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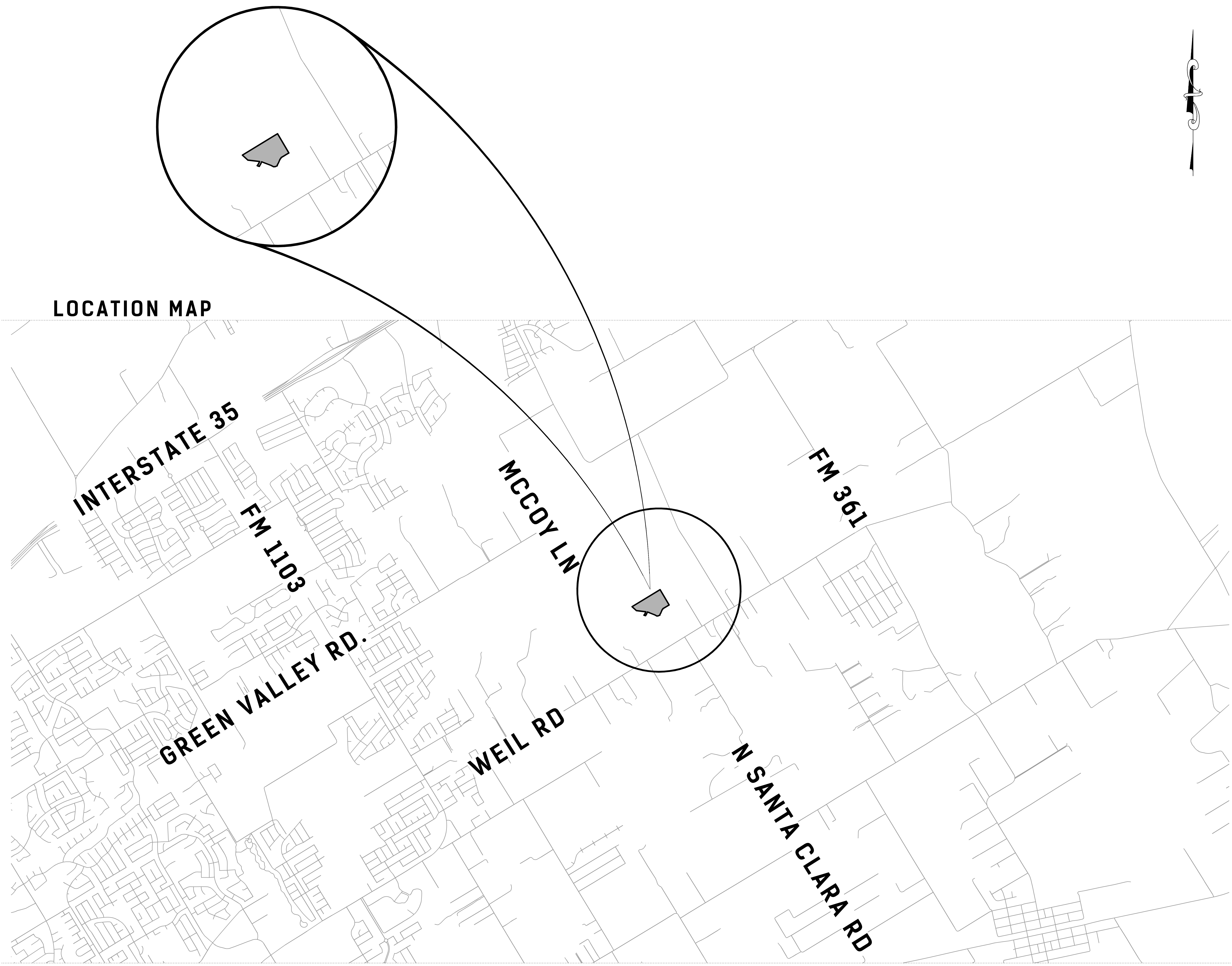


LOCATION MAP

VICINITY MAP

CERTIFICATE OF APPROVAL BY CITY ENGINEER:

APPROVED ON THIS THE _____ DAY OF _____________, 20 _____, BY THE CITY ENGINEER, CITY OF SANTA CLARA, TEXAS.

____
CITY ENGINEER, CITY OF SANTA CLARA

"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 SANTA CLARA MUST RELY UPON THE ADEQUACY OF THE WORK OF THE DESIGN ENGINEER.”

GRACE VALLEY RANCH
PHASE 8

CONSTRUCTION PLANS

GUADALUPE COUNTY MUNICIPAL UTILITY DISTRICT No. 6

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.
AC/AG/BK/SG	11/11/2025	
CHECKED BY	**PROJECT NO.**	**CUDE ENGINEERS**
KYLE HUDEK, P.E.	03499.010	TBPE No. 455 TBPLS No. 10048500

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

KYLE M. HUDEK
138753

11/11/2025

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

STREET AND DRAINAGE GENERAL NOTES:

1. ALL WORK IS TO BE INSTALLED IN ACCORDANCE WITH STANDARDS OF THE CITY OF SANTA CLARA MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS CONTRACT WILL CONFORM TO APPLICABLE CITY OF SANTA CLARA SUBDIVISION 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 THE CITY OF SANTA CLARA.

4. ALL REINFORCING STEEL SHALL BE GRADE 60, MEET THE MATERIAL AND CONSTRUCTION REQUIREMENTS OF THE CITY OF SANTA CLARA.

5. CONCRETE CURING SHALL BE WITH AN IMPERVIOUS MEMBRANE APPLICATION AND SHALL MEET THE MATERIAL AND APPLICATION REQUIREMENTS OF THE CITY OF SAN ANTONIO'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 THE CITY OF SANTA CLARA.

7. 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.

8. 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.

9. 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.

10. PROVIDE AS-BUILT DRAWINGS WITHIN **10 BUSINESS DAYS** OF THE COMPLETION OF CONSTRUCTION.

11. GUADALUPE COUNTY DOES NOT MAINTAIN SIDEWALKS, CURB AND GUTTER, CURB RAMPS, PAVERS, LUMINAIRES, STORM SEWER OR DETENTION APPURTENANCES.

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

13. 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.

14. AN INDEPENDENT TESTING LABORATORY APPROVED BY THE CITY OF SANTA CLARA 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.

15. 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 TXDOTS 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 ONE-HUNDRED AND TWENTY (120) FOOT SPACING.

    B. FLEXIBLE BASE TESTING SHALL INCLUDE - P.I., LL, 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 OPERATIONS OF THE HMAC/WMAC TO DOCUMENT DENSITY, THICKNESS. AND COMPACTION AND PLACEMENT OPERATIONS. THE CITY OF SANTA CLARA 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 FREQUENCY 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.

16. 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 .

17. 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).

18. 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 SANTA CLARA.

19. 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 SANTA CLARA.

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

21. 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.

22. 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.

23. 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 SANTA CLARA	
GVSUD	
GVTC	
GVEC	1-800-401-8845
DIG TEST	1-800-344-8377
TEXAS STATE WIDE ONE CALL LOCATORS	1-800-545-6005 OR 811
TIME WARNER CABLE	
AT&T	
MCI	
VERIZON	

24. 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.

25. THE CONTRACTOR SHALL NOTIFY THE CITY OF SANTA CLARA PLANNING AND ENGINEERING DEPARTMENT 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.

26. CONCRETE SIDEWALKS SHALL HAVE TOOLED WEAKENED PLANE JOINTS EVERY FOUR (4) FEET AND DOWELED EXPANSION JOINT WITH ONE QUARTER INCH (1/4) BITUMASTIC MATERIAL ON CENTER AND ABUTTING EXISTING STRUCTURES.

27. ALL WORKMANSHIP AND MATERIAL SHALL CONFORM TO THE CITY OF SANTA CLARA ORDINANCES FOR PUBLIC WORKS CONSTRUCTION.

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

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

30. 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.

31. 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.

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

33. EXCESS MATERIAL IS TO BE EMBANKED AND COMPACTED TO FINAL GRADE FOR FUTURE PHASES. 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.

34. ANY WORK COMPLETED WITHOUT PRIOR AUTHORIZATION WHETHER INCLUDED IN THE PLANS AND SPECIFICATIONS OR NOT. SHALL NOT BE COMPENSATED BY THE CITY OF SANTA CLARA.

MISCELLANEOUS NOTES:

1. ACCESS TO THIS SITE IS PROVIDED THROUGH TWO PROPOSED DRIVEWAYS ALONG WEIL 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.

CONSTRUCTION SEQUENCING: (LIST PROCESS ON CONSTRUCTION PLAN SET)

1. CALL THE PLANNING AND DEVELOPMENT SERVICES 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 DEVELOPMENT SERVICES DEPARTMENT.

3. PROVIDE THE PLANNING AND DEVELOPMENT SERVICES 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 DURING 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.

CITY OF SANTA CLARA NOTES:

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CITY OF SANTA CLARA 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 SANTA CLARA 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 SANTA CLARA MUST RELY ON THE ADEQUACY OF THE WORK OF THE ENGINEER.

4. DESIGN PROCEDURES ARE IN COMPLETE COMPLIANCE WITH THE CITY OF SANTA CLARA 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 SANTA CLARA 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 SANTA CLARA 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 SANTA CLARA, CONSULTING ENGINEER, CONTRACTOR, GUADALUPE COUNTY AND ANY OTHER AFFECTED PARTIES. NOTIFY THE CITY OF SANTA CLARA 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 OF SANTA CLARA AND GUADALUPE COUNTY A MINIMUM OF 48 HOURS NOTICE BEFORE BEGINNING EACH PHASE OF CONSTRUCTION.

9. BARRICADES, BUILT TO CITY OF SANTA CLARA 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 CITY OF SANTA CLARA 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.

CUDEENGINEERS.COM

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 8

GENERAL NOTES

DATE
11/10/2025
PROJECT NO.
03499.010
DRAWN BY
JK/AR/JF/RB
CHECKED BY
KMH

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

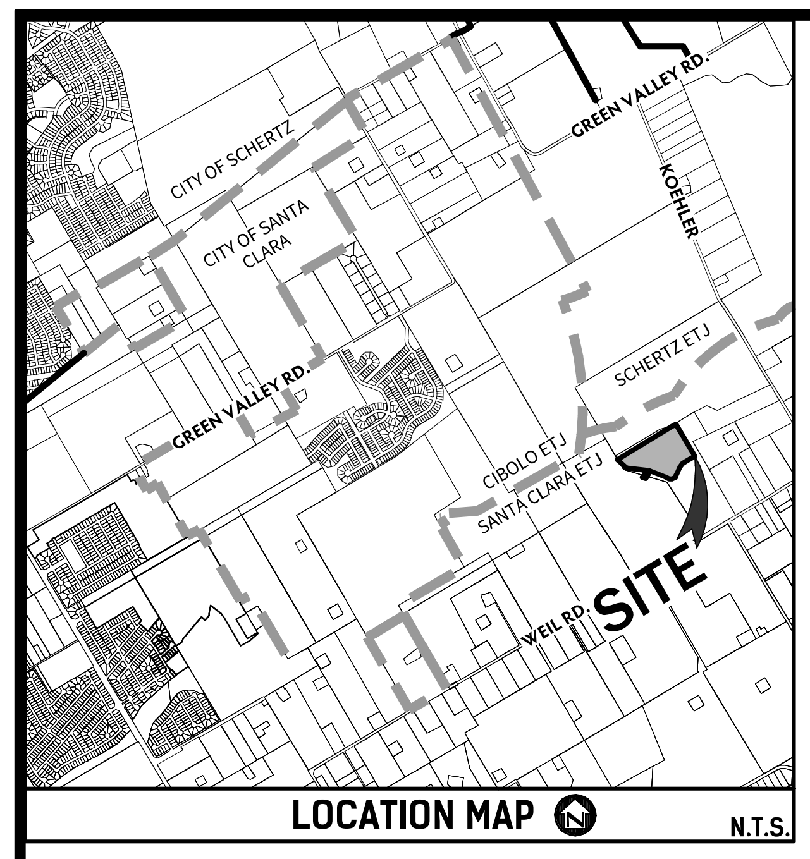
KYLE M. HUDEK
138753
11/11/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C0.00

P:\03499\010\2-DWG\4-Plans\C0.00_GCNOTE.dwg 2025/11/10 5:54pm arodriguez

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.



GREEN VALLEY RD.
CITY OF SCHERTZ
CITY OF SANTA CLARA
GREEN VALLEY RD.
KOHLER
SCHERTZ ETJ
CIBOLO ETJ
SANTA CLARA ETJ
WEIL RD.
SITE

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

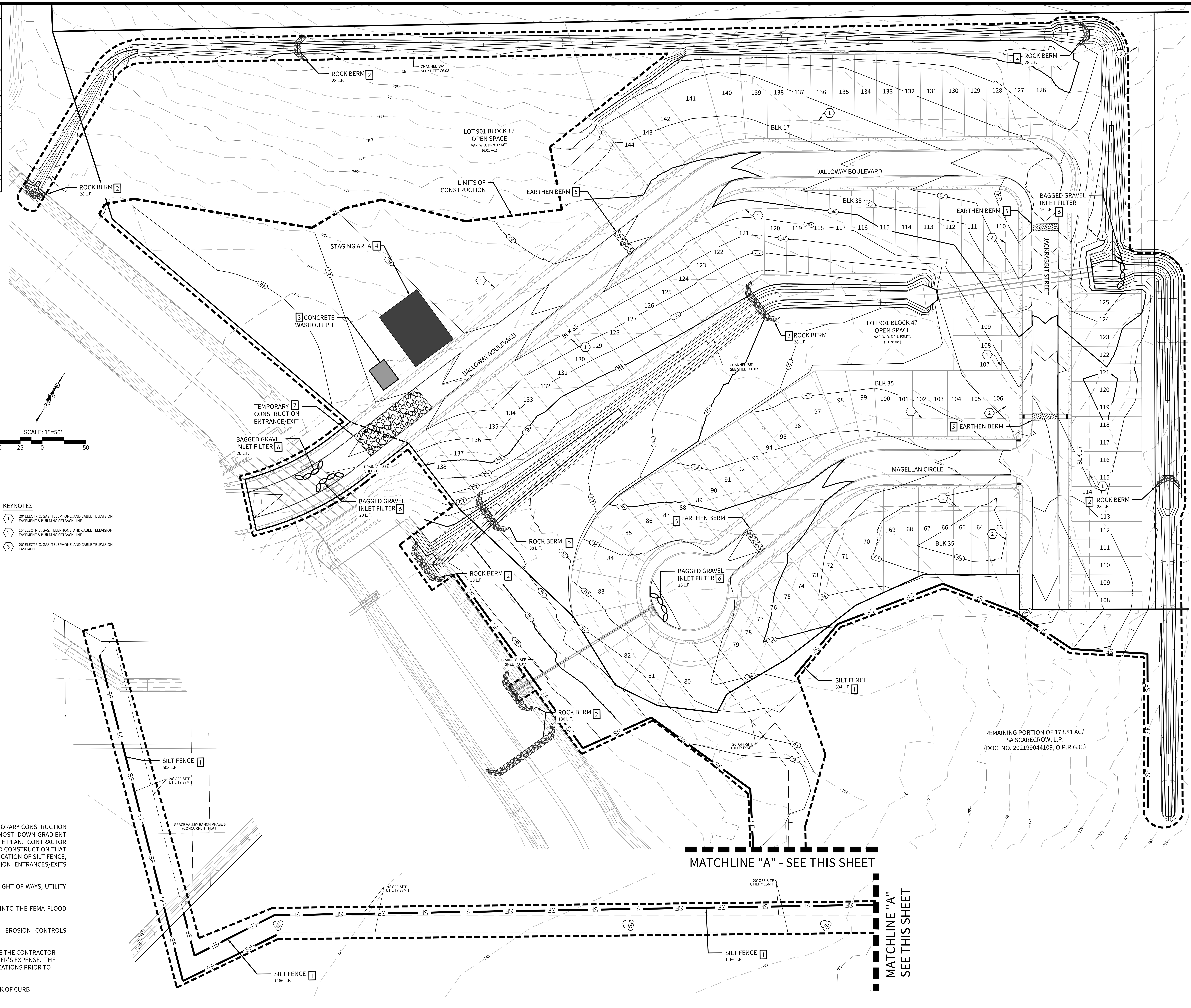
LEGEND

PROPERTY LINE	──
EXISTING CONTOURS	— —930— —
PROPOSED CONTOURS	——930——
LIMITS OF CONSTRUCTION	▬ ▬ ▬ ▬
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	○○○○○
ROCK BERM	▩

SCALE: 1"=50'
50 25 0 50

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	20' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT



ROCK BERM 2
28 L.F.
CHANNEL 'BA' - SEE SHEET C6.08
LOT 901 BLOCK 17
OPEN SPACE
VAR. WID. DRN. ESM'T.
(6.01 Ac.)
LIMITS OF CONSTRUCTION
EARTHEN BERM 5
ROCK BERM 2
28 L.F.
STAGING AREA 4
3 CONCRETE WASHOUT PIT
DALLOWAY BOULEVARD
BLK 17
BLK 35
JACKRABBIT STREET
BAGGED GRAVEL INLET FILTER 6
16 L.F.
EARTHEN BERM 5
ROCK BERM 2
38 L.F.
CHANNEL 'BB' - SEE SHEET C6.03
LOT 901 BLOCK 47
OPEN SPACE
VAR. WID. DRN. ESM'T.
(1.678 Ac.)
TEMPORARY 2
CONSTRUCTION
ENTRANCE/EXIT
BAGGED GRAVEL INLET FILTER 6
20 L.F.
DRAIN 'A' - SEE SHEET C6.02
BAGGED GRAVEL INLET FILTER 6
20 L.F.
ROCK BERM 2
38 L.F.
ROCK BERM 2
38 L.F.
EARTHEN BERM 5
MAGELLAN CIRCLE
BAGGED GRAVEL INLET FILTER 6
16 L.F.
ROCK BERM 2
28 L.F.
EARTHEN BERM 5
DRAIN 'B' - SEE SHEET C6.02
ROCK BERM 2
130 L.F.
SILT FENCE 1
634 L.F.
REMAINING PORTION OF 173.81 AC/
SA SCARECROW, L.P.
(DOC. NO. 202199044109, O.P.R.G.C.)
20' OFF-SITE UTILITY ESM'T
SILT FENCE 1
503 L.F.
GRACE VALLEY RANCH PHASE 6 (CONCURRENT PLAT)
MATCHLINE "A" - SEE THIS SHEET
MATCHLINE "A" SEE THIS SHEET
SILT FENCE 1
1466 L.F.
SILT FENCE 1
1466 L.F.
SF

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.
6. CONTRACTOR TO PROVIDE SILT FENCE ALONG BACK OF CURB POST-CONSTRUCTION OF STREET RIGHT-OF-WAY.

CUDEENGINEERS.COM

EST. 1980
CUDE
ENGINEERS

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

GRACE VALLEY RANCH
PHASE 8

STORM WATER POLLUTION PREVENTION PLAN

DATE
11/11/2025

PROJECT NO.
03499.010

DRAWN BY
JK/AR/JF/RB

CHECKED BY
KMH

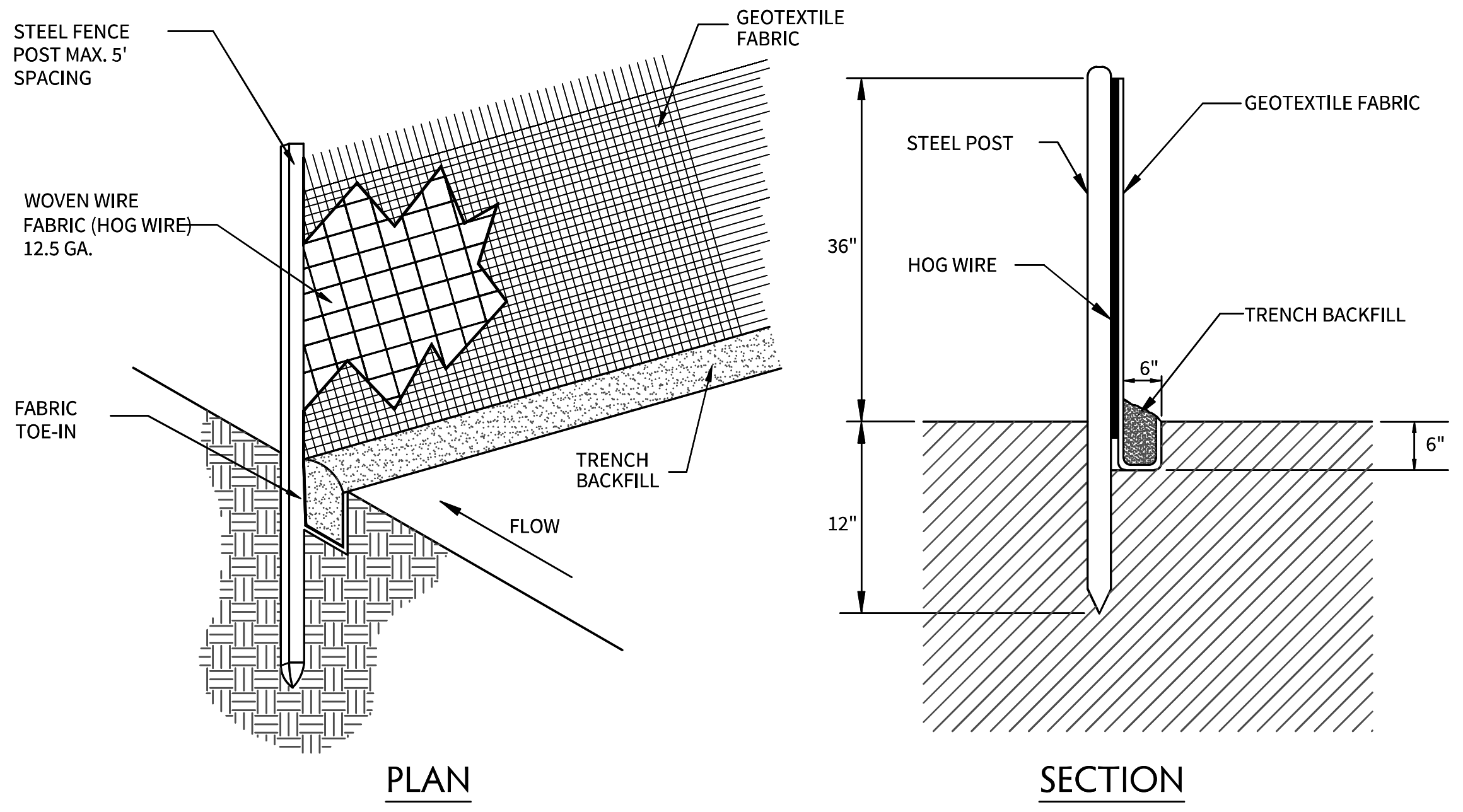
REVISIONS
1.
2.
3.
4.
5.
6.
7.
8.
9.

KYLE M. HUDEK
138753
11/11/2025
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C1.00

P:\03499\010\2-DWG\4-Plans\C1.00_SWPPP.dwg 2025/11/11 1:38pm 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.

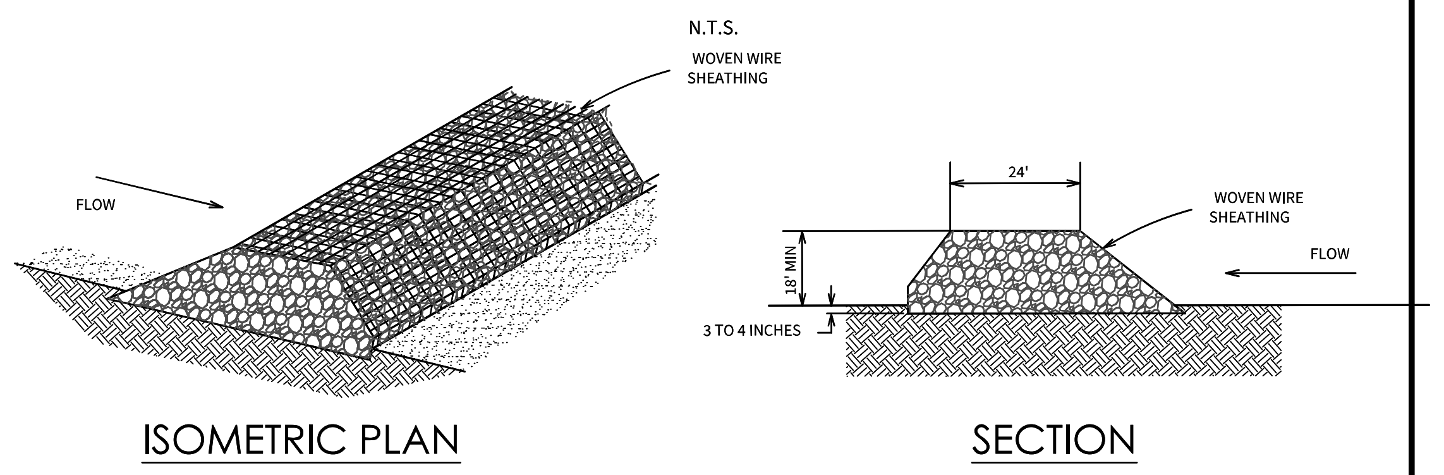

STEEL FENCE
POST MAX. 5'
SPACING
GEOTEXTILE
FABRIC
WOVEN WIRE
FABRIC (HOG WIRE)
12.5 GA.
FABRIC
TOE-IN
TRENCH
BACKFILL
FLOW
PLAN
STEEL POST
GEOTEXTILE FABRIC
HOG WIRE
TRENCH BACKFILL
36"
12"
6"
6"
SECTION

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

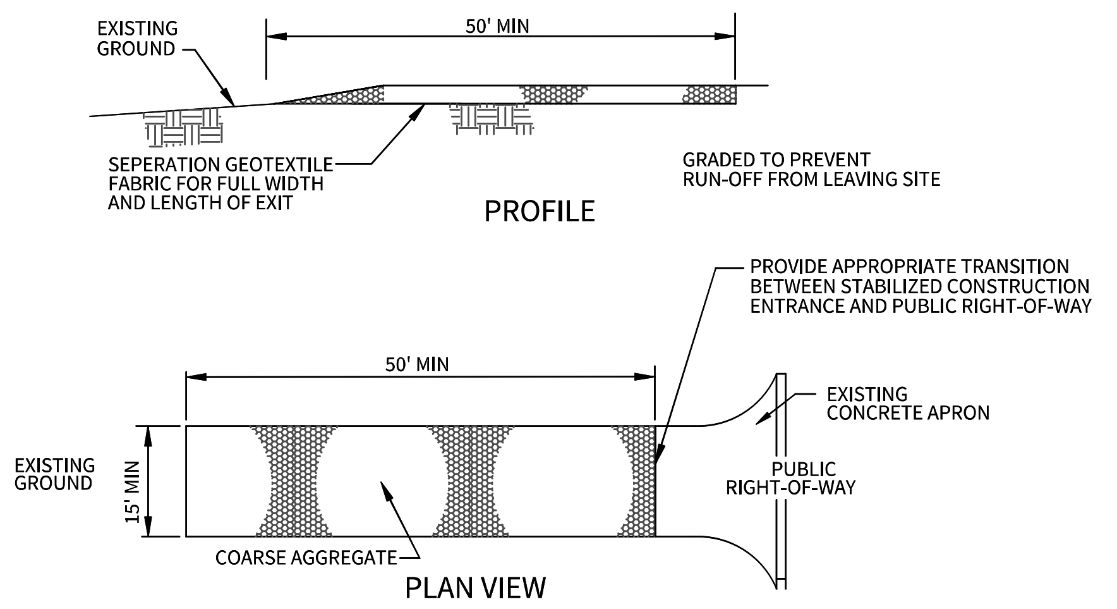

N.T.S.
WOVEN WIRE
SHEATHING
FLOW
ISOMETRIC PLAN
24'
WOVEN WIRE
SHEATHING
FLOW
18' MIN
3 TO 4 INCHES
SECTION

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


EXISTING
GROUND
50' MIN
SEPERATION GEOTEXTILE
FABRIC FOR FULL WIDTH
AND LENGTH OF EXIT
GRADED TO PREVENT
RUN-OFF FROM LEAVING SITE
PROFILE
PROVIDE APPROPRIATE TRANSITION
BETWEEN STABILIZED CONSTRUCTION
ENTRANCE AND PUBLIC RIGHT-OF-WAY
50' MIN
EXISTING
CONCRETE APRON
EXISTING
GROUND
15' MIN
PUBLIC
RIGHT-OF-WAY
COARSE AGGREGATE
PLAN VIEW

GENERAL NOTES

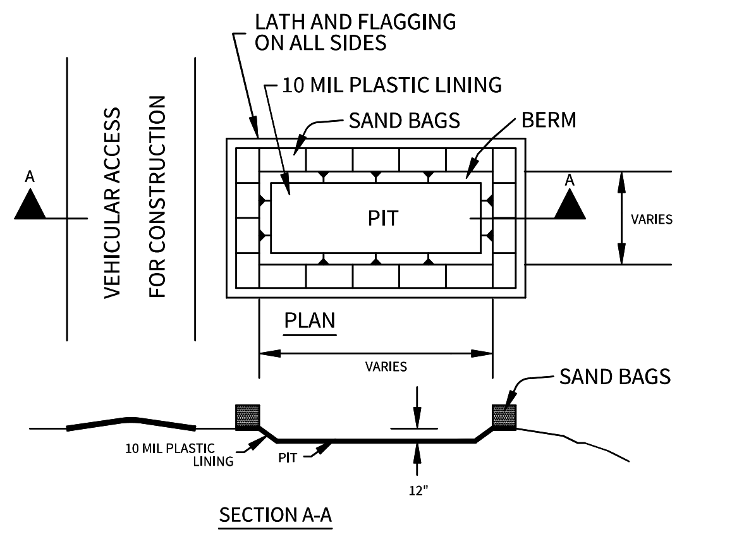
1. LENGTH SHALL BE AS SHOWN ON THE CONSTRUCTION DRAWINGS BUT NOT LESS THAN 50 FEET.
2. THICKNESS SHALL BE NOT LESS THAN 8 INCHES.
3. WIDTH SHALL BE NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS.
4. STABILIZED AREA MAY BE WIDENED OR LENGTHENED TO ACCOMODATE A TRUCK WASHING AREA WHEN SHOWN 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

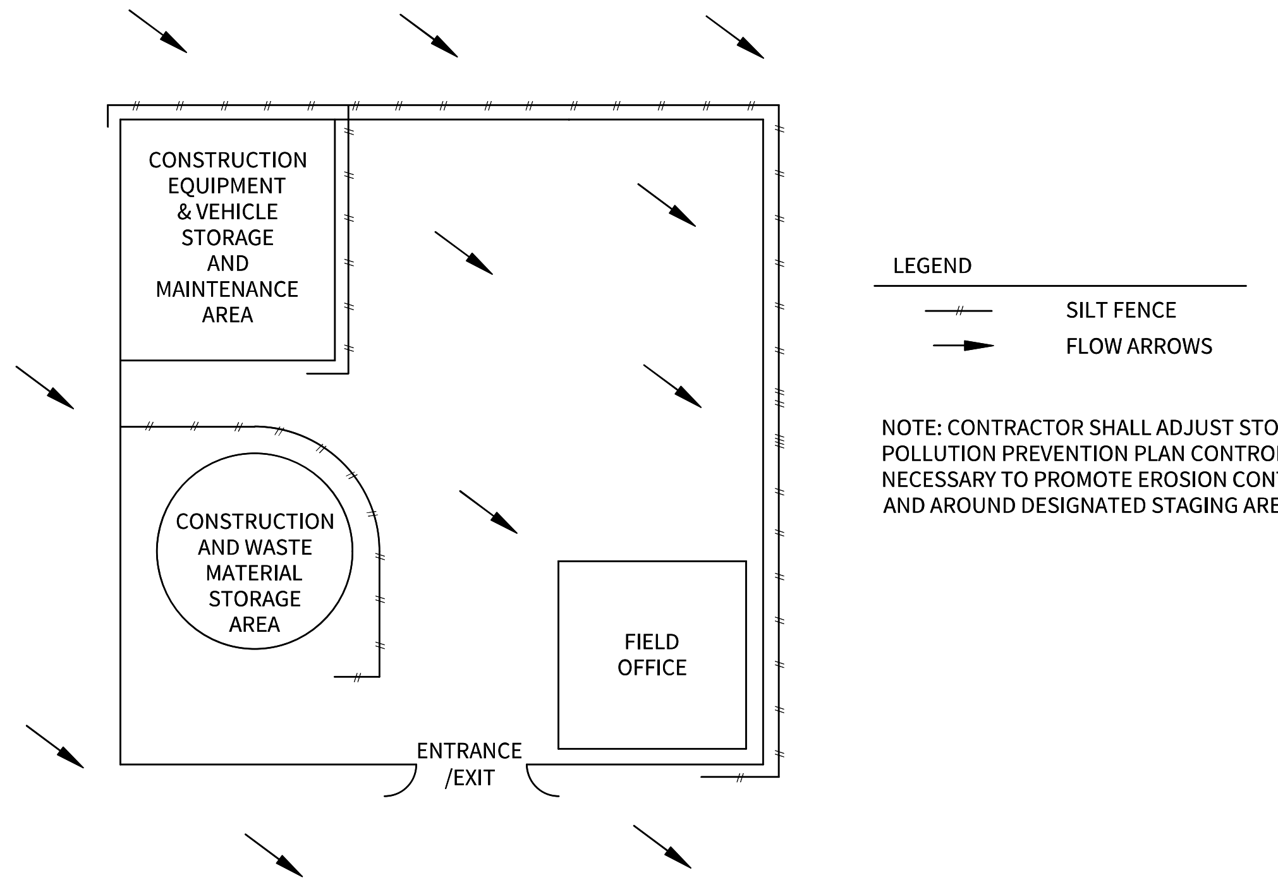

LATH AND FLAGGING
ON ALL SIDES
10 MIL PLASTIC LINING
SAND BAGS
BERM
A
A
VEHICULAR ACCESS
FOR CONSTRUCTION
PIT
VARIES
PLAN
VARIES
SAND BAGS
10 MIL PLASTIC
LINING
PIT
12"
SECTION A-A

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

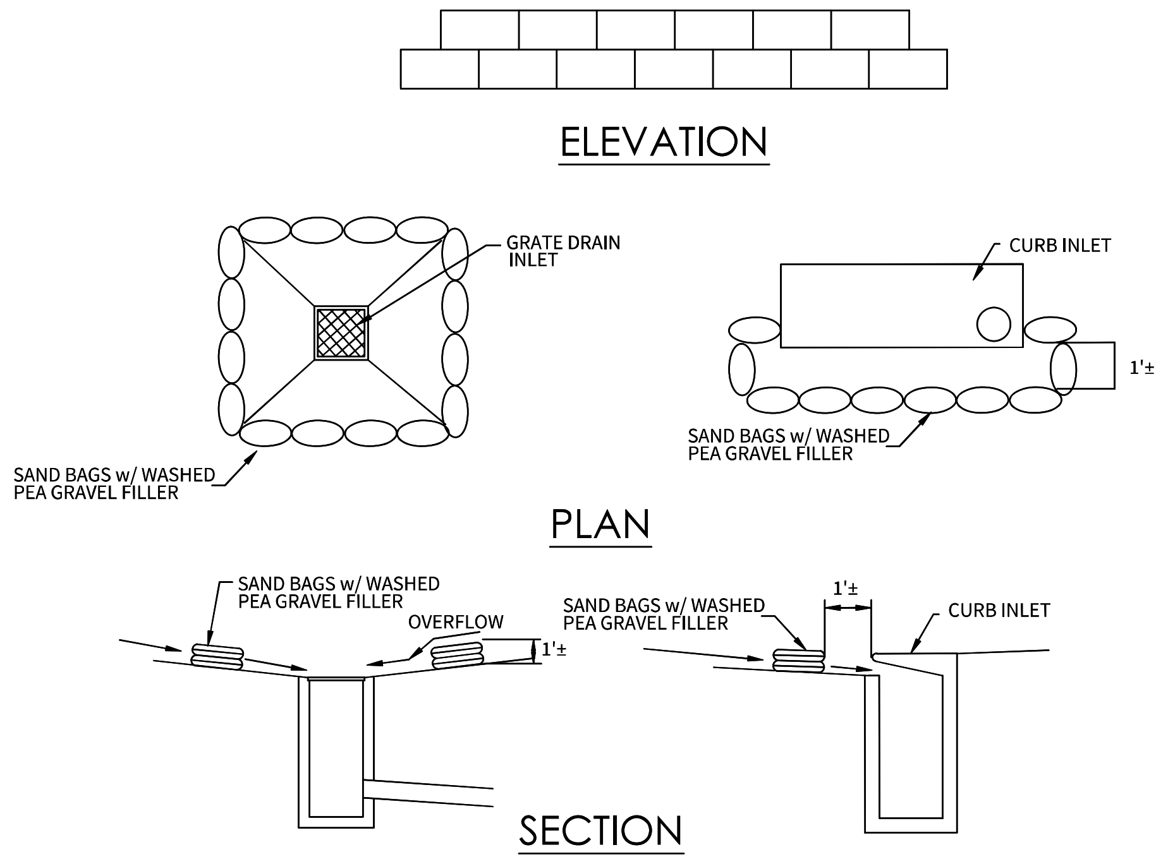
SCALE: NONE


CONSTRUCTION
EQUIPMENT
& VEHICLE
STORAGE
AND
MAINTENANCE
AREA
CONSTRUCTION
AND WASTE
MATERIAL
STORAGE
AREA
FIELD
OFFICE
ENTRANCE
/EXIT
LEGEND
SILT FENCE
FLOW ARROWS

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

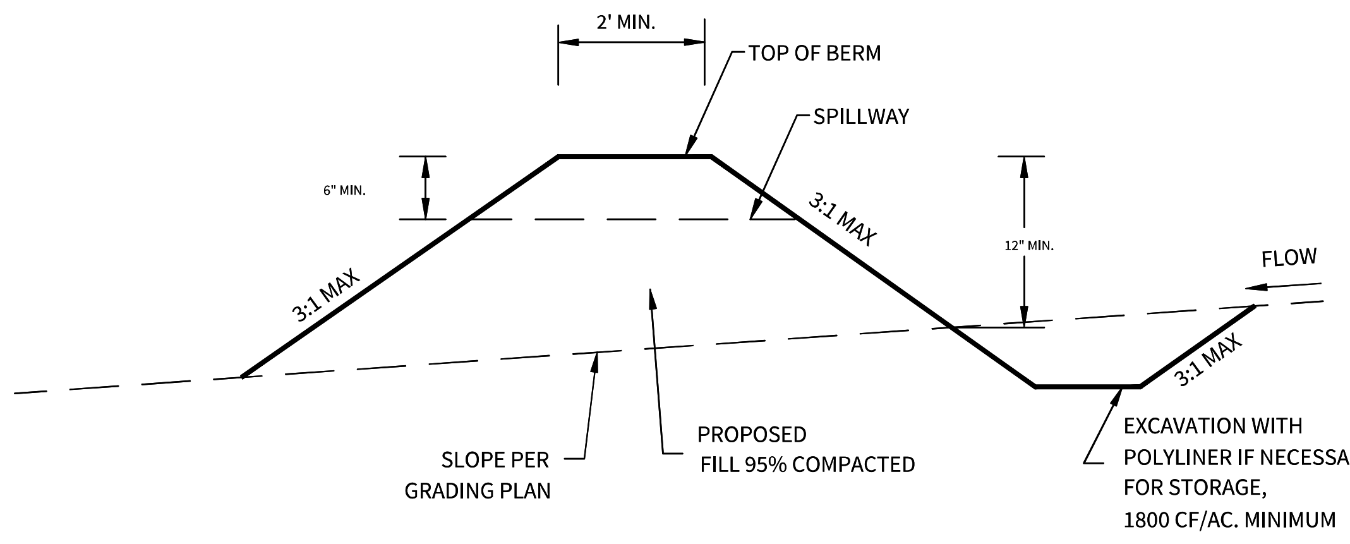

ELEVATION
GRATE DRAIN
INLET
CURB INLET
1'±
SAND BAGS w/ WASHED
PEA GRAVEL FILLER
SAND BAGS w/ WASHED
PEA GRAVEL FILLER
PLAN
SAND BAGS w/ WASHED
PEA GRAVEL FILLER
OVERFLOW
1'±
SAND BAGS w/ WASHED
PEA GRAVEL FILLER
1'±
CURB INLET
SECTION

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 ¾" GRAVEL .
4. WHEN A GRAVEL BAG IS FILLED WITH GRAVEL, THE OPEN END OF THE GRAVEL BAG SHOULD BE STAPLED OR TIED WITH NYLON OR POLY CORD.
5. THE GRAVEL BAGS SHOULD BE PLACED AS SHOWN ON THE DETAIL. THE GRAVEL BAGS SHALL BE STACKED TO FORM A CONTINUOUS BARRIER AROUND THE INLETS. THE BAGS SHOULD BE TIGHTLY ABUTTED AGAINST EACH OTHER TO PREVENT RUNOFF FROM FLOWING BETWEEN THE BAGS.
6. INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL. REPAIR OR REPLACEMENT SHOULD BE MADE PROMPTLY AS NEEDED BY THE CONTRACTOR.
7. CHECK PLACEMENT OF DEVICE TO PREVENT GAPS BETWEEN DEVICE AND CURB.
8. REMOVE SEDIMENT WHEN BUILDUP REACHES A DEPTH OF 3 INCHES. REMOVED SEDIMENT SHOULD BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
9. STRUCTURES SHOULD BE REMOVED AND THE AREA STABILIZED ONLY AFTER THE REMAINING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

6 BAGGED GRAVEL INLET FILTER

SCALE: NONE


2' MIN.
TOP OF BERM
SPILLWAY
6" MIN.
12" MIN.
3:1 MAX
3:1 MAX
3:1 MAX
FLOW
SLOPE PER
GRADING PLAN
PROPOSED
FILL 95% COMPACTED
EXCAVATION WITH
POLYLINER IF NECESSARY
FOR STORAGE,
1800 CF/AC. MINIMUM

NOTE:

1. EARTHEN BERMS ARE TO SPAN ACROSS PROPOSED STREET SECTION (APPROX. 30-FEET WIDE) FROM CURB TO CURB.

7 EARTHEN BERM W/ POLYLINER AND SPILLWAY

SCALE: NONE

CUDEENGINEERS.COM

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

GRACE VALLEY RANCH
PHASE 8

STORMWATER POLLUTION PREVENTION PLAN DETAILS

DATE
11/10/2025

PROJECT NO.
03499.010

DRAWN BY
JK/AR/JF/RB

CHECKED BY
KMH

REVISIONS
1.
2.
3.
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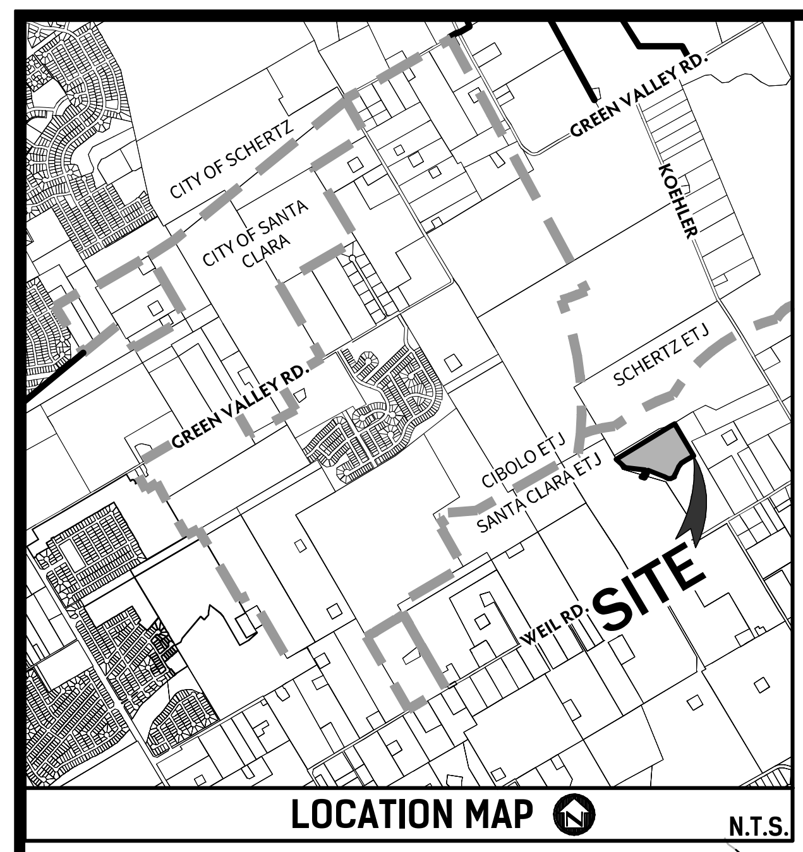
8.
9.

KYLE M. HUDEK
138753
11/11/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C1.D1

P:\03499\010\2-DWG\4-Plans\C1.D1 - SWPPPDT.dwg 2025/11/10 6:12pm arodriguez


CITY OF SCHERTZ
CITY OF SANTA CLARA
GREEN VALLEY RD.
KOHLER
SCHERTZ ETJ
CIBOLO ETJ
SANTA CLARA ETJ
WEIL RD.
SITE

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:

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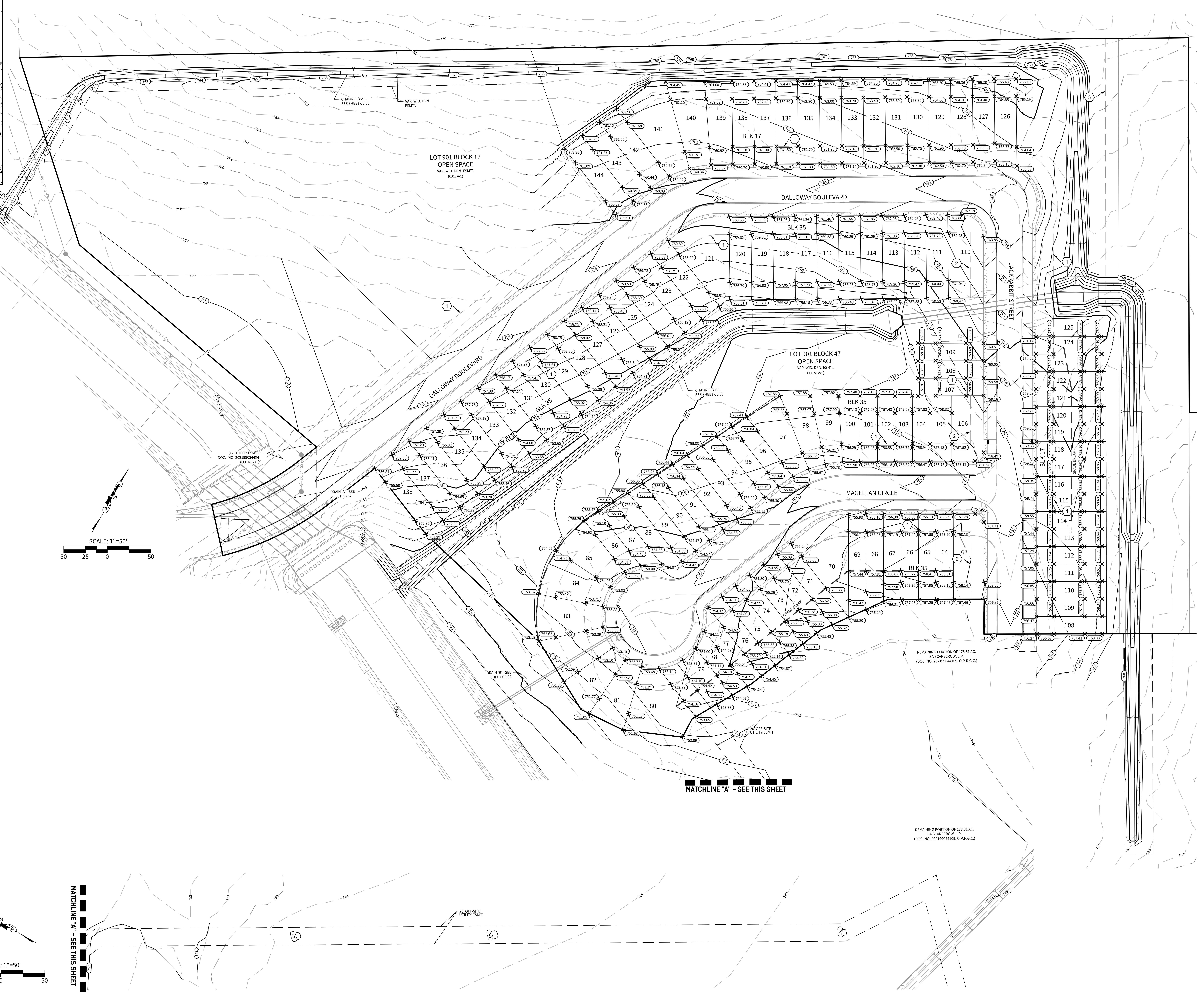
CONTACT PERSON: KYLE M. HUDEK, P.E.
4122 POND HILL ROAD, SUITE 101
SAN ANTONIO, TX 78231
TEL: (210) 681-2951
FAX: (210) 523-7112

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' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT

LEGEND

PROPOSED CONTOUR	——[1000]——
EXISTING CONTOUR	— — —1000— — —
PROPOSED ELEVATION	× (1297.58)
PROPOSED TOP OF WALL ELEVATION	× (1297.58 TW)
PROPOSED BOTTOM OF WALL ELEVATION	× (1297.58 BW)
EXISTING ELEVATION	× 672.00E
GRADE BREAK	— — GRADE BREAK — —
BUILDING SETBACK	— — — — —
SWALE	—— · · · → · · · →——
RETAINING WALL	🟥 🟥 🟥 🟥 🟥
KEYNOTE	①


LOT 901 BLOCK 17
OPEN SPACE
VAR. WID. DRN. ESM'T.
(6.01 Ac.)
CHANNEL '8A' - SEE SHEET C6.08
VAR. WID. DRN. ESM'T.
BLK 17
DALLOWAY BOULEVARD
BLK 35
JACKRABBIT STREET
LOT 901 BLOCK 47
OPEN SPACE
VAR. WID. DRN. ESM'T.
(1.678 Ac.)
CHANNEL '8B' - SEE SHEET C6.03
MAGELLAN CIRCLE
35' UTILITY ESM'T.
DOC. NO. 202199034494
(O.P.R.G.C.)
DRAIN 'A' - SEE SHEET C6.02
EX. 24" SS
DRAIN 'B' - SEE SHEET C6.02
REMAINING PORTION OF 178.81 AC.
SA SCARECROW, L.P.
(DOC. NO. 202199044109, O.P.R.G.C.)
20' OFF-SITE UTILITY ESM'T
MATCHLINE "A" - SEE THIS SHEET
SCALE: 1"=50'
50 25 0 50

CUDEENGINEERS.COM

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

GRACE VALLEY RANCH
PHASE 8

GRADING PLAN

DATE
11/11/2025

PROJECT NO.
03499.010

DRAWN BY
JK/AR/JF/RB

CHECKED BY
KMH

REVISIONS
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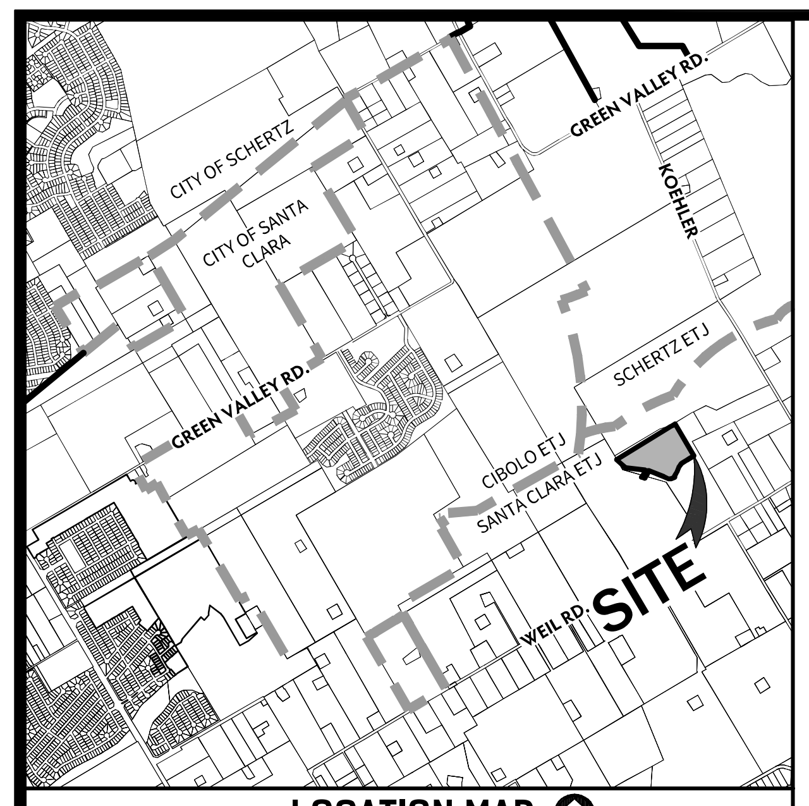
KYLE M. HUDEK
138753
11/11/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C2.00

P:\03499\010\2-DWG\4-Plans\C2.00 - GRAD.dwg 2025/11/11 12:42pm rbarrera


GREEN VALLEY RD.
CITY OF SCHERTZ
CITY OF SANTA CLARA
KOEHLER
GREEN VALLEY RD.
SCHERTZ ETJ
CIBOLO ETJ
SANTA CLARA ETJ
WEIL RD.
SITE

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 M. HUDEK, P.E.
4122 POND HILL ROAD, SUITE 101
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.

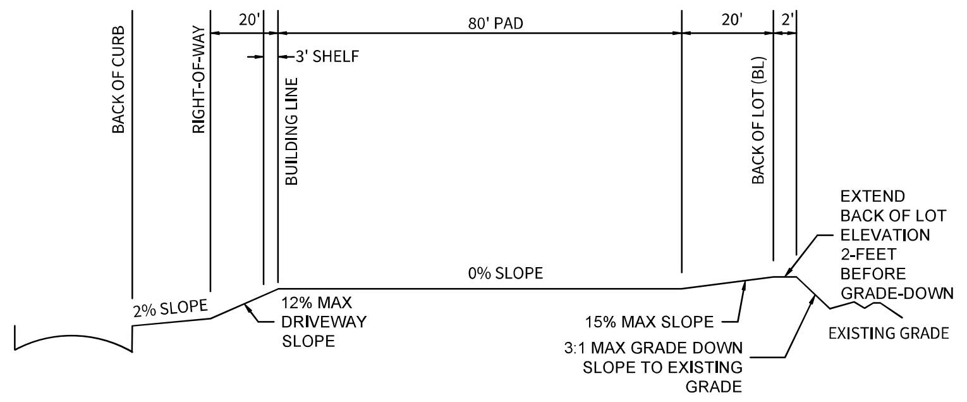
10. MOISTURE CONTENT

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

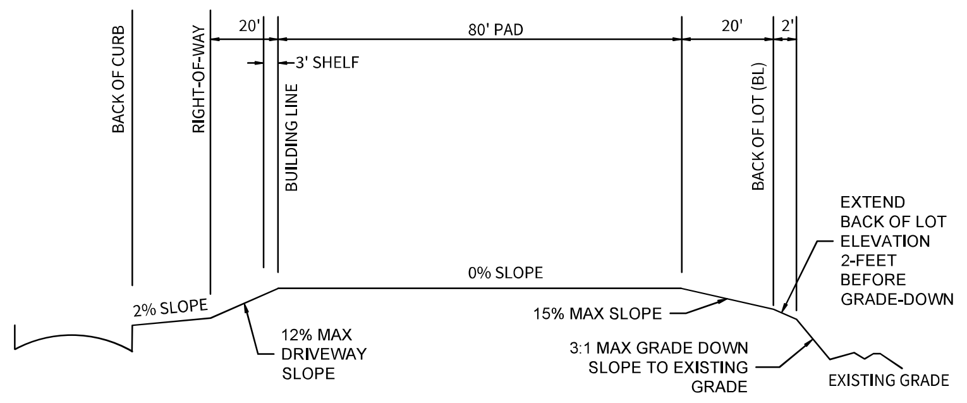
FIELD DENSITY TESTS SHALL BE PERFORMED ON LAYERS OF FILL WHEN THE FILL IS BEING PLACED AS DIRECTED BY THE GEOTECHNICAL ENGINEER. THE MAXIMUM FILL HEIGHT BETWEEN DENSITY TESTING SHALL BE EIGHTEEN INCHES (18"). ALL TESTING SHALL BE REQUESTED BY THE CONTRACTOR TO MEET THE CONTRACTOR'S CONSTRUCTION SCHEDULE. 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.


BACK OF CURB
RIGHT-OF-WAY
20'
80' PAD
20'
2'
3' SHELF
BUILDING LINE
BACK OF LOT (BL)
EXTEND BACK OF LOT ELEVATION 2-FEET BEFORE GRADE-DOWN
0% SLOPE
2% SLOPE
12% MAX DRIVEWAY SLOPE
15% MAX SLOPE
3:1 MAX GRADE DOWN SLOPE TO EXISTING GRADE
EXISTING GRADE

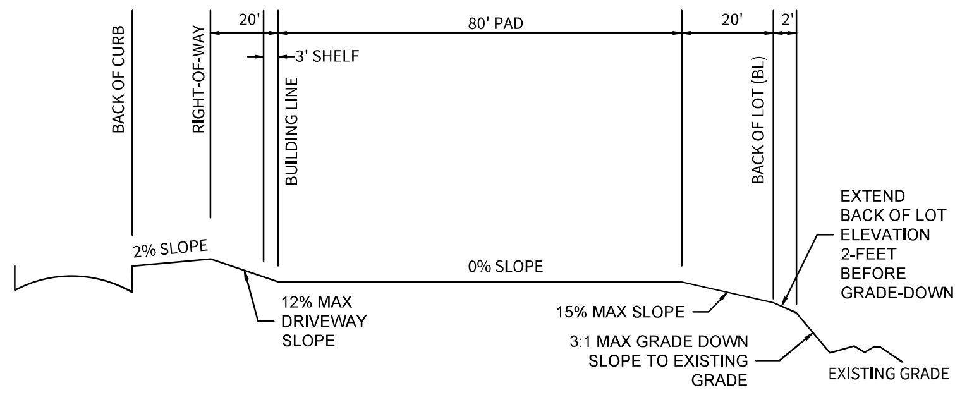
TYPICAL "A-LOT" GRADING DETAIL

(NOT TO SCALE)


BACK OF CURB
RIGHT-OF-WAY
20'
80' PAD
20'
2'
3' SHELF
BUILDING LINE
BACK OF LOT (BL)
EXTEND BACK OF LOT ELEVATION 2-FEET BEFORE GRADE-DOWN
0% SLOPE
2% SLOPE
12% MAX DRIVEWAY SLOPE
15% MAX SLOPE
3:1 MAX GRADE DOWN SLOPE TO EXISTING GRADE
EXISTING GRADE

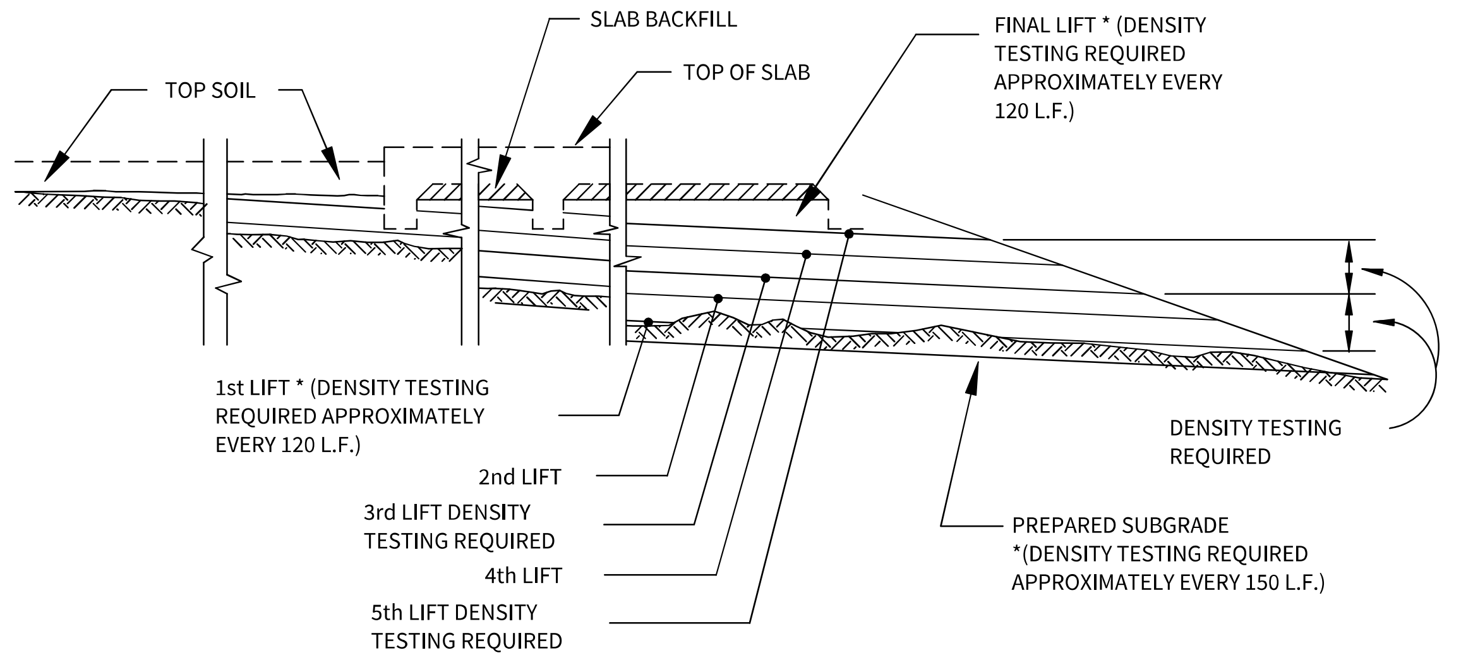
TYPICAL "B-LOT" GRADING DETAIL

(NOT TO SCALE)


BACK OF CURB
RIGHT-OF-WAY
20'
80' PAD
20'
2'
3' SHELF
BUILDING LINE
BACK OF LOT (BL)
EXTEND BACK OF LOT ELEVATION 2-FEET BEFORE GRADE-DOWN
0% SLOPE
2% SLOPE
12% MAX DRIVEWAY SLOPE
15% MAX SLOPE
3:1 MAX GRADE DOWN SLOPE TO EXISTING GRADE
EXISTING GRADE

TYPICAL "C-LOT" GRADING DETAIL

(NOT TO SCALE)


TOP SOIL
SLAB BACKFILL
TOP OF SLAB
FINAL LIFT * (DENSITY TESTING REQUIRED APPROXIMATELY EVERY 120 L.F.)
1st LIFT * (DENSITY TESTING REQUIRED APPROXIMATELY EVERY 120 L.F.)
2nd LIFT
3rd LIFT DENSITY TESTING REQUIRED
4th LIFT
5th LIFT DENSITY TESTING REQUIRED
DENSITY TESTING REQUIRED
PREPARED SUBGRADE *(DENSITY TESTING REQUIRED APPROXIMATELY EVERY 150 L.F.)

DENSITY TEST FREQUENCY

NOT TO SCALE

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GRACE VALLEY RANCH
PHASE 8

GRADING NOTES AND DETAILS

DATE	11/10/2025
PROJECT NO.	03499.010
DRAWN BY	JK/AR/JF/RB
CHECKED BY	KMH

REVISIONS

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KYLE M. HUDEK
138753
11/11/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C2.D1

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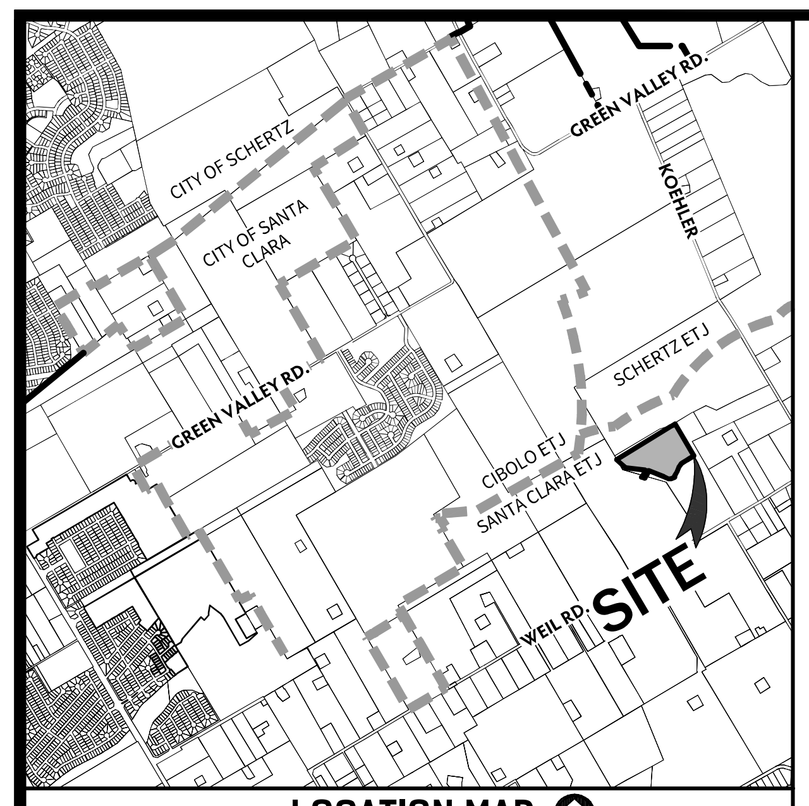
CITY OF SCHERTZ
CITY OF SANTA CLARA
GREEN VALLEY RD.
KOEHLER
SCHERTZ ETJ
CIBOLO ETJ
SANTA CLARA ETJ
WEIL RD.
SITE

LOCATION MAP N.T.S.

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CONTACT PERSON: RICHARD MOTT
100 NE LOOP 410, SUITE 1155
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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	20' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT
◇1	EXISTING 20' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE (CONCURRENT GRACE VALLEY RANCH PHASE 6)
◇2	EXISTING 15' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE (CONCURRENT GRACE VALLEY RANCH PHASE 6)

LEGEND

PROPOSED SANITARY SEWER MANHOLE	—●—
EXISTING SANITARY SEWER MANHOLE	—●—
PROPOSED SANITARY SEWER LATERAL	S
PROPOSED SANITARY SEWER MAIN	8"SS
EXISTING SANITARY SEWER MAIN	EX. 8" SS
PROPOSED WATER MAIN	8"W
EXISTING WATER MAIN	EX. 8" W
PROPOSED STANDARD FIRE HYDRANT	⧓
PROPOSED STANDARD GATE VALVE	—⊣●⊢—
PROPOSED PERMANENT BLOWOFF	—▶●
SITE BOUNDARY	━━
ELECTRIC, GAS, TELEPHONE, & CABLE T.V. EASEMENT	E.G.T.CA. ESM'T
BUILDING SETBACK LINE	B.S.L.
KEYNOTE	⬡1
STREET LIGHT	◉

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.

*CONDUIT SLEEVE NOTE:

1. SLEEVE INSTALLATION TO BE COMPLETED IN ACCORDANCE TO GVEC ISSUED ELECTRICAL PLAN.

CAUTION!!!

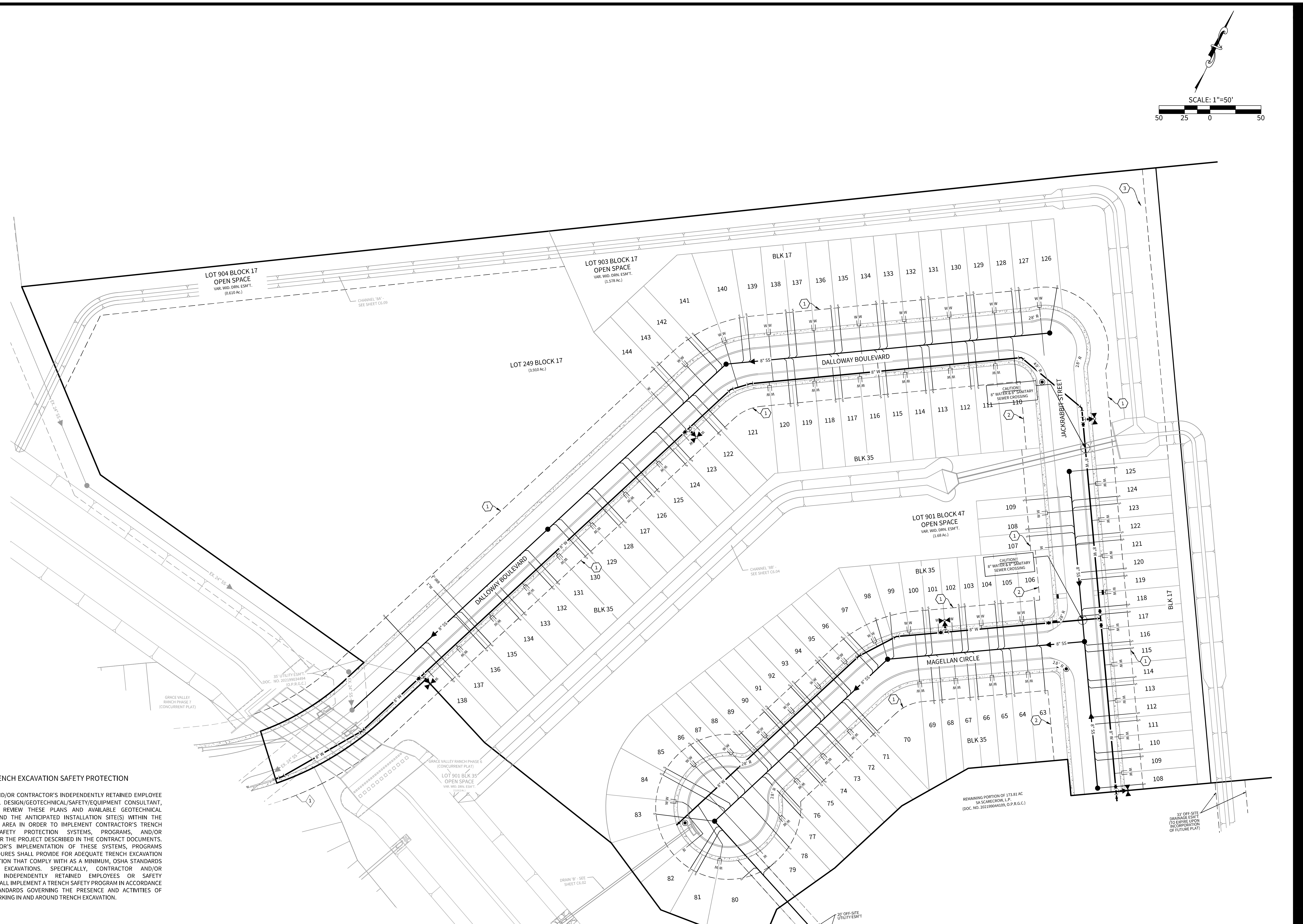
THE CONTRACTOR SHALL BE AWARE THAT EXISTING UTILITIES ARE WITHIN THE SITE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL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

NOTE

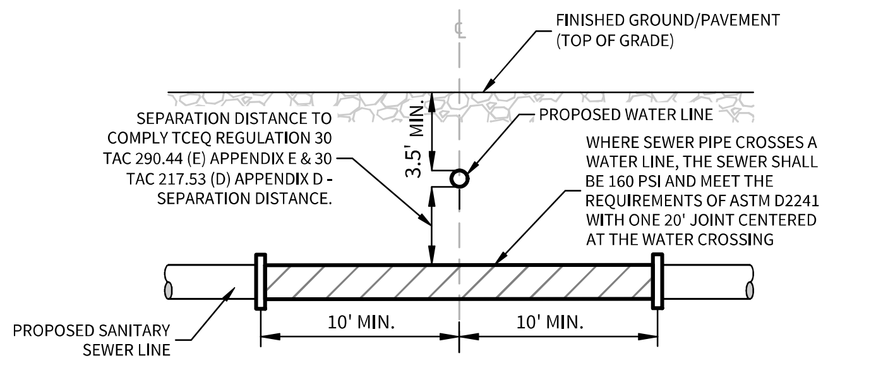
WATER METERS TO BE PLACED WITHIN RIGHT-OF-WAY TO AVOID CONFLICT WITH TRANSFORMERS/SECONDARY ENCLOSURE ELECTRIC SERVICE.

TRENCH EXCAVATION SAFETY PROTECTION

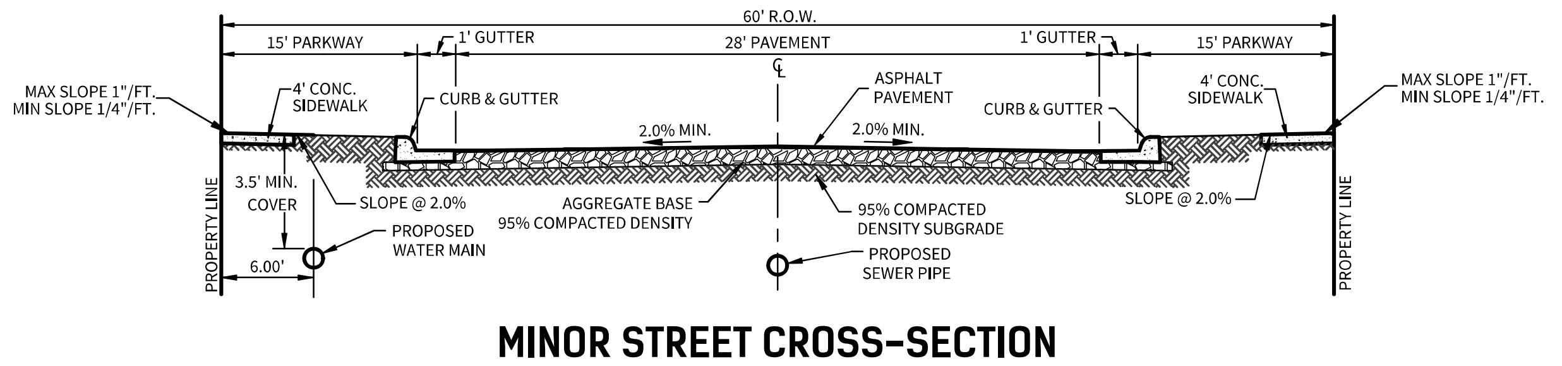
CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S 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.


SCALE: 1"=50'
50 25 0 50
LOT 904 BLOCK 17
OPEN SPACE
VAR. WID. DRN. ESM'T.
LOT 903 BLOCK 17
OPEN SPACE
VAR. WID. DRN. ESM'T.
LOT 249 BLOCK 17
BLK 17
DALLOWAY BOULEVARD
JACKRABBIT STREET
MAGELLAN CIRCLE
BLK 35
LOT 901 BLOCK 47
OPEN SPACE
VAR. WID. DRN. ESM'T.
(1.68 Ac.)
CAUTION!!
8" WATER & 8" SANITARY
SEWER CROSSING
8" SS
8" W
28' R
40' R
REMAINING PORTION OF 173.81 AC
SA SCARECROW, L.P.
(DOC. NO. 202199044109, O.P.R.G.C.)
33' OFF-SITE
DRAINAGE ESM'T
(TO EXPIRE UPON
INCORPORATION
OF FUTURE PLAT)
20' OFF-SITE
UTILITY ESM'T
GRACE VALLEY RANCH PHASE 7
(CONCURRENT PLAT)
GRACE VALLEY RANCH PHASE 6
(CONCURRENT PLAT)
LOT 901 BLK 35
OPEN SPACE
CHANNEL 'BA' SEE SHEET C5.00
CHANNEL 'BB' SEE SHEET C5.04
DRAIN 'B' - SEE SHEET C5.02

MATCHLINE "A" - SEE SHEET C3.01


FINISHED GROUND/PAVEMENT
(TOP OF GRADE)
PROPOSED WATER LINE
SEPARATION DISTANCE TO COMPLY TCEQ REGULATION 30 TAC 290.44 (E) APPENDIX E & 30 TAC 217.53 (D) APPENDIX D - SEPARATION DISTANCE.
3.5' MIN.
WHERE SEWER PIPE CROSSES A WATER LINE, THE SEWER SHALL BE 160 PSI AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20' JOINT CENTERED AT THE WATER CROSSING
PROPOSED SANITARY SEWER LINE
10' MIN.
10' MIN.

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


60' R.O.W.
15' PARKWAY
1' GUTTER
28' PAVEMENT
1' GUTTER
15' PARKWAY
MAX SLOPE 1"/FT.
MIN SLOPE 1/4"/FT.
4' CONC. SIDEWALK
CURB & GUTTER
ASPHALT PAVEMENT
2.0% MIN.
2.0% MIN.
CURB & GUTTER
4' CONC. SIDEWALK
MAX SLOPE 1"/FT.
MIN SLOPE 1/4"/FT.
3.5' MIN. COVER
SLOPE @ 2.0%
AGGREGATE BASE 95% COMPACTED DENSITY
95% COMPACTED DENSITY SUBGRADE
SLOPE @ 2.0%
PROPOSED WATER MAIN
PROPOSED SEWER PIPE
6.00'
PROPERTY LINE
PROPERTY LINE

MINOR STREET CROSS-SECTION
N.T.S.

CUDEENGINEERS.COM

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GRACE VALLEY RANCH
PHASE 8

UTILITY LAYOUT PLAN

DATE
11/10/2025

PROJECT NO.
03499.010

DRAWN BY
JK/AR/JF/RB

CHECKED BY
KMH

REVISIONS
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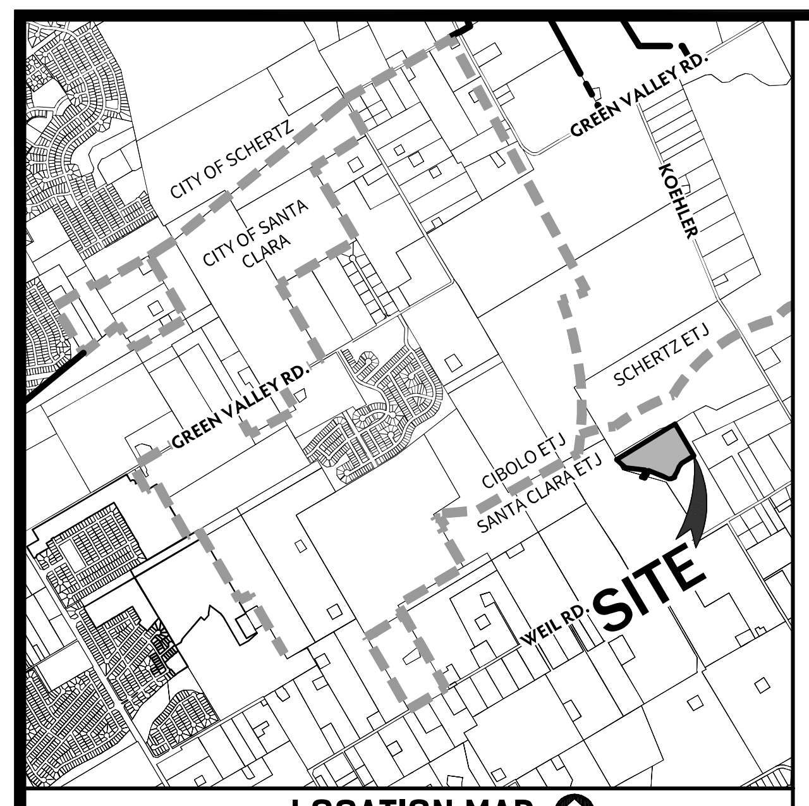
KYLE M. HUDEK
138753
11/11/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C3.00

P:\03499\010\2-DWG\4-Plans\C3.00 - UTIL.dwg 2025/11/10 6:10pm arodriguez


CITY OF SCHERTZ
CITY OF SANTA CLARA
GREEN VALLEY RD.
KOEHLER
SCHERTZ ETJ
CIBOLO ETJ
SANTA CLARA ETJ
WEIL RD.
SITE

LOCATION MAP N.T.S.

DEVELOPER:

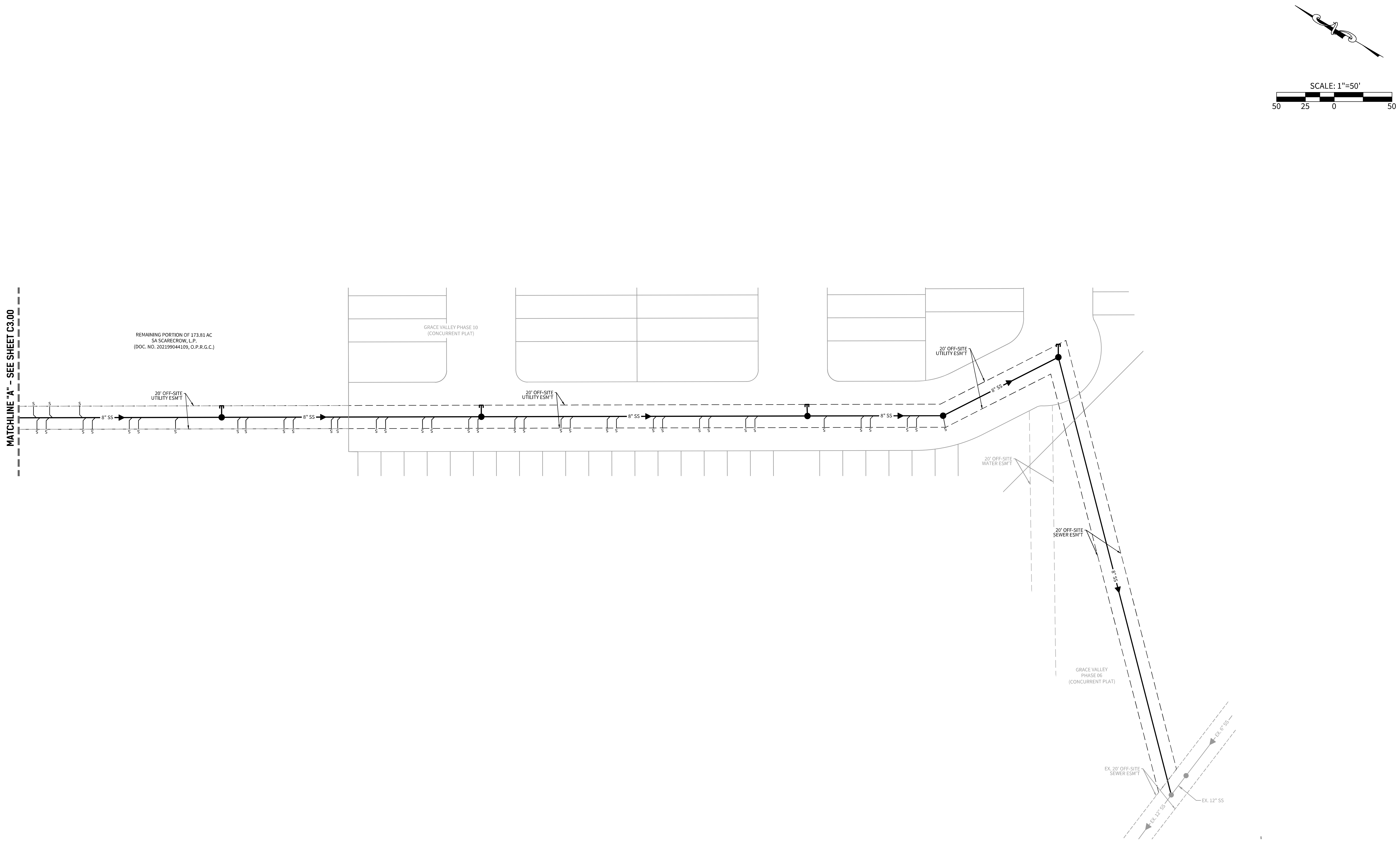
LENNAR HOMES OF TEXAS LAND AND CONSTRUCTION, LTD.
CONTACT PERSON: RICHARD MOTT
100 NE LOOP 410, SUITE 1155
SAN ANTONIO, TX 78216
TEL: (210) 403-6200

CIVIL ENGINEER:

CUDE ENGINEERS
CONTACT PERSON: KYLE M. 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	20' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT
1	EXISTING 20' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE (CONCURRENT GRACE VALLEY RANCH PHASE 6)
2	EXISTING 15' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE (CONCURRENT GRACE VALLEY RANCH PHASE 6)


SCALE: 1"=50'
50
25
0
50
MATCHLINE "A" - SEE SHEET C3.00
REMAINING PORTION OF 173.81 AC
SA SCARECROW, L.P.
(DOC. NO. 202199044109, O.P.R.G.C.)
GRACE VALLEY PHASE 10
(CONCURRENT PLAT)
20' OFF-SITE UTILITY ESM'T
20' OFF-SITE UTILITY ESM'T
20' OFF-SITE UTILITY ESM'T
8" SS
8" SS
8" SS
8" SS
8" SS
S
20' OFF-SITE WATER ESM'T
20' OFF-SITE SEWER ESM'T
GRACE VALLEY PHASE 06
(CONCURRENT PLAT)
EX. 20' OFF-SITE SEWER ESM'T
EX. 6" SS
EX. 12" SS
EX. 12" SS

LEGEND

PROPOSED SANITARY SEWER MANHOLE	●
EXISTING SANITARY SEWER MANHOLE	●
PROPOSED SANITARY SEWER LATERAL	S
PROPOSED SANITARY SEWER MAIN	8"SS
EXISTING SANITARY SEWER MAIN	EX. 8" SS
PROPOSED WATER MAIN	8"W
EXISTING WATER MAIN	EX. 8" W
PROPOSED STANDARD FIRE HYDRANT	
PROPOSED STANDARD GATE VALVE	
PROPOSED PERMANENT BLOWOFF	
SITE BOUNDARY	
ELECTRIC, GAS, TELEPHONE, & CABLE T.V. EASEMENT	E.G.T.CA. ESM'T
BUILDING SETBACK LINE	B.S.L.
KEYNOTE	1
STREET LIGHT	◉

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.

*CONDUIT SLEEVE NOTE:

1. SLEEVE INSTALLATION TO BE COMPLETED IN ACCORDANCE TO GVEC ISSUED ELECTRICAL PLAN.

CAUTION!!!

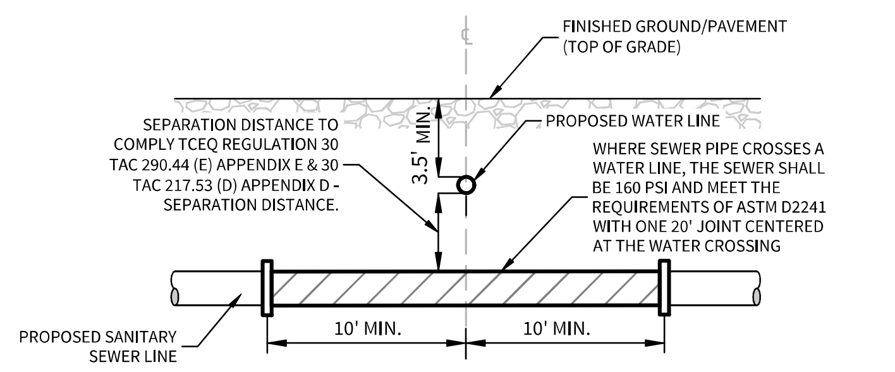
THE CONTRACTOR SHALL BE AWARE THAT EXISTING UTILITIES ARE WITHIN THE SITE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL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

NOTE

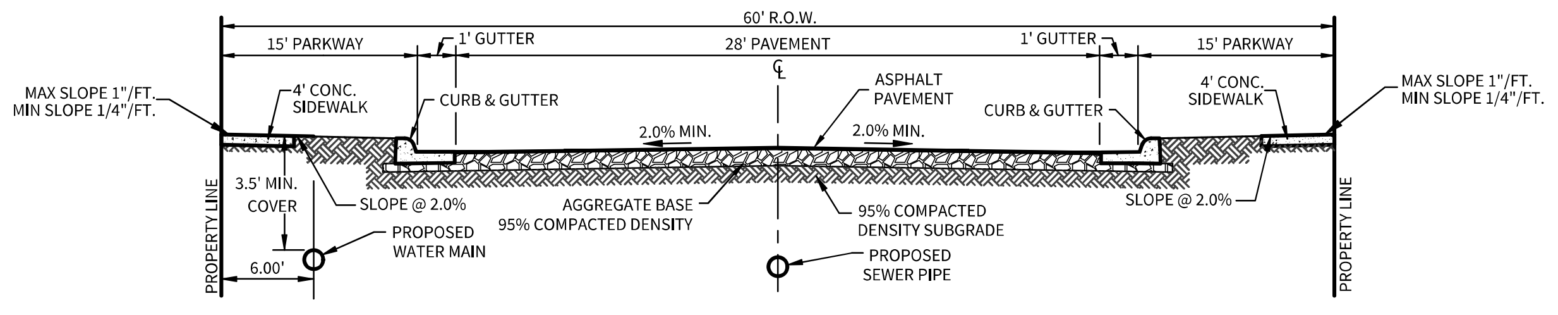
WATER METERS TO BE PLACED WITHIN RIGHT-OF-WAY TO AVOID CONFLICT WITH TRANSFORMERS/SECONDARY ENCLOSURE ELECTRIC SERVICE.

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.


FINISHED GROUND/PAVEMENT
(TOP OF GRADE)
SEPARATION DISTANCE TO COMPLY TCEQ REGULATION 30 TAC 290.44 (E) APPENDIX E & 30 TAC 217.53 (D) APPENDIX D - SEPARATION DISTANCE.
3.5' MIN.
PROPOSED WATER LINE
WHERE SEWER PIPE CROSSES A WATER LINE, THE SEWER SHALL BE 160 PSI AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20' JOINT CENTERED AT THE WATER CROSSING
PROPOSED SANITARY SEWER LINE
10' MIN.
10' MIN.

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


60' R.O.W.
15' PARKWAY
1' GUTTER
28' PAVEMENT
1' GUTTER
15' PARKWAY
MAX SLOPE 1"/FT.
MIN SLOPE 1/4"/FT.
4' CONC. SIDEWALK
CURB & GUTTER
ASPHALT PAVEMENT
2.0% MIN.
2.0% MIN.
CURB & GUTTER
4' CONC. SIDEWALK
MAX SLOPE 1"/FT.
MIN SLOPE 1/4"/FT.
3.5' MIN. COVER
SLOPE @ 2.0%
AGGREGATE BASE 95% COMPACTED DENSITY
95% COMPACTED DENSITY SUBGRADE
SLOPE @ 2.0%
PROPOSED WATER MAIN
6.00'
PROPOSED SEWER PIPE
PROPERTY LINE
PROPERTY LINE

MINOR STREET CROSS-SECTION
N.T.S.

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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 8

UTILITY LAYOUT PLAN

DATE
11/10/2025

PROJECT NO.
03499.010

DRAWN BY
JK/AR/JF/RB

CHECKED BY
KMH

REVISIONS
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7.
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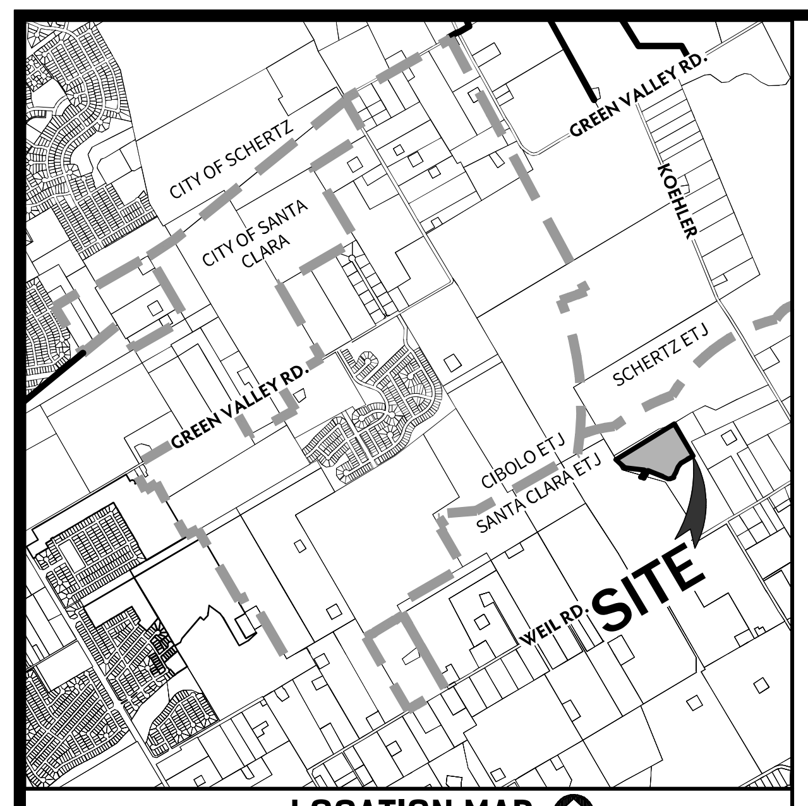
KYLE M. HUDEK
138753
11/11/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C3.01



CITY OF SCHERTZ
GREEN VALLEY RD.
KOHLER
CITY OF SANTA CLARA
SCHERTZ ETJ
GREEN VALLEY RD.
CIBOLO ETJ
SANTA CLARA ETJ
WEIL RD.
SITE

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 M. 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. 20' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT

LEGEND

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

CAUTION!!!

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TRENCH EXCAVATION SAFETY PROTECTION

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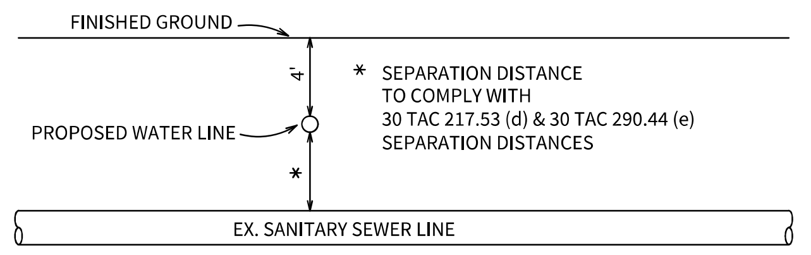
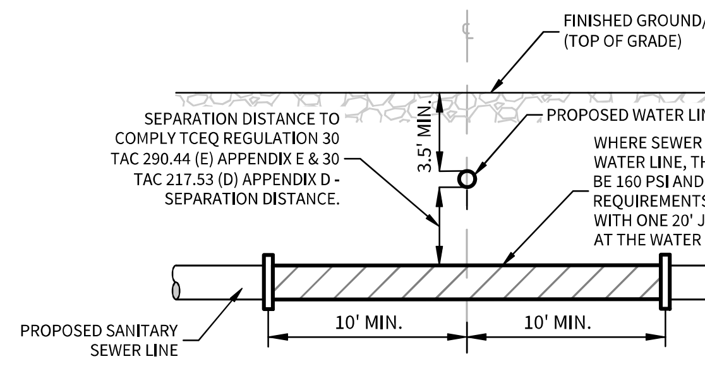


FINISHED GROUND
4'
PROPOSED WATER LINE
*
EX. SANITARY SEWER LINE
* SEPARATION DISTANCE TO COMPLY WITH 30 TAC 217.53 (d) & 30 TAC 290.44 (e) SEPARATION DISTANCES

DETAIL "A"

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

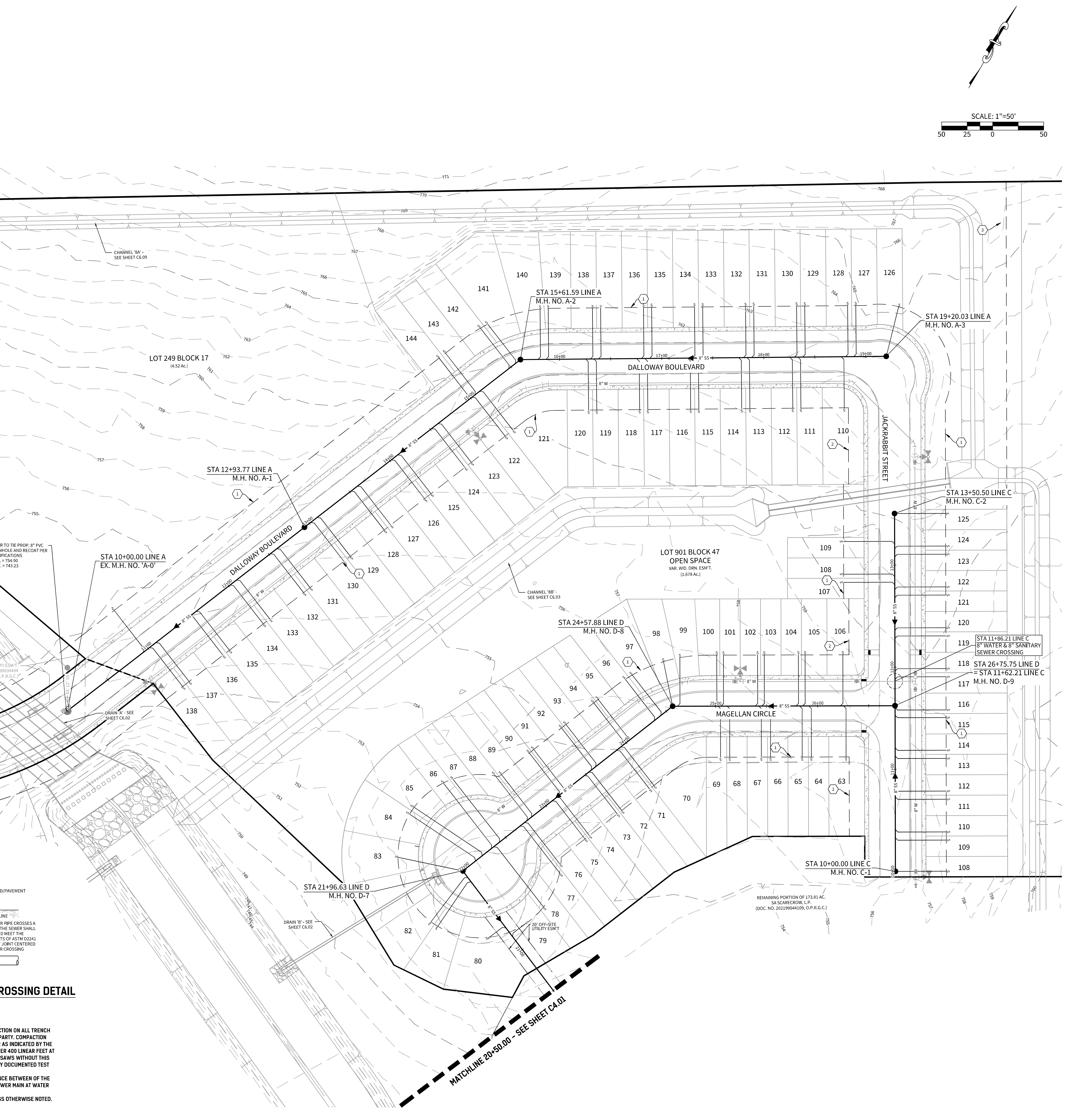


FINISHED GROUND/PAVEMENT (TOP OF GRADE)
PROPOSED WATER LINE
3.5' MIN.
SEPARATION DISTANCE TO COMPLY TCEQ REGULATION 30 TAC 290.44 (E) APPENDIX E & 30 TAC 217.53 (D) APPENDIX D - SEPARATION DISTANCE.
WHERE SEWER PIPE CROSSES A WATER LINE, THE SEWER SHALL BE 160 PSI AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20' JOINT CENTERED AT THE WATER CROSSING
PROPOSED SANITARY SEWER LINE
10' MIN.
10' MIN.

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

NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING 98% COMPACTION ON ALL TRENCH BACKFILL AND PAYING FOR THE TESTS TO BE PERFORMED BY A THIRD PARTY. COMPACTION TEST WILL BE DONE AT ONE LOCATION POINT RANDOMLY SELECTED OR AS INDICATED BY THE SAWS INSPECTOR/TEST ADMINISTER, PER EACH 12-INCH LOOSE LIFT PER 400 LINEAR FEET AT A MINIMUM. THIS PROJECT WILL NOT BE ACCEPTED AND FINALIZED BY SAWS WITHOUT THIS REQUIREMENT BEING MET AND VERIFIED BY PROVIDING ALL NECESSARY DOCUMENTED TEST RESULTS.
2. CONTRACTOR TO MAINTAIN A MINIMUM 1' VERTICAL SEPARATION DISTANCE BETWEEN OF THE BOTTOM PROPOSED WATER MAIN AND TOP OF PROPOSED SANITARY SEWER MAIN AT WATER AND SANITARY SEWER CROSSINGS.
3. ALL LATERALS SHALL BE INSTALLED AT A MINIMUM 2.0% SLOPE UNLESS OTHERWISE NOTED.



