJECT NO.
03346.017

DRAWN BY
AG/JF

CHECKED BY
K.M.H.

REVISIONS
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STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED PROFESSIONAL ENGINEER
08/14/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

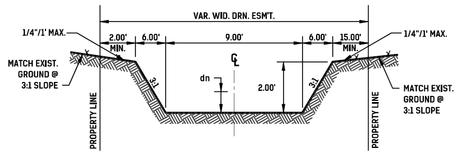
C6.05

P:\03346\017\2-Civil\4-Plans\Phase 4A\04A_DRAIN_PLAN & Proj 2025\08\12 4:57pm rbarrera

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

LEGEND

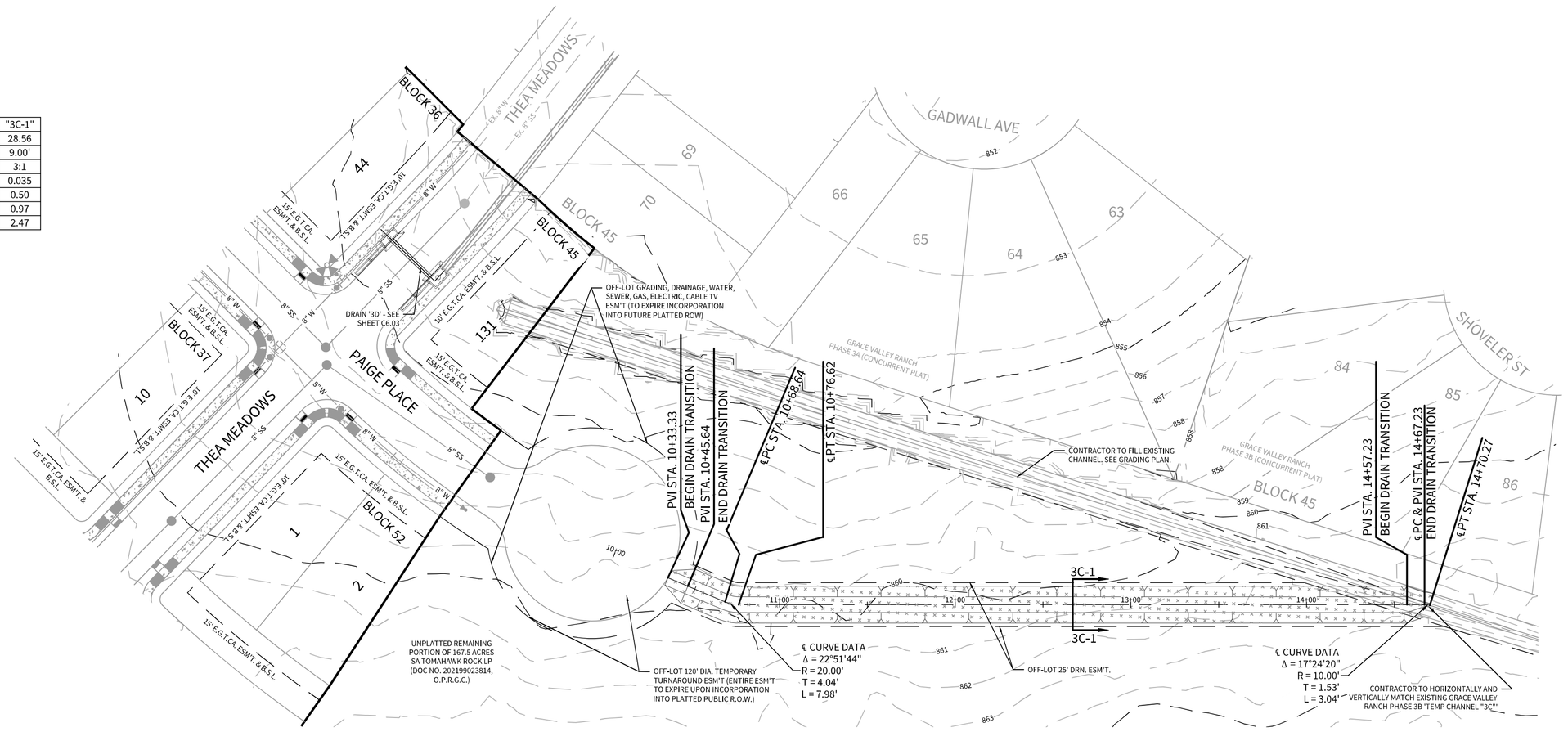
EARTHEN CHANNEL



DRAIN "3C-1" SECTION (N.T.S.)

STA 10+44.22 TO STA 14+57.23

	"3C-1"
Q_{25} (cfs)	28.56
B_W (ft)	9.00'
z	3:1
n	0.035
S (%)	0.50
d_n (ft)	0.97
V (fps)	2.47



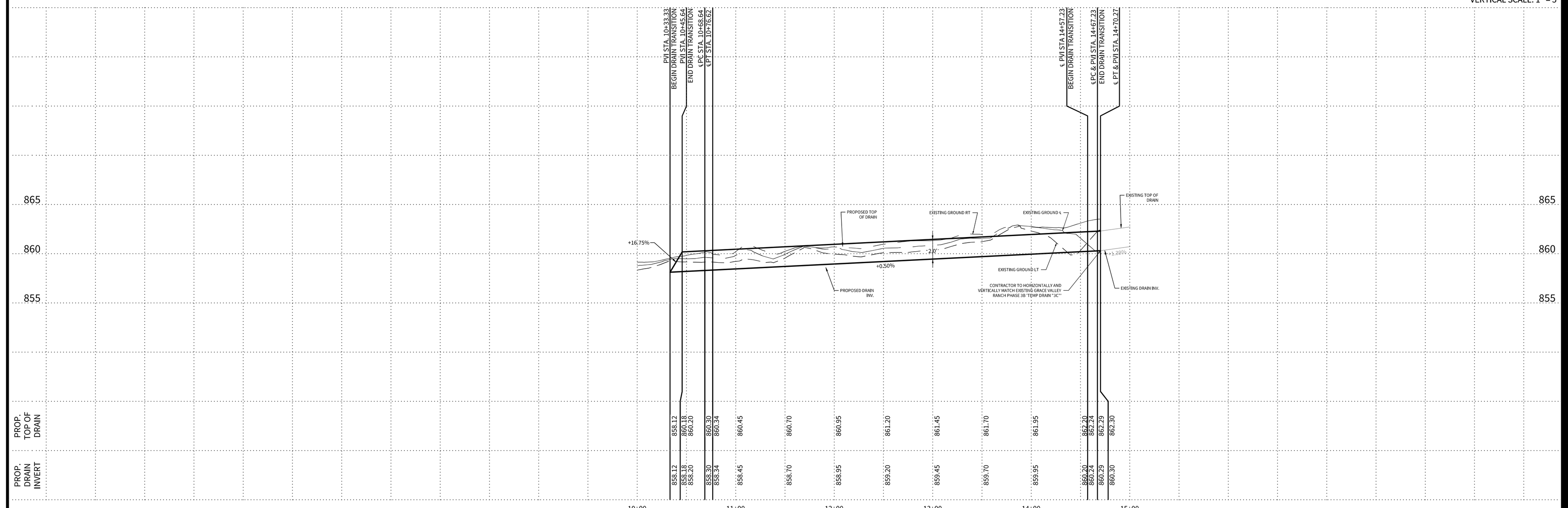
TEMP DRAIN "3C"

STA. 10+12.17 TO STA 14+70.27

SCALE: 1"=50'

50 25 0 50

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



NOTES:

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San Antonio, Texas 78231
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GRACE VALLEY RANCH PHASE 4A

DRAINAGE PLAN & PROFILE - TEMP DRAIN "3C"

DATE
08/01/2025

PROJECT NO.
03346.017

DRAWN BY
AG/JF

CHECKED BY
K.M.H.

REVISIONS
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STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED
PROFESSIONAL ENGINEER

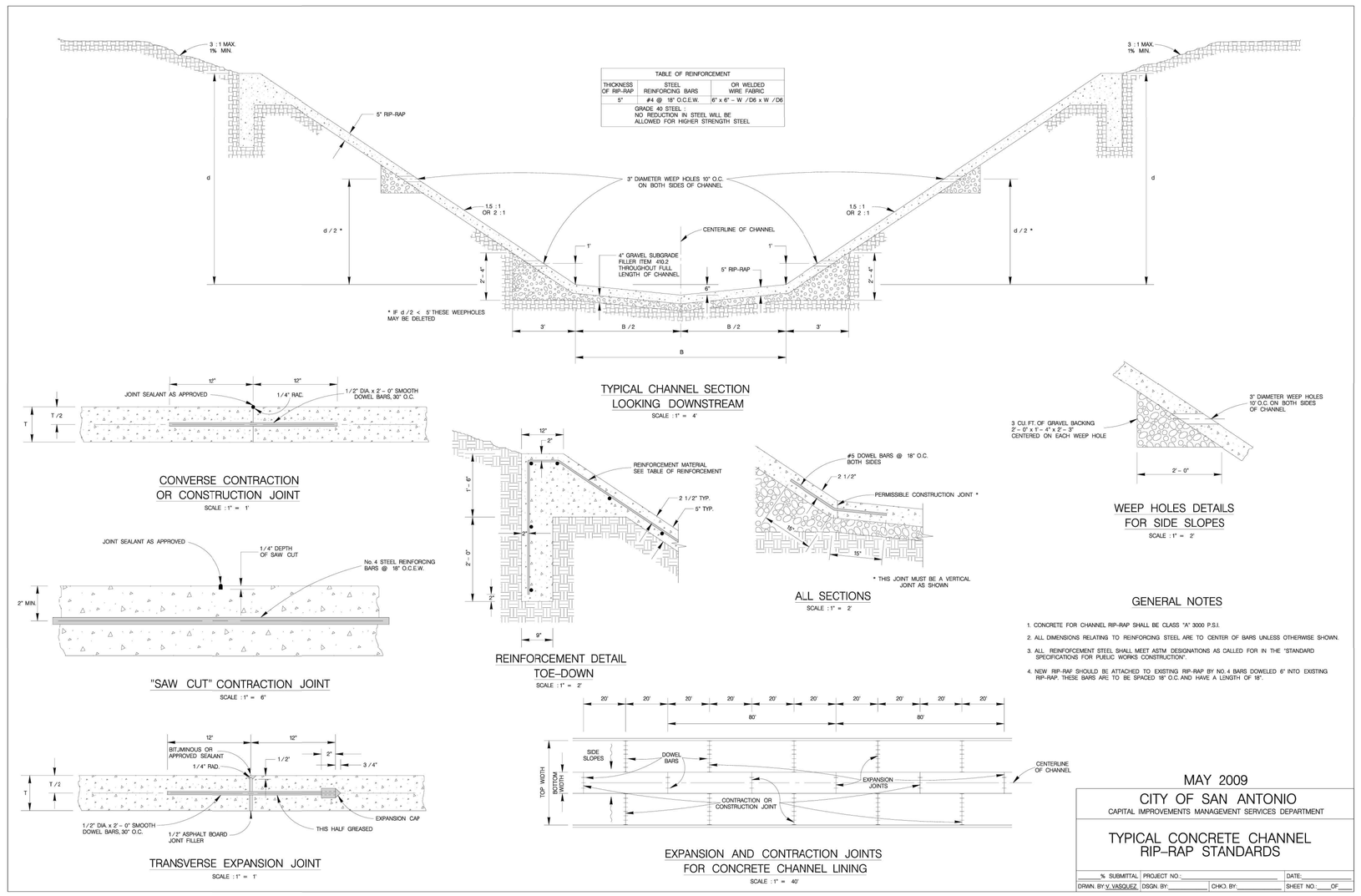
08/14/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C6.06

P:\03346\017-3C\Civil\4-Plans\Phase 4A\C06_DRNP_TEMP DRAIN.dwg, 8/14/2025 12:24pm, Ekaterina

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



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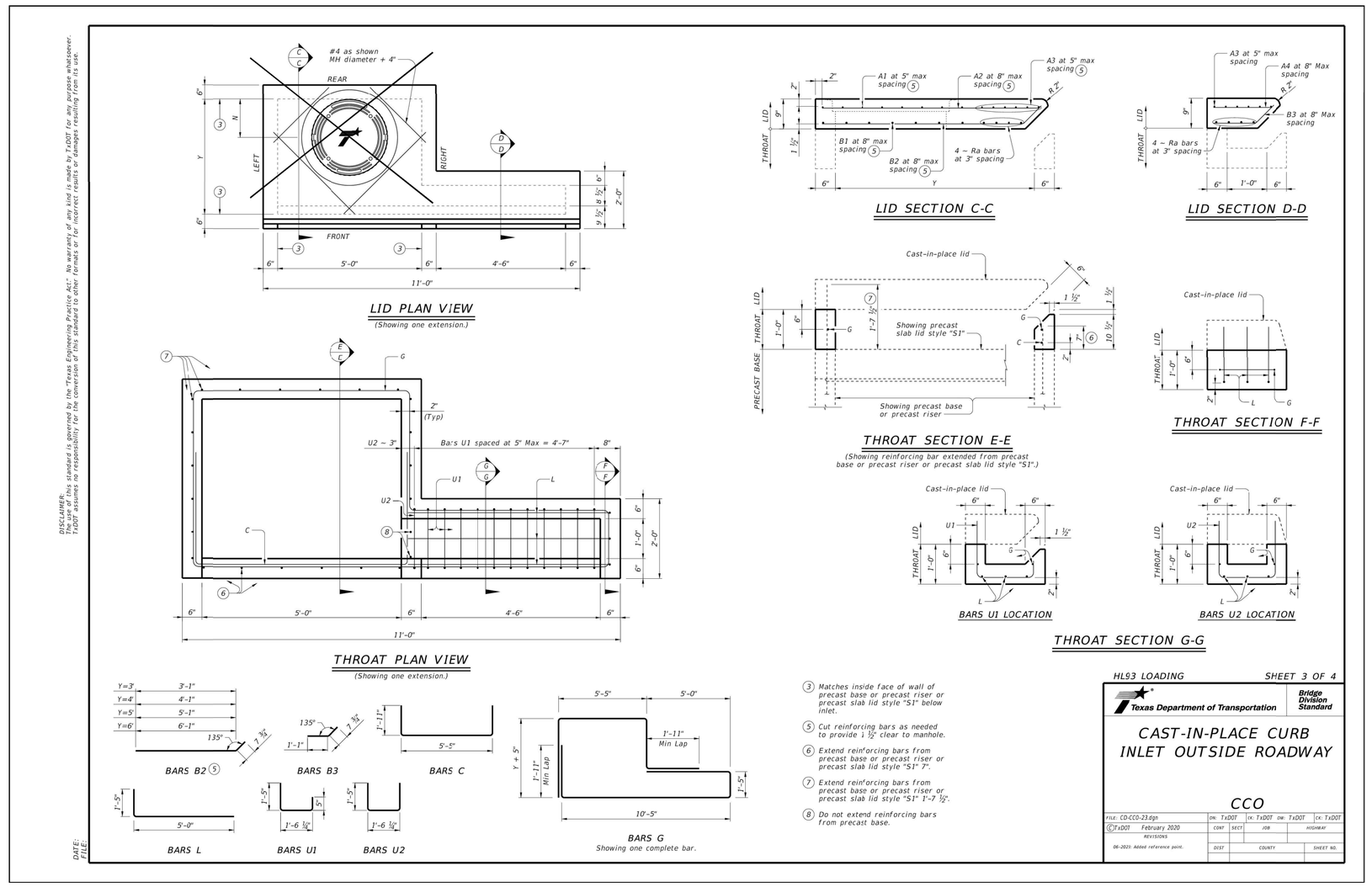

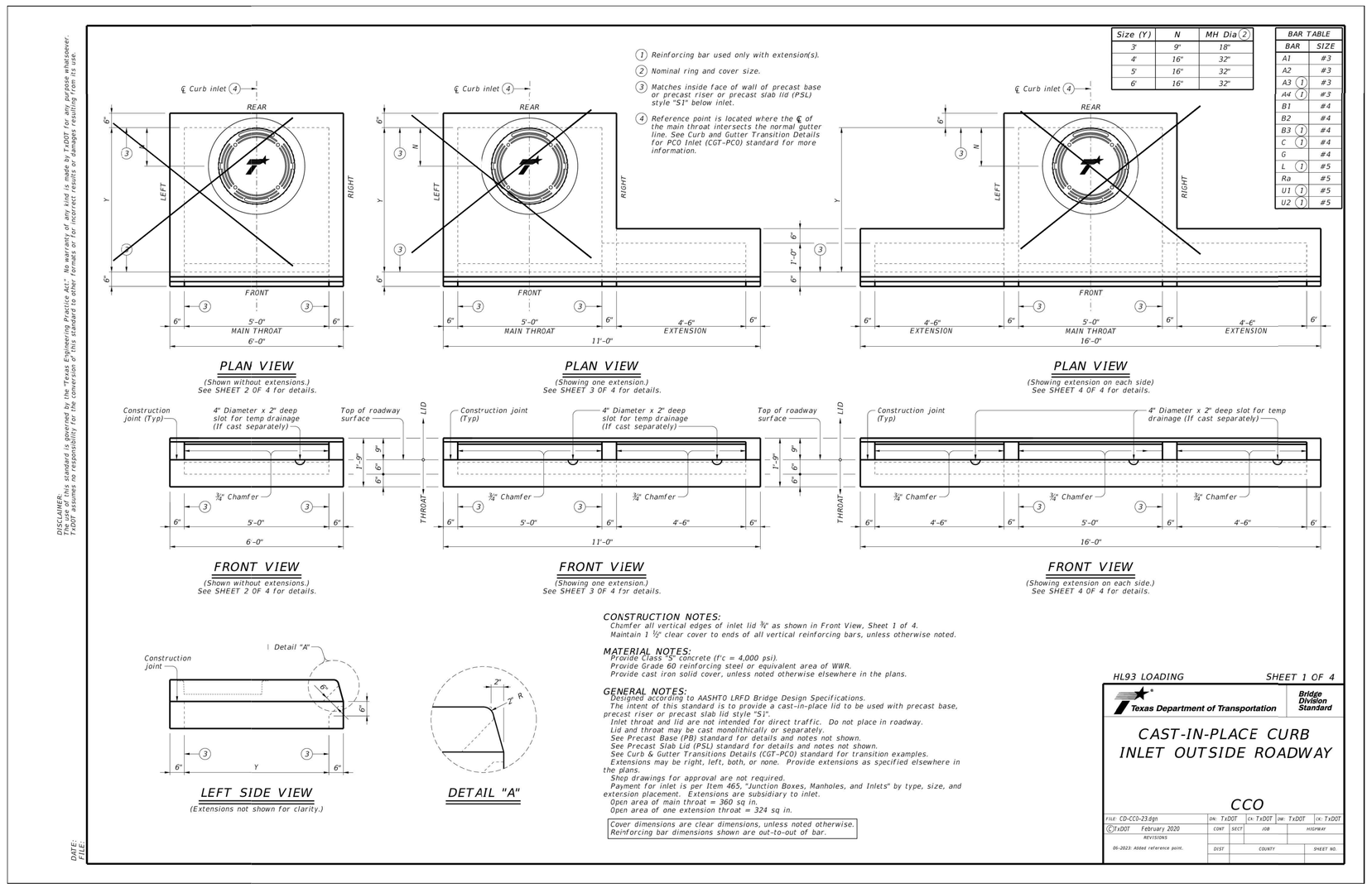

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San Antonio, Texas 78231
P:(210) 681.2951 F: (210)523.7112

GRACE VALLEY RANCH
PHASE 4A

EROSION CONTROL AND INLET DETAILS

DATE
05/29/2025

PROJECT NO.
03346.017

DRAWN BY
AG/JF

CHECKED BY
K.M.H.

