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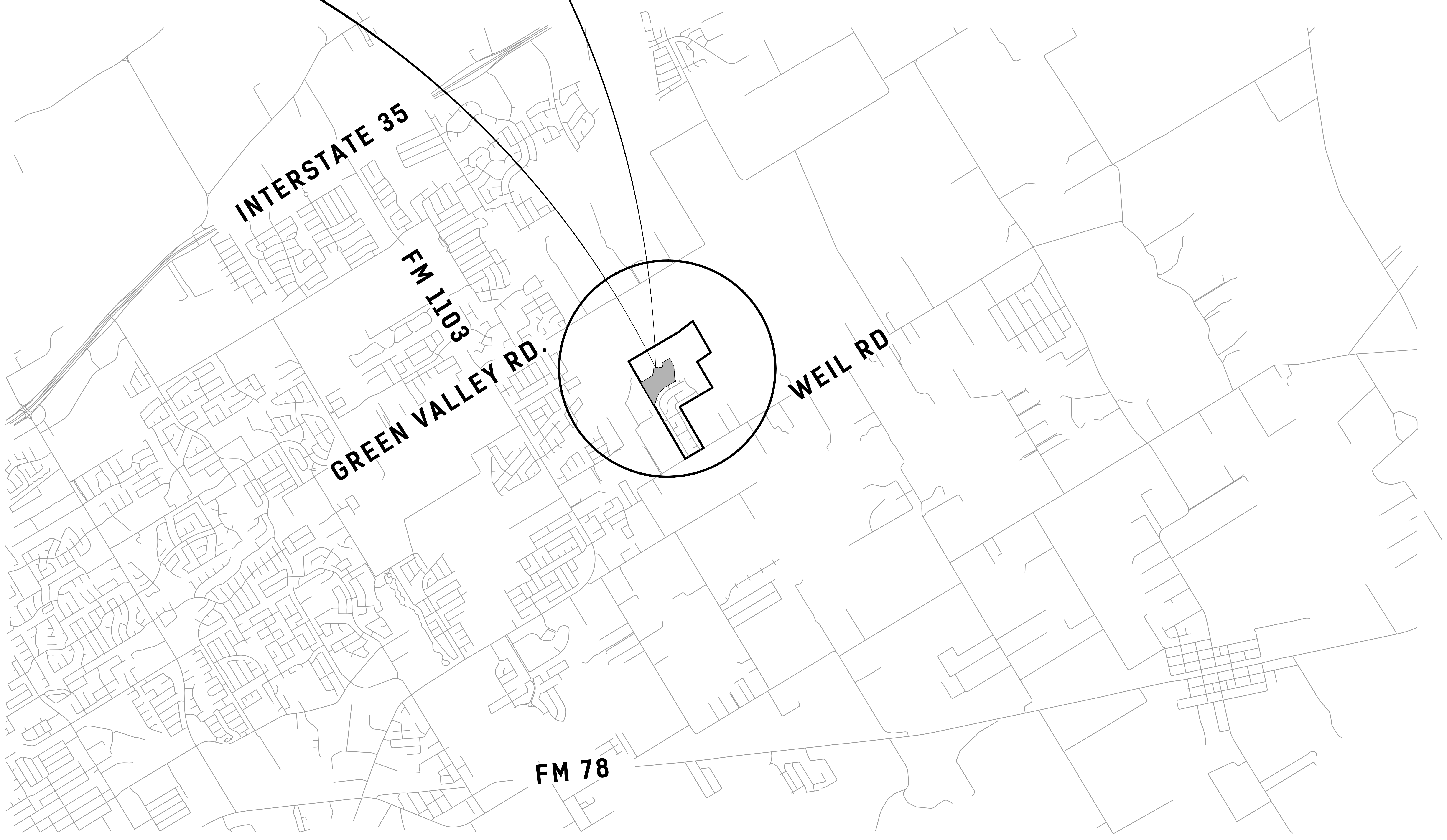

VICINITY MAP

EST. 1980
CUDE
ENGINEERS

GRACE VALLEY RANCH
PHASE 3A

CONSTRUCTION PLANS

DEVELOPER:

LENNAR HOMES OF TEXAS LAND AND
CONSTRUCTION, LTD.
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1922 DRY CREEK WAY, SUITE 101
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DRAWN BY K.M.H./N.N.R./M.O.H.	**DATE** 05/17/2023	**PLAT NO.**
CHECKED BY CHRIS CHAFFEE, P.E.	**PROJECT NO.** 03346.006	**CUDE ENGINEERS** TBPE No. 455 TBPLS No. 10048500

05/23/2023
CHRISTOPHER J. CHAFFEE
127282

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

KYLE M. HUDEK
138753
05/22/2023

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 CIBOLO MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS CONTRACT WILL CONFORM TO APPLICABLE CITY OF CIBOLO SUBDIVIONS REGULATIONS AND, STANDARD SPECIFICATIONS AND DETAILS.
2. FOR ALL REFERENCES TO THE TEXAS DEPARTMENT OF TRANSPORTATION (TXDOT), THE CONTRACTOR SHALL SEE THEIR CURRENT STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS, AND BRIDGES, WHICH IS ALSO LOCATED AT WWW.TXDOT.GOV.
3. ALL CONCRETE SHALL BE AS DETAILED ON THE PLAN SHEETS AND MEET MATERIAL REQUIREMENTS OF GUADALUPE COUNTY.
4. ALL REINFORCING STEEL SHALL BE GRADE 60, MEET THE MATERIAL AND CONSTRUCTION REQUIREMENTS OF GUADALUPE COUNTY.
5. CONCRETE CURING SHALL BE WITH AN IMPERVIOUS MEMBRANE APPLICATION AND SHALL MEET THE MATERIAL AND APPLICATION REQUIREMENTS OF THE CITY OF SAN ANOTNIO'S "MEMBRANE CURING" AND BE LISTED ON THE GUADALUPE COUNTY APPROVED LIST OF SUPPLIERS IN ADDITION TO THE CONTRACTOR APPLYING THE CURING COMPOUND THEY ARE TO INSTALL CONTRACTION/EXPANSION JOINTS ON CONCRETE WORK.
6. ALL CONCRETE CONSTRUCTION AND FINISHING SHALL MEET THE REQUIREMENTS OF GUADALUPE COUNTY.
7. THE CONTRACTOR IS REQUIRED TO ATTEND A PRE-CONSTRUCTION CONFERENCE AND SHALL SCHEDULE IT WITH THE CITY PLANNING AND ENGINEERING DEPARTMENT (RUDY KLEIN A1 (210) 658-9900 EXT 3139) A MINIMUM OF ONE (1) WEEK PRIOR TO BEGINNING CONSTRUCTION.
8. MANHOLES SHALL BE BROKEN BELOW THE FINISH GRADE LEVEL UNTIL THE BASE IS COMPLETED AND THEN RESTORED.
9. THE ENGINEER WILL STAKE THE STREET ONE TIME ONLY AND FURNISH CUT SHEETS TO THE STREET CONTRACTOR; ANY CONSTRUCTION STAKES REMOVED OR DESTROYED BY THE CONTRACTOR OR HIS EMPLOYEES WILL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
10. AN INDEPENDENT TESTING LABORATORY APPROVED BY THE CITY OF CIBOLO SHALL PERFORM ALL "FIELD AND LABORATORY TESTING". THE CITY REQUIRES ALL INSPECTION AND/OR TESTING FIRMS TO BE ACCREDITED, QUALIFIED, AND IN COMPLIANCE WITH THE REQUIREMENTS OF ASTM E329, "STANDARD SPECIFICATION FOR AGENCIES ENGAGED IN CONSTRUCTION INSPECTION AND/OR TESTING". FIRMS MUST PRESENT A COPY OF THEIR CURRENT, OFFICIAL ACCREDITATION BY THE AMERICAN ASSOCIATION FOR LABORATORY ACCREDITATION (A2LA) OR THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) AND CURRENT AMRL AND CCRL PROFICIENCY RESULTS. THE FIRMS SHALL BE

    ACCREDITED IN ALL MATERIAL TEST PROCEDURES REQUIRED TO BE PERFORMED FOR EACH PROJECT.
11. THE DEVELOPER WILL HIRE A THIRD PARTY FOR CONSTRUCTION MATERIAL TESTING IN WHICH THE CONTRACTOR WILL REQUIRE TO COORDINATE AND PROVIDE NECESSARY INFORMATION TO THEM. THE FOLLOWING TEST SCHEDULE SHALL BE ADHERE TO:
    - A. ALL IMPORT FILL PLACED IN THE STREET'S SUBGRADE SHALL BE SELECT MATERIAL, WITH A PLASTICITY INDEX LESS THAN TWENTY (20), AND COMPACTED IN MAXIMUM EIGHT (8) INCH LIFTS TO 98% DENSITY OF TXDOT'S TEST METHOD TEX 113-E. PROVIDE TESTING ON EACH EIGHT (8) INCH COMPACTED LIFT. SUBGRADE MOISTURE DENSITY TESTING SHALL BE AT THE MINIMUM FREQUENCY OF THREE (3) PER BLOCK AND SHALL NOT TO EXCEED FIVE HUNDRED (500) FOOT SPACING.
    - B. FLEXIBLE BASE TESTING SHALL INCLUDE – P.I., L.L., GRADATION, AND WET BALL MILL OF MATERIAL SHALL BE TESTED UPON DELIVERY TO THE PROJECT AND AS DIRECTED BY THE CITY. MOISTURE DENSITY TESTING SHALL BE AT THE MINIMUM RATE OF THREE (3) PER BLOCK AND SHALL NOT TO EXCEED FIVE HUNDRED (500) FOOT SPACING. THE QUALITY CONTROL TEST ON THE MATERIALS SHALL BE PERFORMED BY THE CONTRACTOR'S CITY APPROVED TESTING FIRM. IN-PLACE DENSITY SHALL MEET THE REQUIREMENTS DETAILED IN THE CITY'S SUBDIVISION REGULATIONS.
    - C. HOT AND WARM MIX ASPHALTIC CONCRETE (HMAC/WMAC) DENSITY – IN PLACE DENSITY TESTING SHALL RESULT BETWEEN 92% AND 97% OF THE MAXIMUM THEORETICAL GRAVITY PER TEX 207-F. A SET OF TWO (2) CORES SHALL BE RANDOMLY SAMPLED AT A DISTANCE NOT TO EXCEED FIVE HUNDRED (500) FOOT SPACING PER BLOCK. ALL QUALITY CONTROL NUCLEAR TESTING OF THE IN-PLACE HMAC/WMAC IS FOR QUALITY CONTROL INFORMATION ONLY. THE HMAC/WMAC THICKNESS IS REQUIRED TO BE MEASUREMENT BY CORE. FIELD QUALITY CONTROL PERSONNEL SHALL BE TXDOT LEVEL IB CERTIFIED AND BE PRESENT AT START AND THROUGH THE DURATION OF THE PLACEMENT OPERATONS OF THE HMAC/WMAC TO DOCUMENT DENSITY, THICKNESS, AND COMPACTION AND PLACEMENT OPERATIONS. THE CITY WILL DETERMINE THE REMOVAL AND REPLACEMENT OF ALL FAILED PRODUCTION AND PLACEMENT HMAC/WMAC TEST RESULTS.
    - D. RECYCLED ASPHALT SHINGLES (RAS) AND RECYCLED ASPHALT PAVEMENT (RAP) SHALL NOT BE USED IN ANY HMAC OR WMAC MIXES.
    - E. CONCRETE STRUCTURES – A MINIMUM OF ONE (1) SET OF COMPRESSIVE CONCRETE STRENGTH TEST OF 4, SIX (6) INCH DIAMETER CYLINDERS EACH WILL BE TESTED PER EACH STRUCTURE AND THE FREQUNCY SHALL BE NO LESS THAN ONE (1) SET PER SIXTY (60) CUBIC YARDS OF CONCRETE PLACED AND AT LEAST ONE (1) SET PER DAY.
    - F. CONCRETE CURB AND SIDEWALK – PROVIDE ONE (1) SET OF FOUR (4), SIX (6) INCH DIAMETER CYLINDERS PER EACH 500 LINEAR FEET OF CURB AND/OR SIDEWALK AND AT LEAST ONE (1) SET PER DAY.
    - G. THE CONTRACTOR SHALL SUBMIT CONCRETE, WMAC, AND HMAC DESIGNS A MINIMUM OF 2 WEEKS PRIOR TO THE PLACEMENT OF THE MATERIAL.
12. PROOF ROLLING – ALL SUBGRADE AND EACH LIFT OF BASE MATERIAL SHALL BE PROOF–ROLLED TO THE SATISFACTION OF THE CITY. THE CONTRACTOR SHALL PROVIDE THE NECESSARY EQUIPMENT AND OPERATORS FOR PROOF-ROLLING AS DIRECTED BY THE CITY. SOFT AND YIELDING AREAS DISCOVERED SHALL BE CORRECTED BY THE CONTRACTOR AT THEIR EXPENSE.
13. SURFACE STRUCTURES SUCH AS MAILBOXES, STREET SIGNS, FENCES, DRIVEWAYS, SIDEWALKS, LANDSCAPING, CONCRETE ISLANDS, CURBS OR CONCRETE DRIVEWAYS, ETC., VISIBLE AT THE TIME OF THE SURVEY ARE SHOWN ON THE PLANS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SAFEGUARD AND MAINTAIN ANY AND ALL SURFACE STRUCTURES DURING THE COURSE OF WORK AND TO REPLACE OR REPAIR THOSE ITEMS WHICH ARE DAMAGED BY THE CONTRACTOR WITH LIKE OR BETTER QUALITY AND SHALL BE RESPONSIBLE FOR RESTORING TO ITS ORIGINAL OR BETTER CONDITION (NO SEPARATE PAY ITEM).
14. LOCATIONS AND DEPTHS OF EXISTING UTILITIES SHOWN ON THE PLANS ARE UNDERSTOOD TO BE APPROXIMATE. ACTUAL LOCATIONS MUST BE FIELD VERIFIED BY THE CONTRACTOR AT LEAST 48 HOURS PRIOR TO CONSTRUCTION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL UTILITIES, PROTECT THEM DURING CONSTRUCTION AND REPAIR ANY DAMAGE TO OTHER UTILITIES AT NO COST TO THE CITY OF CIBOLO.
15. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SEE THAT ALL SIGNS AND BARRICADES ARE PROPERLY INSTALLED AND MAINTAINED. ALL LOCATIONS AND DISTANCES WILL BE DECIDED UPON IN THE FIELD BY THE CONTRACTOR, USING THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. THE CITY'S CONSTRUCTION INSPECTOR/TRAFFIC ENGINEERING REPRESENTATIVE WILL ONLY BE RESPONSIBLE TO INSPECT BARRICADES AND SIGNS. IF IN THE OPINION OF THE TRAFFIC ENGINEERING REPRESENTATIVE/ CONSTRUCTION INSPECTOR, THE TRAFIC CONTROL DEVICES DO NOT CONFORM TO ESTABLISHED STANDARDS, ARE INCORRECTLY PLACED OR INSUFFICIENT IN QUANTITY TO PROTECT THE TRAVELING GENERAL PUBLIC, THE CONSTRUCTION INSPECTOR WILL HAVE THE OPTION OF STOPPING THE OPERATIONS UNTIL SUCH TIME AS THE CONDITIONS ARE CORRECTED AT NO EXPENSE TO THE CITY OF CIBOLO.
16. DEVELOPER/CONTRACTOR TO INSTALL ALL STREET NAME SIGNS, STOP SIGNS, SPEED LIMIT, YIELD SIGNS, ETC. SIGNS & STREET NAMES SHALL MEET TEXAS MUTCD STANDARDS.
17. THE STREET CONTRACTOR IS REQUIRED TO ADJUST ALL EXISTING MANHOLES (SEE "ADJUSTING EXISTING MANHOLES" OF THE SPECIFICATION) AND WATER VALVES TO MATCH THE GRADE OF THE STREET SECTION OR THE ELEVATION SPECIFIED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
18. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.181 ACCESS TO GAS VALVES MUST BE MAINTAINED AT ALL TIMES. THE CONTRACTOR MUST PROTECT AND WORK AROUND ANY GAS VALVES THAT ARE IN THE PROJECT AREA.
19. CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF UNDERGROUND UTILITIES AND OTHER UNDERGROUND STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. CONTRACTOR WILL NOTIFY ALL UTILITY COMPANIES AT LEAST 72 HOURS PRIOR TO EXCAVATION.

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

TIME WARNER CABLE
AT&T
MCI
VERIZON

20. CONCRETE CURB SHALL BE CONSTRUCTED WITH A MAXIMUM OF EIGHTY (80) FEET BETWEEN EXPANSION JOINTS AND MARKED AT TEN (10) FOOT INTERVALS WITH APPROVED STEEL MARKING TOOLS. EXPANSION JOINTS SHALL BE PLACED AT THE BEGINNING OF ALL RADII AND AT A MAXIMUM OF EIGHTY (80) FOOT INTERVALS AS DIRECTED BY THE ENGINEER.
21. THE CONTRACTOR SHALL NOTIFY THE CITY PLANNING AND ENGINEERING DEPARTMENT (RUDY KLEIN A1 (210) 658-9900 EXT 3139) PRIOR TO PLACING BACKFILL OR CONCRETE AND PRIOR TO ANY TESTING. CONTRACTOR SHALL REQUEST INSPECTIONS A MINIMUM OF 24 HOURS IN ADVANCE. NO INSPECTIONS ARE AVAILABLE BETWEEN 12:00 P.M. AND 1:00 P.M. OR AFTER 4:00 PM DAILY, ON WEEKENDS, OR ON CITY HOLIDAYS.
22. CONCRETE SIDEWALKS SHALL HAVE TOOLED WEAKENED PLANE JOINTS EVERY FOUR (4) FEET AND DOWELED EXPANSION JOINT WITH ONE QUARTER INCH (¼) BITUMASTIC MATERIAL FORTY FEET (40) ON CENTER AND ABUTTING EXISTING STRUCTURES.
23. ALL WORKMANSHIP AND MATERIAL SHALL CONFORM TO THE CITY OF CIBOLO ORDINANCES FOR PUBLIC WORKS CONSTRUCTION AND GUADALUPE COUNTY
24. CONTRACTOR SHALL INSTALL CURB FOR HANDICAP RAMPS AS SHOWN ON THE PLANS AND ADA STANDARD PLAN SHEETS.
25. CONTRACTOR SHALL PROVIDE BRASS KEYS TO BE USED TO OPEN LOCKING MANHOLE COVERS ON DRAINAGE STRUCTURES DURING PRELIMINARY INSPECTION FOR ACCEPTANCE OF PROJECT.
26. EXISTING STREETS TRENCHES ARE TO BE BACKFILLED WITH FLOWABLE FILL FROM THE TOP OF THE BEDDING MATERIAL TO WITHIN TWO (2) INCHES OF THE FINISHED GRADE ALLOWING FOR THE SURFACE HMAC/WMAC.
27. REMOVE EXISTING CURB ON ALL NEW DRIVEWAYS AND PLACE THE COMPLETE PAVEMENT THICKNESS WITH A MINIMUM OF FIVE (5) INCHES THICKNESS ON RESIDENTIAL AND SIX (6) INCHES MINIMUM ON COMMERCIAL; DEPENDING ON TRAFFIC WEIGHT.
28. CONCRETE PLACED IN NEW DRIVEWAYS INCLUDING ALLEY'S SHALL MEET A MINIMUM 3,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
29. EXCESS MATERIAL IS TO BE DISPOSED OF AS DIRECTED BY THE ENGINEER. NO EXCESS MATERIAL SHALL BE DUMPED OR ALLOWED TO ENTER ANY WATERWAY, CULVERT OR OTHER DRAINAGE STRUCTURE. THE CONTRACTOR SHALL NOT PLACE ANY MATERIAL IN THE 100-YEAR FLOODPLAIN WITHOUT OBTAINING AN APPROVED FLOOD PLAIN PERMIT.
30. ANY WORK COMPLETED WITHOUT PRIOR AUTHORIZATION WHETHER INCLUDED IN THE PLANS AND SPECIFICATIONS OR NOT, SHALL NOT BE COMPENSATED BY THE CITY OF UNIVERSAL CITY.
31. PRIOR TO THE COMMENCEMENT OF ANY WORK, THE COUNTY MUST ATTEND A PRE-CONSTRUCTION MEETING INCLUDING (BUT NOT LIMITED TO) THE CITY, ENGINEER, CONTRACTOR, DEVELOPER'S INSPECTION REPRESENTATIVE, AND DEVELOPER'S CONSTRUCTION MATERIAL TESTING REPRESENTATIVE.
32. DURING CONSTRUCTION, NOTIFY THE COUNTY AT CONSTRUCTION@CO.GUADALUPE.TX.US AT LEAST 48 HOURS IN ADVANCE OF ANY WORK TO BE PERFORMED AFFECTING SUBGRADE, BASE, OR PAVEMENT INCLUDING BACKFILL OF ANY PROPOSED UTILITIES UNDERNEATH THE PAVEMENT AND FILL AREAS UPON WHICH PAVEMENT IS PROPOSED TO BE PLACED. SUCH NOTIFICATION IS ALSO REQUIRED BEFORE IMPLEMENTING ANY APPROVED TRAFFIC CONTROL PLANS ON EXISTING COUNTY-MAINTAINED ROADS. FULL CLOSURE OF COUNTY ROADS REQUIRES AT LEAST ONE MONTH ADVANCE NOTICE AND IS SUBJECT TO THE DISCRETION OF THE COUNTY ENGINEER AND POSSIBLE APPROVAL BY GUADALUPE COUNTY COMMISSIONERS COURT PER TRANSPORTATION CODE, CHAPTER 251.
33. DURING CONSTRUCTION, PROVIDE ALL INSPECTION AND TESTING REPORTS TO THE COUNTY AT CONSTRUCTION@CO.GUADALUPE.TX.US AS SOON AVAILABLE FOR IDENTIFICATION AND CORRECTION OF ANY EMERGING DEFICIENCIES.
34. AT THE COMPLETION OF CONSTRUCTION, PROVIDE AS-BUILT DRAWINGS.

CERTIFICATE OF APPROVAL BY CITY ENGINEER:

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

____
CITY ENGINEER, CITY OF CIBOLO

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

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

MISCELLANEOUS NOTES:

1. ACCESS TO THIS SITE IS PROVIDED THROUGH TWO PROPOSED DRIVEWAYS ALONG GREEN VALLEY RD.
2. DRIVEWAYS ARE SHOWN FOR ILLUSTRATIVE PURPOSES ONLY TO DENOTE A POTENTIAL CONFLICT WITH DRAINAGE FACILITY AND/OR ADA RAMP. ALL DRIVEWAYS WILL BE BUILT WITH HOMEBUILDING.
3. ALL REQUIRED ADA RAMPS ARE SHOWN ON THE PLANS. ONLY ADA RAMPS WITHOUT RESIDENTIAL LOT FRONTAGE SHALL BE BUILT WITH THE STREET INFRASTRUCTURE.
4. CONTRACTOR SHALL REFERENCE TREE PLAN AND PRIVATE GRADING PLAN FOR CLEARING AND GRADING LIMITS.
5. PRIOR TO THE INSTALLATION OF STREET BASE MATERIAL, CONTRACTOR SHALL COORDINATE WITH ENGINEER AND UTILITY PROVIDERS TO INSTALL NECESSARY CONDUITS FOR UTILITY INSTALLATION.
6. CONTRACTOR IS RESPONSIBLE FOR ENSURING POSITIVE SITE DRAINAGE AT ALL TIMES DURING AND UPON COMPLETION OF INFRASTRUCTURE.
7. CONTRACTOR IS REQUIRED TO NOTIFY ENTERPRISE UTILITIES WHEN ENCROACHING UPON THE EXISTING GAS EASEMENT ON SITE.

CITY OF CIBOLO NOTES:

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CITY OF CIBOLO DESIGN AND CONSTRUCTION MANUAL AND THE UNIFIED DEVELOPMENT CODE, HERE AFTER REFERRED TO THE UDC.
2. APPROVAL OF THESE CONSTRUCTION PLANS BY THE CITY OF CIBOLO DOES NOT CONSTITUTE A VERIFICATION OF ALL DATA, INFORMATION AND CALCULATIONS SUPPLIED BY THE APPLICANT. THE ENGINEER OF RECORD IS SOLELY RESPONSIBLE FOR THE COMPLETENESS, ACCURACY AND ADEQUACY OF HIS/HER SUBMITTAL WHETHER OR NOT THE APPLICATION IS REVIEWED FOR CODE COMPLIANCE BY THE CITY ENGINEER.
3. ALL RESPONSIBILITY FOR THE ADEQUACY OF THESE PLANS REMAINS WITH THE ENGINEER WHO PREPARED THEM. IN APPROVING THESE PLANS, THE CITY OF CIBOLO MUST RELY ON THE ADEQUACY OF THE WORK OF THE ENGINEER.
4. DESIGN PROCEDURES ARE IN COMPLETE COMPLIANCE WITH THE CITY OF CIBOLO DESIGN AND CONSTRUCTION MANUAL. IT IS THE RESPONSIBILITY OF THE ENGINEER TO REQUEST A WAIVER FROM ANY ASPECT OF THESE PLANS THAT DO NOT COMPLY WITH THE UDC.
5. A MINIMUM OF TWO EXISTING BENCH MARKS TIED TO CITY OF CIBOLO GRID SHOULD BE SHOWN ON THE PLANS. IN ADDITION TWO PERMANENT BENCHMARKS PER SUBDIVISION SHALL BE INSTALLED IN EACH SUBDIVISION TO INCLUDE DESCRIPTION, LOCATION, AND ELEVATION AND TIE TO CITY OF CIBOLO STANDARDS WHEN POSSIBLE.
6. CAST BRONZE SURVEY MARKERS SHALL BE PLACED IN CONCRETE IN PERMANENT, ACCESSIBLE LOCATIONS AT THE TIME OF CONSTRUCTION. THE LOCATIONS OF THE MARKERS SHALL BE INDICATED ON THE CONSTRUCTION PLANS. A MINIMUM OF ONE MARKER SHALL BE PLACED FOR EACH 20 ACRES OF THE PROJECT.
7. PRIOR TO BEGINNING CONSTRUCTION, THE OWNER OR HIS AUTHORIZED REPRESENTATIVE SHALL CONVENE A PRE-CONSTRUCTION CONFERENCE BETWEEN THE CITY OF CIBOLO, CONSULTING ENGINEER, CONTRACTOR, AND ANY OTHER AFFECTED PARTIES. NOTIFY THE CITY OF CIBOLO AT LEAST 48 HOURS PRIOR TO THE TIME OF THE CONFERENCE AND 48 HOURS PRIOR TO THE BEGINNING OF CONSTRUCTION.
8. THE CONTRACTOR SHALL GIVE THE CITY A MINIMUM OF 48 HOURS NOTICE BEFORE BEGINNING EACH PHASE OF CONSTRUCTION.
9. BARRICADES, BUILT TO CITY OF CIBOLO SPECIFICATIONS, SHALL BE CONSTRUCTED ON ALL DEAD-END STREETS AND AS NECESSARY DURING CONSTRUCTION TO MAINTAIN JOB SAFETY. (STREETS, ETC. MAY BE LISTED IN ADDITION TO OR INSTEAD OF NOTE.)
10. IF BLASTING IS PLANNED BY THE CONTRACTOR, A BLASTING PERMIT MUST BE SECURED PRIOR TO COMMENCEMENT OF ANY BLASTING.
11. ANY EXISTING PAVEMENT, CURBS, AND/ OR SIDEWALKS DAMAGED OR REMOVED WILL BE REPAIRED BY THE CONTRACTOR AT HIS EXPENSE BEFORE ACCEPTANCE OF THE SUBDIVISION.
12. THE LOCATION OF ANY WATER AND / OR WASTEWATER LINES SHOWN ON THE PLANS MUST BE VERIFIED BY THE PUBLIC WORKS DEPARTMENT.
13. USE ONE CALL UTILITY SYSTEM: DIAL 1-800-344-8377, 48 HOURS BEFORE YOU DIG.
14. ALL STORM SEWER PIPES TO BE CLASS III RCP UNLESS NOTED OTHERWISE.

GENERAL NOTES:

FOR ROADS INTENDED FOR MAINTENANCE BY GUADALUPE COUNTY:

1. PRIOR TO THE COMMENCEMENT OF ANY WORK, THE COUNTY SHALL ATTEND A PRECONSTRUCTION MEETING INCLUDING (BUT NOT LIMITED TO) THE CITY, ENGINEER, CONTRACTOR, DEVELOPER'S INSPECTION REPRESENTATIVE, AND DEVELOPER'S CONSTRUCTION MATERIAL TESTING REPRESENTATIVE.
2. DURING CONSTRUCTION, NOTIFY THE COUNTY AT CONSTRUCTION@CO.GUADALUPE.TX.US AT LEAST 48 HOURS IN ADVANCE OF ANY WORK TO BE PERFORMED AFFECTING SUBGRADE, BASE, OR PAVEMENT INCLUDING BACKFILL OF ANY PROPOSED UTILITIES UNDERNEATH THE PAVEMENT AND FILL AREAS UPON WHICH PAVEMENT IS PROPOSED TO BE PLACED. SUCH NOTIFICATION IS ALSO REQUIRED BEFORE IMPLEMENTING ANY APPROVED TRAFFIC CONTROL PLANS ON EXISTING COUNTY-MAINTAINED ROADS. FULL CLOSURE OF COUNTY ROADS REQUIRES AT LEAST ONE MONTH ADVANCE NOTICE AND IS SUBJECT TO THE DISCRETION OF THE COUNTY ENGINEER AND POSSIBLE APPROVAL BY GUADALUPE COUNTY COMMISSIONERS COURT PER TRANSPORTATION CODE, CHAPTER 251.
3. DURING CONSTRUCTION, PROVIDE ALL INSPECTION AND TESTING REPORTS TO THE COUNTY AT CONSTRUCTION@CO.GUADALUPE.TX.US AS SOON AS AVAILABLE FOR IDENTIFICATION AND CORRECTION OF ANY EMERGING DEFICIENCIES.
4. AT THE COMPLETION OF CONSTRUCTION, PROVIDE AS-BUILT DRAWINGS AND A LETTER SIGNED AND SEALED BY THE ENGINEER OF RECORD CERTIFYING THAT:
    - ALL IMPROVEMENTS WERE MADE IN ACCORDANCE WITH THE APPROVED IMPROVEMENT PLANS AND COUNTY REGULATIONS.
    - ANY CHANGED IMPROVEMENTS WERE MADE IN ACCORDANCE WITH THE COUNTY'S REGULATIONS.
    - THE ELEVATIONS AND GRADES WERE TAKEN BY AN ON-SITE SURVEY ON A DATE SPECIFIED TO ENSURE THAT ALL PAVEMENT, INLETS, MANHOLES, AND APPURTENANCES ARE CONSTRUCTED TO GRADE AS SHOWN ON THE RECORD DRAWINGS AND ARE IN COMPLIANCE WITH THE APPROVED PLANS AND SPECIFICATIONS.
    - ALL TRUNK STORM SEWERS AND LEADS ARE OF THE PROPER SIZED AND AND THAT ALL IMPROVEMENTS ARE CAPABLE OF PERFORMANCE AS DESIGNED AND APPROVED.

FOR ROADS INTENDED FOR PRIVATE MAINTENANCE:

1. PRIOR TO THE COMMENCEMENT OF ANY WORK, THE COUNTY SHALL ATTEND A PRECONSTRUCTION MEETING INCLUDING (BUT NOT LIMITED TO) THE CITY, ENGINEER, CONTRACTOR, DEVELOPER'S INSPECTION REPRESENTATIVE, AND DEVELOPER'S CONSTRUCTION MATERIAL TESTING REPRESENTATIVE.
2. DURING CONSTRUCTION, NOTIFY THE COUNTY AT CONSTRUCTION@CO.GUADALUPE.TX.US AT LEAST 48 HOURS IN ADVANCE OF ANY WORK TO BE PERFORMED AFFECTING SUBGRADE, BASE, OR PAVEMENT INCLUDING BACKFILL OF ANY PROPOSED UTILITIES UNDERNEATH THE PAVEMENT AND FILL AREAS UPON WHICH PAVEMENT IS PROPOSED TO BE PLACED. SUCH NOTIFICATION IS ALSO REQUIRED BEFORE IMPLEMENTING ANY APPROVED TRAFFIC CONTROL PLANS ON EXISTING COUNTY-MAINTAINED ROADS. FULL CLOSURE OF COUNTY ROADS REQUIRES AT LEAST ONE MONTH ADVANCE NOTICE AND IS SUBJECT TO THE DISCRETION OF THE COUNTY ENGINEER AND POSSIBLE APPROVAL BY GUADALUPE COUNTY COMMISSIONERS COURT PER TRANSPORTATION CODE, CHAPTER 251.
3. DURING CONSTRUCTION, PROVIDE ALL INSPECTION AND TESTING REPORTS TO THE COUNTY AT CONSTRUCTION@CO.GUADALUPE.TX.US AS SOON AS AVAILABLE FOR IDENTIFICATION AND CORRECTION OF ANY EMERGING DEFICIENCIES.
4. AT THE COMPLETION OF CONSTRUCTION, PROVIDE AS-BUILT DRAWINGS.

CONSTRUCTION SEQUENCING: (LIST PROCESS ON CONSTRUCTION PLAN SET)

1. CALL THE PLANNING AND 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 PRIOR TO DEVELOPMENT OF ANY EMBANKMENT OR EXCAVATION THAT LEADS TO PONDING CONDITIONS. THE OUTLET SYSTEM MUST CONSIST OF A LOW-LEVEL OUTLET AND AN EMERGENCY OVERFLOW MEETING THE REQUIREMENTS OF THE UDC. THE OUTLET SYSTEM SHALL BE PROTECTED FROM EROSION AND SHALL BE MAINTAINED THROUGHOUT THE COURSE OF CONSTRUCTION UNTIL FINAL RESTORATION IS ACHIEVED.
6. DELIVER APPROVED ROUGH CUT SHEETS TO THE CITY ENGINEER PRIOR TO CLEARING AND GRUBBING.
7. ROUGH GRADE STREETS. NO DEVELOPMENT OF EMBANKMENT WILL BE PERMITTED AT THIS TIME.
8. INSTALL ALL UTILITIES TO BE LOCATED UNDER THE PROPOSED PAVEMENT OR WITHIN THE ROAD RIGHT-OF-WAY.
9. DELIVER STORM SEWER CUT SHEETS TO THE CITY ENGINEER.
10. BEGIN INSTALLATION OF STORM SEWER LINES. UPON COMPLETION, RESTORE AS MUCH DISTURBED AREA AS POSSIBLE, PARTICULARLY CHANNELS AND LARGE OPEN AREAS.
11. DELIVER FINAL GRADE CUT SHEETS TO THE CITY ENGINEER.
12. RE-GRADE STREETS TO SUB-GRADE.
13. ENSURE THAT UNDERGROUND UTILITY CROSSINGS ARE COMPLETED. LAY 1ST COURSE BASE MATERIAL ON STREETS.
14. INSTALL CURB AND GUTTER.
15. LAY FINAL BASE COURSE ON ALL STREETS.
16. LAY ASPHALT.
17. COMPLETE FINAL GRADING AND RESTORATION OF DETENTION, SEDIMENTATION / FILTRATION PONDS.
18. COMPLETE PERMANENT EROSION CONTROL AND RESTORATION OF SITE VEGETATION.
19. REMOVE AND DISPOSE OF TEMPORARY EROSION CONTROLS.
20. COMPLETE ANY NECESSARY FINAL DRESS UP OF AREAS DISTURBED.

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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 3A

GENERAL NOTES

DATE
05/17/2023

PROJECT NO.
03346.006

DRAWN BY
KMH/NNR/MOH/MAS

CHECKED BY
CJC

REVISIONS
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KYLE M. HUDEK
138753
05/22/2023

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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1 OF 1

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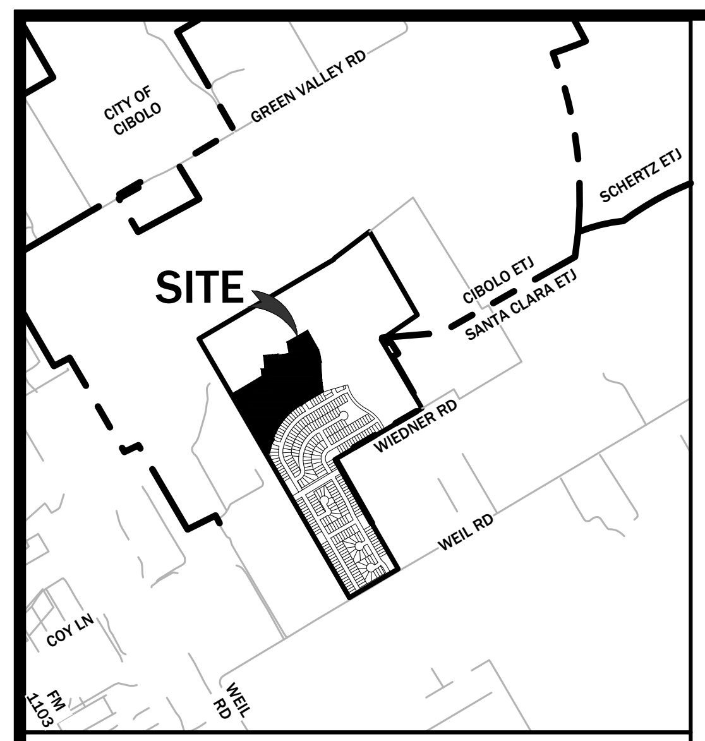


LOCATION MAP

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

CAUTION!!!

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

TRENCH EXCAVATION SAFETY PROTECTION

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

NOTE

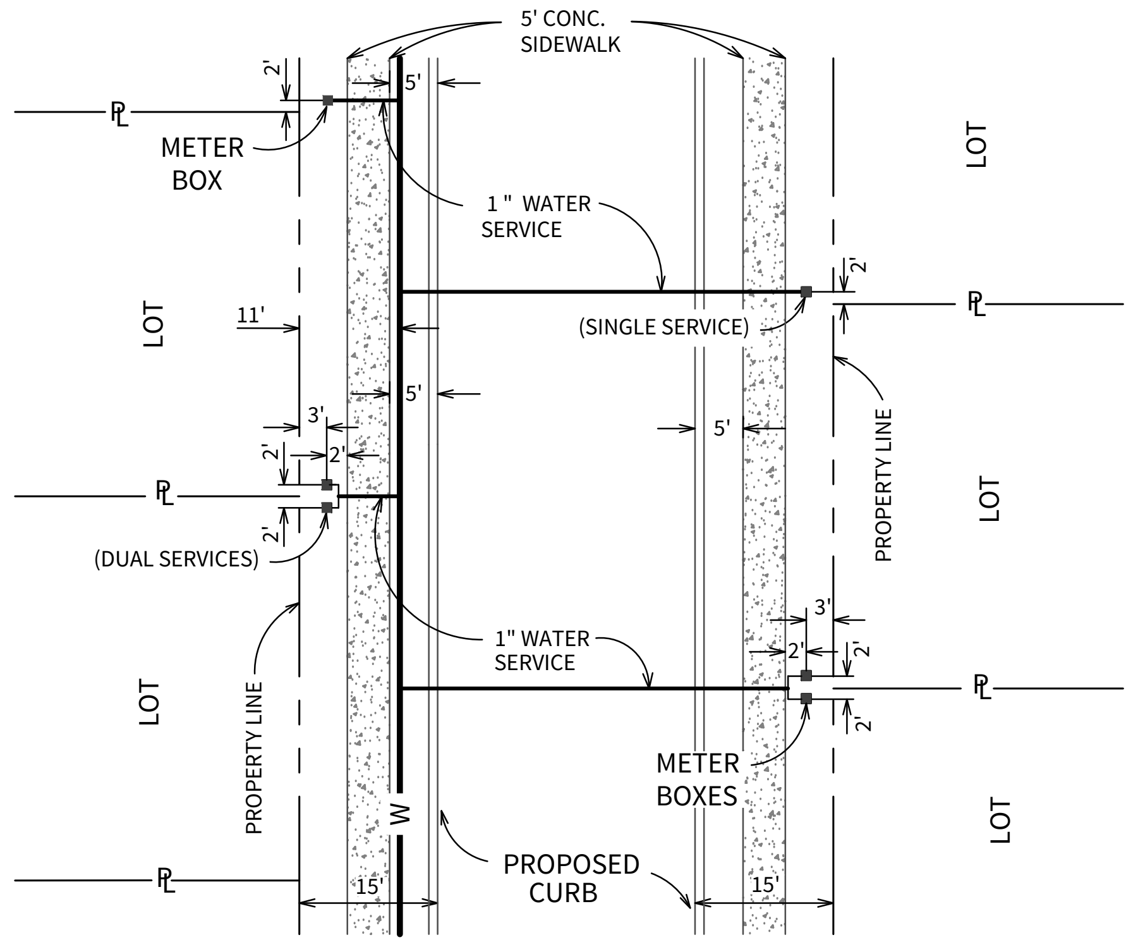
WATER METERS TO BE PLACED WITHIN RIGHT-OF-WAY TO AVOID CONFLICT WITH TRANSFORMERS/SECONDARY ENCLOSURE ELECTRIC SERVICE.

*CONDUIT SLEEVE NOTE:

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

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.

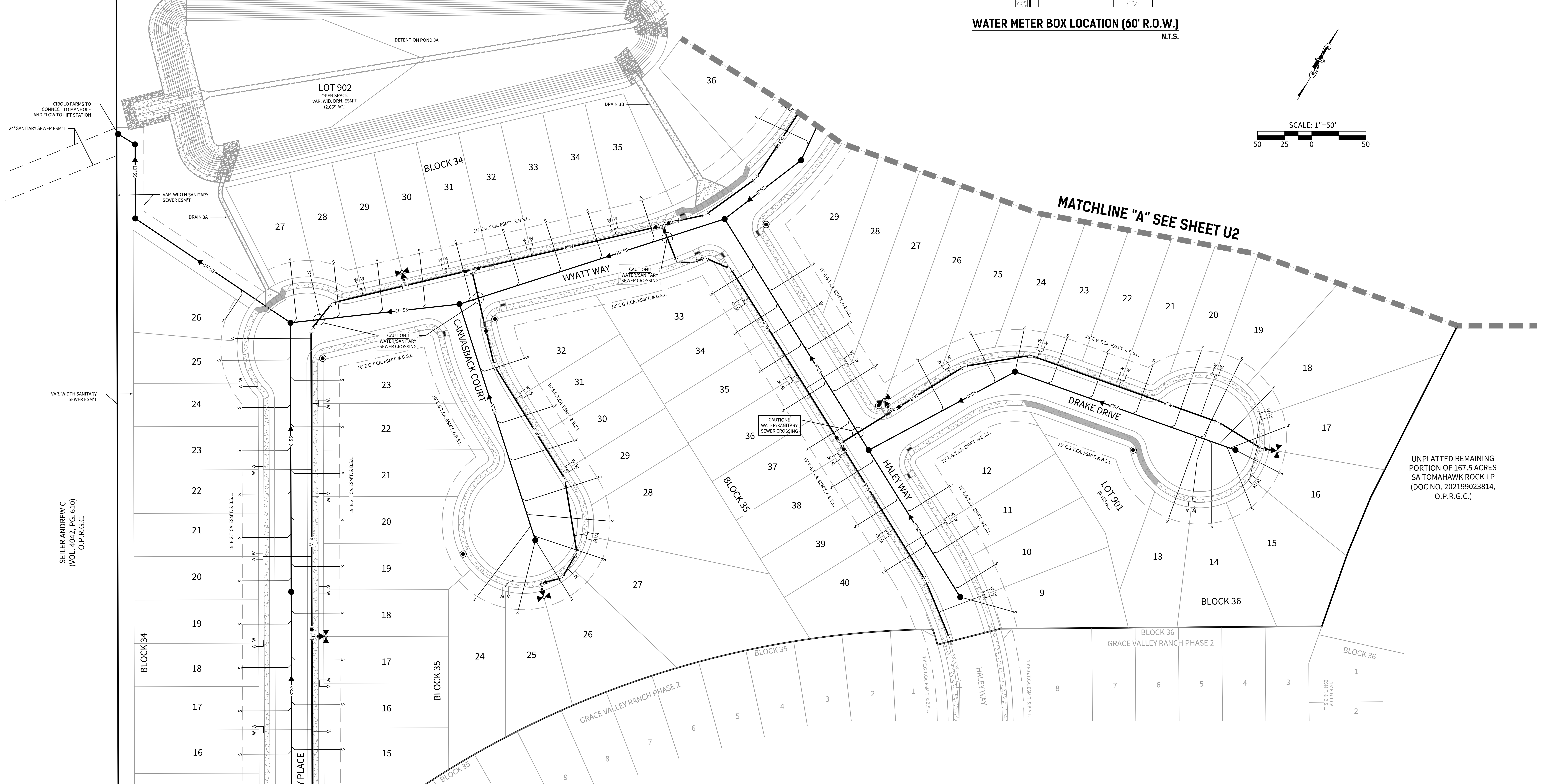


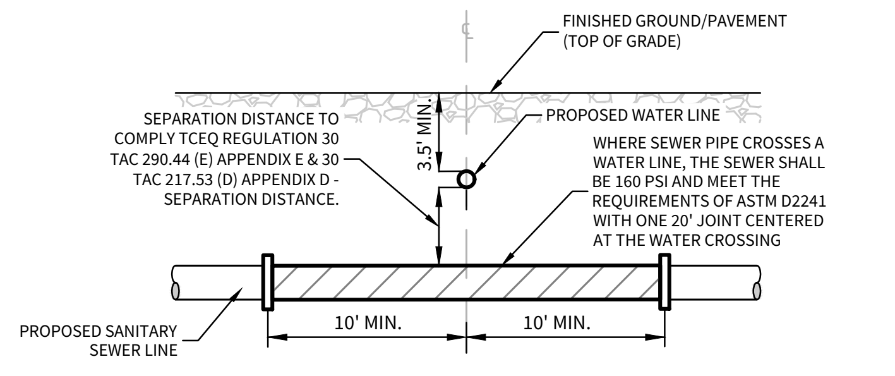
WATER METER BOX LOCATION (60' R.O.W.)

N.T.S.

LEGEND

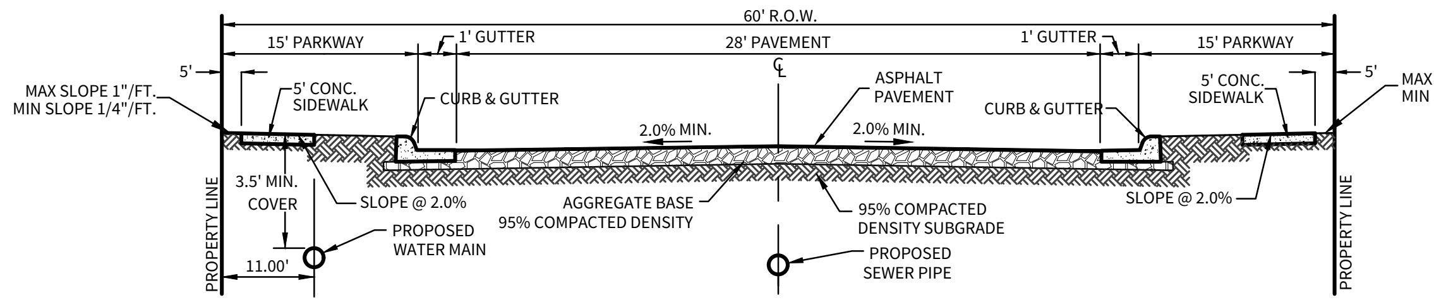
EXISTING SANITARY SEWER	EX.8"SS
PROPOSED SANITARY SEWER	8"SS
EXISTING SANITARY SEWER MANHOLE	●
PROPOSED SANITARY SEWER MANHOLE	●
EXISTING WATER MAIN	EX.8"W
PROPOSED WATER MAIN	8"W
EXISTING STANDARD FIRE HYDRANT	⧓
PROPOSED STANDARD FIRE HYDRANT	⧓
EXISTING STANDARD GATE VALVE	●
PROPOSED STANDARD GATE VALVE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


SCALE: 1"=50'
50
25
0
50
DETENTION POND 3A
LOT 902
OPEN SPACE
VAR. WID. DRN. ESM'T
(2.669 AC.)
DRAIN 3B
DRAIN 3A
CIBOLO FARMS TO CONNECT TO MANHOLE AND FLOW TO LIFT STATION
24' SANITARY SEWER ESM'T
VAR. WIDTH SANITARY SEWER ESM'T
VAR. WIDTH SANITARY SEWER ESM'T
MATCHLINE "A" SEE SHEET U2
BLOCK 34
BLOCK 34
BLOCK 35
BLOCK 35
BLOCK 36
WYATT WAY
CANVASBACK COURT
HALEY WAY
DRAKE DRIVE
PETEY PLACE
LOT 901
CAUTION!! WATER/SANITARY SEWER CROSSING
CAUTION!! WATER/SANITARY SEWER CROSSING
CAUTION!! WATER/SANITARY SEWER CROSSING
15' E.G.T.CA. ESM'T. & B.S.L.
10' E.G.T.CA. ESM'T. & B.S.L.
8"SS
8"W
10"SS
UNPLATTED REMAINING PORTION OF 167.5 ACRES SA TOMAHAWK ROCK LP (DOC NO. 202199023814, O.P.R.G.C.)
SEILER ANDREW C (VOL. 4042, PG. 610) O.P.R.G.C.
GRACE VALLEY RANCH PHASE 2
GRACE VALLEY RANCH PHASE 2
BLOCK 36
BLOCK 35
BLOCK 35
BLOCK 36
HALEY WAY
PETEY PLACE


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.



LOCAL "A" STREET CROSS-SECTION

N.T.S.

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GRACE VALLEY RANCH PHASE 3A

UTILITY LAYOUT PLAN

DATE
05/17/2023

PROJECT NO.
03346.006

DRAWN BY
KMH/NNR/MOH/MAS

CHECKED BY
CJC

REVISIONS
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KYLE M. HUDEK
138753
05/22/2023

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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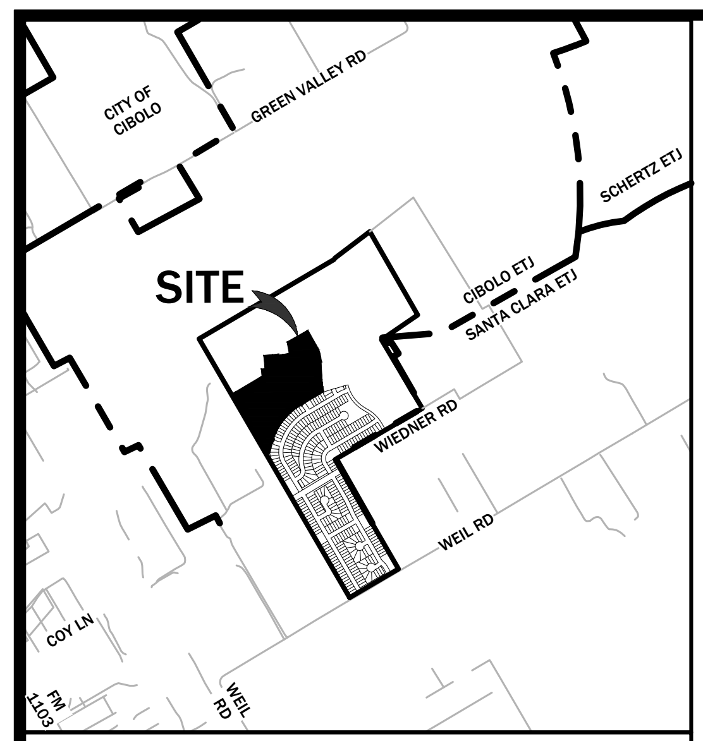

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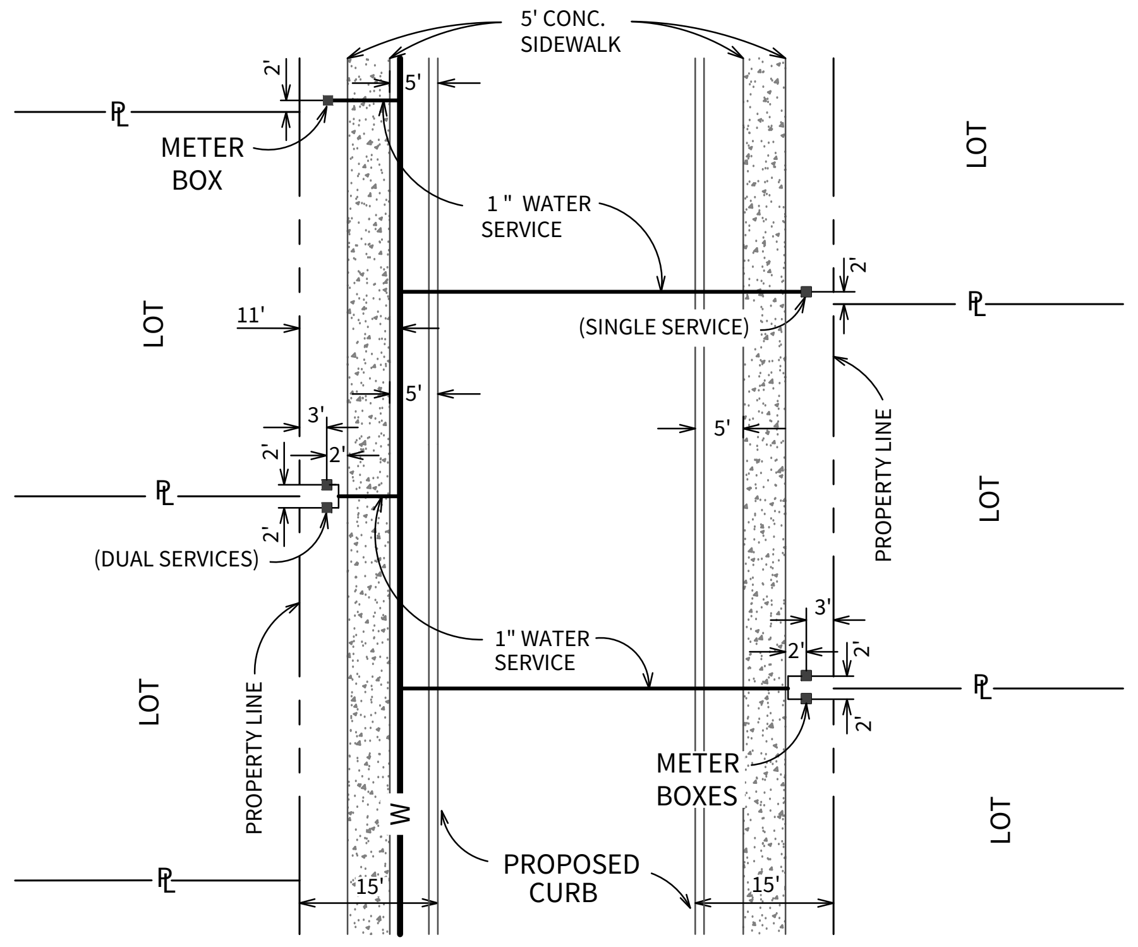
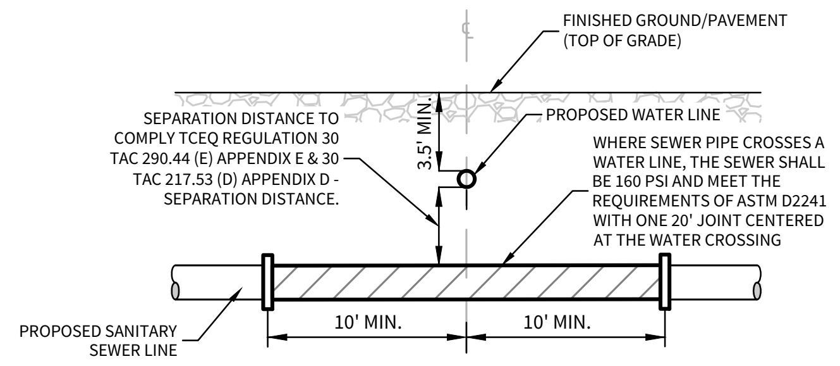


WATER METER BOX LOCATION (60' R.O.W.)

N.T.S.

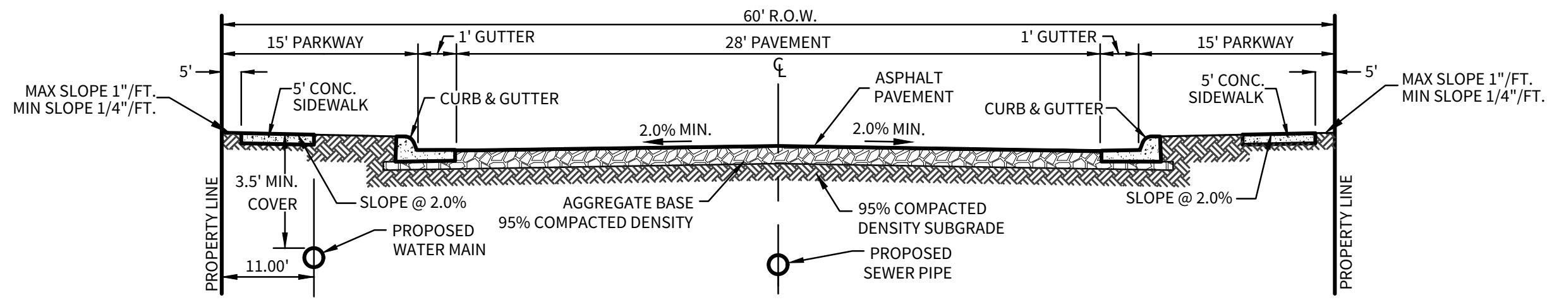
LEGEND

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


℄
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.

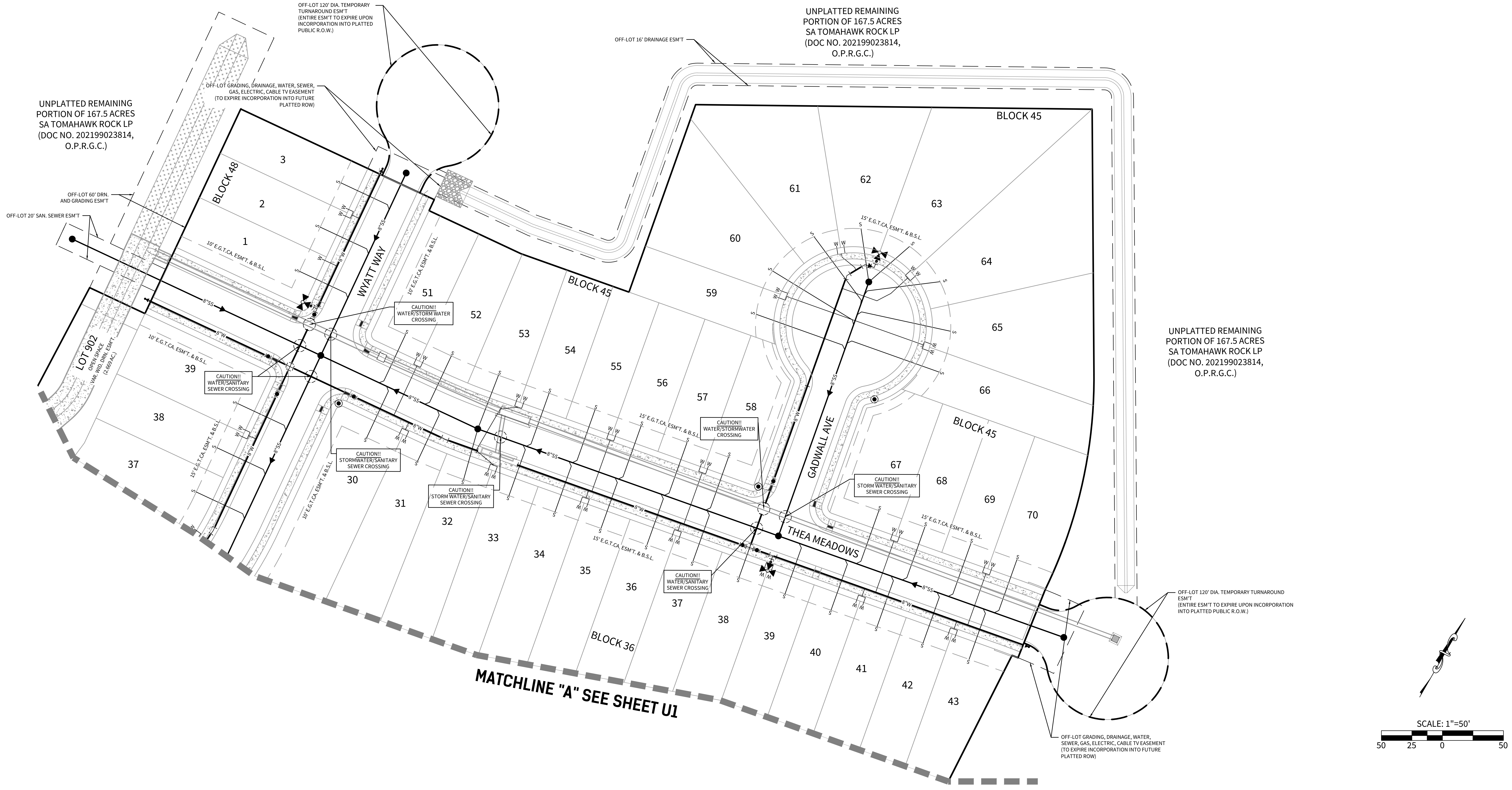
TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.



LOCAL "A" STREET CROSS-SECTION

N.T.S.


OFF-LOT 120' DIA. TEMPORARY TURNAROUND ESM'T (ENTIRE ESM'T TO EXPIRE UPON INCORPORATION INTO PLATTED PUBLIC R.O.W.)
UNPLATTED REMAINING PORTION OF 167.5 ACRES SA TOMAHAWK ROCK LP (DOC NO. 202199023814, O.P.R.G.C.)
OFF-LOT 16' DRAINAGE ESM'T
OFF-LOT GRADING, DRAINAGE, WATER, SEWER, GAS, ELECTRIC, CABLE TV EASEMENT (TO EXPIRE INCORPORATION INTO FUTURE PLATTED ROW)
UNPLATTED REMAINING PORTION OF 167.5 ACRES SA TOMAHAWK ROCK LP (DOC NO. 202199023814, O.P.R.G.C.)
OFF-LOT 60' DRN. AND GRADING ESM'T
OFF-LOT 20' SAN. SEWER ESM'T
BLOCK 48
3
2
1
10' E.G.T.CA. ESM'T. & B.S.L.
WYATT WAY
8"SS
8"W
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
BLOCK 45
BLOCK 45
BLOCK 45
15' E.G.T.CA. ESM'T. & B.S.L.
CAUTION!! WATER/STORM WATER CROSSING
LOT 902 OPEN SPACE VAR. WID. DRN. ESM'T. (2.669 AC.)
39
38
37
CAUTION!! WATER/SANITARY SEWER CROSSING
CAUTION!! STORMWATER/SANITARY SEWER CROSSING
CAUTION!! STORM WATER/SANITARY SEWER CROSSING
CAUTION!! WATER/STORMWATER CROSSING
CAUTION!! STORM WATER/SANITARY SEWER CROSSING
CAUTION!! WATER/SANITARY SEWER CROSSING
GADWALL AVE
THEA MEADOWS
30
31
32
33
34
35
36
37
38
39
40
41
42
43
BLOCK 36
MATCHLINE "A" SEE SHEET U1
UNPLATTED REMAINING PORTION OF 167.5 ACRES SA TOMAHAWK ROCK LP (DOC NO. 202199023814, O.P.R.G.C.)
OFF-LOT 120' DIA. TEMPORARY TURNAROUND ESM'T (ENTIRE ESM'T TO EXPIRE UPON INCORPORATION INTO PLATTED PUBLIC R.O.W.)
OFF-LOT GRADING, DRAINAGE, WATER, SEWER, GAS, ELECTRIC, CABLE TV EASEMENT (TO EXPIRE INCORPORATION INTO FUTURE PLATTED ROW)
SCALE: 1"=50'
50
25
0
50

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 3A

UTILITY LAYOUT PLAN

DATE
05/17/2023

PROJECT NO.
03346.006

DRAWN BY
KMH/NNR/MOH/MAS

CHECKED BY
CJC

REVISIONS

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KYLE M. HUDEK
138753
05/22/2023

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

U2

2 OF 2

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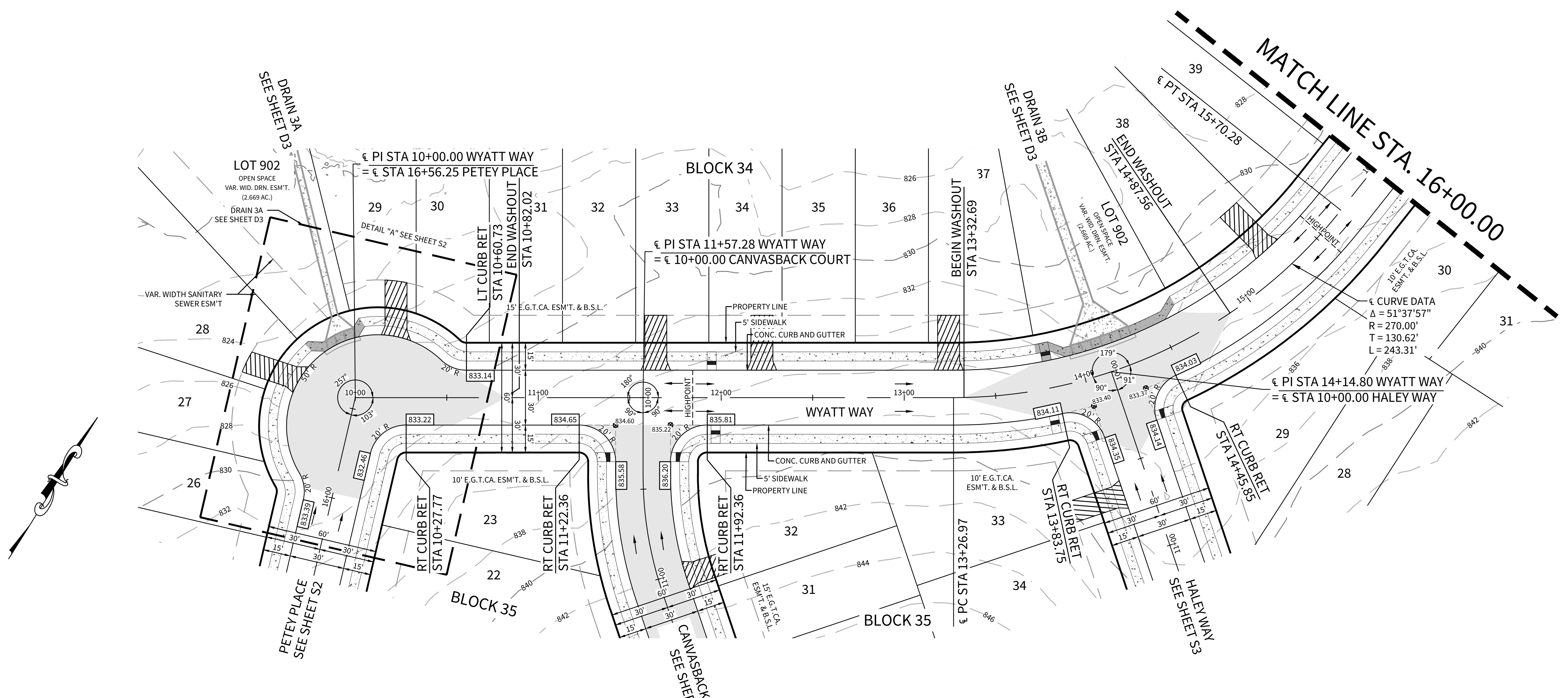
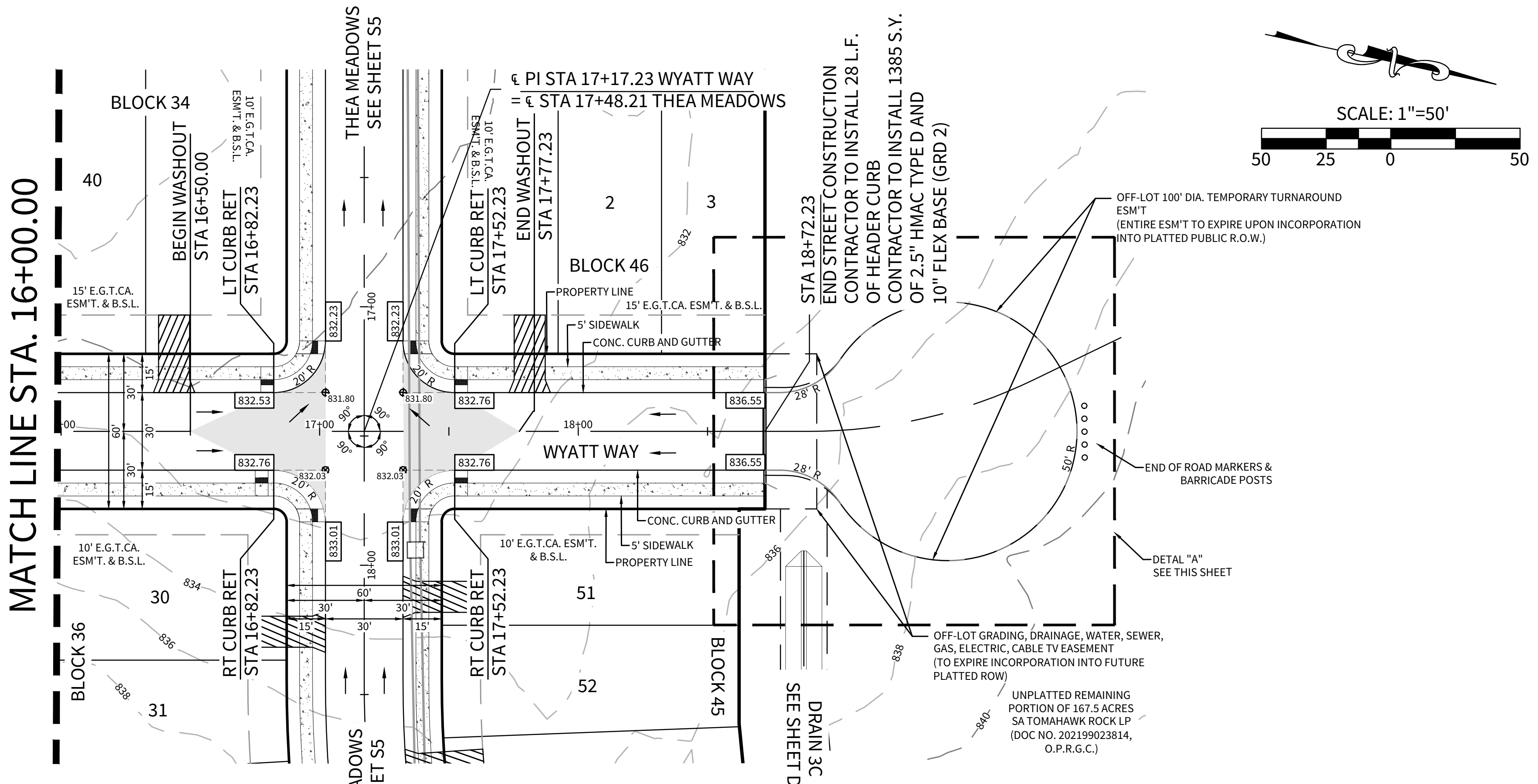
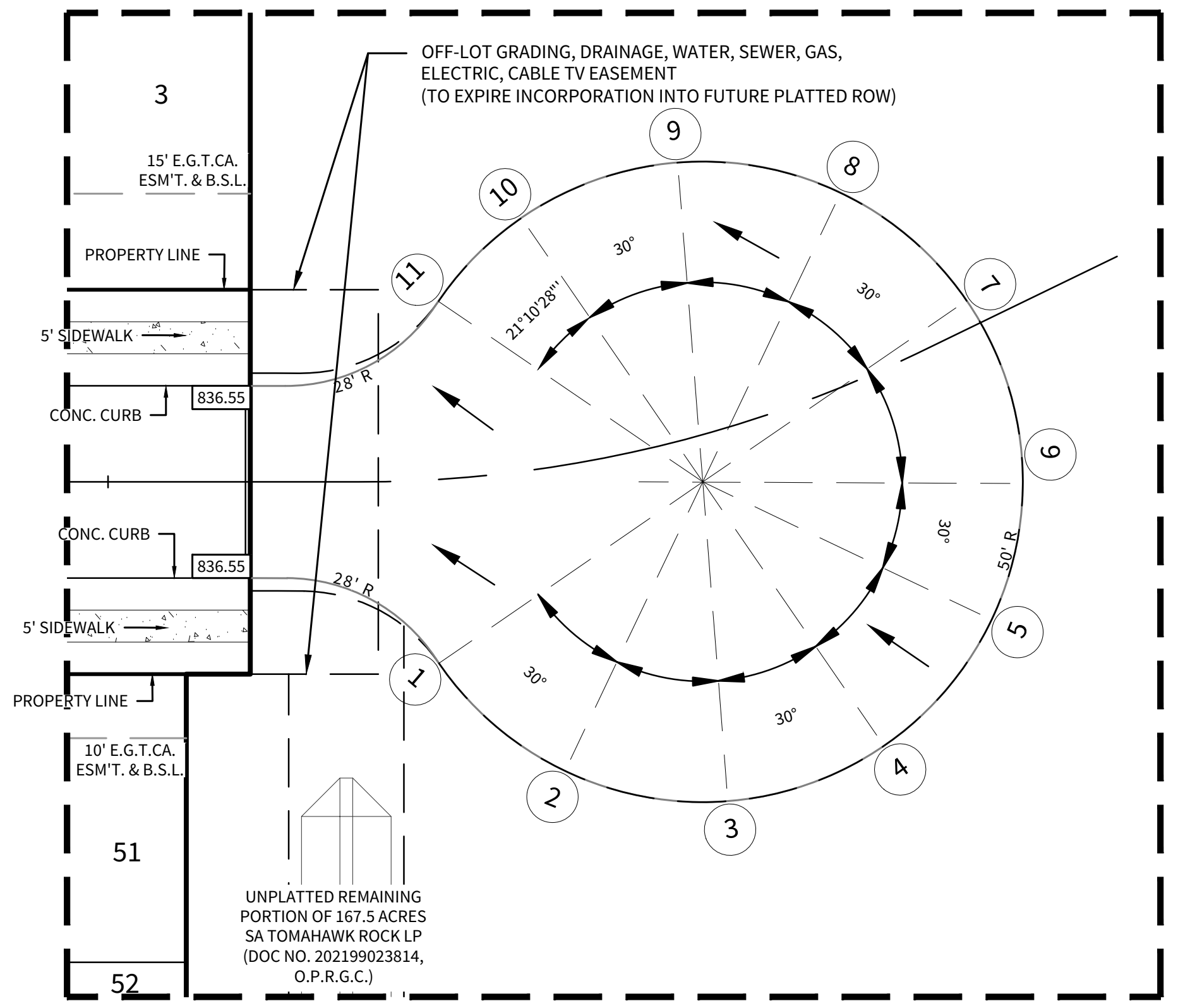
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.




MATCH LINE STA. 16+00.00
SCALE: 1"=50'
50 25 0 50
BLOCK 34
BLOCK 36
BLOCK 45
BLOCK 46
℄ PI STA 17+17.23 WYATT WAY = ℄ STA 17+48.21 THEA MEADOWS
THEA MEADOWS SEE SHEET S5
BEGIN WASHOUT STA 16+50.00
LT CURB RET STA 16+82.23
RT CURB RET STA 16+82.23
LT CURB RET STA 17+52.23
RT CURB RET STA 17+52.23
END WASHOUT STA 17+77.23
STA 18+72.23 END STREET CONSTRUCTION CONTRACTOR TO CONSTRUCT 28 L.F. OF HEADER CURB CONTRACTOR TO INSTALL 1385 S.Y. OF 2.5" HMAC TYPE D AND 10" FLEX BASE (GRD 2)
OFF-LOT 100' DIA. TEMPORARY TURNAROUND ESM'T (ENTIRE ESM'T TO EXPIRE UPON INCORPORATION INTO PLATTED PUBLIC R.O.W.)
END OF ROAD MARKERS & BARRICADE POSTS
DETAIL "A" SEE THIS SHEET
OFF-LOT GRADING, DRAINAGE, WATER, SEWER, GAS, ELECTRIC, CABLE TV EASEMENT (TO EXPIRE INCORPORATION INTO FUTURE PLATTED ROW)
UNPLATTED REMAINING PORTION OF 167.5 ACRES SA TOMAHAWK ROCK LP (DOC NO. 20219023814, O.P.R.G.C.)
DRAIN 3C SEE SHEET D4
WYATT WAY

WYATT WAY TURNAROUND	
POINT	TOP OF CURB ELEVATION
1	835.58
2	836.01
3	836.56
4	837.42
5	838.02
6	838.20
7	837.88
8	837.17
9	836.39
10	835.86
11	835.59


OFF-LOT GRADING, DRAINAGE, WATER, SEWER, GAS, ELECTRIC, CABLE TV EASEMENT (TO EXPIRE INCORPORATION INTO FUTURE PLATTED ROW)
15' E.G.T.CA. ESM'T. & B.S.L.
PROPERTY LINE
5' SIDEWALK
CONC. CURB
10' E.G.T.CA. ESM'T. & B.S.L.
UNPLATTED REMAINING PORTION OF 167.5 ACRES SA TOMAHAWK ROCK LP (DOC NO. 20219023814, O.P.R.G.C.)
1
2
3
4
5
6
7
8
9
10
11
51
52

DETAIL "A"

SCALE: 1" = 30'

LEGEND

▨	SIDEWALK CONSTRUCTED WITH INFRASTRUCTURE
▢	STREET WASHOUT (SEE DETAIL SHEET S6)
——	STREET CENTERLINE
— —	EXISTING CONTOURS
XXX.XX	TOP OF CURB SPOT ELEVATION
▨	DRIVEWAY
⊕XXX.XX	PAVEMENT ELEVATION

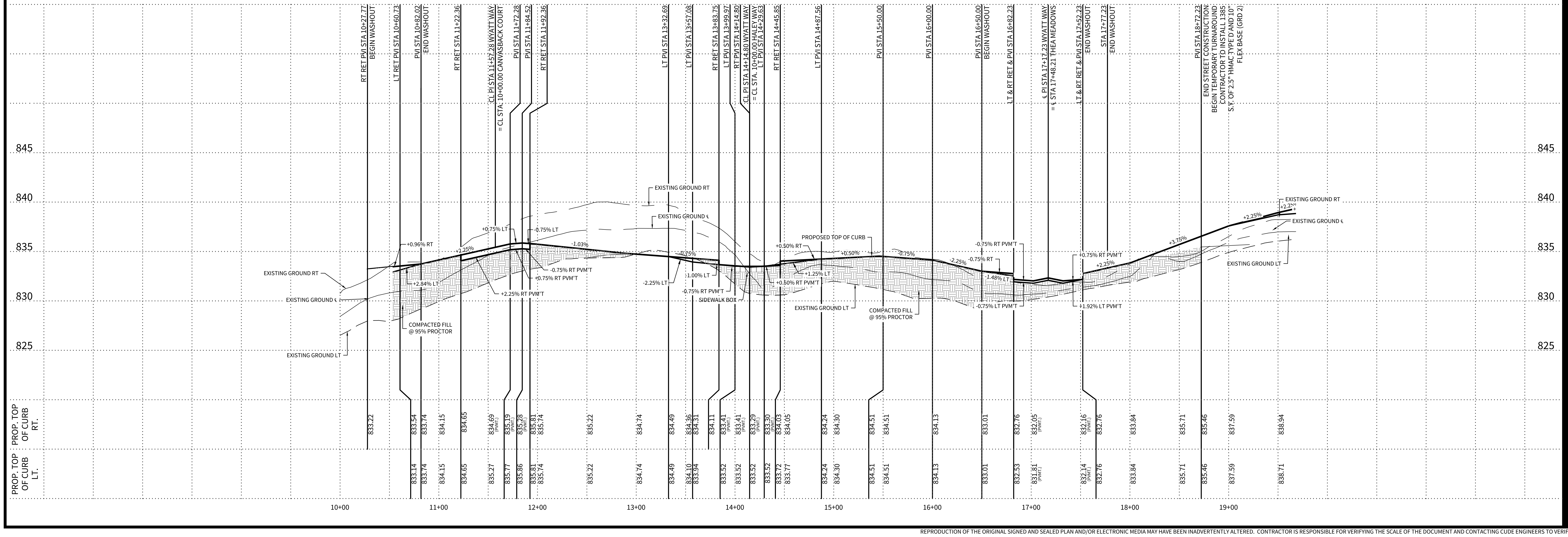
COSA TYPE "III" WHEEL CHAIR RAMPS ARE INDICATED THUS " ▭ " UNLESS OTHERWISE NOTED.

(SEE DETAIL SHEET S6) FOR ADA RAMPS AT SIDEWALK INTERSECTIONS . DETECTABLE WARNING PAVER WITH TRUNCATED DOMES ONLY.

WYATT WAY

STA. 10+27.77 - STA. 18+72.23

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



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GRACE VALLEY RANCH PHASE 3A

STREET PLAN & PROFILE - WYATT WAY

DATE
05/17/2023

PROJECT NO.
03346.006

DRAWN BY
KMH/NNR/MOH/MAS

CHECKED BY
CJC

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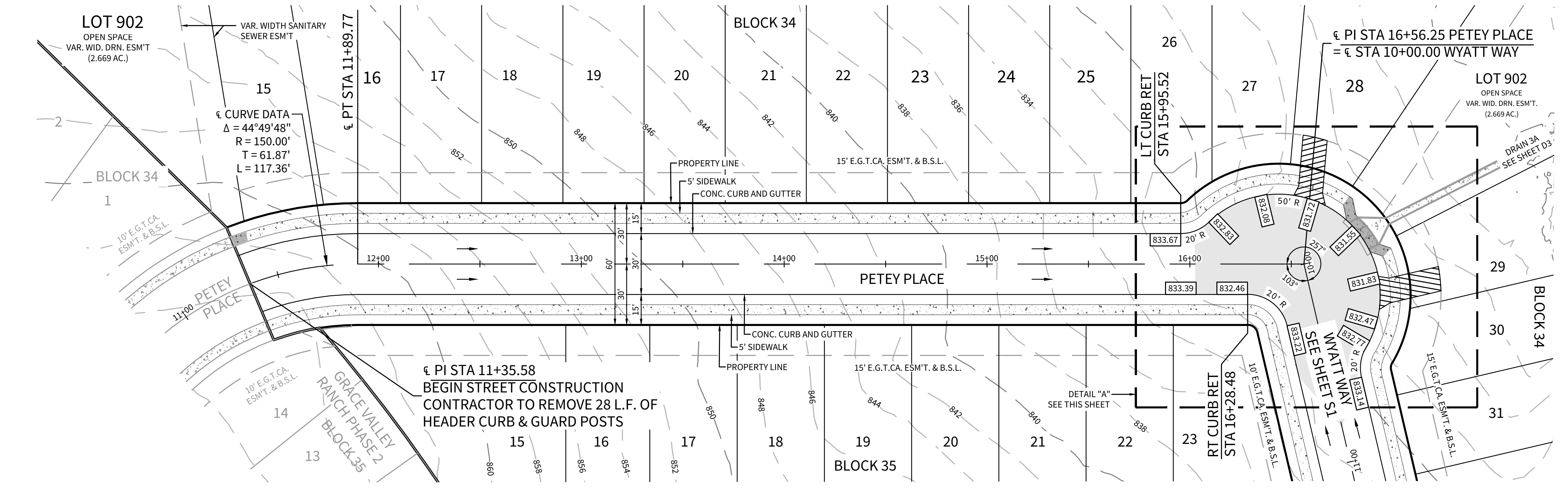
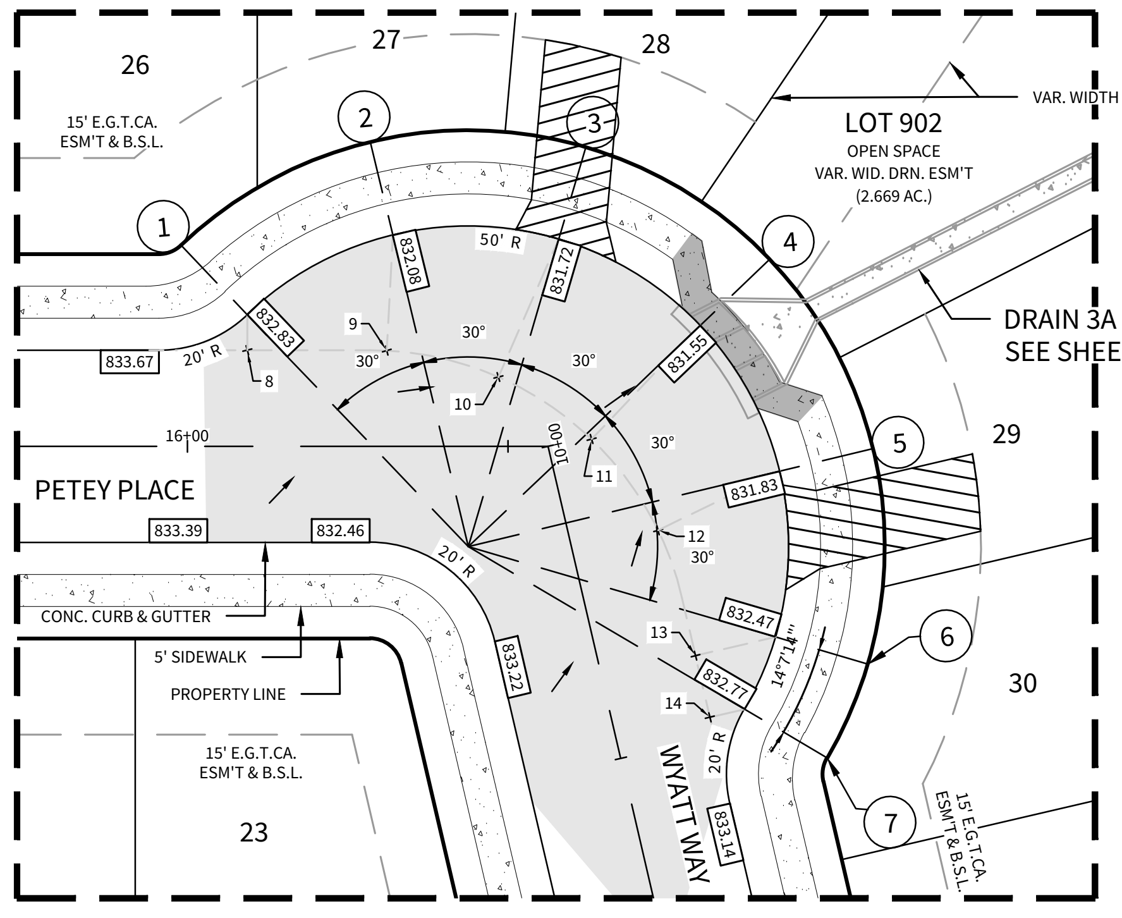
STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED
PROFESSIONAL ENGINEER
05/22/2023

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

S1





DETAIL "A"
SCALE: 1" = 30'

PETEY PLACE KNUCKLE-SAC	
POINT	PAVEMENT ELEVATION
8	832.31
9	832.86
10	831.61
11	831.46
12	831.70
13	832.02
14	832.24

LEGEND

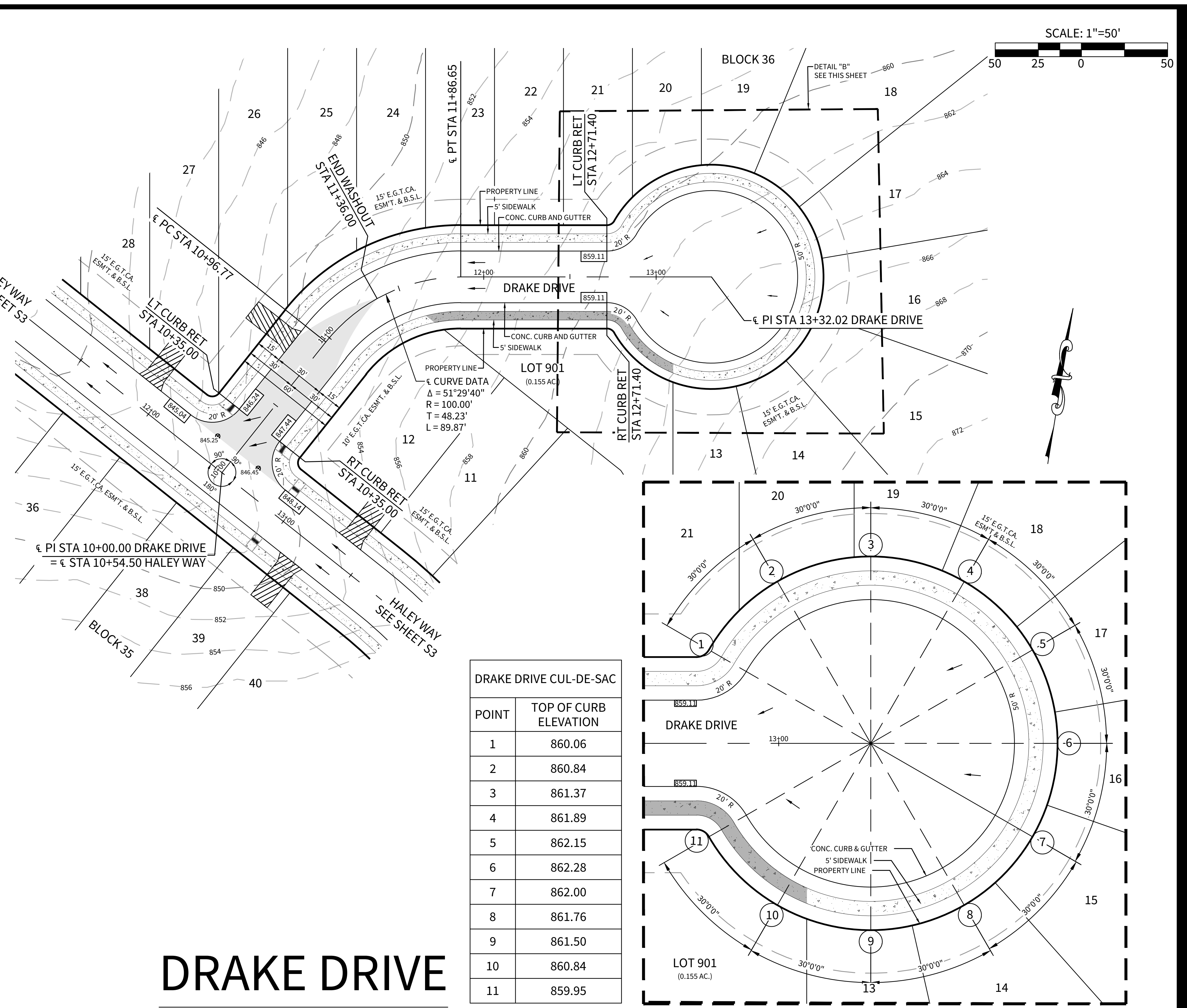
▒	SIDEWALK CONSTRUCTED WITH INFRASTRUCTURE
░	STREET WASHOUT (SEE DETAIL SHEET S6)
────	STREET CENTERLINE
── ──	EXISTING CONTOURS
XXX.XX	TOP OF CURB SPOT ELEVATION
▨	DRIVEWAY
⊕XXX.XX	PAVEMENT ELEVATION

COSA TYPE "III" WHEEL CHAIR RAMPS ARE INDICATED THUS " ◧ " UNLESS OTHERWISE NOTED.

(SEE DETAIL SHEET S6) FOR ADA RAMPS AT SIDEWALK INTERSECTIONS . DETECTABLE WARNING PAVER WITH TRUNCATED DOMES ONLY.