SCALE: 1"=50'
50 25 0 50
CHANNEL '8A' - SEE SHEET C6.09
LOT 249 BLOCK 17
(4.52 Ac.)
CONTRACTOR TO TIE PROP. 8" PVC INTO EX. MANHOLE AND RECOAT PER GVSUD SPECIFICATIONS
EX. RIM ELEV. = 754.90
EX. INV. ELEV. = 743.23
STA 10+00.00 LINE A
EX. M.H. NO. 'A-0'
STA 12+93.77 LINE A
M.H. NO. A-1
STA 15+61.59 LINE A
M.H. NO. A-2
STA 19+20.03 LINE A
M.H. NO. A-3
DALLOWAY BOULEVARD
JACKRABBIT STREET
MAGELLAN CIRCLE
8" SS
8" W
EX. 12" SS
35' UTILITY ESM'T.
DOC. NO. 202199034494
(O.P.R.G.C.)
DRAIN 'A' - SEE SHEET C6.02
DRAIN 'B' - SEE SHEET C6.02
CHANNEL '8B' - SEE SHEET C6.03
LOT 901 BLOCK 47
OPEN SPACE
VAR. WID. DRN. ESM'T.
(1.678 Ac.)
STA 13+50.50 LINE C
M.H. NO. C-2
STA 11+86.21 LINE C
8" WATER & 8" SANITARY SEWER CROSSING
STA 26+75.75 LINE D
= STA 11+62.21 LINE C
M.H. NO. D-9
STA 24+57.88 LINE D
M.H. NO. D-8
STA 21+96.63 LINE D
M.H. NO. D-7
STA 10+00.00 LINE C
M.H. NO. C-1
20' OFF-SITE UTILITY ESM'T
REMAINING PORTION OF 173.81 AC.
SA SCARECROW, L.P.
(DOC. NO. 202199044109, O.P.R.G.C.)
MATCHLINE 20+50.00 - SEE SHEET C4.01

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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 8

SANITARY SEWER MASTER PLAN

DATE
11/10/2025

PROJECT NO.
03499.010

DRAWN BY
JK/AR/JF/RB

CHECKED BY
KMH

REVISIONS
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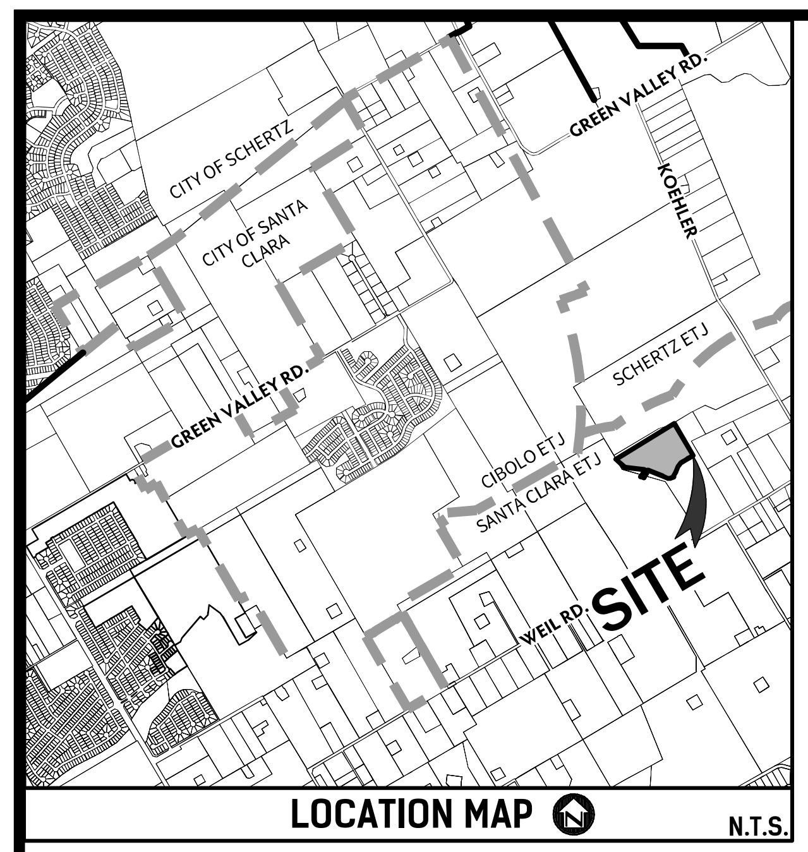
KYLE M. HUDEK
138753
11/11/2025
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C4.00

P:\03499\010\2-DWG\4-Plans\C4.00 - SSMP.dwg 2025/11/10 4:18pm arodriguez

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.


CITY OF SCHERTZ
CITY OF SANTA CLARA
GREEN VALLEY RD.
KOEHLER
SCHERTZ ETJ
CIBOLO ETJ
SANTA CLARA ETJ
WEIL RD.
SITE

LOCATION MAP N.T.S.

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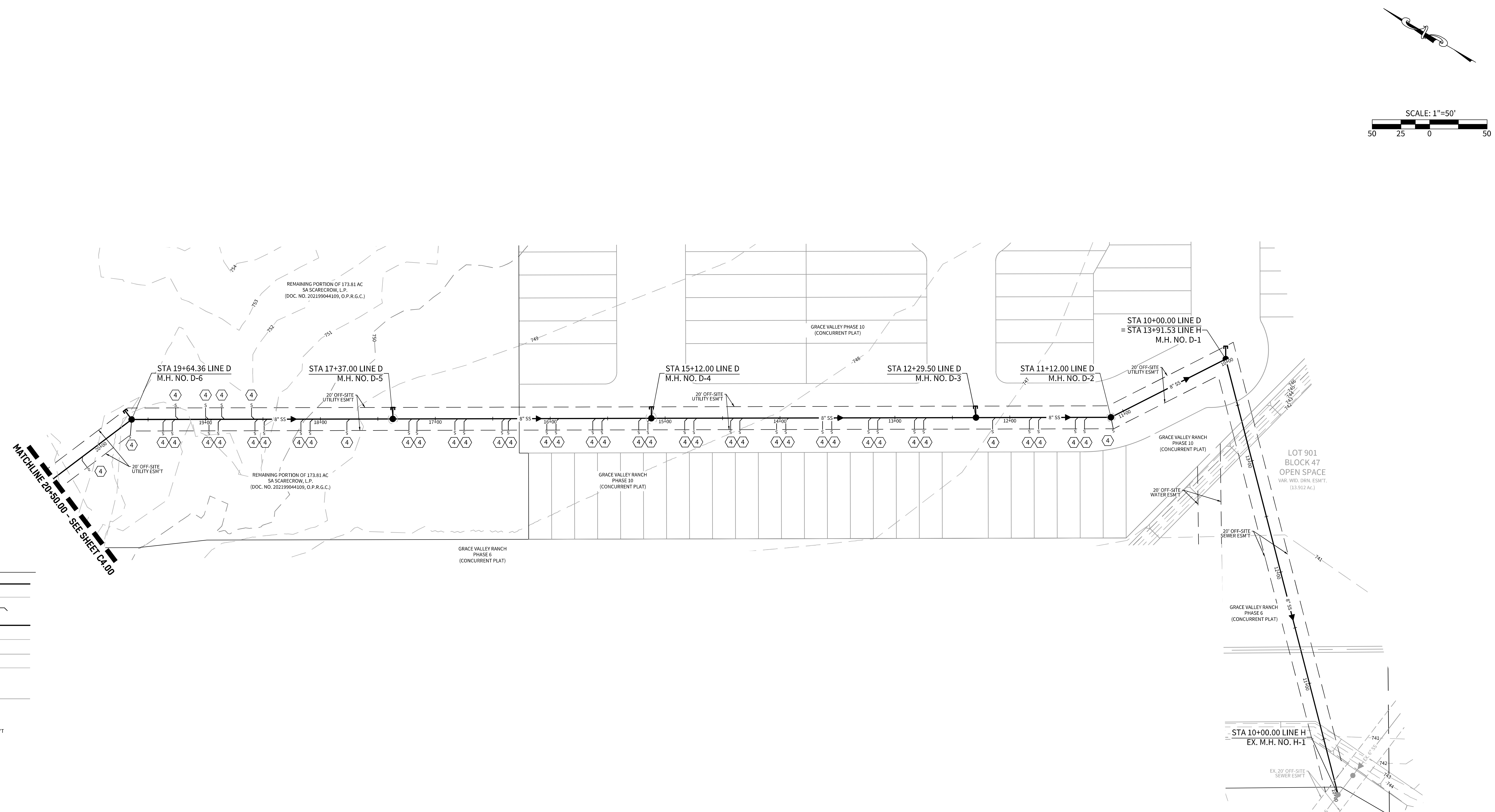
KEYNOTES

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. 20' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT
4. INSTALL 6" SANITARY SEWER WYE AT 2.0% SLOPE AND 10' SANITARY SEWER LATERAL.


SCALE: 1"=50'
50
25
0
50
MATCHLINE 20+50.00 - SEE SHEET C4.00
STA 19+64.36 LINE D
M.H. NO. D-6
STA 17+37.00 LINE D
M.H. NO. D-5
STA 15+12.00 LINE D
M.H. NO. D-4
STA 12+29.50 LINE D
M.H. NO. D-3
STA 11+12.00 LINE D
M.H. NO. D-2
STA 10+00.00 LINE D
= STA 13+91.53 LINE H
M.H. NO. D-1
STA 10+00.00 LINE H
EX. M.H. NO. H-1
20' OFF-SITE UTILITY ESM'T
20' OFF-SITE WATER ESM'T
20' OFF-SITE SEWER ESM'T
EX. 20' OFF-SITE SEWER ESM'T
8" SS
EX. 6" SS
EX. 12" SS
20+00
19+00
18+00
17+00
16+00
15+00
14+00
13+00
12+00
11+00
10+00
REMAINING PORTION OF 173.81 AC
SA SCARECROW, L.P.
(DOC. NO. 202199044109, O.P.R.G.C.)
GRACE VALLEY RANCH
PHASE 6
(CONCURRENT PLAT)
GRACE VALLEY RANCH
PHASE 10
(CONCURRENT PLAT)
GRACE VALLEY PHASE 10
(CONCURRENT PLAT)
LOT 901
BLOCK 47
OPEN SPACE
VAR. WID. DRN. ESM'T.
(13.912 Ac.)
754
753
752
751
750
749
748
747
746
745
744
743
742
741
4
S

LEGEND

PROPOSED SANITARY SEWER MANHOLE	—●—
EXISTING SANITARY SEWER MANHOLE	—●—
PROPOSED SANITARY SEWER LATERAL	S
PROPOSED SANITARY SEWER MAIN	8"SS
EXISTING SANITARY SEWER MAIN	EX. 8" SS
PROPOSED WATER MAIN	8"W
EXISTING WATER MAIN	EX. 8" W
PROPOSED STANDARD FIRE HYDRANT	
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BUILDING SETBACK LINE	B.S.L.

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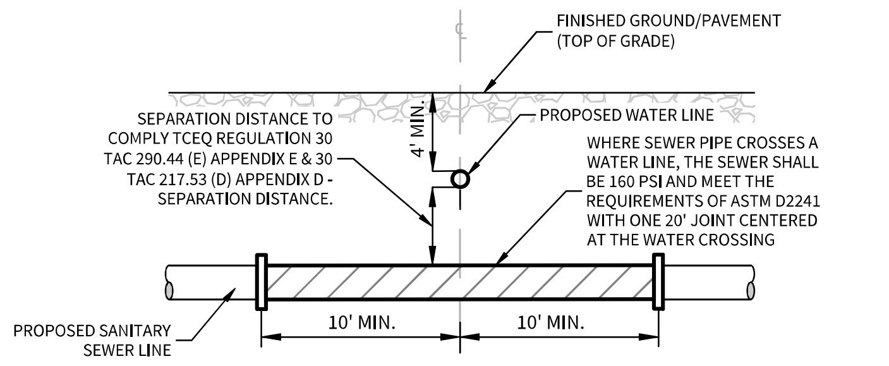
FINISHED GROUND/PAVEMENT
(TOP OF GRADE)
PROPOSED WATER LINE
4' MIN.
SEPARATION DISTANCE TO COMPLY TCEQ REGULATION 30 TAC 290.44 (E) APPENDIX E & 30 TAC 217.53 (D) APPENDIX D - SEPARATION DISTANCE.
WHERE SEWER PIPE CROSSES A WATER LINE, THE SEWER SHALL BE 160 PSI AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20' JOINT CENTERED AT THE WATER CROSSING
PROPOSED SANITARY SEWER LINE
10' MIN.
10' MIN.

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.

NOTES:

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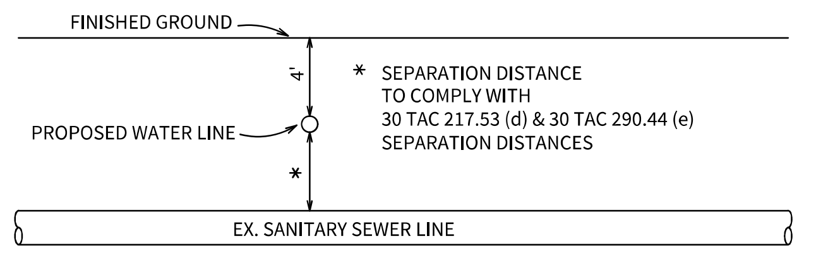
FINISHED GROUND
4'
PROPOSED WATER LINE
*
* SEPARATION DISTANCE TO COMPLY WITH 30 TAC 217.53 (d) & 30 TAC 290.44 (e) SEPARATION DISTANCES
EX. SANITARY SEWER LINE

DETAIL "A"

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.

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EST. 1980 CUDE ENGINEERS

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

GRACE VALLEY RANCH
PHASE 8

OFFSITE SANITARY SEWER MASTER PLAN

DATE
11/10/2025
PROJECT NO.
03499.010
DRAWN BY
JK/AR/JF/RB
CHECKED BY
KMH

REVISIONS
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9.

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

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C4.01

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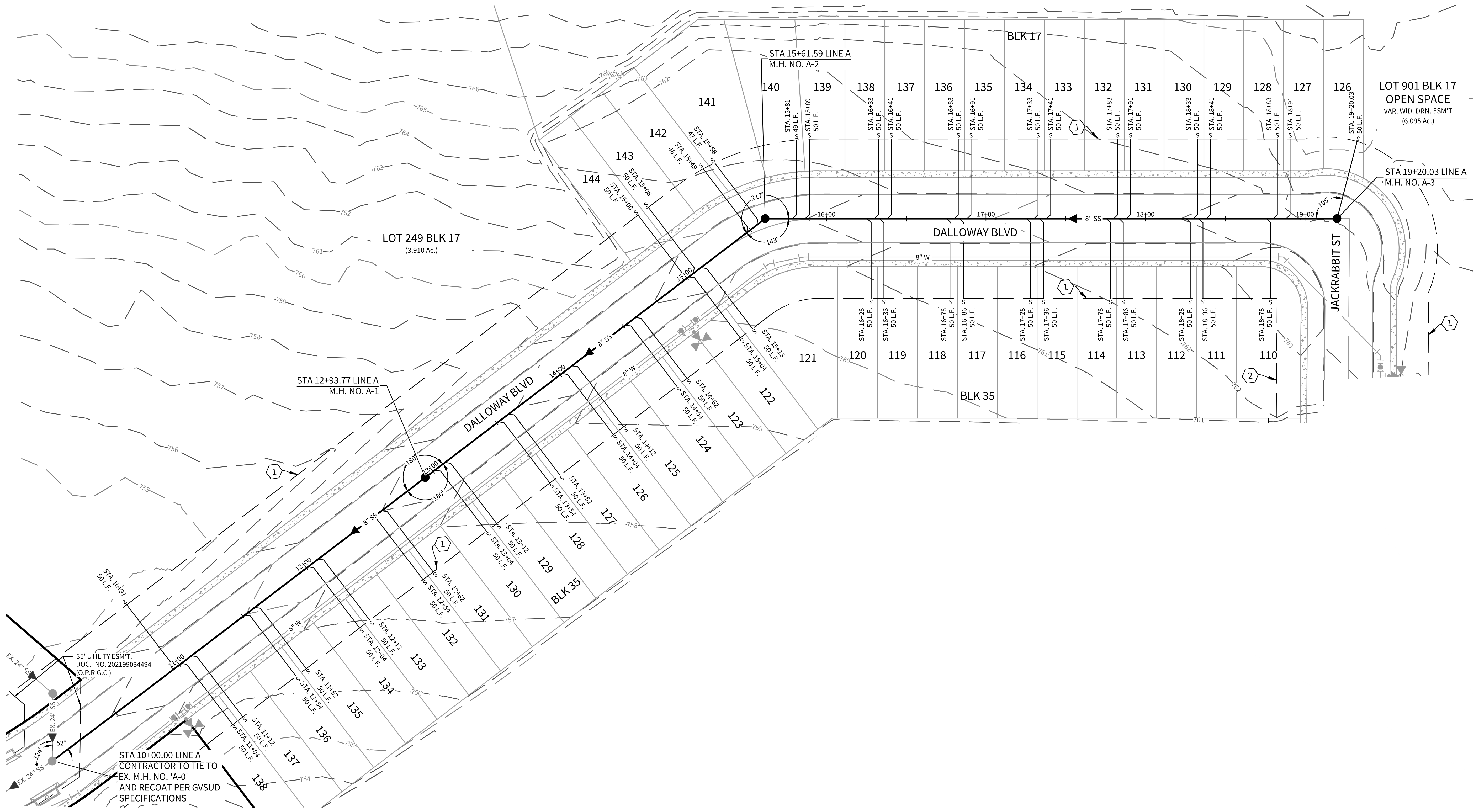
P:\03499\010\2-DWG\4-Plans\C4.00 - SSMP.dwg 2025/11/10 4:18pm arodriguez

LEGEND

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

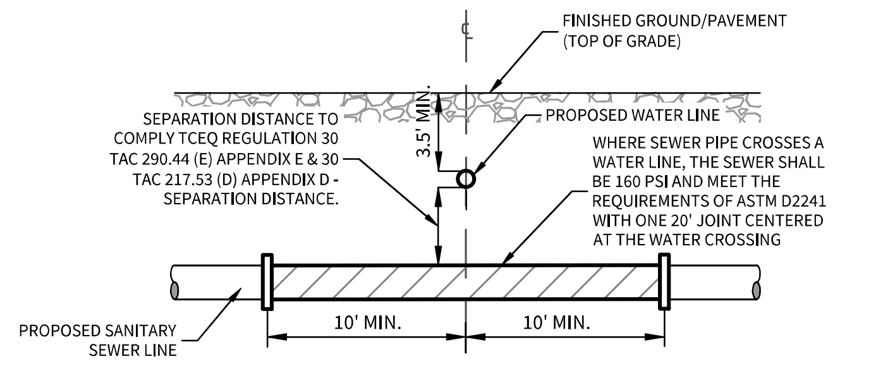
KEYNOTES

1	20' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE
2	10' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE
3	20' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT


LOT 249 BLK 17
(3.910 Ac.)
DALLOWAY BLVD
JACKRABBIT ST
BLK 17
BLK 35
LOT 901 BLK 17
OPEN SPACE
VAR. WID. DRN. ESM'T
(6.095 Ac.)
STA 12+93.77 LINE A
M.H. NO. A-1
STA 15+61.59 LINE A
M.H. NO. A-2
STA 19+20.03 LINE A
M.H. NO. A-3
STA 10+00.00 LINE A
CONTRACTOR TO TIE TO
EX. M.H. NO. 'A-0'
AND RECOAT PER GVSUD
SPECIFICATIONS
35' UTILITY ESM'T
DOC. NO. 20219034494
(O.P.R.G.C.)
EX. 24" SS
8" SS
8" W
121 120 119 118 117 116 115 114 113 112 111 110
122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138
140 139 138 137 136 135 134 133 132 131 130 129 128 127 126
141 142 143 144
50 L.F.

SCALE: 1"=50'

50 25 0 50


FINISHED GROUND/PAVEMENT
(TOP OF GRADE)
PROPOSED WATER LINE
3.5' MIN.
SEPARATION DISTANCE TO
COMPLY TCEQ REGULATION 30
TAC 290.44 (E) APPENDIX E & 30
TAC 217.53 (D) APPENDIX D -
SEPARATION DISTANCE.
WHERE SEWER PIPE CROSSES A
WATER LINE, THE SEWER SHALL
BE 160 PSI AND MEET THE
REQUIREMENTS OF ASTM D2241
WITH ONE 20' JOINT CENTERED
AT THE WATER CROSSING
PROPOSED SANITARY
SEWER LINE
10' MIN.
10' MIN.

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.

NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING 98% COMPACTION ON ALL TRENCH BACKFILL AND PAYING FOR THE TESTS TO BE PERFORMED BY A THIRD PARTY. COMPACTION TEST WILL BE DONE AT ONE LOCATION POINT RANDOMLY SELECTED OR AS INDICATED BY THE SAWS INSPECTOR/TEST ADMINISTER, PER EACH 12-INCH LOOSE LIFT PER 400 LINEAR FEET AT A MINIMUM. THIS PROJECT WILL NOT BE ACCEPTED AND FINALIZED BY SAWS WITHOUT THIS REQUIREMENT BEING MET AND VERIFIED BY PROVIDING ALL NECESSARY DOCUMENTED TEST RESULTS.
2. CONTRACTOR TO MAINTAIN A MINIMUM 1' VERTICAL SEPARATION DISTANCE BETWEEN OF THE BOTTOM PROPOSED WATER MAIN AND TOP OF PROPOSED SANITARY SEWER MAIN AT WATER AND SANITARY SEWER CROSSINGS.
3. ALL LATERALS SHALL BE INSTALLED AT A MINIMUM 2.0% SLOPE UNLESS OTHERWISE NOTED.

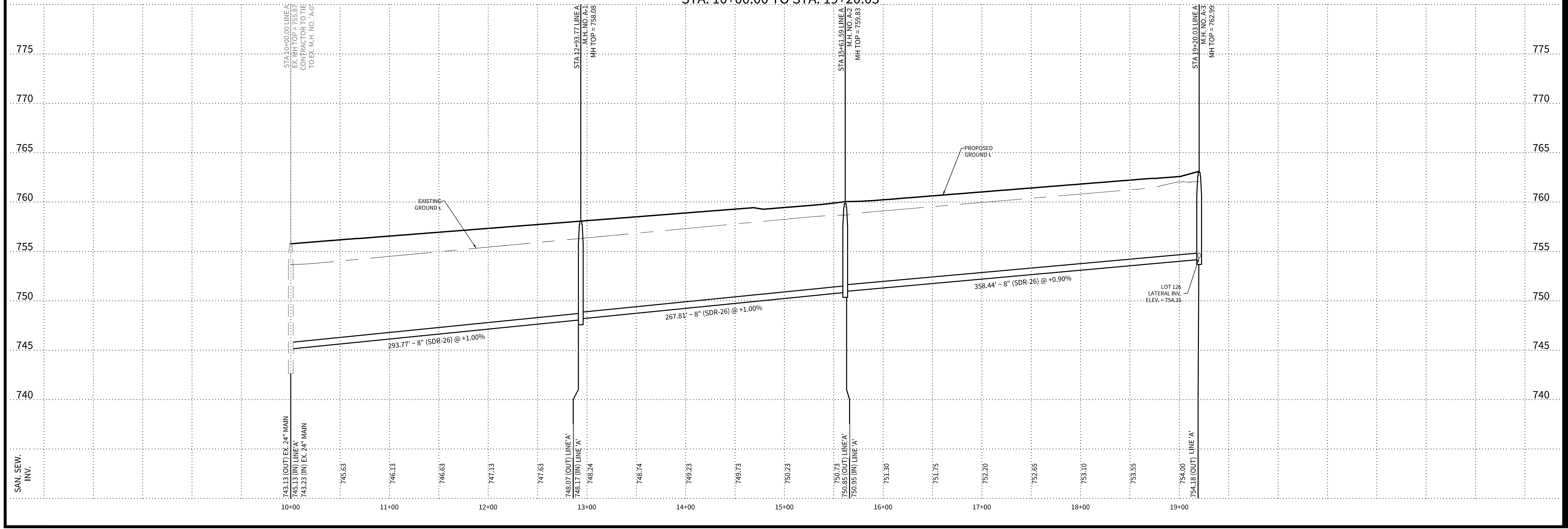
TRENCH EXCAVATION SAFETY PROTECTION

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 "A"

STA. 10+00.00 TO STA. 19+20.03

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


775
770
765
760
755
750
745
740
STA 10+00.00 LINE A
EX. MH TOP = 755.87
CONTRACTOR TO TIE
TO EX. M.H. NO. 'A-0'
STA 12+93.77 LINE A
M.H. NO. A-1
MH TOP = 758.08
STA 15+61.59 LINE A
M.H. NO. A-2
MH TOP = 759.83
STA 19+20.03 LINE A
M.H. NO. A-3
MH TOP = 762.99
EXISTING GROUND
PROPOSED GROUND
293.77' ~ 8" (SDR-26) @ +1.00%
267.81' ~ 8" (SDR-26) @ +1.00%
358.44' ~ 8" (SDR-26) @ +0.90%
LOT 126
LATERAL INV.
ELEV. = 754.35
SAN. SEW. INV.
743.13 (OUT) EX. 24" MAIN
745.13 (IN) LINE'A'
743.23 (IN) EX. 24" MAIN
745.63
746.13
746.63
747.13
747.63
748.07 (OUT) LINE'A'
748.17 (IN) LINE 'A'
748.24
748.74
749.23
749.73
750.23
750.73
750.85 (OUT) LINE'A'
750.95 (IN) LINE 'A'
751.30
751.75
752.20
752.65
753.10
753.55
754.00
754.18 (OUT) LINE 'A'
10+00
11+00
12+00
13+00
14+00
15+00
16+00
17+00
18+00
19+00

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

CUDEENGINEERS.COM

CUDE ENGINEERS EST. 1980

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

GRACE VALLEY RANCH
PHASE 8

SANITARY SEWER PLAN & PROFILE - LINE 'A'

DATE
11/11/2025

PROJECT NO.
03499.010

DRAWN BY
JK/AR/JF/RB

CHECKED BY
KMH

REVISIONS
1.
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KYLE M. HUDEK
138753
11/11/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C4.02

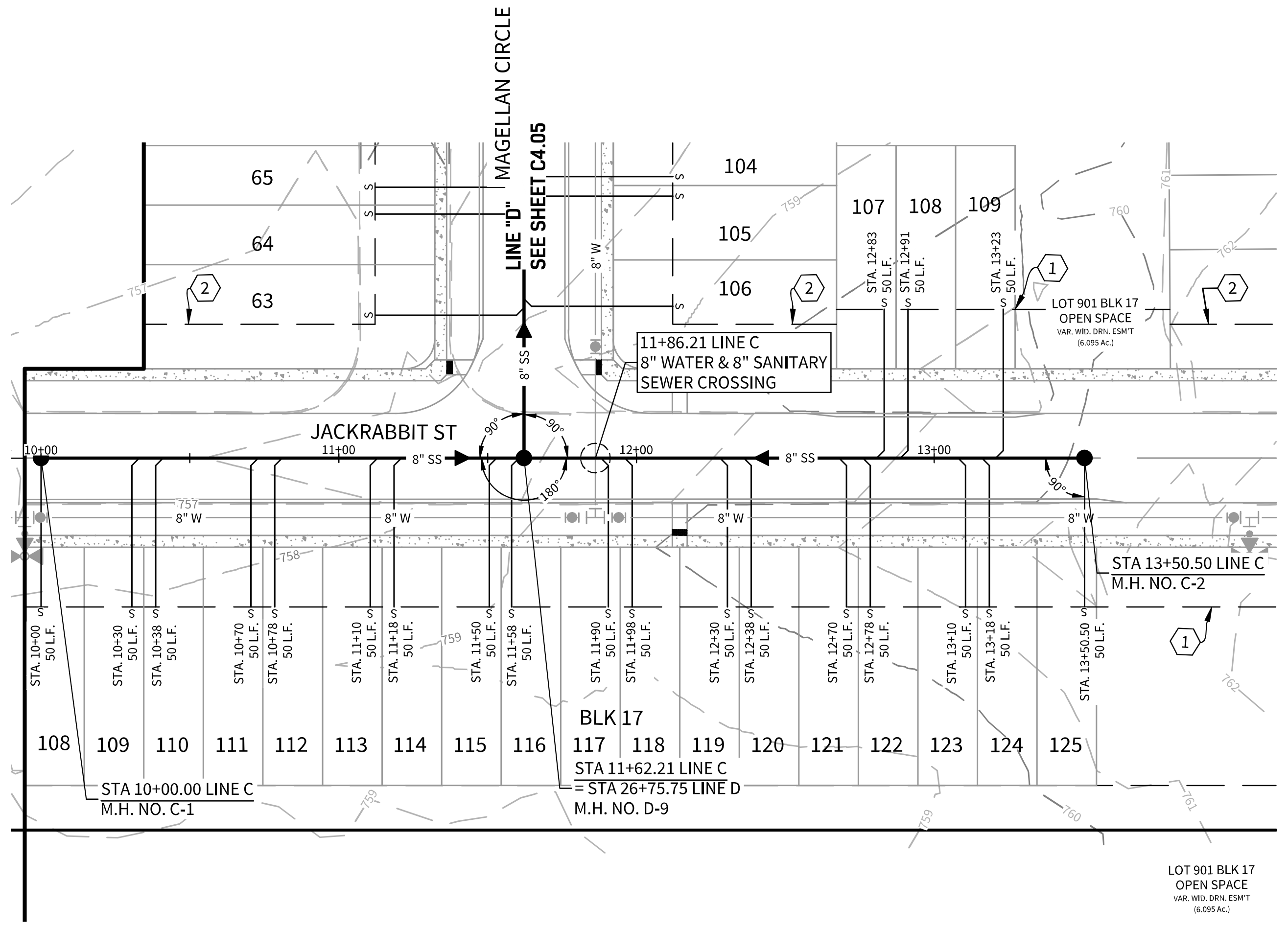
P:\03499\010\2-DWG\4-Plans\C4.01 - SSPF.dwg 2025/11/11 3:31pm khudek

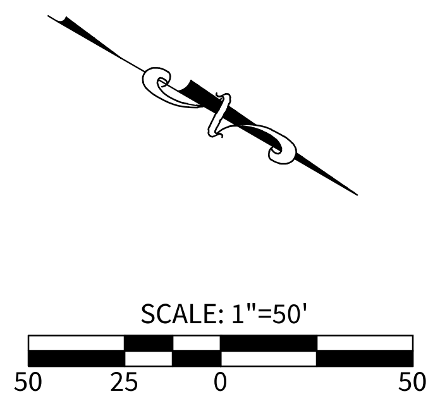
LEGEND

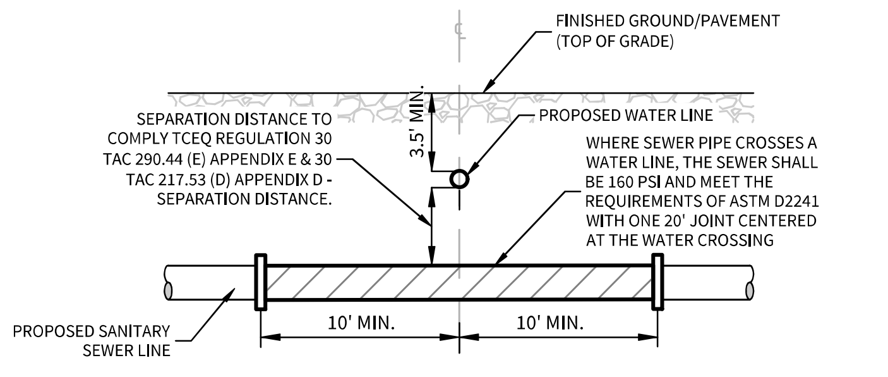
PROPOSED SANITARY SEWER MANHOLE	●
EXISTING SANITARY SEWER MANHOLE	●
PROPOSED SANITARY SEWER LATERAL	S
PROPOSED SANITARY SEWER MAIN	8"SS
EXISTING SANITARY SEWER MAIN	EX. 8" SS
PROPOSED WATER MAIN	8"W
EXISTING WATER MAIN	EX. 8" W
PROPOSED STANDARD FIRE HYDRANT	⋈
PROPOSED STANDARD GATE VALVE	●
PROPOSED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

KEYNOTES

⟨1⟩	20' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE
⟨2⟩	10' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE


MAGELLAN CIRCLE
LINE "D"
SEE SHEET C4.05
65
64
63
104
105
106
107
108
109
11+86.21 LINE C
8" WATER & 8" SANITARY
SEWER CROSSING
JACKRABBIT ST
10+00
11+00
12+00
13+00
8" SS
8" SS
8" W
90°
180°
STA. 12+83 50 L.F.
STA. 12+91 50 L.F.
STA. 13+23 50 L.F.
LOT 901 BLK 17
OPEN SPACE
VAR. WID. DRN. ESM'T
(6.095 Ac.)
STA. 10+00 50 L.F.
STA. 10+30 50 L.F.
STA. 10+38 50 L.F.
STA. 10+70 50 L.F.
STA. 10+78 50 L.F.
STA. 11+10 50 L.F.
STA. 11+18 50 L.F.
STA. 11+50 50 L.F.
STA. 11+58 50 L.F.
STA. 11+90 50 L.F.
STA. 11+98 50 L.F.
STA. 12+30 50 L.F.
STA. 12+38 50 L.F.
STA. 12+70 50 L.F.
STA. 12+78 50 L.F.
STA. 13+10 50 L.F.
STA. 13+18 50 L.F.
STA. 13+50.50 50 L.F.
STA 13+50.50 LINE C
M.H. NO. C-2
BLK 17
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
STA 10+00.00 LINE C
M.H. NO. C-1
STA 11+62.21 LINE C
= STA 26+75.75 LINE D
M.H. NO. D-9
757
758
759
760
761
762
1
2


SCALE: 1"=50'
50
25
0
50


FINISHED GROUND/PAVEMENT
(TOP OF GRADE)
3.5' MIN.
SEPARATION DISTANCE TO
COMPLY TCEQ REGULATION 30
TAC 290.44 (E) APPENDIX E & 30
TAC 217.53 (D) APPENDIX D -
SEPARATION DISTANCE.
PROPOSED WATER LINE
WHERE SEWER PIPE CROSSES A
WATER LINE, THE SEWER SHALL
BE 160 PSI AND MEET THE
REQUIREMENTS OF ASTM D2241
WITH ONE 20' JOINT CENTERED
AT THE WATER CROSSING
PROPOSED SANITARY
SEWER LINE
10' MIN.
10' MIN.

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.

NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING 98% COMPACTION ON ALL TRENCH BACKFILL AND PAYING FOR THE TESTS TO BE PERFORMED BY A THIRD PARTY. COMPACTION TEST WILL BE DONE AT ONE LOCATION POINT RANDOMLY SELECTED OR AS INDICATED BY THE SAWS INSPECTOR/TEST ADMINISTER, PER EACH 12-INCH LOOSE LIFT PER 400 LINEAR FEET AT A MINIMUM. THIS PROJECT WILL NOT BE ACCEPTED AND FINALIZED BY SAWS WITHOUT THIS REQUIREMENT BEING MET AND VERIFIED BY PROVIDING ALL NECESSARY DOCUMENTED TEST RESULTS.
2. CONTRACTOR TO MAINTAIN A MINIMUM 1' VERTICAL SEPARATION DISTANCE BETWEEN OF THE BOTTOM PROPOSED WATER MAIN AND TOP OF PROPOSED SANITARY SEWER MAIN AT WATER AND SANITARY SEWER CROSSINGS.
3. ALL LATERALS SHALL BE INSTALLED AT A MINIMUM 2.0% SLOPE UNLESS OTHERWISE NOTED.

TRENCH EXCAVATION SAFETY PROTECTION

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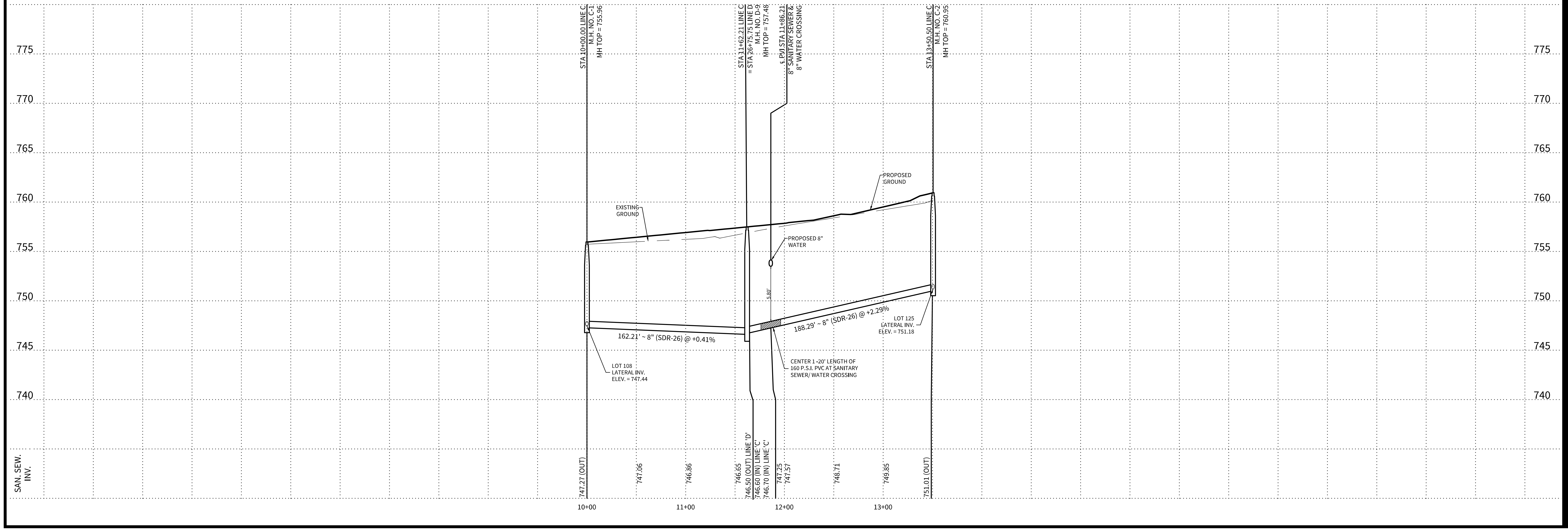
LINE "C"

STA. 10+00.00 TO STA. 13+50.50

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


775
770
765
760
755
750
745
740
STA 10+00.00 LINE C
M.H. NO. C-1
MH TOP = 755.96
STA 11+62.21 LINE C
= STA 26+75.75 LINE D
M.H. NO. D-9
MH TOP = 757.48
℄ PVI STA 11+86.21
8" SANITARY SEWER &
8" WATER CROSSING
STA 13+50.50 LINE C
M.H. NO. C-2
MH TOP = 760.95
PROPOSED
GROUND
EXISTING
GROUND
PROPOSED 8"
WATER
5.80'
162.21' ~ 8" (SDR-26) @ +0.41%
188.29' ~ 8" (SDR-26) @ +2.29%
LOT 125
LATERAL INV.
ELEV. = 751.18
LOT 108
LATERAL INV.
ELEV. = 747.44
CENTER 1 -20' LENGTH OF
160 P.S.I. PVC AT SANITARY
SEWER/ WATER CROSSING
SAN. SEW.
INV.
747.27 (OUT)
747.06
746.86
746.65
746.50 (OUT) LINE 'D'
746.60 (IN) LINE 'C'
746.70 (IN) LINE 'C'
747.25
747.57
748.71
749.85
751.01 (OUT)
10+00
11+00
12+00
13+00

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

GRACE VALLEY RANCH
PHASE 8

SANITARY SEWER PLAN & PROFILE - LINE 'C'

DATE
11/11/2025

PROJECT NO.
03499.010

DRAWN BY
JK/AR/JF/RB

CHECKED BY
KMH

REVISIONS

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KYLE M. HUDEK
138753
11/11/2025

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.

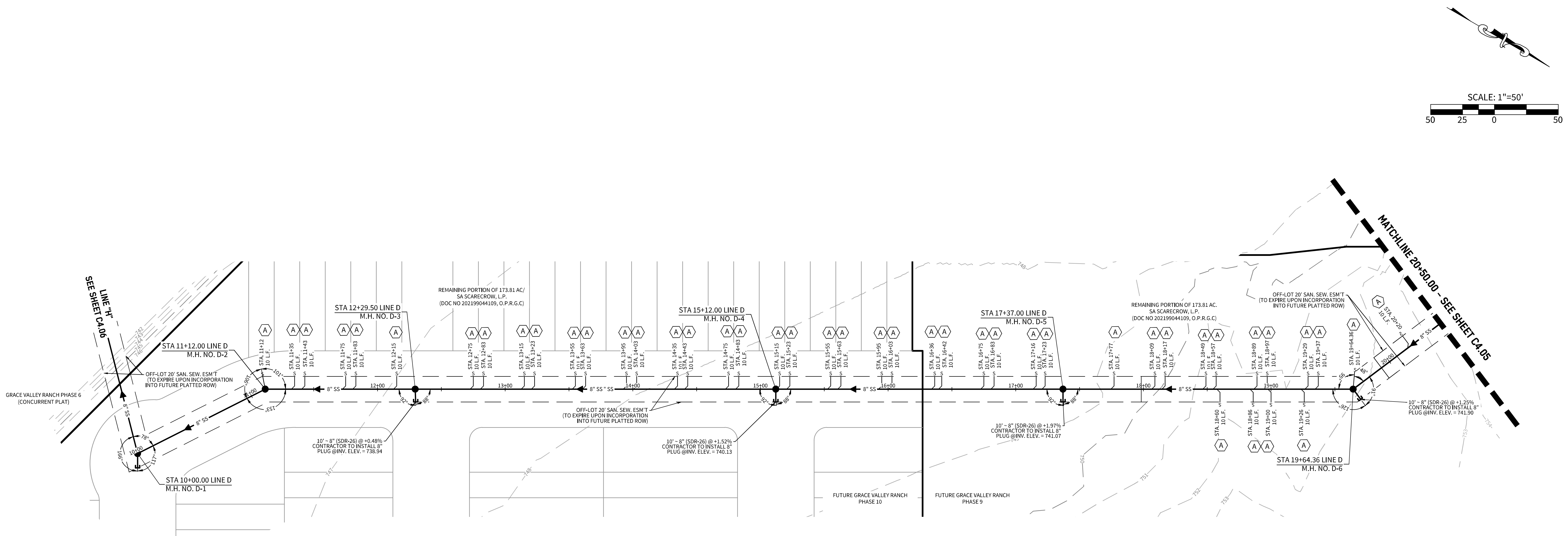
P:\03499\010\2-DWG\4-Plans\C4.01 - SSPF.dwg 2025/11/11 11:52am rbarrera

LEGEND

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

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
LINE "H"
SEE SHEET C4.06
GRACE VALLEY RANCH PHASE 6
(CONCURRENT PLAT)
OFF-LOT 20' SAN. SEW. ESM'T
(TO EXPIRE UPON INCORPORATION
INTO FUTURE PLATTED ROW)
STA 10+00.00 LINE D
M.H. NO. D-1
STA 11+12.00 LINE D
M.H. NO. D-2
STA 12+29.50 LINE D
M.H. NO. D-3
STA 15+12.00 LINE D
M.H. NO. D-4
STA 17+37.00 LINE D
M.H. NO. D-5
STA 19+64.36 LINE D
M.H. NO. D-6
8" SS
10+00
11+00
12+00
13+00
14+00
15+00
16+00
17+00
18+00
19+00
20+00
STA. 11+12 10 L.F.
STA. 11+35 10 L.F.
STA. 11+43 10 L.F.
STA. 11+75 10 L.F.
STA. 11+83 10 L.F.
STA. 12+15 10 L.F.
STA. 12+75 10 L.F.
STA. 12+83 10 L.F.
STA. 13+15 10 L.F.
STA. 13+23 10 L.F.
STA. 13+55 10 L.F.
STA. 13+63 10 L.F.
STA. 13+95 10 L.F.
STA. 14+03 10 L.F.
STA. 14+35 10 L.F.
STA. 14+43 10 L.F.
STA. 14+75 10 L.F.
STA. 14+83 10 L.F.
STA. 15+15 10 L.F.
STA. 15+23 10 L.F.
STA. 15+55 10 L.F.
STA. 15+63 10 L.F.
STA. 15+95 10 L.F.
STA. 16+03 10 L.F.
STA. 16+36 10 L.F.
STA. 16+42 10 L.F.
STA. 16+75 10 L.F.
STA. 16+83 10 L.F.
STA. 17+16 10 L.F.
STA. 17+23 10 L.F.
STA. 17+77 10 L.F.
STA. 18+09 10 L.F.
STA. 18+17 10 L.F.
STA. 18+49 10 L.F.
STA. 18+57 10 L.F.
STA. 18+60 10 L.F.
STA. 18+86 10 L.F.
STA. 18+89 10 L.F.
STA. 18+97 10 L.F.
STA. 19+00 10 L.F.
STA. 19+26 10 L.F.
STA. 19+29 10 L.F.
STA. 19+37 10 L.F.
STA. 19+64.36 10 L.F.
STA. 20+20 10 L.F.
REMAINING PORTION OF 173.81 AC/
SA SCARECROW, L.P.
(DOC NO 202199044109, O.P.R.G.C)
10' ~ 8" (SDR-26) @ +0.48%
CONTRACTOR TO INSTALL 8"
PLUG @INV. ELEV. = 738.94
10' ~ 8" (SDR-26) @ +1.52%
CONTRACTOR TO INSTALL 8"
PLUG @INV. ELEV. = 740.13
10' ~ 8" (SDR-26) @ +1.97%
CONTRACTOR TO INSTALL 8"
PLUG @INV. ELEV. = 741.07
10' ~ 8" (SDR-26) @ +1.25%
CONTRACTOR TO INSTALL 8"
PLUG @INV. ELEV. = 741.90
FUTURE GRACE VALLEY RANCH
PHASE 10
FUTURE GRACE VALLEY RANCH
PHASE 9
MATCHLINE 20+50.00 – SEE SHEET C4.05

NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING 98% COMPACTION ON ALL TRENCH BACKFILL AND PAYING FOR THE TESTS TO BE PERFORMED BY A THIRD PARTY. COMPACTION TEST WILL BE DONE AT ONE LOCATION POINT RANDOMLY SELECTED OR AS INDICATED BY THE SAWS INSPECTOR/TEST ADMINISTER, PER EACH 12-INCH LOOSE LIFT PER 400 LINEAR FEET AT A MINIMUM. THIS PROJECT WILL NOT BE ACCEPTED AND FINALIZED BY SAWS WITHOUT THIS REQUIREMENT BEING MET AND VERIFIED BY PROVIDING ALL NECESSARY DOCUMENTED TEST RESULTS.
2. CONTRACTOR TO MAINTAIN A MINIMUM 1' VERTICAL SEPARATION DISTANCE BETWEEN OF THE BOTTOM PROPOSED WATER MAIN AND TOP OF PROPOSED SANITARY SEWER MAIN AT WATER AND SANITARY SEWER CROSSINGS.
3. ALL LATERALS SHALL BE INSTALLED AT A MINIMUM 2.0% SLOPE UNLESS OTHERWISE NOTED.

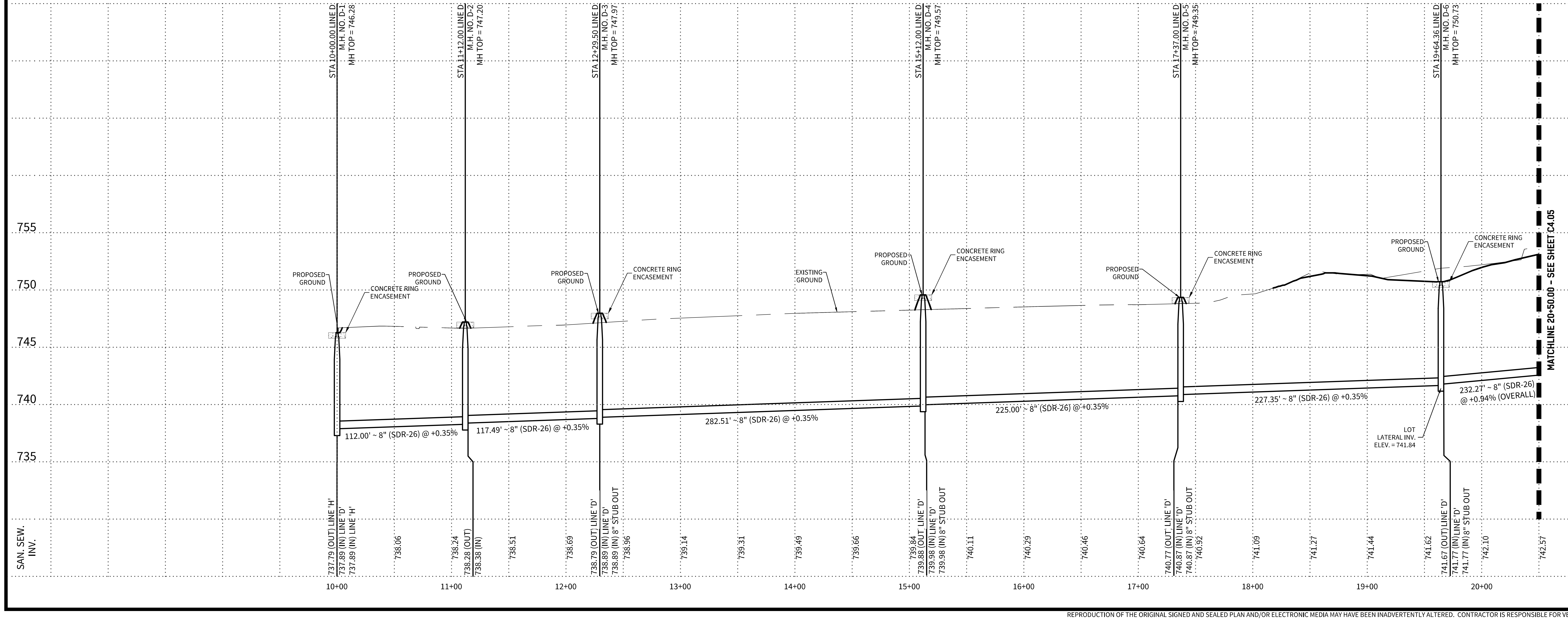
TRENCH EXCAVATION SAFETY PROTECTION

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 "D"

STA. 10+00.00 TO STA. 20+50.00

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


755
750
745
740
735
SAN. SEW. INV.
STA 10+00.00 LINE D
M.H. NO. D-1
MH TOP = 746.28
STA 11+12.00 LINE D
M.H. NO. D-2
MH TOP = 747.20
STA 12+29.50 LINE D
M.H. NO. D-3
MH TOP = 747.97
STA 15+12.00 LINE D
M.H. NO. D-4
MH TOP = 749.57
STA 17+37.00 LINE D
M.H. NO. D-5
MH TOP = 749.35
STA 19+64.36 LINE D
M.H. NO. D-6
MH TOP = 750.73
PROPOSED GROUND
CONCRETE RING ENCASEMENT
EXISTING GROUND
112.00' ~ 8" (SDR-26) @ +0.35%
117.49' ~ 8" (SDR-26) @ +0.35%
282.51' ~ 8" (SDR-26) @ +0.35%
225.00' ~ 8" (SDR-26) @ +0.35%
227.35' ~ 8" (SDR-26) @ +0.35%
232.27' ~ 8" (SDR-26) @ +0.94% (OVERALL)
LOT LATERAL INV. ELEV. = 741.84
MATCHLINE 20+50.00 – SEE SHEET C4.05
737.79 (OUT) LINE 'H'
737.89 (IN) LINE 'D'
737.89 (IN) LINE 'H'
738.06
738.24
738.28 (OUT)
738.38 (IN)
738.51
738.69
738.79 (OUT) LINE 'D'
738.89 (IN) LINE 'D'
738.89 (IN) 8" STUB OUT
738.96
739.14
739.31
739.49
739.66
739.84
739.88 (OUT) LINE 'D'
739.98 (IN) LINE 'D'
739.98 (IN) 8" STUB OUT
740.11
740.29
740.46
740.64
740.77 (OUT) LINE 'D'
740.87 (IN) LINE 'D'
740.87 (IN) 8" STUB OUT
740.92
741.09
741.27
741.44
741.62
741.67 (OUT) LINE 'D'
741.77 (IN) LINE 'D'
741.77 (IN) 8" STUB OUT
742.10
742.57
10+00
11+00
12+00
13+00
14+00
15+00
16+00
17+00
18+00
19+00
20+00

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

GRACE VALLEY RANCH
PHASE 8

SANITARY SEWER PLAN & PROFILE - LINE 'D'

DATE	11/11/2025
PROJECT NO.	03499.010
DRAWN BY	JK/AR/JF/RB
CHECKED BY	KMH

REVISIONS

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KYLE M. HUDEK
138753
11/11/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C4.04

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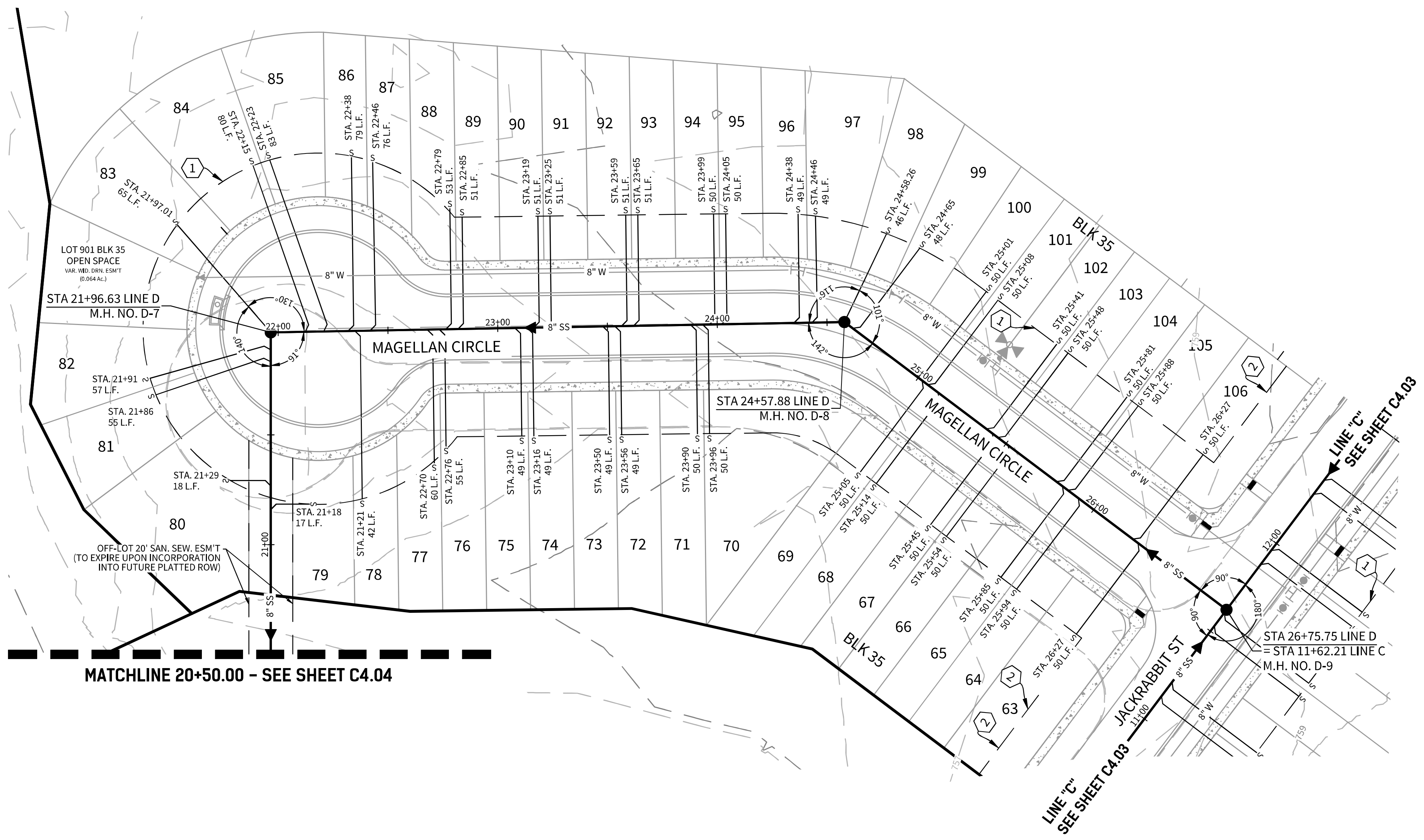
LEGEND

PROPOSED SANITARY SEWER MANHOLE	─●─
EXISTING SANITARY SEWER MANHOLE	─●─
PROPOSED SANITARY SEWER LATERAL	S──
PROPOSED SANITARY SEWER MAIN	── 8"SS ──
EXISTING SANITARY SEWER MAIN	── EX. 8" SS ──
PROPOSED WATER MAIN	── 8"W ──
EXISTING WATER MAIN	── EX. 8" W ──
PROPOSED STANDARD FIRE HYDRANT	⋈
PROPOSED STANDARD GATE VALVE	─┤●├─
PROPOSED PERMANENT BLOWOFF	──▶●
ELECTRIC, GAS, TELEPHONE, & CABLE T.V. EASEMENT	E.G.T.CA. ESM'T
BUILDING SETBACK LINE	B.S.L.

KEYNOTES

⟨1⟩	20' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE
⟨2⟩	10' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE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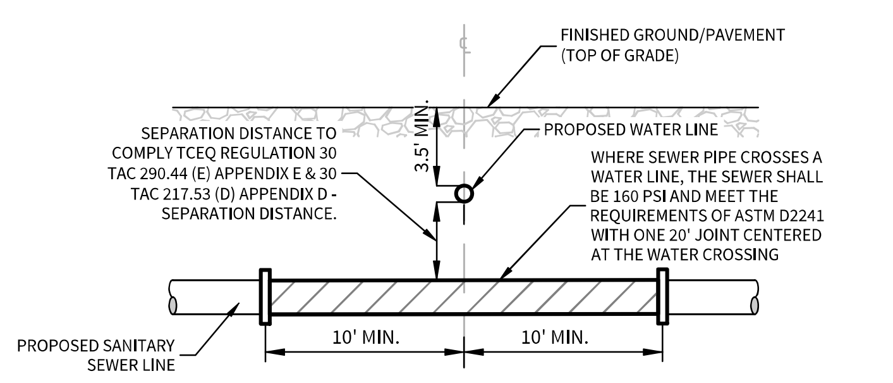
72
71
70
69
68
67
66
65
64
63
BLK 35
LOT 901 BLK 35
OPEN SPACE
VAR. WID. DRN. ESM'T
(0.064 Ac.)
STA 21+96.63 LINE D
M.H. NO. D-7
STA 24+57.88 LINE D
M.H. NO. D-8
STA 26+75.75 LINE D
= STA 11+62.21 LINE C
M.H. NO. D-9
MAGELLAN CIRCLE
JACKRABBIT ST
8" SS
8" W
21+00
22+00
23+00
24+00
25+00
26+00
11+00
12+00
130°
140°
91°
116°
101°
142°
90°
180°
STA. 21+97.01 65 L.F.
STA. 22+15 80 L.F.
STA. 22+23 83 L.F.
STA. 22+38 79 L.F.
STA. 22+46 76 L.F.
STA. 22+79 53 L.F.
STA. 22+85 51 L.F.
STA. 23+19 51 L.F.
STA. 23+25 51 L.F.
STA. 23+59 51 L.F.
STA. 23+65 51 L.F.
STA. 23+99 50 L.F.
STA. 24+05 50 L.F.
STA. 24+38 49 L.F.
STA. 24+46 49 L.F.
STA. 24+58.26 46 L.F.
STA. 24+65 48 L.F.
STA. 25+01 50 L.F.
STA. 25+08 50 L.F.
STA. 25+41 50 L.F.
STA. 25+48 50 L.F.
STA. 25+81 50 L.F.
STA. 25+88 50 L.F.
STA. 26+27 50 L.F.
STA. 21+91 57 L.F.
STA. 21+86 55 L.F.
STA. 21+29 18 L.F.
STA. 21+18 17 L.F.
STA. 21+21 42 L.F.
STA. 22+70 60 L.F.
STA. 22+76 55 L.F.
STA. 23+10 49 L.F.
STA. 23+16 49 L.F.
STA. 23+50 49 L.F.
STA. 23+56 49 L.F.
STA. 23+90 50 L.F.
STA. 23+96 50 L.F.
STA. 25+05 50 L.F.
STA. 25+14 50 L.F.
STA. 25+45 50 L.F.
STA. 25+54 50 L.F.
STA. 25+85 50 L.F.
STA. 25+94 50 L.F.
STA. 26+27 50 L.F.
OFF-LOT 20' SAN. SEW. ESM'T
(TO EXPIRE UPON INCORPORATION INTO FUTURE PLATTED ROW)
MATCHLINE 20+50.00 – SEE SHEET C4.04
LINE "C" SEE SHEET C4.03
LINE "C" SEE SHEET C4.03

SCALE: 1"=50'

50
25
0
50


FINISHED GROUND/PAVEMENT (TOP OF GRADE)
3.5' MIN.
PROPOSED WATER LINE
SEPARATION DISTANCE TO COMPLY TCEQ REGULATION 30 TAC 290.44 (E) APPENDIX E & 30 TAC 217.53 (D) APPENDIX D - SEPARATION DISTANCE.
WHERE SEWER PIPE CROSSES A WATER LINE, THE SEWER SHALL BE 160 PSI AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20' JOINT CENTERED AT THE WATER CROSSING
PROPOSED SANITARY SEWER LINE
10' MIN.
10' MIN.

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.

NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING 98% COMPACTION ON ALL TRENCH BACKFILL AND PAYING FOR THE TESTS TO BE PERFORMED BY A THIRD PARTY. COMPACTION TEST WILL BE DONE AT ONE LOCATION POINT RANDOMLY SELECTED OR AS INDICATED BY THE SAWS INSPECTOR/TEST ADMINISTER, PER EACH 12-INCH LOOSE LIFT PER 400 LINEAR FEET AT A MINIMUM. THIS PROJECT WILL NOT BE ACCEPTED AND FINALIZED BY SAWS WITHOUT THIS REQUIREMENT BEING MET AND VERIFIED BY PROVIDING ALL NECESSARY DOCUMENTED TEST RESULTS.
2. CONTRACTOR TO MAINTAIN A MINIMUM 1' VERTICAL SEPARATION DISTANCE BETWEEN OF THE BOTTOM PROPOSED WATER MAIN AND TOP OF PROPOSED SANITARY SEWER MAIN AT WATER AND SANITARY SEWER CROSSINGS.
3. ALL LATERALS SHALL BE INSTALLED AT A MINIMUM 2.0% SLOPE UNLESS OTHERWISE NOTED.

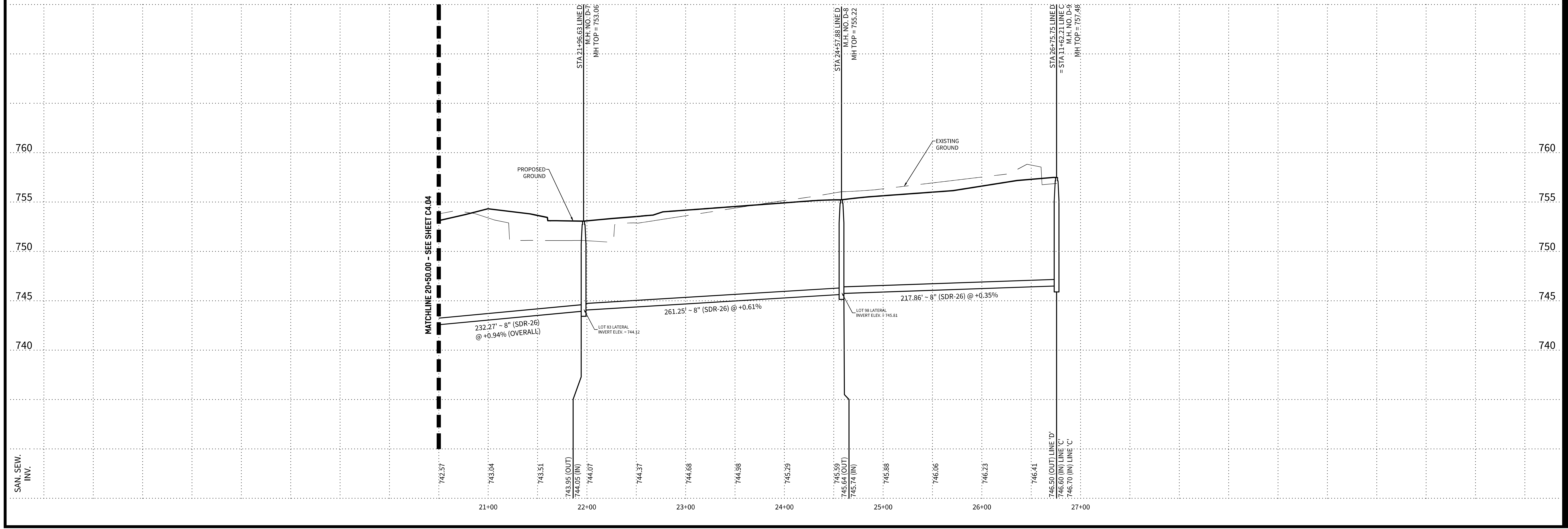
TRENCH EXCAVATION SAFETY PROTECTION

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 "D"

STA. 20+50.00 TO STA. 26+76.12

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


760
755
750
745
740
MATCHLINE 20+50.00 – SEE SHEET C4.04
STA 21+96.63 LINE D
M.H. NO. D-7
MH TOP = 753.06
STA 24+57.88 LINE D
M.H. NO. D-8
MH TOP = 755.22
STA 26+75.75 LINE D
= STA 11+62.21 LINE C
M.H. NO. D-9
MH TOP = 757.48
PROPOSED GROUND
EXISTING GROUND
232.27' ~ 8" (SDR-26) @ +0.94% (OVERALL)
261.25' ~ 8" (SDR-26) @ +0.61%
217.86' ~ 8" (SDR-26) @ +0.35%
LOT 83 LATERAL INVERT ELEV. = 744.12
LOT 98 LATERAL INVERT ELEV. = 745.81
SAN. SEW. INV.
742.57
743.04
743.51
743.95 (OUT)
744.05 (IN)
744.07
744.37
744.68
744.98
745.29
745.59
745.64 (OUT)
745.74 (IN)
745.88
746.06
746.23
746.41
746.50 (OUT) LINE 'D'
746.60 (IN) LINE 'C'
746.70 (IN) LINE 'C'
21+00
22+00
23+00
24+00
25+00
26+00
27+00

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

GRACE VALLEY RANCH
PHASE 8

SANITARY SEWER PLAN & PROFILE - LINE 'D'

DATE
11/11/2025

PROJECT NO.
03499.010

DRAWN BY
JK/AR/JF/RB

CHECKED BY
KMH

REVISIONS
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KYLE M. HUDEK
138753
11/11/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

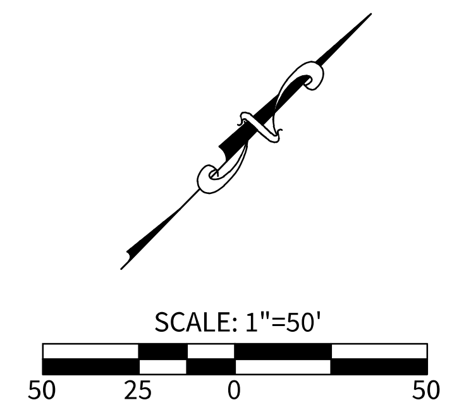
C4.05

LEGEND

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

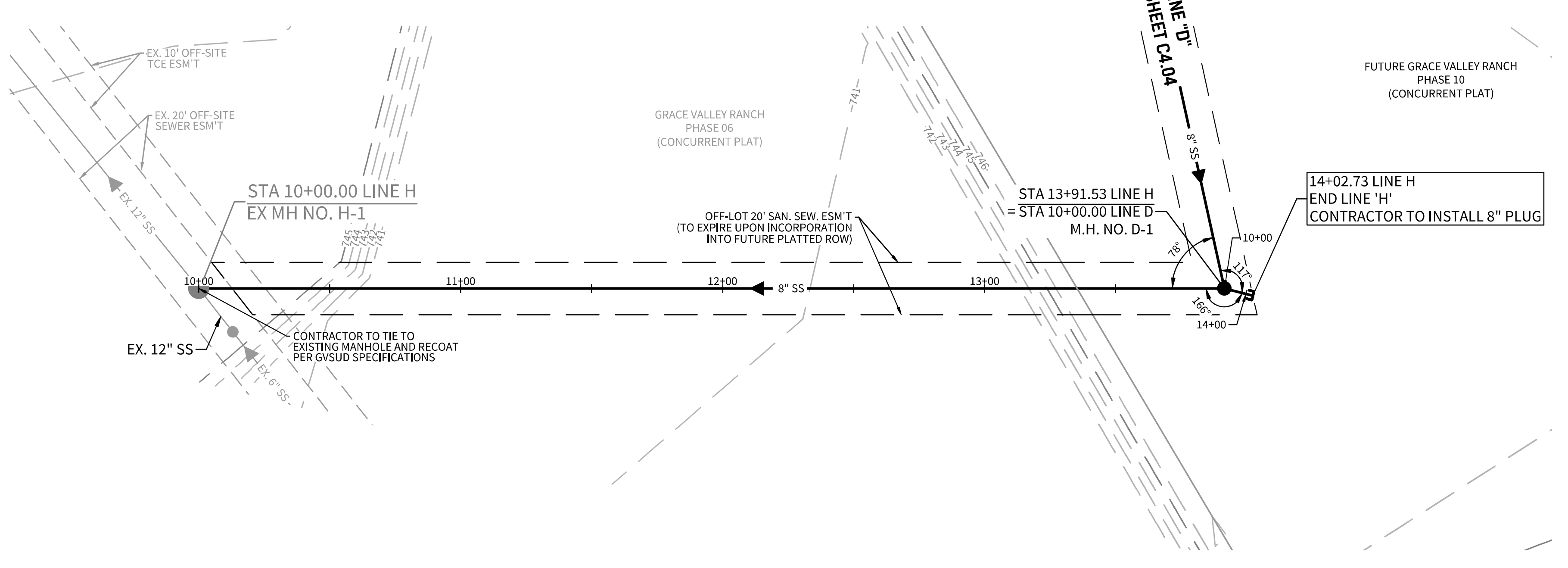
KEYNOTES

1. 20' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE
2. 10' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE


SCALE: 1"=50'
50
25
0
50

NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING 98% COMPACTION ON ALL TRENCH BACKFILL AND PAYING FOR THE TESTS TO BE PERFORMED BY A THIRD PARTY. COMPACTION TEST WILL BE DONE AT ONE LOCATION POINT RANDOMLY SELECTED OR AS INDICATED BY THE SAWS INSPECTOR/TEST ADMINISTER, PER EACH 12-INCH LOOSE LIFT PER 400 LINEAR FEET AT A MINIMUM. THIS PROJECT WILL NOT BE ACCEPTED AND FINALIZED BY SAWS WITHOUT THIS REQUIREMENT BEING MET AND VERIFIED BY PROVIDING ALL NECESSARY DOCUMENTED TEST RESULTS.
2. CONTRACTOR TO MAINTAIN A MINIMUM 1' VERTICAL SEPARATION DISTANCE BETWEEN OF THE BOTTOM PROPOSED WATER MAIN AND TOP OF PROPOSED SANITARY SEWER MAIN AT WATER AND SANITARY SEWER CROSSINGS.
3. ALL LATERALS SHALL BE INSTALLED AT A MINIMUM 2.0% SLOPE UNLESS OTHERWISE NOTED.


EX. 10' OFF-SITE TCE ESM'T
EX. 20' OFF-SITE SEWER ESM'T
EX. 12" SS
EX. 6" SS
EX. 12" SS
STA 10+00.00 LINE H
EX MH NO. H-1
CONTRACTOR TO TIE TO EXISTING MANHOLE AND RECOAT PER GVSUD SPECIFICATIONS
GRACE VALLEY RANCH PHASE 06 (CONCURRENT PLAT)
741
742
743
744
745
746
OFF-LOT 20' SAN. SEW. ESM'T (TO EXPIRE UPON INCORPORATION INTO FUTURE PLATTED ROW)
10+00
11+00
12+00
13+00
14+00
8" SS
LINE "D"
SEE SHEET C4.04
STA 13+91.53 LINE H
= STA 10+00.00 LINE D
M.H. NO. D-1
78°
117°
166°
FUTURE GRACE VALLEY RANCH PHASE 10 (CONCURRENT PLAT)
14+02.73 LINE H
END LINE 'H'
CONTRACTOR TO INSTALL 8" PLUG

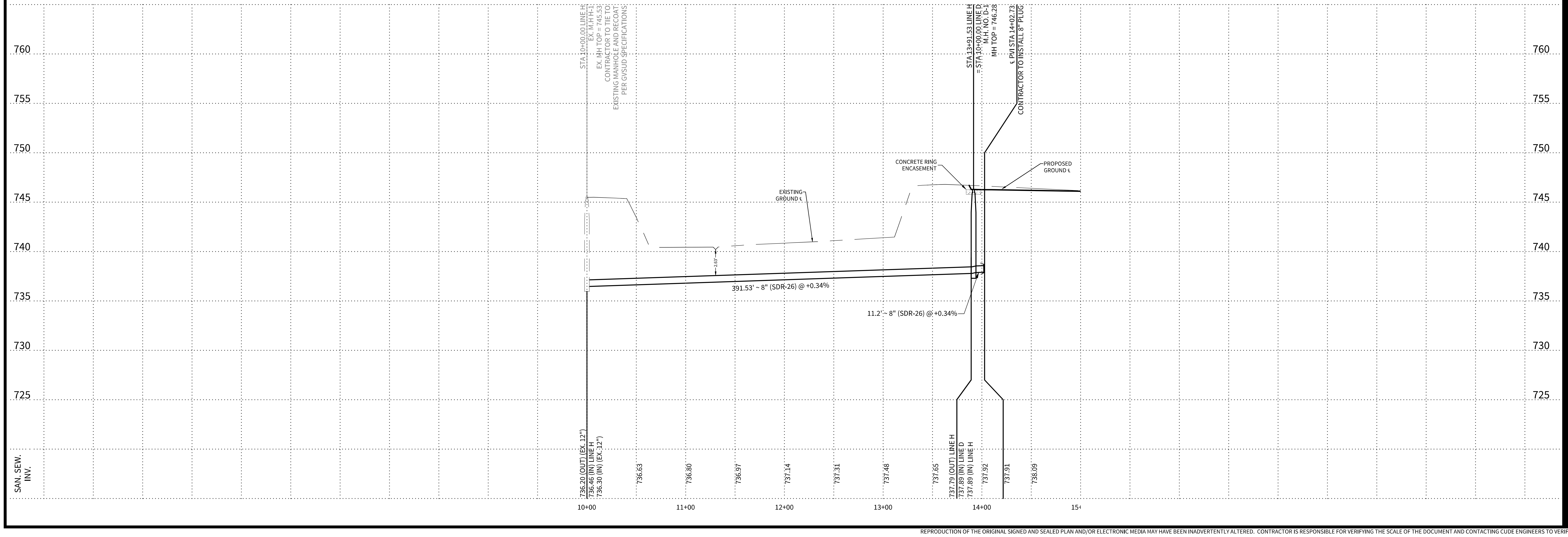
TRENCH EXCAVATION SAFETY PROTECTION

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 "H"

STA. 10+00.00 TO STA. 14+02.73

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


760
755
750
745
740
735
730
725
STA 10+00.00 LINE H
EX. M.H H-1
EX. MH TOP = 745.53
CONTRACTOR TO TIE TO
EXISTING MANHOLE AND RECOAT
PER GVSUD SPECIFICATIONS
EXISTING GROUND ℄
2.63'
391.53' ~ 8" (SDR-26) @ +0.34%
11.2' ~ 8" (SDR-26) @ +0.34%
CONCRETE RING ENCASEMENT
PROPOSED GROUND ℄
STA 13+91.53 LINE H
= STA 10+00.00 LINE D
M.H. NO. D-1
MH TOP = 746.28
℄ PVI STA 14+02.73
CONTRACTOR TO INSTALL 8" PLUG
SAN. SEW. INV.
736.20 (OUT) (EX. 12")
736.46 (IN) LINE H
736.30 (IN) (EX. 12")
736.63
736.80
736.97
737.14
737.31
737.48
737.65
737.79 (OUT) LINE H
737.89 (IN) LINE D
737.89 (IN) LINE H
737.92
737.91
738.09
10+00
11+00
12+00
13+00
14+00
15+

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

GRACE VALLEY RANCH
PHASE 8

SANITARY SEWER PLAN & PROFILE - LINE 'H'

DATE
11/11/2025

PROJECT NO.
03499.010

DRAWN BY
JK/AR/JF/RB

CHECKED BY
KMH

REVISIONS
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KYLE M. HUDEK
138753
11/11/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C4.06

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GREEN VALLEY SPECIAL UTILITY DISTRICT SANITARY SEWER SYSTEM GENERAL NOTES:

THE STANDARD SPECIFICATIONS AND DRAWING (DD) ARE PROVIDED AS A TECHNICAL RESOURCE FOR ENGINEERING PROFESSIONALS FOR USE IN DESIGN AND CONSTRUCTION OF SEWER COLLECTION SYSTEMS PROJECTS MANAGED AND CONTRACTED BY THE GREEN VALLEY SPECIAL UTILITY DISTRICT (GVSUD)

GENERAL: THE OWNER, DEVELOPER, ENGINEERING FIRM SHALL SUBMIT TO THE GREEN VALLEY SPECIAL UTILITY DISTRICT (GVSUD) ENGINEER, FOR APPROVAL, TWO (2) COPIES OF ALL PLATES, PLANS AND PROFILES, PLUMBING LAYOUT, WHICH HAVE BEEN DESIGNED AND THE DRAWINGS SEALED BY A REGISTERED PROFESSIONAL ENGINEER. WHEN APPROVED, ONE (1) COPY WILL BE RETURNED TO THE OWNER, DEVELOPER, ENGINEERING FIRM, SO MARKED. THE OWNER WILL BE REQUIRED TO MAKE ALL CHANGES INDICATED BY THE GVSUD ENGINEER, AND RETURN WITH ALL CHANGES, CORRECTIONS, BACK TO GVSUD FOR APPROVAL.

1. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS CONTRACT SHALL BE APPROVED BY THE GVSUD AND COMPLY WITH:
   A. CURRENT GVSUD TECHNICAL SPECIFICATIONS FOR UTILITIES CONSTRUCTION.
   B. TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ), FORMERLY TEXAS NATURAL RESOURCE CONSERVATION COMMISSION (TNRCC), DESIGN CRITERIA FOR SEWAGE SYSTEMS 31 TAC 317.1, 31 TAC 317.2 AND 31 TAC 317.3, 30 TAC & 213 40 TAC &217.
2. THE CONTRACTOR IS TO NOTIFY AND MAKE ARRANGEMENTS WITH THE GVSUD INSPECTIONS DIVISION AT (830)914-2330 OR (210)372-2228 - 48 HOURS PRIOR TO ANY EXCAVATION. A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD BEFORE ANY EXCAVATION OR START OF PROJECT.
3. WORK SHALL NOT BE PERFORMED ON SATURDAYS, SUNDAYS OR HOLIDAYS BEFORE 7:30 A.M. OR AFTER 4:30 P.M., UNLESS PRIOR APPROVAL IS GRANTED BY THE GVSUD ENGINEER.
   A. THE LOCATIONS AND DEPTHS OF EXISTING UTILITIES TO INCLUDE SURFACE LATERALS, SHOWN IN THESE PLANS ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO LOCATION (POT HOLE, VERIFY LOCATION, ELEVATIONS OF ALL) UTILITY SERVICE LINES 48 HOURS PRIOR TO EXCAVATION AND TO PROTECT THE SAME DURING CONSTRUCTION. CONTRACTOR WILL BE RESPONSIBLE FOR ANY DAMAGES OF EXISTING UTILITIES AND REPAIRS WILL BE AT THE CONTRACTORS EXPENSE.

EXISTING MANHOLES/SEWER

4. CONTRACTOR WILL MAINTAIN SERVICE TO ALL EXISTING SANITARY SEWERS AT ALL TIMES DURING CONSTRUCTION. CONTRACTOR WILL MARK, CLEAN ALL DEBRIS, GRAVEL, DIRT, ETC. OUT OF MANHOLES AND ANY STOPPAGES CAUSED BY DEBRIS DURING CONSTRUCTION. CONTRACTOR WILL UNPLUG STOPPAGE AT CONTRACTORS EXPENSE. ANY DAMAGE TO EXISTING MANHOLES OR SEWER MAIN WILL BE CORRECTED AT THE CONTRACTORS EXPENSE. CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES TO PREVENT DAMAGE TO EXISTING OR NEW RINGS, COVERS, OR CONES FROM EQUIPMENT AND MATERIALS USED OR TAKEN THROUGH THE WORK AREA. IF AN EXISTING OR NEW MANHOLE COVER, RING, OR CONE IS DAMAGED BY THE CONTRACTOR IT SHALL BE REPLACED AS DIRECTED BY THE GVSUD INSPECTOR. MANHOLES WILL NEED TO BE RESEALED WITH THE GVSUD APPROVED SEALING. IF SEAL COATING IS BROKEN, CONTRACTOR WILL HAVE MANHOLE RECOATED. RESEAL ALL LEAKS AT CONTRACTORS EXPENSE.
   A. CONTRACTOR TO ENSURE ALL PLUGS USED TO PLUG SEWER LINES, WHILE TESTING THE PROJECT (SUCH AS AIR PLUGS, SCREW TYPE PLUGS, ETC.) ARE LABELED, MARKED OR TAGGED. PROJECT INSPECTOR WILL RECORD HOW MANY PLUGS ARE BEING USED, LOCATION AND I.D., WITHIN COLLECTION SYSTEM. CONTRACTOR WILL REPORT TO PROJECT INSPECTOR OF ANY LOST OR UNRESTRAINED PLUGS INTO SEWER COLLECTION SYSTEM.
   B. CONTRACTOR WILL BE HELD LIABLE FOR ANY DAMAGES TO SEWER COLLECTION SYSTEM STOPPAGES, OVER-FLOWS, BACKUP INTO HOMES CAUSED BY LOST RUN-AWAY SEWER PLUGS THAT WERE USED ON THAT PROJECT OR OUTFALL LINE WASTEWATER TREATMENT PLANTS.
   C. CONTRACTOR WILL ALSO BE RESPONSIBLE FOR ANY DAMAGE TO WASTEWATER TREATMENT APPARATUS, SUCH AS SCREW PUMPS, ETC. CAUSED BY LOST OF RUN-AWAY SEWER PLUGS. CONTRACTOR WILL BE HELD LIABLE FOR DAMAGES, AS WELL AS COST OF REPAIRS.
5. ALL WORK IN THE TEXAS HIGHWAY DEPARTMENT, BEXAR COUNTY, GUADALUPE COUNTY, AND CITY OF CIBOLO RIGHT OF WAY SHALL BE DONE IN ACCORDANCE WITH RESPECTIVE CONSTRUCTION SPECIFICATIONS AND PERMIT.
6. ALL WORK IN PUBLIC STREETS SHALL BE COORDINATED WITH AND APPROVED BY THE BEXAR COUNTY OR GUADALUPE COUNTY PUBLIC WORKS DEPARTMENT TRAFFIC DIVISION AND STREET ENGINEER.
7. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.161, CITY PUBLIC SERVICE MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT AND WORK AROUND VALVES THAT ARE IN THE PROTECTED AREAS.
8. NO TESTING WILL BE PERFORMED PRIOR TO 30 DAYS FROM THE COMPLETE INSTALLATION OF THE SANITARY SEWER LINES.

   THE FOLLOWING SEQUENCE WILL BE STRICTLY ADHERED TO:
   A. PULL MANDREL - AFTER 30 DAYS OF INSTALLATION
   B. PERFORM AIR TEST
   C. PULL WIPER (AFTER STREET HAS BE ASPHALTED IN NEW SUBDIVISIONS)
   D. VACUUM TEST ALL MANHOLES WITHIN THE PROJECT
   E. CCTV-ALL NEW LINE-PAN (TILL ALL SERVICE LATERALS TO 6”X6” CLEAN OUT. FLOOD ALL LINES BEFORE CCTV, SUMMIT DVD)
9. CONTRACTOR SHALL SUBMIT FIELD COPY PLANS AND PROFILES SHOWING AS-BUILT WORK AT END OF PROJECT, CCTV DVD AND COMPACTION DENSITY REPORTS FOR MAIN SEWER LINE AND ALL SERVICE LATERALS TRENCHES. WARRANTY LETTERS ON MATERIALS, WORKMANSHIP FOR 24 MONTHS AFTER FINAL ACCEPTANCE.
10. ALL MANHOLES SHALL BE CONSTRUCTED SO THAT THE TOP OF THE RING IS AT LEAST TWELVE (12) INCHES ABOVE THE FINISHED GRADE OF THE SURROUNDING GROUND EXCEPT WHEN LOCATED IN PAVED AREAS. IN PAVED AREAS THE MANHOLE RING SHALL BE FLUSH WITH THE PAVEMENT. ALL NEW INSTALLED MANHOLES WILL BE WITH A 30" INCH OPENING, MINIMUM, WITH THE GVSUD LOGO ON THE COVER. EVERY THIRD MANHOLE COVER WILL HAVE A 1" HOLE FOR A VENT.
11. ALL MANHOLES SHALL BE WITH A 30" INCH OPENING, HAVE WATERTIGHT RING AND COVERS, WITH THE GVSUD LOGO. ON PRIVATE PROPERTY, MANHOLE RING AND COVER SHALL BE TYPICAL MANHOLE COVER WATER TIGHT.
   A. BEFORE BACK FILLING/COMPACTION/CONCRETE ENCASEMENT

      ALL MANHOLE JOINT SECTION RISERS, CONE SECTIONS AND GRADE RING SHALL BE WRAPPED WITH GATOR WRAP SEALING SYSTEMS, BUTYL ADHESIVE SEALANT WITH A MINIMUM THICKNESS OF 30 MILS. INFI-SHIELD WRAPPED WITH RISER-WRAP SEALING SYSTEM, GATOR WRAP

      MATERIAL: RUBBER MEETS ASTM C923/MASTIC MEETS ASTM C 990 OR APPROVE BY THE GVSUD ENGINEER SUBSTITUTION ON OUTSIDE FOR I/I, GROUND WATER TABLE.

12. IF CONCRETE THROAT RINGS ARE TO BE INSTALLED, A MINIMUM OF TWO AND A MAXIMUM OF FOUR THROAT RINGS WILL BE USED AT EACH MANHOLE FOR ADJUSTMENT.
13. INFILTRATION DISHES WILL BE REQUIRED IN MANHOLES WHERE APPLICABLE (I.E., SUCH AS LOW DRAINAGE AREAS) AND EVERY THIRD MANHOLE SHALL BE VENTED. 30" INCH MANHOLE COVER WITH 1" INCH HOLE CENTER OF COVER WHERE APPLICABLE.

Note: Manhole cover inserts shall be FRW Industries, inc., "Inflow Protector-Cover" "Preco Industries Ltd.", "Sewer Guard", or approved equal, and shall be installed in strict accordance with the manufacturer's recommendations. The contractor shall be responsible for making the necessary field measurements for the manufacturer prior to construction.

   A. ALL MANHOLES MUST HAVE 350-400 FEET SPACING BETWEEN MANHOLES TO PROVIDE ACCESS TO SEWER LINES FOR CLEANING, ON THE GVSUD PUBLIC SEWER EASEMENT. A 16 FOOT GATE WITH LOCK WILL BE PROVIDED BY THE CONTRACTOR FOR ACCESS TO CLEANING AND MAINTAINING SEWER LINES.
   B. DROP MANHOLES SHALL BE REQUIRED WHEN THE INFLOW ELEVATION IS MORE THAN TWENTY-FOUR (24) INCHES ABOVE THE OUTFLOW ELEVATION. DROP SHALL BE LOCATED OUTSIDE THE MANHOLE WITH ITS FLOW LINE ELEVATION LOCATED BETWEEN THE CENTER LINE AND TOP OF SEWER LINE.
14. ALL MANHOLES WILL BE CONCRETE ENCASEMENT 1 FOOT AROUND RING, 28-INCH DEEP AFTER GATOR WRAP SEALING SYSTEM HAS BEEN APPLIED.
15. NEW MANHOLE PROTECTIVE COATING, LINER IS FOR THE PURPOSE OF INFILTRATION BECAUSE OF HIGH WATER TABLE. APPLICATION PROCEDURES ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION AND PER THE FOLLOWING SPECIFICATIONS:
   A. MANHOLE PROTECTIVE COATING: CONTRACTOR WILL BE RESPONSIBLE FOR MANHOLES ON PROJECT SAFETY ASSESSMENT; CONFINED SPACE ENTRY SET BY OCCUPATIONAL SAFETY AND HEALTH STANDARDS, 29 CFR 1910.146 APP E.
   B. THE CONTRACTOR, SHALL NOTIFY THE GVSUD UTILITIES INSPECTIONS DEPARTMENT WITH A MINIMUM OF 2 DAYS ADVANCE NOTICE OF THE START OF ANY FIELD SURFACE PREPARATION WORK OF COATING APPLICATION WORK OF MANHOLES.
   C. ALL NEW MANHOLES IN NEW DEVELOPMENTS SHALL BE 30" INCH OPENING, WATERTIGHT AND THE INTERIOR WALL COATED WITH A GVSUD APPROVED SEWER STRUCTURE FOR ALL MANHOLES, SEWPERCOAT 2000 HR REGULAR, WITH THE REQUIRED ONE-INCH THICK APPLICATION.

APPROVED MATERIALS ARE AS FOLLOWS:

CEMENTITIOUS COATING WITH REQUIRED HALF-INCH THICK APPLICATION

- SEWPERCOAT 2000 HR REGULAR
- REFRATTA HAC 100
- MAXIMUM CA PLUS

EPOXY COATING: WITH SPECIFIED THICKNESS APPLICATION

- AROMATIC POLYUREA SCP DROPLINER REQUIRED THICKNESS 125 MILS

   D. WARRANTY LETTER ON MANHOLE PROTECTIVE COATING FOR 10 YEARS AFTER FINAL ACCEPTANCE OF PROTECTIVE COATINGS CONTRACTOR IS NOT RELIEVED OF ITS RESPONSIBILITIES UNDER THE CONTRACT DOCUMENTS.
      i. ANY CONNECTIONS TO EXISTING MANHOLES WILL REQUIRE A 36-INCH CRADLE TO SUPPORT INCOMING PIPE. A RUBBER GASKET WILL ALSO BE REQUIRED (CENTERED AT MANHOLE WALL) WITH GROUTING AT INTERIOR AND EXTERIOR PENETRATIONS.

         PENETRATION INTO MANHOLE WILL BE CORE DRILLED. ANY DAMAGE EXITING THE MANHOLE WILL BE REPLACED AT CONTRACTOR'S EXPENSE. IF COATING SEAL IS BROKEN, THE MANHOLE WILL BE RECOATED WITH THE SAME MATERIALS. IF EXISTING SEWER MANHOLE SEAL COATING IS BROKEN, ALL OF MANHOLE WILL BE RELEASED WITH SAME MATERIALS AND ONE-INCH THICKNESS.
      ii. ANY AND ALL EXISTING MANHOLES WITHIN CONSTRUCTION PROJECT THAT TIE IN, ARE DONE BY CONTRACTOR TO STUB-OUT ADJUSTMENT, RECONSTRUCTION, OR LEAKING. MANHOLE WILL BE COAT SEALED AT CONTRACTOR'S EXPENSE.
      iii. MANHOLES WITH STUB-OUTS (8") INCH OR LARGER MUST BE LOCATED AT THE END OF ALL SEWER LINES THAT MAY BE EXTENDED IN THE FUTURE. MANHOLES PLACED AT THE END OF THE WASTEWATER COLLECTION SYSTEM PIPES THAT MAY BE EXTENDED IN THE FUTURE MUST INCLUDE STUB-OUTS WITH PLUGS.

PIPING

16. THE KIND AND DESCRIPTION OF THE PIPE CONDUIT IS SHOWN ON THE PLANS (IF PVC, SDR AND ASTM/ANSI DESIGNATION CLASS). AS SDR 26 PVC, ASTM D-3034 WITH A MINIMUM STIFFNESS OF 115 PSI TEXAS ADMINISTRATIVE CODE (TAC) RULES TO INCLUDE30 TAC & 213, OR ANY REVISIONS THERE TO APPLICABLE TECQ, 30 TAC 7 217, FOR ALL NEW DEVELOPMENT.
17. THE USE OF ASBESTOS CEMENT PIPE WILL BE PROHIBITED UNDER THIS CONTRACT. ALL DUCTILE IRON PIPE USED IN THIS SYSTEM SHALL BE CORROSION PROTECTED ON BOTH THE INTERIOR AND EXTERIOR SURFACES. ALL CORROSION PROTECTION SHALL BE APPLIED AND INSTALLED IN SUCH A MANNER AS TO MAINTAIN A CONTINUOUSLY PROTECTED SURFACE AFTER FINAL PIPE INSTALLATION.
18. ALL PVC SEWER PIPE WITH OVER 14 FEET OF COVER SHALL BE EXTRA STRENGTH; MINIMUM PIPE STIFFNESS OF 150 PSI.
19. ALL SEWER PIPES SHALL HAVE COMPRESSION OR MECHANICAL JOINTS.
20. SEWER PIPE CONNECTIONS TO PRECAST MANHOLES SHALL BE APPROVED BY THE GVSUD. THIS CONNECTION SHALL USE FLEXIBLE "BOOT" TYPE CONNECTOR SUCH AS THE PSX POSITIVE SEAL SYSTEM OR ENGINEER APPROVED EQUAL AND COMPLY WITH ASTM C-923. SEWER PIPE CONNECTIONS TO MONOLITHIC MANHOLES WILL BE AS SHOWN ON THE STANDARD DETAIL SHEET. ANY CHANGES IN THESE METHODS MUST BE APPROVED BY GVSUD ENGINEER.
21. ALL PIPE TRENCHING, BEDDING AND BACKFILL SHALL BE DONE IN ACCORDANCE WITH APPROPRIATE ASTM/ANSI SPECIFICATIONS [REFERENCE 31 TAC 317.2(A)(5)(A); ASTMC-12 (ANSI A106.2) OR ASTM D-2321 (ANSI K65.171)]. ALL COMPACTION @ 98% DENSITY TESTS ACROSS THE BOARD, 1 RANDOM DENSITY TEST PER LIFT FOR EVERY 400 FEET.
   A. SAND MIGRATION, SEEPAGE PREVENTION COLLAR WHEN CHANGING THE INITIAL BACKFILL FROM SELECT INITIAL BACKFILL TO OPTIONAL SELECT INITIAL BACKFILL. A TWO (2) FOOT LONG CLASS D CONCRETE ENCASEMENT, EVERY 180 FEET ALONG PIPE AND 20 FEET FROM WALL OF MANHOLE IN EACH DIRECTION. NO EXTRA PAY ITEM.

   AA. BEDDING SHALL CONSIST OF TXDOT-GRADE 4 (1 1/2"-1 5/8") COMMONLY KNOWN AS SEWER GRAVEL.
   B. SEWER LINE LOCATION
      i. SEWER LINES SHALL BE SIZED AND EXTENDED THROUGH THE LIMITS OF A DEVELOPMENT TO SERVE ADJACENT PROPERTY, WITH MANHOLE AND STUB-OUT AT END OF SEWER LINE.
         a. IN PHASED CONSTRUCTION OF THOROUGHFARES, THE SEWER LINE SHALL BE EXTENDED THE ENTIRE LENGTH OF THE THOROUGHFARE BEING CONSTRUCTED.
      ii. NO PUBLIC SEWER LINE SHALL BE LOCATED NEARER THAN FIVE (5) FEET FROM ANY TREE.
      iii. SIZES AND GRADES FOR SANITARY SEWER SHALL BE AS REQUIRED BY THE GVSUD ENGINEER AND CONSIDERATION SHALL BE GIVE AS TO POSSIBLE EXTENSIONS FOR FUTURE DEVELOPMENT. NO SANITARY SEWERS, OTHER THAN LATERALS AND FORCE MAINS, SHALL BE LESS THAN EIGHT (8) INCH IN DIAMETER.
22. WHEN SEWER LATERALS ARE TO BE CONNECTED TO EXISTING SEWER MAINS AND NO STUB-OUT HAS BEEN EARLIER PROVIDED, THE CONNECTION MUST BE MADE WITH AN APPROVED SERVICE SADDLE AS PER 31 TAC 313.5(C) (7). NEW INVERT TO BE BUILT, SMOOTH CHANNEL FOR NEW PIPE/SLOPE AT 2% FLOW.
23. ALL RESIDENTIAL SERVICE LATERALS SHALL BE SDR 26 WITH RATING OF 115 PSI, BE EXTENDED TO THE PROPERTY LINE AT (6 X 6) CAPPED AND SEALED. ATTACH SEWER BURIAL TAPE TO THE END OF ALL SEWER LATERALS AND BRING UP TO THE GROUND LEVEL FOR MARKER (GREEN). (SEE HOUSE LATERALS DETAILS)
   A. SEWER SERVICE LATERALS. THE SIZES AND LOCATIONS OF LATERALS SHALL BE DESIGNATED AS FOLLOWS UNLESS OTHERWISE DIRECTED BY THE GVSUD ENGINEER:
      i. IN GENERAL FOR SINGLE FAMILY DWELLING, THE LATERAL SIZE SHALL BE FOUR (4) INCH MINIMUM. HOUSE LATERALS SHALL BE IN STALL CENTER OF THE LOT AND SHALL HAVE A TEN(10) FOOT SEPARATION FROM THE WATER SERVICE. THE SERVICE SHALL THEN BE EXTENDED AT A FORTY-FIVE (45) DEGREE ANGLE TO FOUR (4) FEET ABOVE THE FINISHED GRADE AND CAPPED. USE SEWER BURIAL TAPE TO MARK ALL SEWER SERVICE LATERALS.
      ii. MULTIPLE UNITS, APARTMENTS, LOCAL RETAIL AND COMMERCIAL SIX (6) INCH MINIMUM, MANUFACTURING AND INDUSTRIAL - EIGHT (8) INCH MINIMUM, OR LARGER AS REQUIRED.

TRAPS AND INTERCEPTORS (FOG - TECQ)

UNIFORM PLUMBING CODE, CITY OF SAN ANTONIO BUILDING INSPECTIONS DEPARTMENT. ALL COMMERCIAL BUILDINGS WILL HAVE TRAPS (FOG-TECQ).

OIL SEPARATORS

WHICH INCLUDE OIL SEPARATOR-GASOLINE SERVICE STATIONS, CAR WASHES, GARAGES, DRY CLEANERS, CHEMICAL PLANTS, GAS PLANTS, HIDE PROCESSORS, TESTING LABORATORIES, OR ANY PLACE WHERE OIL OR SOLVENTS MAY BE INTRODUCED IN TO THE SANITARY SEWER SYSTEM. THE SIZING CRITERIA FOR OIL SEPARATORS SHALL BE BASED ON THE G.P.M. RATE OF ALL FIXTURES, APPLIANCE OR APPURTENANCE, DRAINING INTO SEWER SYSTEM.

SAND INTERCEPTORS

SAND INTERCEPTORS SHALL BE INSTALLED IN THE SEWER SYSTEM OF THE FOLLOWING ESTABLISHMENTS, GARAGES, CAR WASHES, SERVICE STATIONS, OR ANY PLACE OF BUSINESS WHERE HEAVY SOLIDS MAY BE INTRODUCED INTO THE SANITARY SEWER SYSTEM. THE SIZING CRITERIA FOR A SAND INTERCEPTOR SHALL BE BASED ON THE REQUIRED G.P.M. X 12 MINUTE RETENTION TIMES TO OBTAIN THE TANK SIZE IN GALLONS CAPACITY.

AUTOMATIC CAR WASHES

WITH HIGH PRESSURE SPRAYS AND/OR BRUSHES INSTALL A 50 G.P.M. INTERCEPTOR. MINIMUM, FOR A 4-BAY VEHICLE WASH, THE SIZE OF THE INTERCEPTOR SHALL INCREASE 10 G.P.M. FOR EACH ADDITIONAL WASH BAY OVER 4. SINGLE BAY OR PORTABLE WASHER TYPE VEHICLE WASHES SHALL INSTALL A 20 G.P.M. INTERCEPTOR MINIMUM.

NEUTRALIZING DEVICES

IN NO CASE SHALL CORROSIVE LIQUIDS, SPENT ACIDS, OR OTHER HARMFUL CHEMICALS WHICH MIGHT DESTROY OR INJURE A DRAIN, SEWER, SOIL, OR WASTE PIPE, OR WHICH MIGHT CREATE NOXIOUS OR TOXIC FUMES, DISCHARGE INTO THE SANITARY SEWER SYSTEM WITH OUT BEING THOROUGHLY NEUTRALIZED BY PASSING THOROUGHLY CONSTRUCTED AND ACCEPTABLE NEUTRALIZING DEVICE. SUCH DEVICE SHALL BE PROVIDED WITH A SUFFICIENT INTAKE OF NEUTRALIZING MEDIUM, CONSISTING OF LIMESTONE OR MARBLE CHIPS, SO AS THE MAKE ITS CONTENTS NON-INJURIOUS BEFORE BEING DISCHARGED INTO THE SANITARY SEWER SYSTEM.

LINT TRAPS

PUBLIC AND PRIVATE WASHATERIAS AND COMMERCIAL LAUNDRIES SHALL INSTALL A LINT TRAP EQUIPPED WITH A CONVENIENTLY LOCATED AND EASILY REMOVABLE WIRE BASKET OR OTHER SIMILAR DEVICE THAT WILL PREVENT THE STRINGS, RAGS, BUTTONS, OR OTHER PROHIBITED MATERIAL FROM ENTERING THE SANITARY SEWER SYSTEM. THE BASKET OR OTHER SIMILAR DEVICE SHALL PREVENT PASSAGE TO THE SANITARY SEWER SYSTEM OF SOLIDS GREATER THAN 1/2" INCH DIAMETER. THE LINT TRAP SIZE SHALL BE BASED ON THE TOTAL G.P.M. OF ALL FIXTURES, APPLIANCES AND APPURTENANCES DRAINING TO IT IN LIEU OF A LINT TRAP, A LINT INTERCEPTOR MAY BE INSTALL. THE INTERCEPTOR SHALL BE SIZED AND DESIGNED BY A TEXAS REGISTERED ENGINEER WITH HIS SEAL AND SIGNATURE ON THE DRAWINGS.

GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	SANITARY SEWER SYSTEM GENERAL NOTES (1 OF 2)	
REVISED: MAY 6, 2020	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. G-1

SILVER RECOVERY UNITS

SILVER RECOVERY UNITS SHALL BE INSTALLED IN WASTE LINES(S) LEADING FROM X-RAY PROCESSING, PHOTOGRAPHIC PROCESSING, AND/OR ANY PROCEDURES IN ESTABLISHMENT SUCH AS MEDICAL LABS, DENTAL LABS, PHOTO FINISHERS, PRINTERS, GRAPHIC ARTS PRODUCTION FACILITIES, HOSPITAL FACILITIES, VETERINARY HOSPITALS, OR OTHER ESTABLISHMENTS WHERE SILVER MAY BE INTRODUCED INTO THE SANITARY SEWER SYSTEM.