REVISIONS
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STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED
PROFESSIONAL ENGINEER
05/30/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C6.D1

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

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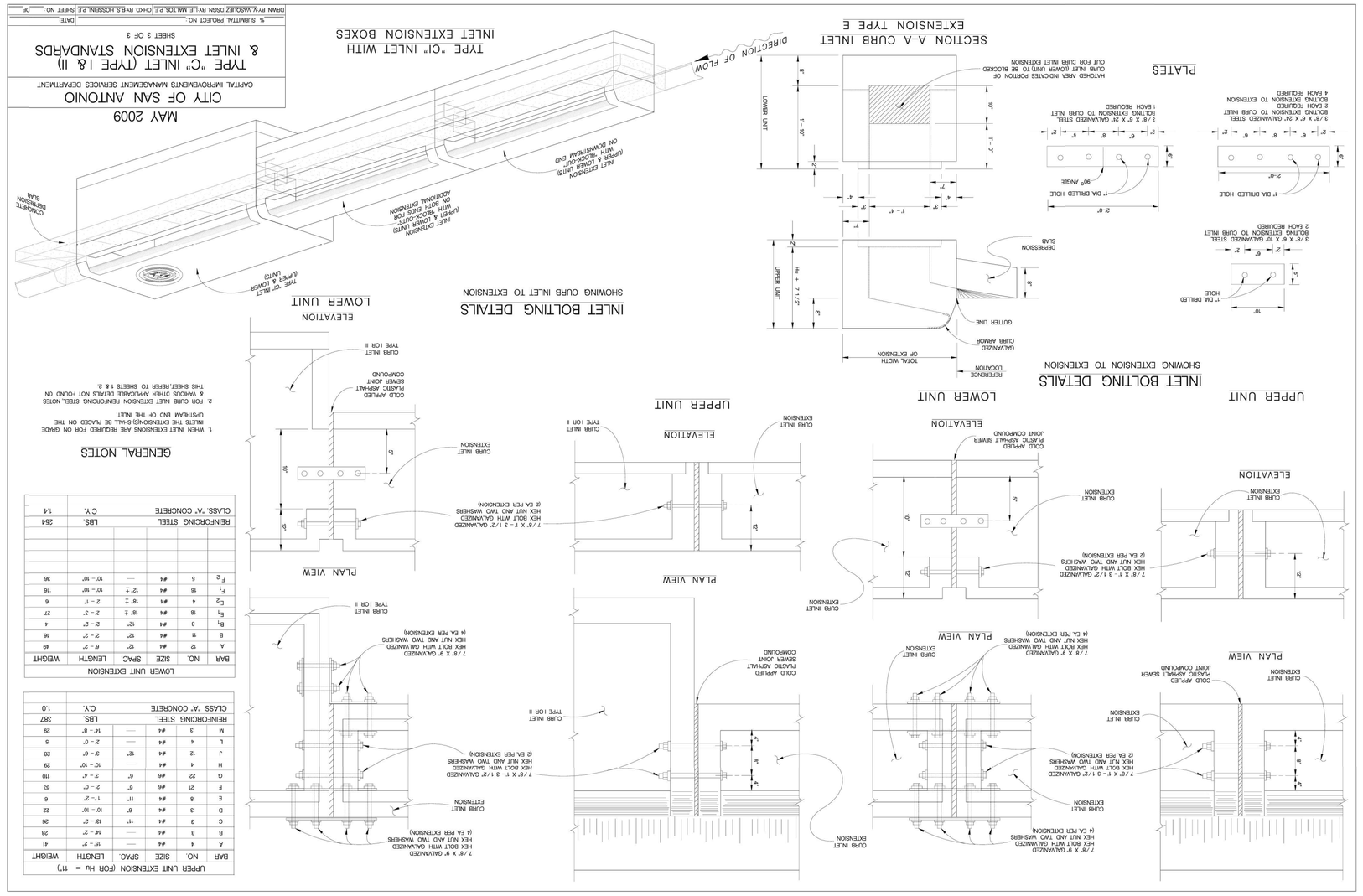
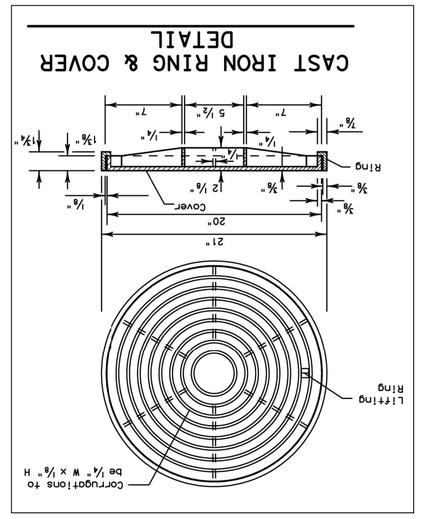
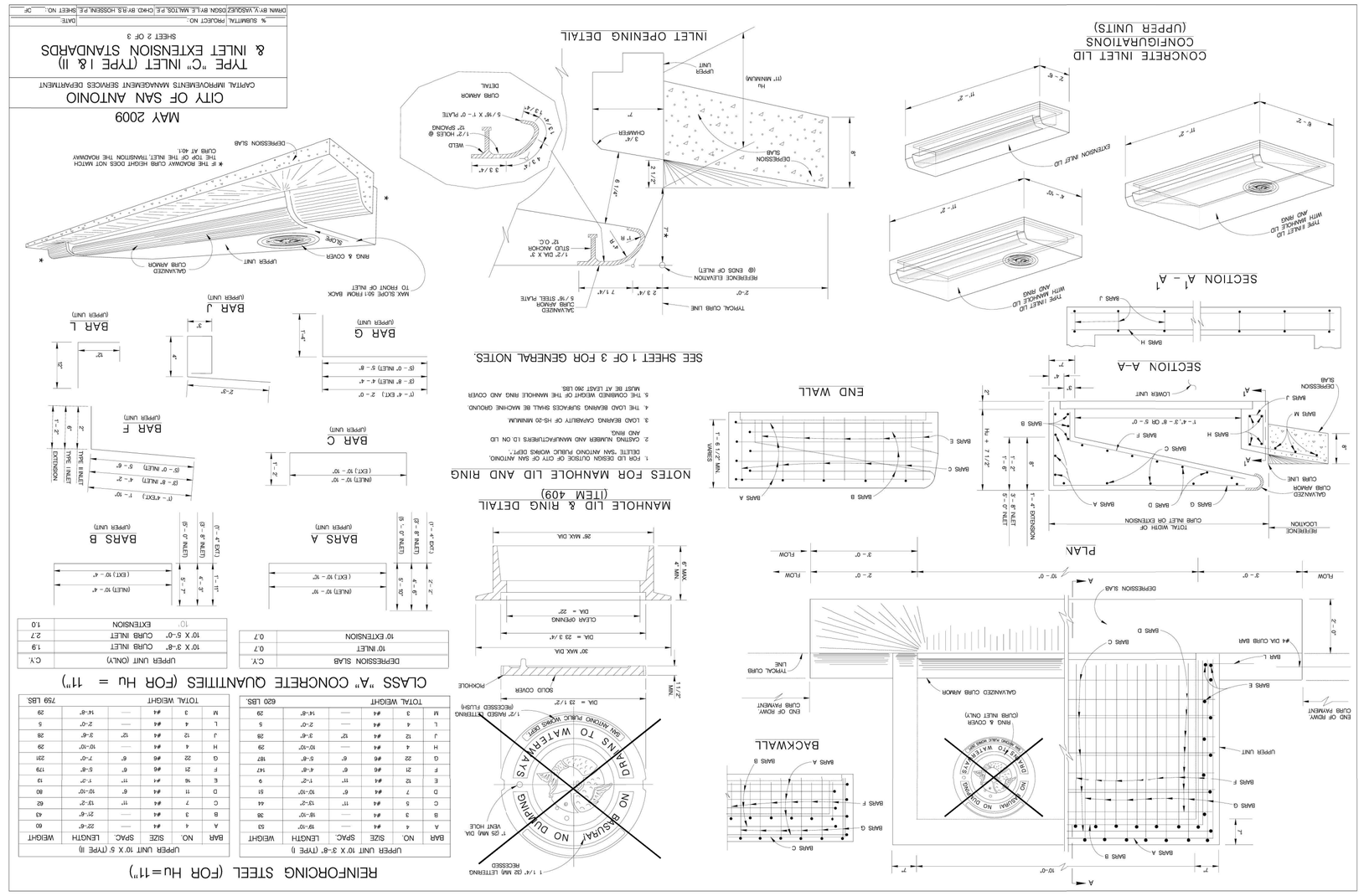
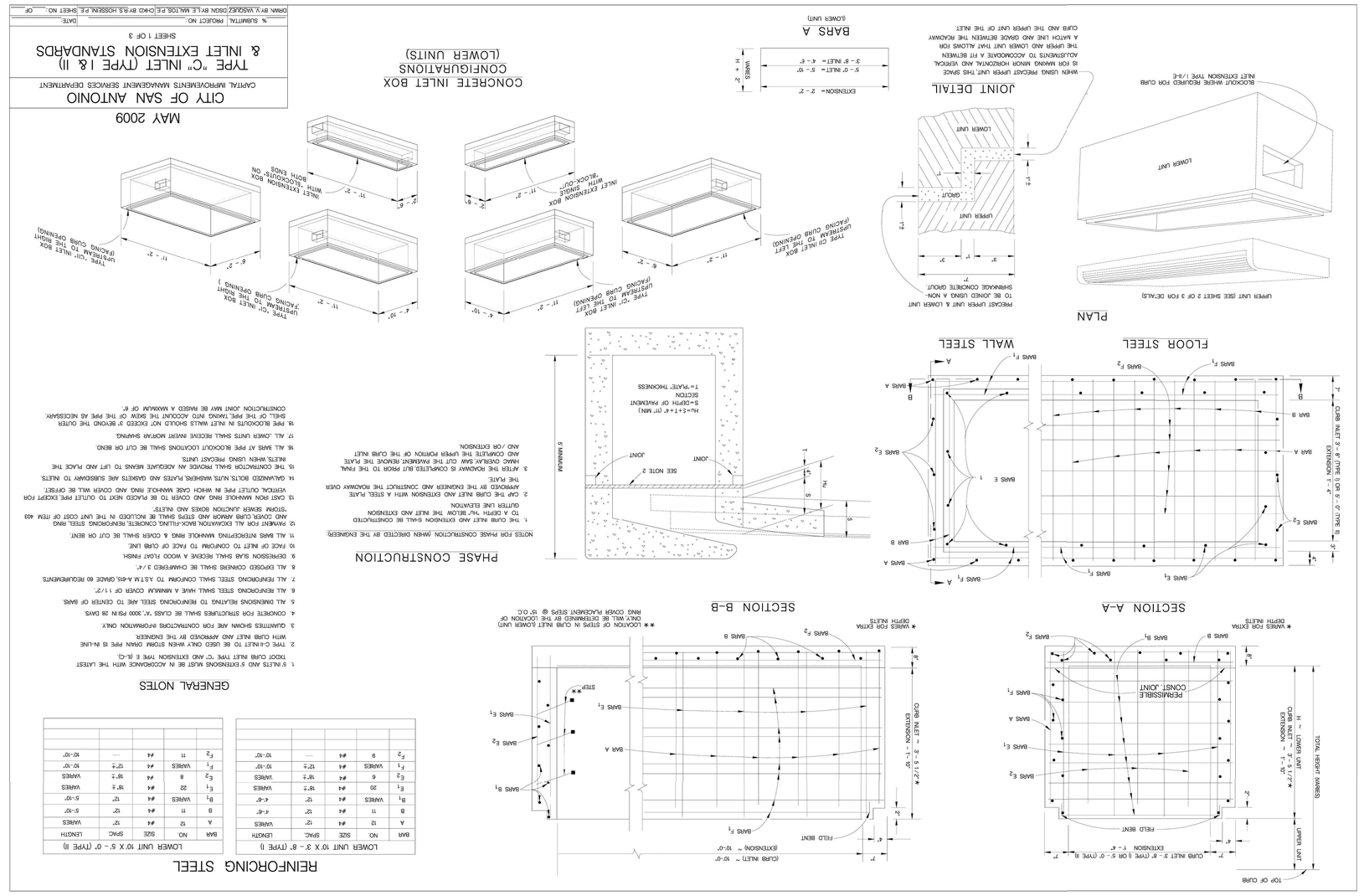
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.









GRACE VALLEY RANCH
PHASE 4A

INLET DETAILS

CUDE ENGINEERS
4122 Pond Hill Road, Suite 101
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P:(210) 681.2951 F:(210)523.7112

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DATE	05/29/2025
PROJECT NO.	0334b.017
DRAWN BY	AG/JF
CHECKED BY	K.M.H.
REVISIONS	
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KYLE M. HUDEK
138753
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
05/30/2025
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10046500

C6.D2

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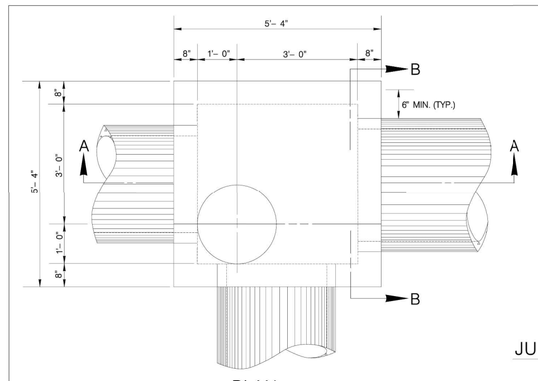
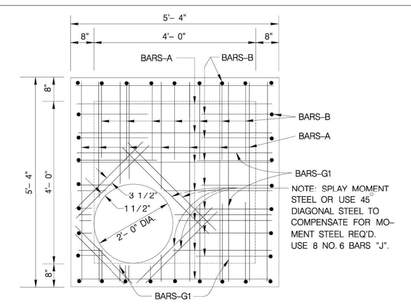
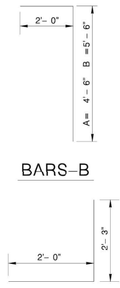


PLAN



PLAN

JUNCTION BOX TOP SLAB SHOWING STEEL



BARS--B

BARS--C

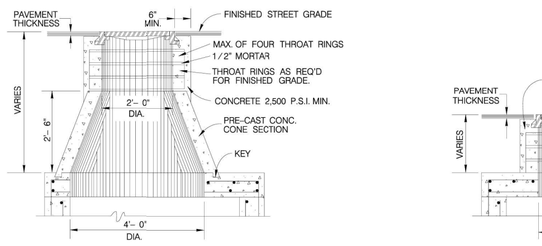
SCHEDULE FOR REINFORCING STEEL

A= 4'X 4'J.B. NO.1 & 4	SHAPE	BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
	STRAIGHT	A	16	4	9" O.C.	5'- 1"	54
		B	32	5	8" O.C.	6'- 10"	228
		C	32	5	8" O.C.	4'- 3"	142
	STRAIGHT	D	16	4	9" O.C.	5'- 1"	54
	STRAIGHT	E	16	3	12" O.C.	3'-11"	24
	STRAIGHT	G	16	4	12" O.C.	5'-1"	54
	STRAIGHT	G_1	8	4	AS SHOWN	5'-1"	27
	STRAIGHT	H	20	3	12" O.C.	4'-5"	33
	STRAIGHT	J	8	6	3 1/2"	2'- 10"	34
						TOTAL	650 LBS.

CLASS "A" CONCRETE- 3.43 CU YDS.
(DOES NOT EXCLUDE MANHOLE OPENINGS OR PIPE OPENING)

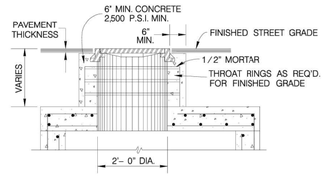
★ NOTE: BAR SIZE AND SPACING BASED ON SPANS AS SHOWN – ANY REVISIONS TO THESE SPANS SHALL INCLUDE A RE-DESIGN ON STEEL REQD.

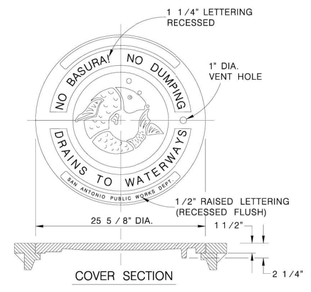
1. CONCRETE FOR STRUCTURE SHALL BE CLASS "A," 3,000 P.S.I. AT 28 DAYS.
2. ALL EXPOSED EDGES SHALL BE CHAMFERED 3 /4".
3. REINFORCING STEEL SHALL BE NEW BILLET STEEL, INTERMEDIATE GRADE, ASTM. A-15. THE DEFORMATION SHALL CONFORM TO ASTM. A-305.
4. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER 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 (2,500 P.S.I. MIN.) TO EFFECT DRAINAGE TO OUTLET PIPE. COST SUBSIDIARY TO CLASS "A" CONCRETE (JUNCTION BOXES).
8. PAYMENT FOR ALL EXCAVATION, BACKFILLING, CONCRETE, REINFORCING STEEL, VERTICAL STACK RING AND COVER SHALL BE INCLUDED IN THE UNIT COST OF ITEM 403 – "STORM SEWER JUNCTION BOXES AND INLETS".



VARIATION OF VERTICAL STACK

VERTICAL STACK DESIGN SHALL BE GOVERNED BY THE DEPTH OF THE TOP OF THE JUNCTION BOX BELOW THE FINISHED STREET GRADE.





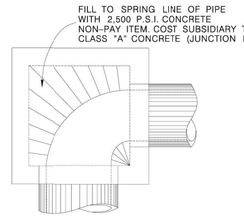
COVER SECTION

MANHOLE LID & RING DETAIL

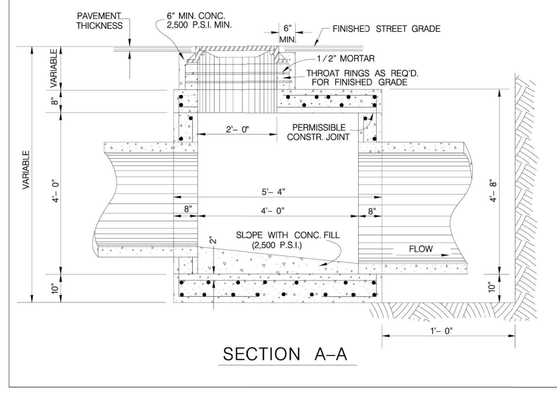
SCALE: 1 : 16

NOTES FOR MANHOLE LID AND RING

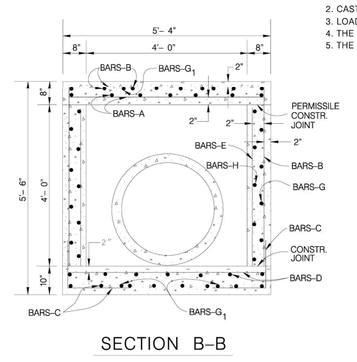
1. FOR LID DESIGN OUTSIDE OF CITY OF SAN ANTONIO, DELETE "SAN ANTONIO PUBLIC WORKS DEPT.".
2. CASTING NUMBER AND MANUFACTURER'S I.D. ON LID AND RING.
3. LOAD BEARING CAPABILITY OF HS-20 MINIMUM.
4. THE LOAD BEARING SURFACES SHALL BE MACHINE GROUND.
5. THE COMBINED WEIGHT OF THE MANHOLE RING AND COVER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



CURVED DEFLECTOR DETAIL



SECTION A–A



SECTION B–B

JANUARY 2005

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

4'x4'x4' JUNCTION BOX STANDARDS

_____% SUBMITTAL PROJECT NO.:_____ DATE:_____
DRWN. BY:_____ DSGN. BY:_____ CHKD. BY:_____ SHEET NO.:____OF____

CUDEENGINEERS.COM

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

GRACE VALLEY RANCH PHASE 4A

JUNCTION BOX DETAILS

DATE
05/29/2025

PROJECT NO.
03346.017

DRAWN BY
AG/JF

CHECKED BY
K.M.H.

REVISIONS
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STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED
PROFESSIONAL ENGINEER
05/30/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C6.D3

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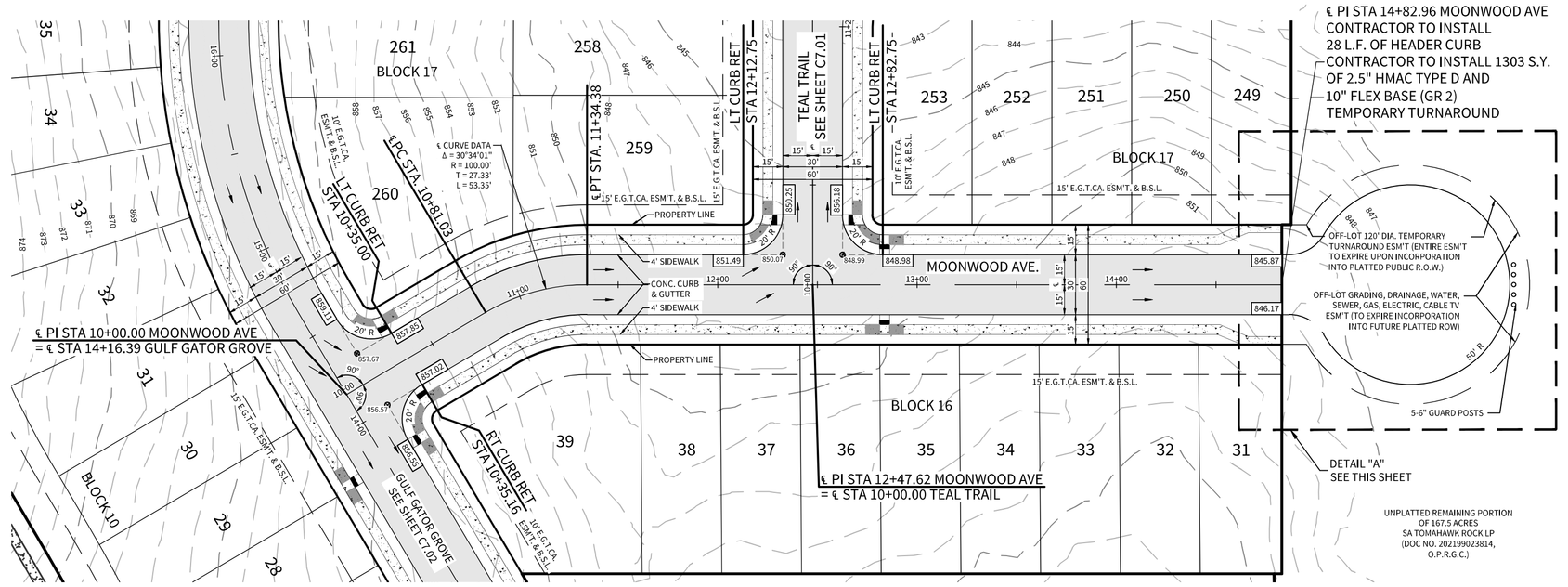
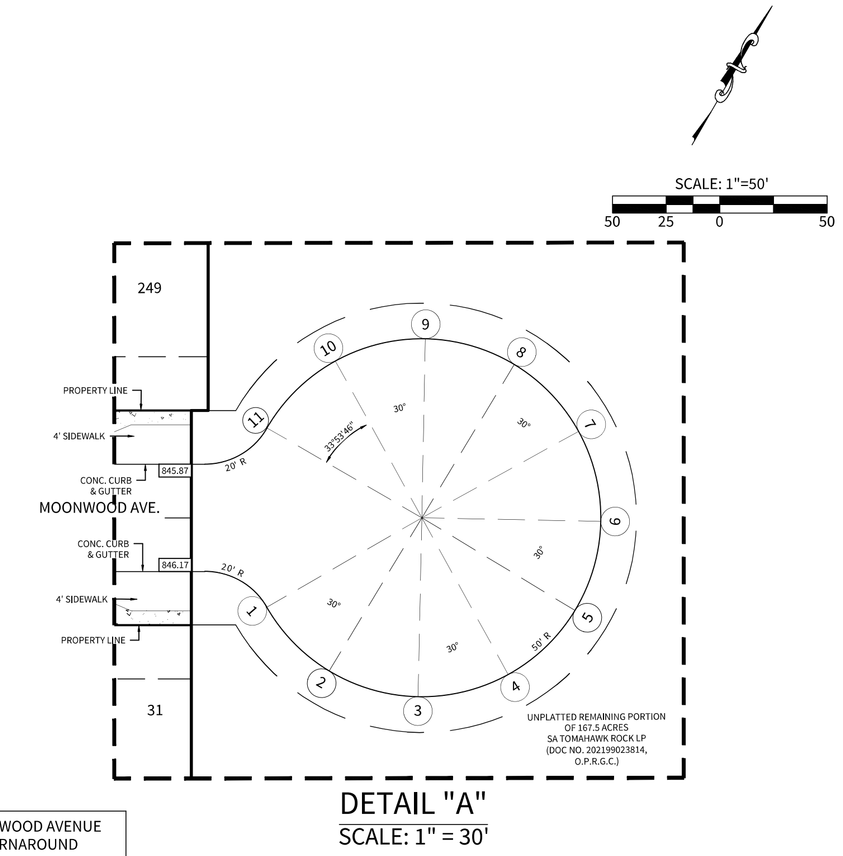
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.