PETEY PLACE

STA. 11+35.58 - STA. 16+03.10



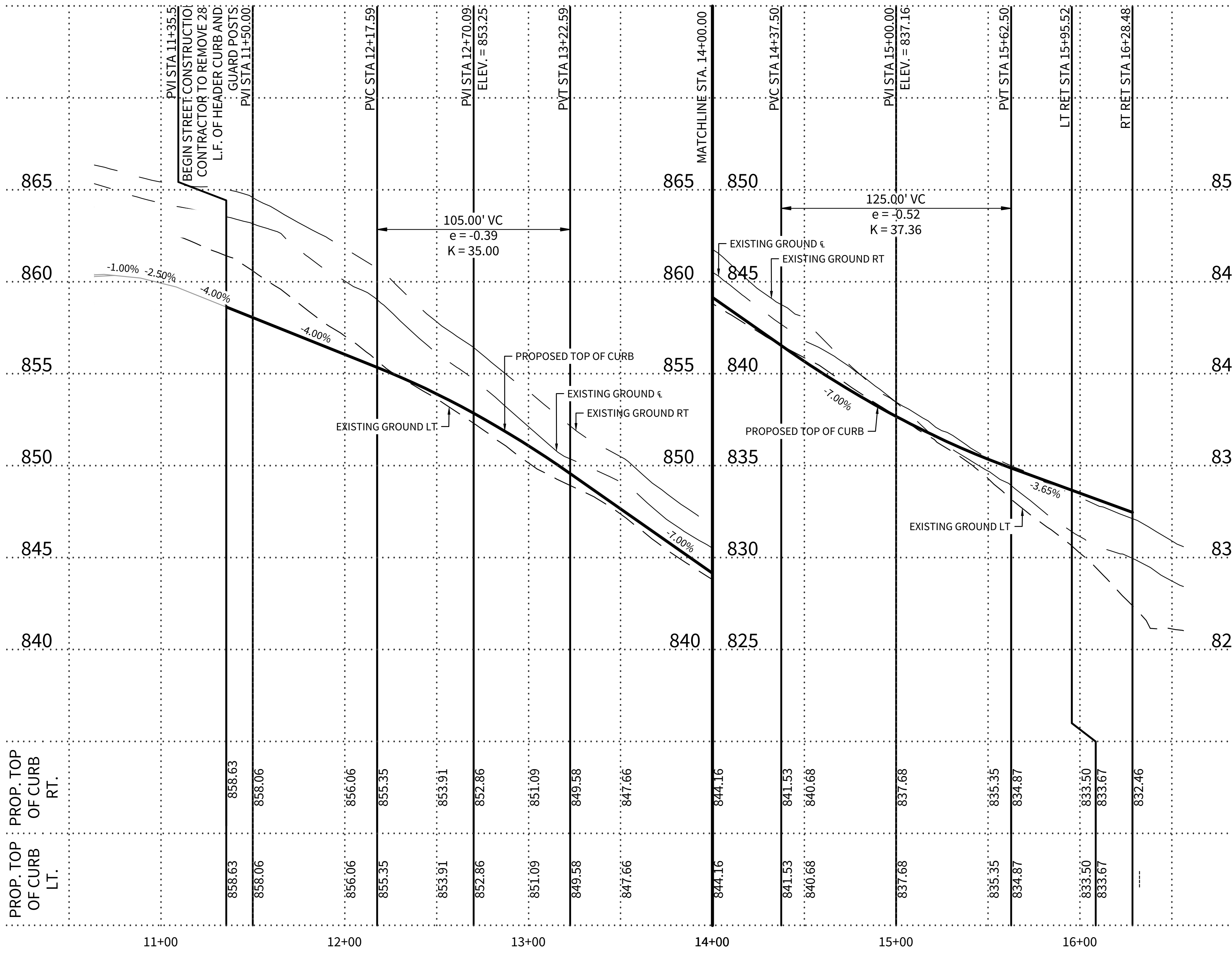
DRAKE DRIVE CUL-DE-SAC	
POINT	TOP OF CURB ELEVATION
1	860.06
2	860.84
3	861.37
4	861.89
5	862.15
6	862.28
7	862.00
8	861.76
9	861.50
10	860.84
11	859.95

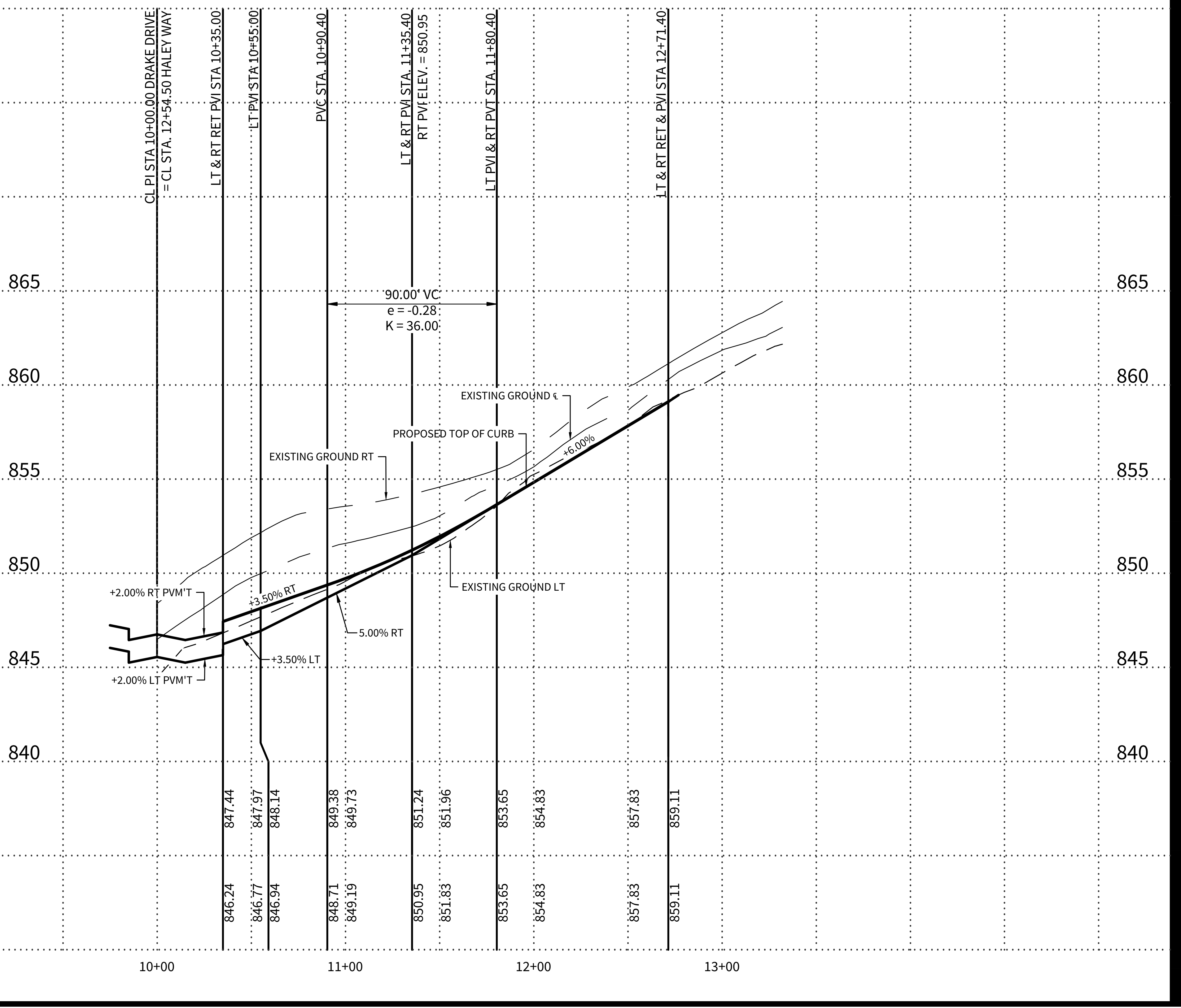
DETAIL "B"
SCALE: 1" = 30'

DRAKE DRIVE

STA. 10+00.00 TO STA. 13+32.02

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





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GRACE VALLEY RANCH PHASE 3A

STREET PLAN & PROFILE - PETEY PLACE AND DRAKE DRIVE

DATE
08/29/2023

PROJECT NO.
03346.006

DRAWN BY
KMH/NNR/MOH/MAS

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KYLE M. HUDEK
138753
09/12/2023

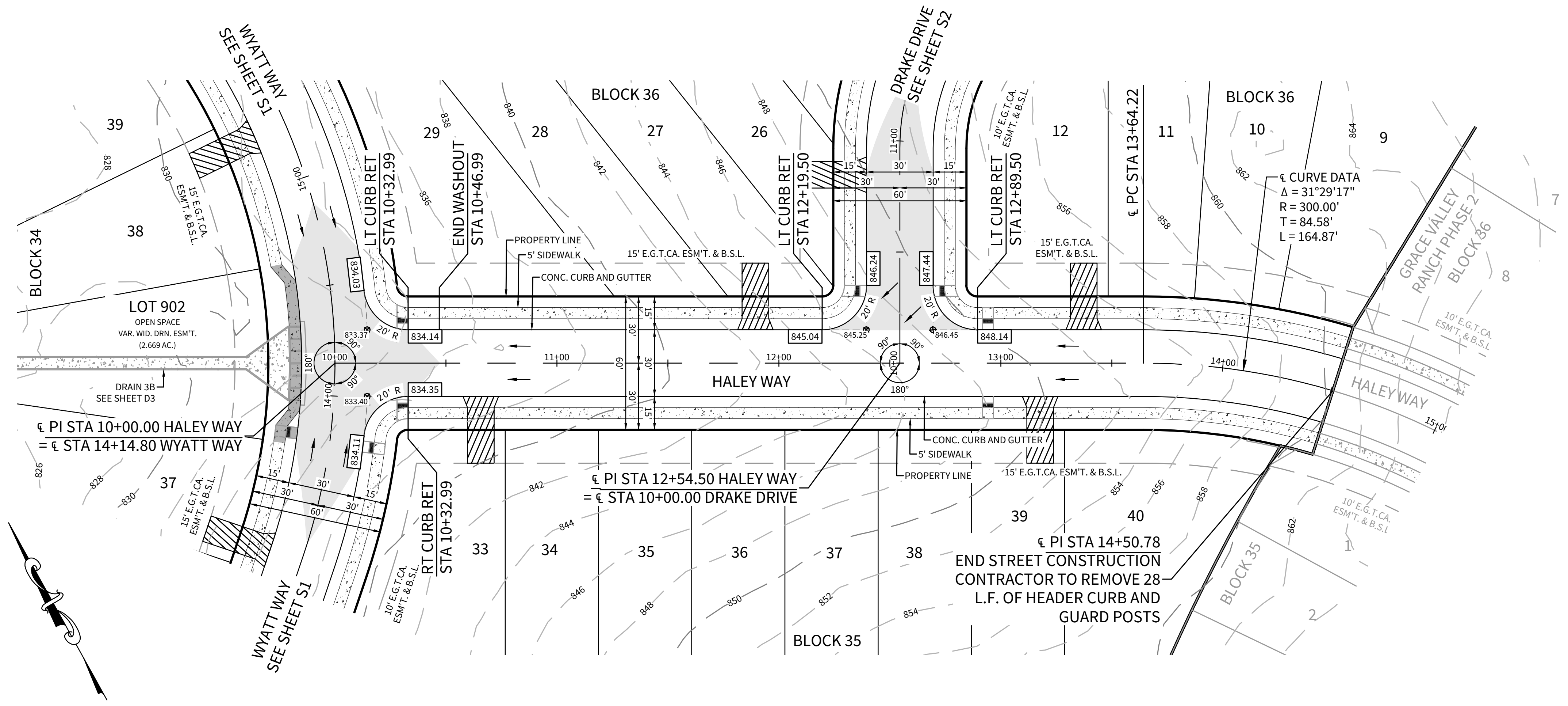
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

S2

2 OF 8

P:\03346\006\2-Drawings\03_STPP PETEY PL & DRAKE DR.dwg 2023/08/29 2:23pm msandoval

SCALE: 1"=50'
50 25 0 50



LEGEND

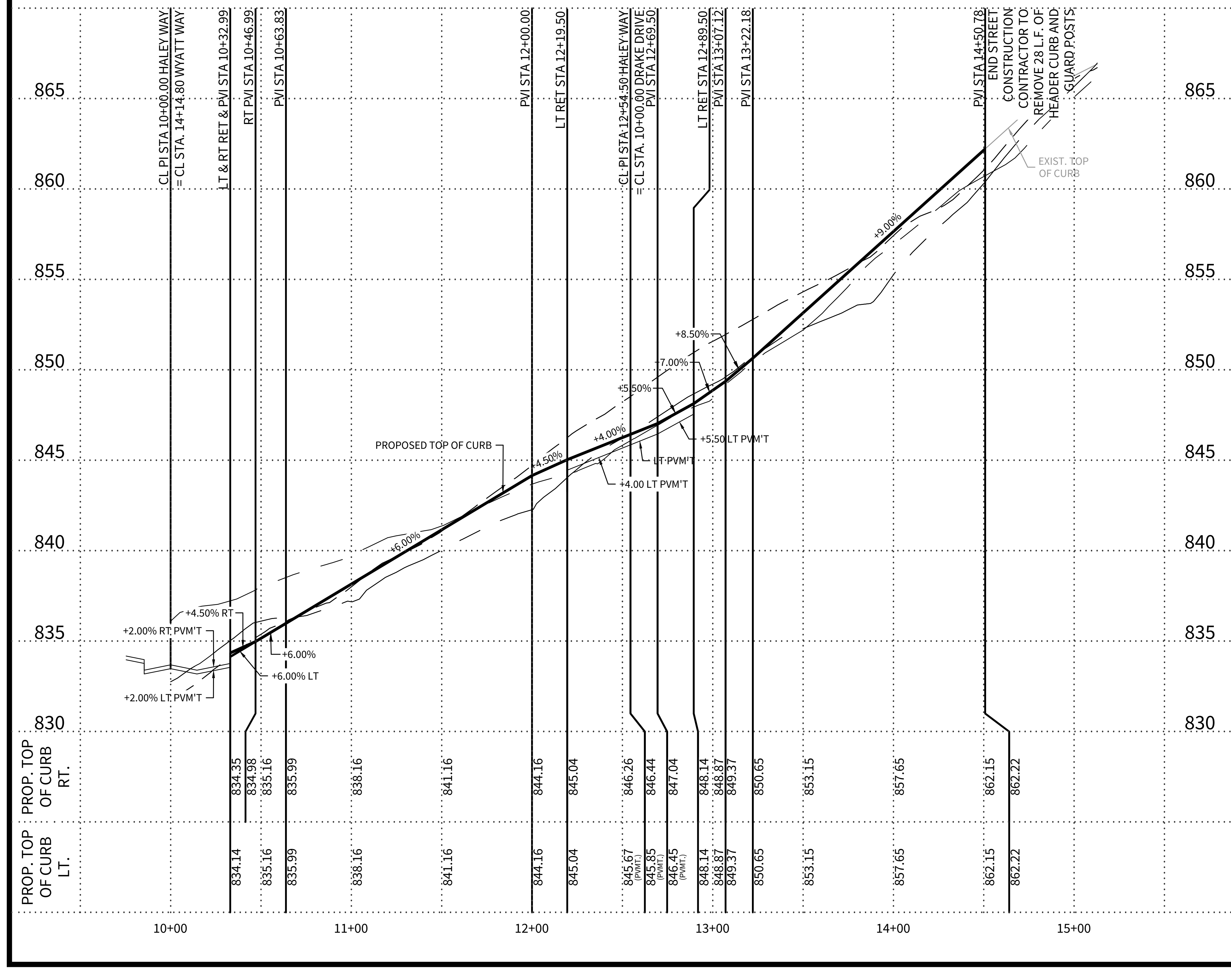
▨	- SIDEWALK CONSTRUCTED WITH INFRASTRUCTURE
☐	- STREET WASHOUT (SEE DETAIL SHEET S6)
———	- STREET CENTERLINE
— —	- EXISTING CONTOURS
XXX.XX	- TOP OF CURB SPOT ELEVATION
▨	- DRIVEWAY
⊕XXX.XX	- PAVEMENT ELEVATION

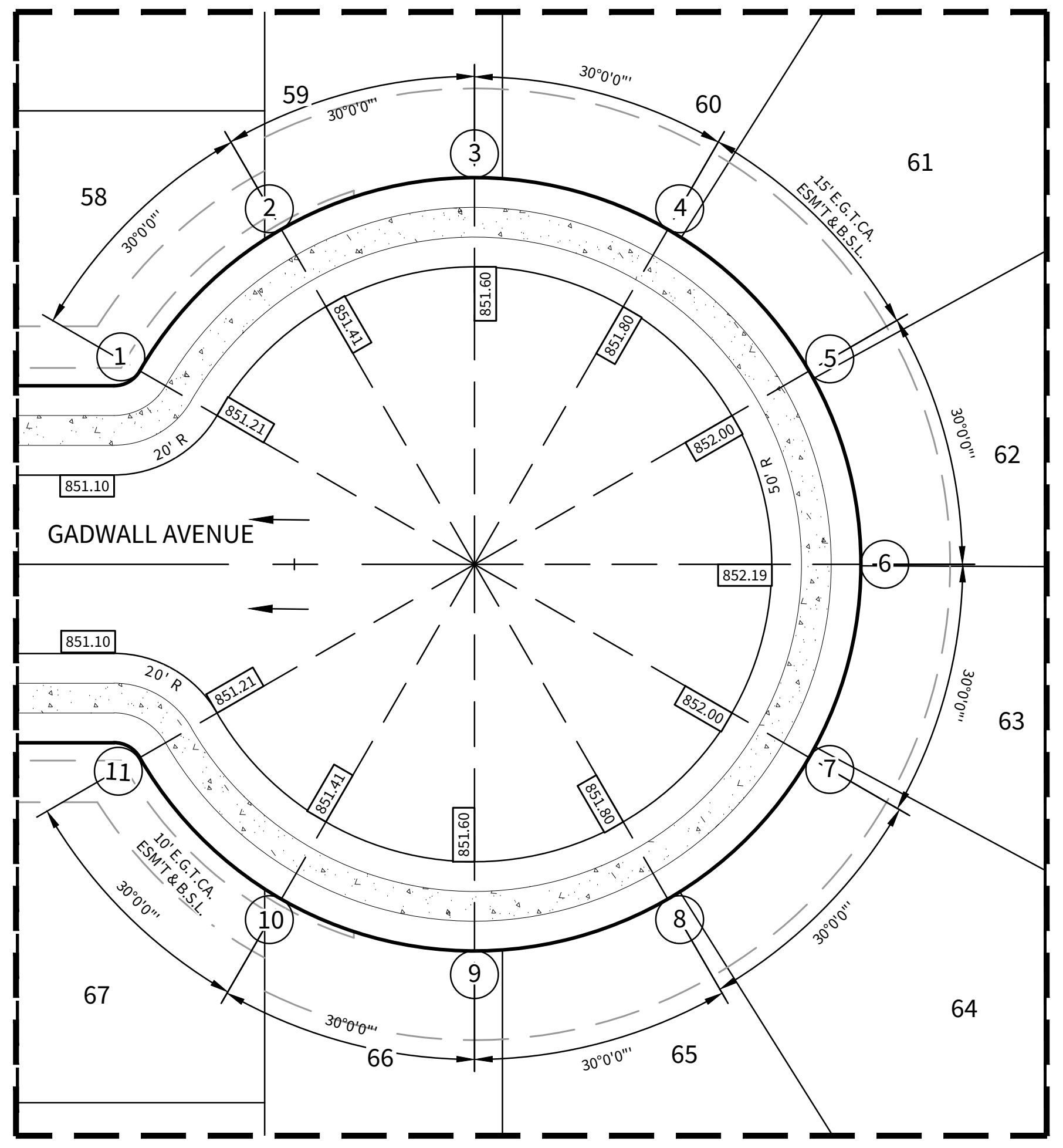
COSA TYPE "III" WHEEL CHAIR RAMPS ARE INDICATED THUS " ◧ " UNLESS OTHERWISE NOTED.

(SEE DETAIL SHEET S6) FOR ADA RAMPS AT SIDEWALK INTERSECTIONS . DETECTABLE WARNING PAVER WITH TRUNCATED DOMES ONLY.

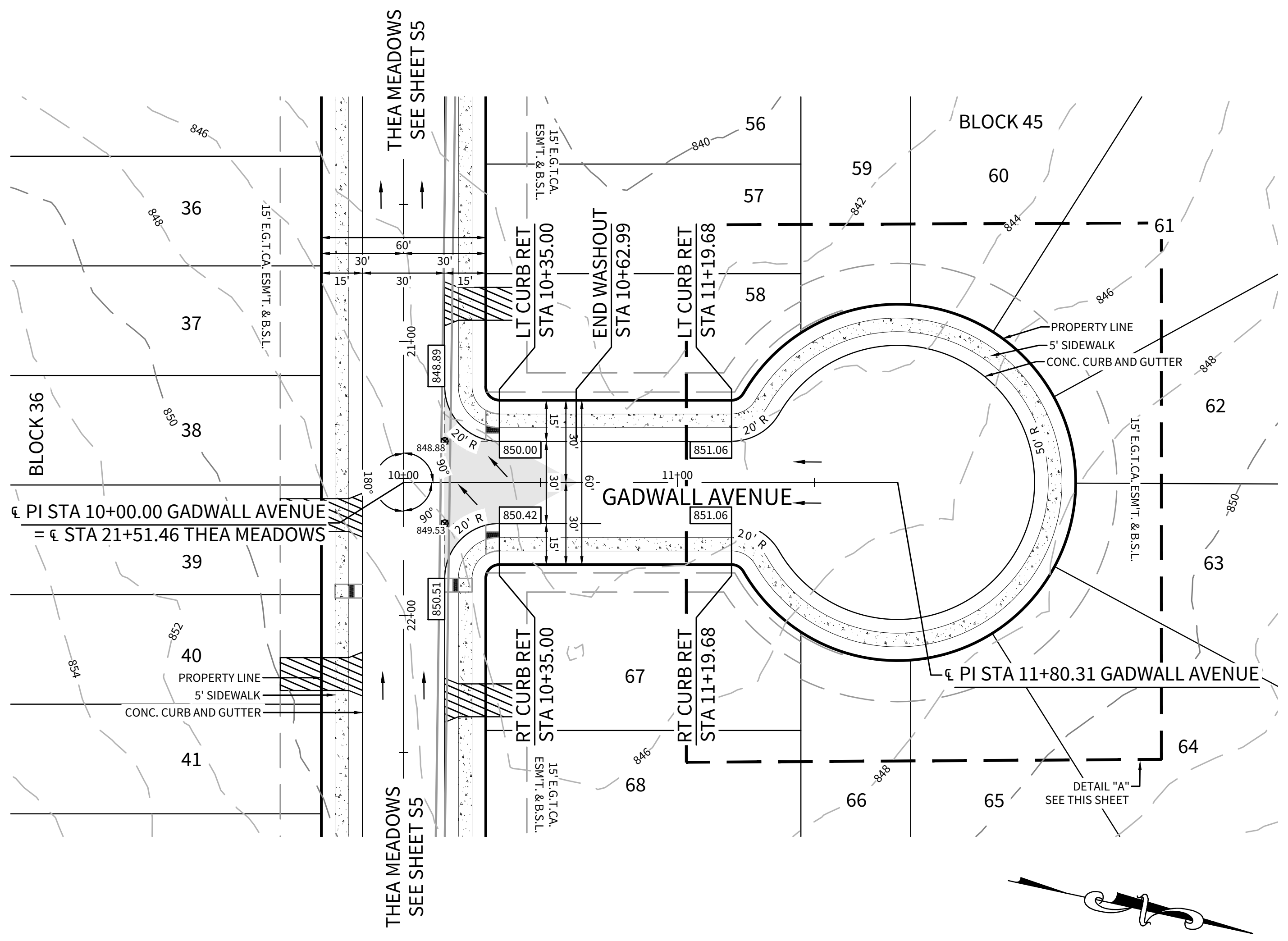
HALEY WAY

STA. 10+00.00 TO STA. 14+50.78





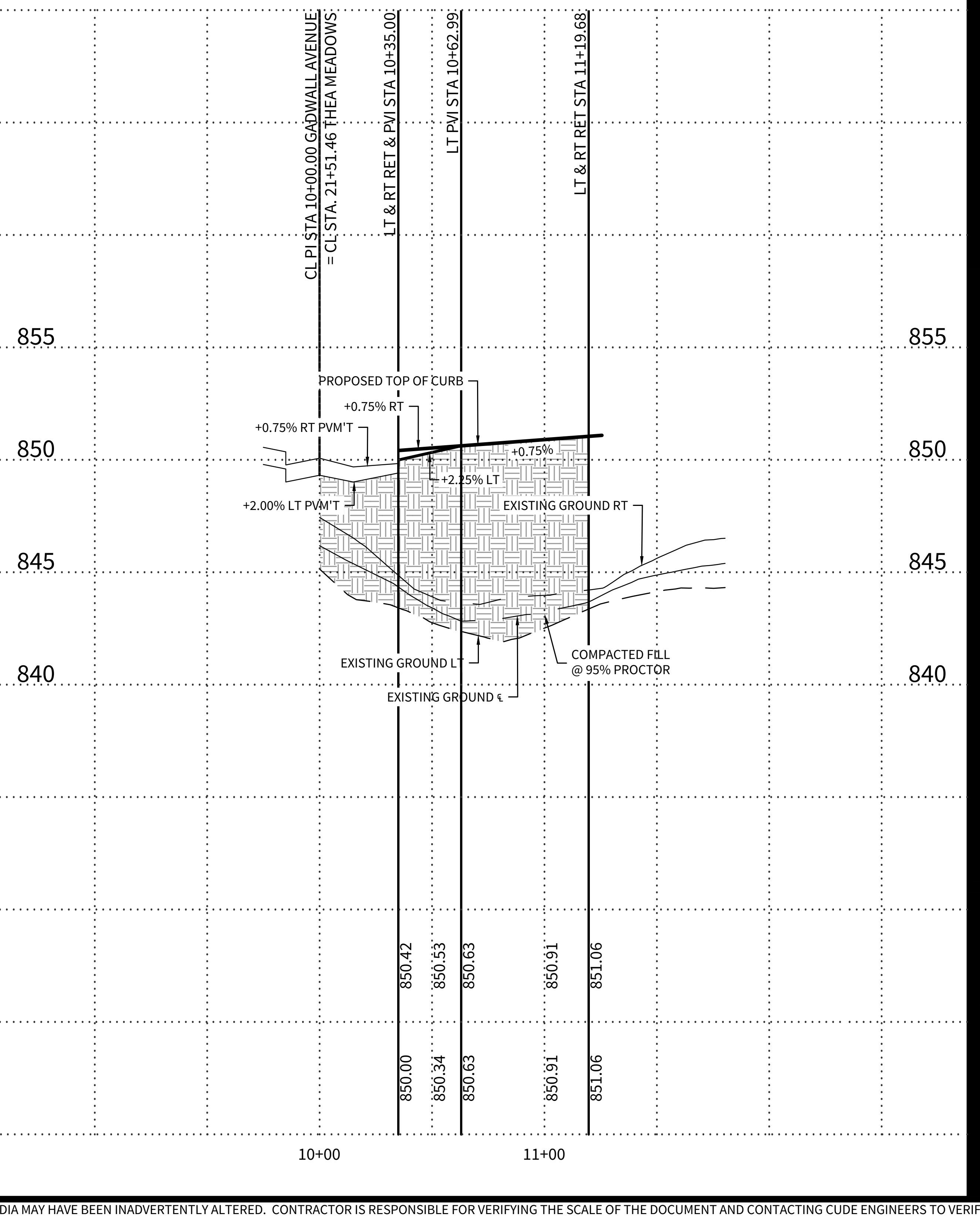
DETAIL "A"
SCALE: 1" = 30'



GADWALL AVENUE

STA. 10+00.00 TO STA. 11+80.31

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



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GRACE VALLEY RANCH
PHASE 3A

STREET PLAN & PROFILE - HALEY WAY AND GADWALL AVENUE

DATE
05/17/2023

PROJECT NO.
03346.006

DRAWN BY
KMH/NNR/MOH/MAS

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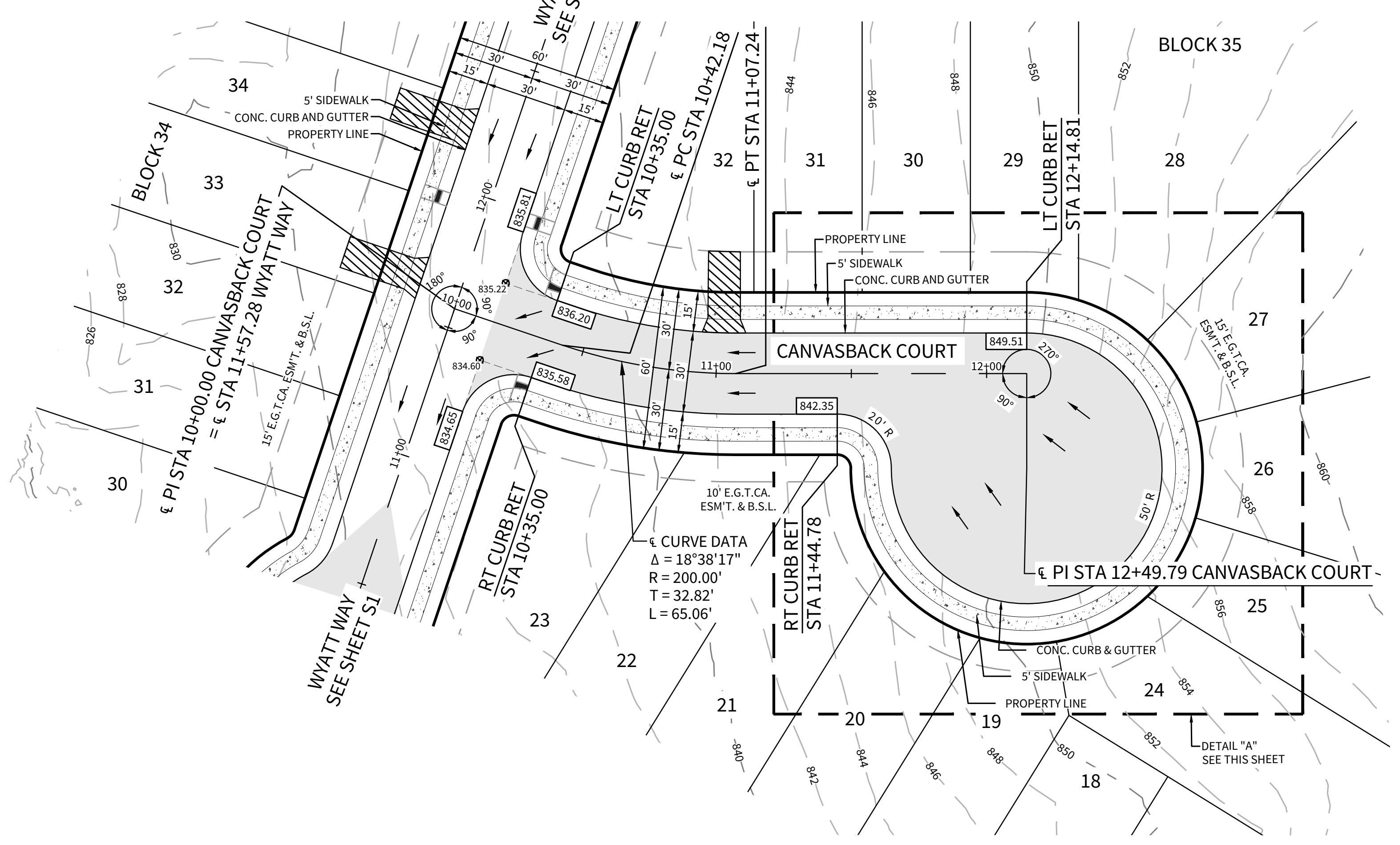
KYLE M. HUDEK
138753
05/22/2023
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

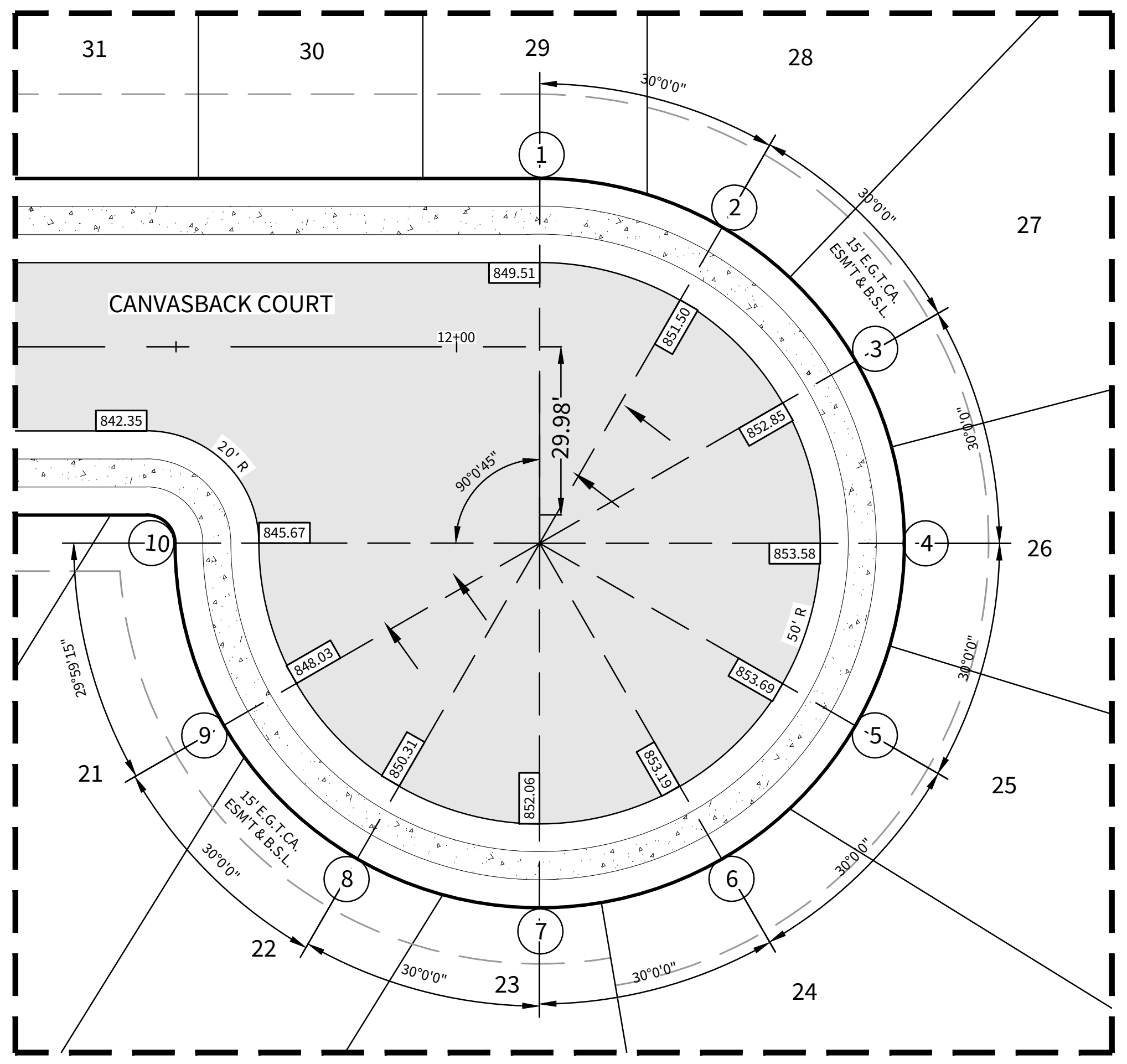
S3

3 OF 8

P:\03346\006\2-Drawings\03_STPP HALEY WAY & SUNSET PL.dwg 2023/05/17 10:51am msandoval

SCALE: 1"=50'
50 25 0 50





DETAIL "A"

SCALE: 1" = 30'

LEGEND

▨	- SIDEWALK CONSTRUCTED WITH INFRASTRUCTURE
☐	- STREET WASHOUT (SEE DETAIL SHEET S6)
▨	- STREET CENTERLINE
— —	- EXISTING CONTOURS
XXX.XX	- TOP OF CURB SPOT ELEVATION
▨	- DRIVEWAY
⊕XXX.XX	- PAVEMENT ELEVATION

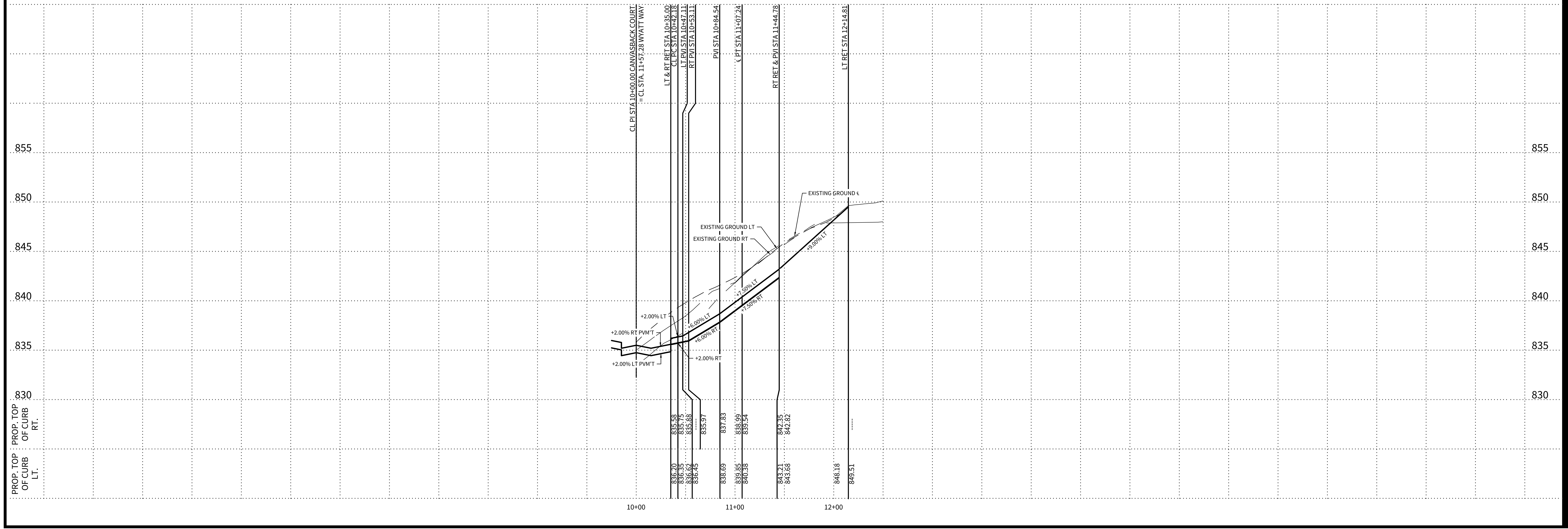
COSA TYPE "III" WHEEL CHAIR RAMPS ARE INDICATED THUS
" ◧ " UNLESS OTHERWISE NOTED.

(SEE DETAIL SHEET S6) FOR ADA RAMPS AT SIDEWALK INTERSECTIONS .
DETECTABLE WARNING PAVER WITH TRUNCATED DOMES ONLY.

CANVASBACK COURT

STA. 10+00.00 TO STA. 12+49.79

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



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GRACE VALLEY RANCH
PHASE 3A

STREET PLAN & PROFILE - CANVASBACK COURT

DATE
05/17/2023

PROJECT NO.
03346.006

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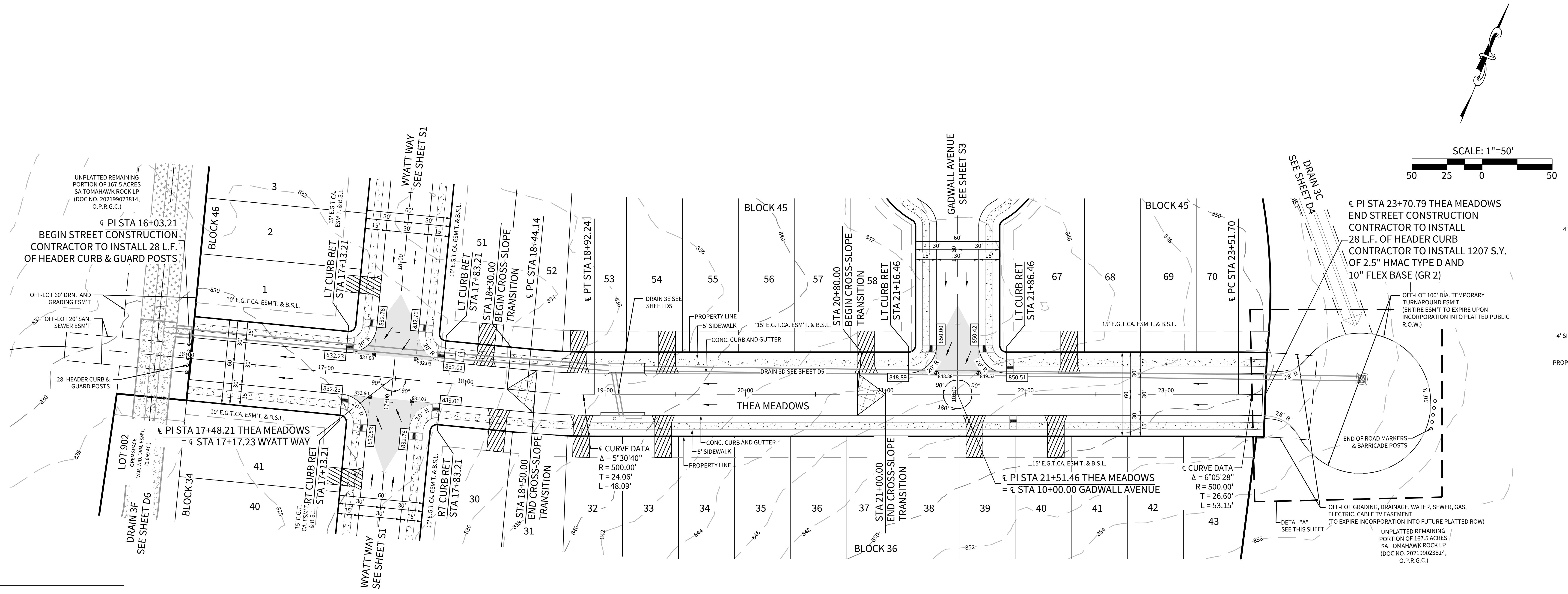
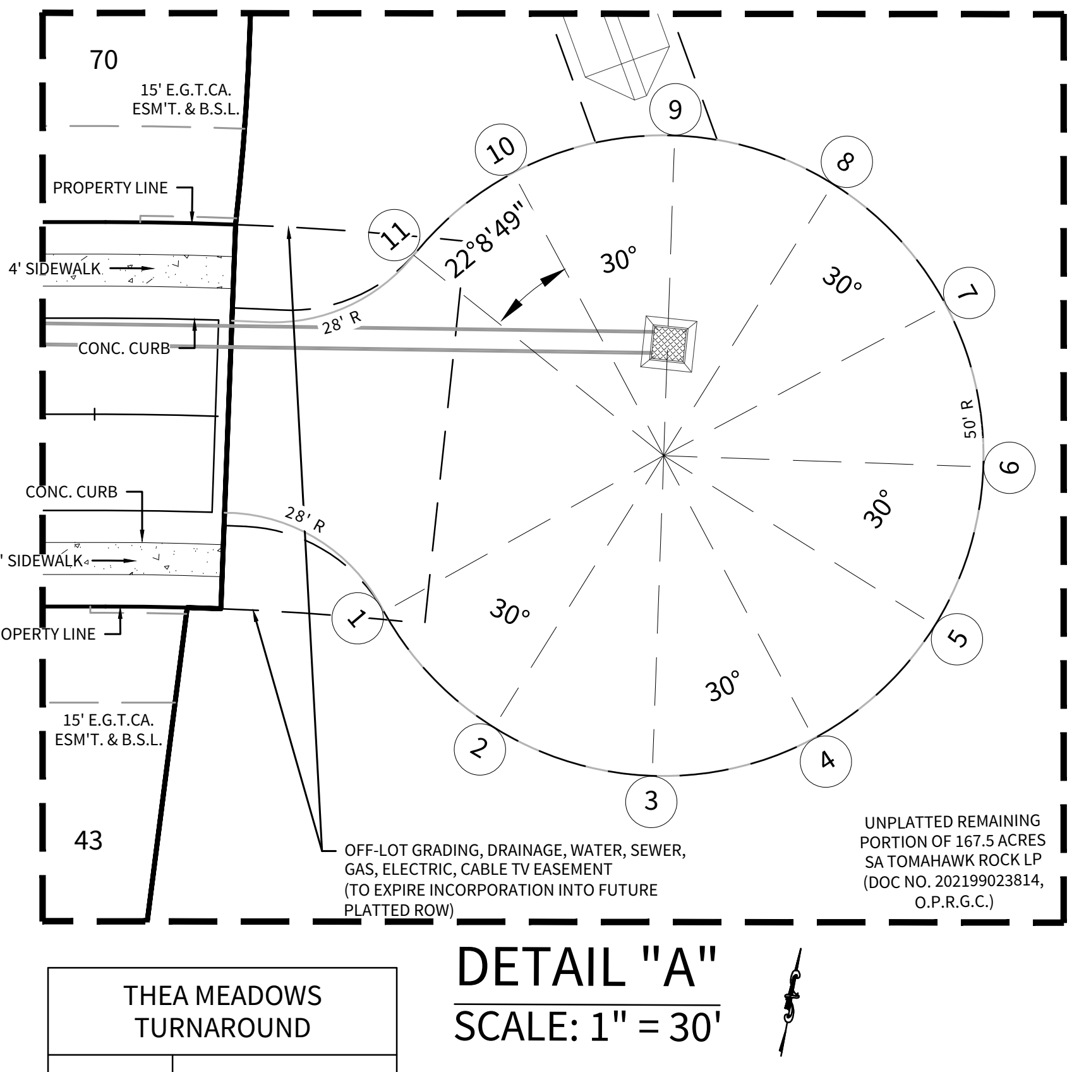
KYLE M. HUDEK
138753
05/22/2023

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

S4

P:\03346\006\2-Drawings\03_STPP CANVASBACK CT.dwg 2023/05/17 10:51am msandoval


UNPLATTED REMAINING PORTION OF 167.5 ACRES SA TOMAHAWK ROCK LP (DOC NO. 202199023814, O.P.R.G.C.)
℄ PI STA 16+03.21
BEGIN STREET CONSTRUCTION
CONTRACTOR TO INSTALL 28 L.F. OF HEADER CURB & GUARD POSTS
OFF-LOT 60' DRN. AND GRADING ESM'T
OFF-LOT 20' SAN. SEWER ESM'T
28' HEADER CURB & GUARD POSTS
BLOCK 46
1
2
3
10' E.G.T.CA. ESM'T. & B.S.L.
WYATT WAY SEE SHEET S1
LT CURB RET STA 17+13.21
LT CURB RET STA 17+83.21
RT CURB RET STA 17+13.21
RT CURB RET STA 17+83.21
15' E.G.T.CA. ESM'T. & B.S.L.
10' E.G.T.CA. ESM'T. & B.S.L.
STA 18+30.00 BEGIN CROSS-SLOPE TRANSITION
STA 18+50.00 END CROSS-SLOPE TRANSITION
℄ PC STA 18+44.14
℄ PT STA 18+92.24
DRAIN 3E SEE SHEET D5
℄ PI STA 17+48.21 THEA MEADOWS = ℄ STA 17+17.23 WYATT WAY
LOT 902 OPEN SPACE VAR. WID. DRN. ESM'T. (2.669 AC.)
DRAIN 3F SEE SHEET D6
BLOCK 34
40
41
30
31
832.23
832.76
833.01
832.53
831.80
832.03
16+00
17+00
18+00
19+00
20+00
21+00
22+00
23+00
60'
30'
15'
20' R
90°
180°
℄ CURVE DATA Δ = 5°30'40" R = 500.00' T = 24.06' L = 48.09'
PROPERTY LINE
5' SIDEWALK
CONC. CURB AND GUTTER
DRAIN 3D SEE SHEET D5
THEA MEADOWS
51
52
53
54
55
56
57
58
67
68
69
70
32
33
34
35
36
37
38
39
40
41
42
43
BLOCK 45
BLOCK 36
GADWALL AVENUE SEE SHEET S3
STA 20+80.00 BEGIN CROSS-SLOPE TRANSITION
STA 21+00.00 END CROSS-SLOPE TRANSITION
LT CURB RET STA 21+16.46
LT CURB RET STA 21+86.46
850.00
850.42
848.89
848.88
849.53
850.51
10+00
15' E.G.T.CA. ESM'T. & B.S.L.
℄ PI STA 21+51.46 THEA MEADOWS = ℄ STA 10+00.00 GADWALL AVENUE
℄ CURVE DATA Δ = 6°05'28" R = 500.00' T = 26.60' L = 53.15'
℄ PC STA 23+51.70
DRAIN 3C SEE SHEET D4
℄ PI STA 23+70.79 THEA MEADOWS
END STREET CONSTRUCTION
CONTRACTOR TO INSTALL 28 L.F. OF HEADER CURB
CONTRACTOR TO INSTALL 1207 S.Y. OF 2.5" HMAC TYPE D AND 10" FLEX BASE (GR 2)
OFF-LOT 100' DIA. TEMPORARY TURNAROUND ESM'T (ENTIRE ESM'T TO EXPIRE UPON INCORPORATION INTO PLATTED PUBLIC R.O.W.)
28' R
50' R
END OF ROAD MARKERS & BARRICADE POSTS
OFF-LOT GRADING, DRAINAGE, WATER, SEWER, GAS, ELECTRIC, CABLE TV EASEMENT (TO EXPIRE INCORPORATION INTO FUTURE PLATTED ROW)
UNPLATTED REMAINING PORTION OF 167.5 ACRES SA TOMAHAWK ROCK LP (DOC NO. 202199023814, O.P.R.G.C.)
DETAL "A" SEE THIS SHEET
828
830
832
834
836
838
840
842
844
846
848
850
852
854
856
SCALE: 1"=50'
50 25 0 50


70
15' E.G.T.CA. ESM'T. & B.S.L.
PROPERTY LINE
4' SIDEWALK
CONC. CURB
43
1
2
3
4
5
6
7
8
9
10
11
22°8'49"
30°
28' R
50' R
OFF-LOT GRADING, DRAINAGE, WATER, SEWER, GAS, ELECTRIC, CABLE TV EASEMENT (TO EXPIRE INCORPORATION INTO FUTURE PLATTED ROW)
UNPLATTED REMAINING PORTION OF 167.5 ACRES SA TOMAHAWK ROCK LP (DOC NO. 202199023814, O.P.R.G.C.)

DETAIL "A"
SCALE: 1" = 30'

THEA MEADOWS TURNAROUND	
POINT	TOP OF CURB ELEVATION
1	854.00
2	854.31
3	854.61
4	854.49
5	854.32
6	854.57
7	854.29
8	854.53
9	854.55
10	854.22
11	853.99

LEGEND

▨	SIDEWALK CONSTRUCTED WITH INFRASTRUCTURE
☐	STREET WASHOUT (SEE DETAIL SHEET S6)
———	STREET CENTERLINE
— —	EXISTING CONTOURS
XXX.XX	TOP OF CURB SPOT ELEVATION
▨	DRIVEWAY
⊕XXX.XX	PAVEMENT ELEVATION

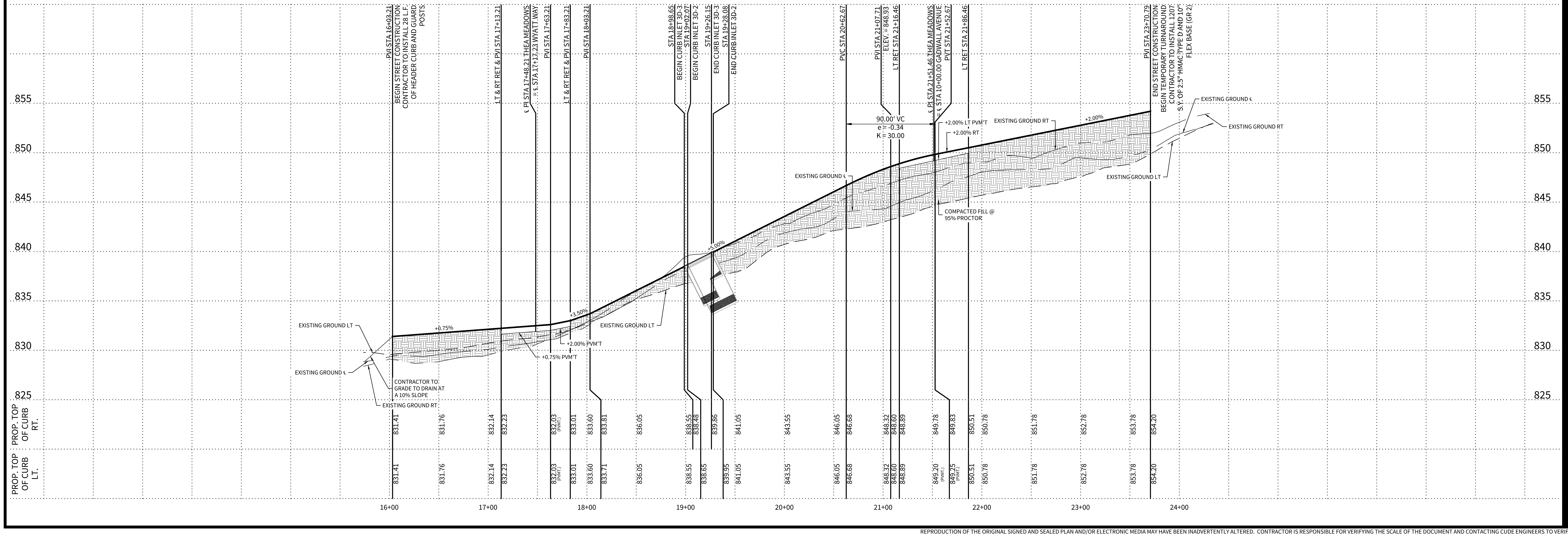
COSA TYPE "III" WHEEL CHAIR RAMPS ARE INDICATED THUS " ▭ " UNLESS OTHERWISE NOTED.

(SEE DETAIL SHEET S6) FOR ADA RAMPS AT SIDEWALK INTERSECTIONS . DETECTABLE WARNING PAVER WITH TRUNCATED DOMES ONLY.

THEA MEADOWS

STA. 16+03.21 TO STA. 23+68.25

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



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GRACE VALLEY RANCH
PHASE 3A

STREET PLAN & PROFILE -
THEA MEADOWS

DATE
05/17/2023

PROJECT NO.
03346.006

DRAWN BY
KMH/NNR/MOH/MAS

CHECKED BY
CJC

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KYLE M. HUDEK
138753
05/22/2023

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

S5

5 OF **8**

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

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

SUBGRADE NOTES (*):

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

GENERAL NOTES (**)

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

SUBGRADE VERIFICATION:

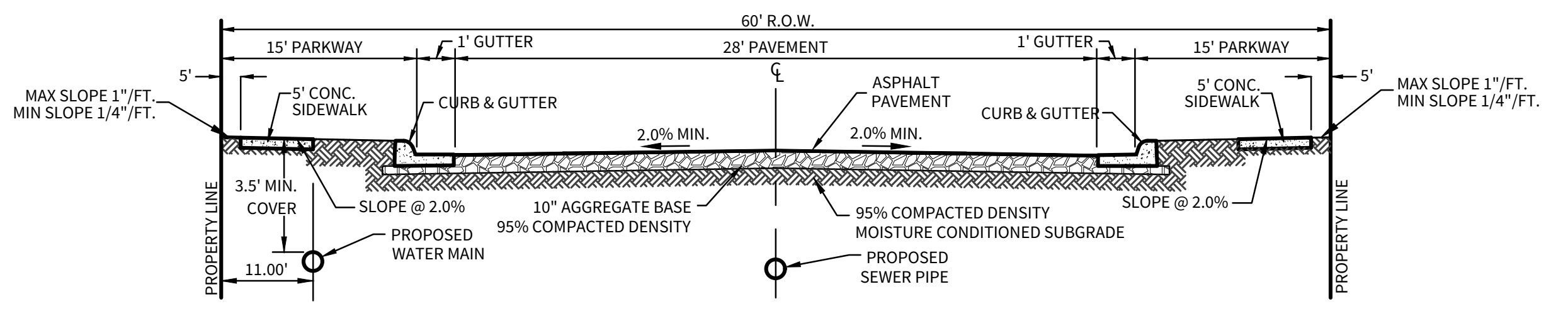
- AT THE TIME OF CONSTRUCTION, THE FINAL PAVEMENT SUBGRADE WILL BE OBSERVED AND VERIFIED BY A REPRESENTATIVE OF TTL, INC.

PRIME COAT:

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

TACK COAT:

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

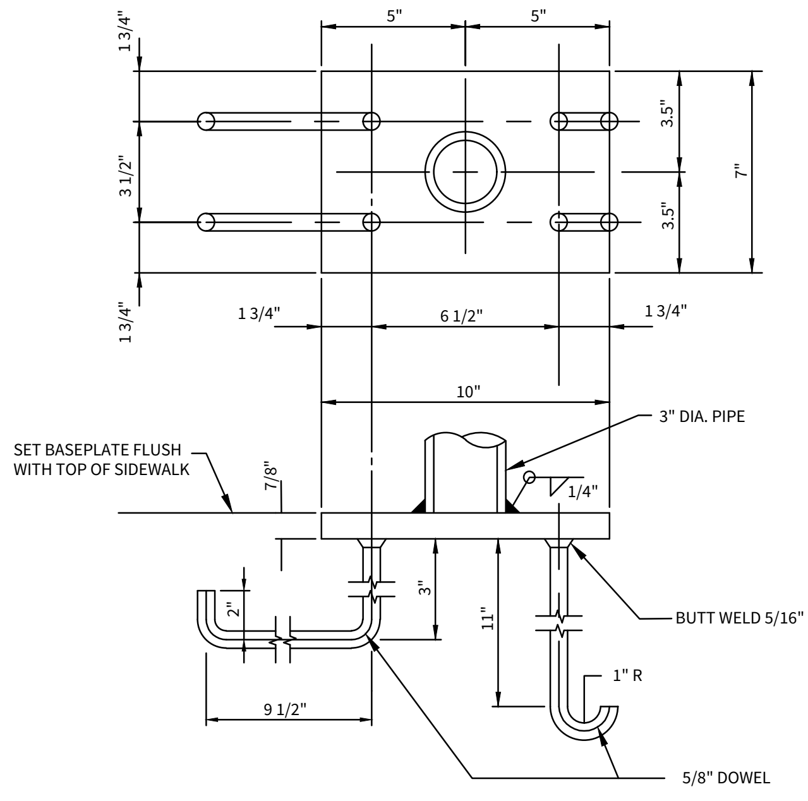


LOCAL "A" STREET CROSS-SECTION

N.T.S.

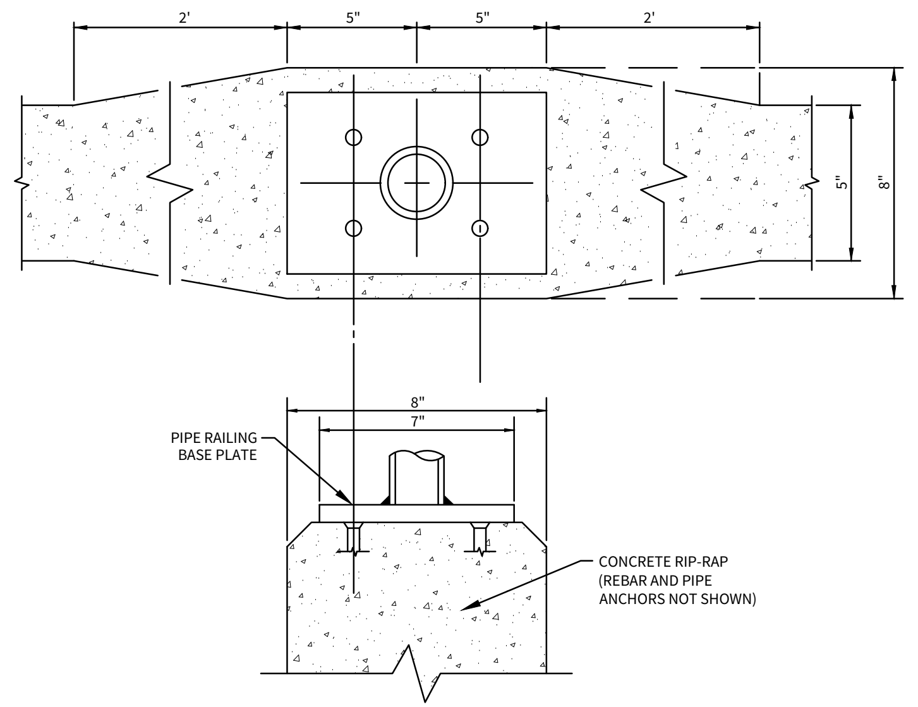
STREET TYPE	HMAC TYPE "D"	LIME STABILIZED SUBGRADE	FLEX BASE (TY A GR 2)	STRUCTURAL NUMBER
LOCAL "A"	2.5"	---	10"	2.50

STREET PAVEMENT DESIGN



PIPE ANCHORAGE DETAILS

N.T.S.

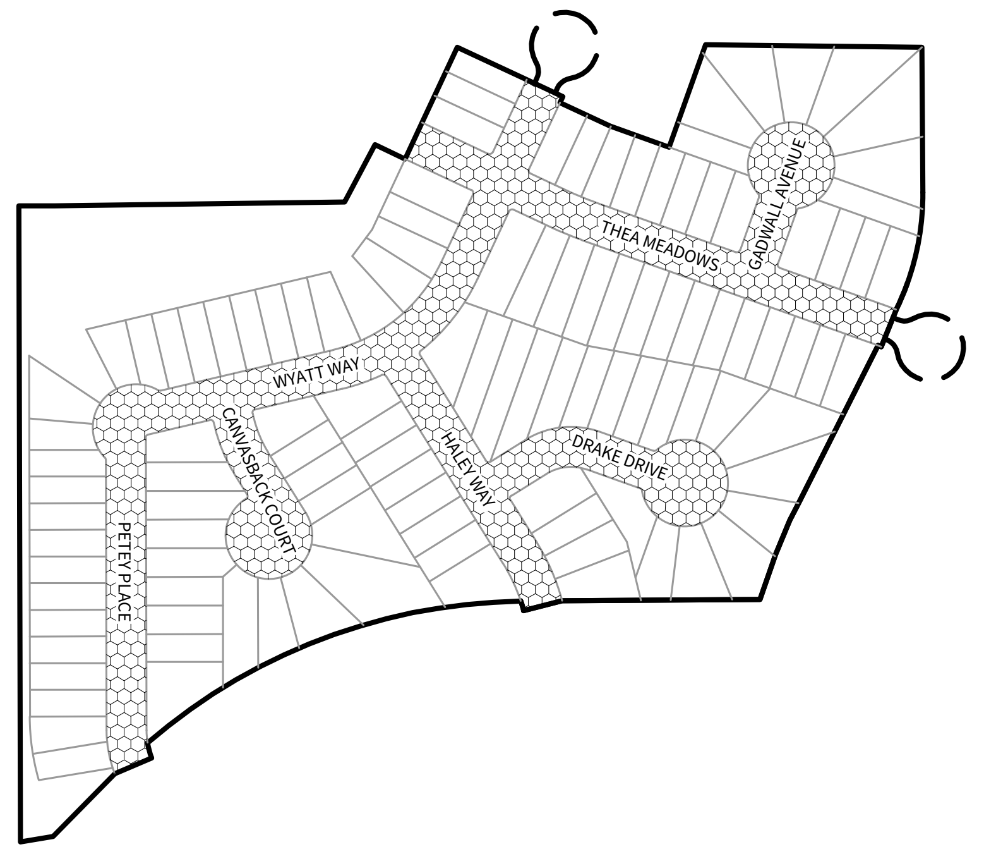


CONCRETE RIP-RAP AT PIPE RAILING BASE PLATE DETAIL

N.T.S.

NOTES:

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



PAVEMENT DESIGN SCHEMATIC N.T.S.

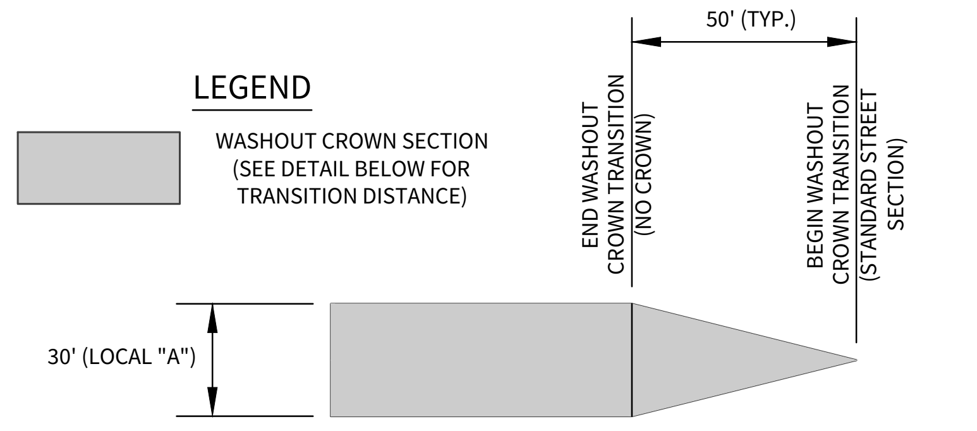
NOTE:

REFERENCE GEOTECHNICAL REPORT TTL. INC NO. 00200903122.01 FOR BORING INFORMATION AND CBR LOCATIONS.

LEGEND:

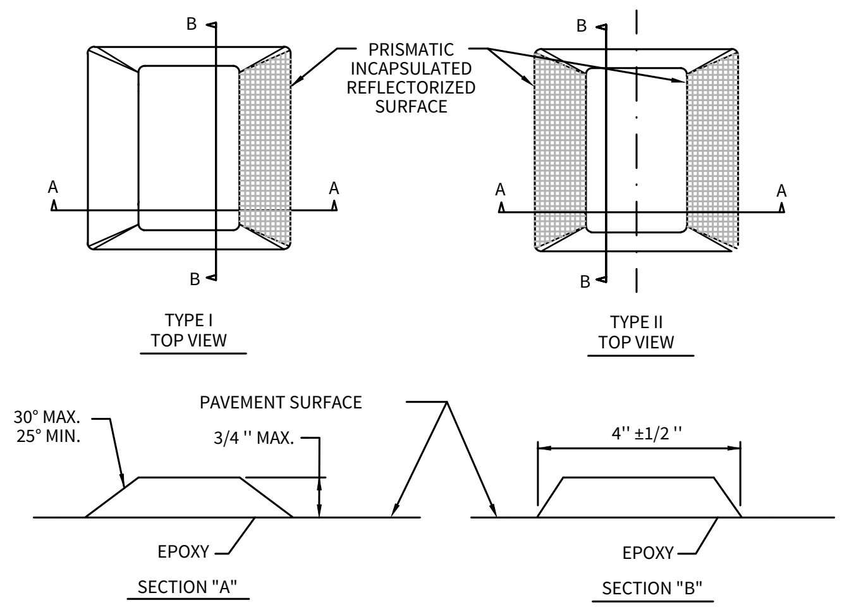
⬡	LOCAL "A"	
	PETEY PLACE	STA. 11+35.58 - 16+56.25
	HALEY WAY	STA. 10+00.00 - 14+50.78
	DRAKE DRIVE	STA. 10+00.00 - 13+32.02
	CANVASBACK COURT	STA. 10+00.00 - 12+44.79
	WYATT WAY	STA. 10+00.00 - 18+72.23
	THEA MEADOWS	STA. 16+03.21 - 23+68.25
	GADWALL AVENUE	STA. 10+00.00 - 11+80.31

DETAILS ON THIS DRAWING ARE NOT TO SCALE



WASHOUT CROWN TRANSITION DETAIL

N.T.S.



1) REFLECTORIZED BLUE - FIRE HYDRANT

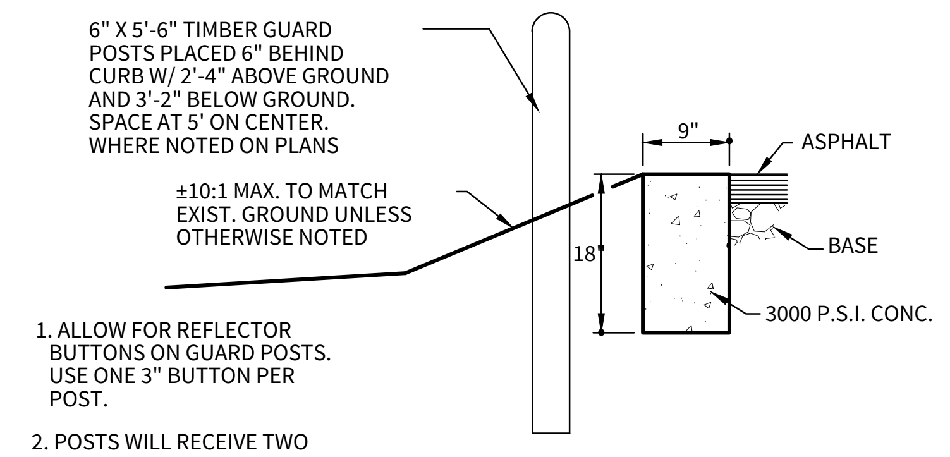
2) ADHENSIVE SHALL BE APPLIED IN SUFFICIENT TO ENSURE THE FOLLOWING:
  a) 100 PERCENT OF THE BONDING AREA OF RAISED PAVEMENT MARKERS SHALL BE IN CONTACT WITH THE ADHESIVE.
  b) RAISED PAVEMENT MARKERS SHALL NOT BE IN CONTACT WITH THE PAVEMENT SURFACE, BUT SHALL BE SEATED ON A CONTINUOUS LAYER OF ADHESIVE.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

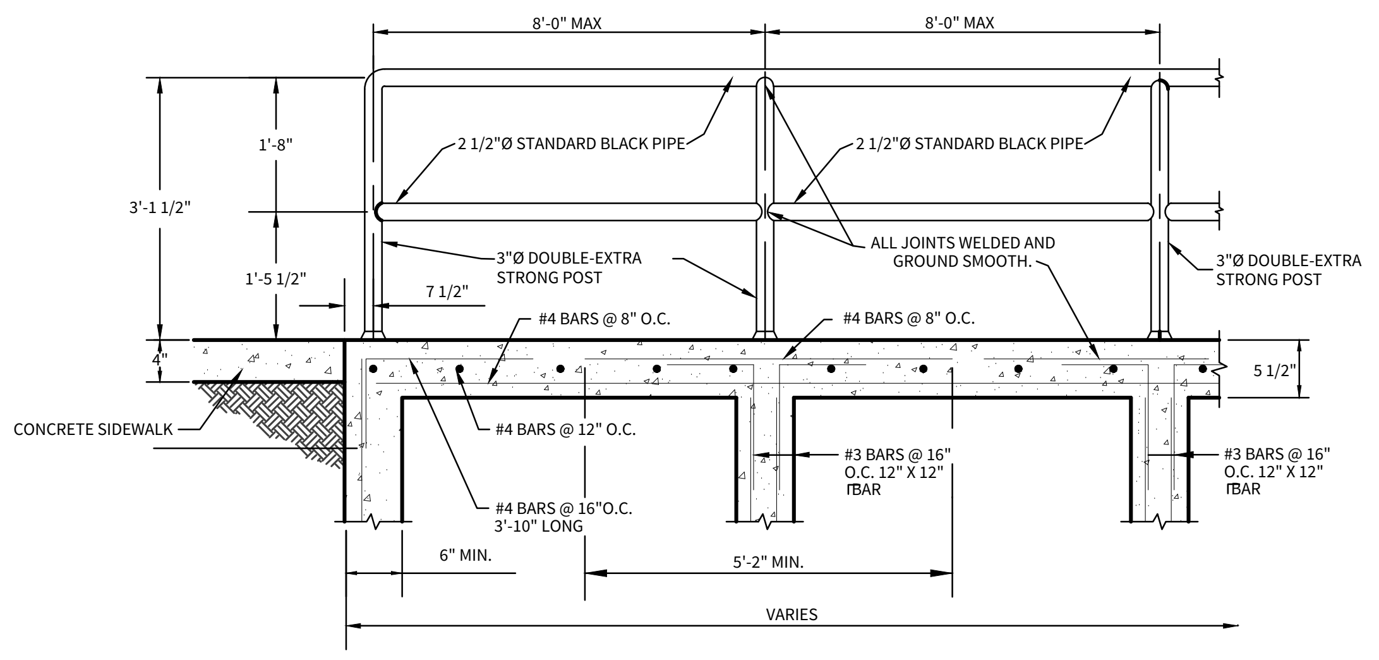


1. ALLOW FOR REFLECTOR BUTTONS ON GUARD POSTS. USE ONE 3" BUTTON PER POST.

2. POSTS WILL RECEIVE TWO COATS OF ALUMINUM PAINT.

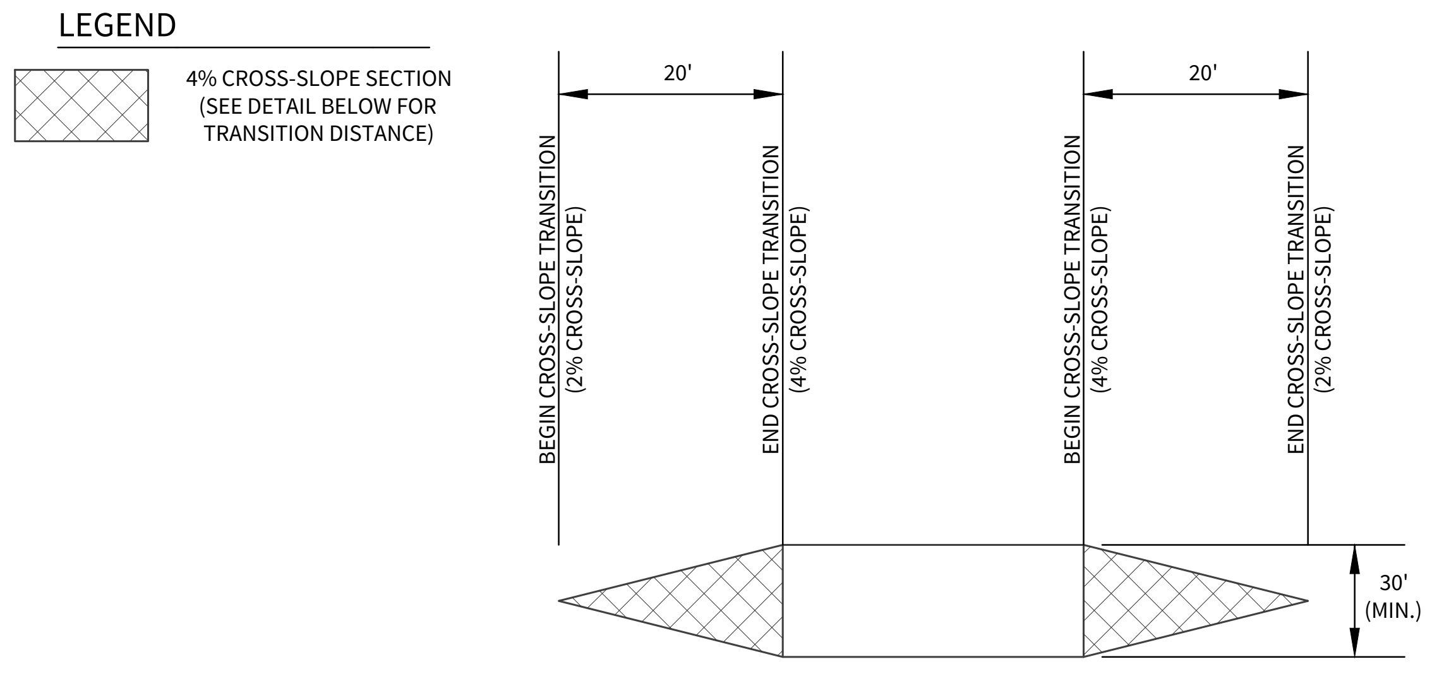
HEADER CURB DETAIL

N.T.S.

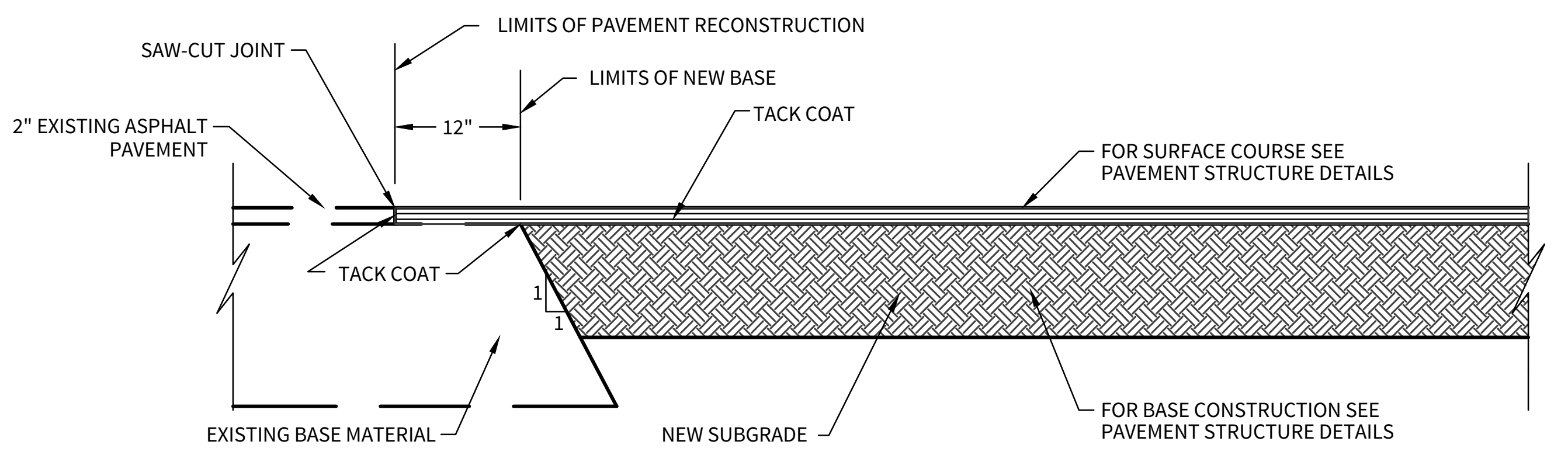


TYPICAL SIDEWALK BRIDGE SECTION AND SIDEWALK PIPE RAILING

N.T.S.

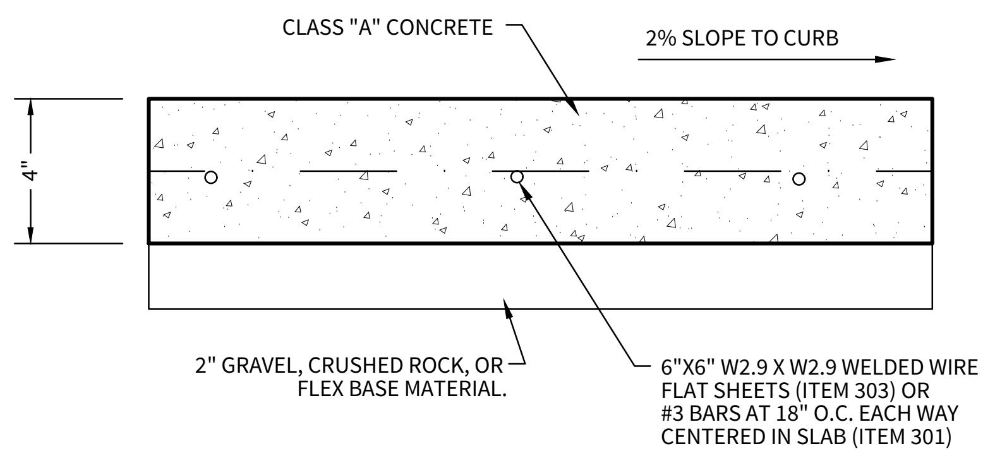


CROSS-SLOPE TRANSITION DETAIL



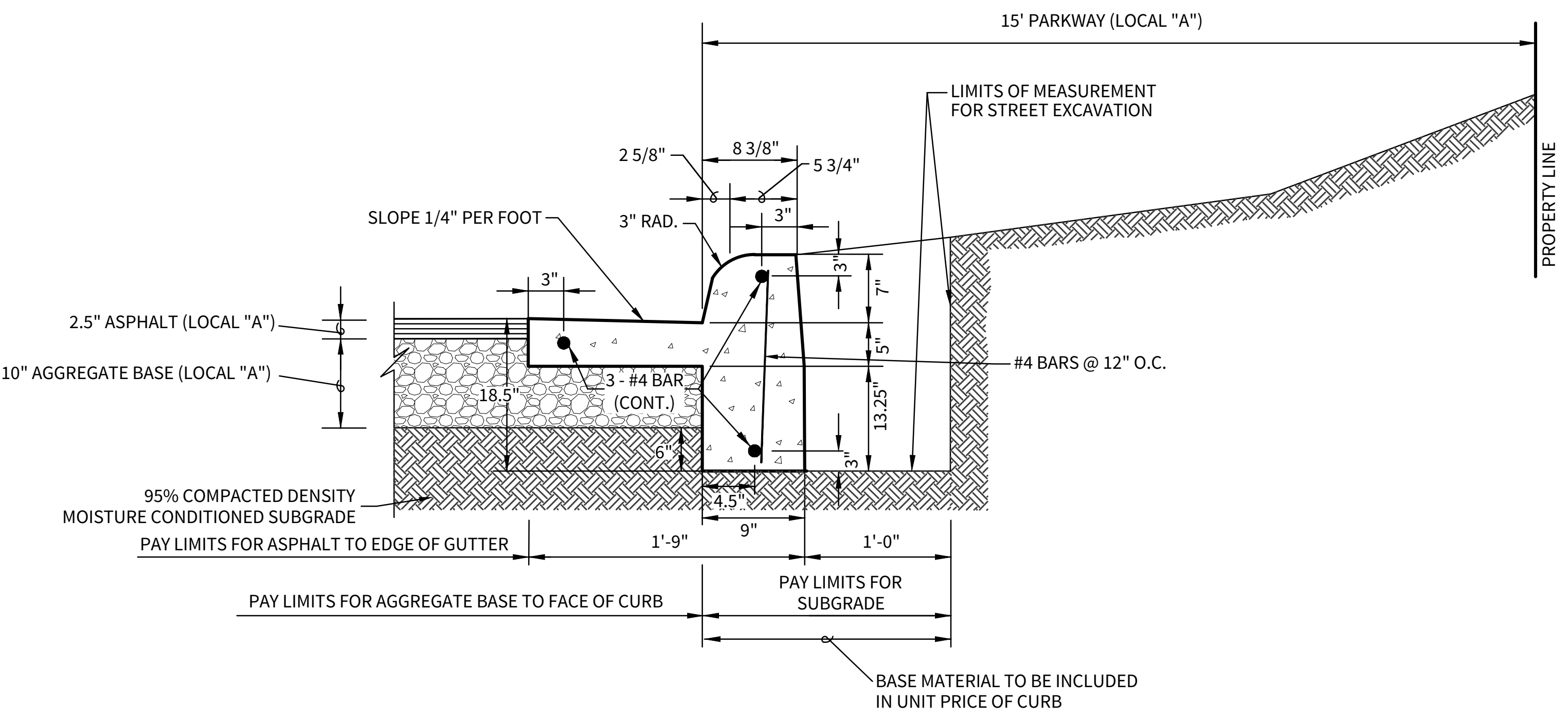
PAVEMENT JUNCTION DETAILS

N.T.S.


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.



LOCAL "A" - CURB & GUTTER DETAIL

N.T.S.

CUDEENGINEERS.COM

EST. 1980
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ENGINEERS

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

GRACE VALLEY RANCH
PHASE 3A

STANDARD STREET DETAILS

DATE
07/19/2023

PROJECT NO.
03346.006

DRAWN BY
KMH/NNR/MOH/MAS

CHECKED BY
CJC

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

KYLE M. HUDEK
138753
07/19/2023

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

S6

6 OF 8

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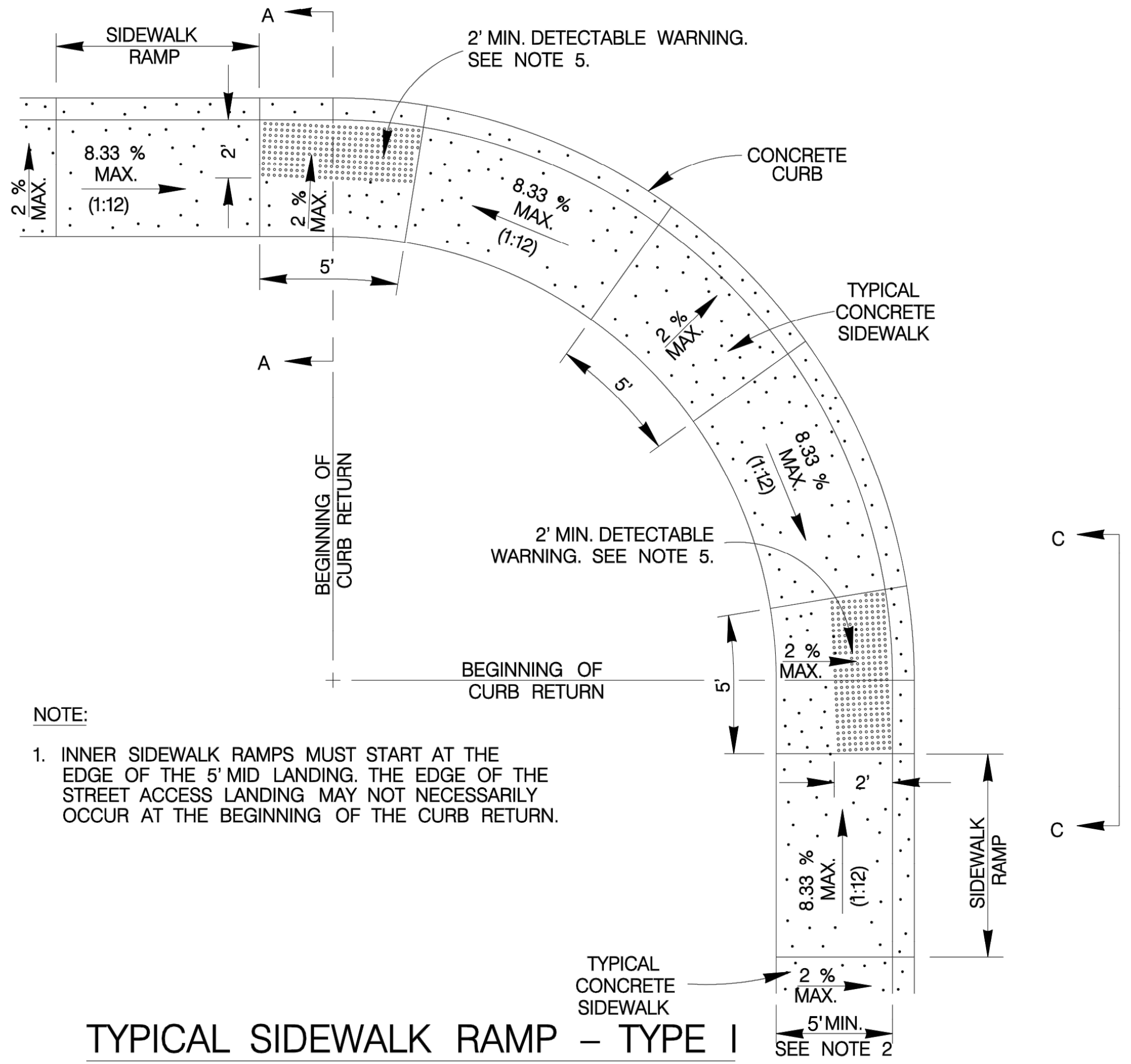
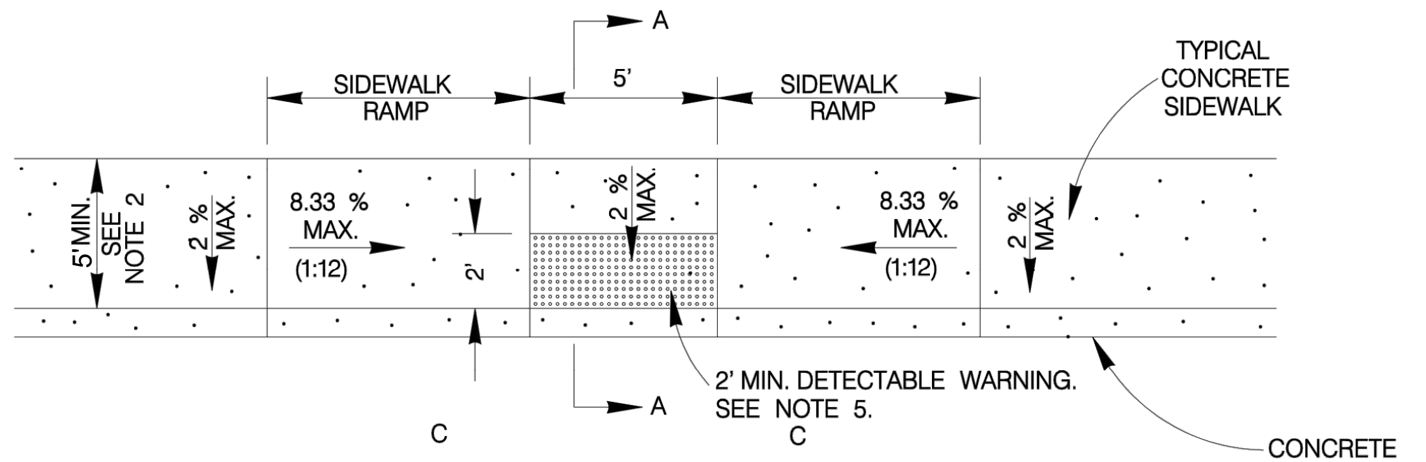

SIDEWALK RAMP
A
2' MIN. DETECTABLE WARNING. SEE NOTE 5.
CONCRETE CURB
8.33 % MAX. (1:12)
2 % MAX.
2'
5'
TYPICAL CONCRETE SIDEWALK
BEGINNING OF CURB RETURN
2' MIN. DETECTABLE WARNING. SEE NOTE 5.
C
SIDEWALK RAMP
TYPICAL CONCRETE SIDEWALK
5' MIN. SEE NOTE 2

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.

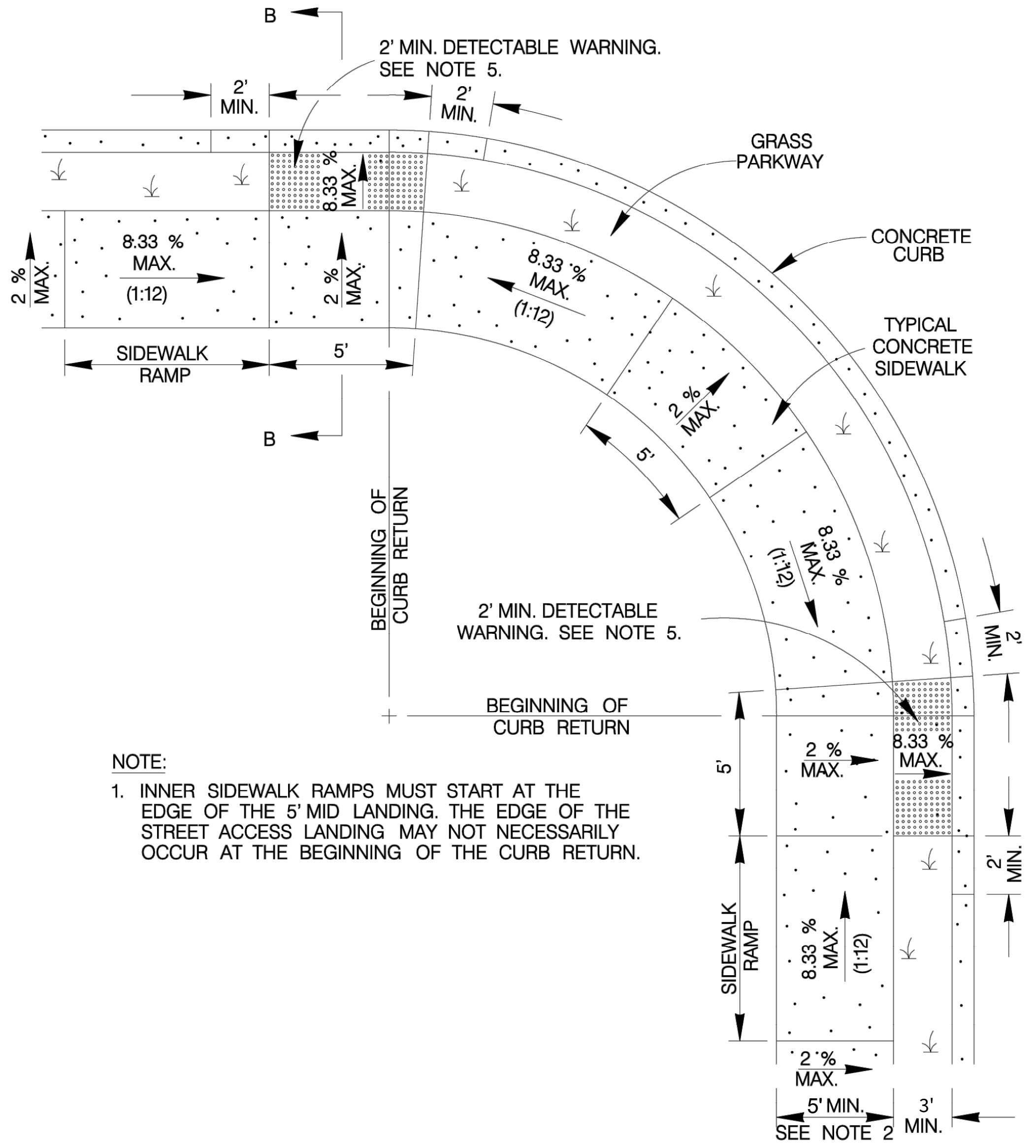
TYPICAL SIDEWALK RAMP – TYPE I

SIDEWALK ABUTS THE CURB
SCALE : 1" = 10'



TYPICAL SIDEWALK RAMP – TYPE II

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

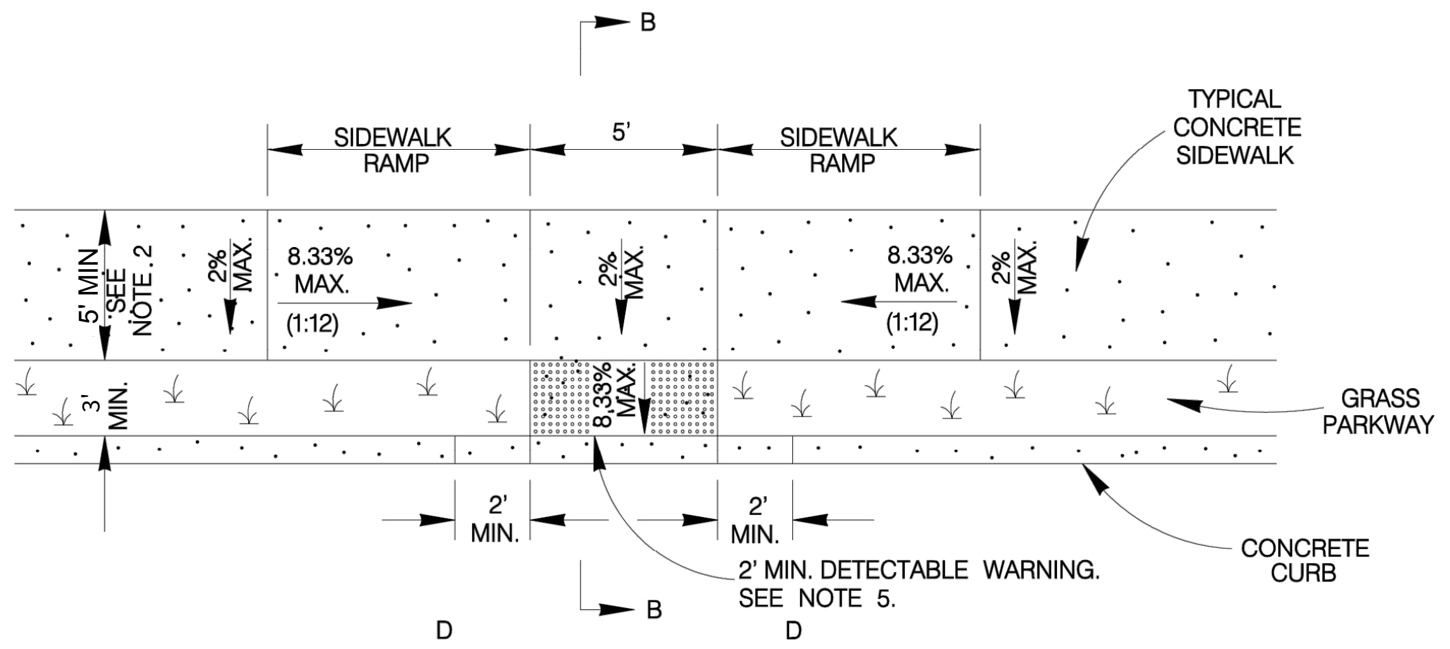


NOTE:

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

TYPICAL SIDEWALK RAMP – TYPE III

SIDEWALK SEPARATED FROM CURB
SCALE : 1" = 10'

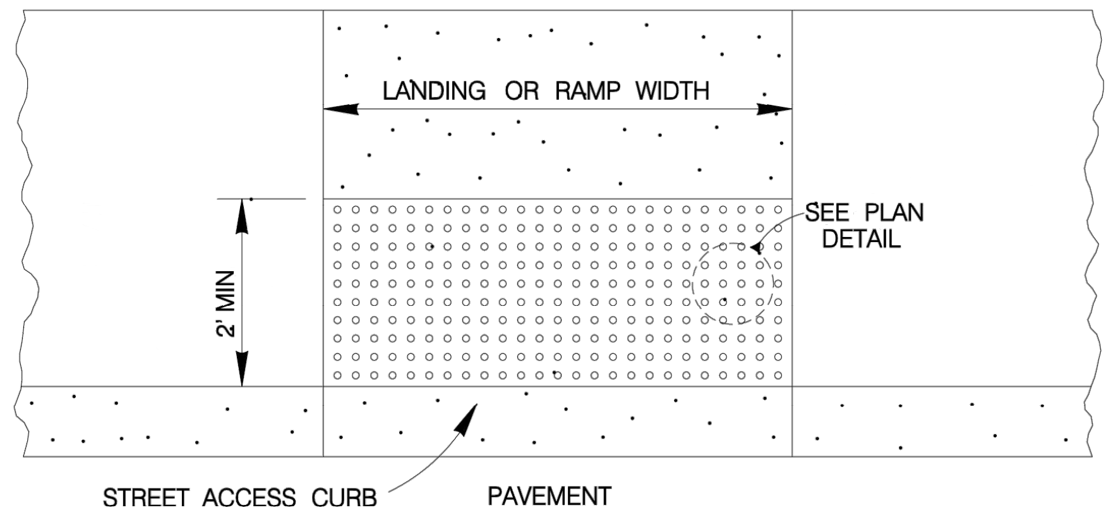


TYPICAL SIDEWALK RAMP – TYPE IV

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

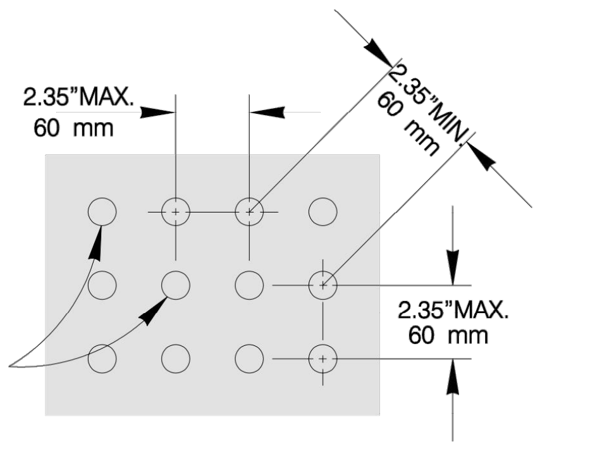
GENERAL NOTES

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



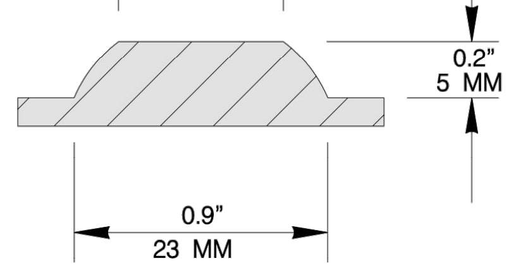
DETECTABLE WARNING SURFACE

SCALE : 1" = 4'



PLAN DETAIL

NO SCALE

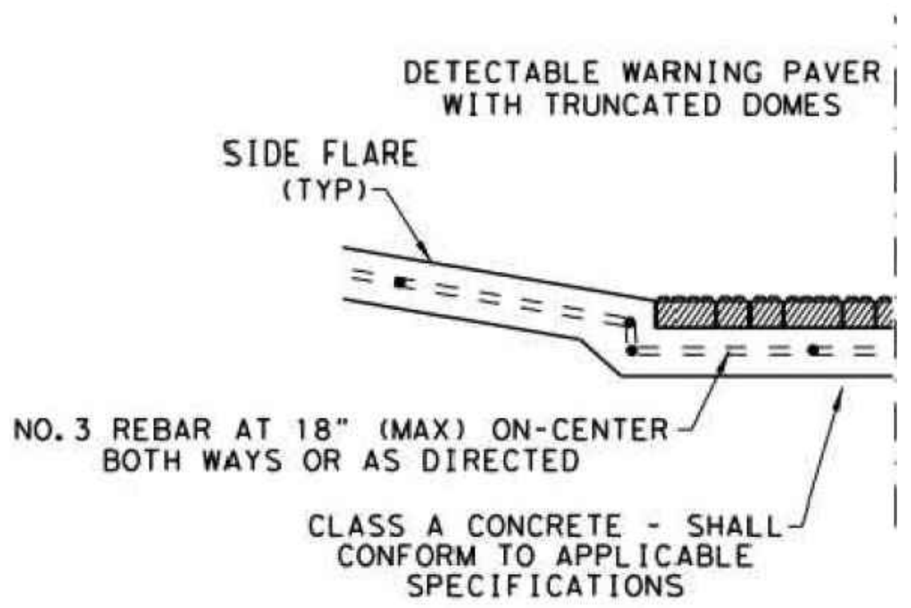


DOME SECTION

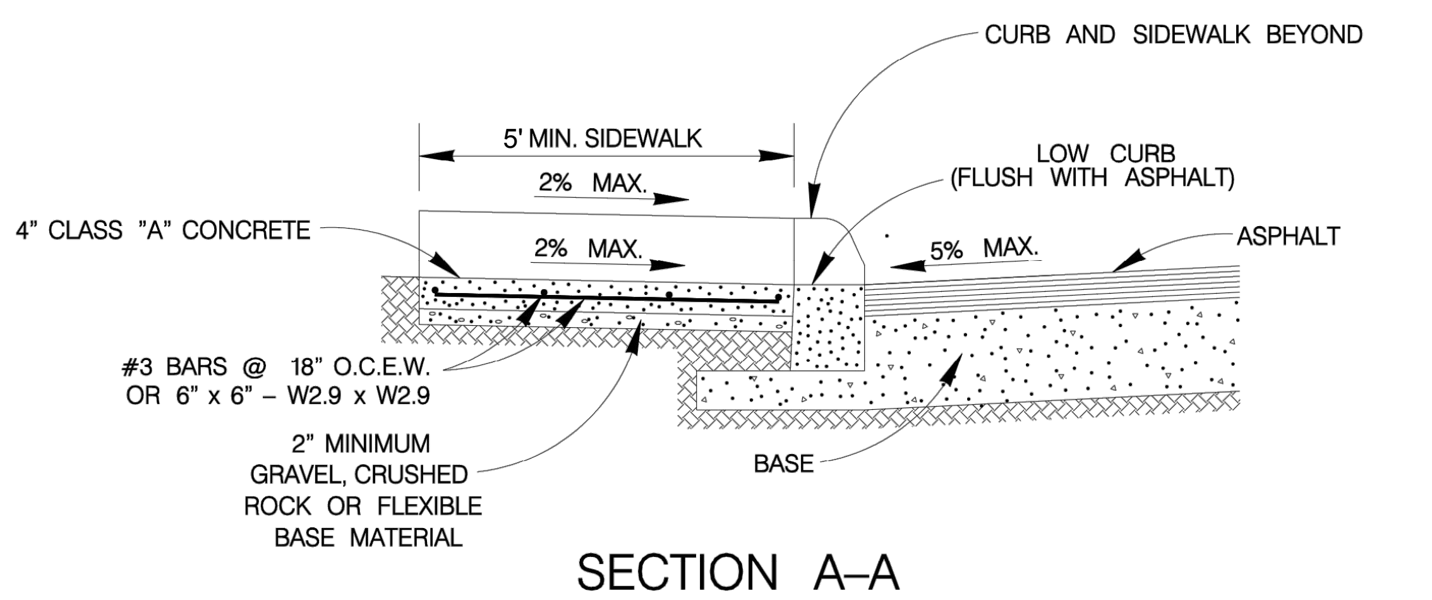
NO SCALE

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.