SOLID INTERCEPTORS

SOLIDS INTERCEPTORS SHALL BE INSTALLED WHEN PRE-TREATMENT OF WASTE STREAMS IS NECESSARY TO PREVENT SOLIDS GREATER THAN $\frac{1}{2}$" IN DIAMETER, WHICH MAY CAUSE LINE STOPPAGE FROM ENTERING THE SANITARY SEWER SYSTEM.

INTERCEPTORS

a. INTERCEPTORS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE DESIGN APPROVED BY THE GVSUD CONSISTING OF A MINIMUM OF TWO COMPARTMENTS WITH FITTINGS DESIGNED FOR GREASE RETENTION AND PROVIDE FOR A MINIMUM OF TWELVE (12) MINUTES RETENTION
b. THERE SHALL BE AN ADEQUATE NUMBER OF MANHOLES TO PROVIDE ACCESS FOR CLEANING ALL AREAS OF AN INTERCEPTOR, ONE MANHOLE PER TRAP COMPARTMENT. MANHOLE COVERS SHALL BE GAS TIGHT IN CONSTRUCTION HAVING A MINIMUM OPENING DIMENSION OF 20 INCHES (0.5 M).
c. IN AREAS WHERE TRAFFIC MAY EXIST THE INTERCEPTOR SHALL BE DESIGNED TO HAVE ADEQUATE REINFORCEMENT AND COVER.
d. ALL INTERCEPTORS SHALL HAVE THE SIZE OF THE INTERCEPTOR (IN GALLON PER MINUTE OR GALLON CAPACITY) PERMANENTLY AFFIXED TO THE DEVICE.
e. ALL CONCRETE UTILIZED IN THE CONSTRUCTION OF INTERCEPTOR SHALL HAVE A MINIMUM STRENGTH OF 3000 PSI.
f. AN EFFLUENT SAMPLING WELL ON ALL INTERCEPTORS SHALL BE REQUIRED. THE SAMPLE WELL SHALL HAVE A RISER A MINIMUM OF 6" INCHES IN DIAMETER AND SHALL BE INSTALLED AFTER THE CONFLUENCE OF ALL WASTE STREAMS FROM THE FACILITY AND PRIOR TO DISCHARGING INTO SANITARY SEWER COLLECTION SYSTEM. THE WELL SHALL BE PERPENDICULAR TO THE EFFLUENT LATERAL TO ALLOW VISUAL OBSERVATION OF THE FLOW STREAM AND PROVIDE FOR SAMPLING OF WASTEWATER.

WATERTIGHT TESTING (24 HOURS)

g. ALL INTERCEPTORS SHALL BE WATER TESTED OUT AT JOB SITE AFTER BEING INSTALLED (PLUG BOTH ENDS AND FILL TO TOP OF INTERCEPTOR). INTERCEPTOR SHALL SHOW NO LEAKAGE FROM SECTION SEAMS, PINHOLES, OR OTHER IMPERFECTIONS. ANY LEAKAGE IS CAUSE FOR REJECTION. WHEN LEAKAGE OCCURS, ADDITIONAL WATER TESTING SHALL BE MADE. AFTER CORRECTING MEASURE TEST, REPORTS SHALL SHOW TOTAL NUMBER OF INTERCEPTORS TESTED. WHEN LEAKAGE OCCURS, CORRECTIVE MEASURES TAKEN SHALL BE REPORTED BY GVSUD INSPECTORS. GVSUD INSPECTORS SHALL RECORD IN DAILY LOG WITH PROJECT NAME, DATE IT WAS TESTED AND COMPLETED.

B. MANHOLES WILL BE REQUIRED ON SIX (6) INCH AND LARGER LATERALS WHERE THEY CONNECT TO THE MAIN.
   a. LATERALS WILL NOT BE ATTACHED TO SEWER MAINS THAT ARE DEEPER THAN TWELVE (12) FEET.
   b. FITTINGS ARE NOT PERMITTED ON LATERALS BETWEEN THE WYE AND THE PROPERTY LINE.
   c. DEEP CUT OR DROP CONNECTIONS SHALL NOT BE PERMITTED.
   d. A MINIMUM OF ONE (1) LATERAL PER BUILDING SHALL BE REQUIRED. ALSO, A MINIMUM OF ONE (1) LATERAL PER RESIDENTIAL LOT SHALL BE REQUIRED. DUPLEXES SHALL HAVE TWO (2) LATERALS THAT SHALL BE INDEPENDENTLY ATTACHED TO THE MAIN.
   e. ALL SEWER LATERAL CROSSING WATER MAINS SHALL CONFORM TO THE REQUIREMENTS OF THE TCEQ CHAPTER 317 (DESIGN CRITERIA FOR SEWERAGE SYSTEMS) LATEST REVISION, SDR 26 150 PSI, OR DUCTILE IRON PIPE, CONCRETE ENCASEMENT.

24. WHERE REQUIRED CONCRETE ENCASEMENT SHALL BE PLACED FOR FULL WIDTH OF THE TRENCH TO A PLAIN SIX (6) INCHES ABOVE THE TOP OF THE PIPE WITH PAY UNITS AS SHOWN ON THE STANDARD DETAILS SHEET.
25. A MINIMUM OF FOUR (4) FEET OF COVER IS TO BE MAINTAINED OVER THE SANITARY SEWER MAIN AND LATERALS AT GRADE, OTHERWISE CONCRETE ENCASEMENT IS REQUIRED.
26. WHERE POROUS MATERIAL , INCLUDING "SUBGRADE FILLER" IS USED FOR BACKFILL IN THE BEDDING AND INITIAL BACKFILL ZONES, SEEPAGE RETAINERS ARE REQUIRED AT AN APPROXIMATE OF 180 FEET. RETAINERS SHALL CONSIST OF CLASS "D" CONCRETE ENCASEMENT. THE RETAINERS SHALL EXTEND FROM THE BOTTOM OF THE TRENCH TO THE TOP OF THE GRANULAR MATERIAL FOR THE ENTIRE TRENCH WIDTH. ENCASEMENT SHALL BE 24 INCHES LONG. NO EXTRA PAY ITEM

BLASTING

27. WHEN ALLOWABLE, BLASTING SHALL BE PREFORMED IN ACCORDANCE WITH THE ABOVE CRITERIA ESTABLISHED BY THE NATIONAL FIRE PROTECTION ASSOCIATION 312 TAC 313.5(C) (6).
28. BLASTING SEWER LINE EXCAVATION MUST BE DONE IN SUCH A MANNER AS TO MINIMIZE THE FRACTURING OF ROCK BEYOND THE REQUIRED EXCAVATION. THE CONTRACTOR SHALL CONSIDER THE ELEVATION OF THE EXISTING SANITARY SEWER MAIN IN RELATION TO THE BLASTING CHARGE AND RELATIVE DIRECTION OF EXISTING AND PROPOSED TRENCHES. BLASTING WITHIN SUCH AREAS SHALL BE ACCOMPLISHED ONLY BY QUALIFIED BLASTING CONTRACTORS WHO HOLD BLASTING LICENSES FROM A QUALIFIED AGENCY SUCH AS THE SAN ANTONIO FIRE DEPARTMENT IN BEXAR COUNTY. ANY DAMAGE TO EXISTING SANITARY SEWERS RESULTING FROM BLASTING SHALL BE REPAIRED AND RESTORED BY THE CONTRACTOR AT HIS OWN EXPENSE.
29. NO BLASTING SHALL BE PERFORMED WITHIN 75 FEET OF EXISTING UTILITIES.

TESTING

30. ALL SEWER LINES MUST BE TESTED IN ACCORDANCE WITH THE FOLLOWING:
   A. 317.2(A)(5)(B); DEFLECTION TEST FOR FLEXIBLE AND SEMI-RIGID PIPE CONDUCTED AFTER FINAL BACKFILL AS BEEN IN PLACE AT LEAST 30 DAYS.
   B. 317.2(A)(4)(A) & (B) OR SARA SPECIFICATIONS INFILTRATION AND OR EXFILTRATION AND OR LOW-PRESSURE AIR TEST.
   C. 313.5(C)(10)(C) OR SARA SPECIFICATIONS: ALL MANHOLES AND WET WELLS MUST BE TESTED SEPARATELY AND INDEPENDENTLY OF THE COLLECTION LINES.
   D. IN THE EVENT THAT TESTING REQUIREMENTS CONFLICT, THE LATEST TCEQ DESIGN CRITERIA SHALL BE USED.
31. SEWER LINES SHALL BE TESTED FROM MANHOLE TO MANHOLE.
32. SANITARY SEWER CONNECTIONS MADE DIRECTLY TO EXISTING MANHOLES WHICH REQUIRE PENETRATION INTO MANHOLE WILL BE CORE DRILLED. ANY DAMAGE TO EXISTING MANHOLE WILL BE REPLACED AT CONTRACTORS EXPENSE AND WILL REQUIRE SUCCESSFUL TESTING OF THE EXISTING MANHOLE IN ACCORDANCE WITH THE GVSUD SPECIFICATIONS. THEY MUST HAVE A PROTECTIVE COATING WITH SEWPERCOAT, RAVEN 405, SAUEREISEN 210, SPRAY WALL OR APPROVED EQUIVALENT BY THE ENGINEER. COATING WILL BE MINIMUM OF 200 MILS THICKNESS DEPENDING ON EXISTING CONDITIONS. TO PROTECT INFRASTRUCTURE INFILTRATION. FOLLOW MANUFACTURER'S RECOMMENDATION ON PROTECTIVE COATING.
33. AFTER CONSTRUCTION, TESTING WILL BE DONE BY PAN/TILT TV CAMERA BY THE CONTRACTOR AND OBSERVED BY INSPECTOR, WASTEWATER ENGINEERING PERSONNEL AND CONTRACTOR AS CAMERA IS RUN THROUGH THE LINES. PAN/TILT ALL 6" SERVICE LATERALS TO 6"X6" STUB-OUT. VIDEOS MUST INCLUDE SUBDIVISION NAME, MANHOLE NUMBER, SERVICE LATERAL STATION NUMBER, FLOW DIRECTION, LOCATION ANY ABNORMALITIES, SUCH AS BROKEN PIPE OR MISALIGNED, JOINT, GRAVEL, DIRT, MUST BE CLEANED OUT, REPLACE AT CONTRACTOR'S EXPENSE. NEW SEWER SYSTEM WILL BE FLOODED WITH H20 BEFORE BEING TV. ALL SEWER LINES MUST BE PRESSURE CLEANED TO INCLUDE SERVICE LATERALS 6" INCH TO STUB-OUT. ALL VIDEOS SHALL BE SUBMITTED IN DVD FORMAT WITH WRITTEN REPORTS.
34. A COPY OF ALL TESTING REPORTS INCLUDING BACKFILL COMPACTION TESTS SHALL BE FORWARDED TO GVSUD.
   A. DENSITY TEST WILL BE REQUIRED ON ALL SANITARY SEWER TRENCHES INCLUDING SERVICE LATERALS. SERVICE LATERALS TO BE CHOSEN RANDOMLY BY FIELD INSPECTOR. DENSITIES ON SERVICE LATERAL SHALL NOT EXCEED 25% OF TOTAL NUMBER OF SERVICES.

EXCAVATION

35. CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY , SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTORS TRENCH EXCAVATION SAFETY SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTORS IMPLEMENTATION OF THE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITHIN OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.
36. CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF ALL WASTE MATERIALS UPON PROJECT COMPLETION. THE CONTRACTOR SHALL NOT PERMANENTLY PLACE ANY WASTE MATERIALS IN THE 100 YEAR FLOODPLAIN WITHOUT AN APPROVED FLOODPLAIN PERMIT.
37. WATER JETTING THE BACKFILL WITHIN A STREET WILL NOT BE PERMITTED. SANITARY SEWER TRENCHES SUBJECT TO TRAFFIC SHALL CONFORM TO SARA SPECIFICATIONS.

WATERLINE CROSSING

38. WHERE THE MINIMUM 9 FOOT SEPARATION DISTANCE BETWEEN SEWER LINES AND WATERLINES CANNOT BE MAINTAINED, THE INSTALLATION OF SEWER LINES SHALL BE IN STRICT ACCORDANCE WITH TCEQ RULES (31 TAC 317.3 APPENDIX E), SDR 26 ASTM 150 PSI OR CONCRETE ENCASEMENT DUCT IRON.

EROSION AND SEDIMENTATION

39. THE TCEQ AND THE ENVIRONMENTAL PROTECTION AGENCY (EPA) REQUIRE EROSION AND SEDIMENTATION CONTROL FOR CONSTRUCTION OF SEWER COLLECTION SYSTEMS. DEVELOPER OR AUTHORIZED REPRESENTATIVE SHALL PROVIDE EROSION AND SEDIMENTATION CONTROL AS NOTED ON THE PROJECT PLAN AND PROFILE SHEETS.
40. ALL TEMPORARY EROSION AND SEDIMENTATION CONTROLS SHALL BE REMOVED BY THE CONTRACTOR AT FINAL ACCEPTANCE OF THE PROJECT BY GVSUD.

SUPPLEMENTING

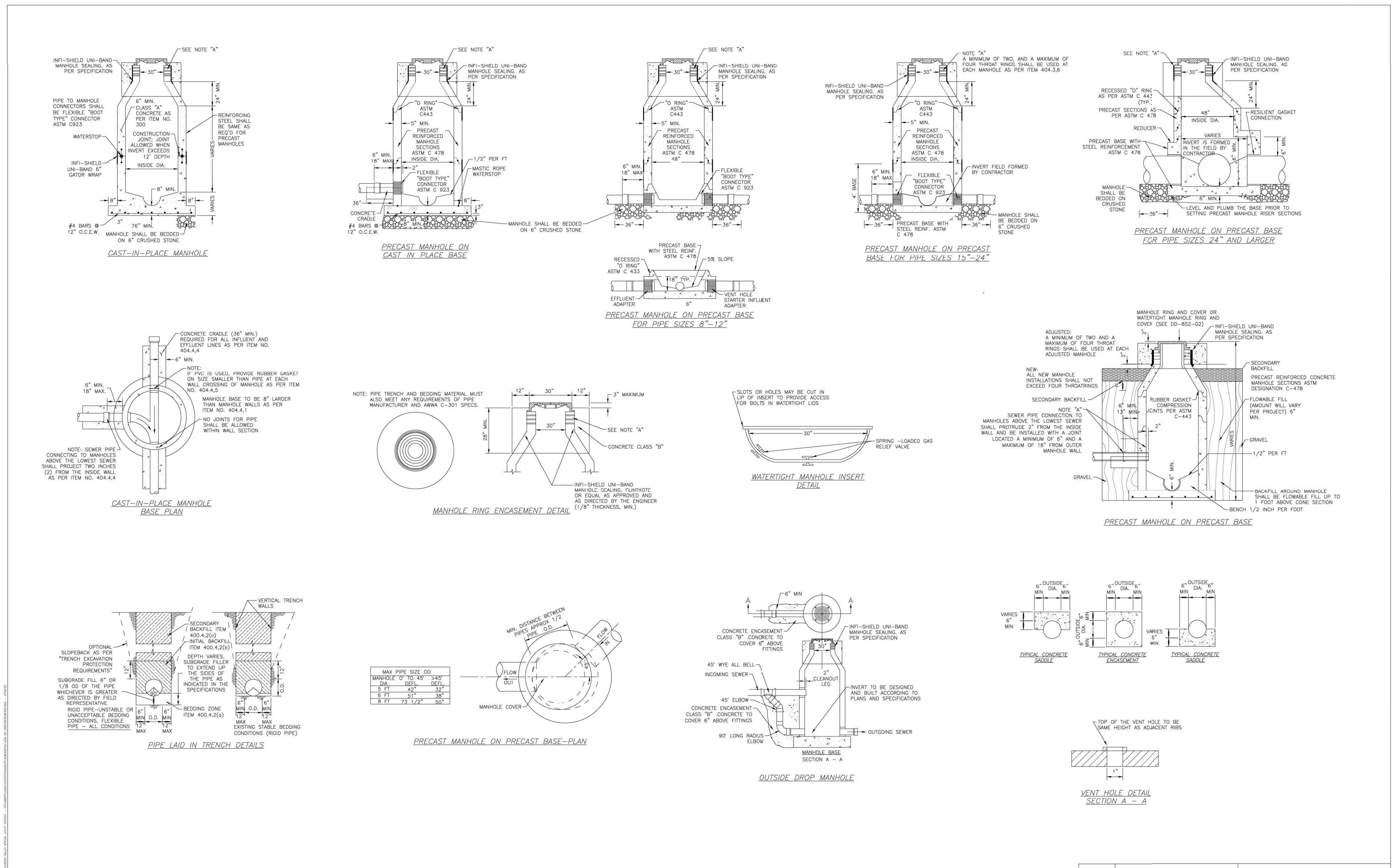
41. NO EXTRA PAYMENT SHALL BE ALLOWED FOR WORK CALLED FOR ON THE PLANS BUT NOT INCLUDED ON THE BID SCHEDULE. THIS INCIDENTAL WORK WILL BE REQUIRED AND SHALL BE INCLUDED UNDER PAY ITEM 10 WHICH IT RELATES TO.
42. UNLESS THE DEVELOPMENT IS PRIVATELY OWNED, THE DEVELOPERS DEDICATES THE SANITARY SEWER MAIN AND MANHOLES TO THE GVSUD. UPON COMPLETION BY THE DEVELOPER AND FINAL ACCEPTANCE BY THE GVSUD. GVSUD WILL OWN AND MAINTAIN THE SANITARY SEWER MAINS AND MANHOLES WHICH ARE LOCATED WITHIN THIS PARTICULAR SUBDIVISION.
43. WORK COMPLETED BY CONTRACTOR WHICH HAS NOT RECEIVED A WORK ORDER OR THE CONSENT OF THE GVSUD CONSTRUCTION INSPECTION DIVISION WILL BE SUBJECT TO REMOVAL AND REPLACEMENT BY AND AT THE EXPENSE OF THE CONTRACTOR.
44. GVSUD IS NOT TO BE RESPONSIBLE FOR ANY ABNORMALITIES ON STUB-OUT, INVERT, GRADE OR SLOPE FOR ANY EXISTING MANHOLE TIE IN OR SERVICE LATERAL TIE IN.
45. ENGINEER, DEVELOPER, AND BUILDER, WILL HAVE PLUMBER AND CONTRACTOR WITH BID PRICE ON NEW INSTALLATION OF ALL 4" INCH SEWER SERVICE LATERALS TO COMPLY WITH TRENCH SAFETY (OSHA) SHORING PROTECTION ON ALL NEW INSTALLATION OF 4" INCH SEWER SERVICE LATERALS. GVSUD WILL NOT BE HELD RESPONSIBLE FOR ANY INJURIES OR DEATH CAUSED BY TRENCH FAILURE OR A WRONG OR DAMAGE DONE TO A PERSON OR TO HIS PROPERTY, OSHA GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.
46. ALL 4" INCH SEWER SERVICE LATERALS WILL BE HYDRAULIC TESTED AND OR LOW AIR PRESSURE TESTED.

    ALL 4" INCH SEWER SERVICE LATERALS WILL BE TELEVISED (TV) FROM 4" INCH CLEAN OUT AT OUTSIDE EACH RESIDENCE TO 6"X6" CLEAN OUT. CONTRACTOR AND PLUMBER WILL SUBMIT REPORTS AND/OR VIDEOS TO GVSUD, WITH THE FOLLOWING INFORMATION: SUBDIVISION NAME, LOT NUMBER, BLOCK NUMBER, STATION NUMBER, STREET NAME AND ADDRESS OF EACH SEWER SERVICE LATERAL.

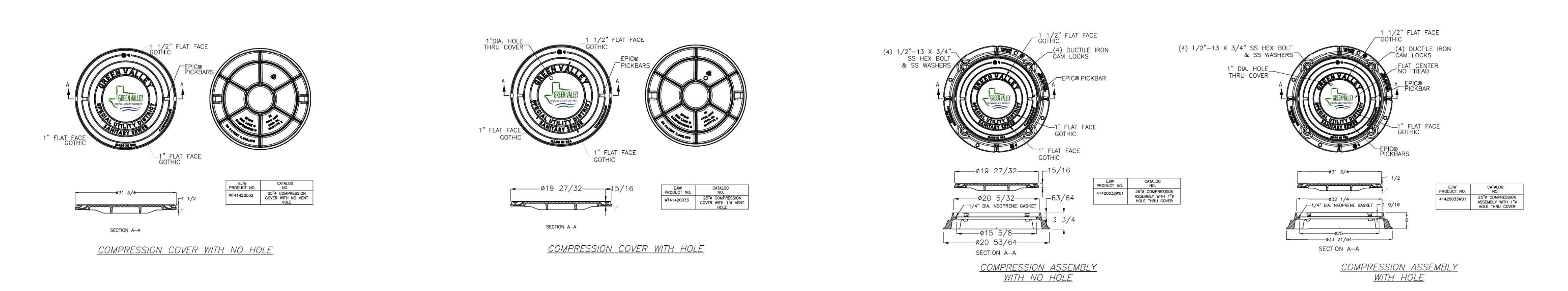
PLUMBER WILL BE PROVIDED PLAN/PROFILE BY ENGINEER/BUILDER. PLUMBER WILL WORK CLOSELY WITH THE GVSUD INSPECTOR ON DAILY TESTING AND TELEVISION BY MAKING ARRANGEMENTS 48 HOURS IN ADVANCE. SEWER SERVICE LATERALS THAT HAVE NOT BEEN INSPECTED OR APPROVED AND/OR COVERED UP, WILL HAVE TO BE RE-DUG AT CONTRACTOR/PLUMBER EXPENSE AND RE-INSPECTED.

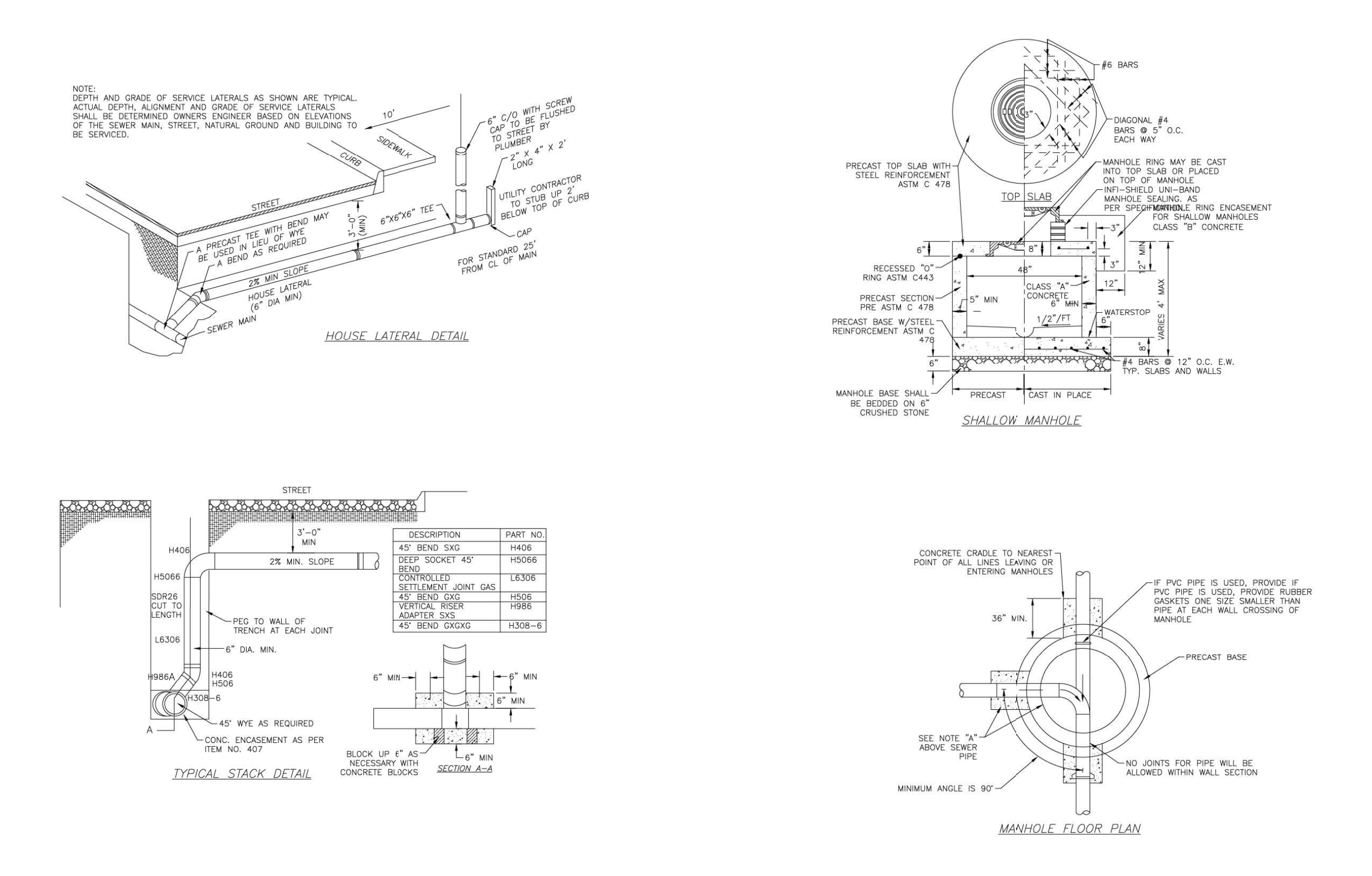
   A. A PROPERTY LINE CLEAN OUT (6"X6") SHALL BE INSTALLED FOR RESIDENTIAL SERVICES. CLEAN OUTS IN THE SIDEWALK OR DRIVEWAY SHALL HAVE A CAST IRON BOOT. CLEAN OUT NOT LOCATED IN A SIDEWALK OR DRIVEWAY SHALL BE LOCATED ON REINFORCED CONCRETE PAD A MINIMUM OF TWELVE (12") INCHES BY TWELVE (12") INCHES BY SIX (6") INCHES THICK. ALL PROPERTY LINE CLEAN OUTS SHALL INCLUDE A LID WITH SEWER IN GREEN COLOR.
47. N1 FENCING: ANY AND ALL FENCING, INCLUDING ELECTRIC FENCE, WHETHER OR NOTE IDENTIFIED ON THE PLANS, MUST BE MAINTAINED AT ALL TIMES. ANY AND ALL DAMAGES DIRECTLY ATTRIBUTED TO THE CONTRACTOR MUST BE REPLACED TO EQUAL OR BETTER CONDITIONS AT THE CONTRACTOR'S EXPENSE AND AS APPROVED BY THE PROJECT MANAGER. GAPS IN THE FENCING MUST BE PROVIDED AT ALL LOCATIONS WHERE THE SEWER LINE EASEMENT CROSSES FENCING. FENCING REQUIRED TO MAINTAIN LIVESTOCK MUST BE MAINTAINED AT ALL TIMES.
48. N2 DAMAGE TO ADJACENT LAND: THE CONTRACTOR MUST AVOID DAMAGE TO ADJACENT LAND OUTSIDE THE IDENTIFIED CONSTRUCTION LIMITS. ANY AND ALL CLAIMS DIRECTORY ATTRIBUTED TO THE CONTRACTOR RESULTING FROM HIS STRAYING BEYOND THE CONSTRUCTION LIMITS MUST BE SETTLED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER WITH THE APPROPRIATE LANDOWNER.
49. N3 PROPERTY OWNER ACCESS: THE CONTRACTOR MUST MAINTAIN ACCESS FOR PRIVATE INDIVIDUALS AT ALL TIMES. IF NORMAL ACCESS IS DAMAGED DURING CONSTRUCTION THE CONTRACTOR MUST REPLACE THE ACCESS TO EQUAL OR BETTER CONDITIONS AT THE CONTRACTOR'S EXPENSE, AS APPROVED BY THE ENGINEER.
50. N4 CONTRACTOR IS RESPONSIBLE FOR LOCATION AND PROTECTION ALL UTILITIES WHETHER OR NOT SHOWN ON THE PLANS. SHOULD THE CONTRACTOR DAMAGE ANY UTILITIES THE CONTRACTOR WILL BE RESPONSIBLE FOR ALL COSTS TO REPAIR THE UTILITIES TO THEIR ORIGINAL CONDITION. CONTRACTOR IS SOLELY RESPONSIBLE FOR LOST REVENUE, LOSSES, ETC CLAIMED BY UTILITY COMPANIES DUE TO CONTRACTORS WORK. CONTRACTOR SHALL NOTIFY GVSUD AND IMPACTED UTILITY COMPANIES 48 HRS. PRIOR TO BEGINNING WORK. CONTRACTOR SHALL VERIFY THE LOCATION OF UTILITIES AND REPORT ANY DISCREPANCIES TO THE ENGINEER.
51. N5 CLEARING PERMANENT EASEMENTS: THE LIMITS OF BOTH THE EXISTING AND PARALLEL SEWER LINES PERMANENT EASEMENTS, AS DELINEATED IN THESE PLANS, MUST BE CLEARED IN ACCORDANCE WITH THE SPECIFICATION. THE CONTRACTOR MAY BE DIRECTED BY THE ENGINEER TO PROTECT AND AVOID CERTAIN TRESS WITHIN THE LIMITS OF THE PERMANENT CONSTRUCTION EASEMENTS. ALL BRUSH MUST BE REMOVED FROM SITE. NO BRUSH PILES TO REMAIN AFTER CONSTRUCTION. BURNING OF BRUSH OR TRASH WILL NOT BE ACCEPTABLE.
52. N7 CONTRACTOR SHALL PROVIDE APPROPRIATE SAFE ACCESS AND BARRICADE WORK AT ALL TIMES TO PROTECT THE PUBLIC. THIS INCLUDES SUBSTANTIAL BARRICADES AROUND ALL TRENCHES, BORE PITS, OPEN EXCAVATIONS, EQUIPMENT, ETC. THE SITE MUST BE LEFT IN SECURE SAFE CONDITION AT NIGHT. IT IS THE CONTRACTORS RESPONSIBILITY TO TAKE NECESSARY PRECAUTIONS TO PROTECT THE PUBLIC THROUGHOUT THE DURATION OF THE PROJECT.
53. N14 SHOULD CONTRACTOR SELECT A TRENCH EXCAVATION PROCEDURE THAT EXTENDS THE LIMITS OF SEEDING OR PAVING AND FINAL SITE PREPARATION (I.E. SLOPE BACK PROTECTION SYSTEM) HE WILL BE RESPONSIBLE FOR MEETING PLAN AND SPECIFICATION REQUIREMENTS TO THE NEW LIMITS AT NO ADDITIONAL COST TO GVSUD.
54. N16 WARNING: NOTE THAT CERTAIN PORTIONS OF THE PROJECT MAY PARALLEL AND/OR CROSS EXISTING UTILITIES. THE CONTRACTORS WILL BE REQUIRED TO PROTECT EXISTING UTILITIES. ADDITIONAL SUPPORTIVE SHORING MAY BE REQUIRED. IT IS SPECIFICALLY THE CONTRACTORS RESPONSIBILITY TO PROTECT HIS WORKERS, EXISTING UTILITIES, AND FINISHED WORK THROUGHOUT THE JOB.
55. N17 OVERHEAD ELECTRIC, CITY PUBLIC SERVICE (CPS) AN APPROPRIATELY SAFE OVERHEAD CLEARANCE MUST BE MAINTAINED BETWEEN ALL EQUIPMENT AND PERSONNEL. THE CONTRACTOR SHALL NOTIFY CITY PUBLIC SERVICE AT 353-2700 AT LEAST 48 HOURS PRIOR TO ANY CONSTRUCTION IN THE VICINITY OF THE CPS OVERHEAD ELECTRIC LINE CONTRACTOR SHALL MAINTAIN CPS RECOMMENDED CLEARANCE REQUIREMENTS.
56. N23 BYPASS PUMPING: THE CONTRACTOR IS RESPONSIBLE FOR ALL BYPASS PUMPING REQUIRED TO COMPLETE THE WORK. BYPASS PUMPS SHALL BE ADEQUATE TO HANDLE PEAK FLOW EVENTS DURING STORM EVENTS. CONTRACTOR SHALL HAVE STANDBY PUMPS AVAILABLE TO BYPASS FLOW IN CASE PRIMARY PUMP FAILS. CONTRACTOR WILL BE SOLELY RESPONSIBLE FOR ALL COSTS FOR CLEANUP OF AN UNAUTHORIZED DISCHARGE AND ANY ASSOCIATED FINES.
57. N26 CONTRACTOR SHALL BACKFILL ALL OPEN TRENCHES AT THE END OF THE DAY. CONTRACTOR SHALL NO INSTALL MORE PIPE THAN CAN BE COVERED. NO OPEN TRENCHES WILL BE PERMITTED OVERNIGHT ALL END OF OPEN PIPE WILL BE PLUGGED OVERNIGHT.
58. N33 THE PROJECT AREA MAY BE SUBJECT TO ARCHEOLOGICAL MONITORING, SHOULD THE CONTRACTOR ENCOUNTER ANY ARCHEOLOGICAL DEPOSITS DURING CONSTRUCTION OPERATIONS, THE CONTRACTOR SHALL STOP ALL WORK IN THE AREA OF THE DEPOSITS AND IMMEDIATELY CALL THE PROJECT MANAGER.
59. N37 CONTRACTOR TO NOTE THAT PORTIONS OF THE CONSTRUCTION ARE WITHIN THE LIMITS OF THE 100 YEAR FLOODPLAIN. THE CONTRACTOR IS REQUIRED TO KEEP THE CHANNEL CLEAR OF POTENTIAL OBSTRUCTIONS TO FLOOD FLOWS. POTENTIAL OBSTRUCTIONS INCLUDE HEAVY CONSTRUCTION EQUIPMENT, TEMPORARY ROADS ACROSS CHANNEL, EXCAVATED MATERIAL, STOCKPILED DEBRIS, ETC. UNDER THREATENING WEATHER CONDITIONS WHERE FLOODING IS LIKELY, OBSTRUCTIONS SHALL BE IMMEDIATELY REMOVED BY THE CONTRACTOR AT NO ADDITIONAL COST TO GVSUD. THE CONTRACTOR ASSUMES ALL RISK FOR UNFINISHED WORK.

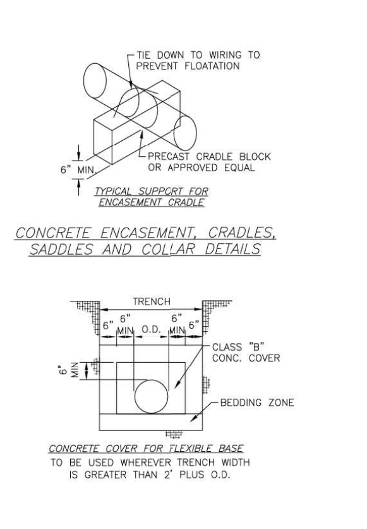
GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	SANITARY SEWER SYSTEM GENERAL NOTES (2 OF 2)	
REVISED: MAY 6, 2020	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. G-2


CAST-IN-PLACE MANHOLE
PRECAST MANHOLE ON CAST IN PLACE BASE
PRECAST MANHOLE ON PRECAST BASE FOR PIPE SIZES 8"-12"
PRECAST MANHOLE ON PRECAST BASE FOR PIPE SIZES 15"-24"
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
TYPICAL CONCRETE ENCASEMENT
VENT HOLE DETAIL SECTION A - A

GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	SANITARY SEWER SYSTEM STANDARD DETAILS (1 OF 2)	
REVISED: JANUARY 28, 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




CONCRETE ENCASEMENT, CRADLES, SADDLES AND COLLAR DETAILS
CONCRETE COVER FOR FLEXIBLE BASE

TO BE USED WHEREVER TRENCH WIDTH IS GREATER THAN 2' PLUS O.D.

SANITARY SEWER GENERAL NOTES

ALL NEW EXISTING SANITARY SEWER MAINS AND MANHOLES IN THIS PROJECT ARE TO REMAIN ACTIVE AND SHALL BE PROTECTED BY THE CONTRACTOR. 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 ENCASING.

THE EXISTING CONDITIONS OF SEWER MAINS AND MANHOLES HAVE BEEN DOCUMENTED BY GVSUD. A PRE-PRECONSTRUCTION VIDEO OF THE LINES AND PHYSICAL SURVEY OF THE MANHOLES WILL BE USED TO DETERMINE THE 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 AT THEIR 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: JANUARY 28, 2021	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. S-2

CUDEENGINEERS.COM

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CUDE
ENGINEERS

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

GRACE VALLEY RANCH PHASE 8

SANITARY SEWER DETAILS

DATE
11/10/2025

PROJECT NO.
03499.010

DRAWN BY
JK/AR/JF/RB

CHECKED BY
KMH

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

KYLE M. HUDEK
138753
11/11/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C4.D1

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:

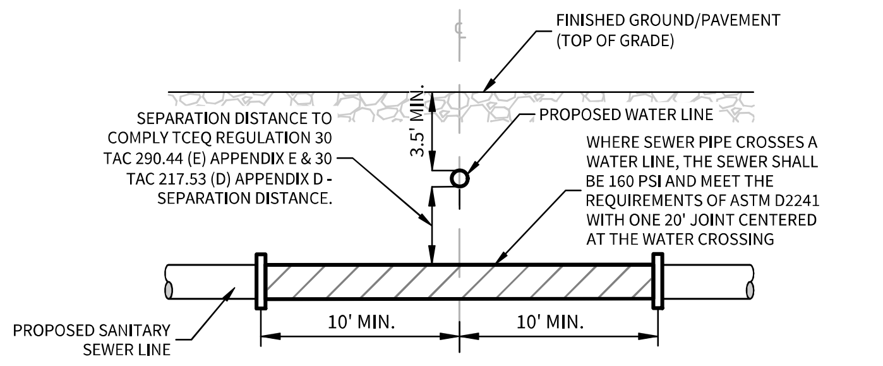
1. All testing shall be arranged and paid for by the contractor and witnessed by GVSUD.
2. All testing must be complete prior to paving streets.
3. The Contractor shall provide GVSUD copies of all test results prior to acceptance of the project.
4. All testing must be complete prior to performing tie-ins 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.

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 GRADING PLAN FOR CLEARING AND GRADING LIMITS.
4. CONTRACTOR SHALL RE-VEGETATE ALL DISTURBED AREAS WITHIN EASEMENT LIMITS UPON COMPLETION OF INFRASTRUCTURE.


FINISHED GROUND/PAVEMENT (TOP OF GRADE)
3.5' MIN.
PROPOSED WATER LINE
SEPARATION DISTANCE TO COMPLY TCEQ REGULATION 30 TAC 290.44 (E) APPENDIX E & 30 TAC 217.53 (D) APPENDIX D - SEPARATION DISTANCE.
WHERE SEWER PIPE CROSSES A WATER LINE, THE SEWER SHALL BE 160 PSI AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20' JOINT CENTERED AT THE WATER CROSSING
PROPOSED SANITARY SEWER LINE
10' MIN.
10' MIN.

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.

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

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

GRACE VALLEY RANCH
PHASE 8

SANITARY SEWER DETAILS

DATE
11/10/2025

PROJECT NO.
03499.010

DRAWN BY
JK/AR/JF/RB

CHECKED BY
KMH

REVISIONS
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8.
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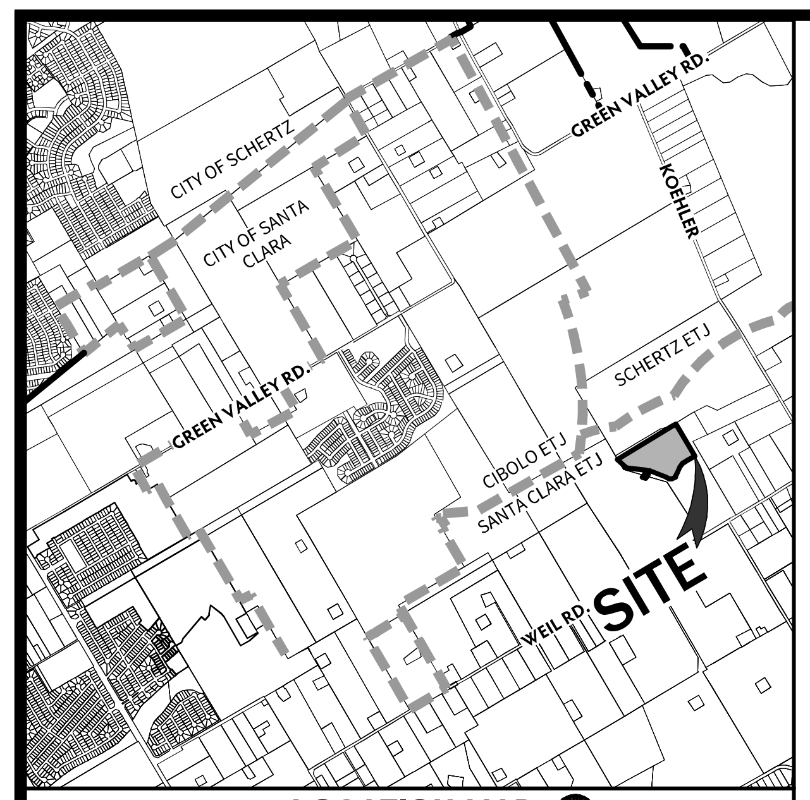
KYLE M. HUDEK
138753
11/11/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C4.D2

P:\03499\010\2-DWG\4-Plans\C4.D1 - SSDP.dwg 2025/11/10 4:21pm arodriguez


GREEN VALLEY RD.
KOHLER
CITY OF SCHERTZ
CITY OF SANTA CLARA
SCHERTZ ETJ
GREEN VALLEY RD.
CIBOLO ETJ
SANTA CLARA ETJ
WEIL RD.
SITE

LOCATION MAP

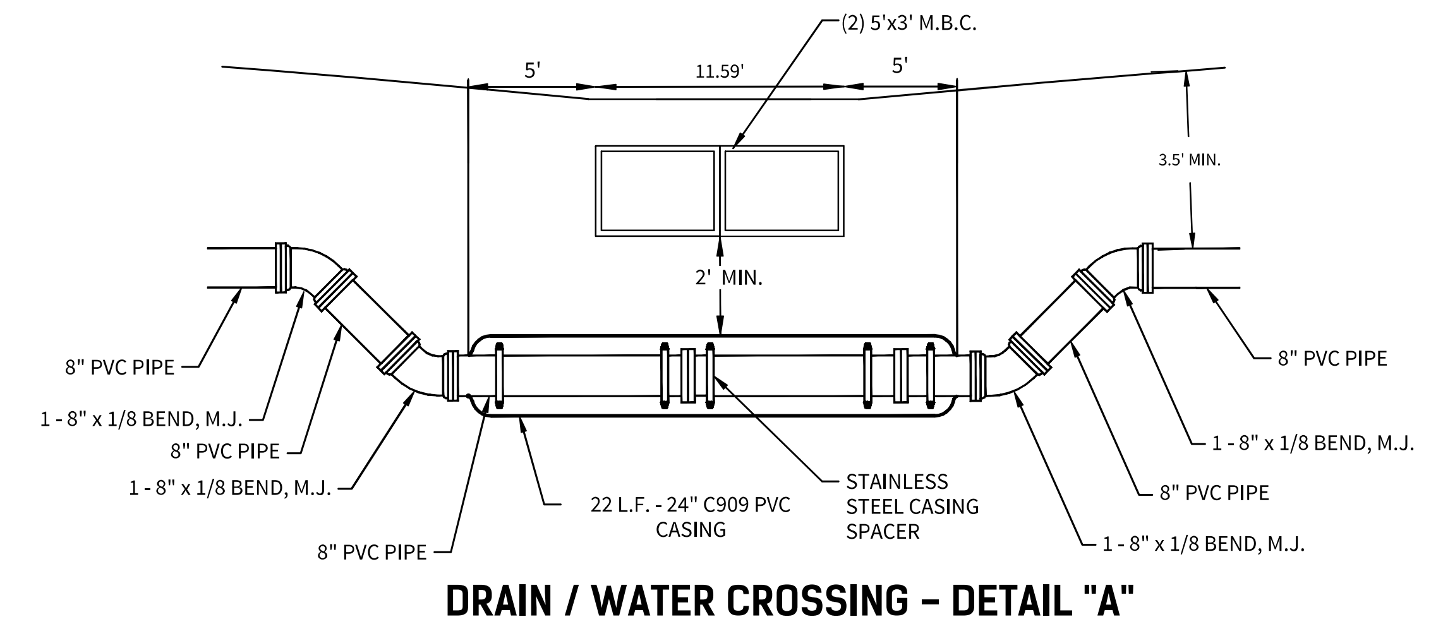
N.T.S.

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. 20' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT
4. 1 - 8" x 6" TEE, M.J., ANCHOR
   1 - 6" x 1/4 BEND, M.J.
   2 - 8" GATE VALVE, M.J.
   1 - 6" GATE VALVE, M.J.
   3 - 6" VALVE BOX, COMPLETE
   1 - STD. FIRE HYDRANT
   1 - 6" D.I. PIPE, CUT AS REQ'D.
   SEE G.V.S.U.D. STANDARD DTL. No. W-22 (SHEET C5.D2)
5. AFTER RELEASED FOR SERVICE,
   CONTRACTOR TO TIE NEW 8" WATER MAIN INTO EXIST. 8" WATER MAIN. CUT AS REQUIRED.
   VALVE TO REMAINED CLOSED UNTIL AFTER DISINFECTION & ACCEPTANCE BY GVSUD

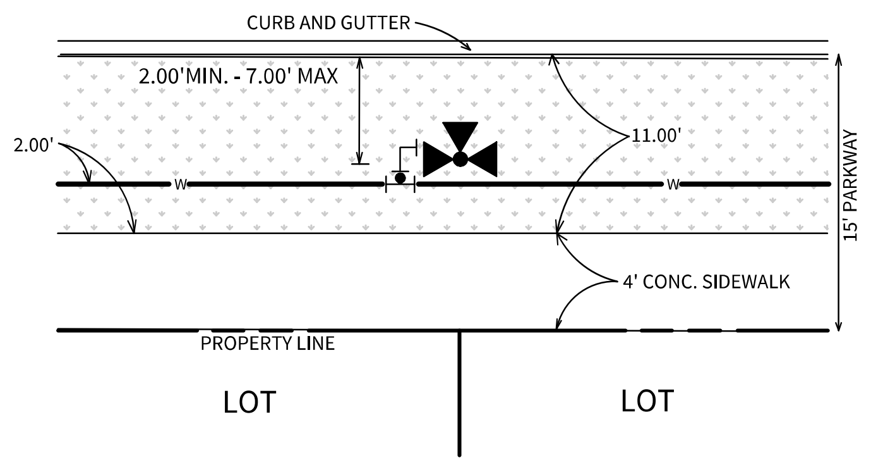
   CONTRACTOR TO REMOVE:
   2" BLOWOFF ASSEMBLY (PERM.)
   8" M.J. X 2" THR. DI. ECCENTRIC REDUCER (PERM.)

   CONTRACTOR TO INSTALL:
   1 - 8" M.J. X 2" THR. DI. ECCENTRIC REDUCER (TEMP.)
   TO BE REMOVED FOR TIE-IN AFTER NEW MAIN IS TESTED AND AACCEPTED.
   1 - 8" SOLID SLEEVE, M.J.
   2" BLOWOFF ASSEMBLY (TEMP.)
6. CONTRACTOR TO INSTALL 24" C-909 CASING AROUND THE WATER MAIN FROM FITTING TO FITTING AT ALL PAVEMENT CROSSINGS. SEE GVSUB DETAILS W-6, W-7, AND W-8, SEE SHEET C5.D1


(2) 5'x3' M.B.C.
5'
11.59'
5'
3.5' MIN.
2' MIN.
8" PVC PIPE
1 - 8" x 1/8 BEND, M.J.
8" PVC PIPE
1 - 8" x 1/8 BEND, M.J.
22 L.F. - 24" C909 PVC CASING
STAINLESS STEEL CASING SPACER
8" PVC PIPE
1 - 8" x 1/8 BEND, M.J.
8" PVC PIPE
1 - 8" x 1/8 BEND, M.J.
8" PVC PIPE

DRAIN / WATER CROSSING - DETAIL "A"

N.T.S.

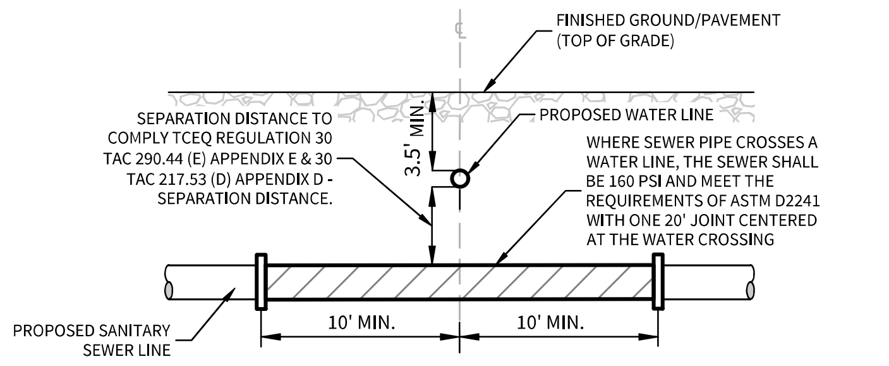

CURB AND GUTTER
2.00'MIN. - 7.00' MAX
2.00'
11.00'
15' PARKWAY
4' CONC. SIDEWALK
PROPERTY LINE
LOT
LOT

LOCAL RESIDENTIAL FIRE HYDRANT DETAIL (4' SIDEWALK)

N.T.S.

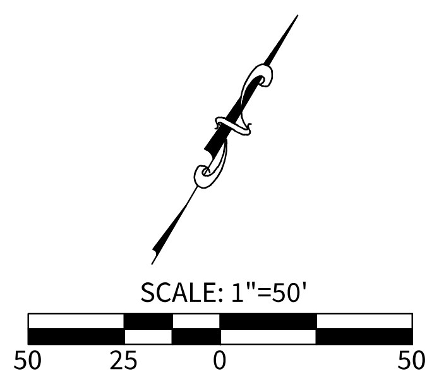
NOTE:

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


FINISHED GROUND/PAVEMENT (TOP OF GRADE)
SEPARATION DISTANCE TO COMPLY TCEQ REGULATION 30 TAC 290.44 (E) APPENDIX E & 30 TAC 217.53 (D) APPENDIX D - SEPARATION DISTANCE.
3.5' MIN.
PROPOSED WATER LINE
WHERE SEWER PIPE CROSSES A WATER LINE, THE SEWER SHALL BE 160 PSI AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20' JOINT CENTERED AT THE WATER CROSSING
PROPOSED SANITARY SEWER LINE
10' MIN.
10' MIN.

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.

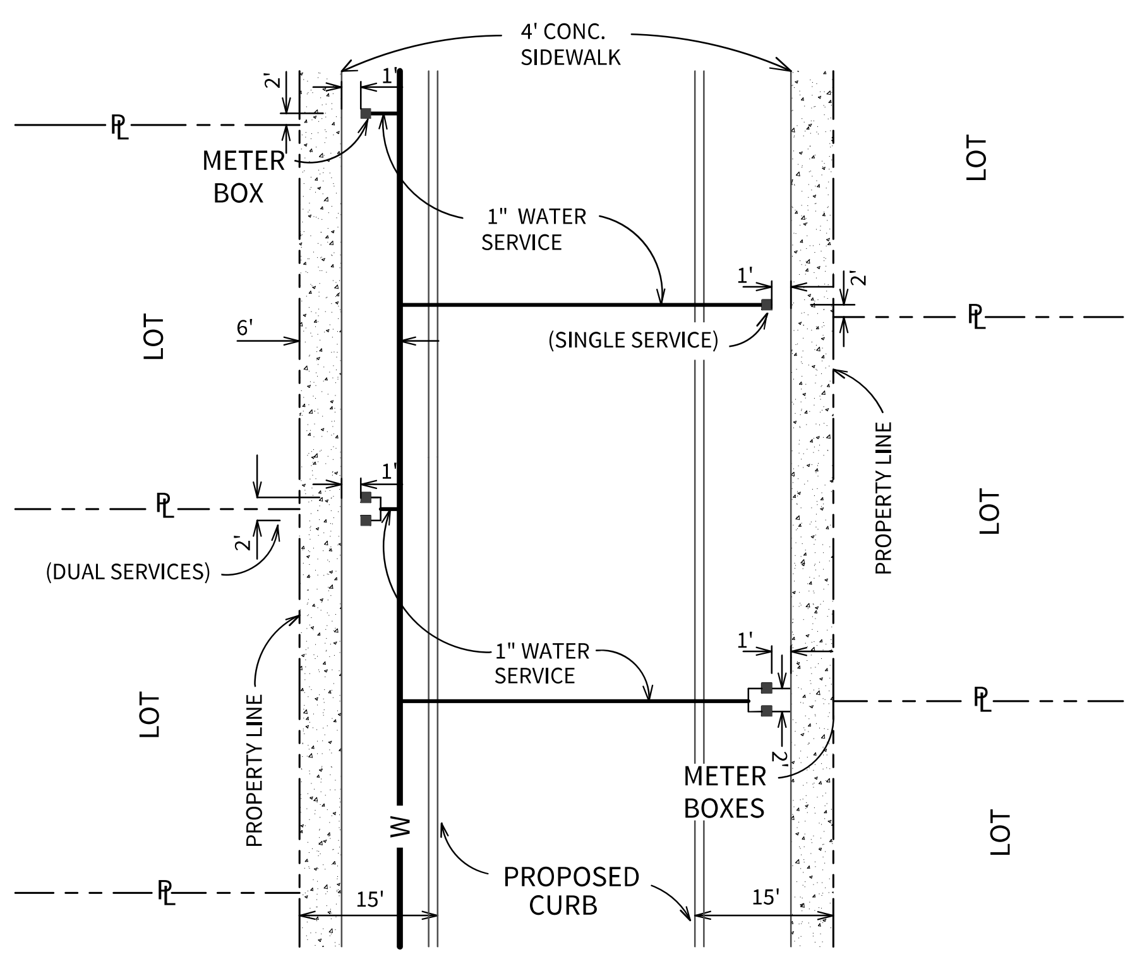

SCALE: 1"=50'
50
25
0
50

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

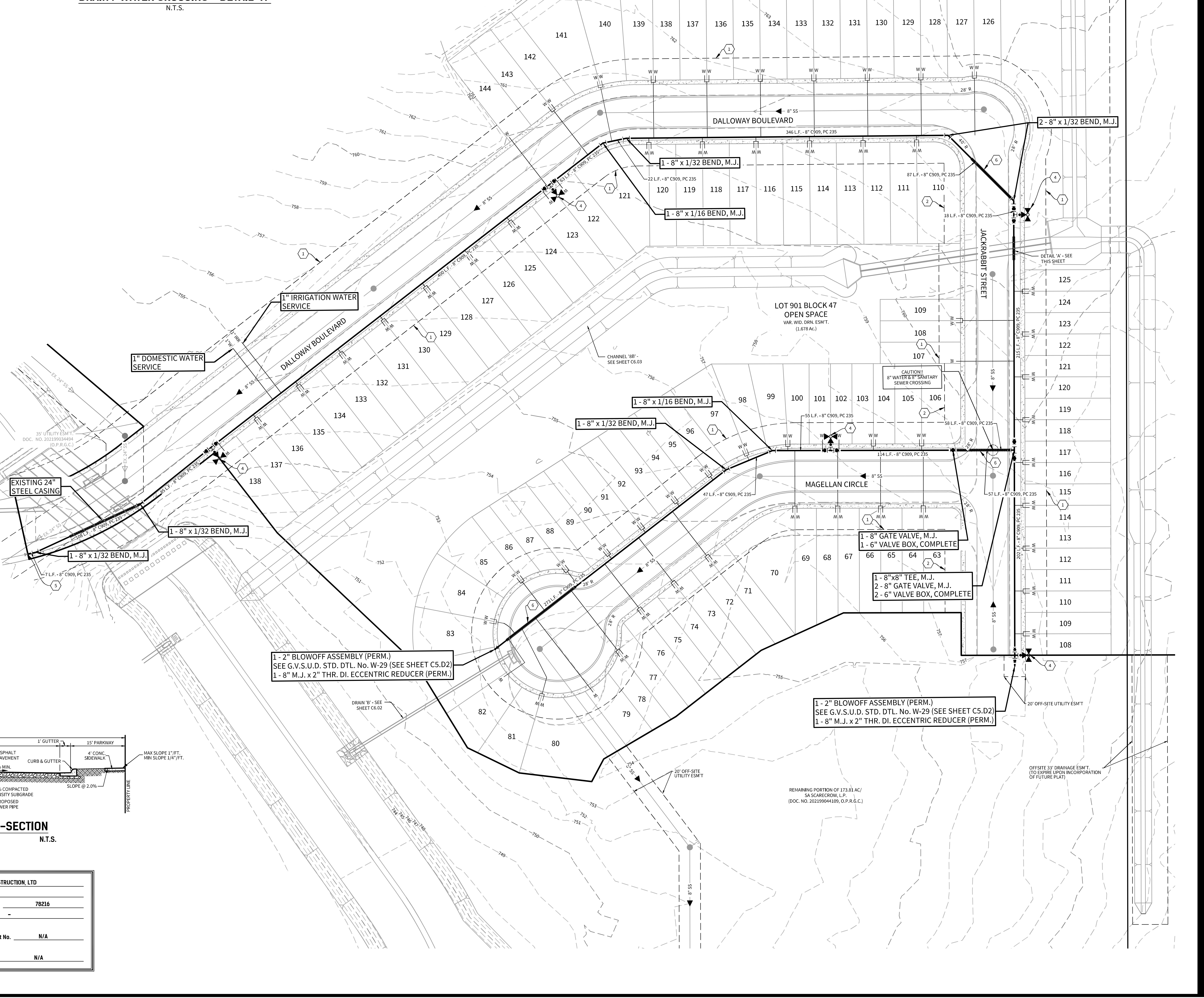
CIVIL ENGINEER:

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


4' CONC. SIDEWALK
METER BOX
1" WATER SERVICE
(SINGLE SERVICE)
(DUAL SERVICES)
1" WATER SERVICE
METER BOXES
PROPOSED CURB
PROPERTY LINE
PROPERTY LINE
LOT
LOT
LOT
LOT
LOT
LOT
2'
1'
6'
15'
15'
W

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

N.T.S.


DALLOWAY BOULEVARD
DALLOWAY BOULEVARD
JACKRABBIT STREET
MAGELLAN CIRCLE
LOT 901 BLOCK 47
OPEN SPACE
VAR. WID. DRN. ESM'T. (1.678 AC.)
1" IRRIGATION WATER SERVICE
1" DOMESTIC WATER SERVICE
EXISTING 24" STEEL CASING
1 - 8" x 1/32 BEND, M.J.
1 - 8" x 1/32 BEND, M.J.
1 - 8" x 1/32 BEND, M.J.
1 - 8" x 1/16 BEND, M.J.
2 - 8" x 1/32 BEND, M.J.
1 - 8" x 1/16 BEND, M.J.
1 - 8" x 1/32 BEND, M.J.
1 - 8" GATE VALVE, M.J.
1 - 6" VALVE BOX, COMPLETE
1 - 8"x8" TEE, M.J.
2 - 8" GATE VALVE, M.J.
2 - 6" VALVE BOX, COMPLETE
1 - 2" BLOWOFF ASSEMBLY (PERM.)
SEE G.V.S.U.D. STD. DTL. No. W-29 (SEE SHEET C5.D2)
1 - 8" M.J. x 2" THR. DI. ECCENTRIC REDUCER (PERM.)
1 - 2" BLOWOFF ASSEMBLY (PERM.)
SEE G.V.S.U.D. STD. DTL. No. W-29 (SEE SHEET C5.D2)
1 - 8" M.J. x 2" THR. DI. ECCENTRIC REDUCER (PERM.)
346 L.F. - 8" C909, PC 235
87 L.F. - 8" C909, PC 235
22 L.F. - 8" C909, PC 235
18 L.F. - 8" C909, PC 235
114 L.F. - 8" C909, PC 235
55 L.F. - 8" C909, PC 235
58 L.F. - 8" C909, PC 235
57 L.F. - 8" C909, PC 235
47 L.F. - 8" C909, PC 235
7 L.F. - 8" C909, PC 235
DETAIL 'A' - SEE THIS SHEET
CAUTION! 8" WATER & 8" SANITARY SEWER CROSSING
CHANNEL 'BB' - SEE SHEET C6.03
DRAIN 'B' - SEE SHEET C6.02
20' OFF-SITE UTILITY ESM'T
20' OFF-SITE UTILITY ESM'T
OFFSITE 33' DRAINAGE ESM'T. (TO EXPIRE UPON INCORPORATION OF FUTURE PLAT)
REMAINING PORTION OF 173.81 AC/ SA SCARECROW, L.P. (DOC. NO. 20219004109, O.P.R.G.C.)
35' UTILITY ESM'T DOC. NO. 202199034494 (O.P.R.G.C.)
8" SS
28' R
140 139 138 137 136 135 134 133 132 131 130 129 128 127 126
141 142 143 144
120 119 118 117 116 115 114 113 112 111 110 121
122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138
125 124 123 122 121 120 119 118 117 116 115 114 113 112 111 110 109 108
109 108 107
98 99 100 101 102 103 104 105 106
97 96 95 94 93 92 91 90 89 88 87 86 85 84 83 82 81 80
79 78 77 76 75 74 73 72 71 70 69 68 67 66 65 64 63

LEGEND

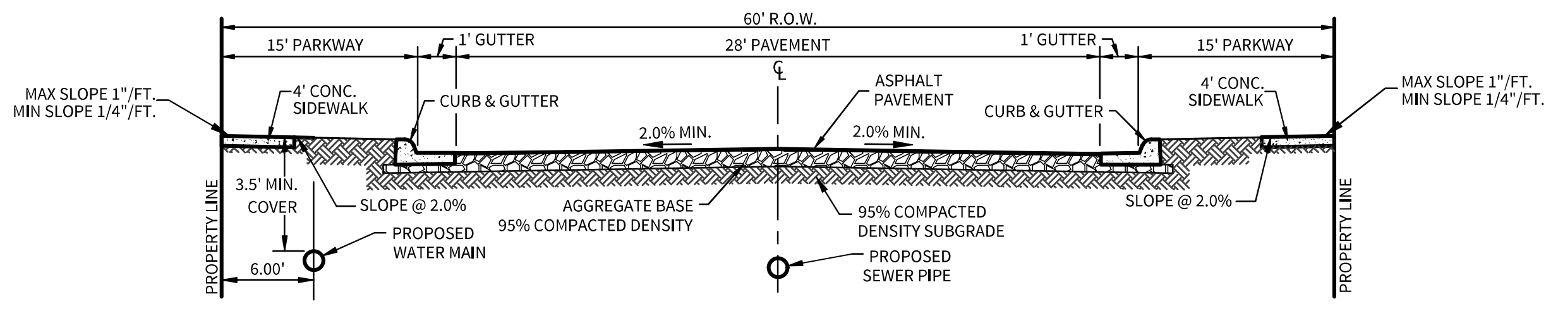
EXISTING SANITARY SEWER	EX.8"SS
PROPOSED SANITARY SEWER	8"SS
EXISTING SANITARY SEWER MANHOLE	●
PROPOSED SANITARY SEWER MANHOLE	●
EXISTING WATER MAIN	EX.8"W
PROPOSED WATER MAIN	8"W
EXISTING STANDARD FIRE HYDRANT	⧓
PROPOSED STANDARD FIRE HYDRANT	⧓
EXISTING STANDARD GATE VALVE	⊣○⊢
PROPOSED STANDARD GATE VALVE	⊣●⊢
EXISTING PERMANENT BLOWOFF	◄
PROPOSED PERMANENT BLOWOFF	◄
ELECTRIC, GAS, TELEPHONE, & CABLE T.V. EASEMENT	E.G.T.CA. ESM'T

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.


60' R.O.W.
15' PARKWAY
1' GUTTER
28' PAVEMENT
1' GUTTER
15' PARKWAY
MAX SLOPE 1"/FT. MIN SLOPE 1/4"/FT.
MAX SLOPE 1"/FT. MIN SLOPE 1/4"/FT.
4' CONC. SIDEWALK
CURB & GUTTER
ASPHALT PAVEMENT
2.0% MIN.
2.0% MIN.
CURB & GUTTER
4' CONC. SIDEWALK
3.5' MIN. COVER
SLOPE @ 2.0%
AGGREGATE BASE 95% COMPACTED DENSITY
95% COMPACTED DENSITY SUBGRADE
SLOPE @ 2.0%
PROPOSED WATER MAIN
PROPOSED SEWER PIPE
PROPERTY LINE
PROPERTY LINE
6.00'

MINOR STREET CROSS-SECTION

N.T.S.

NOTES:

1. LOTS WITH CONFLICTING TRANSFORMER / SECONDARY ENCLOSURE ELECTRIC SERVICE AND WATER METER LOCATION SHALL HAVE WATER METER PLACED 5' FROM PROPERTY LINE WHERE THE CONFLICT OCCURS.
2. DISINFECTION SHALL BE BY MACHINE CHLORINATION.
3. CONTRACTOR TO UTILIZE APPROVED WATER LINE STOPS AND/OR MUELLER INSERTION-VALVES TO MINIMIZE WATER OUTAGES AS REQUIRED BY GVSUD DURING CONSTRUCTION.
4. MOISTURE DENSITY COMPACTION TESTING FREQUENCY- WATER MAIN TRENCHES REQUIRED EVERY 300 L.F. FOR EACH VERTICAL FOOT OF COMPACTED BACKFILL. SERVICES RANDOMLY SELECTED AS REQUIRED BY GVSUD INSPECTOR.
5. ALL TESTING AND TEST REPORTS SHALL BE COORDINATED WITH GVSUD INSPECTOR BY THE CONTRACTOR.
6. ALL DUCTILE IRON PIPE TO BE AMERICAN, ZINC COATED, AWWA/ANSI C-151

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 N/A **Total Acreage** 16.8
Total Linear Footage of Pipe 8" W – 2,054 L.F. **Plat No.** N/A
Meter Size 113 – 5/8" METER , 1 – 3/4" METER (IRR.), 1 – 1" METER
Number of Lots 115 **Job No.** N/A

CUDEENGINEERS.COM

EST. 1980 CUDE ENGINEERS

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

GRACE VALLEY RANCH
PHASE 8

WATER DISTRIBUTION PLAN

DATE
11/11/2025

PROJECT NO.
03499.010

DRAWN BY
JK/AR/JF/RB

CHECKED BY
KMH

REVISIONS
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KYLE M. HUDEK
138753
11/11/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C5.00

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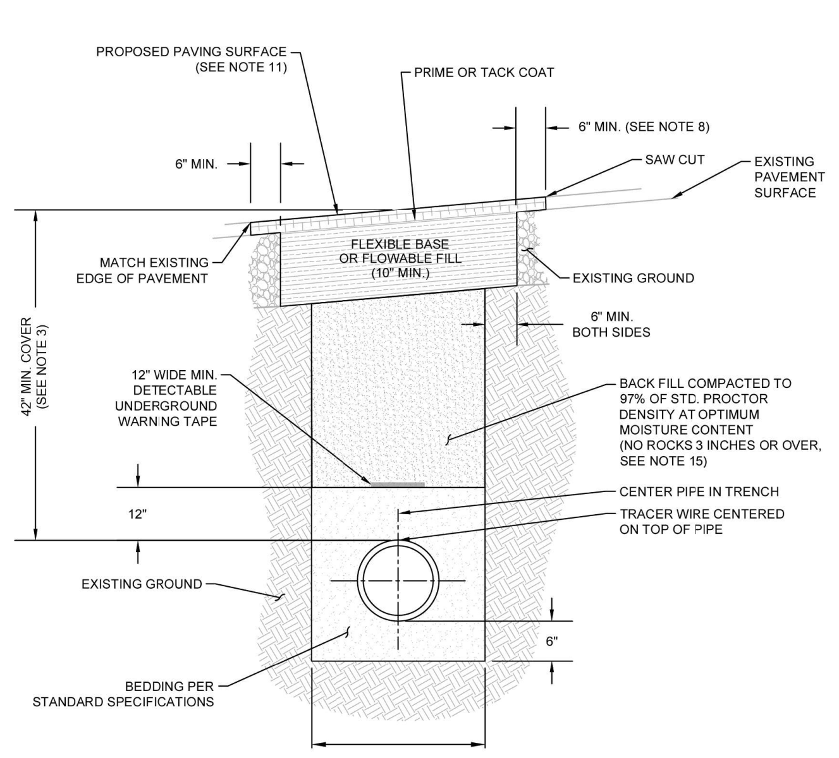

PROPOSED PAVING SURFACE (SEE NOTE 11)
PRIME OR TACK COAT
6" MIN. (SEE NOTE 8)
6" MIN.
SAW CUT
EXISTING PAVEMENT SURFACE
MATCH EXISTING EDGE OF PAVEMENT
FLEXIBLE BASE OR FLOWABLE FILL (10" MIN.)
EXISTING GROUND
6" MIN. BOTH SIDES
42" MIN. COVER (SEE NOTE 3)
12" WIDE MIN. DETECTABLE UNDERGROUND WARNING TAPE
BACK FILL COMPACTED TO 97% OF STD. PROCTOR DENSITY AT OPTIMUM MOISTURE CONTENT (NO ROCKS 3 INCHES OR OVER, SEE NOTE 15)
12"
CENTER PIPE IN TRENCH
TRACER WIRE CENTERED ON TOP OF PIPE
EXISTING GROUND
6"
BEDDING PER STANDARD SPECIFICATIONS
PIPE OD PLUS 6" EACH SIDE. PIPE OD PLUS 24" MAX.

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
REVISED: JANUARY 2024

TRENCH DETAIL FOR PAVED AREAS
(I OF 2)

THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.

DETAIL NO. W-1

NOTES:

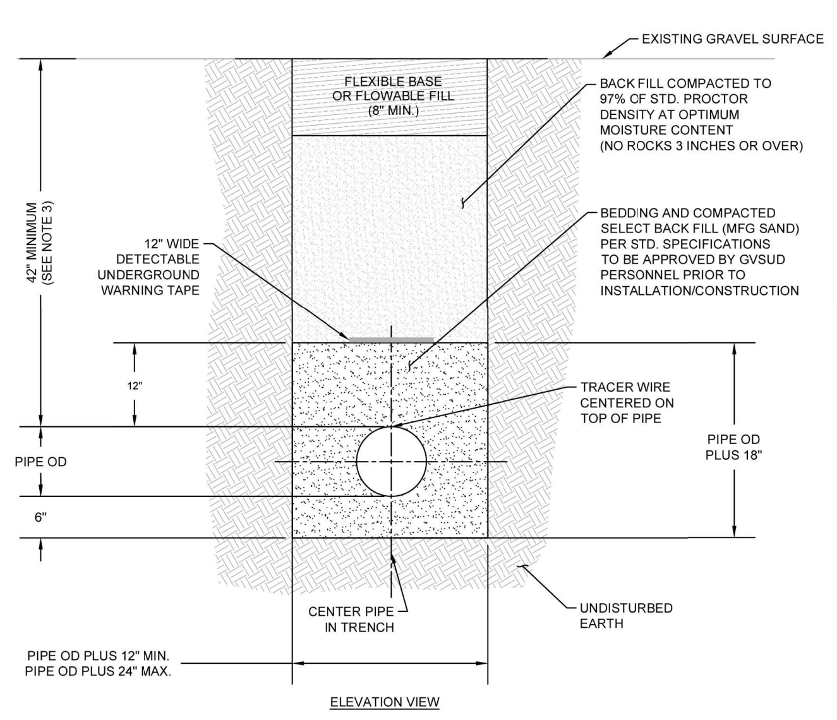
1. ALL WASTEWATER PVC PIPING SHALL BE GREEN IN COLOR. NO WATER DESIGNATED PIPE SHALL BE USED IN WASTEWATER WITHOUT PRIOR APPROVAL FROM THE ENGINEER.
2. ALL WATER PIPING SHALL HAVE A MINIMUM PRESSURE CLASS OF 235 PSI WATER PVC PIPING SHALL BE BLUE IN COLOR.
3. ALL WATER LINES AND WASTEWATER FORCEMAIN SHALL HAVE 42 INCH MINIMUM COVER AND 72 INCH MAXIMUM COVER. WASTEWATER GRAVITY LINES SHALL HAVE 42 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. THE EXISTING PAVED SURFACE SHALL BE SAW CUT IN A STRAIGHT LINE, A MINIMUM OF 12 INCHES WIDER THAN UNDISTURBED SIDES OF THE TRENCH AND SYMMETRICAL ABOUT THE CENTER LINE OF THE EXCAVATION.
8. ANY CONCRETE PAVING SHALL BE CUT 6 INCHES WIDER THAN UNDISTURBED SIDES OF EXCAVATION.
9. 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.
10. 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.
11. 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.
12. TACK COAT ALL EXPOSED EDGES AND SURFACES.
13. 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 02770.
    - ASPHALT PAVING: SHALL BE IN ACCORDANCE WITH SPECIFICATION 02740. HOT MIXED ASPHALT CONCRETE TYPE 'D' SHALL BE USED FOR LIFT THICKNESS UP TO 2 INCHES, AND TYPE 'C' FOR LIFT THICKNESS OVER 2 INCHES AND UP TO 3 INCHES. LIFT THICKNESS SHALL NOT BE MORE THAN 3 INCHES.
14. 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 DETECTABLE UNDERGROUND WARNING TAPE SHALL CONFORM TO THE SPECIFICATIONS AND COLOR CODED IN ACCORDANCE WITH THE AMERICAN PUBLIC WORKS ASSOCIATION UNIFORM COLOR CODE.
15. PIPE BEDDING SHALL BE PLACED BEFORE PIPING IS LAID, UP TO BOTTOM OF PIPE, AND COMPACTED TO 97% STANDARD PROCTOR DENSITY.
16. PLACE PIPE BEDDING IN 12 INCH LIFTS AFTER PIPE IS LAID TO 12 INCHES ABOVE THE PIPE.
17. SELECT BACKFILL MATERIAL PLACED TO REQUIRED HEIGHT IN 6 INCH LIFTS.

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
REVISED: JANUARY 2024

TRENCH DETAIL FOR PAVED AREAS
(2 OF 2)

THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.

DETAIL NO. W-1


EXISTING GRAVEL SURFACE
FLEXIBLE BASE OR FLOWABLE FILL (8" MIN.)
BACK FILL COMPACTED TO 97% OF STD. PROCTOR DENSITY AT OPTIMUM MOISTURE CONTENT (NO ROCKS 3 INCHES OR OVER)
42" MINIMUM (SEE NOTE 3)
12" WIDE DETECTABLE UNDERGROUND WARNING TAPE
BEDDING AND COMPACTED SELECT BACK FILL (MFG SAND) PER STD. SPECIFICATIONS TO BE APPROVED BY GVSUD PERSONNEL PRIOR TO INSTALLATION/CONSTRUCTION
12"
TRACER WIRE CENTERED ON TOP OF PIPE
PIPE OD
PIPE OD PLUS 18"
6"
CENTER PIPE IN TRENCH
UNDISTURBED EARTH
PIPE OD PLUS 12" MIN. PIPE OD PLUS 24" MAX.

ELEVATION VIEW

NOTES:

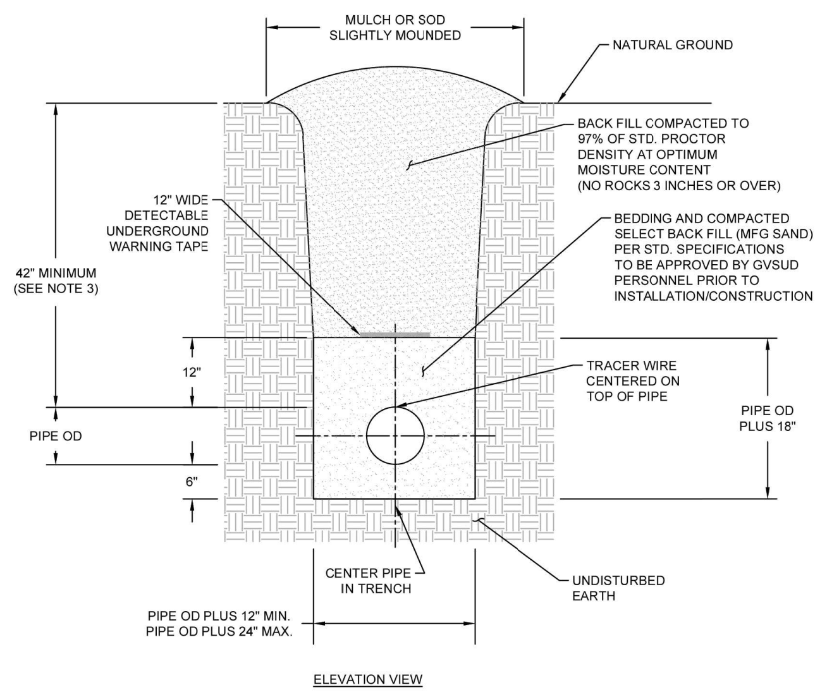
1. ALL WASTEWATER PVC PIPING SHALL BE GREEN IN COLOR. NO WATER DESIGNATED PIPE WILL BE USED IN WASTEWATER.
2. ALL WATER PIPING SHALL HAVE A MINIMUM PRESSURE CLASS OF 235 PSI. WATER PVC PIPING SHALL BE COLOR CODED BLUE.
3. ALL WATER LINES AND WASTEWATER FORCEMAIN SHALL HAVE 42 INCHES MINIMUM COVER AND 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
REVISED: JANUARY 2024

TRENCH DETAIL FOR GRAVEL SURFACED AREAS

THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.

DETAIL NO. W-2


MULCH OR SOD SLIGHTLY MOUNDED
NATURAL GROUND
BACK FILL COMPACTED TO 97% OF STD. PROCTOR DENSITY AT OPTIMUM MOISTURE CONTENT (NO ROCKS 3 INCHES OR OVER)
12" WIDE DETECTABLE UNDERGROUND WARNING TAPE
BEDDING AND COMPACTED SELECT BACK FILL (MFG SAND) PER STD. SPECIFICATIONS TO BE APPROVED BY GVSUD PERSONNEL PRIOR TO INSTALLATION/CONSTRUCTION
42" MINIMUM (SEE NOTE 3)
12"
TRACER WIRE CENTERED ON TOP OF PIPE
PIPE OD
PIPE OD PLUS 18"
6"
CENTER PIPE IN TRENCH
UNDISTURBED EARTH
PIPE OD PLUS 12" MIN. PIPE OD PLUS 24" MAX.

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% AASHTO 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
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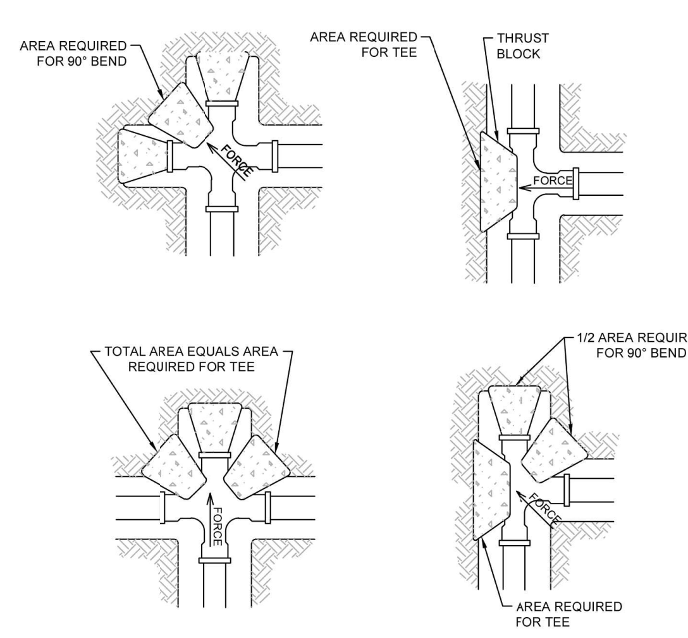
TRENCH DETAIL FOR NON-PAVED AREAS

THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.

DETAIL NO. W-3


AREA REQUIRED FOR 90° BEND
FORCE
AREA REQUIRED FOR TEE
THRUST BLOCK
FORCE
TOTAL AREA EQUALS AREA REQUIRED FOR TEE
FORCE
1/2 AREA REQUIRED FOR 90° BEND
FORCE
AREA REQUIRED FOR TEE

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. IF 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
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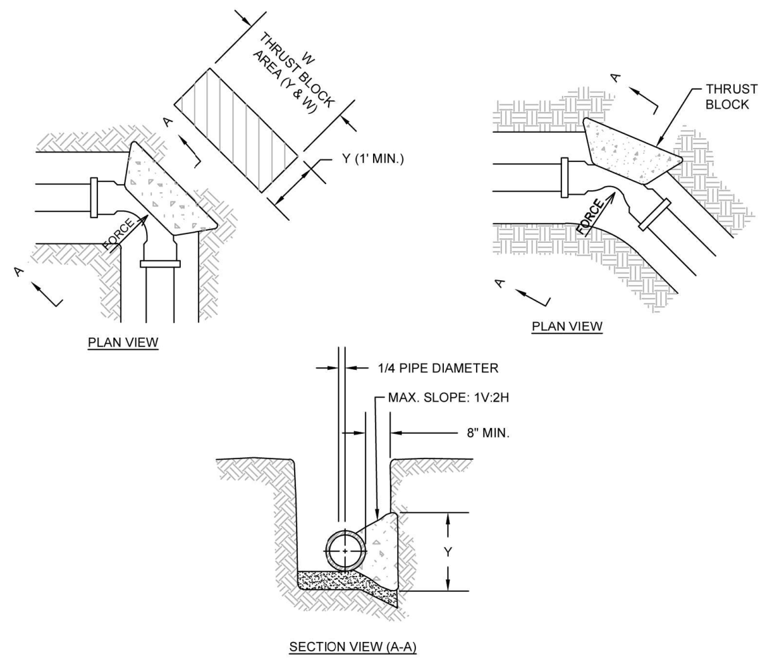
CONCRETE THRUST BLOCKING
(1 OF 2)

THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.

DETAIL NO. W-4


W THRUST BLOCK AREA (Y & W)
A
Y (1' MIN.)
FORCE
A
PLAN VIEW
THRUST BLOCK
A
FORCE
A
PLAN VIEW
1/4 PIPE DIAMETER
MAX. SLOPE: 1V:2H
8" MIN.
Y
SECTION VIEW (A-A)

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. IF 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
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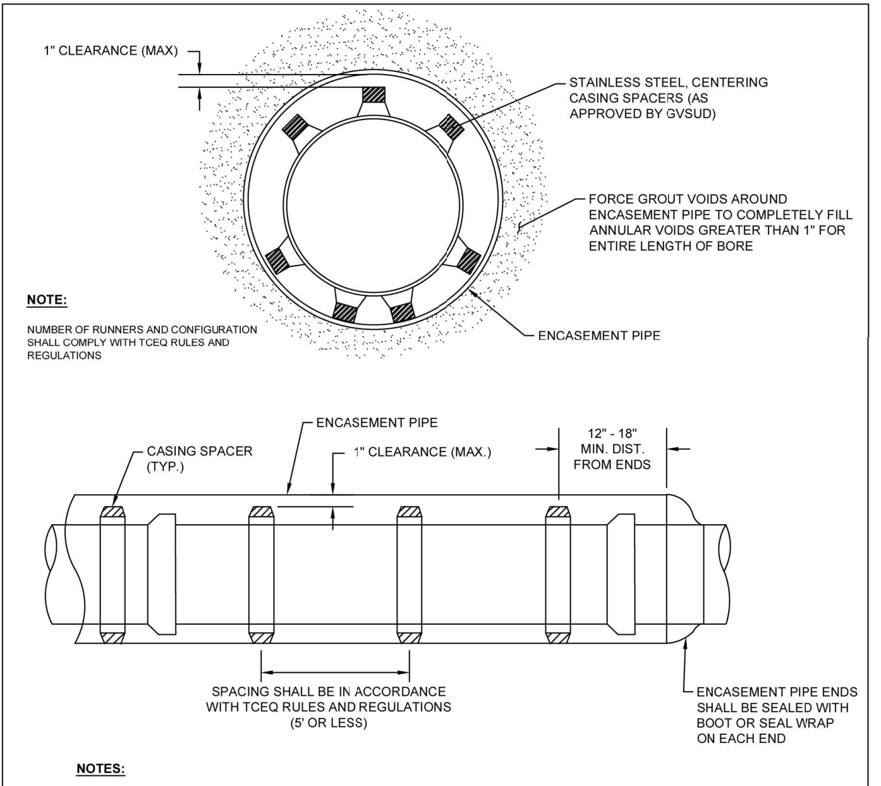
CONCRETE THRUST BLOCKING
(2 OF 2)

THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.

DETAIL NO. W-4


1" CLEARANCE (MAX)
STAINLESS STEEL, CENTERING CASING SPACERS (AS APPROVED BY GVSUD)
FORCE GROUT VOIDS AROUND ENCASEMENT PIPE TO COMPLETELY FILL ANNULAR VOIDS GREATER THAN 1" FOR ENTIRE LENGTH OF BORE
ENCASEMENT PIPE
ENCASEMENT PIPE
CASING SPACER (TYP.)
1" CLEARANCE (MAX.)
12" - 18" MIN. DIST. FROM ENDS
SPACING SHALL BE IN ACCORDANCE WITH TCEQ RULES AND REGULATIONS (5' OR LESS)
ENCASEMENT PIPE ENDS SHALL BE SEALED WITH BOOT OR SEAL WRAP ON EACH END

NOTE:

NUMBER OF RUNNERS AND CONFIGURATION SHALL COMPLY 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 CREEK/STREAM.
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
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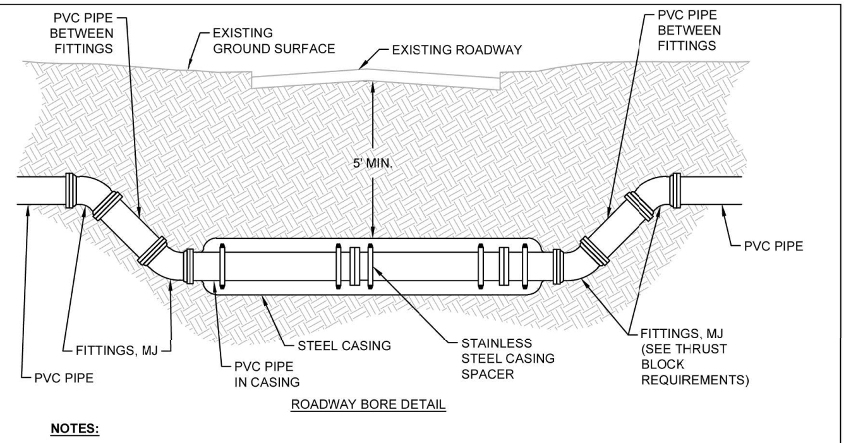
ENCASEMENT DETAIL WITH ENCASEMENT SPACERS

THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.

DETAIL NO. W-6


PVC PIPE BETWEEN FITTINGS
EXISTING GROUND SURFACE
EXISTING ROADWAY
PVC PIPE BETWEEN FITTINGS
5' MIN.
PVC PIPE
FITTINGS, MJ
STEEL CASING
STAINLESS STEEL CASING SPACER
FITTINGS, MJ (SEE THRUST BLOCK REQUIREMENTS)
PVC PIPE
PVC PIPE IN CASING

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 AWWA/ANSI 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./FT.)
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
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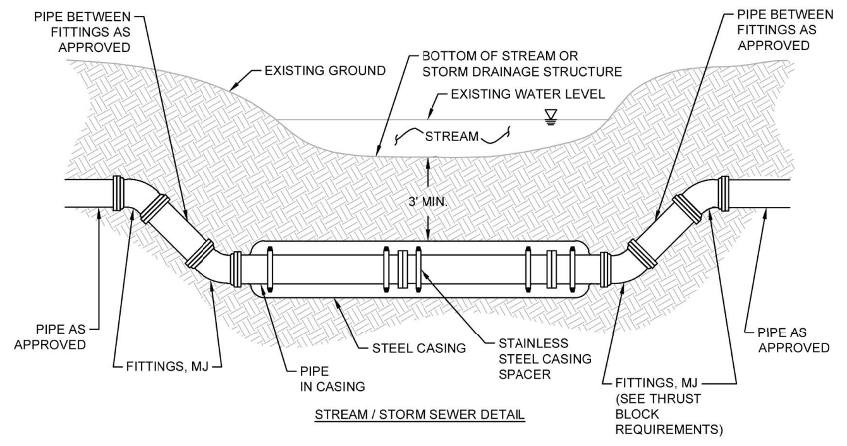
INSTALLATION OF PIPE IN STEEL ENCASEMENT UNDER ROADS

THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.

DETAIL NO. W-7


PIPE BETWEEN FITTINGS AS APPROVED
EXISTING GROUND
BOTTOM OF STREAM OR STORM DRAINAGE STRUCTURE
EXISTING WATER LEVEL
STREAM
PIPE BETWEEN FITTINGS AS APPROVED
3' MIN.
PIPE AS APPROVED
FITTINGS, MJ
STEEL CASING
STAINLESS STEEL CASING SPACER
PIPE IN CASING
FITTINGS, MJ (SEE THRUST BLOCK REQUIREMENTS)
PIPE AS APPROVED

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./FT.)
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
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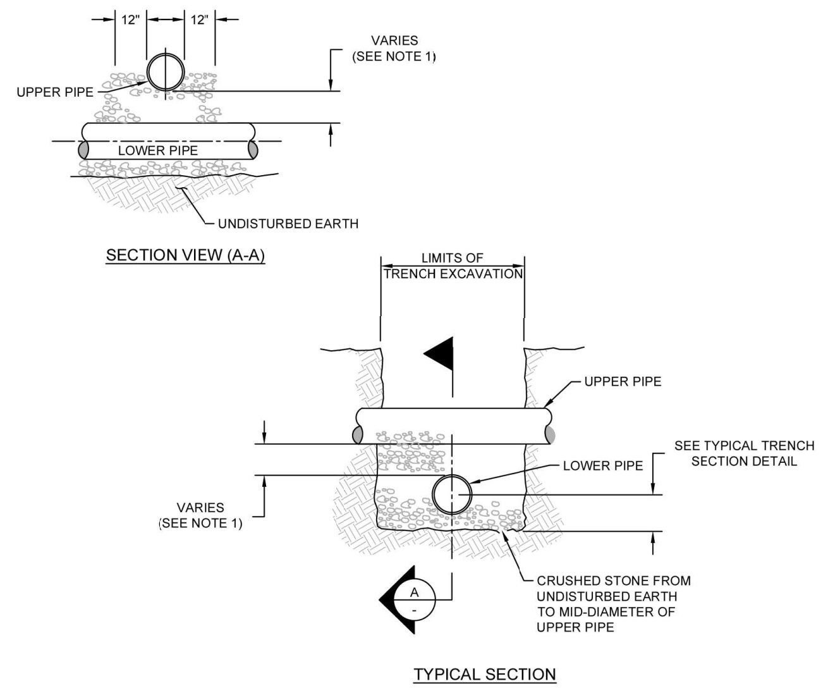
INSTALLATION OF PIPE IN STEEL ENCASEMENT UNDER STREAMS / STORM SEWERS

THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.

DETAIL NO. W-8


12"
12"
VARIES (SEE NOTE 1)
UPPER PIPE
LOWER PIPE
UNDISTURBED EARTH
SECTION VIEW (A-A)
LIMITS OF TRENCH EXCAVATION
UPPER PIPE
SEE TYPICAL TRENCH SECTION DETAIL
LOWER PIPE
VARIES (SEE NOTE 1)
A
CRUSHED STONE FROM UNDISTURBED EARTH TO MID-DIAMETER OF UPPER PIPE
TYPICAL SECTION

NOTES:

1. MAINTAIN A MINIMUM 5 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 5 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 9 FEET HORIZONTALLY FROM CROSSINGS.

GREEN VALLEY SPECIAL UTILITY DISTRICT
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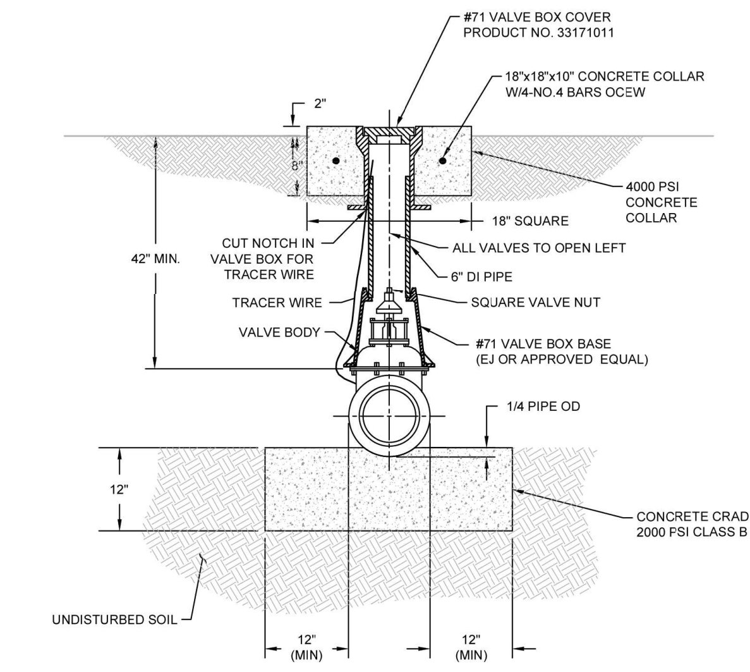
UTILITIES CROSSING DETAIL

THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.

DETAIL NO. W-10


#71 VALVE BOX COVER PRODUCT NO. 33171011
18"x18"x10" CONCRETE COLLAR W/4-NO.4 BARS OCEW
2"
8"
4000 PSI CONCRETE COLLAR
18" SQUARE
42" MIN.
CUT NOTCH IN VALVE BOX FOR TRACER WIRE
ALL VALVES TO OPEN LEFT
6" DI PIPE
TRACER WIRE
SQUARE VALVE NUT
VALVE BODY
#71 VALVE BOX BASE (EJ OR APPROVED EQUAL)
1/4 PIPE OD
12"
CONCRETE CRADLE 2000 PSI CLASS B (MIN.)
UNDISTURBED SOIL
12" (MIN)
12" (MIN)

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 SCHEDULE 80 PIPE.
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 5 FEET, ADD EXTENSION.
6. VALVE TURNS UNDERNEATH CAP.

GREEN VALLEY SPECIAL UTILITY DISTRICT
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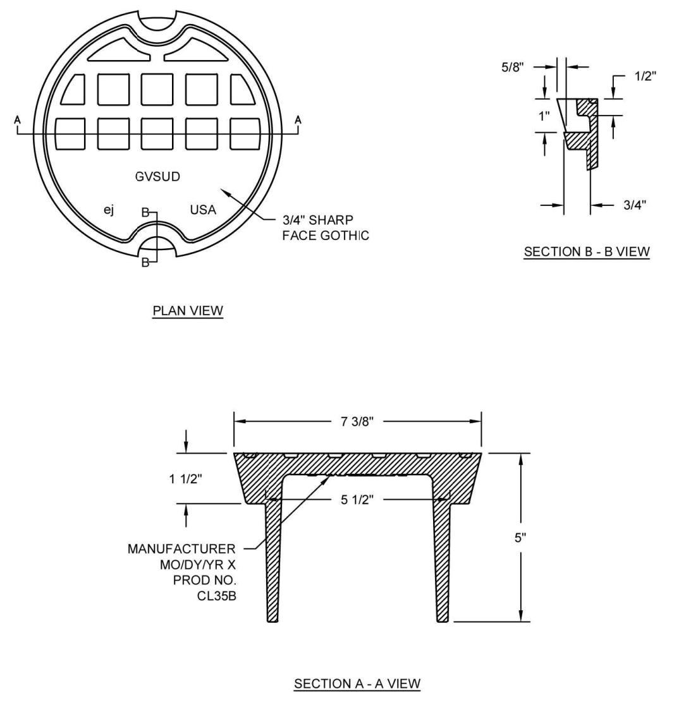
NON-RISING STEM VERTICAL GATE VALVE WITH BOX ASSEMBLY

THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.

DETAIL NO. W-11


A
A
GVSUD
ej
B
USA
B
3/4" SHARP FACE GOTHIC
PLAN VIEW
5/8"
1/2"
1"
3/4"
SECTION B - B VIEW
7 3/8"
1 1/2"
5 1/2"
5"
MANUFACTURER MO/DY/YR X PROD NO. CL35B
SECTION A - A VIEW

NOTES:

1. VALVE BOX COVER SHALL BE EJ GROUP, INC. $71 VALVE BOX COVER PRODUCT NUMBER 33171011, 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
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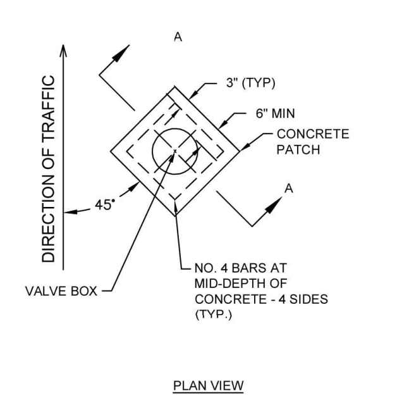
VALVE BOX CASTING LID

THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.

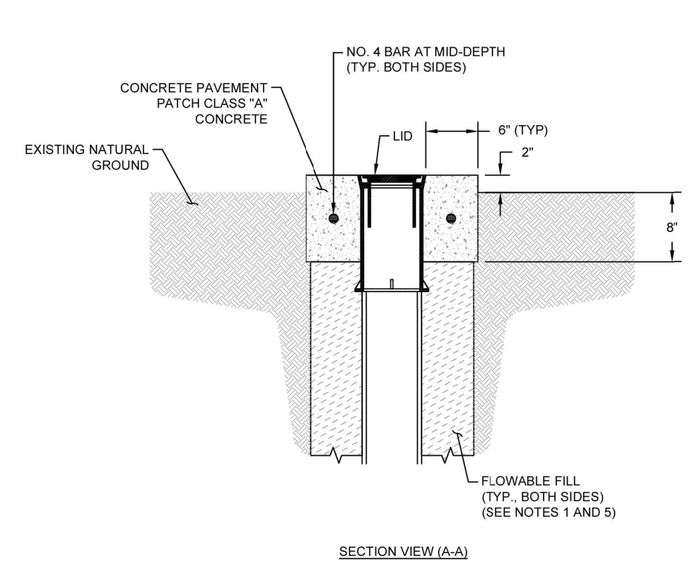
DETAIL NO. W-12


DIRECTION OF TRAFFIC
A
3" (TYP)
6" MIN
CONCRETE PATCH
45°
A
VALVE BOX
NO. 4 BARS AT MID-DEPTH OF CONCRETE - 4 SIDES (TYP.)

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 VALVE.
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 20 INCHES DEEP, CONTRACTOR MAY ELECT TO FILL EXCAVATION 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.


NO. 4 BAR AT MID-DEPTH (TYP. BOTH SIDES)
CONCRETE PAVEMENT PATCH CLASS "A" CONCRETE
EXISTING NATURAL GROUND
LID
6" (TYP)
2"
8"
FLOWABLE FILL (TYP., BOTH SIDES) (SEE NOTES 1 AND 5)

SECTION VIEW (A-A)

GREEN VALLEY SPECIAL UTILITY DISTRICT
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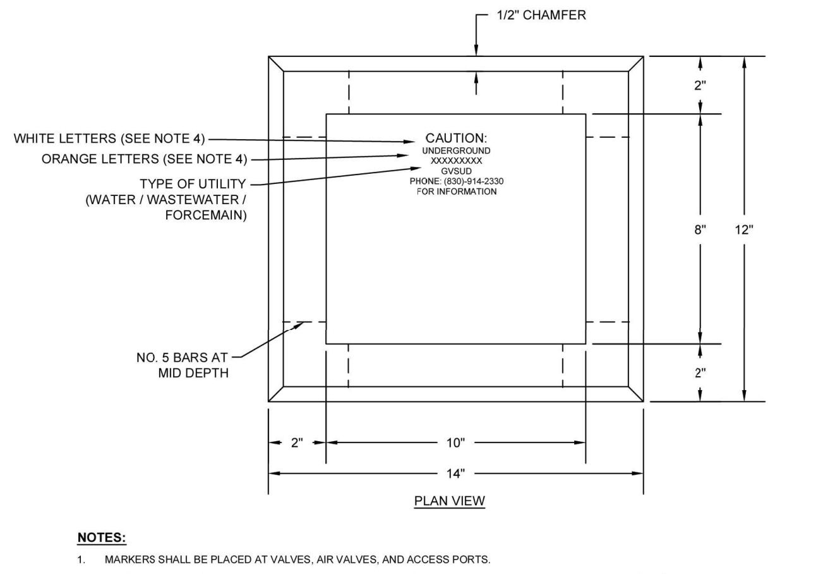
REVISED: JANUARY 2024

VALVE BOX ADJUSTMENT OUTSIDE OF PAVEMENT

THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.

DETAIL NO. W-14

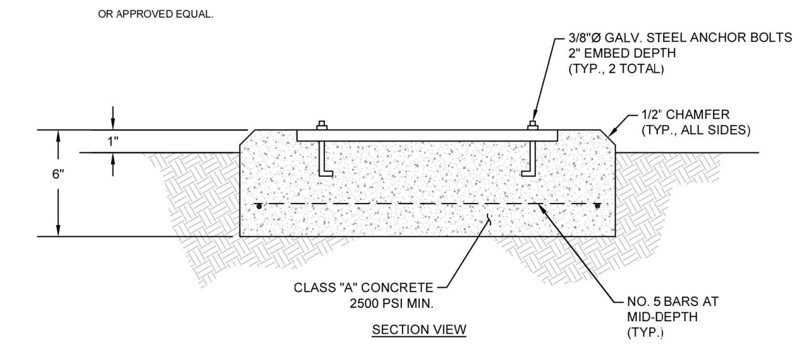

1/2" CHAMFER
WHITE LETTERS (SEE NOTE 4)
ORANGE LETTERS (SEE NOTE 4)
TYPE OF UTILITY (WATER / WASTEWATER / FORCEMAIN)
CAUTION:
UNDERGROUND
XXXXXXXXX
GVSUD
PHONE: (830)-914-2330
FOR INFORMATION
2"
8"
12"
2"
NO. 5 BARS AT MID DEPTH
2"
10"
14"

PLAN VIEW

NOTES:

1. MARKERS SHALL BE PLACED AT VALVES, AIR VALVES, AND ACCESS PORTS.
2. PLACE WATER/WASTEWATER LINE MARKERS AT EVERY FENCE, ROAD CROSSING, AND AT 500' INTERVALS ALONG THE PIPELINE.
3. SIGNS SHALL BE 20 GA. WITH BLACK BACKGROUND FINISH.
4. LETTERS USED FOR "CAUTION" SHALL BE WHITE. ALL REMAINING LETTERS SHALL BE ORANGE.
5. MARKERS SHALL BE OBTAINED FROM:
   5.1. RURAL WATER SPECIALTY CO.
   POST OFFICE BOX 927
   TULSA, OKLAHOMA 74101

   OR APPROVED EQUAL.