MOONWOOD AVENUE TURNAROUND	
POINT	TOP OF PVM'T. ELEVATION
1	845.91
2	845.64
3	845.36
4	845.08
5	844.80
6	844.52
7	844.57
8	844.83
9	845.09
10	845.35
11	845.62

LEGEND

- SIDEWALK CONSTRUCTED WITH INFRASTRUCTURE
- STREET WASHOUT (SEE DETAIL SHEETC7.D1)
- STREET CENTERLINE
- EXISTING CONTOURS
- XXX.XX - TOP OF CURB SPOT ELEVATION
- DRIVEWAY
- XXX.XX - PAVEMENT ELEVATION

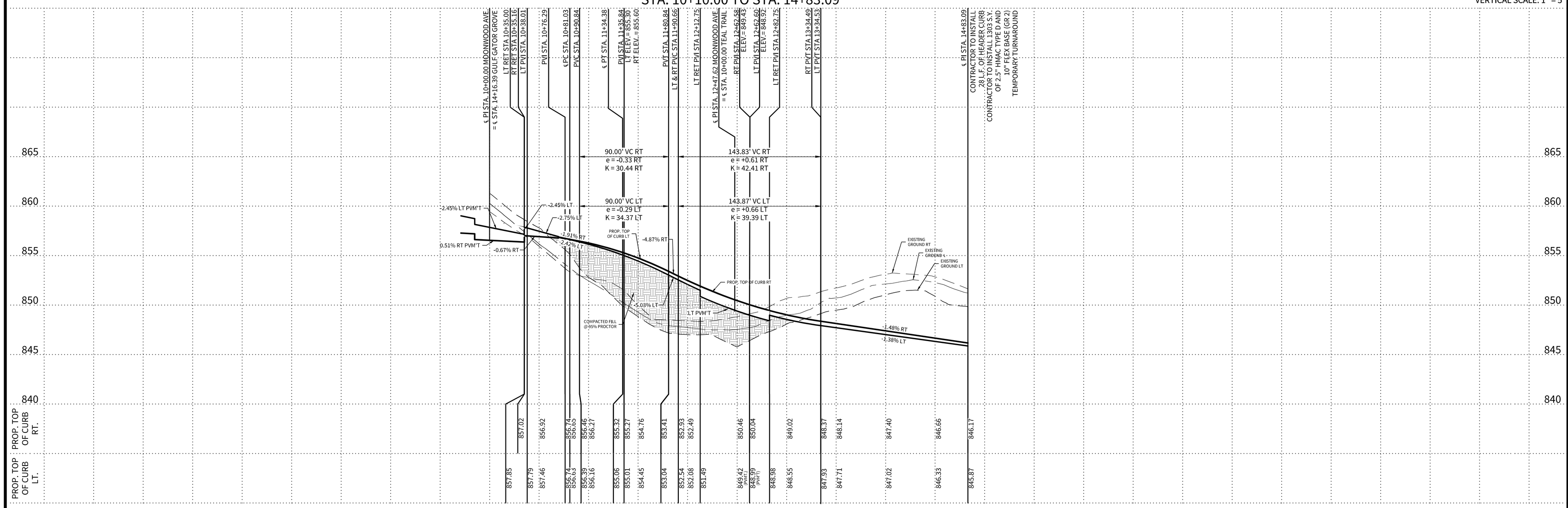
COSA TYPE "III" WHEEL CHAIR RAMPS ARE INDICATED THUS " " UNLESS OTHERWISE NOTED. WHEEL CHAIR RAMPS ARE TO BE CONSTRUCTED WITH INFRASTRUCTURE.

(SEE DETAIL SHEET C7.D2) FOR ADA RAMPS AT SIDEWALK INTERSECTIONS . DETECTABLE WARNING PAVER WITH TRUNCATED DOMES ONLY.

MOONWOOD AVENUE

STA. 10+00.00 TO STA. 14+83.09

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



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GRACE VALLEY RANCH
PHASE 4A

STREET PLAN & PROFILE - MOONWOOD AVENUE

DATE
08/12/2025

PROJECT NO.
03346.017

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K.M.H.

REVISIONS
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STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED
PROFESSIONAL ENGINEER
08/14/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C7.00

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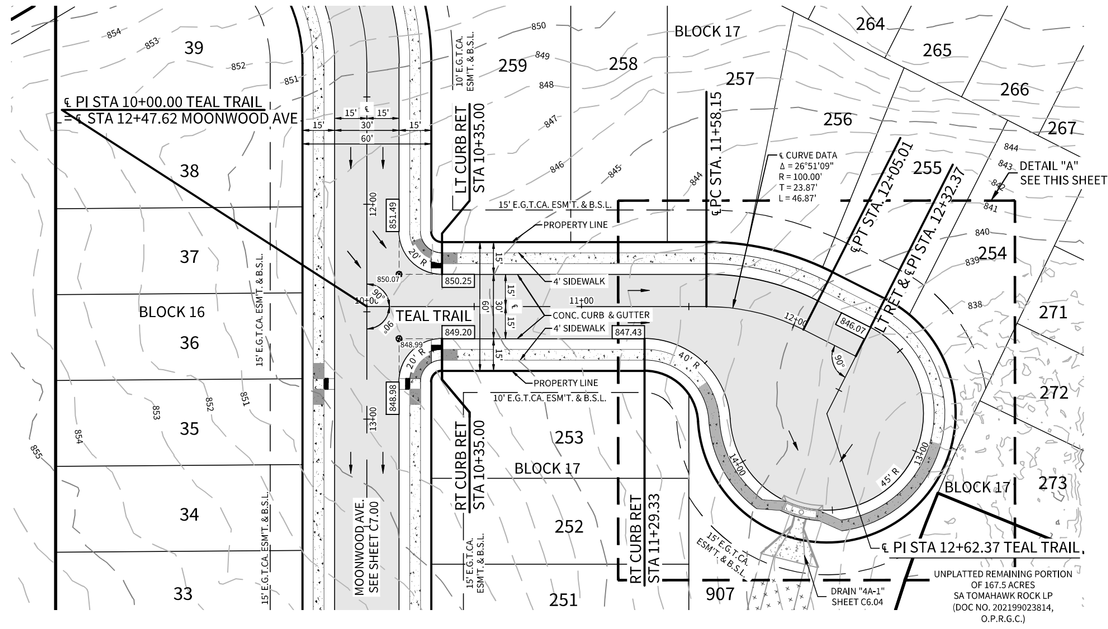

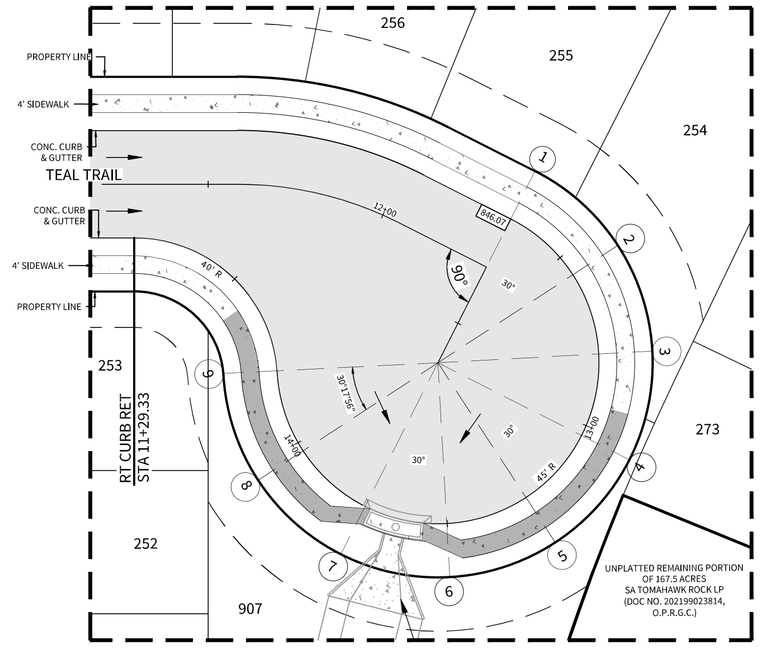

DETAIL "A"
SCALE: 1" = 30'

SCALE: 1"=50'
50 25 0 50

TEAL TRAIL TURNAROUND	
POINT	TOP OF CURB ELEVATION
1	846.07
2	845.67
3	845.28
4	844.88
5	844.48
6	844.14
7	844.05
8	844.24
9	844.72

LEGEND

- SIDEWALK CONSTRUCTED WITH INFRASTRUCTURE
- STREET WASHOUT (SEE DETAIL SHEETC7.D1)
- STREET CENTERLINE
- EXISTING CONTOURS
- XXX.XX - TOP OF CURB SPOT ELEVATION
- DRIVEWAY
- ⊕XXX.XX - PAVEMENT ELEVATION

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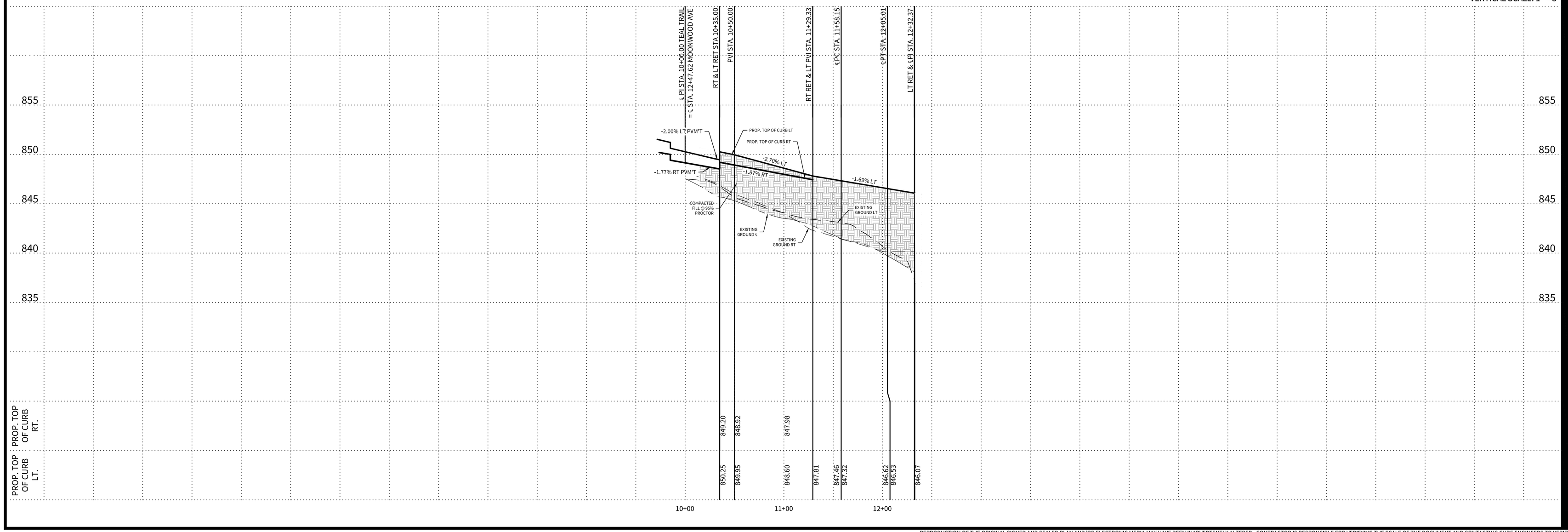
(SEE DETAIL SHEET C7.D2) FOR ADA RAMPS AT SIDEWALK INTERSECTIONS . DETECTABLE WARNING PAVER WITH TRUNCATED DOMES ONLY.

TEAL TRAIL

STA. 10+00.00 TO STA. 12+62.37

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



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GRACE VALLEY RANCH
PHASE 4A

STREET PLAN & PROFILE - TEAL TRAIL

DATE
08/13/2025

PROJECT NO.
03346.017

DRAWN BY
AG/JF

CHECKED BY
K.M.H.

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STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED PROFESSIONAL ENGINEER
08/14/2025

CUDE ENGINEERS
TBPE No. 455
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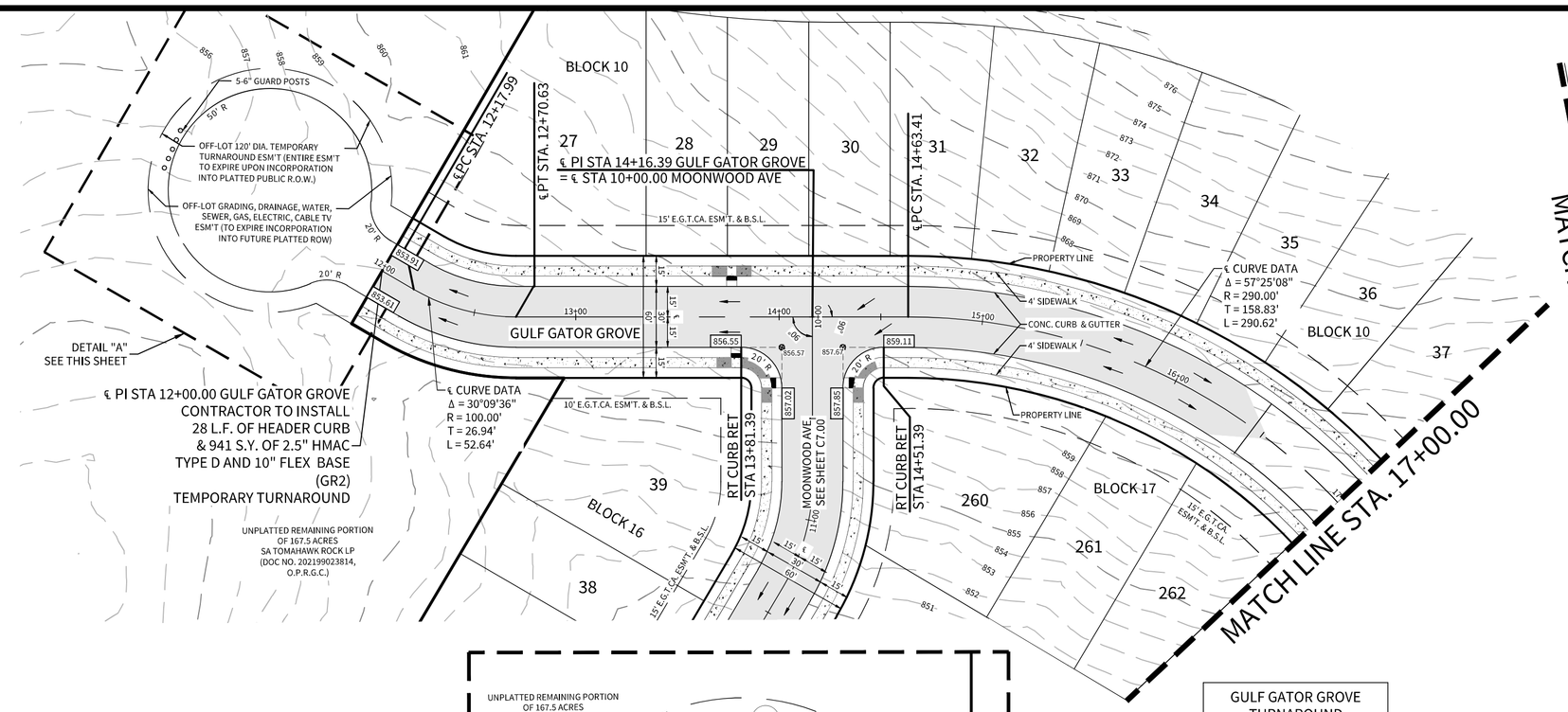
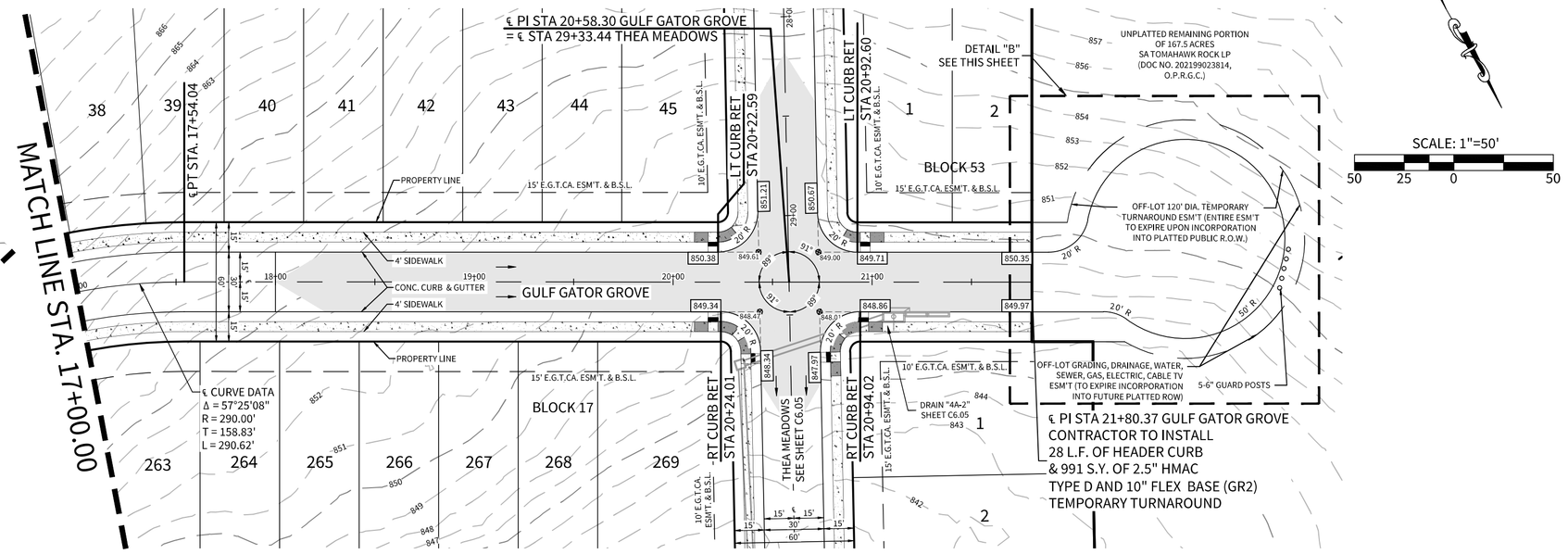
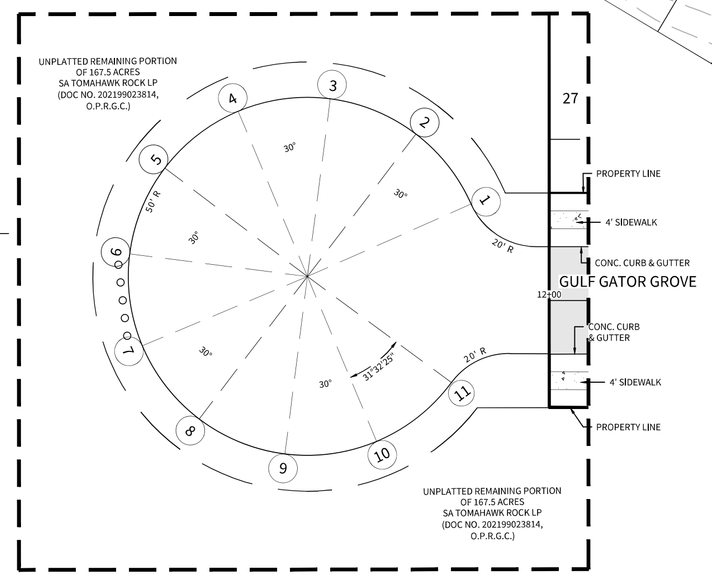
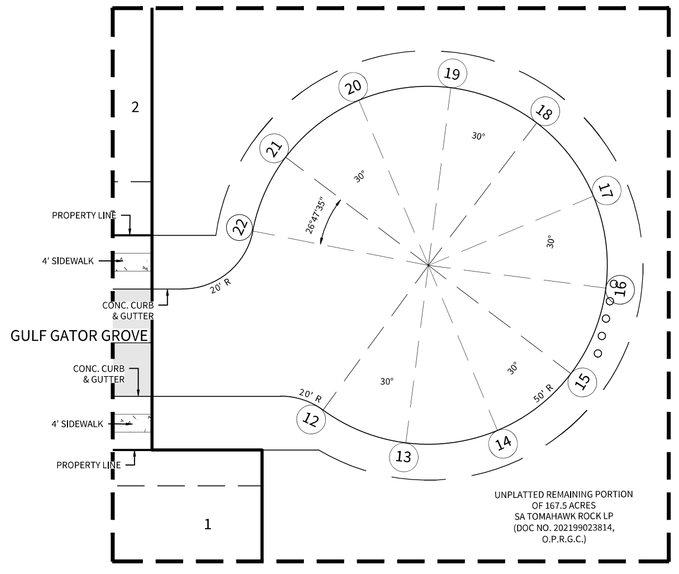