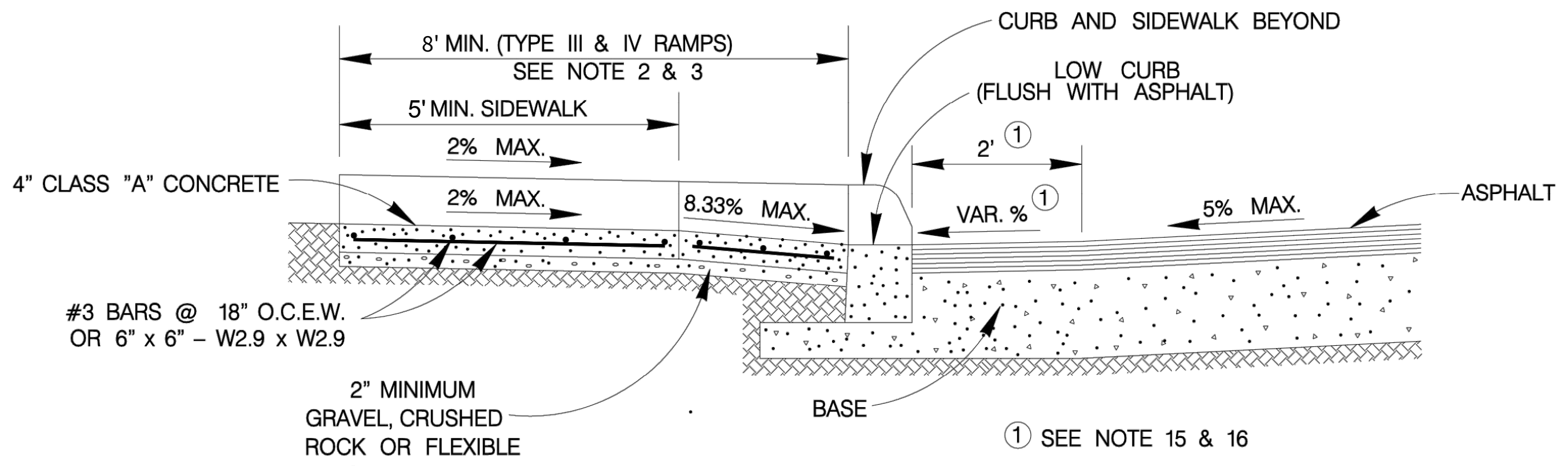

DETECTABLE WARNING PAVER WITH TRUNCATED DOMES
SIDE FLARE (TYP)
NO. 3 REBAR AT 18" (MAX) ON-CENTER BOTH WAYS OR AS DIRECTED
CLASS A CONCRETE - SHALL CONFORM TO APPLICABLE SPECIFICATIONS

SECTION VIEW DETAIL CURB RAMP AT DETECTIBLE WARNINGS


CURB AND SIDEWALK BEYOND
5' 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

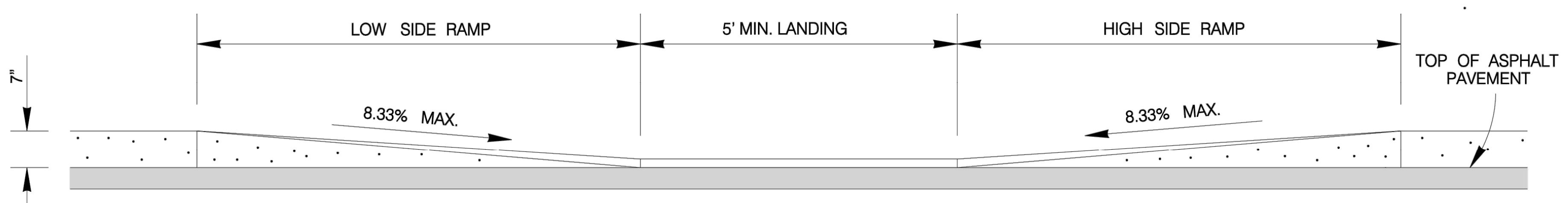
SECTION A–A

SCALE : 1" = 4'


8' MIN. (TYPE III & IV RAMPS) SEE NOTE 2 & 3
CURB AND SIDEWALK BEYOND
LOW CURB (FLUSH WITH ASPHALT)
5' MIN. SIDEWALK
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

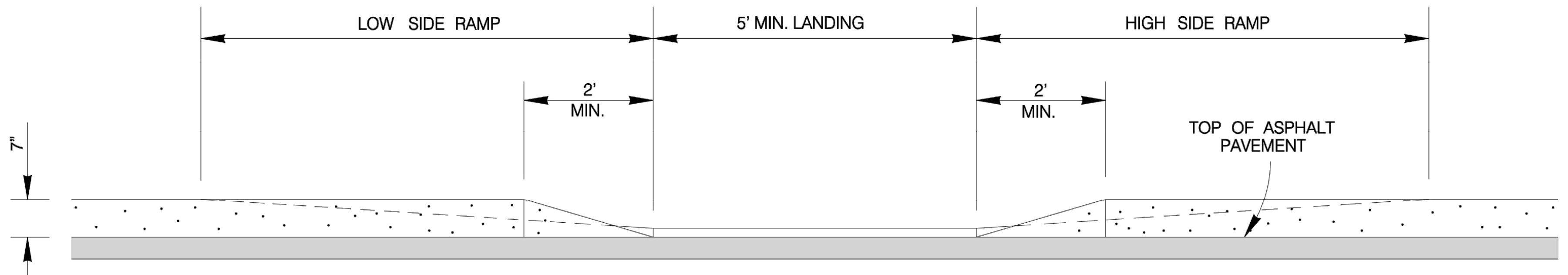
SECTION B–B

SCALE : 1" = 4'



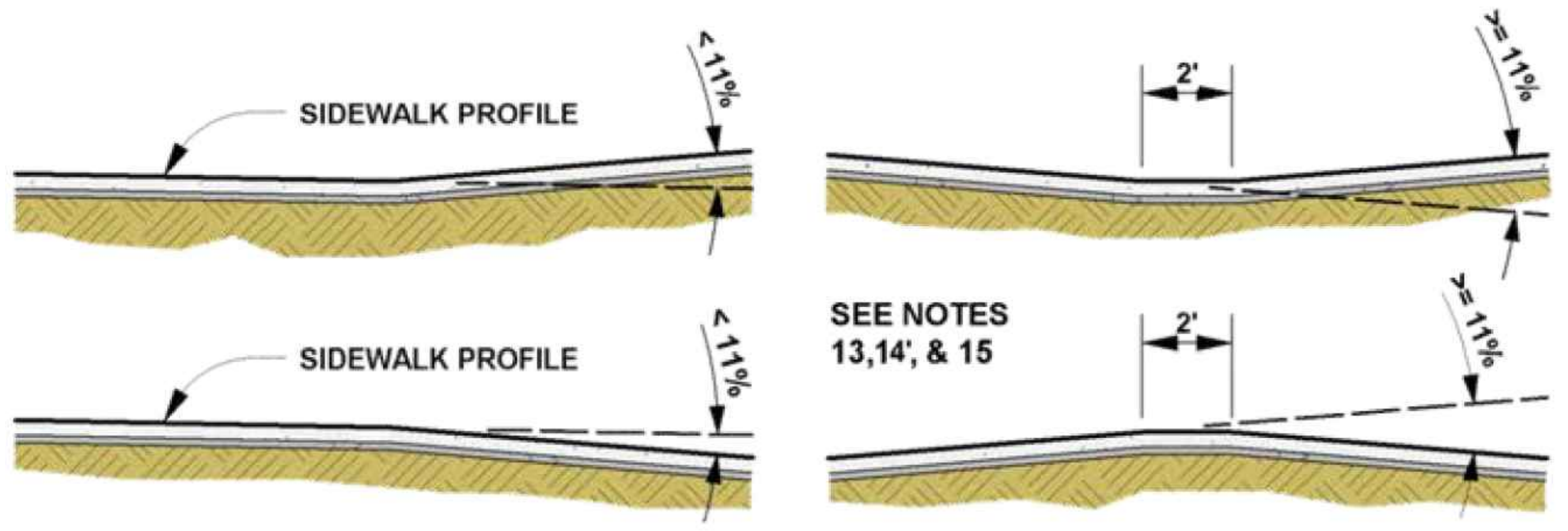
SECTION C–C

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



SECTION D–D

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



SIDEWALK PROFILES AND GRADE REQUIREMENTS

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"

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GRACE VALLEY RANCH
PHASE 3A

ADA RAMP DETAILS

DATE
05/17/2023

PROJECT NO.
03346.006

DRAWN BY
KMH/NNR/MOH/MAS

CHECKED BY
CJC

REVISIONS
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KYLE M. HUDEK
138753
05/22/2023

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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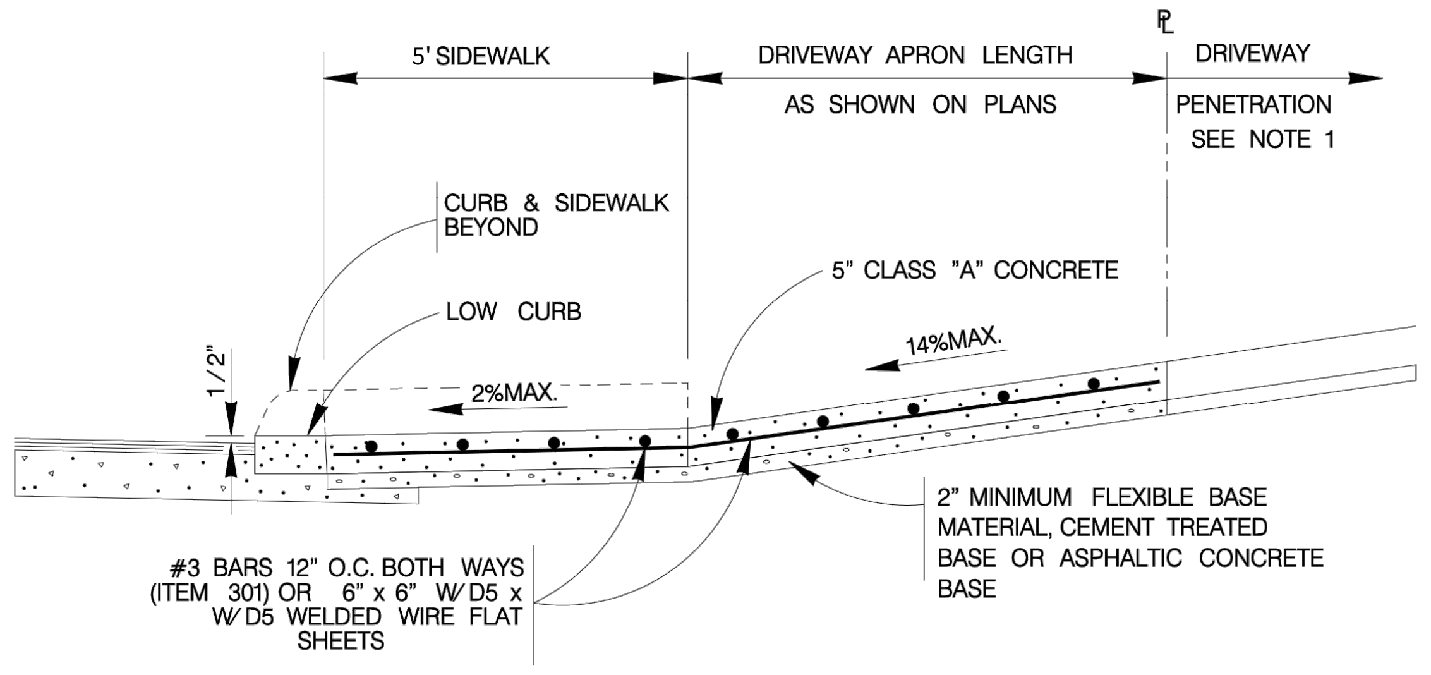
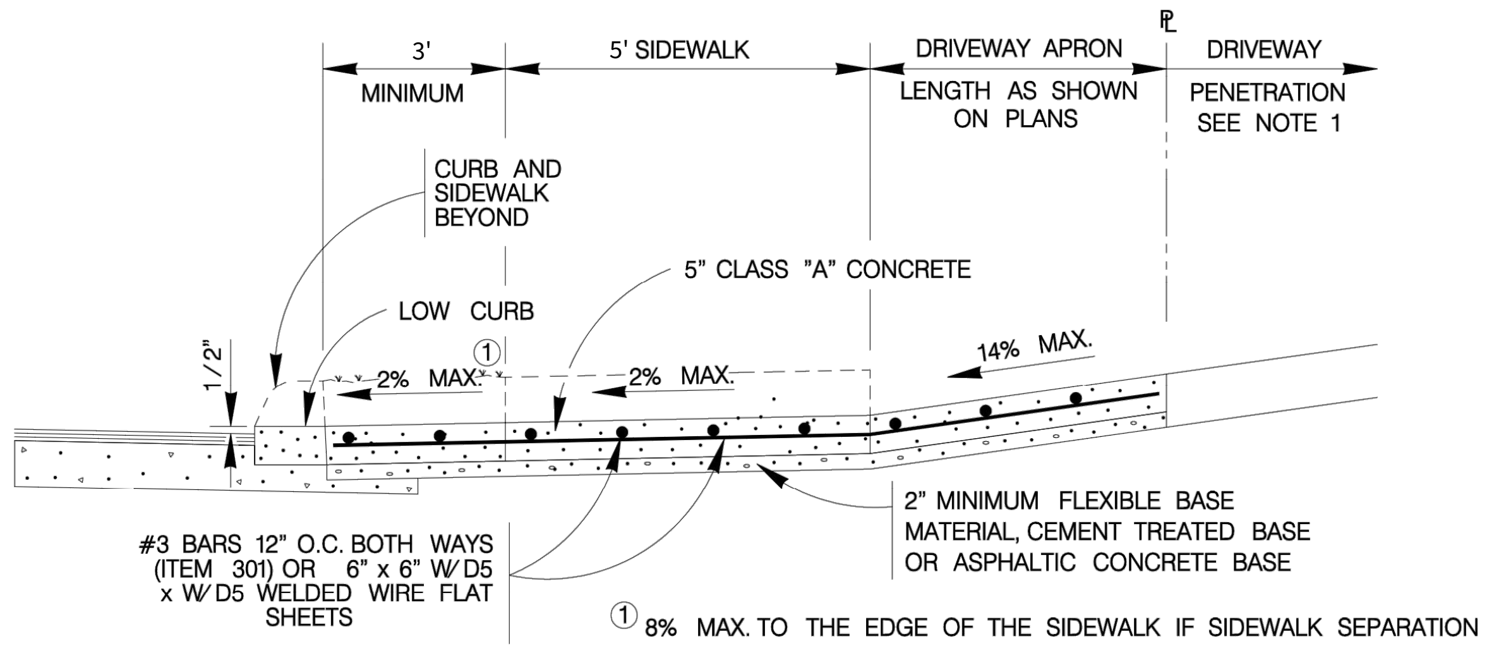

5' SIDEWALK
DRIVEWAY APRON LENGTH AS SHOWN ON PLANS
℞
DRIVEWAY PENETRATION SEE NOTE 1
CURB & SIDEWALK BEYOND
LOW CURB
5" CLASS "A" CONCRETE
14%MAX.
2%MAX.
1/2"
2" MINIMUM FLEXIBLE BASE MATERIAL, CEMENT TREATED BASE OR ASPHALTIC CONCRETE BASE
#3 BARS 12" O.C. BOTH WAYS (ITEM 301) OR 6" x 6" W/D5 x W/D5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

TYPICAL RESIDENTIAL DRIVEWAY SECTION

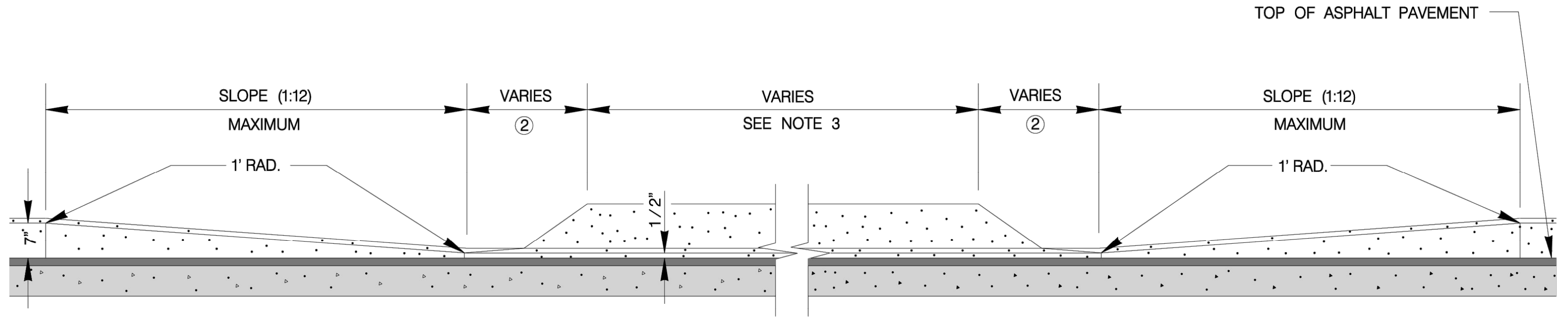
WITH SIDEWALK ABUTTING CURB


3' MINIMUM
5' SIDEWALK
DRIVEWAY APRON LENGTH AS SHOWN ON PLANS
℞
DRIVEWAY PENETRATION SEE NOTE 1
CURB AND SIDEWALK BEYOND
LOW CURB
①
5" CLASS "A" CONCRETE
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

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

TYPICAL RESIDENTIAL DRIVEWAY SECTION

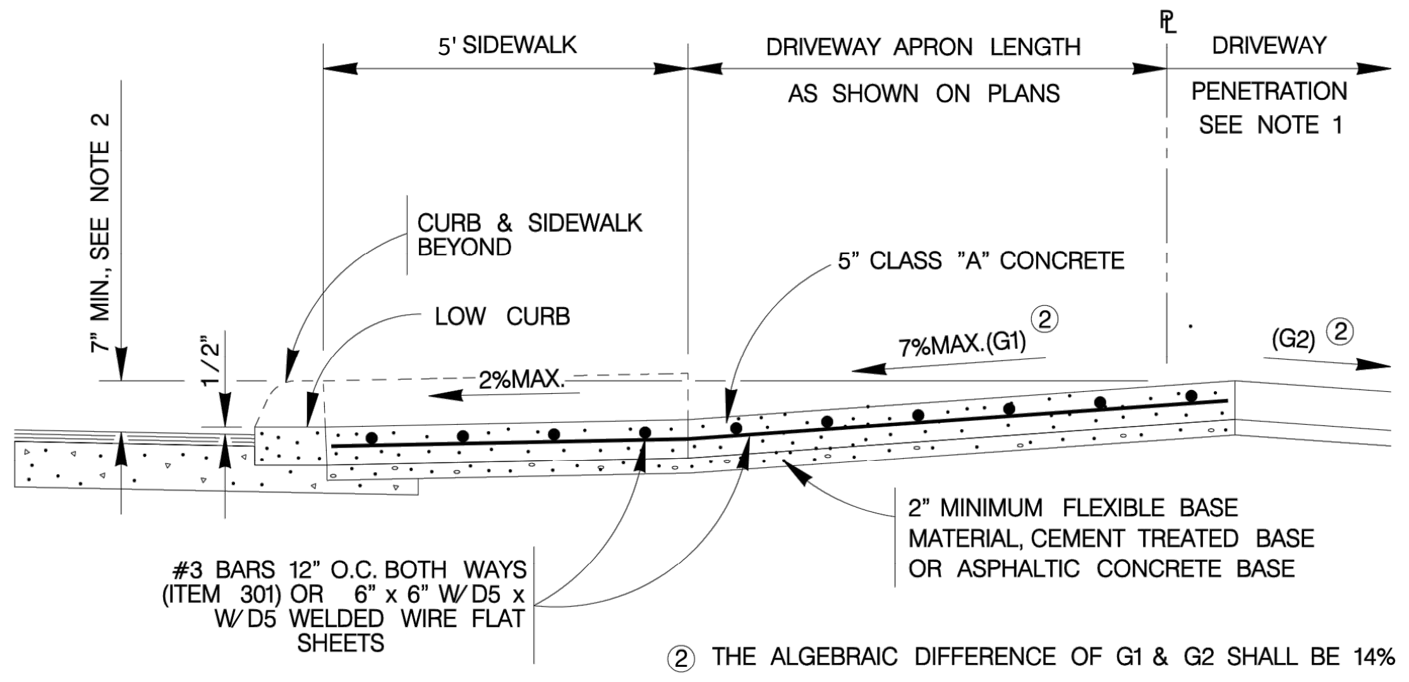
WITH SIDEWALK SEPARATED FROM CURB



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

CURB PROFILE AT DRIVEWAY

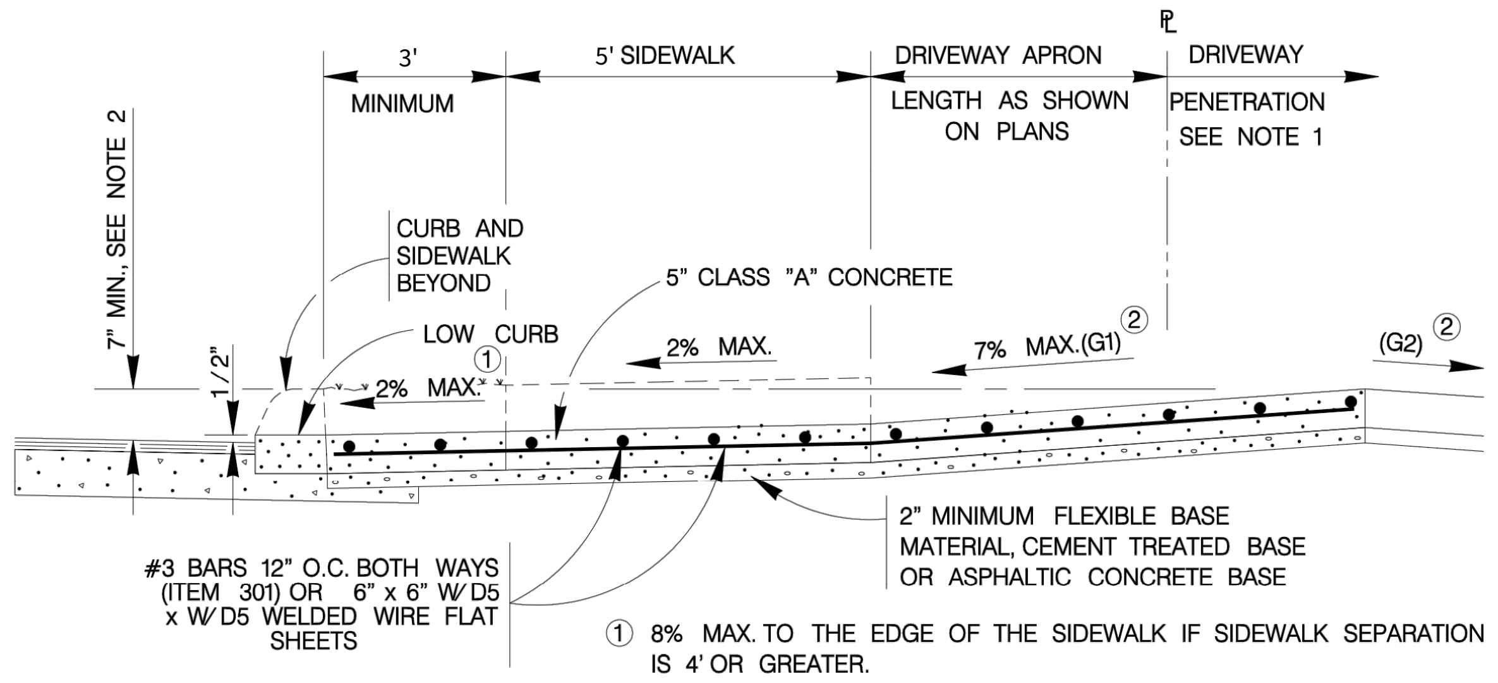
WITH SIDEWALK ABUTTING CURB


5' 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
2%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

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

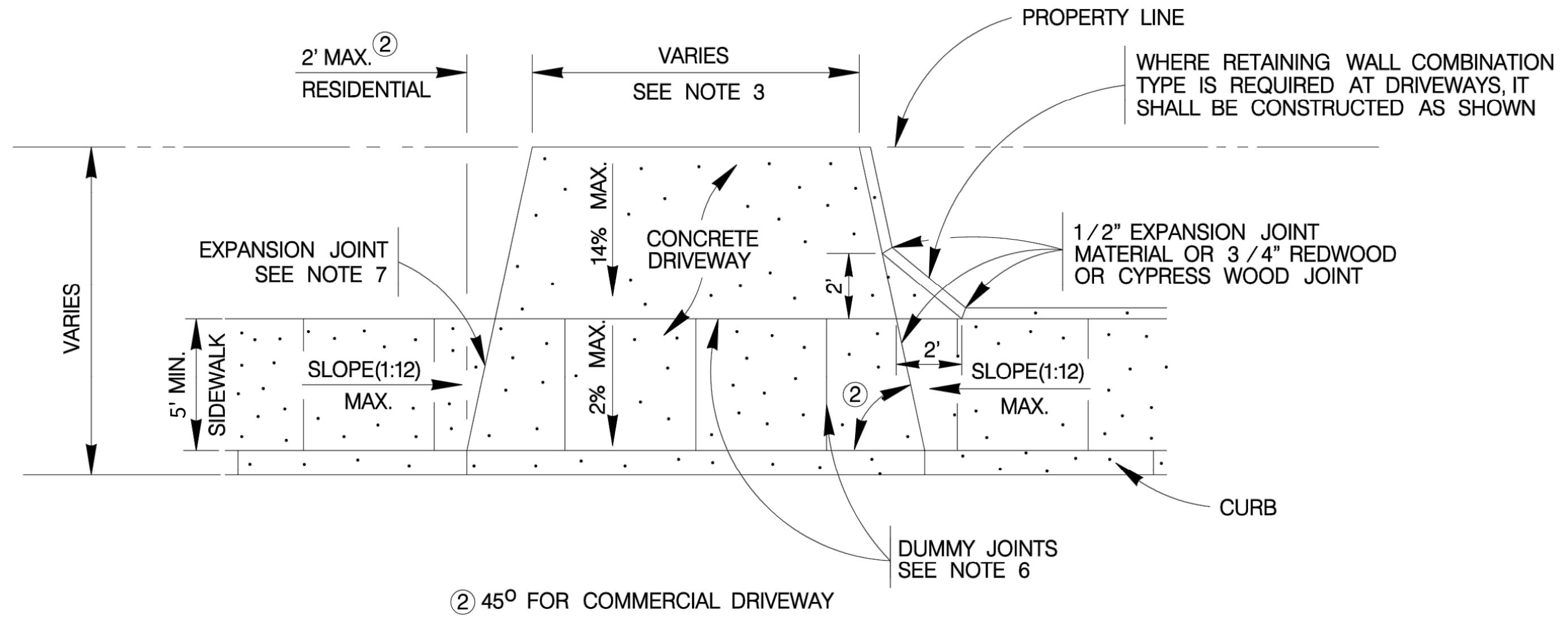

3' MINIMUM
5' SIDEWALK
DRIVEWAY APRON LENGTH AS SHOWN ON PLANS
℞
DRIVEWAY PENETRATION SEE NOTE 1
7" MIN., SEE NOTE 2
CURB AND SIDEWALK BEYOND
LOW CURB
①
5" CLASS "A" CONCRETE
2% MAX.
2% MAX.
7% MAX.(G1) ②
(G2) ②
1/2"
2" MINIMUM FLEXIBLE BASE MATERIAL, CEMENT TREATED BASE OR ASPHALTIC CONCRETE BASE
#3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

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

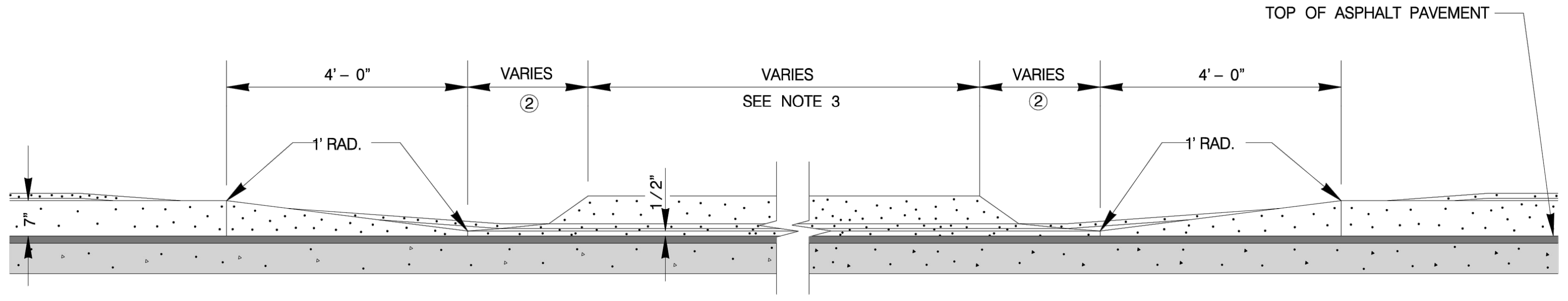
WHERE PROPERTY IS LOWER THAN STREET & SIDEWALK IS SEPARATED FROM CURB


2' MAX. ② RESIDENTIAL
VARIES SEE NOTE 3
PROPERTY LINE
WHERE RETAINING WALL COMBINATION TYPE IS REQUIRED AT DRIVEWAYS, IT SHALL BE CONSTRUCTED AS SHOWN
VARIES
EXPANSION JOINT SEE NOTE 7
14% MAX.
CONCRETE DRIVEWAY
2'
1/2" EXPANSION JOINT MATERIAL OR 3/4" REDWOOD OR CYPRESS WOOD JOINT
5' 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

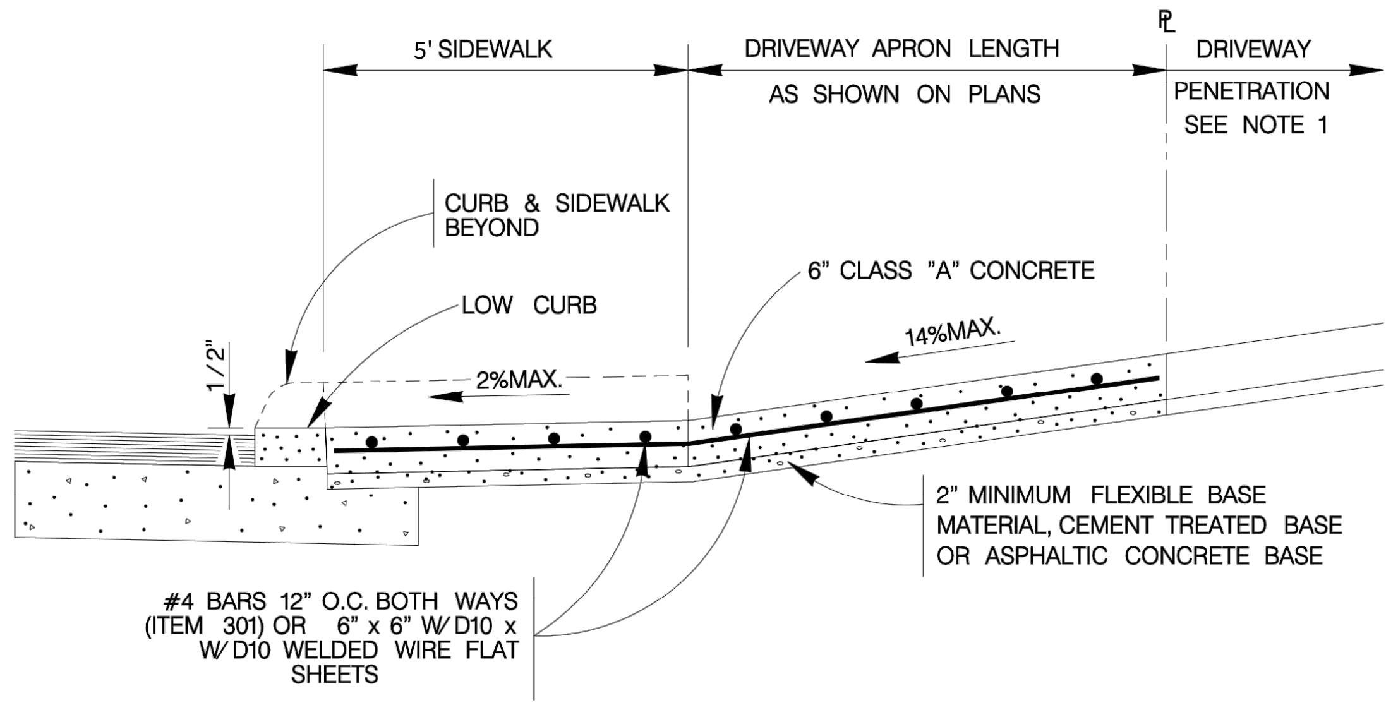
WITH SIDEWALK ABUTTING CURB



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

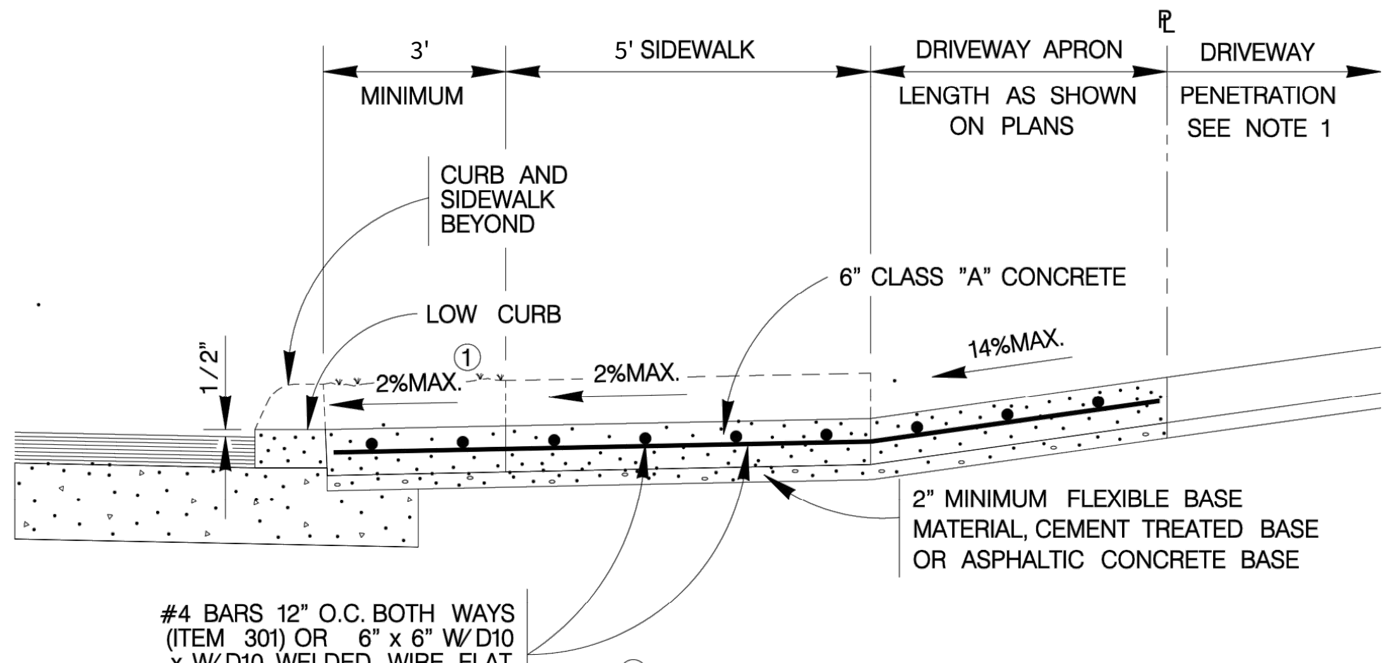
CURB PROFILE AT DRIVEWAY

WITH SIDEWALK SEPARATED FROM CURB


5' SIDEWALK
DRIVEWAY APRON LENGTH AS SHOWN ON PLANS
℞
DRIVEWAY PENETRATION SEE NOTE 1
CURB & SIDEWALK BEYOND
LOW CURB
6" CLASS "A" CONCRETE
14%MAX.
2%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

TYPICAL COMMERCIAL DRIVEWAY SECTION

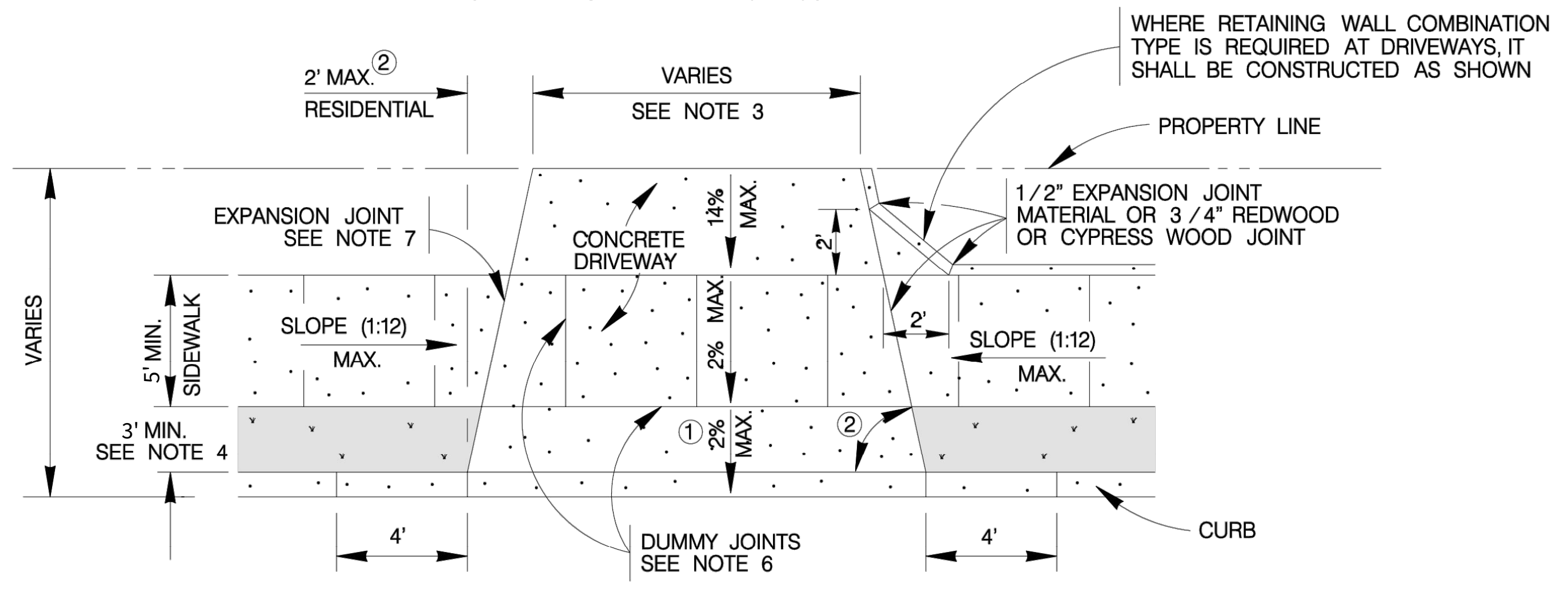
WITH SIDEWALK ABUTTING CURB


3' MINIMUM
5' 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

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



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

CONCRETE DRIVEWAY NOTES

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

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

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

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

4. FOR LOCAL TYPE "A" STREETS, SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 5' AND IF SEPARATED FROM THE CURB, THE SIDEWALK SHALL BE LOCATED A MINIMUM OF 3' FROM THE BACK OF CURB.

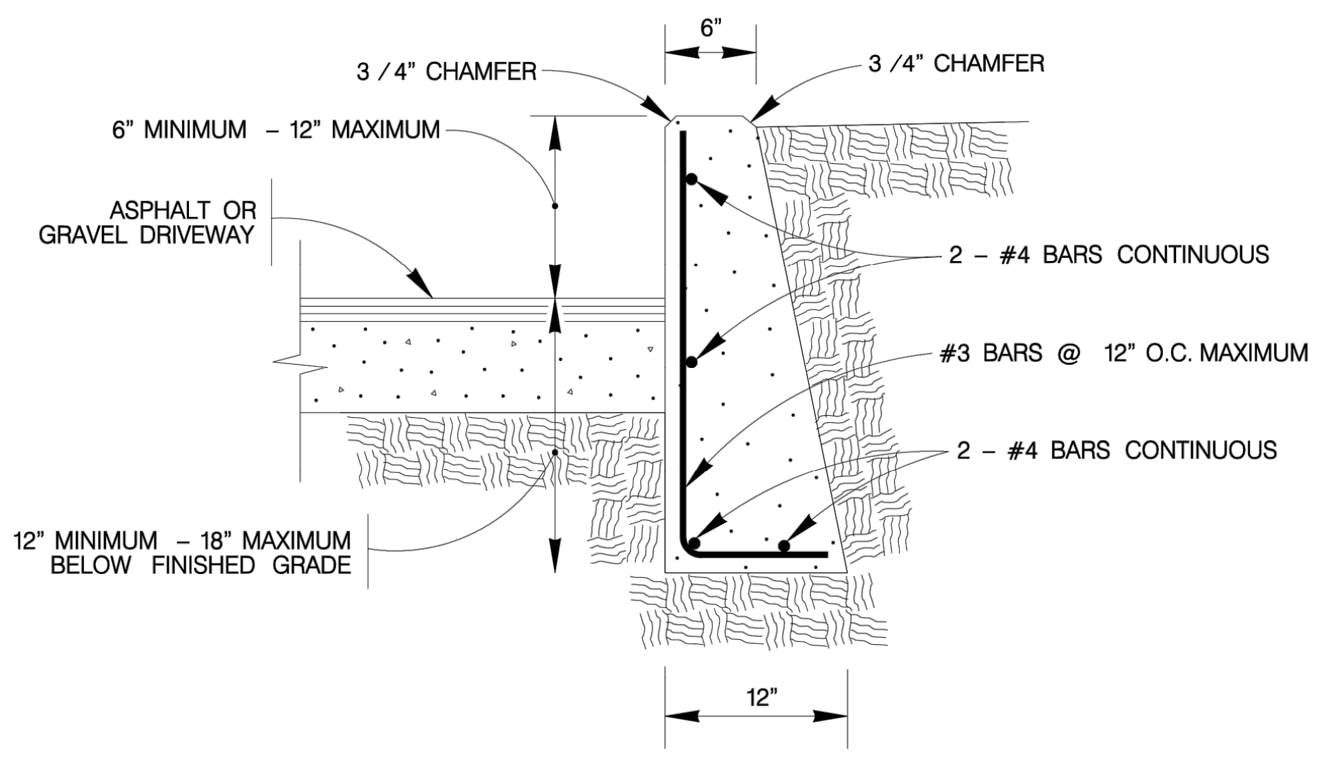
5. FOR OTHER THAN LOCAL TYPE "A" STREETS, THE SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 5' AND SEPARATED A MINIMUM OF 3' FROM THE BACK OF CURB OR, AS AN OPTION, THE SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 6' WHEN LOCATED AT THE BACK OF CURB.

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

7. A MINIMUM OF TWO ROUND AND SMOOTH DOWEL BARS 3/8" IN DIAMETER AND 18" IN LENGTH SHALL BE SPACED 18" APART AT EACH EXPANSION JOINT.

8. SIDEWALK RAMP LENGTHS SHALL BE OF SUFFICIENT LENGTH TO MAINTAIN 8.33% (1:12) MAXIMUM SLOPE. WHERE SIDEWALKS CROSS DRIVEWAYS, SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2%.

9. SIDEWALK RAMP SURFACE SHALL BE BRUSH FINISHED.


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

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ENGINEERS

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

GRACE VALLEY RANCH
PHASE 3A

TYPICAL CONCRETE DRIVEWAY STANDARDS

DATE
05/17/2023

PROJECT NO.
03346.006

DRAWN BY
KMH/NNR/MOH/MAS

CHECKED BY
CJC

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KYLE M. HUDEK
138753
05/22/2023

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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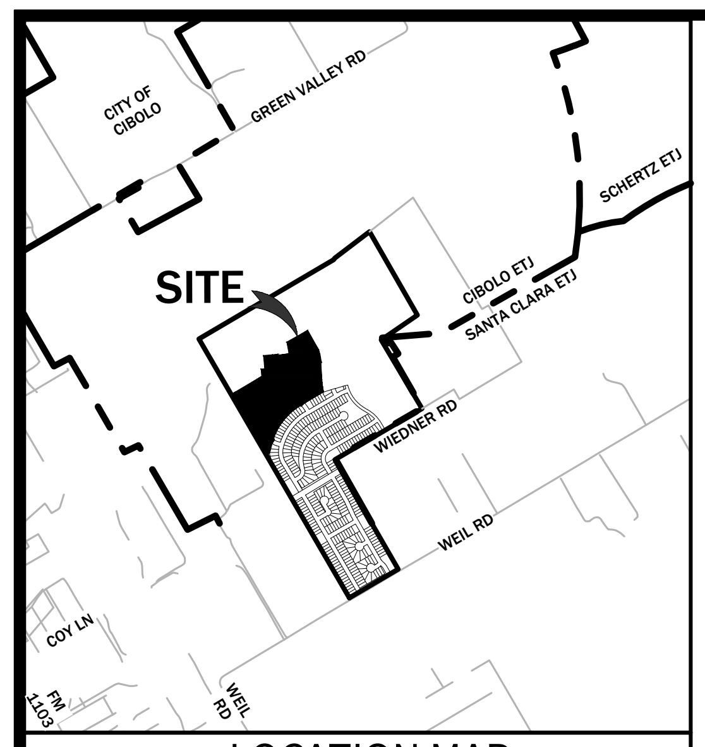


LOCATION MAP

N.T.S.

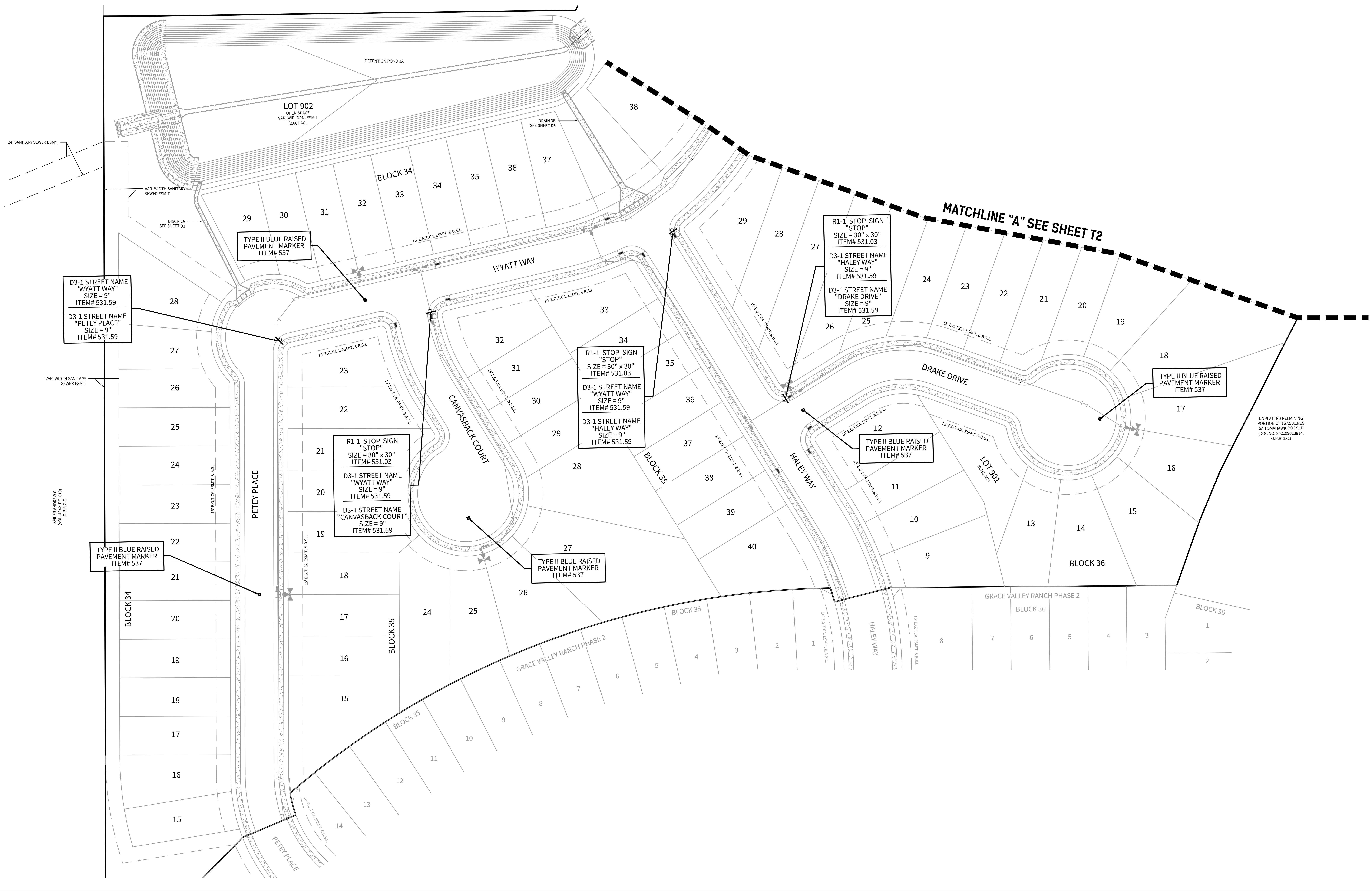
DEVELOPER:

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

NOTE:
CONTRACTOR TO COORDINATE SIGN PLACEMENT WITH SIDEWALK/ADA RAMP CONSTRUCTION TO AVOID ANY POSSIBLE CONFLICTS.


24' SANITARY SEWER ESM'T
VAR. WIDTH SANITARY SEWER ESM'T
DRAIN 3A SEE SHEET D3
DETENTION POND 3A
LOT 902
OPEN SPACE VAR. WID. DRN. ESM'T (2.669 AC.)
DRAIN 3B SEE SHEET D3
38
MATCHLINE "A" SEE SHEET T2
BLOCK 34
29
30
31
32
33
34
35
36
37
15' E.G.T.CA. ESM'T. & B.S.L.
WYATT WAY
TYPE II BLUE RAISED PAVEMENT MARKER ITEM# 537
D3-1 STREET NAME "WYATT WAY" SIZE = 9" ITEM# 531.59
D3-1 STREET NAME "PETEY PLACE" SIZE = 9" ITEM# 531.59
R1-1 STOP SIGN "STOP" SIZE = 30" x 30" ITEM# 531.03
D3-1 STREET NAME "WYATT WAY" SIZE = 9" ITEM# 531.59
D3-1 STREET NAME "CANVASBACK COURT" SIZE = 9" ITEM# 531.59
R1-1 STOP SIGN "STOP" SIZE = 30" x 30" ITEM# 531.03
D3-1 STREET NAME "WYATT WAY" SIZE = 9" ITEM# 531.59
D3-1 STREET NAME "HALEY WAY" SIZE = 9" ITEM# 531.59
R1-1 STOP SIGN "STOP" SIZE = 30" x 30" ITEM# 531.03
D3-1 STREET NAME "HALEY WAY" SIZE = 9" ITEM# 531.59
D3-1 STREET NAME "DRAKE DRIVE" SIZE = 9" ITEM# 531.59
TYPE II BLUE RAISED PAVEMENT MARKER ITEM# 537
TYPE II BLUE RAISED PAVEMENT MARKER ITEM# 537
TYPE II BLUE RAISED PAVEMENT MARKER ITEM# 537
TYPE II BLUE RAISED PAVEMENT MARKER ITEM# 537
VAR. WIDTH SANITARY SEWER ESM'T
SEILER ANDREW C (VOL. 4422, PG. 410) O.P.R.G.C.
PETEY PLACE
CANVASBACK COURT
HALEY WAY
DRAKE DRIVE
BLOCK 35
BLOCK 36
LOT 901
10' E.G.T.CA. ESM'T. & B.S.L.
15' E.G.T.CA. ESM'T. & B.S.L.
25' E.G.T.CA. ESM'T. & B.S.L.
UNPLATTED REMAINING PORTION OF 167.5 ACRES SA TOMAHAWK ROCK LP (DOC NO. 202199023814, O.P.R.G.C.)
GRACE VALLEY RANCH PHASE 2
GRACE VALLEY RANCH PHASE 2
BLOCK 35
BLOCK 36
HALEY WAY
PETEY PLACE

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San Antonio, Texas 78231
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GRACE VALLEY RANCH PHASE 3A

TRAFFIC SIGNAGE PLAN

DATE
05/17/2023

PROJECT NO.
03346.006

DRAWN BY
KMH/NNR/MOH/MAS

CHECKED BY
CJC

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KYLE M. HUDEK
138753
05/22/2023

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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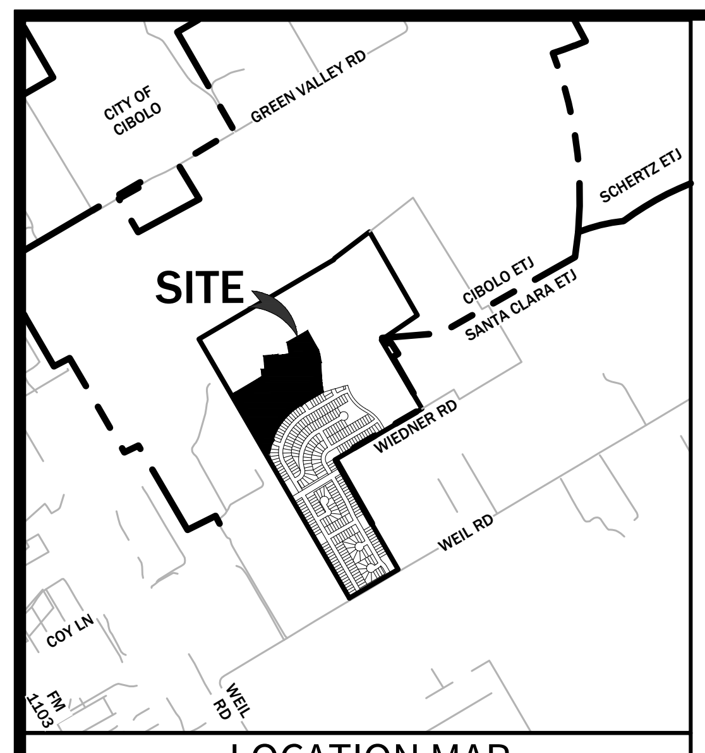

LOCATION MAP

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TEL: (210) 681-2951
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NOTE:
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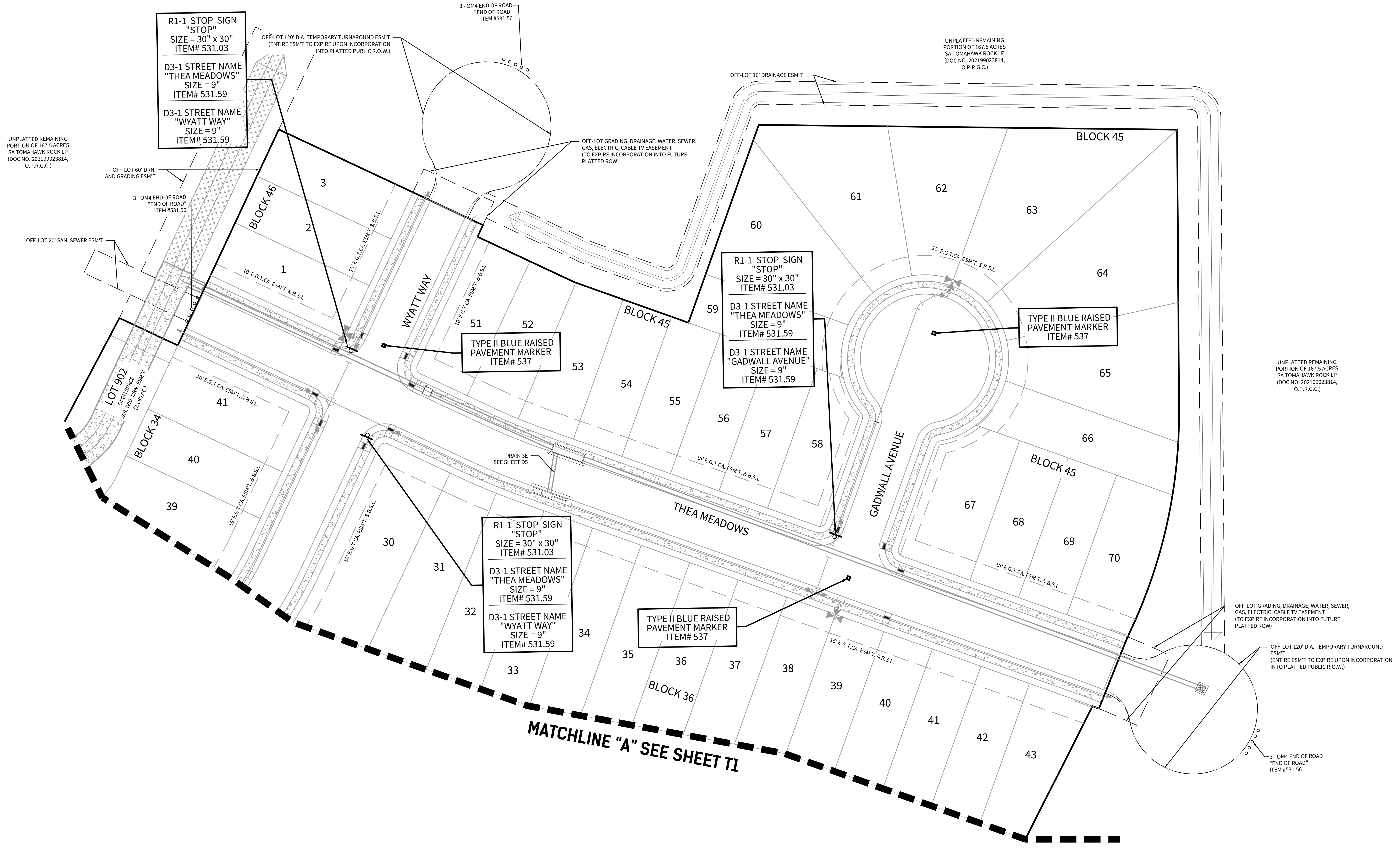

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GRACE VALLEY RANCH PHASE 3A

TRAFFIC SIGNAGE PLAN

DATE
05/17/2023

PROJECT NO.
03346.006

DRAWN BY
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CJC

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KYLE M. HUDEK
138753
K Hudek
05/22/2023

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TBPE No. 455
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2 OF 4

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SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

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

Post Type

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

Number of Posts (1 or 2)

Anchor Type

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

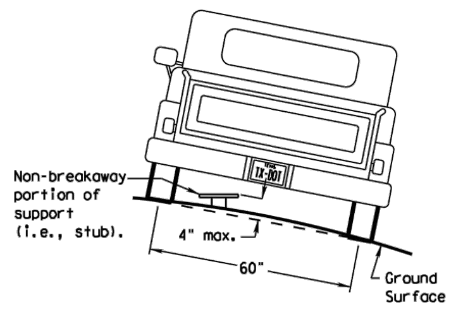
Sign Mounting Designation

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

IF REQUIRED

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

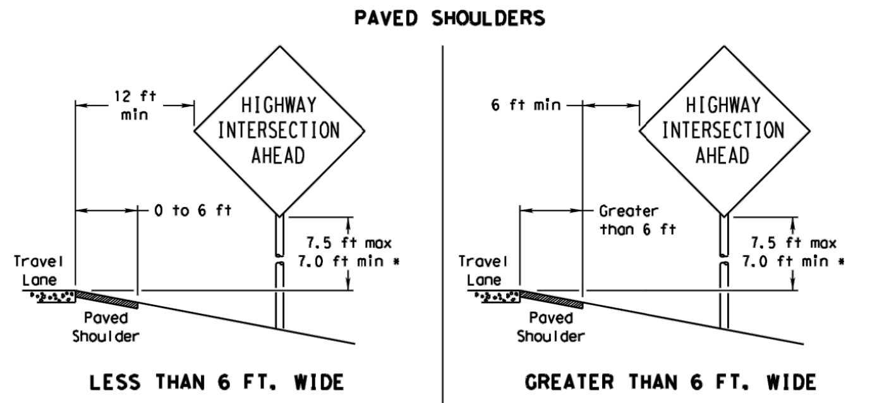
REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



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

SIGN LOCATION

PAVED SHOULDERS



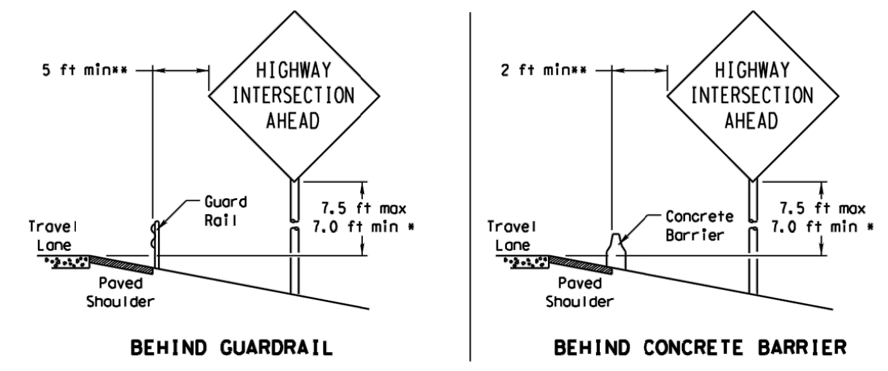
LESS THAN 6 FT. WIDE

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

GREATER THAN 6 FT. WIDE

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

BEHIND BARRIER

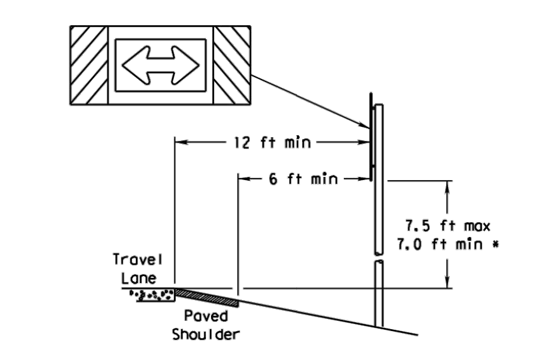


BEHIND GUARDRAIL

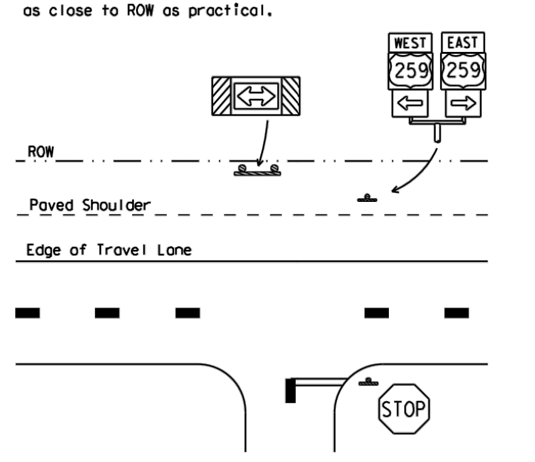
BEHIND CONCRETE BARRIER

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

T-INTERSECTION



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



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

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

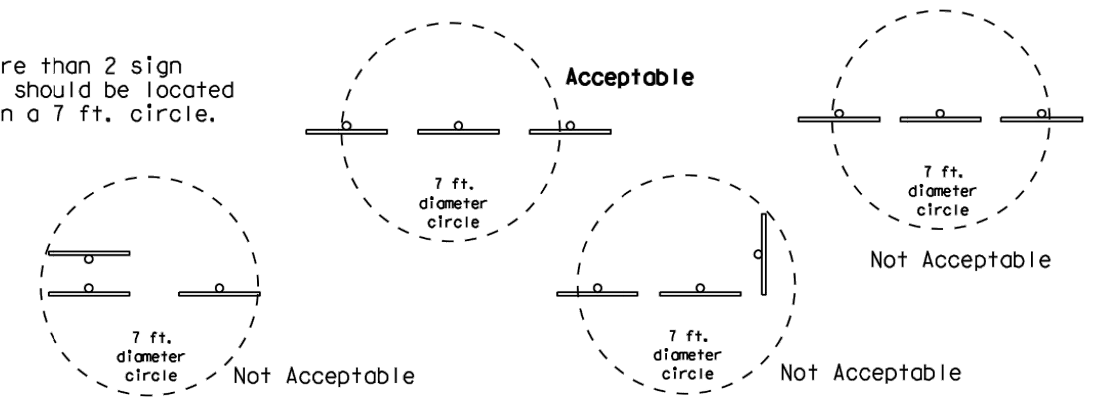
(2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

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

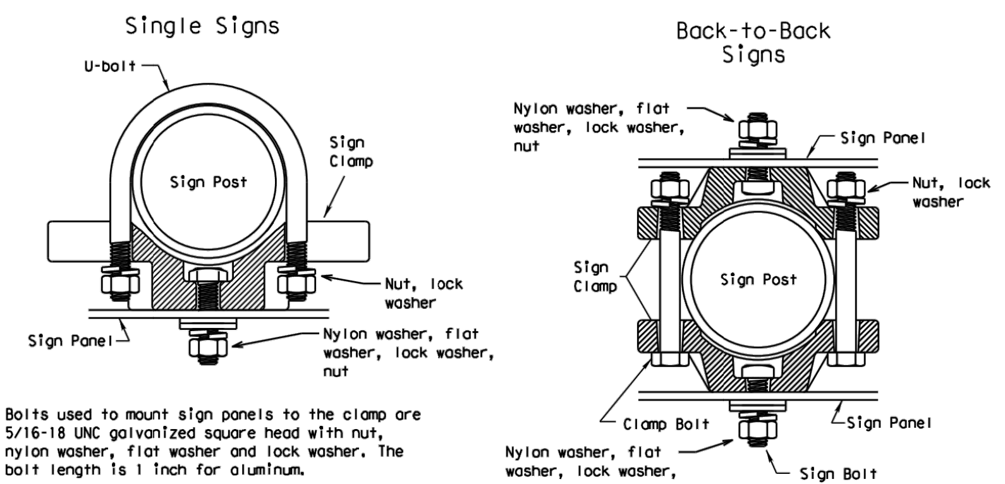
See the Traffic Operations Division website for detailed drawings of sign clamps, Triangular Slipbase System components and Wedge Anchor System components.

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

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



TYPICAL SIGN ATTACHMENT DETAIL



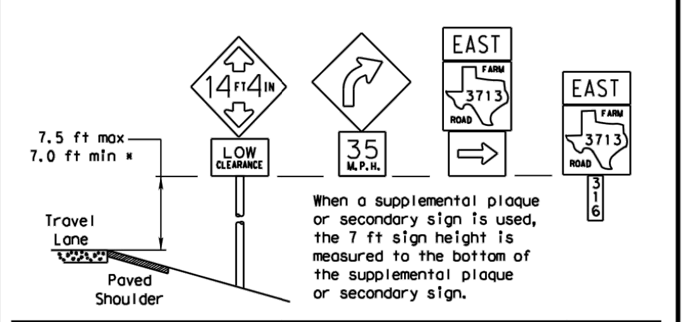
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

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

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

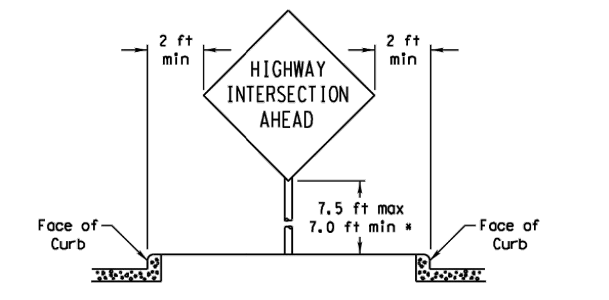
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



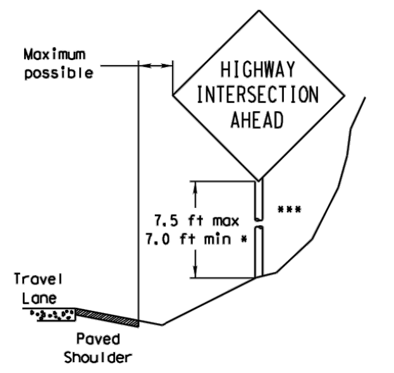
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

CURB & GUTTER OR RAISED ISLAND



RESTRICTED RIGHT-OF-WAY

(When 6 ft min. is not possible.)



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

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

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

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

©TxDOT July 2002	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
9-08 REVISIONS	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO.

26A

DATE:
FILE:

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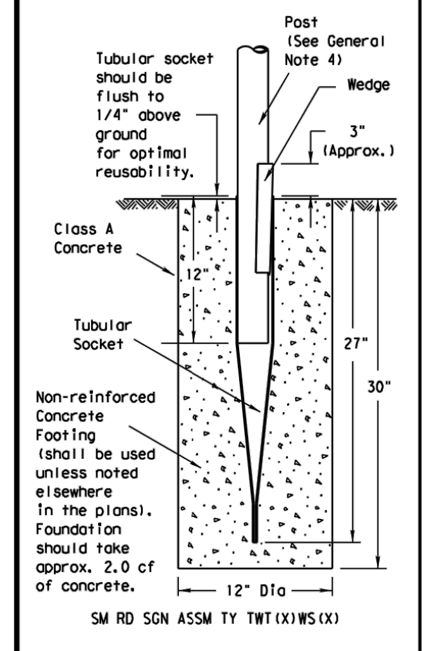
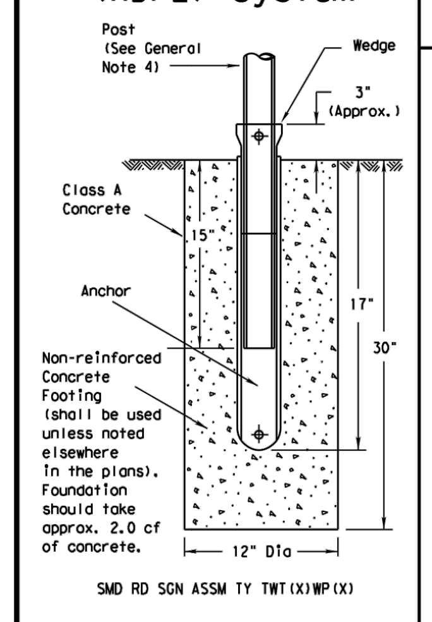
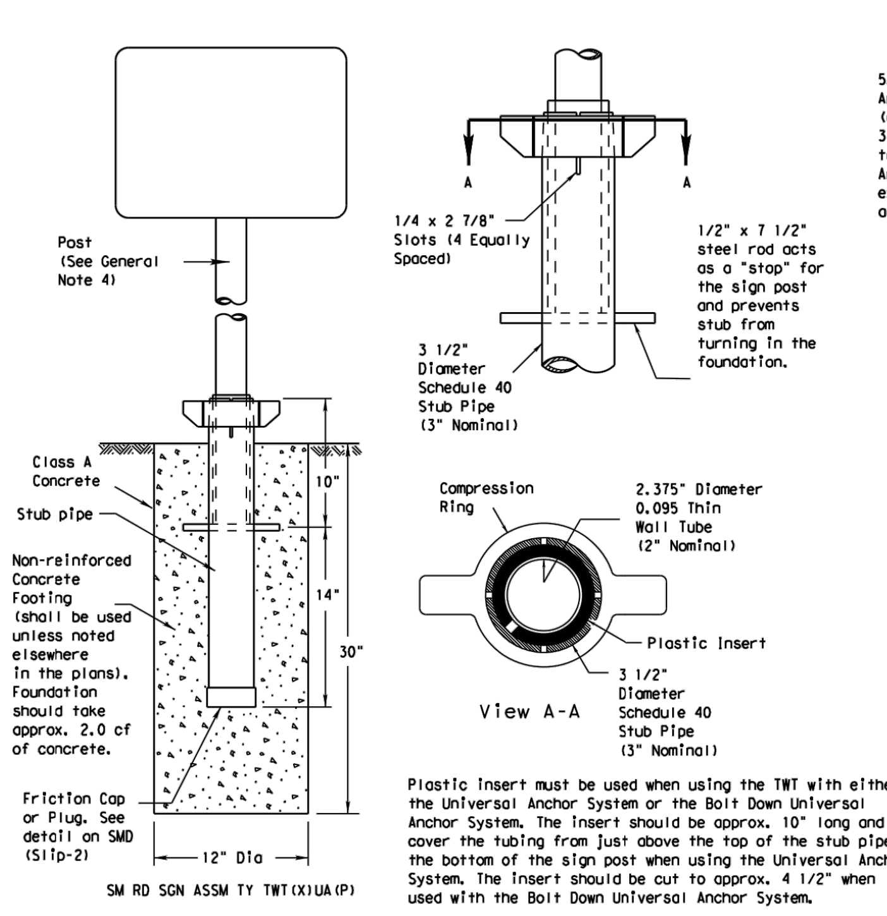
Wedge Anchor Steel System


Tubular socket should be flush to 1/4" above ground for optimal reusability.
Post (See General Note 4)
Wedge
3" (Approx.)
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"
27"
30"
12" Dia
SM RD SGN ASSM TY TWT(X)WS(X)

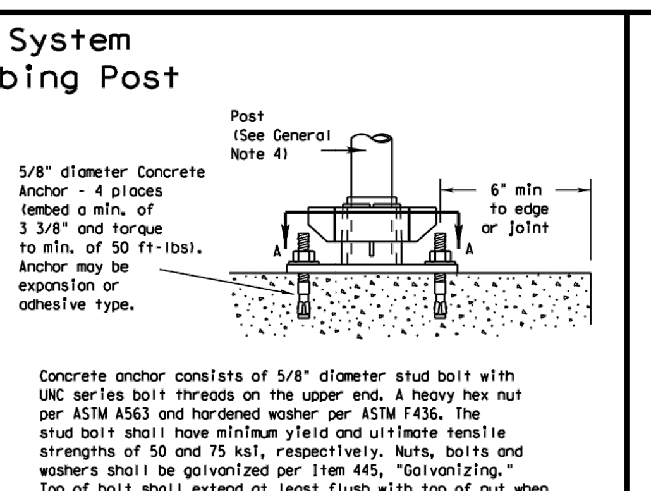
Wedge Anchor High Density Polyethylene (HDPE) System


Post (See General Note 4)
Wedge
3" (Approx.)
Class A Concrete
Anchor
Non-reinforced Concrete Footing (shall be used unless noted elsewhere in the plans). Foundation should take approx. 2.0 cf of concrete.
17"
30"
12" Dia
SMD RD SGN ASSM TY TWT(X)WP(X)

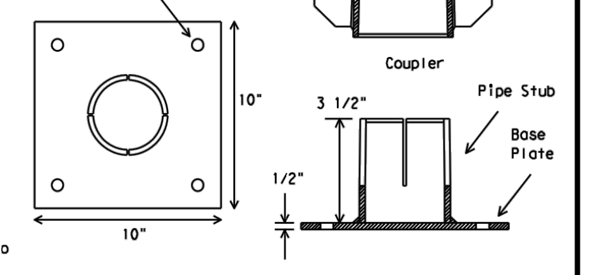
Universal Anchor System with Thin-Walled Tubing Post


1/4 x 2 7/8" Slots (4 Equally Spaced)
1/2" x 7 1/2" steel rod acts as a "stop" for the sign post and prevents stub from turning in the foundation.
3 1/2" Diameter Schedule 40 Stub Pipe (3" Nominal)
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)
10"
14"
30"
12" Dia
Compression Ring
2.375" Diameter 0.095 Thin Wall Tube (2" Nominal)
Plastic Insert
View A-A
3 1/2" Diameter Schedule 40 Stub Pipe (3" Nominal)
SM RD SGN ASSM TY TWT(X)UA(P)

Plastic insert must be used when using the TWT with either the Universal Anchor System or the Bolt Down Universal Anchor System. The insert should be 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.

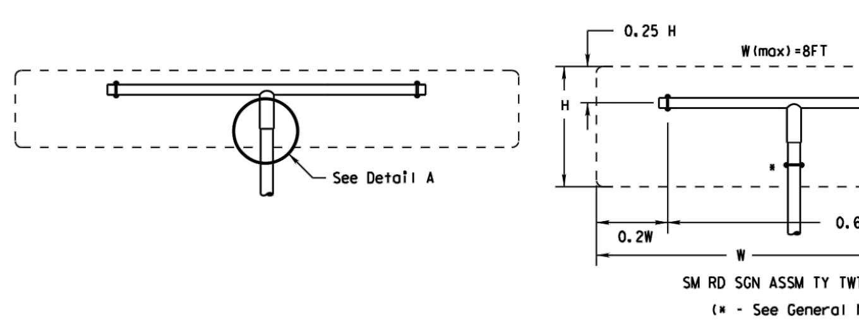

Post (See General Note 4)
5/8" diameter Concrete Anchor - 4 places (embed a min. of 3 3/8" and torque to min. of 50 ft-lbs). Anchor may be expansion or adhesive type.
6" min to edge or joint
A
A

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.

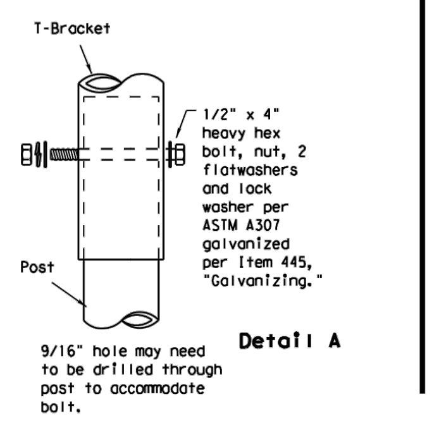


SM RD SGN ASSM TY TWT(X)UB(P)

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



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."
Post
9/16" hole may need to be drilled through post to accommodate bolt.

Detail A

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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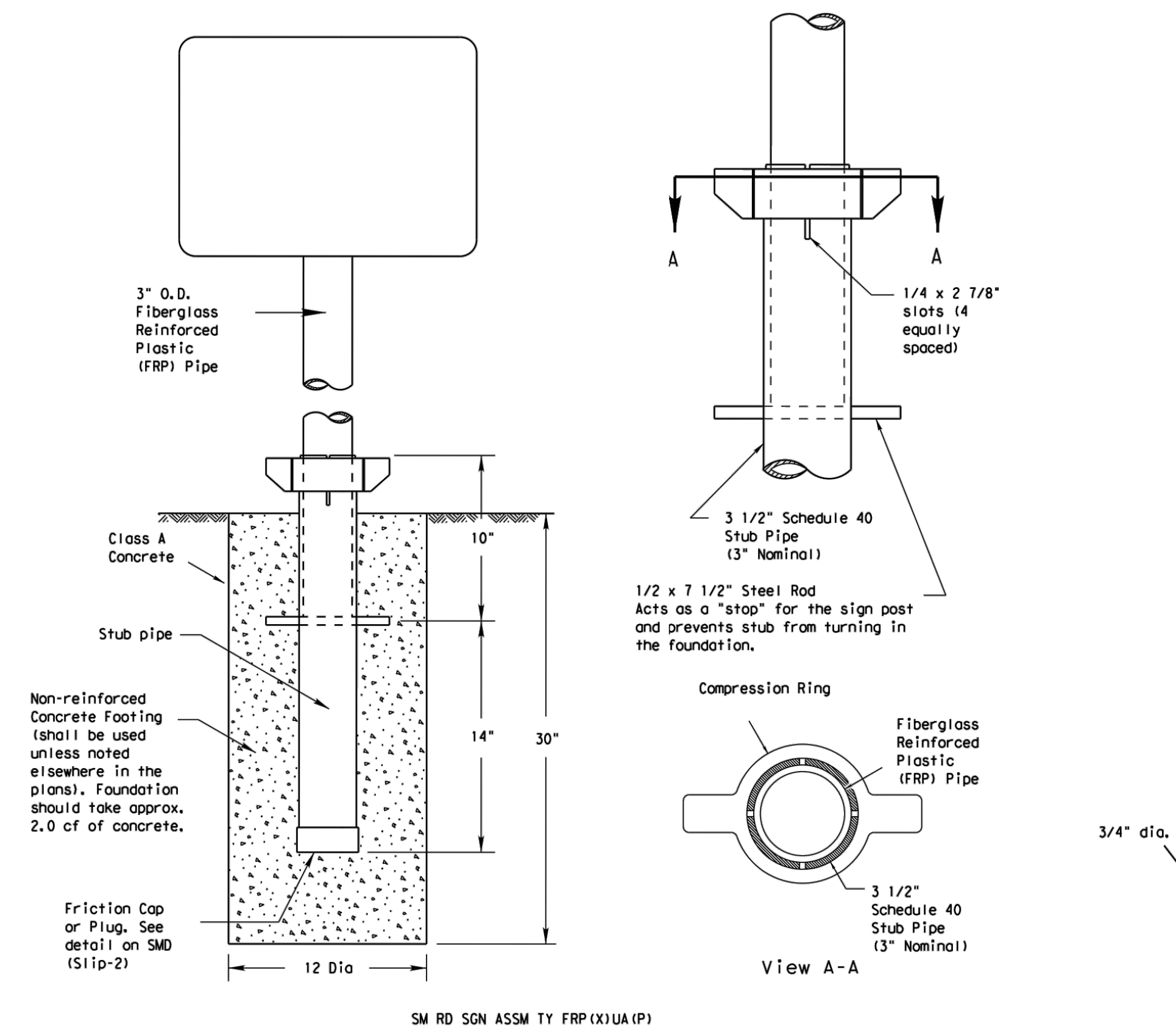
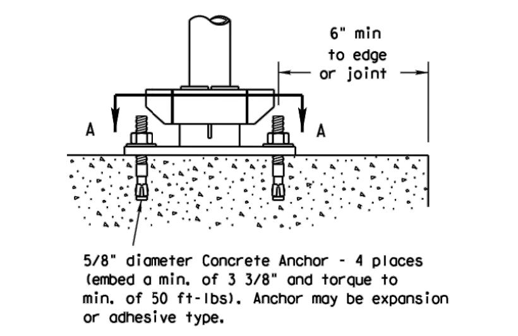
Universal Anchor System with Fiberglass Reinforced Plastic (FRP) Post

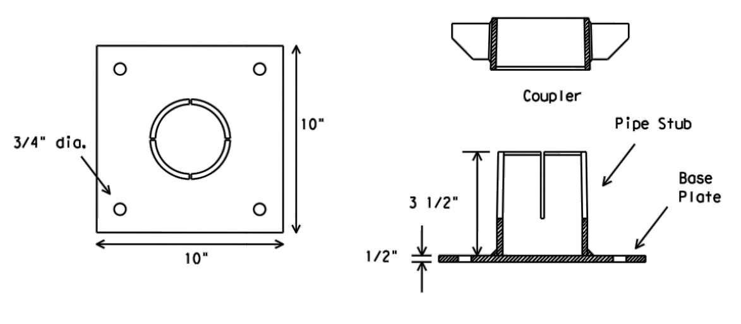

3" O.D. Fiberglass Reinforced Plastic (FRP) Pipe
Class A Concrete
Stub pipe
Non-reinforced Concrete Footing (shall be used unless noted elsewhere in the plans). Foundation should take approx. 2.0 cf of concrete.
Friction Cap or Plug. See detail on SMD (Slip-2)
10"
14"
30"
12 Dia
SM RD SGN ASSM TY FRP(X)UA(P)
A
A
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



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.

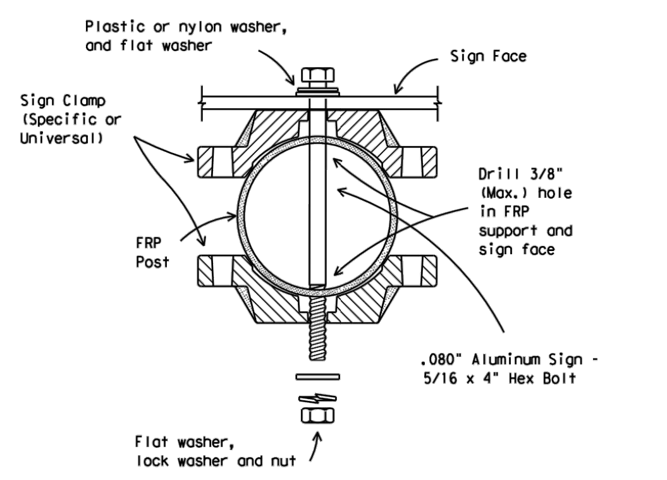
Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. A heavy hex nut per ASTM A563 and hardened washer per ASTM F436. The stud bolt shall have minimum yield and ultimate tensile strengths of 50 and 75 ksi, respectively. Nuts, bolts and washers shall be galvanized 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.

BOLT-DOWN DETAILS

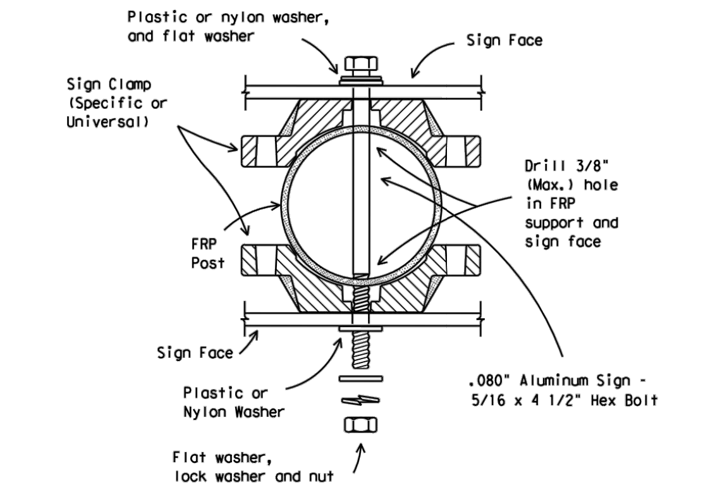


SM RD SGN ASSM TY FRP(X)UB(P)

Typical Sign Mounting Detail for FRP Support with Single Sign


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
Flat washer, lock washer and nut

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
Sign Face
Plastic or Nylon Washer
.080" Aluminum Sign - 5/16 x 4 1/2" Hex Bolt
Flat washer, lock washer and nut

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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GRACE VALLEY RANCH PHASE 3A

TXDOT SIGN MOUNTING DETAILS

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05/17/2023

PROJECT NO.
03346.006

DRAWN BY
KMH/NNR/MOH/MAS

CHECKED BY
CJC

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KYLE M. HUDEK
138753
05/22/2023

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TBPLS No. 10048500

T3

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TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS

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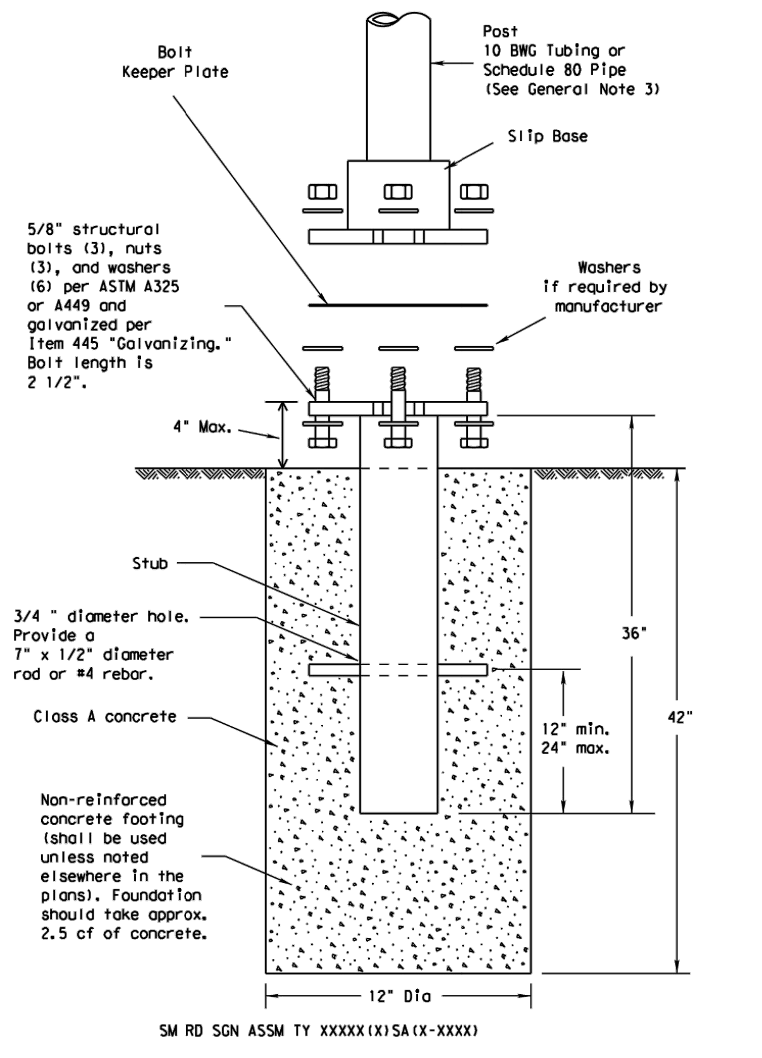

Bolt Keeper Plate
Post
10 BWG Tubing or Schedule 80 Pipe (See General Note 3)
Slip Base
5/8" structural bolts (3), nuts (3), and washers (6) per ASTM A325 or A449 and galvanized per Item 445 "Galvanizing." Bolt length is 2 1/2".
Washers if required by manufacturer
4" Max.
Stub
3/4 " diameter hole. Provide 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

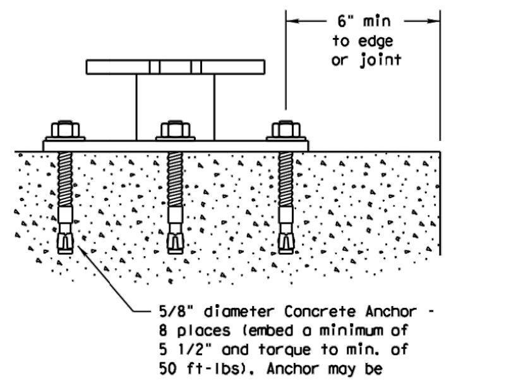
Foundation

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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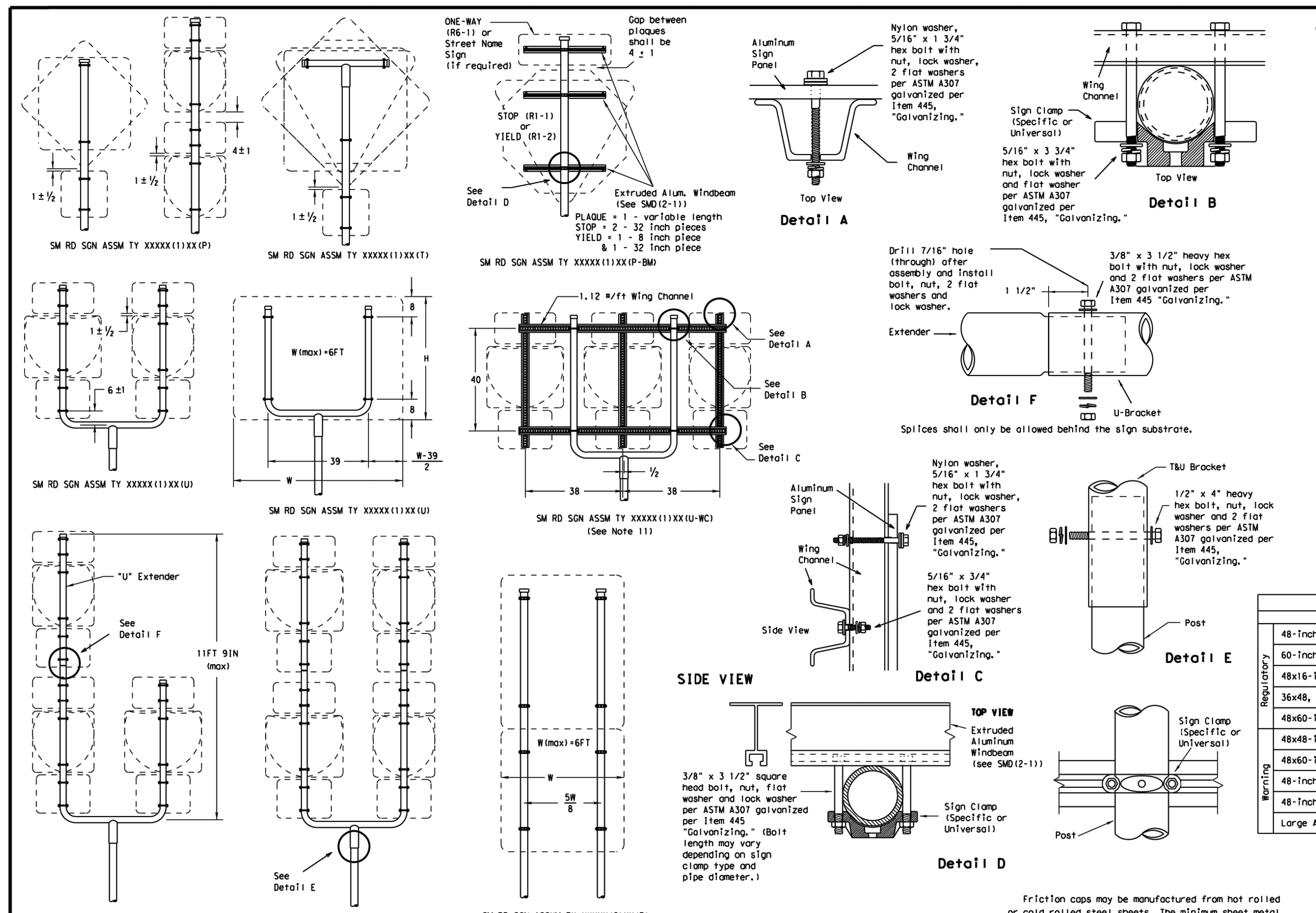
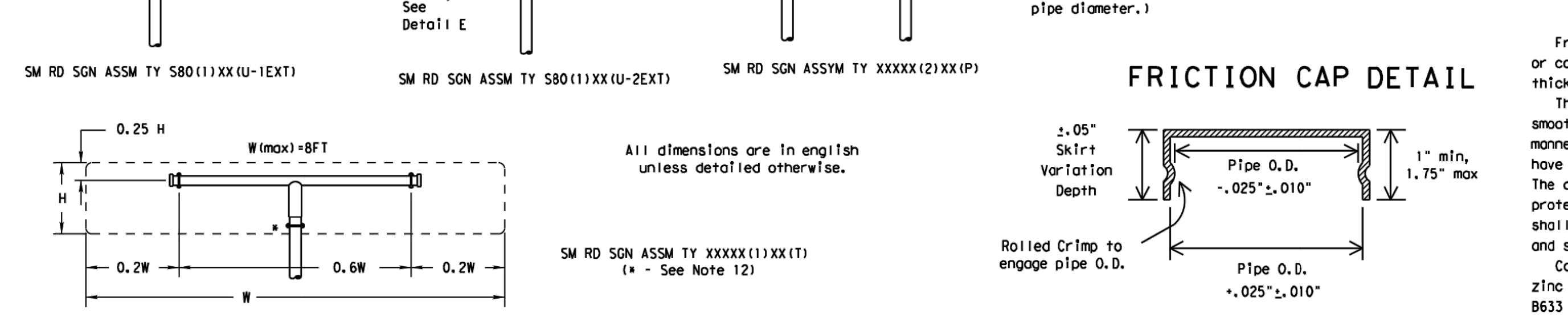

ONE-WAY (R6-1) or Street Name Sign (if required)
STOP (R1-1)
YIELD (R1-2)
Gap between plaques shall be 4 ± 1
PLAQUE + 1 - variable length
STOP + 2 - 32 inch pieces
YIELD + 1 - 8 inch piece & 1 - 32 inch piece
Extruded Alum. Windbeam (See SMD(2-1))
See Detail D
SM RD SGN ASSM TY XXXXX(1)XX(P)
SM RD SGN 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)
1.12 #/ft Wing Channel
W(max)=6FT
See Detail A
See Detail B
See Detail C
"U" Extender
See Detail F
11FT 9IN (max)
W(max)=6FT
See Detail E
SM RD SGN ASSM TY S80(1)XX(U-1EXT)
SM RD SGN ASSM TY S80(1)XX(U-2EXT)
SM RD SGN ASSYM TY XXXXX(2)XX(P)
Aluminum Sign Panel
Nylon washer, 5/16" x 1 3/4" hex bolt with nut, lock washer, 2 flat washers per ASTM A307 galvanized per Item 445, "Galvanizing."
Top View
Wing Channel
Detail A
Sign Clamp (Specific or Universal)
Wing Channel
5/16" x 3 3/4" hex bolt with nut, lock washer and flat washer per ASTM A307 galvanized per Item 445, "Galvanizing."
Top View
Detail B
Drill 7/16" hole (through) after assembly and install bolt, nut, 2 flat washers and lock washer.
Extender
3/8" x 3 1/2" heavy hex bolt with nut, lock washer and 2 flat washers per ASTM A307 galvanized per Item 445 "Galvanizing."
U-Bracket
Detail F
Splices shall only be allowed behind the sign substrate.
Aluminum Sign Panel
Wing Channel
Side View
SIDE VIEW
Nylon washer, 5/16" x 1 3/4" hex bolt with nut, lock washer, 2 flat washers per ASTM A307 galvanized per Item 445, "Galvanizing."
5/16" x 3/4" hex bolt with nut, lock washer and 2 flat washers per ASTM A307 galvanized per Item 445, "Galvanizing."
Detail C
T&U Bracket
1/2" x 4" heavy hex bolt, nut, lock washer and 2 flat washers per ASTM A307 galvanized per Item 445, "Galvanizing."
Post
Detail E
TOP VIEW
Extruded Aluminum Windbeam (see SMD(2-1))
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.)
Sign Clamp (Specific or Universal)
Post
Detail D


0.25 H
W(max)=8FT
0.2W
0.6W
0.2W
W
H
SM RD SGN ASSM TY XXXXX(1)XX(T)
(* - See Note 12)
All dimensions are in english unless detailed otherwise.
±.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 CAP DETAIL

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

26C

DATE:
FILE:

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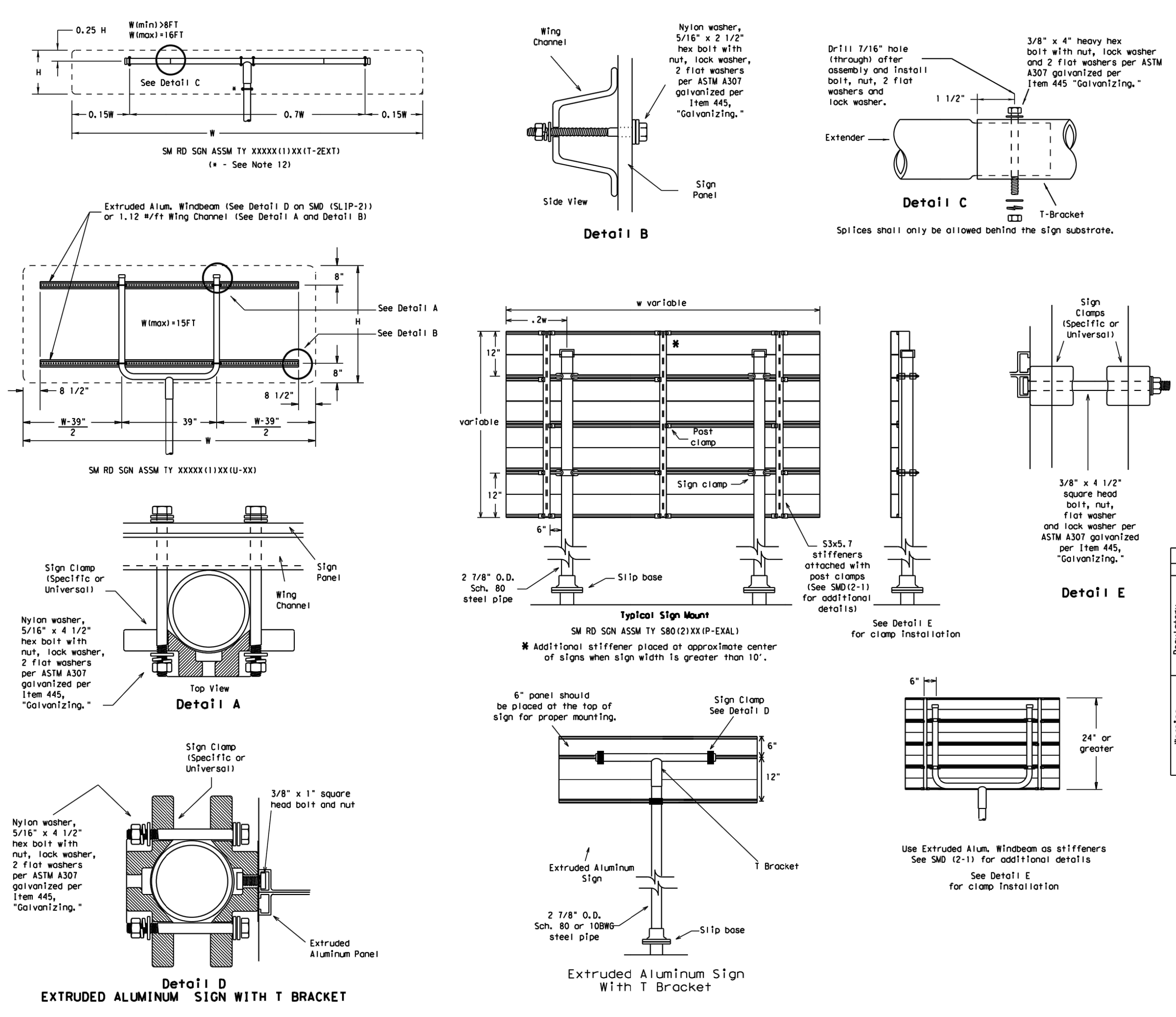
0.25 H
W(min)=8FT
W(max)=16FT
See Detail C
0.15W
0.7W
0.15W
SM RD SGN ASSM TY XXXXX(1)XX(T-2EXT)
(* - See Note 12)
Extruded Alum. Windbeam (See Detail D on SMD (SLIP-2)) or 1.12 #/ft Wing Channel (See Detail A and Detail B)
W(max)=15FT
See Detail A
See Detail B
8 1/2"
W-39"
39"
SM RD SGN ASSM TY XXXXX(1)XX(U-XX)
Wing Channel
Nylon washer, 5/16" x 2 1/2" hex bolt with nut, lock washer, 2 flat washers per ASTM A307 galvanized per Item 445, "Galvanizing."
Side View
Sign Panel
Detail B
Drill 7/16" hole (through) after assembly and install bolt, nut, 2 flat washers and lock washer.
3/8" x 4" heavy hex bolt with nut, lock washer and 2 flat washers per ASTM A307 galvanized per Item 445 "Galvanizing."
Extender
T-Bracket
Detail C
Splices shall only be allowed behind the sign substrate.
Sign Clamp (Specific or Universal)
Wing Channel
Sign Panel
Nylon washer, 5/16" x 4 1/2" hex bolt with nut, lock washer, 2 flat washers per ASTM A307 galvanized per Item 445, "Galvanizing."
Top View
Detail A
W variable
variable
Post clamp
Sign clamp
2 7/8" O.D. Sch. 80 steel pipe
Slip base
S3x5.7 stiffeners attached with post clamps (See SMD(2-1) for additional details)
See Detail E for clamp installation
Typical Sign Mount
SM RD SGN ASSM TY S80(2)XX(P-EXAL)
* Additional stiffener placed at approximate center of signs when sign width is greater than 10'.
Sign Clamps (Specific or Universal)
3/8" x 4 1/2" square head bolt, nut, flat washer and lock washer per ASTM A307 galvanized per Item 445, "Galvanizing."
Detail E
6" panel should be placed at the top of sign for proper mounting.
Sign Clamp See Detail D
Extruded Aluminum Sign
T Bracket
2 7/8" O.D. Sch. 80 or 10BWG steel pipe
Slip base
Extruded Aluminum Sign With T Bracket
Use Extruded Alum. Windbeam as stiffeners See SMD (2-1) for additional details
See Detail E for clamp installation
24" or greater
Sign Clamp (Specific or Universal)
3/8" x 1" square head bolt and nut
Nylon washer, 5/16" x 4 1/2" hex bolt with nut, lock washer, 2 flat washers per ASTM A307 galvanized per Item 445, "Galvanizing."
Extruded Aluminum Panel
Detail D
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)
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	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-3)-08

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

26D

DATE:
FILE:

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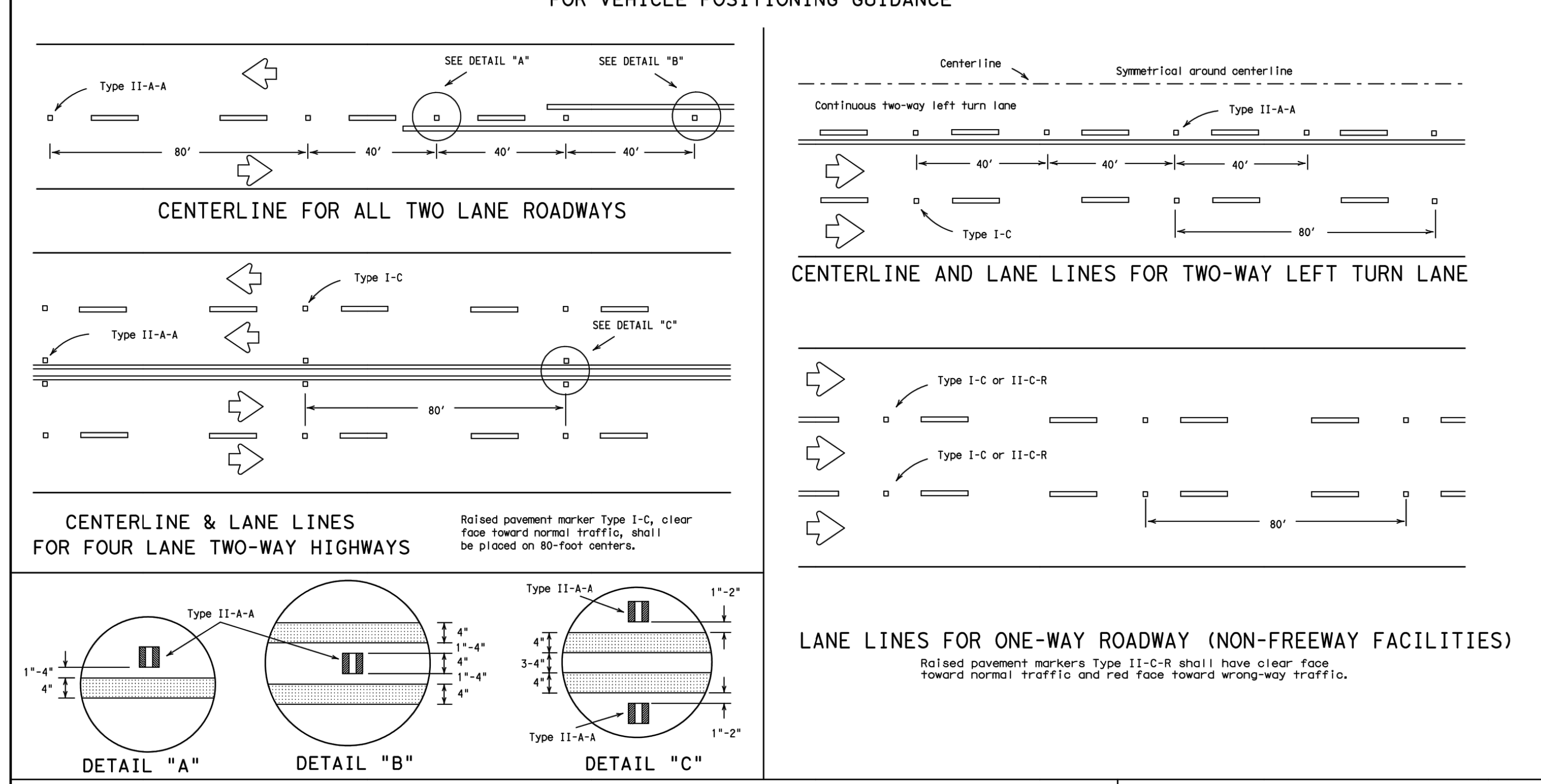
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE



CENTERLINE FOR ALL TWO LANE ROADWAYS

CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY HIGHWAYS

Raised pavement marker Type I-C, clear face toward normal traffic, shall be placed on 80-foot centers.

CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE

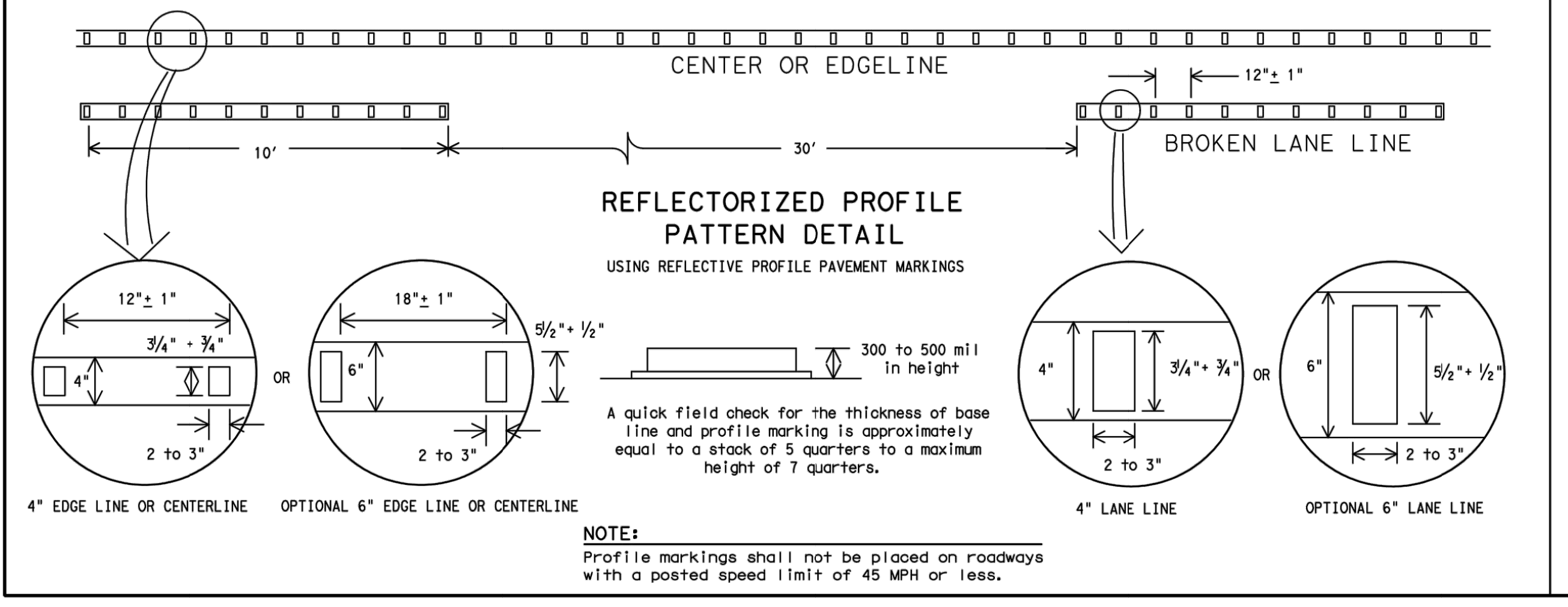
LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

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

DETAIL "A"

DETAIL "B"

DETAIL "C"



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.

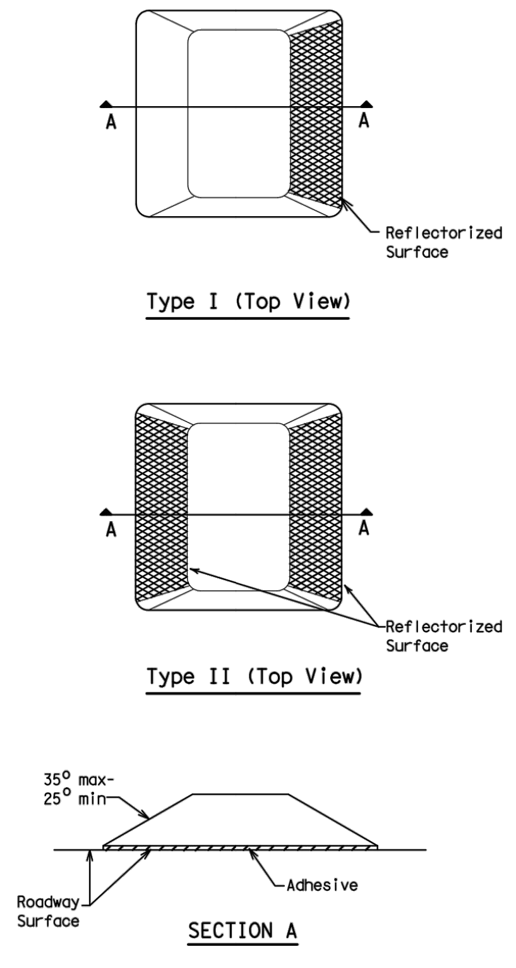
NOTE:
Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

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.



RAISED PAVEMENT MARKERS

Texas Department of Transportation
Traffic Operations Division

POSITION GUIDANCE USING
RAISED MARKERS
REFLECTORIZED PROFILE
MARKINGS

PM(2)-12

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REVISIONS 4-92 2-10 5-00 2-12 8-00 2-08	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO.

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GRACE VALLEY RANCH
PHASE 3A

TXDOT SIGN MOUNTING DETAILS

DATE
05/17/2023

PROJECT NO.
03346.006

DRAWN BY
KMH/NNR/MOH/MAS

CHECKED BY
CJC

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

KYLE M. HUDEK
138753
05/22/2023

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4 OF 4

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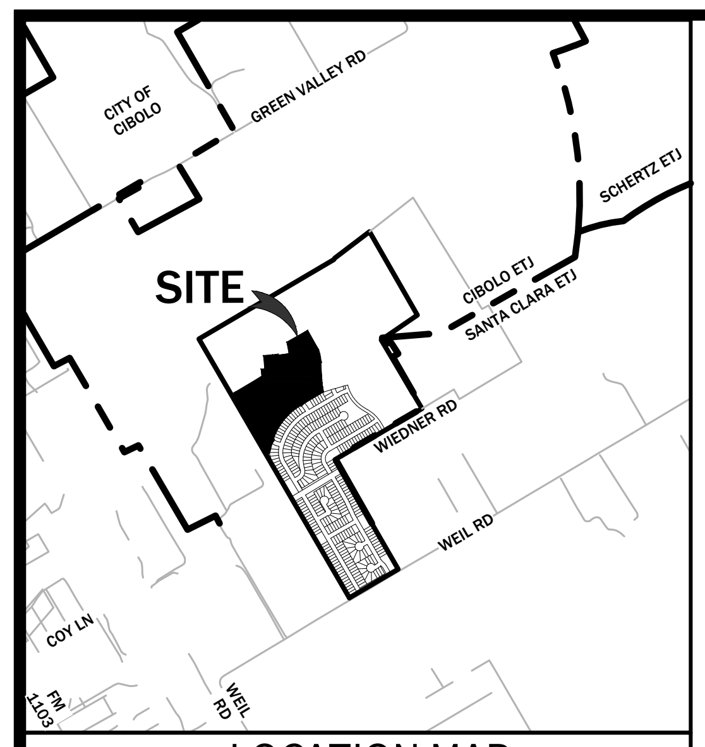

LOCATION MAP N.T.S.

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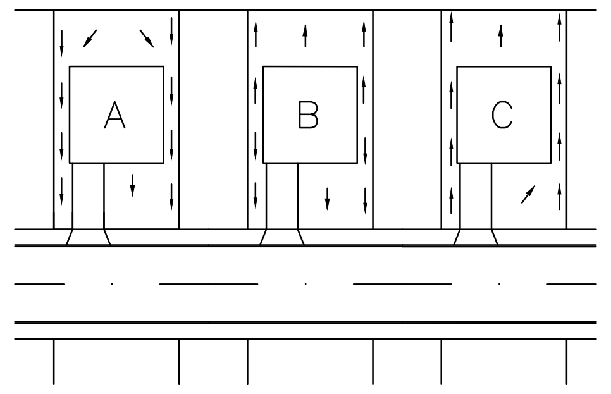
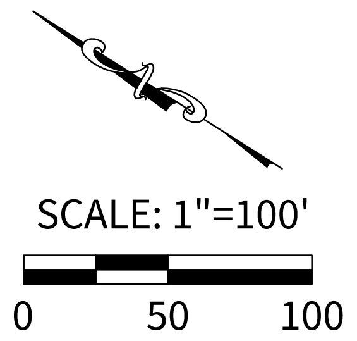
CONTACT PERSON: CHRIS CHAFFEE, P.E.
4122 POND HILL ROAD, SUITE 101
SAN ANTONIO, TX 78231
TEL: (210) 681-2951
FAX: (210) 523-7112

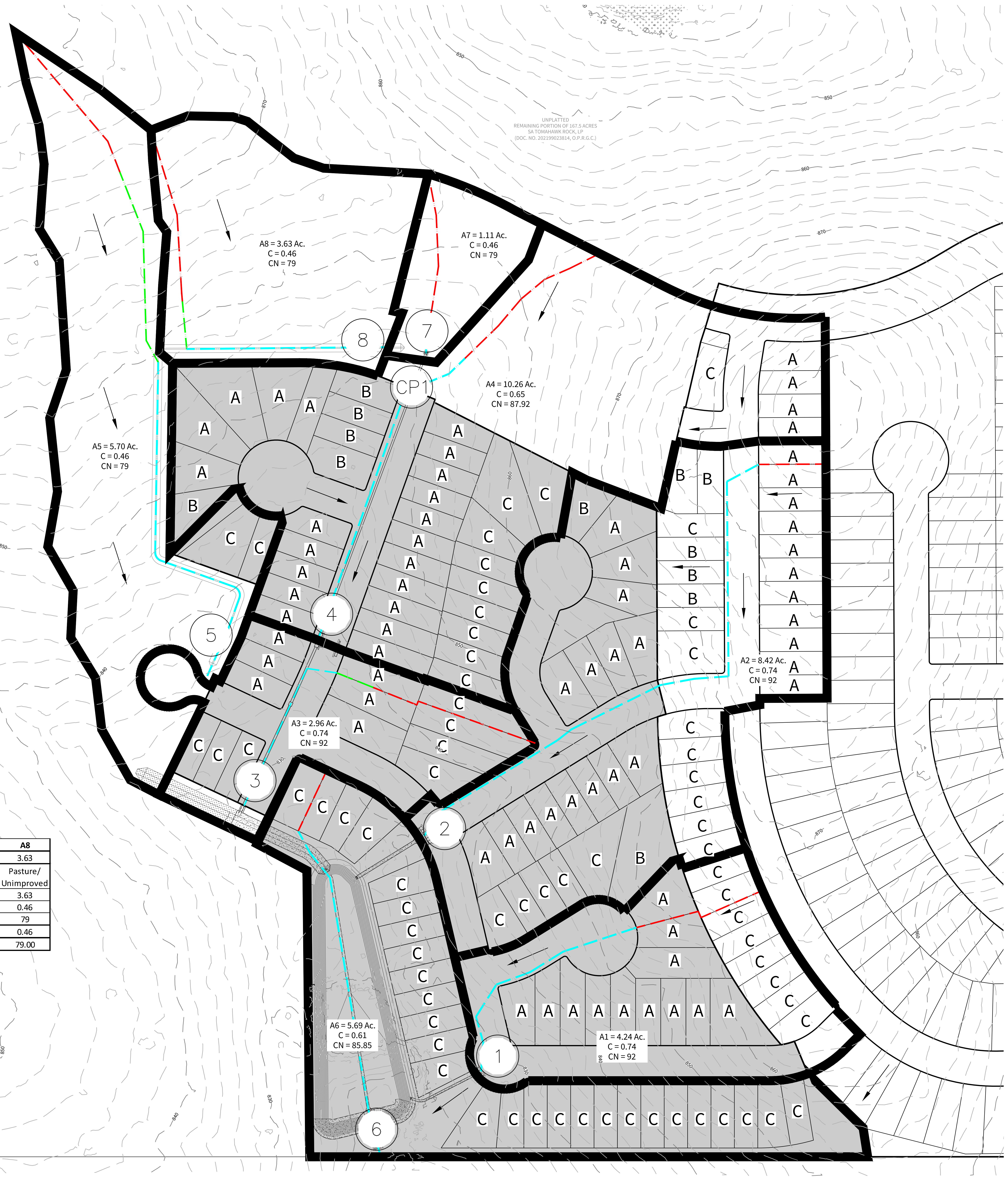
LEGEND

▨ = UNIT 3A BOUNDARY
▬ = DRAINAGE BOUNDARY
🟥 = SHEET FLOW Tc LINE
🟩 = SHALLOW CONCENTRATED Tc LINE
— = CONCENTRATED Tc LINE
(XX) = ACCUMULATION POINT



TYPICAL LOT SITE PLAN
N.T.S.





Area	A1	A2	A3	A4		A5	A6		A7	A8
Total Acreage	4.24	8.42	2.96	10.26		5.70	5.69		1.11	3.63
Character of Area	Single Family Residential: 5,000 - 7,000 sq. ft.	Single Family Residential: 5,000 - 7,000	Single Family Residential: 5,000 - 7,000	Single Family Residential: 5,000 - 7,000 sq. ft.	Pasture/ Unimproved	Pasture/ Unimproved	Park & Open Space	Single Family Residential: 5,000 - 7,000 sq. ft.	Pasture/ Unimproved	Pasture/ Unimproved
Acreage	4.24	8.42	2.96	7.04	3.22	5.70	2.69	3.00	1.11	3.63
C-Value	0.74	0.74	0.74	0.74	0.46	0.46	0.46	0.74	0.46	0.46
CN-Value	92	92	92	92	79	79	79	92	79	79
Weighted C-Value	0.74	0.74	0.74	0.65		0.46	0.61		0.46	0.46
Weighted CN-Value	92.00	92.00	92.00	87.92		79.00	85.85		79.00	79.00

Project Name: Grace Valley Phase 3A **Precipitation** **PA2**

Calculation Summary for Time of Concentrations & Ultimate Flow

HYDROLOGY				Sheet Flow Tc Compuations						Shallow Conc. Tc Compuations					Concentrated Tc Computations			Overall	INTENSITY			Q FLOW			
Drainage Shed	Shed Area (Ac.)	AREA OF ACCUMULATION (Ac.)	C	*Length < 300'*	Paved (Y or N)	Upstream Elev.	Downstream Elev	Slope	Time of Concentration	*Length < 650'*	Paved (Y or N)	Downstream Elev	Slope	Time of Concentration	*Length*	Velocity (fps)	Time of Concentration	Time of Concentration (min)	I5	I25	I100	Q5	Q25	Q100	Drainage Shed
A1	4.24	= A1	0.74	*235.97*	N	866.65	856.42	4.34%	15.66						*420.08*	6	1.17	17.00	5.98	7.74	9.16	18.76	24.29	28.73	A1
A2	8.42	= A2	0.74	*115.00*	N	888.74	884.22	3.93%	11.82						*996.49*	6	2.77	15.00	6.38	8.23	9.73	39.73	51.30	60.64	A2
A3	2.96	= A3	0.74	*300.00*	N	846.82	839.47	2.45%	19.10	*66.82*	N	837.26	3.31%	0.38	*309.38*	6	0.86	21.00	5.33	6.94	8.22	11.68	15.19	18.00	A3
A4	10.26	= A4	0.66	*300.00*	N	863.09	855.13	2.65%	18.69						*570.87*	6	1.59	21.00	5.33	6.94	8.22	36.12	46.97	55.64	A4
A5	5.70	= A5	0.46	*300.00*	N	881.49	872.81	2.89%	18.21	*337.63*	N	858.84	4.14%	1.71	*643.48*	6	1.79	22.00	5.20	6.76	8.02	13.62	17.73	21.01	A5
A6	5.69	= A6	0.61	*115.00*	N	829.63	827.67	1.70%	14.34						*581.92*	6	1.62	16.00	6.17	7.98	9.43	21.42	27.69	32.75	A6
A7	1.11	= A7	0.46	*268.77*	N	862.19	854.56	2.84%	17.62						*40.86*	6	0.11	18.00	5.80	7.52	8.90	2.96	3.84	4.54	A7
A8	3.63	= A8	0.46	*300.00*	N	874.84	862.42	4.14%	17.86	*81.55*	N	857.87	5.58%	0.36	*345.82*	6	0.96	20.00	5.48	7.12	8.43	9.15	11.89	14.08	A8
CP1	4.74	= A7+A8	0.46	*300.00*	N	874.84	862.42	4.14%	17.86	*81.55*	N	857.87	5.58%	0.36	*345.82*	6	0.96	20.00	5.48	7.12	8.43	11.95	15.52	18.38	CP1

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GRACE VALLEY RANCH PHASE 3A

MASTER DRAINAGE PLAN – PROPOSED CONDITIONS

DATE
05/17/2023

PROJECT NO.
03346.006

DRAWN BY
KMH/NNR/MOH/MAS

CHECKED BY
CJC

REVISIONS
1.
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9.

KYLE M. HUDEK
138753
05/22/2023

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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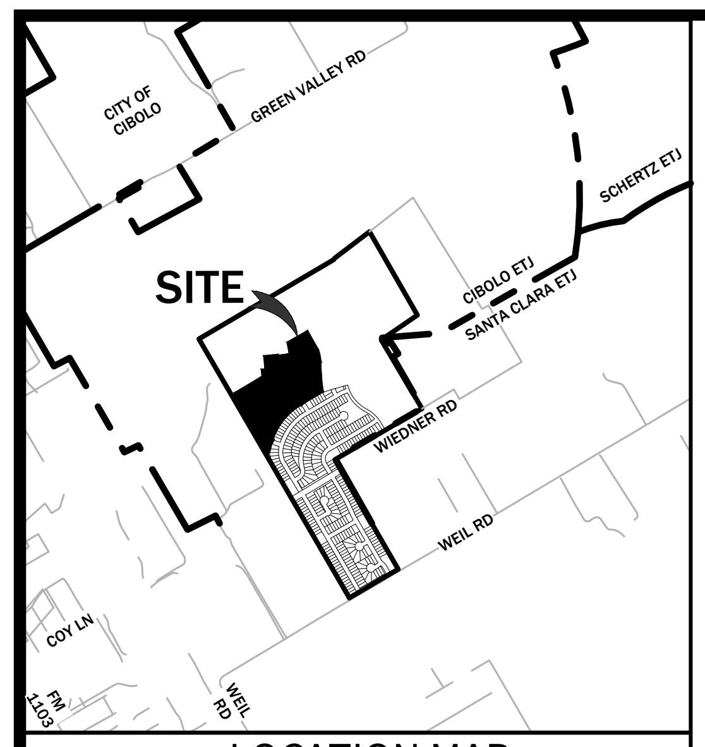


LOCATION MAP N.T.S.

LEGEND

▨ = UNIT 3A BOUNDARY

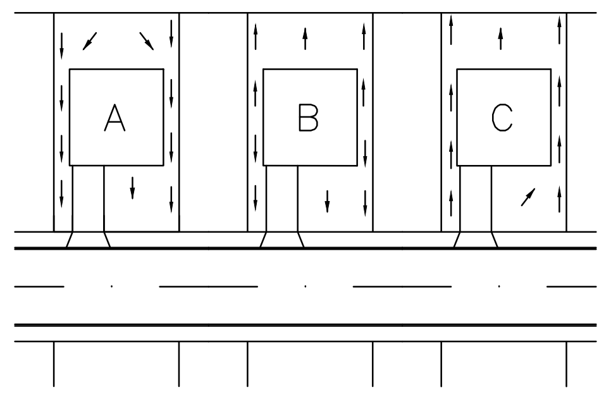
▬ = DRAINAGE BOUNDARY

— — = SHEET FLOW Tc LINE

— — = SHALLOW CONCENTRATED Tc LINE

— — = CONCENTRATED Tc LINE

(XX) = ACCUMULATION POINT



TYPICAL LOT SITE PLAN
N.T.S.

SCALE: 1"=100'
0 50 100

DEVELOPER:

LENNAR HOMES OF TEXAS LAND AND
CONSTRUCTION, LTD.
CONTACT PERSON: RICHARD MOTT
100 NE LOOP 410, SUITE 1155
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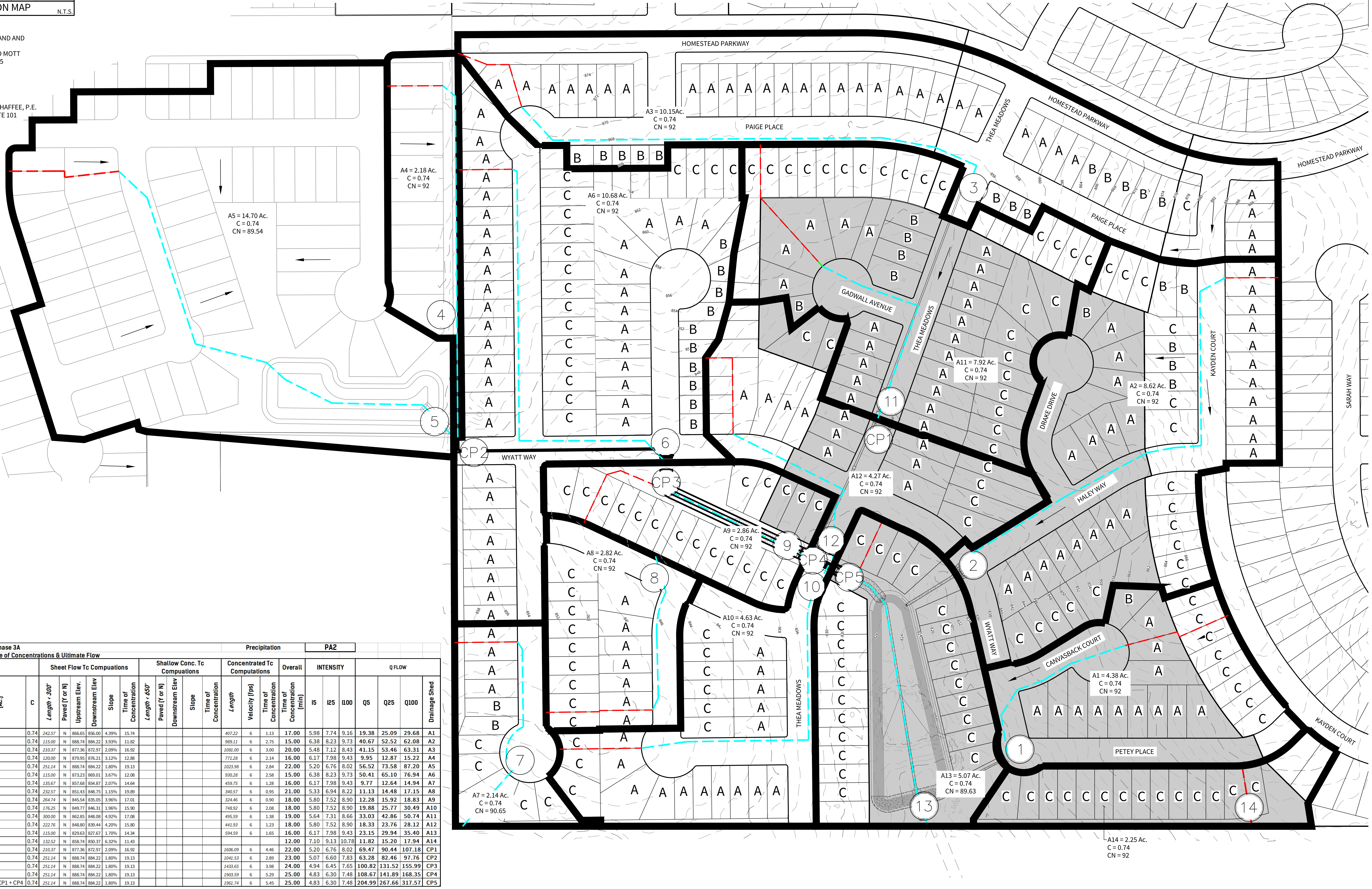

Project Name: Grace Valley Phase 3A
Calculation Summary for Time of Concentrations & Ultimate Flow

Precipitation 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	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
A1	4.38	= A1	0.74	242.57	N	866.65	856.00	4.39%	15.74						407.22	6	1.13	17.00	5.98	7.74	9.16	19.38	25.09	29.68	A1
A2	8.62	= A2	0.74	115.00	N	888.74	884.22	3.93%	11.82						989.11	6	2.75	15.00	6.38	8.23	9.73	40.67	52.52	62.08	A2
A3	10.15	= A3	0.74	210.37	N	877.36	872.97	2.09%	16.92						1081.00	6	3.00	20.00	5.48	7.12	8.43	41.15	53.46	63.31	A3
A4	2.18	= A4	0.74	120.00	N	879.95	876.21	3.12%	12.88						771.28	6	2.14	16.00	6.17	7.98	9.43	9.95	12.87	15.22	A4
A5	14.70	= A5	0.74	251.14	N	888.74	884.22	1.80%	19.13						1023.98	6	2.84	22.00	5.20	6.76	8.02	56.52	73.58	87.20	A5
A6	10.68	= A6	0.74	115.00	N	873.23	869.01	3.67%	12.08						930.28	6	2.58	15.00	6.38	8.23	9.73	50.41	65.10	76.94	A6
A7	2.14	= A7	0.74	135.67	N	857.68	854.87	2.07%	14.64						459.75	6	1.28	16.00	6.17	7.98	9.43	9.77	12.64	14.94	A7
A8	2.82	= A8	0.74	232.57	N	851.43	848.75	1.15%	19.89						340.57	6	0.95	21.00	5.33	6.94	8.22	11.13	14.48	17.15	A8
A9	2.86	= A9	0.74	264.74	N	845.54	835.05	3.96%	17.01						324.46	6	0.90	18.00	5.80	7.52	8.90	12.28	15.92	18.83	A9
A10	4.63	= A10	0.74	176.25	N	849.77	846.31	1.96%	15.90						748.92	6	2.08	18.00	5.80	7.52	8.90	19.88	25.77	30.49	A10
A11	7.92	= A11	0.74	300.00	N	862.85	848.08	4.92%	17.08						495.59	6	1.38	19.00	5.64	7.31	8.66	33.03	42.86	50.74	A11
A12	4.27	= A12	0.74	222.76	N	848.80	839.44	4.20%	15.80						441.93	6	1.23	18.00	5.80	7.52	8.90	18.33	23.76	28.12	A12
A13	5.07	= A13	0.74	115.00	N	829.63	827.67	1.70%	14.34						594.59	6	1.65	16.00	6.17	7.98	9.43	23.15	29.94	35.40	A13
A14	2.25	= A14	0.74	132.52	N	858.74	850.37	6.32%	11.43									12.00	7.10	9.13	10.78	11.82	15.20	17.94	A14
CP1	18.07	= A3+A11	0.74	210.37	N	877.36	872.97	2.09%	16.92						1606.09	6	4.46	22.00	5.20	6.76	8.02	69.47	90.44	107.18	CP1
CP2	16.88	= A4+A5	0.74	251.14	N	888.74	884.22	1.80%	19.13						1041.53	6	2.89	23.00	5.07	6.60	7.83	63.28	82.46	97.76	CP2
CP3	27.56	= A6 + CP2	0.74	251.14	N	888.74	884.22	1.80%	19.13						1433.65	6	3.98	24.00	4.94	6.45	7.65	100.82	131.52	155.99	CP3
CP4	30.42	= A9 + CP3	0.74	251.14	N	888.74	884.22	1.80%	19.13						1903.59	6	5.29	25.00	4.83	6.30	7.48	108.67	141.89	168.35	CP4
CP5	57.39	= A10 + A12 + CP1 + CP4	0.74	251.14	N	888.74	884.22	1.80%	19.13						1961.74	6	5.45	25.00	4.83	6.30	7.48	204.99	267.66	317.57	CP5

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GRACE VALLEY RANCH PHASE 3A

MASTER DRAINAGE PLAN – ULTIMATE CONDITIONS

DATE
05/17/2023

PROJECT NO.
03346.006

DRAWN BY
KMH/NNR/MOH/MAS

CHECKED BY
CJC

REVISIONS
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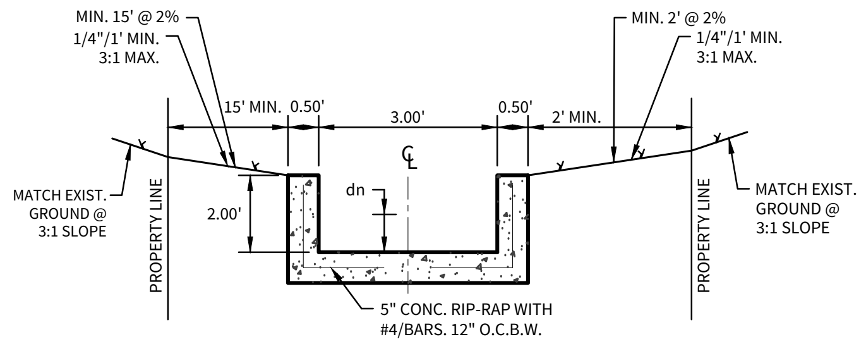
KYLE M. HUDEK
138753
05/22/2023
K. Hudek

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

D2

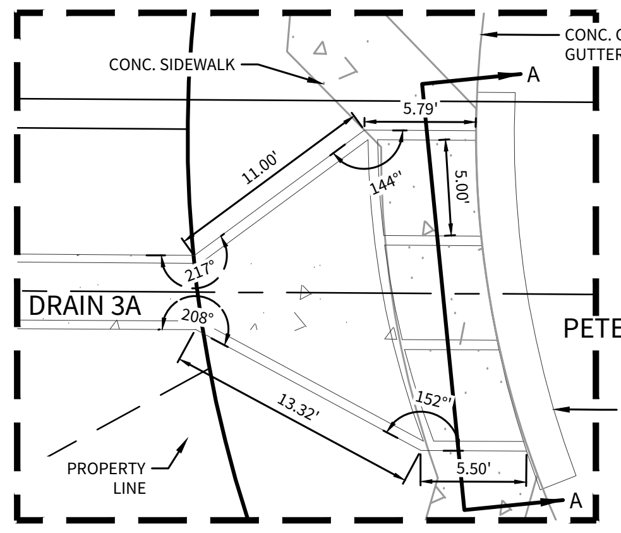
2 OF 10

P:\03346\006\2-Drawings\04_DRMP - ULTIMATE.dwg 2023/05/17 10:53am msandoval



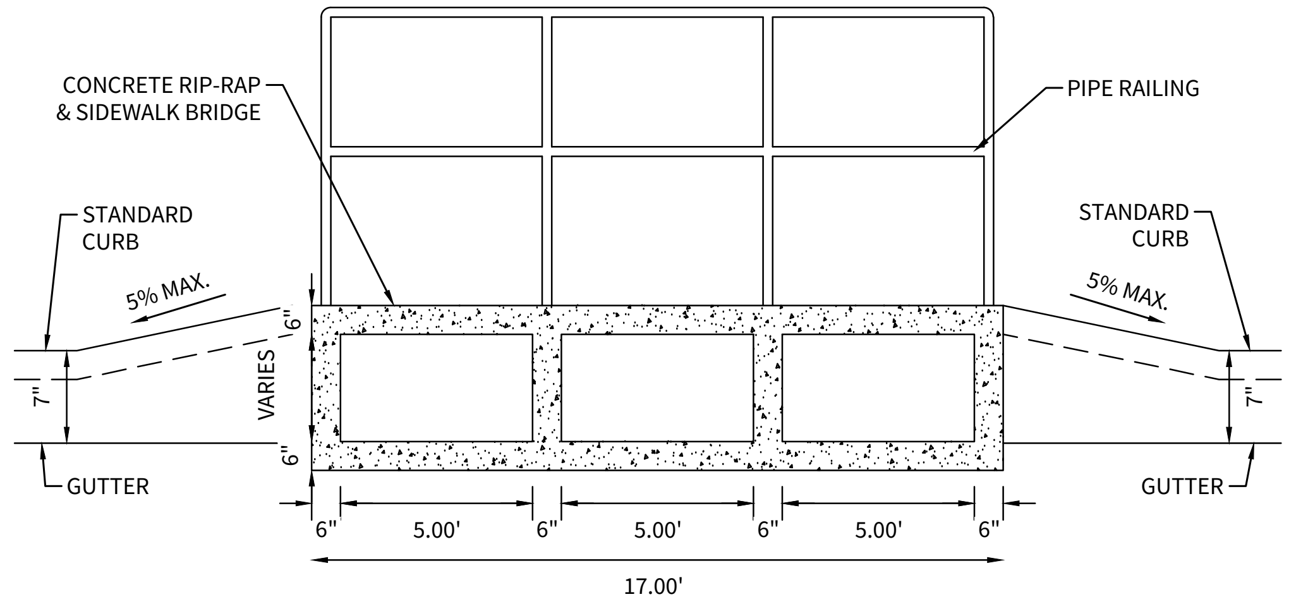
DRAIN '3A-1' SECTION

STA. 10+55.58 TO STA. 11+72.31

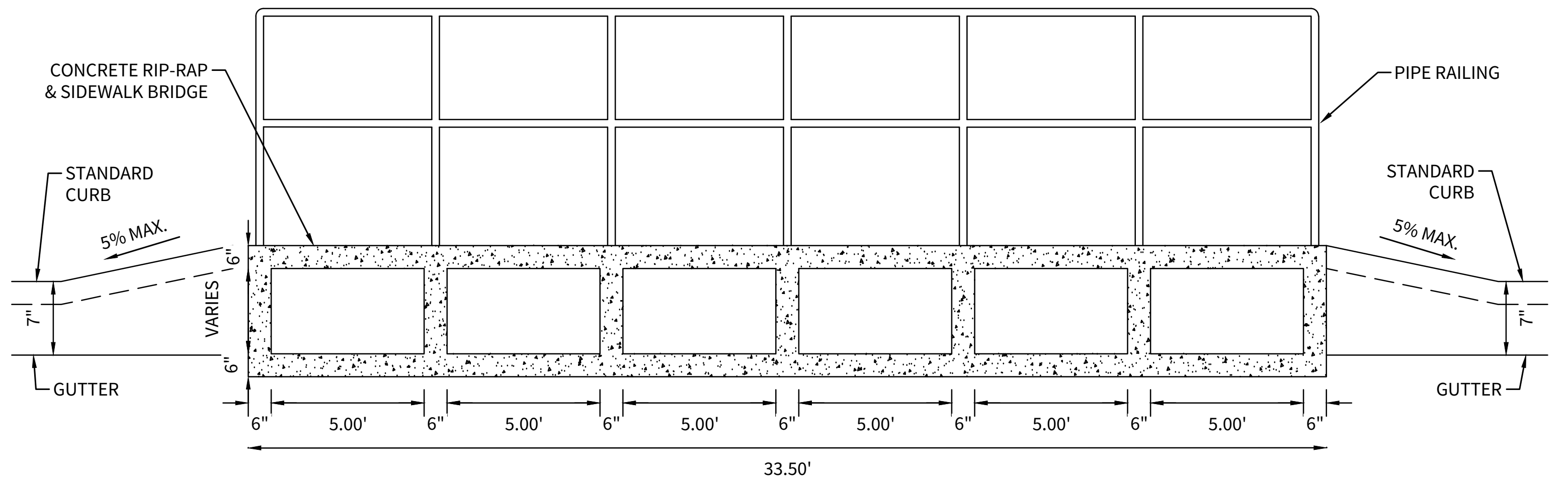


DETAIL "C"

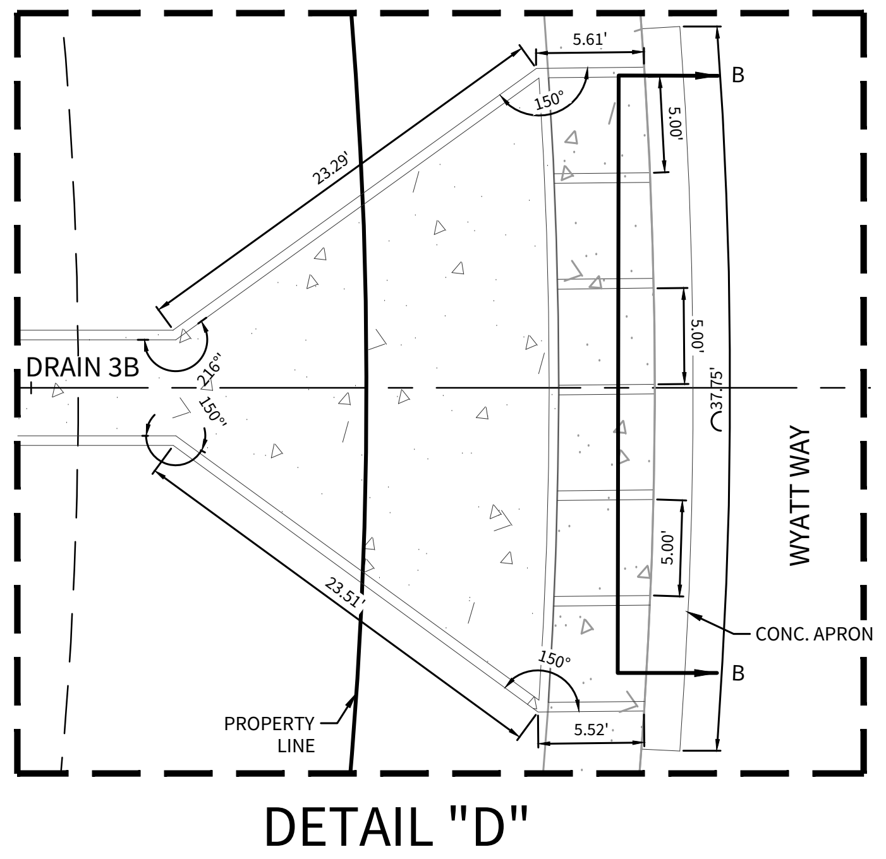
SCALE: 1" = 10'



DRAIN 3A
SECTION A-A THRU SIDEWALK BOX

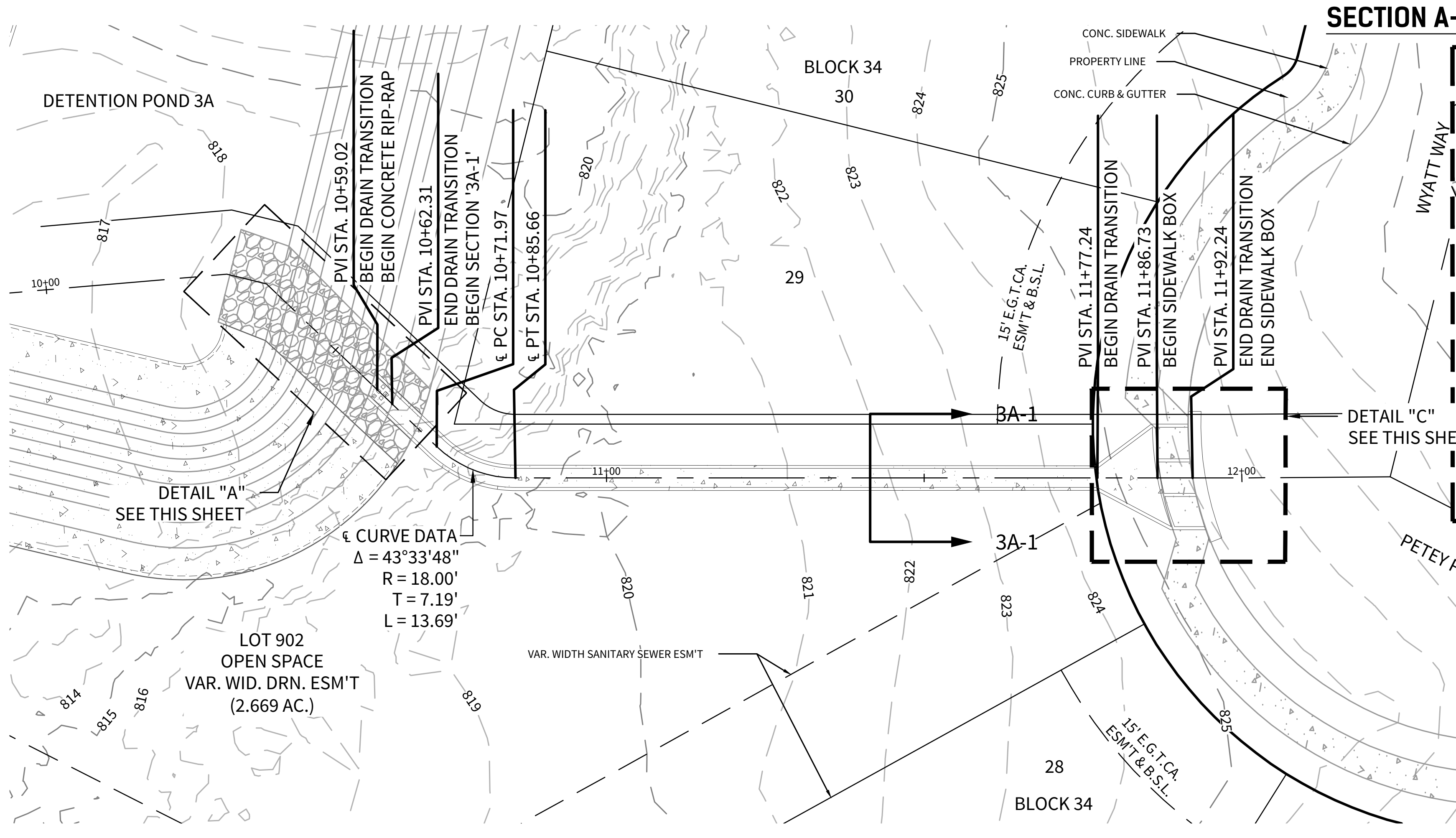


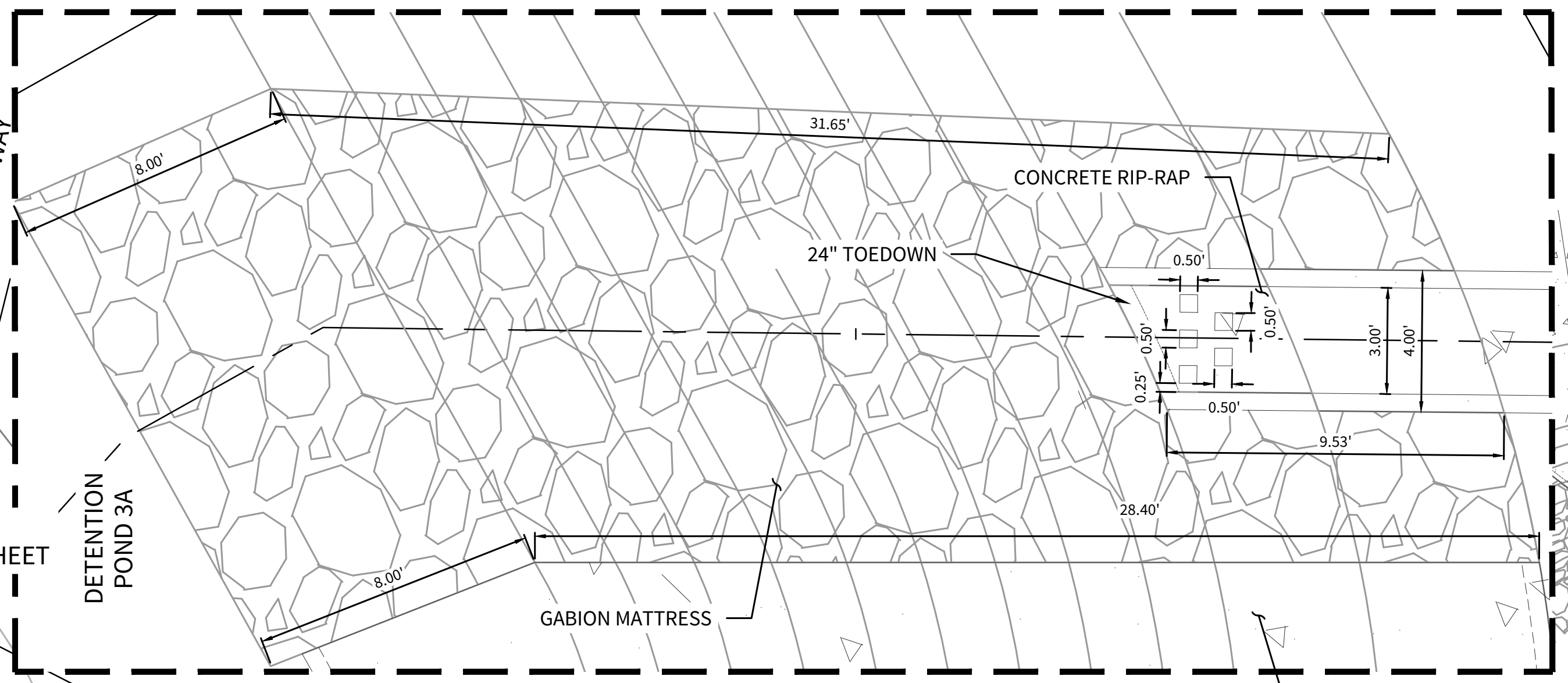
DRAIN 3B
SECTION B-B THRU SIDEWALK BOX



DETAIL "D"

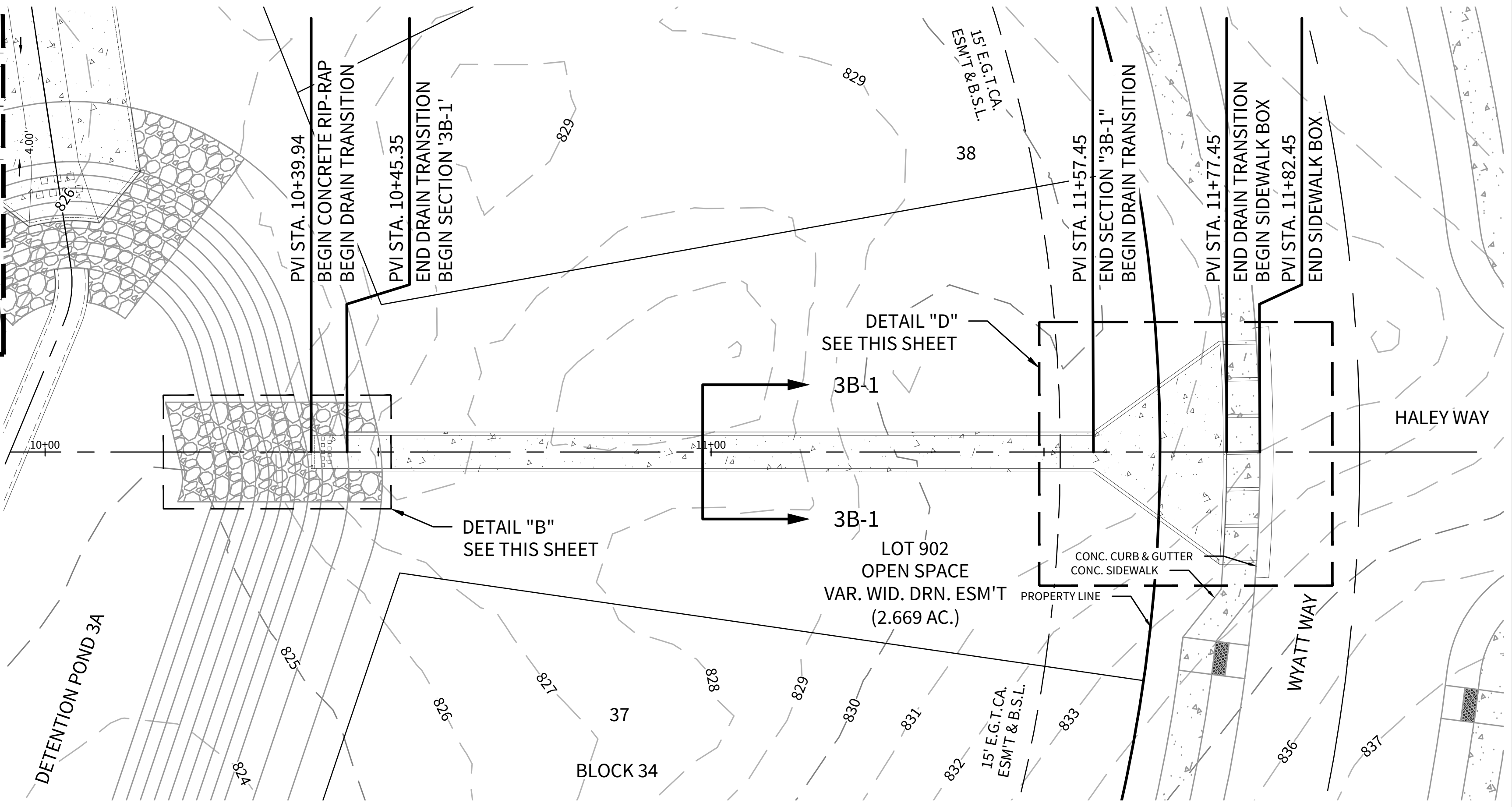
SCALE: 1" = 10'

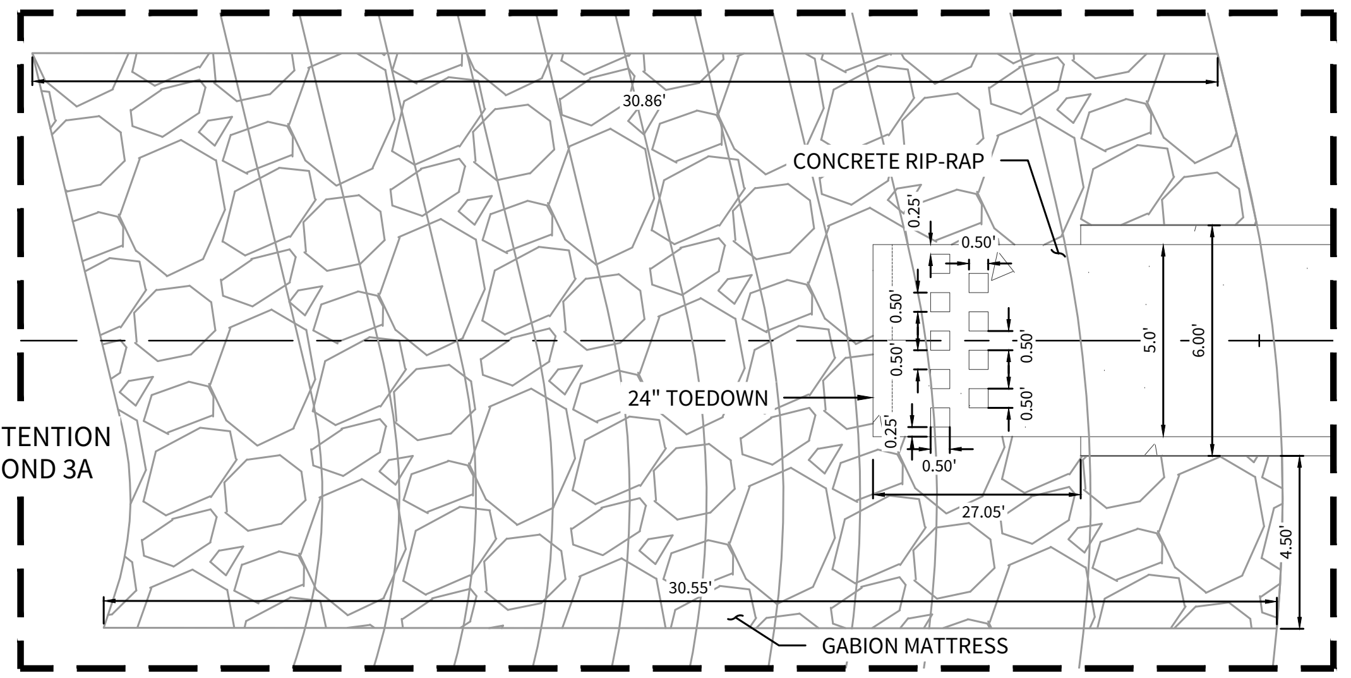




DETAIL "A"

SCALE: 1" = 5'





DETAIL "B"

SCALE: 1" = 5'

NOTES:

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 3000 PSI IN 28 DAYS.
2. 85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY THE CITY OF CIBOLO & GUADALUPE COUNTY. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
3. REFERENCE TYPICAL CONCRETE CHANNEL RIP-RAP STANDARDS FOUND ON SHEET D6.

CURB INLET OPENING

$Q_{25\ ULTIMATE}$ = 25.09 c.f.s. / 2.06 = 12.18' REQ.

USED - 15' INLET OPENING

A = 75.00 s.f. (3 - 5' WIDTH OPENINGS)

GUTTER = 828.97

DRAIN '3A'

STA. 10+59.02 TO STA. 11+92.24

CURB INLET OPENING

$Q_{25\ ULTIMATE}$ = 52.52 c.f.s. / 2.06 = 25.50' REQ.

USED - 30' INLET OPENING

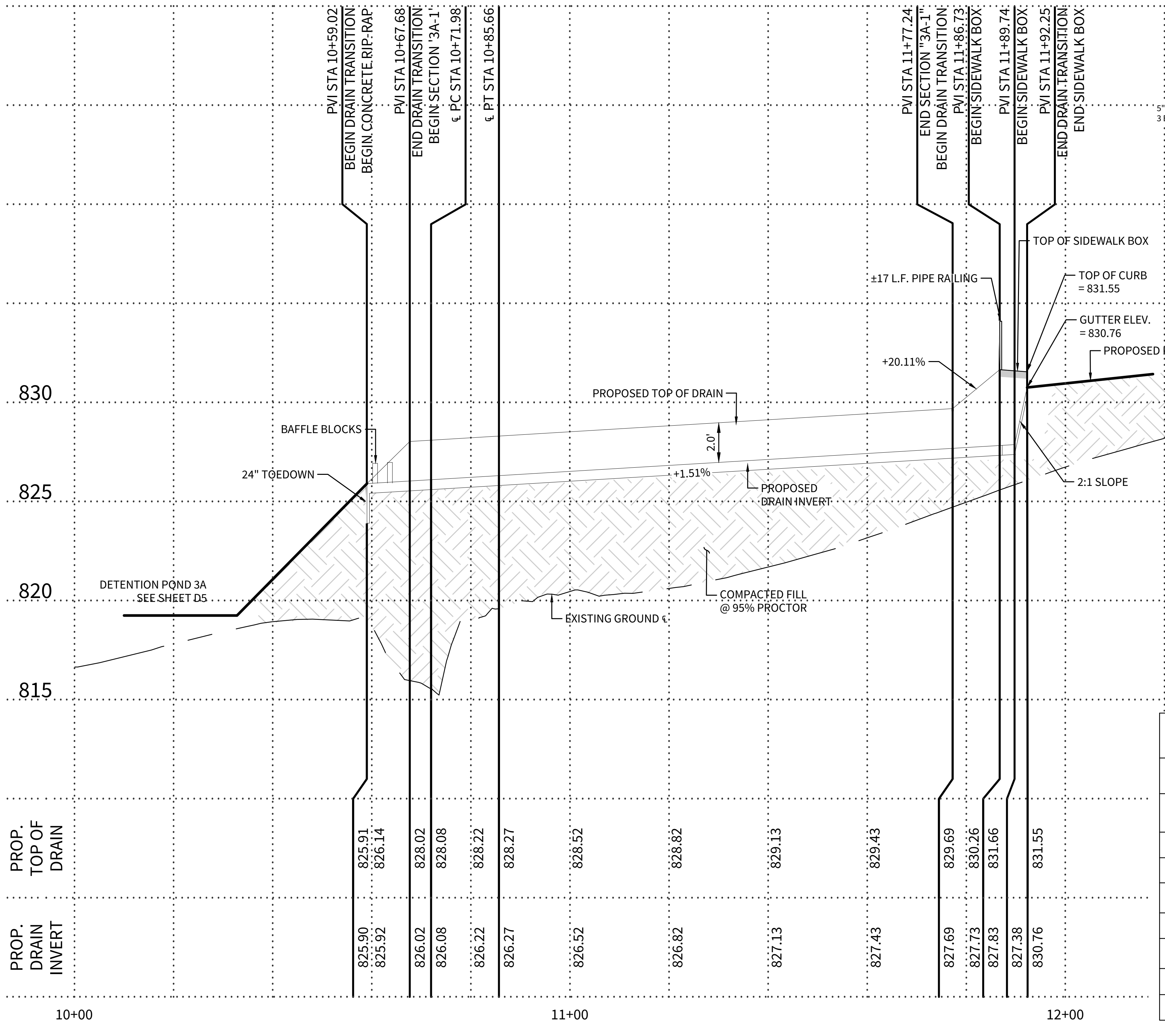
A = 150.00 s.f. (6 - 5' WIDTH OPENINGS)

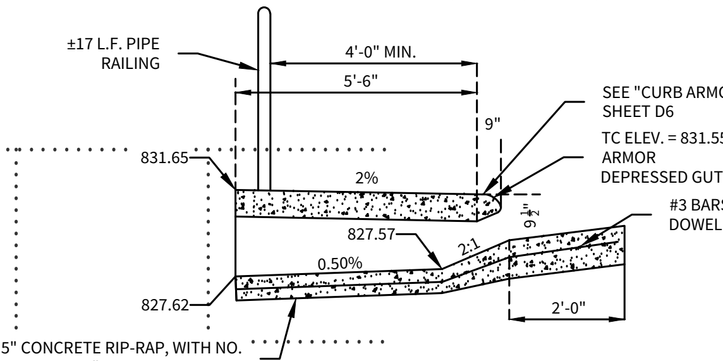
GUTTER = 833.29

DRAIN '3B'

STA. 10+41.32 TO STA. 11+82.45

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



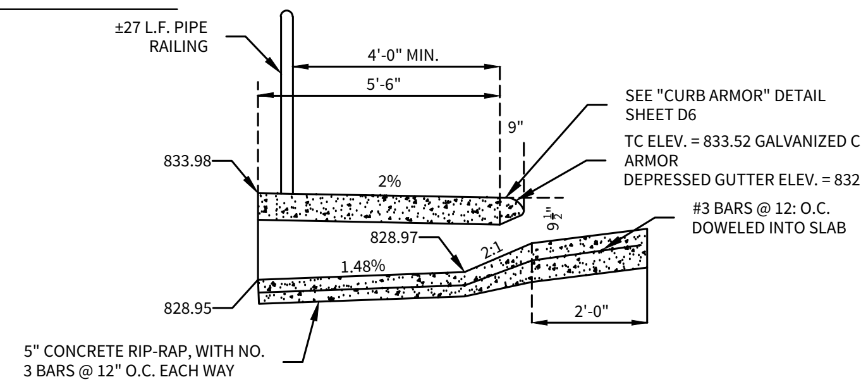

±17 L.F. PIPE RAILING
4'-0" MIN.
5'-6"
9"
SEE "CURB ARMOR" DETAIL SHEET D6
TC ELEV. = 831.55 GALVANIZED CURB ARMOR
DEPRESSED GUTTER ELEV. = 830.76
#3 BARS @ 12: O.C. DOWELED INTO SLAB
831.65
2%
827.57
0.50%
827.62
2'-0"
5" CONCRETE RIP-RAP, WITH NO. 3 BARS @ 12" O.C. EACH WAY

DRAIN 3A
SECTION "B-B"
SIDEWALK BOX DETAIL SECTION

(N.T.S.)

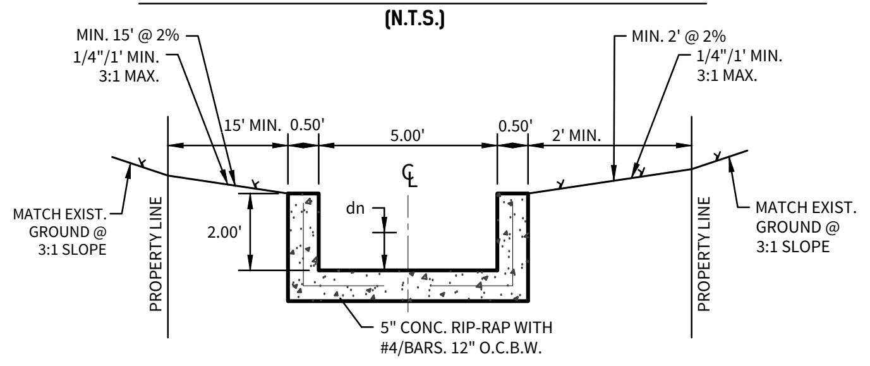
DRAIN '3A' HYDRAULIC SUMMARY	
SECTION	'3A-1'
STATION	10+67.68 - 11+72.35
Q_{25} (cfs)	25.09
n	0.015
S (%)	1.51
D (ft)	2.00
d_n (ft)	0.98
V (fps)	8.53
Bw (ft)	3

DRAIN '3B' HYDRAULIC SUMMARY	
SECTION	'3B-1'
STATION	10+45.35 - 11+57.53
Q_{25} (cfs)	52.52
n	0.015
S (%)	1.80
D (ft)	2.00
d_n (ft)	1.00
V (fps)	10.50
Bw (ft)	5.00


±27 L.F. PIPE RAILING
4'-0" MIN.
5'-6"
9"
SEE "CURB ARMOR" DETAIL SHEET D6
TC ELEV. = 833.52 GALVANIZED CURB ARMOR
DEPRESSED GUTTER ELEV. = 832.73
#3 BARS @ 12: O.C. DOWELED INTO SLAB
833.98
2%
828.97
1.48%
828.95
2'-0"
5" CONCRETE RIP-RAP, WITH NO. 3 BARS @ 12" O.C. EACH WAY

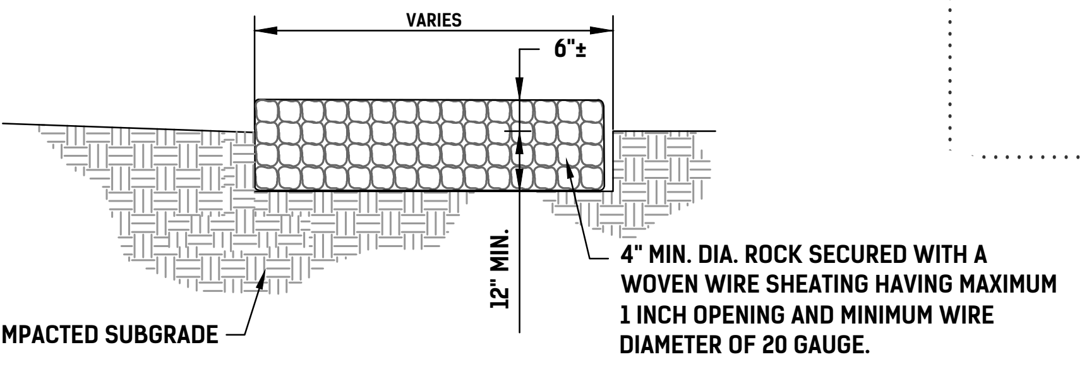
DRAIN 3B
SECTION "D-D"
SIDEWALK BOX DETAIL SECTION

(N.T.S.)



DRAIN '3B-1' SECTION

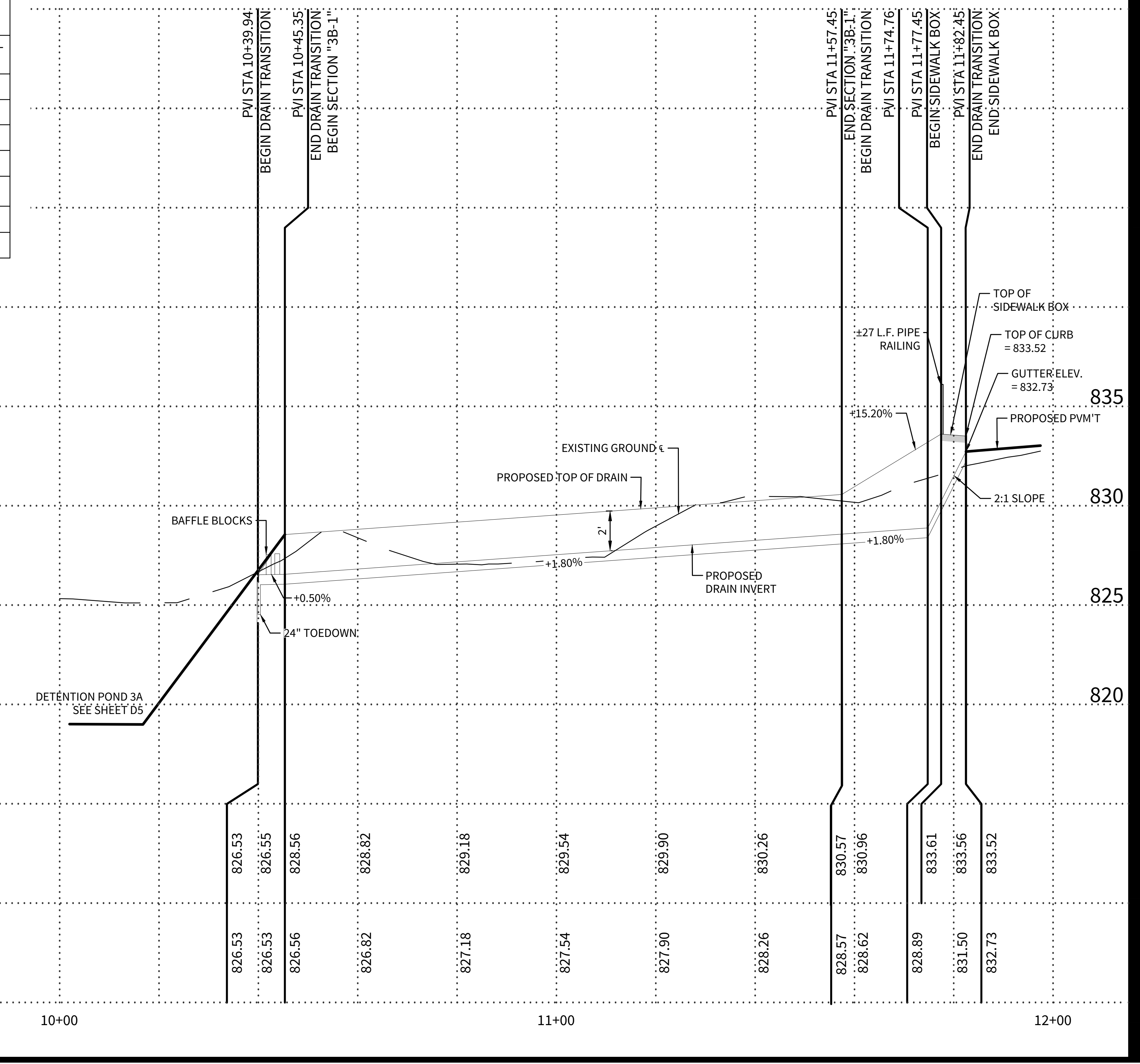
STA. 10+45.35 TO STA. 11+57.45


VARIES
6"±
12" 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

N.T.S.



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GRACE VALLEY RANCH
PHASE 3A

DRAINAGE PLAN & PROFILE - DRAIN 3A & 3B

DATE
06/26/2023

PROJECT NO.
03346.006

DRAWN BY
KMH/NNR/MOH/MAS

CHECKED BY
CJC

REVISIONS
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KYLE M. HUDEK
138753
K. Hudek
07/19/2023

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

D3

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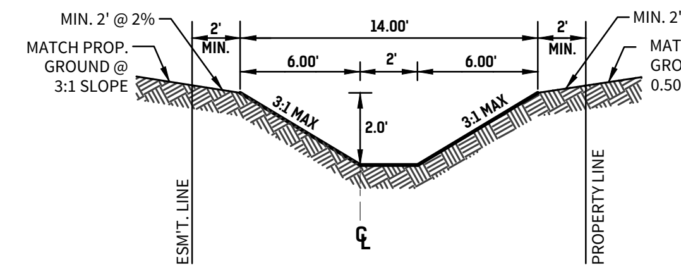
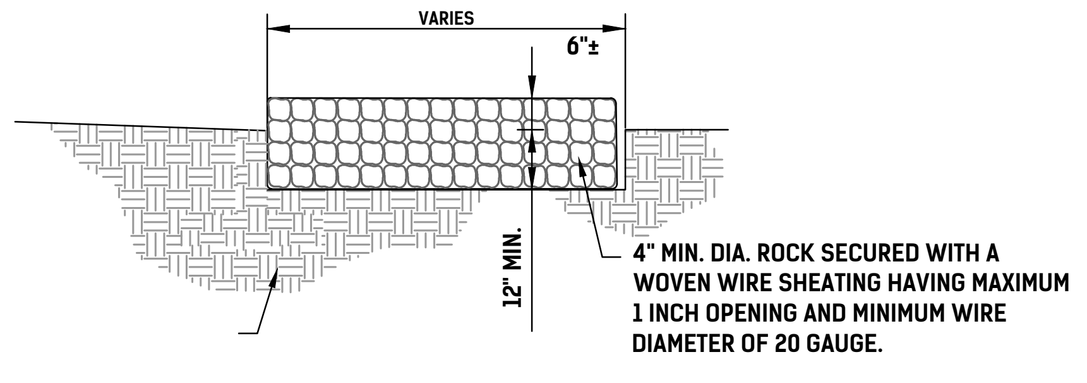
DRAIN '3C'
HYDRAULIC SUMMARY

SECTION	"3C-1"						
STATION	10+06.84 - 11+10.00	11+10.00 - 11+83.05	11+83.05 - 13+01.38	13+01.38 - 14+10.31	14+10.31 - 15+60.00	15+60.00 - 16+46.30	16+46.30 - 20+57.91
Q_{25} (cfs)	17.73	17.73	17.73	17.73	17.73	17.73	11.89
n	0.035	0.035	0.035	0.035	0.035	0.035	0.035
S (%)	1.40	5.53	1.40	5.94	2.16	6.00	0.65
D (ft)	2.00	2	2	2	2	2	2.00
d_n (ft)	1.00	0.72	1.00	0.71	0.91	0.71	0.99
V (fps)	3.55	5.92	3.55	6.05	4.12	6.05	2.42
Bw (ft)	2	2	2	2	2	2	2



DRAIN "3C-1" SECTION

STA 10+06.84 TO STA 20+57.91
(N.T.S.)


VARIES
6"±
12" MIN.
4" MIN. DIA. ROCK SECURED WITH A WOVEN WIRE SHEATING HAVING MAXIMUM 1 INCH OPENING AND MINIMUM WIRE DIAMETER OF 20 GAUGE.

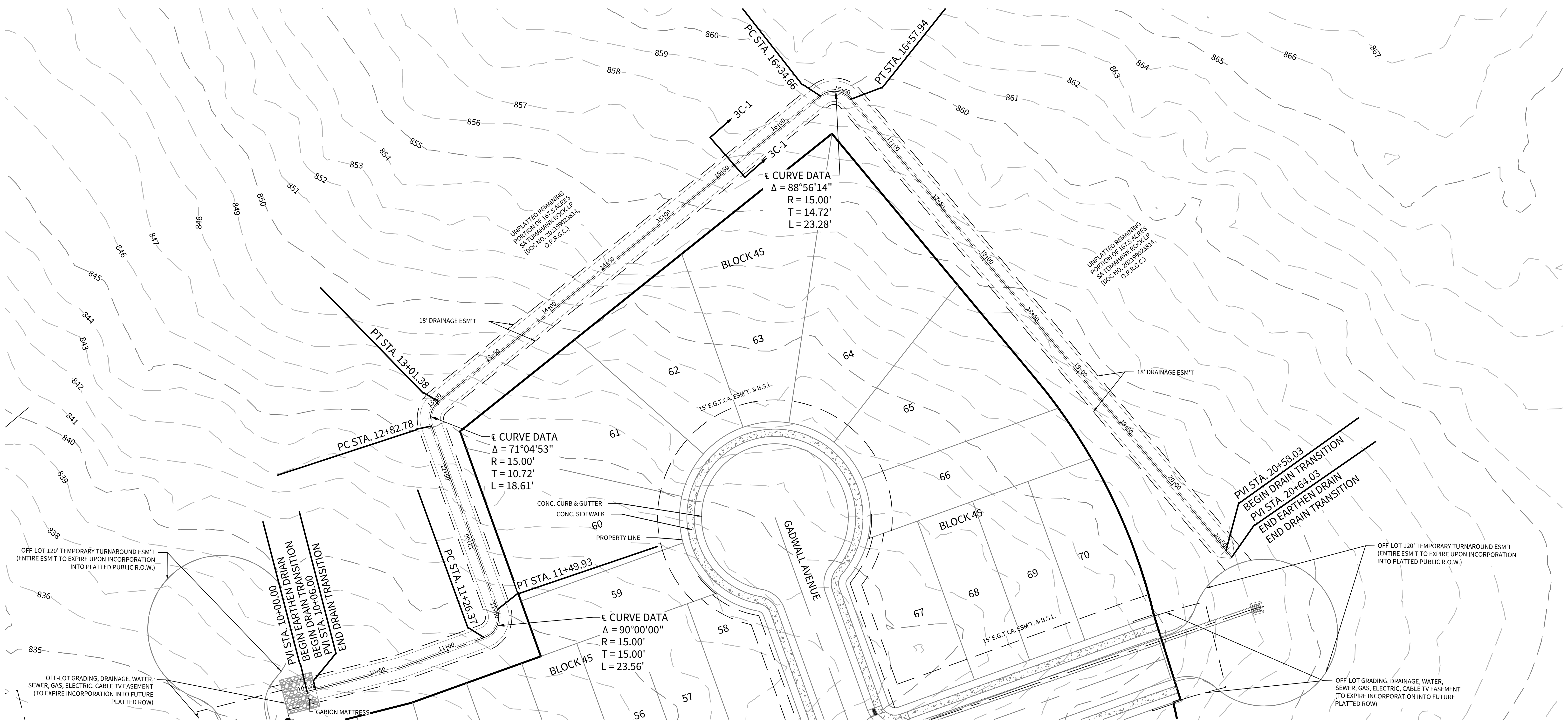
NOTE: GABION MATTRESS TO BE FREE OF GEO-TEXTILE FABRIC LINING.

GABION STYLE ROCK EROSION CONTROL MATTRESS DETAIL

N.T.S.

NOTES:

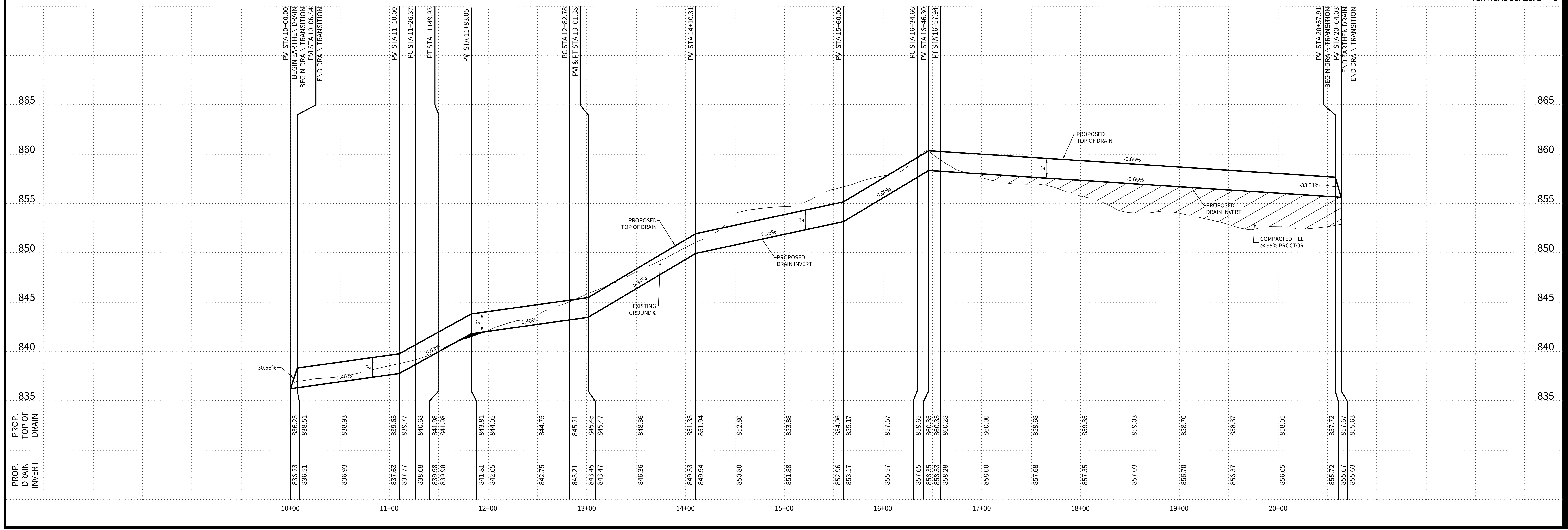
1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 3000 PSI IN 28 DAYS.
2. 85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY THE CITY OF CIBOLO & GUADALUPE COUNTY. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
3. REFERENCE TYPICAL CONCRETE CHANNEL RIP-RAP STANDARDS FOUND ON SHEET D6.



DRAIN '3C'

STA. 10+00.00 TO STA. 20+64.03

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



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GRACE VALLEY RANCH
PHASE 3A

DRAINAGE PLAN & PROFILE - DRAIN 3A & 3B - DRAIN 3C

DATE
05/18/2023

PROJECT NO.
03346.006

DRAWN BY
KMH/NNR/MOH/MAS

CHECKED BY
CJC

REVISIONS
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KYLE M. HUDEK
138753
05/22/2023

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

D4

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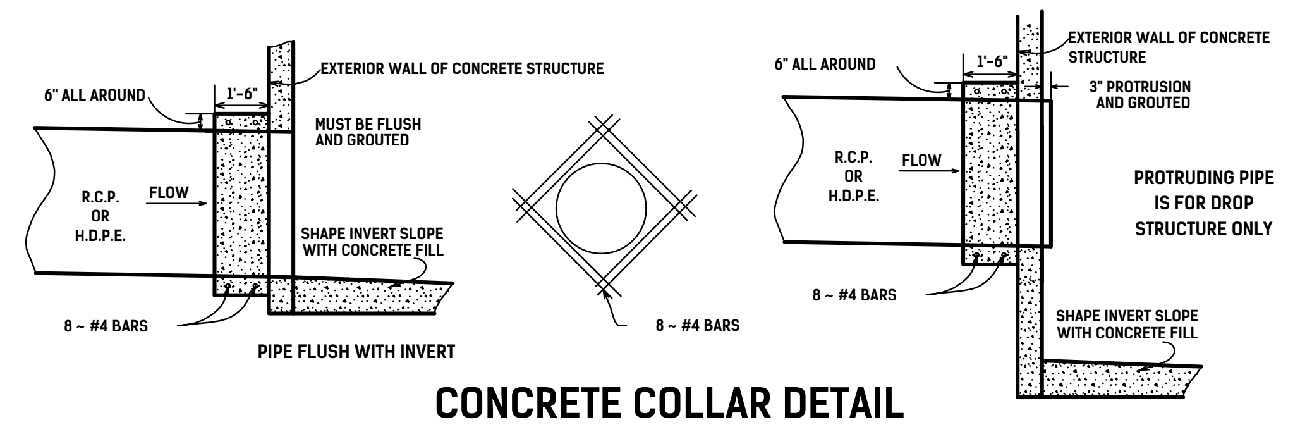
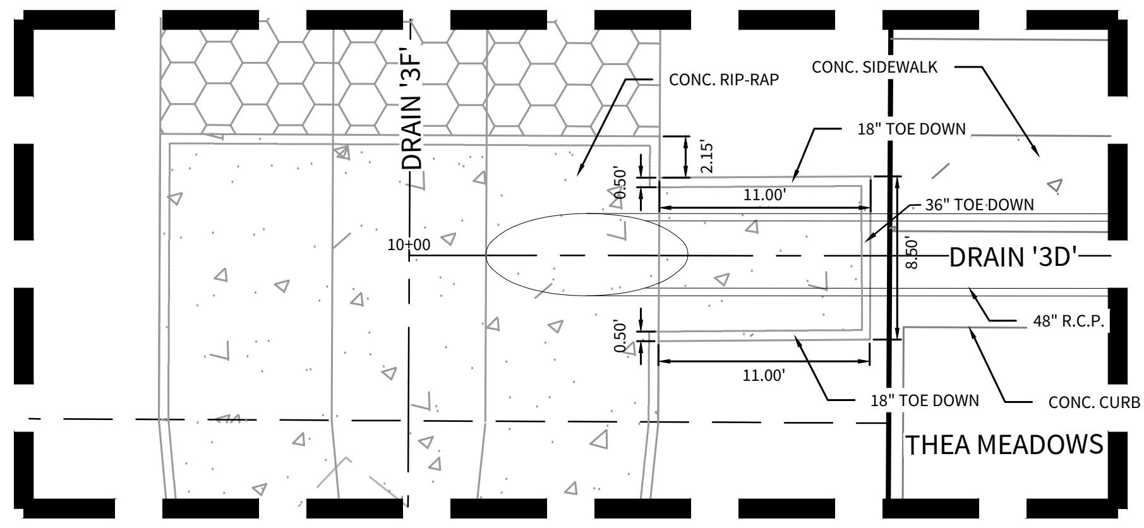

6" ALL AROUND
1'-6"
EXTERIOR WALL OF CONCRETE STRUCTURE
MUST BE FLUSH AND GROUTED
R.C.P. OR H.D.P.E.
FLOW
SHAPE INVERT SLOPE WITH CONCRETE FILL
8 – #4 BARS
PIPE FLUSH WITH INVERT
3" PROTRUSION AND GROUTED
PROTRUDING PIPE IS FOR DROP STRUCTURE ONLY

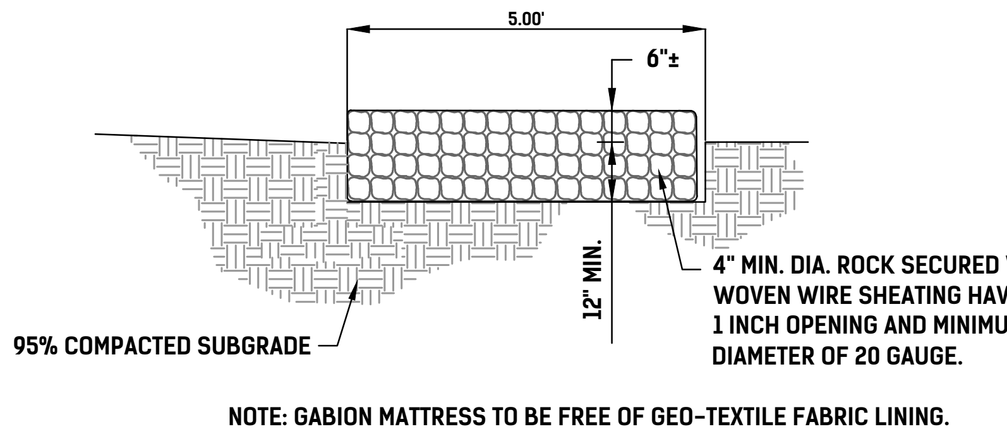
CONCRETE COLLAR DETAIL

(N.T.S.)



DETAIL "A"

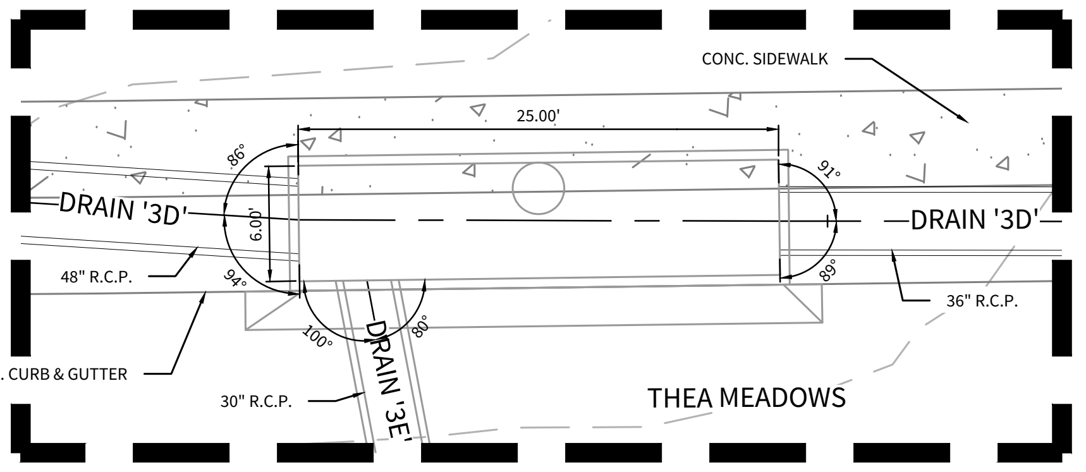
SCALE 1" = 10'


5.00'
6"±
12" MIN.
95% COMPACTED SUBGRADE
4" MIN. DIA. ROCK SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM 1 INCH OPENING AND MINIMUM WIRE DIAMETER OF 20 GAUGE.

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

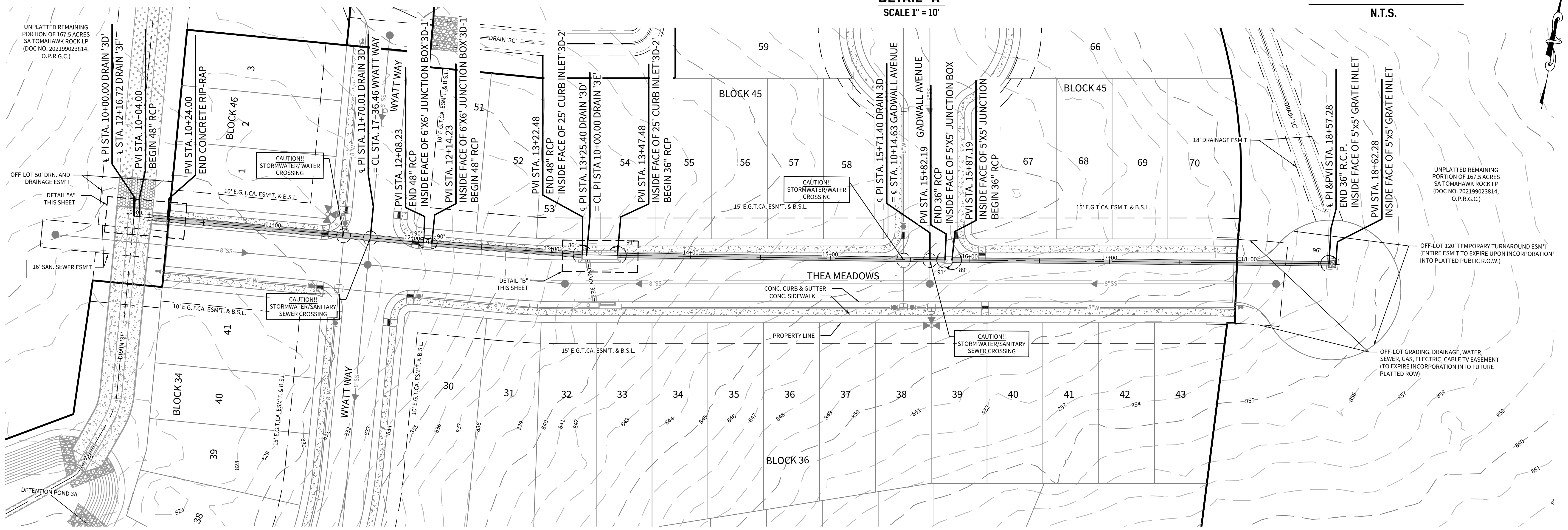
GABION STYLE ROCK EROSION CONTROL MATTRESS DETAIL

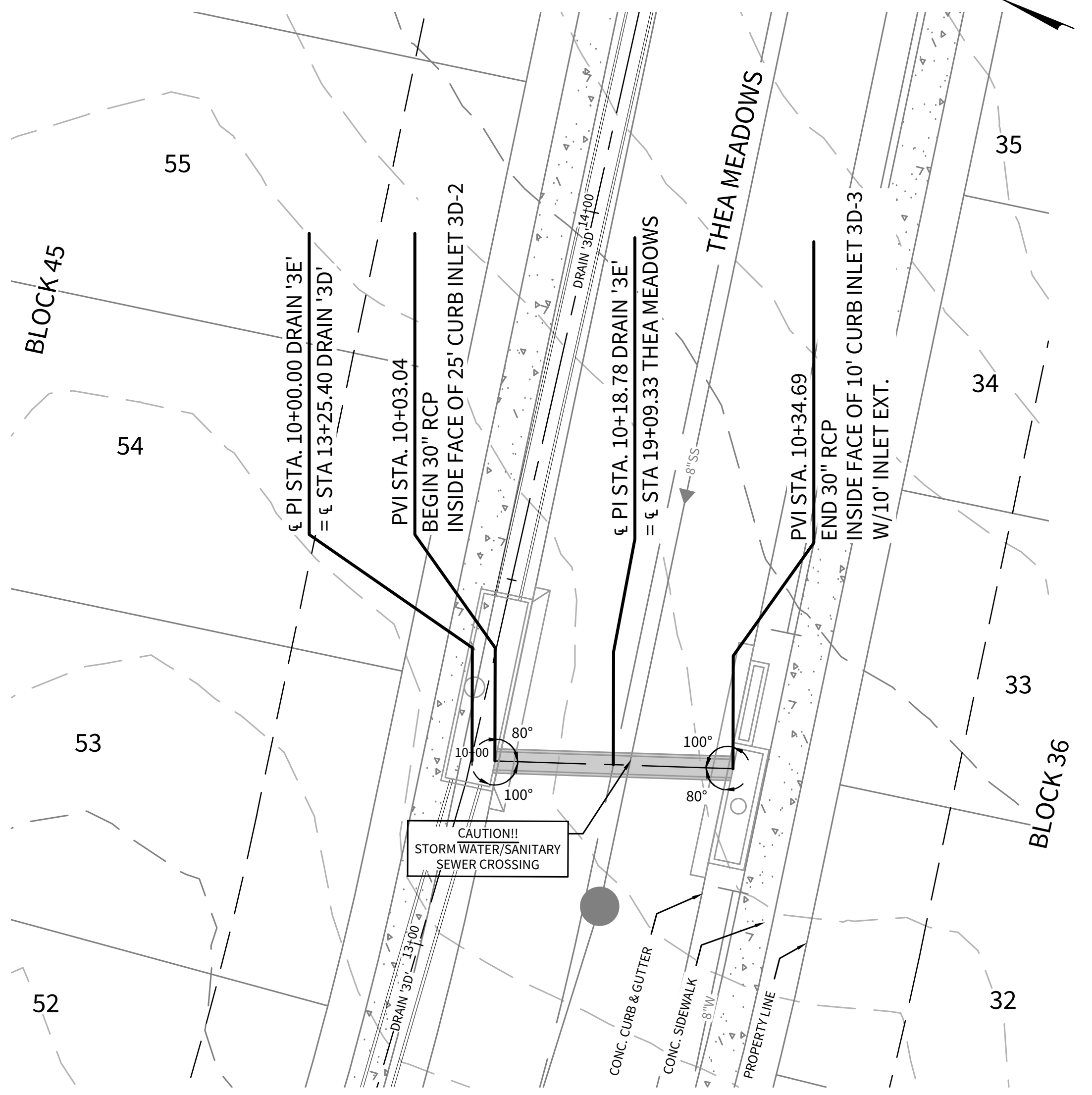
N.T.S.



DETAIL "B"

SCALE 1" = 10'


UNPLATTED REMAINING PORTION OF 167.5 ACRES SA TOMAHAWK ROCK LP (DOC NO. 202199023814, O.P.R.G.C.)
℄ PI STA. 10+00.00 DRAIN '3D' = ℄ STA. 12+16.72 DRAIN '3F'
PVI STA. 10+04.00 BEGIN 48" RCP
PVI STA. 10+24.00 END CONCRETE RIP-RAP
℄ PI STA. 11+70.01 DRAIN 3D = CL STA. 17+36.46 WYATT WAY
PVI STA. 12+08.23 END 48" RCP INSIDE FACE OF 6'X6' JUNCTION BOX 3D-1
PVI STA. 12+14.23 INSIDE FACE OF 6'X6' JUNCTION BOX 3D-1 BEGIN 48" RCP
PVI STA. 13+22.48 END 48" RCP INSIDE FACE OF 25' CURB INLET 3D-2
℄ PI STA. 13+25.40 DRAIN '3D' = CL PI STA. 10+00.00 DRAIN '3E'
PVI STA. 13+47.48 INSIDE FACE OF 25' CURB INLET 3D-2 BEGIN 36" RCP
℄ PI STA. 15+71.40 DRAIN 3D = ℄ STA. 10+14.63 GADWALL AVENUE
PVI STA. 15+82.19 END 36" RCP INSIDE FACE OF 5'X5' JUNCTION BOX
PVI STA. 15+87.19 INSIDE FACE OF 5'X5' JUNCTION BEGIN 36" RCP
℄ PI STA. 18+57.28 END 36" R.C.P. INSIDE FACE OF 5'X5' GRATE INLET
PVI STA. 18+62.28 INSIDE FACE OF 5'X5' GRATE INLET
OFF-LOT 50' DRN. AND DRAINAGE ESM'T
DETAIL "A" THIS SHEET
CAUTION!! STORMWATER/WATER CROSSING
CAUTION!! STORMWATER/SANITARY SEWER CROSSING
10' E.G.T.CA. ESM'T. & B.S.L.
15' E.G.T.CA. ESM'T. & B.S.L.
16' SAN. SEWER ESM'T
18' DRAINAGE ESM'T
DETAIL "B" THIS SHEET
CONC. CURB & GUTTER
CONC. SIDEWALK
PROPERTY LINE
THEA MEADOWS
WYATT WAY
GADWALL AVENUE
DRAIN '3C'
BLOCK 45
BLOCK 46
BLOCK 34
BLOCK 36
DETENTION POND 3A
OFF-LOT 120' TEMPORARY TURNAROUND ESM'T (ENTIRE ESM'T TO EXPIRE UPON INCORPORATION INTO PLATTED PUBLIC R.O.W.)
OFF-LOT GRADING, DRAINAGE, WATER, SEWER, GAS, ELECTRIC, CABLE TV EASEMENT (TO EXPIRE INCORPORATION INTO FUTURE PLATTED ROW)
UNPLATTED REMAINING PORTION OF 167.5 ACRES SA TOMAHAWK ROCK LP (DOC NO. 202199023814, O.P.R.G.C.)


℄ PI STA. 10+00.00 DRAIN '3E' = ℄ STA. 13+25.40 DRAIN '3D'
PVI STA. 10+03.04 BEGIN 30" RCP INSIDE FACE OF 25' CURB INLET 3D-2
℄ PI STA. 10+18.78 DRAIN '3E' = ℄ STA. 19+09.33 THEA MEADOWS
PVI STA. 10+34.69 END 30" RCP INSIDE FACE OF 10' CURB INLET 3D-3 W/10' INLET EXT.
THEA MEADOWS
CAUTION!! STORM WATER/SANITARY SEWER CROSSING
BLOCK 45
BLOCK 36
CONC. CURB & GUTTER
CONC. SIDEWALK
PROPERTY LINE

NOTES:

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 3000 PSI IN 28 DAYS.
2. 85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY THE CITY OF CIBOLO & GUADALUPE COUNTY. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
3. REFERENCE TYPICAL CONCRETE CHANNEL RIP-RAP STANDARDS FOUND ON SHEET D8.