3/8"Ø GALV. STEEL ANCHOR BOLTS 2" EMBED DEPTH (TYP., 2 TOTAL)
1/2" CHAMFER (TYP., ALL SIDES)
1"
6"
CLASS "A" CONCRETE 2500 PSI MIN.
NO. 5 BARS AT MID-DEPTH (TYP.)

SECTION VIEW

GREEN VALLEY SPECIAL UTILITY DISTRICT
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UTILITY MARKER DETAIL

THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.

DETAIL NO. W-16

CUDEENGINEERS.COM

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 8

WATER DISTRIBUTION STANDARD DETAILS

DATE
11/06/2025

PROJECT NO.
03499.010

DRAWN BY
JK/AR/JF/RB

CHECKED BY
KMH

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

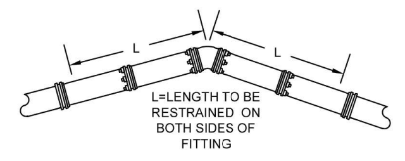
KYLE M. HUDEK
138753
11/11/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C5.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.

P:\03499\010\2-DWG\4-Plans\C5.D1 - WDDP.dwg 2025/11/06 11:01am arodriguez


L
L
L=LENGTH TO BE RESTRAINED ON BOTH SIDES OF FITTING

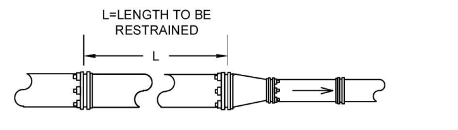
RESTRAINED LENGTH FOR BENDS

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	26
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
REVISED: JANUARY 2024
BEND RESTRAINED LENGTH DESIGN
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-18


L=LENGTH TO BE RESTRAINED
L

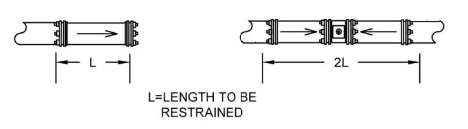
RESTRAINED LENGTH FOR REDUCERS

PIPE SIZE (INCHES)	SMALL SIZE (INCHES)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 PSI
6	4	30
8	4	55
8	6	32
12	4	95
12	6	80
12	8	58
16	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
REVISED: JANUARY 2024
REDUCER RESTRAINED LENGTH DESIGN
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-19


L
2L
L=LENGTH TO BE RESTRAINED

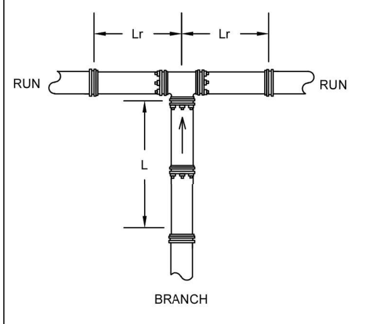
RESTRAINED LENGTH FOR DEAD ENDS/INLINE VALVES

PIPE SIZE (INCHES)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 PSI
4	42
6	59
8	77
12	109
16	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
REVISED: JANUARY 2024
VALVE AND DEAD END RESTRAINED LENGTH DESIGN
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-20


Lr
Lr
RUN
RUN
L
BRANCH

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

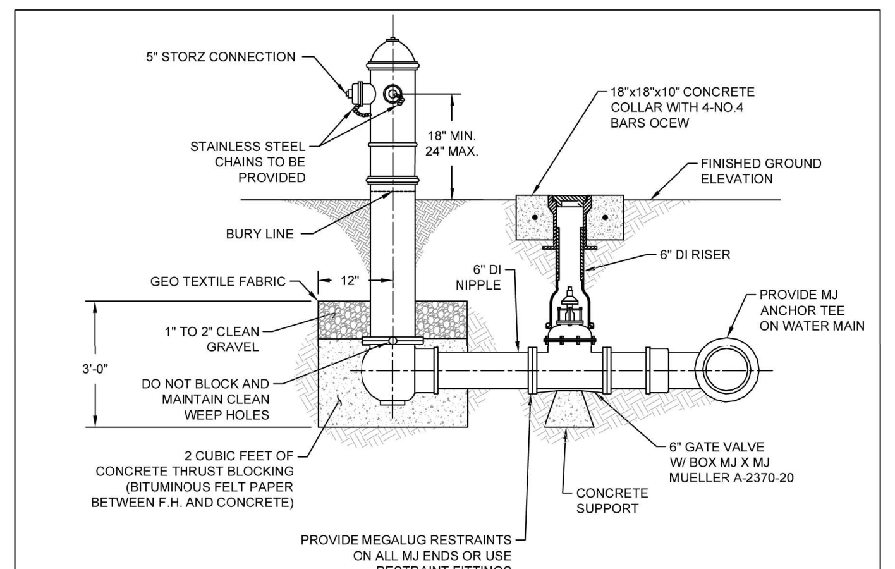
NOTES:

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.

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	1
8	6	0	59
8	6	5	28
8	6	10	1
8	8	0	77
8	8	5	53
8	8	10	30
8	8	15	6
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

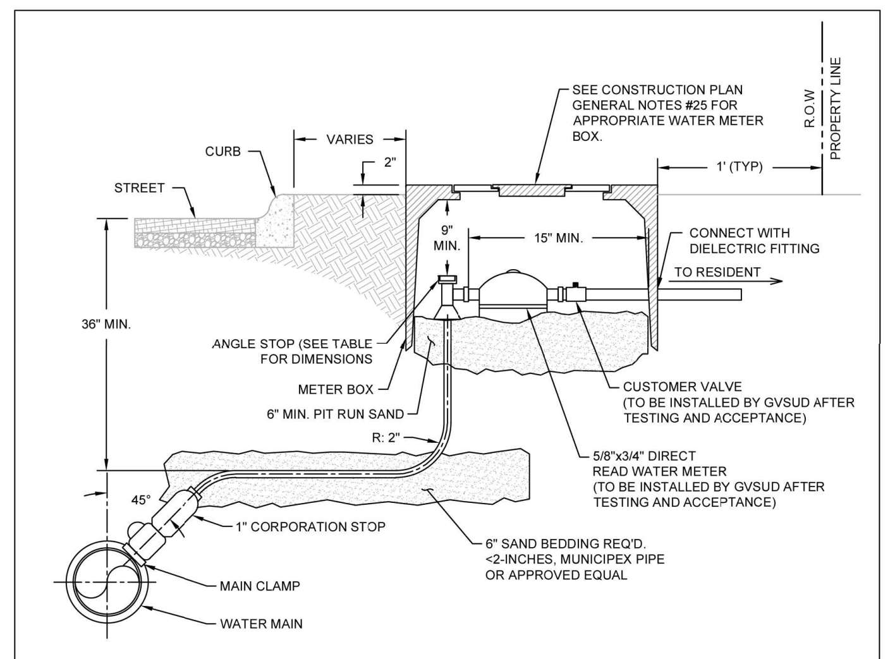
GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
REVISED: JANUARY 2024
TEE RESTRAINED LENGTH DESIGN
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-21


5" STORZ CONNECTION
STAINLESS STEEL CHAINS TO BE PROVIDED
18" MIN. 24" MAX.
18"x18"x10" CONCRETE COLLAR WITH 4-NO.4 BARS OCEW
FINISHED GROUND ELEVATION
BURY LINE
GEO TEXTILE FABRIC
12"
6" DI NIPPLE
6" DI RISER
PROVIDE MJ ANCHOR TEE ON WATER MAIN
1" TO 2" CLEAN GRAVEL
3'-0"
DO NOT BLOCK AND MAINTAIN CLEAN WEEP HOLES
2 CUBIC FEET OF CONCRETE THRUST BLOCKING (BITUMINOUS FELT PAPER BETWEEN F.H. AND CONCRETE)
6" GATE VALVE W/ BOX MJ X MJ MUELLER A-2370-20
CONCRETE SUPPORT
PROVIDE MEGALUG RESTRAINTS ON ALL MJ ENDS OR USE RESTRAINT FITTINGS

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 3 FEET OF CLEARANCE SURROUNDING HYDRANT.
3. HYDRANTS SHALL BE A MINIMUM DISTANCE OF 3 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 TYPES) 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 AND 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 FLEXIFLAG #PP68802.

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


R.O.W PROPERTY LINE
SEE CONSTRUCTION PLAN GENERAL NOTES #25 FOR APPROPRIATE WATER METER BOX.
CURB
VARIES
2"
STREET
1' (TYP)
9" MIN.
15" MIN.
CONNECT WITH DIELECTRIC FITTING
TO RESIDENT
36" MIN.
ANGLE STOP (SEE TABLE FOR DIMENSIONS
METER BOX
6" MIN. PIT RUN SAND
R: 2"
CUSTOMER VALVE (TO BE INSTALLED BY GVSUD AFTER TESTING AND ACCEPTANCE)
5/8"x3/4" DIRECT READ WATER METER (TO BE INSTALLED BY GVSUD AFTER TESTING AND ACCEPTANCE)
45°
1" CORPORATION STOP
6" SAND BEDDING REQ'D. <2-INCHES, MUNICIPEX PIPE OR APPROVED EQUAL
MAIN CLAMP
WATER MAIN

MAIN SIZE	METER SIZE	MAIN SADDLE	CORPORATION	ANGLE STOP
<12"	5/8" OR 3/4"	S-91804 IP	H-15028 IP 1"	B-24258N: 1"x 3/4"
<12"	1"	S-91804 IP	H-15028 IP 1"	B-24258N: 1"X1"

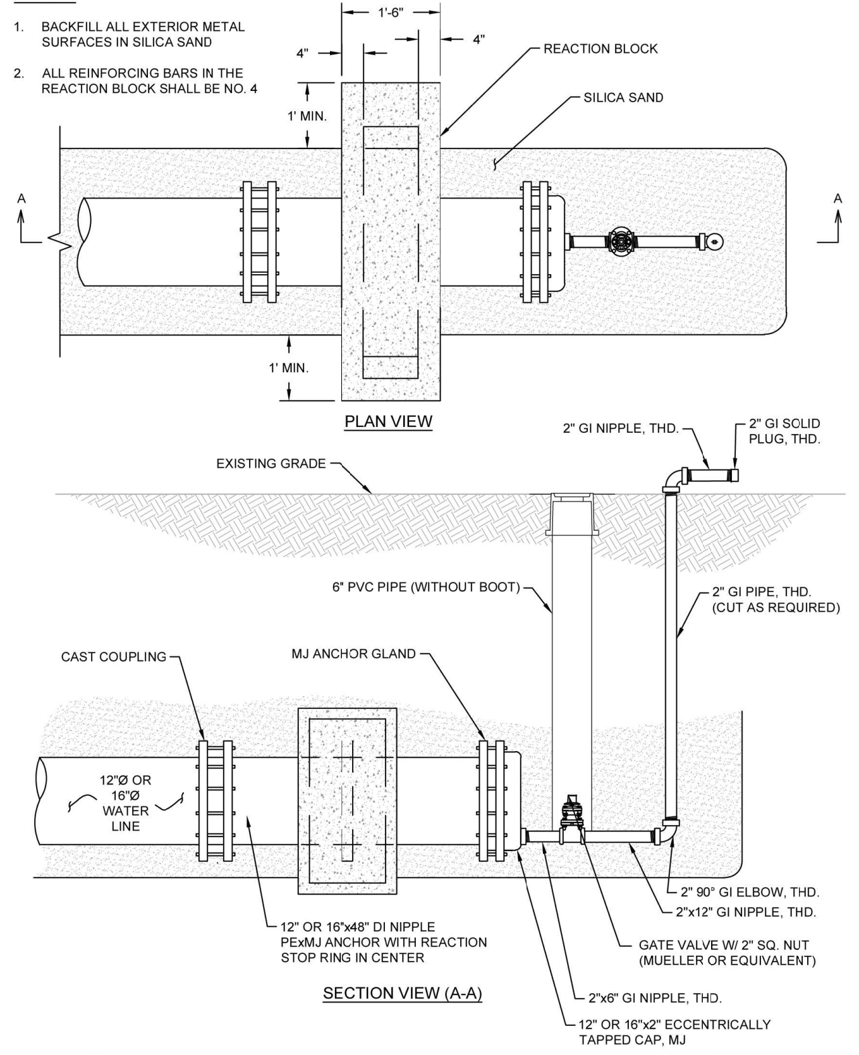
NOTES:

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

NOTES:

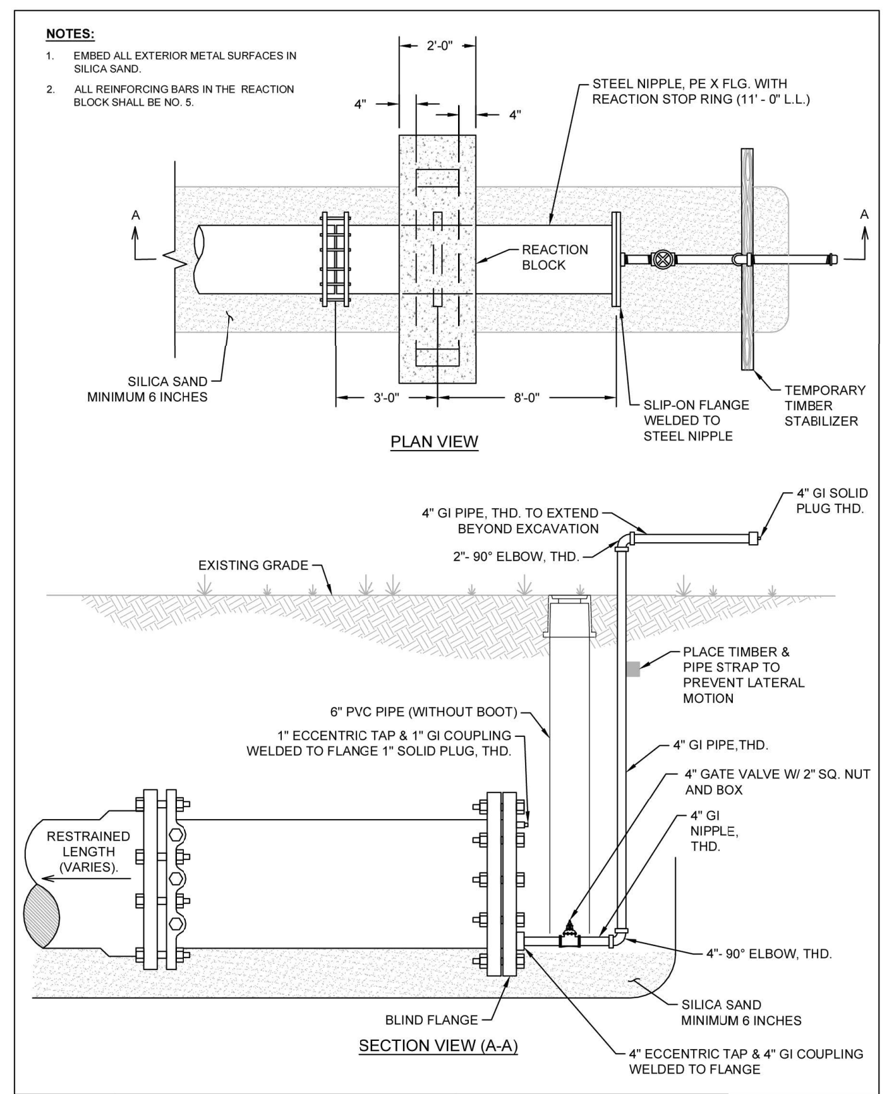
1. BACKFILL ALL EXTERIOR METAL SURFACES IN SILICA SAND
2. ALL REINFORCING BARS IN THE REACTION BLOCK SHALL BE NO. 4


1'-6"
4"
4"
REACTION BLOCK
SILICA SAND
1' MIN.
A
A
1' MIN.
PLAN VIEW
2" GI NIPPLE, THD.
2" GI SOLID PLUG, THD.
EXISTING GRADE
6" PVC PIPE (WITHOUT BOOT)
2" GI PIPE, THD. (CUT AS REQUIRED)
CAST COUPLING
MJ ANCHOR GLAND
12"Ø OR 16"Ø WATER LINE
2" 90° GI ELBOW, THD.
2"x12" GI NIPPLE, THD.
12" OR 16"x48" DI NIPPLE PExMJ ANCHOR WITH REACTION STOP RING IN CENTER
GATE VALVE W/ 2" SQ. NUT (MUELLER OR EQUIVALENT)
SECTION VIEW (A-A)
2"x6" GI NIPPLE, THD.
12" OR 16"x2" ECCENTRICALLY TAPPED CAP, MJ

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

NOTES:

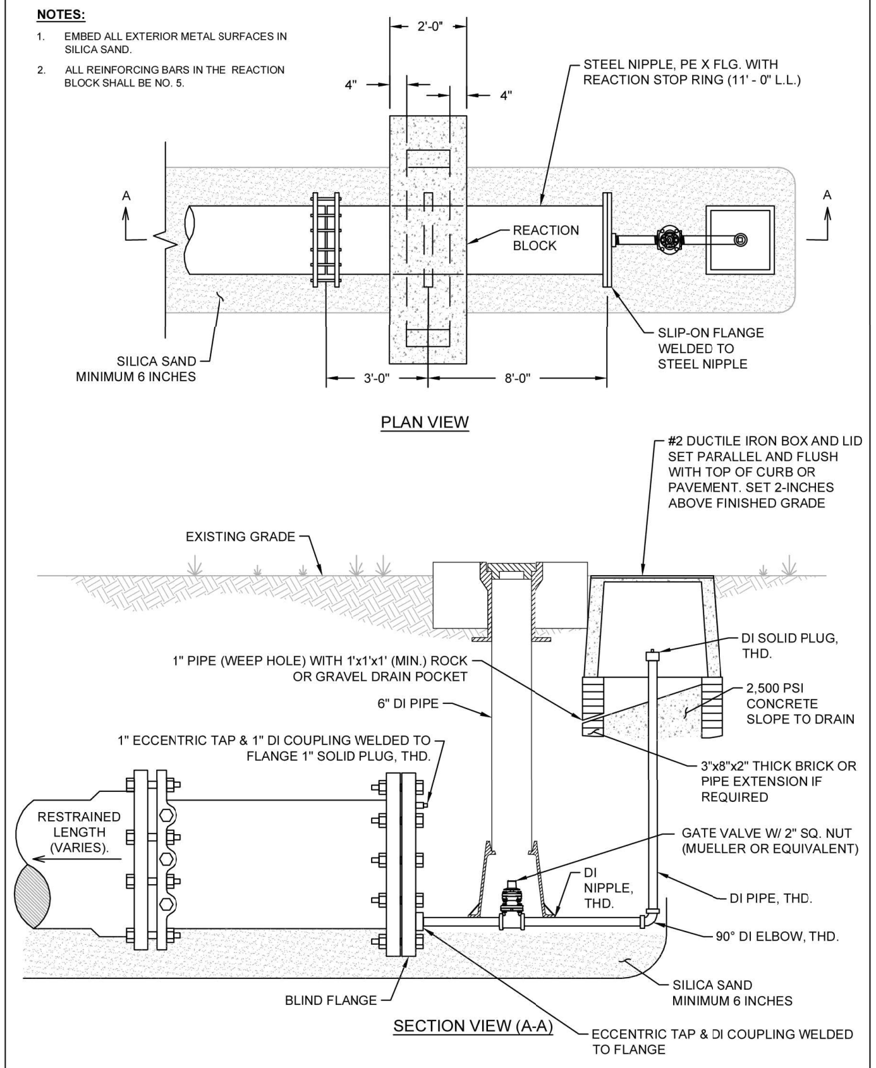
1. EMBED ALL EXTERIOR METAL SURFACES IN SILICA SAND.
2. ALL REINFORCING BARS IN THE REACTION BLOCK SHALL BE NO. 5.


2'-0"
4"
4"
STEEL NIPPLE, PE X FLG. WITH REACTION STOP RING (11' - 0" L.L.)
A
A
REACTION BLOCK
SILICA SAND MINIMUM 6 INCHES
3'-0"
8'-0"
SLIP-ON FLANGE WELDED TO STEEL NIPPLE
TEMPORARY TIMBER STABILIZER
PLAN VIEW
4" GI PIPE, THD. TO EXTEND BEYOND EXCAVATION
4" GI SOLID PLUG THD.
2"- 90° ELBOW, THD.
EXISTING GRADE
PLACE TIMBER & PIPE STRAP TO PREVENT LATERAL MOTION
6" PVC PIPE (WITHOUT BOOT)
1" ECCENTRIC TAP & 1" GI COUPLING WELDED TO FLANGE 1" SOLID PLUG, THD.
4" GI PIPE,THD.
4" GATE VALVE W/ 2" SQ. NUT AND BOX
4" GI NIPPLE, THD.
RESTRAINED LENGTH (VARIES).
4"- 90° ELBOW, THD.
SILICA SAND MINIMUM 6 INCHES
BLIND FLANGE
SECTION VIEW (A-A)
4" ECCENTRIC TAP & 4" GI COUPLING WELDED TO FLANGE

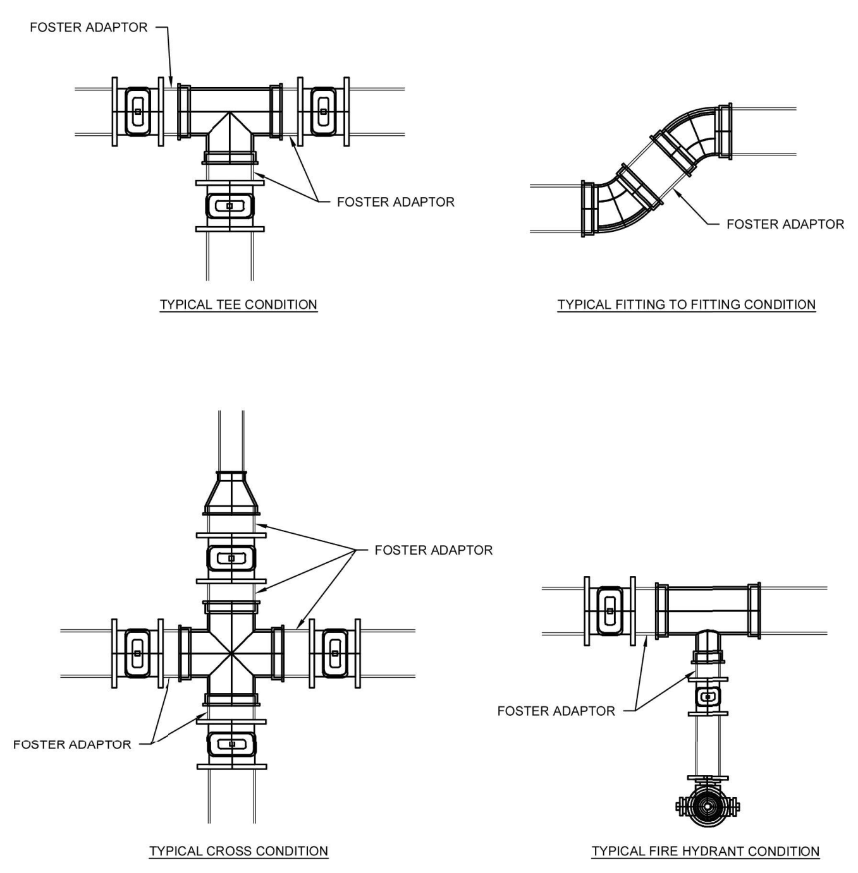
GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
REVISED: JANUARY 2024
4" TEMPORARY BLOW-OFF ASSEMBLY ON 20" OR LARGER MAINS (JOINT RESTRAINT)
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-26

NOTES:

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


2'-0"
4"
4"
STEEL NIPPLE, PE X FLG. WITH REACTION STOP RING (11' - 0" L.L.)
A
A
REACTION BLOCK
SILICA SAND MINIMUM 6 INCHES
3'-0"
8'-0"
SLIP-ON FLANGE WELDED TO STEEL NIPPLE
PLAN VIEW
#2 DUCTILE IRON BOX AND LID SET PARALLEL AND FLUSH WITH TOP OF CURB OR PAVEMENT. SET 2-INCHES ABOVE FINISHED GRADE
EXISTING GRADE
DI SOLID PLUG, THD.
2,500 PSI CONCRETE SLOPE TO DRAIN
1" PIPE (WEEP HOLE) WITH 1'x1'x1' (MIN) ROCK OR GRAVEL DRAIN POCKET
8" DI PIPE
1" ECCENTRIC TAP & 1" DI COUPLING WELDED TO FLANGE 1" SOLID PLUG, THD.
RESTRAINED LENGTH (VARIES)
GATE VALVE W/ 2" SQ. NUT (MUELLER OR EQUIVALENT)
DI NIPPLE, THD.
DI PIPE, THD.
90° DI ELBOW, THD.
SILICA SAND MINIMUM 6 INCHES
BLIND FLANGE
SECTION VIEW (A-A)
ECCENTRIC TAP & DI COUPLING WELDED TO FLANGE

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


FOSTER ADAPTOR
FOSTER ADAPTOR
FOSTER ADAPTOR
TYPICAL TEE CONDITION
TYPICAL FITTING TO FITTING CONDITION
FOSTER ADAPTOR
FOSTER ADAPTOR
FOSTER ADAPTOR
TYPICAL CROSS CONDITION
TYPICAL FIRE HYDRANT CONNECTION

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
REVISED: JANUARY 2024
MECHANICAL JOINT ADAPTOR DETAIL
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.

CUDEENGINEERS.COM
EST. 1980 CUDE ENGINEERS

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

GRACE VALLEY RANCH
PHASE 8

WATER DISTRIBUTION STANDARD DETAILS

DATE
11/06/2025
PROJECT NO.
03499.010
DRAWN BY
JK/AR/JF/RB
CHECKED BY
KMH

REVISIONS
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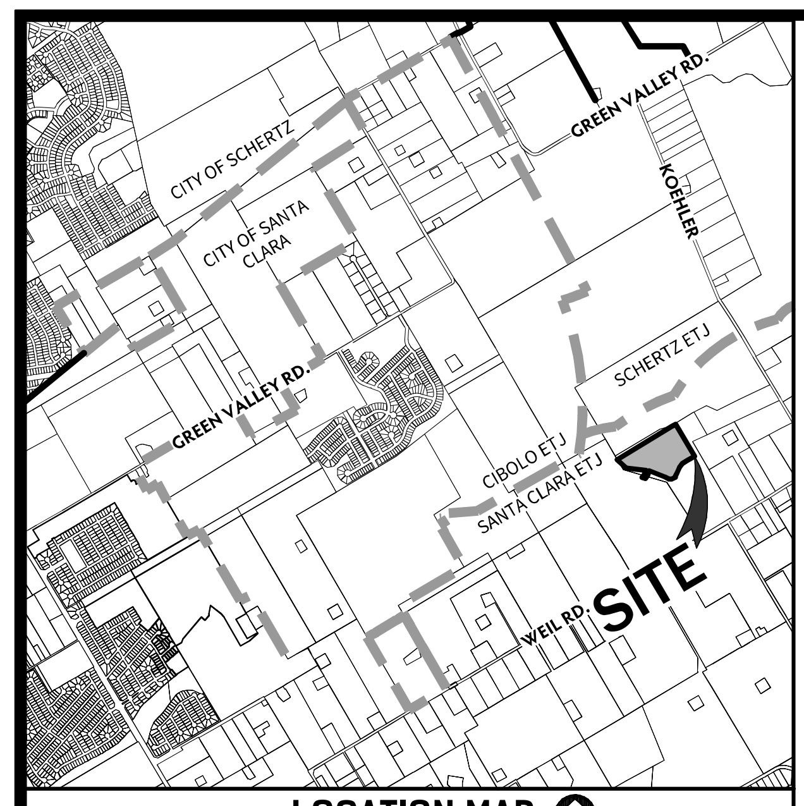
9.

KYLE M. HUDEK
138753
11/11/2025
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C5.D2


GREEN VALLEY RD.
KOEHLER
CITY OF SCHERTZ
CITY OF SANTA CLARA
SCHERTZ ETJ
GREEN VALLEY RD.
CIBOLO ETJ
SANTA CLARA ETJ
WEIL RD.
SITE

LOCATION MAP

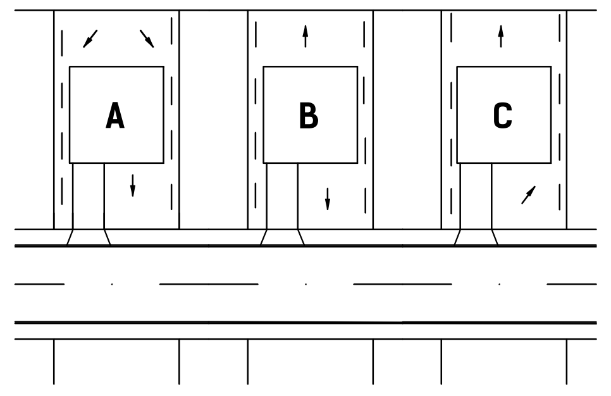
N.T.S.

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 M. 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

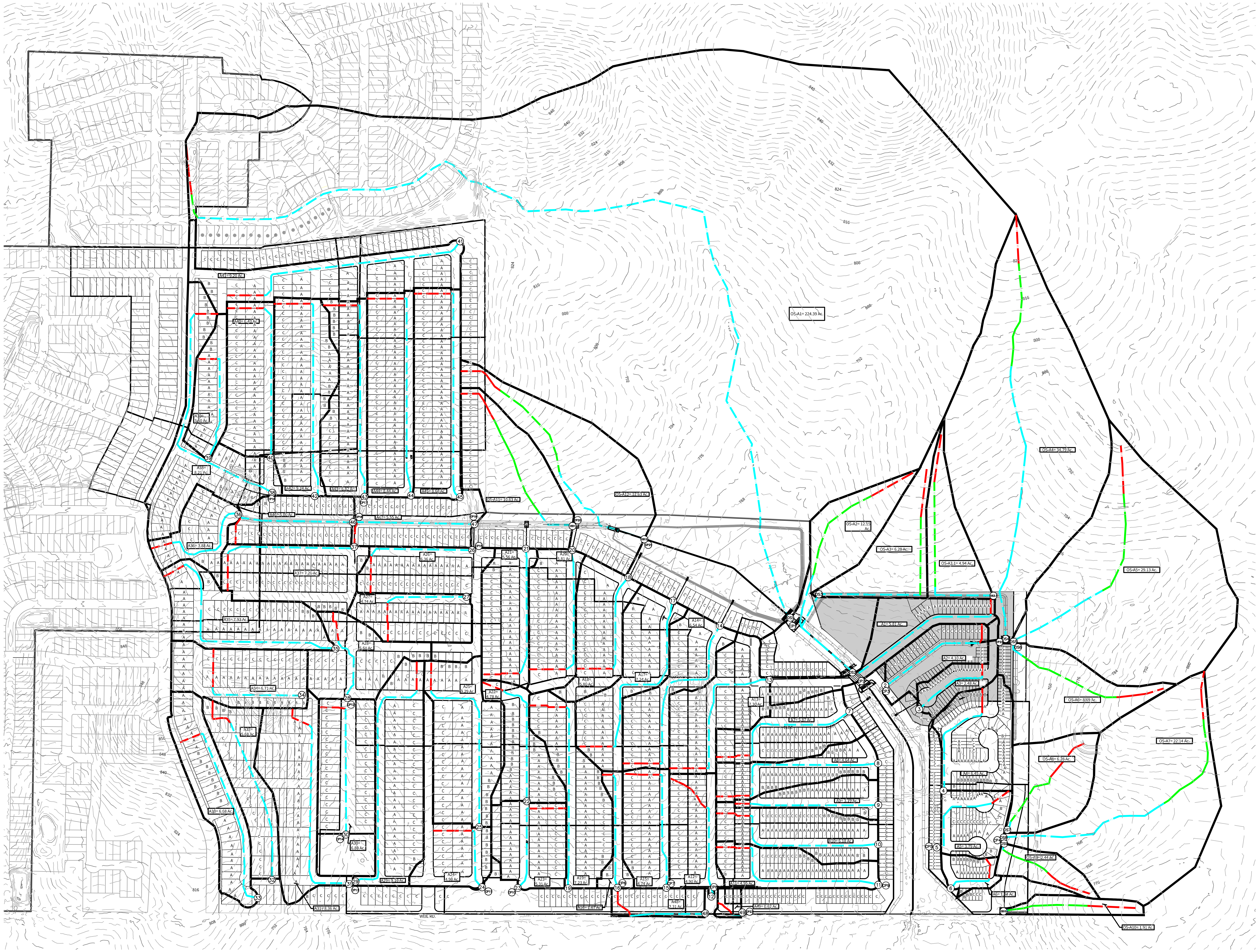
N.T.S.

LEGEND

▨	= UNIT BOUNDARY
▬	= DRAINAGE BOUNDARY
🟥	= SHEET FLOW Tc LINE
🟩	= SHALLOW CONCENTRATED Tc LINE
▬	= CONCENTRATED Tc LINE
ⓧ	= ACCUMULATION POINT

SCALE: 1"=300'

300 150 0 300


OS-A1= 224.39 Ac.
WEIL RD.

CUDEENGINEERS.COM

EST. 1980 CUDE ENGINEERS

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

GRACE VALLEY RANCH PHASE 8

OVERALL DRAINAGE MASTER PLAN - ULTIMATE CONDITIONS

DATE
11/10/2025

PROJECT NO.
03499.010

DRAWN BY
JK/AR/JF/RB

CHECKED BY
KMH

REVISIONS
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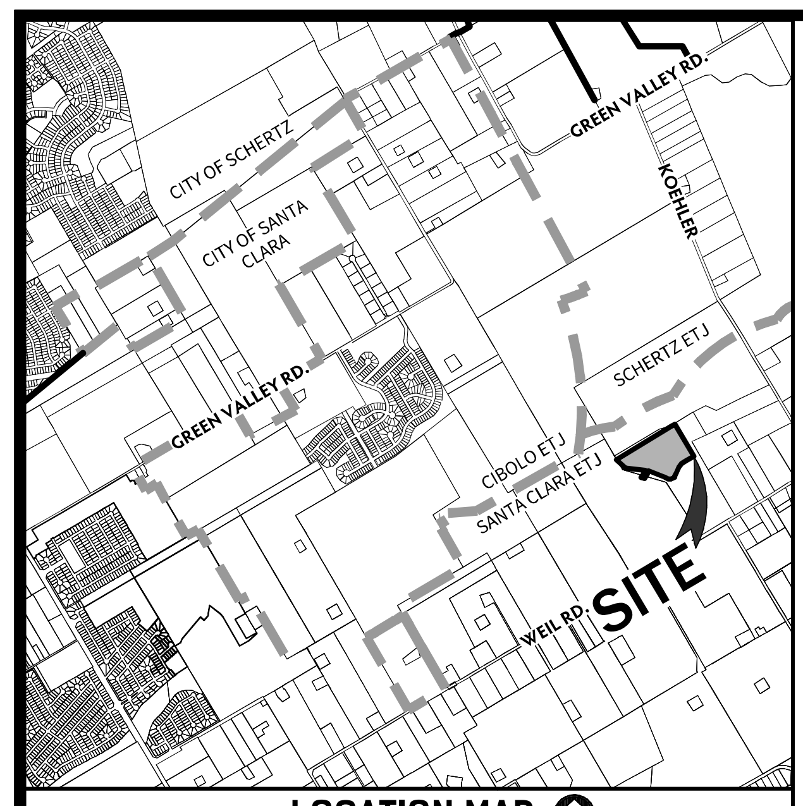
9.

KYLE M. HUDEK
138753
11/11/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C6.00



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

ULTIMATE CONDITIONS

Project Name: Grace Valley Ranch Phase 6
Calculation Summary for Time of Concentrations & Ultimate Flow

Preci PA2

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 (5-YR)	C (25-YR)	C (100-YR)	*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	0.38	0.45	0.53	300.00	N	897.15	885.41	3.91%	18.00	154.58	N	872.88	8.10%	0.56	5993.79	5	19.98	38.00	3.34	4.66	5.85	288.14	474.35	689.38	OS-A1
OS-A2	12.15	=OS-A2	0.38	0.44	0.51	300.00	N	794.00	783.69	3.44%	18.00	650.00	N	763.67	3.08%	3.83	766.33	5	2.55	24.00	4.31	6.00	7.55	19.72	32.28	47.14	OS-A2
OS-A3	6.28	=OS-A3	0.36	0.42	0.49	300.00	N	795.01	786.69	2.77%	18.46	482.11	N	769.32	3.60%	2.61	862.80	5	2.88	23.00	4.42	6.15	7.74	9.99	16.22	23.82	OS-A3
OS-A3.1	4.96	=OS-A3.1	0.36	0.42	0.49	300.00	N	798.00	792.54	1.82%	20.00	650.00	N	769.36	3.57%	3.54	411.06	5	1.37	24.00	4.31	6.00	7.55	7.70	12.50	18.35	OS-A3.1
OS-A4	34.79	=OS-A4	0.36	0.42	0.49	300.00	N	825.00	823.36	0.55%	20.00	650.00	N	802.31	3.24%	3.72	1777.70	5	5.93	29.00	3.79	5.26	6.60	47.47	76.86	112.51	OS-A4
OS-A5	29.13	=OS-A5	0.36	0.42	0.49	300.00	N	800.00	791.22	2.93%	18.15	650.00	N	770.00	3.26%	3.70	613.23	5	2.04	23.00	4.42	6.15	7.74	46.35	75.24	110.48	OS-A5
OS-A6	8.69	=OS-A6	0.37	0.43	0.50	300.00	N	796.00	789.17	2.28%	19.44	650.00	N	759.28	4.60%	3.11	106.98	5	0.36	22.00	4.52	6.30	7.94	14.43	23.55	34.54	OS-A6
OS-A7	22.14	=OS-A7	0.36	0.42	0.49	300.00	N	800.00	791.39	2.87%	18.26	650.00	N	772.70	2.88%	3.97	1061.30	5	3.54	25.00	4.21	5.85	7.36	33.56	54.40	79.85	OS-A7
OS-A8	6.26	=OS-A8	0.36	0.42	0.49	300.00	N	780.00	766.05	4.65%	17.35	396.93	N	750.38	3.95%	2.06	53.72	5	0.18	19.00	4.84	6.75	8.51	10.91	17.75	26.10	OS-A8
OS-A9	2.44	=OS-A9	0.36	0.42	0.49	300.00	N	778.00	761.74	5.42%	16.58	313.28	N	749.24	3.99%	1.62	39.09	5	0.13	18.00	4.94	6.89	8.70	4.34	7.06	10.40	OS-A9
OS-A10	1.91	=OS-A10	0.36	0.42	0.49	300.00	N	784.00	779.12	1.63%	20.00	496.67	N	749.01	6.06%	2.08	27.57	5	0.09	22.00	4.52	6.30	7.94	3.11	5.05	7.43	OS-A10
OS-A11	10.63	=OS-A11	0.41	0.48	0.56	300.00	N	825.32	816.44	2.96%	18.08	650.00	N	788.23	4.34%	3.21	240.56	5	0.80	22.00	4.52	6.30	7.94	19.56	32.46	47.07	OS-A11
OS-A12	12.63	=OS-A12	0.38	0.44	0.52	300.00	N	830.75	821.51	3.08%	18.00	650.00	N	794.89	4.10%	3.32	723.72	5	2.41	23.00	4.42	6.15	7.74	21.08	34.50	50.38	OS-A12
A1	5.81	=A1	0.47	0.57	0.65	93.80	N	766.40	764.63	1.89%	13.22						948.00	5	3.16	16.00	5.15	7.19	9.08	14.02	23.79	34.09	A1
A2	4.10	=A2	0.43	0.52	0.59	124.33	N	763.00	760.16	2.28%	13.65						686.68	5	2.29	15.00	5.26	7.34	9.27	9.28	15.54	22.46	A2
A3	2.48	=A3	0.52	0.64	0.72	75.00	N	758.85	757.45	1.86%	13.27						473.63	5	1.58	14.00	5.46	7.64	9.68	7.04	12.13	17.28	A3
A4	6.45	=A4	0.50	0.62	0.70	156.41	N	757.14	755.00	1.37%	17.08						623.26	5	2.08	19.00	4.84	6.75	8.51	15.73	26.91	38.26	A4
A5	3.79	=A5	0.50	0.62	0.70	133.26	N	756.26	753.26	2.25%	14.17						511.42	5	1.70	15.00	5.26	7.34	9.27	10.07	17.23	24.53	A5
A6	1.54	=A6	0.51	0.63	0.71	132.58	N	750.19	748.42	1.33%	15.96						268.45	5	0.89	16.00	5.15	7.19	9.08	4.05	6.94	9.87	A6
A7	5.87	=A7	0.52	0.64	0.72	212.50	N	786.67	774.47	5.74%	14.16						806.55	5	2.69	16.00	5.15	7.19	9.08	15.72	27.01	38.38	A7
A8	4.64	=A8	0.52	0.64	0.72	211.23	N	786.76	777.90	4.19%	15.37						976.26	5	3.25	18.00	4.94	6.89	8.70	11.92	20.46	29.06	A8
A9	3.19	=A9	0.52	0.64	0.72	95.00	N	780.30	778.04	2.38%	12.25						796.20	5	2.65	14.00	5.46	7.64	9.68	9.06	15.60	22.23	A9
A10	6.18	=A10	0.52	0.64	0.72	215.64	N	785.30	776.44	4.11%	15.68						951.51	5	3.17	18.00	4.94	6.89	8.70	15.88	27.25	38.71	A10
A11	5.03	=A11	0.52	0.64	0.72	211.07	N	777.52	769.96	3.58%	15.74						974.26	5	3.25	18.00	4.94	6.89	8.70	12.92	22.18	31.51	A11
A12	4.90	=A12	0.52	0.64	0.72	297.19	N	799.49	785.84	4.59%	17.27						523.17	5	1.74	19.00	4.84	6.75	8.51	12.33	21.17	30.02	A12
A13	7.30	=A13	0.52	0.64	0.72	230.00	N	800.46	788.38	5.25%	14.87						877.48	5	2.92	17.00	5.05	7.04	8.89	19.17	32.89	46.73	A13
A14	6.54	=A14	0.52	0.64	0.72	230.00	N	805.31	799.85	2.37%	17.50						1107.28	5	3.69	21.00	4.63	6.45	8.13	15.75	27.00	38.28	A14
A15	4.92	=A15	0.52	0.64	0.72	212.34	N	805.00	800.11	2.30%	16.77						724.75	5	2.42	19.00	4.84	6.75	8.51	12.38	21.25	30.15	A15
A16	1.67	=A16	0.52	0.64	0.72	67.50	N	806.81	805.79	1.50%	13.99						711.97	5	2.37	16.00	5.15	7.19	9.08	4.47	7.68	10.92	A16
A17	7.24	=A17	0.52	0.64	0.72	207.09	N	807.29	803.86	1.65%	17.94						1167.72	5	3.89	21.00	4.63	6.45	8.13	17.43	29.89	42.38	A17
A18	5.80	=A18	0.52	0.64	0.72	222.62	N	806.00	793.22	5.74%	14.36						594.41	5	1.98	16.00	5.15	7.19	9.08	15.53	26.69	37.92	A18
A19	7.23	=A19	0.52	0.64	0.72	240.00	N	818.40	811.28	2.97%	17.07						1133.27	5	3.78	20.00	4.73	6.60	8.32	17.78	30.54	43.31	A19
A20	5.81	=A20	0.52	0.64	0.72	230.00	N	817.79	807.30	4.56%	15.44						764.57	5	2.55	17.00	5.05	7.04	8.89	15.26	26.18	37.19	A20
A21	5.56	=A21	0.52	0.64	0.72	227.71	N	823.72	818.56	2.27%	17.39						784.91	5	2.62	20.00	4.73	6.60	8.32	13.68	23.49	33.31	A21
A22	4.78	=A22	0.52	0.64	0.72	138.72	N	823.40	821.02	1.71%	15.51						785.03	5	2.62	18.00	4.94	6.89	8.70	12.28	21.08	29.94	A22
A23	5.31	=A23	0.52	0.64	0.72	230.00	N	796.00	790.55	2.37%	17.50						526.50	5	1.76	19.00	4.84	6.75	8.51	13.36	22.94	32.54	A23
A24	4.98	=A24	0.52	0.64	0.72	240.00	N	798.20	788.96	3.85%	16.15						378.61	5	1.26	17.00	5.05	7.04	8.89	13.08	22.44	31.88	A24
A25	9.29	=A25	0.52	0.64	0.72	172.13	N	830.48	827.74	1.59%	16.75						1092.14	5	3.64	20.00	4.73	6.60	8.32	22.85	39.24	55.65	A25
A26	6.36	=A26	0.52	0.64	0.72	230.00	N	820.63	814.71	2.58%	17.35						659.42	5	2.20	19.00	4.84	6.75	8.51	16.01	27.48	38.97	A26
A27	4.74	=A27	0.52	0.64	0.72	245.00	N	826.41	819.23	2.93%	17.14						501.60	5	1.67	18.00	4.94	6.89	8.70	12.18	20.90	29.69	A27
A28	5.68	=A28	0.52	0.64	0.72	197.76	N	829.34	824.64	2.38%	16.22						422.10	5	1.41	17.00	5.05	7.04	8.89	14.92	25.59	36.36	A28
A29	9.16	=A29	0.52	0.64	0.72	177.21	N	830.22	828.00	1.25%	17.93						1511.81	5	5.04	22.00	4.52	6.30	7.94	21.53	36.93	52.37	A29
A30	6.80	=A30	0.46	0.56	0.64	156.38	N	818.00	808.94	5.80%	12.82						778.12	5	2.59	15.00	5.26	7.34	9.27	16.57	28.05	40.25	A30
A31	8.36	=A31	0.49	0.60	0.68	168.58	N	825.29	815.51	5.80%	13.08						1233.96	5	4.11	17.00	5.05	7.04	8.89	20.66	35.18	50.23	A31
A32	5.68	=A32	0.42	0.51	0.58	240.79	N	846.31	840.00	2.62%	17.76						1018.09	5	3.39	21.00	4.63	6.45	8.13	11.16	18.63	26.90	A32
A33	6.68	=A33	0.52	0.64	0.72	135.61	N	849.87	845.14	3.49%	12.89						1143.38	5	3.81	16.00	5.15	7.19	9.08	17.89	30.74	43.67	A33
A34	6.71	=A34	0.51	0.63	0.71	240.00	N	849.61	846.08	1.47%	20.00						578.77	5	1.93	21.00	4.63	6.45	8.13	15.85	27.11	38.50	A34
A35	7.93	=A35	0.52	0.64	0.72	143.68	N	870.00	856.76	9.21%	11.14						1362.99	5	4.54	15.00	5.26	7.34	9.27	21.69	37.25	52.93	A35
A36	3.82	=A36	0.52	0.64	0.72	134.64	N	873.00	862.72	7.63%	10.83						626.93	5	2.09	12.00	5.87	8.25	10.49	11.66	20.17	28.85	A36
A37	7.20	=A37	0.52	0.64	0.72	229.71	N	857.95	849.73	3.58%	16.20						798.91	5	2.66	18.00	4.94	6.89	8.70	18.50	31.75	45.10	A37
A38	8.21	=A38	0.52	0.64	0.72	144.96	N	880.25	877.33	2.02%	14.98						1494.95	5	4.98	19.00	4.84	6.75	8.51	20.66	35.47	50.30	A38
A39	3.50	=A39	0.50	0.62	0.70	115.00	N	872.36	869.64	2.37%	13.01						646.37	5	2.15	15.00	5.26	7.34	9.27	9.29	15.89	22.63	A39
A40	6.43	=A40	0.51	0.63	0.71	230.00	N	880.00	872.14	3.42%	16.29						946.85	5	3.16	19.00	4.84	6.75	8.51	15.89	27.23	38.67	A40
A41	9.20	=A41	0.52	0.64	0.72	230.00	N	878.47	871.78	2.91%	16.68						1359.12	5	4.53	21.00	4.63	6.45	8.13	22.15	37.98	53.85	A41
A42	9.24	=A42	0.52	0.64	0.72	230.00	N	872.08	864.00	3.51%	16.24						1210.50	5	4.04	20.00	4.73	6.60	8.32	22.73	39.03	55.35	A42
A43	6.82	=A43	0.52	0.64	0.72	212.38	N	863.91	859.03	2.30%	16.77						1208.80	5	4.03	20.00	4.73	6.60	8.32	16.77	28.81	40.85	A43
A44	8.44	=A44	0.52	0.64	0.72	230.00	N	859.42	850.71	3.79%	16.11						1253.16	5	4.18	20.00	4.73	6.60	8.32	20.76	35.65	50.56	A44
A45	8.68	=A45	0.52	0.64	0.72	230.00	N	851.27	839.83	4.97%	15.03						1295.78	5	4.32	19.00	4.84	6.75	8.51	21.85	37.50	53.18	A45
A46	5.06	=A46	0.48	0.58	0.66	162.06	N	848.28	845.78	1.54%	16.84						698.18	5	2.33	19.00	4.84	6.75	8.51	11.69	19.85	28.36	A46
A47	5.55	=A47	0.48	0.59	0.66	145.59	N	817.11	814.00	2.13%	14.81						725.71	5	2.42	17.00	5.05	7.04	8.89	13.49	22.92	32.77	A47
A48	2.31	=A48	0.44	0.53	0.60	207.46	N	784.25	772.08	5.87%	14.05						457.01	5	1.52	15.00	5.26	7.34	9.27	5.35	8.98	12.95	A48
A49	0.62	=A49	0.42	0.50	0.57	116.9	N	767.6	759.7	6.73%	10.84						60.27	5	0.20	11.00	6.08	8.56	10.89	1.57	2.64	3.85	A49
*CP1	344.21	=OS-A1+CP20+A14+A17+A18	0.43	0.51	0.59	300.00	N	897.15	885.41	3.91%	18.00	154.58	N	864.42	13.58%	0.43	5993.79	5	19.98	38.00	3.34	4.66	5.85	490.41	820.51	1179.38	*CP1
*CP2	368.45	=OS-A2 + OS-A3 + A1 + CP1	0.42	0.51	0.58	300.00	N	897.15	885.41	3.91%	18.00	154.58	N	856.76	18.53%	0.37	6515.50	5	21.72	40.00	3.26	4.54	5.71	509.83	850.80	1225.81	*CP2
CP3	81.67	=A2 + CP22	0.36	0.43	0.50	300.00	N	825.00	823.36	0.55%	20.00	650.00	N	802.31	3.24%	3.72	2589.84	5	8.63	32.00	3.60	5.00	6.27	107.11	173.93	254.09	CP3
CP4	30.84	=OS-A7 + OS-A8 + OS-A9	0.36	0.42	0.49	300.00	N	800.00	791.39	2.87%	18.26	650.00	N	772.70	2.88%	3.97	1061.30	5	3.54	25.00	4.21	5.85	7.36	46.74	75.77	111.22	CP4
CP5	34.63	=A5+CP4	0.38	0.44	0.51	300.00	N	800.00	791.39	2.87%	18.26	650.00	N	772.70	2.88%	3.97	1447.58	5	4.83	27.00	4.00	5.56	6.98	52.06	85.07	123.95	CP5
CP6	8.90	=A16+A19	0.52	0.64	0.72	240.00	N	818.40	811.28	2.97%	17.07						1440.11	5	4.80	21.00	4.63	6.45	8.13	21.43	36.74	52.10	CP6
CP7	13.82	=A15+CP6	0.52	0.64	0.72	240.00	N	818.40	811.28	2.97%	17.07						1742.66	5	5.81	22.00	4.52	6.30	7.94	32.48	55.72	79.01	CP7
CP8	18.72	=A12+CP7	0.52	0.64	0.72	240.00	N	818.40	811.28	2.97%	17.07						1959.18	5	6.53	23.00	4.42	6.15	7.74	43.03	73.68	104.32	CP8
CP9	23.75	=A11+CP8	0.52	0.64	0.72	240.00	N	818.40	811.28	2.97%	17.07						3069.04	5	10.23	27.00	4.00	5.56	6.98	49.40	84.51	119.36	CP9
CP10	10.09	=A22+A23	0.52	0.64	0.72	138.72	N	823.40	821.02	1.71%	15.51						1343.95	5	4.48	19.00	4.84	6.75	8.51	25.39	43.59	61.82	CP10
CP11	14.27	=A24+A25	0.52	0.64	0.72	172.13	N	830.48	827.74	1.59%	16.75						1474.05	5	4.91	21.00	4.63	6.45	8.13	34.36	58.91	83.53	CP11
CP12	20.32	=A28+A34+A35	0.52	0.64	0.72	240.00	N	849.61	846.08	1.47%	20.00						878.01	5	2.93	22.00	4.52	6.30	7.94	47.76	81.93	116.17	CP12
CP13	17.52	=A29+A31	0.51	0.62	0.70	177.21	N	830.22	828.00	1.25%	17.93						1511.81	5	5.04	22.00	4.52	6.30	7.94	40.02	68.42	97.23	CP13
CP14	27.12	=A30+CP12	0.51	0.62	0.70	240.00	N	849.61	846.08	1.47%	20.00						1725.42	5	5.75	25.00	4.21	5.85	7.36	57.75	98.44	139.63	CP14
CP15	11.10	=A26+A27	0.52	0.64	0.72	245.00	N	826.41	819.23	2.93%	17.14						858.69	5	2.86	20.00	4.73	6.60	8.32	27.30	46.89	66.49	CP15
CP16	18.14	=A38+A39+A40	0.51	0.63	0.71	144.96	N	880.25	877.33	2.02%	14.98						1494.95	5	4.98	19.00	4.84	6.75	8.51	45.10	77.31	109.75	CP16
CP17	16.06	=A42+A43	0.52	0.64	0.72	212.38	N	863.91	859.03	2.30%	16.77						1208.80	5	4.03	20.00	4.73	6.60	8.32	39.50	67.84	96.21	CP17
CP18	27.02	=A36+A46+CP16	0.51	0.62	0.70	144.96	N	880.25	877.33	2.02%	14.98						1889.96	5	6.30	21.00	4.63	6.45	8.13	63.53	108.61	154.31	CP18
CP19	72.95	=A37+A44+A45+A47+CP17+CP18	0.51	0.63	0.71	144.96	N	880.25	877.33	2.02%	14.98						2643.41	5	8.81	23.00	4.42	6.15	7.74	165.26	282.52	400.47	CP19
CP20	100.24	=OS-A11 + A21+CP15+CP19	0.50	0.62	0.69	144.96	N	880.25	877.33	2.02%	14.98						3244.06	5	10.81	25.00	4.21	5.85	7.36	212.09	361.25	512.72	CP20
CP21	112.87	=OS-A12 + CP20	0.49	0.60	0.67	144.96	N	880.25	877.33	2.02%	14.98						3700.88	5	12.34	27.00	4.00	5.56	6.98	220.59	374.54	531.67	CP21
CP22	77.57	=OS-3.1 + OS-A4 + OS-A5 + OS-A6	0.36	0.42	0.49	300.00	N	825.00	823.36	0.55%	20.00	650.00	N	802.31	3.24%	3.72	1777.70	5	5.93	29.00	3.79	5.26	6.60	106.08	171.83	251.47	CP22
CP23	2.93	=A48+A49	0.43	0.52	0.60	207.5	N	784.3	772.1	5.87%	14.05						693.01	5	2.31	16.00	5.15	7.19	9.08	6.56	11.02	15.90	CP23

* DENOTES DRAINAGE AREA ANALYZED USING THE SCS HYDROLOGY METHOD DUE TO DRAINAGE AREA SIZE AND DETENTION CONSIDERATIONS. ALL HYDRAULIC CALCULATIONS FOR DRAINAGE STRUCTURES ASSOCIATED WITH THESE DRAINAGE AREAS SHOULD BE DERIVED FROM THE SCS METHOD HYDROLOGY CHART FOUND ON PAGE C6.04.

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GRACE VALLEY RANCH
PHASE 8

OVERALL DRAINAGE MASTER PLAN CALCULATIONS

DATE
11/10/2025

PROJECT NO.
03499.010

DRAWN BY
JK/AR/JF/RB

CHECKED BY
KMH

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

KYLE M. HUDEK
138753
11/11/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C6.01

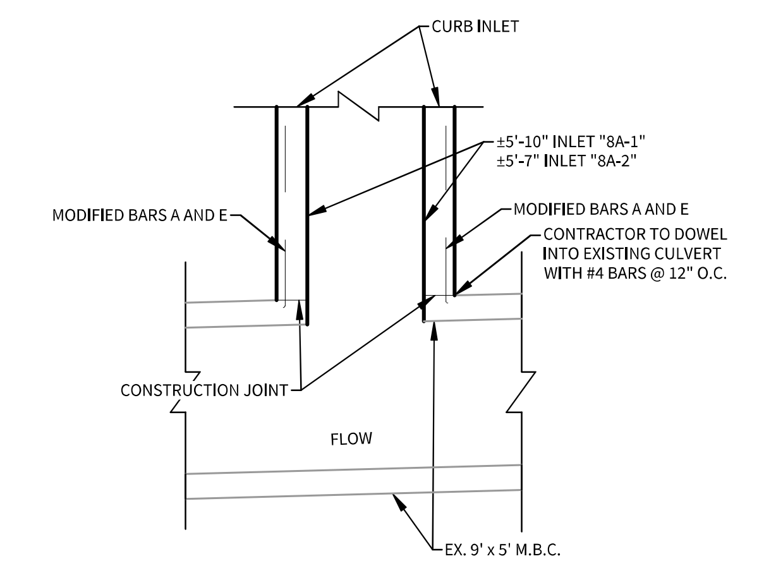
LEGEND

EARTHEN CHANNEL	▨
CONCRETE RIP-RAP	▨
8"X12" ROCK RUBBLE	▨

KEYNOTES

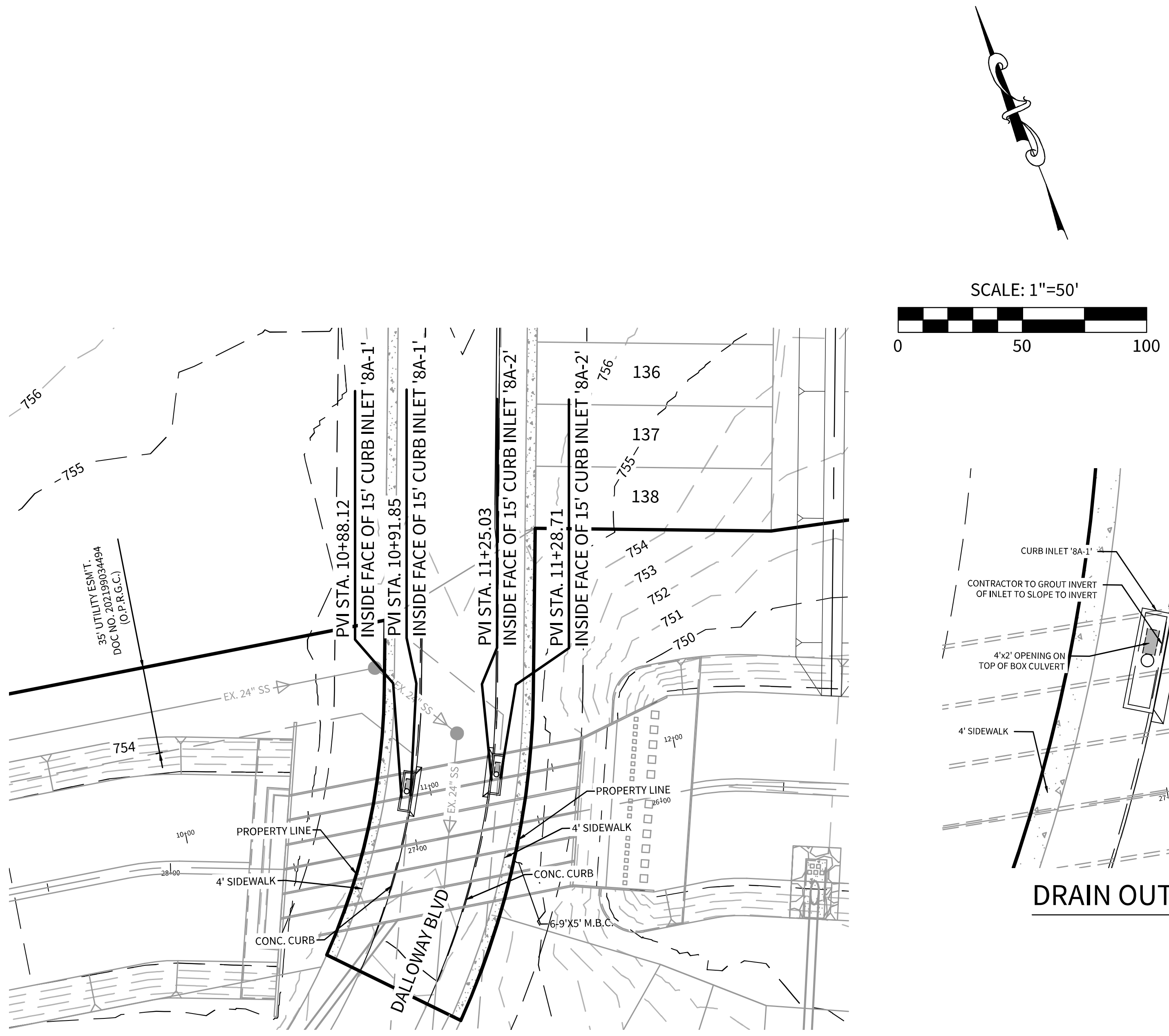
① 20' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE

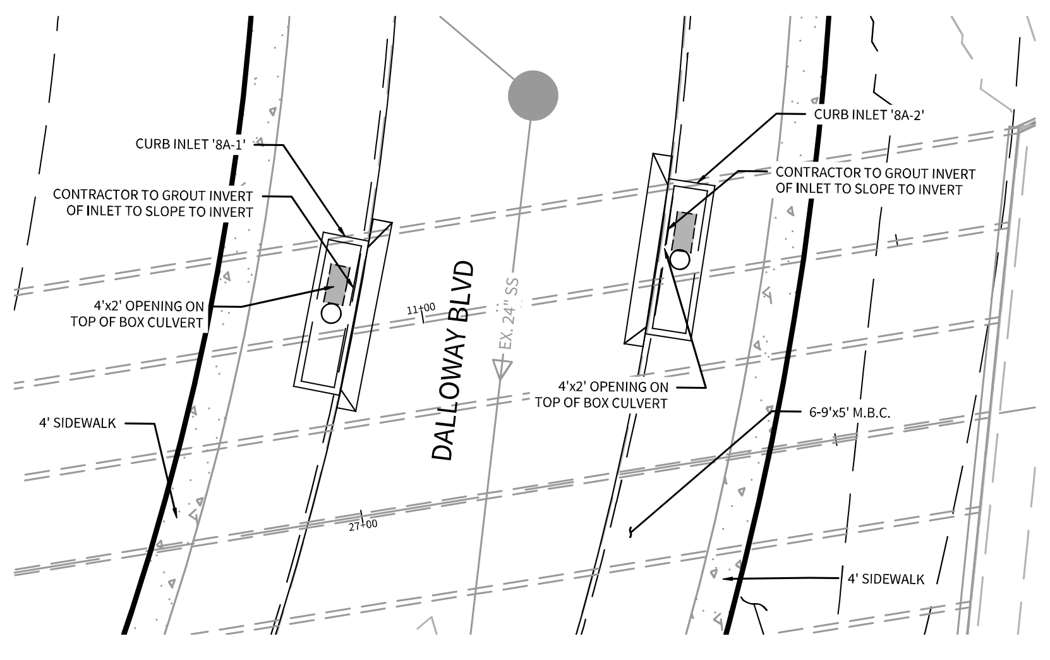
② 15' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE


CURB INLET
±5'-10" INLET "8A-1"
±5'-7" INLET "8A-2"
MODIFIED BARS A AND E
MODIFIED BARS A AND E
CONTRACTOR TO DOWEL INTO EXISTING CULVERT WITH #4 BARS @ 12" O.C.
CONSTRUCTION JOINT
FLOW
EX. 9' x 5' M.B.C.

CURB INLET & M.B.C. CONNECTION DETAIL

(NOT TO SCALE)


SCALE: 1"=50'
0 50 100
PVI STA. 10+88.12
INSIDE FACE OF 15' CURB INLET '8A-1'
PVI STA. 10+91.85
INSIDE FACE OF 15' CURB INLET '8A-1'
PVI STA. 11+25.03
INSIDE FACE OF 15' CURB INLET '8A-2'
PVI STA. 11+28.71
INSIDE FACE OF 15' CURB INLET '8A-2'
136
137
138
756
755
754
753
752
751
750
PROPERTY LINE
PROPERTY LINE
4' SIDEWALK
4' SIDEWALK
CONC. CURB
CONC. CURB
DALLOWAY BLVD

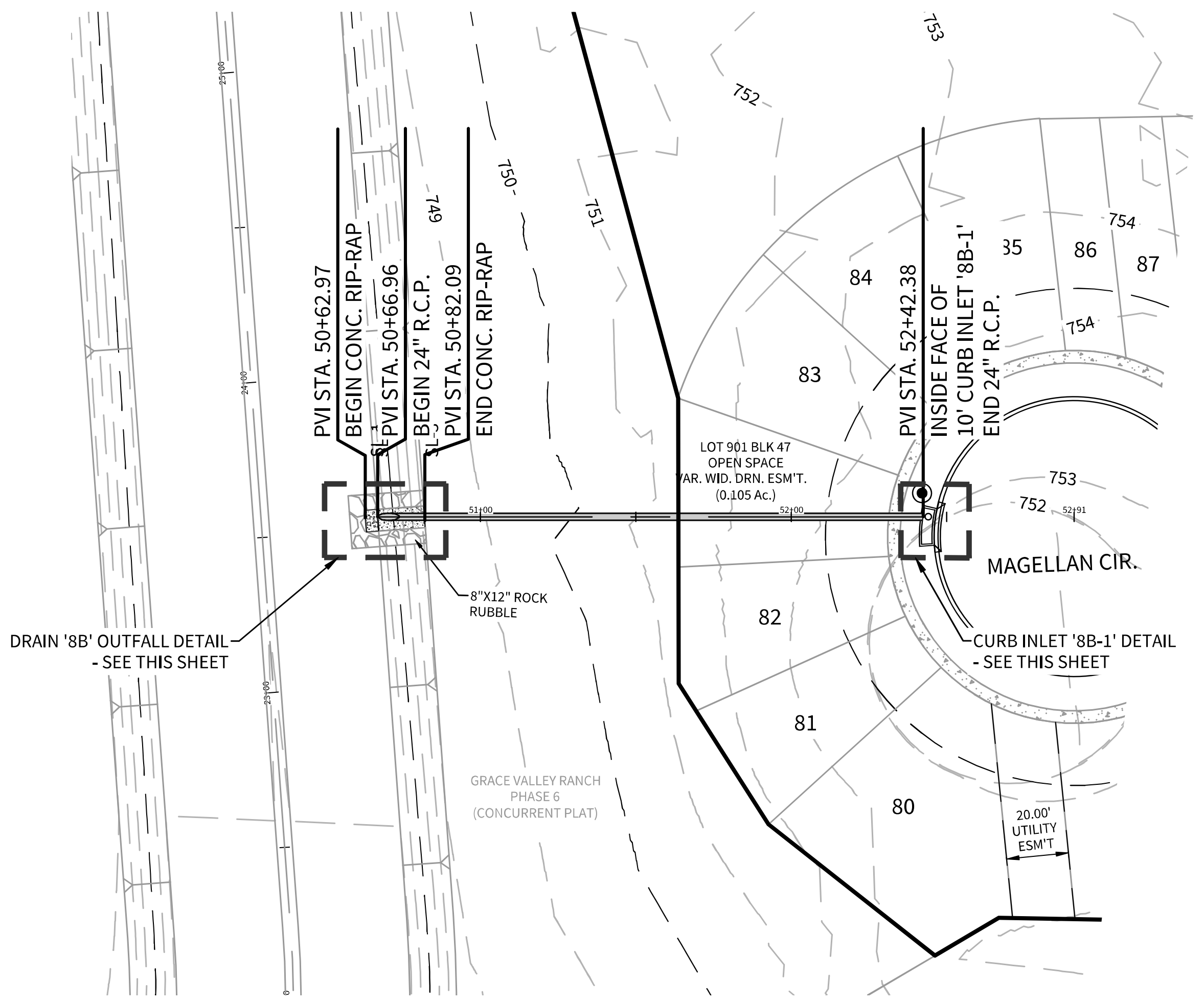

CURB INLET '8A-1'
CURB INLET '8A-2'
CONTRACTOR TO GROUT INVERT OF INLET TO SLOPE TO INVERT
4'X2' OPENING ON TOP OF BOX CULVERT
4' SIDEWALK
DALLOWAY BLVD
6-9'X5' M.B.C.
4' SIDEWALK

DRAIN OUTLET STRUCTURE DETAIL

(SCALE: 1"=20')

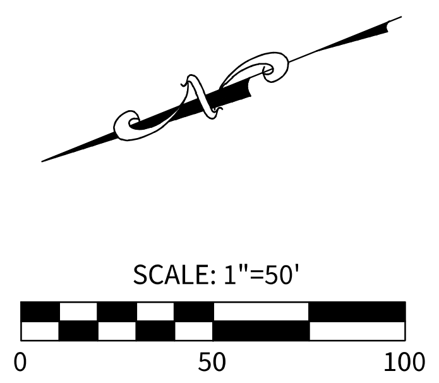
DRAIN '8A'

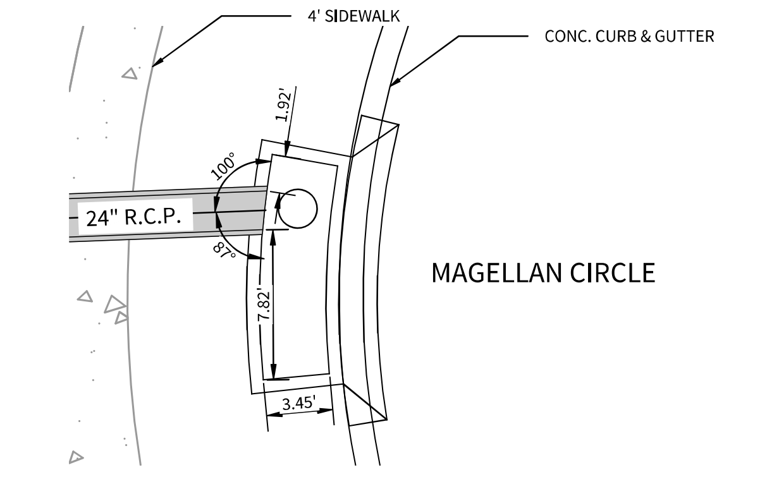
STA. 10+88.12 TO STA. 11+28.71


PVI STA. 50+62.97
BEGIN CONC. RIP-RAP
PVI STA. 50+66.96
BEGIN 24" R.C.P.
PVI STA. 50+82.09
END CONC. RIP-RAP
PVI STA. 52+42.38
INSIDE FACE OF 10' CURB INLET '8B-1'
END 24" R.C.P.
753
752
751
750
749
754
84
83
35
86
87
82
81
80
LOT 901 BLK 47 OPEN SPACE PAR. WID. DRN. ESM'T. (0.105 Ac.)
MAGELLAN CIR.
DRAIN '8B' OUTFALL DETAIL - SEE THIS SHEET
8"X12" ROCK RUBBLE
CURB INLET '8B-1' DETAIL - SEE THIS SHEET
GRACE VALLEY RANCH PHASE 9 (CONCURRENT PLAT)
20.00' UTILITY ESM'T.

DRAIN '8B'

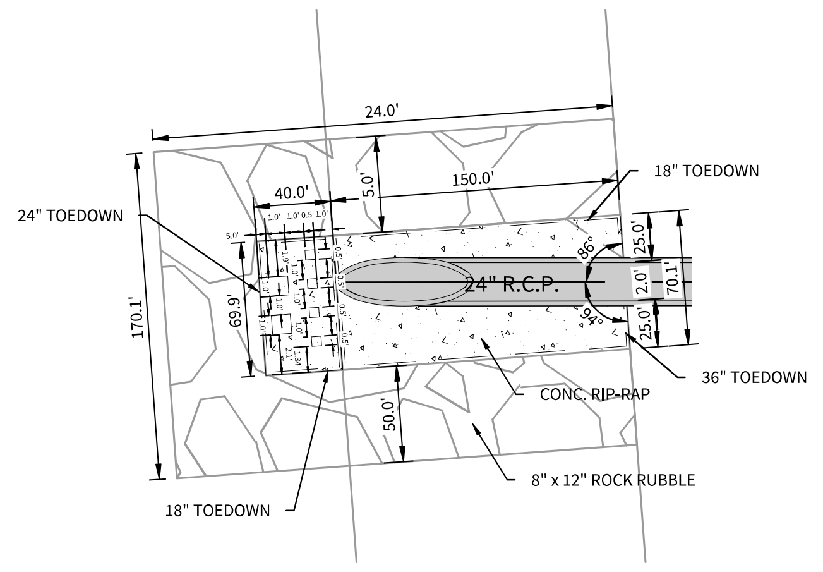
STA. 50+62.97 TO STA. 52+42.38


SCALE: 1"=50'
0 50 100


4' SIDEWALK
CONC. CURB & GUTTER
24" R.C.P.
MAGELLAN CIRCLE

CURB INLET '8B-1' DETAIL

(SCALE: 1"=10')


24.0'
150.0'
40.0'
18" TOEDOWN
24" TOEDOWN
24" R.C.P.
CONC. RIP-RAP
36" TOEDOWN
8" x 12" ROCK RUBBLE
18" TOEDOWN

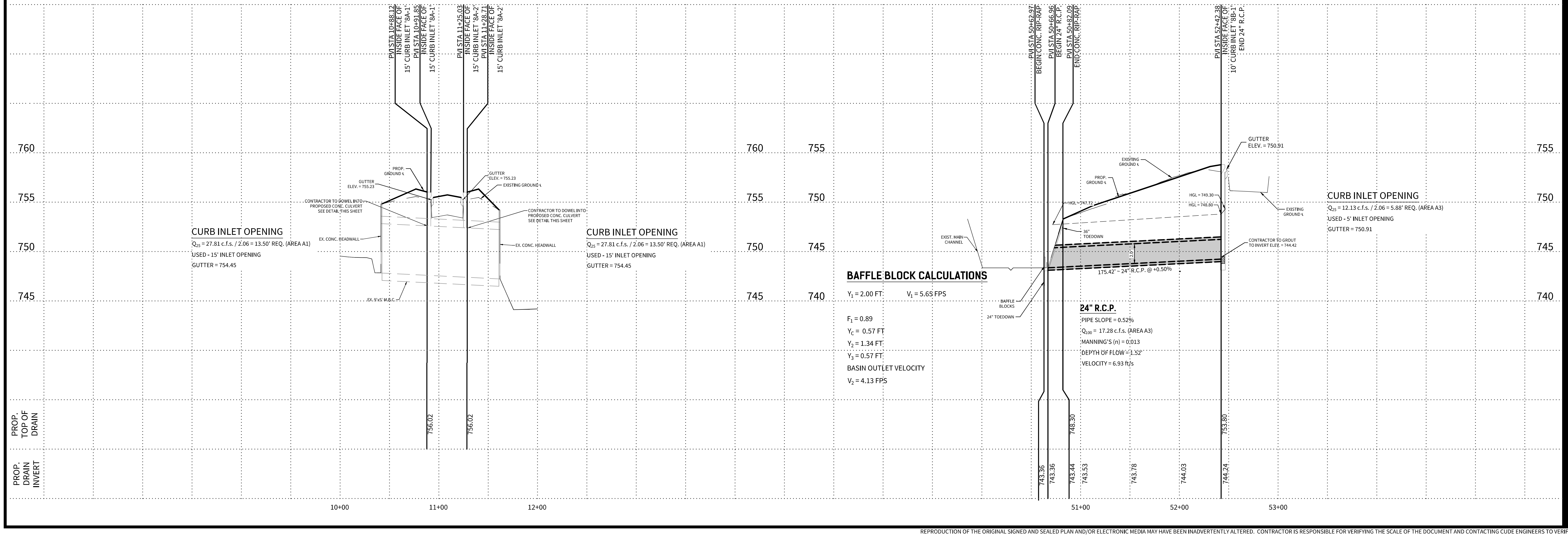
DRAIN '8B' OUTFALL DETAIL

(SCALE: 1"=10')

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 SANTA CLARA & GUADALUPE COUNTY. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING, AND WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
3. REFERENCE TYPICAL CONCRETE CHANNEL RIP-RAP STANDARDS FOUND ON SHEET C6.D1

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


PVI STA 10+88.12
INSIDE FACE OF 15' CURB INLET '8A-1'
PVI STA 10+91.85
INSIDE FACE OF 15' CURB INLET '8A-1'
PVI STA 11+25.03
INSIDE FACE OF 15' CURB INLET '8A-2'
PVI STA 11+28.71
INSIDE FACE OF 15' CURB INLET '8A-2'
760
755
750
745
PROP. GROUND ℄
GUTTER ELEV. = 755.23
GUTTER ELEV. = 755.23
EXISTING GROUND ℄
CONTRACTOR TO DOWEL INTO PROPOSED CONC. CULVERT SEE DETAIL THIS SHEET
CONTRACTOR TO DOWEL INTO PROPOSED CONC. CULVERT SEE DETAIL THIS SHEET
EX. CONC. HEADWALL
EX. CONC. HEADWALL
EX. 9'X5' M.B.C.
PVI STA 50+62.97
BEGIN CONC. RIP-RAP
PVI STA 50+66.96
BEGIN 24" R.C.P.
PVI STA 50+82.09
END CONC. RIP-RAP
PVI STA 52+42.38
INSIDE FACE OF 10' CURB INLET '8B-1'
END 24" R.C.P.
GUTTER ELEV. = 750.91
EXISTING GROUND ℄
PROP. GROUND ℄
HGL = 747.72
HGL = 749.30
HGL = 748.80
EXISTING GROUND ℄
36" TOEDOWN
EXIST. MAIN CHANNEL
CONTRACTOR TO GROUT TO INVERT ELEV. = 744.42
2.0'
175.42' ~ 24" R.C.P. @ +0.50%
BAFFLE BLOCKS
24" TOEDOWN
PROP. TOP OF DRAIN
756.02
756.02
748.30
753.80
PROP. DRAIN INVERT
743.36
743.36
743.44
743.53
743.78
744.03
744.24
10+00
11+00
12+00
51+00
52+00
53+00

CURB INLET OPENING

Q_{25} = 27.81 c.f.s. / 2.06 = 13.50' REQ. (AREA A1)
USED - 15' INLET OPENING
GUTTER = 754.45

CURB INLET OPENING

Q_{25} = 27.81 c.f.s. / 2.06 = 13.50' REQ. (AREA A1)
USED - 15' INLET OPENING
GUTTER = 754.45

BAFFLE BLOCK CALCULATIONS

Y_1 = 2.00 FT V_1 = 5.65 FPS

F_1 = 0.89
Y_C = 0.57 FT
Y_2 = 1.34 FT
Y_3 = 0.57 FT
BASIN OUTLET VELOCITY
V_2 = 4.13 FPS

24" R.C.P.

PIPE SLOPE = 0.52%
Q_{100} = 17.28 c.f.s. (AREA A3)
MANNING'S (n) = 0.013
DEPTH OF FLOW = 1.52'
VELOCITY = 6.93 ft/s

CURB INLET OPENING

Q_{25} = 12.13 c.f.s. / 2.06 = 5.88' REQ. (AREA A3)
USED - 5' INLET OPENING
GUTTER = 750.91

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GRACE VALLEY RANCH
PHASE 8

DRAINAGE PLAN & PROFILE - DRAIN '8A, 8B'

DATE
11/11/2025

PROJECT NO.
03499.010

DRAWN BY
JK/AR/JF/RB

CHECKED BY
KMH

REVISIONS
1.
2.
3.
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7.
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9.

KYLE M. HUDEK
138753
11/11/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C6.02

P:\03499\010\2-DWG\4-Plans\C6.03 DRAINAGE PLAN & PROFILE - DRAIN 8A.dwg 2025/11/11 11:17am arodriguez

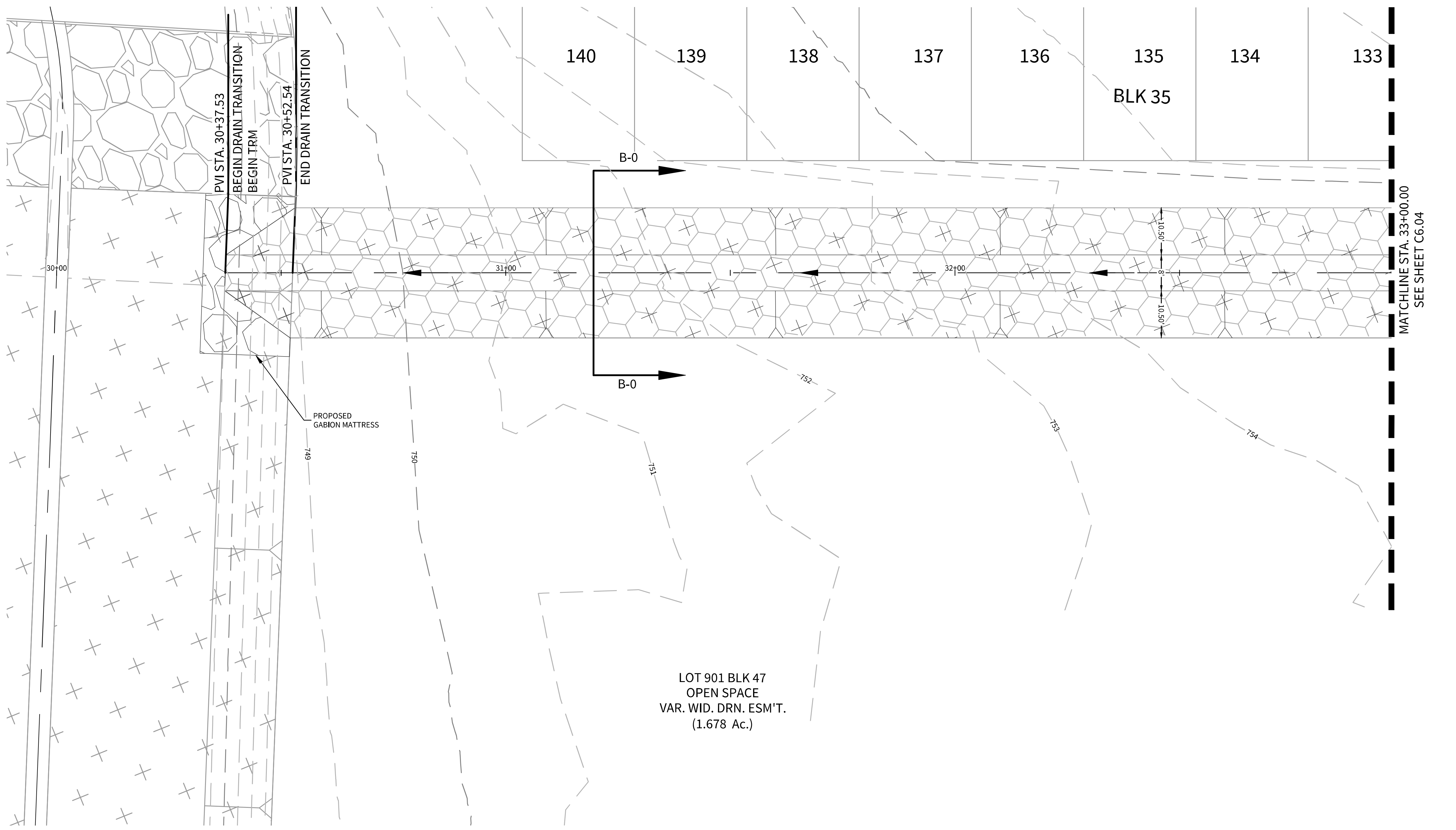
LEGEND

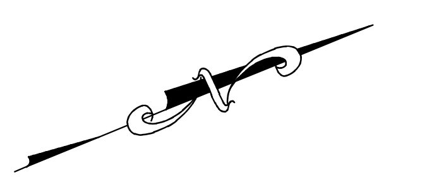
EARTHEN CHANNEL	+
CONCRETE RIP-RAP	▵
TURF REINFORCEMENT MAT	⬡

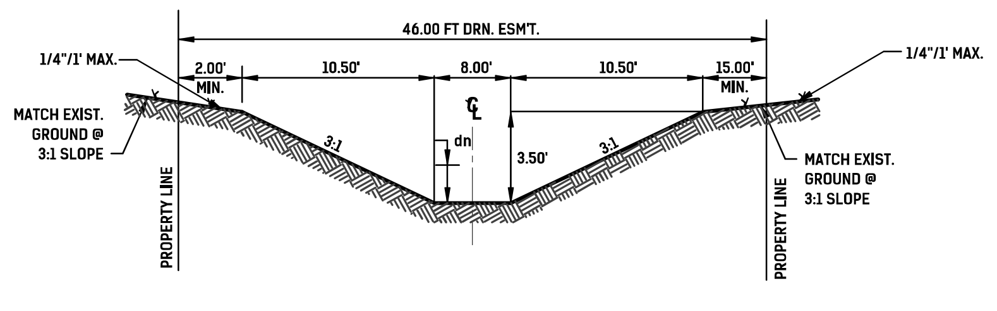
KEYNOTES

① 20' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE

② 10' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE


PVI STA. 30+37.53
BEGIN DRAIN TRANSITION
BEGIN TRM
PVI STA. 30+52.54
END DRAIN TRANSITION
140
139
138
137
136
135
134
133
BLK 35
B-0
B-0
30+00
31+00
32+00
MATCHLINE STA. 33+00.00
SEE SHEET C6.04
PROPOSED
GABION MATTRESS
749
750
751
752
753
754
LOT 901 BLK 47
OPEN SPACE
VAR. WID. DRN. ESM'T.
(1.678 Ac.)


SCALE: 1"=20'


46.00 FT DRN. ESM'T.
1/4"/1' MAX.
1/4"/1' MAX.
2.00'
MIN.
10.50'
8.00'
10.50'
15.00'
MIN.
℄
dn
3.50'
3:1
3:1
MATCH EXIST.
GROUND @
3:1 SLOPE
MATCH EXIST.
GROUND @
3:1 SLOPE
PROPERTY LINE
PROPERTY LINE

DRAIN "B-0" SECTION (N.T.S.)

MAIN CHANNEL HYDRAULIC SUMMARY		
SECTION	"B0"	"B0"
STATION	30+52.54 - 31+50.00	31+50.00 - 33+50.00
Q_{100} (cfs)	273.93	273.93
n	0.035	0.035
S (%)	2.85	1.06
D (ft)	3.50	3.50
d_n (ft)	2.21	2.81
V (fps)	9.09	6.32

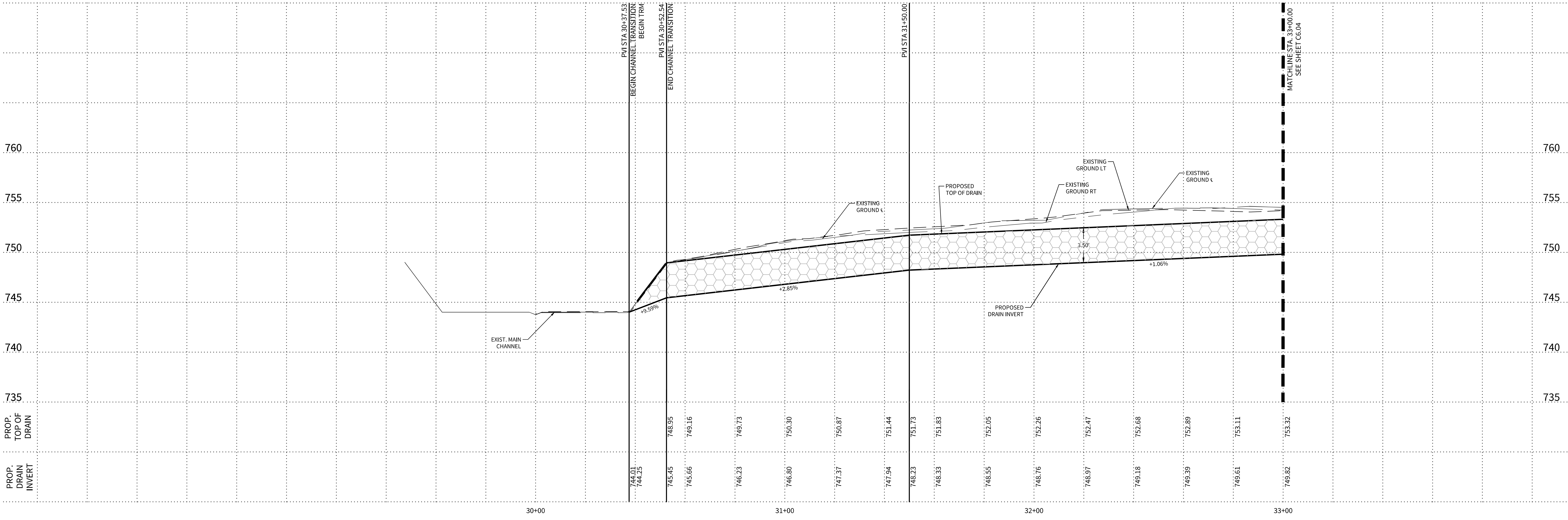
NOTES:

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 SANTA CLARA & GUADALUPE COUNTY. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING, AND WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
3. REFERENCE TYPICAL CONCRETE CHANNEL RIP-RAP STANDARDS FOUND ON SHEET C6.D1

CHANNEL 8B

STA. 30+37.53 TO STA. 33+00.00

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


PVI STA 30+37.53
BEGIN CHANNEL TRANSITION
BEGIN TRM
PVI STA 30+52.54
END CHANNEL TRANSITION
PVI STA 31+50.00
MATCHLINE STA. 33+00.00
SEE SHEET C6.04
760
755
750
745
740
735
EXISTING GROUND ℄
PROPOSED TOP OF DRAIN
EXISTING GROUND RT
EXISTING GROUND LT
EXISTING GROUND ℄
3.50'
+1.06%
+2.85%
+9.59%
PROPOSED DRAIN INVERT
EXIST. MAIN CHANNEL
PROP. TOP OF DRAIN
748.95
749.16
749.73
750.30
750.87
751.44
751.73
751.83
752.05
752.26
752.47
752.68
752.89
753.11
753.32
PROP. DRAIN INVERT
744.01
744.25
745.45
745.66
746.23
746.80
747.37
747.94
748.23
748.33
748.55
748.76
748.97
749.18
749.39
749.61
749.82
30+00
31+00
32+00
33+00

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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 8

DRAINAGE PLAN & PROFILE - CHANNEL 8B

DATE
11/11/2025

PROJECT NO.
03499.010

DRAWN BY
JK/AR/JF/RB

CHECKED BY
KMH

REVISIONS
1.
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9.

KYLE M. HUDEK
138753
11/11/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C6.03

P:\03499\010\2-DWG\4-Plans\C6.04 DRAINAGE PLAN & PROFILE - CHANNEL 8A.dwg 2025/11/11 11:26am arodriguez

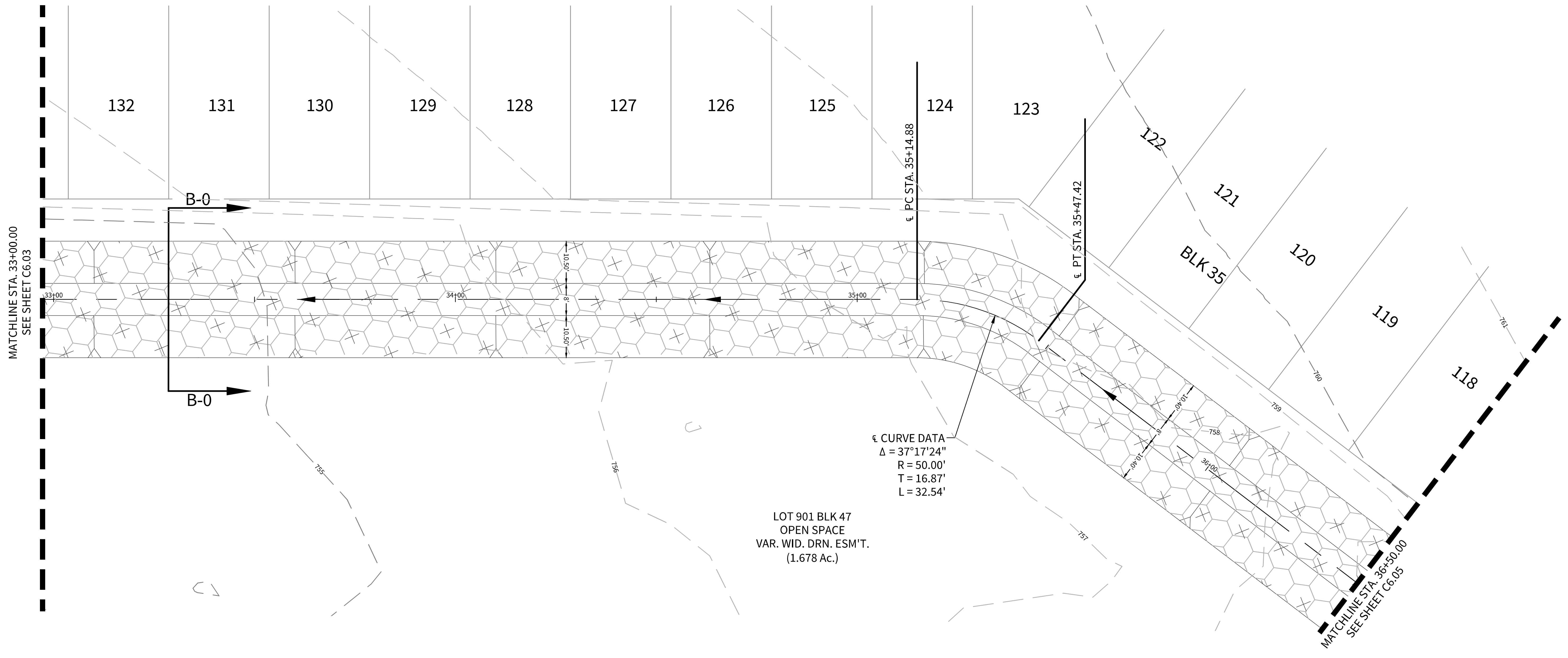
LEGEND

EARTHEN CHANNEL	+ + +
CONCRETE RIP-RAP	▵
TURF REINFORCEMENT MAT	⬡

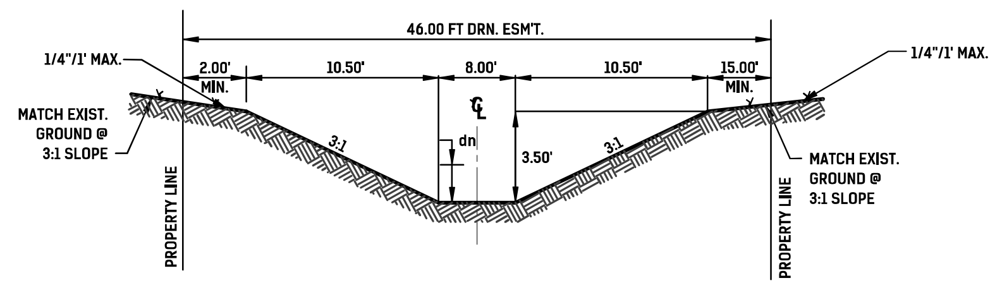
KEYNOTES

① 20' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE

② 10' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE


132
131
130
129
128
127
126
125
124
123
122
121
120
119
118
BLK 35
B-0
B-0
MATCHLINE STA. 33+00.00
SEE SHEET C6.03
33+00
34+00
35+00
℄ PC STA. 35+14.88
℄ PT STA. 35+47.42
℄ CURVE DATA
Δ = 37°17'24"
R = 50.00'
T = 16.87'
L = 32.54'
LOT 901 BLK 47
OPEN SPACE
VAR. WID. DRN. ESM'T.
(1.678 Ac.)
MATCHLINE STA. 36+50.00
SEE SHEET C6.05

SCALE: 1"=20'
0 10 20


46.00 FT DRN. ESM'T.
1/4"/1' MAX.
2.00' MIN.
10.50'
8.00'
10.50'
15.00' MIN.
1/4"/1' MAX.
℄
MATCH EXIST. GROUND @ 3:1 SLOPE
3:1
dn
3.50'
3:1
MATCH EXIST. GROUND @ 3:1 SLOPE
PROPERTY LINE
PROPERTY LINE

DRAIN "B-0" SECTION (N.T.S.)