DETAIL "A"
SCALE: 1" = 30'

GULF GATOR GROVE TURNAROUND	
POINT	TOP OF PVM'T. ELEVATION
1	853.19
2	853.05
3	852.90
4	852.76
5	852.61
6	852.47
7	852.19
8	852.35
9	852.52
10	852.68
11	852.84



DETAIL "B"
SCALE: 1" = 30'

GULF GATOR GROVE TURNAROUND	
POINT	TOP OF PVM'T. ELEVATION
12	850.03
13	850.36
14	851.31
15	851.06
16	851.10
17	850.92
18	850.73
19	850.55
20	850.37
21	850.18
22	850.02

LEGEND

- SIDEWALK CONSTRUCTED WITH INFRASTRUCTURE
- STREET WASHOUT (SEE DETAIL SHEETC7.D1)
- STREET CENTERLINE
- EXISTING CONTOURS
- XXX.XX - TOP OF CURB SPOT ELEVATION
- DRIVEWAY
- XXX.XX - PAVEMENT ELEVATION

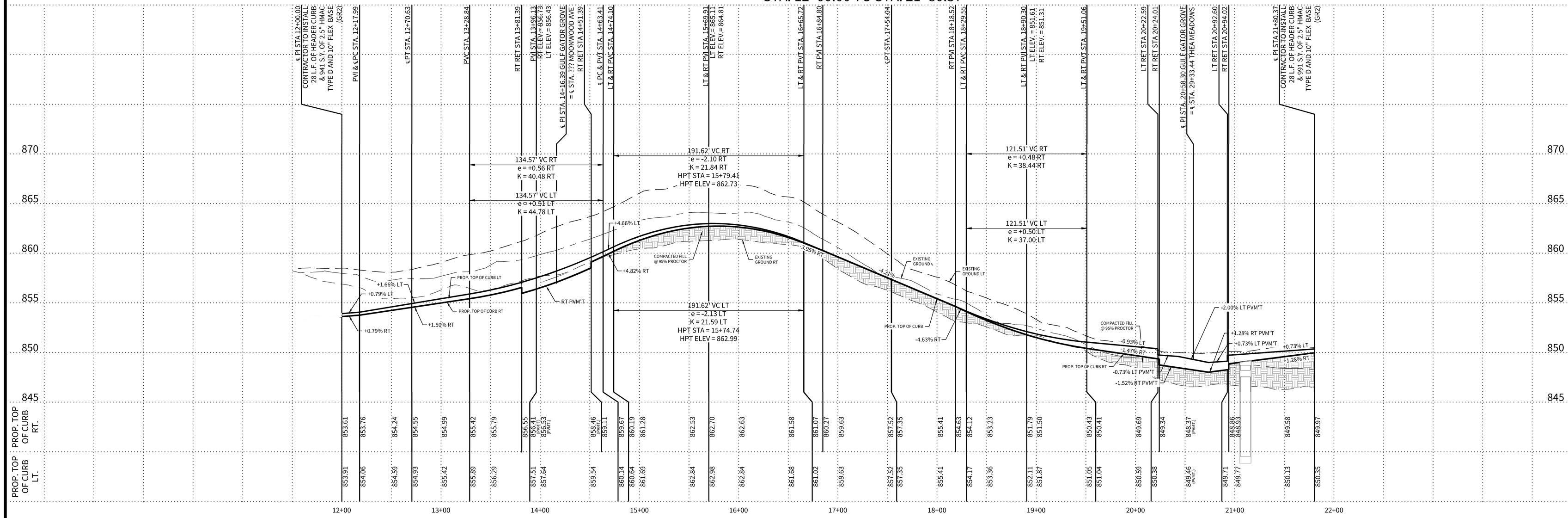
COSA TYPE "III" WHEEL CHAIR RAMPS ARE INDICATED THUS " " UNLESS OTHERWISE NOTED. WHEEL CHAIR RAMPS ARE TO BE CONSTRUCTED WITH INFRASTRUCTURE.

(SEE DETAIL SHEET C7.D2) FOR ADA RAMPS AT SIDEWALK INTERSECTIONS . DETECTABLE WARNING PAVER WITH TRUNCATED DOMES ONLY.

GULF GATOR GROVE

STA. 12+00.00 TO STA. 21+80.37

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



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San Antonio, Texas 78231
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GRACE VALLEY RANCH
PHASE 4A

STREET PLAN & PROFILE - GULF GATOR GROVE

DATE
08/12/2025

PROJECT NO.
03346.017

DRAWN BY
AG/JF

CHECKED BY
K.M.H.

REVISIONS
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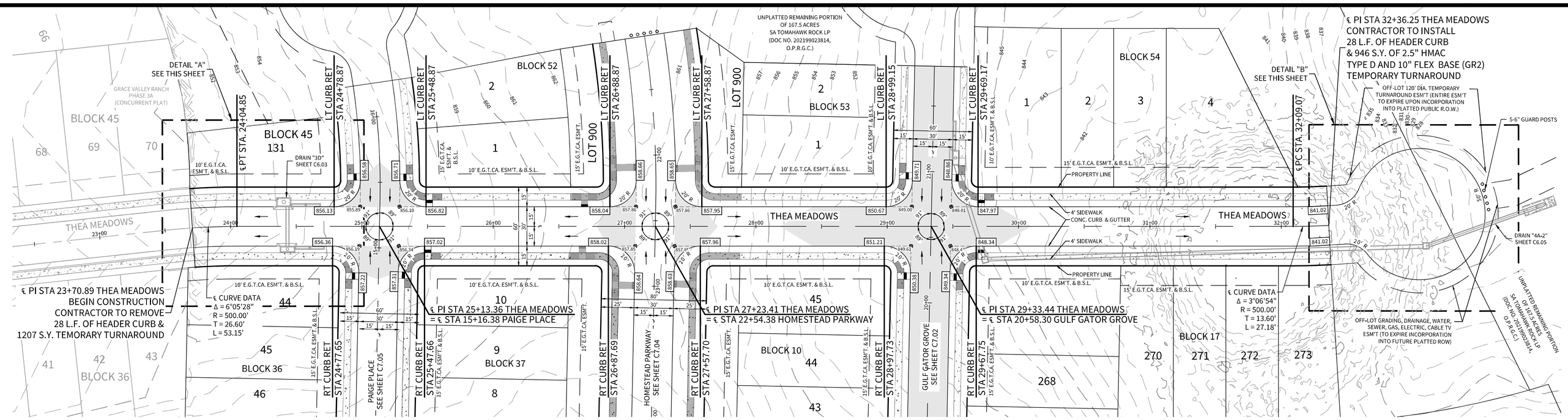
STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED PROFESSIONAL ENGINEER
08/14/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C7.02

P:\03346\03172-DWG\ARdata\Plans\ASCE\ALL_STP\GULF GATOR GROVE.dwg 2025/08/13 4:05pm dsarmia

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

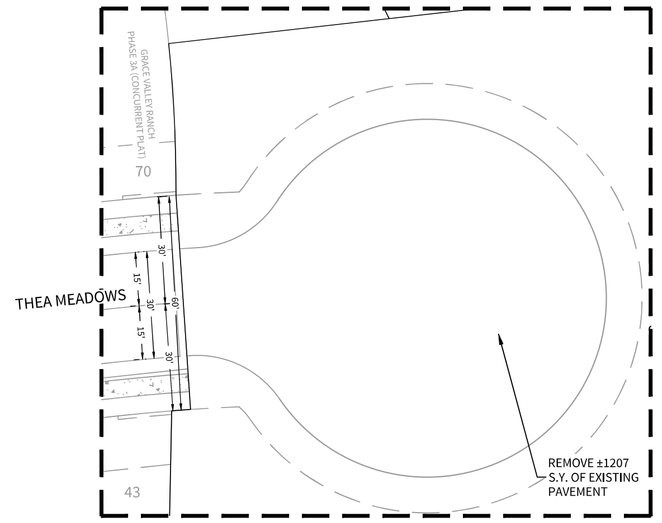


LEGEND

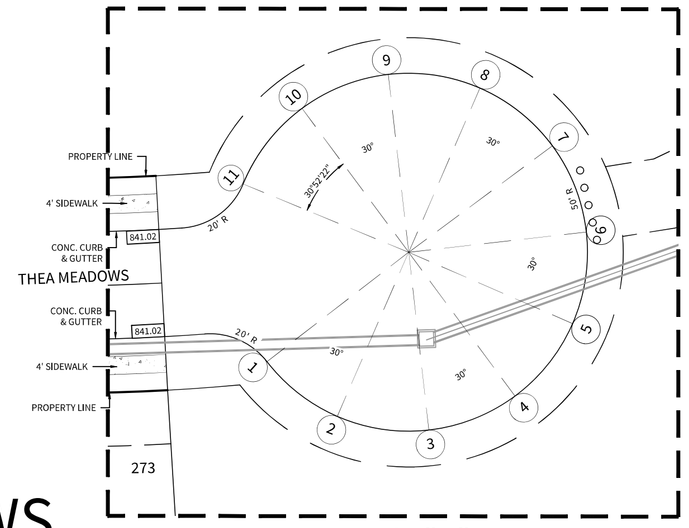
- SIDEWALK CONSTRUCTED WITH INFRASTRUCTURE
- STREET WASHOUT (SEE DETAIL SHEETC7.D1)
- STREET CENTERLINE
- EXISTING CONTOURS
- XXX.XX - TOP OF CURB SPOT ELEVATION
- DRIVEWAY
- XXX.XX - PAVEMENT ELEVATION

COSA TYPE "III" WHEEL CHAIR RAMPS ARE INDICATED THUS " " UNLESS OTHERWISE NOTED. WHEEL CHAIR RAMPS ARE TO BE CONSTRUCTED WITH INFRASTRUCTURE.

(SEE DETAIL SHEET C7.D2) FOR ADA RAMPS AT SIDEWALK INTERSECTIONS . DETECTABLE WARNING PAVER WITH TRUNCATED DOMES ONLY.



DETAIL 'A'
TEMPORARY TURNAROUND DEMOLITION
N.T.S.



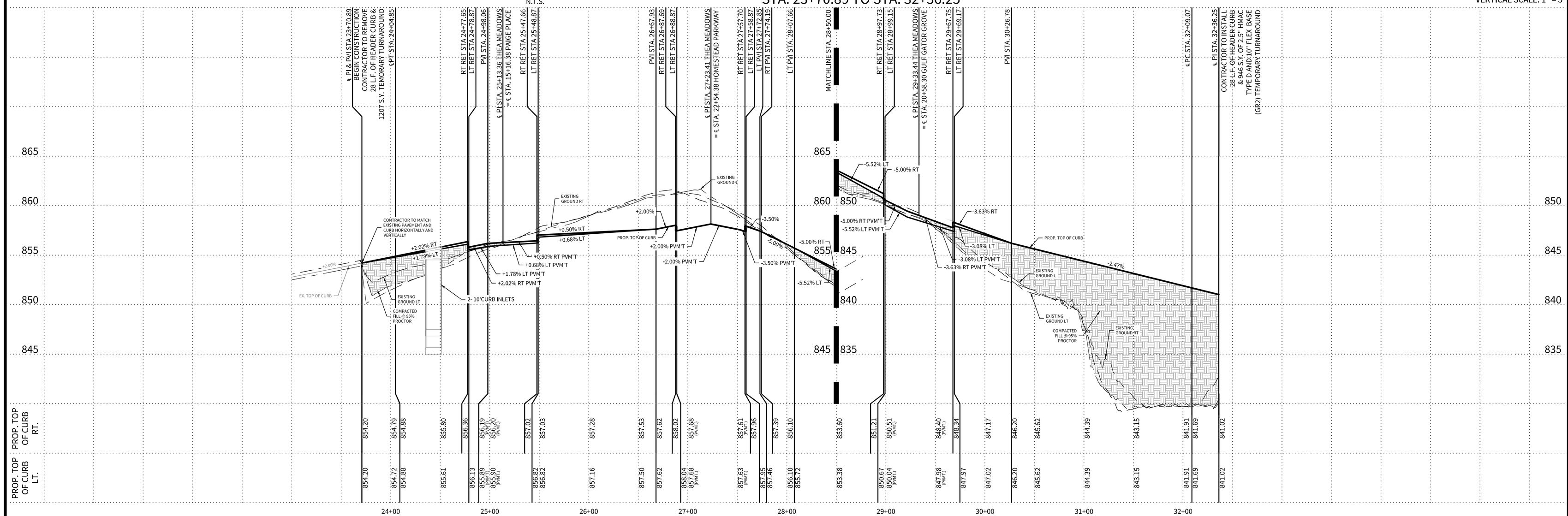
DETAIL "B"
SCALE: 1" = 30'

THEA MEADOWS TURNAROUND	
POINT	TOP OF PVM'T. ELEVATION
1	839.87
2	839.41
3	838.93
4	838.45
5	837.97
6	837.49
7	837.97
8	838.45
9	838.93
10	839.41
11	839.91

THEA MEADOWS

STA. 23+70.89 TO STA. 32+36.25

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



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GRACE VALLEY RANCH PHASE 4A

STREET PLAN & PROFILE - THEA MEADOWS

DATE
08/11/2025

PROJECT NO.
03346.017

DRAWN BY
AG/JF

CHECKED BY
K.M.H.

REVISIONS
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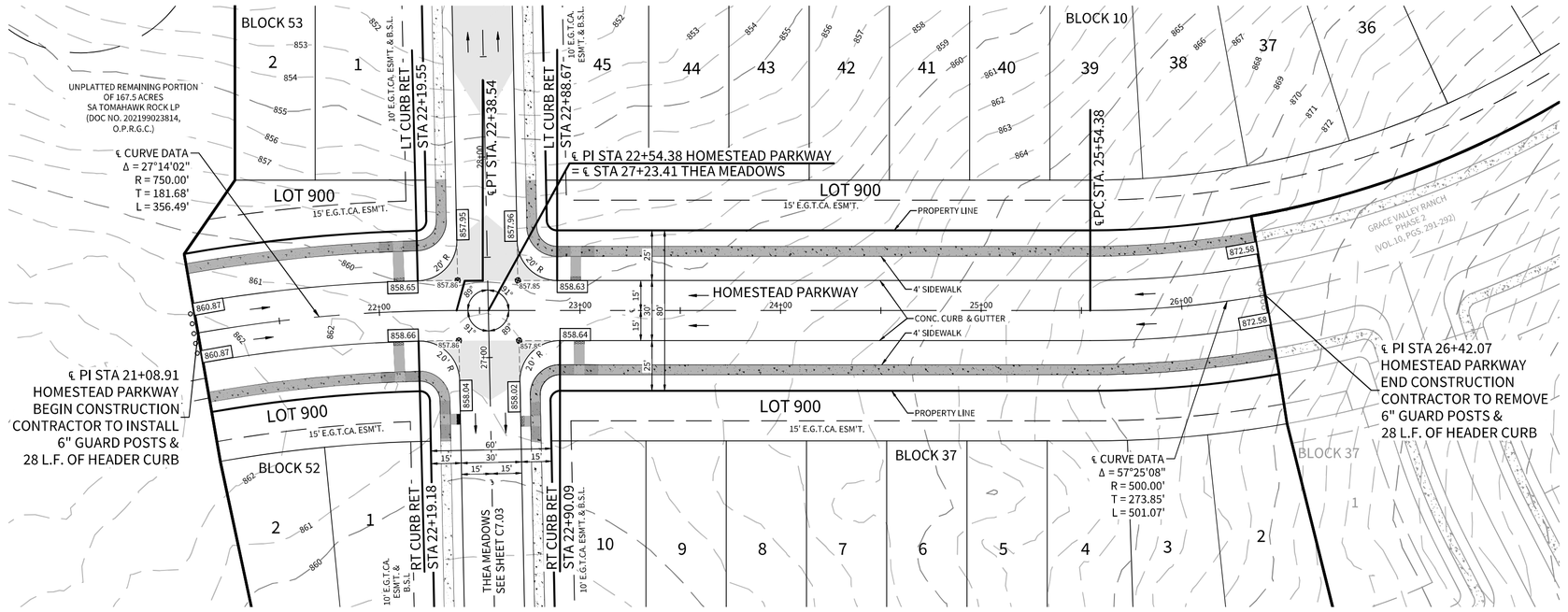
STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED PROFESSIONAL ENGINEER
08/14/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C7.03

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



SCALE: 1"=50'
50 25 0 50

LEGEND

- SIDEWALK CONSTRUCTED WITH INFRASTRUCTURE
- STREET WASHOUT (SEE DETAIL SHEETC7.D1)
- STREET CENTERLINE
- EXISTING CONTOURS
- XXX.XX - TOP OF CURB SPOT ELEVATION
- DRIVEWAY
- XXX.XX - PAVEMENT ELEVATION

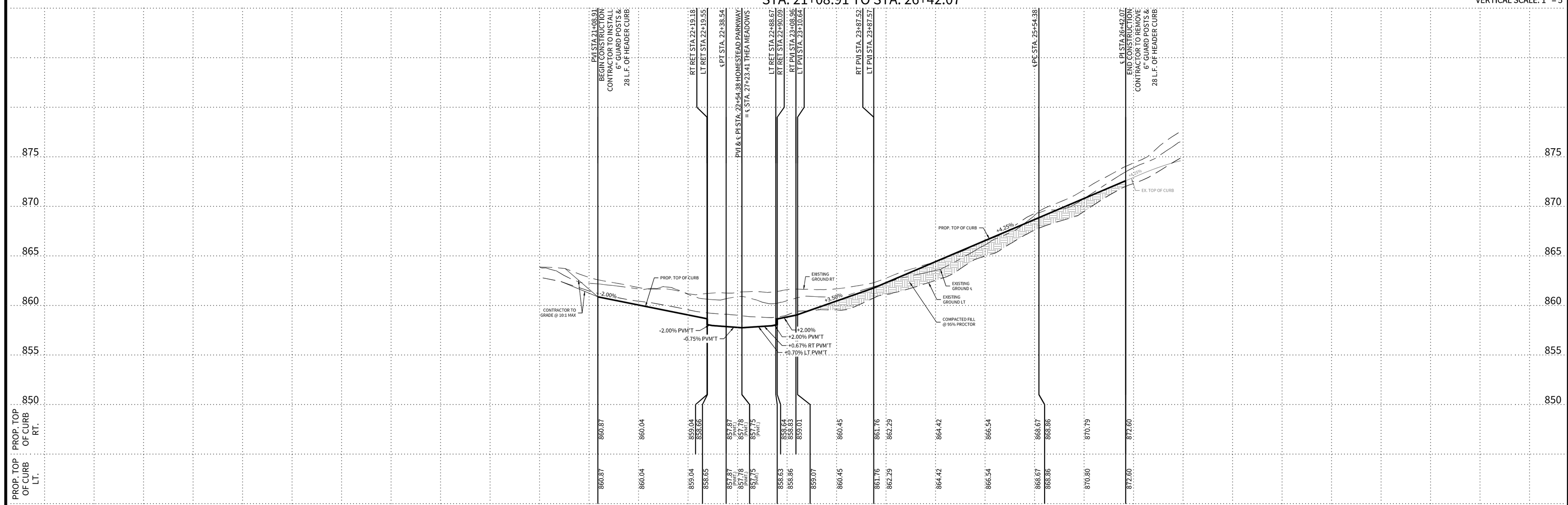
COSA TYPE "III" WHEEL CHAIR RAMPS ARE INDICATED THUS " " UNLESS OTHERWISE NOTED. WHEEL CHAIR RAMPS ARE TO BE CONSTRUCTED WITH INFRASTRUCTURE.