DRAIN '3D'

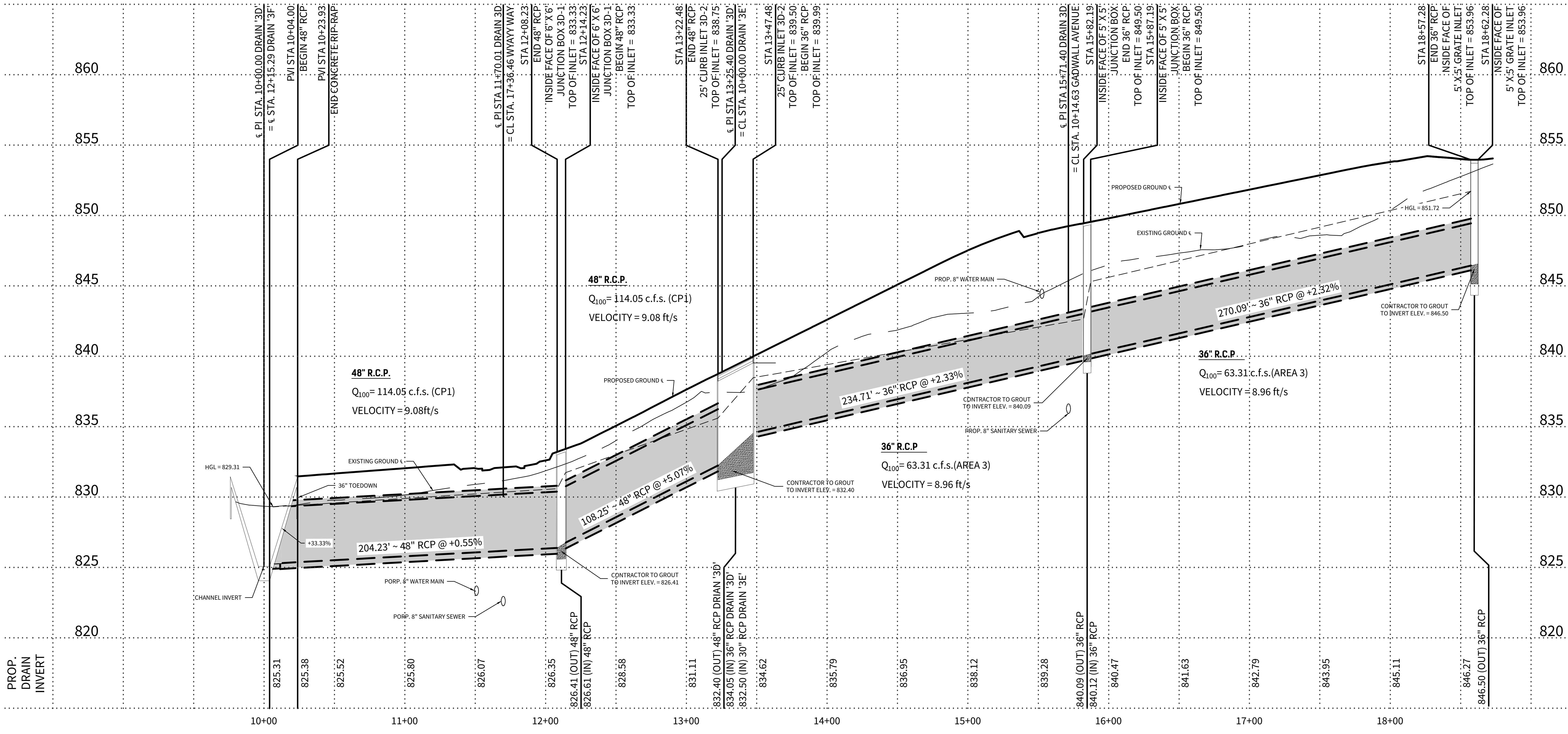
STA. 10+00.00 TO STA. 18+62.238

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

DRAIN '3E'

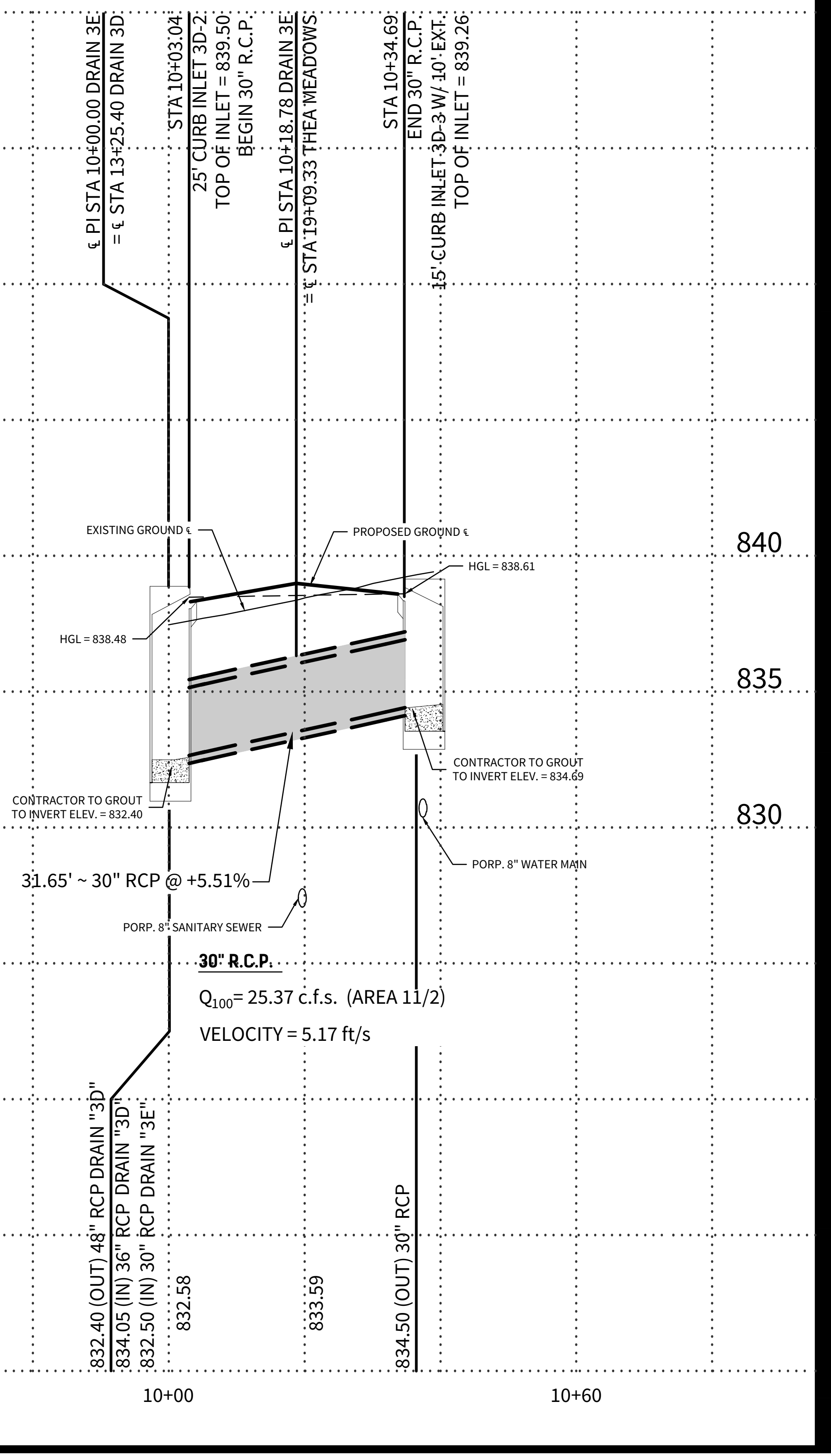
STA. 10+00.00 TO STA. 10+34.69

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


℄ PI STA. 10+00.00 DRAIN '3D' = ℄ STA. 12+15.29 DRAIN '3F'
PVI STA 10+04.00 BEGIN 48" RCP
PVI STA 10+23.93 END CONCRETE RIP-RAP
℄ PI STA 11+70.01 DRAIN 3D = CL STA. 17+36.46 WYATT WAY
STA 12+08.23 END 48" RCP INSIDE FACE OF 6'X6' JUNCTION BOX 3D-1 TOP OF INLET = 833.33
STA 12+14.23 INSIDE FACE OF 6'X6' JUNCTION BOX 3D-1 BEGIN 48" RCP TOP OF INLET = 833.33
STA 13+22.48 END 48" RCP 25' CURB INLET 3D-2 TOP OF INLET = 838.75
℄ PI STA 13+25.40 DRAIN '3D' = CL STA. 10+00.00 DRAIN '3E'
STA 13+47.48 25' CURB INLET 3D-2 TOP OF INLET = 839.50 BEGIN 36" RCP TOP OF INLET = 839.99
℄ PI STA 15+71.40 DRAIN 3D = CL STA. 10+14.63 GADWALL AVENUE
STA 15+82.19 INSIDE FACE OF 5'X5' JUNCTION BOX END 36" RCP TOP OF INLET 849.50
STA 15+87.19 INSIDE FACE OF 5'X5' JUNCTION BOX BEGIN 36" RCP TOP OF INLET 849.50
STA 18+57.28 END 36" RCP INSIDE FACE OF 5'X5' GRATE INLET TOP OF INLET = 853.96
STA 18+62.28 INSIDE FACE OF 5'X5' GRATE INLET TOP OF INLET = 853.96
860
855
850
845
840
835
830
825
820
PROPOSED GROUND ℄
EXISTING GROUND ℄
HGL = 851.72
PROP. 8" WATER MAIN
48" R.C.P.
Q100 = 114.05 c.f.s. (CP1)
VELOCITY = 9.08 ft/s
270.09' ~ 36" RCP @ +2.32%
CONTRACTOR TO GROUT TO INVERT ELEV. = 846.50
36" R.C.P.
Q100 = 63.31 c.f.s.(AREA 3)
VELOCITY = 8.96 ft/s
234.71' ~ 36" RCP @ +2.33%
CONTRACTOR TO GROUT TO INVERT ELEV. = 840.09
PROP. 8" SANITARY SEWER
48" R.C.P.
Q100 = 114.05 c.f.s. (CP1)
VELOCITY = 9.08ft/s
36" R.C.P
Q100 = 63.31 c.f.s.(AREA 3)
VELOCITY = 8.96 ft/s
CONTRACTOR TO GROUT TO INVERT ELEV. = 832.40
HGL = 829.31
36" TOEDOWN
108.25' ~ 48" RCP @ +5.07%
204.23' ~ 48" RCP @ +0.55%
+33.33%
CONTRACTOR TO GROUT TO INVERT ELEV. = 826.41
PORP. 8" WATER MAIN
PORP. 8" SANITARY SEWER
CHANNEL INVERT
PROP. DRAIN INVERT
825.31
825.38
825.52
825.80
826.07
826.35
826.41 (OUT) 48" RCP
826.61 (IN) 48" RCP
828.58
831.11
832.40 (OUT) 48" RCP DRAIN '3D'
834.05 (IN) 36" RCP DRAIN '3D'
832.50 (IN) 30" RCP DRAIN '3E'
834.62
835.79
836.95
838.12
839.28
840.09 (OUT) 36" RCP
840.12 (IN) 36" RCP
840.47
841.63
842.79
843.95
845.11
846.27
846.50 (OUT) 36" RCP
10+00
11+00
12+00
13+00
14+00
15+00
16+00
17+00
18+00

CURB INLET "3D-2" OPENING
Q_{25} = 25.37 c.f.s. / 2.06 = 12.32' REQ. (AREA 3)
USED - 25' INLET

CURB INLET "3D-3" OPENING
Q_{25} = 25.37 c.f.s. / 2.06 = 12.32' REQ. (AREA 3)
USED - 15' INLET W/10' EXT.


℄ PI STA 10+00.00 DRAIN 3E = ℄ STA 13+25.40 DRAIN 3D
STA 10+03.04 25' CURB INLET 3D-2 TOP OF INLET = 839.50 BEGIN 30" R.C.P.
℄ PI STA 10+18.78 DRAIN '3E' = ℄ STA 19+09.33 THEA MEADOWS
STA 10+34.69 END 30" R.C.P. 15' CURB INLET 3D-3 W/10' EXT. TOP OF INLET = 839.26
840
835
830
825
EXISTING GROUND ℄
PROPOSED GROUND ℄
HGL = 838.61
HGL = 838.48
CONTRACTOR TO GROUT TO INVERT ELEV. = 832.40
CONTRACTOR TO GROUT TO INVERT ELEV. = 834.69
31.65' ~ 30" RCP @ +5.51%
PORP. 8" WATER MAIN
PORP. 8" SANITARY SEWER
30" R.C.P.
Q100 = 25.37 c.f.s. (AREA 11/2)
VELOCITY = 5.17 ft/s
832.40 (OUT) 48" RCP DRAIN "3D"
834.05 (IN) 36" RCP DRAIN "3D"
832.50 (IN) 30" RCP DRAIN "3E"
832.58
833.59
834.50 (OUT) 30" RCP
10+00
10+60

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

GRACE VALLEY RANCH PHASE 3A

DRAINAGE PLAN & PROFILE - DRAIN 3D & 3E

DATE
09/25/2023

PROJECT NO.
03346.006

DRAWN BY
KMH/NNR/MOH/MAS

CHECKED BY
CJC

REVISIONS
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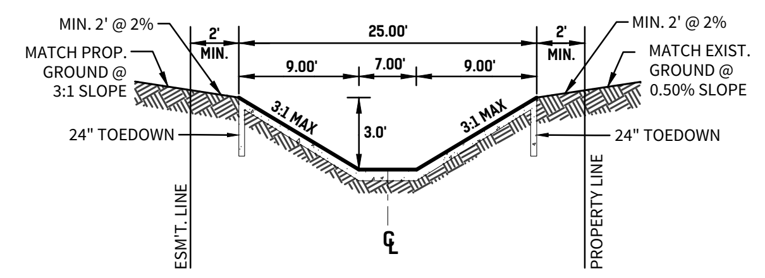
KYLE M. HUDEK
138753
09/25/2023

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

D5

5 OF 10

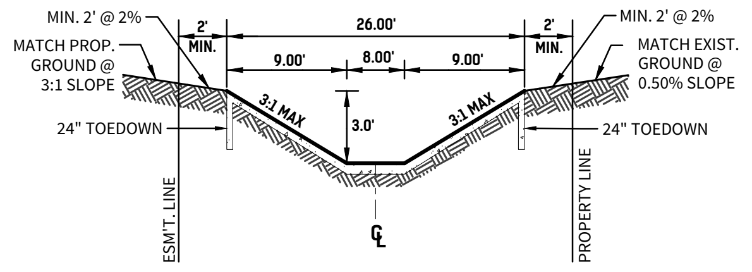
DRAIN '3F' HYDRAULIC SUMMARY							
SECTION	"3F-1"				"3F-2"	"3F-3"	
STATION	10+37.82- 10+48.58	10+48.58 - 10+60.00	10+60.00 - 11+62.12	11+62.12 - 12+02.99	12+07.99 - 12+22.99	12+22.99 - 12+44.12	12+44.12 - 13+93.12
Q_{25} (cfs)	267.66	267.67	267.67	267.67	267.67	141.89	141.89
n	0.015	0.015	0.015	0.015	0.015	0.035	0.035
S (%)	1.00	33.33	1.50	1.00	1.00	6.88	1.50
D (ft)	3.00	3.00	3.00	3.00	3.00	3.00	3.00
d_n (ft)	1.86	0.74	1.68	1.86	1.78	1.20	1.78
V (fps)	11.44	39.23	13.23	11.44	11.27	10.19	5.98
Bw (ft)	7	7	7	7	8	8	8



DRAIN "3F-1" SECTION

STA 10+37.82 TO STA 12+02.99

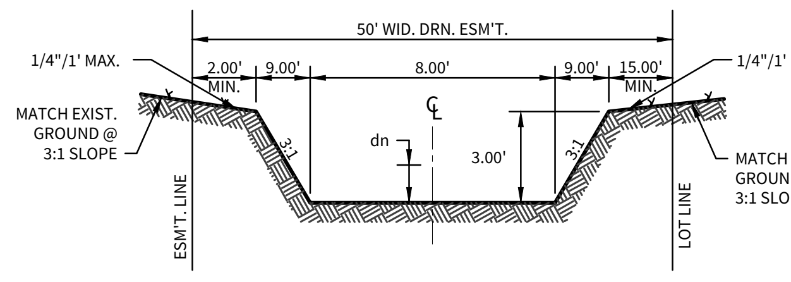
(N.T.S.)



DRAIN "3F-2" SECTION

STA 12+07.99 TO STA 12+22.99

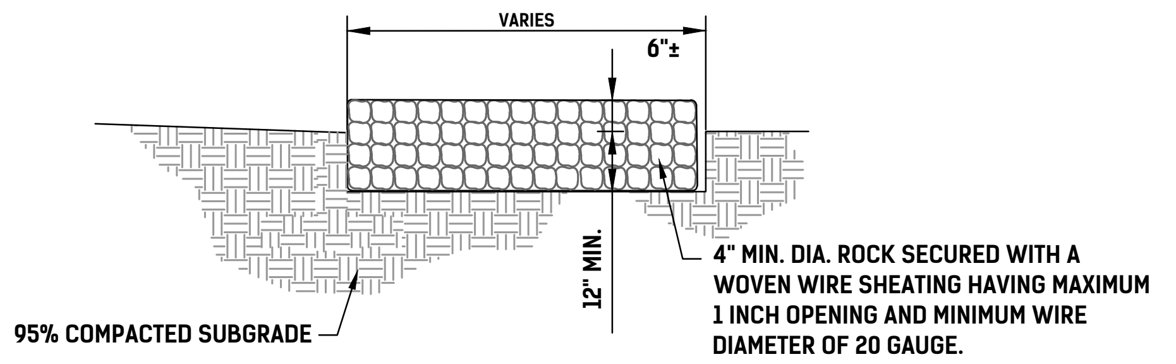
(N.T.S.)



DRAIN "3F-3" SECTION

STA 12+22.99 TO STA 13+93.12

(N.T.S.)

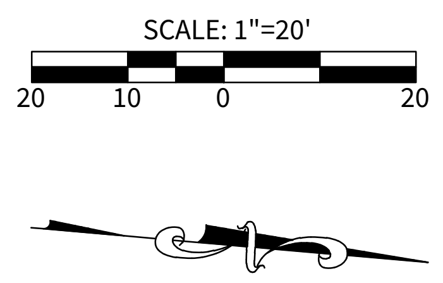

VARIES
6"±
12" MIN.
95% COMPACTED SUBGRADE
4" MIN. DIA. ROCK SECURED WITH A WOVEN WIRE SHEATING HAVING MAXIMUM 1 INCH OPENING AND MINIMUM WIRE DIAMETER OF 20 GAUGE.

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

GABION STYLE ROCK EROSION CONTROL MATTRESS DETAIL

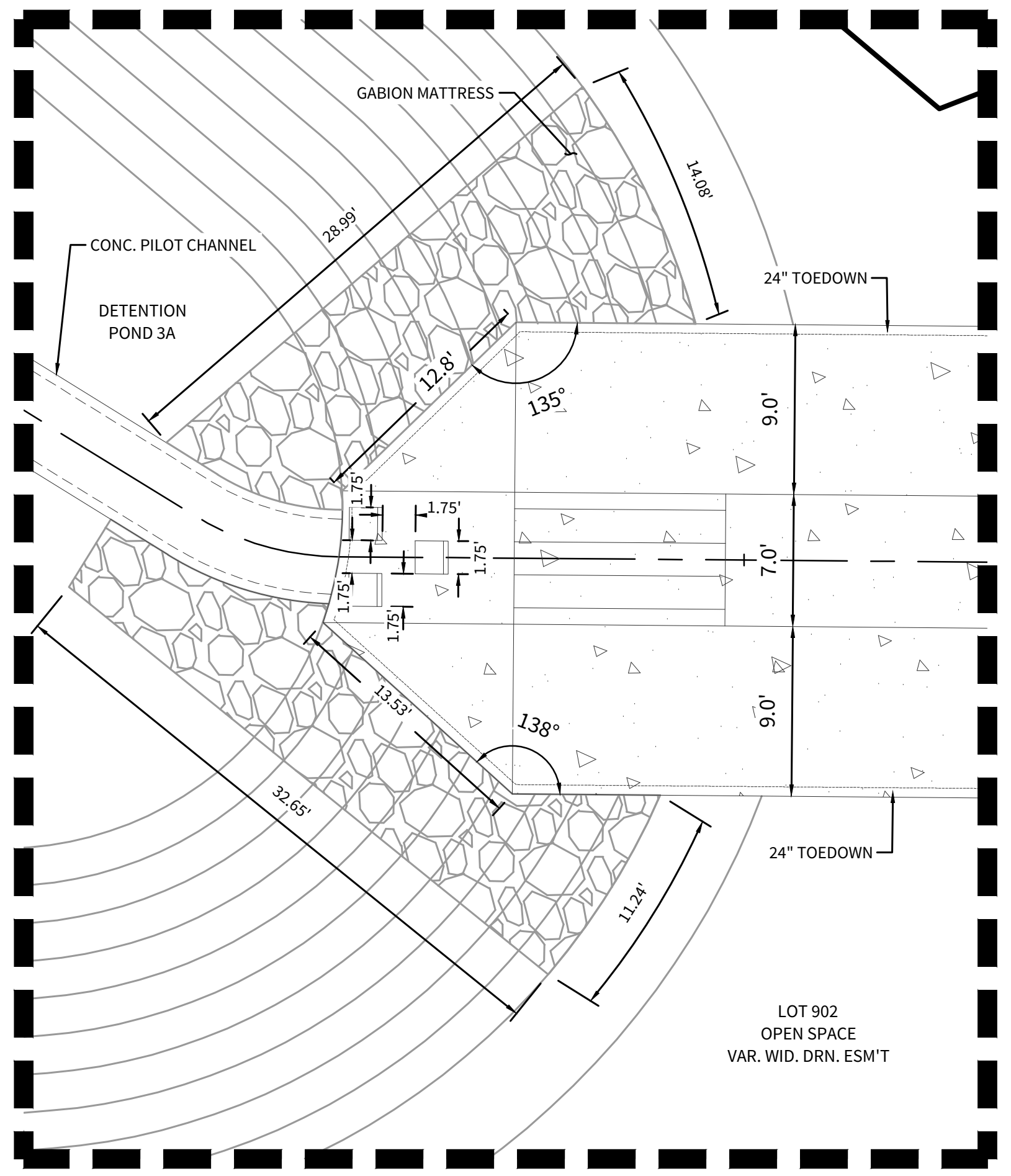
N.T.S.

SCALE: 1"=20'



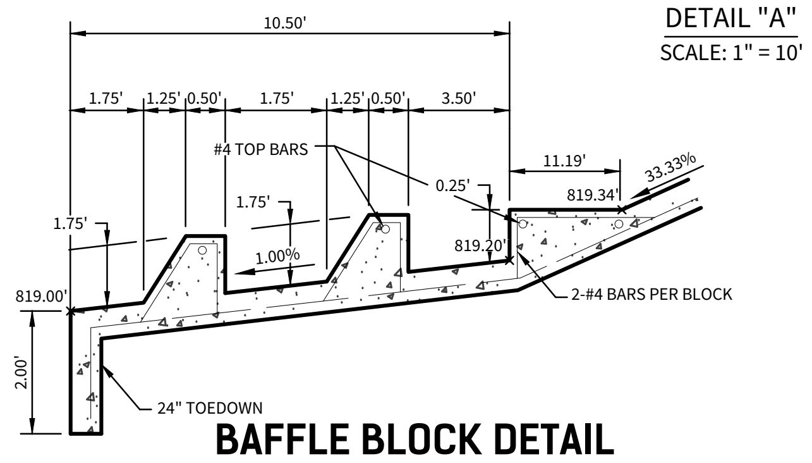
LEGEND:

▨	= EARTHEN
▨	= CONCRETE
▨	= GABION MATTRESS
▨	= TURF REINFORCEMENT MAT



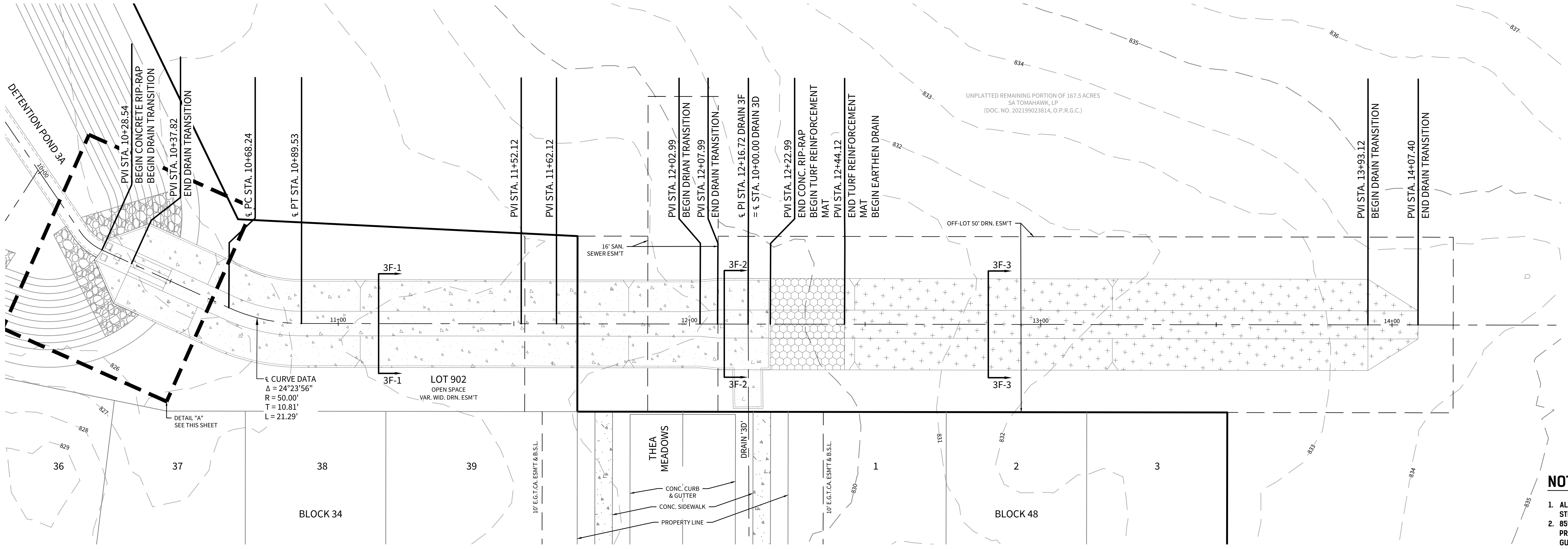
DETAIL "A"

SCALE: 1" = 10'



BAFFLE BLOCK DETAIL

(N.T.S.)



NOTES:

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 3000 PSI IN 28 DAYS.
2. 85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY THE CITY OF CIBOLO & GUADALUPE COUNTY. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
3. REFERENCE TYPICAL CONCRETE CHANNEL RIP-RAP STANDARDS FOUND ON SHEET D8.

DRAIN '3F'

STA. 10+28.54 TO STA. 14+07.40

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

BAFFLE BLOCK CALCULATIONS – DRAIN "3F" POND OUTFALL

$Y_1 = 1.86'$

$V_1 = 11.44$ fps

$$F_1 = \frac{V_1}{\sqrt{dng}} = \frac{11.44}{\sqrt{1.86x32.2}} = 1.48$$

$$\frac{Y_2}{Y_1} = 1/2\left(\sqrt{1+8(1.48)^2} - 1\right)$$

$$\frac{Y_2}{Y_1} = 1.65$$

$Y_2 = 3.07'$

$$L_B = \frac{4.5\,Y_2}{F_1^{0.76}} = \frac{4.5(3.07)}{(1.48)^{0.76}} = 10.26'$$

USED = 10.50'

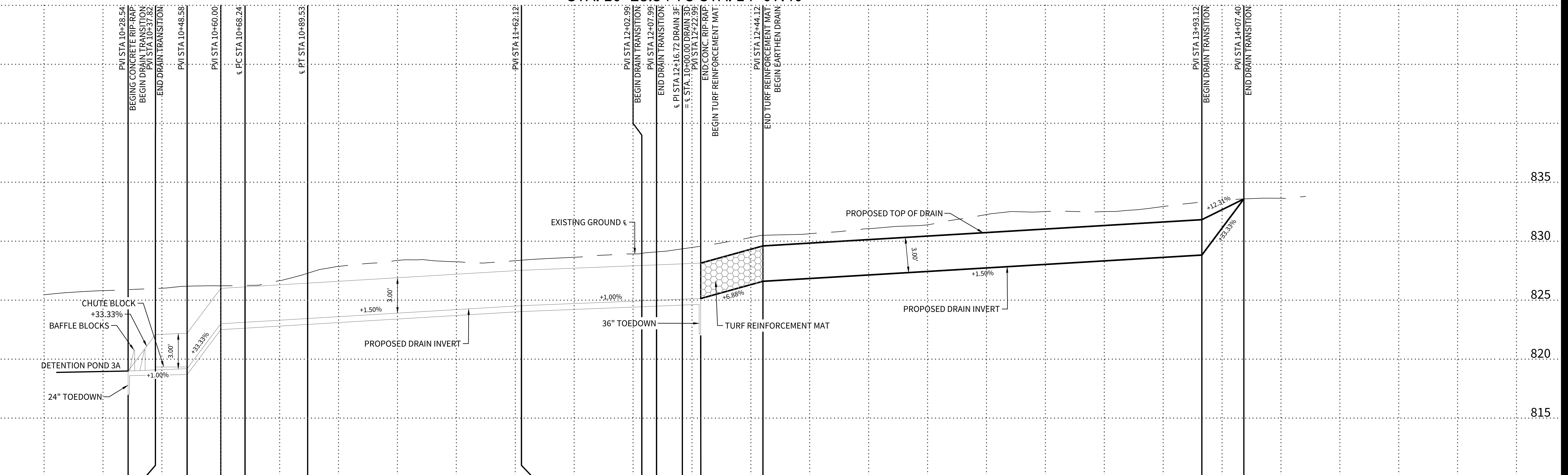
$L_B/3 = 3.50'$

SPACING = $0.75\,Y_1 = 1.40'$

$$Y_3 = \frac{0.07\,Y_2}{C} = \frac{0.07(3.07)}{1.06} = 0.20'$$

USED = 0.25'

$V_2 = 5.58$ fps



PROP. TOP OF DRAIN	819.00	822.09	822.11	822.20	826.01	826.13	826.31	826.45	826.61	826.91	827.21	827.51	827.54	827.72	827.92	827.95
PROP. DRAIN INVERT	819.00	819.09	819.11	819.20	823.01	823.13	823.31	823.45	823.61	823.91	824.21	824.51	824.54	824.72	824.92	824.95

PROP. TOP OF DRAIN	828.00	828.09	828.12	828.15	829.32	829.60	829.84	830.14	830.44	830.74	831.04	831.34	831.64	831.83	832.68	833.59
PROP. DRAIN INVERT	825.00	825.09	825.12	825.15	826.32	826.60	826.84	827.14	827.44	827.74	828.04	828.34	828.64	828.83	831.13	833.59

10+00 11+00 12+00 13+00 14+00

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GRACE VALLEY RANCH PHASE 3A

DRAINAGE PLAN & PROFILE - DRAIN 3F

DATE
09/12/2023

PROJECT NO.
03346.006

DRAWN BY
KMH/NNR/MOH/MAS

CHECKED BY
CJC

REVISIONS
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KYLE M. HUDEK
138753
09/12/2023
K. Hudek

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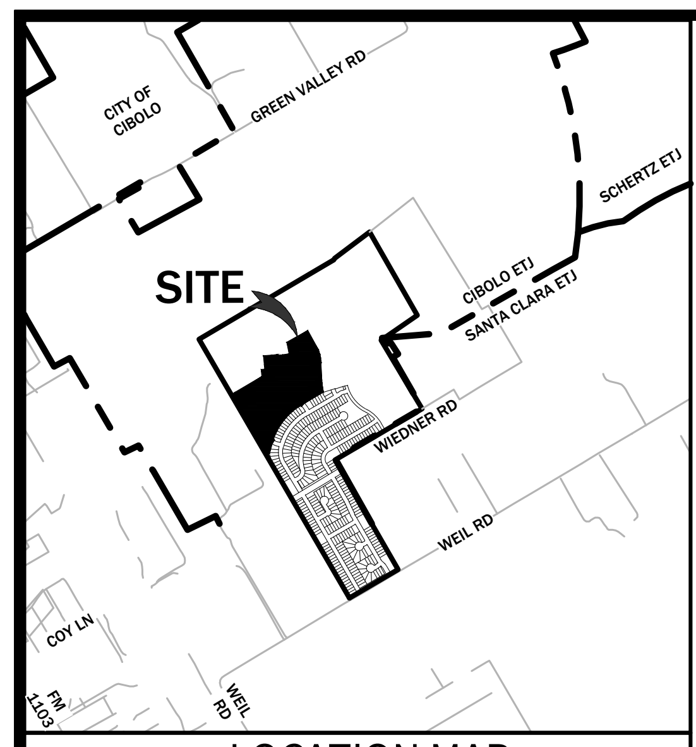
TBPE No. 455
TBPLS No. 10048500

D6

6 OF 10



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

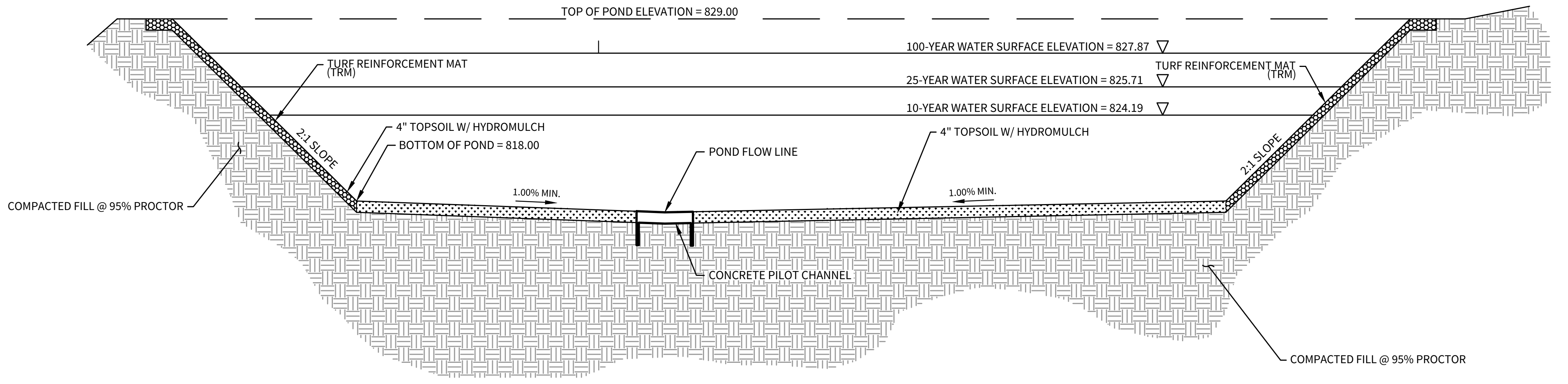
CIVIL ENGINEER:

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

SCALE: 1"=20'
0 10 20

LEGEND:

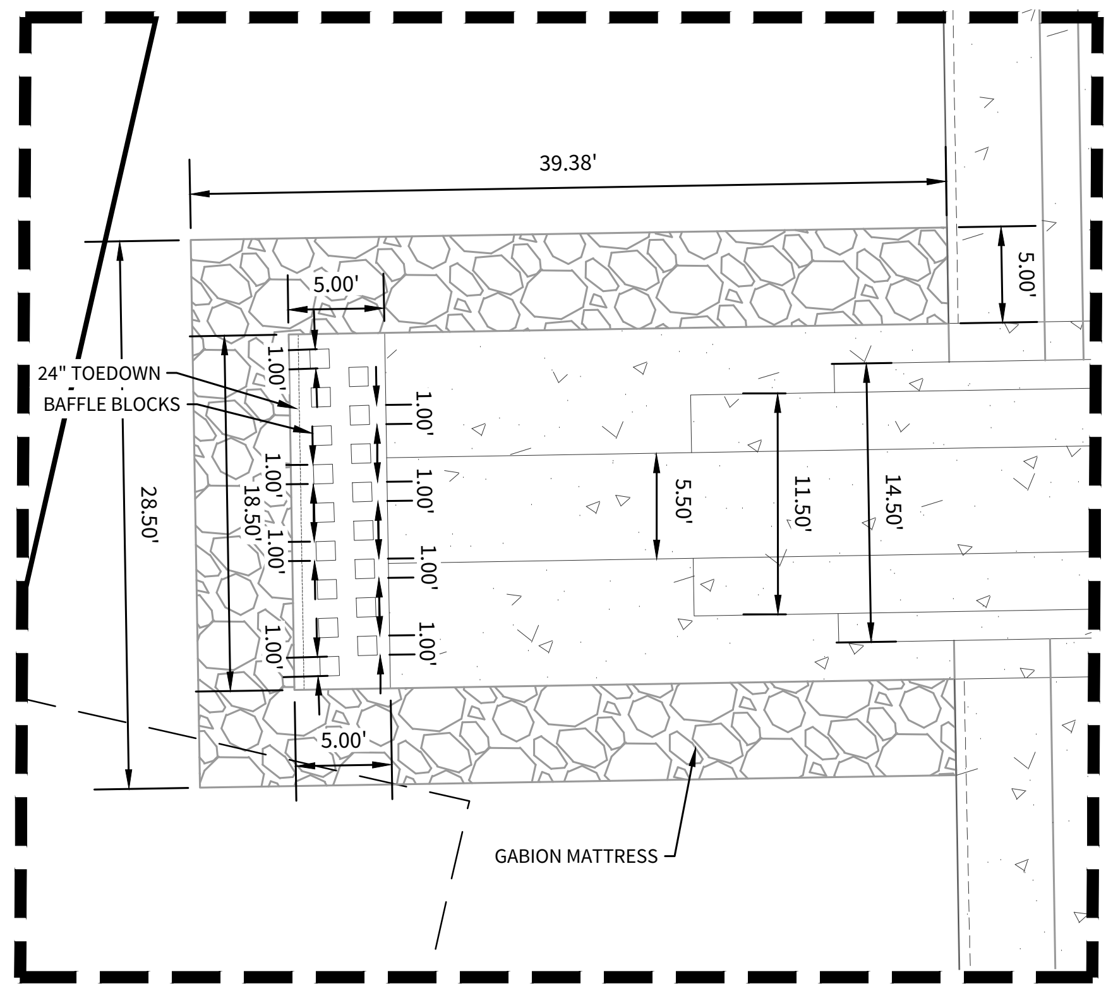
—1290—	= EXISTING CONTOUR
▭1290▭	= PROPOSED CONTOUR
━━	= PARK VILLAGE UNIT 6 BOUNDARY
X.XX% →	= PROPOSED FLOW ARROW
⬡	= TURF REINFORCEMENT MAT (TRM) PYRAMAT 25
+	= EARTHEN
△	= CONCRETE


TOP OF POND ELEVATION = 829.00
100-YEAR WATER SURFACE ELEVATION = 827.87
25-YEAR WATER SURFACE ELEVATION = 825.71
10-YEAR WATER SURFACE ELEVATION = 824.19
TURF REINFORCEMENT MAT (TRM)
TURF REINFORCEMENT MAT (TRM)
4" TOPSOIL W/ HYDROMULCH
BOTTOM OF POND = 818.00
POND FLOW LINE
4" TOPSOIL W/ HYDROMULCH
2:1 SLOPE
2:1 SLOPE
1.00% MIN.
1.00% MIN.
COMPACTED FILL @ 95% PROCTOR
CONCRETE PILOT CHANNEL
COMPACTED FILL @ 95% PROCTOR

SECTION "A-A"

N.T.S.

DETENTION POND 3A - PLAN VIEW

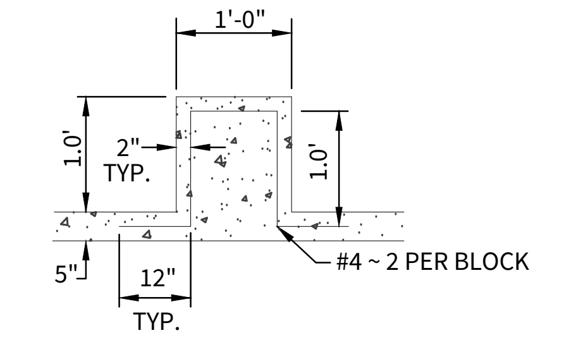


OUTLET DETAIL

SCALE: 1" = 10'

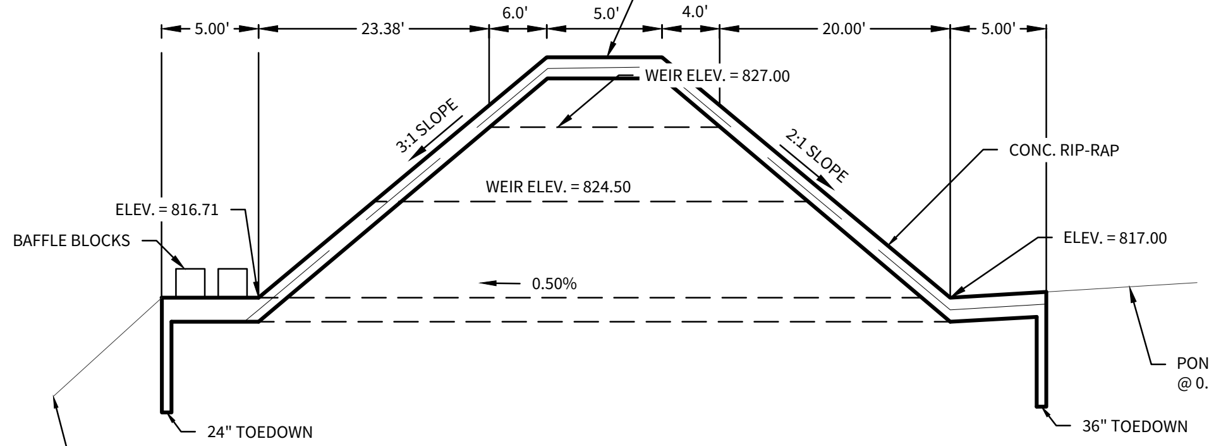
NOTES:

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 3000 PSI IN 28 DAYS.
2. 85% OF CHANNEL & DETENTION POND SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY THE CITY OF CIBOLO & GUADALUPE COUNTY. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
3. REFERENCE TYPICAL CONCRETE CHANNEL RIP-RAP STANDARDS FOUND ON SHEET D8.
4. CONTRACTOR TO COORDINATE WITH CHRIS LEWIS (977)439-2235 DURING THE PROCESS WHEN ORDERING TURF REINFORCEMENT MATERIAL (TRM).



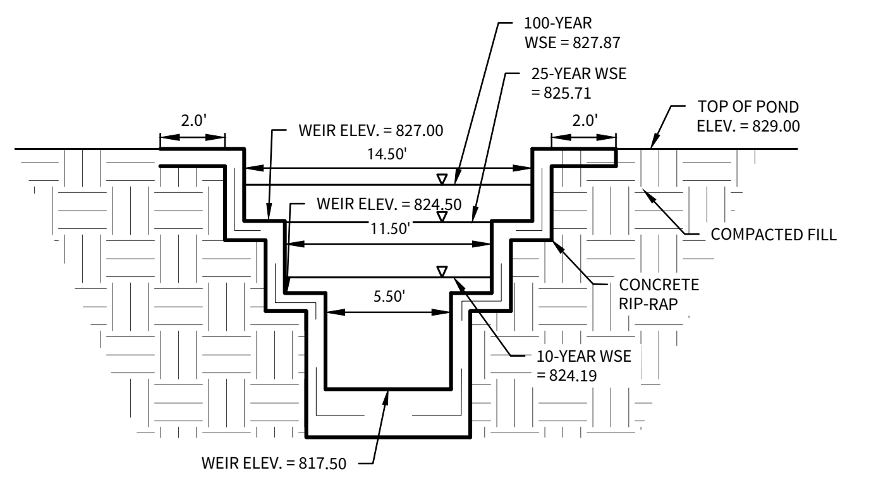
BAFFLE BLOCK REINFORCEMENT

(N.T.S.)



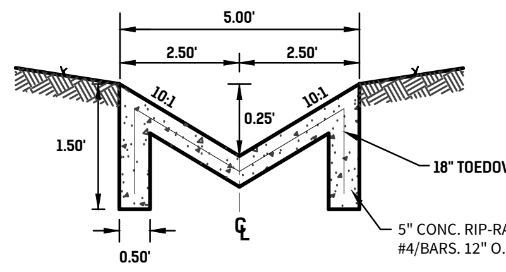
SECTION "B-B"

N.T.S.



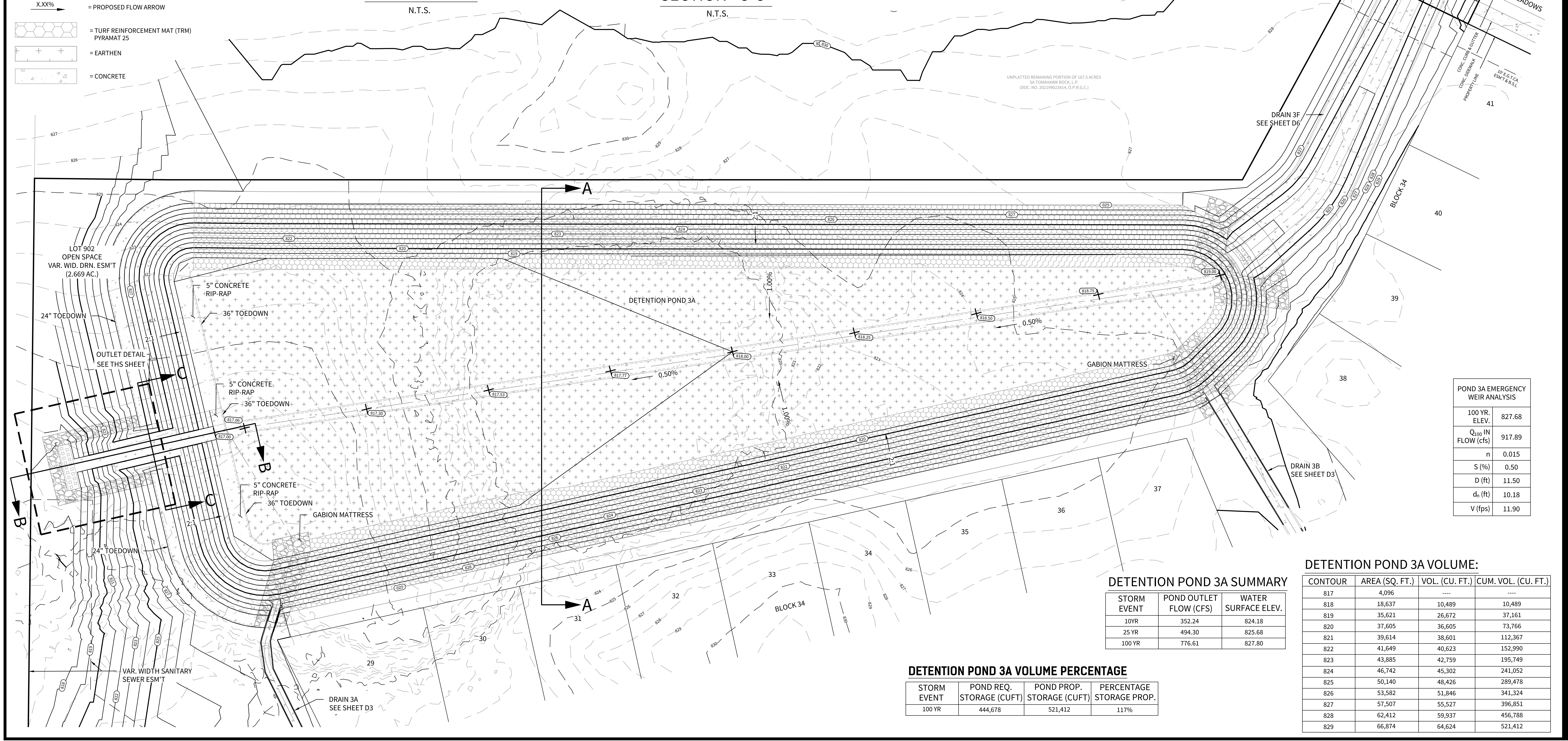
SECTION "C-C"

N.T.S.



PILOT CHANNEL SECTION

(N.T.S.)



POND 3A EMERGENCY WEIR ANALYSIS	
100 YR. ELEV.	827.68
Q_{100} IN FLOW (cfs)	917.89
n	0.015
S (%)	0.50
D (ft)	11.50
d_n (ft)	10.18
V (fps)	11.90

DETENTION POND 3A SUMMARY

STORM EVENT	POND OUTLET FLOW (CFS)	WATER SURFACE ELEV.
10YR	352.24	824.18
25 YR	494.30	825.68
100 YR	776.61	827.80

DETENTION POND 3A VOLUME PERCENTAGE

STORM EVENT	POND REQ. STORAGE (CUFT)	POND PROP. STORAGE (CUFT)	PERCENTAGE STORAGE PROP.
100 YR	444,678	521,412	117%

DETENTION POND 3A VOLUME:

CONTOUR	AREA (SQ. FT.)	VOL. (CU. FT.)	CUM. VOL. (CU. FT.)
817	4,096	----	----
818	18,637	10,489	10,489
819	35,621	26,672	37,161
820	37,605	36,605	73,766
821	39,614	38,601	112,367
822	41,649	40,623	152,990
823	43,885	42,759	195,749
824	46,742	45,302	241,052
825	50,140	48,426	289,478
826	53,582	51,846	341,324
827	57,507	55,527	396,851
828	62,412	59,937	456,788
829	66,874	64,624	521,412

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EST. 1980
ENGINEERS

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

**GRACE VALLEY RANCH
PHASE 3A**

DETENTION POND 3A

DATE
05/18/2023

PROJECT NO.
03346.006

DRAWN BY
KMH/NNR/MOH/MAS

CHECKED BY
CJC

REVISIONS
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KYLE M. HUDEK
138753
K. Hudek
05/22/2023

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

D7

7 OF 10

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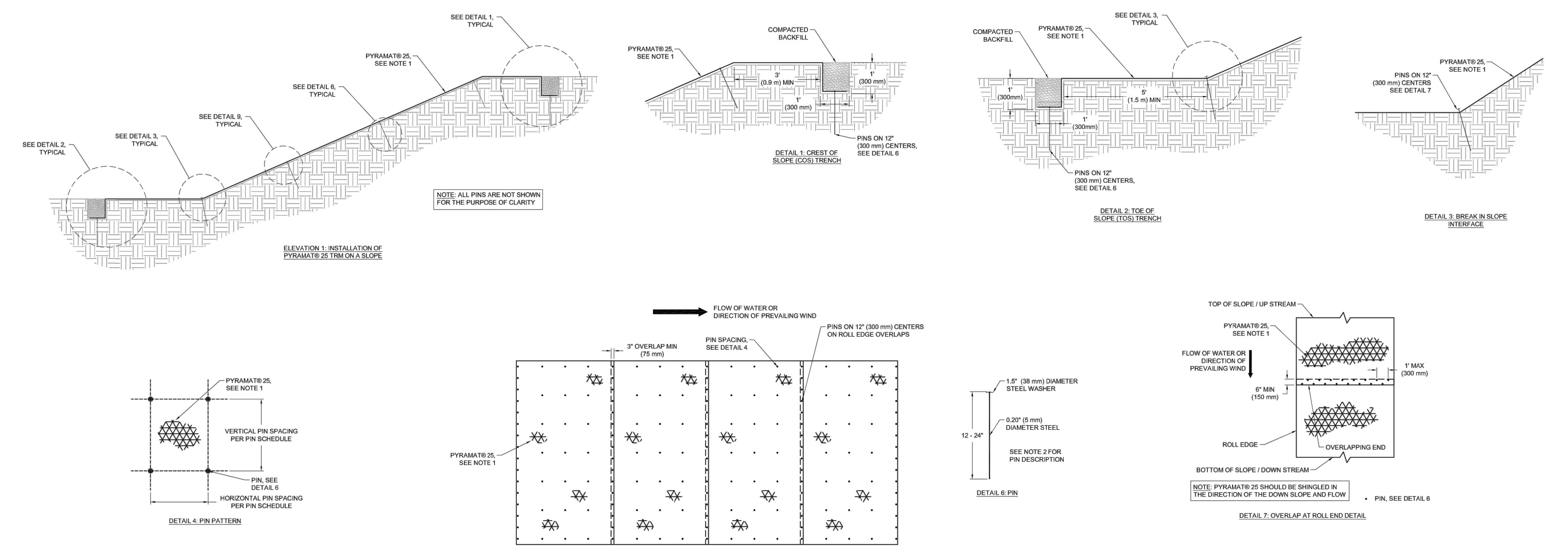
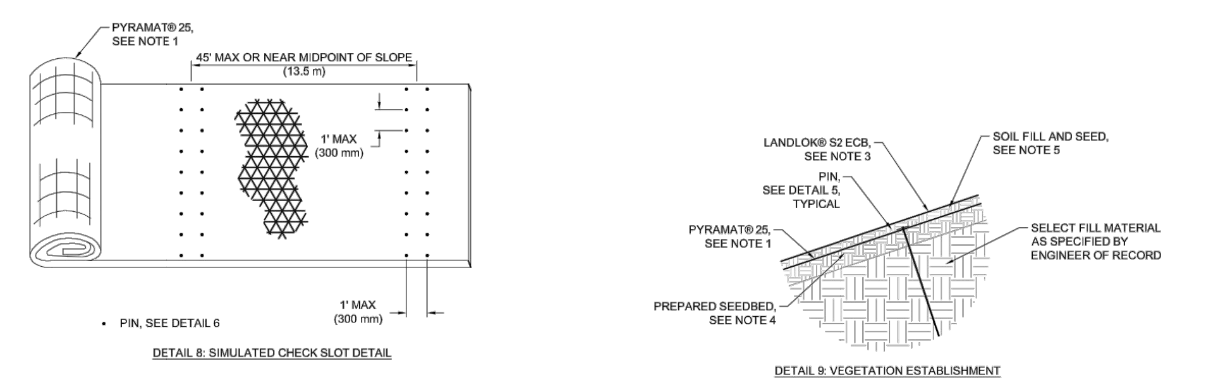

DETAIL 1: INSTALLATION OF PYRAMAT® 25 TRM ON A SLOPE
DETAIL 2: TOE OF SLOPE (TOS) TRENCH
DETAIL 1: CREST OF SLOPE (COS) TRENCH
DETAIL 3: BREAK IN SLOPE INTERFACE
DETAIL 4: PIN PATTERN
DETAIL 5: PIN PATTERN
DETAIL 6: PIN
DETAIL 7: OVERLAP AT ROLL END DETAIL
NOTE: ALL PINS ARE NOT SHOWN FOR THE PURPOSE OF CLARITY
NOTE: PYRAMAT® 25 SHOULD BE SHINGLED IN THE DIRECTION OF THE DOWN SLOPE AND FLOW
PIN, SEE DETAIL 6


DETAIL 8: SIMULATED CHECK SLOT DETAIL
DETAIL 9: VEGETATION ESTABLISHMENT
45' MAX OR NEAR MIDPOINT OF SLOPE (13.5 m)
1' MAX (300 mm)
LANDLOK® S2 ECB, SEE NOTE 3
SOIL FILL AND SEED, SEE NOTE 5
SELECT FILL MATERIAL AS SPECIFIED BY ENGINEER OF RECORD
PREPARED SEEDBED, SEE NOTE 4

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

PYRAMAT® 25 TRM ON A SLOPE FOR EROSION CONTROL GENERAL INSTALLATION GUIDELINES

GENERAL NOTES

1. PYRAMAT® 25 TRM is a three-dimensional, lofty, woven polypropylene geotextile that is available in green or tan which is specially designed for erosion control applications on steep slopes and vegetated waterways. The matrix is composed of polypropylene monofilament yarns featuring X3® technology woven into a uniform configuration of resilient pyramid-like projections. The material exhibits very high interlock and reinforcement capacity with both soil and root systems, demonstrates superior UV resistance, and enhances seedling 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.
3. LANDLOK® S2 Erosion Control Blankets consist of 100% wheat straw mechanically bound and covered on both sides by netting. The straw is homogeneously blended and evenly distributed throughout the blanket. The netting is photodegradable polypropylene with mesh openings of approximately 3/8 in. by 3/8 in. (11 mm by 11 mm). The blanket is sewn on approximately 2 in. (51 mm) centers with photodegradable polypropylene thread. This product is NTPEP approved for AASHTO standards.

VEGETATION ESTABLISHMENT

4. Prepare seedbed by loosening 50 to 75 mm (2 to 3 in) of soil above final grade. Apply seed in an amount equivalent to 60% of the total mixture required to be installed on the soil surface, to scarified surface prior to installation of the PYRAMAT® 25 TRM. Select and apply soil amendments and fertilizer, to scarified surface prior to installation of the PYRAMAT® 25 TRM. A site specific soil test should be performed to help determine what soil amendments, such as lime and fertilizer, need to be incorporated into the soil to promote healthy vegetation.
5. The installed PYRAMAT® 25 TRM shall be soil filled and seeded with the remaining 40% of the seed mixture. Do not place excessive soil above material. Once soil fill and additional seed is in place, surficial protection should be accomplished by installing LANDLOK® S2 Erosion Control Blanket (ECB) atop the seed layer. LANDLOK® S2 ECB is to be secured using 6" U-shaped staples with a frequency of 2.0 staples per square meter (1.7 staples per square yard).
6. Irrigate as necessary to establish and maintain vegetation until 75% of vegetation has established and has reached a height of 2 inches. Frequent, light irrigation will need to be applied to seeded areas if natural rain events have not occurred within two weeks of seeding.

BEFORE INSTALLATION BEGINS

7. 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.
8. Gather the Tools Needed: Tools that you will need to install PYRAMAT® 25 include a pair of industrial shears to cut PYRAMAT® 25 and tape measure.
9. 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.
10. Please consult the Propex Website for the most up to date installation guidelines.

Propex
GEOSOLUTIONS

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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
Rev
PYRAMAT
TURF REINFORCEMENT MAT (TRM)
PYRAMAT® 25 INSTALLATION DETAILS FOR SLOPES
Date: 02/15/2017
Drawn By: J. HILL
Scale: NTS
*ALL DIMENSIONS ARE TO BE VERIFIED BY ENGINEER OF RECORD

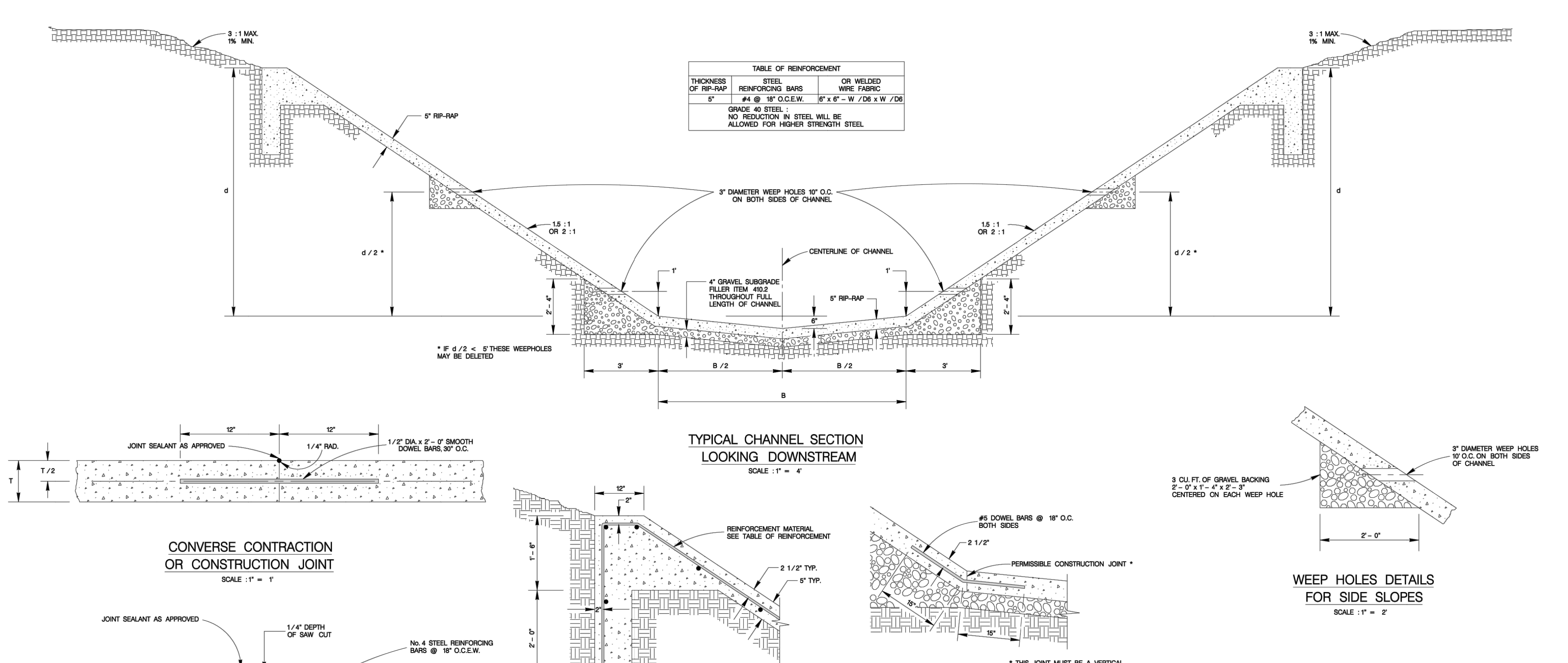
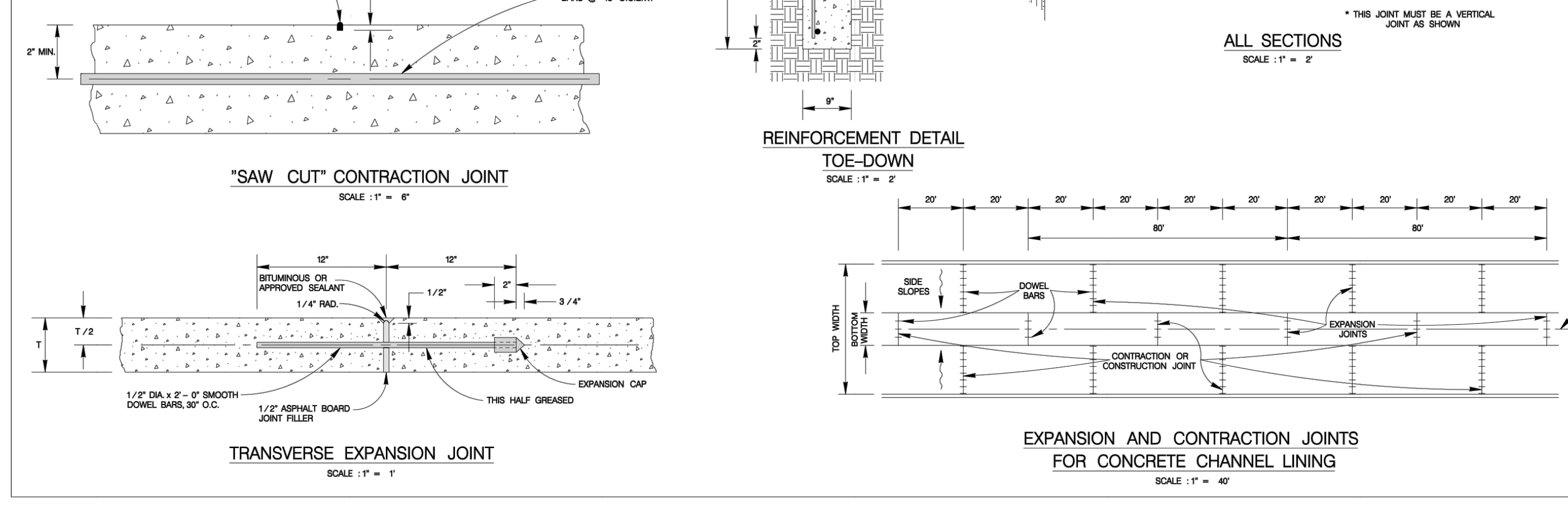

TYPICAL CHANNEL SECTION LOOKING DOWNSTREAM
SCALE : 1" = 4'
3" DIAMETER WEEP HOLES 10" O.C. ON BOTH SIDES OF CHANNEL
CENTERLINE OF CHANNEL
1.5 : 1 OR 2 : 1
3 : 1 MAX. 1% MIN.
5" RIP-RAP
4" GRAVEL SUBGRADE FILLER ITEM 4XLE THROUGHOUT FULL LENGTH OF CHANNEL
* IF d/2 < 6' THESE WEEPHOLES MAY BE DELETED
CONVERSE CONTRACTION OR CONSTRUCTION JOINT
REINFORCEMENT DETAIL TOE-DOWN
ALL SECTIONS
WEEP HOLES DETAILS FOR SIDE SLOPES
SCALE : 1" = 2'

TABLE OF REINFORCEMENT		
THICKNESS OF RIP-RAP	STEEL REINFORCING BARS	OR WELDED WIRE FABRIC
5"	#4 @ 18" O.C.E.W.	6" x 6" – W /D6 x W /D6
GRADE 40 STEEL : NO REDUCTION IN STEEL WILL BE ALLOWED FOR HIGHER STRENGTH STEEL		


"SAW CUT" CONTRACTION JOINT
TRANSVERSE EXPANSION JOINT
EXPANSION AND CONTRACTION JOINTS FOR CONCRETE CHANNEL LINING
SCALE : 1" = 40'
CENTERLINE OF CHANNEL

GENERAL NOTES

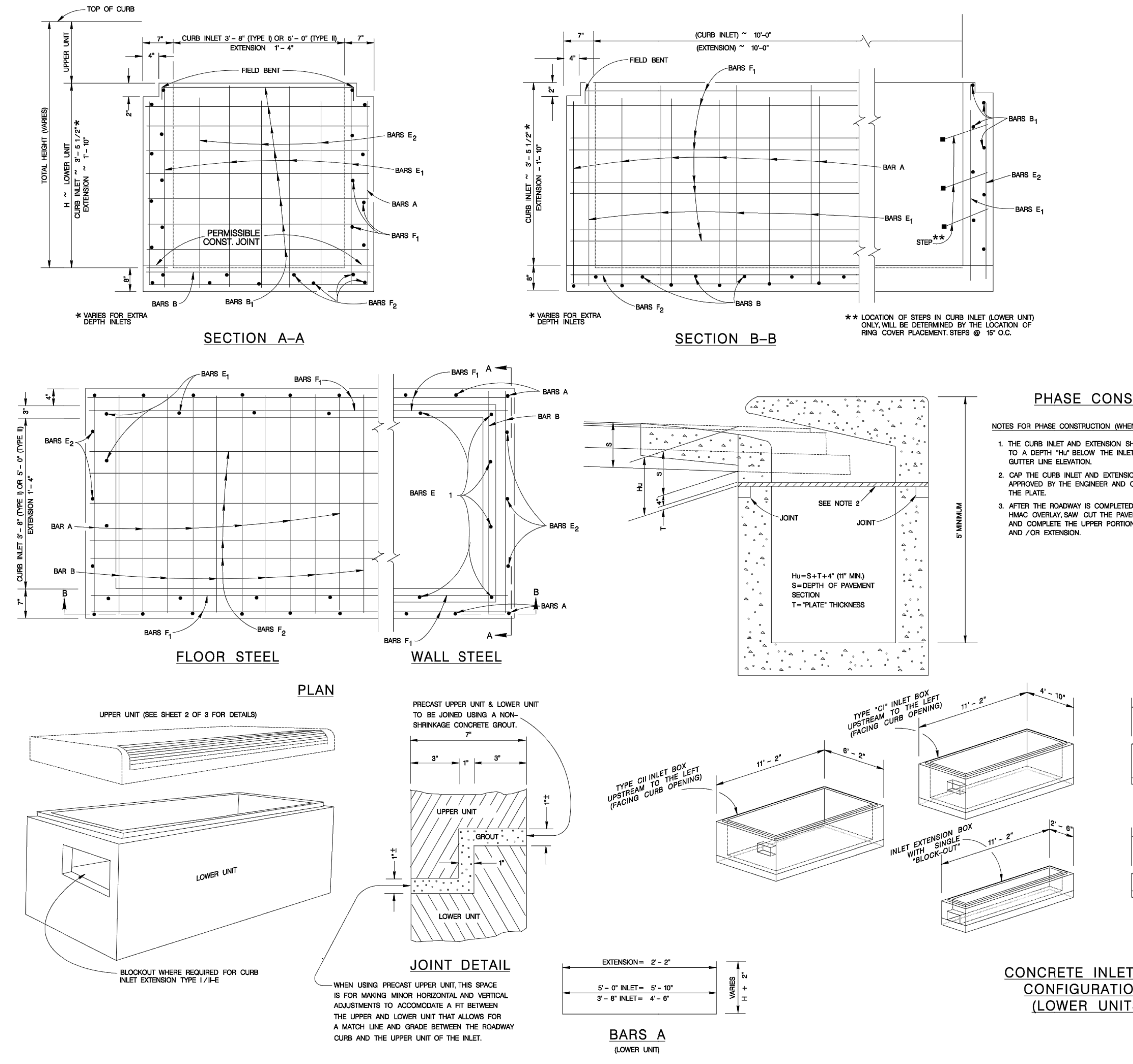
1. CONCRETE FOR CHANNEL RIP–RAP SHALL BE CLASS "A" 3000 P.S.I.
2. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS UNLESS OTHERWISE SHOWN.
3. ALL REINFORCEMENT STEEL SHALL MEET ASTM DESIGNATIONS AS CALLED FOR IN THE "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION".
4. NEW RIP–RAP 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".

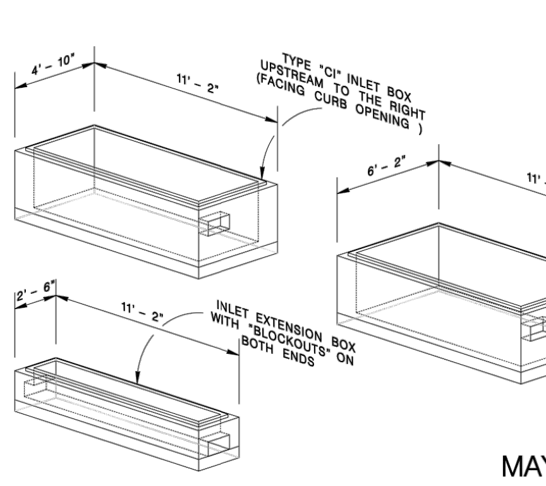
MAY 2009

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____


SECTION A–A
SECTION B–B
FLOOR STEEL
WALL STEEL
PLAN
JOINT DETAIL
BARS A (LOWER UNIT)
PERMISSIBLE CONST. JOINT
** LOCATION OF STEPS IN CURB INLET (LOWER UNIT) WILL BE DETERMINED BY THE LOCATION OF RING COVER PLACEMENT. STEPS @ 15" O.C.
5' MINIMUM
BLOCKOUT WHERE REQUIRED FOR CURB INLET EXTENSION TYPE 1 (I–I)


CONCRETE INLET BOX CONFIGURATIONS (LOWER UNITS)
TYPE "CI" INLET BOX UPSTREAM TO THE RIGHT (FACING CURB OPENING)
INLET EXTENSION BOX WITH "BLOCKOUTS" ON BOTH ENDS
11' – 2"
4' – 10"

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"

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.

GENERAL NOTES

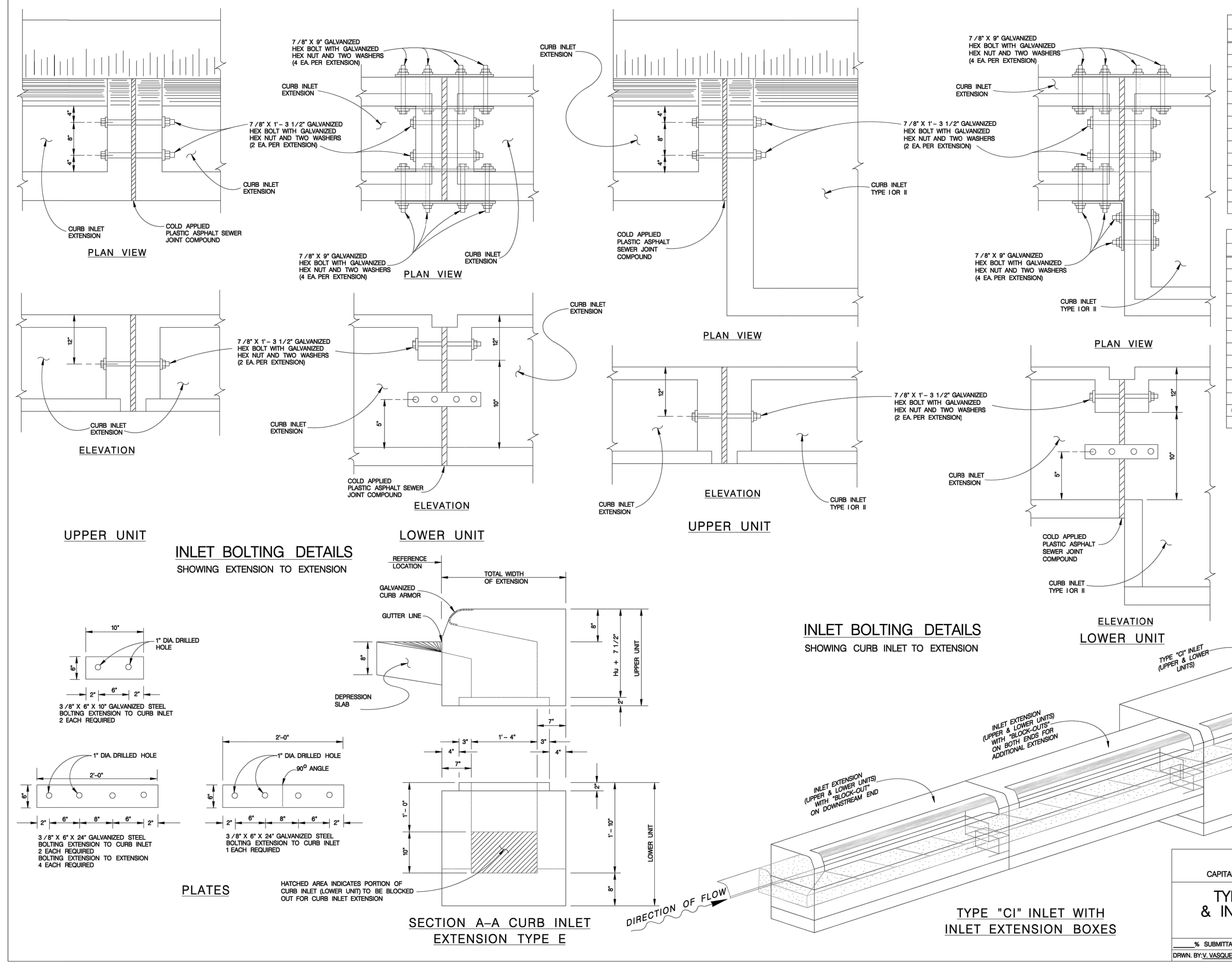
1. 5' INLETS AND 5' EXTENSIONS MUST BE IN ACCORDANCE WITH THE LATEST TXDOT CURB INLET TYPE "C" AND EXTENSION TYPE E (IL–C).
2. TYPE C–II INLET TO BE USED ONLY WHEN STORM DRAIN PIPE IS IN–LINE WITH CURB INLET AND APPROVED BY THE ENGINEER.
3. QUANTITIES SHOWN ARE FOR CONTRACTORS INFORMATION ONLY.
4. CONCRETE 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".

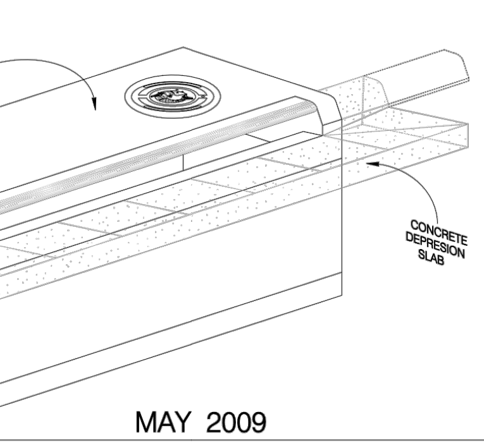
MAY 2009

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 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
7 / 8" X 9" GALVANIZED HEX BOLT WITH GALVANIZED HEX NUT AND TWO WASHERS (4 EA. PER EXTENSION)
7 / 8" X 1'– 3 1/2" GALVANIZED HEX BOLT WITH GALVANIZED HEX NUT AND TWO WASHERS (2 EA. PER EXTENSION)
CURB INLET EXTENSION
CURB INLET TYPE I OR II
COLD APPLIED PLASTIC ASPHALT SEWER JOINT COMPOUND
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____

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

GRACE VALLEY RANCH
PHASE 3A

CONCRETE RIP-RAP AND INLET DETAILS

DATE
05/17/2023

PROJECT NO.
03346.006

DRAWN BY
KMH/NNR/MOH/MAS

CHECKED BY
CJC

REVISIONS
1.
2.
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9.

KYLE M. HUDEK
138753
05/22/2023

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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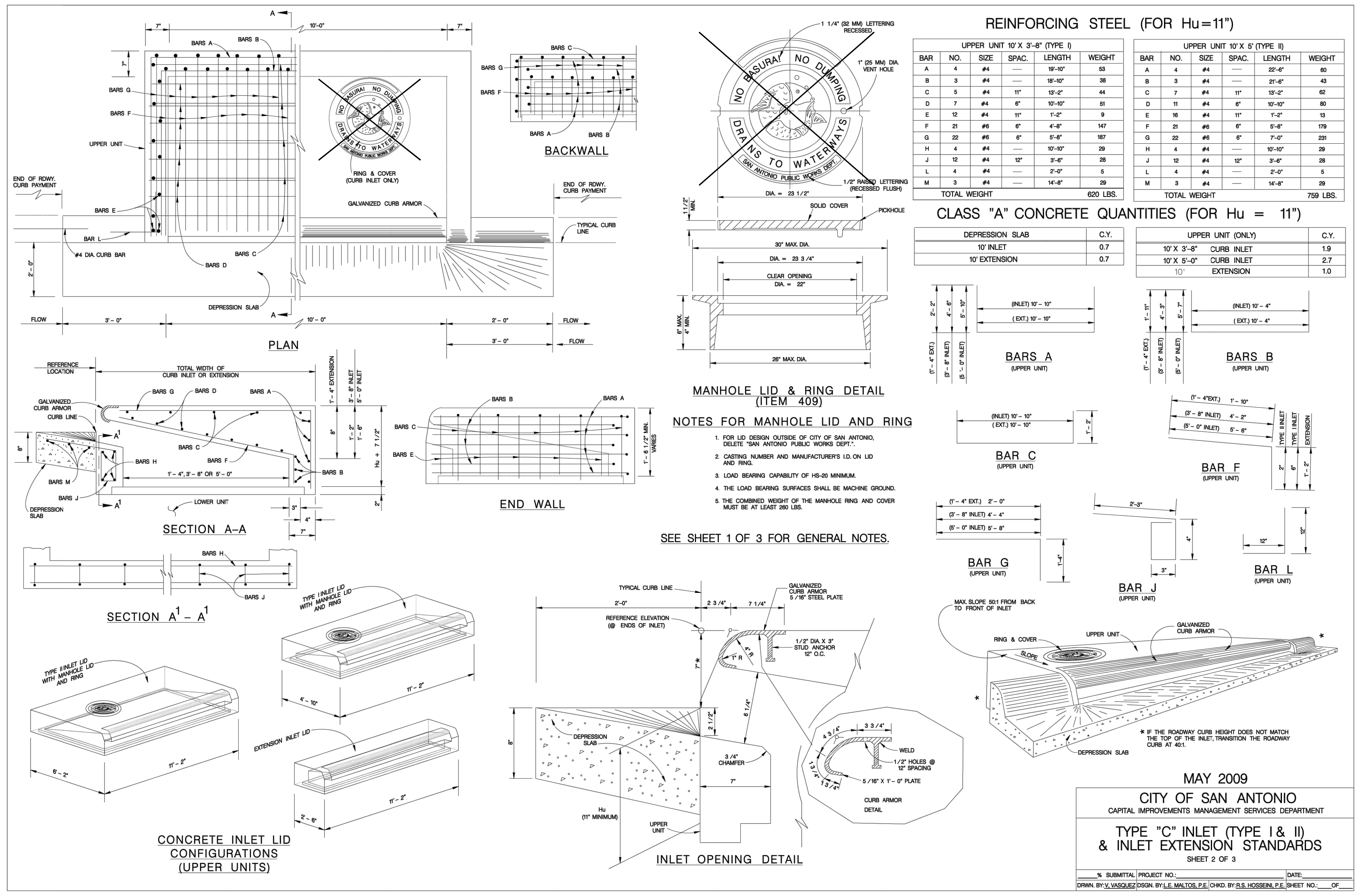


REINFORCING STEEL (FOR Hu=11")

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

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.

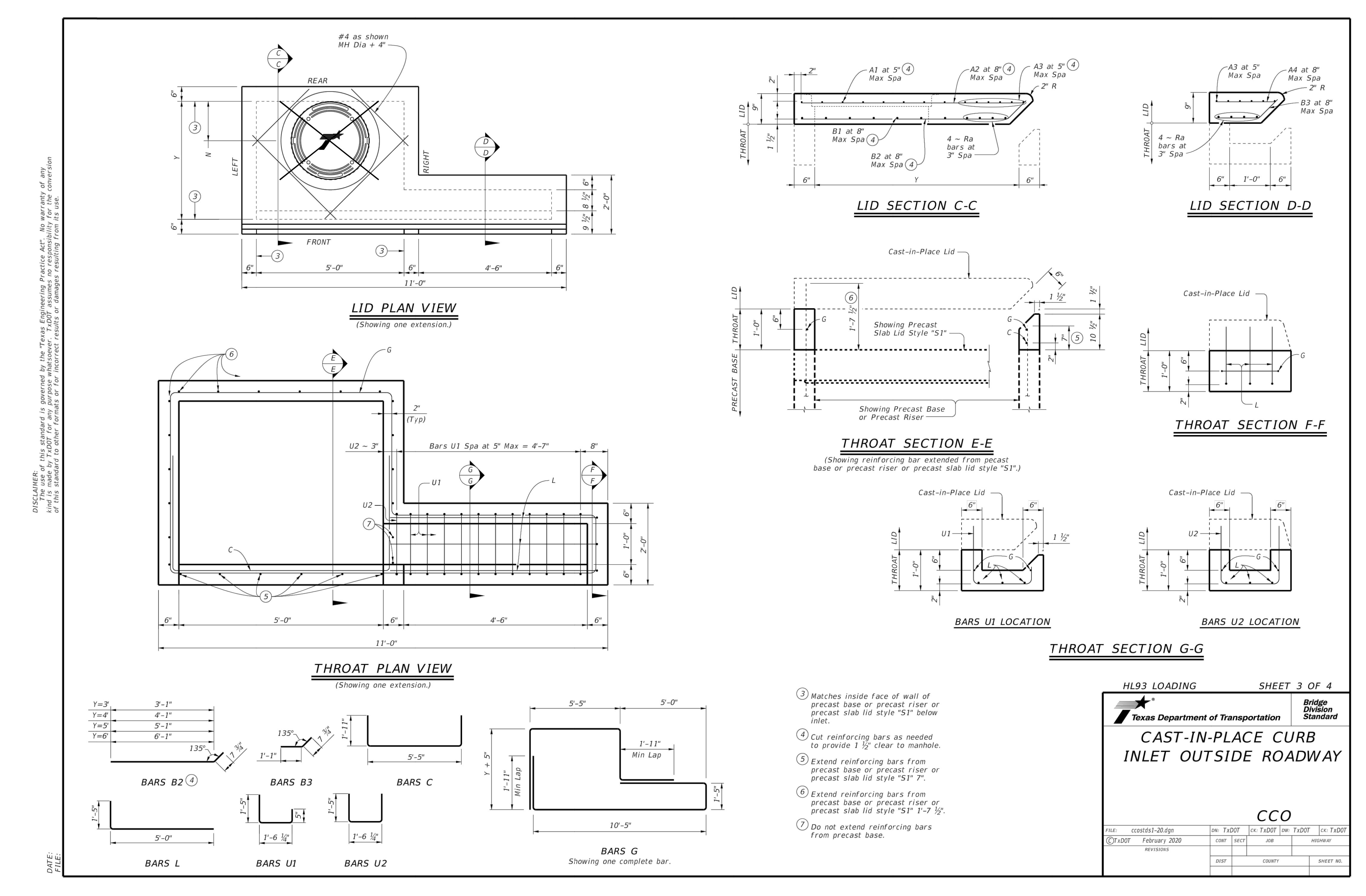
* IF THE ROADWAY CURB HEIGHT DOES NOT MATCH THE TOP OF THE INLET, TRANSITION THE ROADWAY CURB AT 40:1.

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____



③ Matches inside face of wall of precast base or precast riser or precast slab lid style "S1" below inlet.

④ Cut reinforcing bars as needed to provide 1 ½" clear to manhole.

⑤ Extend reinforcing bars from precast base or precast riser or precast slab lid style "S1" 7".

⑥ Extend reinforcing bars from precast base or precast riser or precast slab lid style "S1" 1'-7 ½".

⑦ Do not extend reinforcing bars from precast base.

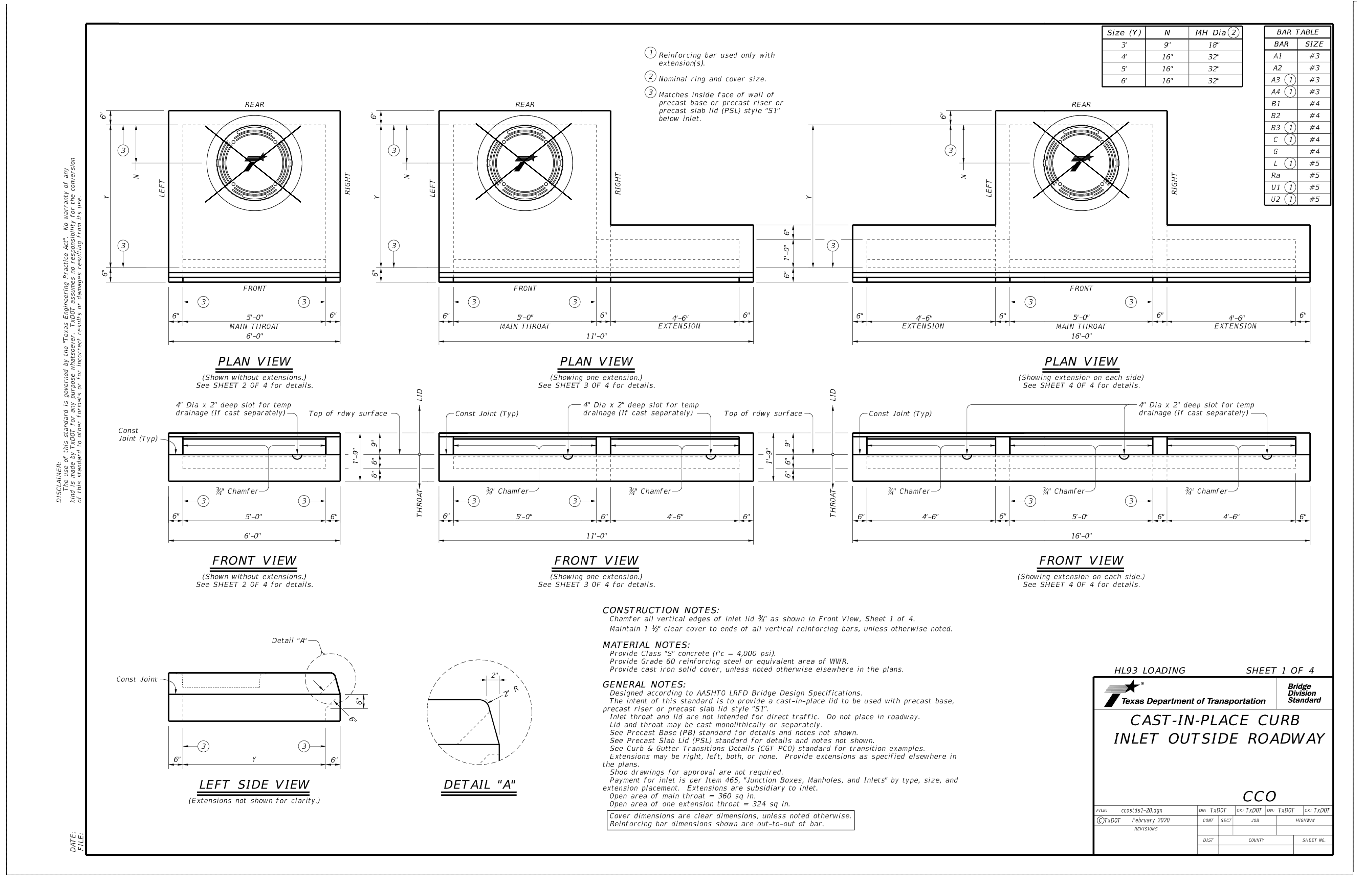
HL93 LOADING SHEET 3 OF 4

Texas Department of Transportation — Bridge Division Standard

CAST-IN-PLACE CURB
INLET OUTSIDE ROADWAY

CCO

FILE: ccostds1-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.


PLAN VIEW
(Shown without extensions.)
See SHEET 2 OF 4 for details.
PLAN VIEW
(Showing one extension.)
See SHEET 3 OF 4 for details.
PLAN VIEW
(Showing extension on each side)
See SHEET 4 OF 4 for details.
FRONT VIEW
(Shown without extensions.)
See SHEET 2 OF 4 for details.
FRONT VIEW
(Showing one extension.)
See SHEET 3 OF 4 for details.
FRONT VIEW
(Showing extension on each side.)
See SHEET 4 OF 4 for details.
LEFT SIDE VIEW
(Extensions not shown for clarity.)
DETAIL "A"
MAIN THROAT
EXTENSION
¾" Chamfer
Const Joint (Typ)
Top of rdwy surface
4" Dia x 2" deep slot for temp drainage (if cast separately)

Size (Y)	N	MH Dia ②
3'	9"	18"
4'	16"	32"
5'	16"	32"
6'	16"	32"

BAR TABLE	
BAR	SIZE
A1	#3
A2	#3
A3 ①	#3
A4 ①	#3
B1	#4
B2	#4
B3 ①	#4
C ①	#4
G	#4
L ①	#5
Ra	#5
U1 ①	#5
U2 ①	#5

① Reinforcing bar used only with extension(s).

② Nominal ring and cover size.

③ Matches inside face of wall of precast base or precast riser or precast slab lid (PSL) style "S1" below inlet.

CONSTRUCTION NOTES:
Chamfer all vertical edges of inlet lid ¾" as shown in Front View, Sheet 1 of 4.
Maintain 1 ½" clear cover to ends of all vertical reinforcing bars, unless otherwise noted.

MATERIAL NOTES:
Provide Class "S" concrete (f'c = 4,000 psi).
Provide Grade 60 reinforcing steel or equivalent area of WWR.
Provide cast iron solid cover, unless noted otherwise elsewhere in the plans.

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
The intent of this standard is to provide a cast-in-place lid to be used with precast base, precast riser or precast slab lid style "S1".
Inlet throat and lid are not intended for direct traffic. Do not place in roadway.
Lid and throat may be cast monolithically or separately.
See Precast Base (PB) standard for details and notes not shown.
See Precast Slab Lid (PSL) standard for details and notes not shown.
See Curb & Gutter Transitions Details (CGT-PCO) standard for transition examples.
Extensions may be right, left, both, or none. Provide extensions as specified elsewhere in the plans.
Shop drawings for approval are not required.
Payment for inlet is per Item 465, "Junction Boxes, Manholes, and Inlets" by type, size, and extension placement. Extensions are subsidiary to inlet.
Open area of main throat = 360 sq in.
Open area of one extension throat = 324 sq in.

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

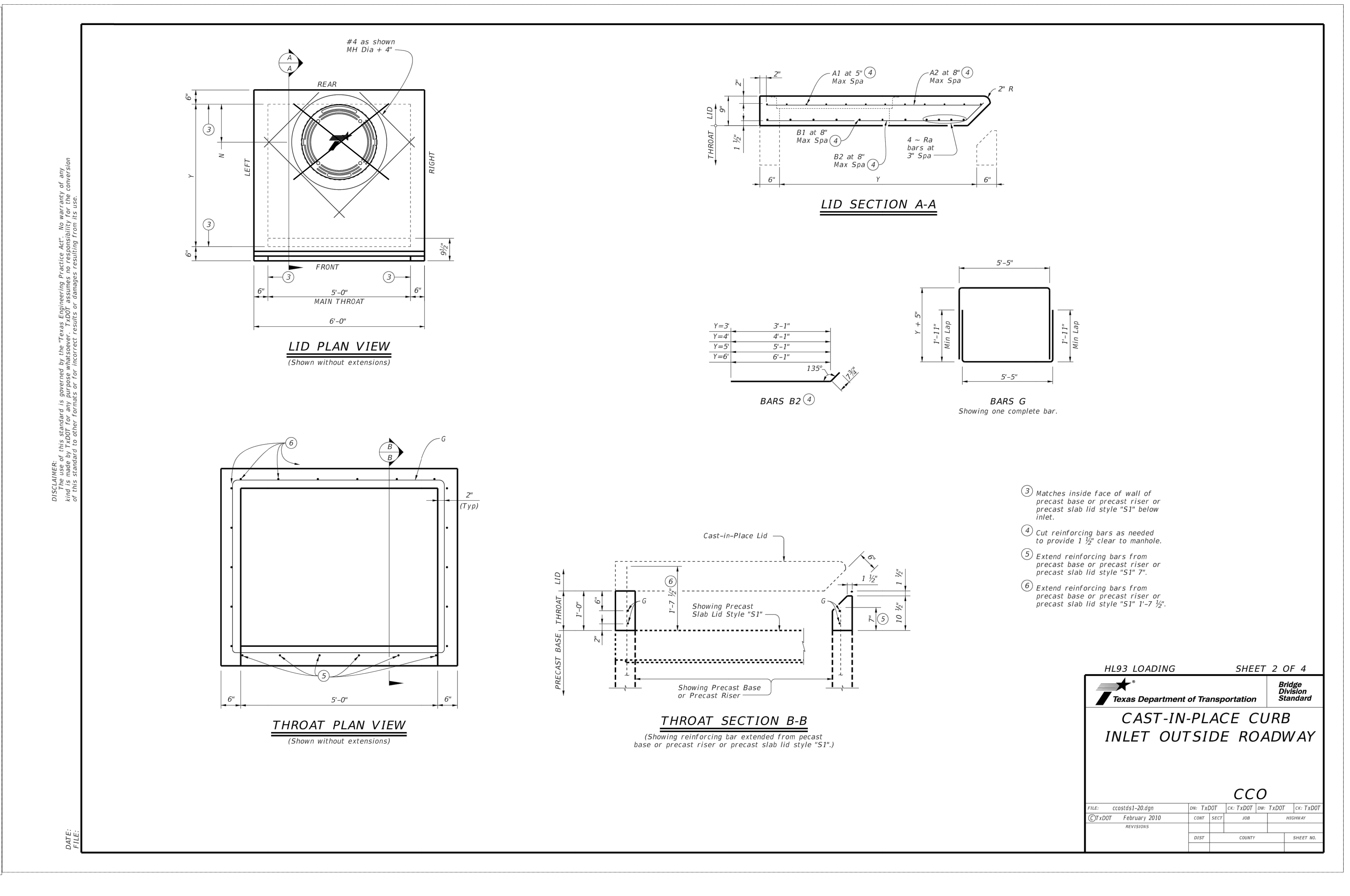
HL93 LOADING SHEET 1 OF 4

Texas Department of Transportation — Bridge Division Standard

CAST-IN-PLACE CURB
INLET OUTSIDE ROADWAY

CCO

FILE: ccostds1-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.


LID PLAN VIEW
(Shown without extensions)
LID SECTION A-A
BARS B2
BARS G
Showing one complete bar.
THROAT PLAN VIEW
(Shown without extensions)
THROAT SECTION B-B
(Showing reinforcing bar extended from precast base or precast riser or precast slab lid style "S1".)
Cast-in-Place Lid
Showing Precast Slab Lid Style "S1"
Showing Precast Base or Precast Riser
#4 as shown MH Dia + 4"
REAR
FRONT
MAIN THROAT

③ Matches inside face of wall of precast base or precast riser or precast slab lid style "S1" below inlet.

④ Cut reinforcing bars as needed to provide 1 ½" clear to manhole.

⑤ Extend reinforcing bars from precast base or precast riser or precast slab lid style "S1" 7".

⑥ Extend reinforcing bars from precast base or precast riser or precast slab lid style "S1" 1'-7 ½".

HL93 LOADING SHEET 2 OF 4

Texas Department of Transportation — Bridge Division Standard

CAST-IN-PLACE CURB
INLET OUTSIDE ROADWAY

CCO

FILE: ccostds1-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	DIST	COUNTY		SHEET NO.