MAIN CHANNEL HYDRAULIC SUMMARY		
SECTION	"B0"	"B0"
STATION	31+50.00 - 33+50.00	33+50.00 - 36+87.71
Q_{100} (cfs)	273.93	273.93
n	.035	0.035
S (%)	1.06	0.70
D (ft)	3.50	3.50
d_n (ft)	2.81	2.99
V (fps)	6.32	5.40

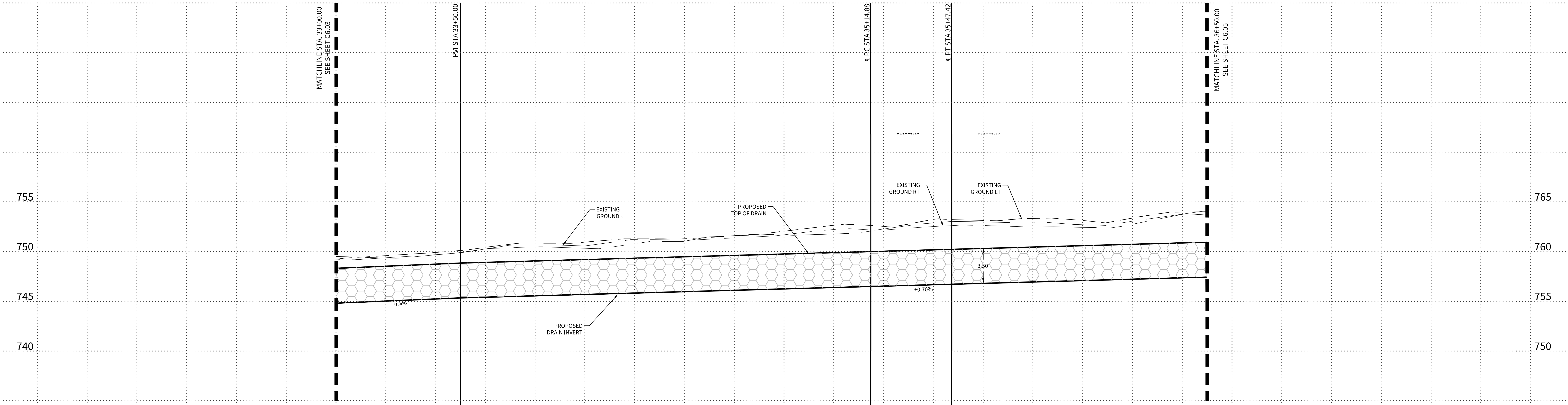
NOTES:

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 SANTA CLARA & GUADALUPE COUNTY. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING, AND WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
3. REFERENCE TYPICAL CONCRETE CHANNEL RIP-RAP STANDARDS FOUND ON SHEET C6.D1

CHANNEL 8B

STA. 33+00.00 TO STA. 36+50.00

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



PROP. TOP OF DRAIN	753.32	753.53	753.74	753.85	753.92	754.06	754.20	754.34	754.47	754.61	754.75	754.89	754.92	755.03	755.17	755.15	755.31	755.45	755.59	755.73	755.87
PROP. DRAIN INVERT	749.82	750.03	750.24	750.35	750.42	750.56	750.70	750.84	750.97	751.11	751.25	751.39	751.50	751.53	751.67	751.72	751.81	751.95	752.09	752.23	752.37

33+00 34+00 35+00 36+00

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GRACE VALLEY RANCH
PHASE 8

DRAINAGE PLAN & PROFILE - CHANNEL 8B

DATE
11/10/2025

PROJECT NO.
03499.010

DRAWN BY
JK/AR/JF/RB

CHECKED BY
KMH

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KYLE M. HUDEK
138753
11/11/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C6.04

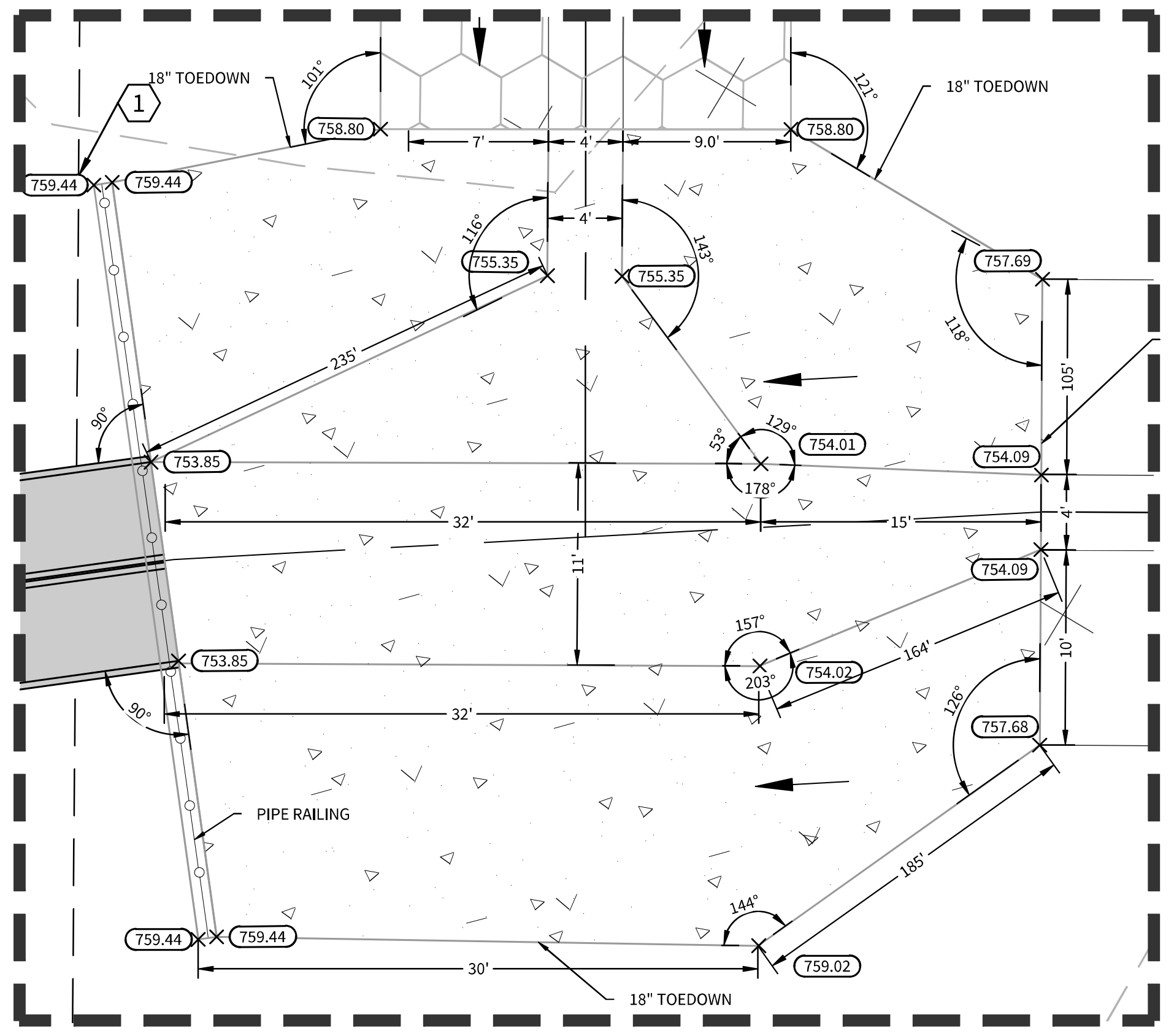
P:\03499\010\2-DWG\4-Plans\C6.04 DRAINAGE PLAN & PROFILE - CHANNEL 8A.dwg 2025/11/10 5:39pm arodriguez

LEGEND

EARTHEN CHANNEL	✚
CONCRETE RIP-RAP	▨
TURF REINFORCEMENT MAT	⬡

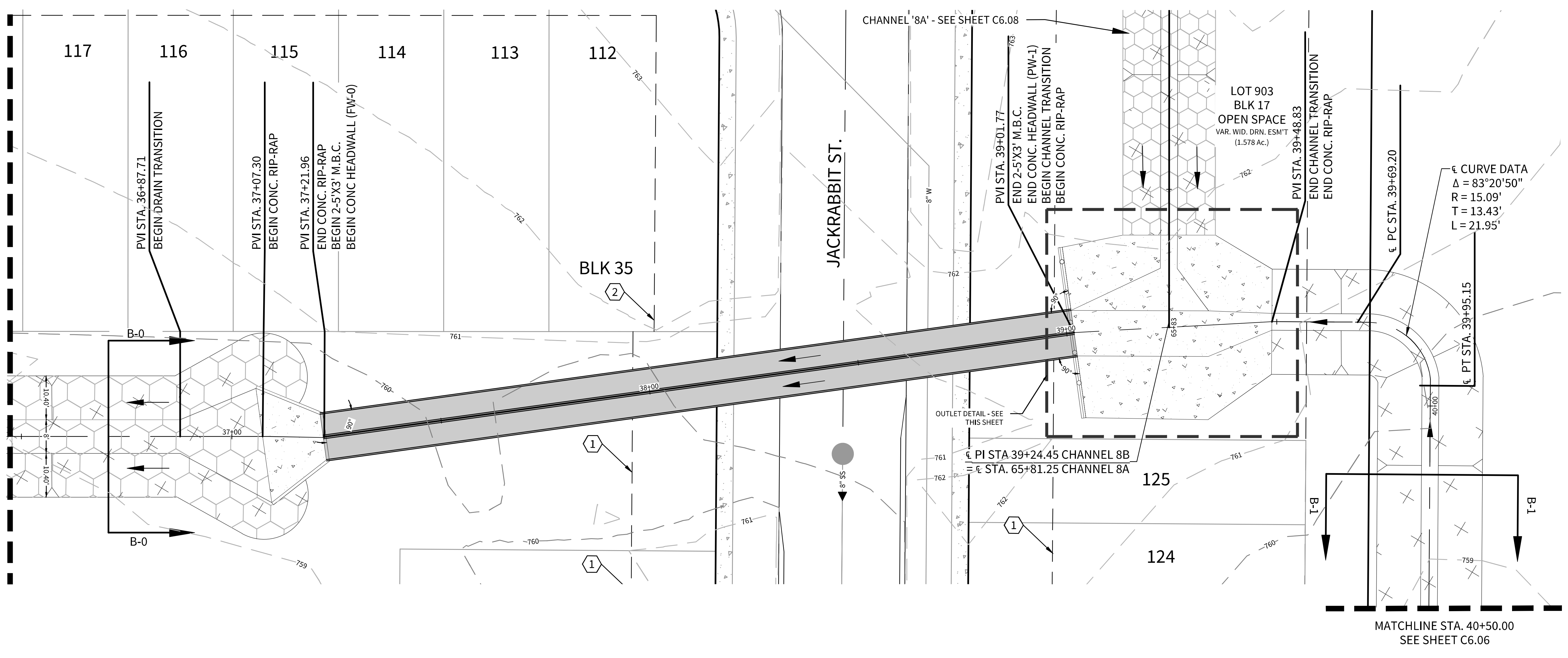
KEYNOTES

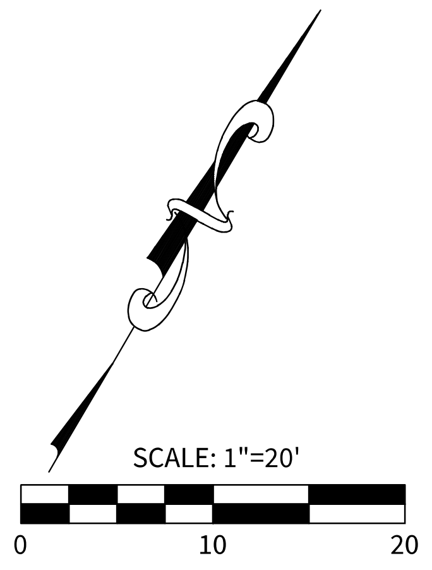
1. 20' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE
2. 10' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE

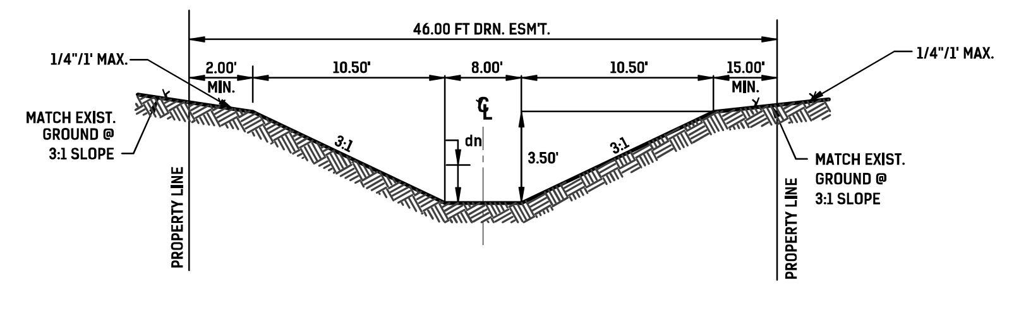

18" TOEDOWN
1
759.44
758.80
7'
4'
9.0'
101°
121°
18" TOEDOWN
757.69
755.35
754.09
754.02
753.85
32'
15'
36" TOEDOWN
757.68
PIPE RAILING
759.02
30'
18" TOEDOWN

OUTLET DETAIL

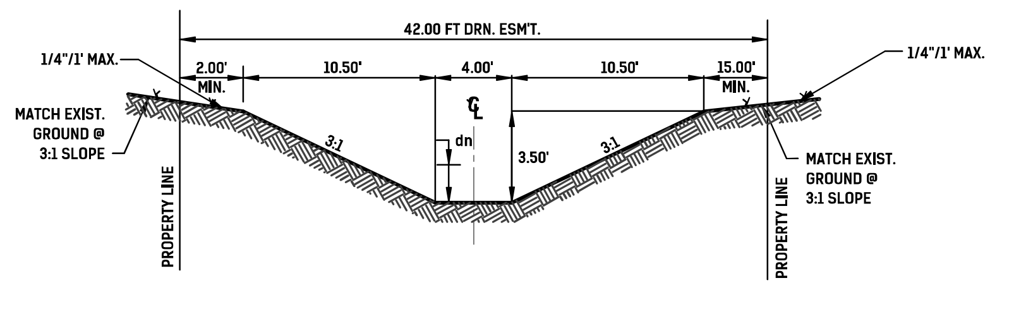
SCALE: 1" = 10'


117
116
115
114
113
112
PVI STA. 36+87.71
BEGIN DRAIN TRANSITION
PVI STA. 37+07.30
BEGIN CONC. RIP-RAP
PVI STA. 37+21.96
END CONC. RIP-RAP
BEGIN 2-5'X3' M.B.C.
BEGIN CONC HEADWALL (FW-0)
BLK 35
JACKRABBIT ST.
CHANNEL '8A' - SEE SHEET C6.08
PVI STA. 39+01.77
END 2-5'X3' M.B.C.
END CONC. HEADWALL (PW-1)
BEGIN CHANNEL TRANSITION
BEGIN CONC. RIP-RAP
LOT 903
BLK 17
OPEN SPACE
VAR. WID. DRN. ESM'T
(1.578 Ac.)
PVI STA. 39+48.83
END CHANNEL TRANSITION
END CONC. RIP-RAP
℄ PC STA. 39+69.20
℄ CURVE DATA
Δ = 83°20'50"
R = 15.09'
T = 13.43'
L = 21.95'
℄ PT STA. 39+95.15
OUTLET DETAIL - SEE THIS SHEET
℄ PI STA 39+24.45 CHANNEL 8B
= ℄ STA. 65+81.25 CHANNEL 8A
125
124
B-0
B-1
MATCHLINE STA. 36+50.00
SEE SHEET C6.04
MATCHLINE STA. 40+50.00
SEE SHEET C6.06
39+00
40+00
8" W
8" SS


SCALE: 1"=20'
0
10
20


46.00 FT DRN. ESM'T.
1/4"/1' MAX.
2.00' MIN.
10.50'
8.00'
10.50'
15.00' MIN.
℄
dn
3.50'
3:1
MATCH EXIST. GROUND @ 3:1 SLOPE
PROPERTY LINE

DRAIN "B-0" SECTION (N.T.S.)


42.00 FT DRN. ESM'T.
1/4"/1' MAX.
2.00' MIN.
10.50'
4.00'
10.50'
15.00' MIN.
℄
dn
3.50'
3:1
MATCH EXIST. GROUND @ 3:1 SLOPE
PROPERTY LINE

DRAIN "B-1" SECTION (N.T.S.)

MAIN CHANNEL HYDRAULIC SUMMARY		
SECTION	"B0"	"B1"
STATION	33+50.00 - 36+87.71	39+48.83 - 42+52.48
Q_{100} (cfs)	273.93	145.02
n	0.035	0.035
S (%)	0.70	0.50
D (ft)	3.50	3.50
d_n (ft)	2.99	2.83
V (fps)	5.40	4.10

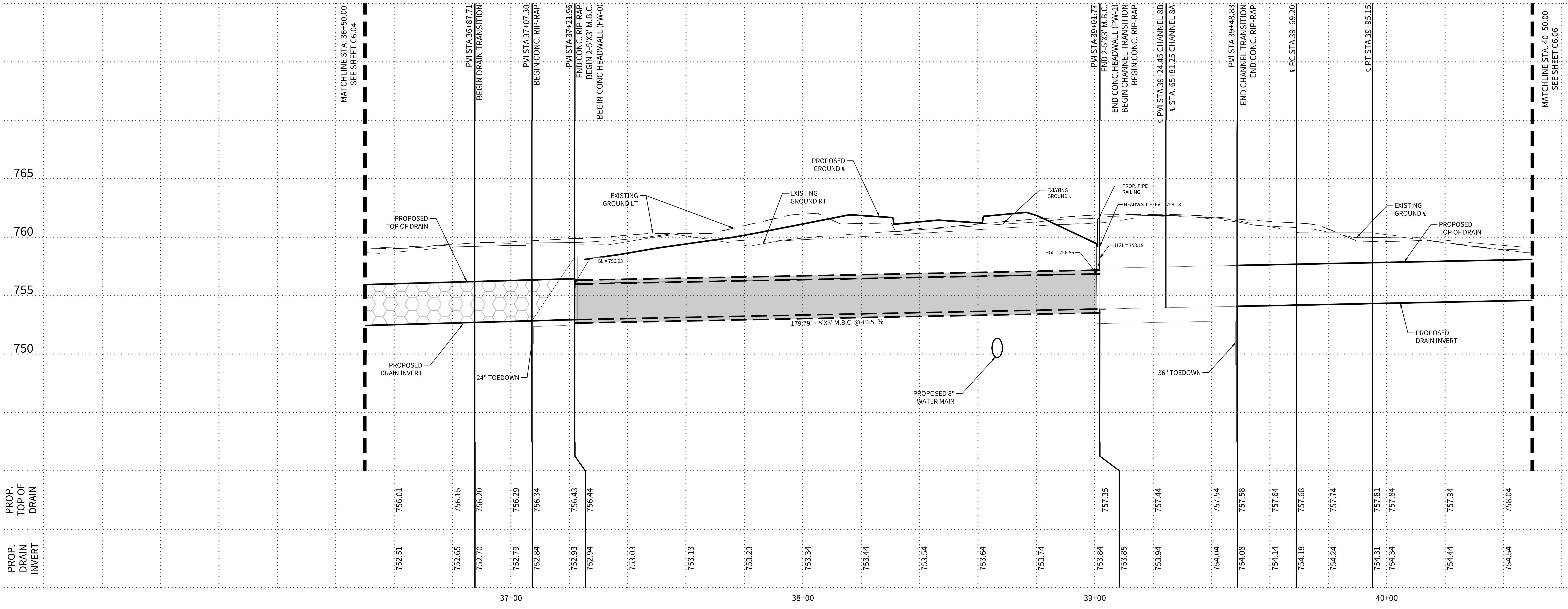
NOTES:

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 SANTA CLARA & GUADALUPE COUNTY. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING, AND WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
3. REFERENCE TYPICAL CONCRETE CHANNEL RIP-RAP STANDARDS FOUND ON SHEET C6.D1

CHANNEL 8B

STA. 36+50.00 TO STA. 40+50.00

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


MATCHLINE STA. 36+50.00
SEE SHEET C6.04
PVI STA 36+87.71
BEGIN DRAIN TRANSITION
PVI STA 37+07.30
BEGIN CONC. RIP-RAP
PVI STA 37+21.96
END CONC. RIP-RAP
BEGIN 2-5'X3' M.B.C.
BEGIN CONC HEADWALL (FW-0)
PVI STA 39+01.77
END 2-5'X3' M.B.C.
END CONC.HEADWALL (PW-1)
BEGIN CHANNEL TRANSITION
BEGIN CONC. RIP-RAP
℄ PVI STA 39+24.45 CHANNEL 8B
= ℄ STA. 65+81.25 CHANNEL 8A
PVI STA 39+48.83
END CHANNEL TRANSITION
END CONC. RIP-RAP
℄ PC STA 39+69.20
℄ PT STA 39+95.15
MATCHLINE STA. 40+50.00
SEE SHEET C6.06
765
760
755
750
PROPOSED TOP OF DRAIN
EXISTING GROUND LT
PROPOSED GROUND ℄
EXISTING GROUND RT
EXISTING GROUND ℄
PROP. PIPE RAILING
HEADWALL ELEV. = 759.18
HGL = 756.03
HGL = 756.86
HGL = 758.19
EXISTING GROUND ℄
PROPOSED TOP OF DRAIN
179.79' - 5'X3' M.B.C. @ +0.51%
PROPOSED DRAIN INVERT
24" TOEDOWN
PROPOSED 8" WATER MAIN
36" TOEDOWN
PROPOSED DRAIN INVERT
PROP. TOP OF DRAIN
756.01
756.15
756.20
756.29
756.34
756.43
756.44
757.35
757.44
757.54
757.58
757.64
757.68
757.74
757.81
757.84
757.94
758.04
PROP. DRAIN INVERT
752.51
752.65
752.70
752.79
752.84
752.93
752.94
753.03
753.13
753.23
753.34
753.44
753.54
753.64
753.74
753.84
753.85
753.94
754.04
754.08
754.14
754.18
754.24
754.31
754.34
754.44
754.54
37+00
38+00
39+00
40+00

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GRACE VALLEY RANCH
PHASE 8

DRAINAGE PLAN & PROFILE - CHANNEL 8B

DATE
11/11/2025

PROJECT NO.
03499.010

DRAWN BY
JK/AR/JF/RB

CHECKED BY
KMH

REVISIONS

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9.

KYLE M. HUDEK
138753
11/11/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C6.05

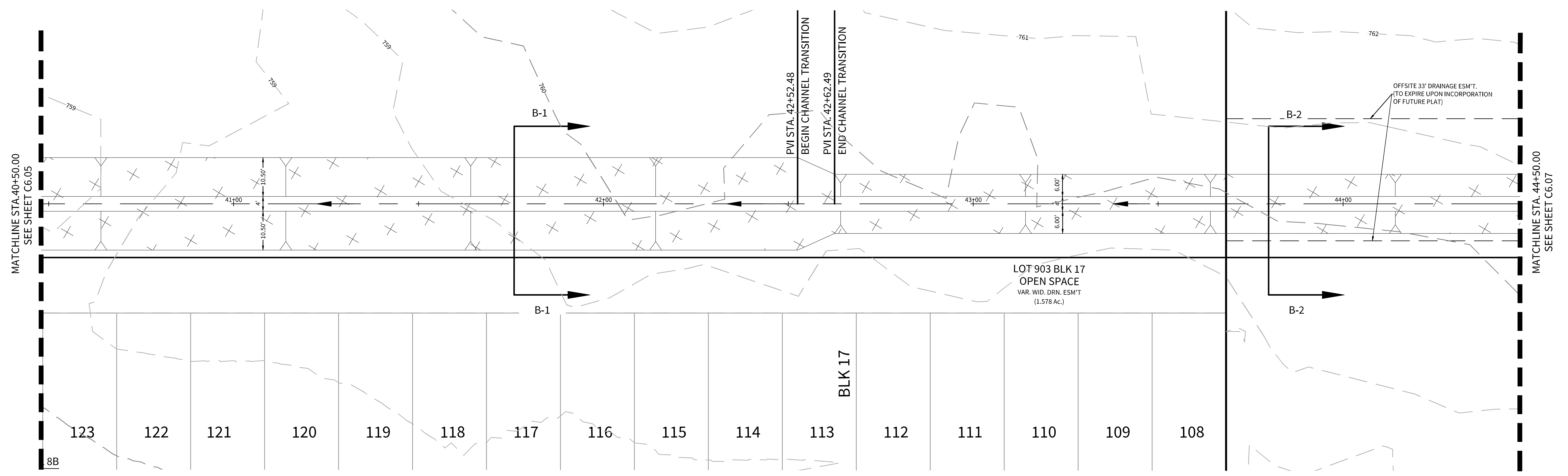
LEGEND

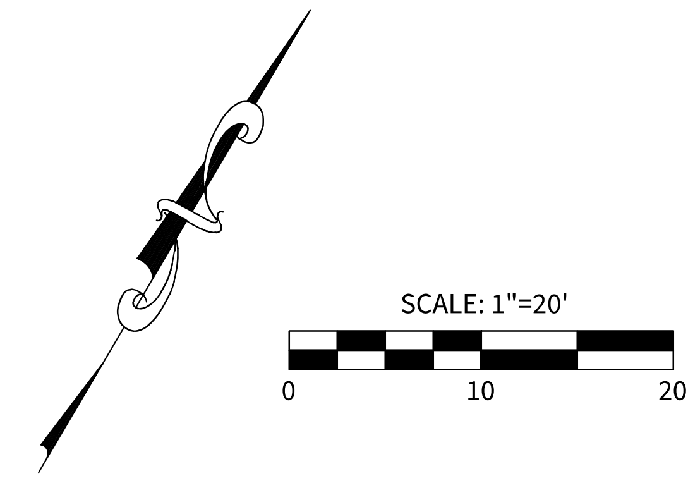
EARTHEN CHANNEL	+
TURF REINFORCEMENT MAT	⬡

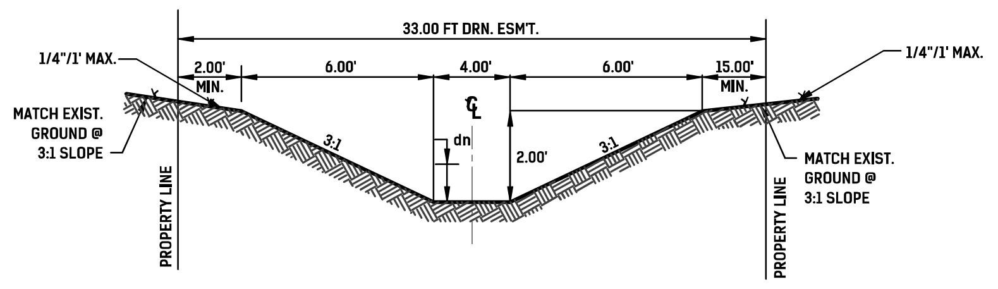
KEYNOTES

① 20' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE

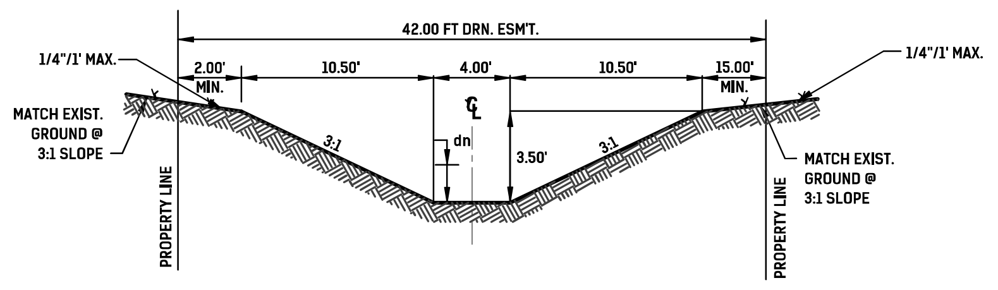
② 10' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE


MATCHLINE STA.40+50.00
SEE SHEET C6.05
PVI STA 42+52.48
BEGIN CHANNEL TRANSITION
PVI STA 42+62.49
END CHANNEL TRANSITION
MATCHLINE STA. 44+50.00
SEE SHEET C6.07
B-1
B-2
OFFSITE 33' DRAINAGE ESM'T.
(TO EXPIRE UPON INCORPORATION OF FUTURE PLAT)
759
760
761
762
41+00
42+00
43+00
44+00
10.50'
6.00'
LOT 903 BLK 17
OPEN SPACE
VAR. WID. DRN. ESM'T
(1.578 Ac.)
BLK 17
123
122
121
120
119
118
117
116
115
114
113
112
111
110
109
108
8B


SCALE: 1"=20'
0
10
20


33.00 FT DRN. ESM'T.
1/4"/1' MAX.
2.00' MIN.
6.00'
4.00'
6.00'
15.00' MIN.
1/4"/1' MAX.
MATCH EXIST. GROUND @ 3:1 SLOPE
℄
dn
2.00'
3:1
3:1
PROPERTY LINE
MATCH EXIST. GROUND @ 3:1 SLOPE
PROPERTY LINE

DRAIN "B–2" SECTION (N.T.S.)


42.00 FT DRN. ESM'T.
1/4"/1' MAX.
2.00' MIN.
10.50'
4.00'
10.50'
15.00' MIN.
1/4"/1' MAX.
MATCH EXIST. GROUND @ 3:1 SLOPE
℄
dn
3.50'
3:1
3:1
PROPERTY LINE
MATCH EXIST. GROUND @ 3:1 SLOPE
PROPERTY LINE

DRAIN "B–1" SECTION (N.T.S.)

MAIN CHANNEL HYDRAULIC SUMMARY		
SECTION	"B1"	"B2"
STATION	39+48.83 - 42+52.48	42+62.49 - 46+00.13
Q_{100} (cfs)	145.02	34.54
n	0.035	0.035
S (%)	0.50	0.69
D (ft)	3.50	2.00
d_n (ft)	2.83	1.34
V (fps)	4.10	3.21

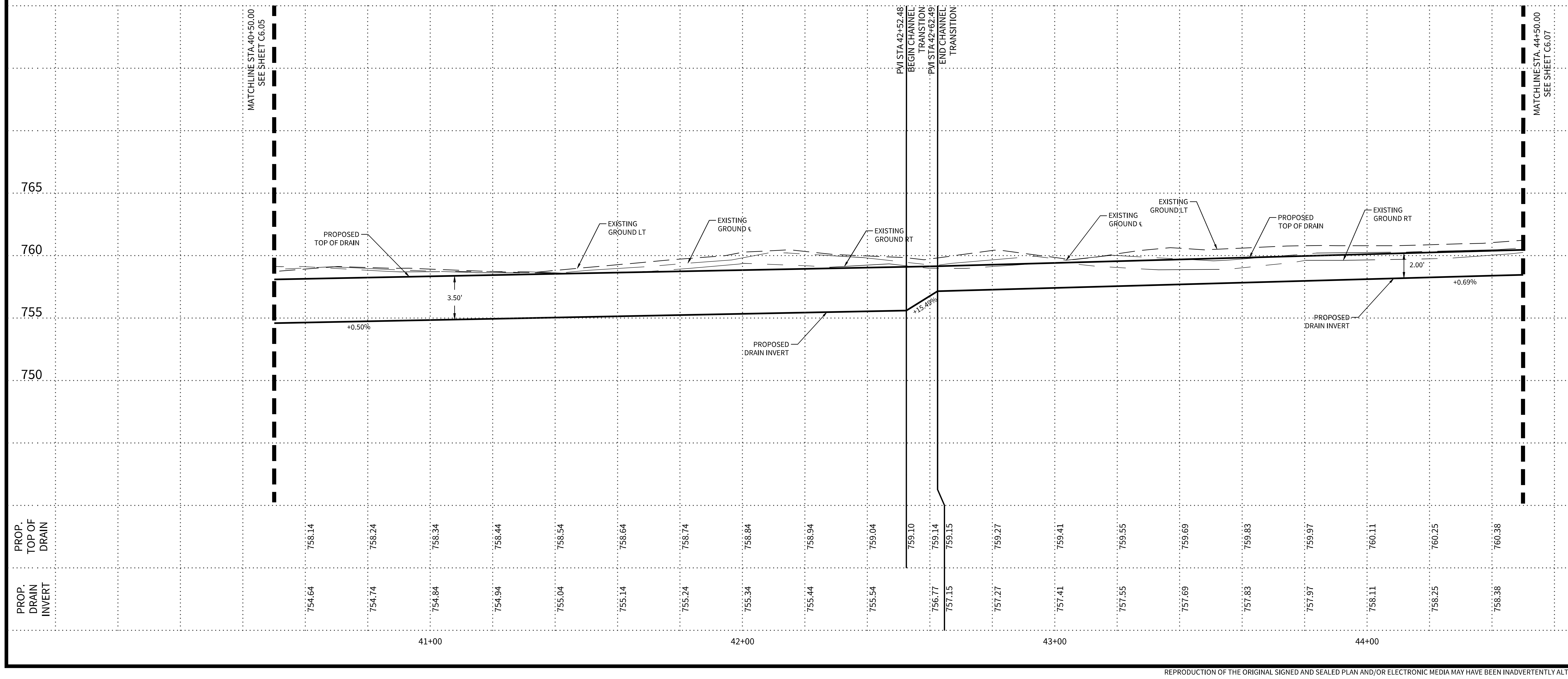
NOTES:

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 SANTA CLARA & GUADALUPE COUNTY. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING, AND WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
3. REFERENCE TYPICAL CONCRETE CHANNEL RIP-RAP STANDARDS FOUND ON SHEET C6.D1

CHANNEL 8B

STA. 40+50.00 TO STA. 44+50.00

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


MATCHLINE STA.40+50.00
SEE SHEET C6.05
PVI STA 42+52.48
BEGIN CHANNEL TRANSITION
PVI STA 42+62.49
END CHANNEL TRANSITION
MATCHLINE STA. 44+50.00
SEE SHEET C6.07
765
760
755
750
765
760
755
750
PROPOSED TOP OF DRAIN
EXISTING GROUND LT
EXISTING GROUND ℄
EXISTING GROUND RT
EXISTING GROUND ℄
EXISTING GROUND LT
PROPOSED TOP OF DRAIN
EXISTING GROUND RT
3.50'
+0.50%
PROPOSED DRAIN INVERT
+15.49%
2.00'
+0.69%
PROPOSED DRAIN INVERT
41+00
42+00
43+00
44+00

PROP. TOP OF DRAIN	758.14	758.24	758.34	758.44	758.54	758.64	758.74	758.84	758.94	759.04	759.10	759.14	759.15	759.27	759.41	759.55	759.69	759.83	759.97	760.11	760.25	760.38
PROP. DRAIN INVERT	754.64	754.74	754.84	754.94	755.04	755.14	755.24	755.34	755.44	755.54		756.77	757.15	757.27	757.41	757.55	757.69	757.83	757.97	758.11	758.25	758.38

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KYLE M. HUDEK
138753
11/11/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C6.06

P:\03499\010\2-DWG\4-Plans\C6.04 DRAINAGE PLAN & PROFILE - CHANNEL 8A.dwg 2025/11/11 12:26pm arodriguez

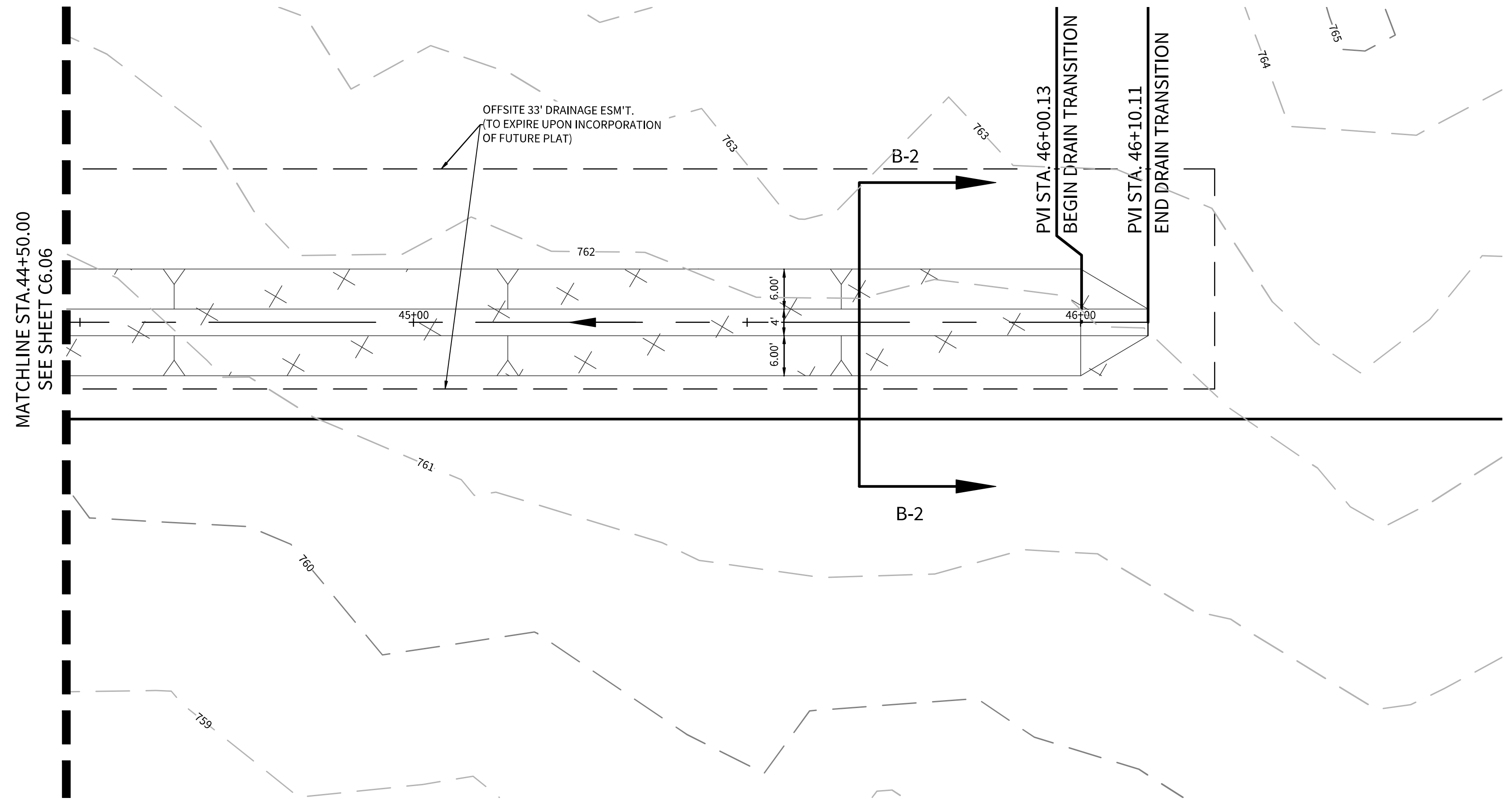
LEGEND

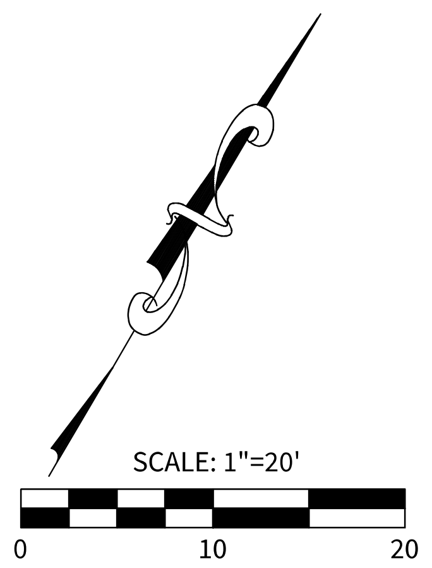
EARTHEN CHANNEL ▨

KEYNOTES

① 20' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE

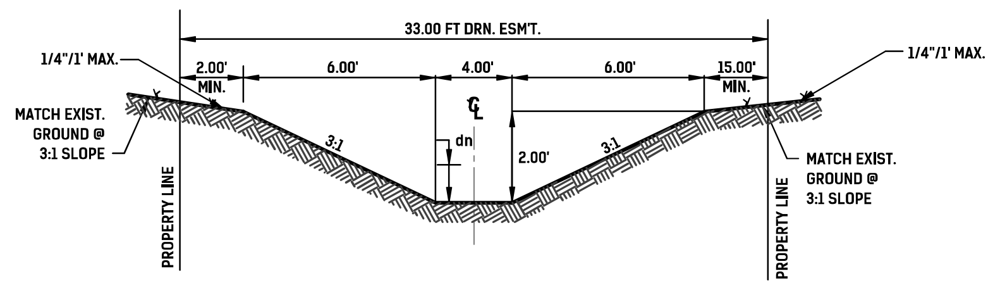
② 10' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE


MATCHLINE STA.44+50.00
SEE SHEET C6.06
OFFSITE 33' DRAINAGE ESM'T.
(TO EXPIRE UPON INCORPORATION
OF FUTURE PLAT)
B-2
B-2
PVI STA. 46+00.13
BEGIN DRAIN TRANSITION
PVI STA. 46+10.11
END DRAIN TRANSITION
45+00
46+00
6.00'
4'
6.00'
759
760
761
762
763
763
764
765


SCALE: 1"=20'
0
10
20

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 SANTA CLARA & GUADALUPE COUNTY. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING, AND WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
3. REFERENCE TYPICAL CONCRETE CHANNEL RIP-RAP STANDARDS FOUND ON SHEET C6.D1


33.00 FT DRN. ESM'T.
1/4"/1' MAX.
1/4"/1' MAX.
2.00'
MIN.
6.00'
4.00'
6.00'
15.00'
MIN.
℄
dn
2.00'
3:1
3:1
MATCH EXIST.
GROUND @
3:1 SLOPE
MATCH EXIST.
GROUND @
3:1 SLOPE
PROPERTY LINE
PROPERTY LINE

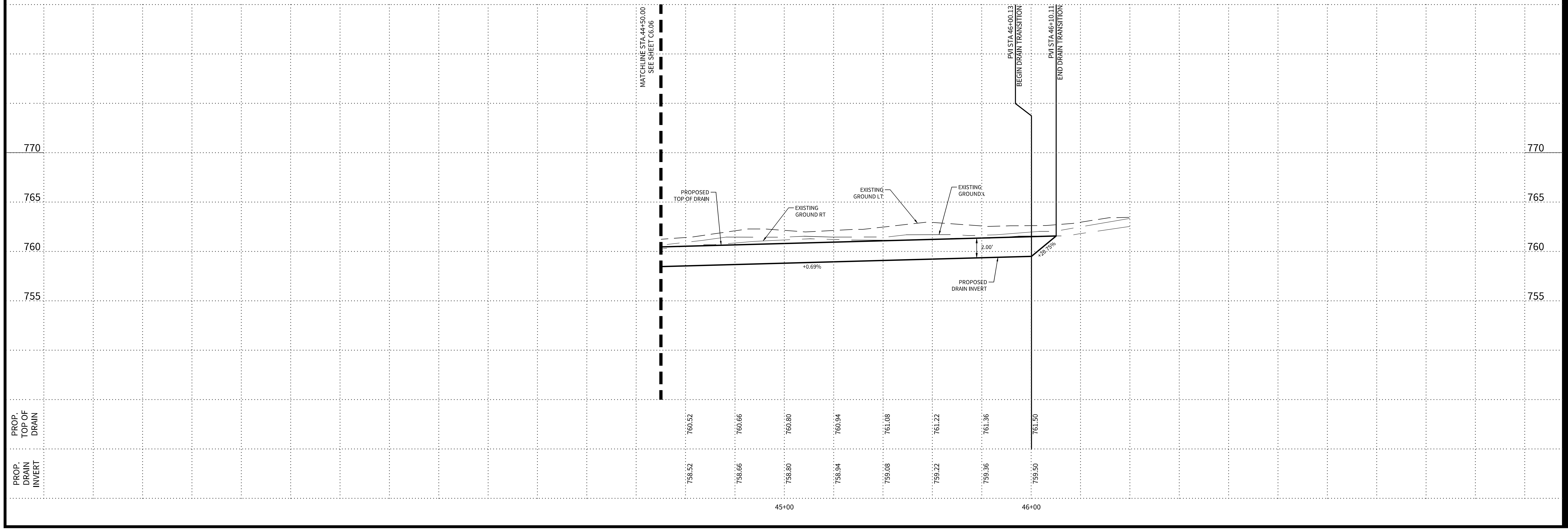
DRAIN "B-2" SECTION (N.T.S.)

MAIN CHANNEL HYDRAULIC SUMMARY	
SECTION	"B2"
STATION	42+62.49 - 46+00.13
Q_{100} (cfs)	34.54
n	0.035
S (%)	0.69
D (ft)	2.00
d_n (ft)	1.34
V (fps)	3.21

CHANNEL 8B

STA. 44+50.00 TO STA. 46+10.11

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



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GRACE VALLEY RANCH
PHASE 8

DRAINAGE PLAN & PROFILE - CHANNEL 8B

DATE
11/11/2025

PROJECT NO.
03499.010

DRAWN BY
JK/AR/JF/RB

CHECKED BY
KMH

REVISIONS
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KYLE M. HUDEK
138753
K. Hudek
11/11/2025

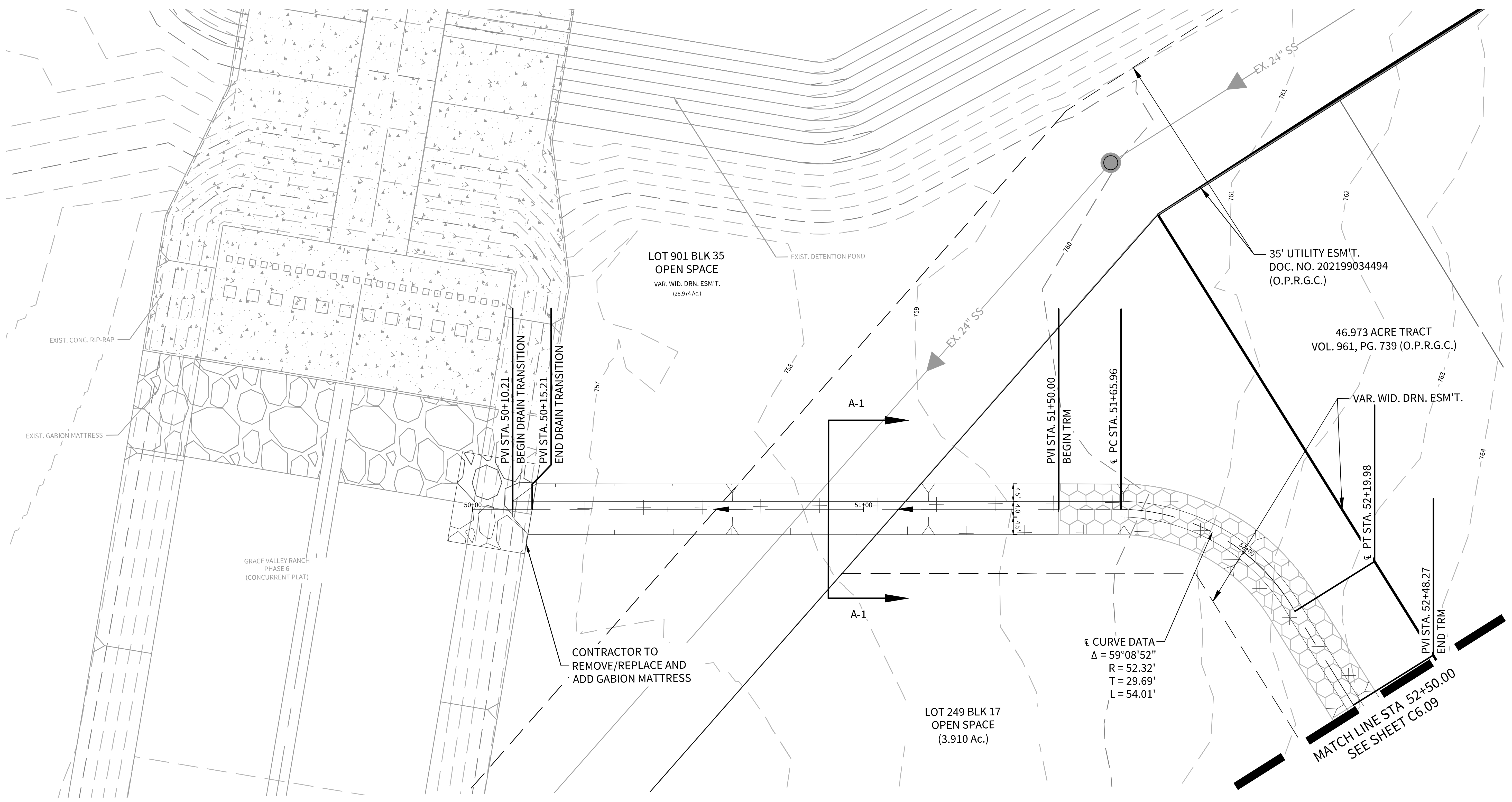
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C6.07

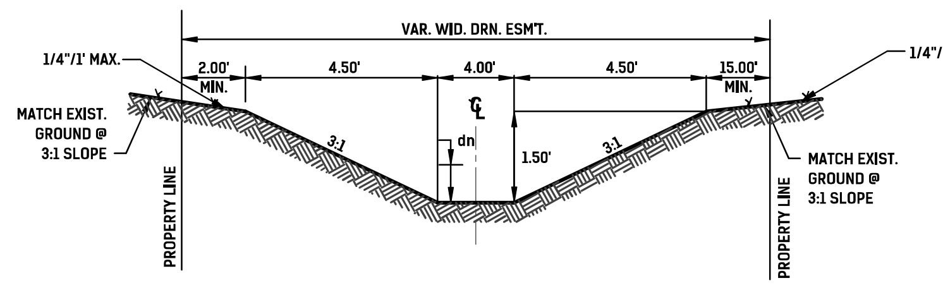
P:\03499\010\2-DWG\4-Plans\C6.04 DRAINAGE PLAN & PROFILE - CHANNEL 8A.dwg 2025/11/11 12:26pm arodriguez

LEGEND

EARTHEN CHANNEL	▨
CONCRETE RIP-RAP	▨
TURF REINFORCEMENT MAT	▨


LOT 901 BLK 35
OPEN SPACE
VAR. WID. DRN. ESM'T.
(28.974 Ac.)
EXIST. DETENTION POND
EX. 24" SS
EXIST. CONC. RIP-RAP
EXIST. GABION MATTRESS
GRACE VALLEY RANCH PHASE 6 (CONCURRENT PLAT)
PVI STA. 50+10.21 BEGIN DRAIN TRANSITION
PVI STA. 50+15.21 END DRAIN TRANSITION
A-1
A-1
51+00
50+00
PVI STA. 51+50.00 BEGIN TRM
℄ PC STA. 51+65.96
℄ PT STA. 52+19.98
PVI STA. 52+48.27 END TRM
MATCH LINE STA 52+50.00 SEE SHEET C6.09
35' UTILITY ESM'T. DOC. NO. 202199034494 (O.P.R.G.C.)
46.973 ACRE TRACT VOL. 961, PG. 739 (O.P.R.G.C.)
VAR. WID. DRN. ESM'T.
CONTRACTOR TO REMOVE/REPLACE AND ADD GABION MATTRESS
℄ CURVE DATA
Δ = 59°08'52"
R = 52.32'
T = 29.69'
L = 54.01'
LOT 249 BLK 17
OPEN SPACE
(3.910 Ac.)

SCALE: 1"=20'
0 10 20


VAR. WID. DRN. ESM'T.
1/4"/1' MAX.
1/4"/1' MAX.
2.00' MIN.
4.50'
4.00'
4.50'
15.00' MIN.
℄
dn
1.50'
3:1
3:1
MATCH EXIST. GROUND @ 3:1 SLOPE
MATCH EXIST. GROUND @ 3:1 SLOPE
PROPERTY LINE
PROPERTY LINE

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

CHANNEL '8A' HYDRAULIC SUMMARY			
SECTION	"A-1"		
STATION	50+15.21 - 51+50.00	51+50.00 - 52+48.27	52+48.27 - 54+34.11
Q_{100} (cfs)	23.82	23.82	23.82
n	0.035	0.035	0.035
S (%)	1.96	3.96	1.08
D (ft)	1.50	1.50	1.50
d_n (ft)	0.86	0.72	1.00
V (fps)	4.21	5.37	3.40

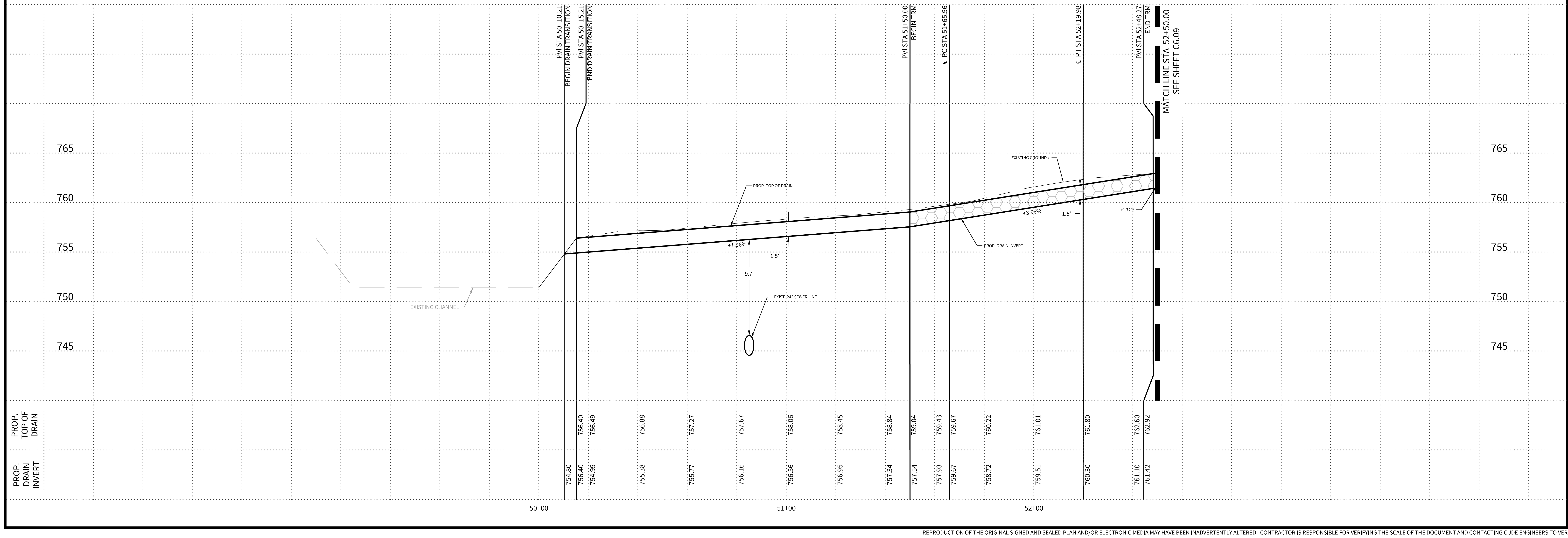
NOTES:

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 SANTA CLARA & GUADALUPE COUNTY. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING, AND WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
3. REFERENCE TYPICAL CONCRETE CHANNEL RIP-RAP STANDARDS FOUND ON SHEET C6.D1

CHANNEL 8A

STA. 50+00.00 TO STA. 52+50.00

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


PVI STA 50+10.21 BEGIN DRAIN TRANSITION
PVI STA 50+15.21 END DRAIN TRANSITION
PVI STA 51+50.00 BEGIN TRM
℄ PC STA 51+65.96
℄ PT STA 52+19.98
PVI STA 52+48.27 END TRM
MATCH LINE STA 52+50.00 SEE SHEET C6.09
765
760
755
750
745
765
760
755
750
745
EXISTING GROUND ℄
PROP. TOP OF DRAIN
PROP. DRAIN INVERT
+1.96%
+3.96%
+1.72%
1.5'
1.5'
9.7'
EXIST. 24" SEWER LINE
EXISTING CHANNEL
PROP. TOP OF DRAIN
756.40
756.49
756.88
757.27
757.67
758.06
758.45
758.84
759.04
759.43
759.67
760.22
761.01
761.80
762.60
762.92
PROP. DRAIN INVERT
754.80
756.40
754.99
755.38
755.77
756.16
756.56
756.95
757.34
757.54
757.93
759.67
758.72
759.51
760.30
761.10
761.42
50+00
51+00
52+00

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GRACE VALLEY RANCH
PHASE 8

DRAINAGE PLAN & PROFILE - CHANNEL 8A

DATE
11/10/2025

PROJECT NO.
03499.010

DRAWN BY
JK/AR/JF/RB

CHECKED BY
KMH

REVISIONS
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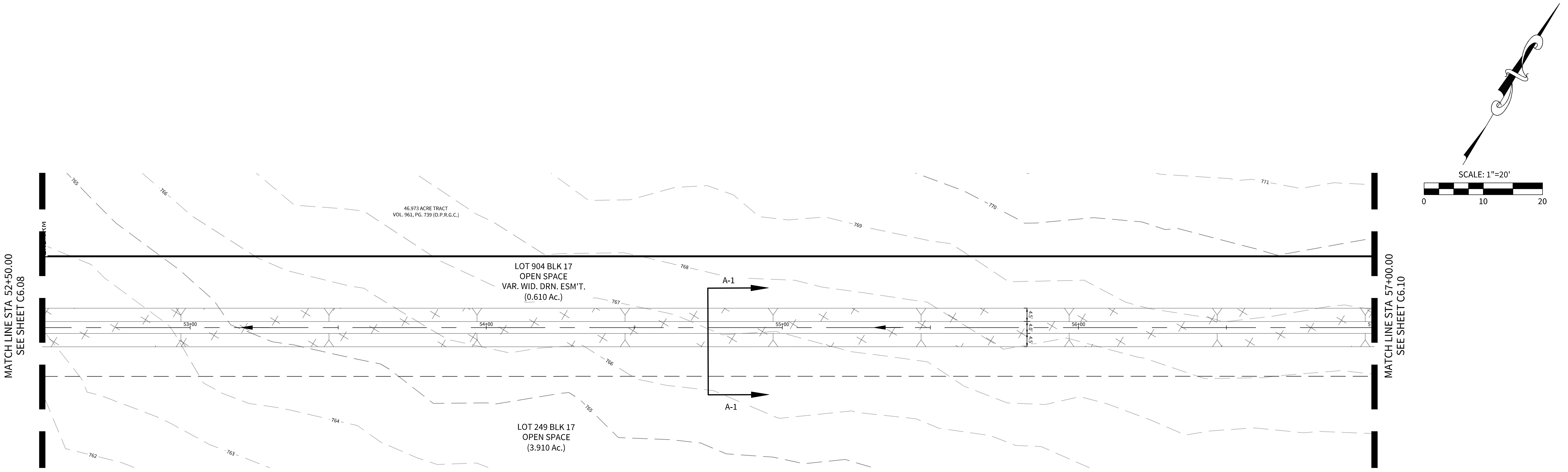
KYLE M. HUDEK
138753
11/11/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

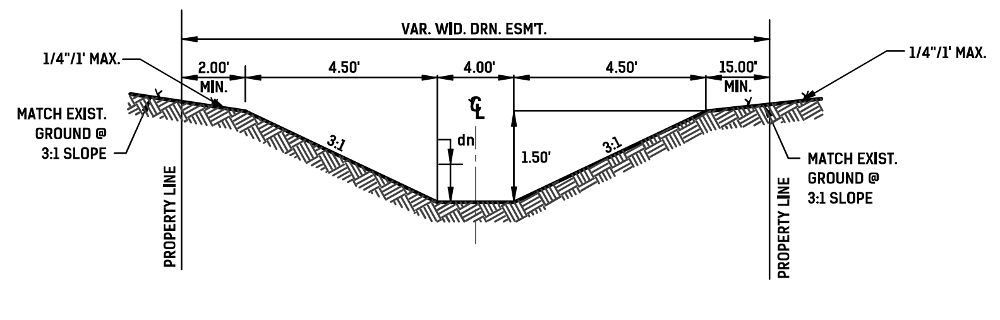
C6.08

LEGEND

EARTHEN CHANNEL ▨


SCALE: 1"=20'
0
10
20
MATCH LINE STA 52+50.00
SEE SHEET C6.08
MATCH LINE STA 57+00.00
SEE SHEET C6.10
46.973 ACRE TRACT
VOL. 961, PG. 739 (O.P.R.G.C.)
LOT 904 BLK 17
OPEN SPACE
VAR. WID. DRN. ESM'T.
(0.610 Ac.)
LOT 249 BLK 17
OPEN SPACE
(3.910 Ac.)
A-1
A-1
53+00
54+00
55+00
56+00
762
763
764
765
766
767
768
769
770
771

CHANNEL '8A' HYDRAULIC SUMMARY		
SECTION	"A-1"	
STATION	52+48.27 - 54+34.11	54+34.11 - 58+32.21
Q_{100} (cfs)	23.82	23.82
n	0.035	0.035
S (%)	1.08	1.10
D (ft)	1.50	1.50
d_n (ft)	1.00	1.00
V (fps)	3.40	3.40


VAR. WID. DRN. ESM'T.
1/4"/1' MAX.
1/4"/1' MAX.
2.00' MIN.
4.50'
4.00'
4.50'
15.00' MIN.
℄
dn
1.50'
3:1
3:1
MATCH EXIST. GROUND @ 3:1 SLOPE
MATCH EXIST. GROUND @ 3:1 SLOPE
PROPERTY LINE
PROPERTY LINE

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

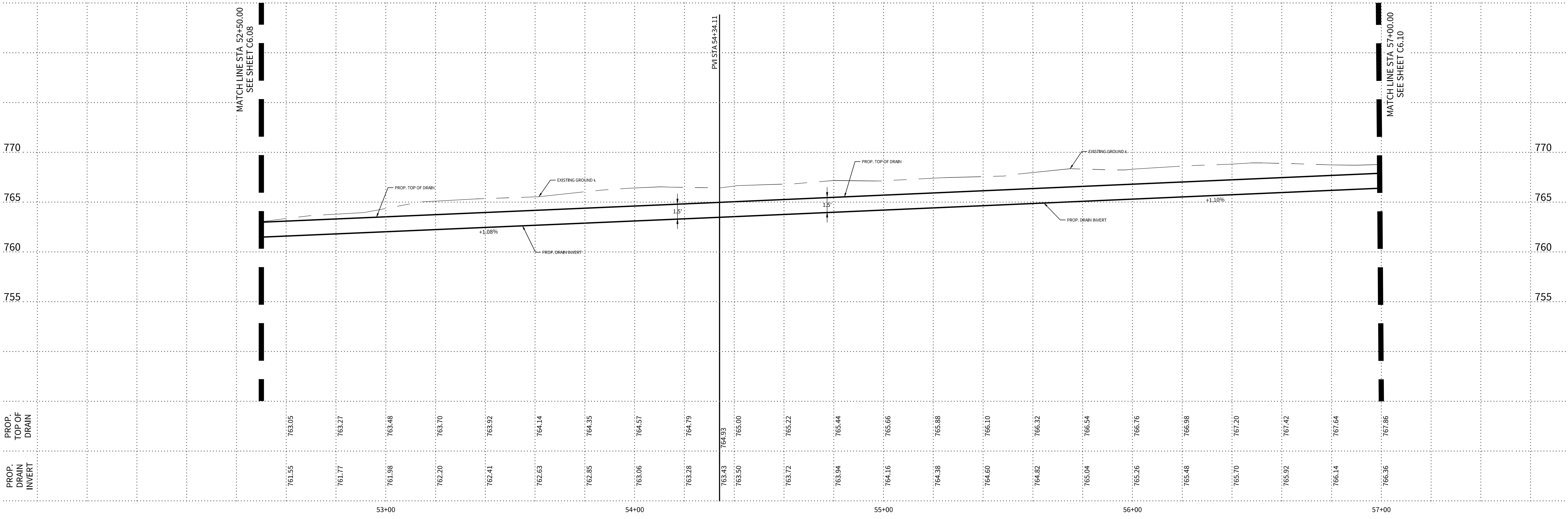
NOTES:

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 SANTA CLARA & GUADALUPE COUNTY. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING, AND WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
3. REFERENCE TYPICAL CONCRETE CHANNEL RIP-RAP STANDARDS FOUND ON SHEET C6.D1

CHANNEL 8A

STA. 52+50.00 TO STA. 57+00.00

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


MATCH LINE STA 52+50.00
SEE SHEET C6.08
MATCH LINE STA 57+00.00
SEE SHEET C6.10
PVI STA 54+34.11
770
765
760
755
PROP. TOP OF DRAIN
EXISTING GROUND
PROP. TOP OF DRAIN
EXISTING GROUND
PROP. DRAIN INVERT
PROP. DRAIN INVERT
1.5'
1.5'
+1.08%
+1.10%
53+00
54+00
55+00
56+00
57+00

PROP. TOP OF DRAIN	PROP. DRAIN INVERT
763.05	761.55
763.27	761.77
763.48	761.98
763.70	762.20
763.92	762.41
764.14	762.63
764.35	762.85
764.57	763.06
764.79	763.28
764.93	763.43
765.00	763.50
765.22	763.72
765.44	763.94
765.66	764.16
765.88	764.38
766.10	764.60
766.32	764.82
766.54	765.04
766.76	765.26
766.98	765.48
767.20	765.70
767.42	765.92
767.64	766.14
767.86	766.36

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GRACE VALLEY RANCH
PHASE 8

DRAINAGE PLAN & PROFILE - CHANNEL 8A

DATE
11/10/2025

PROJECT NO.
03499.010

DRAWN BY
JK/AR/JF/RB

CHECKED BY
KMH

REVISIONS
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KYLE M. HUDEK
138753
11/11/2025

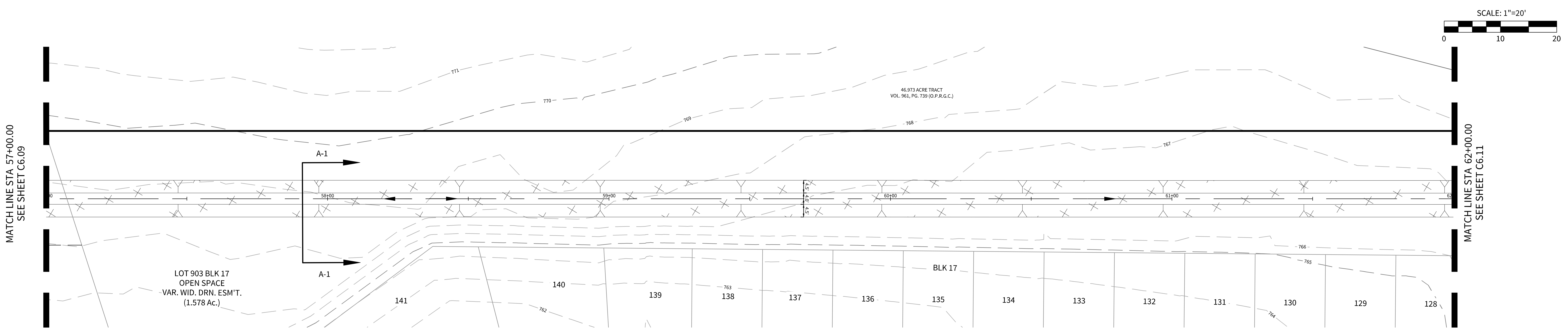
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C6.09

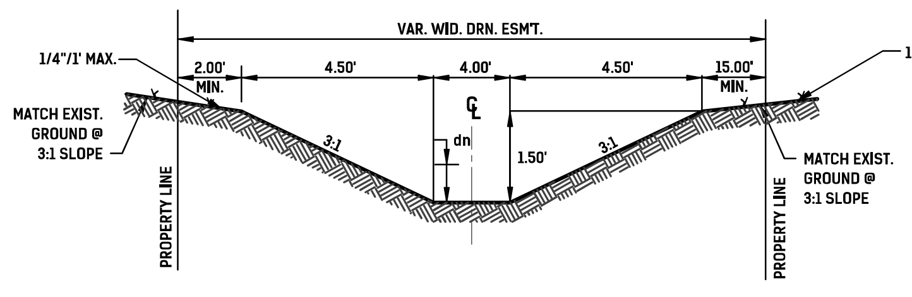
P:\03499\010\2-DWG\4-Plans\C6.09 DRAINAGE PLAN & PROFILE - CHANNEL 8A.dwg 2025/11/10 6:01pm arodriguez

LEGEND

EARTHEN CHANNEL	▨
CONCRETE RIP-RAP	▨
TURF REINFORCEMENT MAT	▨


SCALE: 1"=20'
0
10
20
MATCH LINE STA 57+00.00
SEE SHEET C6.09
MATCH LINE STA 62+00.00
SEE SHEET C6.11
771
770
769
768
767
766
765
764
763
762
46.973 ACRE TRACT
VOL. 961, PG. 739 (D.P.R.G.C.)
A-1
58+00
59+00
60+00
61+00
LOT 903 BLK 17
OPEN SPACE
VAR. WID. DRN. ESM'T.
(1.578 Ac.)
BLK 17
141
140
139
138
137
136
135
134
133
132
131
130
129
128

CHANNEL '8A' HYDRAULIC SUMMARY			
SECTION	"A-1"		
STATION	54+34.11 - 58+32.21	58+32.21 - 60+49.60	60+49.60 - 62+54.73
Q_{100} (cfs)	23.82	18.35	18.35
n	0.035	0.035	0.035
S (%)	1.10	1.39	0.65
D (ft)	1.50	1.50	1.50
d_n (ft)	1.00	0.82	1.00
V (fps)	3.40	3.46	2.62


VAR. WID. DRN. ESM'T.
1/4"/1' MAX.
2.00' MIN.
4.50'
4.00'
4.50'
15.00' MIN.
1/4"/1' MAX.
MATCH EXIST. GROUND @ 3:1 SLOPE
℄
dn
1.50'
3:1
3:1
PROPERTY LINE
MATCH EXIST. GROUND @ 3:1 SLOPE
PROPERTY LINE

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

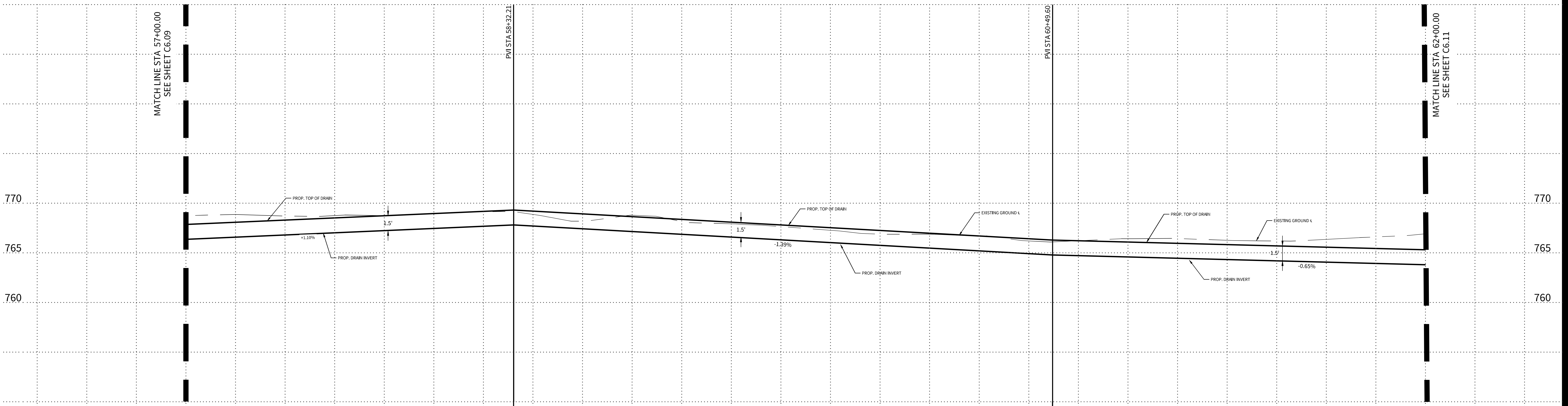
NOTES:

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 SANTA CLARA & GUADALUPE COUNTY. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING, AND WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
3. REFERENCE TYPICAL CONCRETE CHANNEL RIP-RAP STANDARDS FOUND ON SHEET C6.D1

CHANNEL 8A

STA. 57+00.00 TO STA. 62+00.00

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


MATCH LINE STA 57+00.00
SEE SHEET C6.09
PVI STA 58+32.21
PVI STA 60+49.60
MATCH LINE STA 62+00.00
SEE SHEET C6.11
770
765
760
PROP. TOP OF DRAIN
1.5'
+1.10%
PROP. DRAIN INVERT
PROP. TOP OF DRAIN
1.5'
-1.39%
PROP. DRAIN INVERT
EXISTING GROUND ℄
PROP. TOP OF DRAIN
EXISTING GROUND ℄
1.5'
-0.65%
PROP. DRAIN INVERT

STATION	PROP. TOP OF DRAIN	PROP. DRAIN INVERT
57+00	767.86	766.36
	768.08	766.58
	768.30	766.80
	768.52	767.02
	768.74	767.24
58+00	768.96	767.46
	769.18	767.68
	769.31	767.81
	769.20	767.70
	768.92	767.42
	768.64	767.14
59+00	768.37	766.87
	768.09	766.59
	767.81	766.31
	767.53	766.03
	767.25	765.75
60+00	766.97	765.47
	766.69	765.19
	766.41	764.91
	766.28	764.78
	766.21	764.71
	766.08	764.58
61+00	765.95	764.45
	765.82	764.32
	765.69	764.19
	765.56	764.06
	765.43	763.93
62+00	765.30	763.80

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GRACE VALLEY RANCH
PHASE 8

DRAINAGE PLAN & PROFILE - CHANNEL 8A

DATE
11/10/2025

PROJECT NO.
03499.010

DRAWN BY
JK/AR/JF/RB

CHECKED BY
KMH

REVISIONS
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KYLE M. HUDEK
138753
11/11/2025

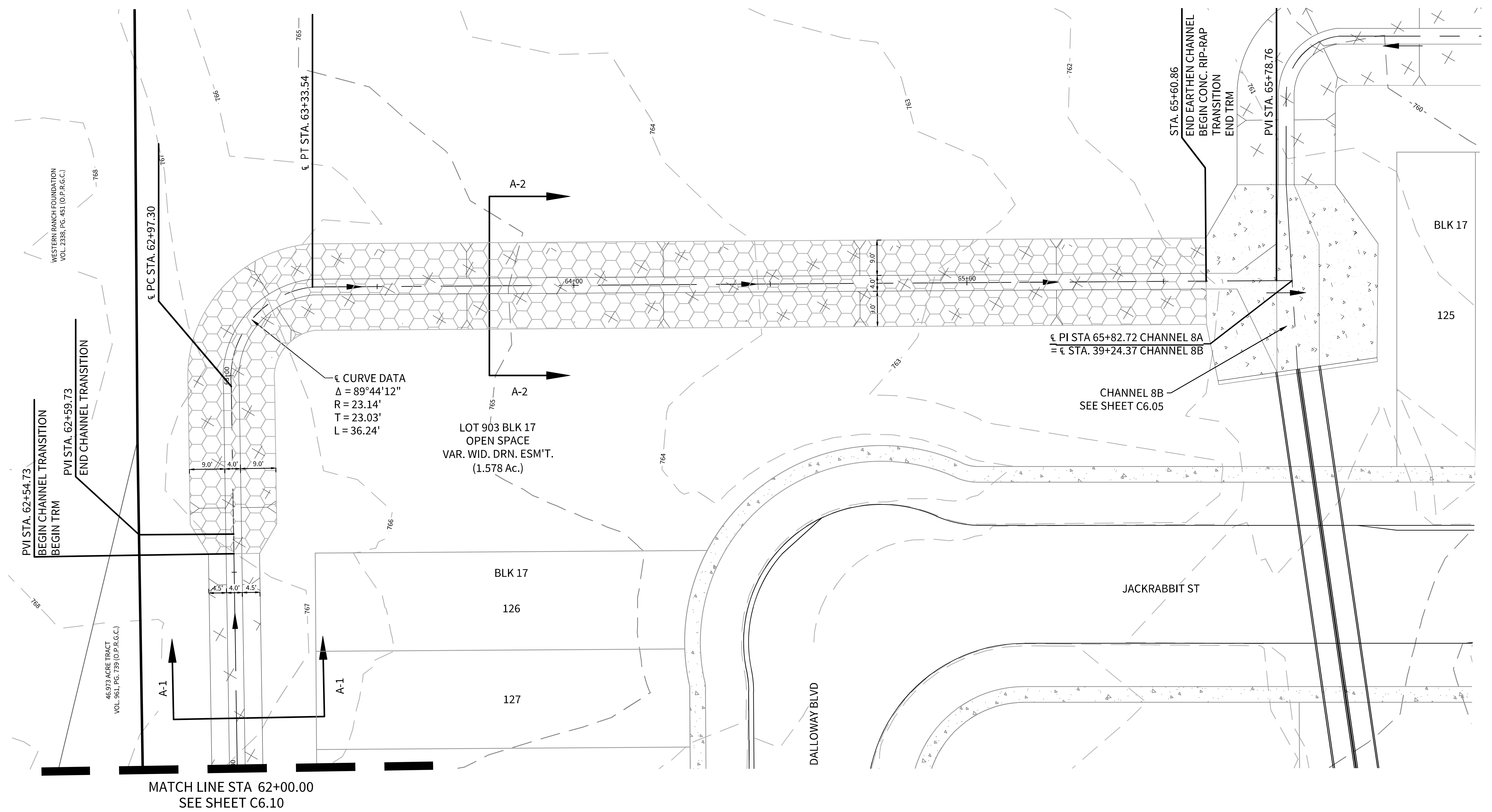
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C6.10

P:\03499\010\2-DWG\4-Plans\C6.09 DRAINAGE PLAN & PROFILE - CHANNEL 8A.dwg 2025/11/10 6:04pm arodriguez

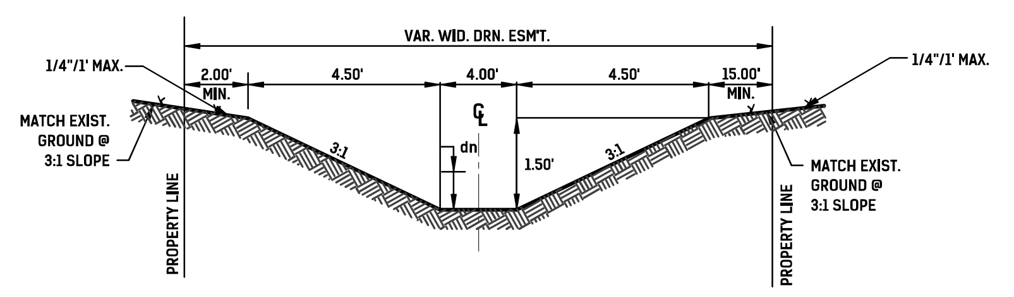
LEGEND

EARTHEN CHANNEL	▨
CONCRETE RIP-RAP	▨
TURF REINFORCEMENT MAT	▨

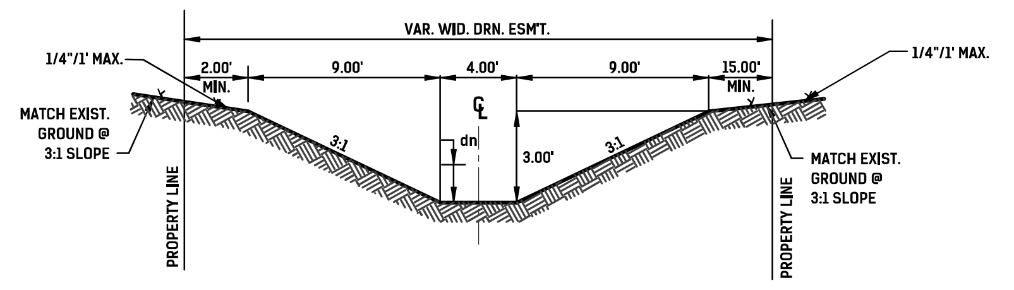

WESTERN RANCH FOUNDATION
VOL. 2338, PG. 451 (O.P.R.G.C.)
46.973 ACRE TRACT
VOL. 961, PG. 739 (O.P.R.G.C.)
PVI STA. 62+54.73
BEGIN CHANNEL TRANSITION
BEGIN TRM
PVI STA. 62+59.73
END CHANNEL TRANSITION
℄ PC STA. 62+97.30
℄ PT STA. 63+33.54
A-1
A-2
℄ CURVE DATA
Δ = 89°44'12"
R = 23.14'
T = 23.03'
L = 36.24'
LOT 903 BLK 17
OPEN SPACE
VAR. WID. DRN. ESM'T.
(1.578 Ac.)
BLK 17
126
127
DALLOWAY BLVD
JACKRABBIT ST
STA. 65+60.86
END EARTHEN CHANNEL
BEGIN CONC. RIP-RAP
TRANSITION
END TRM
PVI STA. 65+78.76
℄ PI STA 65+82.72 CHANNEL 8A
= ℄ STA. 39+24.37 CHANNEL 8B
CHANNEL 8B
SEE SHEET C6.05
BLK 17
125
9.0'
4.0'
4.5'
63+00
64+00
65+00
768
767
766
765
764
763
762
761
760
MATCH LINE STA 62+00.00
SEE SHEET C6.10

SCALE: 1"=20'

0 10 20


VAR. WID. DRN. ESM'T.
1/4"/1' MAX.
2.00' MIN.
4.50'
4.00'
4.50'
15.00' MIN.
1/4"/1' MAX.
MATCH EXIST. GROUND @ 3:1 SLOPE
℄
dn
1.50'
3:1
3:1
PROPERTY LINE
MATCH EXIST. GROUND @ 3:1 SLOPE
PROPERTY LINE

DRAIN "A–1" SECTION (N.T.S.)


VAR. WID. DRN. ESM'T.
1/4"/1' MAX.
2.00' MIN.
9.00'
4.00'
9.00'
15.00' MIN.
1/4"/1' MAX.
MATCH EXIST. GROUND @ 3:1 SLOPE
℄
dn
3.00'
3:1
3:1
PROPERTY LINE
MATCH EXIST. GROUND @ 3:1 SLOPE
PROPERTY LINE

DRAIN "A–2" SECTION (N.T.S.)

CHANNEL '8A' HYDRAULIC SUMMARY				
SECTION	"A-1"	"A-2"		
STATION	60+49.60 - 62+54.73	62+59.73 - 64+09.64	64+09.64 - 65+50.00	65+50.00 - 65+60.86
Q_{100} (cfs)	18.35	130.86	130.86	130.86
n	0.035	0.035	0.035	0.035
S (%)	0.65	1.55	1.50	12.37
D (ft)	1.50	3.00	3.00	3.00
d_n (ft)	1.00	2.09	2.11	1.28
V (fps)	2.62	6.10	6.00	13.04

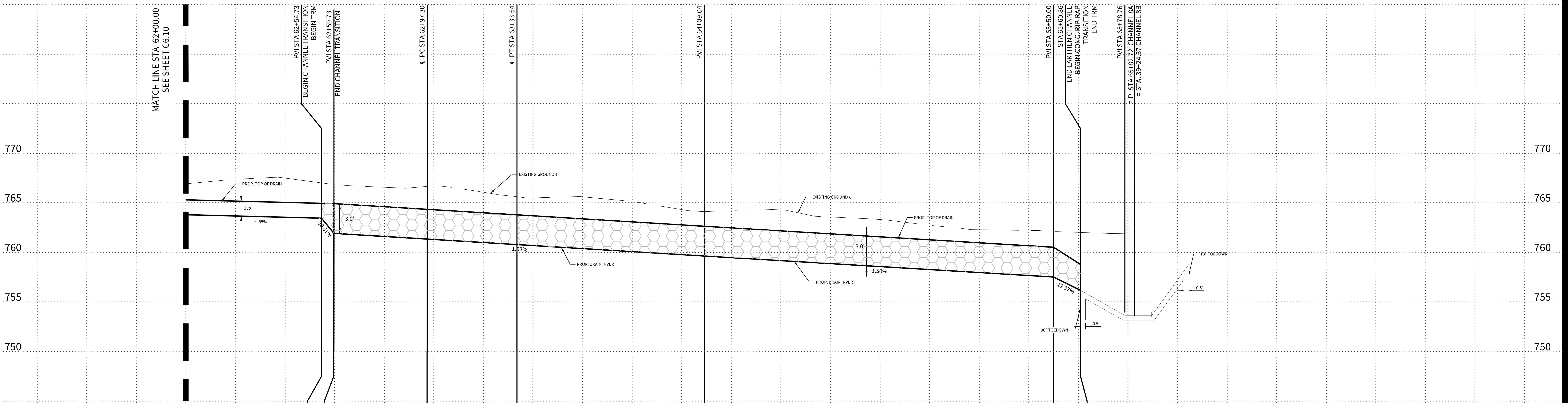
NOTES:

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 SANTA CLARA & GUADALUPE COUNTY. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING, AND WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
3. REFERENCE TYPICAL CONCRETE CHANNEL RIP-RAP STANDARDS FOUND ON SHEET C6.D1

CHANNEL 8A

STA. 62+00.00 TO STA. 65+82.72

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


MATCH LINE STA 62+00.00
SEE SHEET C6.10
PVI STA 62+54.73
BEGIN CHANNEL TRANSITION
BEGIN TRM
PVI STA 62+59.73
END CHANNEL TRANSITION
℄ PC STA 62+97.30
℄ PT STA 63+33.54
PVI STA 64+09.04
PVI STA 65+50.00
STA 65+60.86
END EARTHEN CHANNEL
BEGIN CONC. RIP-RAP
TRANSITION
END TRM
PVI STA 65+78.76
℄ PI STA 65+82.72 CHANNEL 8A
= STA. 39+24.37 CHANNEL 8B
770
765
760
755
750
PROP. TOP OF DRAIN
EXISTING GROUND ℄
1.5'
-0.55%
-30.61%
3.0'
-1.53%
PROP. DRAIN INVERT
3.0'
-1.50%
-12.37%
18" TOEDOWN
0.5'
36" TOEDOWN
0.5'
62+00
63+00
64+00
65+00
66+00

PROP. TOP OF DRAIN	PROP. DRAIN INVERT
765.30	763.80
765.17	763.67
765.04	763.54
764.95	763.45
764.92	761.92
764.91	761.91
764.61	761.61
764.34	761.34
764.30	761.30
764.00	760.99
763.79	760.79
763.69	760.69
763.38	760.38
763.08	760.08
762.77	759.77
762.63	759.63
762.47	759.47
762.17	759.17
761.87	758.87
761.57	758.57
761.27	758.27
760.97	757.97
760.67	757.67
760.52	757.52
758.92	756.28
758.78	756.17

CUDEENGINEERS.COM

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 8

DRAINAGE PLAN & PROFILE - CHANNEL 8A

DATE
11/11/2025

PROJECT NO.
03499.010

DRAWN BY
JK/AR/JF/RB

CHECKED BY
KMH

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

KYLE M. HUDEK
138753
11/11/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C6.11

P:\03499\010\2-DWG\4-Plans\C6.09 DRAINAGE PLAN & PROFILE - CHANNEL 8A.dwg 2025/11/11 1:16pm arodriguez

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

DATE:
FILE:

TABLE OF DIMENSIONS AND REINFORCING STEEL
(Wings for one structure end)

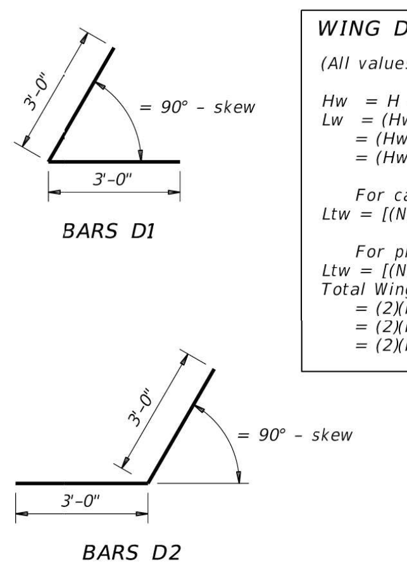
Maximum Wingwall Height Hw	W	X	Y	Z	Bars J1 Size	Bars J1 Spa	Bars J2 Size	Bars J2 Spa	Estimated Quantities per ft of wing (2~wings) ④ Reinf Lb/Ft)	Conc (CY/Ft)	Estimated Quantities per ft of Toewall (1~toewall) Reinf (Lb/Ft)	Conc (CY/Ft)
2'-6"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	48.64	0.406	6.85	0.071
2'-9"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	49.31	0.424	6.85	0.071
3'-0"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	49.98	0.444	6.85	0.071
3'-3"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	53.32	0.462	6.85	0.071
3'-6"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	53.98	0.480	6.85	0.071
4'-0"	3'-2"	1'-2"	1'-0"	7"	#4	1'-0"	#4	1'-0"	55.77	0.532	6.85	0.071
4'-6"	3'-2"	1'-2"	1'-0"	7"	#4	1'-0"	#4	1'-0"	59.77	0.568	6.85	0.071
5'-0"	3'-9"	1'-7"	1'-2"	7"	#4	1'-0"	#4	1'-0"	63.45	0.632	6.96	0.075
5'-6"	3'-9"	1'-7"	1'-2"	7"	#4	1'-0"	#4	1'-0"	67.46	0.668	6.96	0.075
6'-0"	4'-4"	2'-0"	1'-4"	7"	#5	1'-0"	#5	1'-0"	80.67	0.730	7.07	0.078
6'-6"	4'-4"	2'-0"	1'-4"	7"	#5	1'-0"	#5	1'-0"	85.05	0.768	7.07	0.078
7'-0"	5'-0"	2'-3"	1'-9"	8"	#5	1'-0"	#5	1'-0"	92.15	0.864	8.07	0.093
7'-6"	5'-0"	2'-3"	1'-9"	8"	#5	1'-0"	#5	1'-0"	96.54	0.902	8.07	0.093
8'-0"	5'-6"	2'-8"	1'-10"	8"	#5	6"	#5	6"	139.04	0.962	8.13	0.095
8'-6"	5'-6"	2'-8"	1'-10"	8"	#5	6"	#5	6"	144.47	1.000	8.13	0.095
9'-6"	6'-0"	2'-10"	2'-2"	9"	#5	6"	#5	6"	156.93	1.136	8.41	0.110
10'-6"	6'-5"	3'-0"	2'-5"	9"	#6	6"	#5	6"	196.27	1.234	8.57	0.117
11'-6"	7'-2"	3'-6"	2'-8"	11"	#6	6"	#6	6"	230.13	1.438	9.52	0.140
12'-6"	7'-8"	3'-9"	2'-11"	1'-0"	#7	6"	#6	6"	283.41	1.592	9.74	0.157
13'-6"	8'-2"	4'-0"	3'-2"	1'-2"	#8	6"	#6	6"	348.72	1.804	10.02	0.186
14'-6"	8'-10"	4'-5"	3'-5"	1'-4"	#9	6"	#6	6"	432.94	2.046	10.30	0.218
15'-6"	9'-6"	4'-10"	3'-8"	1'-6"	#9	6"	#7	6"	489.52	2.302	11.24	0.253
16'-0"	9'-11"	5'-0"	3'-11"	1'-7"	#9	6"	#7	6"	505.72	2.448	11.47	0.279

TABLE OF WINGWALL REINFORCING
(2~wings)

Bar	Size	No.	Spa
D1	#6	~	1'-0"
D2	#6	~	1'-0"
E1	#4	~	1'-0"
F	#4	~	1'-0"
G	#6	~	8"
M1	#4	4	~
P	#4	~	1'-0"
V	#4	~	1'-0"

TABLE OF TOEWALL REINFORCING

Bar	Size	No.	Spa
J3	#4	~	1'-0"
M2	#4	2	~
E2	#4	~	1'-0"


3'-0"
= 90° - skew
3'-0"

BARS D1

BARS D2

WING DIMENSION FORMULAS:

(All values are in feet.)

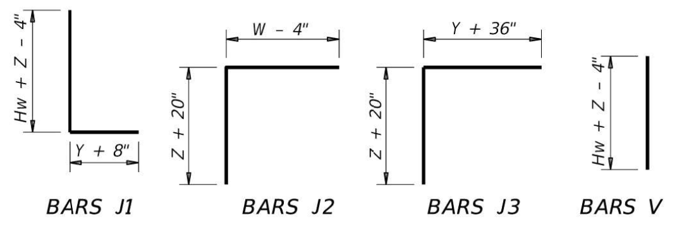
Hw = H + T + C
Lw = (Hw) (SL) ÷ cosine (θ) for Type PW-1
= (Hw - 1') (SL) ÷ cosine (θ) for Type PW-2 and Hw ≥ 4'
= (Hw - 0.5') (SL) ÷ cosine (θ) for Type PW-2 and Hw < 4'

For cast-in-place culverts:
Ltw = [(N) (S) + (N + 1) (U)] ÷ cosine (θ)

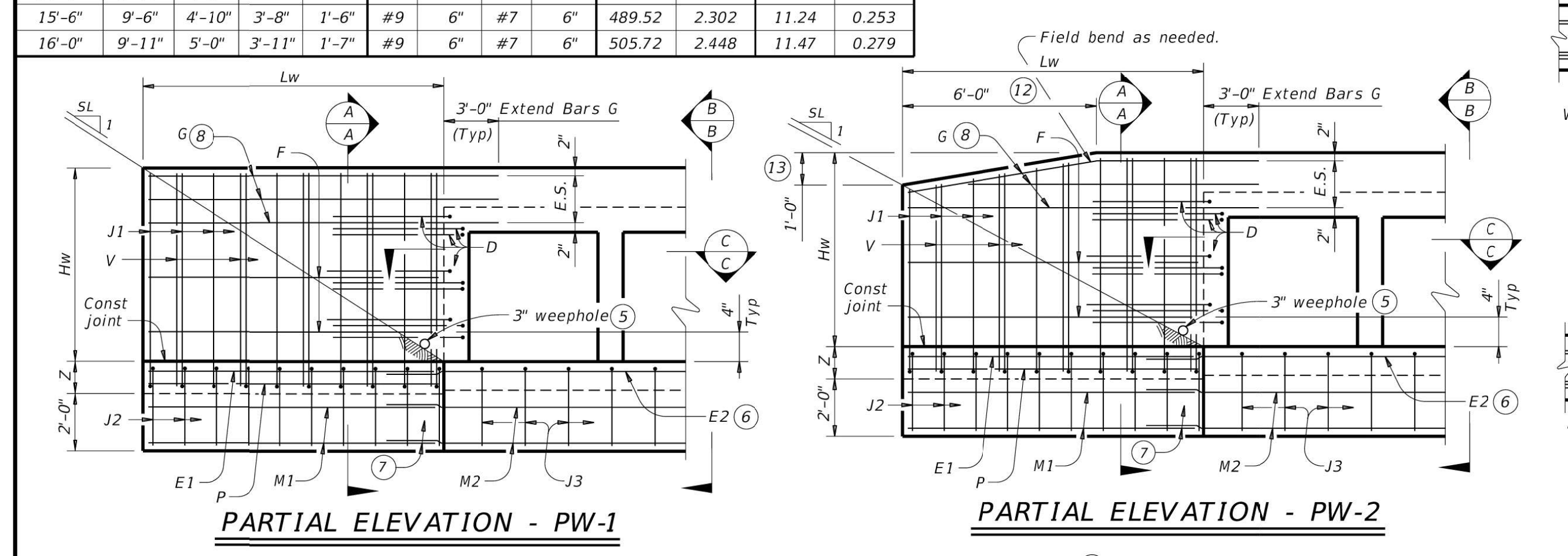
For precast culverts:
Ltw = [(N) (2 U + S) + (N - 1) (0.5')] ÷ cosine (θ)
Total Wingwall Area (two wings ~ SF)
= (2)(Hw)(Lw) for Type PW-1
= (2)(Hw)(Lw) - 6 SF for Type PW-2 and Hw ≥ 4'
= (2)(Hw)(Lw) - 1.5 SF for Type PW-2 and Hw < 4'

Hw = Height of wingwall
Lw = Length of wingwall
Ltw = Culvert toewall length
N = Number of culvert spans
SL:1 = Channel slope ratio. (horizontal: 1 vertical, usual value is 2:1)
θ = Culvert skew

See applicable box culvert standard sheet for S, H, T, and U values.

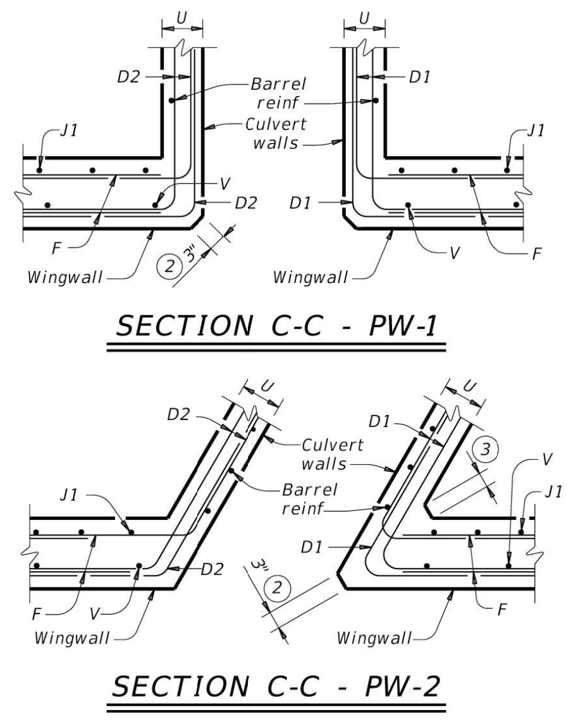

Hw + Z - 4"
Y + 8"
W - 4"
Z + 20"
Y + 36"
Z + 20"
Hw + Z - 4"

BARS J1 BARS J2 BARS J3 BARS V


Field bend as needed.
Lw
SL
1
G ⑧
F
3'-0" Extend Bars G
(Typ)
E.S.
J1
V
D
Const joint
3" weephole ⑤
J2
E2 ⑥
E1
P
M1
M2
J3
Hw
6'-0" ⑫
⑬
1'-0"

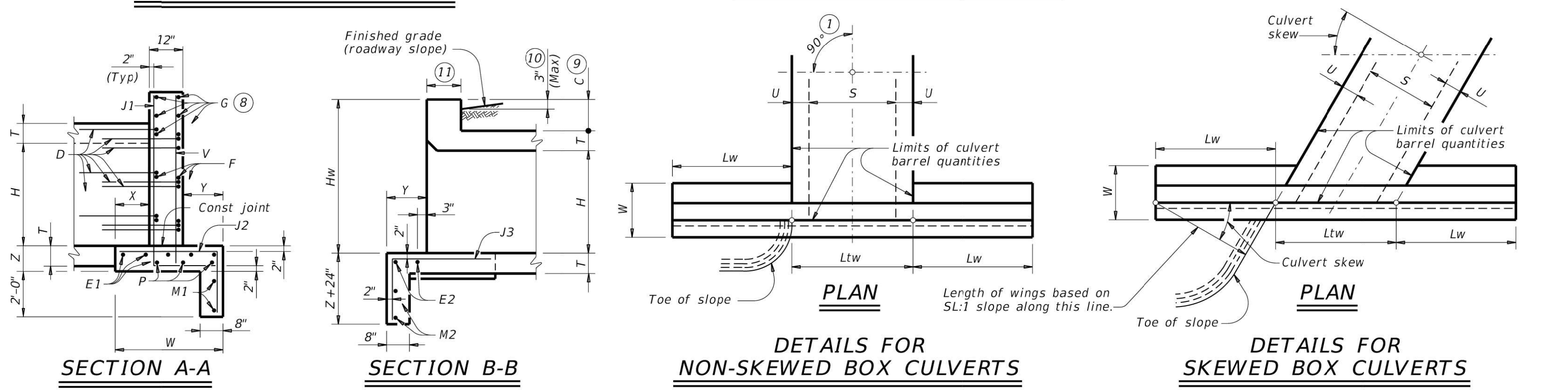
PARTIAL ELEVATION - PW-1

PARTIAL ELEVATION - PW-2


U
D2
D1
Barrel reinf
Culvert walls
J1
V
F
Wingwall
③

SECTION C-C - PW-1

SECTION C-C - PW-2


12"
2" (Typ)
J1
G ⑧
D
V
F
Const joint
J2
E1
P
M1
Finished grade (roadway slope)
⑩
⑪
3" Max
C
J3
Y + 24"
E2
M2
8"
①
Limits of culvert barrel quantities
Lw
Ltw
W
Toe of slope
Length of wings based on SL:1 slope along this line.
Culvert skew

SECTION A-A
(Showing wing reinforcement.)

SECTION B-B
(Showing wing reinforcement.)

PLAN

DETAILS FOR NON-SKEWED BOX CULVERTS

PLAN

DETAILS FOR SKEWED BOX CULVERTS
(Showing 30° skew.)

① Skew = 0°

② At discharge end, chamfer may be ¾" minimum.

③ For 15° skew ~ 1"
For 30° skew ~ 2"
For 45° skew ~ 3"

④ Quantities shown are for two Type PW-1 wings. Adjust concrete volume for Type PW-2 wings. To determine estimated quantities for two wings, multiply the tabulated values by Lw. Quantities shown do not include weight of Bars D.

⑤ Provide weepholes for Hw = 5'-0" and greater. Fill around weepholes with coarse gravel.

⑥ Extend Bars E2 1'-6" minimum into the wingwall footing.

⑦ Lap Bars M1 1'-6" minimum with Bars M2.

⑧ Place Bars G as shown, equally spaced at 8" maximum. Provide at least two pairs of Bars G per wing.

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

⑩ For vehicle safety, the following requirements must be met:
- For structures without bridge rail, construct curbs no more than 3" above finished grade.
- For structures with bridge rail, construct curbs flush with finished grade.

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

⑪ 1'-0" typical. 2'-3" when the Box Culvert Rail Mounting Details (RAC) standard sheet is referred to elsewhere in the plans.

⑫ 3'-0" for Hw < 4'.

⑬ 6" for Hw < 4'.

DESIGNER NOTES:

Type PW-1 can be used for all applications and must be used if railing is to be mounted to the wingwall.

Type PW-2 can only be used for applications without a railing mounted to the wingwall.

MATERIAL NOTES:

Provide Class C concrete (f'c=3,600 psi).
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.

GENERAL NOTES:

Designed in accordance with AASHTO LRFD Bridge Design Specifications.

Depth of toewalls for wingwalls and culverts may be reduced or eliminated when founded on solid rock, when directed by the Engineer.

See Box Culvert Supplement (BCS) standard sheet for wingwall type and additional dimensions and information.

Quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for the Contractor's information only.

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

Texas Department of Transportation
Bridge Division Standard

CONCRETE WINGWALLS
WITH PARALLEL WINGS FOR BOX CULVERTS
TYPES PW-1 AND PW-2
PW

FILE: CD-PW-20.dgn	DN: GAF	CK: CAT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.