(SEE DETAIL SHEET C7.D2) FOR ADA RAMPS AT SIDEWALK INTERSECTIONS . DETECTABLE WARNING PAVER WITH TRUNCATED DOMES ONLY.

HOMESTEAD PARKWAY

STA. 21+08.91 TO STA. 26+42.07

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



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GRACE VALLEY RANCH
PHASE 4A

STREET PLAN & PROFILE - HOMESTEAD PARKWAY

DATE
08/11/2025

PROJECT NO.
03346.017

DRAWN BY
AG/JF

CHECKED BY
K.M.H.

REVISIONS
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STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED
PROFESSIONAL ENGINEER
08/14/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C7.04

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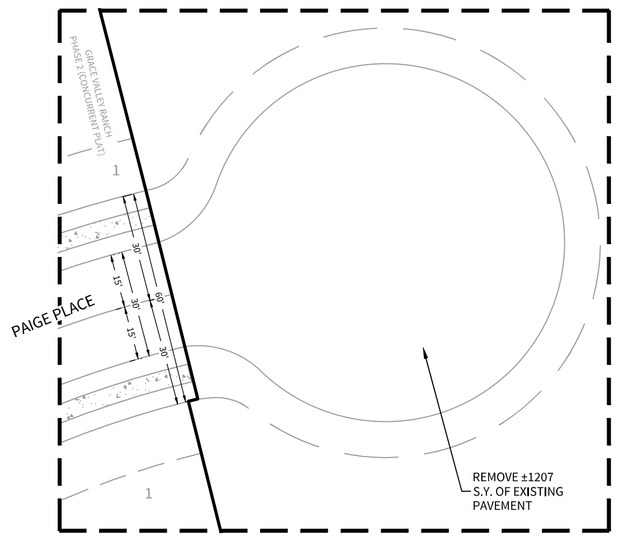
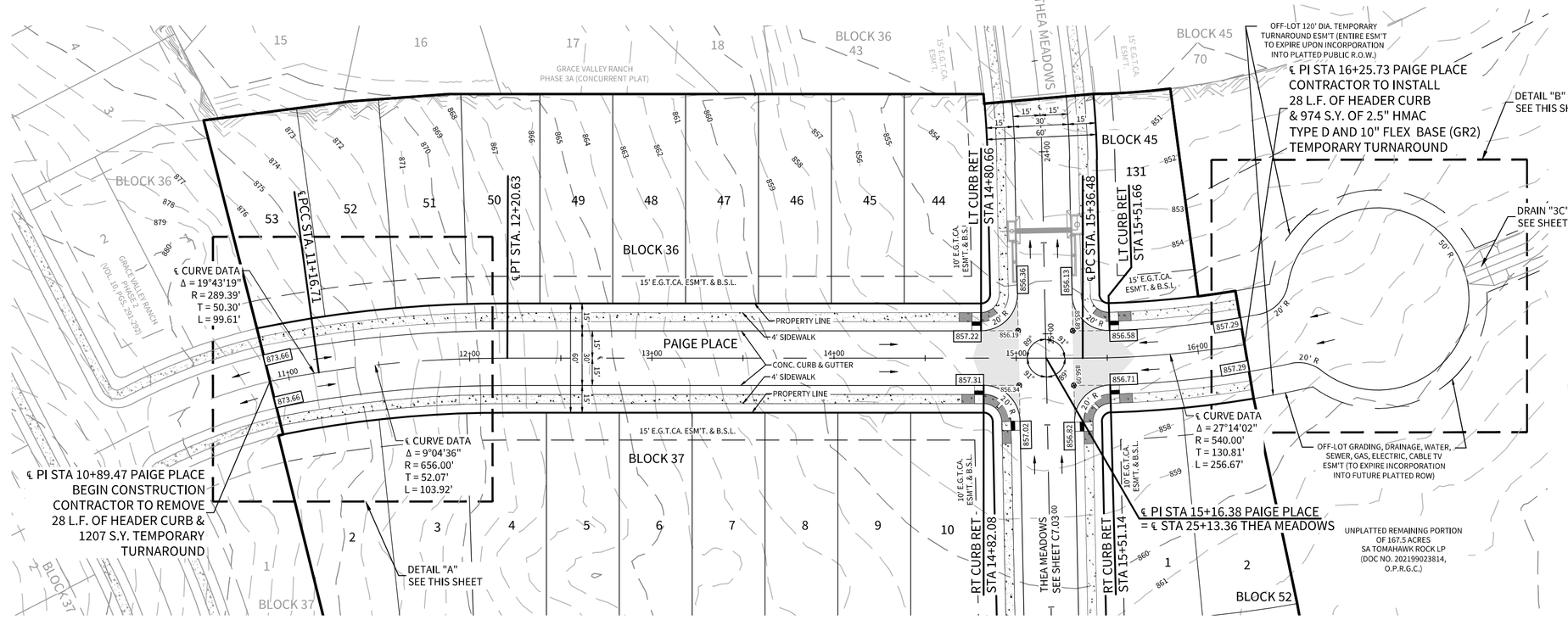
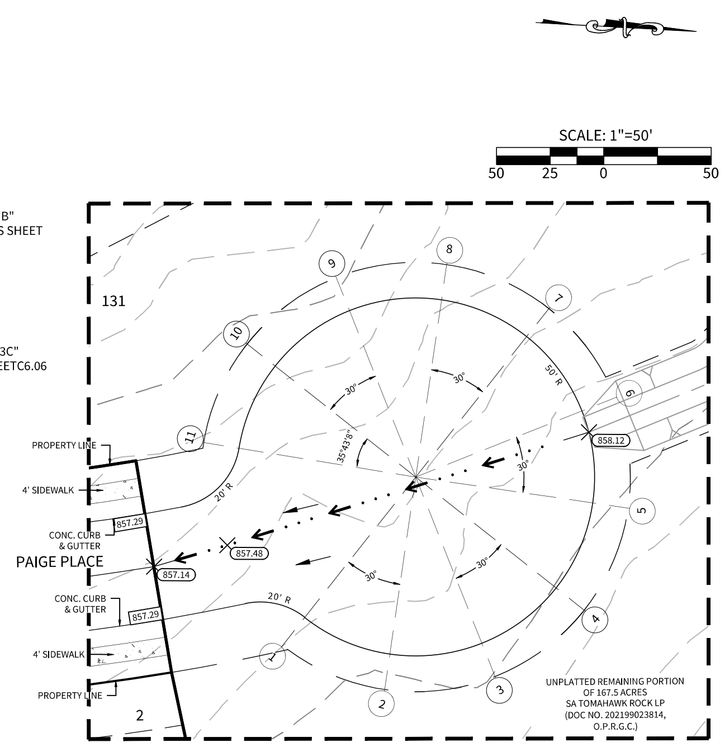


DETAIL 'A'
TEMPORARY TURNAROUND DEMOLITION
N.T.S.





DETAIL "B"
SCALE: 1" = 30'

TURNAROUND TABLE	
POINT	TOP OF PVM'T. ELEVATION
1	858.09
2	858.61
3	859.01
4	858.90
5	858.70
6	858.24
7	858.79
8	859.06
9	859.18
10	858.74
11	858.00

LEGEND

- SIDEWALK CONSTRUCTED WITH INFRASTRUCTURE
- STREET WASHOUT (SEE DETAIL SHEETC7.D1)
- STREET CENTERLINE
- EXISTING CONTOURS
- XXX.XX - TOP OF CURB SPOT ELEVATION
- DRIVEWAY
- XXX.XX - PAVEMENT ELEVATION

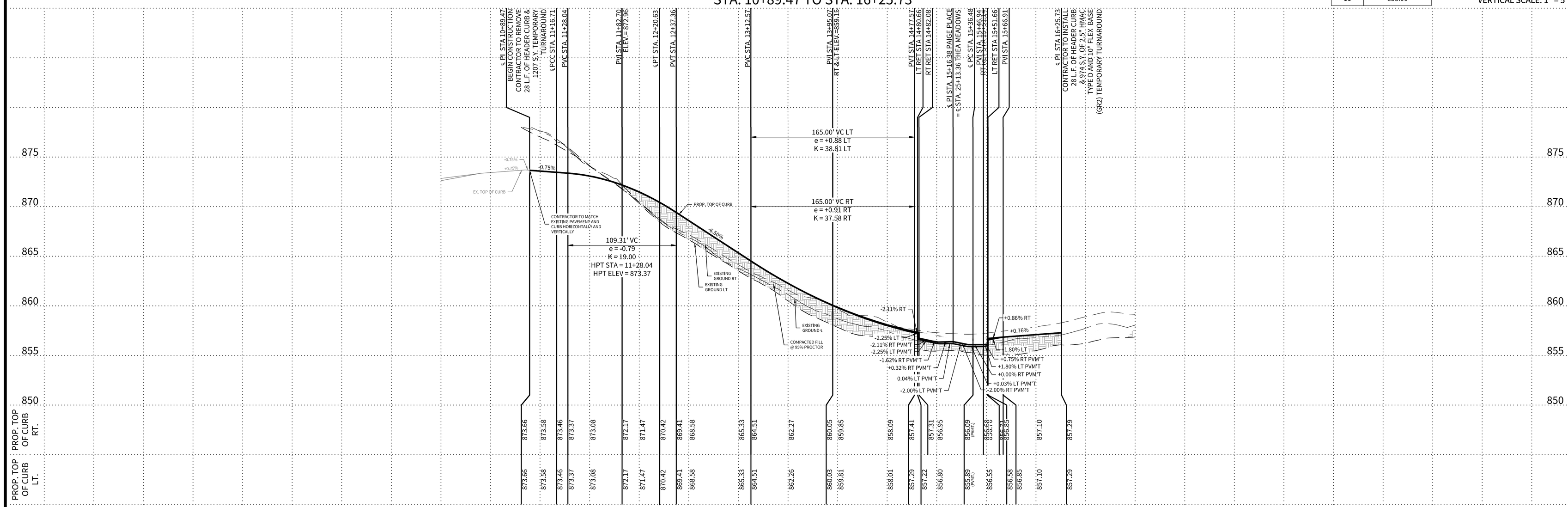
COSA TYPE "III" WHEEL CHAIR RAMPS ARE INDICATED THUS " " UNLESS OTHERWISE NOTED. WHEEL CHAIR RAMPS ARE TO BE CONSTRUCTED WITH INFRASTRUCTURE.

(SEE DETAIL SHEET C7.D2) FOR ADA RAMPS AT SIDEWALK INTERSECTIONS . DETECTABLE WARNING PAVER WITH TRUNCATED DOMES ONLY.

PAIGE PLACE

STA. 10+89.47 TO STA. 16+25.73

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



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GRACE VALLEY RANCH PHASE 4A

STREET PLAN & PROFILE - PAIGE PLACE

DATE
08/13/2025

PROJECT NO.
03346.017

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K.M.H.

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STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED PROFESSIONAL ENGINEER
08/14/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C7.05

P:\03346\03346.17-00000\Plans\Phase 4A\C7.05_STP PAIGE PLACE.dwg 2025/08/13 7:55am Beatrice

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

STREET PAVEMENT DESIGN OPTIONS (TTL, INC. - 00220903168.00)

1. PAVEMENT SECTION REQUIRED IS TO BE DETERMINED BY GEOTECHNICAL ENGINEER ON-SITE.

SUBGRADE NOTES (*):

- THE SUBGRADE WILL BE PROOF ROLLED TO IDENTIFY SOFT AREAS BEFORE STABILIZATION.
- THE SUBGRADE PLASTICITY INDEX VALUE IS EXPECTED TO BE GREATER THAN 20. SUBGRADE STABILIZATION IS NEEDED.
- ALL FILL UNDER ROADWAY TO BE MAX PI 35.
- UNDERCUT SOFT, WEAK, AND UNSTABLE SOILS BY EXCAVATING BELOW SUBGRADE LEVEL TO EXPOSE STABLE SOILS. THE EXCAVATED SOIL CAN BE USED TO RESTORE THE EXCAVATION SUBGRADE, PROVIDED THAT THE SOILS ARE RELATIVELY FREE AND CLEAN OF DELETERIOUS MATERIAL AND MATERIALS EXCEEDING 3 INCHES IN MAXIMUM DIMENSION. THE EXCAVATED SOIL, OR IMPORTED FILL SOIL, SHALL BE PLACED IN MAXIMUM 6-INCH COMPACTED LIFTS. EACH LIFT OF SOIL SHALL BE MOISTURE CONDITIONED BETWEEN PLUS OR MINUS THREE (±3) PERCENTAGE POINTS OF THE OPTIMUM MOISTURE CONTENT AND COMPACTED TO AT LEAST 95 PERCENT OF THE MAXIMUM DRY DENSITY DETERMINED IN ACCORDANCE WITH THE STANDARD COMPACTION EFFORT (ASTM D 698). IF UNDERCUTTING DEEPER THAN ABOUT 3 FEET IS NEEDED, CONTACT FSG.
- SOIL SUBGRADE AREAS REQUIRING FILL PLACEMENT SHOULD BE SCARIFIED TO A DEPTH OF ABOUT EIGHT (8) INCHES AND MOISTURE CONDITIONED BETWEEN PLUS OR MINUS TWO (±2) POINTS OF THE OPTIMUM MOISTURE CONTENT. THE MOISTURE CONDITIONED SUBGRADE SHOULD THEN BE COMPACTED TO AT LEAST 95 PERCENT OF THE MAXIMUM DRY DENSITY DETERMINED IN ACCORDANCE WITH ASTM D 698. THE SUBGRADE SHOULD BE MOISTURE CONDITIONED JUST PRIOR TO FILL PLACEMENT SO THE SUBGRADE MAINTAINS ITS COMPACTION MOISTURE LEVELS AND DOES NOT DRY OUT.
- ANY FILL 5' OR GREATER IN THICKNESS IS TO BE COMPACTED TO D1557.
- ON-SITE SOILS (GENERAL FILL), SELECT FILL OR GRANULAR FILL SOIL SHOULD BE PLACED TO ACHIEVE THE DESIRED ELEVATION.

GENERAL NOTES (**)

- INPUT PARAMETERS ARE SHOWN IN TABLE NO. 6. PLEASE CALL US TO PROVIDE PAVEMENT RECOMMENDATIONS, IF NEEDED, FOR DIFFERENT INPUT VALUES.
- IF REPETITIVE TRUCK OR HEAVY TRUCK TRAFFIC IS ANTICIPATED, PLEASE CONTACT US FOR REVISED PAVEMENT RECOMMENDATIONS.
- PAVEMENT SECTION RECOMMENDATIONS ARE BASED ON A CBR VALUE OF 1.8. THE PAVEMENT RECOMMENDATIONS PRESENTED ABOVE ARE NOT BASED ON THE SHRINK / SWELL CHARACTERISTICS OF THE UNDERLYING SOILS. IF WATER IS ALLOWED TO GET UNDERNEATH THE ASPHALT / CONCRETE OR IF MOISTURE CONTENT OF THE BASE OR SUBGRADE CHANGES SIGNIFICANTLY, THEN PAVEMENT DISTRESS WILL OCCUR. MOISTURE PENETRATION UNDERNEATH THE ASPHALT PAVEMENT SURFACE WILL BE REDUCED BY USING DEEPER CURBS; CURBS EXTENDING A MINIMUM OF 3 INCHES INTO SUBGRADE.
- THE PAVEMENT CAN EXPERIENCE CRACKING AND DEFORMATION DUE TO SHRINKAGE AND SWELLING CHARACTERISTICS OF THE SOILS AS DESCRIBED IN THE VERTICAL MOVEMENTS SECTION OF THIS REPORT.

SUBGRADE VERIFICATION:

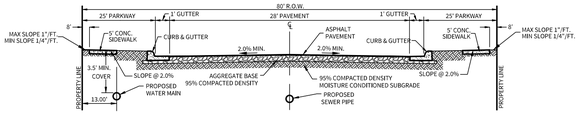
- AT THE TIME OF CONSTRUCTION, THE FINAL PAVEMENT SUBGRADE WILL BE OBSERVED AND VERIFIED BY A REPRESENTATIVE OF TTL, INC.

PRIME COAT:

- THE PRIME COAT SHOULD CONSIST OF SEALING THE BASE WITH AN OIL SUCH AS MC-30 OR AE-P ASPHALT CEMENT. THE PRIME COAT SHOULD BE APPLIED AT A RATE NOT OT EXCEED 0.35 GALLONS PER SQUARE YARD WITH MATERIALS WHICH MEET TXDOT ITEM 300. THE PRIME COAT WILL HELP TO MINIMIZE PENETRATION OF RAINFALL AND OTHER MOISTURE THAT PENETRATES THE BASE.

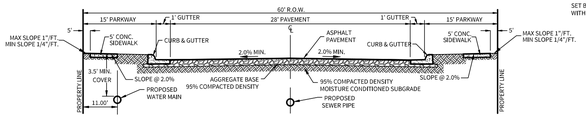
TACK COAT:

- THE ASPHALTIC MATERIAL USED FOR TACK COAT SHALL MEET THE REQUIREMENTS FOR “ASPHALT CEMENT”, “CUT-BACK ASPHALT” OR “EMULSIFIED ASPHALT” IN ITEM NO. 300, “ASPHALTS, OILS AND EMULSIONS” OF THE TEXAS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS. THE ASPHALTIC MATERIAL USED FOR TACK COAT SHALL BE THE TYPE OR GRADE SHOWN IN THE REFERRING SPECIFICATION, OR ON THE PLANS, OR AS DIRECTED/APPROVED BY THE ENGINEER.



COLLECTOR STREET CROSS-SECTION

N.T.S.

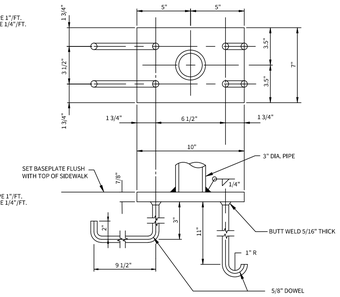


LOCAL "A" STREET CROSS-SECTION

N.T.S.

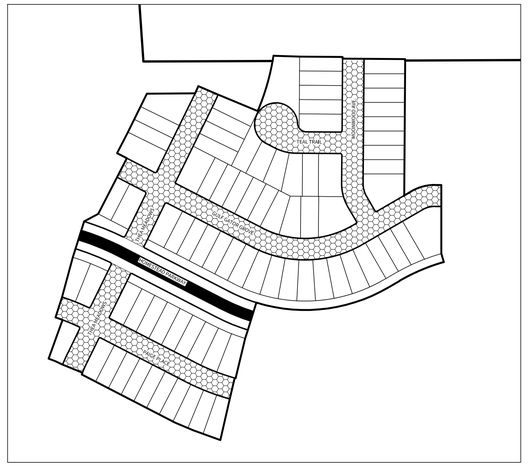
STREET TYPE	HMAC TYPE "D"	LIME STABILIZED SUBGRADE	FLEX BASE (TY A GR 1 OR 2)	STRUCTURAL NUMBER
LOCAL "A"	2.5"	---	10"	2.50
COLLECTOR	3.5"	---	23"	4.76

STREET PAVEMENT DESIGN



PIPE ANCHORAGE DETAILS

N.T.S.



PAVEMENT DESIGN SCHEMATIC N.T.S.

NOTE:
REFERENCE GEOTECHNICAL REPORT TTL INC NO. 00220903168.00 FOR BORING INFORMATION AND CBR LOCATIONS.

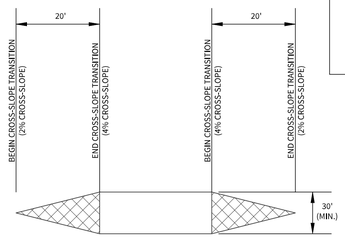
LEGEND:

LOCAL "A"

MOONWOOD AVE.	STA. 10+10.00 - 14+83.09
TEAL TRAIL	STA. 10+00.00 - 12+63.00
THEA MEADOWS	STA. 23+71.00 - 32+36.25
GULF GATOR GROVE	STA. 12+00.00 - 21+80.37
PAIGE PLACE	STA. 10+89.00 - 16+25.73

COLLECTOR

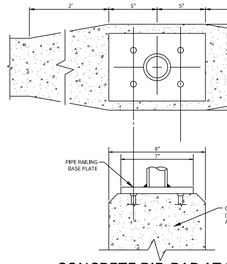
HOMESTEAD PARKWAY	STA. 21+09.00 - 26+42.00



LEGEND

4% CROSS-SLOPE SECTION (SEE DETAIL BELOW FOR TRANSITION DISTANCE)

CROSS-SLOPE TRANSITION DETAIL

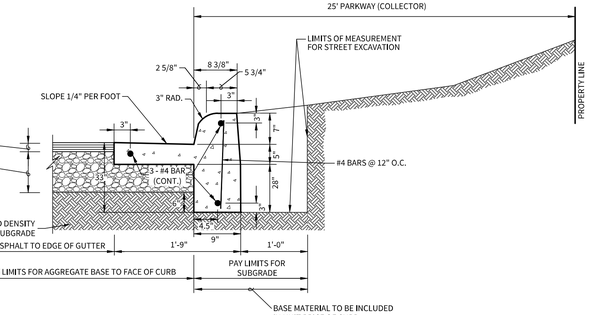


CONCRETE RIP-RAP AT PIPE RAILING BASE PLATE DETAIL

N.T.S.