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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 3A

INLET DETAIL

DATE
05/17/2023

PROJECT NO.
03346.006

DRAWN BY
KMH/NNR/MOH/MAS

CHECKED BY
CJC

REVISIONS
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KYLE M. HUDEK
138753
05/22/2023
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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9 OF 10

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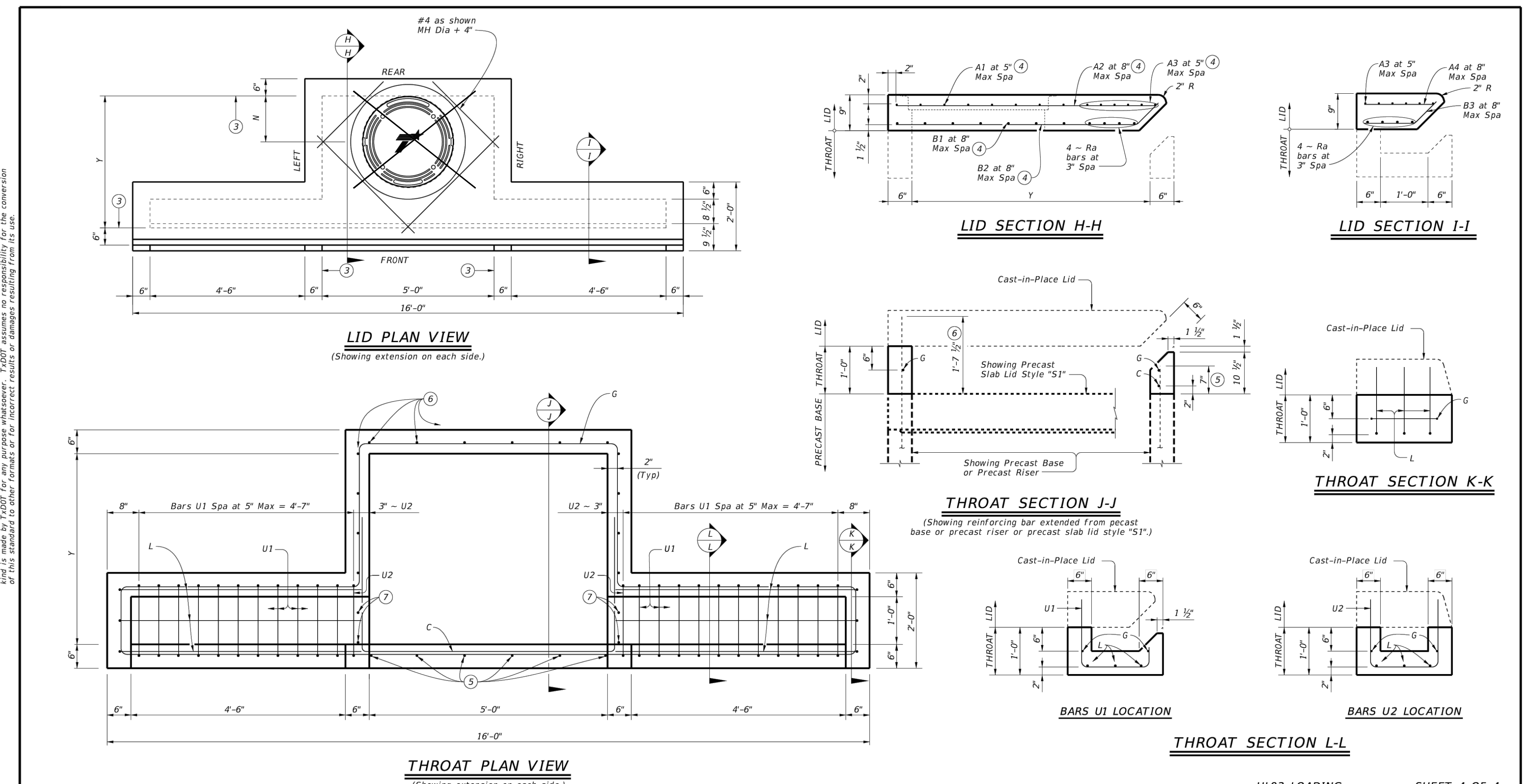
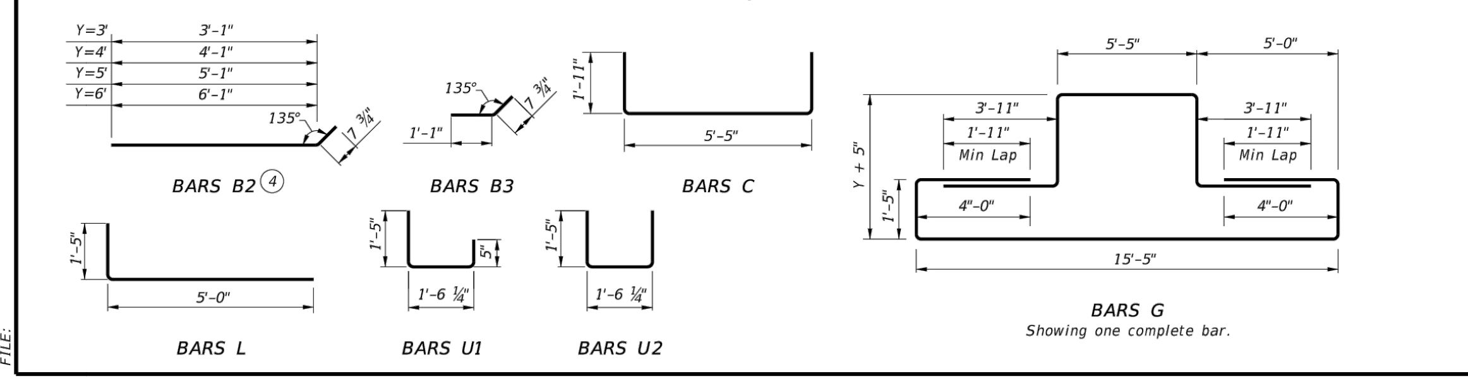

LID PLAN VIEW
(Showing extension on each side.)
LID SECTION H-H
LID SECTION I-I
THROAT SECTION J-J
(Showing reinforcing bar extended from precast base or precast riser or precast slab lid style "S1")
THROAT SECTION K-K
THROAT PLAN VIEW
(Showing extension on each side.)
BARS U1 LOCATION
BARS U2 LOCATION
THROAT SECTION L-L
FRONT
REAR
LEFT
RIGHT
Cast-in-Place Lid
Showing Precast Slab Lid Style "S1"
Showing Precast Base or Precast Riser
16'-0"
4'-6"
5'-0"



③ Matches inside face of wall of precast base or precast riser or precast slab lid style "S1" below inlet.

④ Cut reinforcing bars as needed to provide 1 ½" clear to manhole.

⑤ Extend reinforcing bars from precast base or precast riser or precast slab lid style "S1" 7".

⑥ Extend reinforcing bars from precast base or precast riser or precast slab lid style "S1" 1'-7 ½".

⑦ Do not extend reinforcing bars from precast base.

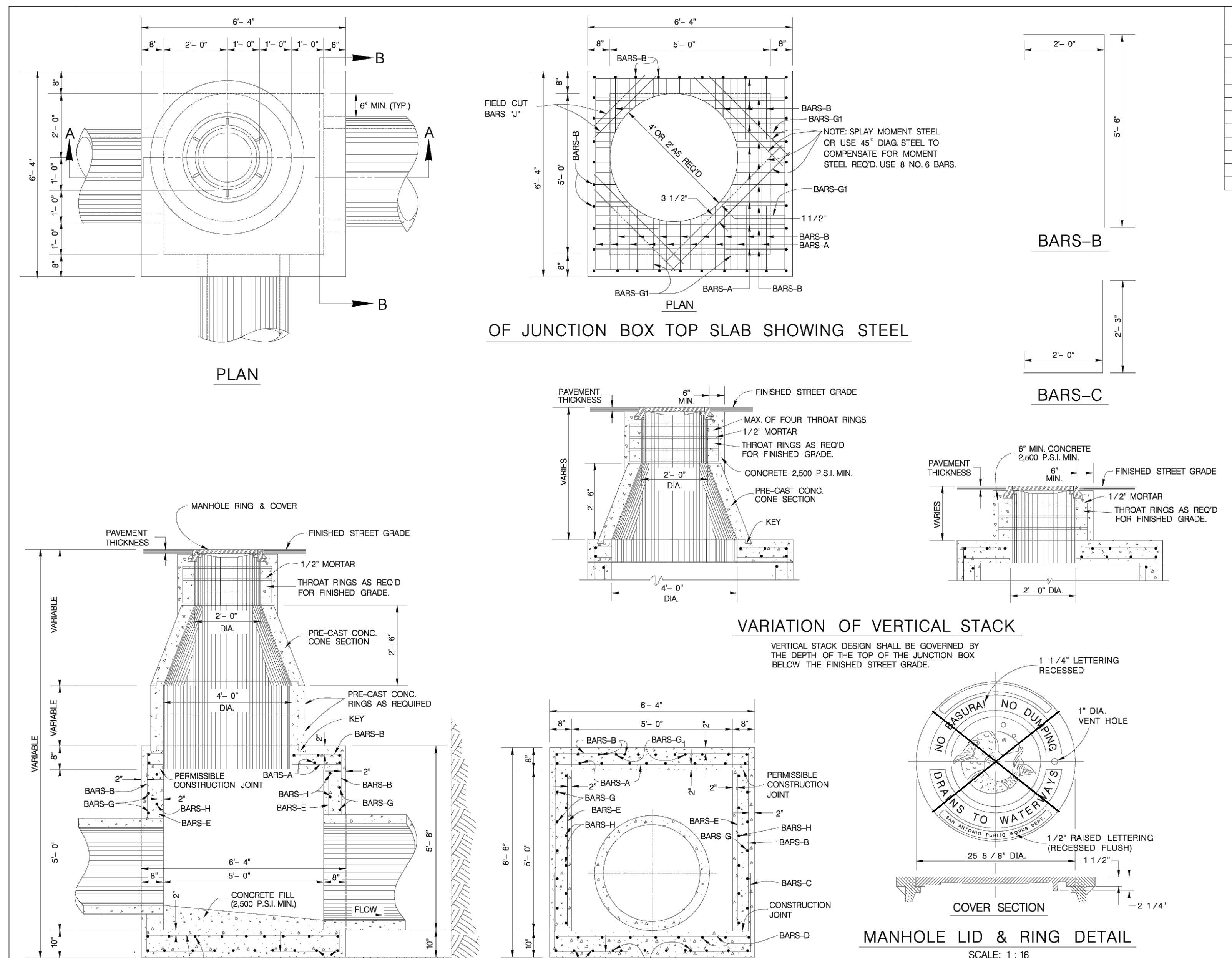
HL93 LOADING
SHEET 4 OF 4

Texas Department of Transportation
Bridge Division Standard

CAST-IN-PLACE CURB INLET OUTSIDE ROADWAY

CCO

FILE: ccostds1-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.


PLAN
OF JUNCTION BOX TOP SLAB SHOWING STEEL
BARS–B
BARS–C
VARIATION OF VERTICAL STACK
VERTICAL STACK DESIGN SHALL BE GOVERNED BY THE DEPTH OF THE TOP OF THE JUNCTION BOX BELOW THE FINISHED STREET GRADE.
SECTION A–A
SECTION B–B
MANHOLE LID & RING DETAIL
SCALE: 1 : 16
COVER SECTION
25 5 / 8" DIA.
1 1/2"
2 1/4"
1/2" RAISED LETTERING (RECESSED FLUSH)
1 1/4" LETTERING RECESSED
1" DIA. VENT HOLE
SAN ANTONIO PUBLIC WORKS DEPT.
NO DUMPING DRAINS TO WATERWAYS
MANHOLE RING & COVER
FINISHED STREET GRADE
PAVEMENT THICKNESS
THROAT RINGS AS REQ'D FOR FINISHED GRADE.
PRE-CAST CONC. CONE SECTION
PRE-CAST CONC. RINGS AS REQUIRED
KEY
PERMISSIBLE CONSTRUCTION JOINT
CONCRETE FILL (2,500 P.S.I MIN.)
FLOW
BARS–A
BARS–D
BARS–E
BARS–G
BARS–H
BARS–J
FIELD CUT BARS "J"
NOTE: SPLAY MOMENT STEEL OR USE 45° DIAG. STEEL TO COMPENSATE FOR MOMENT STEEL REQ'D USE 8 NO. 6 BARS.

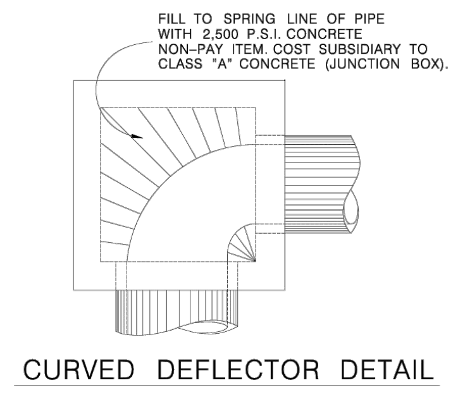
SCHEDULE FOR REINFORCING STEEL

SHAPE	BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
STRAIGHT	A	18	4	9" O.C.	6'– 1"	73
┌	B	36	5	8" O.C.	7'– 6"	282
└	C	36	5	8" O.C.	4'– 3"	160
STRAIGHT	D	18	4	9" O.C.	6'– 1"	73
STRAIGHT	E	20	3	12" O.C.	4'– 11"	37
STRAIGHT	G	20	4	12" O.C.	6'– 1"	81
STRAIGHT	G_1	8	4	AS SHOWN	6'– 1"	33
STRAIGHT	H	24	3	12" O.C.	5'– 5"	49
STRAIGHT	J	8	6	3 1⁄2" O.C.	4'– 11"	59
					TOTAL	847 lbs.

CLASS "A" CONCRETE – 5.03 CU. YDS.
(DOES NOT EXCLUDE MANHOLE OPENINGS OR PIPE OPENING)

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

1. CONCRETE FOR STRUCTURE SHALL BE CLASS "A" 3,000 P.S.I. AT 28 DAYS.
2. ALL EXPOSED EDGES SHALL BE CHAMFERED 3⁄4".
3. REINFORCING STEEL SHALL BE NEW BILLET STEEL, INTERMEDIATE GRADE, ASTM A–15. THE DEFORMATION SHALL CONFORM TO ASTM A–305.
4. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS.
5. ALL BARS INTERCEPTING MANHOLE OPENING AND REINFORCED CONCRETE PIPE SHALL BE FIELD–CUT.
6. WHERE LAPPING OF BARS IS REQUIRED, A MINIMUM LAP OF 33 DIAMETERS SHALL BE USED.
7. INVERT OF JUNCTION BOX TO BE SHAPED WITH CONCRETE FILL (2,500 P.S.I. MIN.) TO EFFECT DRAINAGE TO OUTLET PIPE. COST SUBSIDIARY TO CLASS "A" CONCRETE (JUNCTION BOXES).
8. PAYMENT FOR ALL EXCAVATION, BACKFILLING, CONCRETE, REINFORCING STEEL, VERTICAL STACK, RING AND COVER SHALL BE INCLUDED IN THE UNIT COST OF ITEM 403 – "STORM SEWER JUNCTION BOXES AND INLETS".


FILL TO SPRING LINE OF PIPE WITH 2,500 P.S.I. CONCRETE NON–PAY ITEM. COST SUBSIDIARY TO CLASS "A" CONCRETE (JUNCTION BOX).
CURVED DEFLECTOR DETAIL

NOTES FOR MANHOLE LID AND RING

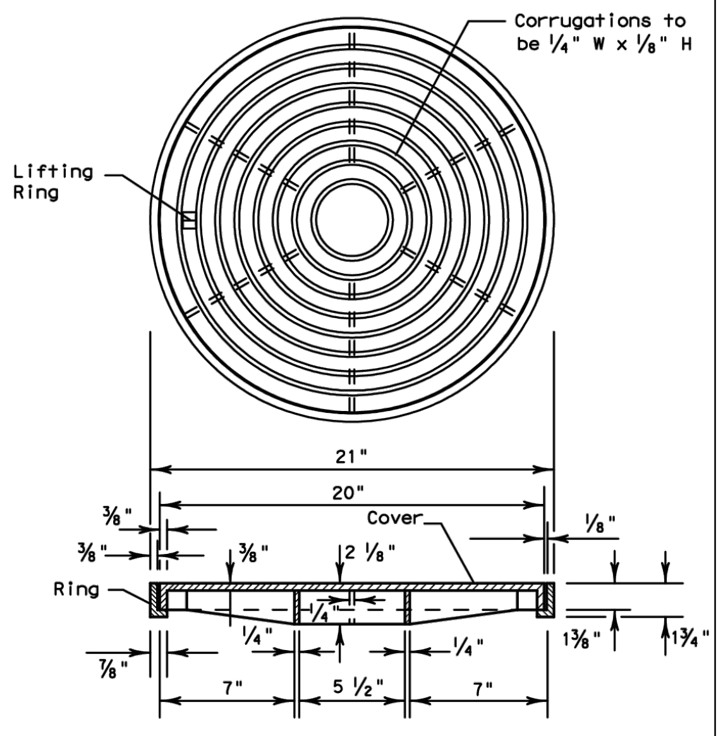
1. FOR LID DESIGN OUTSIDE OF CITY OF SAN ANTONIO, DELETE "SAN ANTONIO PUBLIC WORKS DEPT.".
2. CASTING NUMBER AND MANUFACTURER'S I.D. ON LID AND RING.
3. LOAD BEARING CAPABILITY OF HS–20 MINIMUM.
4. THE LOAD BEARING SURFACES SHALL BE MACHINE GROUND.
5. THE COMBINED WEIGHT OF THE MANHOLE RING AND COVER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

JANUARY 2005

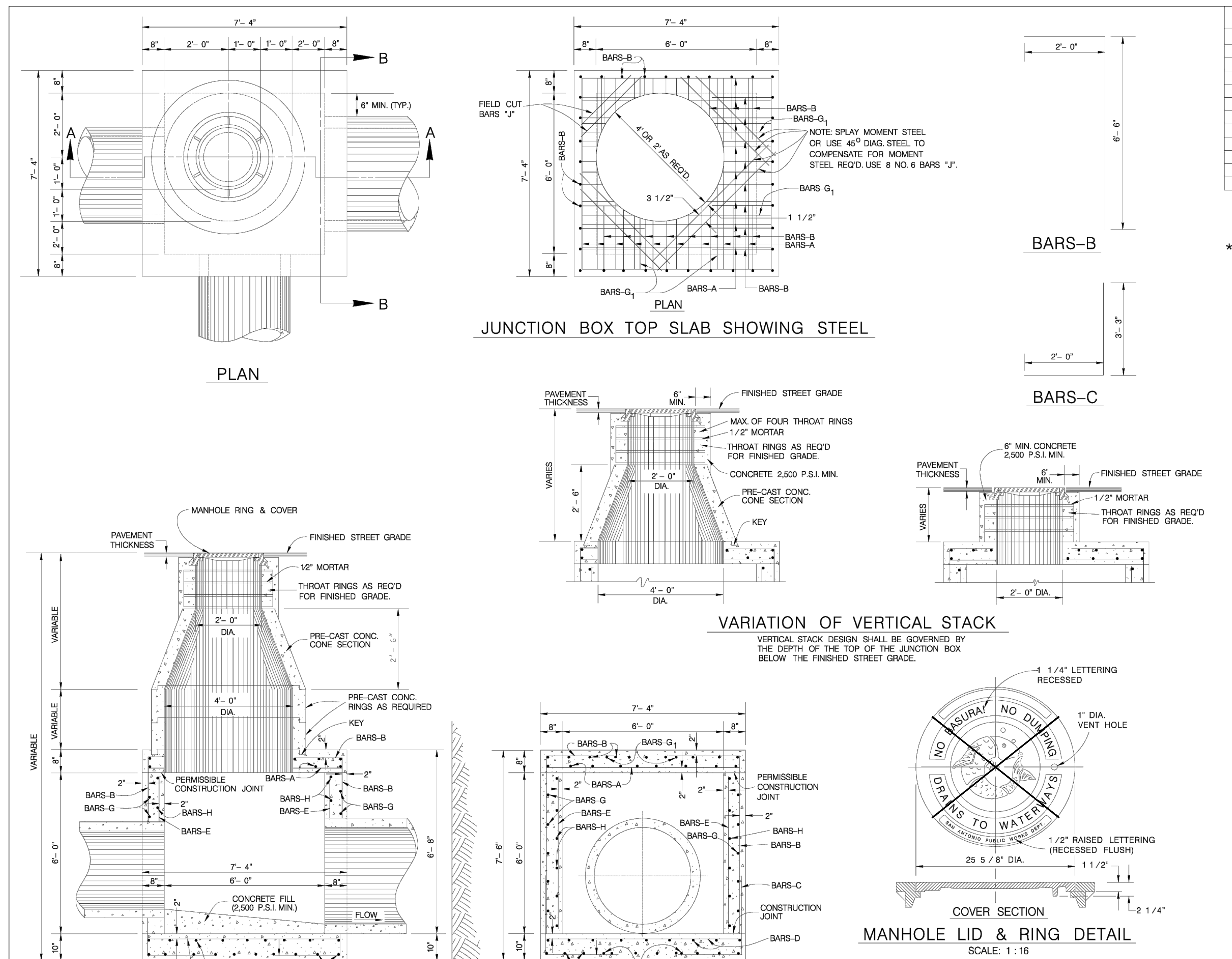
CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

5'x5'x5' JUNCTION BOX STANDARDS

______% SUBMITTAL	PROJECT NO.:____________		DATE:________
DRWN. BY:________	DSGN. BY:________	CHKD. BY:________	SHEET NO.:____OF____



CAST IRON RING & COVER DETAIL


PLAN
JUNCTION BOX TOP SLAB SHOWING STEEL
BARS–B
BARS–C
VARIATION OF VERTICAL STACK
VERTICAL STACK DESIGN SHALL BE GOVERNED BY THE DEPTH OF THE TOP OF THE JUNCTION BOX BELOW THE FINISHED STREET GRADE.
SECTION A–A
SECTION B–B
MANHOLE LID & RING DETAIL
SCALE: 1 : 16
COVER SECTION
25 5 / 8" DIA.
1 1/2"
2 1/4"
1/2" RAISED LETTERING (RECESSED FLUSH)
1 1/4" LETTERING RECESSED
1" DIA. VENT HOLE
SAN ANTONIO PUBLIC WORKS DEPT.
NO DUMPING DRAINS TO WATERWAYS
MANHOLE RING & COVER
FINISHED STREET GRADE
PAVEMENT THICKNESS
THROAT RINGS AS REQ'D FOR FINISHED GRADE.
PRE-CAST CONC. CONE SECTION
PRE-CAST CONC. RINGS AS REQUIRED
KEY
PERMISSIBLE CONSTRUCTION JOINT
CONCRETE FILL (2,500 P.S.I MIN.)
FLOW
CONSTRUCTION JOINT
FIELD CUT BARS "J"
NOTE: SPLAY MOMENT STEEL OR USE 45° DIAG. STEEL TO COMPENSATE FOR MOMENT STEEL REQ'D USE 8 NO. 6 BARS "J".

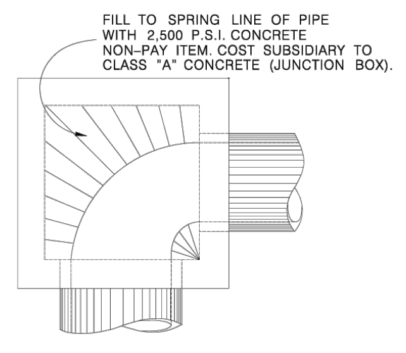
SCHEDULE FOR REINFORCING STEEL

SHAPE	BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
STRAIGHT	A	21	4	9" O.C.	7'– 1"	99
┌	B	46	5	8" O.C.	8'– 6"	408
└	C	46	5	8" O.C.	5'– 3"	252
STRAIGHT	D	21	4	9" O.C.	7'– 1"	99
STRAIGHT	E	28	3	12" O.C.	5'– 11"	62
STRAIGHT	G	20	4	12" O.C.	7'– 1"	95
STRAIGHT	G_1	8	4	AS SHOWN	6'– 1"	33
STRAIGHT	H	27	3	12" O.C.	7'– 1"	72
STRAIGHT	J	8	6	3 1 / 2" O.C.	4'– 11"	59
					TOTAL	1,179 LBS.

CLASS "A" CONCRETE – 6.94 CU. YDS.
(DOES NOT EXCLUDE MANHOLE OPENINGS OR PIPE OPENING)

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

1. CONCRETE FOR STRUCTURE SHALL BE CLASS "A" 3,000 P.S.I. AT 28 DAYS.
2. ALL EXPOSED EDGES SHALL BE CHAMFERED 3 /4".
3. REINFORCING STEEL SHALL BE NEW BILLET STEEL, INTERMEDIATE GRADE, ASTM A–15. THE DEFORMATION SHALL CONFORM TO ASTM A–305.
4. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS.
5. ALL BARS INTERCEPTING MANHOLE OPENING AND REINFORCED CONCRETE PIPE SHALL BE FIELD–CUT.
6. WHERE LAPPING OF BARS IS REQUIRED, A MINIMUM LAP OF 33 DIAMETERS SHALL BE USED.
7. INVERT OF JUNCTION BOX TO BE SHAPED WITH CONCRETE FILL (2,500 P.S.I. MIN.) TO EFFECT DRAINAGE TO OUTLET PIPE. COST SUBSIDIARY TO CLASS "A" CONCRETE (JUNCTION BOXES).
8. PAYMENT FOR ALL EXCAVATION, BACKFILLING, CONCRETE, REINFORCING STEEL, VERTICAL STACK, RING AND COVER SHALL BE INCLUDED IN THE UNIT COST OF ITEM 403 – "STORM SEWER JUNCTION BOXES AND INLETS".


FILL TO SPRING LINE OF PIPE WITH 2,500 P.S.I. CONCRETE NON–PAY ITEM. COST SUBSIDIARY TO CLASS "A" CONCRETE (JUNCTION BOX).
CURVED DEFLECTOR DETAIL

NOTES FOR MANHOLE LID AND RING

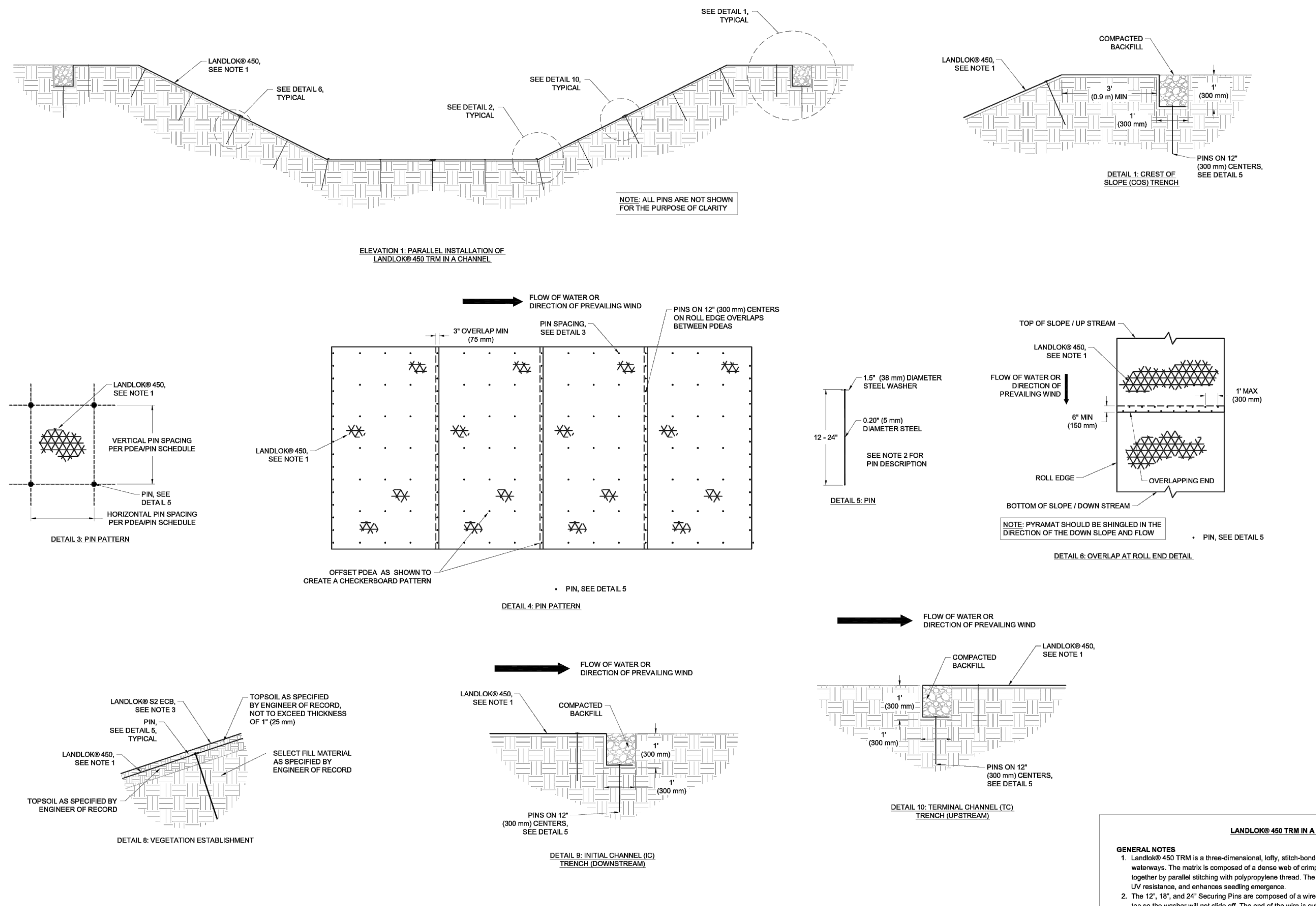
1. FOR LID DESIGN OUTSIDE OF CITY OF SAN ANTONIO, DELETE "SAN ANTONIO PUBLIC WORKS DEPT.".
2. CASTING NUMBER AND MANUFACTURER'S I.D. ON LID AND RING.
3. LOAD BEARING CAPABILITY OF HS–20 MINIMUM.
4. THE LOAD BEARING SURFACES SHALL BE MACHINE GROUND.
5. THE COMBINED WEIGHT OF THE MANHOLE RING AND COVER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

JANUARY 2005

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

6'x6'x6' JUNCTION BOX STANDARDS

______% SUBMITTAL	PROJECT NO.:____________		DATE:________
DRWN. BY:________	DSGN. BY:________	CHKD. BY:________	SHEET NO.:____OF____


ELEVATION 1: PARALLEL INSTALLATION OF LANDLOK® 450 TRM IN A CHANNEL
DETAIL 1: CREST OF SLOPE (COS) TRENCH
DETAIL 2: BREAK IN SLOPE INTERFACE
DETAIL 3: PIN PATTERN
DETAIL 4: PIN PATTERN
DETAIL 5: PIN
DETAIL 6: OVERLAP AT ROLL END DETAIL
DETAIL 7: SIMULATED CHECK SLOT DETAIL
DETAIL 8: VEGETATION ESTABLISHMENT
DETAIL 9: INITIAL CHANNEL (IC) TRENCH (DOWNSTREAM)
DETAIL 10: TERMINAL CHANNEL (TC) TRENCH (UPSTREAM)
LANDLOK® 450, SEE NOTE 1
SEE DETAIL 6, TYPICAL
SEE DETAIL 2, TYPICAL
NOTE: ALL PINS ARE NOT SHOWN FOR THE PURPOSE OF CLARITY
FLOW OF WATER OR DIRECTION OF PREVAILING WIND
PINS ON 12" (300 mm) CENTERS, SEE DETAIL 5
OFFSET PDEA AS SHOWN TO CREATE A CHECKERBOARD PATTERN
TOPSOIL AS SPECIFIED BY ENGINEER OF RECORD
SELECT FILL MATERIAL AS SPECIFIED BY ENGINEER OF RECORD
COMPACTED BACKFILL
OVERLAPPING END
ROLL EDGE
1' (300 mm)

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 seedling 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	
△				
△		Date: 04/07/2015	Drawn By: N. HEMNANI	Scale: NTS
Rev			*ALL DIMENSIONS ARE TO BE VERIFIED BY ENGINEER OF RECORD	

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

GRACE VALLEY RANCH PHASE 3A

INLET DETAIL & EROSION CONTROL DETAILS

DATE
09/12/2023

PROJECT NO.
03346.006

DRAWN BY
KMH/NNR/MOH/MAS

CHECKED BY
CJC

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KYLE M. HUDEK
138753
09/12/2023
K. Hudek

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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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.

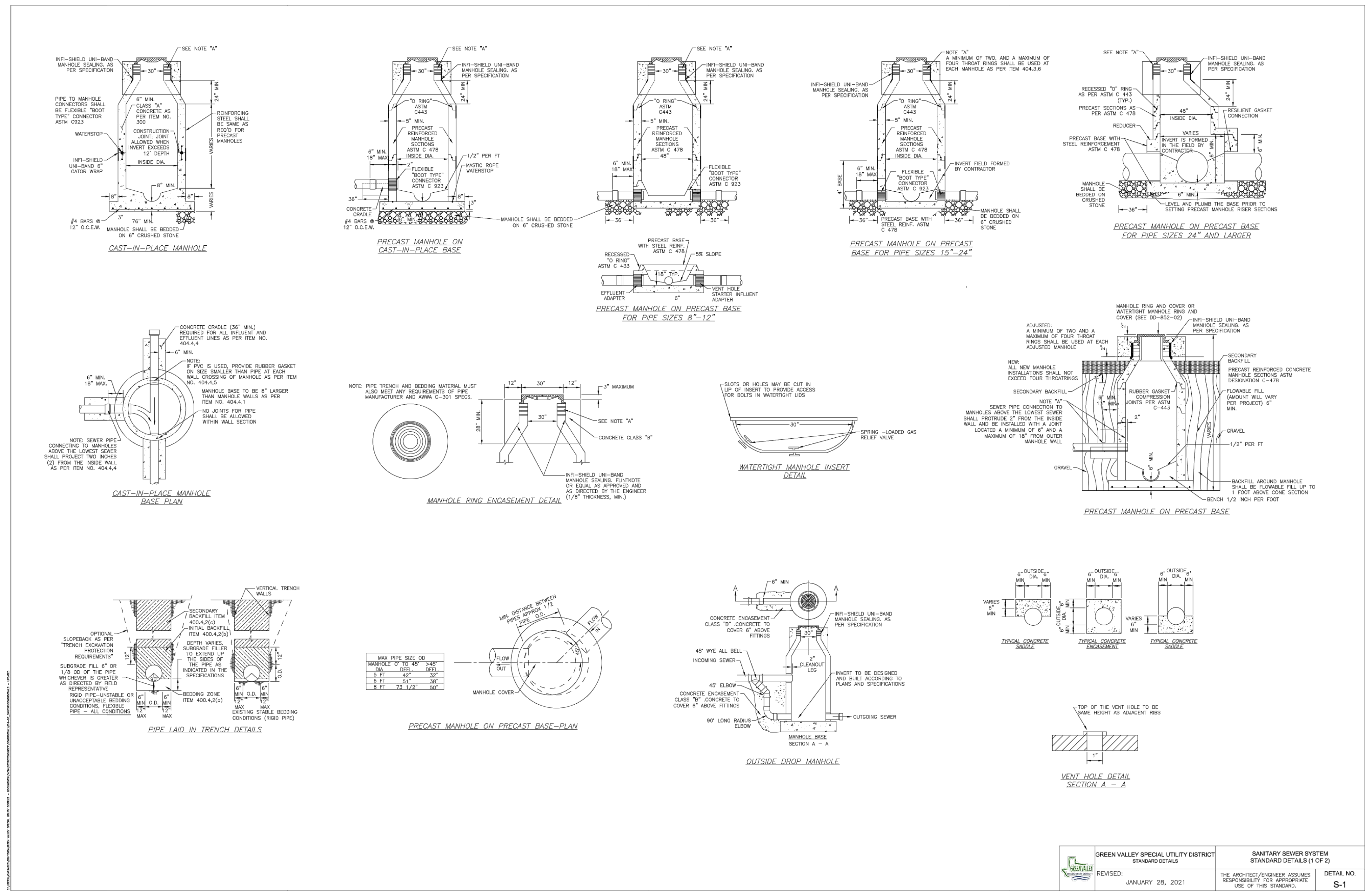
    ALL 4" INCH SEWER SERVICE LATERALS WILL BE TELEVISED (TV) FROM 4" INCH CLEAN OUT AT OUTSIDE EACH RESIDENCE TO 6"X6" CLEAN OUT. CONTRACTOR AND PLUMBER WILL SUBMIT REPORTS AND/OR VIDEOS TO GVSUD, WITH THE FOLLOWING INFORMATION: SUBDIVISION NAME, LOT NUMBER, BLOCK NUMBER, STATION NUMBER, STREET NAME AND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

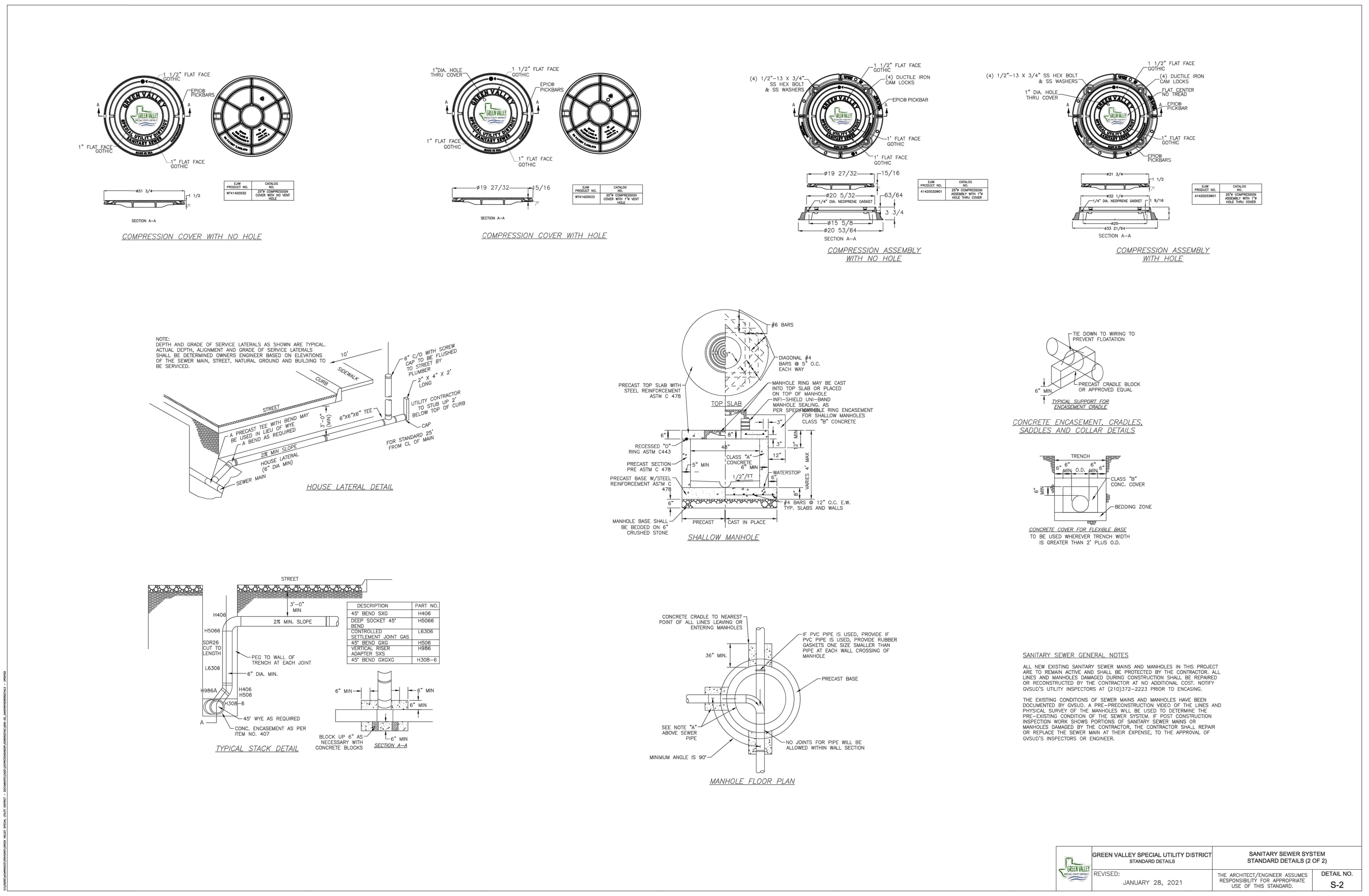
PLUMBER WILL BE PROVIDED PLAN/PROFILE BY ENGINEER/BUILDER. PLUMBER WILL WORK CLOSELY WITH THE GVSUD INSPECTOR ON DAILY TESTING AND TELEVISION BY MAKING ARRANGEMENTS 48 HOURS IN ADVANCE. SEWER SERVICE LATERALS THAT HAVE NOT BEEN INSPECTED OR APPROVED AND/OR COVERED UP, WILL HAVE TO BE RE-DUG AT CONTRACTOR/PLUMBER 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
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
DETAIL NO. S-1


COMPRESSION COVER WITH NO HOLE
COMPRESSION COVER WITH HOLE
COMPRESSION ASSEMBLY WITH NO HOLE
COMPRESSION ASSEMBLY WITH HOLE
HOUSE LATERAL DETAIL
SHALLOW MANHOLE
CONCRETE ENCASEMENT, CRADLES, SADDLES AND COLLAR DETAILS
TYPICAL STACK DETAIL
MANHOLE FLOOR PLAN
SANITARY SEWER GENERAL NOTES
GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS
SANITARY SEWER SYSTEM STANDARD DETAILS (2 OF 2)
REVISED: JANUARY 28, 2021
DETAIL NO. S-2

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 3A

SANITARY SEWER GENERAL NOTES AND DETAILS

DATE
05/17/2023

PROJECT NO.
03346.006

DRAWN BY
KMH/NNR/MOH/MAS

CHECKED BY
CJC

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

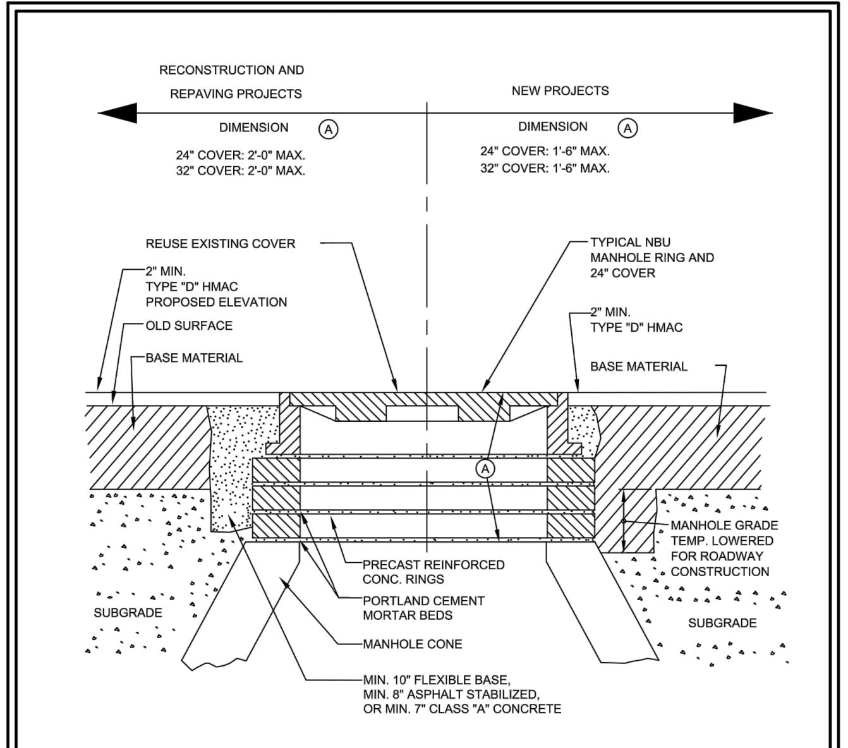
KYLE M. HUDEK
138753
05/22/2023

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

SS1

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.

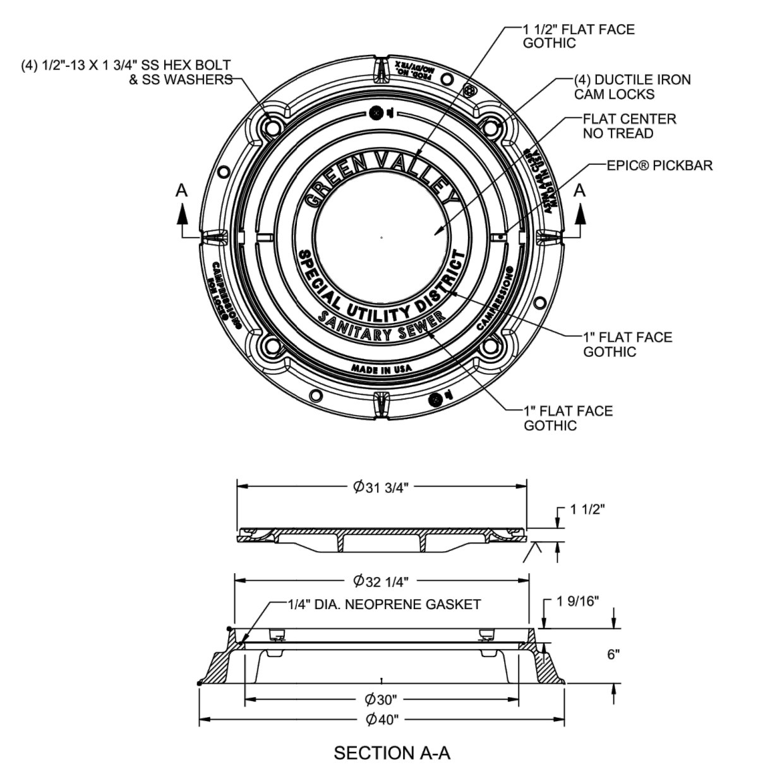
P:\03346\006\2-Drawings\05_SSDP.dwg 2023/05/17 10:56am msandoval


RECONSTRUCTION AND REPAVING PROJECTS
NEW PROJECTS
PRECAST REINFORCED CONC. RINGS
PORTLAND CEMENT MORTAR BEDS
MANHOLE CONE
MIN. 10" FLEXIBLE BASE, MIN. 8" ASPHALT STABILIZED, OR MIN. 7" CLASS "A" CONCRETE
SUBGRADE
FOR ROADWAY CONSTRUCTION

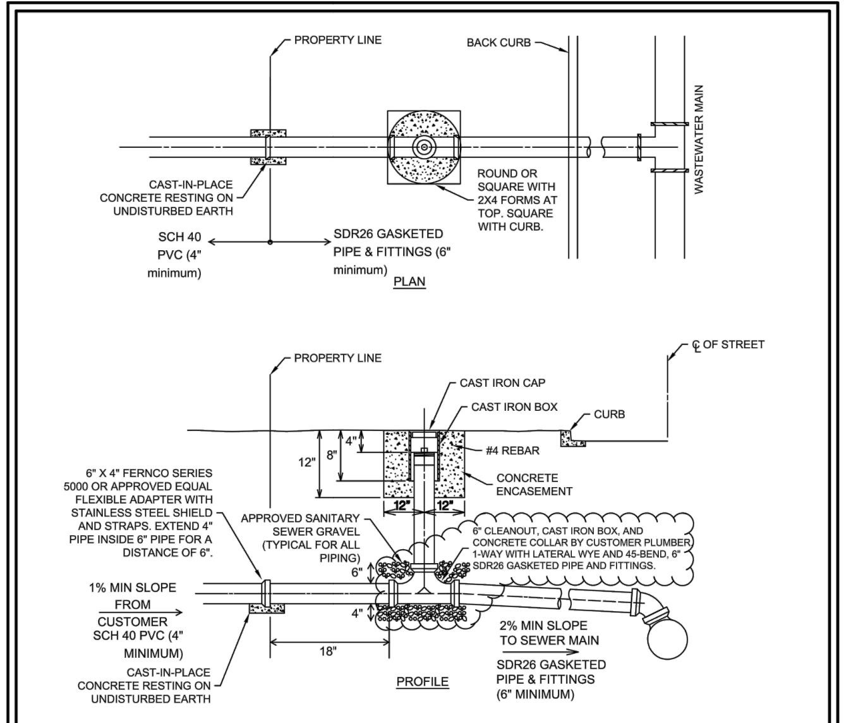
NOTES:

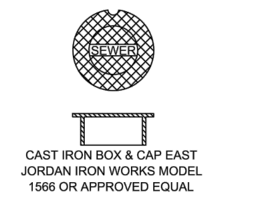
1. MORTAR BEDS SHALL NOT EXCEED 1".
2. SUBGRADE AND BASE MATERIALS SHALL BE COMPACTED ACCORDING TO STANDARD SPECIFICATIONS.

GREEN VALLEY SPECIAL UTILITY DISTRICT
529 S CENTER ST. MARION, TX 78124 PH: (830) 914-2330
RECORD SIGNED COPY ON FILE AT GVSUD
APPROVED
3/15/2018
WASTEWATER
NEW MANHOLE CONSTRUCTION AND MINOR MANHOLE ADJUSTMENT
THE ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. WW-18



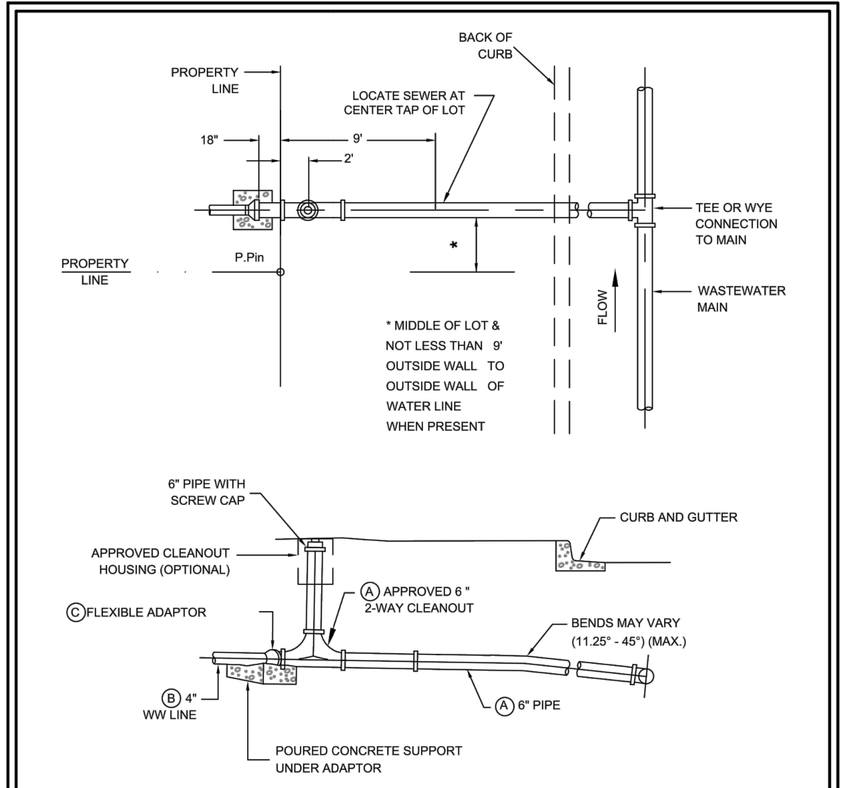
GREEN VALLEY SPECIAL UTILITY DISTRICT
529 S CENTER ST. MARION, TX 78124 PH: (830) 914-2330
RECORD SIGNED COPY ON FILE AT GVSUD
APPROVED
3/15/2018
WASTEWATER
MANHOLE RING & COVER DETAIL
THE ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. WW-19


PROPERTY LINE
BACK CURB
PLAN
APPROVED SANITARY SEWER GRAVEL (TYPICAL FOR ALL PIPING)
6" CLEANOUT, CAST IRON BOX, AND CONCRETE COLLAR BY CUSTOMER PLUMBER. 1-WAY WITH LATERAL WYE AND 45-BEND, 6" SDR26 GASKETED PIPE AND FITTINGS.
2% MIN SLOPE TO SEWER MAIN
SDR26 GASKETED PIPE & FITTINGS (6" MINIMUM)
18"
PROFILE


CAST IRON BOX & CAP EAST JORDAN IRON WORKS MODEL 1566 OR APPROVED EQUAL

NOTES:
1) TAPPING SADDLES ARE NOT ALLOWED.
2) CLEANOUT RISERS SHALL BE INSTALLED PLUMB/LEVEL. TOP OF CONCRETE 2" ABOVE FINISH GRADE. VERTICAL AND HORIZONTAL EDGES OF EXPOSED CONCRETE SHALL BE FORMED WITH 3/4" CHAMFER STRIPS.
3) CUSTOMER PLUMBER MUST INSTALL A SEPARATE 2-WAY CLEANOUT (4" MINIMUM SIZE) AT CUSTOMER FACILITY.
4) USE TXDOT GRADE 4 COARSE AGGREGATE BEDDING FOR ALL PIPING, 4" MINIMUM BELOW PIPE, 6" MINIMUM ABOVE PIPE.
5) OBTAIN GVSUD INSPECTION PRIOR TO BACKFILL (830-379-5822). MINIMUM 48-HOURS NOTICE IS REQUIRED.

GREEN VALLEY SPECIAL UTILITY DISTRICT
529 S CENTER ST. MARION, TX 78124 PH: (830) 914-2330
RECORD SIGNED COPY ON FILE AT GVSUD
APPROVED
3/15/2018
WASTEWATER
TYPICAL CLEANOUT DETAIL
THE ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. WW-5


BACK OF CURB
PROPERTY LINE
LOCATE SEWER AT CENTER TAP OF LOT
TEE OR WYE CONNECTION TO MAIN
WASTEWATER MAIN
APPROVED CLEANOUT HOUSING (OPTIONAL)
CURB AND GUTTER
(C) FLEXIBLE ADAPTOR
(A) APPROVED 6" 2-WAY CLEANOUT
BENDS MAY VARY (11.25° - 45°) (MAX.)
(B) 4" WW LINE
(A) 6" PIPE
POURED CONCRETE SUPPORT UNDER ADAPTOR

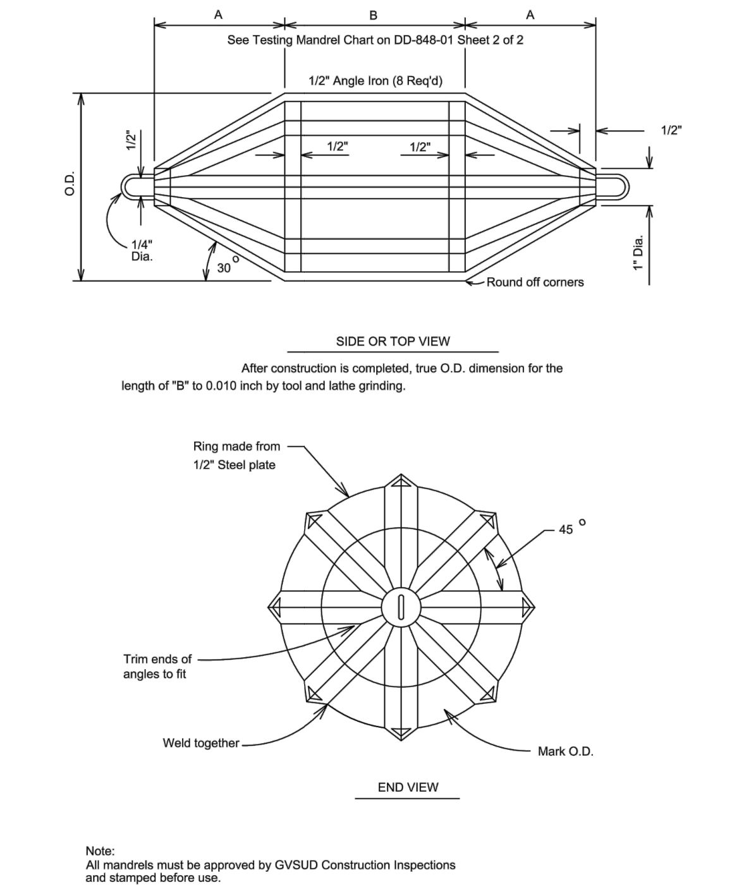
NOTES:

Ⓐ TO BE INSTALLED AND INSPECTED DURING SUBDIVISION CONSTRUCTION.

Ⓑ GVSUD SHALL INSPECT CUSTOMER'S WASTEWATER LINE, EXCEPT CONNECTION AT TAP.

Ⓒ OUTSIDE CITY, GVSUD SEWER DEPARTMENT SHALL INSPECT CONNECTION AT TAP.

GREEN VALLEY SPECIAL UTILITY DISTRICT
529 S CENTER ST. MARION, TX 78124 PH: (830) 914-2330
RECORD SIGNED COPY ON FILE AT GVSUD
APPROVED
3/15/2018
WASTEWATER
SINGLE WASTEWATER SERVICE CONNECTION DETAIL
THE ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. WW-6-A



GREEN VALLEY SPECIAL UTILITY DISTRICT
529 S CENTER ST. MARION, TX 78124 PH: (830) 914-2330
RECORD SIGNED COPY ON FILE AT GVSUD
APPROVED
3/15/2018
WASTEWATER
GO, NO GO DEFLECTION TESTING MANDREL
THE ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. WW-22-A

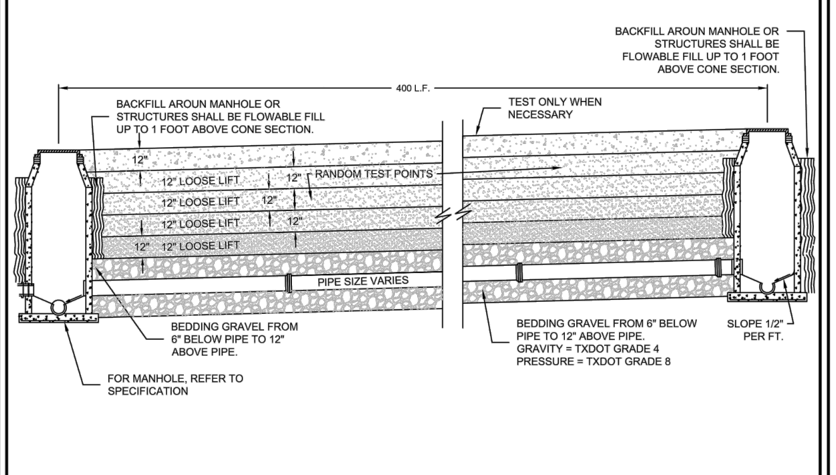
			MANDREL O.D.			RING O.D.		
SIZE	A	B	PSM (SDR-35)	PSM (SDR-26)	LARGE DIA. RIBBED	PSM (SDR-35)	PSM (SDR-26)	LARGE DIA. RIBBED
6"	4.0"	4"	5.56	5.43	——	4.85	4.72	——
8"	5.3"	6"	7.45	7.28	——	6.74	6.57	——
10"	6.7"	6"	9.32	9.10	——	8.61	8.39	——
12"	8.0"	8"	11.08	10.83	——	10.37	10.12	——
15"	10.0"	9"	13.57	13.26	——	12.86	12.55	——
18"	12.0"	11"	16.58	——	16.72	15.89	——	16.01
21"	14.0"	12"	19.56	——	19.66	18.85	——	18.95
24"	16.0"	15"	22.00	——	22.26	21.29	——	21.55
27"	18.0"	16"	24.80	——	25.10	24.09	——	24.39
30"	20.0"	18"	——	——	27.94	——	——	27.23
36"	24.0"	21"	——	——	33.63	——	——	32.92
40"	26.8"	24"	——	——	37.41	——	——	36.70
48"	32.0"	29"	——	——	44.99	——	——	44.28

Note:
Standards for all PVC pipe shall conform to minimum of ASTM D3033.

GREEN VALLEY SPECIAL UTILITY DISTRICT
529 S CENTER ST. MARION, TX 78124 PH: (830) 914-2330
RECORD SIGNED COPY ON FILE AT GVSUD
APPROVED
3/15/2018
WASTEWATER
GO, NO GO DEFLECTION TESTING MANDREL CHART
THE ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. WW-22-B

NOTES:
1. UTILITY CONTRACTOR, DURING SUBDIVISION CONSTRUCTION, INSTALLS WASTEWATER CONNECTION TO MAIN, 6" STUB WITH 6" SERVICE BRANCH WITH 2-WAY CLEANOUT AND RISER FOR CLEANOUTS (CAPPED) AND PLUGS FOR 2-WAY CLEANOUTS AT PROPERTY LINE END. ALL WASTEWATER PIPING SHALL HAVE ELASTOMERIC GASKET TYPE JOINTS AND SHALL SLOPE DOWNWARD TO MAIN 2%, 1/4 " PER FOOT, MINIMUM TO 45° MAXIMUM. DEPTH OF SERVICE STUB AT PROPERTY LINE WILL BE SHOWN ON PLANS BY ENGINEER OR DESIGNATED REPRESENTATIVE IF GREATER THAN 4', OTHERWISE, THE INSTALLED DEPTH WILL TYPICALLY BE 4' TO 6'. IF WASTEWATER SERVICE LINE TO MAIN REQUIRES DEFLECTION EXCEEDING 45°, REFER TO DETAIL DRAWING 301. ALL INSTALLATIONS SHALL BE MADE IN ACCORDANCE WITH INFORMATION SHOWN ON APPLICABLE STANDARD DRAWINGS AND WILL BE INSPECTED BY GREEN VALLEY SPECIAL UTILITY DISTRICT (GVSUD) CONSTRUCTION INSPECTION PERSONNEL.
2. CUSTOMERS REMOVE PLUGS FROM 2-WAY CLEANOUT, AT PROPERTY LINE, INSTALL MINIMUM 18" LENGTH OF 6" PIPE, INSTALL 4" WASTEWATER LINES [EXTEND 4" PIPE 6" MINIMUM INTO 6" PIPE AND JOINT WITH FLEXIBLE ADAPTOR] AND CAST IN PLACE CONCRETE SUPPORT BLOCK UNDER THE FLEXIBLE ADAPTOR. BLOCK SHALL HAVE MINIMUM DIMENSIONS OF 6" THICK AND 18" WIDE AND EXTEND A MINIMUM OF 6" BEYOND EITHER END OF ADAPTOR. IF WASTEWATER WILL NOT SATISFACTORILY FLOW BY GRAVITY TO SEWER MAIN ADJACENT TO PROPERTY, PUMP EQUIPMENT MUST BE PROVIDED BY THE CUSTOMER AS PART OF CUSTOMER'S WASTEWATER SYSTEM.
3. CUSTOMER IS RESPONSIBLE FOR PIPING SYSTEM UNTIL WASTEWATER IS CONNECTED. ANY MISSING OR DAMAGED PARTS SHALL BE REINSTALLED BY CUSTOMER WHO SHALL GUARANTEE, FOR A PERIOD OF ONE (1) YEAR FROM DATE OF ACCEPTANCE, THAT CONNECTIONS TO NBU SYSTEMS ARE FREE FROM DEFECTS IN WORKMANSHIP OR MATERIALS. CUSTOMER ALSO HAS THE RESPONSIBILITY TO ASSURE THAT 2-WAY CLEANOUTS REMAIN CLEAR OF SIDEWALKS AND OTHER OBSTRUCTIONS.
4. GREEN VALLEY SPECIAL UTILITY DISTRICT (GVSUD) ACTIVITY IS LIMITED TO INSPECTION OF CONNECTIONS TO GVSUD'S WASTEWATER SYSTEM. FOR MAINTENANCE PURPOSES, GVSUD'S RESPONSIBILITY ENDS AT THE CUSTOMER'S WASTEWATER CONNECTION TO THE 2-WAY CLEANOUT.
5. PIPING IN STREET RIGHT-OF-WAY AND IN EASEMENT AREA SHALL BE BEDDED IN GRANULAR MATERIALS AS REQUIRED BY NBU STANDARD SPECIFICATION; MATERIALS SHALL BE AS SPECIFIED; BACKFILL ABOVE THE GRANULAR BEDDING. SERVICE LINES IN THESE AREAS SHALL HAVE A MINIMUM COVER BELOW FINAL STREET GRADE OF 42"; ANY EXCEPTION MUST BE SPECIFICALLY APPROVED BY THE ENGINEER.

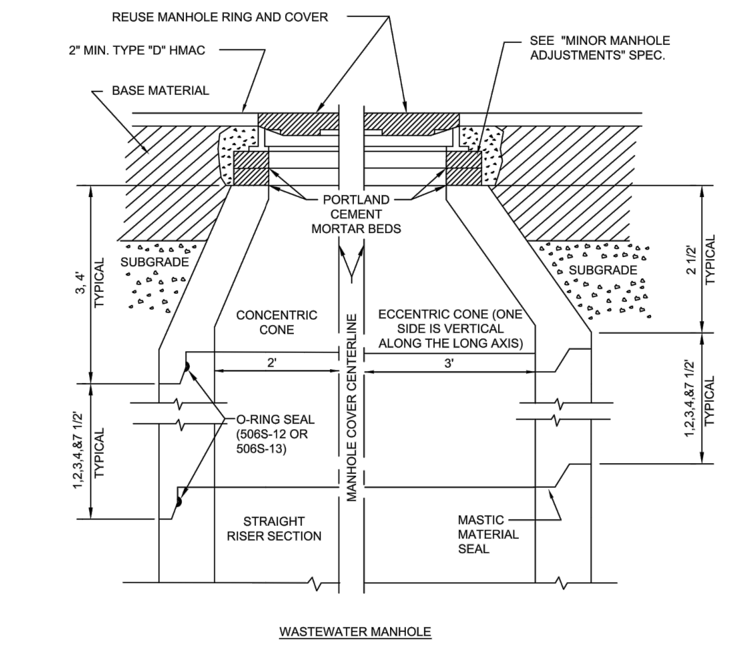
GREEN VALLEY SPECIAL UTILITY DISTRICT
529 S CENTER ST. MARION, TX 78124 PH: (830) 914-2330
RECORD SIGNED COPY ON FILE AT GVSUD
APPROVED
3/15/2018
WASTEWATER
SINGLE WASTEWATER SERVICE CONNECTION DETAIL
THE ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. WW-6-B


BACKFILL AROUN MANHOLE OR STRUCTURES SHALL BE FLOWABLE FILL UP TO 1 FOOT ABOVE CONE SECTION.
TEST ONLY WHEN NECESSARY
RANDOM TEST POINTS
PIPE SIZE VARIES
BEDDING GRAVEL FROM 6" BELOW PIPE TO 12" ABOVE PIPE.
BEDDING GRAVEL FROM 6" BELOW PIPE TO 12" ABOVE PIPE. GRAVITY = TXDOT GRADE 4 PRESSURE = TXDOT GRADE 8
SLOPE 1/2" PER FT.
FOR MANHOLE, REFER TO SPECIFICATION

NOTES:

1. THE COMPACTION REPORT WILL INDICATE THE STATION AND THE DEPTH OF EACH TEST POINT.
2. WHEN CONTRACTOR OPTS TO BACKFILL WITH APPROVED SECONDARY MATERIAL. ALL WORK WILL BE SUBJECT TO SECTION 804.5.1 AND 804.5.2C AND 2.D.
3. INSURE COMPACTION PROBE PENETRATS TO SAME DEPTH AS LIFT.

GREEN VALLEY SPECIAL UTILITY DISTRICT
529 S CENTER ST. MARION, TX 78124 PH: (830) 914-2330
RECORD SIGNED COPY ON FILE AT GVSUD
APPROVED
3/15/2018
WASTEWATER
TRENCH COMPACTION DETAIL
THE ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. WW-7

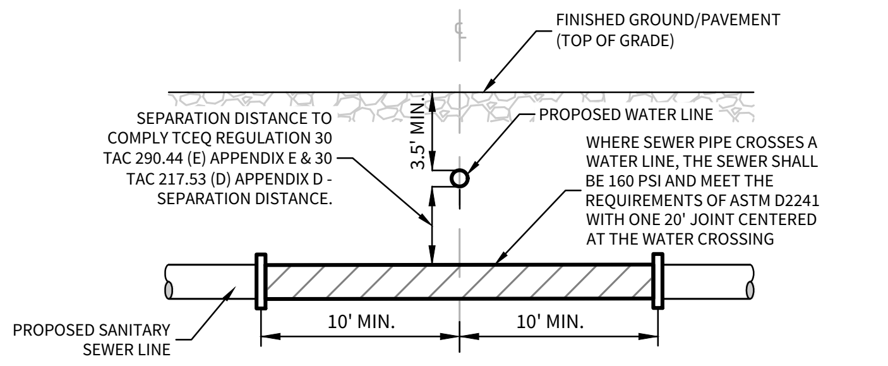

REUSE MANHOLE RING AND COVER
2" MIN. TYPE "D" HMAC
SEE "MINOR MANHOLE ADJUSTMENT" SPEC.
BASE MATERIAL
SUBGRADE
PORTLAND CEMENT MORTAR BEDS
CONCENTRIC CONE
ECCENTRIC CONE (ONE SIDE IS VERTICAL ALONG THE LONG AXIS)
O-RING SEAL (506S-12 OR 506S-13)
STRAIGHT RISER SECTION
MASTIC MATERIAL SEAL
MANHOLE COVER CENTERLINE
TYPICAL
1,2,3,4,&7 1/2' TYPICAL
WASTEWATER MANHOLE

NOTES:
1. MANHOLE SECTIONS TEMPORARILY REMOVED FOR ROADWAY CONSTRUCTION MAY BE REUSED ONLY WITH THE WRITTEN APPROVAL OF THE INSPECTOR. O-RINGS SHALL NOT BE REUSED.
2. ANY COMBINATION OF REMOVING THE CONCRETE RINGS, AND / OR THE MANHOLE CONE, AND/OR THE STRAIGHT RISER SECTION OF THE MANHOLE SHALL BE ACCEPTABLE TO TEMPORARILY LOWER THE MANHOLE GRADE FOR ROADWAY RECONSTRUCTION.
3. WHILE THE MANHOLE IS TEMPORARILY LOWERED, A SHEET OF STEEL SUITABLE TO SUPPORT ALL IMPOSED LOADS SHALL BE USED TO COVER THE OPENING. THE STEEL PLATE SHALL BE SET IN MORTAR TO PREVENT LEAKAGE.
4. SUBGRADE AND BASE MATERIALS SHALL BE COMPACTED TO 95% AND 100% DENSITIES, RESPECTIVELY, COMPACTION SHALL BE BY MECHANICAL TAMPING TO THE DENSITIES SPECIFIED.
5. MANHOLE SHALL BE SET SO RING AND COVER MATCH STREET SLOPE.
6. PATCH UP EXISTING COATING AND RE-WARRANTY WITH 10 YEAR MANUFACTURER WARRANTY.

GREEN VALLEY SPECIAL UTILITY DISTRICT
529 S CENTER ST. MARION, TX 78124 PH: (830) 914-2330
RECORD SIGNED COPY ON FILE AT GVSUD
APPROVED
3/15/2018
WASTEWATER
MAJOR MANHOLE ADJUSTMENT
THE ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. WW-17

ENGINEER SANITARY SEWER GENERAL NOTES:

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


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.

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.

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San Antonio, Texas 78231
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GRACE VALLEY RANCH PHASE 3A

SANITARY SEWER DETAILS

DATE
05/17/2023
PROJECT NO.
03346.006
DRAWN BY
KMH/NNR/MOH/MAS
CHECKED BY
CJC

REVISIONS
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KYLE M. HUDEK
138753
05/22/2023
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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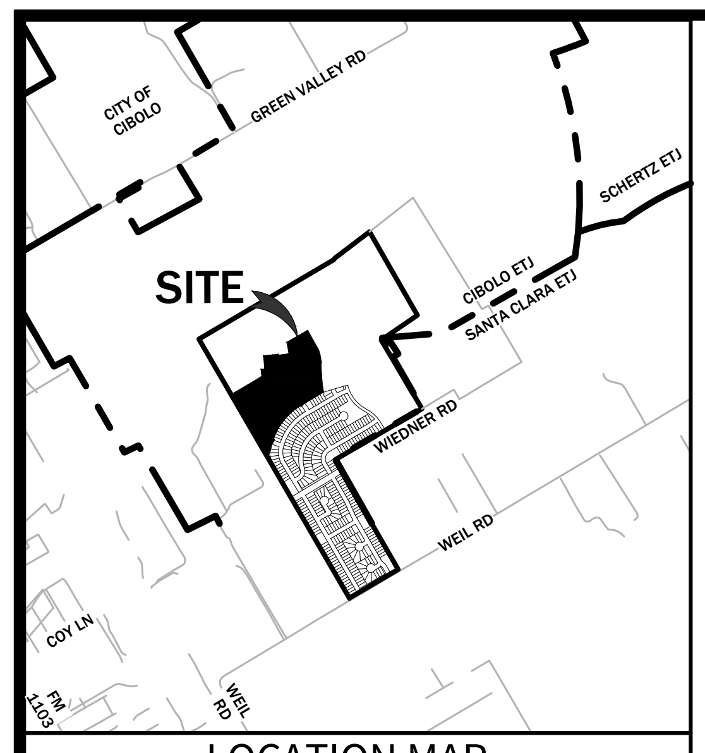
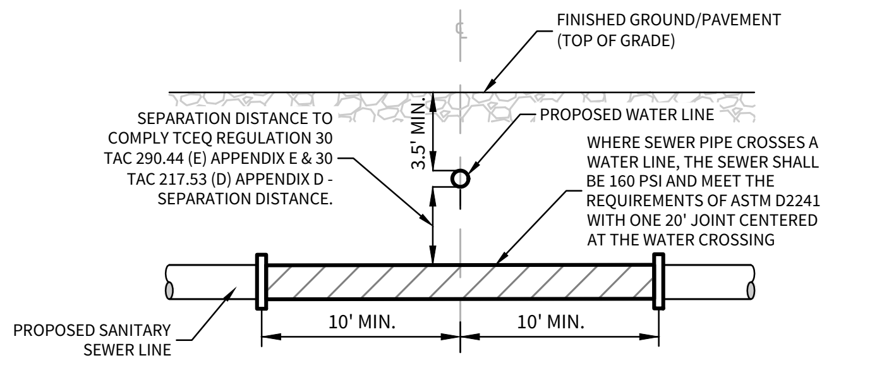


LOCATION MAP N.T.S.

LEGEND

- 8" W = PROPOSED WATER MAIN
- EX. 8" W = EXISTING WATER MAIN
- ◀ EX. 8" SS ● = EXISTING SEWER LINE AND MANHOLE
- ◀ 8" SS ● = PROPOSED SEWER LINE AND MANHOLE
- ◀ SS ● = PROPOSED SEWER LINE AND MANHOLES BY OTHERS (GVSUD)
- ELEC = EXISTING OVERHEAD ELECTRIC LINE
- ⧓ = PROPOSED HYDRANT


FINISHED GROUND/PAVEMENT (TOP OF GRADE)
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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.

CAUTION!!!

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TRENCH EXCAVATION SAFETY PROTECTION

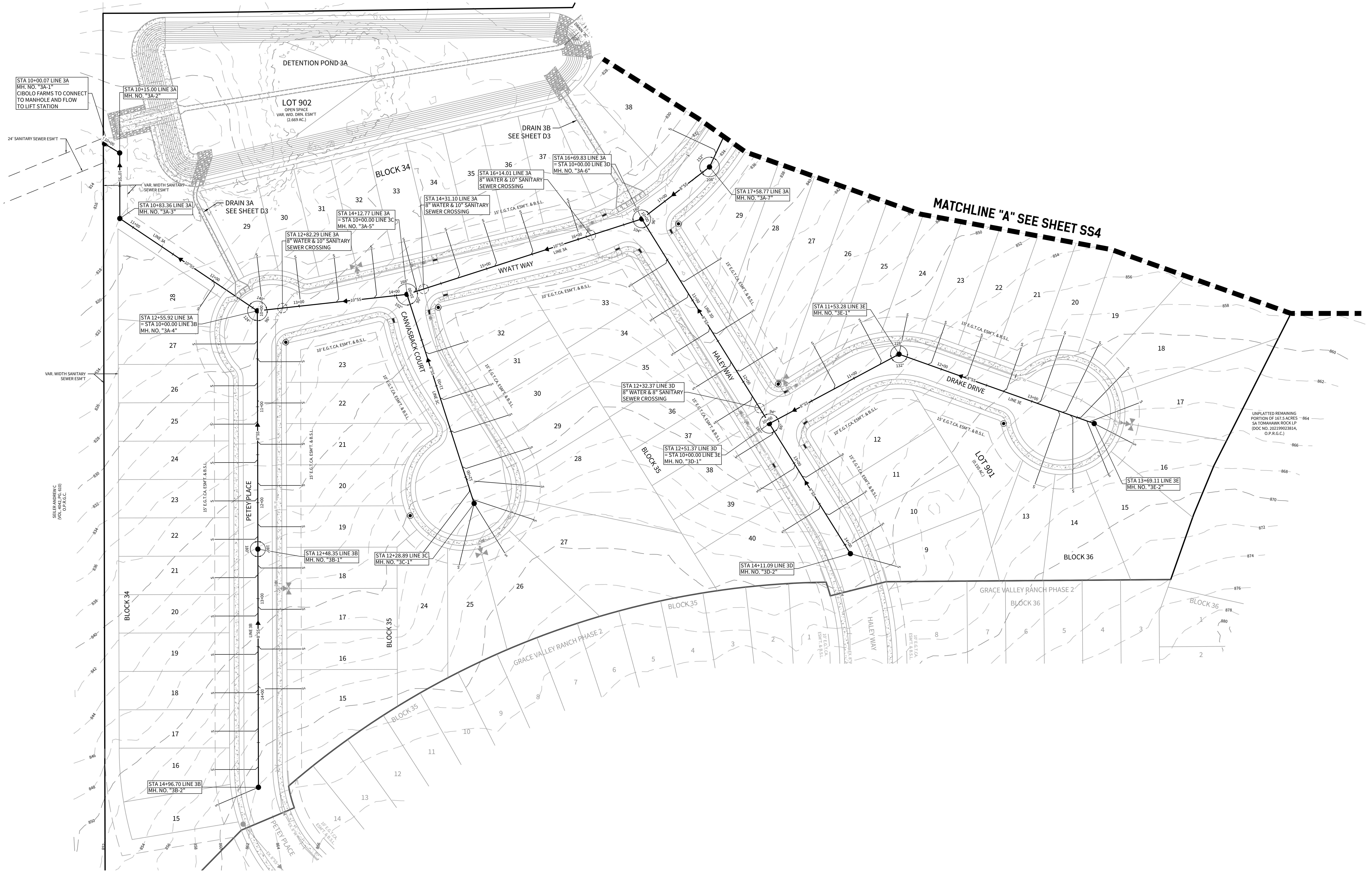
CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S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

DEVELOPER:

LENNAR HOMES OF TEXAS LAND AND CONSTRUCTION, LTD.
CONTACT PERSON: RICHARD MOTT
1922 DRY CREEK WAY, SUITE 101
SAN ANTONIO, TX 78259
TEL: (210) 403-6282

CIVIL ENGINEER:

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



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GRACE VALLEY RANCH
PHASE 3A

SANITARY SEWER MASTER PLAN

DATE	05/17/2023
PROJECT NO.	03346.006
DRAWN BY	NNR/KMH
CHECKED BY	CC

REVISIONS

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KYLE M. HUDEK
138753
05/22/2023

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

SS3

3 OF 9

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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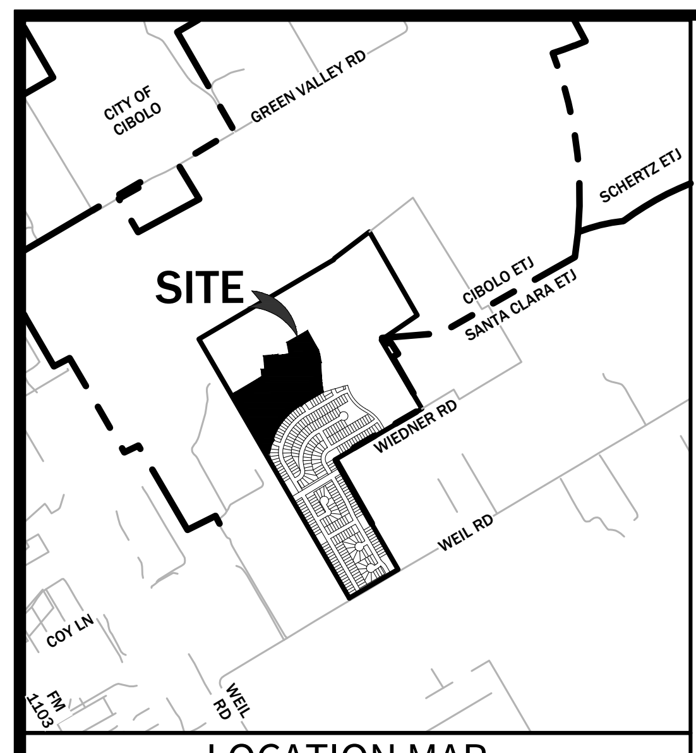

LOCATION MAP

N.T.S.

LEGEND

8" W	= PROPOSED WATER MAIN
EX. 8" W	= EXISTING WATER MAIN
EX. 8" SS ●	= EXISTING SEWER LINE AND MANHOLE
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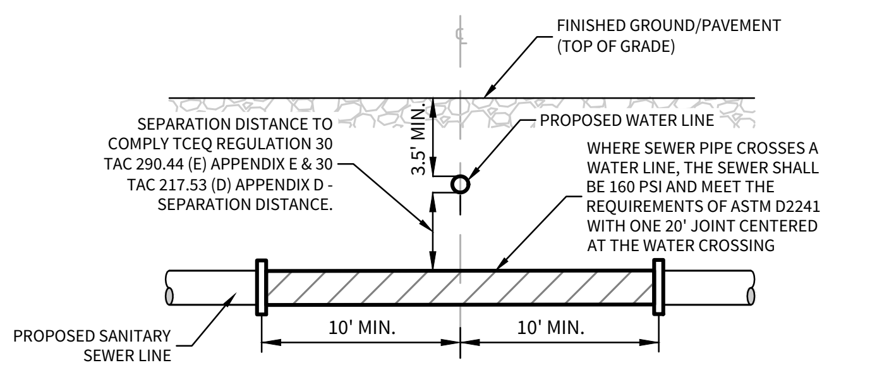

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

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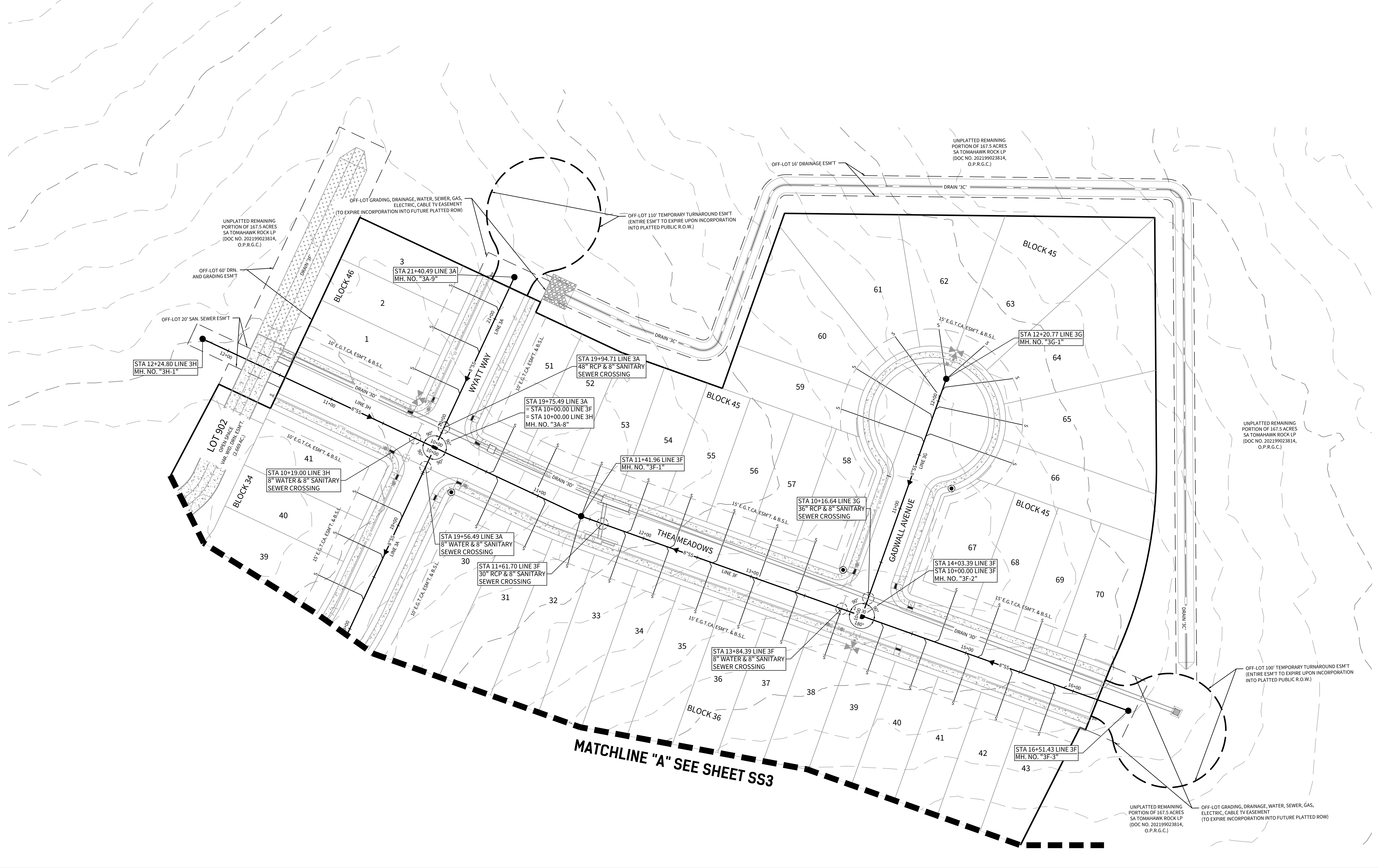
UNPLATTED REMAINING PORTION OF 167.5 ACRES SA TOMAHAWK ROCK LP (DOC NO. 202199023814, O.P.R.G.C.)
OFF-LOT 60' DRN. AND GRADING ESM'T
OFF-LOT 20' SAN. SEWER ESM'T
OFF-LOT GRADING, DRAINAGE, WATER, SEWER, GAS, ELECTRIC, CABLE TV EASEMENT (TO EXPIRE INCORPORATION INTO FUTURE PLATTED ROW)
OFF-LOT 110' TEMPORARY TURNAROUND ESM'T (ENTIRE ESM'T TO EXPIRE UPON INCORPORATION INTO PLATTED PUBLIC R.O.W.)
OFF-LOT 16' DRAINAGE ESM'T
UNPLATTED REMAINING PORTION OF 167.5 ACRES SA TOMAHAWK ROCK LP (DOC NO. 202199023814, O.P.R.G.C.)
DRAIN '3C'
DRAIN '3F'
DRAIN '3D'
BLOCK 46
BLOCK 45
BLOCK 34
BLOCK 36
LOT 902 OPEN SPACE VAR. WID. DRN. ESM'T. (2.669 AC.)
WYATT WAY
THEA MEADOWS
GADWALL AVENUE
LINE 3A
LINE 3H
LINE 3F
LINE 3G
8"SS
8"W
10' E.G.T.CA. ESM'T. & B.S.L.
15' E.G.T.CA. ESM'T. & B.S.L.
STA 21+40.49 LINE 3A
MH. NO. "3A-9"
STA 12+24.80 LINE 3H
MH. NO. "3H-1"
STA 19+94.71 LINE 3A
48" RCP & 8" SANITARY SEWER CROSSING
STA 19+75.49 LINE 3A
= STA 10+00.00 LINE 3F
= STA 10+00.00 LINE 3H
MH. NO. "3A-8"
STA 10+19.00 LINE 3H
8" WATER & 8" SANITARY SEWER CROSSING
STA 19+56.49 LINE 3A
8" WATER & 8" SANITARY SEWER CROSSING
STA 11+41.96 LINE 3F
MH. NO. "3F-1"
STA 11+61.70 LINE 3F
30" RCP & 8" SANITARY SEWER CROSSING
STA 10+16.64 LINE 3G
36" RCP & 8" SANITARY SEWER CROSSING
STA 12+20.77 LINE 3G
MH. NO. "3G-1"
STA 14+03.39 LINE 3F
STA 10+00.00 LINE 3F
MH. NO. "3F-2"
STA 13+84.39 LINE 3F
8" WATER & 8" SANITARY SEWER CROSSING
STA 16+51.43 LINE 3F
MH. NO. "3F-3"
OFF-LOT 100' TEMPORARY TURNAROUND ESM'T (ENTIRE ESM'T TO EXPIRE UPON INCORPORATION INTO PLATTED PUBLIC R.O.W.)
UNPLATTED REMAINING PORTION OF 167.5 ACRES SA TOMAHAWK ROCK LP (DOC NO. 202199023814, O.P.R.G.C.)
OFF-LOT GRADING, DRAINAGE, WATER, SEWER, GAS, ELECTRIC, CABLE TV EASEMENT (TO EXPIRE INCORPORATION INTO FUTURE PLATTED ROW)
10+00
11+00
12+00
13+00
15+00
16+00
19+00
20+00
21+00
90°
180°
MATCHLINE "A" SEE SHEET SS3

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GRACE VALLEY RANCH
PHASE 3A

SANITARY SEWER MASTER PLAN

DATE
05/17/2023

PROJECT NO.
03346.006

DRAWN BY
NNR/KMH

CHECKED BY
CC

REVISIONS
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KYLE M. HUDEK
138753
05/22/2023

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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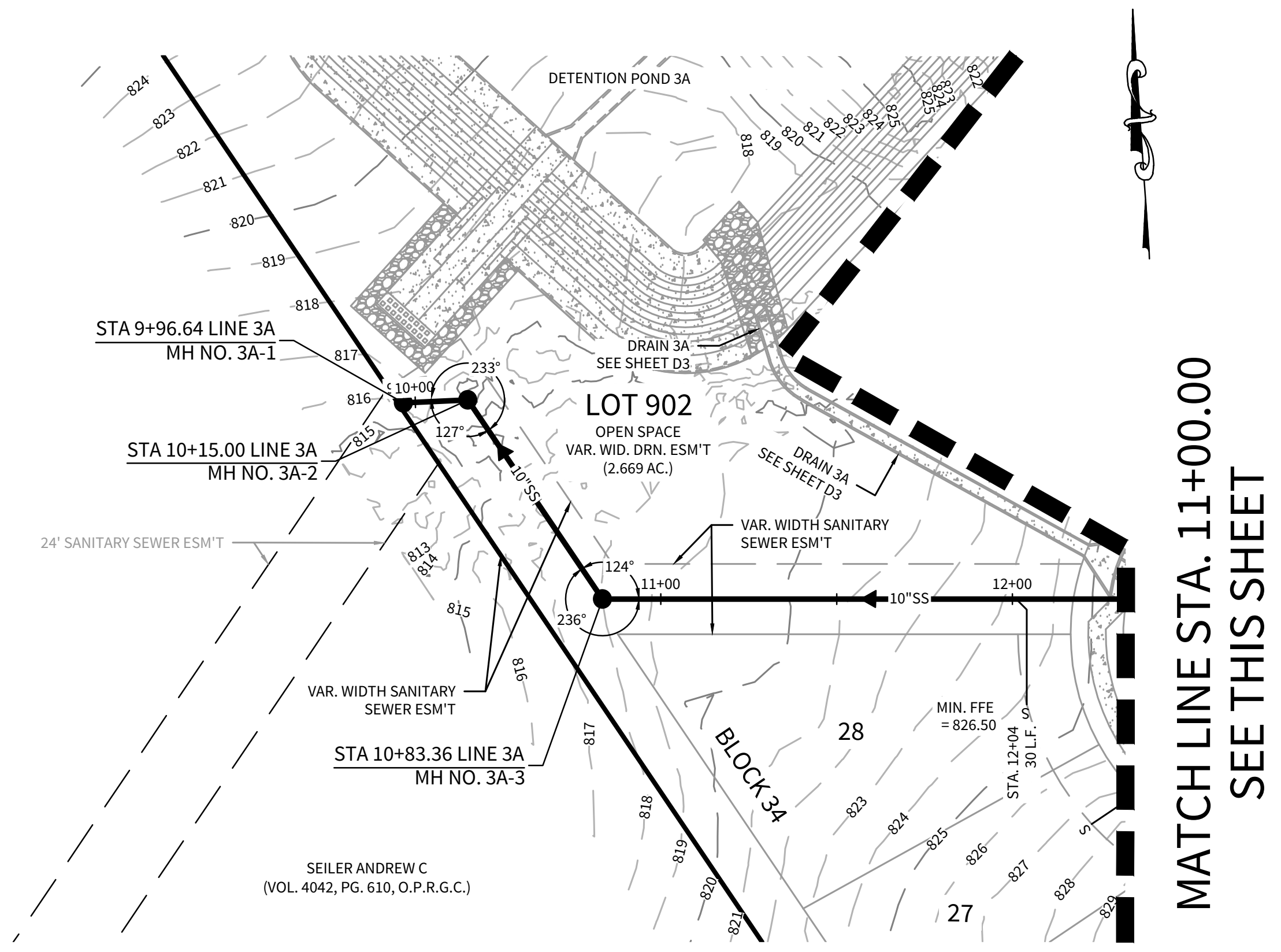

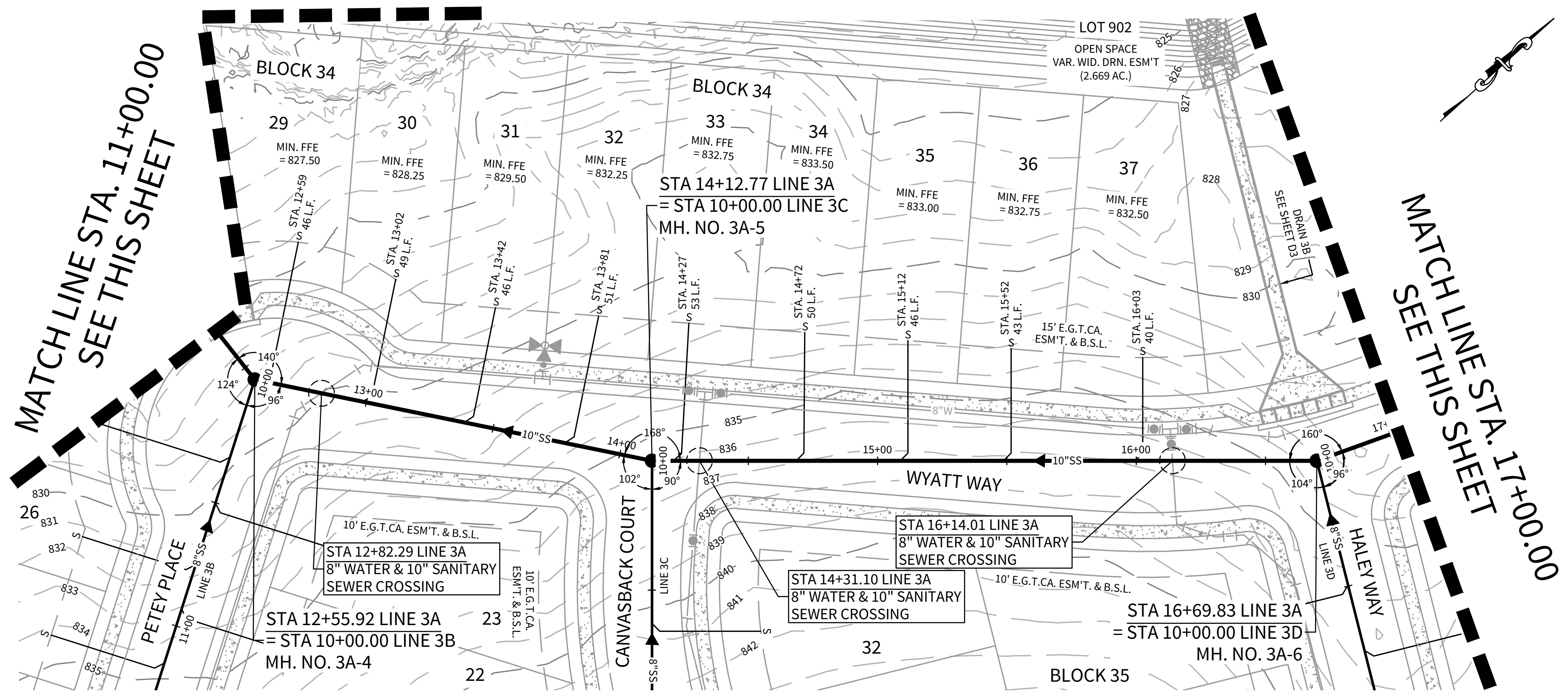

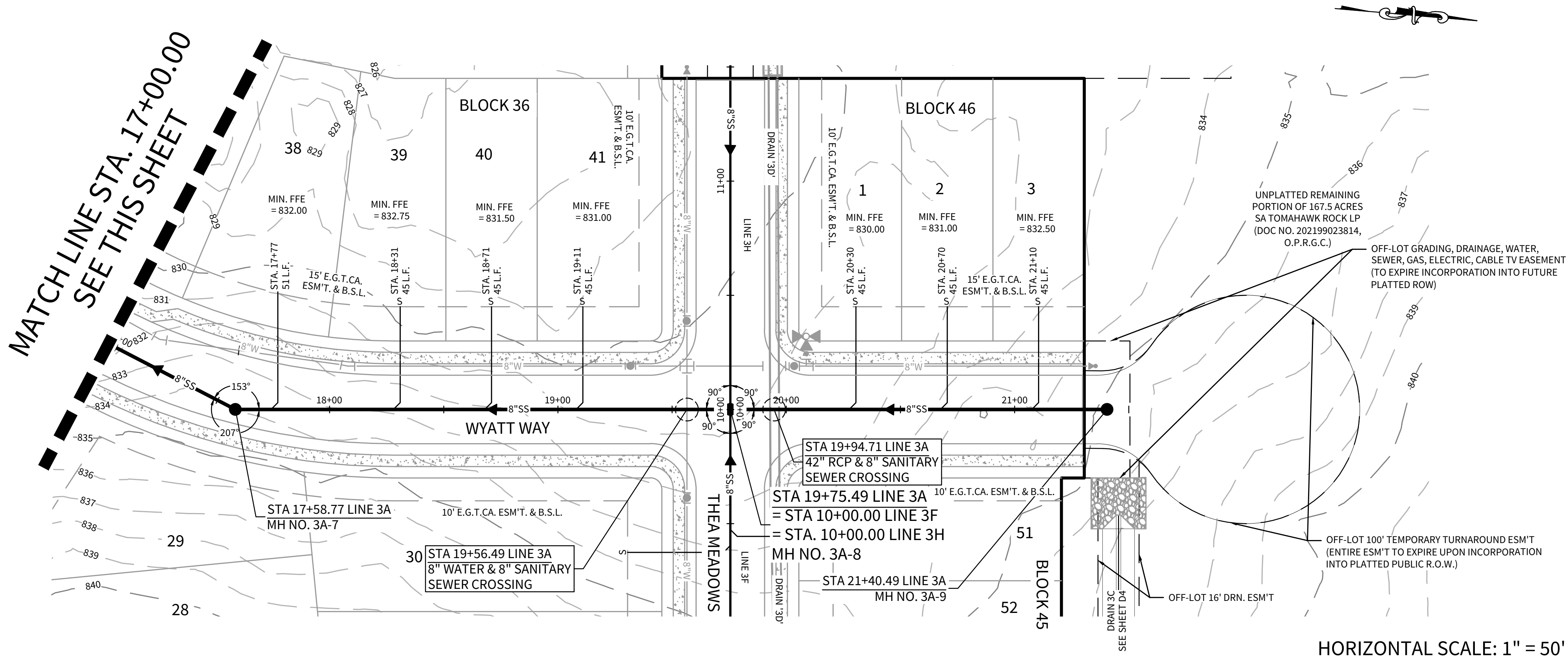

MATCH LINE STA. 17+00.00
SEE THIS SHEET
BLOCK 36
BLOCK 46
38
39
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41
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2
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STA 17+58.77 LINE 3A
MH NO. 3A-7
STA 19+56.49 LINE 3A
8" WATER & 8" SANITARY SEWER CROSSING
STA 19+94.71 LINE 3A
42" RCP & 8" SANITARY SEWER CROSSING
STA 19+75.49 LINE 3A
= STA 10+00.00 LINE 3F
= STA. 10+00.00 LINE 3H
MH NO. 3A-8
STA 21+40.49 LINE 3A
MH NO. 3A-9
WYATT WAY
THEA MEADOWS
BLOCK 45
29
28
30
51
52
UNPLATTED REMAINING PORTION OF 167.5 ACRES SA TOMAHAWK ROCK LP (DOC NO. 20219023814, O.P.R.G.C.)
OFF-LOT GRADING, DRAINAGE, WATER, SEWER, GAS, ELECTRIC, CABLE TV EASEMENT (TO EXPIRE INCORPORATION INTO FUTURE PLATTED ROW)
OFF-LOT 100' TEMPORARY TURNAROUND ESM'T (ENTIRE ESM'T TO EXPIRE UPON INCORPORATION INTO PLATTED PUBLIC R.O.W.)
OFF-LOT 16' DRN. ESM'T

NOTE:
ALL SEWER LATERALS AND PROPERTY LINE CLEANOUTS ARE TO BE LOCATED OUTSIDE OF DRIVEWAY PAVED AREAS.