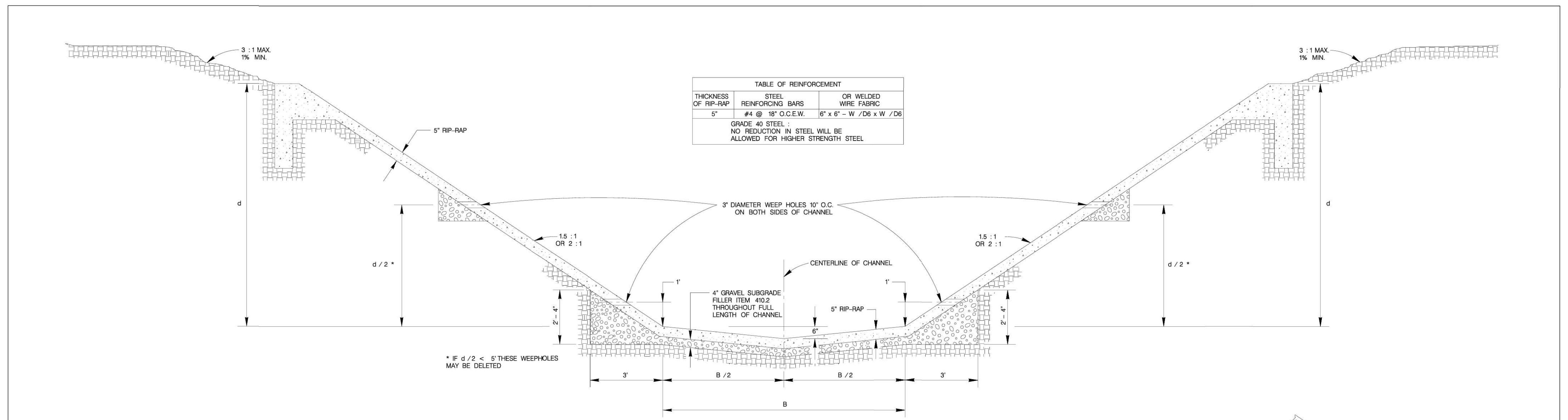
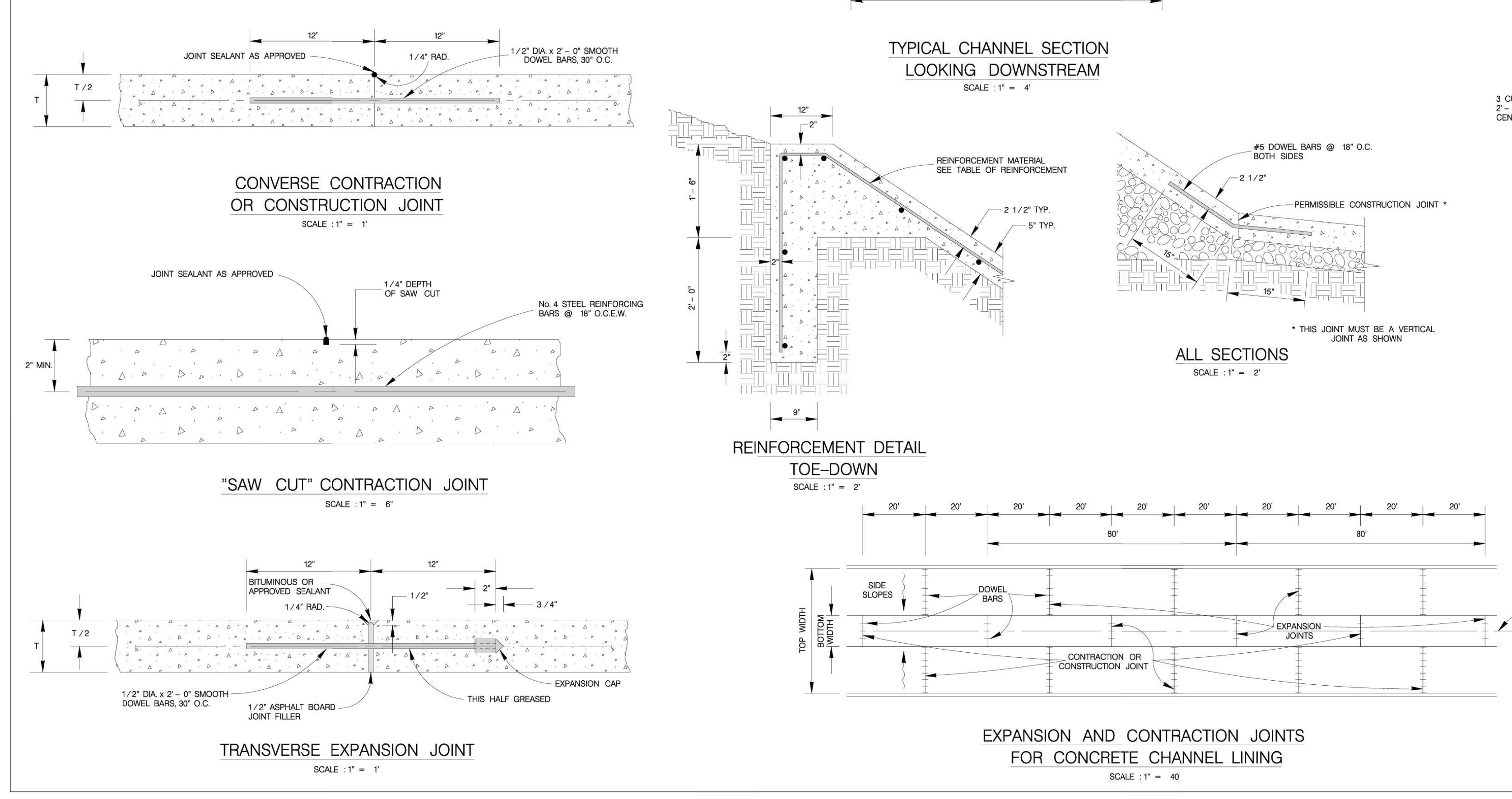


TABLE OF REINFORCEMENT
5' RIP-RAP
3" DIAMETER WEEP HOLES 10' O.C. ON BOTH SIDES OF CHANNEL
CENTERLINE OF CHANNEL
1.5 : 1 OR 2 : 1
4" GRAVEL SUBGRADE FILLER ITEM 4103 THROUGHOUT FULL LENGTH OF CHANNEL
5" RIP-RAP
1' Ø 2" Ø EITHER WEEPHOLES MAY BE DELETED
B / 2
B

TYPICAL CHANNEL SECTION
LOOKING DOWNSTREAM


JOINT SEALANT AS APPROVED
1/4" RAD.
1/2" DIA x 2' - 0" SMOOTH DOWEL BARS 30" O.C.
JOINT SEALANT AS APPROVED
1/4" DEPTH OF SAW CUT
No 4 STEEL REINFORCING BARS @ 18" O.C.E.W.
PREMOLDED OR APPROVED SEALANT
1/2" ASPHALT BOARD JOINT FILLER
THIS HALF GREASED
EXPANSION CAP
REINFORCEMENT MATERIAL SEE TABLE OF REINFORCEMENT
#4 DOWEL BARS @ 18" O.C. BOTH SIDES
PERMISSIBLE CONSTRUCTION JOINT *
* THIS JOINT MUST BE A VERTICAL JOINT AS SHOWN.
DOWEL BARS
SIDE SLOPES
EXPANSION JOINTS
CONTRACTION OR CONSTRUCTION JOINT
CENTERLINE OF CHANNEL
20'

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

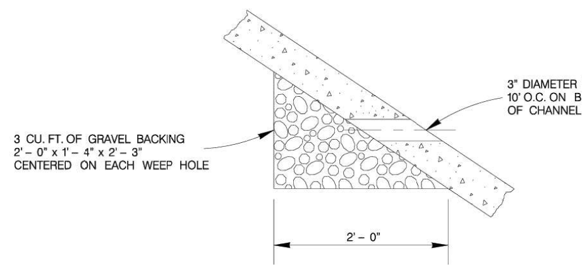
"SAW CUT" CONTRACTION JOINT
SCALE : 1" = 1'

TRANSVERSE EXPANSION JOINT
SCALE : 1" = 1'

REINFORCEMENT DETAIL TOE-DOWN
SCALE : 1" = 3'

ALL SECTIONS
SCALE : 1" = 3'

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


3" DIAMETER WEEP HOLES 10' O.C. ON BOTH SIDES OF CHANNEL
3 CU FT OF GRAVEL BACKING CENTERED ON EACH WEEP HOLE
2' - 0"

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

GENERAL NOTES

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

MAY 2009

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

TYPICAL CONCRETE CHANNEL RIP-RAP STANDARDS

____% SUBMITTAL	PROJECT NO.:____		DATE:____
DRWN. BY: V. VASQUEZ	DSGN. BY:____	CHKD. BY:____	SHEET NO.:____OF____

TABLE OF DIMENSIONS AND REINFORCING STEEL
(Wings for one structure end)

Maximum Wingwall Height Hw	W	X	Y	Z	Bars J1 Size	Bars J1 Spa	Bars J2 Size	Bars J2 Spa	Estimated Quantities per ft of wing length (2~wings) ③ Reinf (Lb/Ft)	Conc (CY/Ft)
2'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	33.73	0.248
3'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.07	0.261
3'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.74	0.273
4'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	38.41	0.285
4'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	41.75	0.330
5'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.09	0.343
5'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.75	0.355
6'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	46.42	0.367
7'-0"	3'-8"	1'-9"	1'-3"	7"	#4	1'-0"	#4	1'-0"	52.77	0.414
8'-0"	4'-2"	2'-0"	1'-6"	8"	#5	1'-0"	#4	1'-0"	60.19	0.486
9'-0"	4'-8"	2'-3"	1'-9"	8"	#4	6"	#4	6"	81.49	0.535
10'-0"	5'-2"	2'-6"	2'-0"	8"	#5	6"	#4	6"	97.25	0.584
11'-0"	5'-8"	2'-9"	2'-3"	8"	#6	6"	#5	6"	133.65	0.634
12'-0"	6'-2"	3'-0"	2'-6"	9"	#7	6"	#5	6"	162.29	0.721
13'-0"	6'-8"	3'-3"	2'-9"	11"	#7	6"	#5	6"	178.80	0.856
14'-0"	7'-2"	3'-6"	3'-0"	1'-0"	#8	6"	#5	6"	216.78	0.959
15'-0"	7'-8"	4'-0"	3'-0"	1'-1"	#9	6"	#6	6"	283.06	1.068
16'-0"	8'-2"	4'-6"	3'-0"	1'-3"	#9	6"	#6	6"	297.02	1.234

TABLE OF WINGWALL REINFORCING
(2~wings)

Bar	Size	No.	Spa
D	#5	~	1'-0"
E	#4	~	1'-0"
F	#4	~	1'-0"
G	#6	4	~
M	#4	4	~
P	#4	~	1'-0"
R	#5	6	~
V	#4	~	1'-0"

TABLE OF ESTIMATED CULVERT TOEWALL QUANTITIES

Bar	Size	No.	Spa
L	#4	~	1'-6"
Q	#4	1	~
Reinf (Lb/Ft)			2.45
Conc (CY/Ft)			0.037

WING DIMENSION FORMULAS:

(All values are in feet.)

Hw = H + T + C - 0.250'
A = (Hw - 0.333') (SL)
B = (A) tangent (30°)
Lw = (A) ÷ cosine (30°)

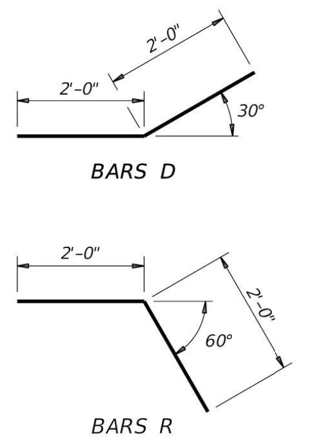
For cast-in-place culverts:
Ltw = (N) (S) + (N + 1) (U)

For precast culverts:
Ltw = (N) (2U + S) + (N - 1) (0.5')

Total wingwall area (two wings ~ SF) = (Hw + 0.333') (Lw)

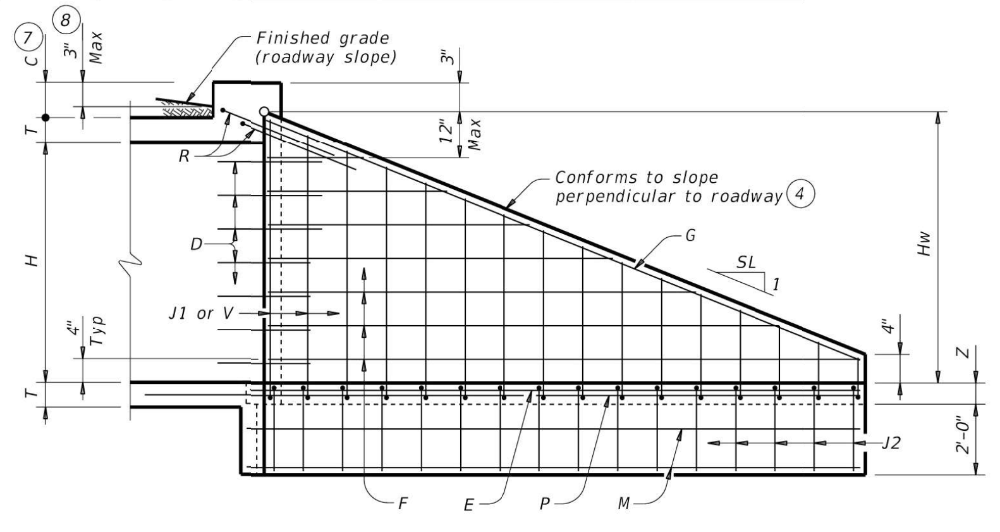
Hw = Height of wingwall
SL:1 = Side slope ratio (horizontal:1 vertical)
Lw = Length of wingwall
Ltw = Culvert toewall length
N = Number of culvert spans

See applicable box culvert standard sheet for H, S, T, and U values.

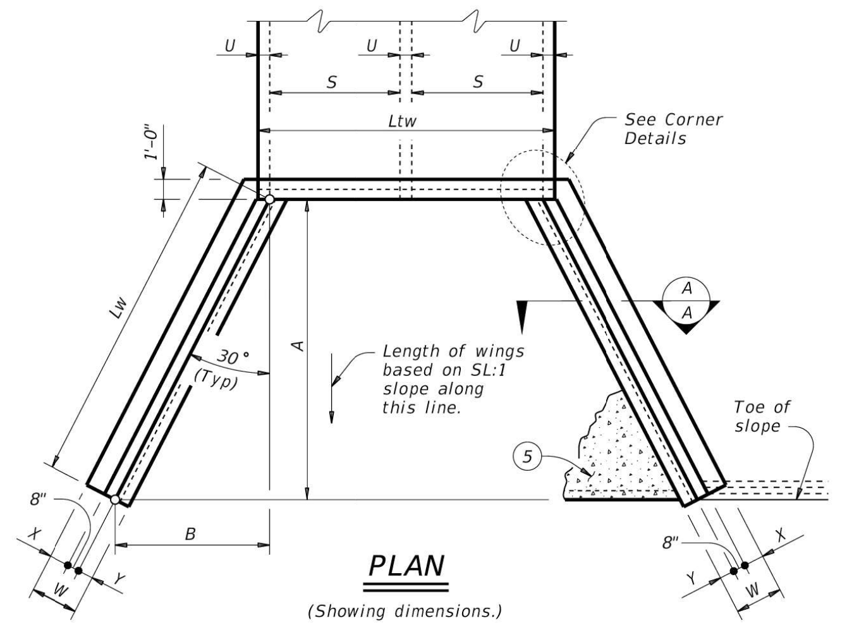

2'-0"
2'-0"
30°
2'-0"
60°
2'-0"

BARS D

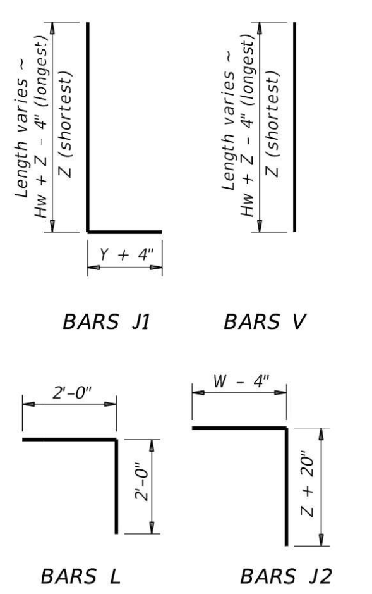
BARS R


⑦ ⑧
C
3" Max
Finished grade (roadway slope)
T
R
12" Max
Conforms to slope perpendicular to roadway ④
G
SL
1
D
J1 or V
E
F
4"
Z
Hw
H
6" Typ

INSIDE ELEVATION
(Showing reinforcing. Culvert and culvert toewall reinforcing not shown for clarity.)

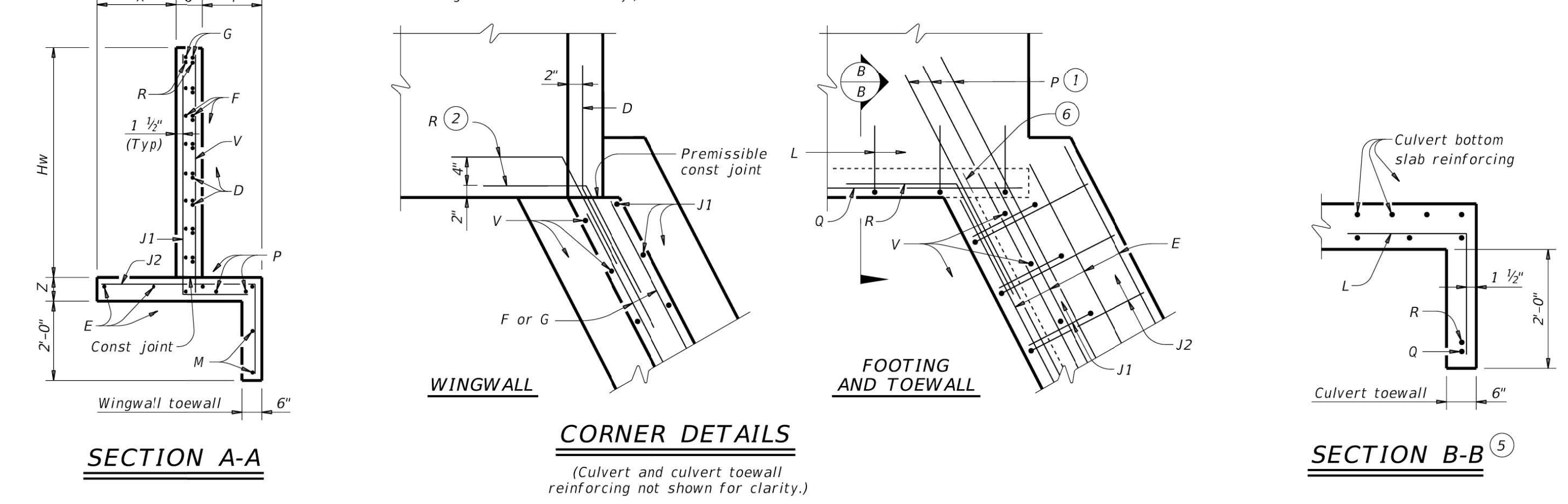

U
S
Ltw
See Corner Details
1'-0"
Lw
30° (Typ)
Length of wings based on SL:1 slope along this line.
Toe of slope
⑤
A
B
8"
6"

PLAN
(Showing dimensions.)


Length varies ~ Hw + Z (longest)
Length varies ~ Hw + Z (shortest)
2'-0"
W - 4"
Z + 20"

BARS J1 BARS V

BARS L BARS J2


W
X
Y
G
F
R
1 ½" (Typ)
P
J1
J2
Const joint
Hw
Z
2'-0"
Wingwall toewall
6"
Premissible const joint
F or G
R
D
Q
P
Culvert bottom slab reinforcing
Culvert toewall
1 ½"
L

SECTION A-A

WINGWALL

CORNER DETAILS
(Culvert and culvert toewall reinforcing not shown for clarity.)

FOOTING AND TOEWALL

SECTION B-B ⑤

① Extend Bars P 3'-0" minimum into bottom slab of box culvert.

② Adjust as necessary to maintain 1 1#2" clear cover and 4" minimum between bars.

③ Quantities shown are based on an average wing height for two wings (one structure end). To determine total quantities for two wings, multiply the tabulated values by Lw.

④ Recommended values of side slope are: 2:1, 3:1, 4:1, and 6:1.

⑤ When shown elsewhere on the plans, construct 5" deep concrete riprap. Payment for riprap is as required by Item 432, "Riprap." Unless otherwise shown on the plans or directed by the Engineer, provide a 6" wide by 1'-6" deep reinforced concrete toewall along all edges of the riprap adjacent to natural ground; reinforce the toewall by extending typical riprap reinforcing into the toewall; and extend construction joints or grooved joints oriented in the direction of flow across the full distance of the riprap at intervals of approximately 20'. When such riprap is provided, the culvert toewall shown in SECTION B-B will not be required.

⑥ At Contractor's option, culvert toewall may be ended flush with wingwall toewall. Adjust reinforcing as needed.

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

⑧ For vehicle safety, the following requirements must be met:
- For structures without bridge rail, construct curbs no more than 3" above finished grade.
- For structures with bridge rail, construct curbs flush with finished grade.

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

MATERIAL NOTES:

Provide Class C concrete (f'c=3,600 psi).
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
In riprap concrete synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing unless noted otherwise.

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.

When structure is founded on solid rock, depth of toewalls for culverts and wingwalls may be reduced or eliminated as directed by the Engineer.

See Box Culvert Supplement (BCS) standard sheet for additional dimensions and information.

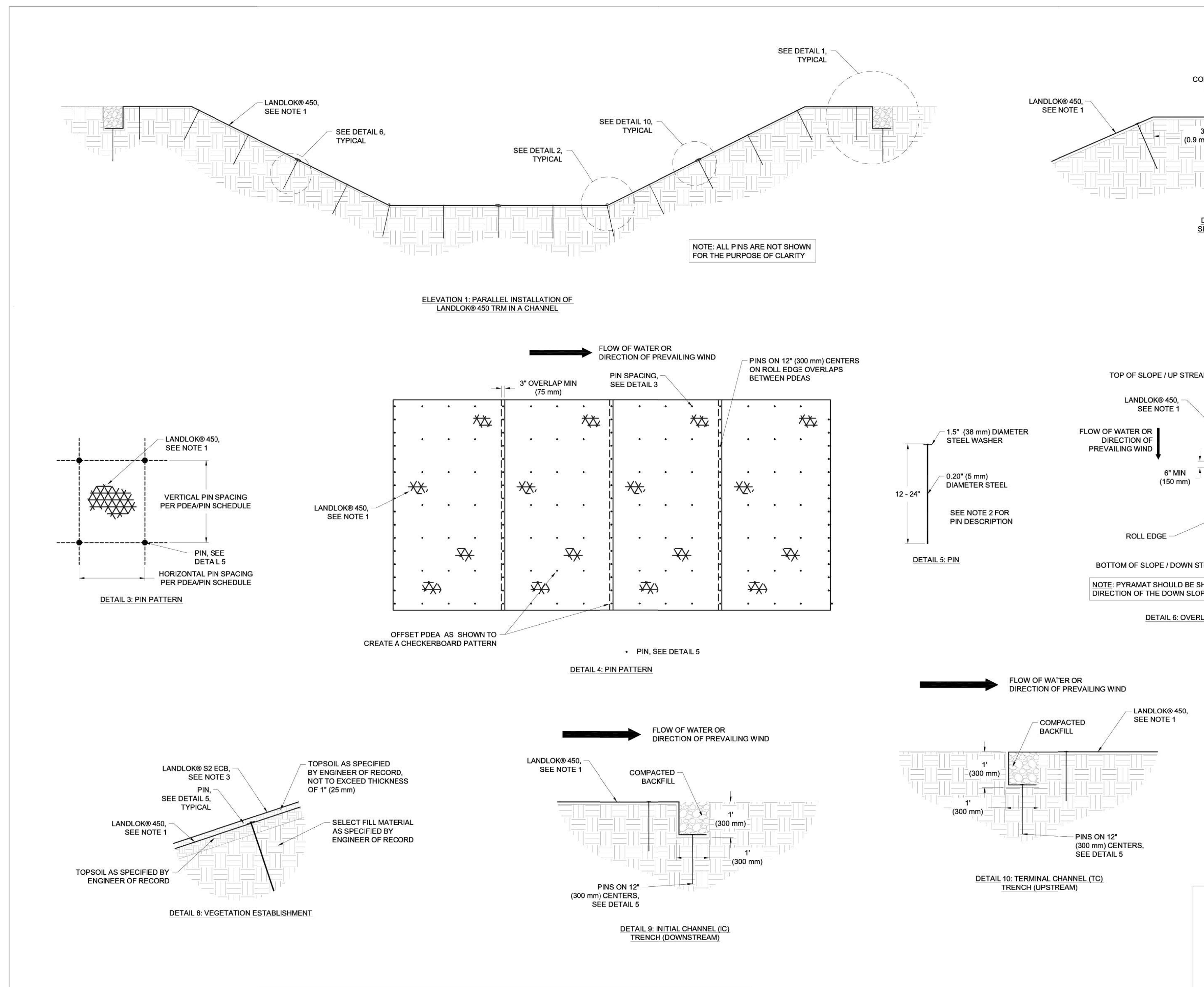
The quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for Contractor's information only.

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

Texas Department of Transportation
Bridge Division Standard

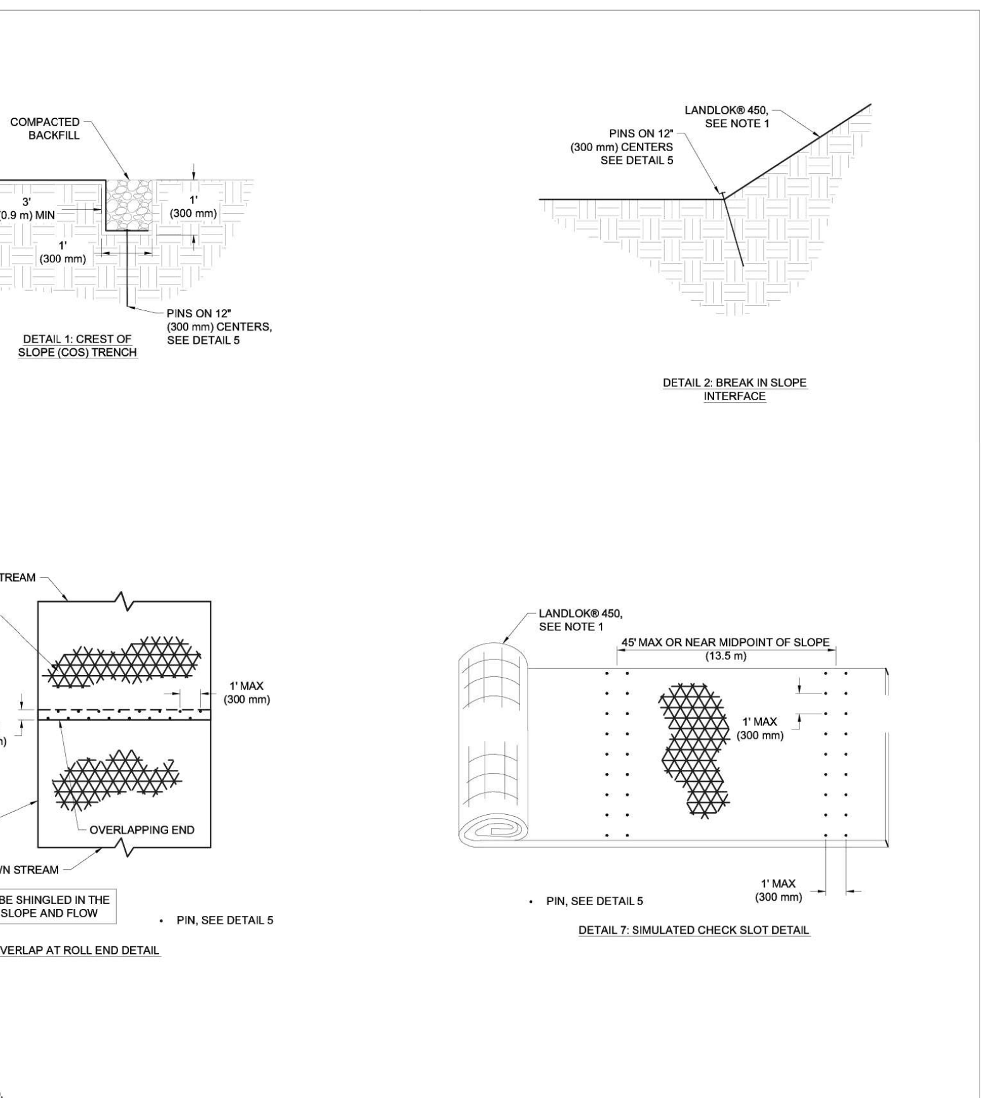
CONCRETE WINGWALLS
WITH FLARED WINGS FOR 0° SKEW BOX CULVERTS
FW-0

FILE: CD-FW0-20.dgn	DN: GAF	CK: CAT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.


SEE DETAIL 1, TYPICAL
LANDLOK® 450, SEE NOTE 1
SEE DETAIL 6, TYPICAL
SEE DETAIL 2, TYPICAL
SEE DETAIL 10, TYPICAL
NOTE: ALL PINS ARE NOT SHOWN FOR THE PURPOSE OF CLARITY
ELEVATION 1: PARALLEL INSTALLATION OF LANDLOK® 450 TRM IN A CHANNEL
FLOW OF WATER OR DIRECTION OF PREVAILING WIND
PINS ON 12" (300 mm) CENTERS ON ROLL EDGE OVERLAPS BETWEEN PDEAS
3" OVERLAP MIN (75 mm)
PIN SPACING, SEE DETAILS 3
LANDLOK® 450, SEE NOTE 1
VERTICAL PIN SPACING PER PDEA/PIN SCHEDULE
HORIZONTAL PIN SPACING PER PDEA/PIN SCHEDULE
PIN, SEE DETAIL 5
DETAIL 3: PIN PATTERN
OFFSET PDEA. AS SHOWN TO CREATE A CHECKERBOARD PATTERN
DETAIL 4: PIN PATTERN
LANDLOK® S2 ECB, SEE NOTE 3
PIN, SEE DETAIL 5, TYPICAL
LANDLOK® 450, SEE NOTE 1
TOPSOIL AS SPECIFIED BY ENGINEER OF RECORD, NOT TO EXCEED THICKNESS OF 1" (25 mm)
SELECT FILL MATERIAL AS SPECIFIED BY ENGINEER OF RECORD
TOPSOIL AS SPECIFIED BY ENGINEER OF RECORD
COMPACTED BACKFILL
1' (300 mm)
PINS ON 12" (300 mm) CENTERS, SEE DETAIL 5
LANDLOK® 450, SEE NOTE 1
1.5" (38 mm) DIAMETER STEEL WASHER
0.20" (5 mm) DIAMETER STEEL
SEE NOTE 2 FOR PIN DESCRIPTION
DETAIL 5: PIN
12 - 24"

DETAIL 8: VEGETATION ESTABLISHMENT

DETAIL 9: INITIAL CHANNEL (IC) TRENCH (DOWNSTREAM)


LANDLOK® 450, SEE NOTE 1
COMPACTED BACKFILL
3" (7.6 cm) MIN
1' (300 mm)
DETAIL 1: CREST OF SLOPE (COS) TRENCH
PINS ON 12" (300 mm) CENTERS, SEE DETAIL 5
LANDLOK® 450, SEE NOTE 1
PINS ON 12" (300 mm) CENTERS
DETAIL 2: BREAK IN SLOPE INTERFACE
TOP OF SLOPE / UP STREAM
FLOW OF WATER OR DIRECTION OF PREVAILING WIND
6" MIN (150 mm)
ROLL EDGE
OVERLAPPING END
BOTTOM OF SLOPE / DOWN STREAM
NOTE: PYRAMAT SHOULD BE SHINGLED IN THE DIRECTION OF THE DOWN SLOPE AND FLOW
DETAIL 6: OVERLAP AT ROLL END DETAIL
AT MAX OR NEAR MIDPOINT OF SLOPE
DETAIL 7: SIMULATED CHECK SLOT DETAIL
FLOW OF WATER OR DIRECTION OF PREVAILING WIND
COMPACTED BACKFILL
1' (300 mm)
PINS ON 12" (300 mm) CENTERS, SEE DETAIL 5

DETAIL 10: TERMINAL CHANNEL (TC) TRENCH (UPSTREAM)

PIN SCHEDULE

SECURING DEVICE	PIN
HORIZONTAL PDEA SPACING	2' (0.60 m)
VERTICAL PDEA SPACING	2.5' (0.75 m)
EMBEDMENT DEPTH	PER MANUFACTURES DESIGN

LANDLOK® 450 TRM IN A CHANNEL FOR EROSION CONTROL GENERAL INSTALLATION GUIDELINES

GENERAL NOTES
1. Landlok® 450 TRM is a three-dimensional, lofty, stitch-bonded polypropylene geotextile which is specially designed for erosion control applications on steep slopes and vegetated waterways. The matrix is composed of a dense web of crimped,interlocking fibers featuring X3® technology positioned between two biaxially oriented nets and mechanically bound together by parallel stitching with polypropylene thread. The material exhibits very high interlock and reinforcement capacity with both soil and root systems, demonstrates superior UV resistance, and enhances seeding emergence.
2. The 12", 18", and 24" Securing Pins are composed of a wire, mushroomed at the top. A washer is then placed on the wire and the wire is crimped or swedged about 3-1/2" below the top so the washer will not slide off. The end of the wire is cut at a 45 degree angle for easy penetration of the soil. These Pins with washers conform to industry standards for erosion control pins with washers.

BEFORE INSTALLATION BEGINS
1. Coordinate with a Propex Representative: A pre-construction meeting is suggested with the construction team and a representative from Propex. This meeting should be scheduled by the contractor with at least a two week notice.
2. Gather the Tools Needed: Tools that you will need to install Landlok 450 include a pair of industrial shears to cut Landlok 450 and tape measure.
3. Determine how to Establish Vegetation: The method of vegetation establishment should be determined prior to the start of installation. Different vegetation establishment methods require different orders of installation. Refer to Establish Vegetation for further guidance.
4. Please consult the Propex Website for the most up to date installation guidelines.

Propex™ Geotextile Systems
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EROSION CONTROL INSTALLATION DETAILS

Please note that the information presented herein is general information only. It is for conceptual use only and not intended to be used for construction. While every effort has been made to ensure its accuracy, this information should not be used for a specific application without independent professional examination and verification of its suitability, applicability, and accuracy. This engineering drawing is protected by the Copyright Act, 17 U.S.C. §101 et seq. and may be used ONLY with the express written permission of Propex in connection with Propex products. Any copying, distributing, and/or creation of a derivative work without permission of Propex is prohibited and is subject of actual damages, statutory damages and attorney's fees under the Copyright Act.

1 of 1
LANDLOK® BY PROPEX
TURF REINFORCEMENT MAT (HPTRM)
LANDLOK® 450 INSTALLATION DETAILS FOR CHANNELS
Rev
Date: 04/07/2015
Drawn By: N. HEMNANI
Scale: NTS
*ALL DIMENSIONS ARE TO BE VERIFIED BY ENGINEER OF RECORD

CUDEENGINEERS.COM

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 8

EROSION CONTROL AND CONCRETE HEADWALL DETAILS

DATE
11/10/2025

PROJECT NO.
03499.010

DRAWN BY
JK/AR/JF/RB

CHECKED BY
KMH

REVISIONS
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5.
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7.
8.
9.

KYLE M. HUDEK
138753
11/11/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C6.D1

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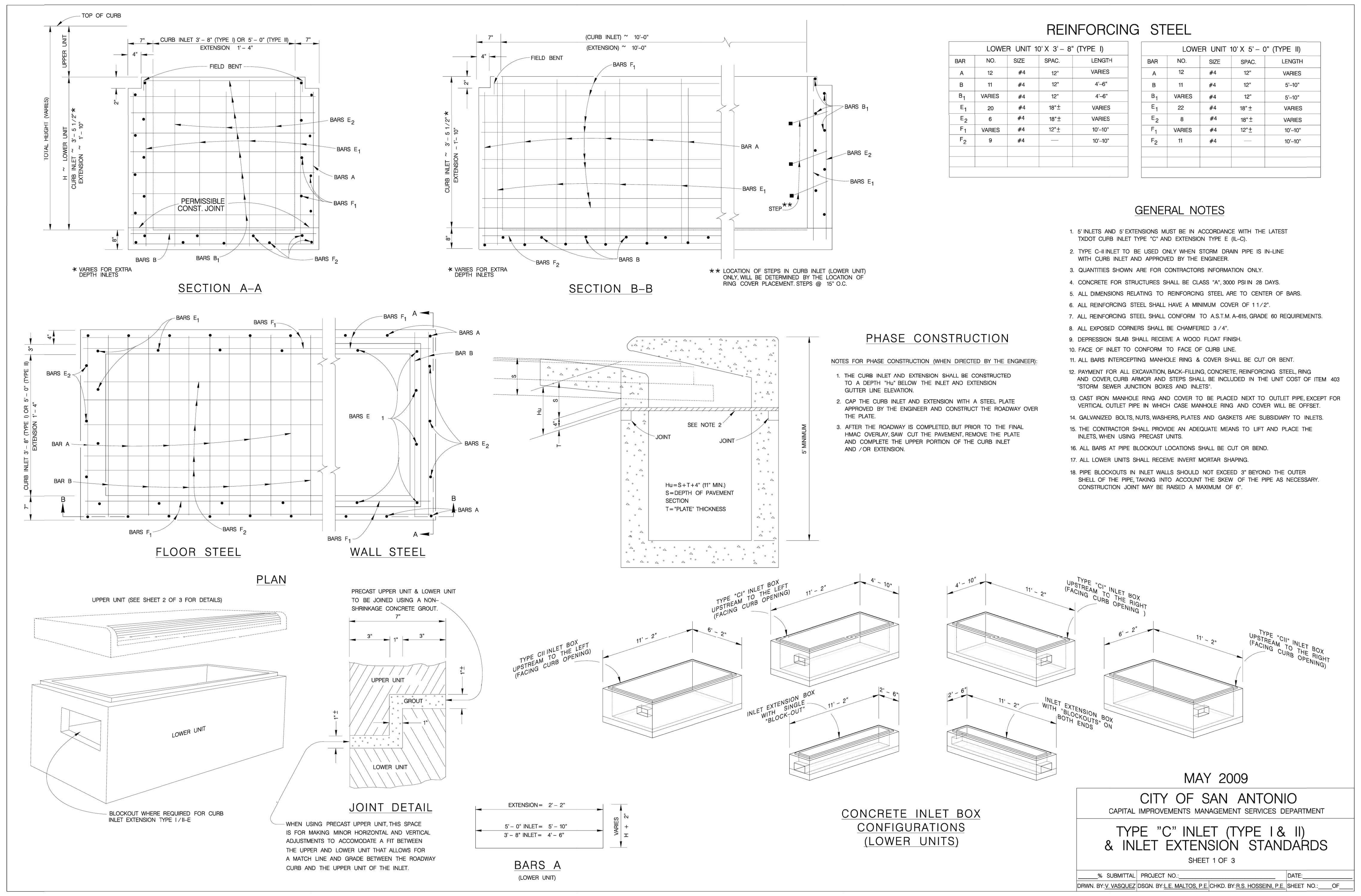

SECTION A–A
SECTION B–B
FLOOR STEEL
WALL STEEL
PLAN
JOINT DETAIL
BARS A
CONCRETE INLET BOX CONFIGURATIONS (LOWER UNITS)
INLET EXTENSION BOX WITH "BLOCKOUTS" ON BOTH ENDS

REINFORCING STEEL

LOWER UNIT 10' X 3' – 8" (TYPE I)				
BAR	NO.	SIZE	SPAC.	LENGTH
A	12	#4	12"	VARIES
B	11	#4	12"	4'–6"
B_1	VARIES	#4	12"	4'–6"
E_1	20	#4	18"±	VARIES
E_2	6	#4	18"±	VARIES
F_1	VARIES	#4	12"±	10'–10"
F_2	9	#4	—	10'–10"

LOWER UNIT 10' X 5' – 0" (TYPE II)				
BAR	NO.	SIZE	SPAC.	LENGTH
A	12	#4	12"	VARIES
B	11	#4	12"	5'–10"
B_1	VARIES	#4	12"	5'–10"
E_1	22	#4	18"±	VARIES
E_2	8	#4	18"±	VARIES
F_1	VARIES	#4	12"±	10'–10"
F_2	11	#4	—	10'–10"

GENERAL NOTES

1. 5' INLETS AND 5' EXTENSIONS MUST BE IN ACCORDANCE WITH THE LATEST TXDOT CURB INLET TYPE "C" AND EXTENSION TYPE E (IL–C).
2. TYPE C–II INLET TO BE USED ONLY WHEN STORM DRAIN PIPE IS IN–LINE WITH CURB INLET AND APPROVED BY THE ENGINEER.
3. QUANTITIES SHOWN ARE FOR CONTRACTORS INFORMATION ONLY.
4. CONCRETE FOR STRUCTURES SHALL BE CLASS "A", 3000 PSI IN 28 DAYS.
5. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS.
6. ALL REINFORCING STEEL SHALL HAVE A MINIMUM COVER OF 1 1/2".
7. ALL REINFORCING STEEL SHALL CONFORM TO A.S.T.M. A–615, GRADE 60 REQUIREMENTS.
8. ALL EXPOSED CORNERS SHALL BE CHAMFERED 3/4".
9. DEPRESSION SLAB SHALL RECEIVE A WOOD FLOAT FINISH.
10. FACE OF INLET TO CONFORM TO FACE OF CURB LINE.
11. ALL BARS INTERCEPTING MANHOLE RING & COVER SHALL BE CUT OR BENT.
12. PAYMENT FOR ALL EXCAVATION, BACK–FILLING, CONCRETE, REINFORCING STEEL, RING AND COVER, CURB ARMOR AND STEPS SHALL BE INCLUDED IN THE UNIT COST OF ITEM 403 "STORM SEWER JUNCTION BOXES AND INLETS".
13. CAST IRON MANHOLE RING AND COVER TO BE PLACED NEXT TO OUTLET PIPE, EXCEPT FOR VERTICAL OUTLET PIPE IN WHICH CASE MANHOLE RING AND COVER WILL BE OFFSET.
14. GALVANIZED BOLTS, NUTS, WASHERS, PLATES AND GASKETS ARE SUBSIDIARY TO INLETS.
15. THE CONTRACTOR SHALL PROVIDE AN ADEQUATE MEANS TO LIFT AND PLACE THE INLETS, WHEN USING PRECAST UNITS.
16. ALL BARS AT PIPE BLOCKOUT LOCATIONS SHALL BE CUT OR BEND.
17. ALL LOWER UNITS SHALL RECEIVE INVERT MORTAR SHAPING.
18. PIPE BLOCKOUTS IN INLET WALLS SHOULD NOT EXCEED 3" BEYOND THE OUTER SHELL OF THE PIPE, TAKING INTO ACCOUNT THE SKEW OF THE PIPE AS NECESSARY. CONSTRUCTION JOINT MAY BE RAISED A MAXIMUM OF 6".

PHASE CONSTRUCTION

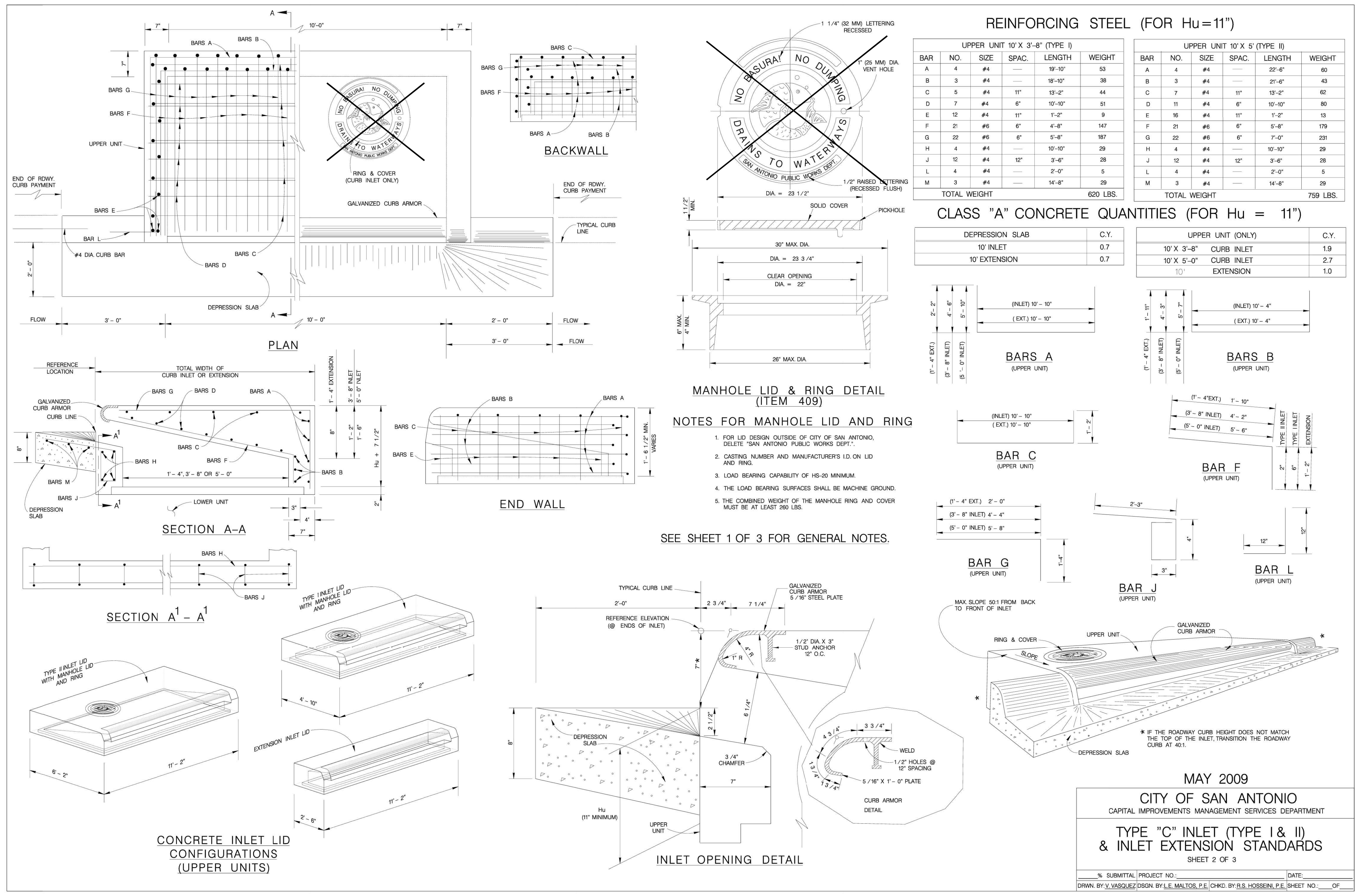
NOTES FOR PHASE CONSTRUCTION (WHEN DIRECTED BY THE ENGINEER):

1. THE CURB INLET AND EXTENSION SHALL BE CONSTRUCTED TO A DEPTH "Hu" BELOW THE INLET AND EXTENSION GUTTER LINE ELEVATION.
2. CAP THE CURB INLET AND EXTENSION WITH A STEEL PLATE APPROVED BY THE ENGINEER AND CONSTRUCT THE ROADWAY OVER THE PLATE.
3. AFTER THE ROADWAY IS COMPLETED, BUT PRIOR TO THE FINAL HMAC OVERLAY, SAW CUT THE PAVEMENT, REMOVE THE PLATE AND COMPLETE THE UPPER PORTION OF THE CURB INLET AND /OR EXTENSION.

MAY 2009

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT
TYPE "C" INLET (TYPE I & II)
& INLET EXTENSION STANDARDS
SHEET 1 OF 3

______% SUBMITTAL	PROJECT NO.:		DATE:
DRWN. BY: V. VASQUEZ	DSGN. BY: L.E. MALTOS, P.E.	CHKD. BY: R.S. HOSSEINI, P.E.	SHEET NO.:____OF____


PLAN
BACKWALL
SECTION A–A
SECTION A¹ – A¹
END WALL
CONCRETE INLET LID CONFIGURATIONS (UPPER UNITS)
INLET OPENING DETAIL
BAR C
BAR F
BAR G
BAR J
BAR L

MANHOLE LID & RING DETAIL (ITEM 409)

NOTES FOR MANHOLE LID AND RING

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

SEE SHEET 1 OF 3 FOR GENERAL NOTES.

REINFORCING STEEL (FOR Hu = 11")

UPPER UNIT 10' X 3'–8" (TYPE I)					
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	4	#4	—	19'–10"	53
B	3	#4	—	18'–10"	38
C	5	#4	11"	13'–2"	44
D	7	#4	6"	10'–10"	51
E	12	#4	11"	1'–2"	9
F	21	#6	6"	4'–8"	147
G	22	#6	6"	5'–8"	187
H	4	#4	—	10'–10"	29
J	12	#4	12"	3'–6"	28
L	4	#4	—	2'–0"	5
M	3	#4	—	14'–8"	29
TOTAL WEIGHT					620 LBS.

UPPER UNIT 10' X 5' (TYPE II)					
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	4	#4	—	22'–6"	60
B	3	#4	—	21'–6"	43
C	7	#4	11"	13'–2"	62
D	11	#4	6"	10'–10"	80
E	16	#4	11"	1'–2"	13
F	21	#6	6"	5'–8"	179
G	22	#6	6"	7'–0"	231
H	4	#4	—	10'–10"	29
J	12	#4	12"	3'–6"	28
L	4	#4	—	2'–0"	5
M	3	#4	—	14'–8"	29
TOTAL WEIGHT					759 LBS.

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

DEPRESSION SLAB	C.Y.
10' INLET	0.7
10' EXTENSION	0.7

UPPER UNIT (ONLY)	C.Y.
10' X 3'–8" CURB INLET	1.9
10' X 5'–0" CURB INLET	2.7
10' EXTENSION	1.0

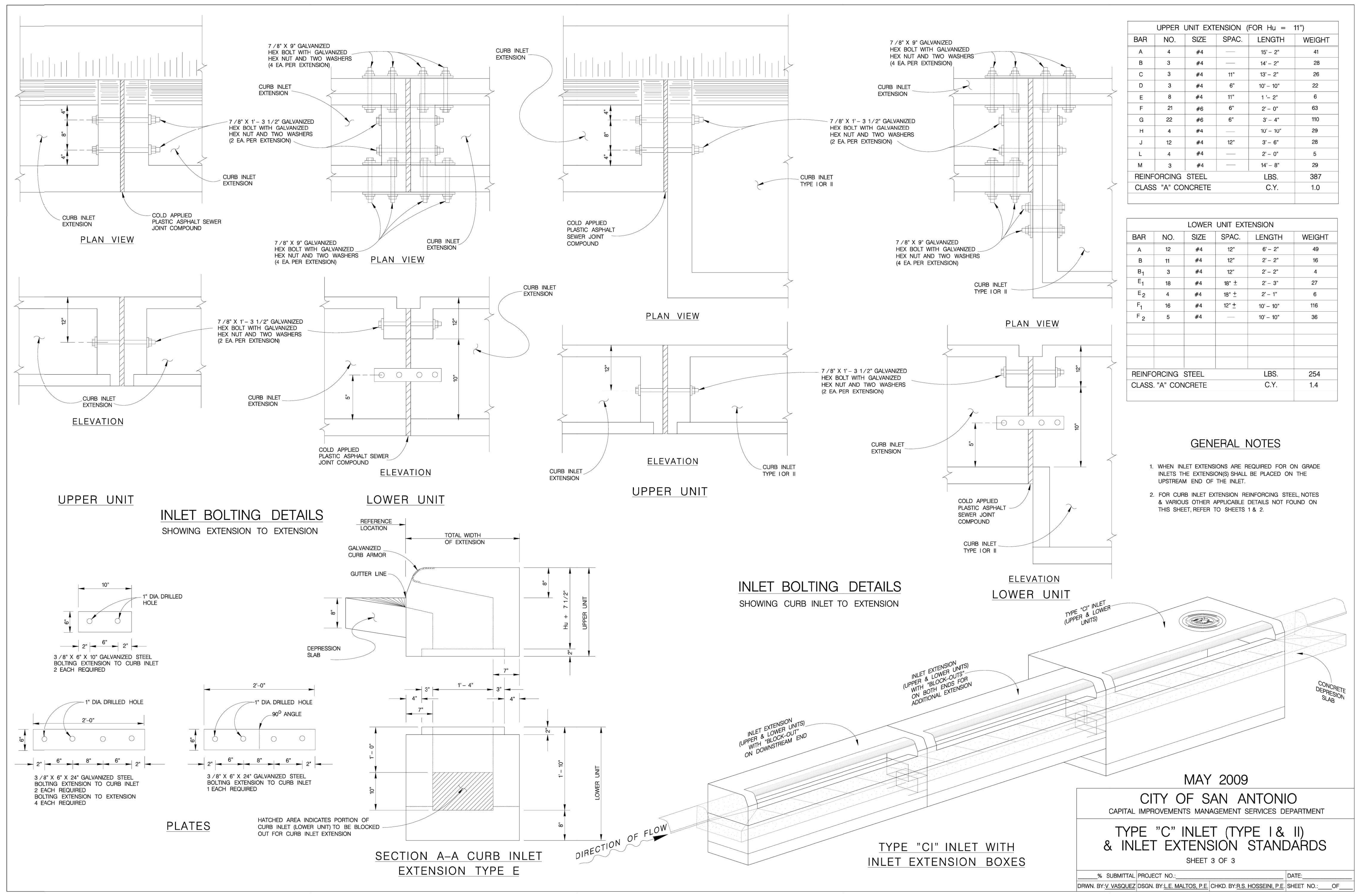
BARS A (UPPER UNIT)

BARS B (UPPER UNIT)

MAY 2009

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT
TYPE "C" INLET (TYPE I & II)
& INLET EXTENSION STANDARDS
SHEET 2 OF 3

______% SUBMITTAL	PROJECT NO.:		DATE:
DRWN. BY: V. VASQUEZ	DSGN. BY: L.E. MALTOS, P.E.	CHKD. BY: R.S. HOSSEINI, P.E.	SHEET NO.:____OF____


PLAN VIEW
ELEVATION
UPPER UNIT
LOWER UNIT
INLET BOLTING DETAILS
SHOWING EXTENSION TO EXTENSION
INLET BOLTING DETAILS
SHOWING CURB INLET TO EXTENSION
PLATES
SECTION A–A CURB INLET EXTENSION TYPE E
TYPE "CI" INLET WITH INLET EXTENSION BOXES
DIRECTION OF FLOW

UPPER UNIT EXTENSION (FOR Hu = 11")					
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	4	#4	—	15' – 2"	41
B	3	#4	—	14' – 2"	28
C	3	#4	11"	13' – 2"	26
D	3	#4	6"	10' – 10"	22
E	8	#4	11"	1 '– 2"	6
F	21	#6	6"	2' – 0"	63
G	22	#6	6"	3' – 4"	110
H	4	#4	—	10' – 10"	29
J	12	#4	12"	3' – 6"	28
L	4	#4	—	2' – 0"	5
M	3	#4	—	14' – 8"	29
REINFORCING STEEL				LBS.	387
CLASS "A" CONCRETE				C.Y.	1.0

LOWER UNIT EXTENSION					
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	12	#4	12"	6' – 2"	49
B	11	#4	12"	2' – 2"	16
B_1	3	#4	12"	2' – 2"	4
E_1	18	#4	18" ±	2' – 3"	27
E_2	4	#4	18" ±	2' – 1"	6
F_1	16	#4	12" ±	10' – 10"	116
F_2	5	#4	—	10' – 10"	36
REINFORCING STEEL				LBS.	254
CLASS. "A" CONCRETE				C.Y.	1.4

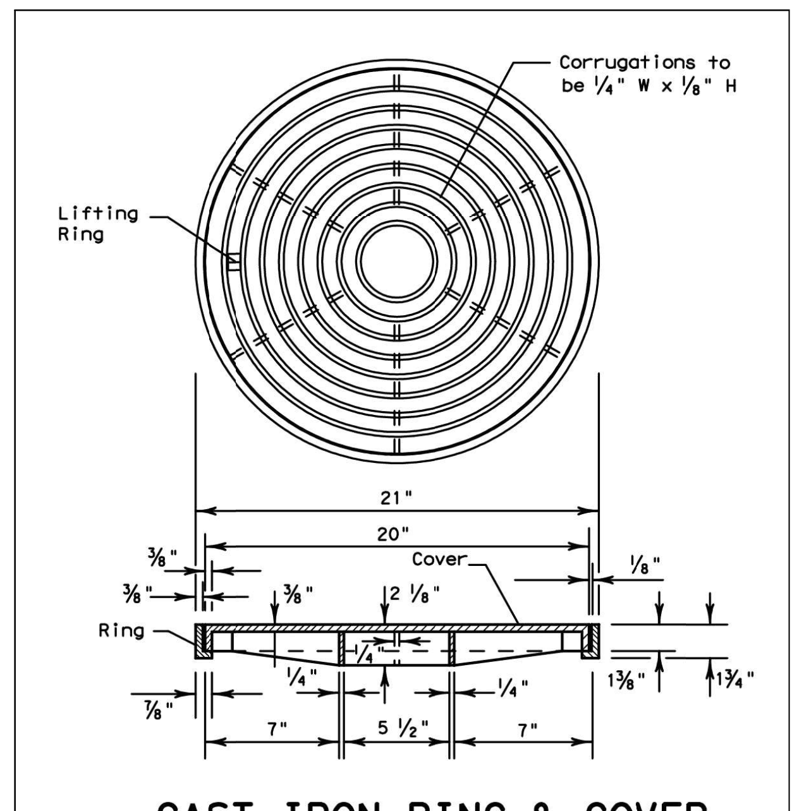
GENERAL NOTES

1. WHEN INLET EXTENSIONS ARE REQUIRED FOR ON GRADE INLETS THE EXTENSION(S) SHALL BE PLACED ON THE UPSTREAM END OF THE INLET.
2. FOR CURB INLET EXTENSION REINFORCING STEEL, NOTES & VARIOUS OTHER APPLICABLE DETAILS NOT FOUND ON THIS SHEET, REFER TO SHEETS 1 & 2.

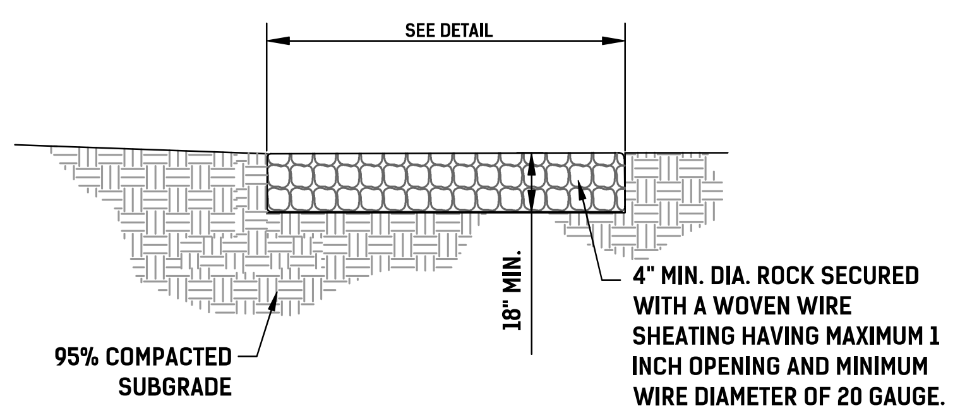
MAY 2009

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT
TYPE "C" INLET (TYPE I & II)
& INLET EXTENSION STANDARDS
SHEET 3 OF 3

______% SUBMITTAL	PROJECT NO.:		DATE:
DRWN. BY: V. VASQUEZ	DSGN. BY: L.E. MALTOS, P.E.	CHKD. BY: R.S. HOSSEINI, P.E.	SHEET NO.:____OF____

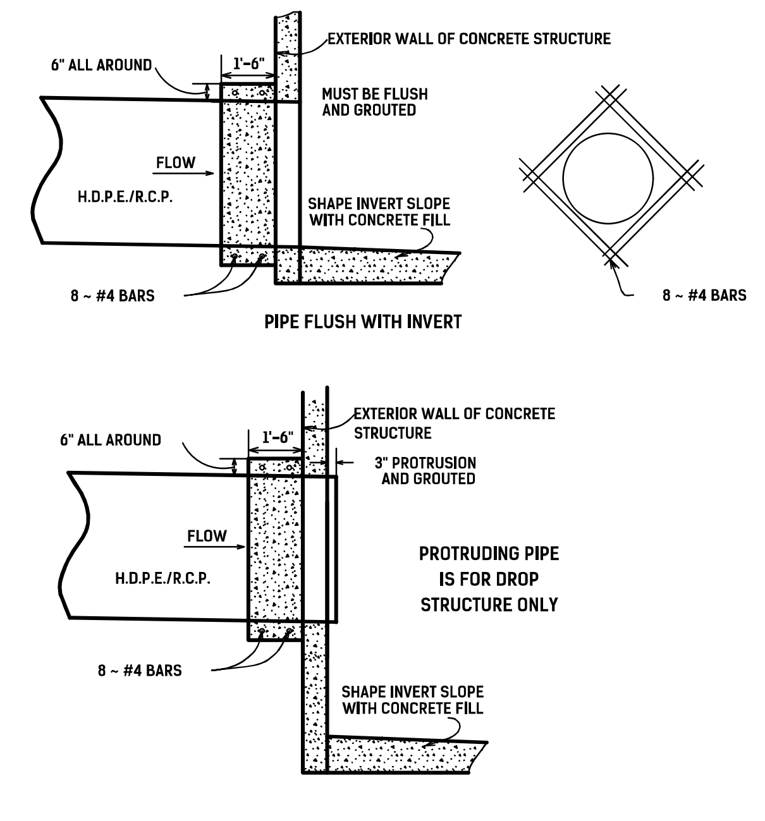

Corrugations to be 1/4" W x 1/8" H
Lifting Ring
21"
20"
Cover
Ring
3/8"
2 1/8"
1/8"
1/4"
7/8"
7"
5 1/2"
1 3/8"
1 3/4"

CAST IRON RING & COVER DETAIL


SEE DETAIL
18" MIN.
95% COMPACTED SUBGRADE
4" MIN. DIA. ROCK SECURED WITH A WOVEN WIRE SHEATING HAVING MAXIMUM 1 INCH OPENING AND MINIMUM WIRE DIAMETER OF 20 GAUGE.

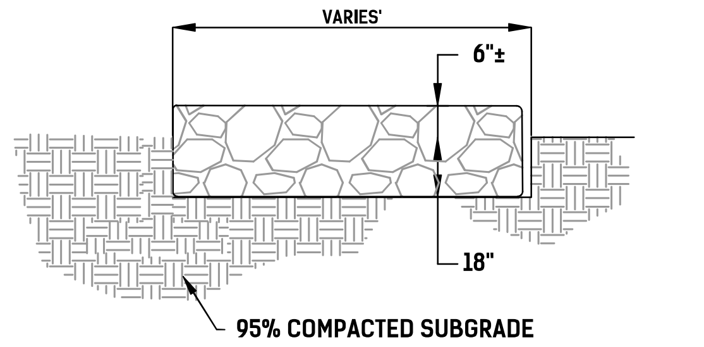
NOTE: GABION MATTRESS TO BE FREE OF GEO–TEXTILE FABRIC LINING.

GABION STYLE ROCK EROSION CONTROL MATTRESS DETAIL


6" ALL AROUND
1'–6"
EXTERIOR WALL OF CONCRETE STRUCTURE
MUST BE FLUSH AND GROUTED
FLOW
H.D.P.E./R.C.P.
SHAPE INVERT SLOPE WITH CONCRETE FILL
8 ~ #4 BARS
PIPE FLUSH WITH INVERT
8 ~ #4 BARS
6" ALL AROUND
1'–6"
EXTERIOR WALL OF CONCRETE STRUCTURE
3" PROTRUSION AND GROUTED
FLOW
H.D.P.E./R.C.P.
PROTRUDING PIPE IS FOR DROP STRUCTURE ONLY
8 ~ #4 BARS
SHAPE INVERT SLOPE WITH CONCRETE FILL

CONCRETE COLLAR DETAIL

(N.T.S.)


VARIES'
6"±
18"
95% COMPACTED SUBGRADE

8"X12" ROCK RUBBLE DETAIL

N.T.S.

CUDEENGINEERS.COM

EST. 1980
CUDE
ENGINEERS

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

GRACE VALLEY RANCH
PHASE 8

INLET DETAILS

DATE
11/10/2025

PROJECT NO.
03499.010

DRAWN BY
JK/AR/JF/RB

CHECKED BY
KMH

REVISIONS
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9.

KYLE M. HUDEK
138753
11/11/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C6.D2

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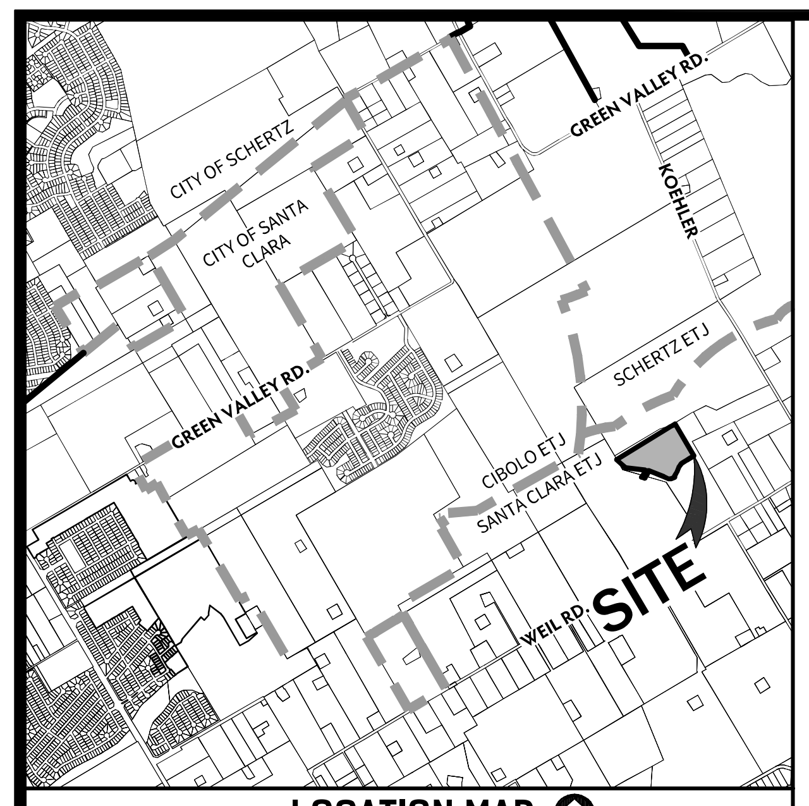

CITY OF SCHERTZ
CITY OF SANTA CLARA
GREEN VALLEY RD.
KOHLER
SCHERTZ ETJ
CIBOLO ETJ
SANTA CLARA ETJ
WEIL RD.
SITE

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

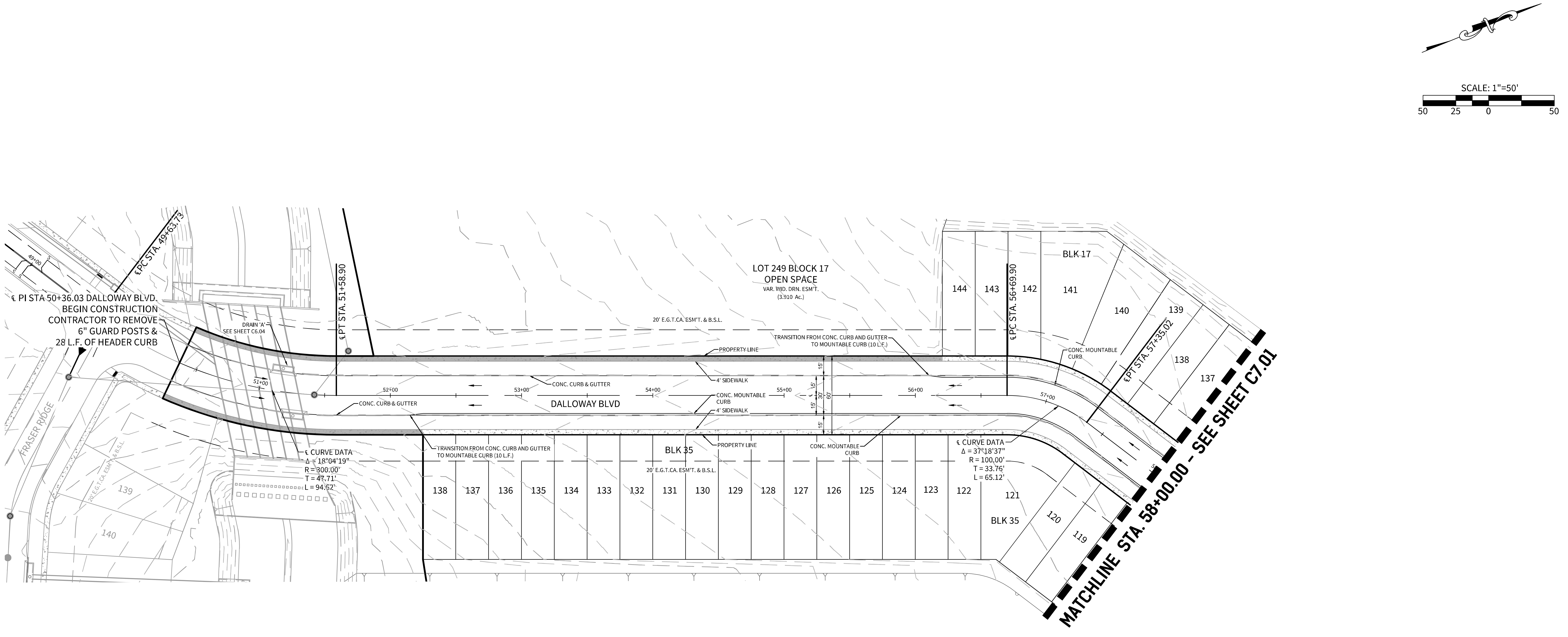
LEGEND

▨	- SIDEWALK CONSTRUCTED WITH INFRASTRUCTURE
▨	- STREET WASHOUT (SEE DETAIL SHEET C7.D1)
—— – ——	- STREET CENTERLINE
—— ——	- EXISTING CONTOURS
⊕ XXX.XX	- TOP OF CURB SPOT ELEVATION
▨	- DRIVEWAY
XXX.XX	- PAVEMENT ELEVATION

TxDOT TYPE "2" WHEEL CHAIR RAMPS ARE INDICATED
THUS " ▬ " UNLESS OTHERWISE NOTED.
(SEE DETAIL SHEET C7.D1) FOR ADA RAMPS AT SIDEWALK INTERSECTIONS

TxDOT TYPE "10" WHEEL CHAIR RAMPS ARE INDICATED
THUS " ▬ " UNLESS OTHERWISE NOTED.
(SEE DETAIL SHEET C7.D1) FOR ADA RAMPS AT SIDEWALK INTERSECTIONS

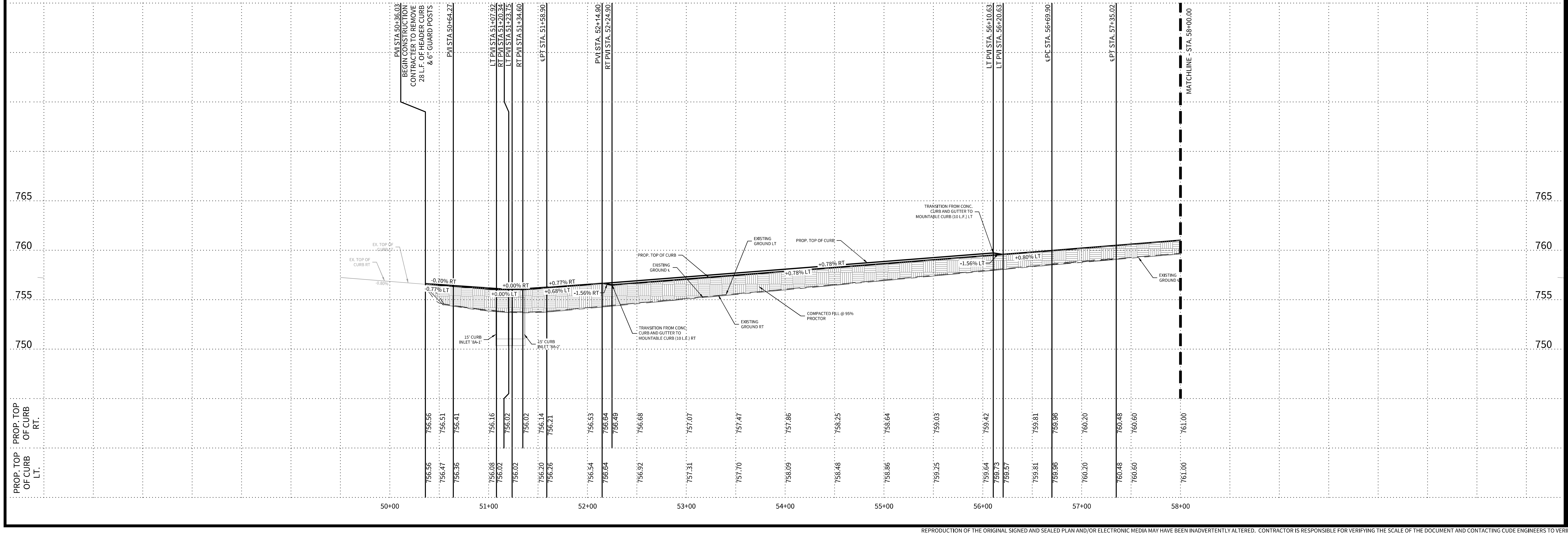
(SEE DETAIL SHEET C7.D1) FOR ADA RAMPS AT SIDEWALK INTERSECTIONS .
DETECTABLE WARNING PAVER WITH TRUNCATED DOMES ONLY.


SCALE: 1"=50'
50 25 0 50
℄ PC STA. 49+63.73
49+00
℄ PI STA 50+36.03 DALLOWAY BLVD.
BEGIN CONSTRUCTION
CONTRACTOR TO REMOVE
6" GUARD POSTS &
28 L.F. OF HEADER CURB
DRAIN 'A'
SEE SHEET C6.04
℄ PT STA. 51+58.90
51+00
52+00
53+00
54+00
55+00
56+00
57+00
CONC. CURB & GUTTER
DALLOWAY BLVD
FRASER RIDGE
20' E.G.T.CA. ESM'T. & B.S.L.
139
140
℄ CURVE DATA
Δ = 18°04'19"
R = 300.00'
T = 47.71'
L = 94.62'
TRANSITION FROM CONC. CURB AND GUTTER
TO MOUNTABLE CURB (10 L.F.)
LOT 249 BLOCK 17
OPEN SPACE
VAR. WID. DRN. ESM'T.
(3.910 Ac.)
20' E.G.T.CA. ESM'T. & B.S.L.
PROPERTY LINE
4' SIDEWALK
CONC. MOUNTABLE CURB
15'
30'
60'
BLK 17
144
143
142
141
140
139
138
137
℄ PC STA. 56+69.90
℄ PT STA. 57+35.02
CONC. MOUNTABLE CURB
BLK 35
138
137
136
135
134
133
132
131
130
129
128
127
126
125
124
123
122
121
120
119
℄ CURVE DATA
Δ = 37°18'37"
R = 100.00'
T = 33.76'
L = 65.12'
MATCHLINE STA. 58+00.00 - SEE SHEET C7.01

DALLOWAY BOULEVARD

STA. 50+64.27 TO STA. 58+00.00

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


PVI STA 50+36.03
BEGIN CONSTRUCTION
CONTRACTER TO REMOVE
28 L.F. OF HEADER CURB
& 6" GUARD POSTS
PVI STA. 50+64.27
LT PVI STA 51+07.92
RT PVI STA 51+20.34
LT PVI STA 51+23.75
RT PVI STA 51+34.60
℄ PT STA. 51+58.90
PVI STA. 52+14.90
RT PVI STA. 52+24.90
LT PVI STA. 56+10.63
LT PVI STA. 56+20.63
℄ PC STA. 56+69.90
℄ PT STA. 57+35.02
MATCHLINE - STA. 58+00.00
765
760
755
750
EX. TOP OF CURB LT
EX. TOP OF CURB RT
-0.80%
-0.70% RT
-0.77% LT
+0.00% RT
+0.00% LT
+0.77% RT
+0.68% LT
-1.56% RT
PROP. TOP OF CURB
EXISTING GROUND ℄
EXISTING GROUND LT
+0.78% LT
+0.78% RT
-1.56% LT
+0.80% LT
TRANSITION FROM CONC. CURB AND GUTTER TO MOUNTABLE CURB (10 L.F.) LT
15' CURB INLET '8A-1'
15' CURB INLET '8A-2'
TRANSITION FROM CONC. CURB AND GUTTER TO MOUNTABLE CURB (10 L.F.) RT
EXISTING GROUND RT
COMPACTED FILL @ 95% PROCTOR
EXISTING GROUND ℄
PROP. TOP OF CURB RT.
756.56 756.51 756.41 756.16 756.02 756.02 756.14 756.21 756.53 756.64 756.49 756.68 757.07 757.47 757.86 758.25 758.64 759.03 759.42 759.81 759.96 760.20 760.48 760.60 761.00
PROP. TOP OF CURB LT.
756.56 756.47 756.36 756.08 756.02 756.02 756.20 756.26 756.54 756.64 756.92 757.31 757.70 758.09 758.48 758.86 759.25 759.64 759.73 759.57 759.81 759.96 760.20 760.48 760.60 761.00
50+00
51+00
52+00
53+00
54+00
55+00
56+00
57+00
58+00

CUDEENGINEERS.COM

EST. 1980 CUDE ENGINEERS

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

GRACE VALLEY RANCH
PHASE 8

STREET PLAN & PROFILE - DALLOWAY BOULEVARD

DATE
11/10/2025

PROJECT NO.
03499.010

DRAWN BY
JK/AR/JF/RB

CHECKED BY
KMH

REVISIONS
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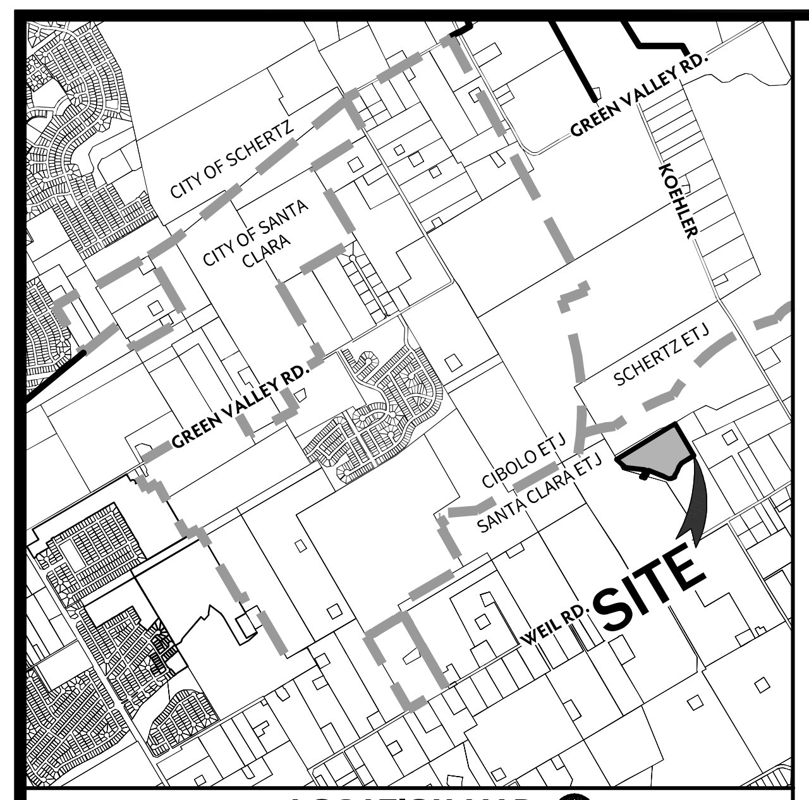
KYLE M. HUDEK
138753
11/11/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C7.00

P:\03499\010\2-DWG\4-Plans\C7.00_STPP DALLOWAY BLVD.dwg 2025/11/10 5:17pm arodriguez


CITY OF SCHERTZ
CITY OF SANTA CLARA
GREEN VALLEY RD.
KOHLER
SCHERTZ ETJ
CIBOLO ETJ
SANTA CLARA ETJ
WEIL RD.
SITE

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

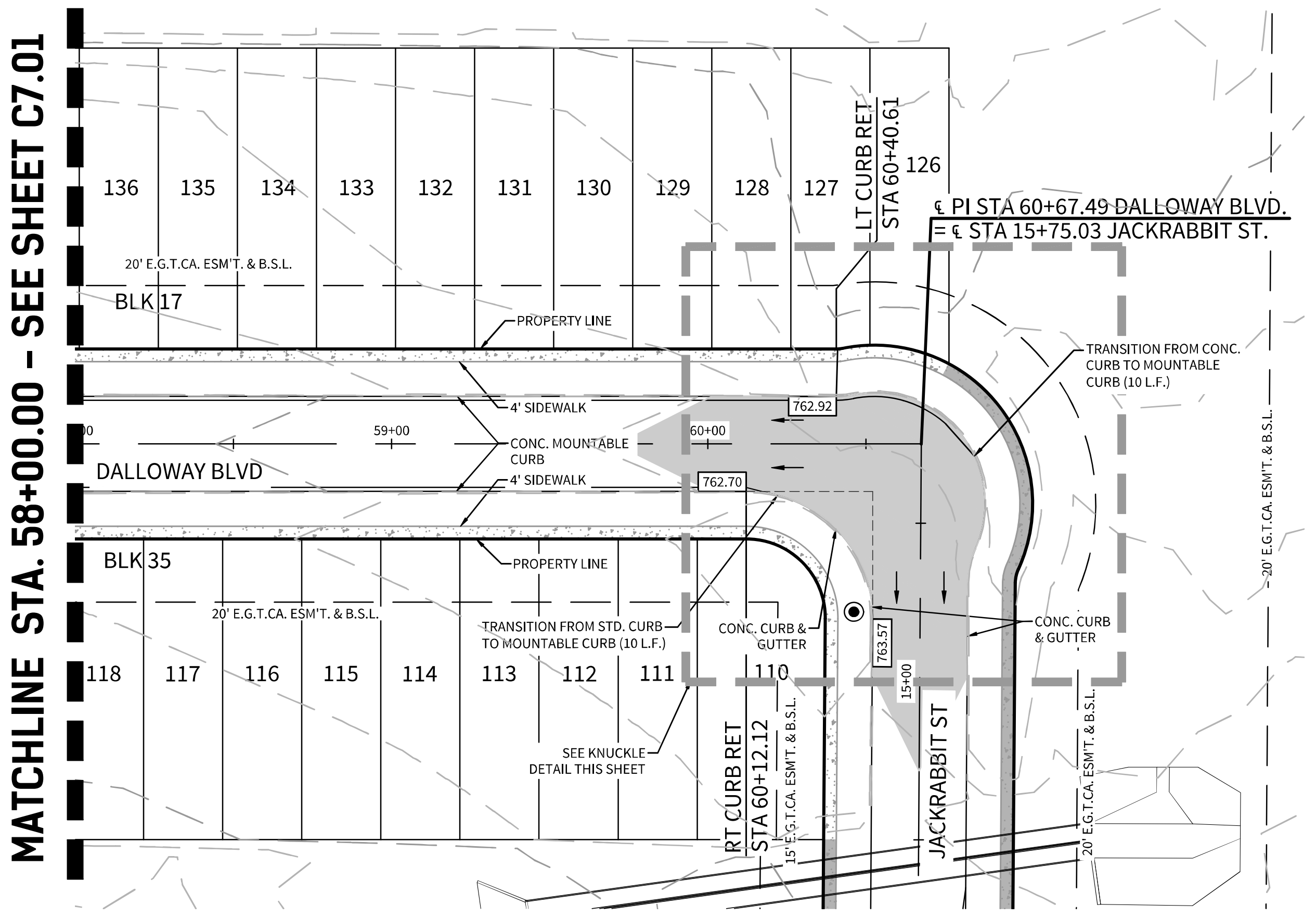
LEGEND

▨	SIDEWALK CONSTRUCTED WITH INFRASTRUCTURE
▨	STREET WASHOUT (SEE DETAIL SHEET C7.D1)
—— – ——	STREET CENTERLINE
—— ——	EXISTING CONTOURS
⊕ XXX.XX	TOP OF CURB SPOT ELEVATION
▯	DRIVEWAY
XXX.XX	PAVEMENT ELEVATION

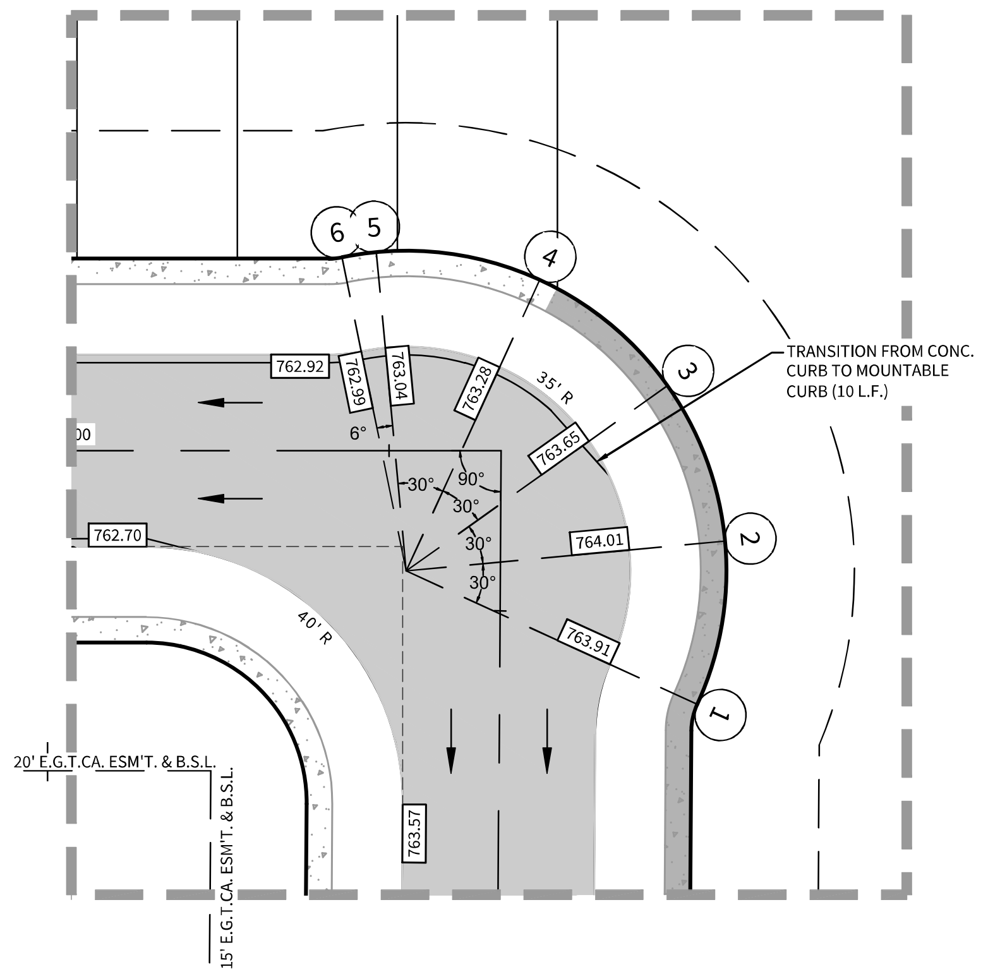
TxDOT TYPE "2" WHEEL CHAIR RAMPS ARE INDICATED
THUS " ▬ " UNLESS OTHERWISE NOTED.
(SEE DETAIL SHEET C7.D1) FOR ADA RAMPS AT SIDEWALK INTERSECTIONS

TxDOT TYPE "10" WHEEL CHAIR RAMPS ARE INDICATED
THUS " ▬ " UNLESS OTHERWISE NOTED.
(SEE DETAIL SHEET C7.D1) FOR ADA RAMPS AT SIDEWALK INTERSECTIONS

(SEE DETAIL SHEET C7.D1) FOR ADA RAMPS AT SIDEWALK INTERSECTIONS .
DETECTABLE WARNING PAVER WITH TRUNCATED DOMES ONLY.


MATCHLINE STA. 58+00.00 – SEE SHEET C7.01
136
135
134
133
132
131
130
129
128
127
126
LT CURB RET
STA 60+40.61
℄ PI STA 60+67.49 DALLOWAY BLVD.
= ℄ STA 15+75.03 JACKRABBIT ST.
20' E.G.T.CA. ESM'T. & B.S.L.
BLK 17
PROPERTY LINE
4' SIDEWALK
CONC. MOUNTABLE CURB
4' SIDEWALK
59+00
60+00
762.92
762.70
DALLOWAY BLVD
TRANSITION FROM CONC. CURB TO MOUNTABLE CURB (10 L.F.)
BLK 35
PROPERTY LINE
20' E.G.T.CA. ESM'T. & B.S.L.
TRANSITION FROM STD. CURB TO MOUNTABLE CURB (10 L.F.)
CONC. CURB & GUTTER
CONC. CURB & GUTTER
763.57
15+00
118
117
116
115
114
113
112
111
110
SEE KNUCKLE DETAIL THIS SHEET
RT CURB RET
STA 60+12.12
15' E.G.T.CA. ESM'T. & B.S.L.
JACKRABBIT ST
20' E.G.T.CA. ESM'T. & B.S.L.

SCALE: 1"=50'
50 25 0 50

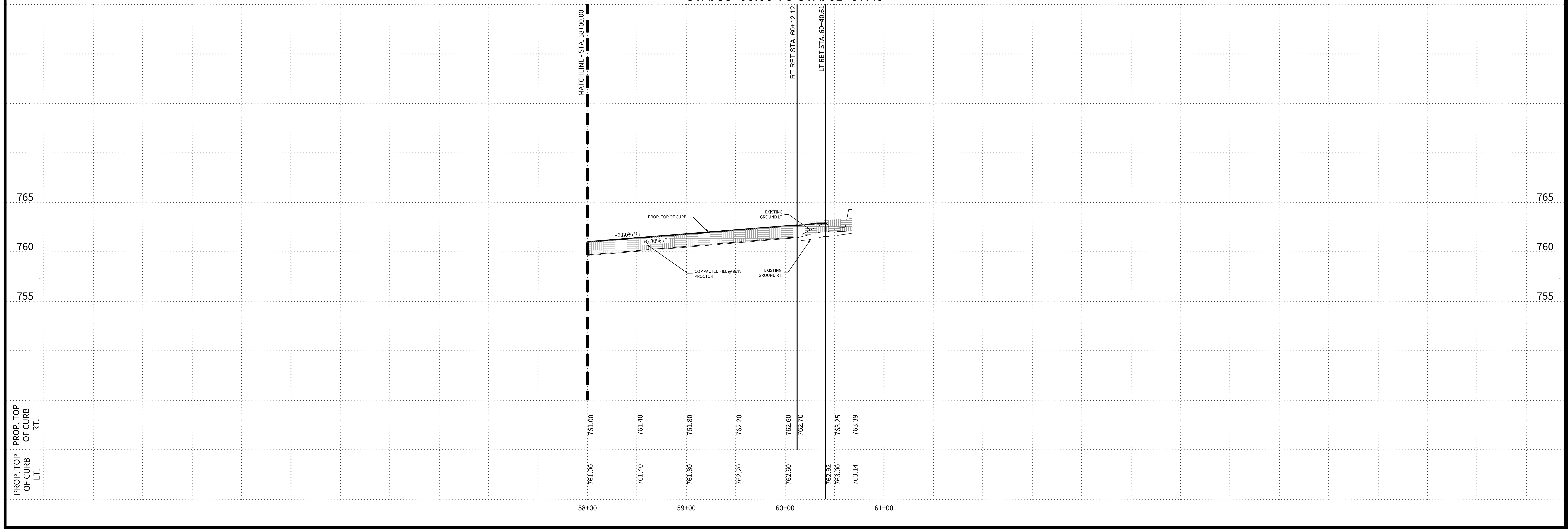

6
5
4
3
2
1
762.92
762.70
764.01
763.57
35' R
40' R
30°
30°
30°
30°
6"
TRANSITION FROM CONC. CURB TO MOUNTABLE CURB (10 L.F.)
20' E.G.T.CA. ESM'T. & B.S.L.
15' E.G.T.CA. ESM'T. & B.S.L.

DALLOWAY BOULEVARD KNUCKLE DETAIL
SCALE: 1" = 30'

DALLOWAY BOULEVARD

STA. 58+00.00 TO STA. 61+67.49

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


MATCHLINE - STA. 58+00.00
RT RET STA. 60+12.12
LT RET STA. 60+40.61
765
760
755
PROP. TOP OF CURB
+0.80% RT
+0.80% LT
EXISTING GROUND LT
EXISTING GROUND RT
COMPACTED FILL @ 95% PROCTOR
PROP. TOP OF CURB RT.
761.00
761.40
761.80
762.20
762.60
762.70
763.25
763.39
PROP. TOP OF CURB LT.
761.00
761.40
761.80
762.20
762.60
762.92
763.00
763.14
58+00
59+00
60+00
61+00

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

GRACE VALLEY RANCH
PHASE 8

STREET PLAN & PROFILE - DALLOWAY BOULEVARD

DATE	11/10/2025
PROJECT NO.	03499.010
DRAWN BY	JK/AR/JF/RB
CHECKED BY	KMH

REVISIONS

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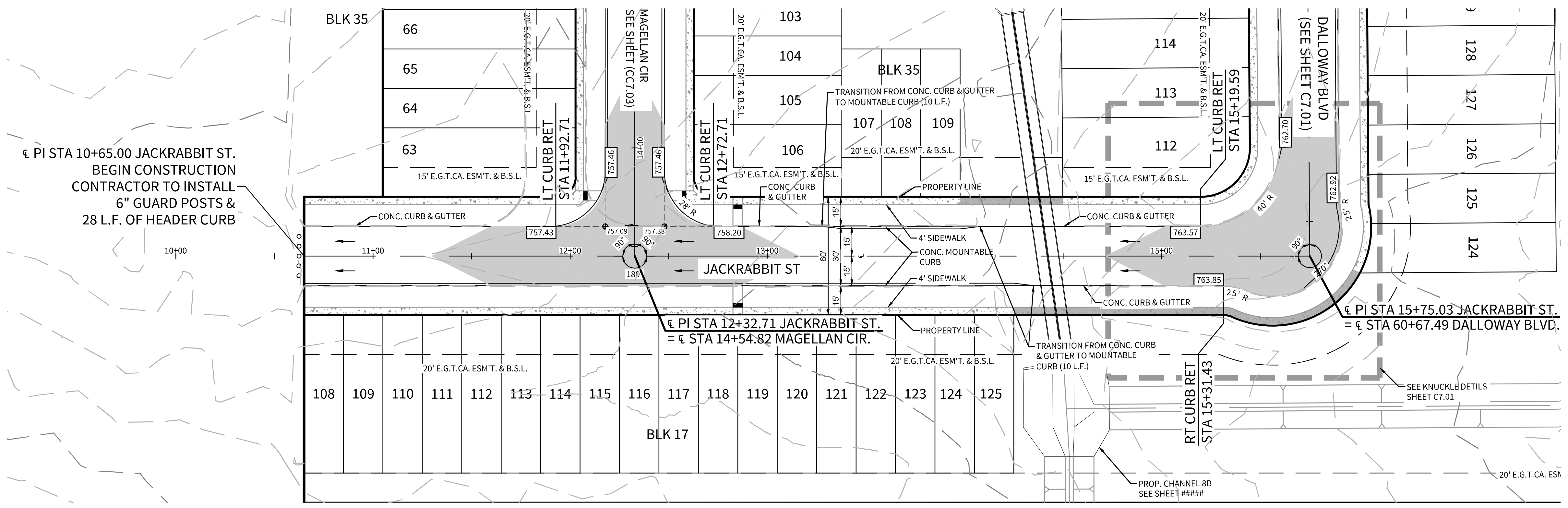
KYLE M. HUDEK
138753
11/11/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C7.01

P:\03499\010\2-DWG\4-Plans\C7.00_STPP DALLOWAY BLVD.dwg 2025/11/10 5:19pm arodriguez

SCALE: 1"=50'
50 25 0 50


BLK 35
66
65
64
63
20' E.G.T.CA. ESM'T. & B.S.L.
MAGELLAN CIR
SEE SHEET (CC7.03)
LT CURB RET
STA 11+92.71
LT CURB RET
STA 12+72.71
103
104
105
106
107
108
109
BLK 35
TRANSITION FROM CONC. CURB & GUTTER
TO MOUNTABLE CURB (10 L.F.)
20' E.G.T.CA. ESM'T. & B.S.L.
15' E.G.T.CA. ESM'T. & B.S.L.
℄ PI STA 10+65.00 JACKRABBIT ST.
BEGIN CONSTRUCTION
CONTRACTOR TO INSTALL
6" GUARD POSTS &
28 L.F. OF HEADER CURB
CONC. CURB & GUTTER
CONC. CURB
& GUTTER
PROPERTY LINE
757.46
757.46
14+00
757.43
757.09
757.33
758.20
28' R
90°
90°
180
10+00
11+00
12+00
13+00
JACKRABBIT ST
60'
30'
15'
15'
15'
15'
4' SIDEWALK
CONC. MOUNTABLE
CURB
4' SIDEWALK
℄ PI STA 12+32.71 JACKRABBIT ST.
= ℄ STA 14+54.82 MAGELLAN CIR.
PROPERTY LINE
114
113
112
15' E.G.T.CA. ESM'T & B.S.L.
LT CURB RET
STA 15+19.59
DALLOWAY BLVD
(SEE SHEET C7.01)
762.70
762.92
40' R
25' R
25' R
763.57
763.85
15+00
90°
270°
CONC. CURB & GUTTER
CONC. CURB & GUTTER
128
127
126
125
124
℄ PI STA 15+75.03 JACKRABBIT ST.
= ℄ STA 60+67.49 DALLOWAY BLVD.
TRANSITION FROM CONC. CURB
& GUTTER TO MOUNTABLE
CURB (10 L.F.)
SEE KNUCKLE DETILS
SHEET C7.01
20' E.G.T.CA. ESM'T. & B.S.L.
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
BLK 17
RT CURB RET
STA 15+31.43
PROP. CHANNEL 8B
SEE SHEET #####
20' E.G.T.CA. ESM

LEGEND

- ▨ - SIDEWALK CONSTRUCTED WITH INFRASTRUCTURE
- ▨ - STREET WASHOUT (SEE DETAIL SHEET C7.D1)
- —— – —— - STREET CENTERLINE
- —— —— - EXISTING CONTOURS
- ⊕ XXX.XX - TOP OF CURB SPOT ELEVATION
- ▨ - DRIVEWAY
- XXX.XX - PAVEMENT ELEVATION

TxDOT TYPE "2" WHEEL CHAIR RAMPS ARE INDICATED
THUS " ▬ " UNLESS OTHERWISE NOTED.
(SEE DETAIL SHEET C7.D1) FOR ADA RAMPS AT SIDEWALK INTERSECTIONS

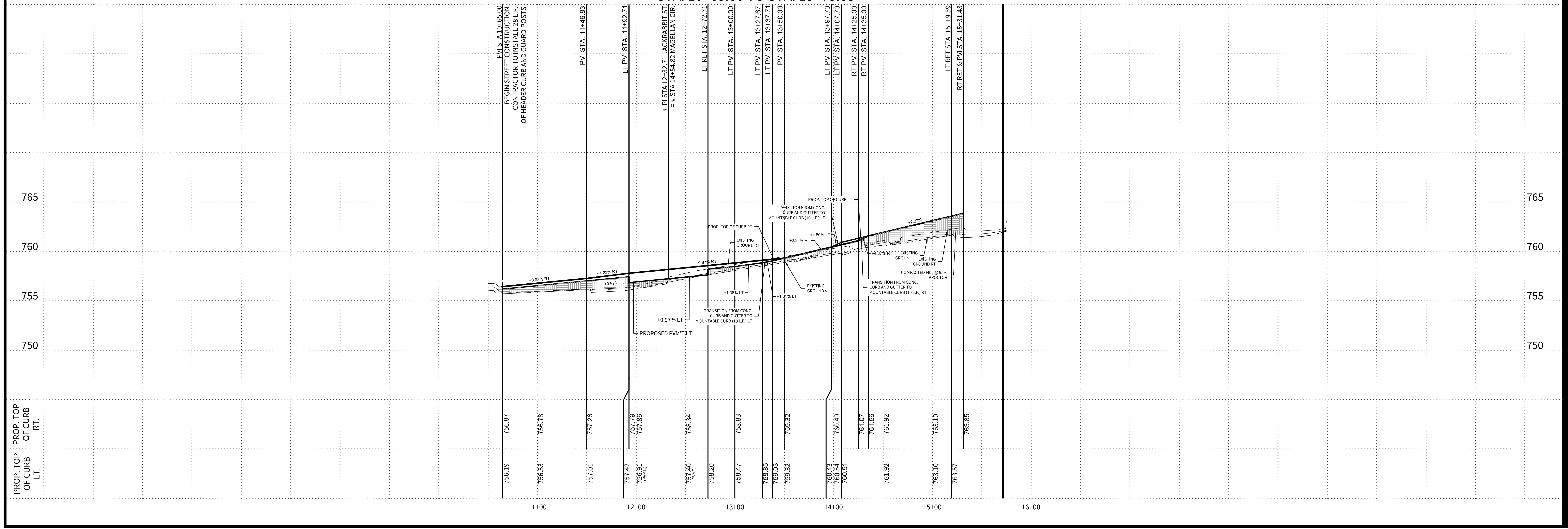
TxDOT TYPE "10" WHEEL CHAIR RAMPS ARE INDICATED
THUS " ▬ " UNLESS OTHERWISE NOTED.
(SEE DETAIL SHEET C7.D1) FOR ADA RAMPS AT SIDEWALK INTERSECTIONS

(SEE DETAIL SHEET C7.D1) FOR ADA RAMPS AT SIDEWALK INTERSECTIONS .
DETECTABLE WARNING PAVER WITH TRUNCATED DOMES ONLY.