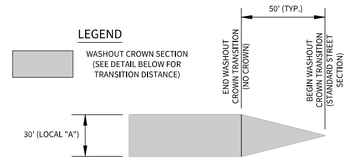
NOTES:

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



COLLECTOR - CURB & GUTTER DETAIL

N.T.S.

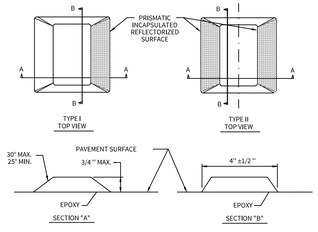


LEGEND

WASHOUT CROWN SECTION (SEE DETAIL BELOW FOR TRANSITION DISTANCE)

WASHOUT CROWN TRANSITION DETAIL

N.T.S.



1) REFLECTORIZED BLUE - FIRE HYDRANT

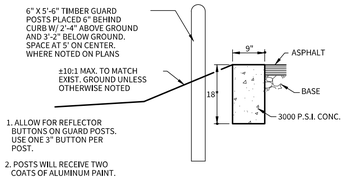
2) ADHENSIVE SHALL BE APPLIED IN SUFFICIENT TO ENSURE THE FOLLOWING:
   a) 100 PERCENT OF THE BONDING AREA OF RAISED PAVEMENT MARKERS SHALL BE IN CONTACT WITH THE ADHESIVE.
   b) RAISED PAVEMENT MARKERS SHALL NOT BE IN CONTACT WITH THE PAVEMENT SURFACE, BUT SHALL BE SEATED ON A CONTINUOUS LAYER OF ADHESIVE.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

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

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

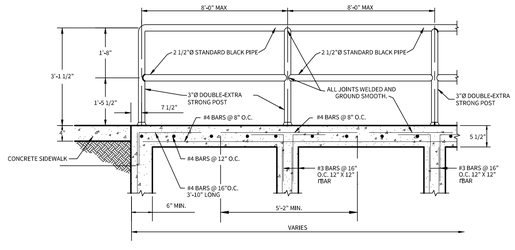
PAVEMENT REFLECTORS DETAIL

N.T.S.



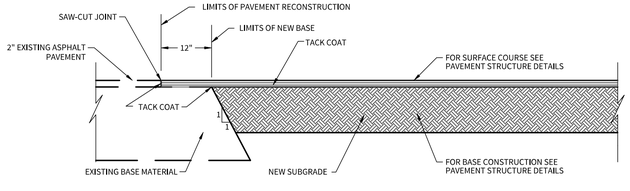
HEADER CURB DETAIL

N.T.S.



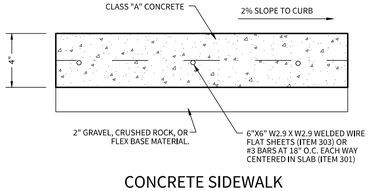
TYPICAL SIDEWALK BRIDGE SECTION AND SIDEWALK PIPE RAILING

N.T.S.



PAVEMENT JUNCTION DETAILS

N.T.S.



CONCRETE SIDEWALK

N.T.S.

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P:(210) 681.2951 F: (210)523.7112

GRACE VALLEY RANCH
PHASE 4A

STANDARD STREET DETAILS

DATE
08/12/2025

PROJECT NO.
03346.017

DRAWN BY
AG/JF

CHECKED BY
K.M.H.

REVISIONS

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STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED
PROFESSIONAL ENGINEER
08/14/2025

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TBPLS No. 10048500

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DETAILS ON THIS DRAWING ARE NOT TO SCALE

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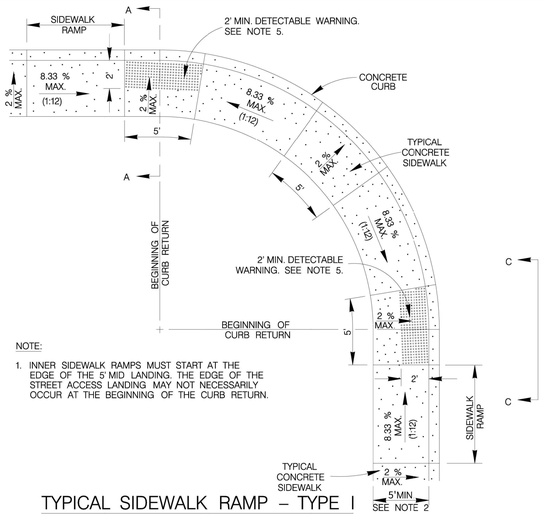


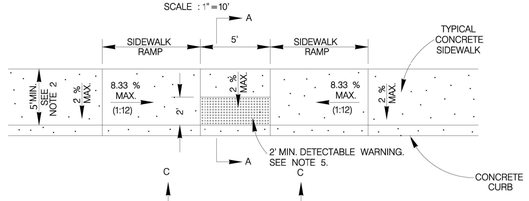
NOTE:

1. INNER SIDEWALK RAMPS MUST START AT THE EDGE OF THE 5'MID LANDING. THE EDGE OF THE STREET ACCESS LANDING MAY NOT NECESSARILY OCCUR AT THE BEGINNING OF THE CURB RETURN.

TYPICAL SIDEWALK RAMP – TYPE I

SIDEWALK ABUTS THE CURB

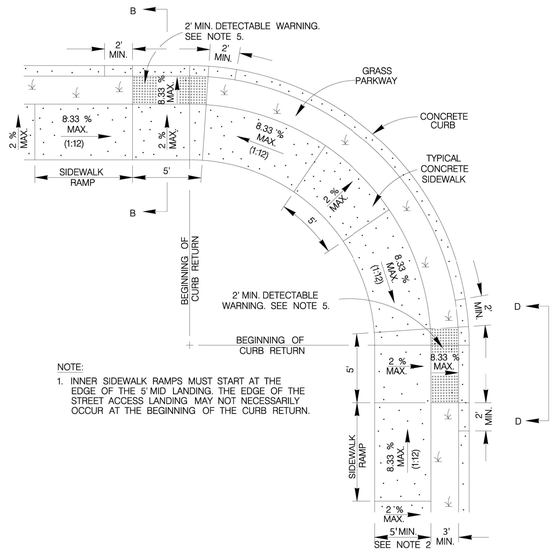
SCALE : 1" = 10'



TYPICAL SIDEWALK RAMP – TYPE II

USED AT TEE INTERSECTIONS WHERE SIDEWALK ABUTS CURB

SCALE : 1" – 10'



NOTE:

1. INNER SIDEWALK RAMPS MUST START AT THE EDGE OF THE 5'MID LANDING. THE EDGE OF THE STREET ACCESS LANDING MAY NOT NECESSARILY OCCUR AT THE BEGINNING OF THE CURB RETURN.

TYPICAL SIDEWALK RAMP – TYPE III

SIDEWALK SEPARATED FROM CURB

SCALE : 1" = 10'

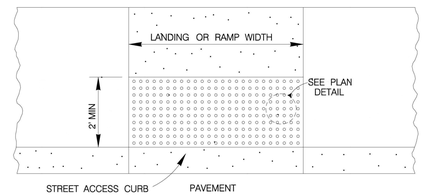
TYPICAL SIDEWALK RAMP – TYPE IV

USED AT TEE INTERSECTIONS WHERE SIDEWALK IS SEPARATED FROM CURB

SCALE : 1" = 10'

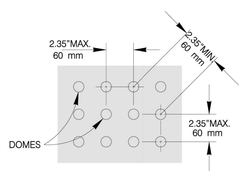
GENERAL NOTES

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



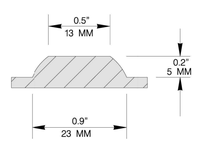
DETECTABLE WARNING SURFACE

SCALE : 1" = 4'



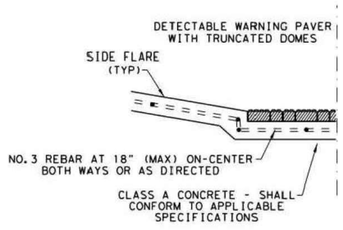
PLAN DETAIL

NO SCALE

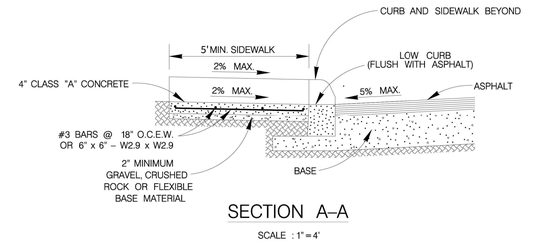


DOME SECTION

NO SCALE

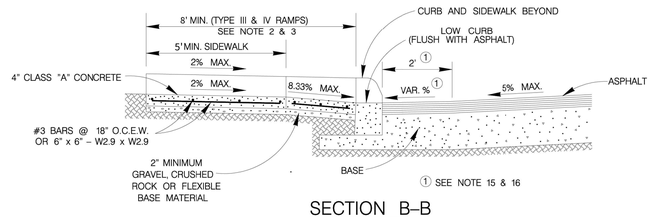


SECTION VIEW DETAIL
CURB RAMP AT DETECTIBLE WARNINGS



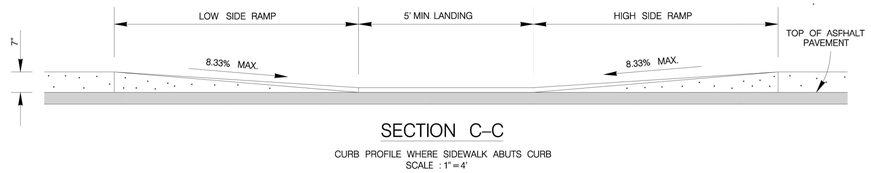
SECTION A–A

SCALE : 1" = 4'



SECTION B–B

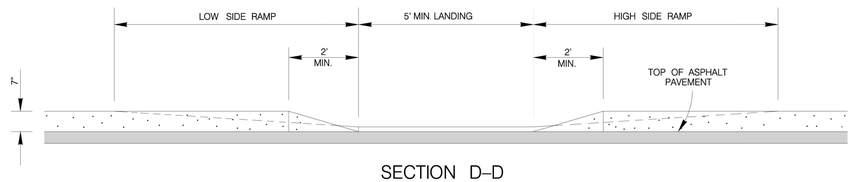
SCALE : 1" = 4'



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'

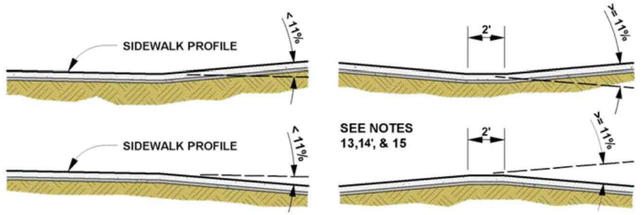


TABLE 1 (SEE NOTE 4)		
GUTTER SLOPE	SIDEWALK RAMP LENGTH (1:12)	
	LOW SIDE	HIGH SIDE
1%	5'–6"	7'–2"
2%	5'–0"	8'–4"
3%	4'–6"	10'–0"
4%	4'–2"	12'–6"
5%	3'–10"	16'–8"

SIDEWALK PROFILES AND GRADE REQUIREMENTS

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.

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

GRACE VALLEY RANCH PHASE 4A

WHEELCHAIR RAMP DETAILS

DATE
06/02/2025

PROJECT NO.
03346.017

DRAWN BY
AG/JF

CHECKED BY
K.M.H.

REVISIONS
1.
2.
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9.

STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED PROFESSIONAL ENGINEER
06/02/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C7.D2

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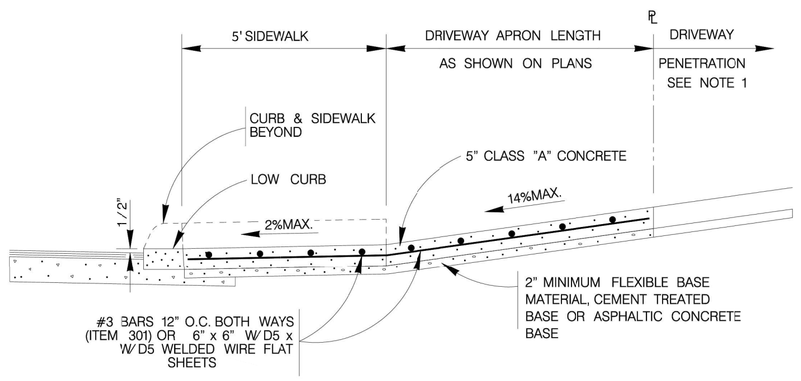
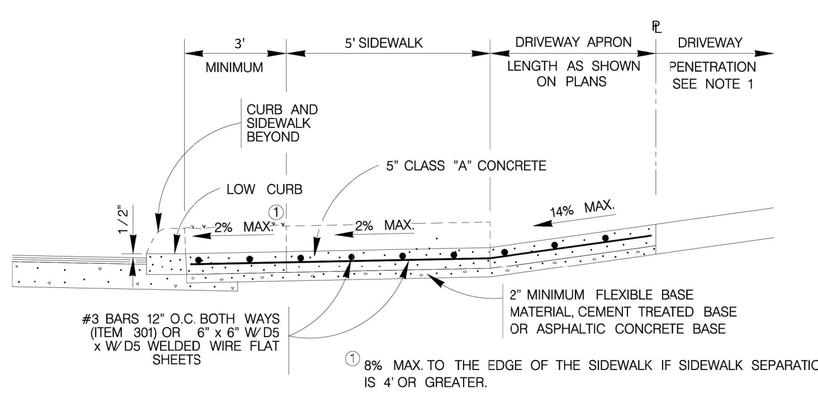


TYPICAL RESIDENTIAL DRIVEWAY SECTION

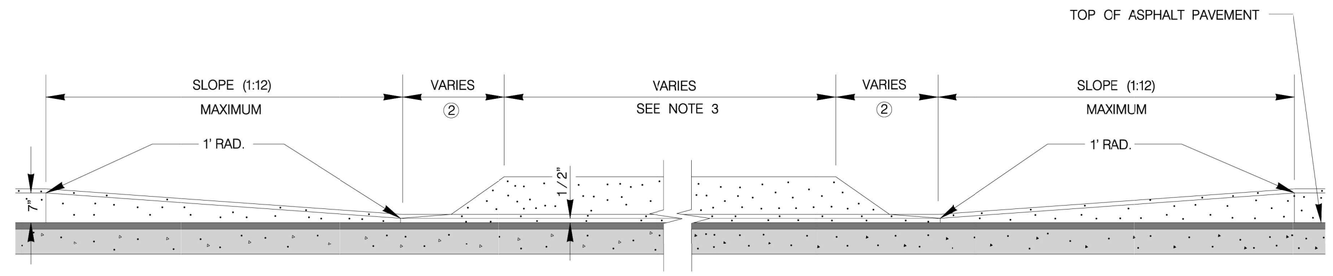
WITH SIDEWALK ABUTTING CURB



TYPICAL RESIDENTIAL DRIVEWAY SECTION

WITH SIDEWALK SEPARATED FROM CURB

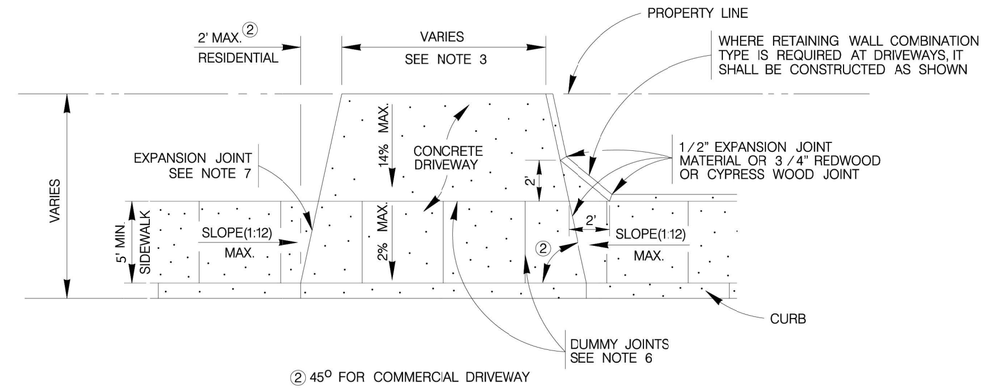
① 8% MAX. TO THE EDGE OF THE SIDEWALK IF SIDEWALK SEPARATION IS 4' OR GREATER.



② RESIDENTIAL : 2' MAXIMUM; COMMERCIAL: SEE PLAN VIEW

CURB PROFILE AT DRIVEWAY

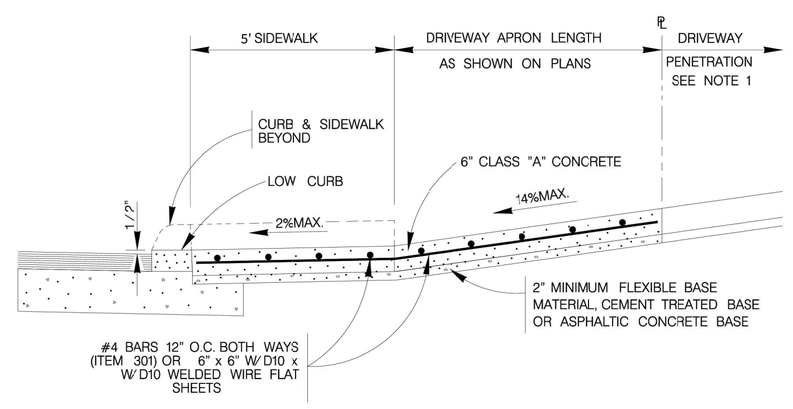
WITH SIDEWALK ABUTTING CURB



② 45° FOR COMMERCIAL DRIVEWAY

TYPICAL DRIVEWAY PLAN VIEW

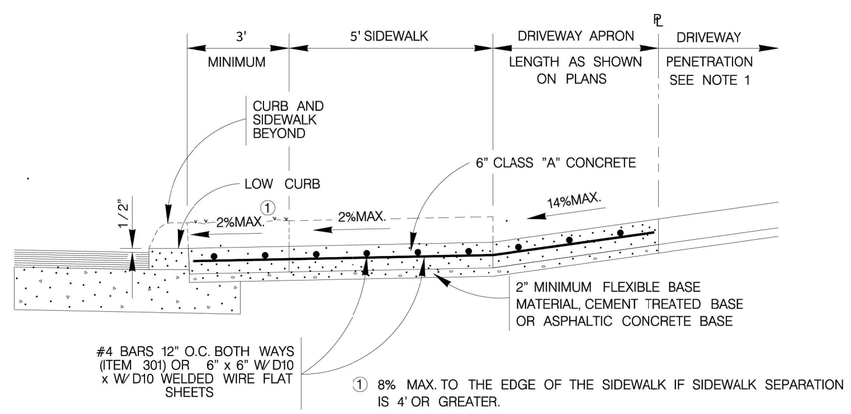
WITH SIDEWALK ABUTTING CURB



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

TYPICAL RESIDENTIAL DRIVEWAY SECTION

WHERE PROPERTY IS LOWER THAN STREET & SIDEWALK IS ABUTTING CURB



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

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

TYPICAL RESIDENTIAL DRIVEWAY SECTION

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

TYPICAL COMMERCIAL DRIVEWAY SECTION

WITH SIDEWALK ABUTTING CURB

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

TYPICAL COMMERCIAL DRIVEWAY SECTION

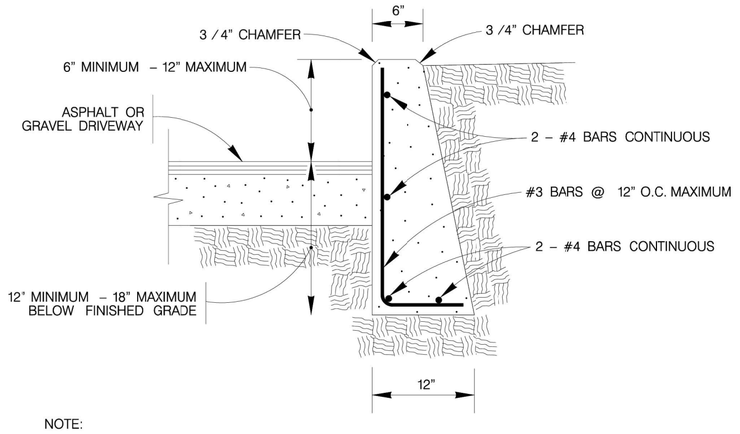
WITH SIDEWALK SEPARATED FROM CURB

CONCRETE DRIVEWAY NOTES

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

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

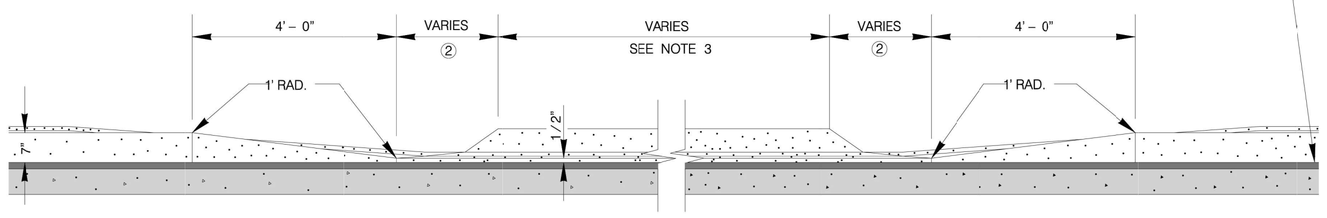
4. FOR LOCAL TYPE "A" STREETS, SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 5' AND IF SEPARATED FROM THE CURB, THE SIDEWALK SHALL BE LOCATED A MINIMUM OF 3' FROM THE BACK OF CURB.
5. FOR OTHER THAN LOCAL TYPE "A" STREETS, THE SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 5' AND SEPARATED A MINIMUM OF 3' FROM THE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



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

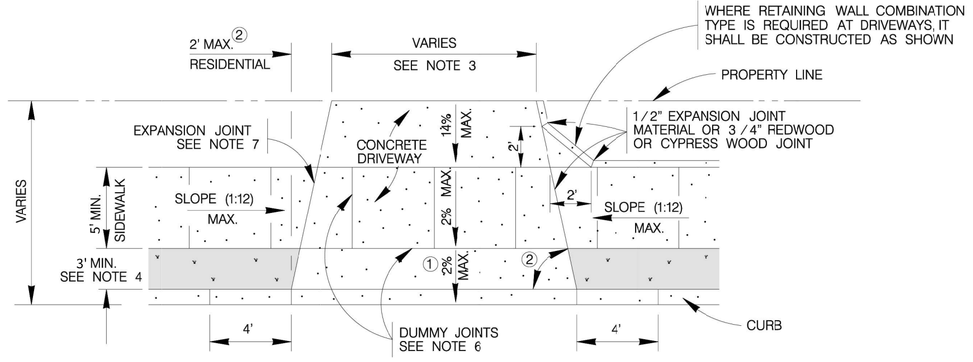
ON COMPACTED SUBGRADE



② RESIDENTIAL : 2' MAXIMUM; COMMERCIAL: SEE PLAN VIEW

CURB PROFILE AT DRIVEWAY

WITH SIDEWALK SEPARATED FROM CURB



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

② 45° FOR COMMERCIAL DRIVEWAY

TYPICAL DRIVEWAY PLAN VIEW

WITH SIDEWALK SEPARATED FROM CURB

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GRACE VALLEY RANCH PHASE 4A

CONCRETE DRIVEWAY DETAILS

DATE 06/02/2025

PROJECT NO. 03346.017

DRAWN BY AG/JF

CHECKED BY K.M.H.