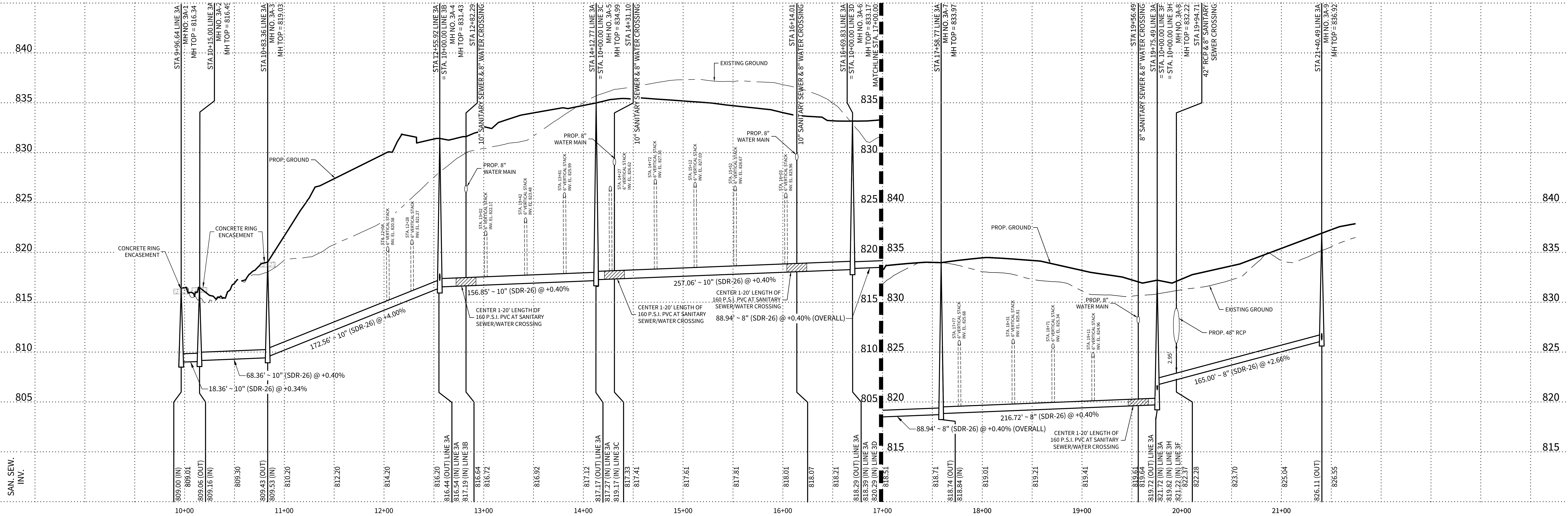
TRENCH EXCAVATION SAFETY PROTECTION

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 "3A"

STA. 10+00.00 TO 21+40.49

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



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GRACE VALLEY RANCH
PHASE 3A

SANITARY SEWER PLAN AND PROFILE - LINE "3A"

DATE	05/17/2023
PROJECT NO.	03346.006
DRAWN BY	KMH/NNR/MOH/MAS
CHECKED BY	CJC

REVISIONS
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STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED
PROFESSIONAL ENGINEER
05/22/2023

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

SS5

5 OF 9

P:\03346\006\2-Drawings\05_SSPP LINE 3A.dwg 2023/05/17 1:02pm msandoval

SCALE: 1"=50'
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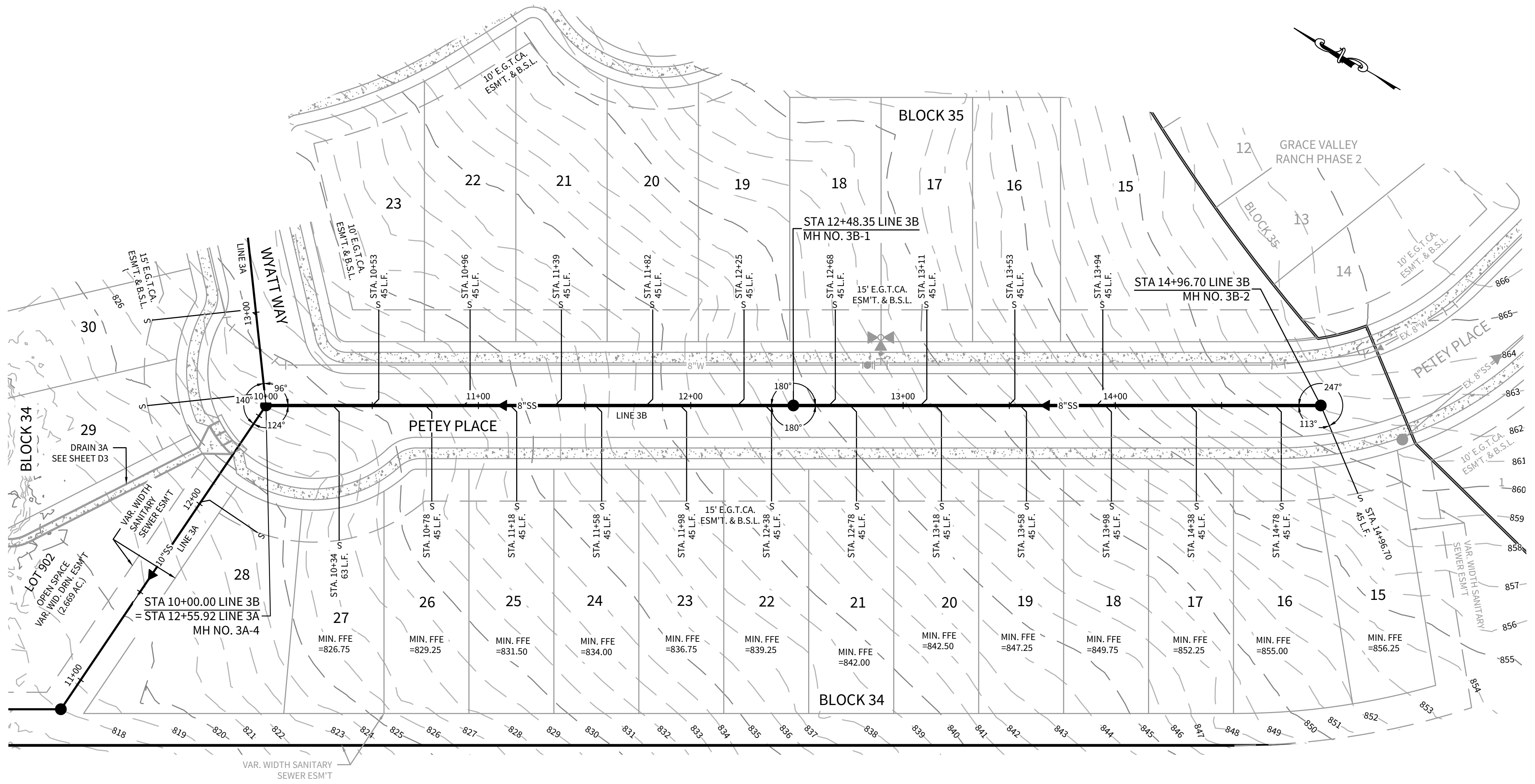
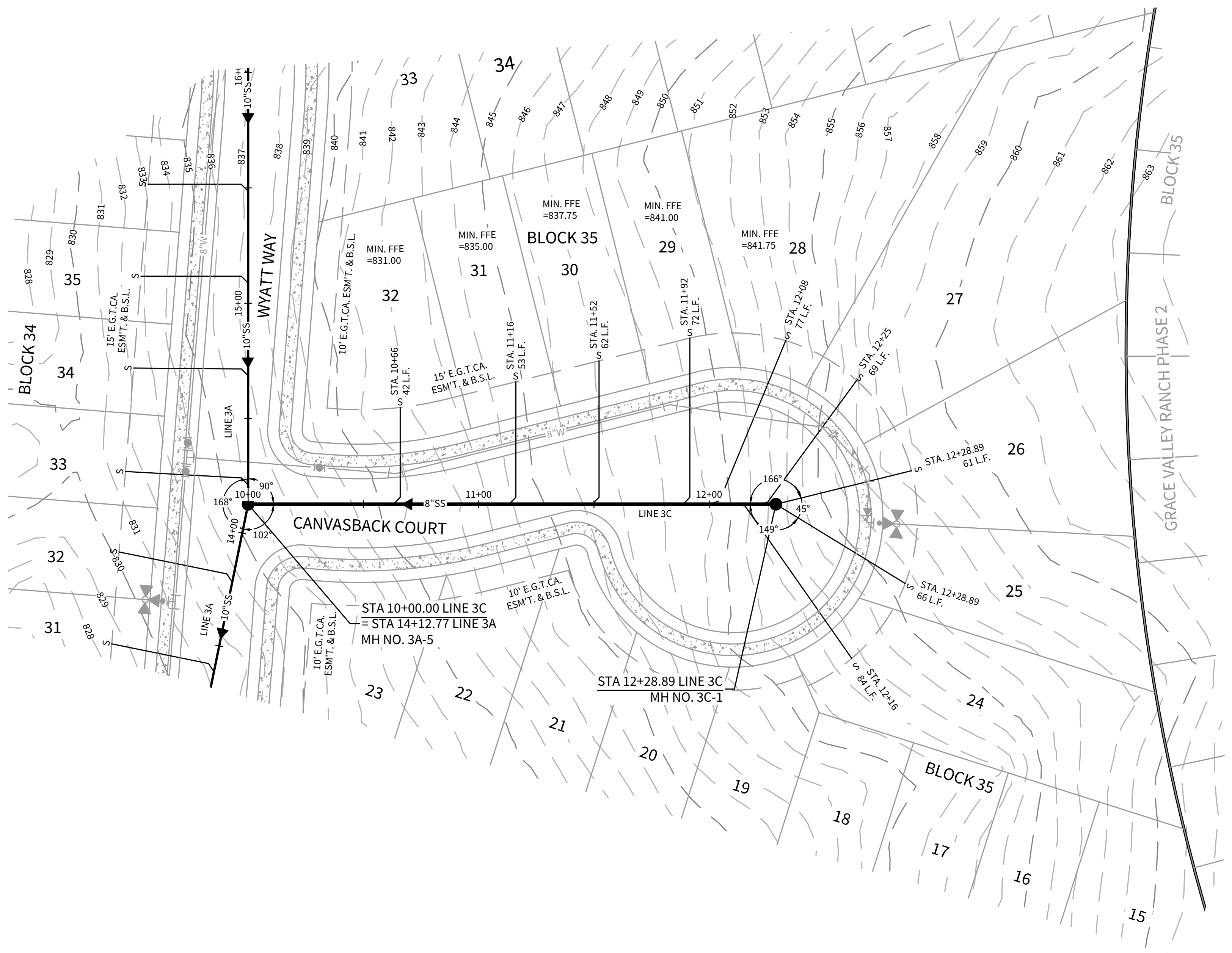




NOTE:
ALL SEWER LATERALS AND PROPERTY LINE CLEANOUTS ARE TO BE LOCATED OUTSIDE OF DRIVEWAY PAVED AREAS.

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.

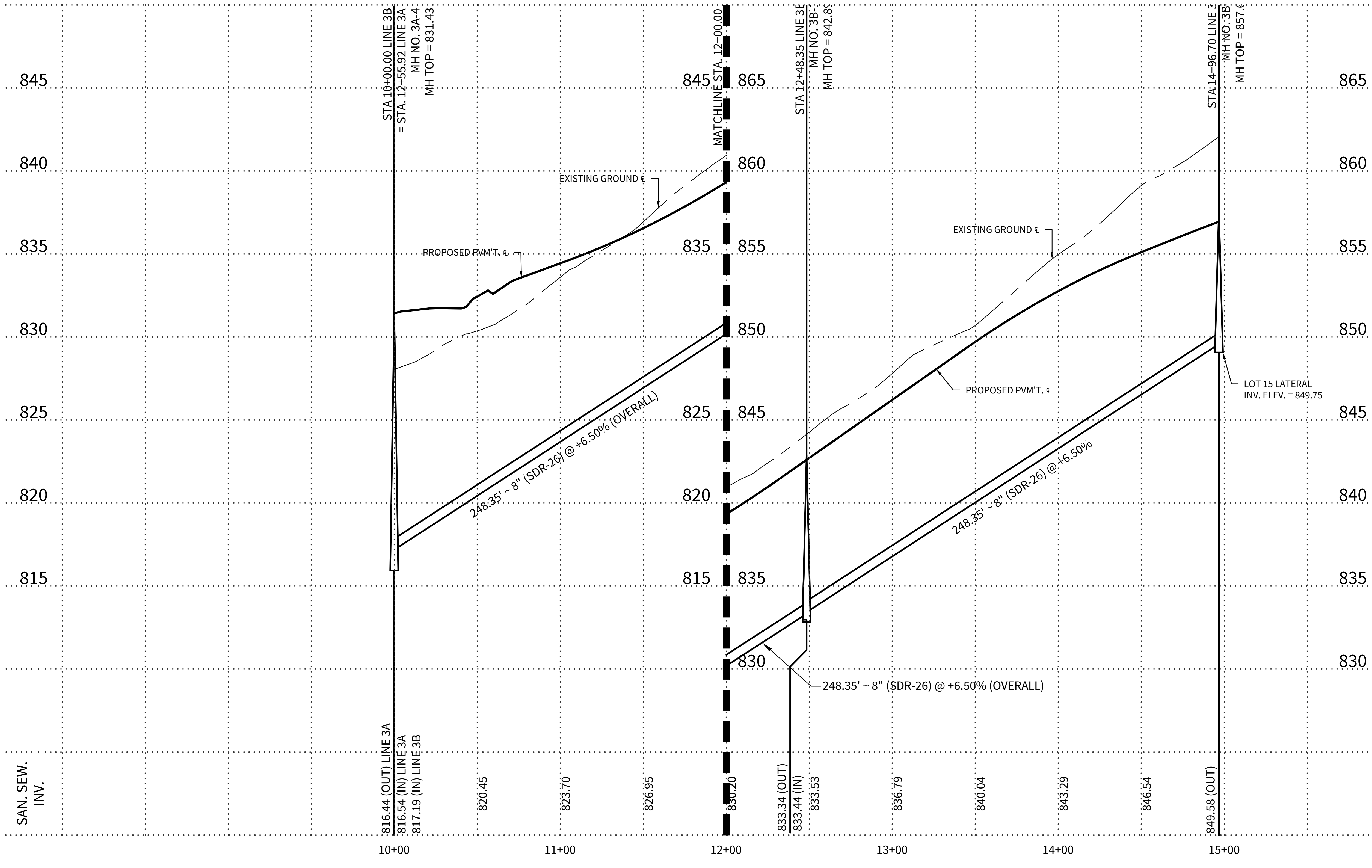
LINE "3B"

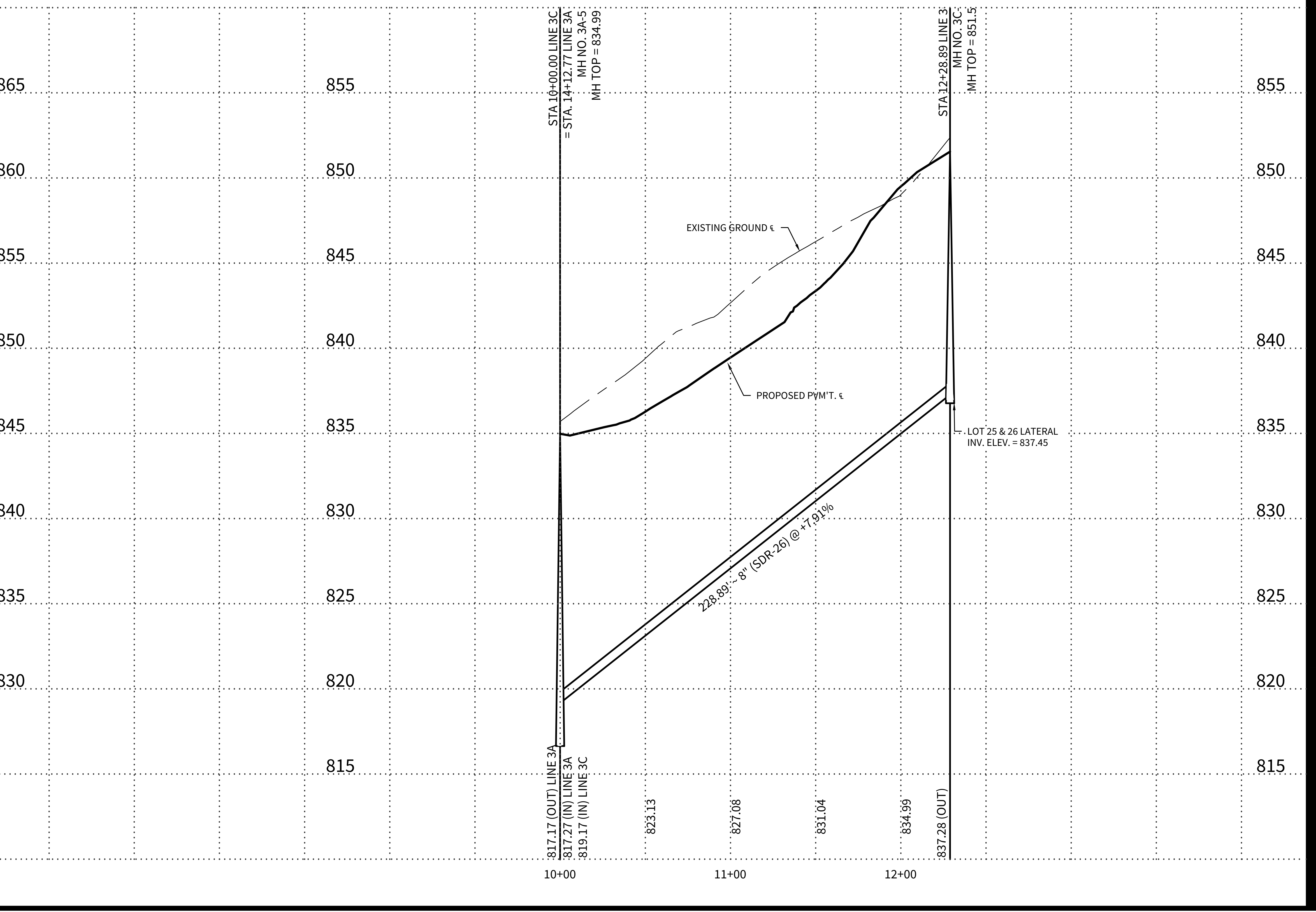
STA. 10+00.00 TO 14+96.70

LINE "3C"

STA. 10+00.00 TO 12+28.89

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





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GRACE VALLEY RANCH PHASE 3A

SANITARY SEWER PLAN AND PROFILE - LINE "3B" AND LINE "3C"

DATE	05/17/2023
PROJECT NO.	03346.006
DRAWN BY	KMH/NNR/MOH/MAS
CHECKED BY	CJC

REVISIONS
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KYLE M. HUDEK
138753
05/22/2023
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

SS6

6 OF 9

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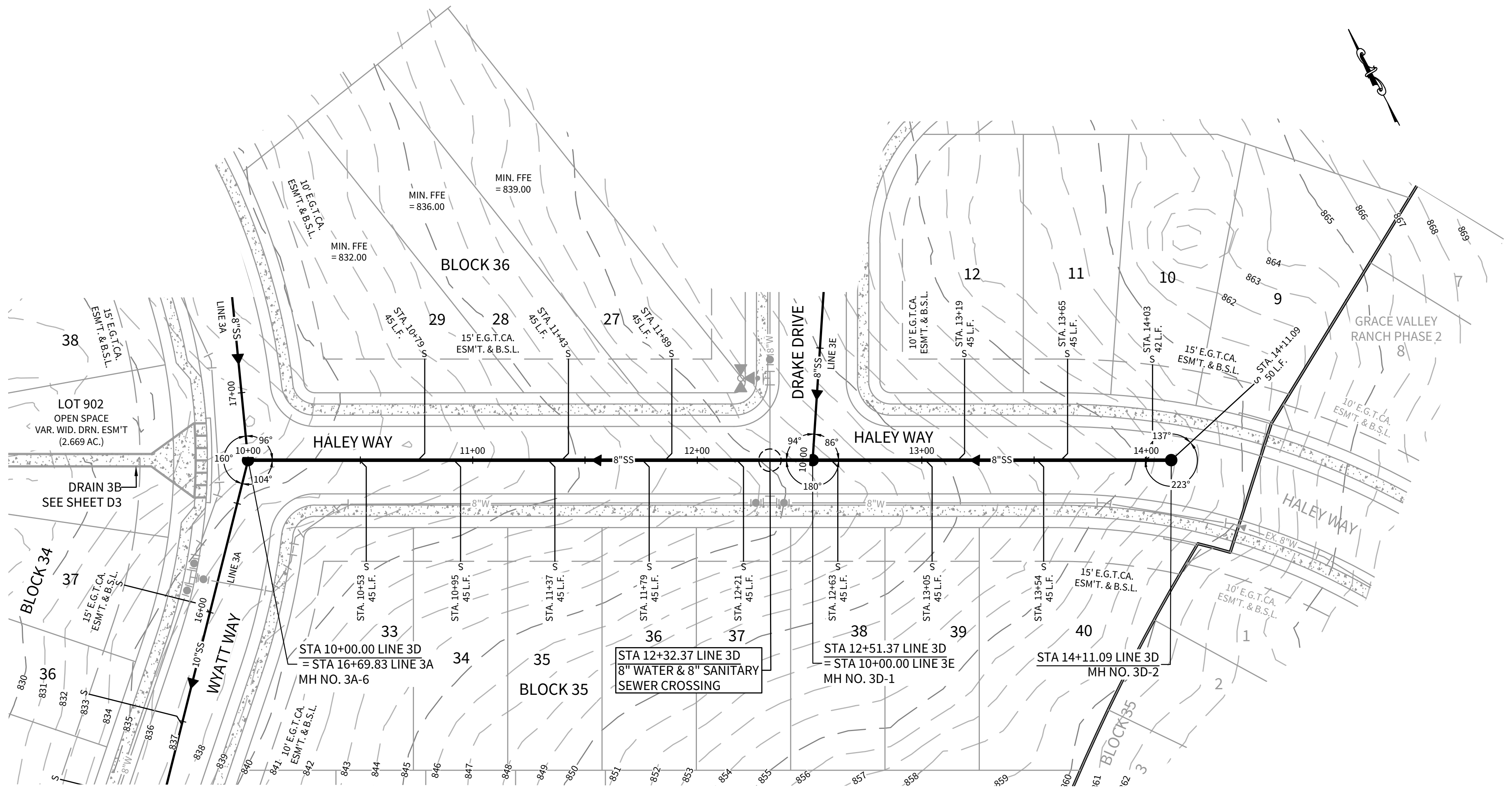

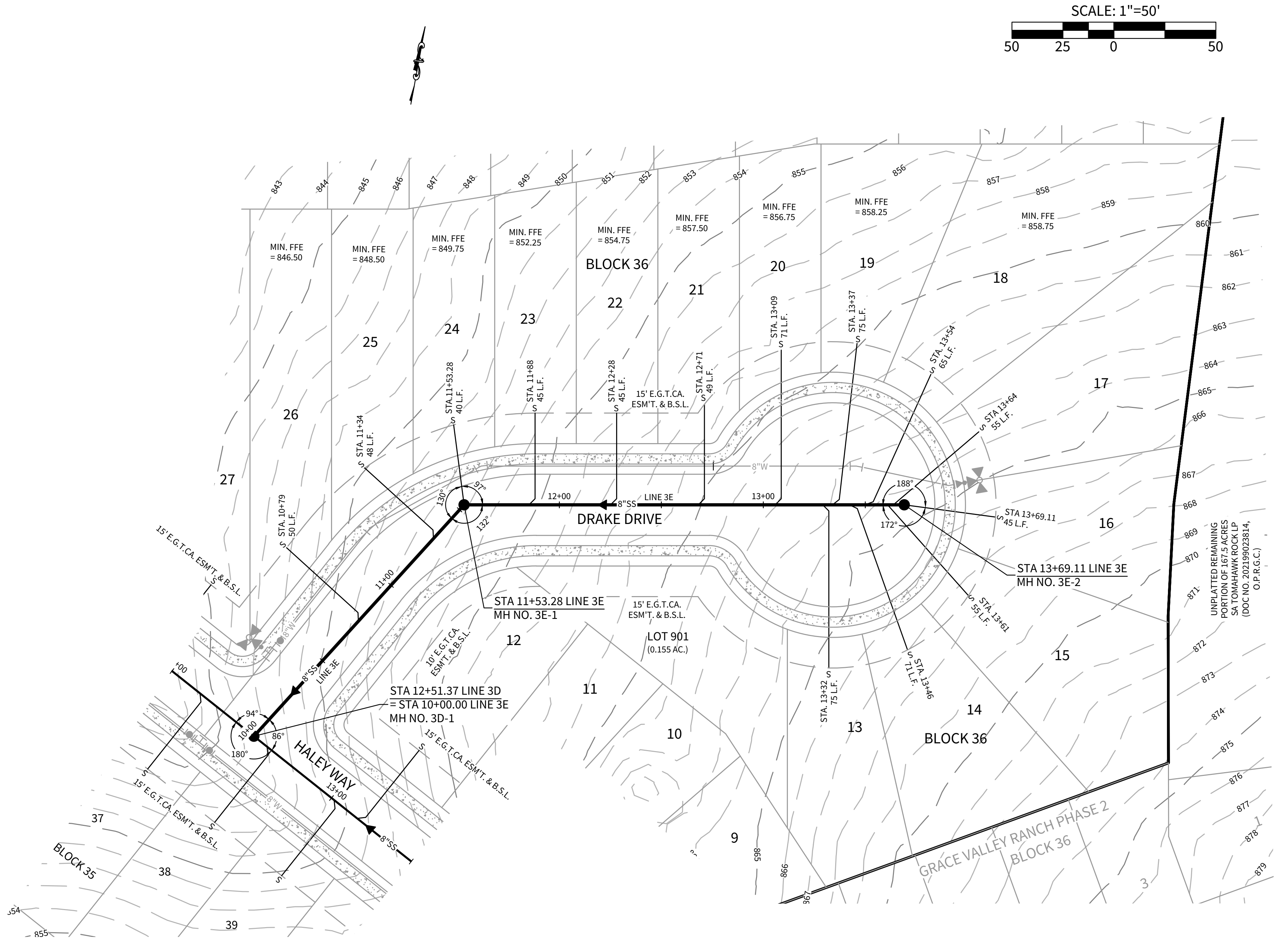

NOTE:
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TRENCH EXCAVATION SAFETY PROTECTION

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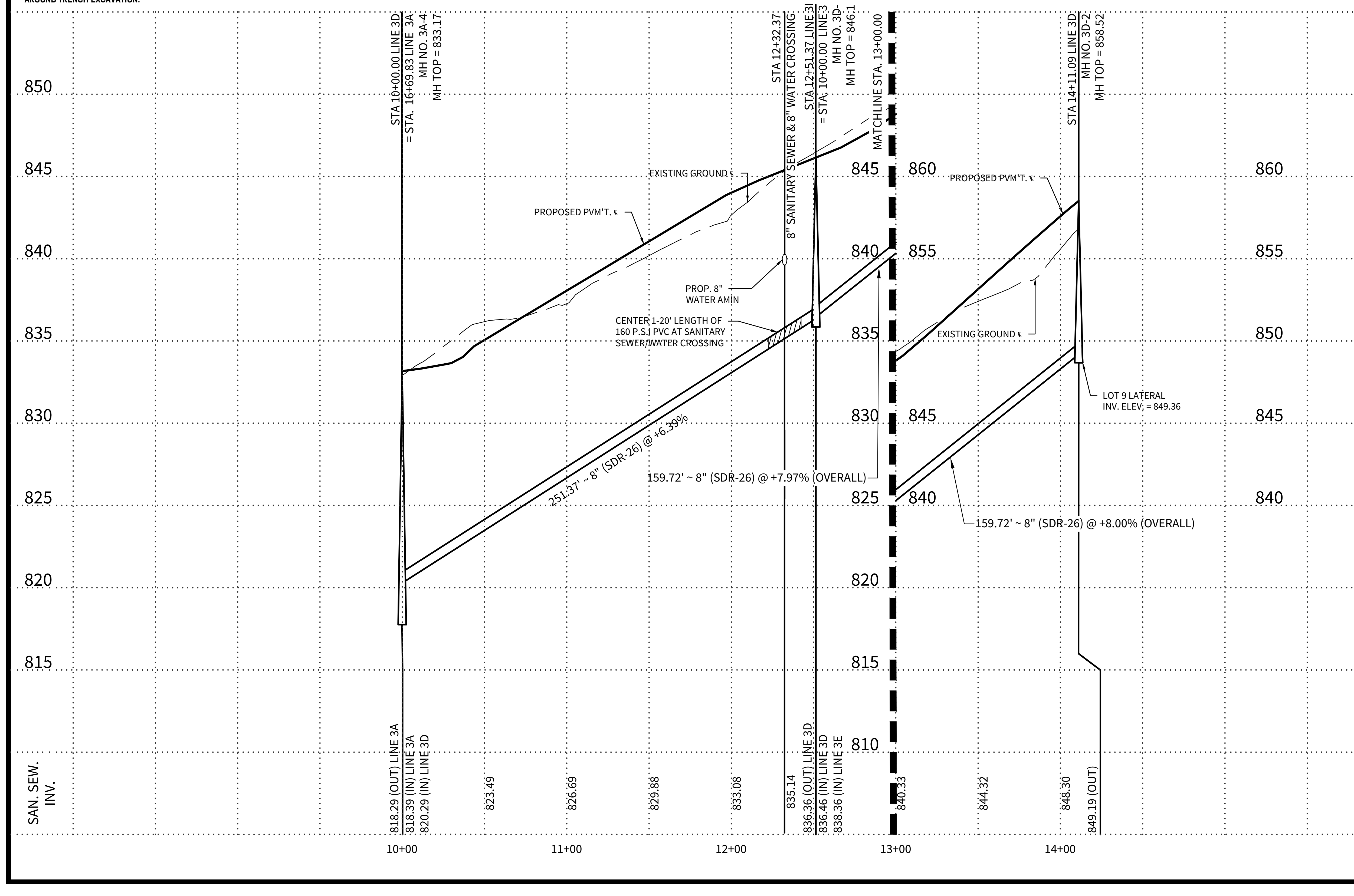
LINE "3D"

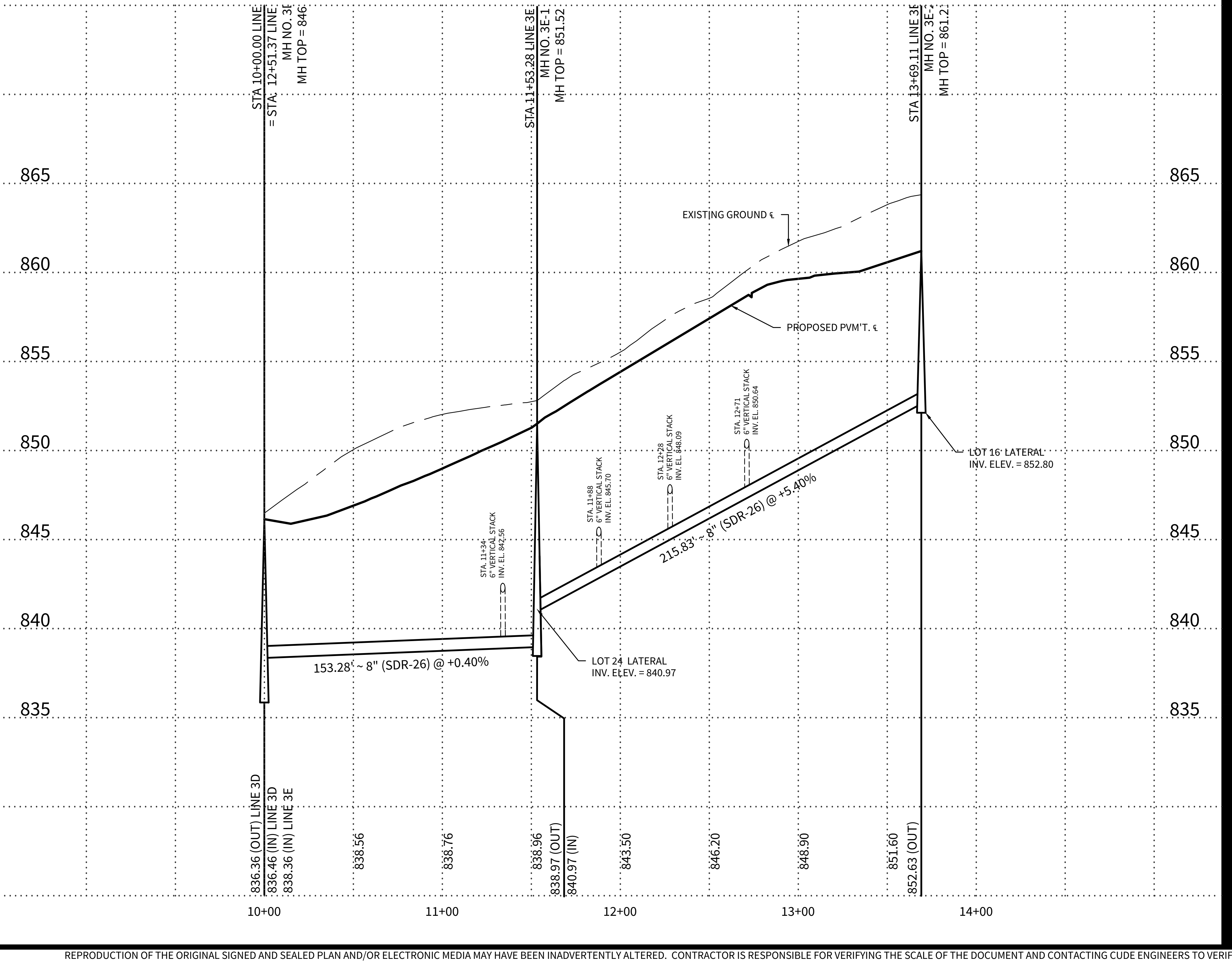
STA. 10+00.00 TO 14+11.09

LINE "3E"

STA. 10+00.00 TO 13+69.11

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





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GRACE VALLEY RANCH
PHASE 3A

SANITARY SEWER PLAN AND PROFILE - LINE "3D" AND LINE "3E"

DATE
05/17/2023

PROJECT NO.
03346.006

DRAWN BY
KMH/NNR/MOH/MAS

CHECKED BY
CJC

REVISIONS
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KYLE M. HUDEK
138753
05/22/2023
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

SS7

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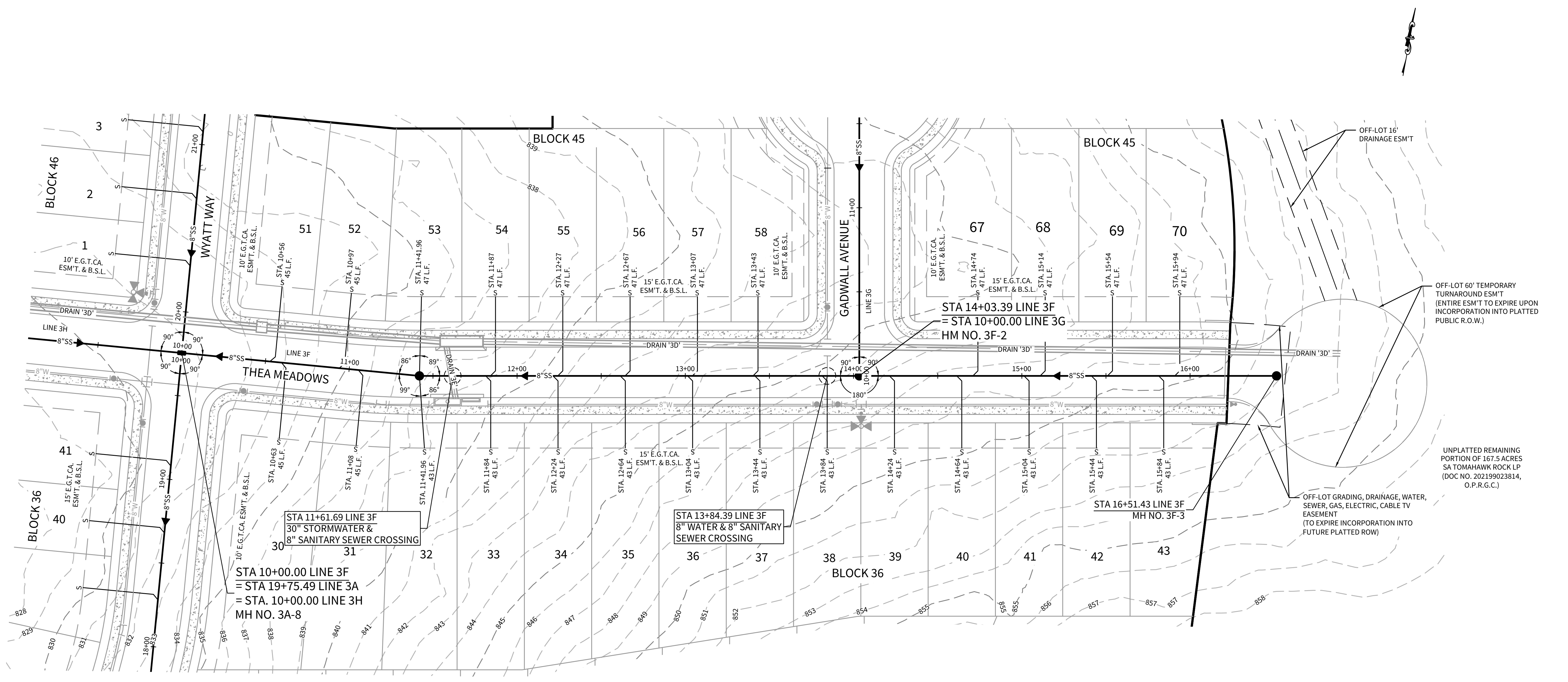
BLOCK 45
BLOCK 46
BLOCK 36
WYATT WAY
THEA MEADOWS
GADWALL AVENUE
LINE 3H
LINE 3F
DRAIN '30'
8"SS
11+00
12+00
13+00
15+00
16+00
OFF-LOT 16' DRAINAGE ESM'T
OFF-LOT 60' TEMPORARY TURNAROUND ESM'T (ENTIRE ESM'T TO EXPIRE UPON INCORPORATION INTO PLATTED PUBLIC R.O.W.)
UNPLATTED REMAINING PORTION OF 167.5 ACRES SA TOMAHAWK ROCK LP (DOC NO. 20219902314, O.P.R.G.C.)
OFF-LOT GRADING, DRAINAGE, WATER, SEWER, GAS, ELECTRIC, CABLE TV EASEMENT (TO EXPIRE INCORPORATION INTO FUTURE PLATTED ROW)
STA 14+03.39 LINE 3F = STA 10+00.00 LINE 3G HM NO. 3F-2
STA 11+61.69 LINE 3F 30" STORMWATER & 8" SANITARY SEWER CROSSING
STA 13+84.39 LINE 3F 8" WATER & 8" SANITARY SEWER CROSSING
STA 16+51.43 LINE 3F MH NO. 3F-3
STA 10+00.00 LINE 3F = STA 19+75.49 LINE 3A = STA. 10+00.00 LINE 3H MH NO. 3A-8
10' E.G.T.CA. ESM'T. & B.S.L.
15' E.G.T.CA. ESM'T. & B.S.L.
1
2
3
30
31
32
33
34
35
36
37
38
39
40
41
42
43
51
52
53
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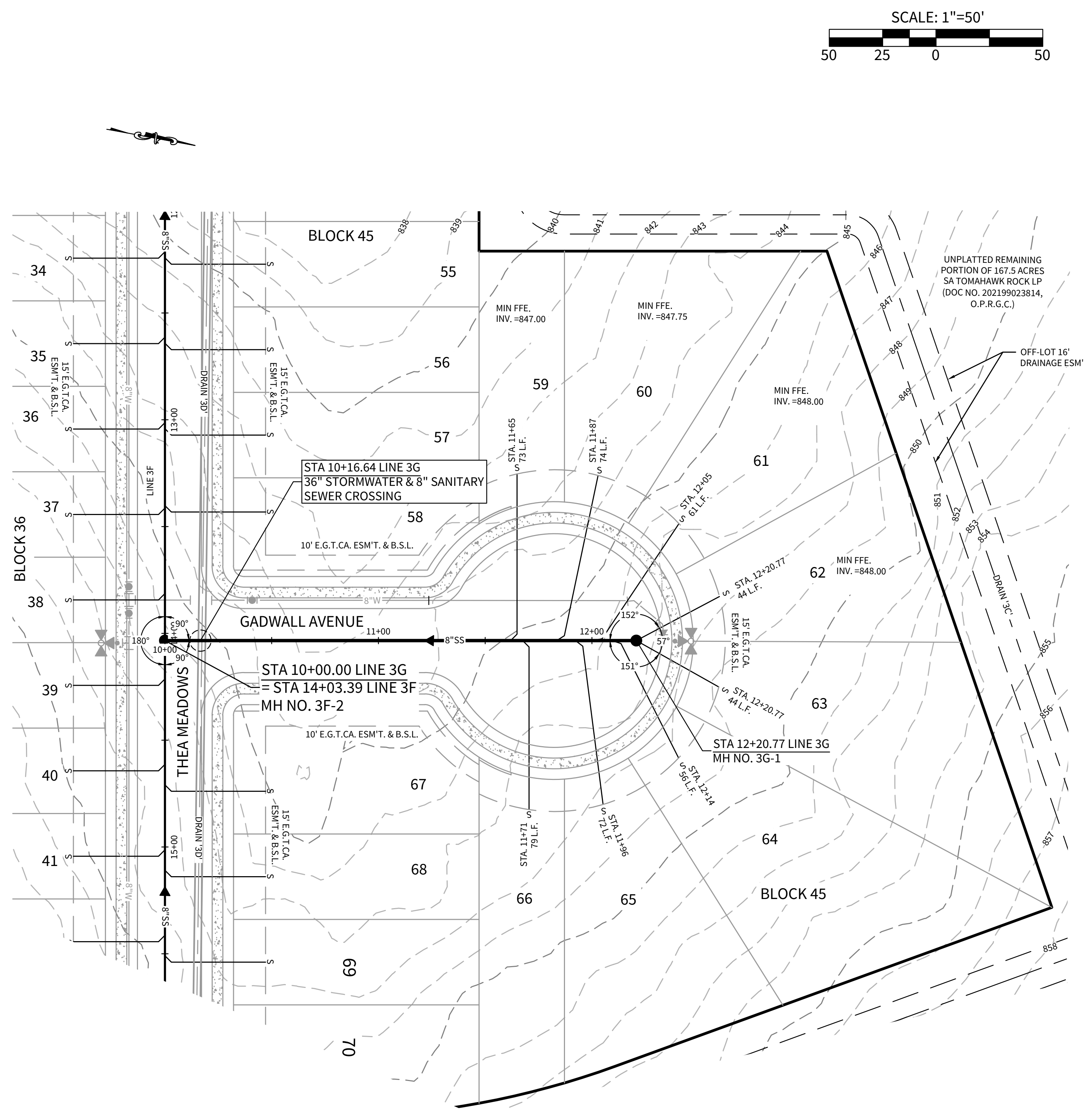
SCALE: 1"=50'
50 25 0 50
BLOCK 45
BLOCK 36
GADWALL AVENUE
THEA MEADOWS
LINE 3F
11+00
12+00
STA 10+16.64 LINE 3G 36" STORMWATER & 8" SANITARY SEWER CROSSING
STA 10+00.00 LINE 3G = STA 14+03.39 LINE 3F MH NO. 3F-2
STA 12+20.77 LINE 3G MH NO. 3G-1
UNPLATTED REMAINING PORTION OF 167.5 ACRES SA TOMAHAWK ROCK LP (DOC NO. 202199023814, O.P.R.G.C.)
OFF-LOT 16' DRAINAGE ESM'T
MIN FFE. INV. =847.00
MIN FFE. INV. =847.75
MIN FFE. INV. =848.00
10' E.G.T.CA. ESM'T. & B.S.L.
34
35
36
37
38
39
40
41
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70

LINE "3F"

STA. 10+00.00 TO STA. 16+51.43

LINE "3G"

STA. 10+00.00 TO STA. 12+20.77

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

NOTE:
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TRENCH EXCAVATION SAFETY PROTECTION

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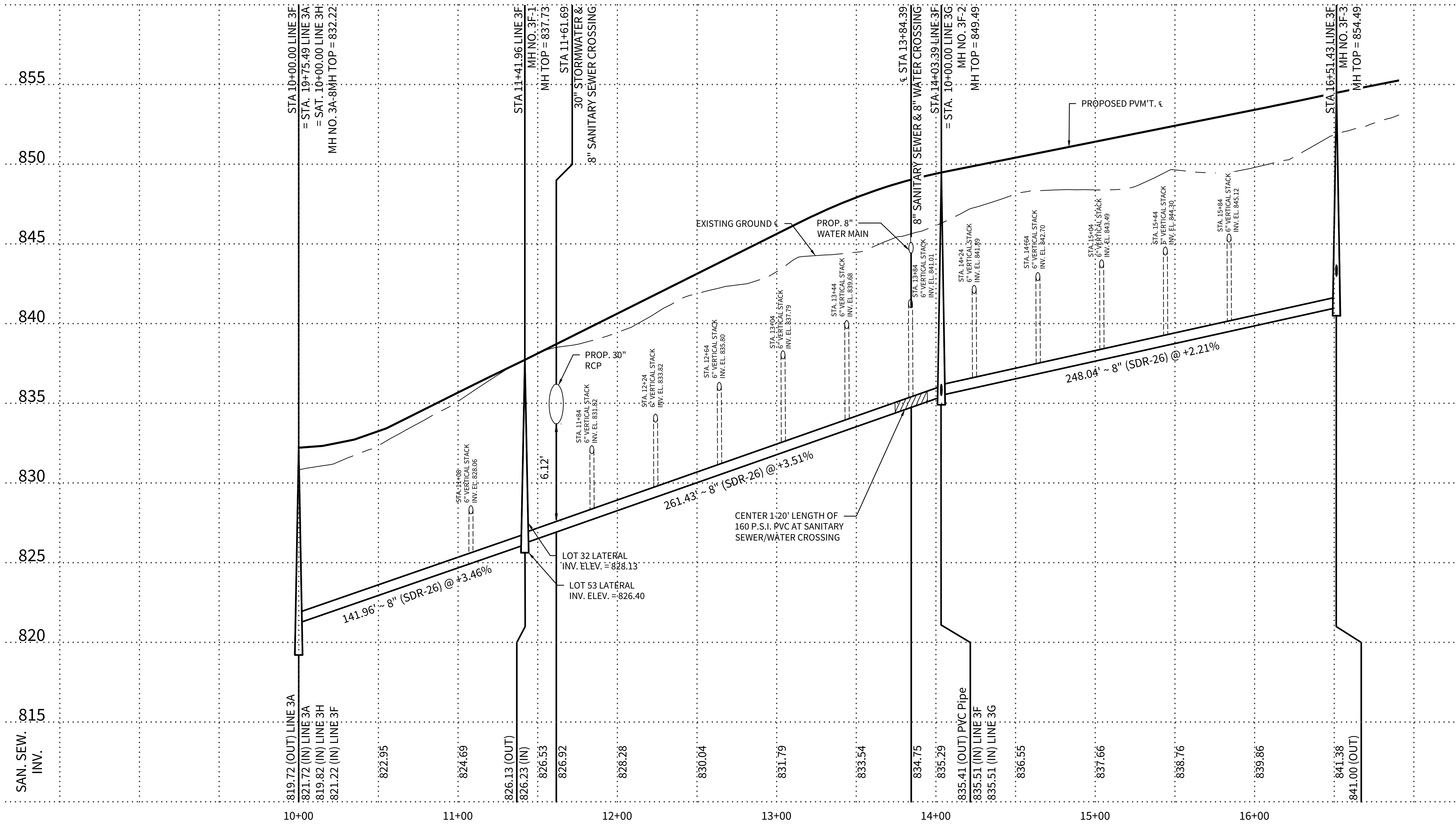
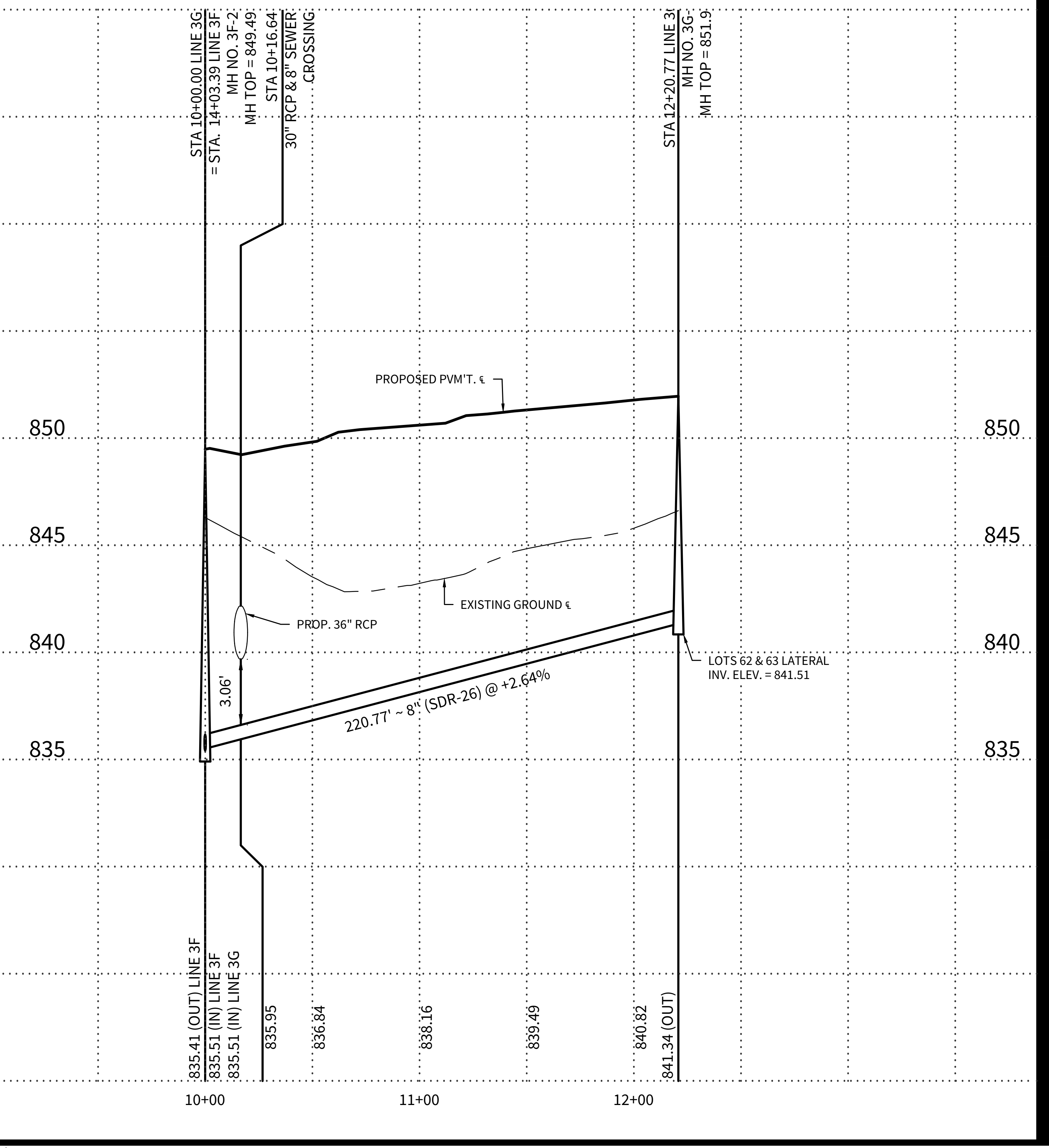

STA 10+00.00 LINE 3F = STA. 19+75.49 LINE 3A = SAT. 10+00.00 LINE 3H MH NO. 3A-8MH TOP = 832.22
STA 11+41.96 LINE 3F MH NO. 3F-1 MH TOP = 837.73
STA 11+61.69 30" STORMWATER & 8" SANITARY SEWER CROSSING
STA 13+84.39 8" SANITARY SEWER & 8" WATER CROSSING
STA 14+03.39 LINE 3F = STA. 10+00.00 LINE 3G MH NO. 3F-2 MH TOP = 849.49
STA 16+51.43 LINE 3F MH NO. 3F-3 MH TOP = 854.49
PROPOSED PVM'T. ℄
EXISTING GROUND ℄
PROP. 8" WATER MAIN
PROP. 30" RCP
6.12'
141.96' ~ 8" (SDR-26) @ +3.46%
261.43' ~ 8" (SDR-26) @ +3.51%
248.04' ~ 8" (SDR-26) @ +2.21%
CENTER 1-20' LENGTH OF 160 P.S.I. PVC AT SANITARY SEWER/WATER CROSSING
LOT 32 LATERAL INV. ELEV. = 828.13
LOT 53 LATERAL INV. ELEV. = 826.40
6" VERTICAL STACK
855
850
845
840
835
830
825
820
815
SAN. SEW. INV.
819.73 (OUT) LINE 3A
821.72 (IN) LINE 3A
819.82 (IN) LINE 3H
821.22 (IN) LINE 3F
822.95
824.69
826.13 (OUT)
826.23 (IN)
826.53
826.92
828.28
830.04
831.79
833.54
834.75
835.29
835.41 (OUT) PVC Pipe
835.51 (IN) LINE 3F
835.51 (IN) LINE 3G
836.55
837.66
838.76
839.86
841.38
841.00 (OUT)
10+00
11+00
12+00
13+00
14+00
15+00
16+00


STA 10+00.00 LINE 3G = STA. 14+03.39 LINE 3F MH NO. 3F-2 MH TOP = 849.49
STA 10+16.64 30" RCP & 8" SEWER CROSSING
STA 12+20.77 LINE 3G MH NO. 3G-1 MH TOP = 851.9
PROPOSED PVM'T. ℄
EXISTING GROUND ℄
PROP. 36" RCP
3.06'
220.77' ~ 8" (SDR-26) @ +2.64%
LOTS 62 & 63 LATERAL INV. ELEV. = 841.51
850
845
840
835
835.41 (OUT) LINE 3F
835.51 (IN) LINE 3F
835.51 (IN) LINE 3G
835.95
836.84
838.16
839.49
840.82
841.34 (OUT)
10+00
11+00
12+00

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GRACE VALLEY RANCH PHASE 3A

SANITARY SEWER PLAN AND PROFILE - LINE "3F" AND LINE "3G"

DATE
05/17/2023

PROJECT NO.
03346.006

DRAWN BY
KMH/NNR/MOH/MAS

CHECKED BY
CJC

REVISIONS
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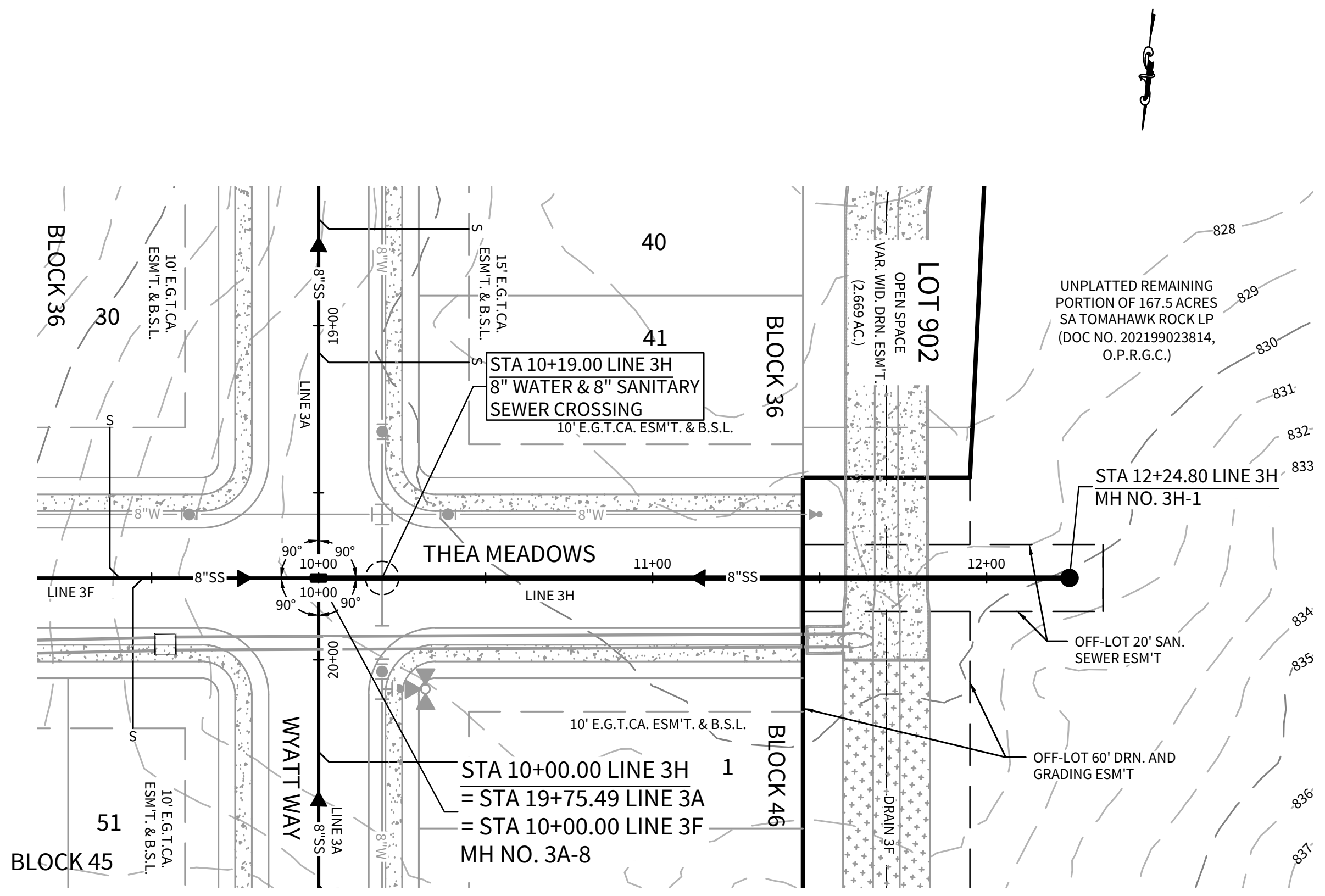
KYLE M. HUDEK
138753
05/22/2023

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

SS8

SCALE: 1"=50'
50 25 0 50



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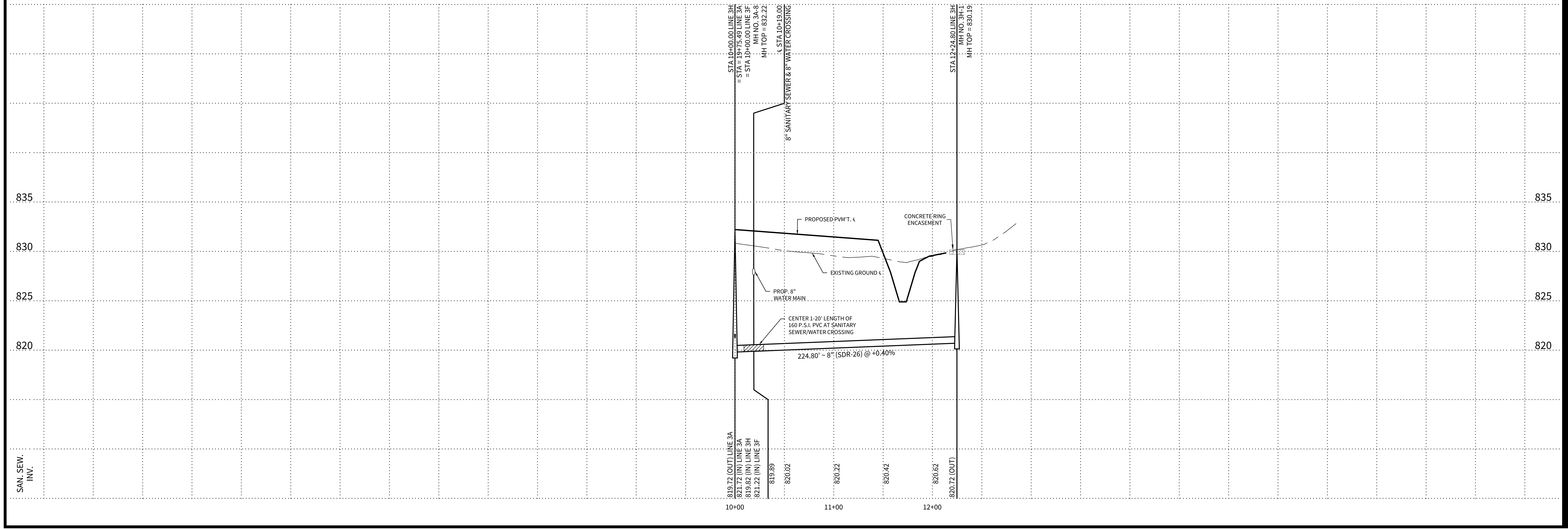
LINE "3H"

STA. 10+00.00 TO STA. 12+24.80

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



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GRACE VALLEY RANCH
PHASE 3A

SANITARY SEWER PLAN AND PROFILE - LINE "3H"

DATE
05/17/2023

PROJECT NO.
03346.006

DRAWN BY
KMH/NNR/MOH/MAS

CHECKED BY
CJC

REVISIONS
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KYLE M. HUDEK
138753
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05/22/2023

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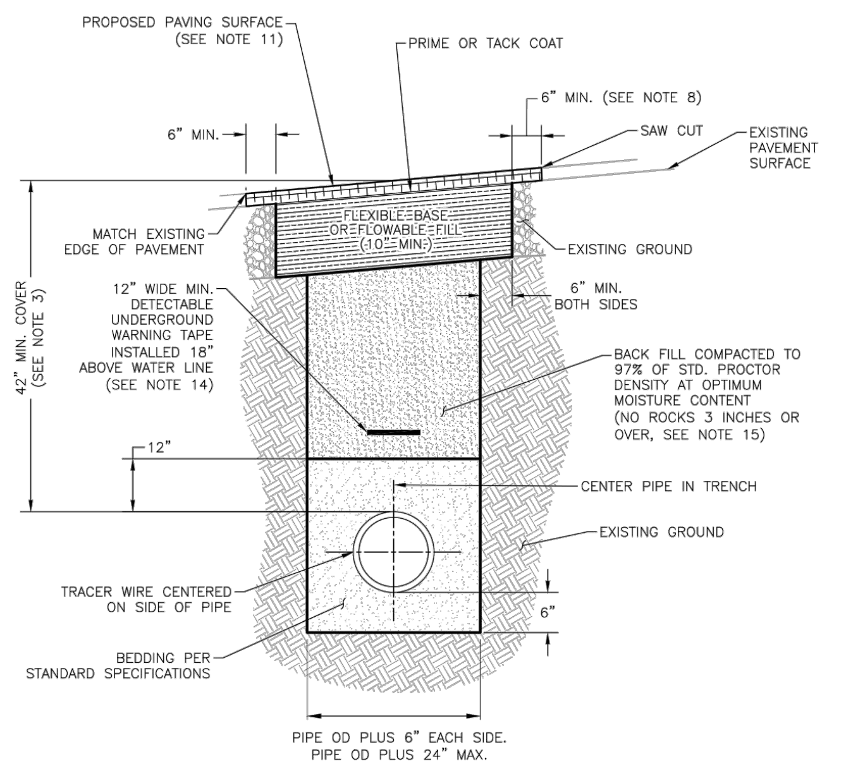
TBPE No. 455
TBPLS No. 10048500

SS9

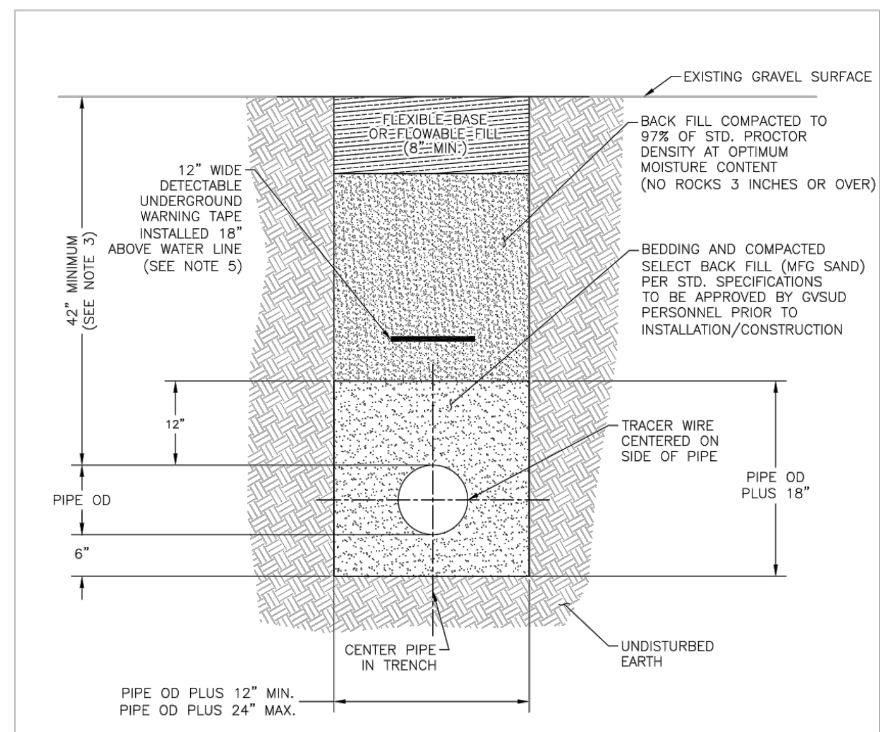

PROPOSED PAVING SURFACE (SEE NOTE 11)
PRIME OR TACK COAT
6" MIN. (SEE NOTE 8)
6" MIN.
SAW CUT
EXISTING PAVEMENT SURFACE
MATCH EXISTING EDGE OF PAVEMENT
FLEXIBLE BASE OR FLOWABLE FILL (10" MIN.)
EXISTING GROUND
42" MIN. COVER (SEE NOTE 3)
12" WIDE MIN. DETECTABLE UNDERGROUND WARNING TAPE INSTALLED 18" ABOVE WATER LINE (SEE NOTE 14)
6" MIN. BOTH SIDES
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
EXISTING GROUND
TRACER WIRE CENTERED ON SIDE OF PIPE
6"
BEDDING PER STANDARD SPECIFICATIONS
PIPE OD PLUS 6" EACH SIDE. PIPE OD PLUS 24" MAX.

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
TRENCH DETAIL FOR PAVED AREAS
(I OF 2)
REVISED: FEBRUARY 2021
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 18 INCHES ABOVE WATER LINE, 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
TRENCH DETAIL FOR PAVED AREAS
(2 OF 2)
REVISED: FEBRUARY 2021
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-1

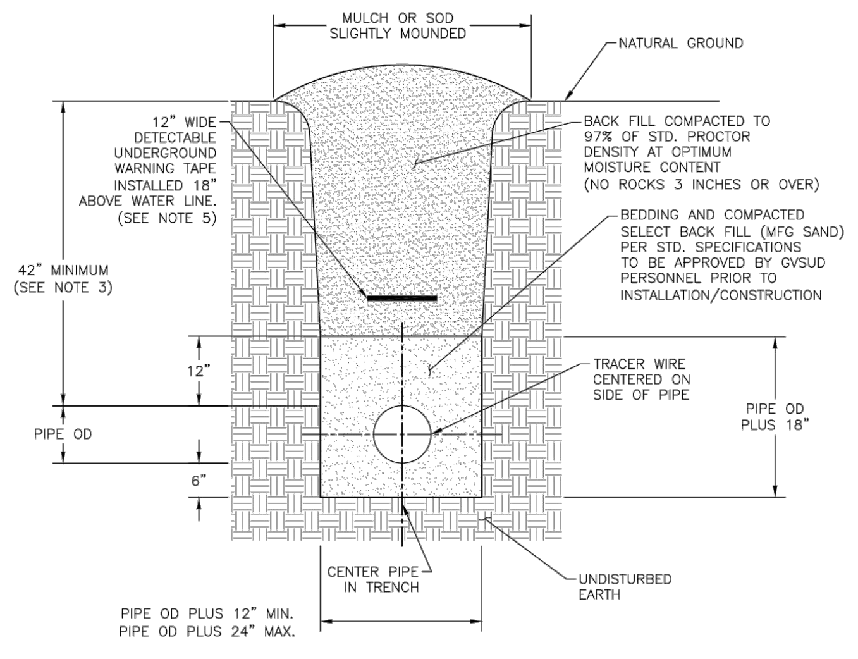

EXISTING GRAVEL SURFACE
FLEXIBLE BASE OR FLOWABLE FILL (8" MIN.)
BACK FILL COMPACTED TO 97% OF STD. PROCTOR DENSITY AT OPTIMUM MOISTURE CONTENT (NO ROCKS 3 INCHES OR OVER)
12" WIDE DETECTABLE UNDERGROUND WARNING TAPE INSTALLED 18" ABOVE WATER LINE (SEE NOTE 5)
42" MINIMUM (SEE NOTE 3)
BEDDING AND COMPACTED SELECT BACK FILL (MFG SAND) PER STD. SPECIFICATIONS TO BE APPROVED BY GVSUD PERSONNEL PRIOR TO INSTALLATION/CONSTRUCTION
12"
TRACER WIRE CENTERED ON SIDE 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 18 INCHES ABOVE WATER LINE, IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS. THE TAPE SHALL CONFORM TO THE SPECIFICATIONS AND COLOR CODED IN ACCORDANCE WITH APWA UNIFORM COLOR CODE.
6. PIPE BEDDING PLACED BEFORE PIPING IS LAID UP TO BOTTOM OF PIPE COMPACTED TO 95% ASHTO DENSITY.
7. PLACE IN 12 INCH LIFTS AFTER PIPE IS LAID TO 12 INCHES ABOVE THE PIPE.
8. SELECT BACKFILL MATERIAL PLACED TO REQUIRED HEIGHT IN 6 INCH LIFTS.

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
TRENCH DETAIL FOR GRAVEL SURFACED AREAS
REVISED: FEBRUARY 2021
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-2

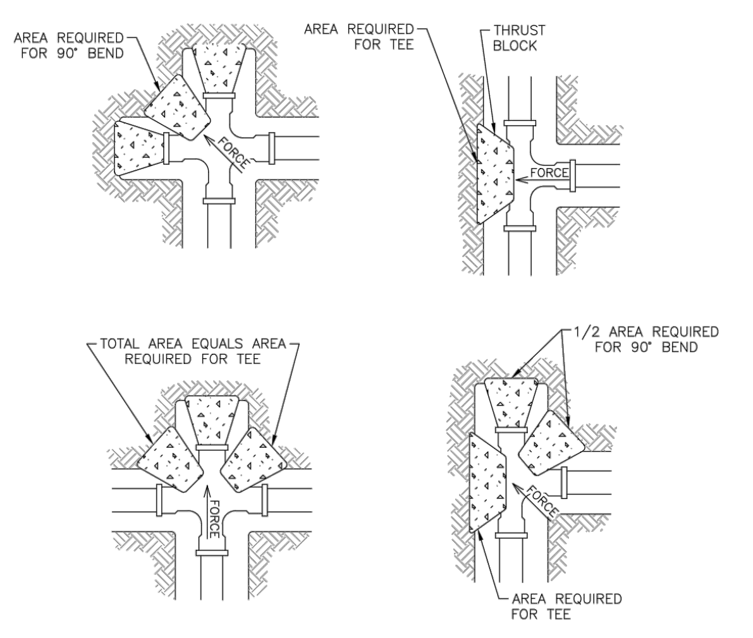

MULCH OR SOD SLIGHTLY MOUNDED
NATURAL GROUND
12" WIDE DETECTABLE UNDERGROUND WARNING TAPE INSTALLED 18" ABOVE WATER LINE. (SEE NOTE 5)
BACK FILL COMPACTED TO 97% OF STD. PROCTOR DENSITY AT OPTIMUM MOISTURE CONTENT (NO ROCKS 3 INCHES OR OVER)
42" MINIMUM (SEE NOTE 3)
BEDDING AND COMPACTED SELECT BACK FILL (MFG SAND) PER STD. SPECIFICATIONS TO BE APPROVED BY GVSUD PERSONNEL PRIOR TO INSTALLATION/CONSTRUCTION
12"
TRACER WIRE CENTERED ON SIDE 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 18 INCHES ABOVE WATER LINE, 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
STANDARD DETAILS
TRENCH DETAIL FOR NON-PAVED AREAS
REVISED: FEBRUARY 2021
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-3

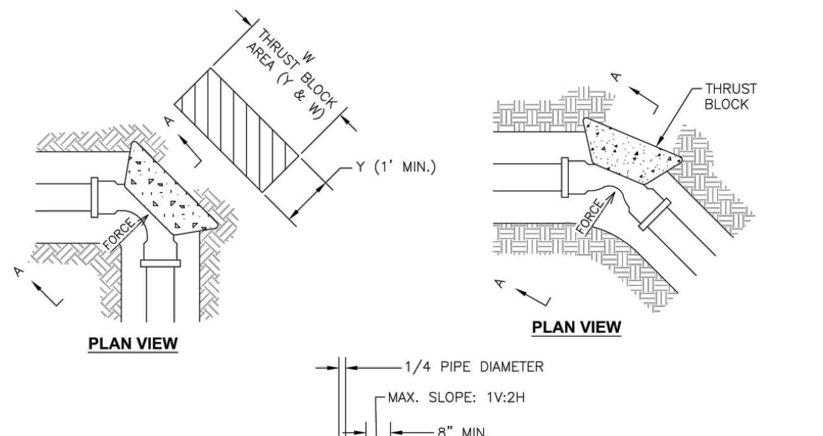

AREA REQUIRED FOR 90° BEND
AREA REQUIRED FOR TEE
THRUST BLOCK
FORCE
TOTAL AREA EQUALS AREA REQUIRED FOR TEE
1/2 AREA REQUIRED FOR 90° BEND
AREA REQUIRED FOR TEE

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:

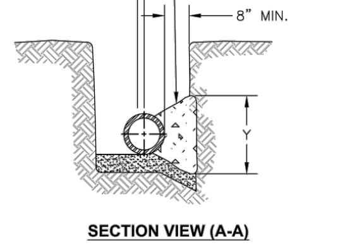
1. TABLE IS BASED ON SOILS WITH A MINIMUM BEARING CAPACITY OF 3,000 PSF. IF CONDITIONS ARE FOUND TO INDICATE SOIL BEARING IS LESS, THE AREAS SHALL BE INCREASED ACCORDINGLY.
2. AREAS FOR PIPE LARGER THAN 18 INCHES SHALL BE RESTRAINED.
3. THRUST BLOCKS SHALL EXTEND TO UNDISTURBED GROUND. CONCRETE SHALL 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
STANDARD DETAILS
CONCRETE THRUST BLOCKING
(1 OF 2)
REVISED: FEBRUARY 2021
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-4



PLAN VIEW

PLAN VIEW



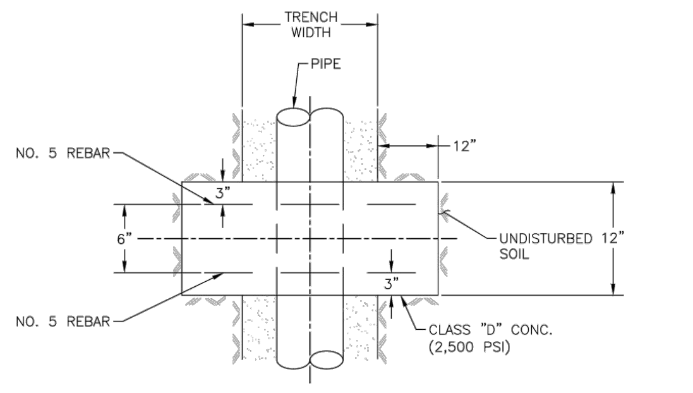
SECTION VIEW (A-A)

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

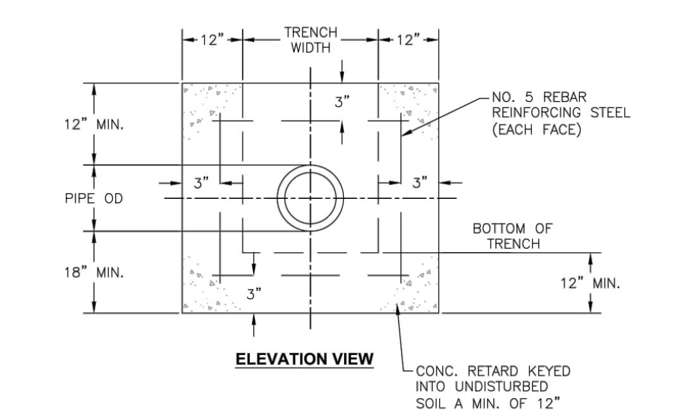
NOTES:

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
STANDARD DETAILS
CONCRETE THRUST BLOCKING
(2 OF 2)
REVISED: FEBRUARY 2021
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-4



PLAN VIEW

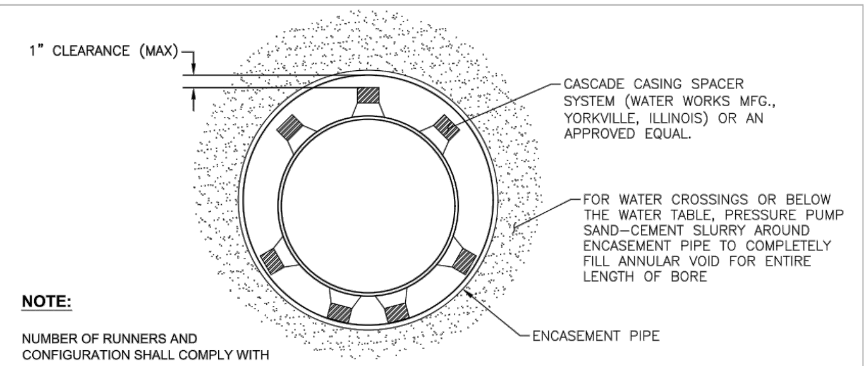

12"
TRENCH WIDTH
12"
12" MIN.
3"
NO. 5 REBAR REINFORCING STEEL (EACH FACE)
PIPE OD
BOTTOM OF TRENCH
18" MIN.
12" MIN.
CONC. RETARD KEYED INTO UNDISTURBED SOIL A MIN. OF 12"

ELEVATION VIEW

NOTES:

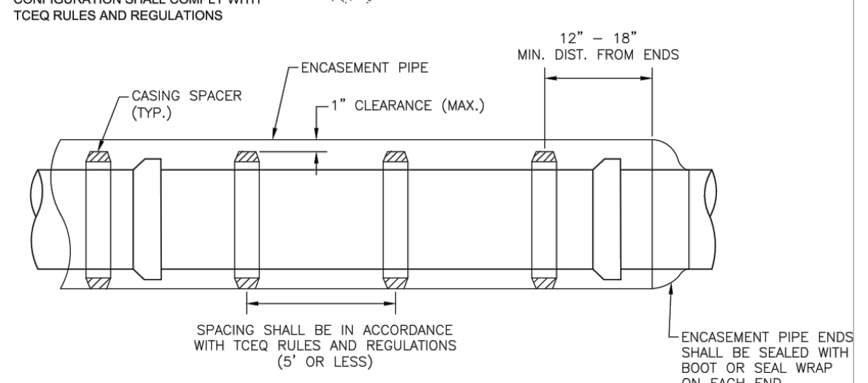
1. TO BE PLACED ON SLOPES GREATER THAN 10% WITH MAXIMUM SPACING OF 20 FEET.
2. WHEN TRENCHING IN ROCK CONDITIONS, WIDTH MAY BE REDUCED FROM 12 INCHES DOWN TO 6 INCHES.

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
CONCRETE RETARD
REVISED: FEBRUARY 2021
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-5


1" CLEARANCE (MAX)
CASCADE CASING SPACER SYSTEM (WATER WORKS MFG., YORKVILLE, ILLINOIS) OR AN APPROVED EQUAL.
FOR WATER CROSSINGS OR BELOW THE WATER TABLE, PRESSURE PUMP SAND-CEMENT SLURRY AROUND ENCASEMENT PIPE TO COMPLETELY FILL ANNULAR VOID FOR ENTIRE LENGTH OF BORE
ENCASEMENT PIPE

NOTE:

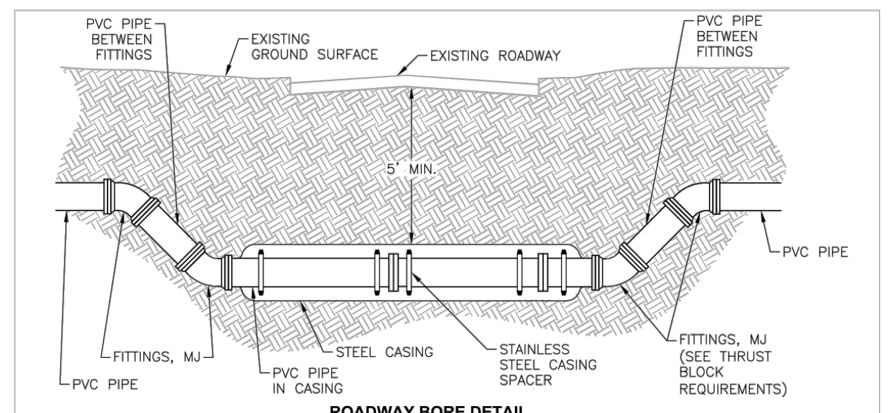
NUMBER OF RUNNERS AND CONFIGURATION SHALL COMPLY WITH TCEQ RULES AND REGULATIONS


12" – 18" MIN. DIST. FROM ENDS
ENCASEMENT PIPE
CASING SPACER (TYP.)
1" CLEARANCE (MAX.)
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

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.

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
ENCASEMENT DETAIL WITH ENCASEMENT SPACERS
REVISED: FEBRUARY 2021
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

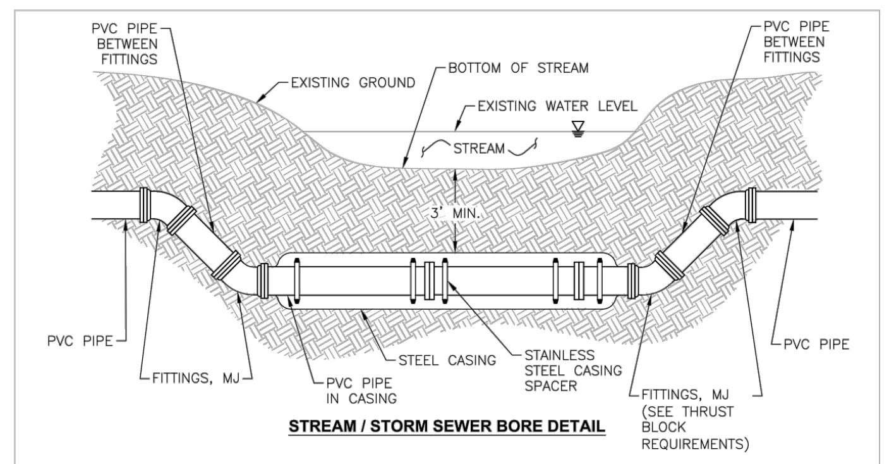
ROADWAY BORE DETAIL

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 5 SPACERS ARE REQUIRED. FOR A PIPE 13 FEET IN LENGTH, A MINIMUM OF 3 SPACERS ARE REQUIRED.
3. 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.
3. FOR ROAD WAY CROSSINGS, THE ENDS OF THE CASING PIPE SHALL EXTEND TO THE RIGHT OF WAY LINES.
4. ALL PIPE FITTINGS, VALVES, AND APPURTENANCES SHALL MATCH OR EXCEED CLASS RATING OF PIPE AS SHOWN ON THE PLANS.
5. SEE ENCASEMENT DETAIL WITH ENCASEMENT SPACER DETAIL W-6.

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
STANDARD DETAILS
INSTALLATION OF PIPE IN STEEL ENCASEMENT UNDER ROADS
REVISED: FEBRUARY 2021
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-7


PVC PIPE BETWEEN FITTINGS
EXISTING GROUND
BOTTOM OF STREAM
EXISTING WATER LEVEL
STREAM
PVC PIPE BETWEEN FITTINGS
3' MIN.
PVC PIPE
FITTINGS, MJ
STEEL CASING
STAINLESS STEEL CASING SPACER
PVC PIPE IN CASING
FITTINGS, MJ (SEE THRUST BLOCK REQUIREMENTS)
PVC PIPE

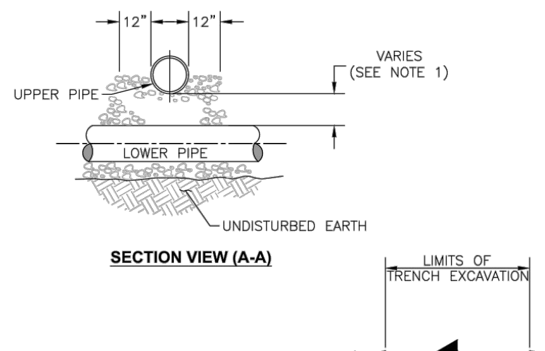
STREAM / STORM SEWER BORE DETAIL

NOTES:

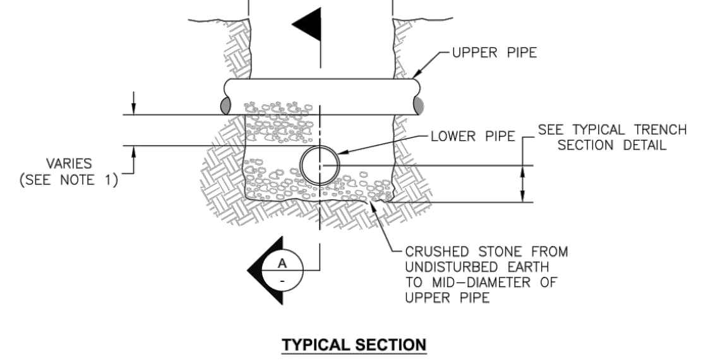
1. ALL PIPE IN ENCASEMENT PIPE SHALL BE RESTRAINED WITH AN APPROVED METHOD FOR ENTIRE LENGTH OF THE ENCASEMENT PIPE PLUS 10 FEET ON EACH SIDE.
2. FOR A PIPE 20 FEET IN LENGTH, A MINIMUM OF 5 SPACERS ARE REQUIRED. FOR A PIPE 13 FEET IN LENGTH, A MINIMUM OF 3 SPACERS ARE REQUIRED.
3. AT ANY CREEK CROSSING 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.
4. SEE ENCASEMENT DETAIL WITH ENCASEMENT SPACER DETAIL W-6.
5. ANNULAR SPACE TO BE FILLED WITH SAND-CEMENT SLURRY.
6. 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
STANDARD DETAILS
INSTALLATION OF PIPE IN STEEL ENCASEMENT UNDER STREAMS / STORM SEWERS
REVISED: FEBRUARY 2021
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-8



SECTION VIEW (A-A)

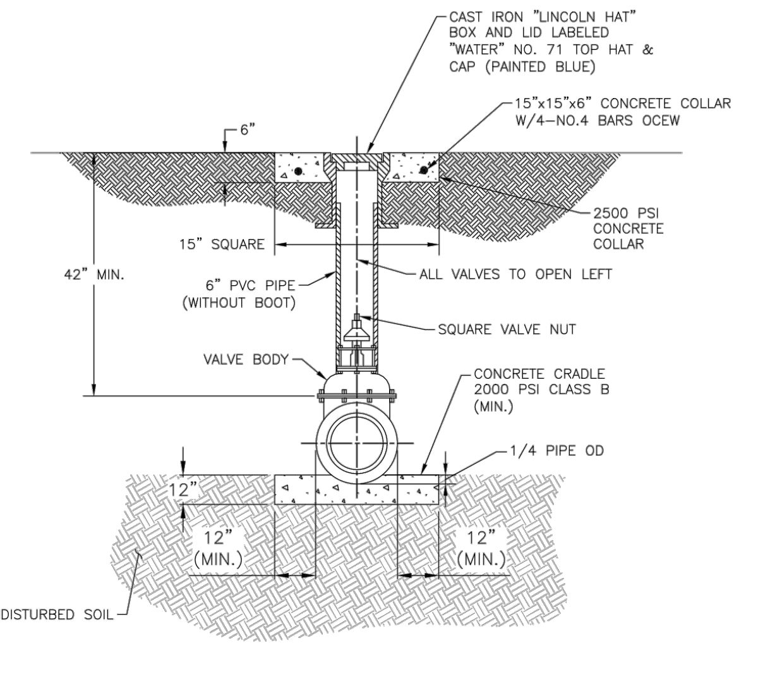

LIMITS OF TRENCH EXCAVATION
UPPER PIPE
LOWER PIPE
SEE TYPICAL TRENCH SECTION DETAIL
VARIES (SEE NOTE 1)
A
CRUSHED STONE FROM UNDISTURBED EARTH TO MID-DIAMETER OF UPPER PIPE

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.

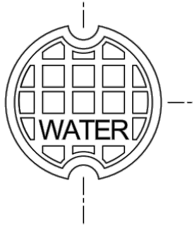
GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
UTILITIES CROSSING DETAIL
REVISED: FEBRUARY 2021
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-10


CAST IRON "LINCOLN HAT" BOX AND LID LABELED "WATER" NO. 71 TOP HAT & CAP (PAINTED BLUE)
15"x15"x6" CONCRETE COLLAR W/4-NO.4 BARS OCEW
6"
2500 PSI CONCRETE COLLAR
15" SQUARE
42" MIN.
6" PVC PIPE (WITHOUT BOOT)
ALL VALVES TO OPEN LEFT
SQUARE VALVE NUT
VALVE BODY
CONCRETE CRADLE 2000 PSI CLASS B (MIN.)
1/4 PIPE OD
12"
12" (MIN.)
12" (MIN.)
UNDISTURBED SOIL

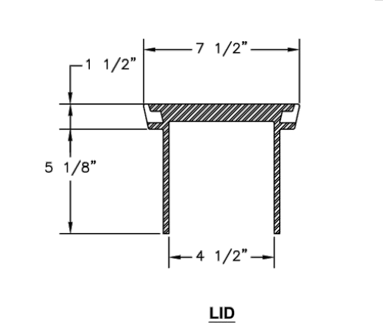
NOTES:

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.

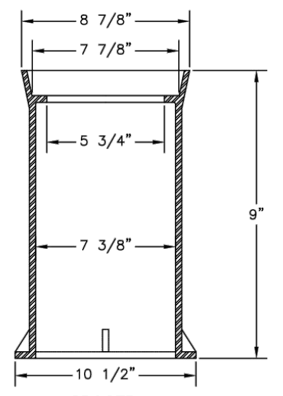
GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
RISING STEM VERTICAL GATE VALVE WITH BOX ASSEMBLY
REVISED: FEBRUARY 2021
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-11



PLAN VIEW



LID
ELEVATION VIEW

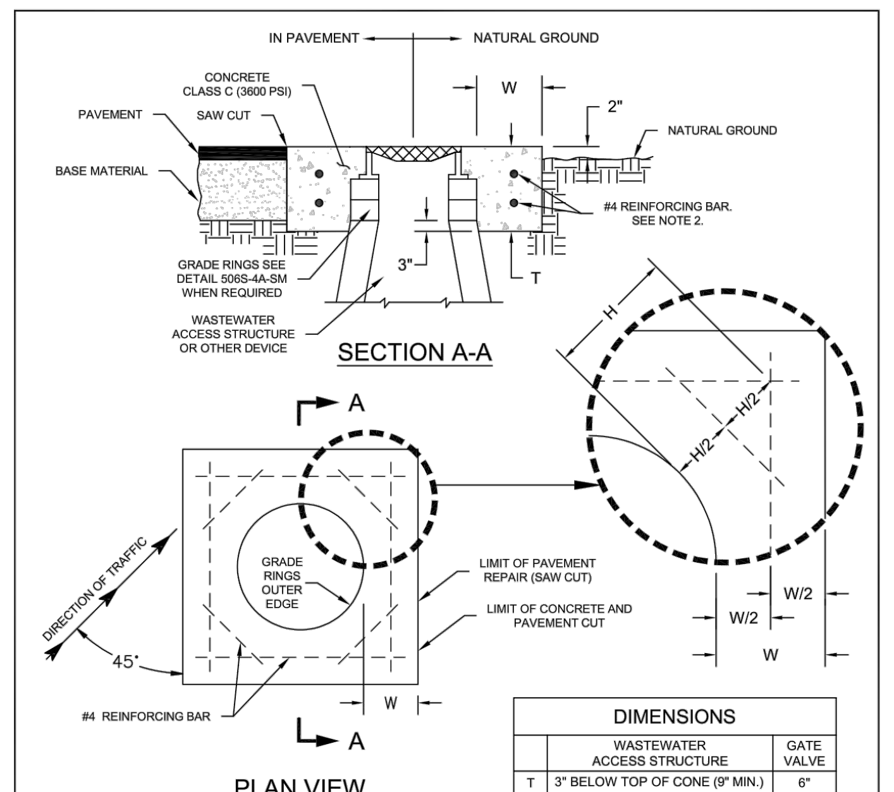


SPACER
ELEVATION VIEW

NOTES:

1. VALVE BOXES SHALL BE SIP INDUSTRIES SAN ANTONIO VBX EQ. #71, OR APPROVED EQUIVALENT.
2. TYPICAL FILLET IS 3/16 INCH RADIUS.
3. LETTERING SHALL BE 1 1/2 INCH HEIGHT 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.
8. WEIGHT: APPROXIMATELY 13 LBS.

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
VALVE BOX CASTING LID
REVISED: FEBRUARY 2021
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-12


IN PAVEMENT
NATURAL GROUND
CONCRETE CLASS C (3600 PSI)
PAVEMENT
SAW CUT
W
2"
NATURAL GROUND
BASE MATERIAL
#4 REINFORCING BAR. SEE NOTE 2.
3"
T
GRADE RINGS SEE DETAIL 506S-4A-SM WHEN REQUIRED
WASTEWATER ACCESS STRUCTURE OR OTHER DEVICE

SECTION A-A

A
H
H/2
H/2
DIRECTION OF TRAFFIC
45°
GRADE RINGS OUTER EDGE
LIMIT OF PAVEMENT REPAIR (SAW CUT)
LIMIT OF CONCRETE AND PAVEMENT CUT
W/2
W/2
W
W
#4 REINFORCING BAR
A

PLAN VIEW

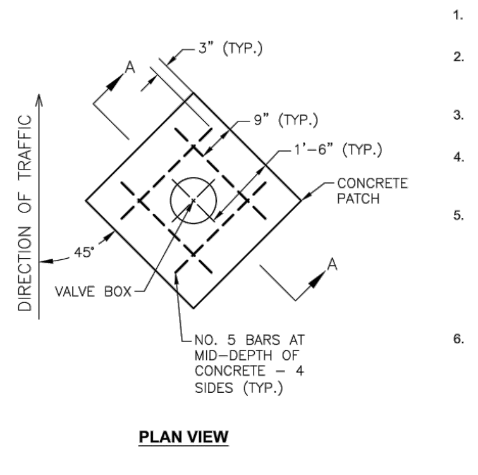
DIMENSIONS		
	WASTEWATER ACCESS STRUCTURE	GATE VALVE
T	3" BELOW TOP OF CONE (9" MIN.)	6"
W	12"	8"

NOTES:

1. THE CONCRETE COLLAR SHALL BE REINFORCED WITH #4 BARS AS SHOWN. THE CONCRETE SHALL EXTEND TO EDGE OF SAW CUT PAVEMENT EDGE.
2. REBAR WILL BE PLACED IN TWO LAYERS. FIRST LAYER (1/3 T) FROM TOP OF COLLAR AND SECOND LAYER (⅔ T) FROM TOP OF COLLAR. IF (T) IS 12" OR LESS ONE LAYER OF REBAR WILL BE USED, PLACED MID POINT BETWEEN TOP AND BOTTOM OF COLLAR.
3. REQUIREMENTS FOR NEW MANHOLE CONSTRUCTION AND MINOR MANHOLE ADJUSTMENTS IN NEW RECONSTRUCTION AND REAPING PROJECTS ARE INCLUDED IN DETAIL NO. 506S-3-SM, 506S-8-SM, 506S-8A-SM AND 506S-10-SM.
4. REFER TO TRENCH DETAIL FOR ADDITIONAL BACKFILL REQUIREMENTS WITH APPROPRIATE CONDITIONS.
5. BOLLARDS REQUIRED IN RURAL AREAS AS OUTLINED IN COSM DETAIL 500S-B-SM

REFERENCES
DETAIL 500S-B-SM

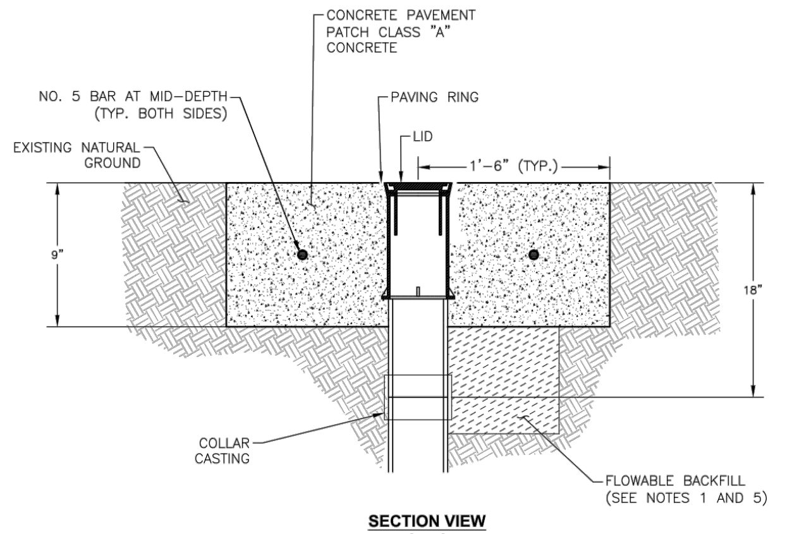
GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
CONCRETE RISER COLLAR
ADOPTED MARCH 2023
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
STANDARD NO. W-13E
1 OF 1



PLAN VIEW

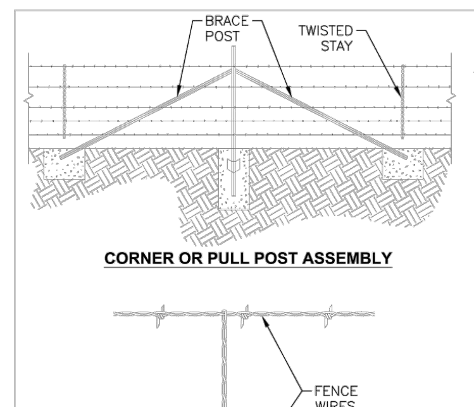
NOTES:

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. REMOVE 18 INCHES OF EXISTING RISER PIPE AND REPLACE TO THE NEW ELEVATION USING NEW ADJUSTABLE PIPE AND A CASTING.
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.

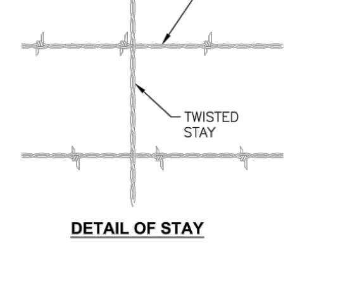

CONCRETE PAVEMENT PATCH CLASS "A" CONCRETE
NO. 5 BAR AT MID-DEPTH (TYP. BOTH SIDES)
PAVING RING
LID
EXISTING NATURAL GROUND
1'-6" (TYP.)
9"
18"
COLLAR CASTING
FLOWABLE BACKFILL (SEE NOTES 1 AND 5)

SECTION VIEW
(A-A)

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
VALVE BOX ADJUSTMENT OUTSIDE OF PAVEMENT
REVISED: FEBRUARY 2021
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-14



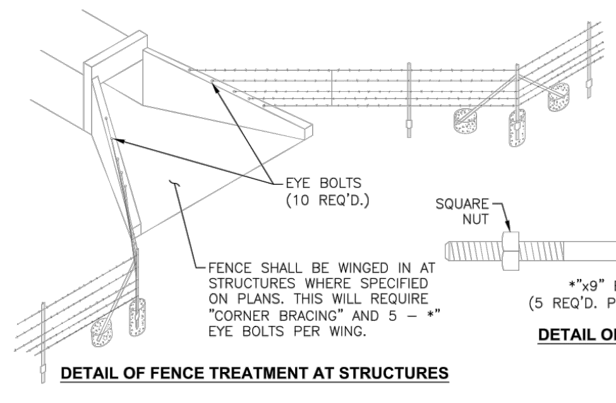
CORNER OR PULL POST ASSEMBLY



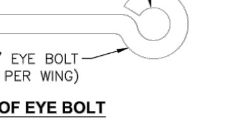
DETAIL OF STAY

NOTES:

1. ANY HIGH POINT WHICH INTERFERES WITH THE PLACING OF WIRE MESH SHALL BE EXCAVATED TO PROVIDE A 2 INCH CLEARANCE.
2. LATCHES FOR TYPE 1 AND TYPE 2 GATES SHALL BE OF THE SPRING, FORK, OR CHAIN TYPE.
3. CONCRETE SHALL BE OF THE DESIGN AND CONSISTENCY APPROVED BY THE ENGINEER AND SHALL CONTAIN NOT LESS THAN 4 SACKS OF CEMENT PER CUBIC YARD.
4. ANCHOR PLATES SHALL BE OF A DESIGN AND THICKNESS SUFFICIENT TO PREVENT TURNING OF THE POST IN FIRM SOIL. METAL END, CORNER, AND PULL POST SHALL BE A MINIMUM OF 2 INCH INSIDE DIAMETER PIPE (3.65 LBS./L.F.), WITH A 1 INCH INSIDE DIAMETER PIPE BRACE (2.27 LBS./L.F.), 2"x2 "x," ANGLE (4.1 LBS./LIN.FT.) 2"x2"x," ANGLE BRACE (3.19 LBS./LIN.FT.) OR OTHER SECTION APPROVED BY THE ENGINEER. FASTENERS FOR SECURING BARBED WIRE OR WIRE MESH TO METAL POSTS SHALL BE A MINIMUM OF 11 GAUGE GALVANIZED STEEL WIRE. TUBULAR POSTS SHALL BE FITTED WITH WATER TIGHT MALLEABLE IRON CAPS.
5. METAL LINE POSTS SHALL BE NOT LESS THAN 6'-6" IN LENGTH AND SHALL WEIGH NOT LESS THAN 1.33 LBS./L.F.