JACKRABBIT STREET

STA. 10+65.00 TO STA. 15+75.03

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


PVI STA 10+65.00
BEGIN STREET CONSTRUCTION
CONTRACTOR TO INSTALL 28 L.F.
OF HEADER CURB AND GUARD POSTS
PVI STA. 11+49.83
LT PVI STA. 11+92.71
℄ PI STA 12+32.71 JACKRABBIT ST.
= ℄ STA 14+54.82 MAGELLAN CIR.
LT RET STA. 12+72.71
LT PVI STA. 13+00.00
LT PVI STA. 13+27.67
LT PVI STA. 13+37.71
PVI STA. 13+50.00
LT PVI STA. 13+97.70
LT PVI STA. 14+07.70
RT PVI STA. 14+25.00
RT PVI STA. 14+35.00
LT RET STA. 15+19.59
RT RET & PVI STA. 15+31.43
765
760
755
750
765
760
755
750
PROP. TOP OF CURB LT
TRANSITION FROM CONC.
CURB AND GUTTER TO
MOUNTABLE CURB (10 L.F.) LT
PROP. TOP OF CURB RT
EXISTING
GROUND RT
+2.37%
+4.80% LT
+2.34% RT
+0.97% RT
+1.23% RT
+0.97% RT
+0.97% LT
+2.34% LT
+4.87% RT
EXISTING
GROUN
EXISTING
GROUND RT
COMPACTED FILL @ 95%
PROCTOR
EXISTING
GROUND ℄
+1.38% LT
+1.81% LT
TRANSITION FROM CONC.
CURB AND GUTTER TO
MOUNTABLE CURB (10 L.F.) RT
+0.97% LT
TRANSITION FROM CONC.
CURB AND GUTTER TO
MOUNTABLE CURB (10 L.F.) LT
PROPOSED PVM'T LT
PROP. TOP OF CURB RT.
756.87
756.78
757.26
757.79
757.86
758.34
758.83
759.32
760.49
761.07
761.56
761.92
763.10
763.85
PROP. TOP OF CURB LT.
756.19
756.53
757.01
757.42
756.91 (PVMT.)
757.40 (PVMT.)
758.20
758.47
758.85
759.03
759.32
760.43
760.54
760.91
761.92
763.10
763.57
11+00
12+00
13+00
14+00
15+00
16+00

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CUDE
EST. 1980
ENGINEERS

4122 Pond Hill Road, Suite 101
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GRACE VALLEY RANCH
PHASE 8

STREET PLAN & PROFILE - DALLOWAY BOULEVARD

DATE
11/10/2025

PROJECT NO.
03499.010

DRAWN BY
JK/AR/JF/RB

CHECKED BY
KMH

REVISIONS
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KYLE M. HUDEK
138753
11/11/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C7.02

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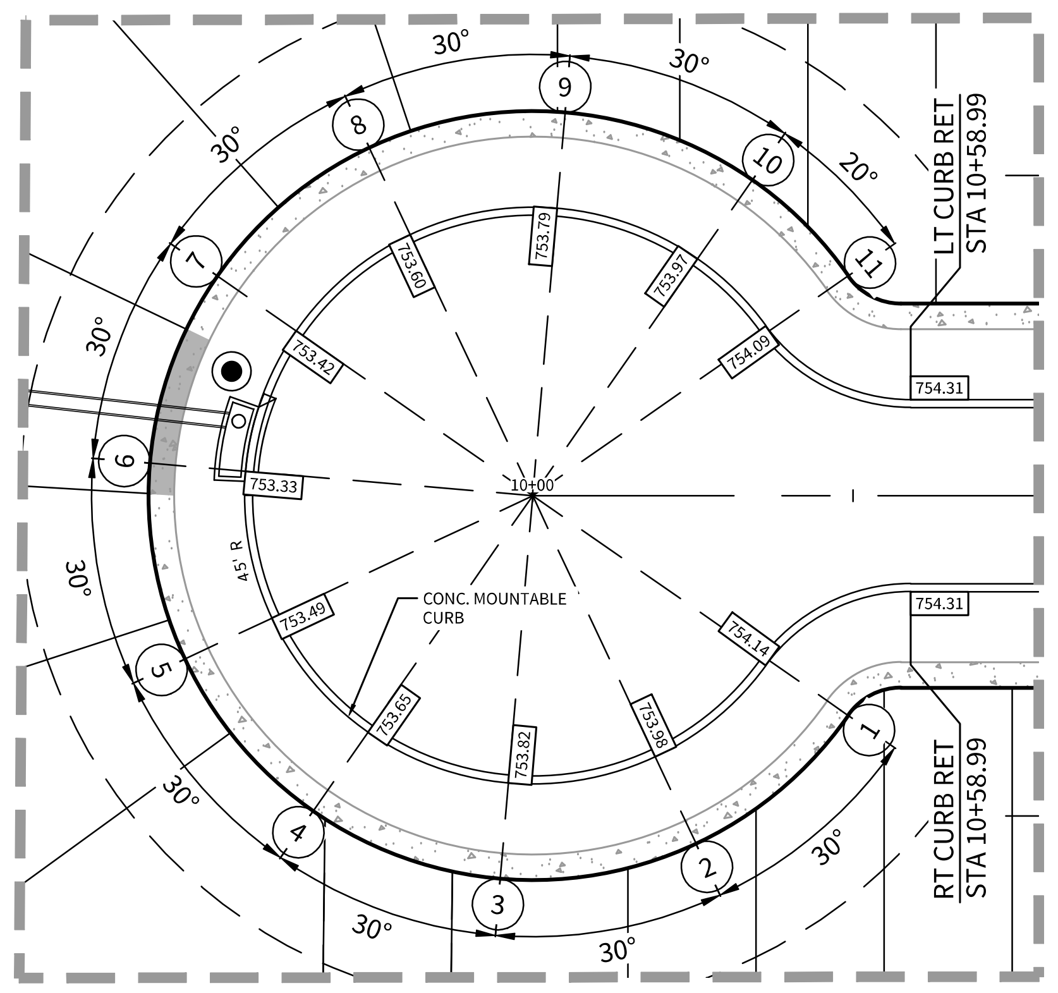
30°
30°
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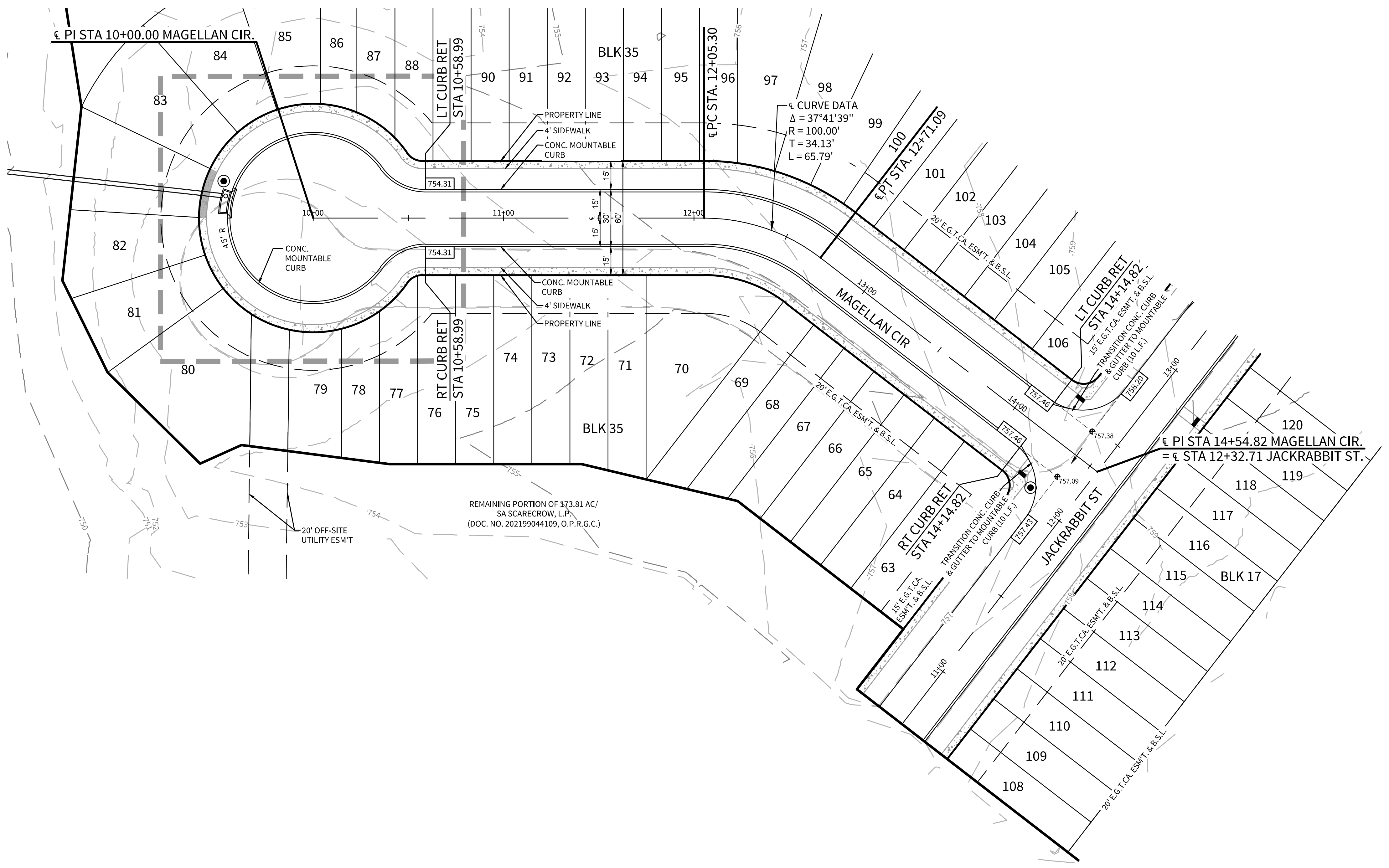
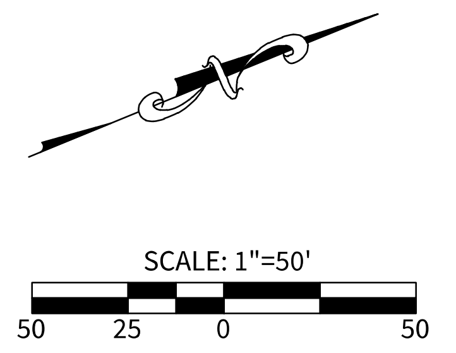
20°
30°
30°
30°
30°
30°
30°
1
2
3
4
5
6
7
8
9
10
11
LT CURB RET
STA 10+58.99
RT CURB RET
STA 10+58.99
753.79
753.60
753.97
753.42
754.09
754.31
753.33
10+00
45' R
753.49
CONC. MOUNTABLE
CURB
754.14
754.31
753.65
753.82
753.98

DALLOWAY BOULEVARD KNUCKLE DETAIL

SCALE: 1" = 30'


℄ PI STA 10+00.00 MAGELLAN CIR.
84
85
86
87
88
83
82
81
80
79
78
77
76
75
74
73
72
71
70
69
68
67
66
65
64
63
90
91
92
93
94
95
96
97
98
99
100
101
102
103
104
105
106
BLK 35
BLK 35
BLK 17
LT CURB RET
STA 10+58.99
RT CURB RET
STA 10+58.99
℄ PC STA. 12+05.30
℄ PT STA. 12+71.09
PROPERTY LINE
4' SIDEWALK
CONC. MOUNTABLE
CURB
754.31
754.31
10+00
11+00
12+00
13+00
14+00
15'
15'
30'
60'
15'
15'
45' R
CONC.
MOUNTABLE
CURB
CONC. MOUNTABLE
CURB
4' SIDEWALK
PROPERTY LINE
REMAINING PORTION OF 173.81 AC/
SA SCARECROW, L.P.
(DOC. NO. 202199044109, O.P.R.G.C.)
20' OFF-SITE
UTILITY ESM'T
℄ CURVE DATA
Δ = 37°41'39"
R = 100.00'
T = 34.13'
L = 65.79'
20' E.G.T.CA. ESM'T. & B.S.L.
MAGELLAN CIR
LT CURB RET
STA 14+14.82
15' E.G.T.CA. ESM'T. & B.S.L.
TRANSITION CONC. CURB
& GUTTER TO MOUNTABLE
CURB (10 L.F.)
757.46
758.20
757.38
757.46
757.09
RT CURB RET
STA 14+14.82
TRANSITION CONC. CURB
& GUTTER TO MOUNTABLE
CURB (10 L.F.)
757.43
15' E.G.T.CA.
ESM'T. & B.S.L.
JACKRABBIT ST
11+00
12+00
13+00
℄ PI STA 14+54.82 MAGELLAN CIR.
= ℄ STA 12+32.71 JACKRABBIT ST.
120
119
118
117
116
115
114
113
112
111
110
109
108
20' E.G.T.CA. ESM'T. & B.S.L.
750
751
752
753
754
755
756
757
758
759


SCALE: 1"=50'
50
25
0
50

LEGEND

- ▬ - SIDEWALK CONSTRUCTED WITH INFRASTRUCTURE
- ▨ - STREET WASHOUT (SEE DETAIL SHEET C7.D1)
- — - — - STREET CENTERLINE
- — — - EXISTING CONTOURS
- ⊕ XXX.XX - TOP OF CURB SPOT ELEVATION
- ▯ - DRIVEWAY
- XXX.XX - PAVEMENT ELEVATION

TxDOT TYPE "2" WHEEL CHAIR RAMPS ARE INDICATED
THUS " ▬ " UNLESS OTHERWISE NOTED.
(SEE DETAIL SHEET C7.D1) FOR ADA RAMPS AT SIDEWALK INTERSECTIONS

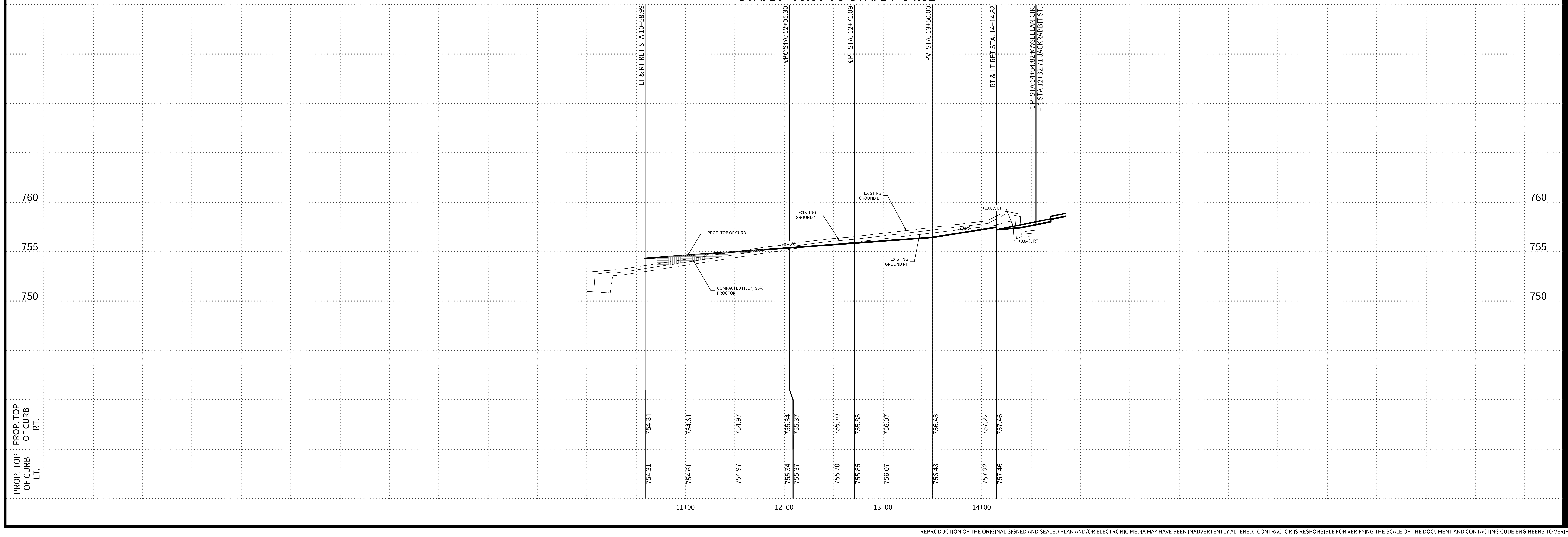
TxDOT TYPE "10" WHEEL CHAIR RAMPS ARE INDICATED
THUS " ⌐ " UNLESS OTHERWISE NOTED.
(SEE DETAIL SHEET C7.D1) FOR ADA RAMPS AT SIDEWALK INTERSECTIONS

(SEE DETAIL SHEET C7.D1) FOR ADA RAMPS AT SIDEWALK INTERSECTIONS .
DETECTABLE WARNING PAVER WITH TRUNCATED DOMES ONLY.

MAGELLAN CIRCLE

STA. 10+00.00 TO STA. 14+54.82

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



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GRACE VALLEY RANCH
PHASE 8

STREET PLAN & PROFILE - MAGELLAN CIRCLE

DATE
11/11/2025
PROJECT NO.
03499.010
DRAWN BY
JK/AR/JF/RB
CHECKED BY
KMH

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

KYLE M. HUDEK
138753
11/11/2025
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.

STREET PAVEMENT DESIGN OPTIONS (TTL , INC. - 00240902004.00)

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 LIME STABILIZATION IS NEEDED.
- 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 TWO (±2) 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 TTL, INC.
- 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 THE STANDARD COMPACTION EFFORT (ASTM D 6998). THE SUBGRADE SHOULD BE MOISTURE CONDITIONED JUST PRIOR TO FILL PLACEMENT SO THE SUBGRADE MAINTAINS ITS COMPACTION MOISTURE LEVELS AND DOES NOT DRY OUT.
- 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 2.0. 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 BASE.

SUBGRADE VERIFICATION:

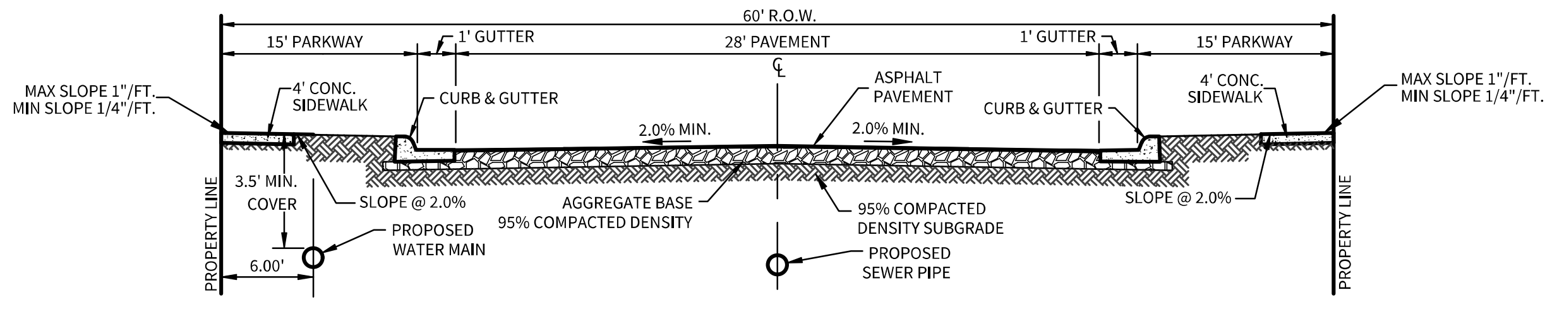
- AT THE TIME OF CONSTRUCTION, THE FINAL PAVEMENT SUBGRADE WILL BE OBSERVED AND VERIFIED BY A REPRESENTATIVE OF TTL, INC.

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 TO 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.

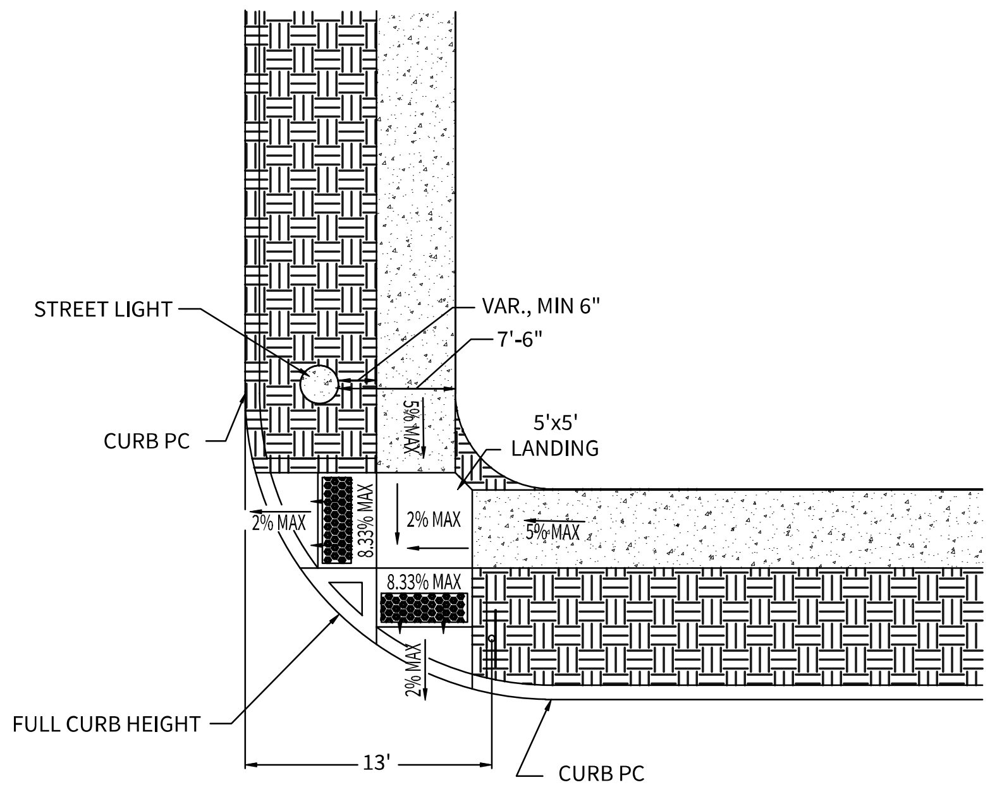
TACK COAT:

- 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.


60' R.O.W.
15' PARKWAY
1' GUTTER
28' PAVEMENT
1' GUTTER
15' PARKWAY
MAX SLOPE 1"/FT.
MIN SLOPE 1/4"/FT.
4' CONC. SIDEWALK
CURB & GUTTER
ASPHALT PAVEMENT
2.0% MIN.
2.0% MIN.
CURB & GUTTER
4' CONC. SIDEWALK
MAX SLOPE 1"/FT.
MIN SLOPE 1/4"/FT.
3.5' MIN. COVER
SLOPE @ 2.0%
AGGREGATE BASE 95% COMPACTED DENSITY
95% COMPACTED DENSITY SUBGRADE
SLOPE @ 2.0%
PROPOSED WATER MAIN
PROPOSED SEWER PIPE
6.00'
PROPERTY LINE
PROPERTY LINE

MINOR ACCESS STREET CROSS-SECTION

N.T.S.

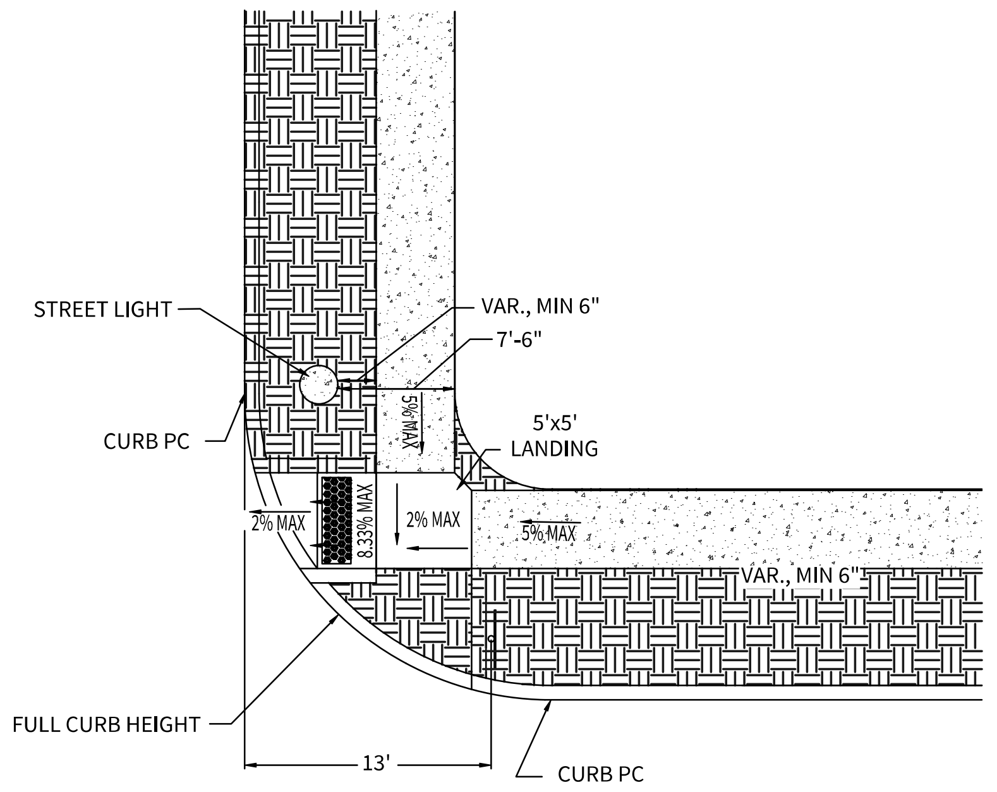

STREET LIGHT
VAR., MIN 6"
7'-6"
CURB PC
5'x5' LANDING
5% MAX
2% MAX
8.33% MAX
2% MAX
5% MAX
8.33% MAX
2% MAX
FULL CURB HEIGHT
13'
CURB PC

ADA RAMP INTERSECTION LAYOUT DETAIL
(TYPE 10 DIRECTIONAL RAMPS)

N.T.S.

NOTES:

1. STREET LIGHTS SHALL BE INSTALLED 7.5' WITHIN R.O.W. AND A MINIMUM DISTANCE OF 6" FROM THE PROPOSED SIDEWALK.

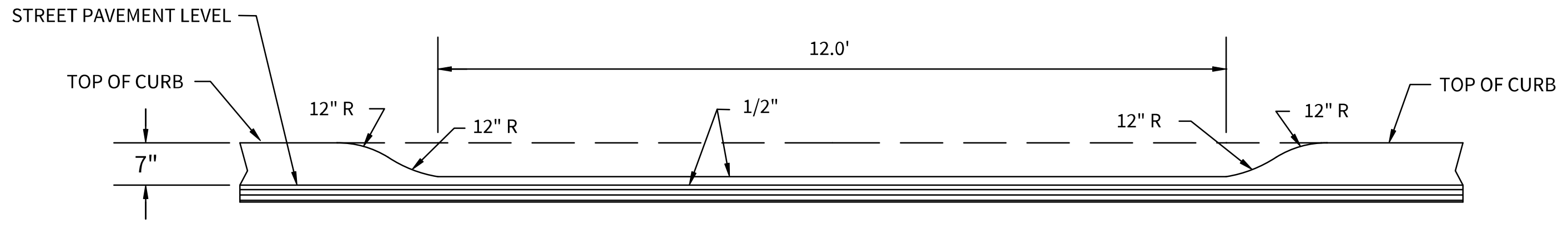

STREET LIGHT
VAR., MIN 6"
7'-6"
CURB PC
5'x5' LANDING
5% MAX
2% MAX
8.33% MAX
2% MAX
5% MAX
VAR., MIN 6"
FULL CURB HEIGHT
13'
CURB PC

ADA RAMP INTERSECTION LAYOUT DETAIL
(TYPE 10 DIRECTIONAL RAMPS – SINGLE DIRECTION)

N.T.S.

NOTES:

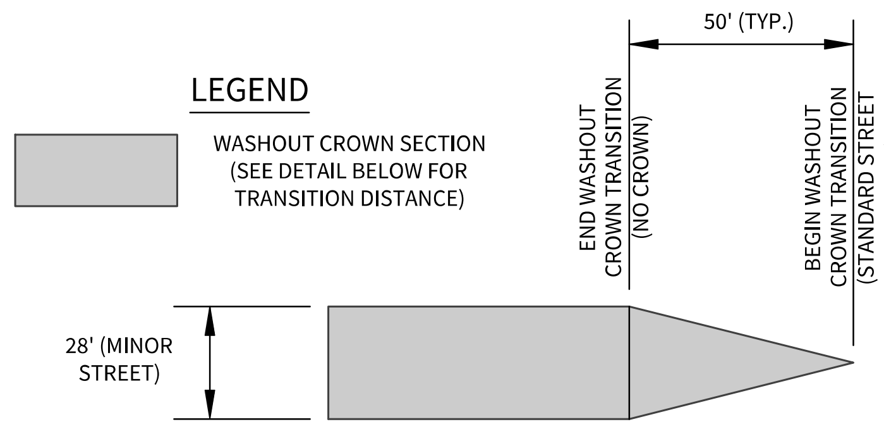
1. STREET LIGHTS SHALL BE INSTALLED 7.5' WITHIN R.O.W. AND A MINIMUM DISTANCE OF 6" FROM THE PROPOSED SIDEWALK.


STREET PAVEMENT LEVEL
TOP OF CURB
7"
12" R
12" R
12.0'
1/2"
12" R
12" R
TOP OF CURB

TYPICAL DRIVEWAY CUT SECTION

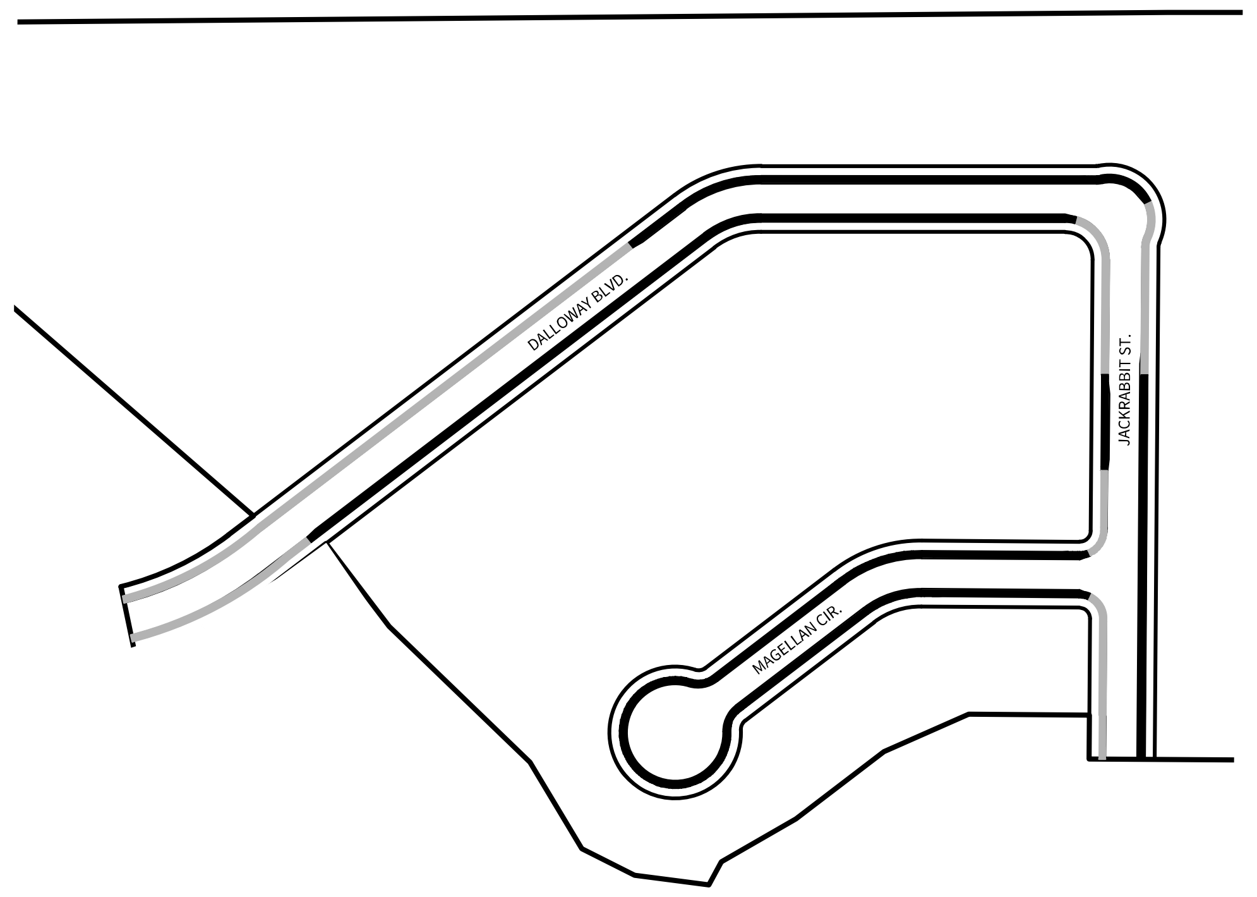
STREET TYPE	HMAC TYPE "D"	FLEX BASE (TY A OR B GR 2)	LIME SUBGRADE	STRUCTURAL NUMBER
MINOR ACCESS	2.5"	12"	6" (24 LB/SY)	3.26

STREET PAVEMENT DESIGN


LEGEND
WASHOUT CROWN SECTION (SEE DETAIL BELOW FOR TRANSITION DISTANCE)
50' (TYP.)
END WASHOUT CROWN TRANSITION (NO CROWN)
BEGIN WASHOUT CROWN TRANSITION (STANDARD STREET SECTION)
28' (MINOR STREET)

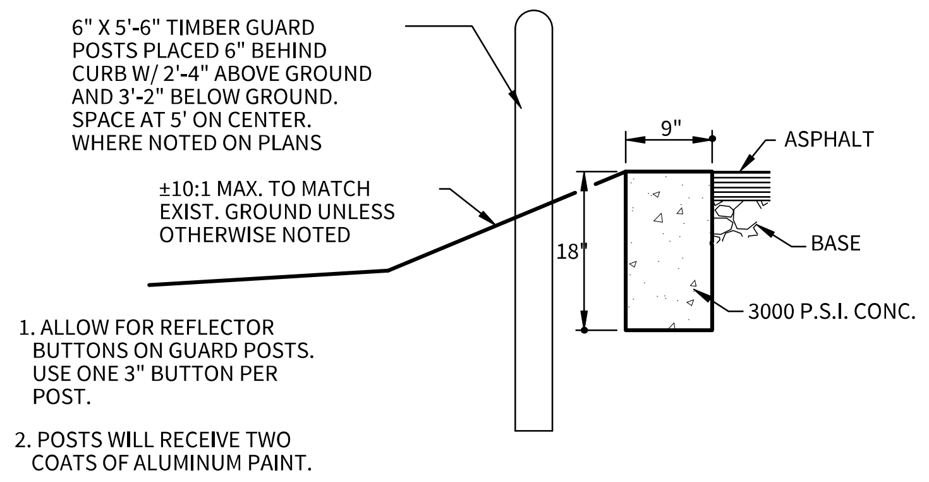
WASHOUT CROWN TRANSITION DETAIL

N.T.S.


DALLOWAY BLVD.
JACKRABBIT ST.
MAGELLAN CIR.

CONC. CURB DESIGN DETAIL

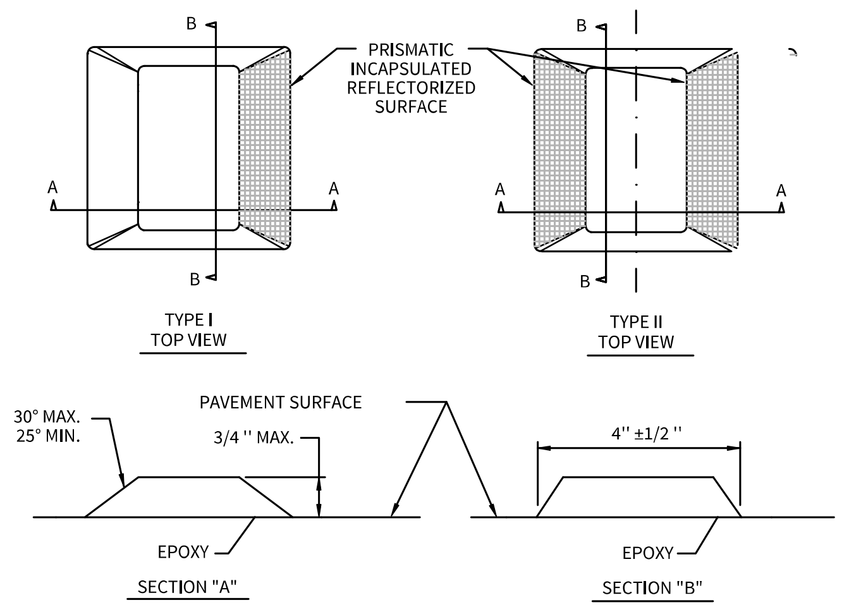
▨	CURB AND GUTTER
■	MOUNTABLE CURB


6" X 5'-6" TIMBER GUARD POSTS PLACED 6" BEHIND CURB W/ 2'-4" ABOVE GROUND AND 3'-2" BELOW GROUND. SPACE AT 5' ON CENTER. WHERE NOTED ON PLANS
±10:1 MAX. TO MATCH EXIST. GROUND UNLESS OTHERWISE NOTED
9"
18"
ASPHALT
BASE
3000 P.S.I. CONC.

1. ALLOW FOR REFLECTOR BUTTONS ON GUARD POSTS. USE ONE 3" BUTTON PER POST.
2. POSTS WILL RECEIVE TWO COATS OF ALUMINUM PAINT.

HEADER CURB DETAIL

N.T.S.


B
B
PRISMATIC INCAPSULATED REFLECTORIZED SURFACE
A
A
B
B
A
A
TYPE I TOP VIEW
TYPE II TOP VIEW
30° MAX.
25° MIN.
PAVEMENT SURFACE
3/4 '' MAX.
4'' ±1/2 ''
EPOXY
EPOXY
SECTION "A"
SECTION "B"

1) REFLECTORIZED BLUE - FIRE HYDRANT

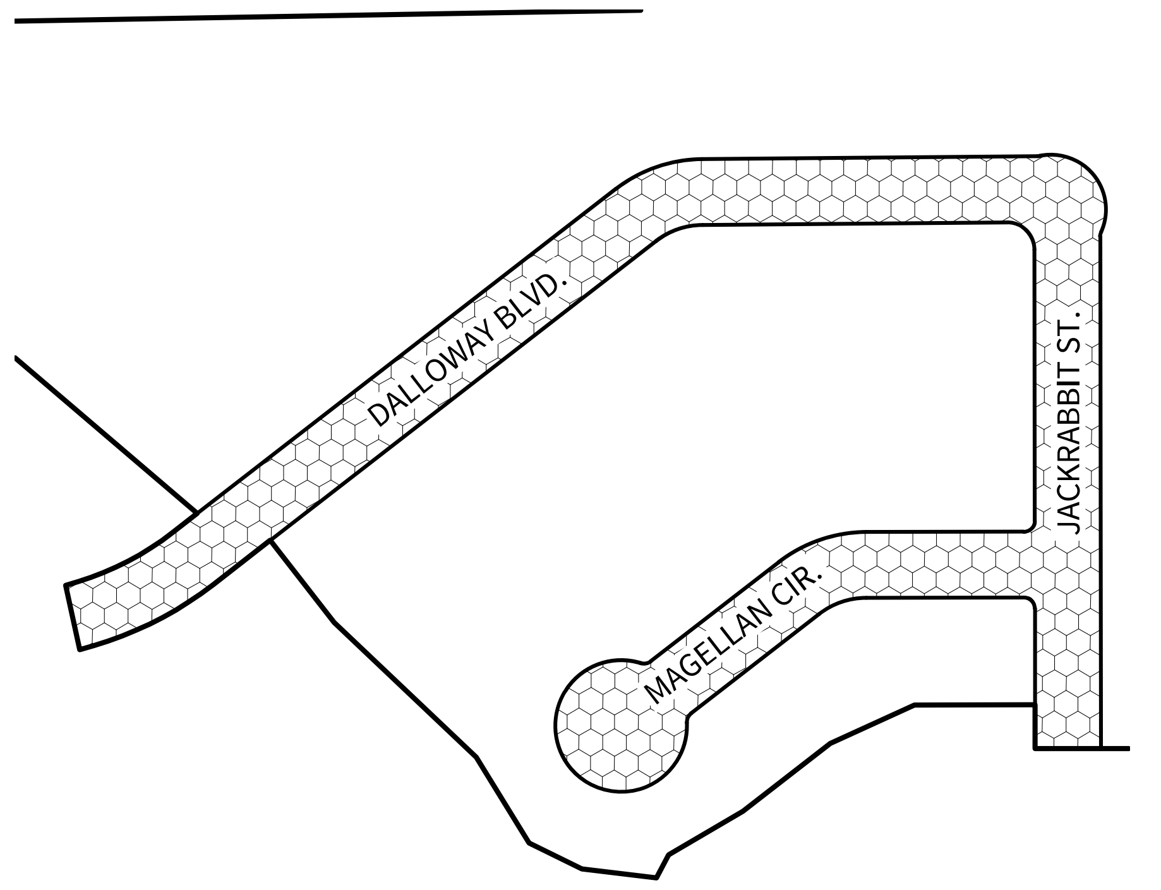
2) ADHENSIVE SHALL BE APPLIED IN SUFFICIENT TO ENSURE THE FOLLOWING:
   a) 100 PERCENT OF THE BONDING AREA OF RAISED PAVEMENT MARKERS SHALL BE IN CONTACT WITH THE ADHESIVE.
   b) RAISED PAVEMENT MARKERS SHALL NOT BE IN CONTACT WITH THE PAVEMENT SURFACE, BUT SHALL BE SEATED ON A CONTINUOUS LAYER OF ADHESIVE.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

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

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

PAVEMENT REFLECTORS DETAIL

N.T.S.

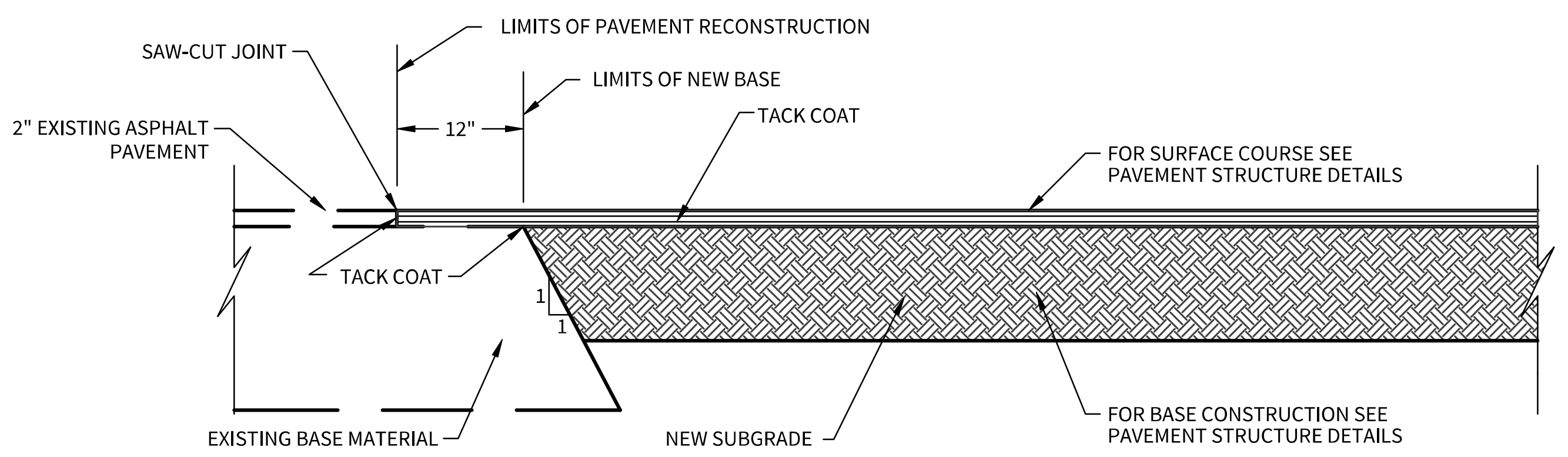

DALLOWAY BLVD.
JACKRABBIT ST.
MAGELLAN CIR.

PAVEMENT DESIGN SCHEMATIC N.T.S.

NOTE:
REFERENCE GEOTECHNICAL REPORT TTL. INC NO. 00240902004.00 FOR BORING INFORMATION AND CBR LOCATIONS.

LEGEND:

⬡	MINOR STREET	
	DALLOWAY BLVD.	STA. 50+36.03 - 61+67.49
	JACKRABBIT ST.	STA. 10+65.00 - 15+75.03
	MAGELLAN CIR.	STA. 10+00.00 - 14+54.82


LIMITS OF PAVEMENT RECONSTRUCTION
SAW-CUT JOINT
LIMITS OF NEW BASE
2" EXISTING ASPHALT PAVEMENT
12"
TACK COAT
FOR SURFACE COURSE SEE PAVEMENT STRUCTURE DETAILS
TACK COAT
1
1
EXISTING BASE MATERIAL
NEW SUBGRADE
FOR BASE CONSTRUCTION SEE PAVEMENT STRUCTURE DETAILS

PAVEMENT JUNCTION DETAILS

N.T.S.

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San Antonio, Texas 78231
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GRACE VALLEY RANCH
PHASE 8

STANDARD STREET DETAILS

DATE
11/10/2025

PROJECT NO.
03499.010

DRAWN BY
JK/AR/JF/RB

CHECKED BY
KMH

REVISIONS

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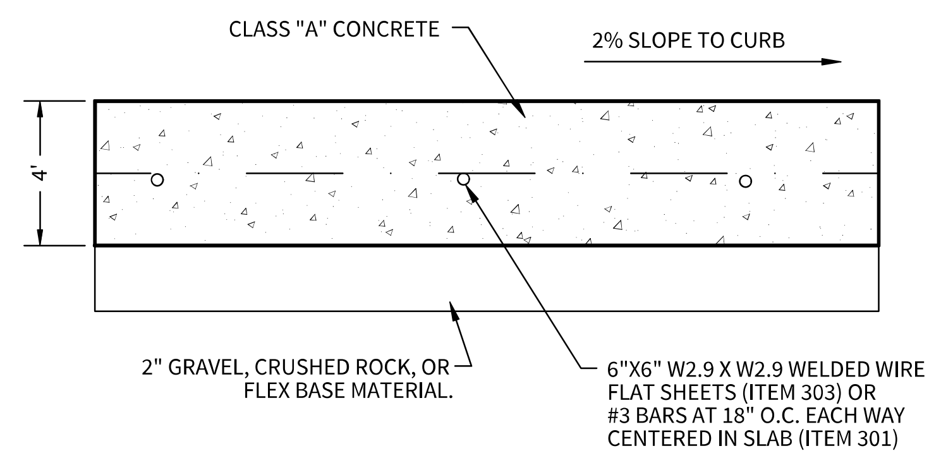
KYLE M. HUDEK
138753
11/11/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

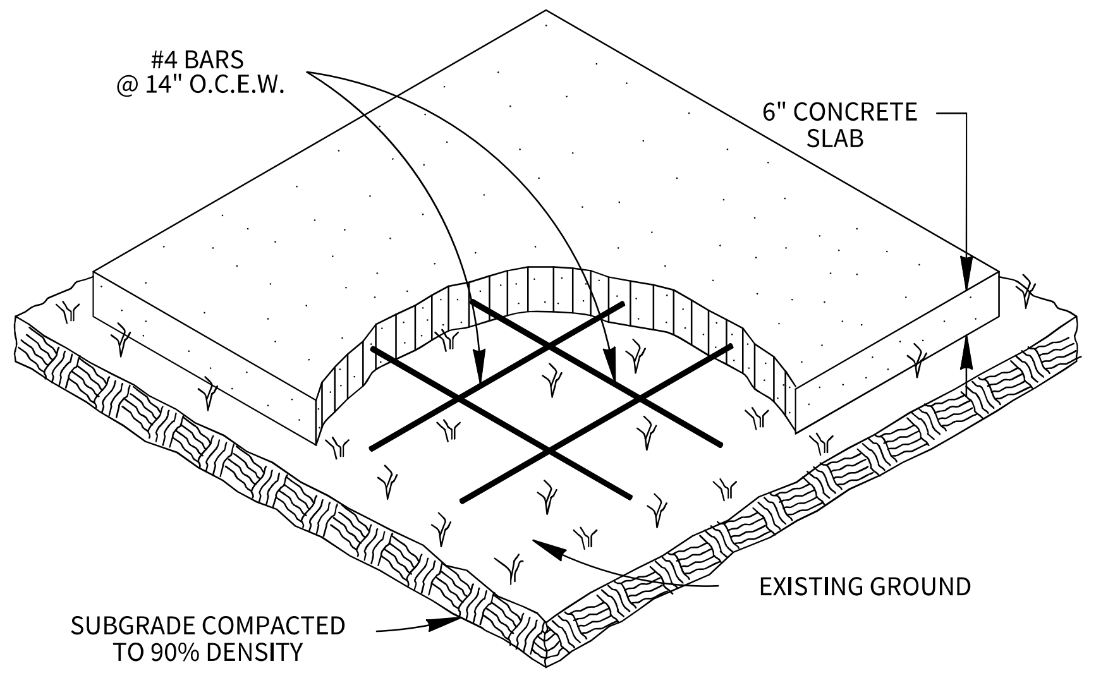
C7.D1

P:\03499\010\2-DWG\4-Plans\C7.D1_STDP.dwg 2025/11/10 5:21pm arodriguez


CLASS "A" CONCRETE
2% SLOPE TO CURB
4"
2" GRAVEL, CRUSHED ROCK, OR FLEX BASE MATERIAL.
6"X6" W2.9 X W2.9 WELDED WIRE FLAT SHEETS (ITEM 303) OR #3 BARS AT 18" O.C. EACH WAY CENTERED IN SLAB (ITEM 301)

CONCRETE SIDEWALK

N.T.S.

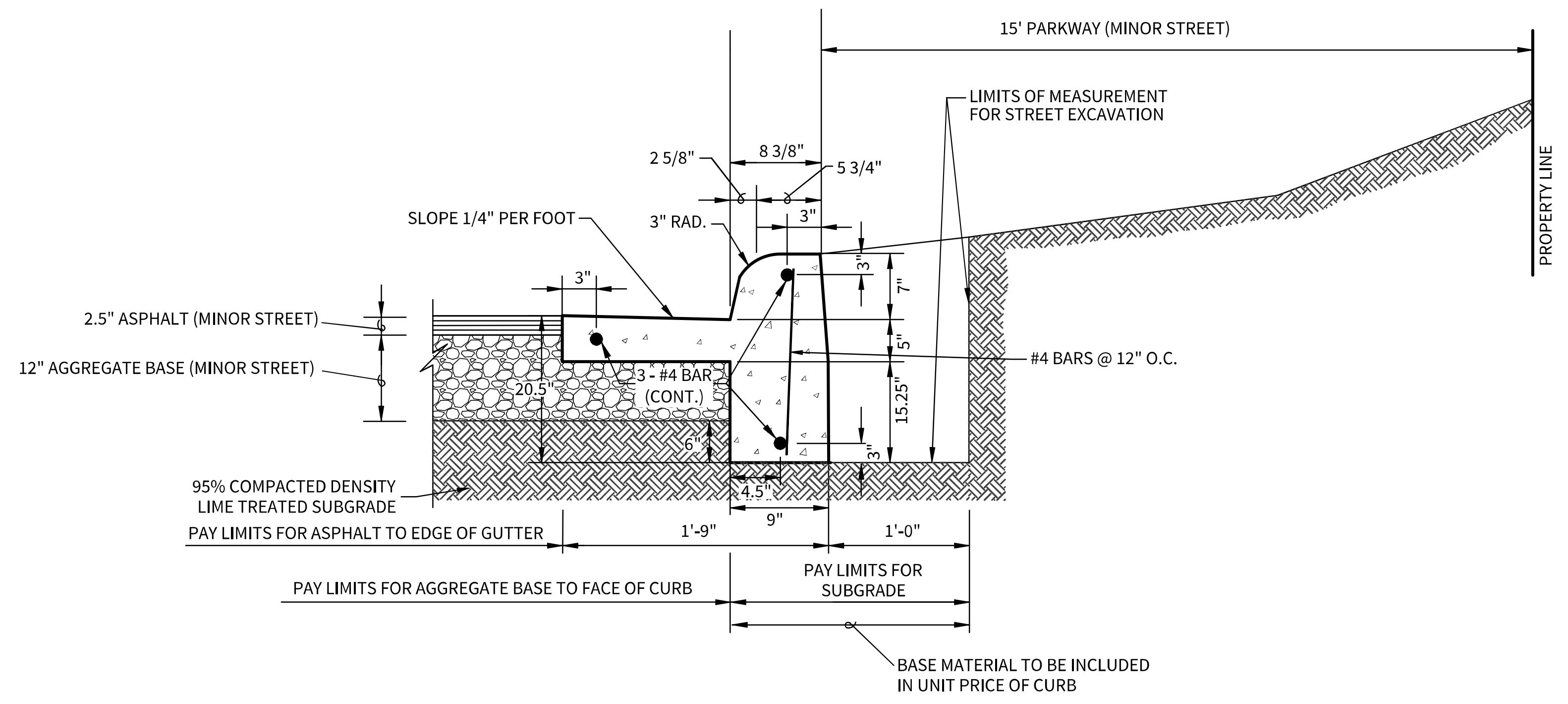

#4 BARS @ 14" O.C.E.W.
6" CONCRETE SLAB
EXISTING GROUND
SUBGRADE COMPACTED TO 90% DENSITY

MAIL BOX PAD NOTE:

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

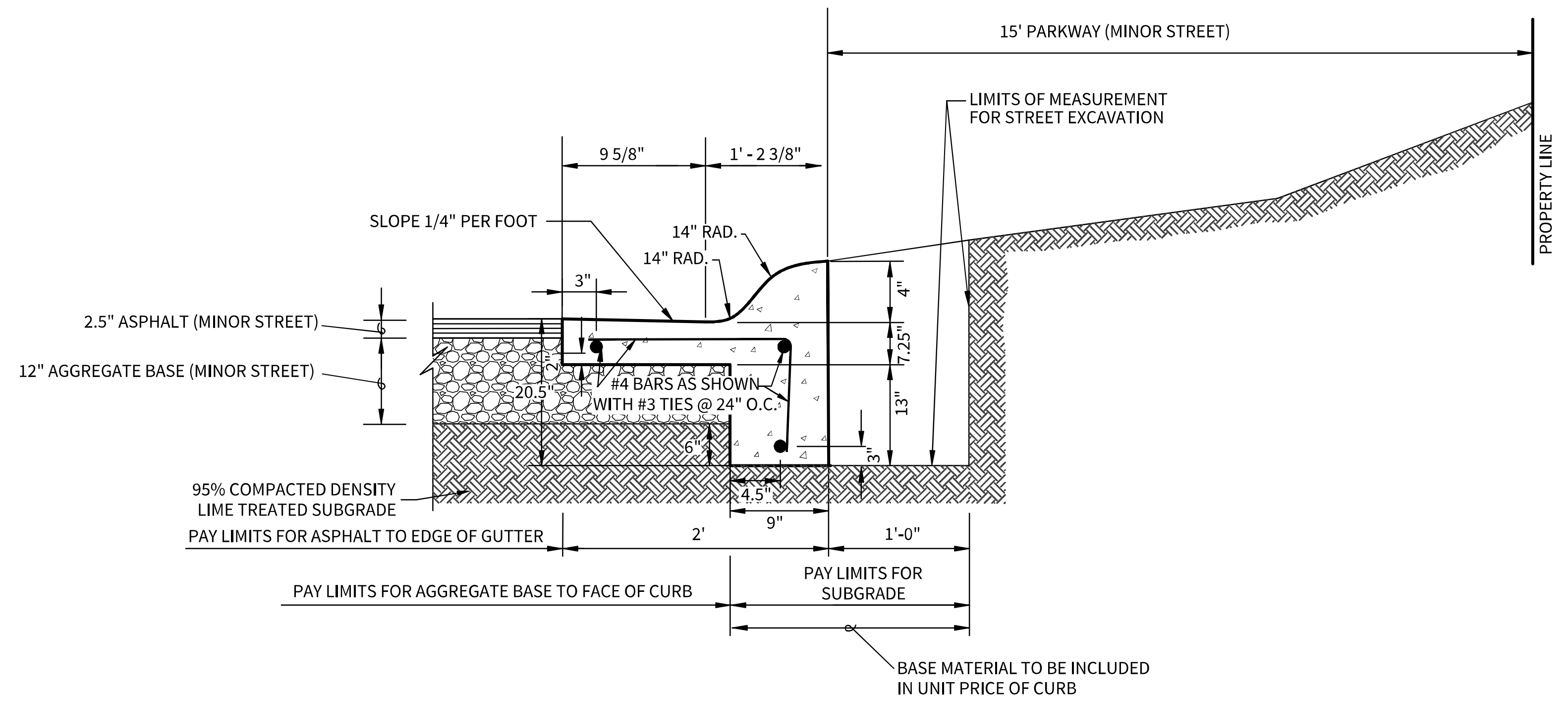
COMMUNITY MAIL BOX SLAB

ITEM 513.2


15' PARKWAY (MINOR STREET)
LIMITS OF MEASUREMENT FOR STREET EXCAVATION
PROPERTY LINE
2 5/8"
8 3/8"
5 3/4"
SLOPE 1/4" PER FOOT
3" RAD.
3"
3"
2.5" ASPHALT (MINOR STREET)
12" AGGREGATE BASE (MINOR STREET)
20.5"
3 - #4 BAR (CONT.)
#4 BARS @ 12" O.C.
3"
7"
5"
15.25"
6"
3"
4.5"
9"
95% COMPACTED DENSITY LIME TREATED SUBGRADE
PAY LIMITS FOR ASPHALT TO EDGE OF GUTTER
1'-9"
1'-0"
PAY LIMITS FOR AGGREGATE BASE TO FACE OF CURB
PAY LIMITS FOR SUBGRADE
BASE MATERIAL TO BE INCLUDED IN UNIT PRICE OF CURB

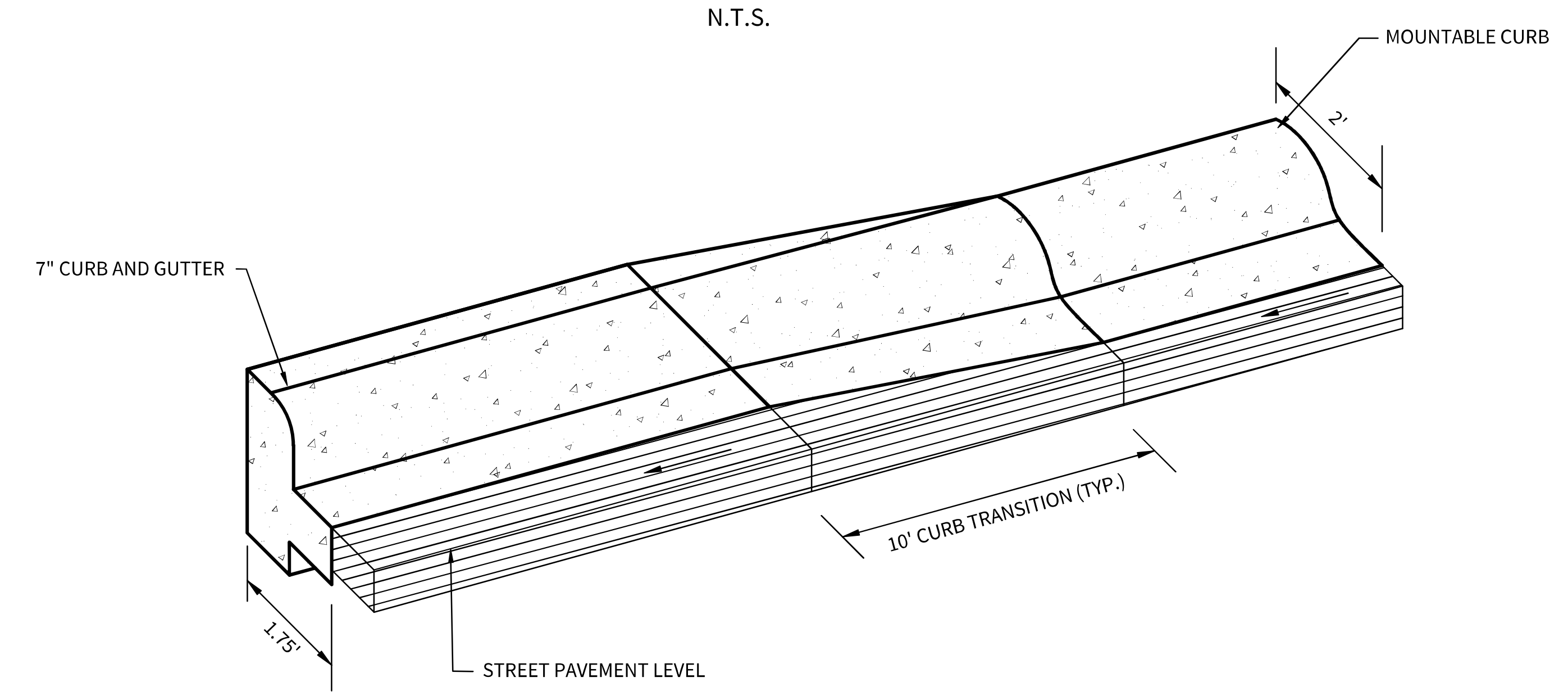
MINOR ACCESS STREET - CURB & GUTTER DETAIL

N.T.S.


15' PARKWAY (MINOR STREET)
LIMITS OF MEASUREMENT FOR STREET EXCAVATION
PROPERTY LINE
9 5/8"
1' - 2 3/8"
SLOPE 1/4" PER FOOT
14" RAD.
14" RAD.
3"
2.5" ASPHALT (MINOR STREET)
12" AGGREGATE BASE (MINOR STREET)
2"
20.5"
#4 BARS AS SHOWN WITH #3 TIES @ 24" O.C.
4"
7.25"
13"
6"
3"
4.5"
9"
95% COMPACTED DENSITY LIME TREATED SUBGRADE
PAY LIMITS FOR ASPHALT TO EDGE OF GUTTER
2'
1'-0"
PAY LIMITS FOR AGGREGATE BASE TO FACE OF CURB
PAY LIMITS FOR SUBGRADE
BASE MATERIAL TO BE INCLUDED IN UNIT PRICE OF CURB

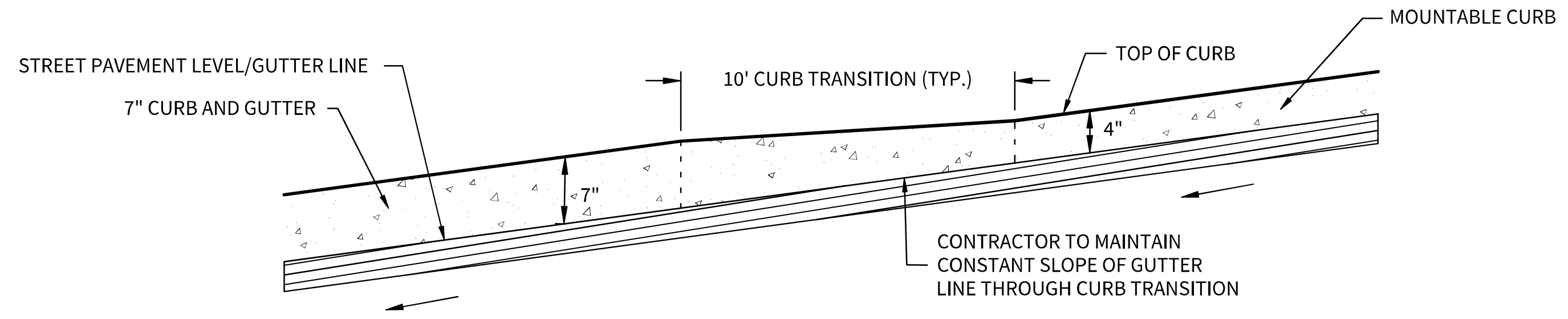
MINOR ACCESS STREET - MOUNTABLE CURB DETAIL

N.T.S.


MOUNTABLE CURB
2'
7" CURB AND GUTTER
10' CURB TRANSITION (TYP.)
1.75'
STREET PAVEMENT LEVEL

CURB TRANSITION DETAIL

N.T.S.


STREET PAVEMENT LEVEL/GUTTER LINE
7" CURB AND GUTTER
10' CURB TRANSITION (TYP.)
TOP OF CURB
MOUNTABLE CURB
7"
4"
CONTRACTOR TO MAINTAIN CONSTANT SLOPE OF GUTTER LINE THROUGH CURB TRANSITION

CURB TRANSITION DETAIL - PROFILE VIEW

N.T.S.

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GRACE VALLEY RANCH
PHASE 8

STANDARD STREET DETAILS

DATE
11/10/2025
PROJECT NO.
03499.010
DRAWN BY
JK/AR/JF/RB
CHECKED BY
KMH

REVISIONS
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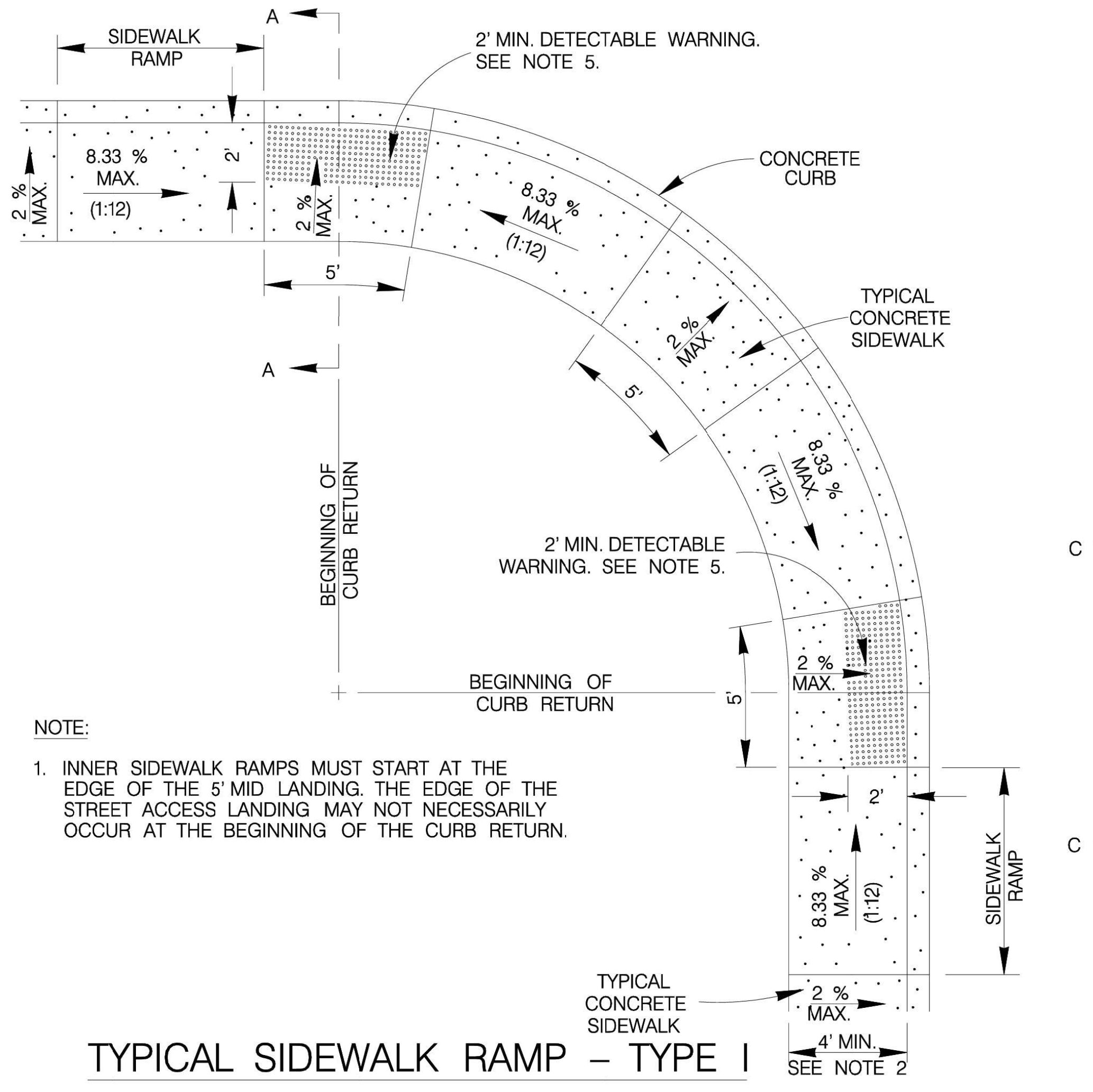
9.

KYLE M. HUDEK
138753
11/11/2025
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C7.D2

P:\03499\010\2-DWG\4-Plans\C7.D1_STDP.dwg 2025/11/10 5:21pm arodriguez

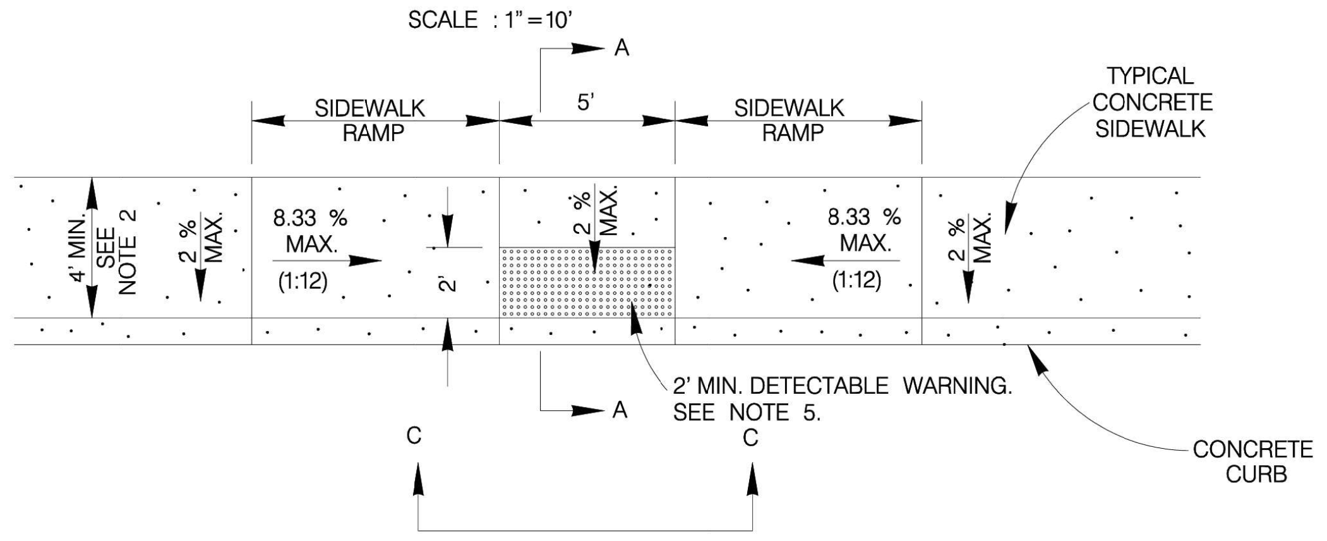
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.


SIDEWALK RAMP
2' MIN. DETECTABLE WARNING. SEE NOTE 5.
A
A
2 % MAX.
8.33 % MAX. (1:12)
2'
5'
CONCRETE CURB
TYPICAL CONCRETE SIDEWALK
BEGINNING OF CURB RETURN
2' MIN. DETECTABLE WARNING. SEE NOTE 5.
BEGINNING OF CURB RETURN
C
C
SIDEWALK RAMP
TYPICAL CONCRETE SIDEWALK
4' MIN. SEE NOTE 2

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'

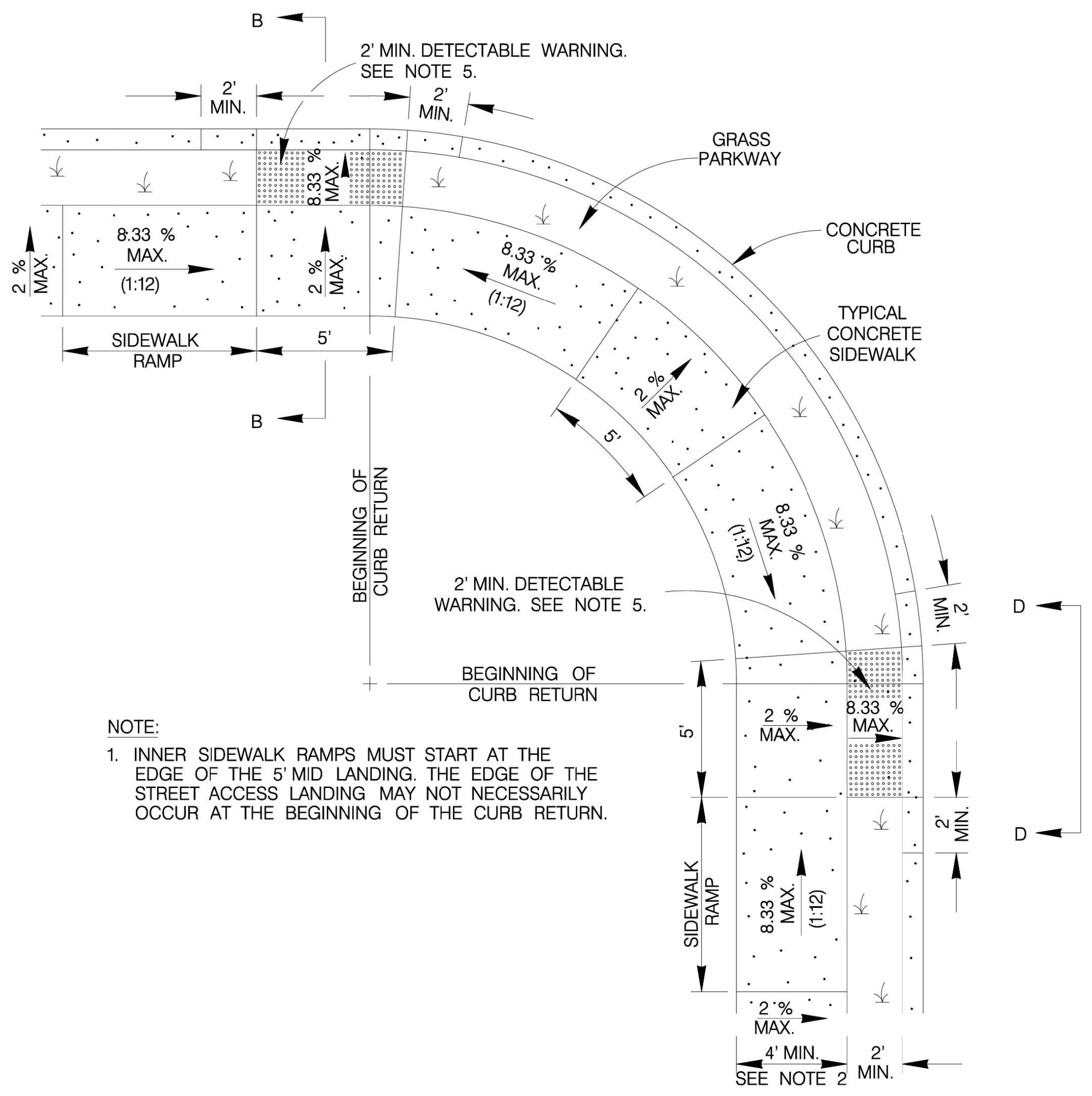

A
SIDEWALK RAMP
5'
SIDEWALK RAMP
TYPICAL CONCRETE SIDEWALK
4' MIN. SEE NOTE 2
2 % MAX.
8.33 % MAX. (1:12)
2'
2' MIN. DETECTABLE WARNING. SEE NOTE 5.
A
CONCRETE CURB
C
C

TYPICAL SIDEWALK RAMP – TYPE II

USED AT TEE INTERSECTIONS WHERE SIDEWALK ABUTS CURB
SCALE : 1" = 10'

GENERAL NOTES

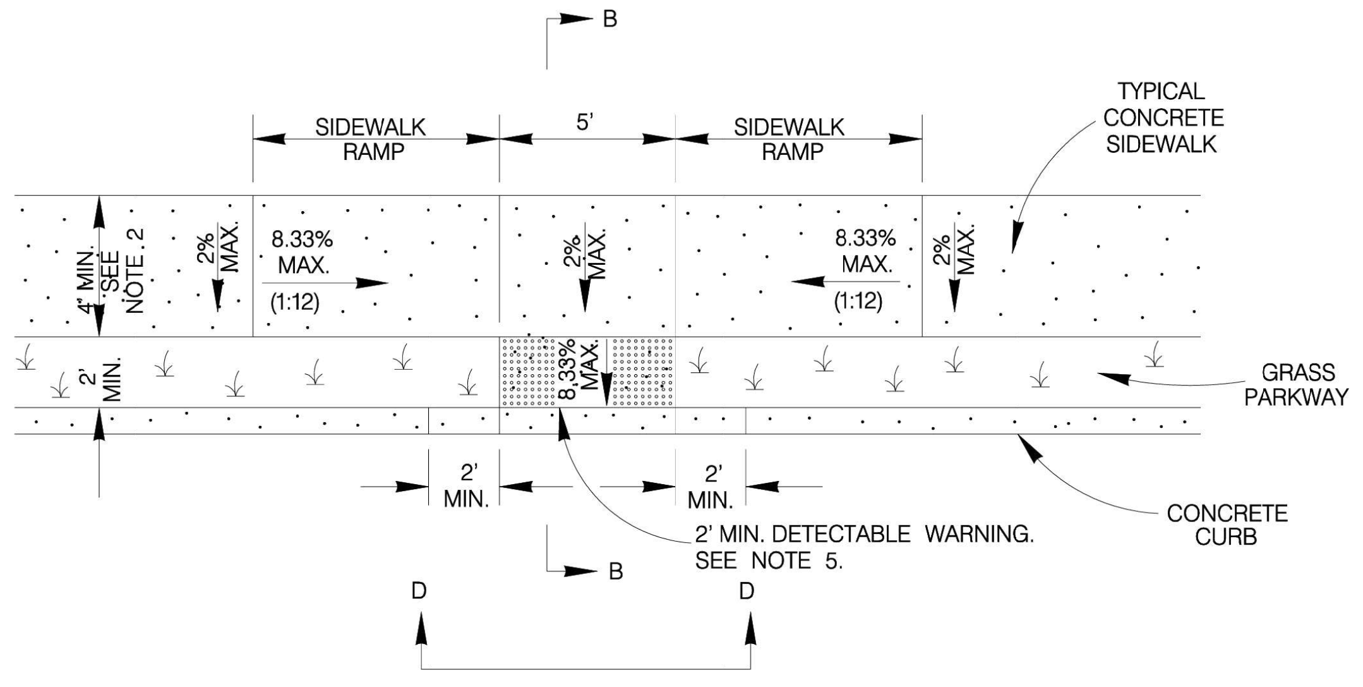
1. WHEN POSSIBLE SIDEWALKS SHOULD BE PLACED NEXT TO THE PROPERTY LINE, ALLOWING A MININMUM OF 1 FOOT BUFFER. DEVIATION OF THE PATHWAY FROM A STRAIGHT LINE IS ENCOURAGED TO AVOID TREES OR OTHER OBSTRUCTIONS.
2. FOR LOCAL TYPE "A" STREETS, SIDEWALKS SHALL HAVE A MINIMUM UNOBSTRUCTED WIDTH OF 4' AND IF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


B
2' MIN.
2' MIN. DETECTABLE WARNING. SEE NOTE 5.
2' MIN.
GRASS PARKWAY
CONCRETE CURB
TYPICAL CONCRETE SIDEWALK
8.33 % MAX. (1:12)
2 % MAX.
SIDEWALK RAMP
5'
B
BEGINNING OF CURB RETURN
2' MIN. DETECTABLE WARNING. SEE NOTE 5.
BEGINNING OF CURB RETURN
D
D
2' MIN.
SIDEWALK RAMP
4' MIN. SEE NOTE 2
2' MIN.

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.

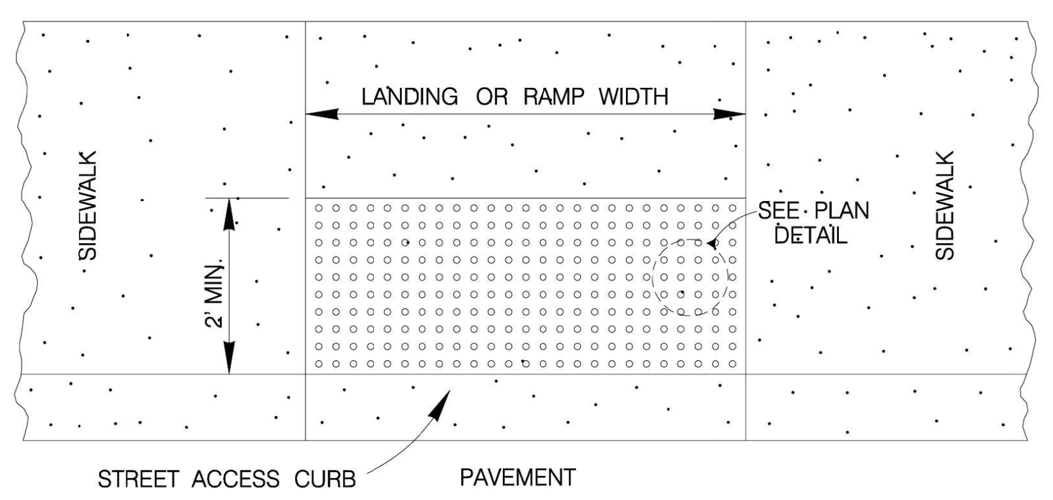
TYPICAL SIDEWALK RAMP – TYPE III

SIDEWALK SEPARATED FROM CURB
SCALE : 1" = 10'


B
SIDEWALK RAMP
5'
SIDEWALK RAMP
TYPICAL CONCRETE SIDEWALK
4' MIN. SEE NOTE 2
2' MIN.
2% MAX.
8.33% MAX. (1:12)
GRASS PARKWAY
CONCRETE CURB
2' MIN.
2' MIN.
2' MIN. DETECTABLE WARNING. SEE NOTE 5.
B
D
D

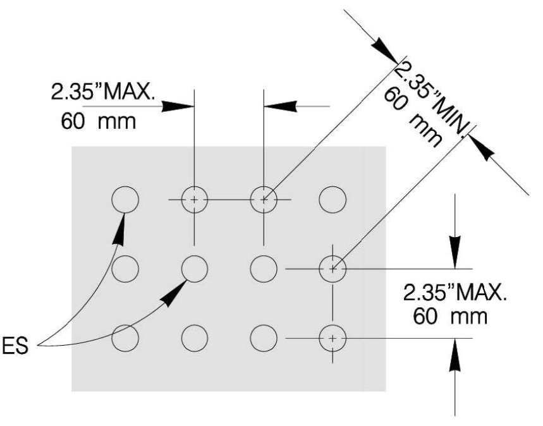
TYPICAL SIDEWALK RAMP – TYPE IV

USED AT TEE INTERSECTIONS WHERE SIDEWALK IS SEPARATED FROM CURB
SCALE : 1" = 10'


LANDING OR RAMP WIDTH
SIDEWALK
SIDEWALK
2' MIN.
SEE PLAN DETAIL
STREET ACCESS CURB
PAVEMENT

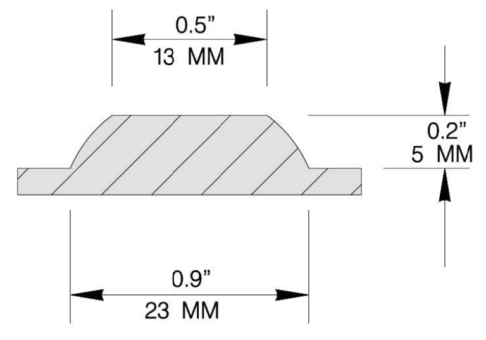
DETECTABLE WARNING SURFACE

SCALE : 1" = 4'


2.35"MAX. 60 mm
2.35"MIN. 60 mm
2.35"MAX. 60 mm
DOMES

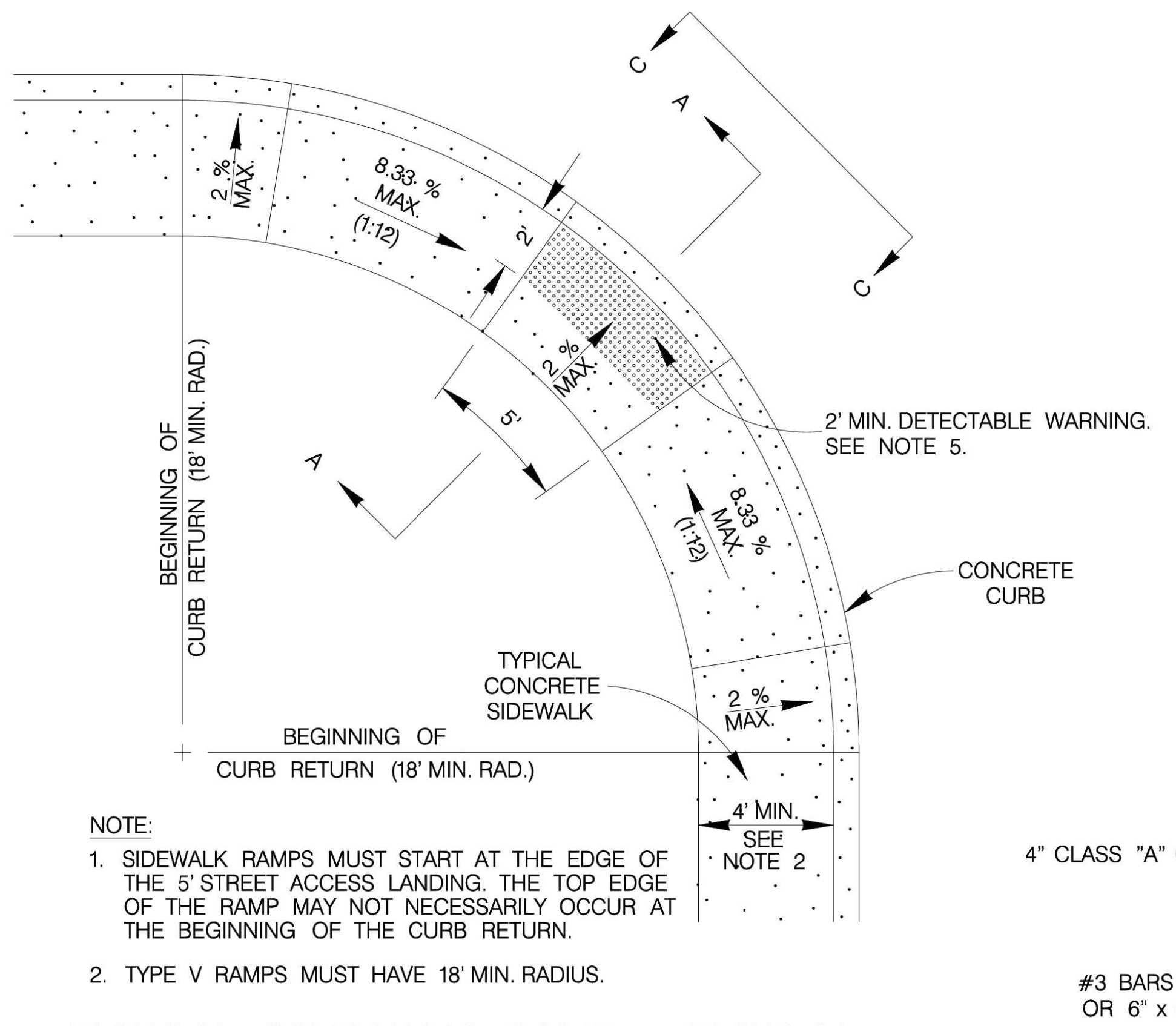
PLAN DETAIL

NO SCALE


0.5" 13 MM
0.2" 5 MM
0.9" 23 MM

DOME SECTION

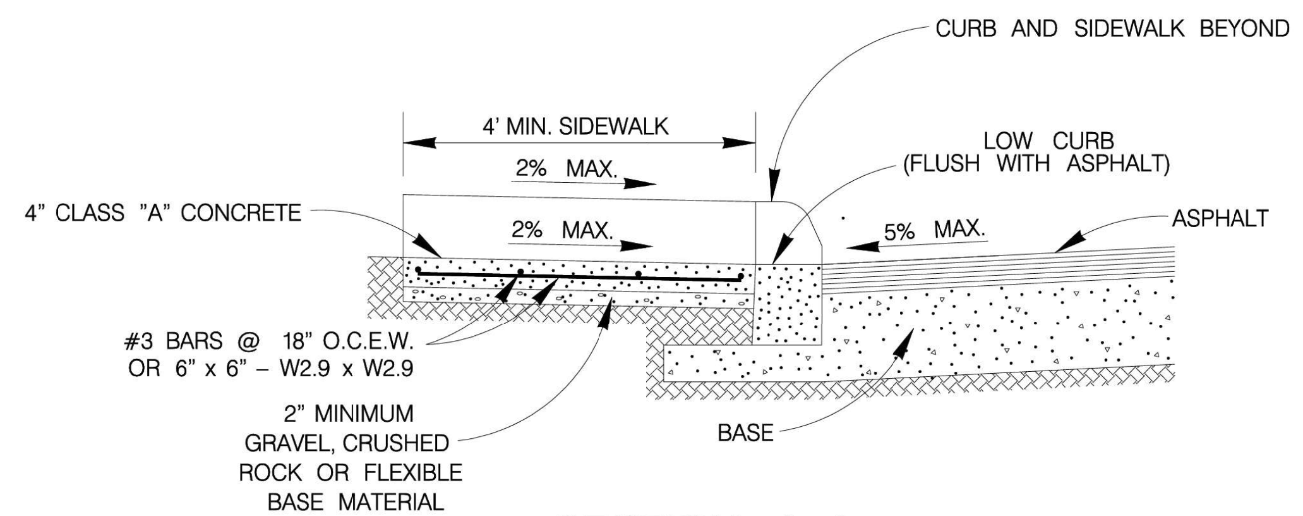
NO SCALE


C
A
C
2 % MAX.
8.33 % MAX. (1:12)
5'
A
2' MIN. DETECTABLE WARNING. SEE NOTE 5.
BEGINNING OF CURB RETURN (18' MIN. RAD.)
CONCRETE CURB
TYPICAL CONCRETE SIDEWALK
BEGINNING OF CURB RETURN (18' MIN. RAD.)
4' MIN. SEE NOTE 2

NOTE:
1. SIDEWALK RAMPS MUST START AT THE EDGE OF THE 5' STREET ACCESS LANDING. THE TOP EDGE OF THE RAMP MAY NOT NECESSARILY OCCUR AT THE BEGINNING OF THE CURB RETURN.
2. TYPE V RAMPS MUST HAVE 18' MIN. RADIUS.

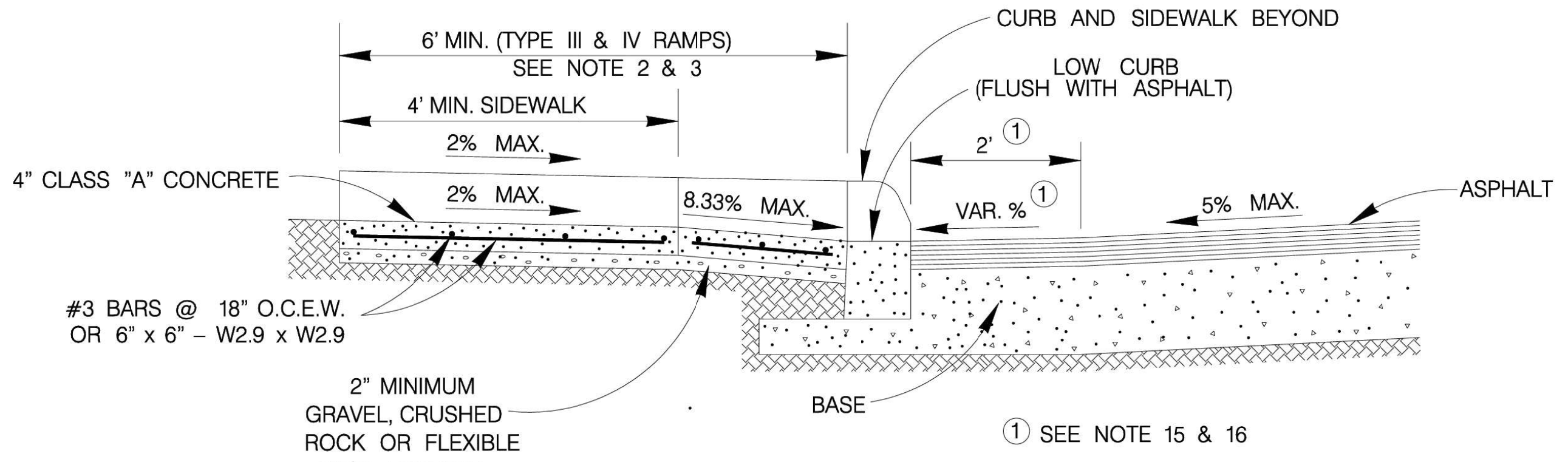
TYPICAL SIDEWALK RAMP – TYPE V

SIDEWALK ABUTS CURB
SCALE : 1" = 10'


CURB AND SIDEWALK BEYOND
4' MIN. SIDEWALK
2% MAX.
LOW CURB (FLUSH WITH ASPHALT)
4" CLASS "A" CONCRETE
2% MAX.
5% MAX.
ASPHALT
#3 BARS @ 18" O.C.E.W. OR 6" x 6" – W2.9 x W2.9
2" MINIMUM GRAVEL, CRUSHED ROCK OR FLEXIBLE BASE MATERIAL
BASE

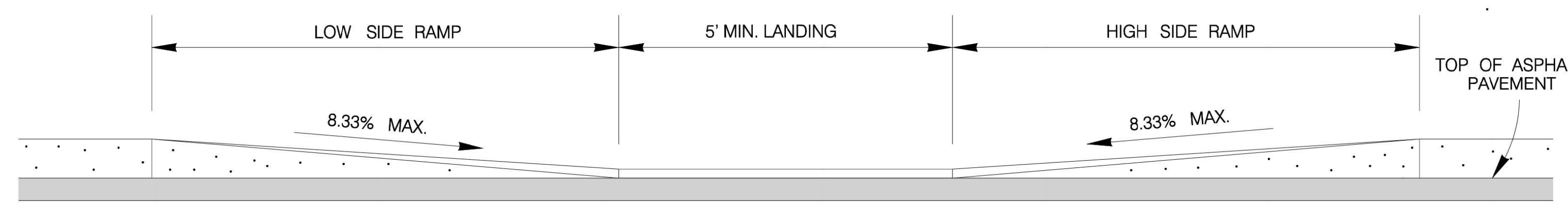
SECTION A–A

SCALE : 1" = 4'


6' MIN. (TYPE III & IV RAMPS) SEE NOTE 2 & 3
CURB AND SIDEWALK BEYOND
4' MIN. SIDEWALK
LOW CURB (FLUSH WITH ASPHALT)
2% MAX.
2' ①
4" CLASS "A" CONCRETE
2% MAX.
8.33% MAX.
VAR. % ①
5% MAX.
ASPHALT
#3 BARS @ 18" O.C.E.W. OR 6" x 6" – W2.9 x W2.9
2" MINIMUM GRAVEL, CRUSHED ROCK OR FLEXIBLE BASE MATERIAL
BASE
① SEE NOTE 15 & 16

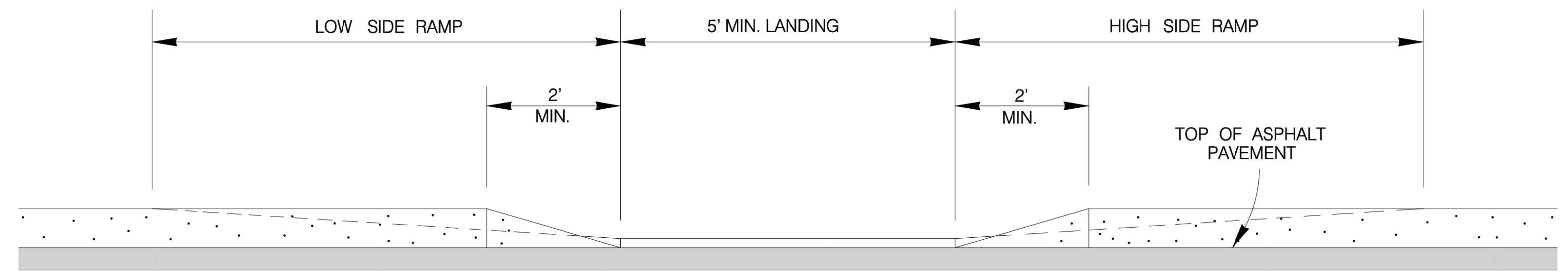
SECTION B–B

SCALE : 1" = 4'


LOW SIDE RAMP
5' MIN. LANDING
HIGH SIDE RAMP
TOP OF ASPHALT PAVEMENT
7"
8.33% MAX.
8.33% MAX.

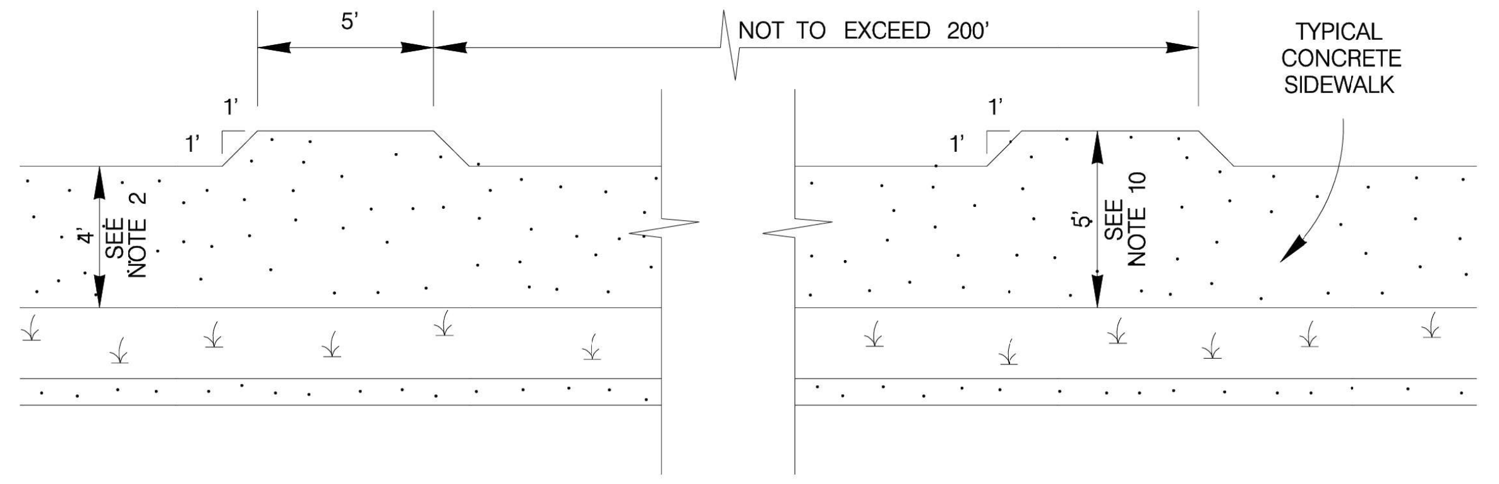
SECTION C–C

CURB PROFILE WHERE SIDEWALK ABUTS CURB
SCALE : 1" = 4'


LOW SIDE RAMP
5' MIN. LANDING
HIGH SIDE RAMP
2' MIN.
2' MIN.
TOP OF ASPHALT PAVEMENT
7"

SECTION D–D

CURB PROFILE WHERE SIDEWALK IS SEPARATED FROM CURB
SCALE : 1" = 4'


5'
NOT TO EXCEED 200'
TYPICAL CONCRETE SIDEWALK
1'
1'
1'
1'
4' SEE NOTE 2
5' SEE NOTE 10

SIDEWALK PASSING SPACE

SCALE : 1" = 10'

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"

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

MAY 2009

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

WHEELCHAIR RAMP STANDARDS

____% SUBMITTAL	PROJECT NO.:____		DATE:____
DRWN. BY: V. VASQUEZ	DSGN. BY:____	CHKD. BY: R.S. HOSSEINI, P.E.	SHEET NO.:____OF____

CUDEENGINEERS.COM

EST. 1980 CUDE ENGINEERS

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

GRACE VALLEY RANCH
PHASE 8

WHEELCHAIR RAMP DETAILS

DATE
11/10/2025
PROJECT NO.
03499.010
DRAWN BY
JK/AR/JF/RB
CHECKED BY
KMH

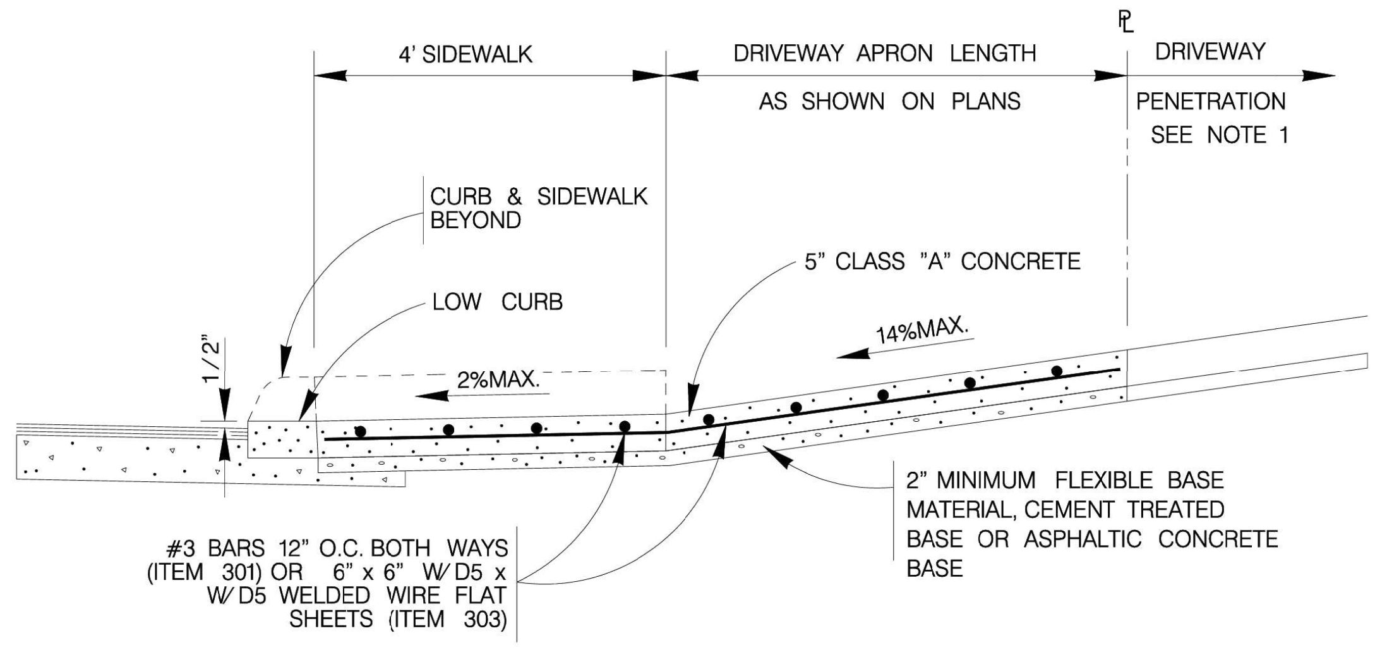
REVISIONS
1.
2.
3.
4.
5.
6.
7.
8.
9.

KYLE M. HUDEK
138753
11/11/2025
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C7.D3

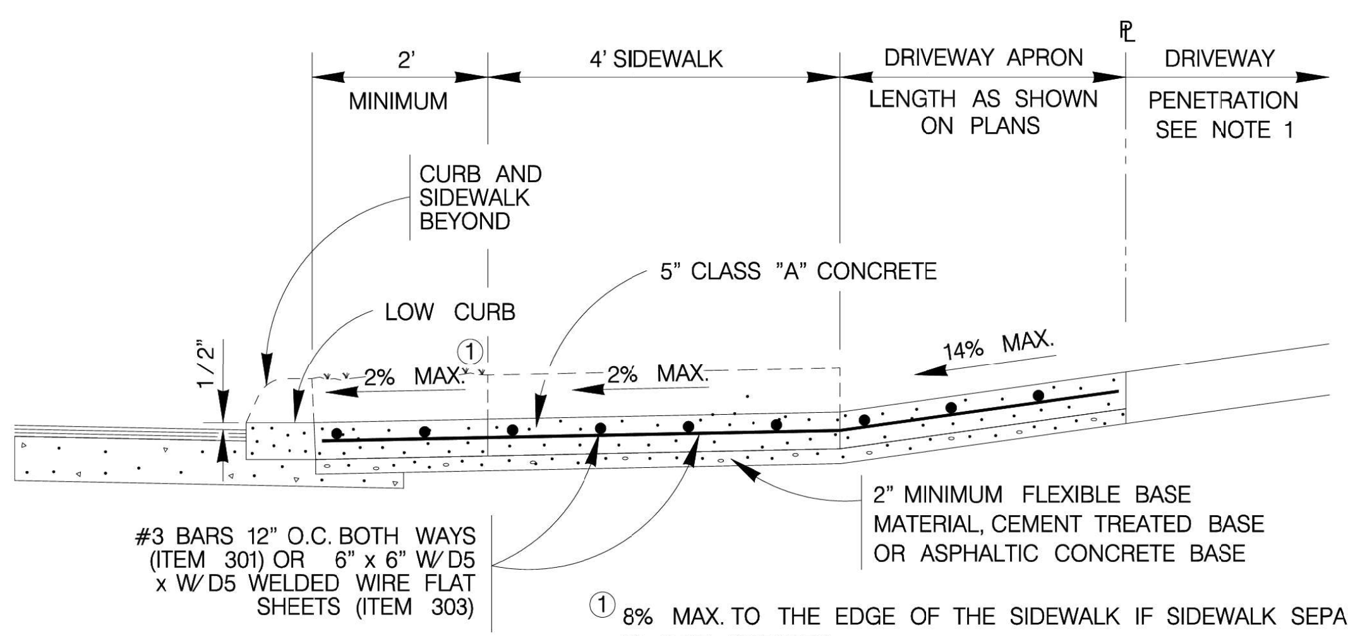
P:\03499\010\2-DWG\4-Plans\C7.D1_STDP.dwg 2025/11/10 5:21pm arodriguez

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.