REVISIONS
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STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED
PROFESSIONAL ENGINEER
06/02/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C7.D3

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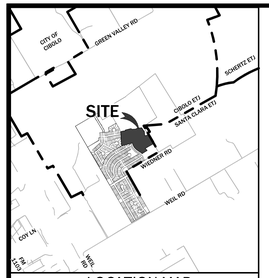


LOCATION MAP N.T.S.

NOTE:

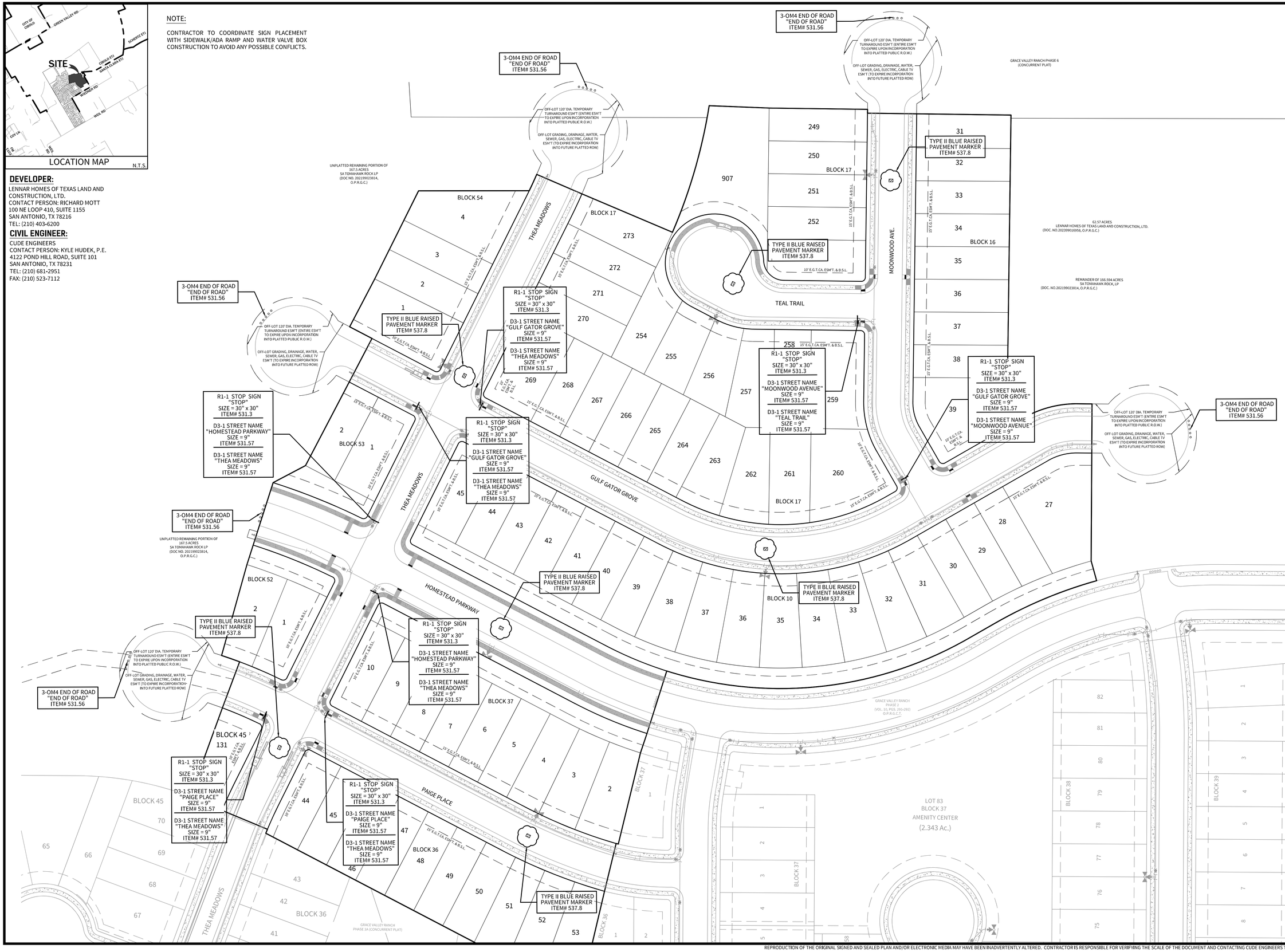
CONTRACTOR TO COORDINATE SIGN PLACEMENT WITH SIDEWALK/ADA RAMP AND WATER VALVE BOX CONSTRUCTION TO AVOID ANY POSSIBLE CONFLICTS.

DEVELOPER:

LENNAR HOMES OF TEXAS LAND AND CONSTRUCTION, LTD.
CONTACT PERSON: RICHARD MOTT
100 NE LOOP 410, SUITE 1155
SAN ANTONIO, TX 78216
TEL: (210) 403-6200

CIVIL ENGINEER:

CUDE ENGINEERS
CONTACT PERSON: KYLE HUDEK, P.E.
4122 POND HILL ROAD, SUITE 101
SAN ANTONIO, TX 78231
TEL: (210) 681-2951
FAX: (210) 523-7112



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San Antonio, Texas 78231
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GRACE VALLEY RANCH PHASE 4A

TRAFFIC CONSTRUCTION PLAN

DATE 06/02/2025
PROJECT NO. 03346.017
DRAWN BY AG/JF
CHECKED BY K.M.H.

REVISIONS
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STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED PROFESSIONAL ENGINEER
06/03/2025
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C8.00

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DATE:
GTD:

SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

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

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

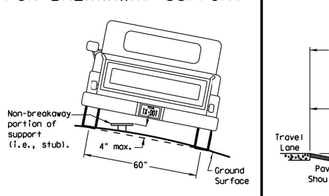
Number of Posts (1 or 2)

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

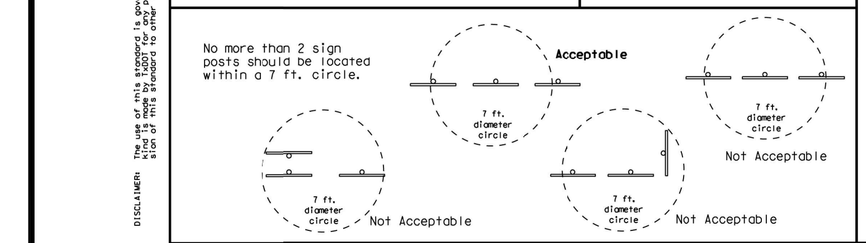
Sign Mounting Designation
- P = Prefab. "Path" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
- T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
- U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))

IF REQUIRED
- TEXT or ZEXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
- BM = Extruded Mind Beam (see SMD(SLIP-1) to (SLIP-3))
- MC = 1.12 PSF Metal Channel (see SMD(SLIP-1) to (SLIP-3))
- EXAL = Extruded Aluminum Sign Panels (see SMD(SLIP-3))

REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT

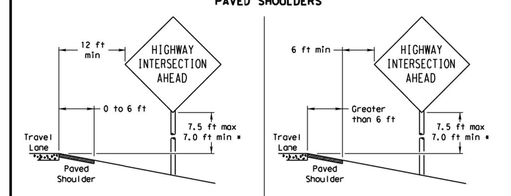


To avoid vehicle undercarriage snagging, any substantial reming of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel paths).



SIGN LOCATION

PAVED SHOULDERS



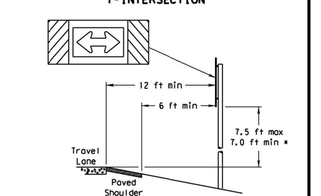
LESS THAN 6 FT. WIDE

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

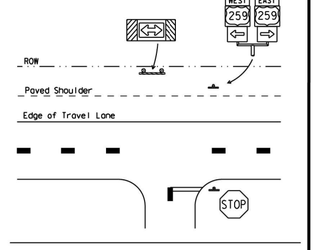
GREATER THAN 6 FT. WIDE

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

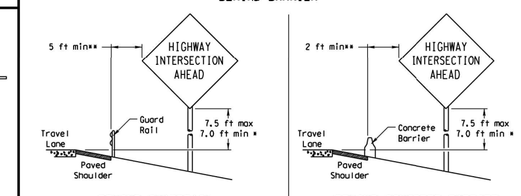
T-INTERSECTION



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



BEHIND BARRIER



BEHIND GUARDRAIL | **BEHIND CONCRETE BARRIER**

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

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

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

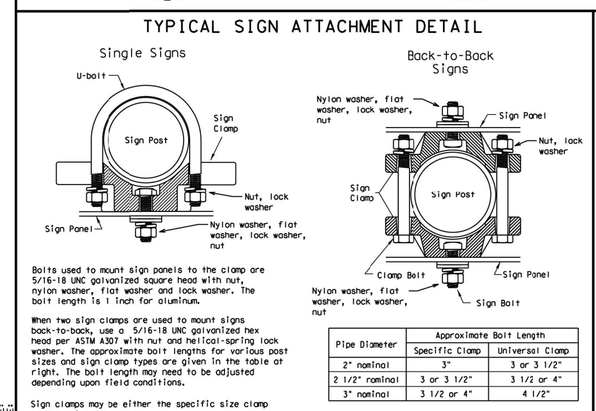
(2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

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

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

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

TYPICAL SIGN ATTACHMENT DETAIL



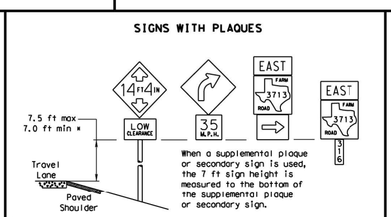
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

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

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

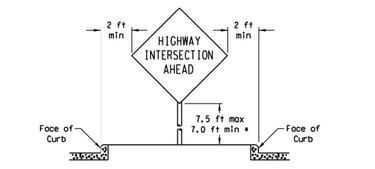
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES

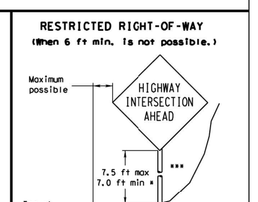


When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

CURB & GUTTER OR RAISED ISLAND



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



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

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

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

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

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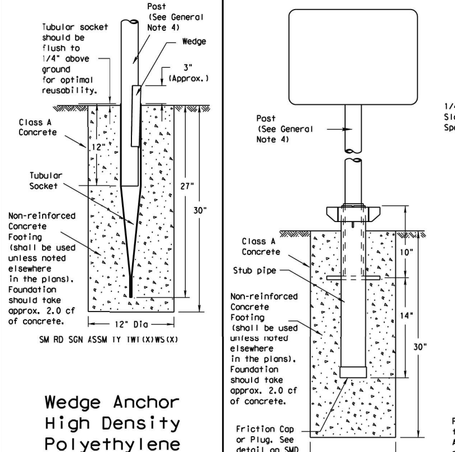
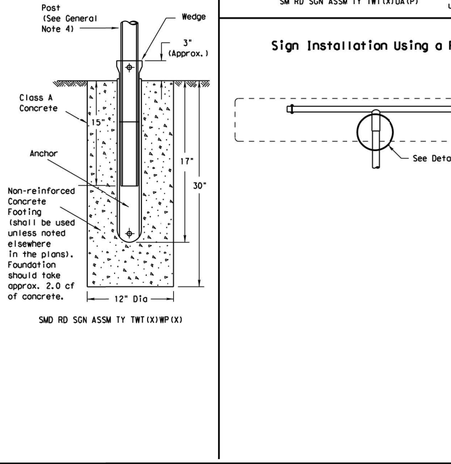
Wedge Anchor Steel System



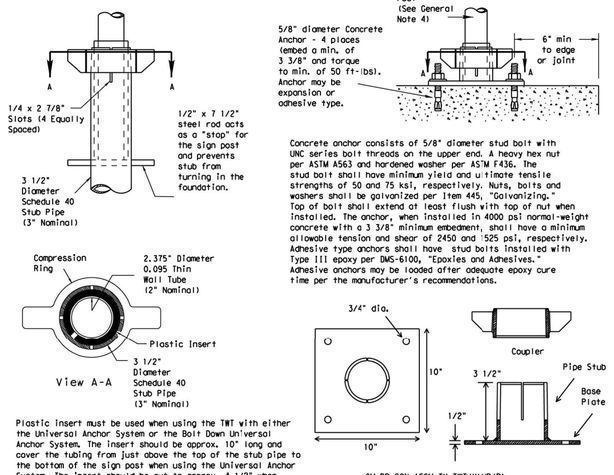
SM RD SGN ASSM TY TWT(XX)UA(X)

Wedge Anchor High Density Polyethylene (HDPE) System



SMD RD SGN ASSM TY TWT(XX)WP(X)

Universal Anchor System with Thin-Walled Tubing Post

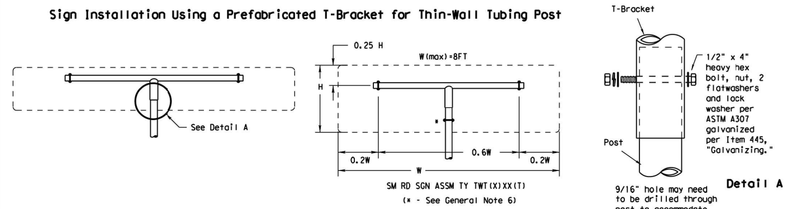


SM RD SGN ASSM TY TWT(XX)UA(P)

Plastic insert must be used when using the TWT with either the Universal Anchor System or the Bolt Down Universal Anchor System. The insert should be cut to approx. 10" long and cover the tubing from just above the top of the stub pipe to the bottom of the sign post when using the Universal Anchor System. The insert should be cut to approx. 4 1/2" when used with the Bolt Down Universal Anchor System.

SM RD SGN ASSM TY TWT(XX)UB(P)

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



NOTE

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

GENERAL NOTES:
1. The Wedge Anchor System and the Universal Anchor System with thin wall tubing post may be used to support up to 10 square feet of sign area.
2. The tubular socket, wedge and prefabricated T-bracket shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to the approval of the TxDOT Traffic Standards Engineer.
3. Except for posts 10 BWG Tubing), clamps, nuts and bolts, all components shall be prequalified. A list of prequalified vendors may be obtained from the Material Producer List web page. The website address is: http://www.txdot.gov/business/producer list.htm
4. When a post conforms to this specification it may be used interchangeably. Post material shall conform to the following specifications:
   - 13 BWG Tubing (2.375" outside diameter) (TWT)
     - 0.095" nominal wall thickness
     - Seamless or electric-resistance welded steel tubing
     - Steel shall be ASTM A 53 Gr. B per ASTM A1011 or ASTM A1008
     - When welded tubing is used, it may meet the following:
       - 55,000 PSI minimum yield strength
       - 75,000 PSI minimum tensile strength
       - 18% minimum elongation in 2"
     - Wall thickness (nominal) shall be within the range of .083" to .099"
     - Outside diameter (uncoated) shall be within the range of 2.369" to 2.381"
     - Galvanization per ASTM 123 or ASTM A653 G210. For prepainted steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
5. Sign blanks shall be the sizes and shapes shown on the plans.
6. Additional sign clamps required on the "T-bracket" post for 24" high signs. Place clamp at least 3" above bottom of sign when possible.
7. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
8. See the Traffic Operations Division website for detailed drawings of sign clamps and Wedge Anchor System components. The website address is: http://www.txdot.gov/publications/traffic.htm

WEDGE ANCHOR SYSTEM INSTALLATION PROCEDURE
1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN)-08 must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Place concrete into hole until it is approximately flush with the ground. Concrete shall be Class A.
3. Insert tubular socket into concrete until top of socket is approximately 1/4 " above the concrete footing.
4. Plumb the socket. Allow a minimum 4 days for concrete to set, unless otherwise directed by Engineer.
5. Attach the sign to the sign post.
6. Insert the sign post into socket and align sign face with roadway.
7. Drive the wedge into the socket to secure post. This will leave approximately 3 inches of the wedge exposed.

UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURE
1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN)-08 must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. Insert base post in foundation hole to depths shown and fill hole with concrete. Cut base post from bottom and ensure a minimum of 18" embedment if installed in solid rock.
3. Level and plumb the base post with coupler using a torpedo level and let concrete set a minimum of 4 days, unless otherwise directed by Engineer. Bottom of base post signs shall be above the concrete footing.
4. Attach sign to FRP post.
5. Insert sign post into base post. Lower until the post comes to rest on the steel rod.
6. Use hammer to ensure the coupler is firmly seated. Top of coupler should be level with top of base post in most instances.
7. Check sign to ensure there is no twist. If loose, increase the tightening of coupler.