4' SIDEWALK
DRIVEWAY APRON LENGTH
AS SHOWN ON PLANS
℄
DRIVEWAY
PENETRATION
SEE NOTE 1
CURB & SIDEWALK BEYOND
LOW CURB
5" CLASS "A" CONCRETE
14%MAX.
1/2"
2%MAX.
2" MINIMUM FLEXIBLE BASE MATERIAL, CEMENT TREATED BASE OR ASPHALTIC CONCRETE BASE
#3 BARS 12" O.C. BOTH WAYS (ITEM 301) OR 6" x 6" W/D5 x W/D5 WELDED WIRE FLAT SHEETS (ITEM 303)

TYPICAL RESIDENTIAL DRIVEWAY SECTION

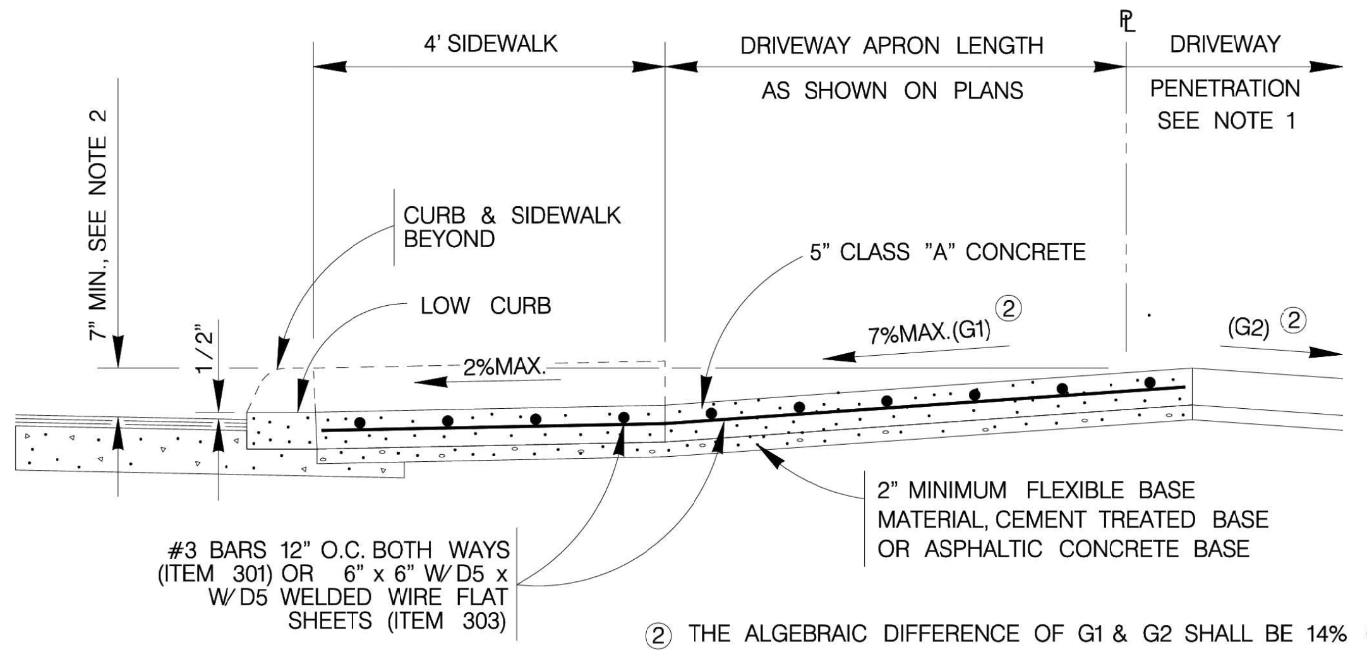
WITH SIDEWALK ABUTTING CURB
ITEM 503.1


2'
MINIMUM
4' SIDEWALK
DRIVEWAY APRON
LENGTH AS SHOWN ON PLANS
℄
DRIVEWAY
PENETRATION
SEE NOTE 1
CURB AND SIDEWALK BEYOND
LOW CURB
5" CLASS "A" CONCRETE
①
2% MAX.
2% MAX.
14% MAX.
1/2"
2" MINIMUM FLEXIBLE BASE MATERIAL, CEMENT TREATED BASE OR ASPHALTIC CONCRETE BASE
#3 BARS 12" O.C. BOTH WAYS (ITEM 301) OR 6" x 6" W/D5 x W/D5 WELDED WIRE FLAT SHEETS (ITEM 303)

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

TYPICAL RESIDENTIAL DRIVEWAY SECTION

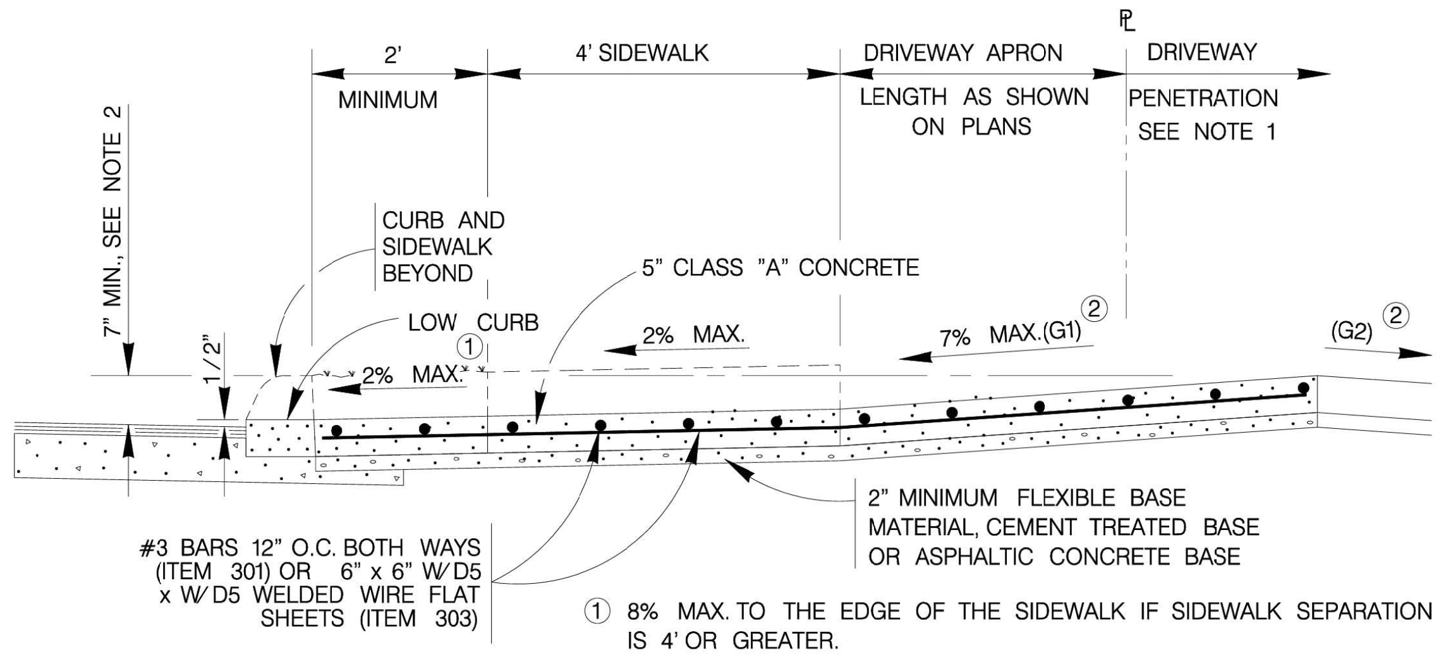
WITH SIDEWALK SEPARATED FROM CURB
ITEM 503.1


4' SIDEWALK
DRIVEWAY APRON LENGTH
AS SHOWN ON PLANS
℄
DRIVEWAY
PENETRATION
SEE NOTE 1
7" MIN., SEE NOTE 2
CURB & SIDEWALK BEYOND
LOW CURB
5" CLASS "A" CONCRETE
7%MAX.(G1) ②
(G2) ②
1/2"
2%MAX.
2" MINIMUM FLEXIBLE BASE MATERIAL, CEMENT TREATED BASE OR ASPHALTIC CONCRETE BASE
#3 BARS 12" O.C. BOTH WAYS (ITEM 301) OR 6" x 6" W/D5 x W/D5 WELDED WIRE FLAT SHEETS (ITEM 303)

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
ITEM 503.1

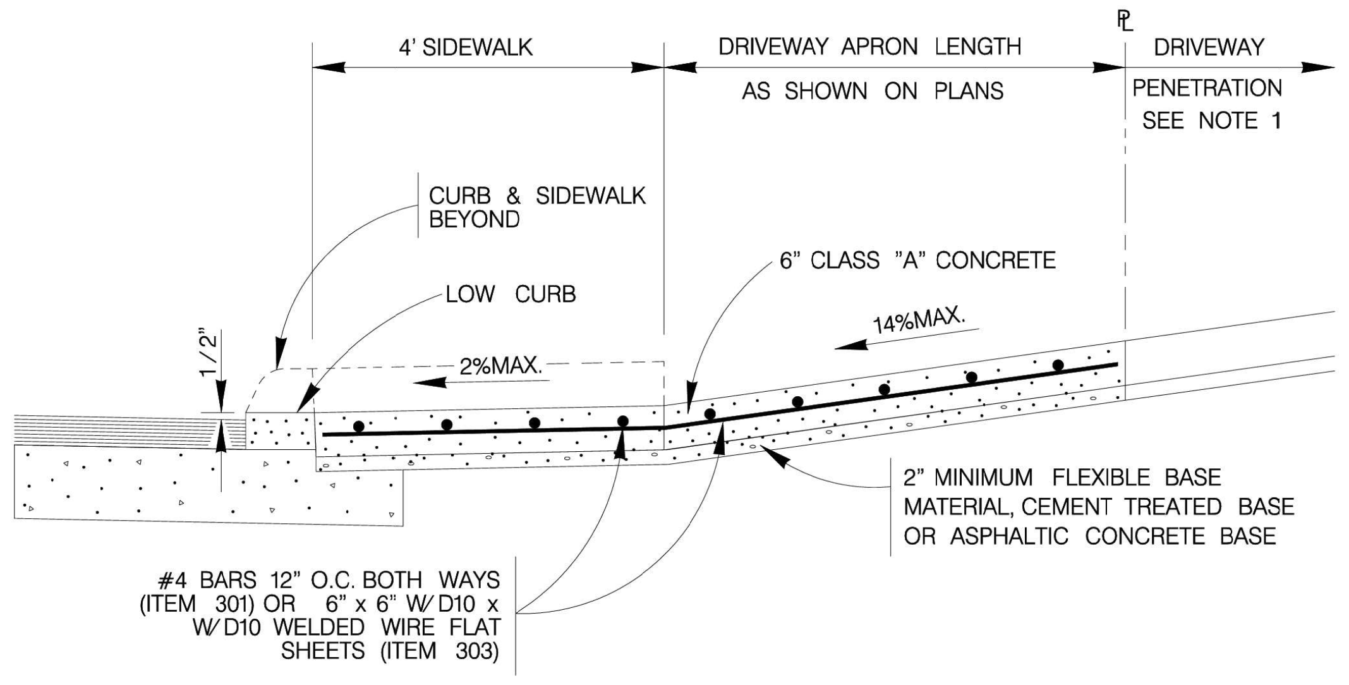

2'
MINIMUM
4' SIDEWALK
DRIVEWAY APRON
LENGTH AS SHOWN ON PLANS
℄
DRIVEWAY
PENETRATION
SEE NOTE 1
7" MIN., SEE NOTE 2
CURB AND SIDEWALK BEYOND
LOW CURB
①
5" CLASS "A" CONCRETE
2% MAX.
2% MAX.
7% MAX.(G1) ②
(G2) ②
1/2"
2" MINIMUM FLEXIBLE BASE MATERIAL, CEMENT TREATED BASE OR ASPHALTIC CONCRETE BASE
#3 BARS 12" O.C. BOTH WAYS (ITEM 301) OR 6" x 6" W/D5 x W/D5 WELDED WIRE FLAT SHEETS (ITEM 303)

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

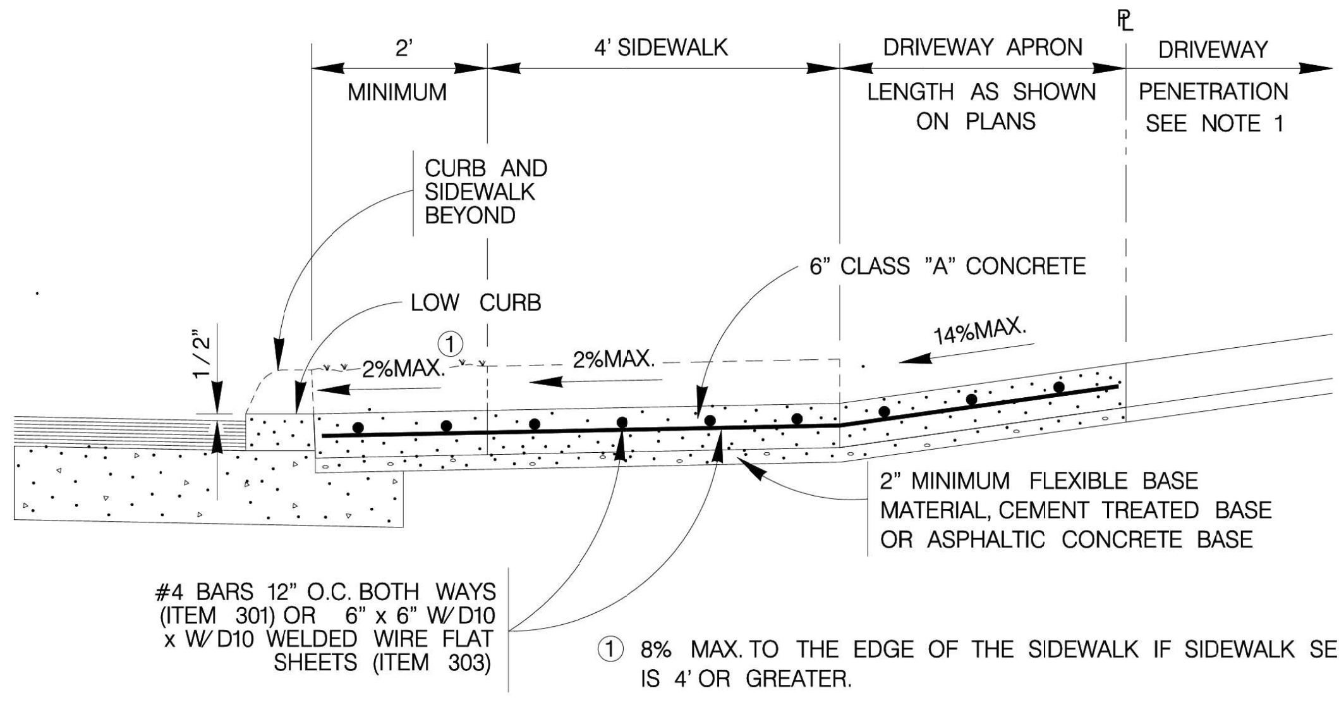
TYPICAL RESIDENTIAL DRIVEWAY SECTION

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


4' SIDEWALK
DRIVEWAY APRON LENGTH
AS SHOWN ON PLANS
℄
DRIVEWAY
PENETRATION
SEE NOTE 1
CURB & SIDEWALK BEYOND
LOW CURB
6" CLASS "A" CONCRETE
14%MAX.
1/2"
2%MAX.
2" MINIMUM FLEXIBLE BASE MATERIAL, CEMENT TREATED BASE OR ASPHALTIC CONCRETE BASE
#4 BARS 12" O.C. BOTH WAYS (ITEM 301) OR 6" x 6" W/D10 x W/D10 WELDED WIRE FLAT SHEETS (ITEM 303)

TYPICAL COMMERCIAL DRIVEWAY SECTION

WITH SIDEWALK ABUTTING CURB
ITEM 503.2


2'
MINIMUM
4' SIDEWALK
DRIVEWAY APRON
LENGTH AS SHOWN ON PLANS
℄
DRIVEWAY
PENETRATION
SEE NOTE 1
CURB AND SIDEWALK BEYOND
LOW CURB
①
6" CLASS "A" CONCRETE
2%MAX.
2%MAX.
14%MAX.
1/2"
2" MINIMUM FLEXIBLE BASE MATERIAL, CEMENT TREATED BASE OR ASPHALTIC CONCRETE BASE
#4 BARS 12" O.C. BOTH WAYS (ITEM 301) OR 6" x 6" W/D10 x W/D10 WELDED WIRE FLAT SHEETS (ITEM 303)

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
ITEM 503.2

CONCRETE DRIVEWAY NOTES

1. DRIVEWAY PENETRATION REFERS TO A PORTION OF THE DRIVEWAY THAT MAY BE NECESSARY TO RECONSTRUCT WITHIN PRIVATE PROPERTY TO COMPLY WITH A MAXIMUM DRIVEWAY SLOPE. THIS PORTION OF THE DRIVEWAY SHALL BE PAID FOR UNDER THE FOLLOWING ITEMS AS MAY APPLY:
   A.) CONCRETE DRIVEWAY PAID FOR UNDER ITEM NO. 503.1 OR 503.2.
   B.) ASPHALTIC CONCRETE DRIVEWAY PAID FOR UNDER ITEM NO. 503.4 AND SHALL INCLUDE A MINIMUM OF 1" ASPHALT TYPE 'D' & 6" FLEXIBLE BASE
   C.) GRAVEL DRIVEWAY PAID FOR UNDER ITEM NO. 503.5 AND SHALL INCLUDE A MINIMUM OF 6" FLEXIBLE BASE

2. 7" MINIMUM HEIGHT WILL NOT NECESSARILY OCCUR AT THE PROPERTY LINE. IT MAY OCCUR WITHIN THE RIGHT OF WAY OR WITHIN THE DRIVEWAY PENETRATION ON PRIVATE PROPERTY.

3. THE PROPOSED DRIVEWAY SHOULD MATCH THE EXISTING WIDTH AT THE PROPERTY LINE BUT UNLESS AUTHORIZED BY THE CITY TRAFFIC ENGINEER, THE WIDTH SHALL BE WITHIN THE FOLLOWING VALUES:

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

4. FOR LOCAL TYPE "A" STREETS, SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 4' AND IF SEPARATED FROM THE CURB, THE SIDEWALK SHALL BE LOCATED A MINIMUM OF 2' FROM THE BACK OF CURB.

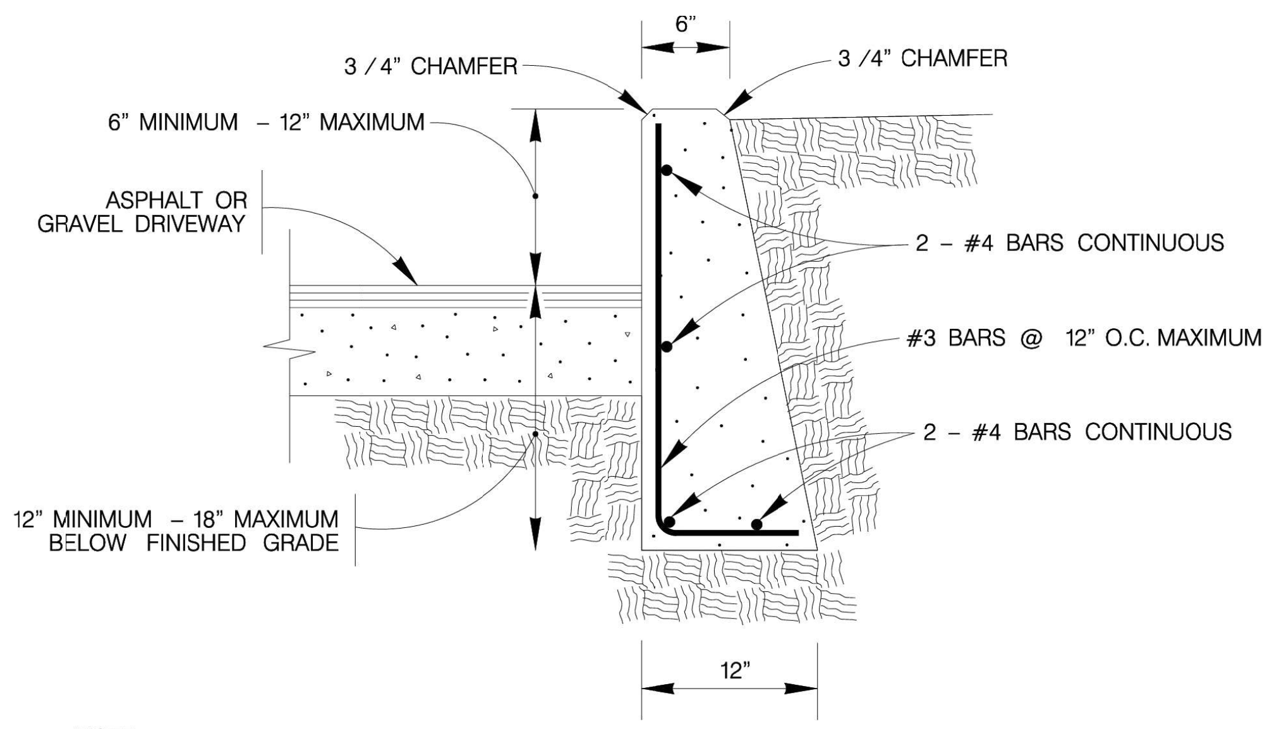
5. FOR OTHER THAN LOCAL TYPE "A" STREETS, THE SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 4' AND SEPARATED A MINIMUM OF 2' FROM THE BACK OF CURB OR, AS AN OPTION, THE SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 6' WHEN LOCATED AT THE BACK OF CURB.

6. DUMMY JOINTS PARALLEL TO THE CURB SHALL BE PLACED WHERE THE SIDEWALK MEETS THE DRIVEWAY. DUMMY JOINTS PERPENDICULAR TO THE CURB, AND WITHIN THE BOUNDARIES OF THE PARALLEL DUMMY JOINTS, SHALL BE PLACED AT INTERVALS EQUAL TO THE WIDTH OF THE SIDEWALK.

7. A MINIMUM OF TWO ROUND AND SMOOTH DOWEL BARS 3/8" 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%.

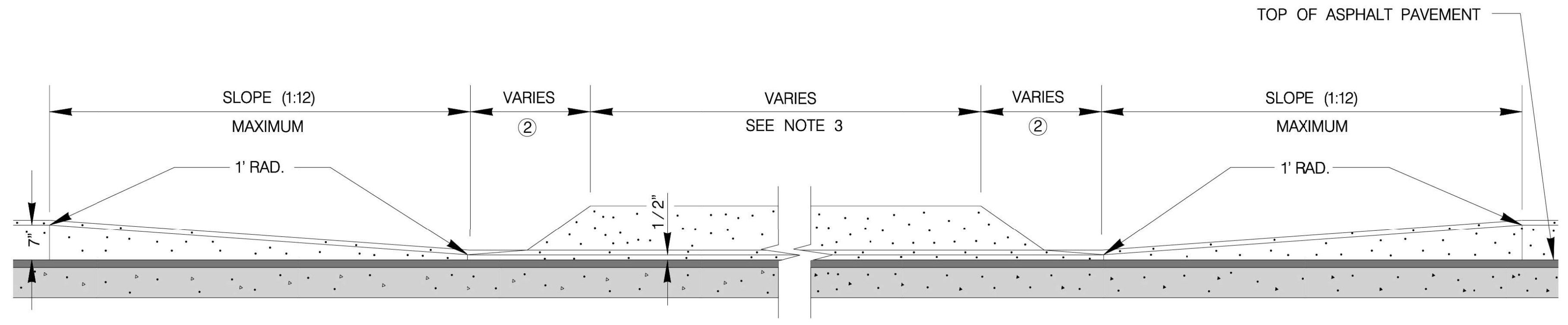
9. SIDEWALK RAMP SURFACE SHALL BE BRUSH FINISHED.


6"
3/4" CHAMFER
3/4" CHAMFER
6" MINIMUM – 12" MAXIMUM
ASPHALT OR GRAVEL DRIVEWAY
2 – #4 BARS CONTINUOUS
#3 BARS @ 12" O.C. MAXIMUM
2 – #4 BARS CONTINUOUS
12" MINIMUM – 18" MAXIMUM BELOW FINISHED GRADE
12"

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

DRIVEWAY – CONCRETE RETAINING WALL

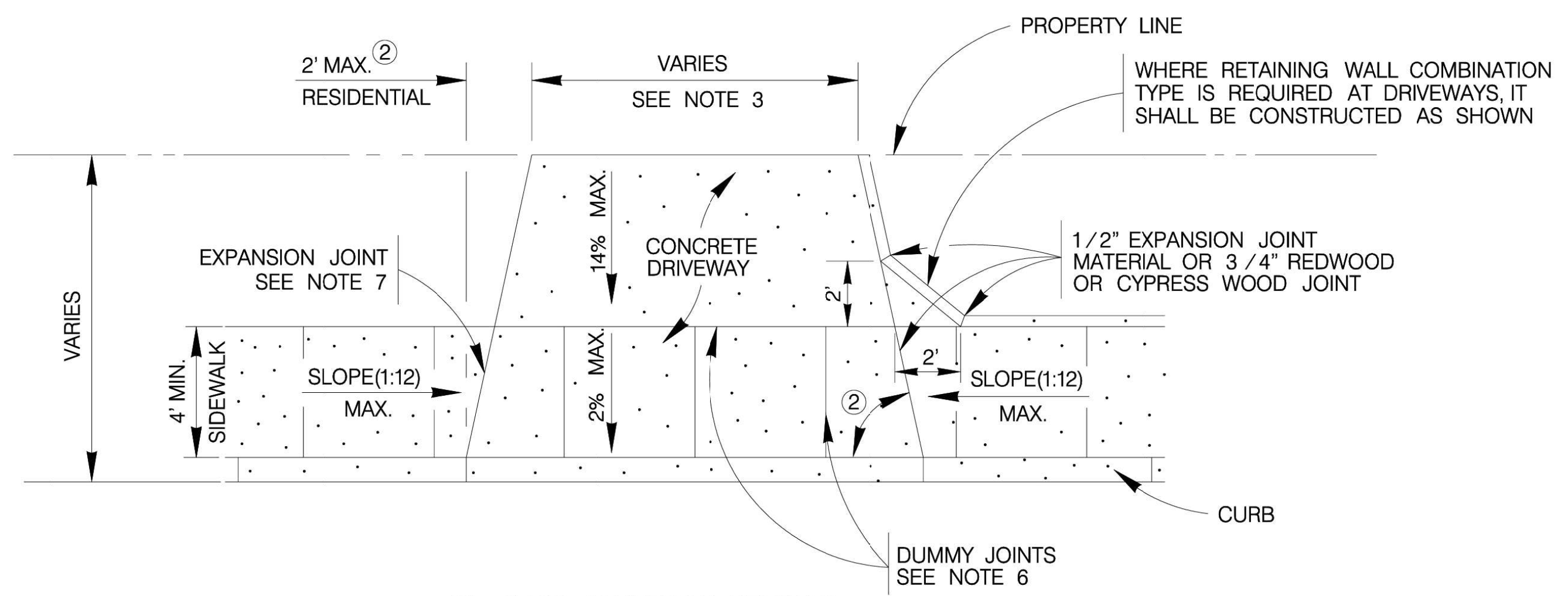
ON COMPACTED SUBGRADE
ITEM 307.1


TOP OF ASPHALT PAVEMENT
SLOPE (1:12)
MAXIMUM
VARIES
②
VARIES
SEE NOTE 3
VARIES
②
SLOPE (1:12)
MAXIMUM
1' RAD.
1' RAD.
7"
1/2"

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

CURB PROFILE AT DRIVEWAY

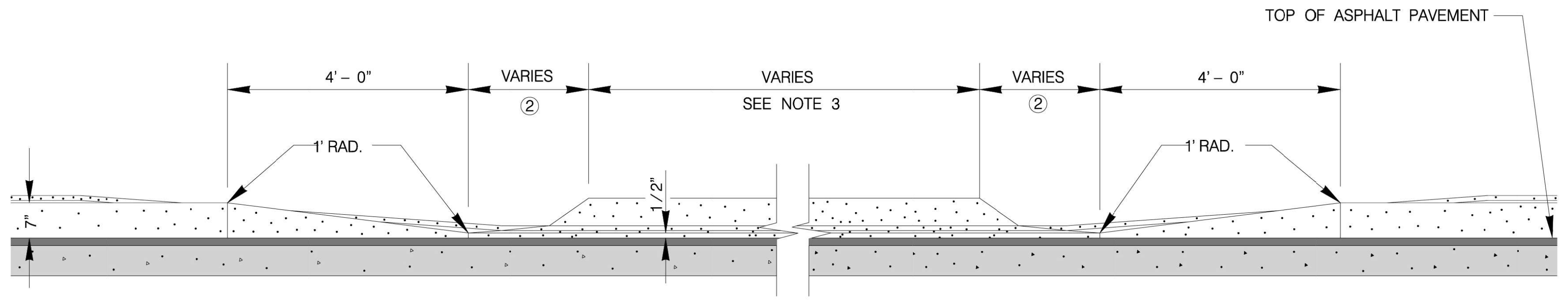
WITH SIDEWALK ABUTTING CURB


PROPERTY LINE
WHERE RETAINING WALL COMBINATION TYPE IS REQUIRED AT DRIVEWAYS, IT SHALL BE CONSTRUCTED AS SHOWN
2' MAX. ②
RESIDENTIAL
VARIES
SEE NOTE 3
VARIES
EXPANSION JOINT SEE NOTE 7
14% MAX.
CONCRETE DRIVEWAY
2'
1/2" EXPANSION JOINT MATERIAL OR 3/4" REDWOOD OR CYPRESS WOOD JOINT
4' MIN. SIDEWALK
SLOPE(1:12) MAX.
2% MAX.
2'
②
SLOPE(1:12) MAX.
CURB
DUMMY JOINTS SEE NOTE 6

② 45° FOR COMMERCIAL DRIVEWAY

TYPICAL DRIVEWAY PLAN VIEW

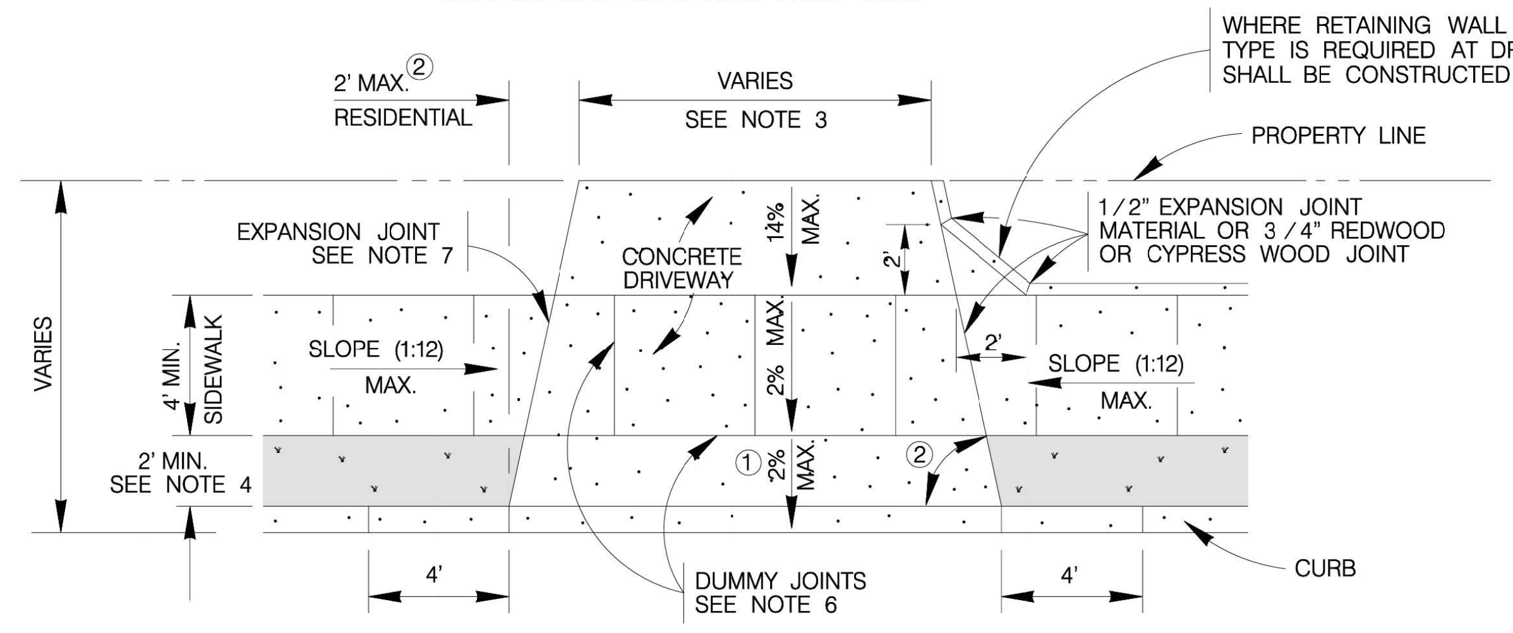
WITH SIDEWALK ABUTTING CURB


TOP OF ASPHALT PAVEMENT
4' – 0"
VARIES
②
VARIES
SEE NOTE 3
VARIES
②
4' – 0"
1' RAD.
1' RAD.
7"
1/2"

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

CURB PROFILE AT DRIVEWAY

WITH SIDEWALK SEPARATED FROM CURB


WHERE RETAINING WALL COMBINATION TYPE IS REQUIRED AT DRIVEWAYS, IT SHALL BE CONSTRUCTED AS SHOWN
PROPERTY LINE
2' MAX. ②
RESIDENTIAL
VARIES
SEE NOTE 3
VARIES
EXPANSION JOINT SEE NOTE 7
14% MAX.
CONCRETE DRIVEWAY
2'
1/2" EXPANSION JOINT MATERIAL OR 3/4" REDWOOD OR CYPRESS WOOD JOINT
4' MIN. SIDEWALK
SLOPE (1:12) MAX.
2% MAX.
2'
SLOPE (1:12) MAX.
2' MIN. SEE NOTE 4
① 2% MAX.
②
CURB
4'
DUMMY JOINTS SEE NOTE 6
4'

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

MAY 2009

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

CONCRETE DRIVEWAY STANDARDS

______% SUBMITTAL	PROJECT NO.:______________		DATE:__________
DRWN. BY: V. VASQUEZ	DSGN. BY:__________	CHKD. BY: R.S. HOSSEINI, P.E.	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 8

CONCRETE DRIVEWAY DETAILS

DATE
11/10/2025
PROJECT NO.
03499.010
DRAWN BY
JK/AR/JF/RB
CHECKED BY
KMH

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

KYLE M. HUDEK
138753
11/11/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C7.D4

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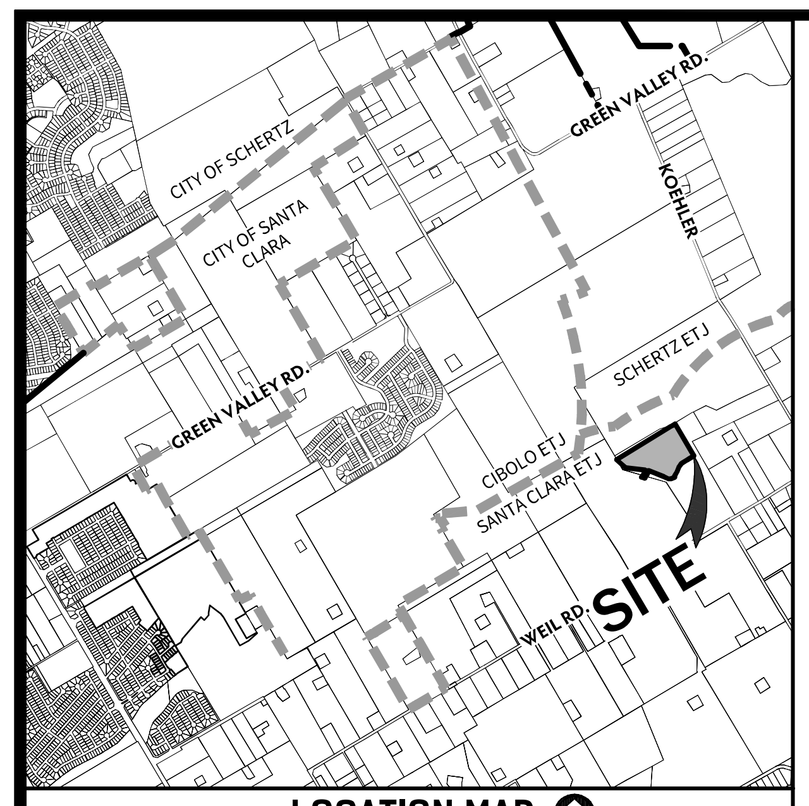

CITY OF SCHERTZ
CITY OF SANTA CLARA
GREEN VALLEY RD.
KOHLER
SCHERTZ ETJ
CIBOLO ETJ
SANTA CLARA ETJ
WEIL RD.
SITE

LOCATION MAP

N.T.S.

NOTE:

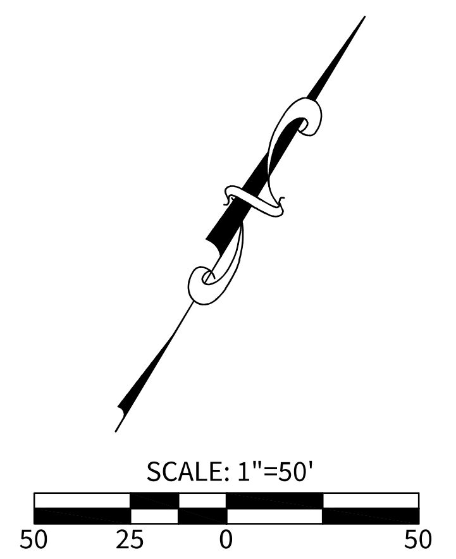
CONTRACTOR TO COORDINATE SIGN PLACEMENT WITH SIDEWALK/ADA RAMP, STREET LIGHT, AND VALVE BOX CONSTRUCTION TO AVOID ANY POSSIBLE CONFLICTS.

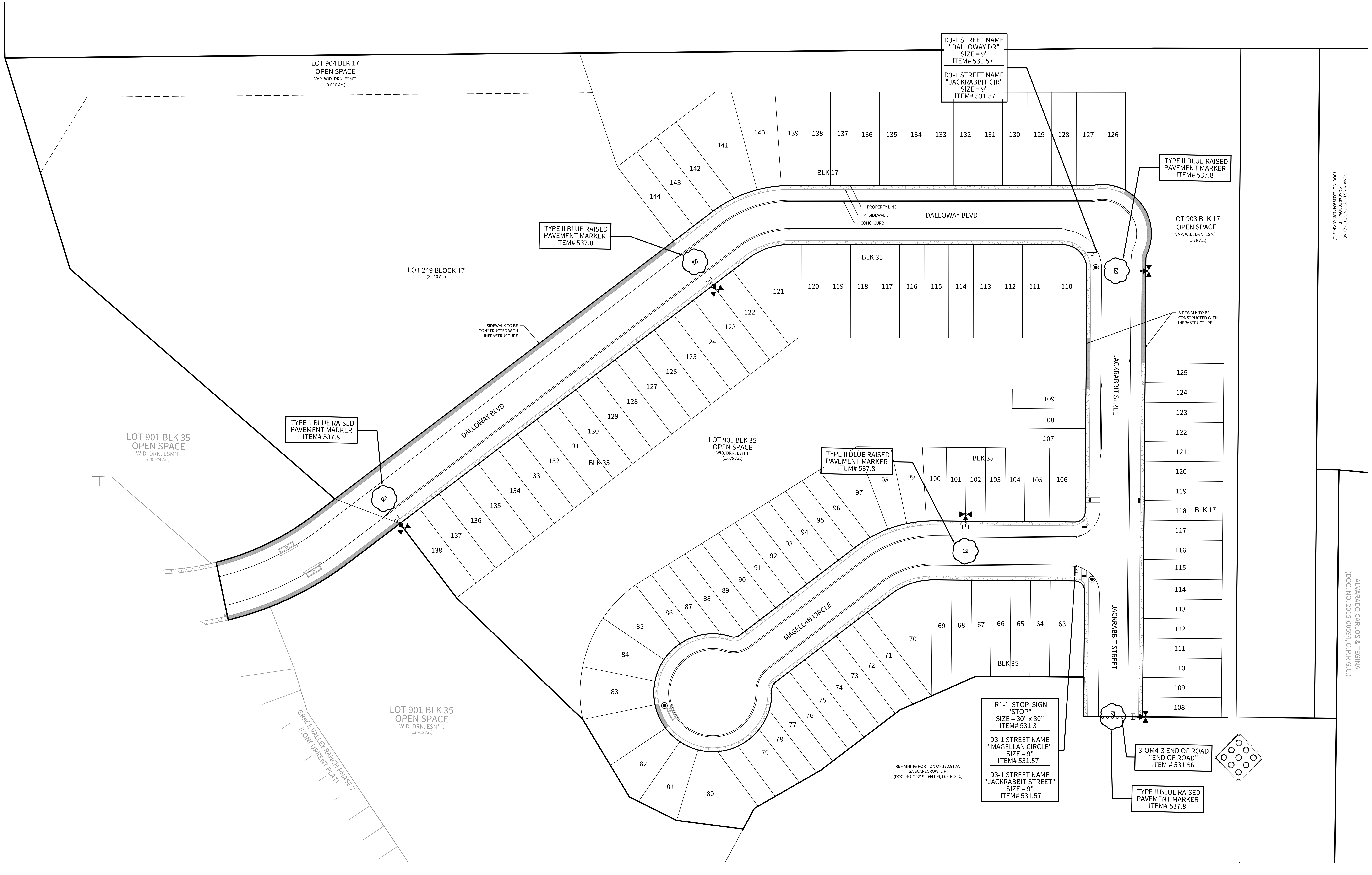
DEVELOPER:

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


SCALE: 1"=50'
50
25
0
50


D3-1 STREET NAME "DALLOWAY DR" SIZE = 9" ITEM# 531.57
D3-1 STREET NAME "JACKRABBIT CIR" SIZE = 9" ITEM# 531.57
TYPE II BLUE RAISED PAVEMENT MARKER ITEM# 537.8
TYPE II BLUE RAISED PAVEMENT MARKER ITEM# 537.8
TYPE II BLUE RAISED PAVEMENT MARKER ITEM# 537.8
TYPE II BLUE RAISED PAVEMENT MARKER ITEM# 537.8
R1-1 STOP SIGN "STOP" SIZE = 30" x 30" ITEM# 531.3
D3-1 STREET NAME "MAGELLAN CIRCLE" SIZE = 9" ITEM# 531.57
D3-1 STREET NAME "JACKRABBIT STREET" SIZE = 9" ITEM# 531.57
3-OM4-3 END OF ROAD "END OF ROAD" ITEM # 531.56
TYPE II BLUE RAISED PAVEMENT MARKER ITEM# 537.8
LOT 904 BLK 17 OPEN SPACE VAR. WID. DRN. ESM'T (0.610 Ac.)
LOT 249 BLOCK 17 (3.910 Ac.)
LOT 903 BLK 17 OPEN SPACE VAR. WID. DRN. ESM'T (1.578 Ac.)
LOT 901 BLK 35 OPEN SPACE WID. DRN. ESM'T. (20.074 Ac.)
LOT 901 BLK 35 OPEN SPACE WID. DRN. ESM'T (1.678 Ac.)
LOT 901 BLK 35 OPEN SPACE WID. DRN. ESM'T. (13.912 Ac.)
DALLOWAY BLVD
JACKRABBIT STREET
MAGELLAN CIRCLE
BLK 17
BLK 35
PROPERTY LINE
4' SIDEWALK
CONC. CURB
SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
REMAINING PORTION OF 173.81 AC SA SCARECROW, L.P. (DOC. NO. 20219044109, O.P.R.G.C.)
ALVARADO CARLOS & TEGINA (DOC. NO. 2015-00594, O.P.R.G.C.)
GRACE VALLEY RANCH PHASE 7 (CONCURRENT PLAT)

CUDEENGINEERS.COM

EST. 1980 CUDE ENGINEERS

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

GRACE VALLEY RANCH PHASE 8

TRAFFIC SIGNAGE PLAN

DATE
11/10/2025

PROJECT NO.
03499.010

DRAWN BY
JK/AR/JF/RB

CHECKED BY
KMH

REVISIONS

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5.
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9.

KYLE M. HUDEK
138753
11/11/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C8.00

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DATE:
FILE:

SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

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

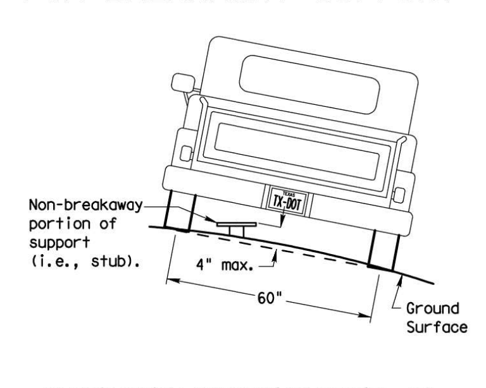
Post Type
- FRP = Fiberglass Reinforced Plastic Pipe (see SMD(FRP))
- TWT = Thin-Walled Tubing (see SMD(TWT))
- 10BWG = 10 BWG Tubing (see SMD(SLIP-1) to (SLIP-3))
- S80 = Schedule 80 Pipe (see SMD(SLIP-1) to (SLIP-3))

Number of Posts (1 or 2)

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

Sign Mounting Designation
- P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
- T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
- U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))
- IF REQUIRED
- 1EXT or 2EXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
- BM = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))
- WC = 1.12 #/ft Wing Channel (see SMD(SLIP-1) to (SLIP-3))
- EXAL = Extruded Aluminum Sign Panels (see SMD(SLIP-3))

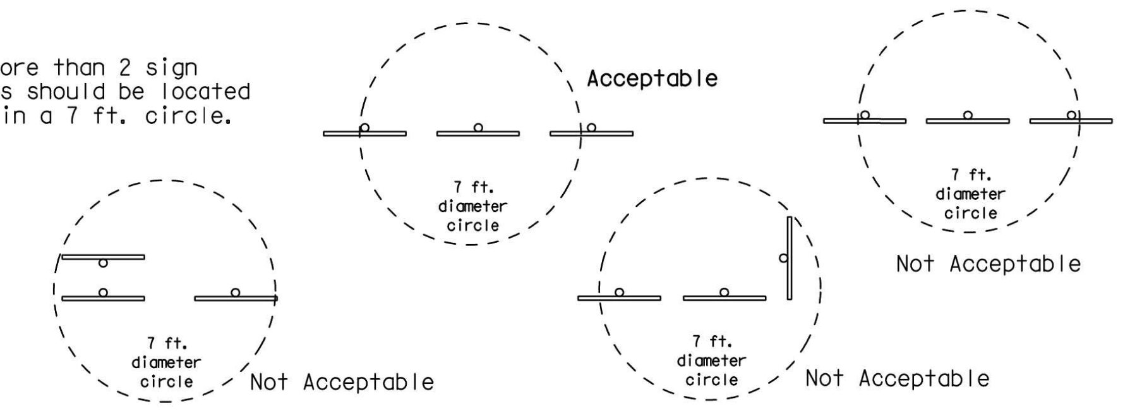
REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



Non-breakaway portion of support (i.e., stub).
4" max.
60"
Ground Surface
TX-DOT

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

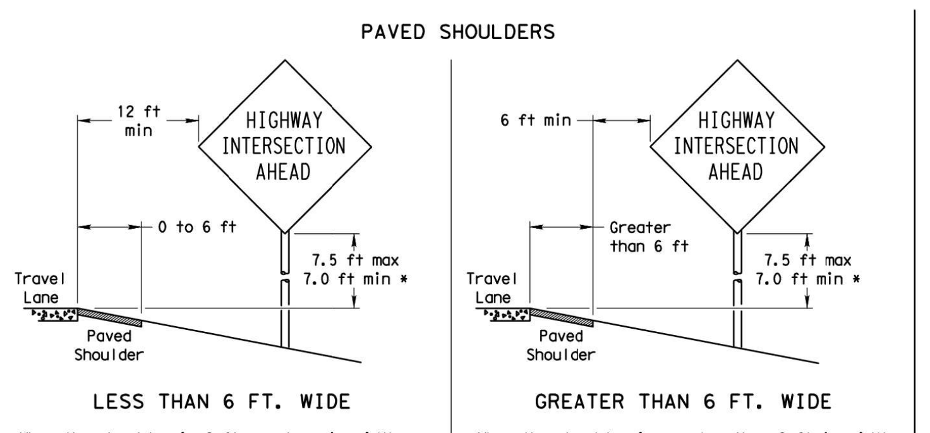
No more than 2 sign posts should be located within a 7 ft. circle.



Acceptable
7 ft. diameter circle
Not Acceptable
7 ft. diameter circle
Not Acceptable
7 ft. diameter circle

SIGN LOCATION

PAVED SHOULDERS



12 ft min
0 to 6 ft
HIGHWAY INTERSECTION AHEAD
7.5 ft max
7.0 ft min *
Travel Lane
Paved Shoulder
6 ft min
Greater than 6 ft

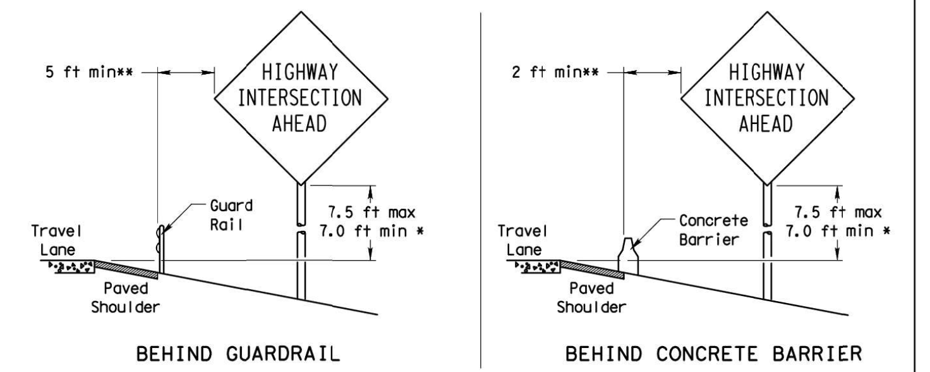
LESS THAN 6 FT. WIDE

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.

BEHIND BARRIER



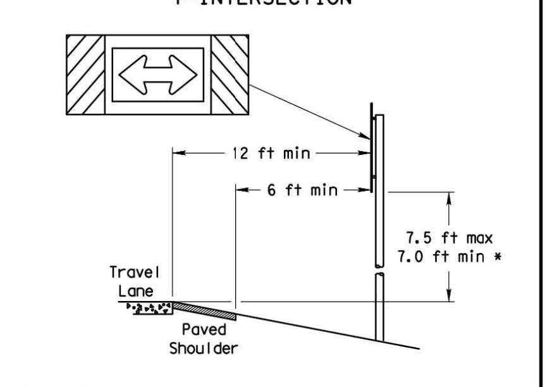
5 ft min**
HIGHWAY INTERSECTION AHEAD
Guard Rail
7.5 ft max
7.0 ft min *
Travel Lane
Paved Shoulder
2 ft min**
Concrete Barrier

BEHIND GUARDRAIL

BEHIND CONCRETE BARRIER

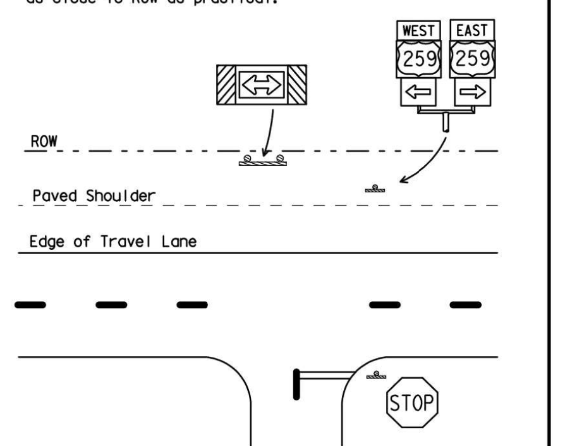
**Sign clearance based on distance required for proper guard rail or concrete barrier performance.

T-INTERSECTION



12 ft min
6 ft min
7.5 ft max
7.0 ft min *
Travel Lane
Paved Shoulder

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



WEST
259
EAST
259
ROW
Paved Shoulder
Edge of Travel Lane
STOP

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

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

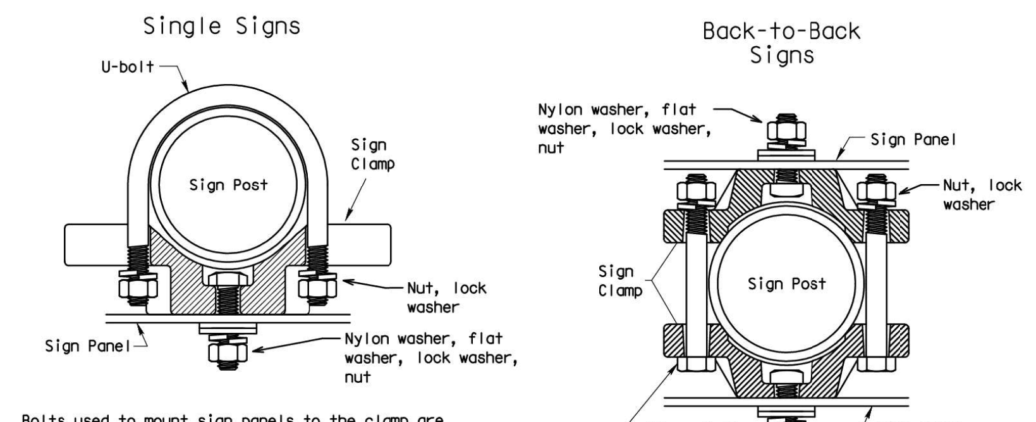
(2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

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

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

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

TYPICAL SIGN ATTACHMENT DETAIL



Single Signs
U-bolt
Sign Post
Sign Clamp
Nut, lock washer
Sign Panel
Nylon washer, flat washer, lock washer, nut
Back-to-Back Signs
Nylon washer, flat washer, lock washer, nut
Sign Panel
Nut, lock washer
Sign Clamp
Sign Post
Clamp Bolt
Sign Panel
Sign Bolt

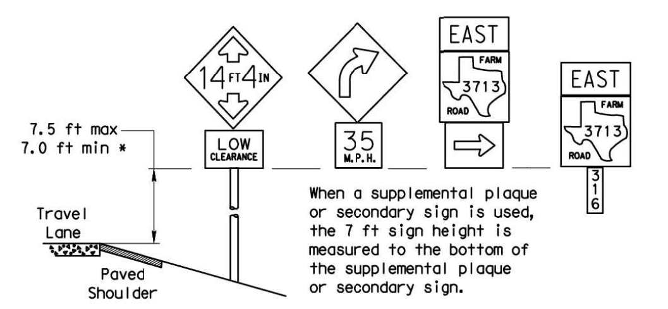
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

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"

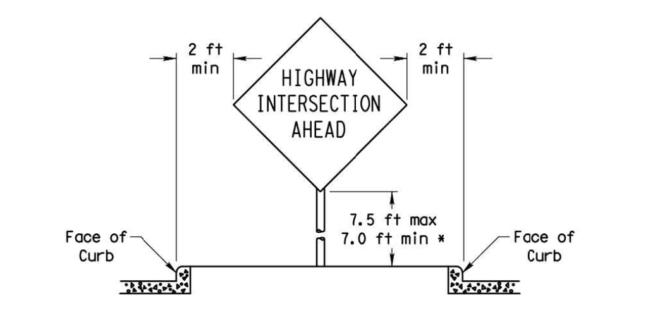
SIGNS WITH PLAQUES



14 FT 4 IN
LOW CLEARANCE
35 M.P.H.
EAST
FARM 3713 ROAD
EAST
FARM 3713 ROAD
316
7.5 ft max
7.0 ft min *
Travel Lane
Paved Shoulder

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.

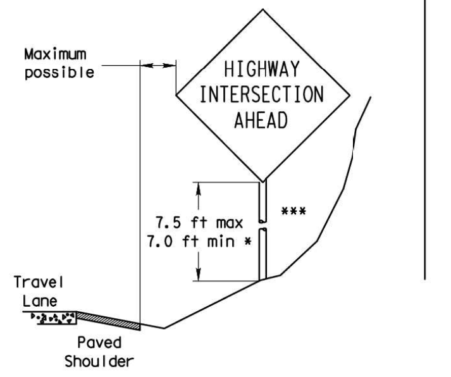
CURB & GUTTER OR RAISED ISLAND



2 ft min
2 ft min
HIGHWAY INTERSECTION AHEAD
7.5 ft max
7.0 ft min *
Face of Curb
Face of Curb

RESTRICTED RIGHT-OF-WAY

(When 6 ft min. is not possible.)



Maximum possible
HIGHWAY INTERSECTION AHEAD
***
7.5 ft max
7.0 ft min *
Travel Lane
Paved Shoulder

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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9-08 REVISIONS	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO.

26A

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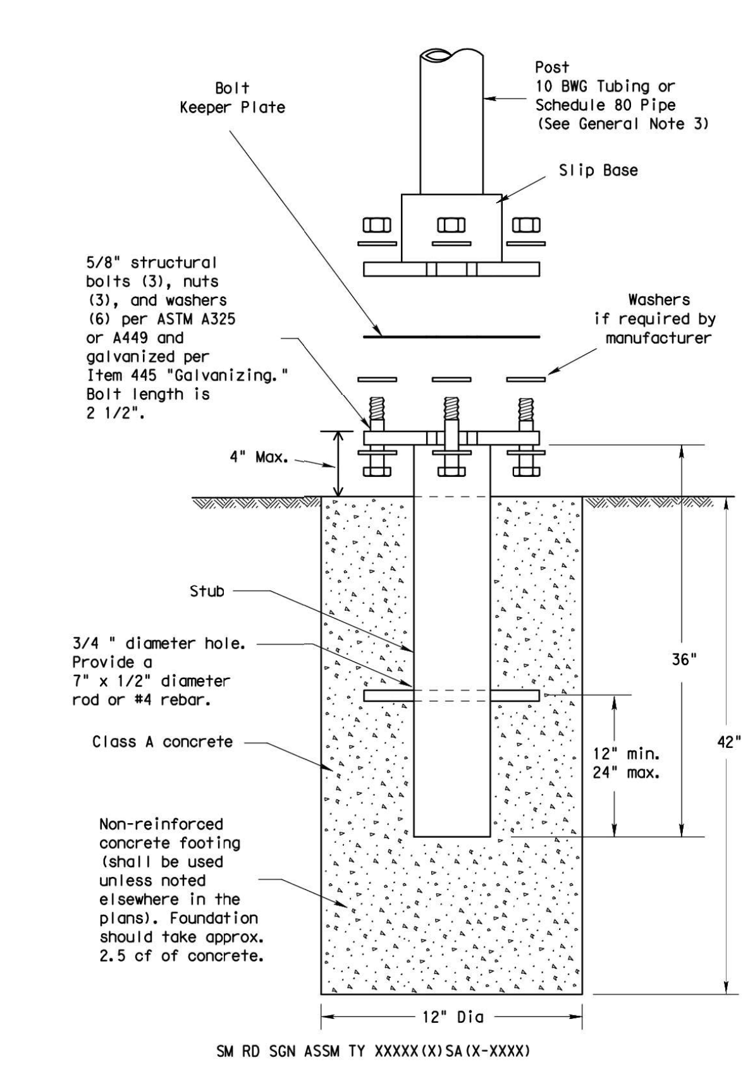
DATE:
FILE:

TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



Post
10 BWG Tubing or Schedule 80 Pipe (See General Note 3)
Bolt Keeper Plate
Slip Base
Washers if required by manufacturer
5/8" structural bolts (3), nuts (3), and washers (6) per ASTM A325 or A449 and galvanized per Item 445 "Galvanizing." Bolt length is 2 1/2".
4" Max.
Stub
3/4 " diameter hole. Provide a 7" x 1/2" diameter rod or #4 rebar.
Class A concrete
Non-reinforced concrete footing (shall be used unless noted elsewhere in the plans). Foundation should take approx. 2.5 cf of concrete.
36"
42"
12" min, 24" max.
12" Dia

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

NOTE

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

GENERAL NOTES:

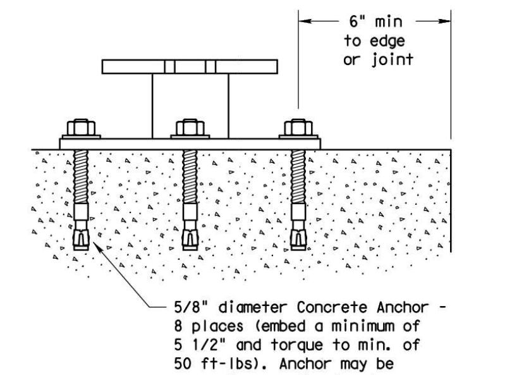
1. Slip base shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
2. Material used as post with this system shall conform to the following specifications:
   10 BWG Tubing (2.875" outside diameter)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

ASSEMBLY PROCEDURE

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

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

CONCRETE ANCHOR



6" min to edge or joint
5/8" diameter Concrete Anchor - 8 places (embed a minimum of 5 1/2" and torque to min. of 50 ft-lbs). Anchor may be expansion or adhesive type.

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

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

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08

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9-08 REVISIONS	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO.

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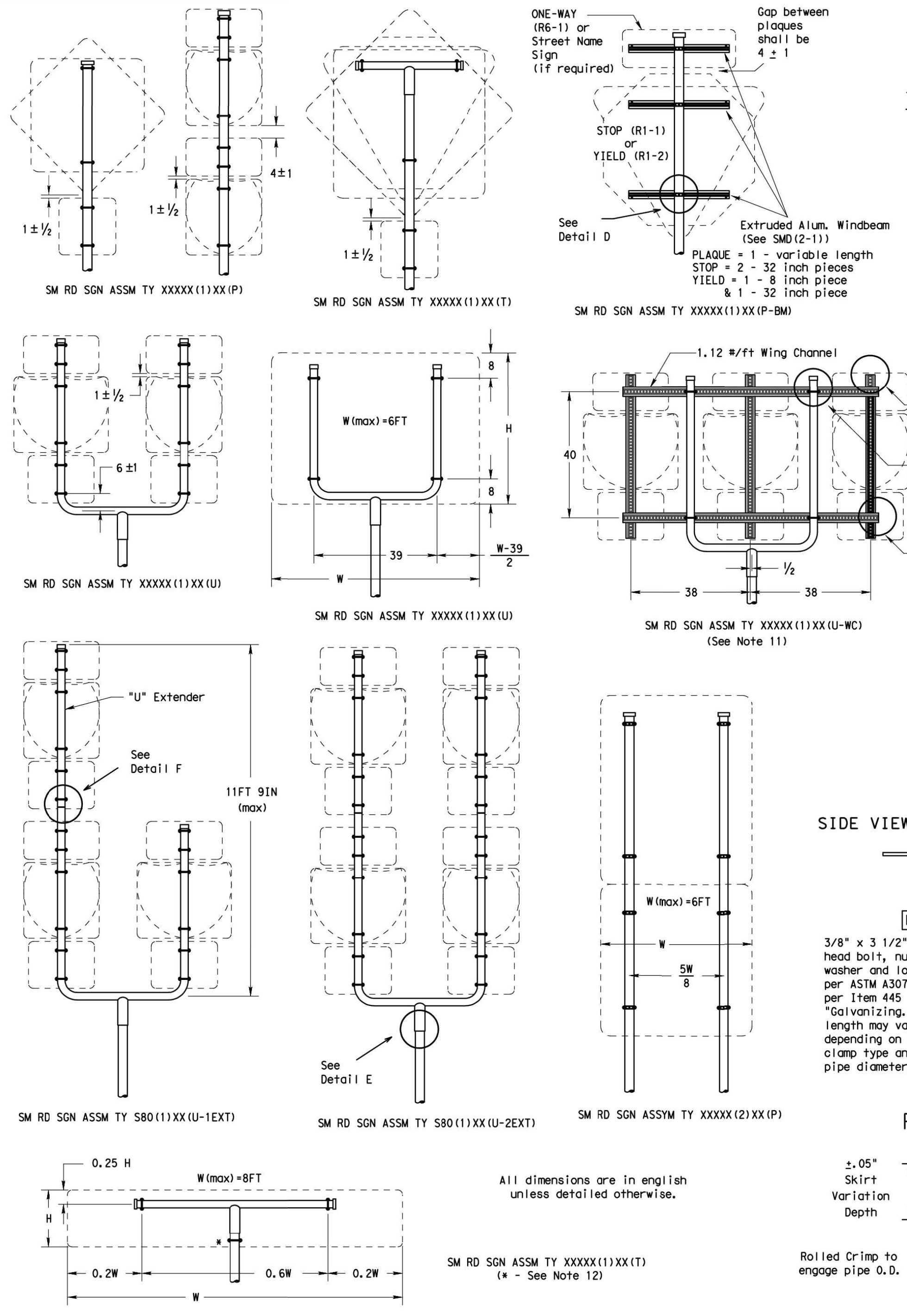
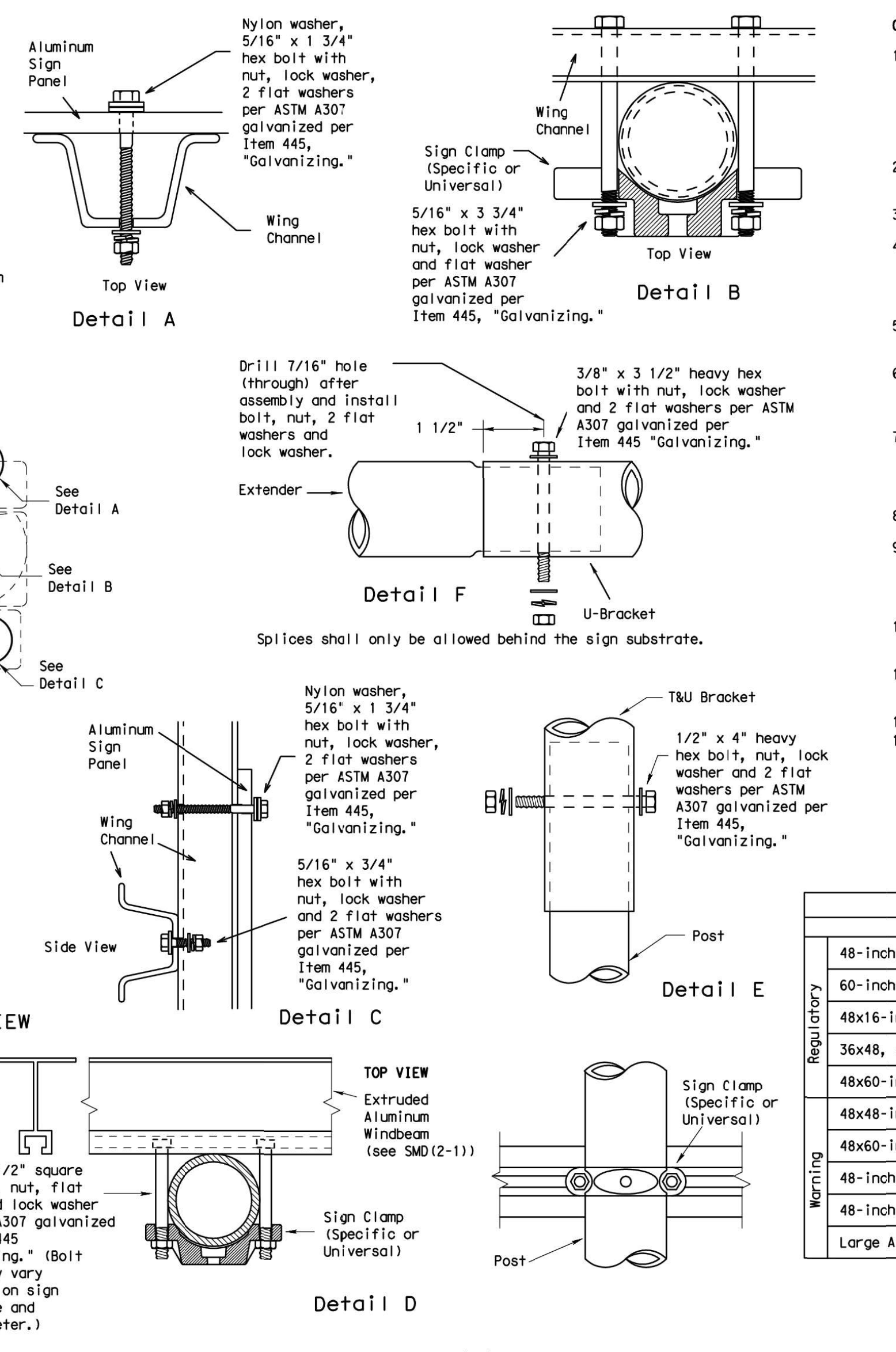


SM RD SGN ASSM TY XXXXX(1)XX(P)
SM RD SGN ASSM TY XXXXX(1)XX(T)
SM RD SGN ASSM TY XXXXX(1)XX(P-BM)
SM RD SGN ASSM TY XXXXX(1)XX(U)
SM RD SGN ASSM TY XXXXX(1)XX(U-WC) (See Note 11)
SM RD SGN ASSM TY S80(1)XX(U-1EXT)
SM RD SGN ASSM TY XXXXX(1)XX(U-2EXT)
SM RD SGN ASSM TY XXXXX(2)XX(P)
SM RD SGN ASSM TY XXXXX(1)XX(T) (* - See Note 12)
ONE-WAY (R6-1) or Street Name Sign (if required)
Gap between plaques shall be 4 ± 1
STOP (R1-1) or YIELD (R1-2)
Extruded Alum. Windbeam (See SMD(2-1))
PLAQUE = 1 - variable length
STOP = 2 - 32 inch pieces
YIELD = 1 - 8 inch piece & 1 - 32 inch piece
1.12 #/ft Wing Channel
"U" Extender
All dimensions are in english unless detailed otherwise.

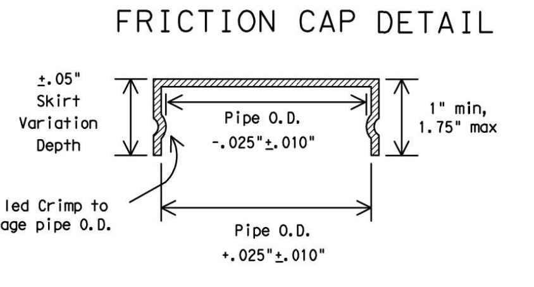


Detail A
Detail B
Detail C
Detail D
Detail E
Detail F
SIDE VIEW
TOP VIEW
Aluminum Sign Panel
Wing Channel
Sign Clamp (Specific or Universal)
T&U Bracket
U-Bracket
Post
Extender
Extruded Aluminum Windbeam (see SMD(2-1))

Splices shall only be allowed behind the sign substrate.

3/8" x 3 1/2" square head bolt, nut, flat washer and lock washer per ASTM A307 galvanized per Item 445 "Galvanizing." (Bolt length may vary depending on sign clamp type and pipe diameter.)

FRICTION CAP DETAIL



±.05" Skirt Variation Depth
Pipe O.D. -.025"±.010"
1" min, 1.75" max
Rolled Crimp to engage pipe O.D.
Pipe O.D. +.025"±.010"

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)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
Warning	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
	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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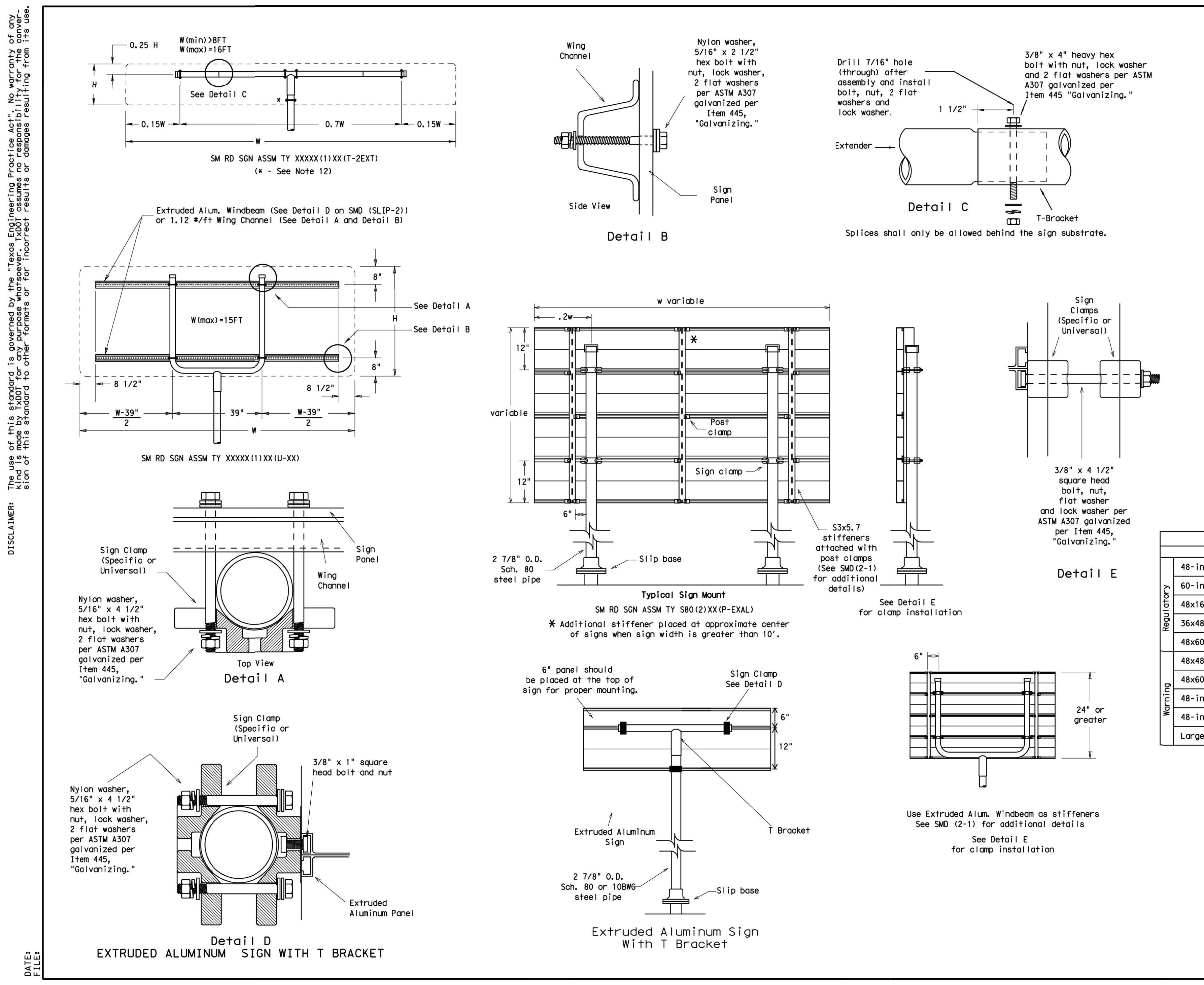

SM RD SGN ASSM TY XXXXX(1)XX(T-2EXT)
SM RD SGN ASSM TY XXXXX(1)XX(U-XX)
SM RD SGN ASSM TY S80(2)XX(P-EXAL)
Extruded Alum. Windbeam (See Detail D on SMD(SLIP-2)) or 1.12 #/ft Wing Channel (See Detail A and Detail B)
Detail A
Detail B
Detail C
Detail D
Detail E
Typical Sign Mount
Sign Clamp (Specific or Universal)
Slip base
Post clamp
Sign clamp
S3x5.7 stiffeners attached with post clamps (See SMD(2-1) for additional details)
T-Bracket
T Bracket
Extruded Aluminum Sign
2 7/8" O.D. Sch. 80 or 10BWG steel pipe
W variable
variable
24" or greater

Splices shall only be allowed behind the sign substrate.

✱ Additional stiffener placed at approximate center of signs when sign width is greater than 10'.

6" panel should be placed at the top of sign for proper mounting.

Use Extruded Alum. Windbeam as stiffeners See SMD (2-1) for additional details

See Detail E for clamp installation

Extruded Aluminum Sign With T Bracket

EXTRUDED ALUMINUM SIGN WITH T BRACKET

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

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Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-3)-08

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CUDEENGINEERS.COM

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 6

TRAFFIC SIGNAGE DETAILS

DATE
11/10/2025

PROJECT NO.
03499.008

DRAWN BY
AG/BK/SG/RB/JF

CHECKED BY
K.M.H.

REVISIONS
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KYLE M. HUDEK
138753
11/11/2025

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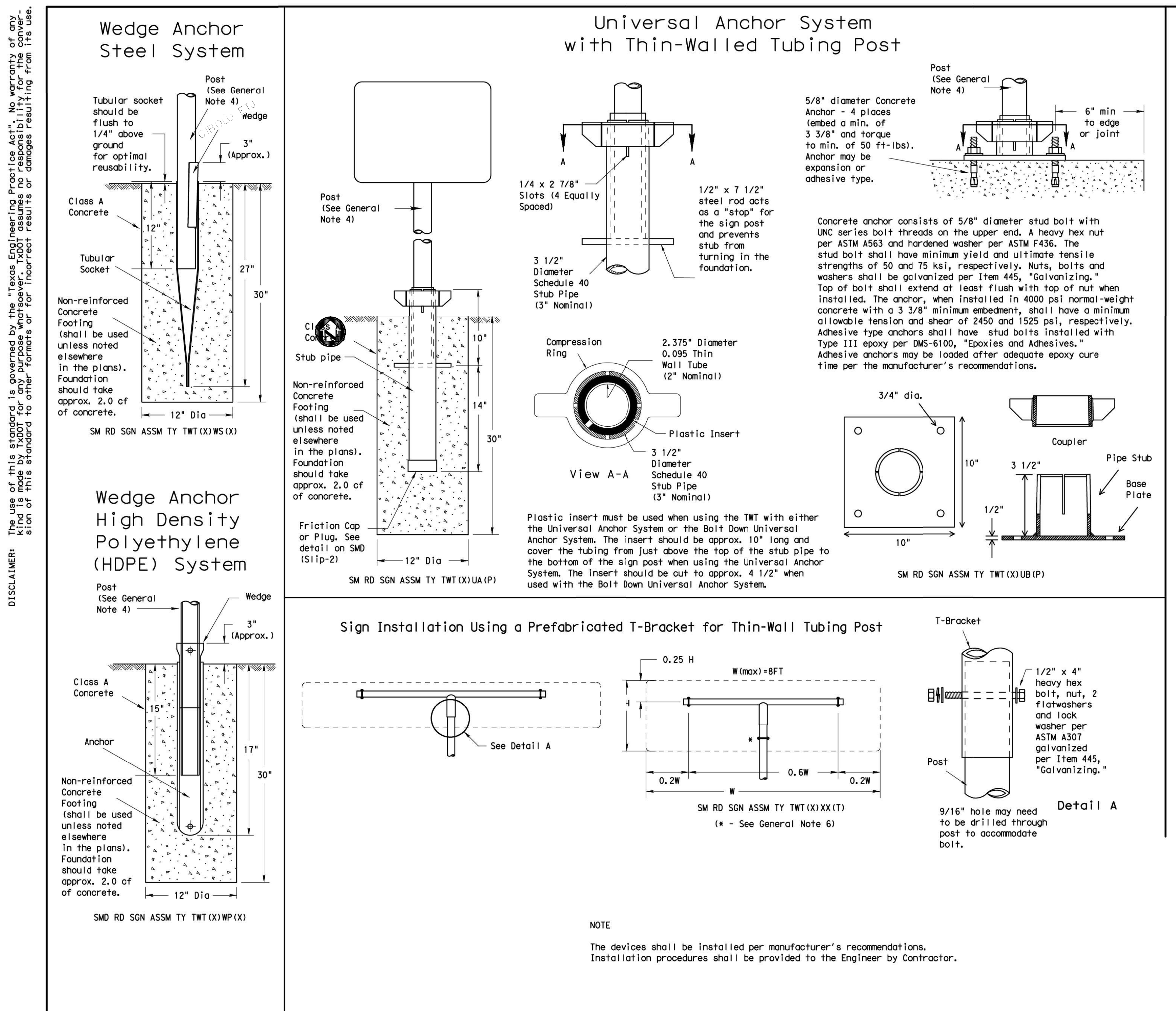

Wedge Anchor Steel System
Post (See General Note 4)
Wedge
3" (Approx.)
Tubular socket should be flush to 1/4" above ground for optimal reusability.
Class A Concrete
Tubular Socket
Non-reinforced Concrete Footing (shall be used unless noted elsewhere in the plans). Foundation should take approx. 2.0 cf of concrete.
12" Dia
27"
30"
SM RD SGN ASSM TY TWT(X)WS(X)
Wedge Anchor High Density Polyethylene (HDPE) System
Anchor
SM RD SGN ASSM TY TWT(X)WP(X)
Universal Anchor System with Thin-Walled Tubing Post
Stub pipe
Friction Cap or Plug. See detail on SMD (Slip-2)
1/4 x 2 7/8" Slots (4 Equally Spaced)
3 1/2" Diameter Schedule 40 Stub Pipe (3" Nominal)
1/2" x 7 1/2" steel rod acts as a "stop" for the sign post and prevents stub from turning in the foundation.
Compression Ring
2.375" Diameter 0.095 Thin Wall Tube (2" Nominal)
Plastic Insert
View A-A
SM RD SGN ASSM TY TWT(X)UA(P)
5/8" diameter Concrete Anchor - 4 places (embed a min. of 3 3/8" and torque to min. of 50 ft-lbs). Anchor may be expansion or adhesive type.
6" min to edge or joint
3/4" dia.
10"
Coupler
Pipe Stub
Base Plate
3 1/2"
1/2"
SM RD SGN ASSM TY TWT(X)UB(P)
Sign Installation Using a Prefabricated T-Bracket for Thin-Wall Tubing Post
See Detail A
W(max)=8FT
0.25 H
0.2W
SM RD SGN ASSM TY TWT(X)XX(T)
(* - See General Note 6)
T-Bracket
1/2" x 4" heavy hex bolt, nut, 2 flatwashers and lock washer per ASTM A307 galvanized per Item 445, "Galvanizing."
9/16" hole may need to be drilled through post to accommodate bolt.
Post
Detail A

Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. A heavy hex nut per ASTM A563 and hardened washer per ASTM F436. The stud bolt shall have minimum yield and ultimate tensile strengths of 50 and 75 ksi, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Top of bolt shall extend at least flush with top of nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 3 3/8" minimum embedment, shall have a minimum allowable tension and shear of 2450 and 1525 psi, respectively. 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.

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 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.

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 (13 BWG Tubing), clamps, nuts and bolts, all components shall be prequalified. A list of prequalified vendors may be obtained from the Material Producer List web page. The website address is: http://www.txdot.gov/business/producer list.htm
4. Material used as post with this system shall conform to the following specifications:
   - 13 BWG Tubing (2.375" outside diameter) (TWT)
     - 0.095" nominal wall thickness
     - Seamless or electric-resistance welded steel tubing
     - Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
     - Other steels may be used if they meet the following:
       - 55,000 PSI minimum yield strength
       - 70,000 PSI minimum tensile strength
       - 18% minimum elongation in 2"
     - Wall thickness (uncoated) shall be within the range of .083" to .099"
     - Outside diameter (uncoated) shall be within the range of 2.369" to 2.381"
     - Galvanization per ASTM 123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
5. Sign blanks shall be the sizes and shapes shown on the plans.
6. Additional sign clamp required on the "T-bracket" post for 24" high signs. Place clamp at least 3" above bottom of sign when possible.
7. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
8. See the Traffic Operations Division website for detailed drawings of sign clamps and Wedge Anchor System components. The website address is: http://www.txdot.gov/publications/traffic.htm

WEDGE ANCHOR SYSTEM INSTALLATION PROCEDURE

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

UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURE

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

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
WEDGE & UNIVERSAL ANCHOR
WITH THIN WALL TUBING POST
SMD(TWT)-08

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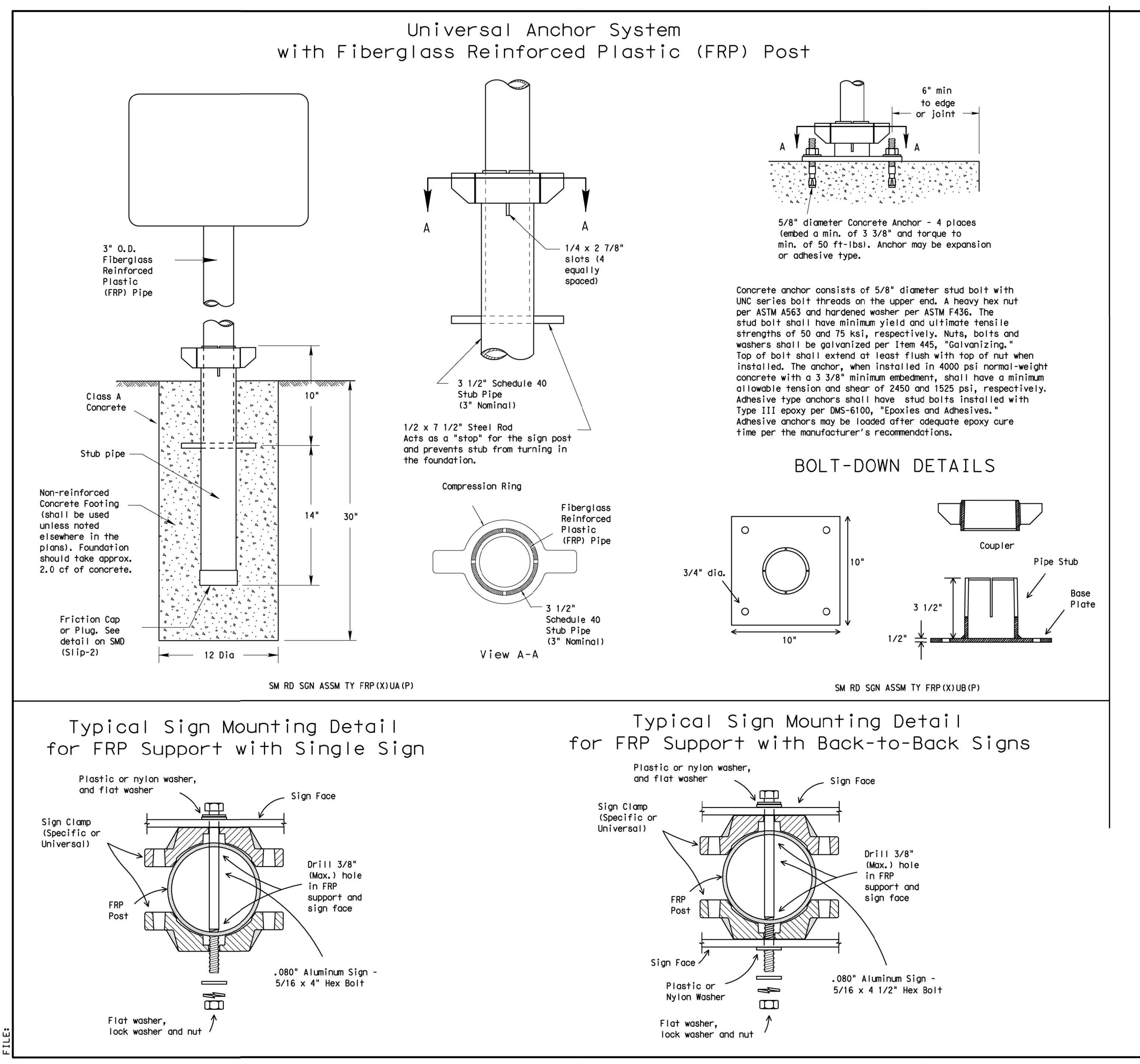

Universal Anchor System with Fiberglass Reinforced Plastic (FRP) Post
3" O.D. Fiberglass Reinforced Plastic (FRP) Pipe
Class A Concrete
Stub pipe
Non-reinforced Concrete Footing (shall be used unless noted elsewhere in the plans). Foundation should take approx. 2.0 cf of concrete.
Friction Cap or Plug. See detail on SMD (Slip-2)
12 Dia
10"
14"
30"
1/4 x 2 7/8" slots (4 equally spaced)
3 1/2" Schedule 40 Stub Pipe (3" Nominal)
1/2 x 7 1/2" Steel Rod Acts as a "stop" for the sign post and prevents stub from turning in the foundation.
Compression Ring
Fiberglass Reinforced Plastic (FRP) Pipe
3 1/2" Schedule 40 Stub Pipe (3" Nominal)
View A-A
SM RD SGN ASSM TY FRP(X)UA(P)
5/8" diameter Concrete Anchor - 4 places (embed a min. of 3 3/8" and torque to min. of 50 ft-lbs). Anchor may be expansion or adhesive type.
6" min to edge or joint
BOLT-DOWN DETAILS
3/4" dia.
Coupler
Pipe Stub
Base Plate
SM RD SGN ASSM TY FRP(X)UB(P)
Typical Sign Mounting Detail for FRP Support with Single Sign
Typical Sign Mounting Detail for FRP Support with Back-to-Back Signs
Plastic or nylon washer, and flat washer
Sign Face
Sign Clamp (Specific or Universal)
Drill 3/8" (Max.) hole in FRP support and sign face
FRP Post
.080" Aluminum Sign - 5/16 x 4" Hex Bolt
.080" Aluminum Sign - 5/16 x 4 1/2" Hex Bolt
Plastic or Nylon Washer
Flat washer, lock washer and nut

Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. A heavy hex nut per ASTM A563 and hardened washer per ASTM F436. The stud bolt shall have minimum yield and ultimate tensile strengths of 50 and 75 ksi, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Top of bolt shall extend at least flush with top of nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 3 3/8" minimum embedment, shall have a minimum allowable tension and shear of 2450 and 1525 psi, respectively. 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.

GENERAL NOTES:

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

FRP POST REQUIREMENTS

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

Texas Department of Transportation
Traffic Operations Division
125 East 11th Street
Austin, Texas 78701-2483

UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURES

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

BOLT DOWN SIGN SUPPORT

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

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
UNIVERSAL ANCHOR SYSTEM
WITH FRP POST
SMD(FRP)-08

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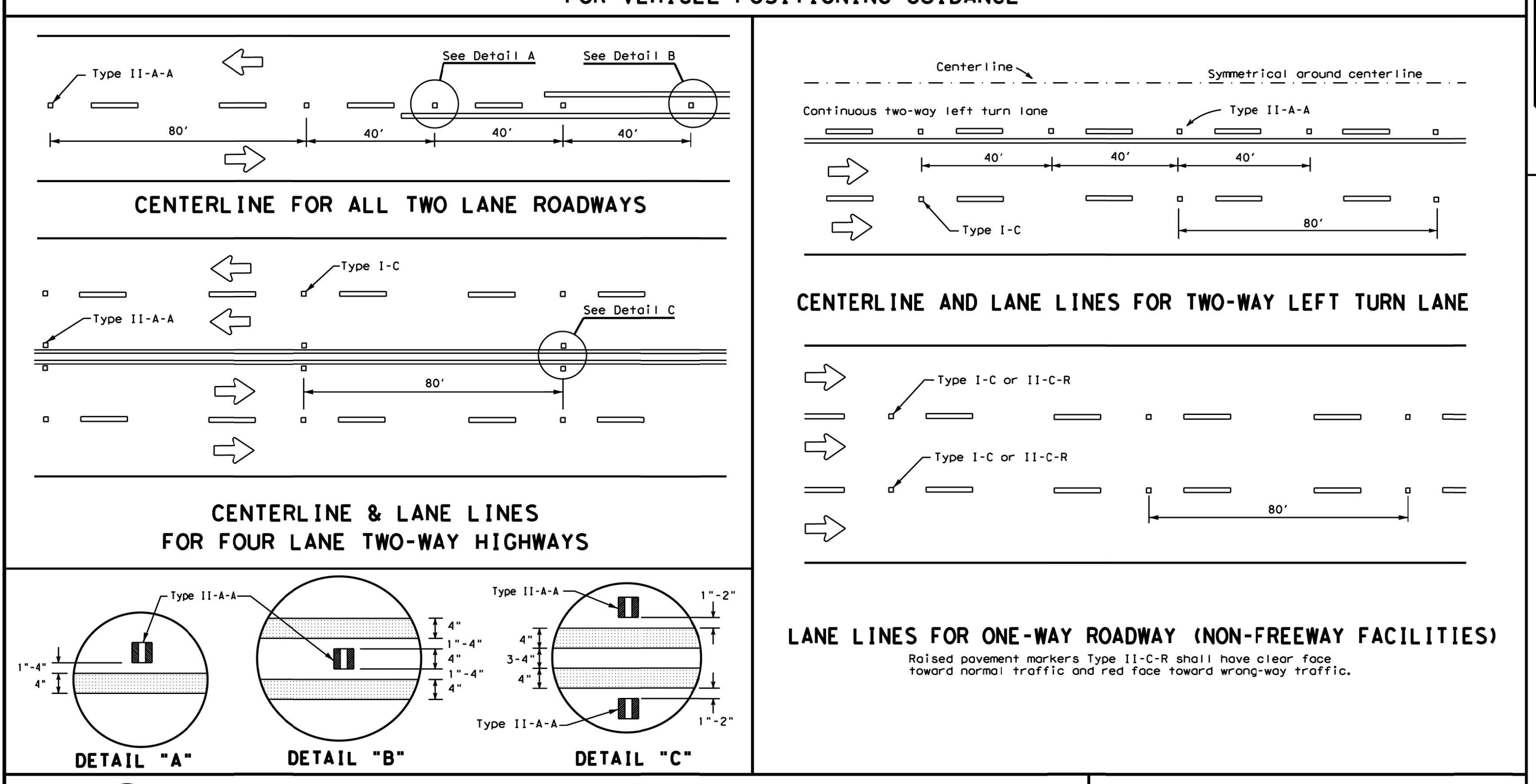
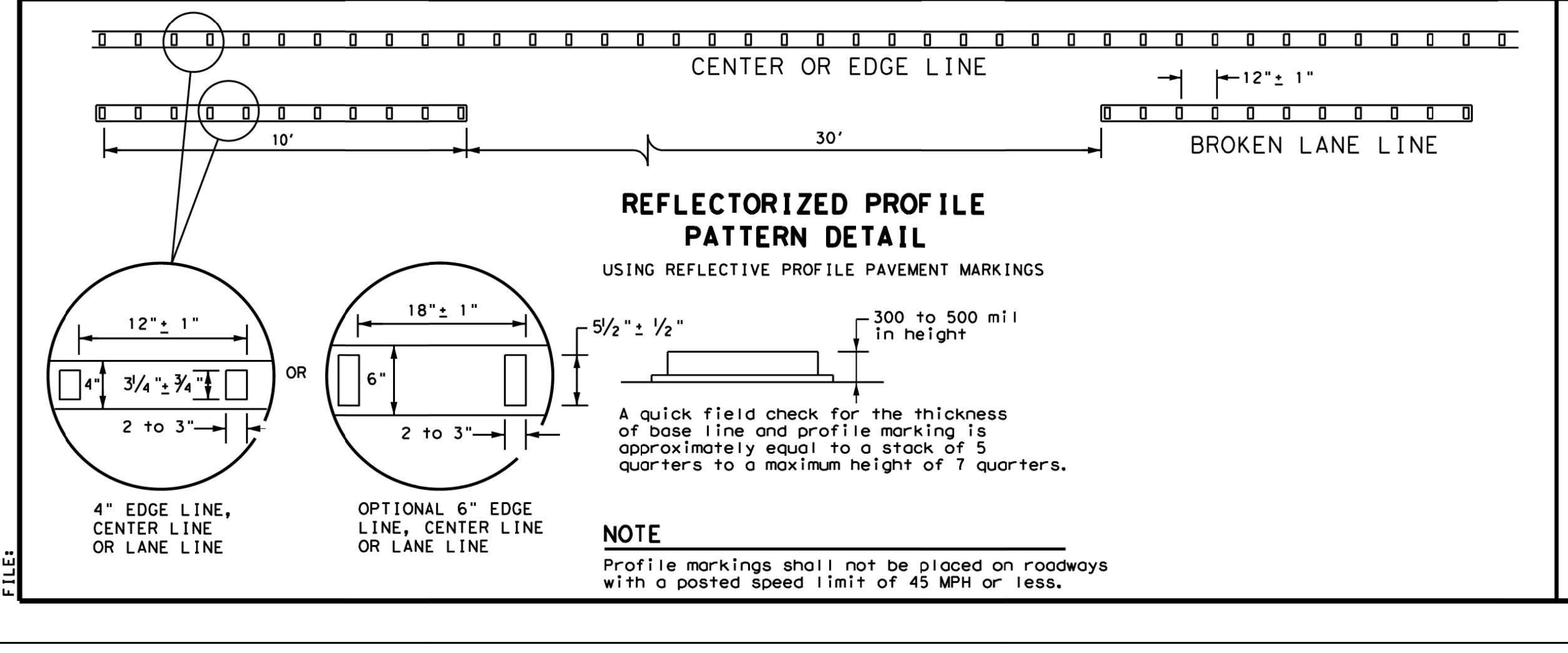
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE



Type II-A-A
See Detail A
See Detail B
80'
40'
CENTERLINE FOR ALL TWO LANE ROADWAYS
Type I-C
See Detail C
CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY HIGHWAYS
DETAIL "A"
DETAIL "B"
DETAIL "C"
1'-4"
4"
1'-2"
3'-4"
Centerline
Symmetrical around centerline
Continuous two-way left turn lane
CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE
Type I-C or II-C-R
LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

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



CENTER OR EDGE LINE
BROKEN LANE LINE
10'
30'
12"± 1"
18"± 1"
3/4"-3/4"
6"
2 to 3"
OR
4" EDGE LINE, CENTER LINE OR LANE LINE
OPTIONAL 6" EDGE LINE, CENTER LINE OR LANE LINE
300 to 500 mil in height
5/2"± 1/2"

REFLECTORIZED PROFILE PATTERN DETAIL
USING REFLECTIVE PROFILE PAVEMENT MARKINGS

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

NOTE

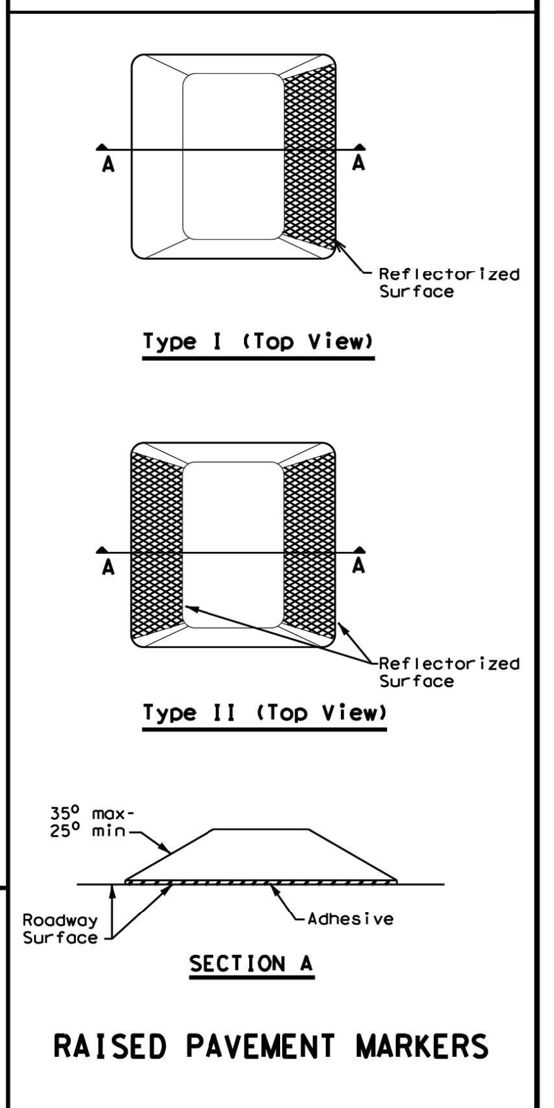
Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

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.



A
Reflectorized Surface
Type I (Top View)
Type II (Top View)
35° max-
25° min-
Roadway Surface
Adhesive
SECTION A

RAISED PAVEMENT MARKERS

Texas Department of Transportation
Traffic Safety Division Standard

POSITION GUIDANCE USING
RAISED MARKERS
RELECTORIZED PROFILE
MARKINGS
PM(2)-20

FILE: pm2-20.dgn
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4-92 2-10
5-00 2-12
8-00 6-20

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GRACE VALLEY RANCH
PHASE 6

TRAFFIC SIGNAGE DETAILS

DATE
11/10/2025

PROJECT NO.
03499.008

DRAWN BY
AG/BK/SG/RB/JF

CHECKED BY
K.M.H.

REVISIONS
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KYLE M. HUDEK
138753
11/11/2025

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C8.D2

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