Texas Department of Transportation
Traffic Operations Division

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

SMD(TWT)-08

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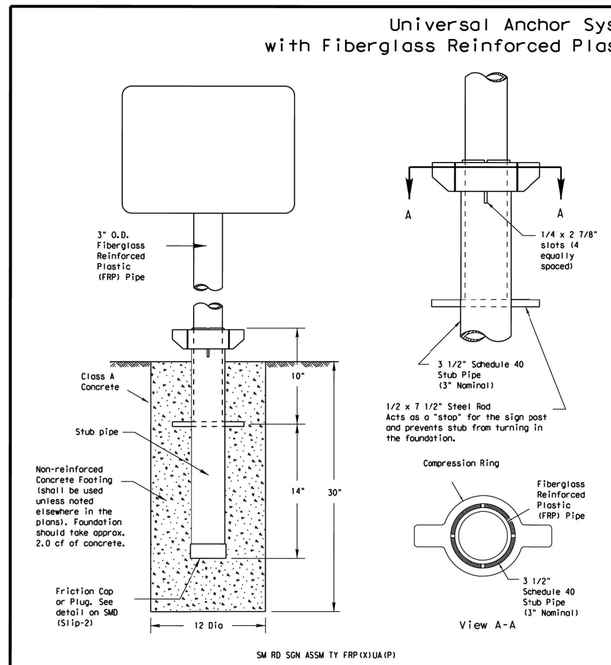
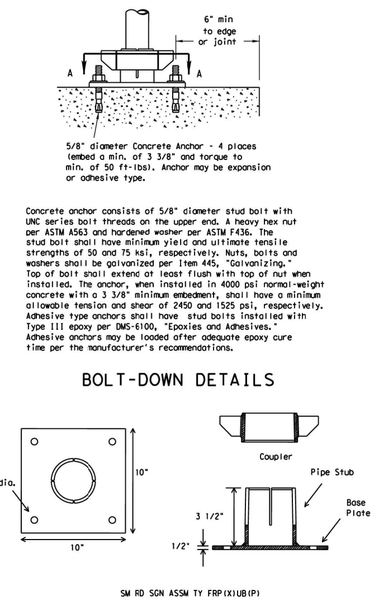
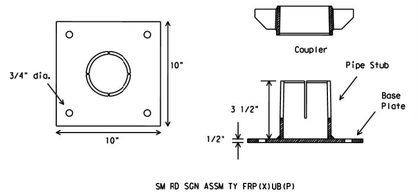
Universal Anchor System with Fiberglass Reinforced Plastic (FRP) Post



SM RD SGN ASSM TY FRP(XX)UA(P)



BOLT-DOWN DETAILS



SM RD SGN ASSM TY FRP(XX)UB(P)

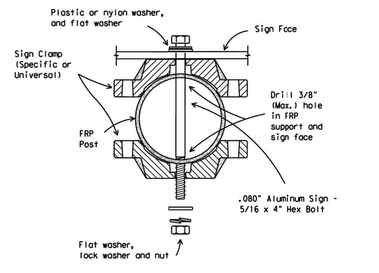
GENERAL NOTES:
1. FRP sign supports for a single type sign support may be used for signs up to and including 16 square feet. Dual post installation may be used for signs up to and including 32 square feet.
2. All nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing."
3. See the Traffic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

FRP POST REQUIREMENTS
1. Materials shall conform to the requirements of Departmental Material Specification DMS-7410 and will be furnished in a yellow or gray color as specified elsewhere in the plans.
2. Thickness of FRP sign support is 0.125" + 0.031", - 0.0".
3. FRP sign supports are prequalified by the Traffic Operations Division. Prequalification procedures are obtained by writing:
   Texas Department of Transportation
   Traffic Operations Division
   125 East 11th Street
   Austin, Texas 78701-2483

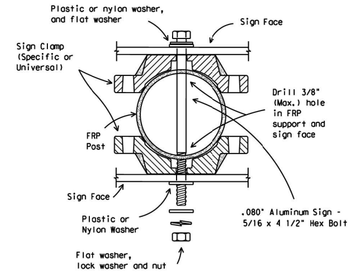
UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURES
1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN)-08 must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
3. Insert base post in foundation hole to depths shown and fill hole with concrete. Cut base post from bottom and ensure a minimum of 18" embedment if installed in solid rock.
4. Level and plumb the base post with coupler using a torpedo level and let concrete set a minimum of 4 days, unless otherwise directed by Engineer. Bottom of base post signs shall be above the concrete footing.
5. Attach sign to FRP post.
6. Insert sign post into base post. Lower until the post comes to rest on the steel rod.
7. Use hammer to ensure the coupler is firmly seated. Top of coupler should be level with top of base post in most instances.
8. Check sign to ensure there is no twist. If loose, increase the tightening of coupler.

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

Typical Sign Mounting Detail for FRP Support with Single Sign



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



Texas Department of Transportation
Traffic Operations Division

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

SMD(FRP)-08

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San Antonio, Texas 78231
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GRACE VALLEY RANCH PHASE 4A

TXDOT SIGN MOUNTING DETAILS

DATE
06/02/2025

PROJECT NO.
03346.017

DRAWN BY
AG/JF

CHECKED BY
K.M.H.

REVISIONS
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STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED
PROFESSIONAL ENGINEER
06/03/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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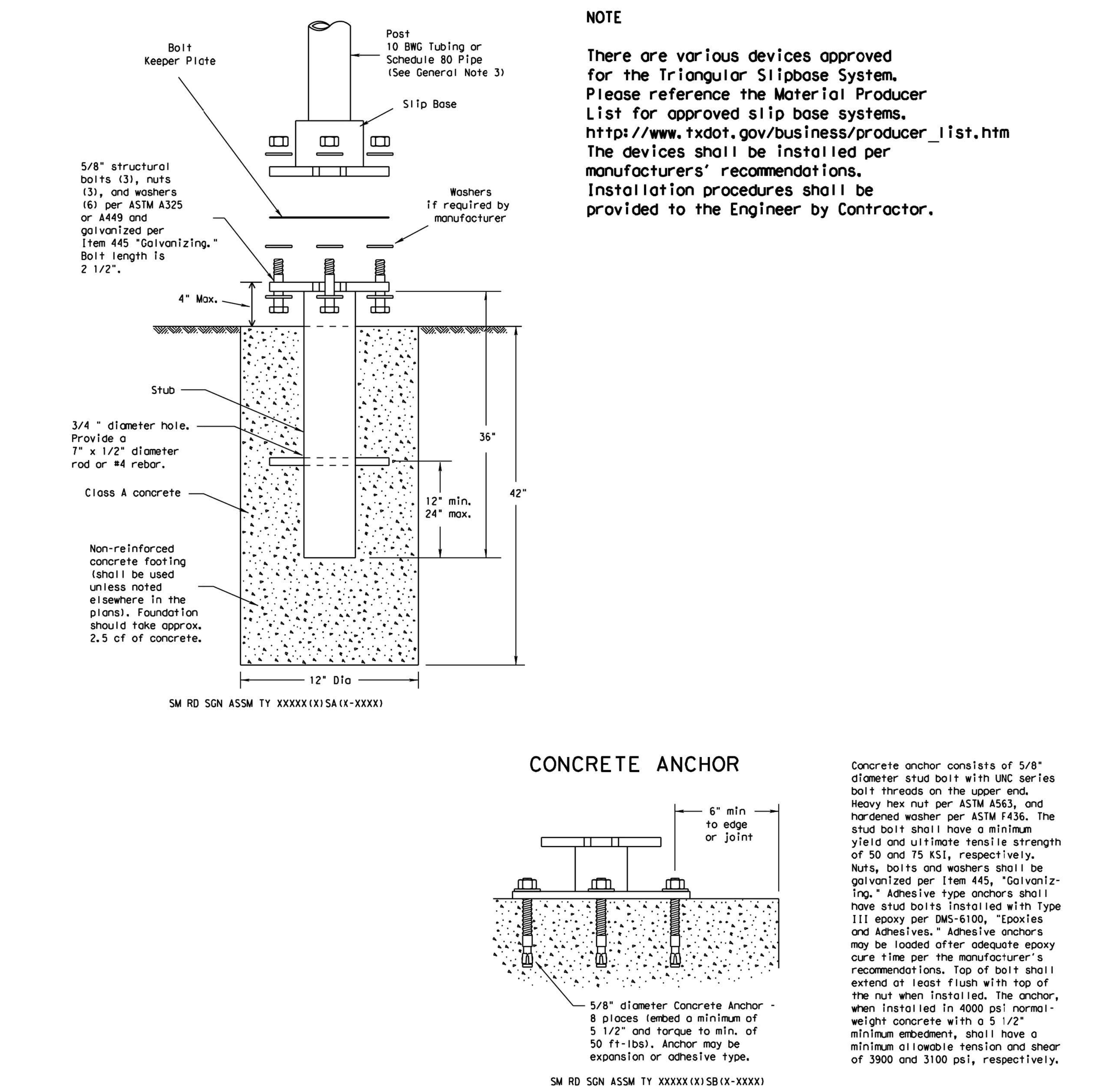
TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



NOTE

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

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

GENERAL NOTES:

1. Slip base shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
2. Material used as post with this system shall conform to the following specifications:
   10 BWG Tubing (2.875" outside diameter)
   0.134" nominal wall thickness
   Seamless or electric-resistance welded steel tubing or pipe
   Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   Other steels may be used if they meet the following:
   55,000 PSI minimum yield strength
   70,000 PSI minimum tensile strength
   20% minimum elongation in 2"
   Wall thickness (uncoated) shall be within the range of 0.122" to 0.138"
   Outside diameter (uncoated) shall be within the range of 2.867" to 2.883"
   Galvanization per ASTM A123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
   Schedule 80 Pipe (2.875" outside diameter)
   0.276" nominal wall thickness
   Steel tubing per ASTM A500 Gr C
   Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the following:
   46,000 PSI minimum yield strength
   62,000 PSI minimum tensile strength
   21% minimum elongation in 2"
   Wall thickness (uncoated) shall be within the range of 0.248" to 0.304"
   Outside diameter (uncoated) shall be within the range of 2.855" to 2.895"
   Galvanization per ASTM A123
3. See the Traffic Operations Division website for detailed drawings of sign clamps and Texas Universal Triangular Slipbase System components. The website address is: http://www.txdot.gov/publications/traffic.htm
4. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

ASSEMBLY PROCEDURE

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

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

Texas Department of Transportation
Traffic Operations Division

**SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM
SMD(SLIP-1)-08**

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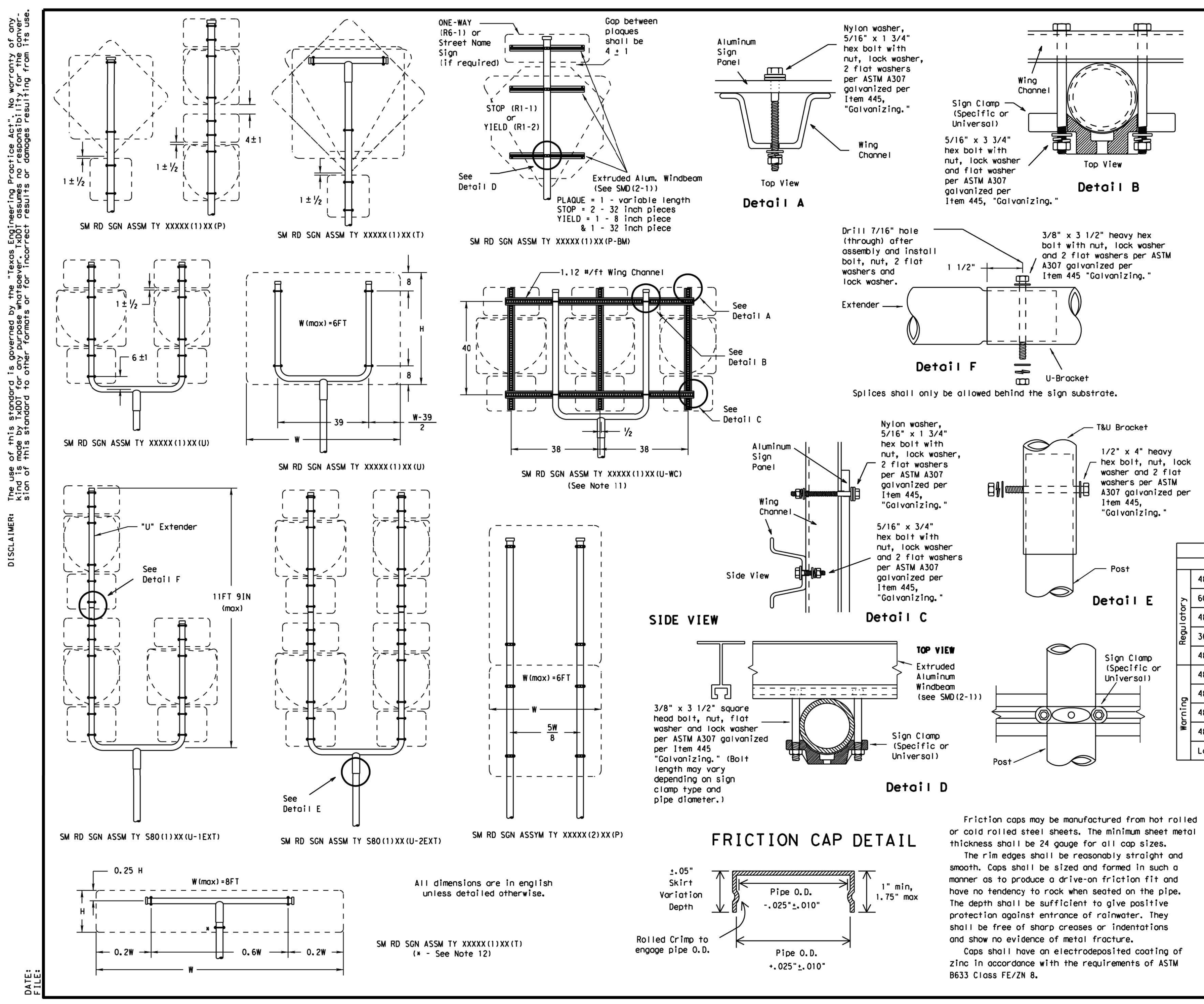

Friction caps may be manufactured from hot rolled or cold rolled steel sheets. The minimum sheet metal thickness shall be 24 gauge for all cap sizes. The rim edges shall be reasonably straight and smooth. Caps shall be sized and formed in such a manner as to produce a drive-on friction fit and have no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

GENERAL NOTES:

1.

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

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

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

Texas Department of Transportation
Traffic Operations Division

**SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM
SMD(SLIP-2)-08**

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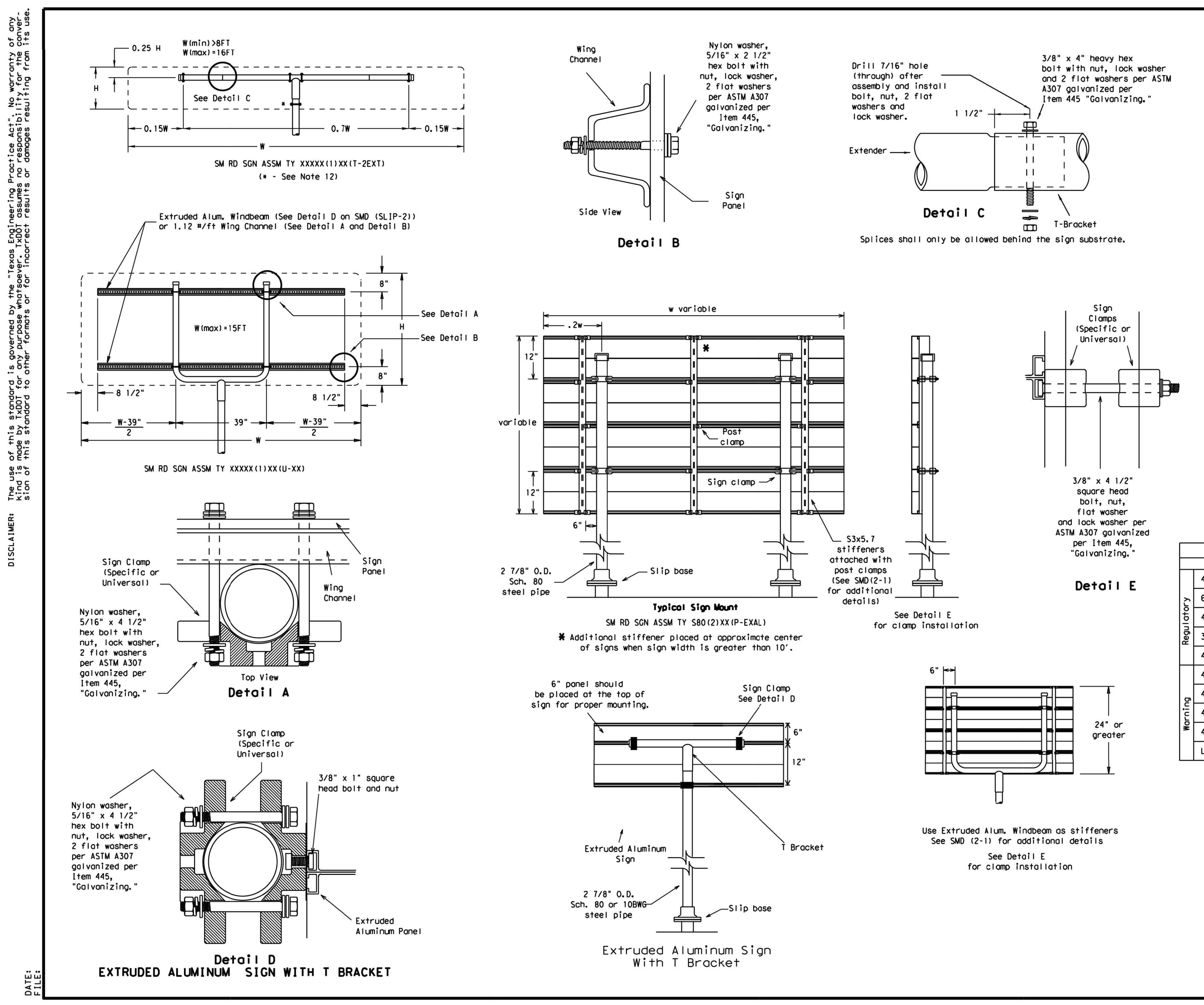

GENERAL NOTES:

1.

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

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

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

Texas Department of Transportation
Traffic Operations Division

**SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM
SMD(SLIP-3)-08**

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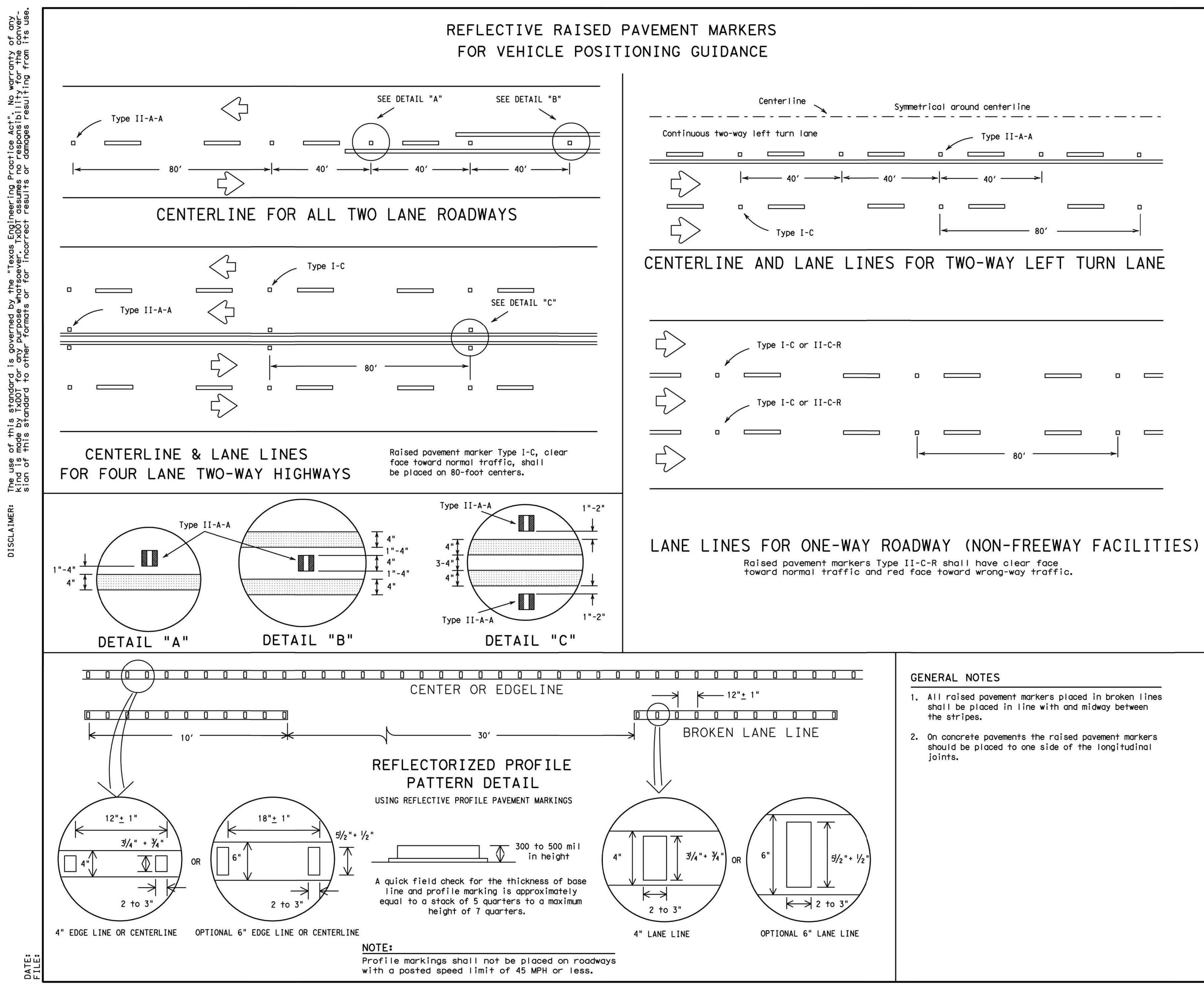
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE



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

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

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

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

Texas Department of Transportation
Traffic Operations Division

**POSITION GUIDANCE USING RAISED MARKERS REFLECTORIZED PROFILE MARKINGS
PM(2)-12**

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GRACE VALLEY RANCH PHASE 4A

TXDOT SIGN MOUNTING DETAILS

DATE 06/02/2025
PROJECT NO. 03346.017
DRAWN BY AG/JF
CHECKED BY K.M.H.

REVISIONS
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9.

STATE OF TEXAS
KYLE M. HUDEK
138753
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PROFESSIONAL ENGINEER
06/03/2025

CUDE ENGINEERS
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