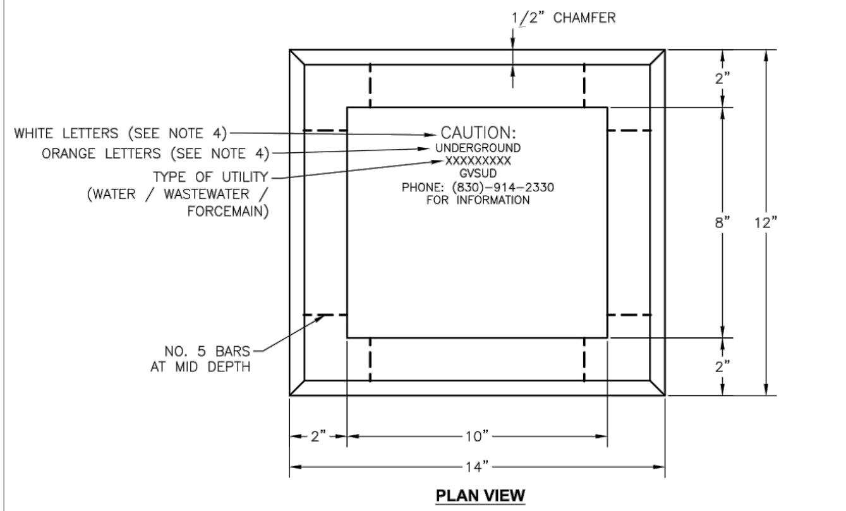

EYE BOLTS (10 REQ'D.)
FENCE SHALL BE WINGED IN AT STRUCTURES WHERE SPECIFIED ON PLANS. THIS WILL REQUIRE "CORNER BRACING" AND 5 – *" EYE BOLTS PER WING.

DETAIL OF FENCE TREATMENT AT STRUCTURES



DETAIL OF EYE BOLT

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
BARBED WIRE FENCE AND WOVEN WIRE FENCE WITH STEEL POSTS
(2 OF 2)
REVISED: FEBRUARY 2021
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-15

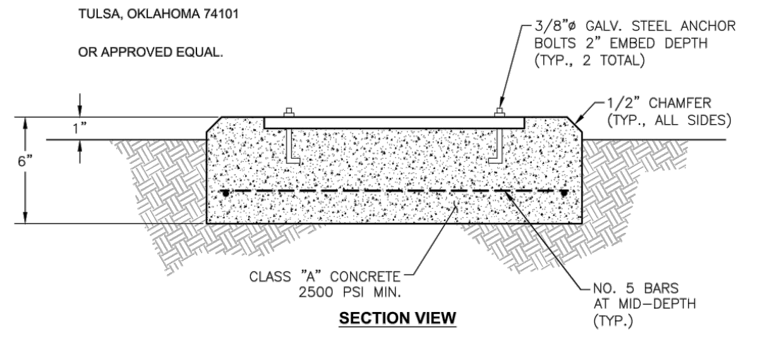


PLAN VIEW

NOTES:

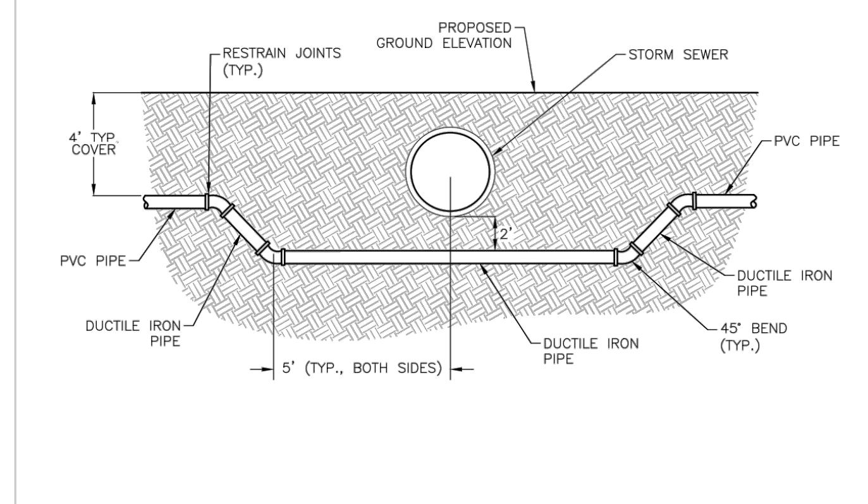
1. MARKERS SHALL BE PLACED AT VALVES, AIR VALVES, AND ACCESS PORTS.
2. PLACE WATER/WASTEWATER LINE MARKERS AT EVERY FENCE, ROAD CROSSING, AND AT 500' INTERVALS ALONG THE PIPELINE.
3. SIGNS SHALL BE 20 GA. WITH BLACK BACKGROUND FINISH.
4. LETTERS USED FOR "CAUTION" SHALL BE WHITE. ALL REMAINING LETTERS 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
STANDARD DETAILS
UTILITY MARKER DETAIL
REVISED: FEBRUARY 2021
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-16



NOTES:

1. MAINTAIN 24 INCH (MIN.) SEPARATION FROM STORM SEWER LINE.
2. 45° BENDS MUST BE THRUST BLOCKED AND RESTRAINED AT BOTTOM BENDS. SEE STANDARD DETAIL.

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
STORM SEWER CROSSING
REVISED: FEBRUARY 2021
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-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 3A

WATER DISTRIBUTION STANDARD DETAILS

DATE
05/22/2023

PROJECT NO.
03346.006

DRAWN BY
KMH/NNR/MOH/MAS

CHECKED BY
CJC

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

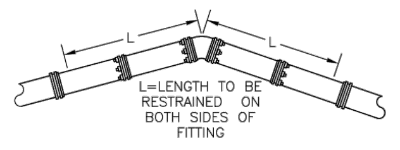
KYLE M. HUDEK
138753
05/22/2023
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

W1

1 OF 4

P:\03346\006\2-Drawings\07_WDDP.dwg 2023/05/22 3:11pm msandoval

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.



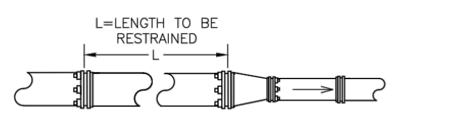
RESTRAINED LENGTH FOR BENDS

PIPE SIZE (INCHES)	BEND ANGLE (DEG)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 PSI	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 150 PSI
6	90	23	17
6	45	9	7
6	22.5	5	3
6	11.25	2	2
8	90	30	22
8	45	12	9
8	22.5	6	4
8	11.25	3	2
12	90	43	32
12	45	18	13
12	22.5	8	6
12	11.25	4	3
16	90	63	47
16	45	26	20
16	22.5	13	10
16	11.25	7	5
24	90	85	64
24	45	35	27
24	22.5	17	13
24	11.25	9	7

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. ALL JOINTS WITHIN THE RESTRAINED LENGTH SHALL BE RESTRAINED.

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
BEND RESTRAINED LENGTH DESIGN
REVISED: FEBRUARY 2021
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-18



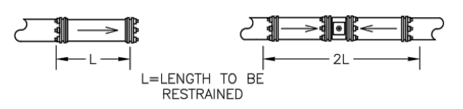
RESTRAINED LENGTH FOR REDUCERS

PIPE SIZE (INCHES)	SMALL SIZE (INCHES)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 PSI	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 150 PSI
6	4	30	23
8	4	55	42
8	6	32	24
12	4	95	71
12	6	80	60
12	8	58	43
16	4	131	98
16	6	120	90
16	8	104	78
16	12	60	45
24	16	110	83

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. ALL JOINTS WITHIN THE RESTRAINED LENGTH SHALL BE RESTRAINED.

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
REDUCER RESTRAINED LENGTH DESIGN
REVISED: FEBRUARY 2021
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-19



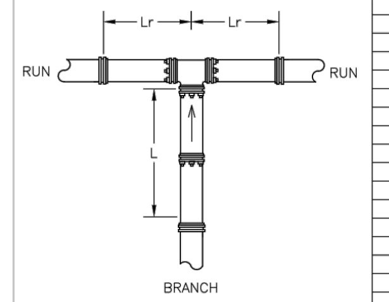
RESTRAINED LENGTH FOR DEAD ENDS/INLINE VALVES

PIPE SIZE (INCHES)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 PSI	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 150 PSI
4	42	32
6	59	44
8	77	58
12	109	82
16	142	106
24	202	151

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. ALL JOINTS WITHIN THE RESTRAINED LENGTH SHALL BE RESTRAINED.

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
VALVE AND DEAD END RESTRAINED LENGTH DESIGN
REVISED: FEBRUARY 2021
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-20



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

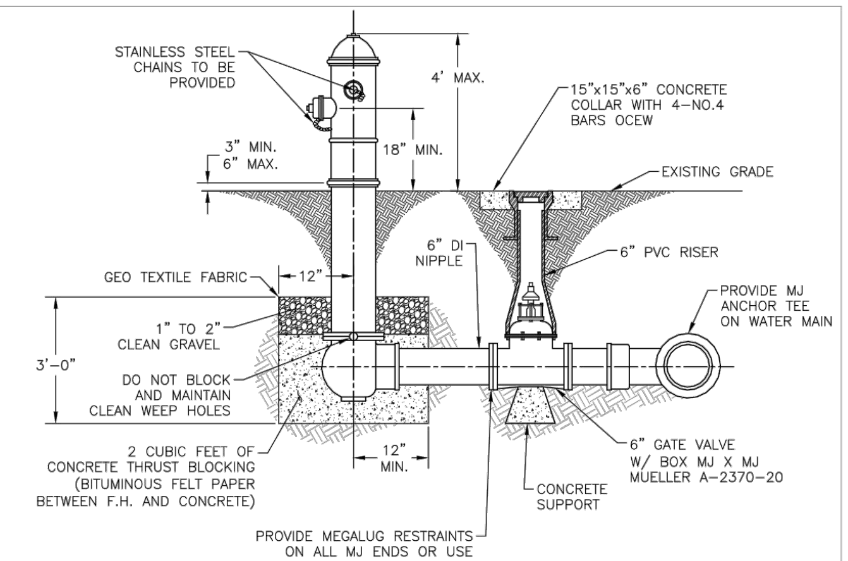
RESTRAINED LENGTH FOR TEES

PIPE SIZE (INCHES)	BRANCH SIZE (INCHES)	LENGTH OF RUN (FEET)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 PSI	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 150 PSI
6	4	0	42	31
6	4	5	7	1
6	4	10	1	1
6	6	0	59	44
6	6	5	35	20
6	6	10	11	1
8	4	0	42	31
8	4	5	1	1
8	6	0	59	44
8	6	5	28	13
8	6	10	1	1
8	8	0	77	58
8	8	5	53	34
8	8	10	30	11
8	8	15	6	1
12	4	0	42	31
12	4	5	1	1
12	6	0	59	44
12	6	5	13	1
12	6	10	1	1
12	8	0	77	58
12	8	5	42	23
12	8	10	7	1
12	8	15	1	1
12	12	0	109	82
12	12	5	86	59
12	12	10	63	35
12	12	15	39	12
16	4	0	42	32
16	4	5	1	1
16	6	0	59	44
16	6	5	1	1
16	8	0	78	58
16	8	5	39	20
16	8	10	1	1
16	12	0	110	83
16	12	5	84	57
16	12	10	59	31
16	12	15	33	6
16	12	20	7	1
16	16	0	142	106
16	16	5	123	87
16	16	10	104	68
16	16	15	85	49
16	16	20	65	30
24	24	5	169	119
24	24	10	136	86
24	24	15	103	53
24	24	20	70	20

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. ALL JOINTS WITHIN THE RESTRAINED LENGTH SHALL BE RESTRAINED.

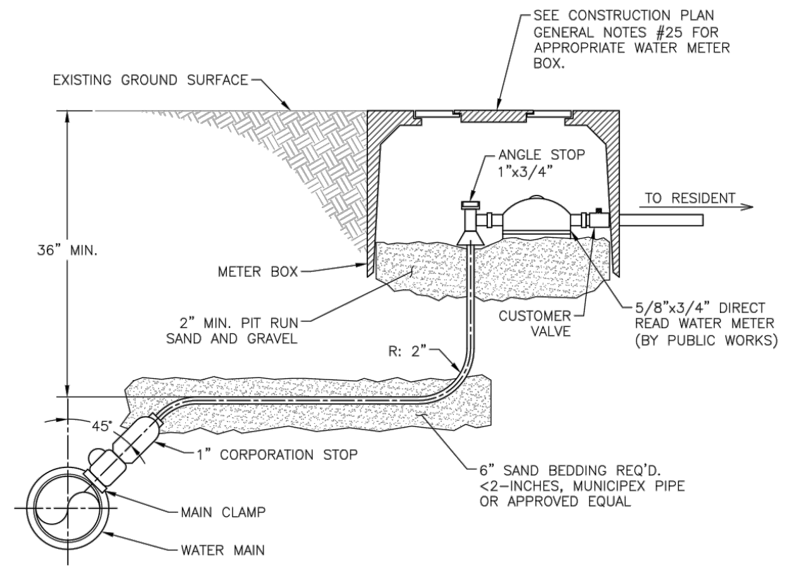
GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
TEE RESTRAINED LENGTH DESIGN
REVISED: FEBRUARY 2021
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-21


STAINLESS STEEL CHAINS TO BE PROVIDED
4' MAX.
15"x15"x6" CONCRETE COLLAR WITH 4-NO.4 BARS OCEW
3" MIN. 6" MAX.
18" MIN.
EXISTING GRADE
6" DI NIPPLE
6" PVC RISER
GEO TEXTILE FABRIC
12"
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)
12" MIN.
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 ROW 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. 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 EXTENSIONS ARE REQUIRED ON ALL VALVES THAT EXCEED 3 FEET DEEP FROM FINISHED GRADE. VALVE EXTENSIONS SHALL BE PLACED SO THAT THE EXTENSION NUT IS BETWEEN 18 AND 24 INCHES FROM FINISHED GRADE.
7. VALVE, DUCTILE IRON PIPE, AND STANDARD FIRE HYDRANT SYSTEM SHALL BE RESTRAINT JOINT CONTINUOUSLY TOGETHER.
8. FIRE HYDRANT SHALL BE AN MUELLER 6 INCH (3) WAY HYDRANT WITH BREAK AWAY BOLTS (SHOE TYPES) PROVIDED WITH STORZ CONNECTION. DEPTH OF BURY SHALL BE 42 INCHES MINIMUM. WITH A MINIMUM OF ONE CUBIC FOOT OF GRAVEL PLACED AROUND FIRE HYDRANT WEEP HOLES. FIRE HYDRANTS MUST BE SET PLUMB. HOSE CONNECTION MUST FACE ROADWAY.
9. HYDRANT ASSEMBLY SHALL BE RESTRAINED FROM TEE TO HYDRANT.
10. 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.

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
STANDARD HYDRANT ASSEMBLY INSTALLATION
REVISED: FEBRUARY 2021
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-22


SEE CONSTRUCTION PLAN GENERAL NOTES #25 FOR APPROPRIATE WATER METER BOX.
EXISTING GROUND SURFACE
ANGLE STOP 1"x3/4"
TO RESIDENT
36" MIN.
METER BOX
2" MIN. PIT RUN SAND AND GRAVEL
CUSTOMER VALVE
5/8"x3/4" DIRECT READ WATER METER (BY PUBLIC WORKS)
R: 2"
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"	S-91804 IP	H-15028 IP 1"	H-14258: 1"x 3/4"

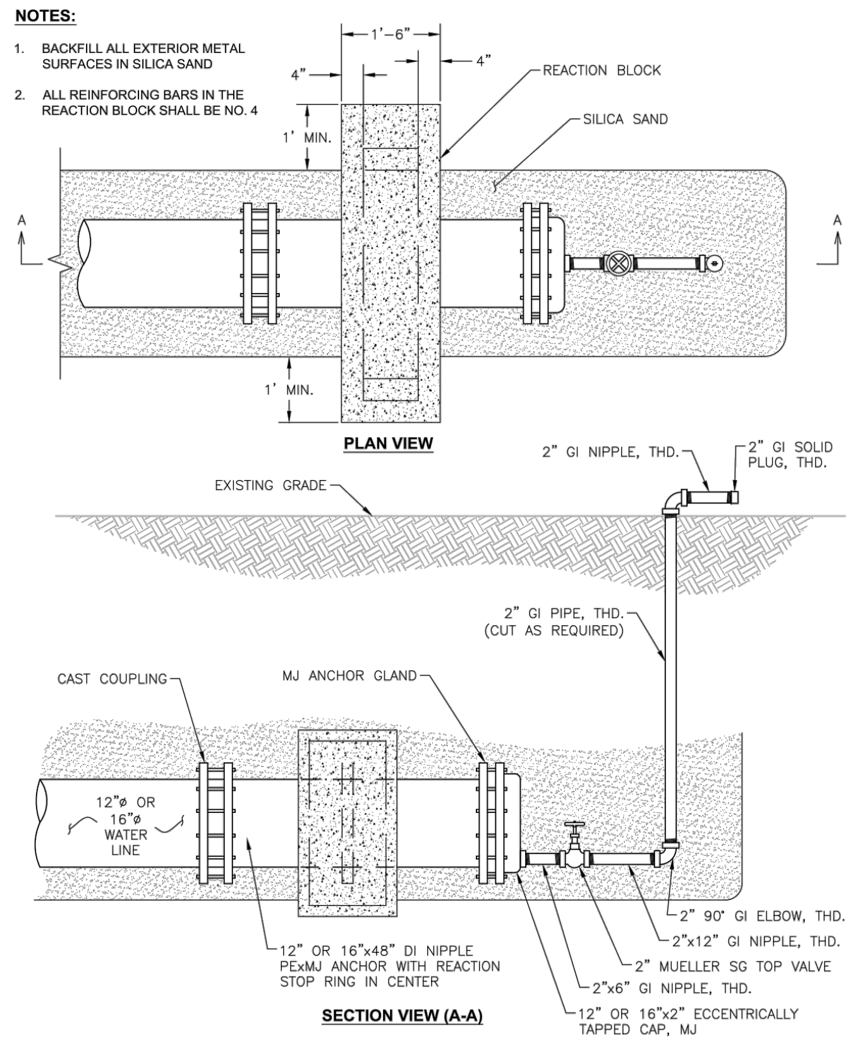
NOTES:

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

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
STANDARD SERVICE CONNECTION
REVISED: FEBRUARY 2021
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-23

NOTES:

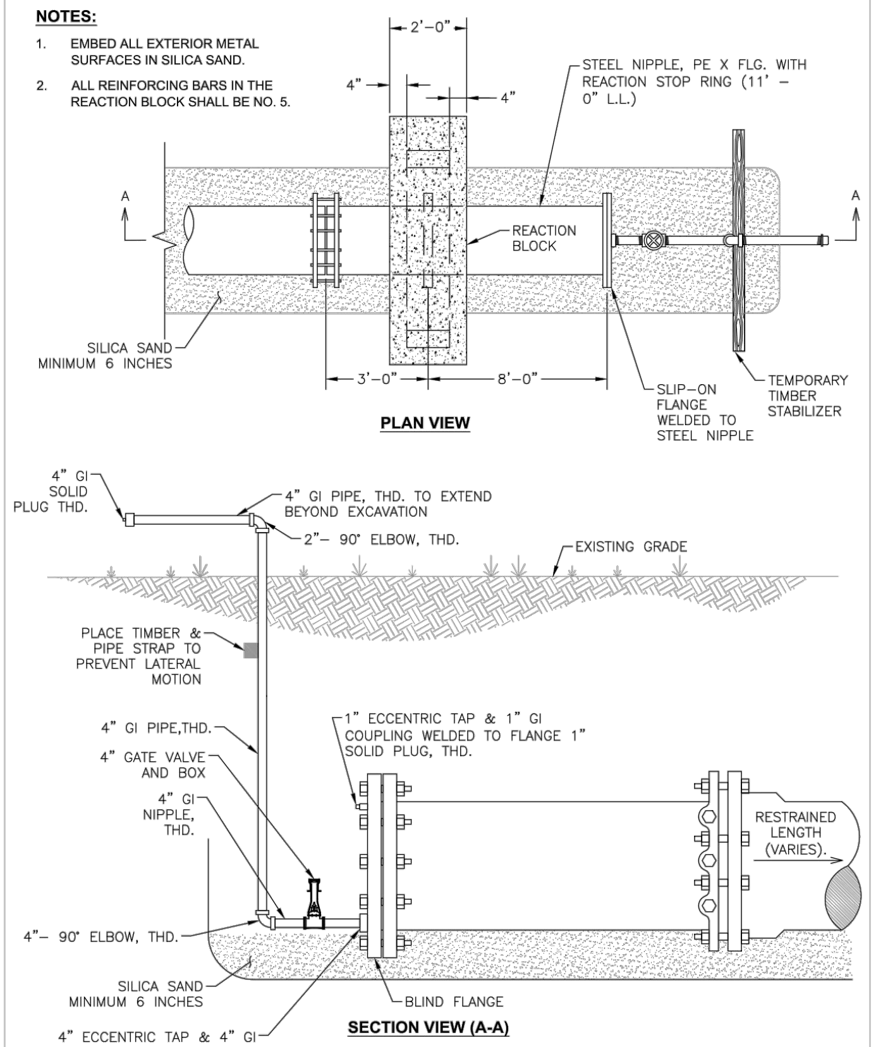
1. BACKFILL ALL EXTERIOR METAL SURFACES IN SILICA SAND
2. ALL REINFORCING BARS IN THE REACTION BLOCK SHALL BE NO. 4



GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
2" TEMPORARY BLOW-OFF ASSEMBLY ON 12" TO 16" MAINS
REVISED: FEBRUARY 2021
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-25

NOTES:

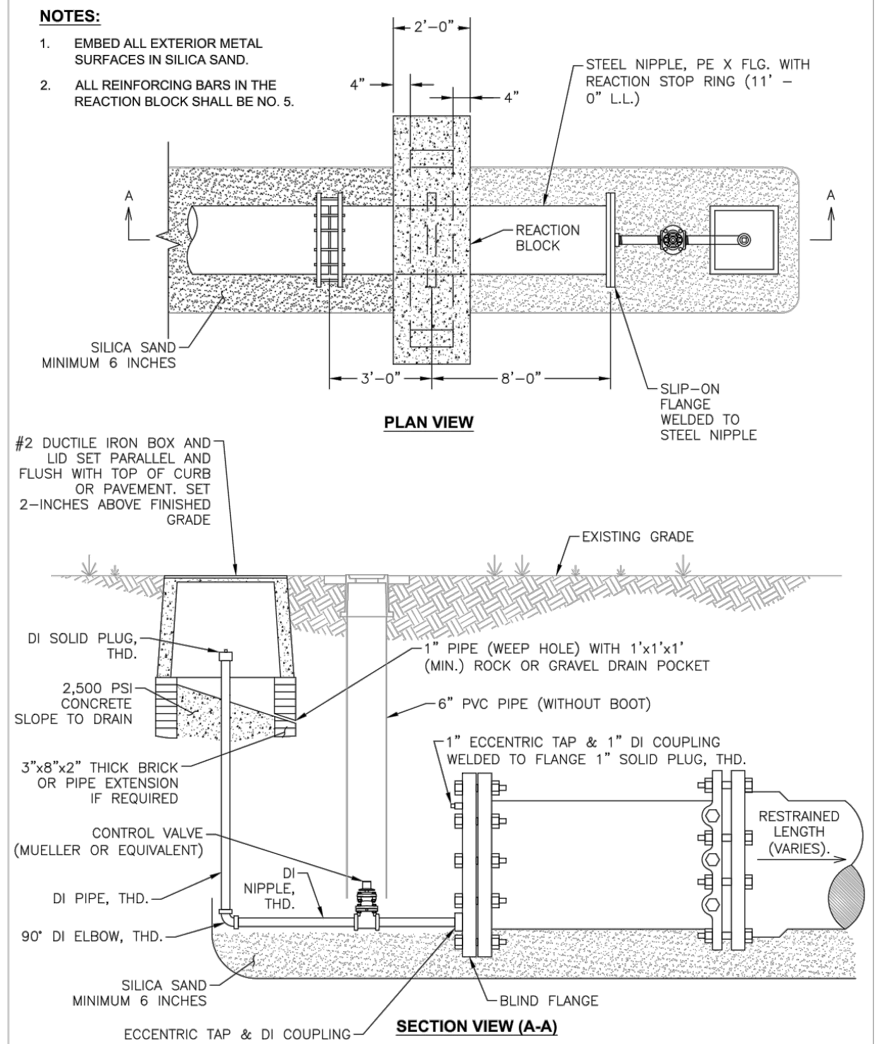
1. EMBED ALL EXTERIOR METAL SURFACES IN SILICA SAND.
2. ALL REINFORCING BARS IN THE REACTION BLOCK SHALL BE NO. 5.


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 SOLID PLUG THD.
4" GI PIPE, THD. TO EXTEND BEYOND EXCAVATION
2"– 90° ELBOW, THD.
EXISTING GRADE
PLACE TIMBER & PIPE STRAP TO PREVENT LATERAL MOTION
4" GI PIPE,THD.
4" GATE VALVE AND BOX
4" GI NIPPLE, THD.
1" ECCENTRIC TAP & 1" GI COUPLING WELDED TO FLANGE 1" SOLID PLUG, THD.
RESTRAINED LENGTH (VARIES).
4"– 90° ELBOW, THD.
SILICA SAND MINIMUM 6 INCHES
BLIND FLANGE
4" ECCENTRIC TAP & 4" GI COUPLING WELDED TO FLANGE
SECTION VIEW (A-A)

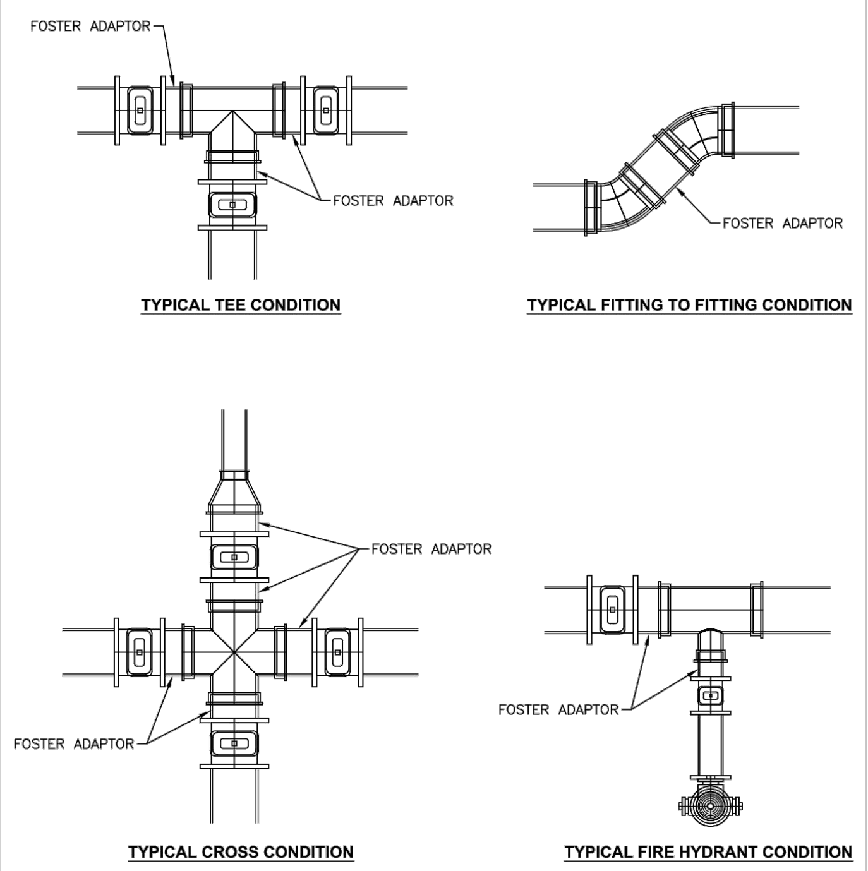
GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
4" TEMPORARY BLOW-OFF ASSEMBLY ON 20" OR LARGER MAINS (JOINT RESTRAINT)
REVISED: FEBRUARY 2021
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-26

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.
1" PIPE (WEEP HOLE) WITH 1'x1'x1' (MIN.) ROCK OR GRAVEL DRAIN POCKET
2,500 PSI CONCRETE SLOPE TO DRAIN
6" PVC PIPE (WITHOUT BOOT)
3"x8"x2" THICK BRICK OR PIPE EXTENSION IF REQUIRED
1" ECCENTRIC TAP & 1" DI COUPLING WELDED TO FLANGE 1" SOLID PLUG, THD.
CONTROL VALVE (MUELLER OR EQUIVALENT)
RESTRAINED LENGTH (VARIES).
DI NIPPLE, THD.
DI PIPE, THD.
90° DI ELBOW, THD.
SILICA SAND MINIMUM 6 INCHES
BLIND FLANGE
ECCENTRIC TAP & DI COUPLING WELDED TO FLANGE
SECTION VIEW (A-A)

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
2" & 4" PERMANENT URBAN BLOW-OFF ASSEMBLY
REVISED: FEBRUARY 2021
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-28

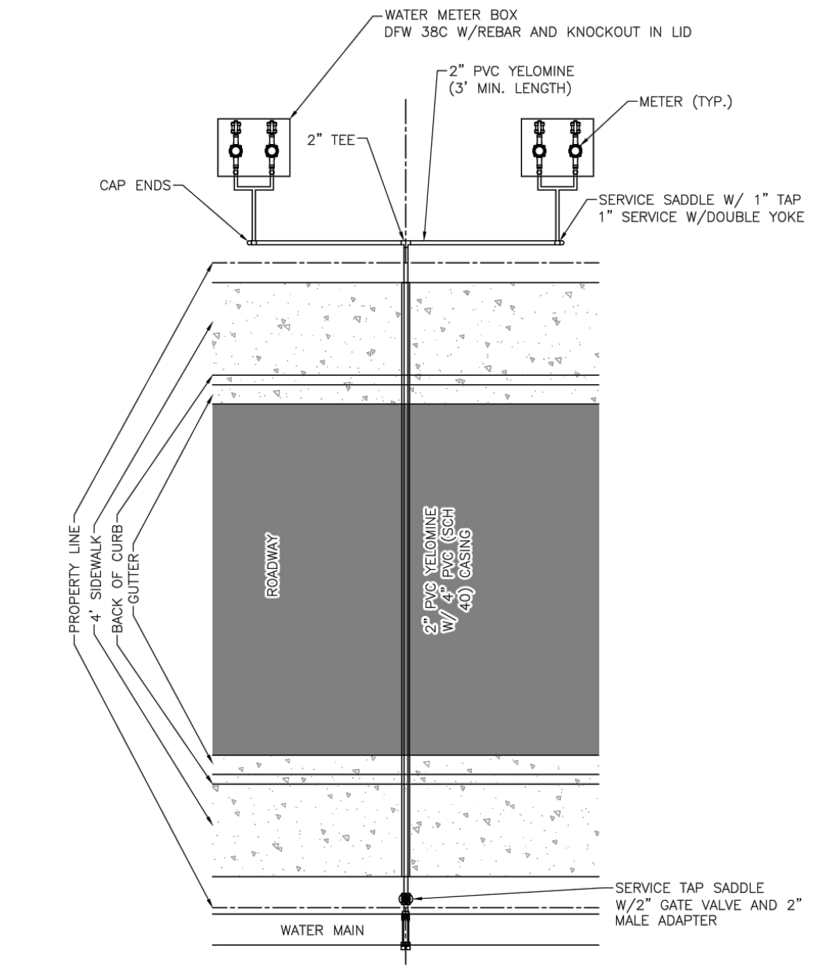


TYPICAL TEE CONDITION
TYPICAL FITTING TO FITTING CONDITION
TYPICAL CROSS CONDITION
TYPICAL FIRE HYDRANT CONDITION

NOTE:

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

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
MECHANICAL JOINT ADAPTOR DETAIL
REVISED: FEBRUARY 2021
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-30


WATER METER BOX DFW 38C W/REBAR AND KNOCKOUT IN LID
2" PVC YELOMINE (3' MIN. LENGTH)
METER (TYP.)
2" TEE
CAP ENDS
SERVICE SADDLE W/ 1" TAP 1" SERVICE W/DOUBLE YOKE
PROPERTY LINE
4' SIDEWALK
BACK OF CURB
GUTTER
ROADWAY
2" PVC YELOMINE W/ 4" PVC (SCH 40) CASING
SERVICE TAP SADDLE W/2" GATE VALVE AND 2" MALE ADAPTER
WATER MAIN

NOTE:

1. MALE ADAPTOR AND TEE SHALL BE HARCO TYPE FITTINGS OR APPROVED EQUAL.

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
DUAL LONG WATER SERVICE DETAIL
REVISED: FEBRUARY 2021
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-31

GVSUD CONSTRUCTION PLAN GENERAL NOTES

1. ALL WORKMANSHIP AND MATERIALS FOR THE WATER SYSTEM SHALL CONFORM TO THE WATER STANDARDS AND DESIGN CRITERIA OF GREEN VALLEY SPECIAL UTILITY DISTRICT (GVSUD).
2. PVC MAINS 12-INCHES AND BELOW SHALL CONFORM TO AWWA C-909 PRESSURE CLASS 235 OR ABOVE DEPENDING ON SYSTEM PRESSURES. PVC MAIN GREATER THAN 12 INCHES SHALL CONFORM TO AWWA C-900 DR 18 OR ABOVE DEPENDING ON SYSTEM PRESSURES. WATER MAINS SHALL HAVE AN ABSOLUTE MINIMUM DEPTH OF 5-FEET BELOW ROADWAY LEVEL AND 42-INCHES IN ALL OTHER AREAS.
3. ALL WATER MAIN DUCTILE IRON FITTINGS SHALL BE MECHANICAL JOINT AND CONFORM TO ANSI/AWWA C-153 OR C-110. ALL BOLTS SHALL HAVE KOPR KOTE OR APPROVED EQUAL 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.
4. 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 12-INCH-WIDE DETECTABLE METAL TAPE SHALL BE PLACED ABOVE BEDDING INITIAL BACKFILL.
5. EXCEEDING MAXIMUM DEFLECTION IS PROHIBITED. THE ANGULAR DEFLECTION AT BELL-SPIGOT JOINTS SHOULD NOT EXCEED ONE (1) DEGREE. THIS WILL PRODUCE A 4-INCH OFFSET FOR EVERY 20-FOOT SECTION OF PIPE. JOINT DEFLECTION IS ACHIEVED AFTER THE JOINT IS ASSEMBLED IN STRAIGHT ALIGNMENT AND DEFLECTED TO THE REFERENCE MARK. THE BELL SHOULD BE BRACED TO ALLOW THE FREE END TO MOVE LATERALLY UNDER STEADY PRESSURE USING A PRY BAR OR OTHER SUITABLE MEANS. CARE SHOULD BE TAKEN NOT TO EXCEED THE MAXIMUM DEFLECTION ALLOWED OR TO DAMAGE THE PIPE WITH MACHINERY. ABRUPT CHANGES IN DIRECTION SHALL BE ACCOMPLISHED WITH FITTINGS.
6. OVER STRESSING THE BELL BY OVER INSERTING THE JOINTS, OVERBELLING, AND PASSING THE INSERTION REFERENCE MARK IS PROHIBITED AND WILL REQUIRE REMOVAL AND REINSTALLATION.
7. STANDARD FIRE HYDRANT SHALL INCLUDE HYDRANT, 6-INCH RESILIENT 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.

GVSUD CONSTRUCTION PLAN GENERAL NOTES

8. 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.
9. VALVES ARE PROHIBITED IN ADA RAMPS, CURBS, AND ROADWAYS. VALVES ARE PROHIBITED IN SIDEWALKS IN CITY OF NEW BRAUNFELS.
10. METER BOXES ARE PROHIBITED IN ANY SIDEWALKS, DRIVEWAYS, OR ROADWAYS.
11. SMALL SERVICE TAPS SHALL BE EITHER 1-INCH OR 2 INCH AND SHALL BE REHAU MUNICIPEX WITH CTS 200 PSI PLASTIC INSERT. SMALL SERVICE TAPS TO BE MADE WITH SINGLE BRASS STRAP TAPPING SADDLE WITH IRON PIPE THREADS. EXCEPTION: IF LOCATED WITHIN CITY OF CIBOLO- SERVICE TAPS TO BE MADE WITH DOUBLE STAINLESS STRAP EPOXY COATING SADDLES WITH IRON PIPE THREADS.
12. 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 PVC SCHEDULE 40 OR APPROVED EQUAL.
13. SINGLE 5/8" & ¾" METER BOXES SHALL BE DFW36C 16" X 11". DUAL 5/8" & ¾" METER BOXES SHALL BE DFW38C 17" X 15". 1-INCH METER BOXES SHALL BE DFW65C-14-1A 15 1/4" X 30 3/8". ALL METER BOXES SHALL BE PLASTIC WITH LIDS HAVING REBAR, ARM, AND KNOCKOUT.
14. THE FORD U BRANCH IS TO BE USED ON ALL DUAL SERVICES (U48-43Q) WITH THE 5/8" X 3/4" FEMALE THREAD ANGLE HEAD. ALL OTHER ANGLE HEADS WILL BE THE FORD Q NUT. ALL CORPORATION STOPS WILL BE IPS X Q NUT. ALL BRASS VALVES TO BE 'BALL' TYPE MINIMUM 200 PSI PRESSURE RATING. "CC" THREADED CORPORATION STOPS PROHIBITED.
15. TAPPING MACHINES UTILIZED FOR INSTALLING ANY TYPE OF TAP 1-INCH TO 2-INCHES WILL BE OF THE PURGE TYPE, WHICH AT THE TIME OF TAPPING SHALL EXPEL ALL CHIPS AND RESIDUE TO ATMOSPHERE THROUGH AN APPROPRIATE OUTLET AND/OR BE ABLE TO RETAIN THE COUPON.
16. ALL WATER MAIN, PIPE, CASINGS, FITTINGS, AND VALVES SHALL BE LAID IN MANUFACTURED SAND EMBEDMENT PER DETAILS. THE SAND SHALL FULLY ENCASE ALL PIPES, INCLUDING FITTINGS AND VALVES, BY A MINIMUM OF 12-INCHES. ALL FITTINGS AND VALVES ARE TO RECEIVE THRUST BLOCKING, FOSTER ADAPTER, ANCHOR NIPPLE, FORD UNI-FLANGE RETAINER GLAND JOINT RESTRAINTS, AND BELL JOINT RESTRAINTS WHEN SPECIFIED BY GVSUD OR THE DISTRICT'S ENGINEER.
17. CONTRACTOR TO CURB CUT V'S FOR VALVES AND X'S FOR METERS.
18. PRIOR TO CONSTRUCTION OF THE SEWER AND WATER MAINS, ALL R.O.W. ROADWAYS AND PARKWAY SHALL HAVE REFERENCE SURVEY STAKING AND BE EXCAVATED OR PROPERLY FILLED TO SUB-GRADE ELEVATION.

GVSUD CONSTRUCTION PLAN GENERAL NOTES

19. SURVEY STAKING OFFSETS ARE REQUIRED FOR ALL WATER MAIN AND APPURTENANCES.
20. THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES INDICATED ON THE PLANS ARE TAKEN FROM AVAILABLE RECORDS AND ARE NOT GUARANTEED. CONTRACTOR SHALL INVESTIGATE AND FIELD VERIFY UTILITY LOCATIONS A MINIMUM OF 300 LF AHEAD OF CROSSING AND TIE-IN LOCATIONS. THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR ANY DAMAGE TO AND FOR MAINTENANCE PROTECTION OF THE EXISTING UTILITIES, WHETHER THEY ARE SHOWN ON THE PLANS OR NOT.
21. ALL WASTEWATER PIPES CROSSING THE POTABLE WATER DISTRIBUTION SYSTEM WILL BE HELD IN STRICT ACCORDANCE WITH TCEQ RULES AND REGULATIONS. PROPOSED SUB-GRADE LIMITS AND DIMENSIONS MUST BE SHOWN ON THE PLANS, AND CONSTRUCTION PROCEDURES WILL BE INSPECTED TO VERIFY COMPLIANCE WITH TCEQ 290.44(E).
22. OTHER UTILITIES SHALL NOT BE LOCATED CLOSER THAN 3-FEET TO WATER MAINS.
23. THE GREEN VALLEY INSPECTOR SHALL BE NOTIFIED AT LEAST FORTY-EIGHT HOURS PRIOR TO BACK FILLING OR TESTING.
24. A FIELD PRE-CONSTRUCTION MEETING SHALL BE HELD BEFORE CONSTRUCTION BEGINS AND MATERIAL SHALL BE AVAILABLE ON-SITE FOR INSPECTION.
25. 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.
26. OPERATION OF EXISITNG VALVES IN THE GVSUD WATER DISTRIBUTION SYSTEM SHALL ONLY BE AS APPROVED BY GVSUD AND IN THE PRESENCE OF GVSUD PERSONNEL. THE CONTRACTOR SHALL NOTIFY GVSUD WHEN A VALVE NEEDS TO BE OPERATED AND MAY ONLY OPERATE A VALVE IN THE PRESENCE OF THE GVSUD INSPECTOR.
27. 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.
28. HYDROSTATIC PRESSURE TESTING SHALL BE EVERY 200 LF (MAX) OF 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.
29. CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH AND CONFINED SPACE ENTRY SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION AND ALL RELATED WORK. ANY TRENCH PROTECTION SAFETY VIOLATION WILL BE DOCUMENTED AND WILL RESULT IN AN IMMEDIATE WORK STOPPAGE BY THE GVSUD INSPECTOR AT MINUMUM UNTIL THE NEXT WORKDAY.

GVSUD CONSTRUCTION PLAN GENERAL NOTES

30. CONTRACTOR MUST PROTECT ALL UNATTENDED TRENCHES AND EXCAVATIONS WITH TEMPORARY FENCING.
31. NO TREES MAY BE PLANTED IN THE AREAS DESIGNATED AS WATER OR UTILITY EASEMENTS, OR AREAS WHERE WATER MAINS AND WATER SERVICE CROSSINGS EXIST OR ARE PLANNED TO BE CONSTRUCTED.
32. ALL GARBAGE OR SPOIL MATERIAL FROM THE WORK SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR AT CONTRACTOR'S EXPENSE.
33. CONTRACTOR SHALL PROVIDE "AS-BUILT" WATER LINE PLANS AT THE PRELIMINARY WALK THRU FOR THE GVSUD INSPECTOR AND ENGINEER. THE PLANS SHALL LIST MATERIAL MANUFACTURERS, LINE LENGTH FROM FITTING TO FITTING, AND TAP LOCATIONS.
34. GPS FILES SHALL BE PROVIDED BY THE CONTRACTOR TO THE ENGINEER AND GVSUD INSPECTOR FOR THE PLAN OF RECORD. CONTRACTOR SHALL PROVIDE AN ASCII COMMA DELIMITED OR EXCEL FILE CONTAINING THREE-DIMENSIONAL GPS SURVEY POINTS WITH FOUR (4) DECIMAL PLACES OF PRECISION, LESS THAN FOUR (4) INCHES OF HORIZONTAL POSITION ACCURACY, AND LESS THAN EIGHT (8) INCHES OF VERTICAL POSITION ACCURACY. POINTS SHALL BE PROVIDED FOR A MINIMUM OF THREE (3) CONTROL POINTS AND ALL FITTINGS, APPURTENANCES, ENCASEMENTS, VAULTS, AND TANKS. THE ENGINEER SHALL FURNISH PLAN OF RECORD DRAWINGS TO GVSUD FOR APPROVAL HAVING FINAL MEASUREMENTS AND THAT MATCH THE GPS 'X', 'Y', AND 'Z' COORDINATES.
35. THE CONTRACTOR SHALL PROVIDE THE ENGINEER WITH ALL THE INFORMATION AS REQUIRED SO THAT THE ENGINEER CAN SUPPLY GVSUD THE GIS PACKAGE FOR APPROVAL.
36. A FINAL WALK THRU FOR FINAL FIELD ACCPETANCE WILL BE SCHEDULED WITH THE CONTRACTOR AFTER THE PRELIMINARY WALK THRU PUNCH LIST ITEMS HAVE BEEN COMPLETED AND AFTER THE GIS PACKAGE IS APPROVED AND ACCEPTED BY GVSUD.
37. GVSUD CONTACT NUMBER: 830-914-2330

REVISED: JULY 22,2022

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 3A

WATER DISTRIBUTION STANDARD DETAILS

DATE
05/22/2023
PROJECT NO.
03346.006
DRAWN BY
KMH/NNR/MOH/MAS
CHECKED BY
CJC

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

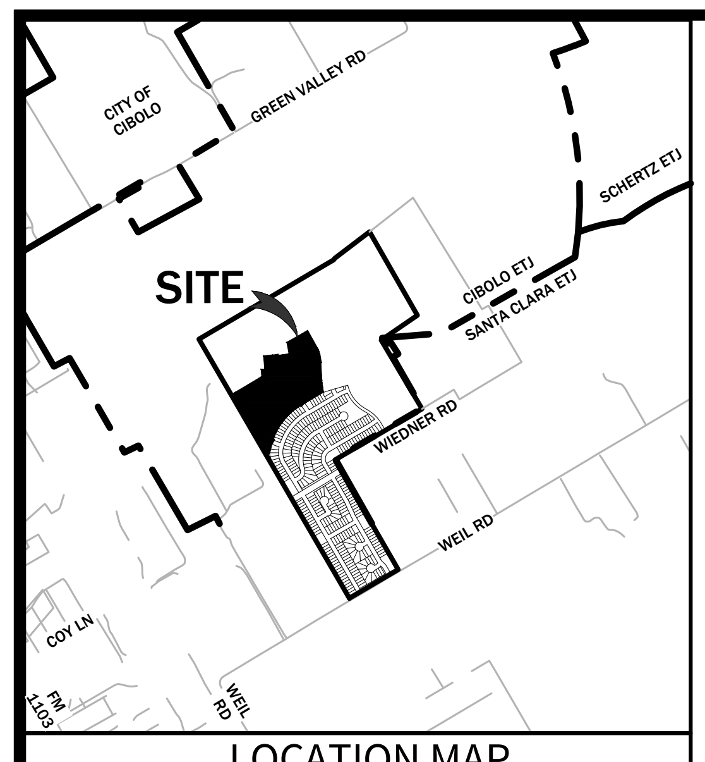
KYLE M. HUDEK
138753
K. Hudek
05/22/2023
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

W2

2 OF 4

P:\03346\006\2-Drawings\07_WDDP.dwg 2023/05/22 3:12pm msandoval

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



LOCATION MAP
N.T.S.

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.

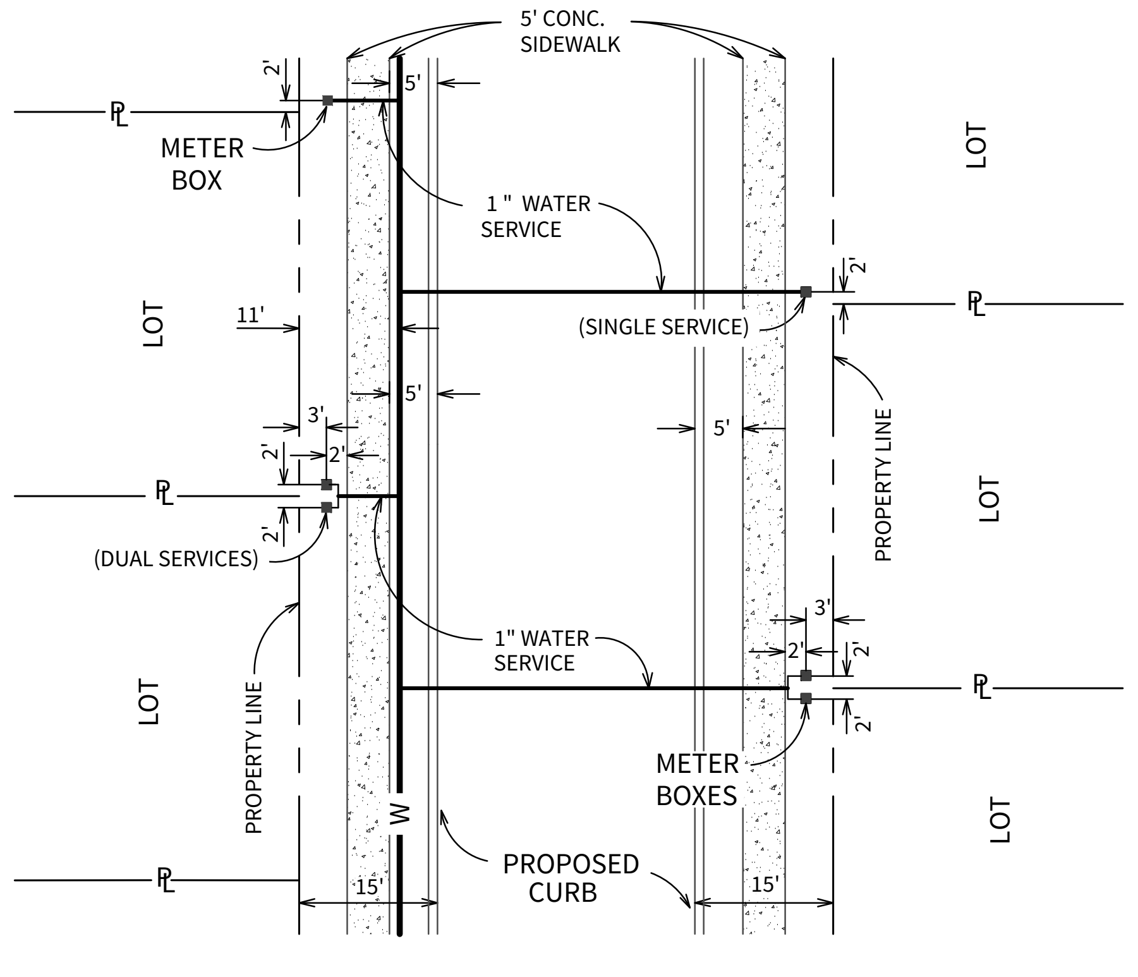
DEVELOPER:

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

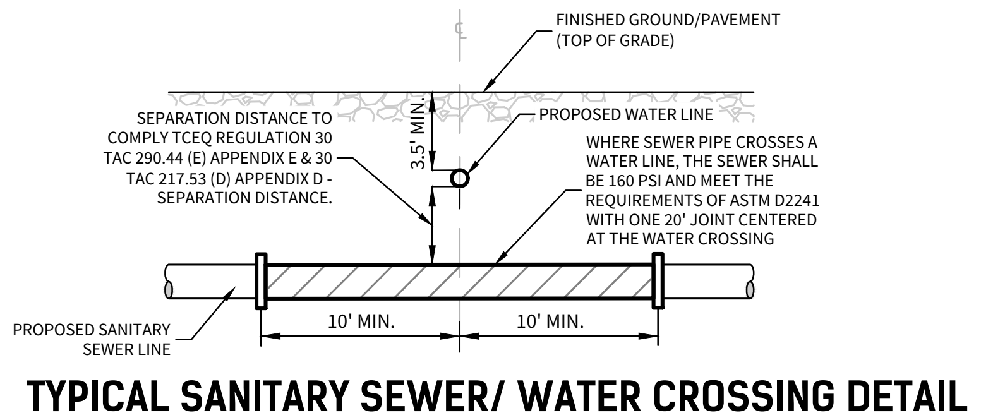
CIVIL ENGINEER:

CUDE ENGINEERS
CONTACT PERSON: CHRIS CHAFFEE, 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



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

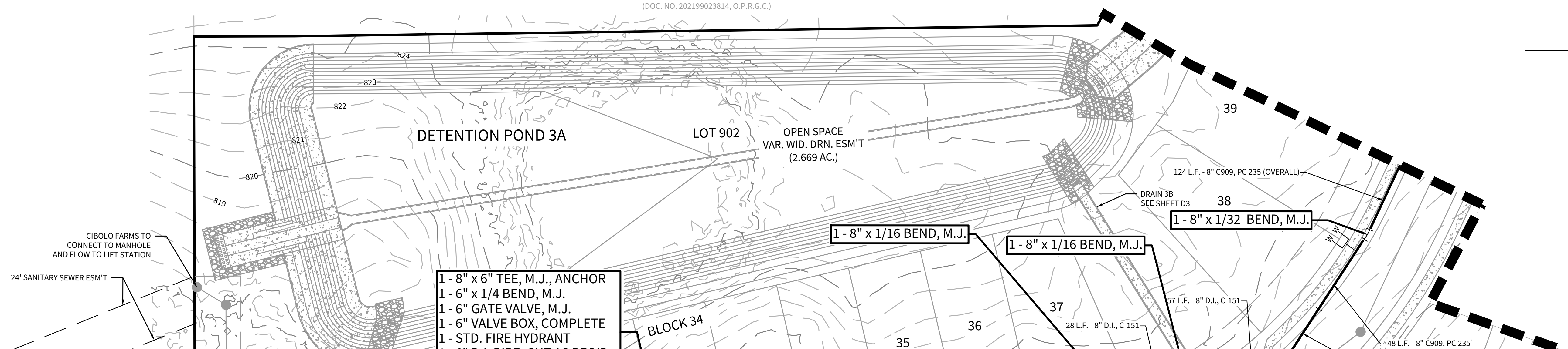
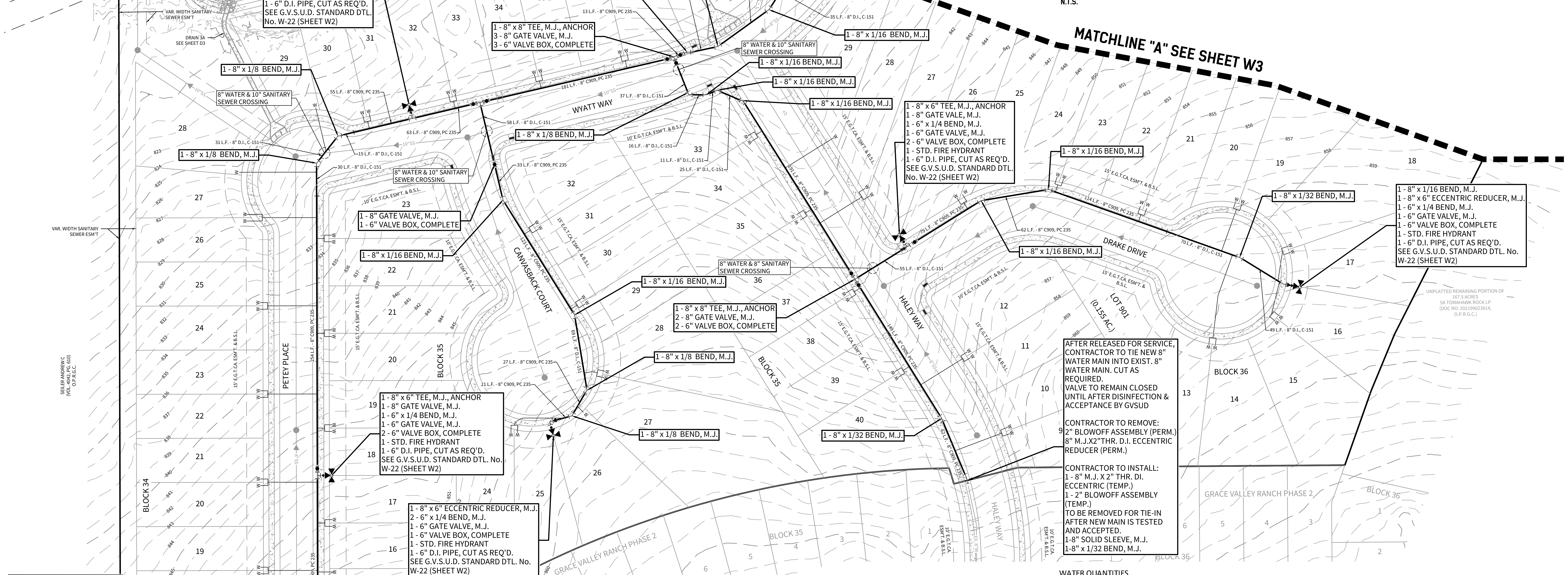
TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL
N.T.S.

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
BUILDING SETBACK LINE	B.S.L.

NOTES:

1. IN THE CITY OF CIBOLO, FIRE HYDRANTS SHALL BE MUELLER OR EJ TYPE AND SHALL BE 2' MINIMUM AND 7' MAXIMUM FROM THE BACK OF CURB.
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



UNPLATTED REMAINING PORTION OF 167.5 ACRES SA TOMAHAWK ROCK, L.P. (DOC. NO. 20219902381A, O.P.R.G.C.)
DETENTION POND 3A
LOT 902
OPEN SPACE VAR. WID. DRN. ESM'T (2.669 AC.)
CIBOLO FARMS TO CONNECT TO MANHOLE AND FLOW TO LIFT STATION
24' SANITARY SEWER ESM'T
VAR. WIDTH SANITARY SEWER ESM'T
DRAIN 3A SEE SHEET D3
DRAIN 3B SEE SHEET D3
MATCHLINE "A" SEE SHEET W3
BLOCK 34
BLOCK 35
BLOCK 36
WYATT WAY
CANVASBACK COURT
PETEY PLACE
HALEY WAY
DRAKE DRIVE
LOT 901 (0.155 AC.)
GRACE VALLEY RANCH PHASE 2
VAR. WIDTH SANITARY SEWER ESM'T
SEILER ANDREW C (VOL. 4842, PG. 610) O.P.R.G.C.
1 - 8" x 6" TEE, M.J., ANCHOR
1 - 6" x 1/4 BEND, M.J.
1 - 6" GATE VALVE, M.J.
1 - 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 W2)
1 - 8" x 1/16 BEND, M.J.
1 - 8" x 1/16 BEND, M.J.
1 - 8" x 1/32 BEND, M.J.
1 - 8" x 8" TEE, M.J., ANCHOR
3 - 8" GATE VALVE, M.J.
3 - 6" VALVE BOX, COMPLETE
8" WATER & 10" SANITARY SEWER CROSSING
1 - 8" x 1/16 BEND, M.J.
1 - 8" x 1/16 BEND, M.J.
1 - 8" x 1/16 BEND, M.J.
1 - 8" x 1/16 BEND, M.J.
1 - 8" x 1/8 BEND, M.J.
1 - 8" x 1/8 BEND, M.J.
1 - 8" x 1/8 BEND, M.J.
8" WATER & 10" SANITARY SEWER CROSSING
8" WATER & 10" SANITARY SEWER CROSSING
1 - 8" GATE VALVE, M.J.
1 - 6" VALVE BOX, COMPLETE
1 - 8" x 1/16 BEND, M.J.
1 - 8" x 6" TEE, M.J., ANCHOR
1 - 8" GATE VALE, M.J.
1 - 6" x 1/4 BEND, M.J.
1 - 6" GATE VALVE, M.J.
2 - 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 W2)
1 - 8" x 1/16 BEND, M.J.
1 - 8" x 1/32 BEND, M.J.
1 - 8" x 1/16 BEND, M.J.
1 - 8" x 1/16 BEND, M.J.
8" WATER & 8" SANITARY SEWER CROSSING
1 - 8" x 8" TEE, M.J., ANCHOR
2 - 8" GATE VALVE, M.J.
2 - 6" VALVE BOX, COMPLETE
1 - 8" x 1/8 BEND, M.J.
1 - 8" x 1/8 BEND, M.J.
1 - 8" x 1/32 BEND, M.J.
1 - 8" x 1/16 BEND, M.J.
1 - 8" x 6" ECCENTRIC REDUCER, M.J.
1 - 6" x 1/4 BEND, M.J.
1 - 6" GATE VALVE, M.J.
1 - 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 W2)
1 - 8" x 6" TEE, M.J., ANCHOR
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1 - STD. FIRE HYDRANT
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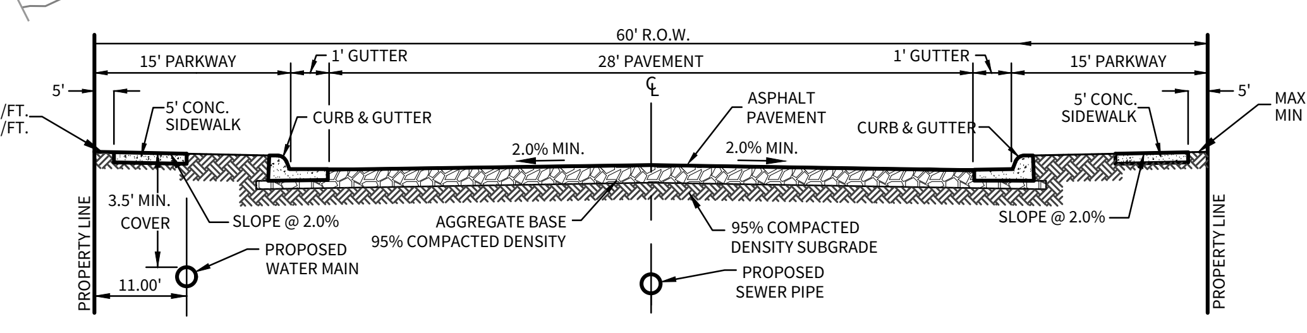
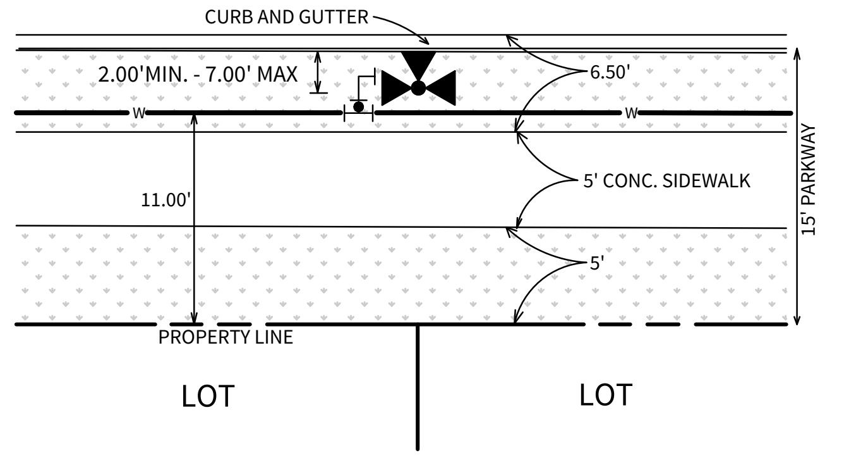
SEE G.V.S.U.D. STANDARD DTL. No. W-22 (SHEET W2)
1 - 8" x 6" ECCENTRIC REDUCER, M.J.
2 - 6" x 1/4 BEND, M.J.
1 - 6" GATE VALVE, M.J.
1 - 6" VALVE BOX, COMPLETE
1 - STD. FIRE HYDRANT
1 - 6" D.I. PIPE, CUT AS REQ'D.
SEE G.V.S.U.D. STANDARD DTL. No. W-22 (SHEET W2)
1 - 8" x 1/32 BEND, M.J.
AFTER RELEASED FOR SERVICE, CONTRACTOR TO TIE NEW 8" WATER MAIN INTO EXIST. 8" WATER MAIN. CUT AS REQUIRED.
VALVE TO REMAIN CLOSED UNTIL AFTER DISINFECTION & ACCEPTANCE BY GVSUD
CONTRACTOR TO REMOVE:
2" BLOWOFF ASSEMBLY (PERM.)
8" M.J.X2"THR. D.I. ECCENTRIC REDUCER (PERM.)
CONTRACTOR TO INSTALL:
1 - 8" M.J. X 2" THR. DI. ECCENTRIC (TEMP.)
1 - 2" BLOWOFF ASSEMBLY (TEMP.)
TO BE REMOVED FOR TIE-IN AFTER NEW MAIN IS TESTED AND ACCEPTED.
1-8" SOLID SLEEVE, M.J.
1-8" x 1/32 BEND, M.J.
AFTER RELEASED FOR SERVICE, CONTRACTOR TO TIE NEW 8" WATER MAIN INTO EXIST. 8" WATER MAIN. CUT AS REQUIRED.
VALVE TO REMAIN CLOSED UNTIL AFTER DISINFECTION & ACCEPTANCE BY GVSUD
CONTRACTOR TO REMOVE:
2" BLOWOFF ASSEMBLY (PERM.)
8" M.J.X2"THR. D.I. ECCENTRIC REDUCER (PERM.)
CONTRACTOR TO INSTALL:
1 - 8" M.J. X 2" THR. DI. ECCENTRIC (TEMP.)
1 - 2" BLOWOFF ASSEMBLY (TEMP.)
TO BE REMOVED FOR TIE-IN AFTER NEW MAIN IS TESTED AND ACCEPTED.
1-8" SOLID SLEEVE, M.J.
1-8" x 1/32 BEND, M.J.
UNPLATTED REMAINING PORTION OF 167.5 ACRES SA TOMAHAWK ROCK LP (DOC. NO. 20219023814, O.P.R.G.C.)



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

WATER QUANTITIES

8" D.I. C-151	920 L.F.
8" PVC C-909	2724 L.F.
FIRE HYDRANT ASSEMBLY	8 EA.
8"x6" TEE, M.J.	5 EA.
8"x8" TEE, M.J.	4 EA.
8" CROSS, M.J.	1 EA.
6" - 1/4 BEND, MJ.	3 EA.
8" - 1/8 BEND, M.J	7 EA.
8" - 1/16 BEND, M.J.	10 EA.
8" - 1/32 BEND, M.J.	7 EA.
8"x6" ECCENTRIC REDUCER, M.J.	3 EA.
8"x2" ECCENTRIC REDUCER, M.J.	5 EA.
8" - GATE VALVE, M.J. W/ BOX	17 EA.
2" - BLOW OFF ASSEMBLY (TEMP.)	2 EA.
2" - BLOW OFF ASSEMBLY (PERM.)	3 EA.
8" SOLIND SLEEVE	2 EA.
1" LONG WATER SERVICE (DUAL)	24 EA.
1" SHORT WATER SERVICE (DUAL)	28 EA.
1" LONG WATER SERVICE (SINGLE)	4 EA.
1" SHORT WATER SERVICE (SINGLE)	3 EA.



LOCAL RESIDENTIAL FIRE HYDRANT DETAIL (5' 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.

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 3A

WATER DISTRIBUTION PLAN

DATE
05/17/2023

PROJECT NO.
03346.006

DRAWN BY
KMH/NNR/MOH/MAS

CHECKED BY
CJC

REVISIONS
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KYLE M. HUDEK
138753
05/22/2023

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

W3

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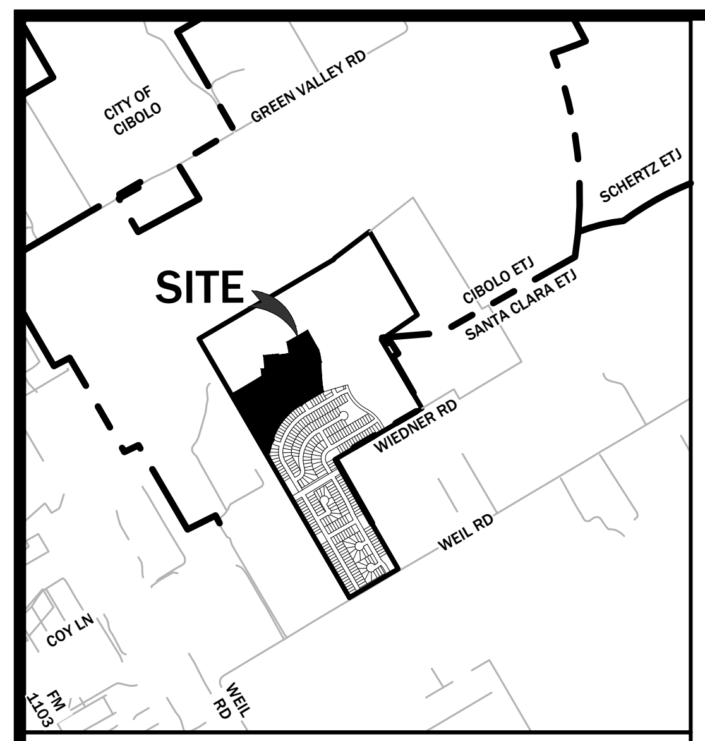


LOCATION MAP

N.T.S.

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

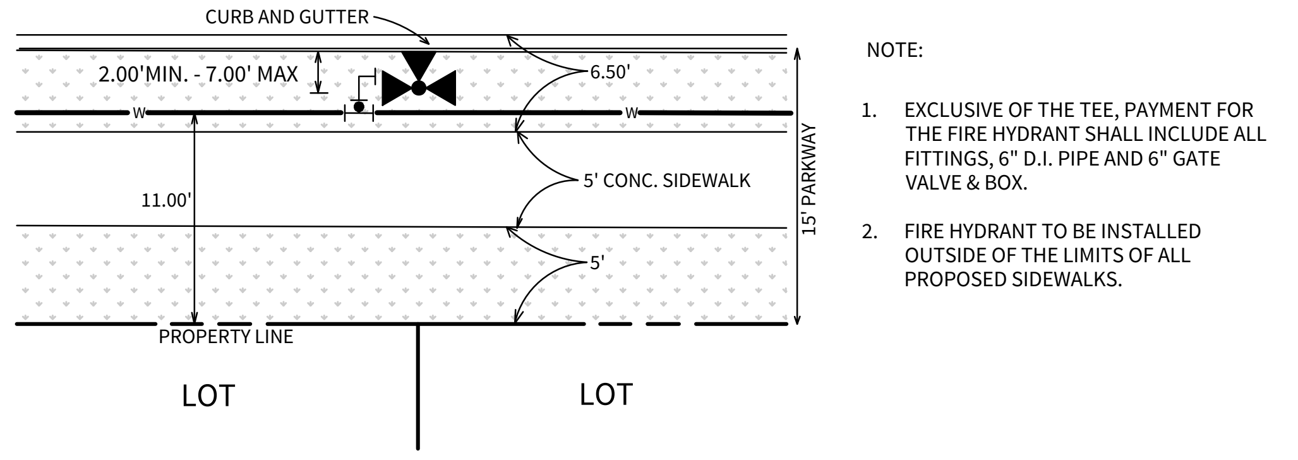
CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S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

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

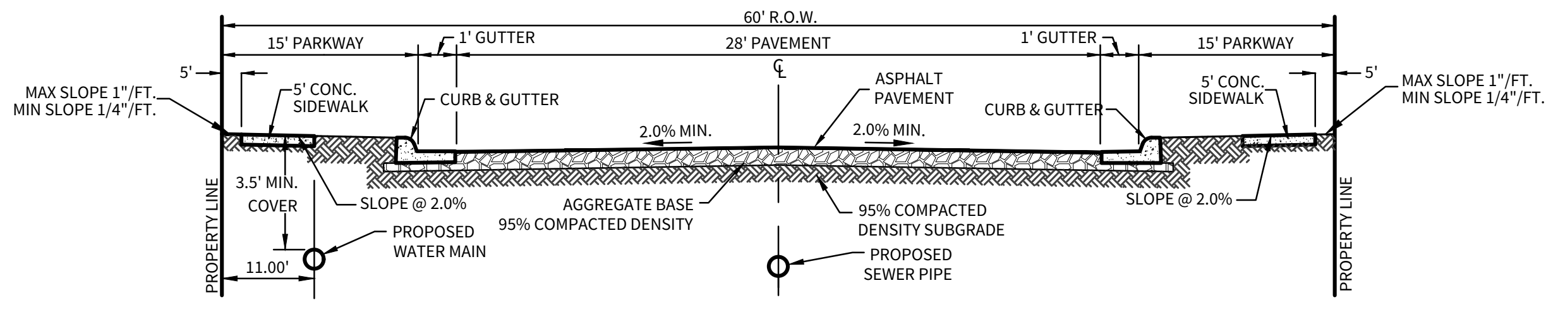


NOTE:

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

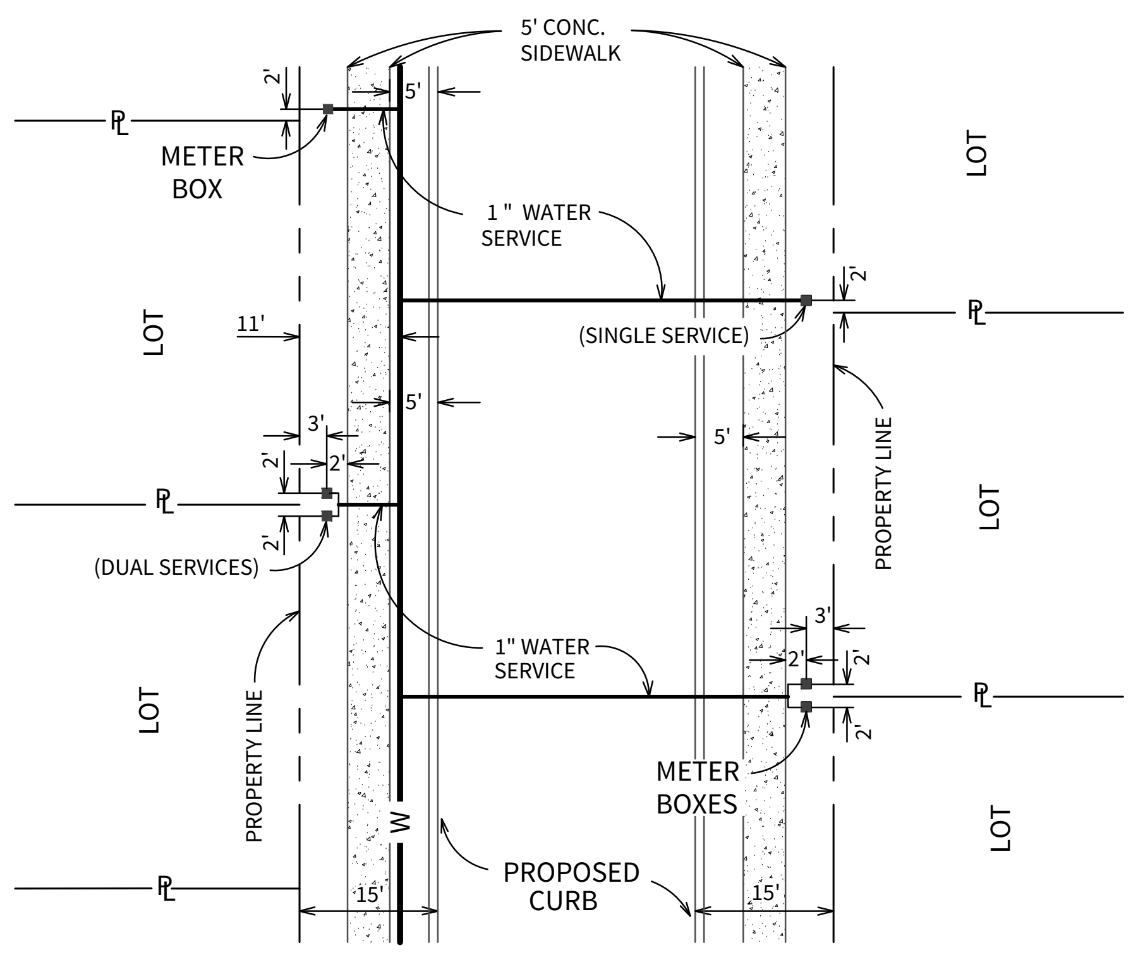
LOCAL RESIDENTIAL FIRE HYDRANT DETAIL (5' SIDEWALK)

N.T.S.



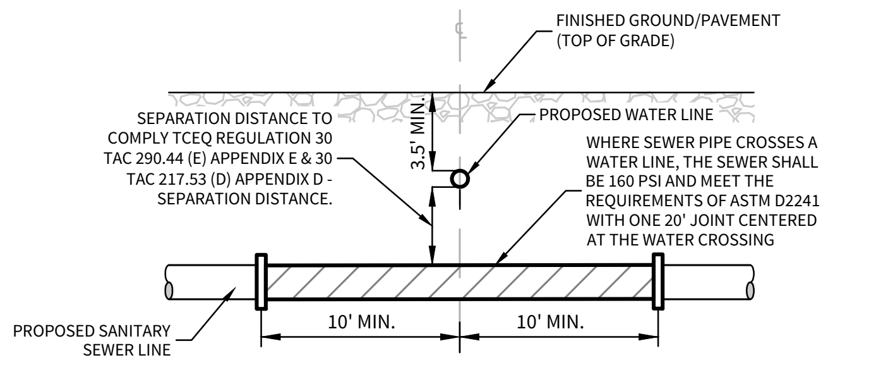
LOCAL "A" STREET CROSS-SECTION

N.T.S.



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

N.T.S.


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.

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
BUILDING SETBACK LINE	B.S.L.

NOTES:

1. IN THE CITY OF CIBOLO, FIRE HYDRANTS SHALL BE MUELLER OR EJ TYPE AND SHALL BE 2' MINIMUM AND 7' MAXIMUM FROM THE BACK OF CURB.

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.

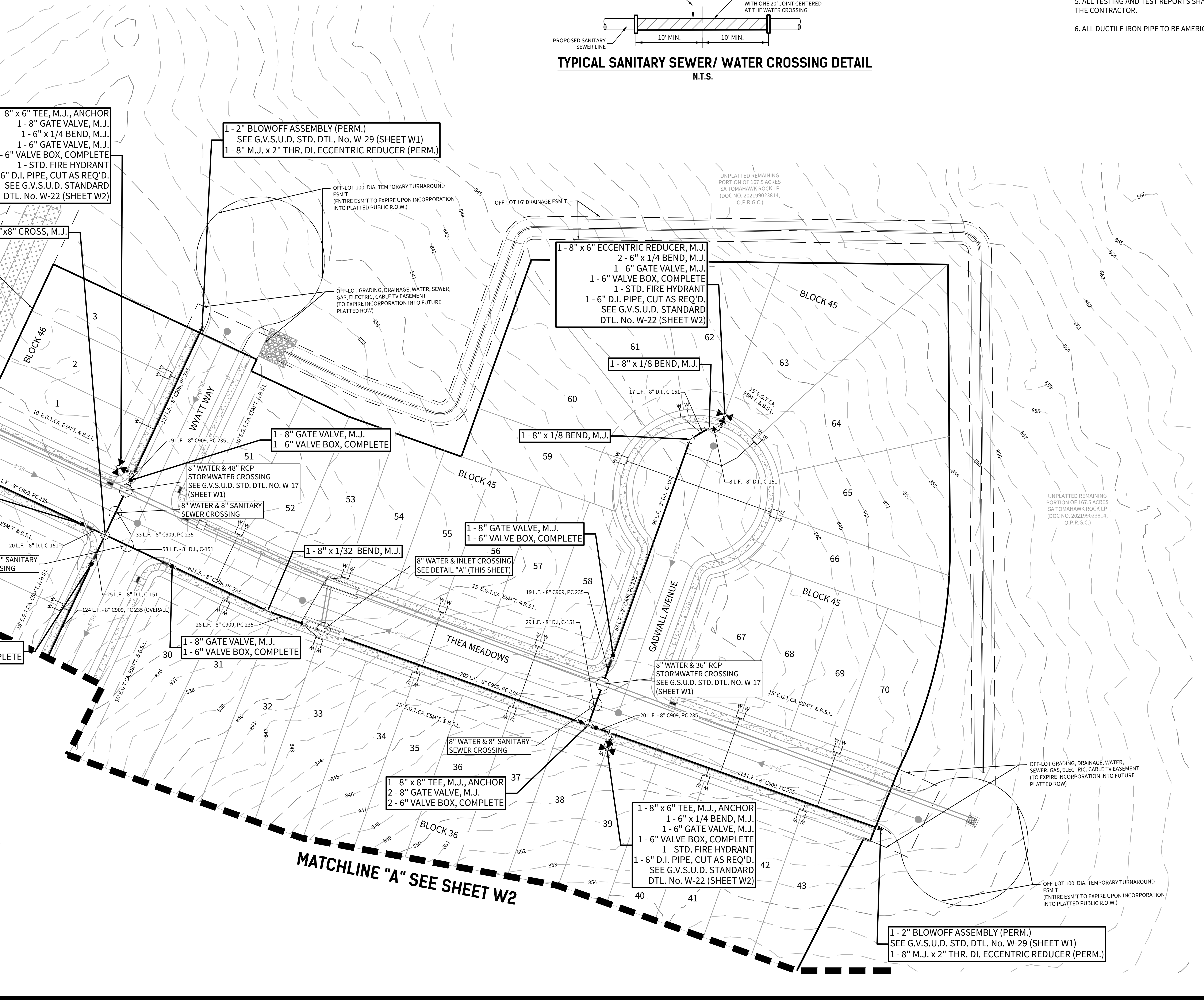
4. MOISTURE DENSITY COMPACTION TESTING FREQUENCY- WATER MAIN TRENCHES REQUIRED EVERY 300 L.F. FOR EACH VERTICAL FOOT OF COMPACTED BACKFILL. SERVICES RANDOMLY SELECTED AS REQUIRED BY GVSUD INSPECTOR.

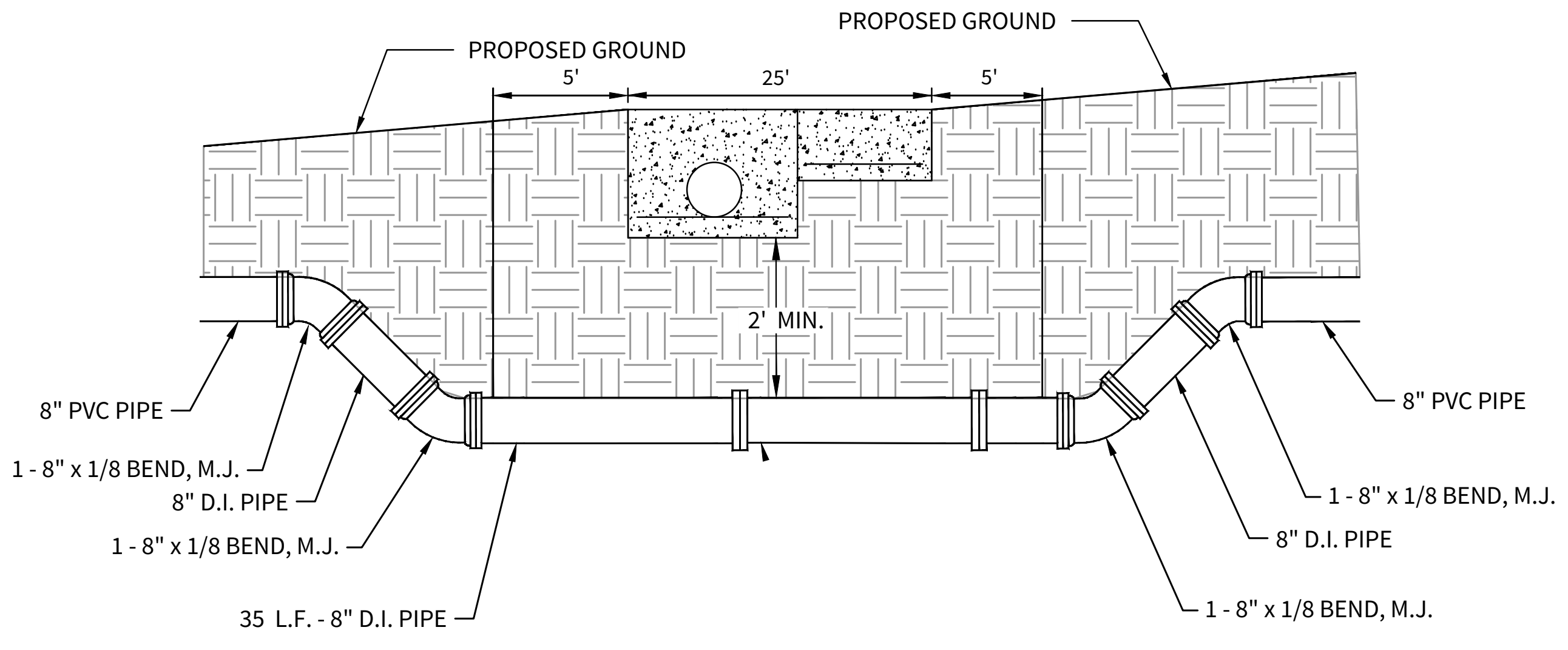
5. ALL TESTING AND TEST REPORTS SHALL BE COORDINATED WITH GVSUD INSPECTOR BY THE CONTRACTOR.

6. ALL DUCTILE IRON PIPE TO BE AMERICAN, ZINC COATED, AWWA/ANSI C-151

SCALE: 1"=50'

50 25 0 50


1 - 8" x 6" TEE, M.J., ANCHOR
1 - 8" GATE VALVE, M.J.
1 - 6" x 1/4 BEND, M.J.
1 - 6" GATE VALVE, M.J.
2 - 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 W2)
1 - 2" BLOWOFF ASSEMBLY (PERM.)
SEE G.V.S.U.D. STD. DTL. No. W-29 (SHEET W1)
1 - 8" M.J. x 2" THR. DI. ECCENTRIC REDUCER (PERM.)
UNPLATTED REMAINING PORTION OF 167.5 ACRES SA TOMAHAWK ROCK LP (DOC NO. 202199023814, O.P.R.G.C.)
OFF-LOT 100' DIA. TEMPORARY TURNAROUND ESM'T (ENTIRE ESM'T TO EXPIRE UPON INCORPORATION INTO PLATTED PUBLIC R.O.W.)
1 - 8"x8" CROSS, M.J.
OFF-LOT 60' DRN. AND GRADING ESM'T
1 - 2" BLOWOFF ASSEMBLY (PERM.)
SEE G.V.S.U.D. STD. DTL. No. W-29 (SHEET W1)
1 - 8" M.J. x 2" THR. DI. ECCENTRIC REDUCER (PERM.)
OFF-LOT GRADING, DRAINAGE, WATER, SEWER, GAS, ELECTRIC, CABLE TV EASEMENT (TO EXPIRE INCORPORATION INTO FUTURE PLATTED ROW)
OFF-LOT 20' SAN. SEWER ESM'T
BLOCK 46
WYATT WAY
127 L.F. - 8" C909, PC 235
10' E.G.T.CA. ESM'T. & B.S.L.
9 L.F. - 8" C909, PC 235
1 - 8" GATE VALVE, M.J.
1 - 6" VALVE BOX, COMPLETE
8" WATER & 48" RCP STORMWATER CROSSING SEE G.V.S.U.D. STD. DTL. NO. W-17 (SHEET W1)
8" WATER & 8" SANITARY SEWER CROSSING
1 - 8" GATE VALVE, M.J.
1 - 6" VALVE BOX, COMPLETE
111 L.F. - 8" C909, PC 235
LOT 902 OPEN SPACE VAR. WID. DRN. ESM'T. (2.669 AC.)
33 L.F. - 8" C909, PC 235
20 L.F. - 8" D.I, C-151
58 L.F. - 8" D.I., C-151
8" WATER & 8" SANITARY SEWER CROSSING
25 L.F. - 8" D.I., C-151
124 L.F. - 8" C909, PC 235 (OVERALL)
15' E.G.T.CA. ESM'T. & B.S.L.
1 - 8" GATE VALVE, M.J.
1 - 6" VALVE BOX, COMPLETE
82 L.F. - 8" C909, PC 235
28 L.F. - 8" C909, PC 235
1 - 8" GATE VALVE, M.J.
1 - 6" VALVE BOX, COMPLETE
1 - 8" x 1/32 BEND, M.J.
8" WATER & INLET CROSSING SEE DETAIL "A" (THIS SHEET)
1 - 8" GATE VALVE, M.J.
1 - 6" VALVE BOX, COMPLETE
BLOCK 45
THEA MEADOWS
19 L.F. - 8" C909, PC 235
29 L.F. - 8" D.I, C-151
83 L.F. - 8" C909, PC 235
GADWALL AVENUE
OFF-LOT 16' DRAINAGE ESM'T
1 - 8" x 6" ECCENTRIC REDUCER, M.J.
2 - 6" x 1/4 BEND, M.J.
1 - 6" GATE VALVE, M.J.
1 - 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 W2)
1 - 8" x 1/8 BEND, M.J.
17 L.F. - 8" D.I., C-151
15' E.G.T.CA. ESM'T. & B.S.L.
1 - 8" x 1/8 BEND, M.J.
8 L.F. - 8" D.I., C-151
96 L.F. - 8" D.I., C-151
8" WATER & 36" RCP STORMWATER CROSSING SEE G.S.U.D. STD. DTL. NO. W-17 (SHEET W1)
202 L.F. - 8" C909, PC 235
20 L.F. - 8" C909, PC 235
8" WATER & 8" SANITARY SEWER CROSSING
1 - 8" x 8" TEE, M.J., ANCHOR
2 - 8" GATE VALVE, M.J.
2 - 6" VALVE BOX, COMPLETE
223 L.F. - 8" C909, PC 235
1 - 8" x 6" TEE, M.J., ANCHOR
1 - 6" x 1/4 BEND, M.J.
1 - 6" GATE VALVE, M.J.
1 - 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 W2)
OFF-LOT GRADING, DRAINAGE, WATER, SEWER, GAS, ELECTRIC, CABLE TV EASEMENT (TO EXPIRE INCORPORATION INTO FUTURE PLATTED ROW)
OFF-LOT 100' DIA. TEMPORARY TURNAROUND ESM'T (ENTIRE ESM'T TO EXPIRE UPON INCORPORATION INTO PLATTED PUBLIC R.O.W.)
1 - 2" BLOWOFF ASSEMBLY (PERM.)
SEE G.V.S.U.D. STD. DTL. No. W-29 (SHEET W1)
1 - 8" M.J. x 2" THR. DI. ECCENTRIC REDUCER (PERM.)
BLOCK 36
MATCHLINE "A" SEE SHEET W2
8"SS
W W
M M



CURB / WATER CROSSING - DETAIL 'A'

N.T.S.

CUDEENGINEERS.COM

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

GRACE VALLEY RANCH
PHASE 3A

WATER DISTRIBUTION PLAN

DATE
05/17/2023

PROJECT NO.
03346.006

DRAWN BY
KMH/NNR/MOH/MAS

CHECKED BY
CJC

REVISIONS
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KYLE M. HUDEK
138753
K. Hudek
05/22/2023

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

W4

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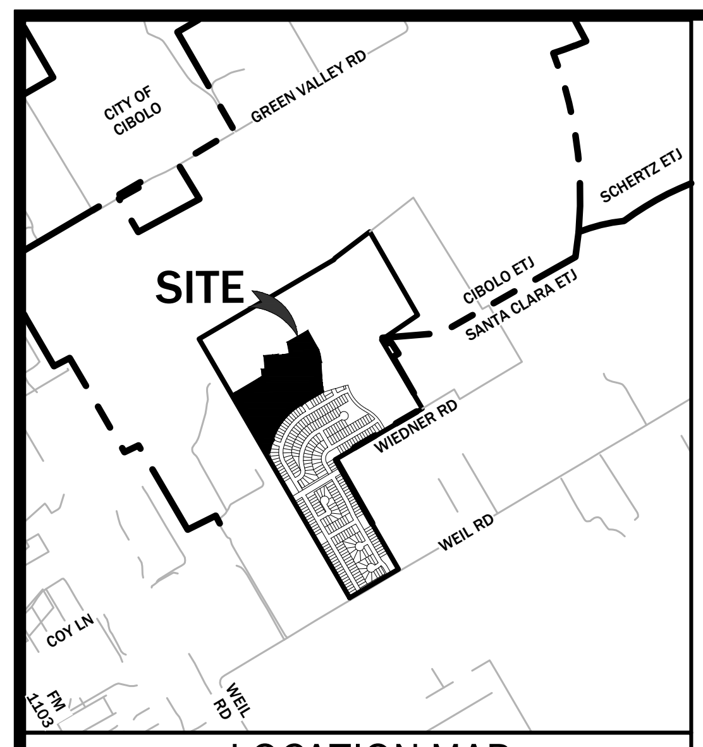
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



LOCATION MAP

N.T.S.

DEVELOPER:

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

CIVIL ENGINEER:

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

SCALE: 1"=50'

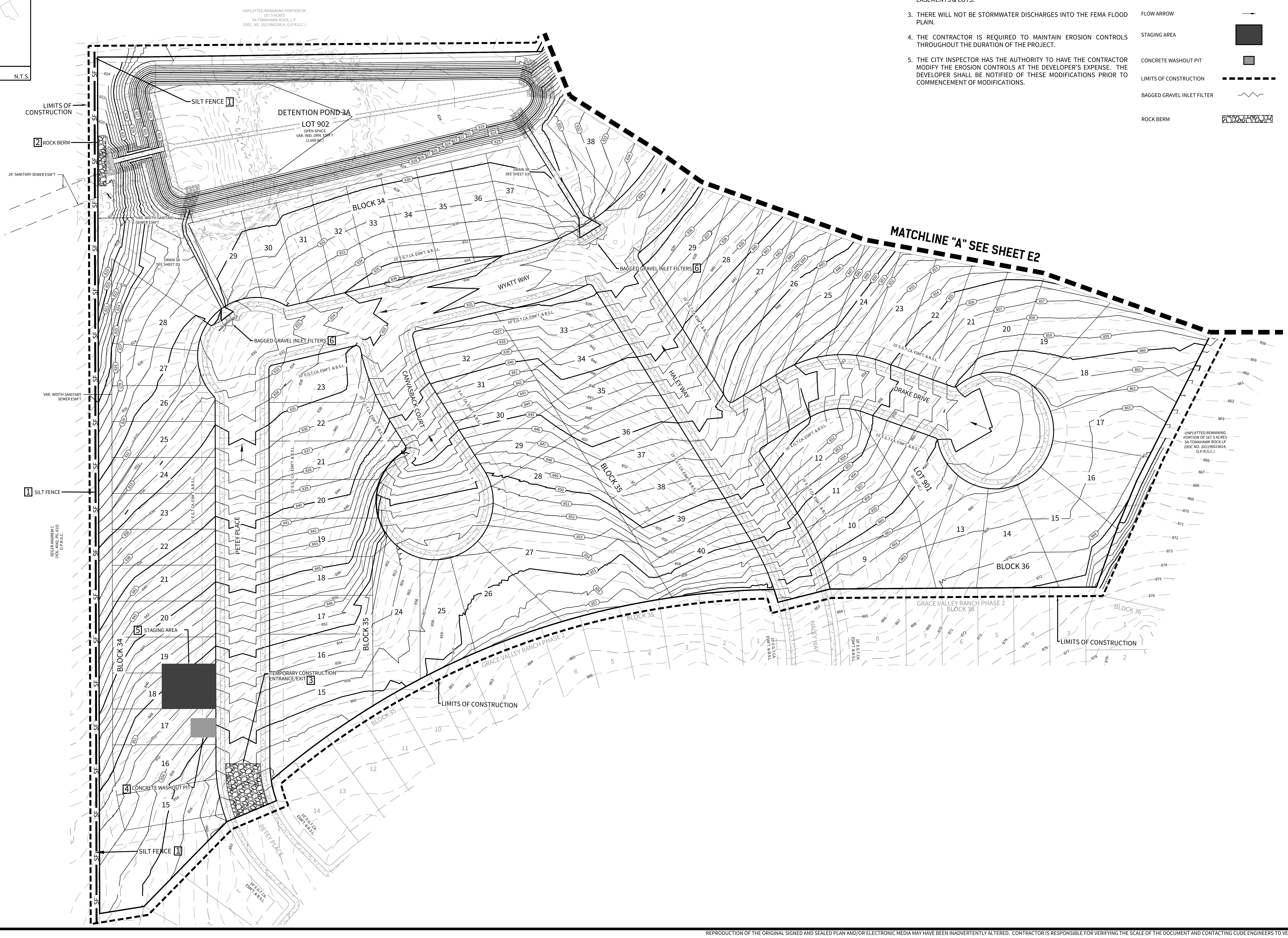
50 25 0 50

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.

LEGEND

PROPERTY LINE	───
EXISTING CONTOURS	— —930— —
BMP ITEM NUMBER	1
TEMPORARY CONSTRUCTION ENTRANCE/EXIT	▨
SILT FENCE	▬ SF ▬
FLOW ARROW	→
STAGING AREA	■
CONCRETE WASHOUT PIT	▪
LIMITS OF CONSTRUCTION	■ ■ ■ ■ ■
BAGGED GRAVEL INLET FILTER	⌇
ROCK BERM	▨


UNPLATTED REMAINING PORTION OF 167.5 ACRES SA TOMAHAWK ROCK, L.P. (DOC. NO. 202190023814, O.P.R.G.C.)
LIMITS OF CONSTRUCTION
2 ROCK BERM
24' SANITARY SEWER ESM'T
SILT FENCE 1
DETENTION POND 3A
LOT 902
OPEN SPACE VAR. WID. DRN. ESM'T (2.669 AC.)
VAR. WIDTH SANITARY SEWER ESM'T
DRAIN 3A SEE SHEET D3
DRAIN 3B SEE SHEET D3
BLOCK 34
WYATT WAY
BAGGED GRAVEL INLET FILTERS 6
MATCHLINE "A" SEE SHEET E2
CANVASBACK COURT
HALEY WAY
DRAKE DRIVE
LOT 901
BLOCK 35
BLOCK 36
PETEY PLACE
15' E.G.T.CA. ESM'T. & B.S.L.
10' E.G.T.CA. ESM'T. & B.S.L.
VAR. WIDTH SANITARY SEWER ESM'T
1 SILT FENCE
SELLER ANDREW C (VOL. 4042, PG. 410) O.P.R.G.C.
5 STAGING AREA
TEMPORARY CONSTRUCTION ENTRANCE/EXIT 3
4 CONCRETE WASHOUT PIT
SILT FENCE 1
LIMITS OF CONSTRUCTION
GRACE VALLEY RANCH PHASE 2
UNPLATTED REMAINING PORTION OF 167.5 ACRES SA TOMAHAWK ROCK LP (DOC NO. 202190023814, O.P.R.G.C.)
SF

CUDEENGINEERS.COM

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

GRACE VALLEY RANCH
PHASE 3A

STORMWATER POLLUTION PREVENTION PLAN

DATE
05/17/2023

PROJECT NO.
03346.006

DRAWN BY
KMH/NNR/MOH/MAS

CHECKED BY
CJC

REVISIONS
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KYLE M. HUDEK
138753
05/22/2023

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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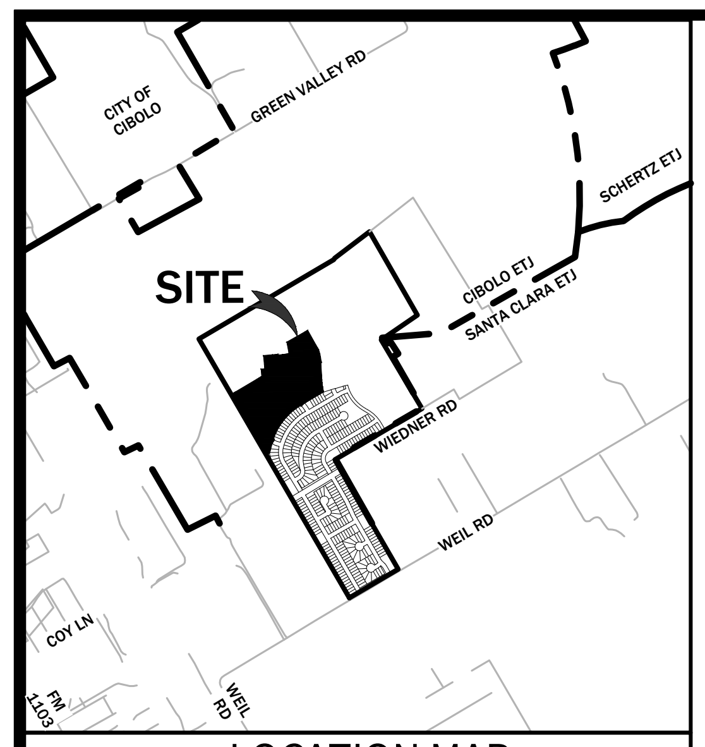

LOCATION MAP N.T.S.

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.

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: CHRIS CHAFFEE, P.E.
4122 POND HILL ROAD, SUITE 101
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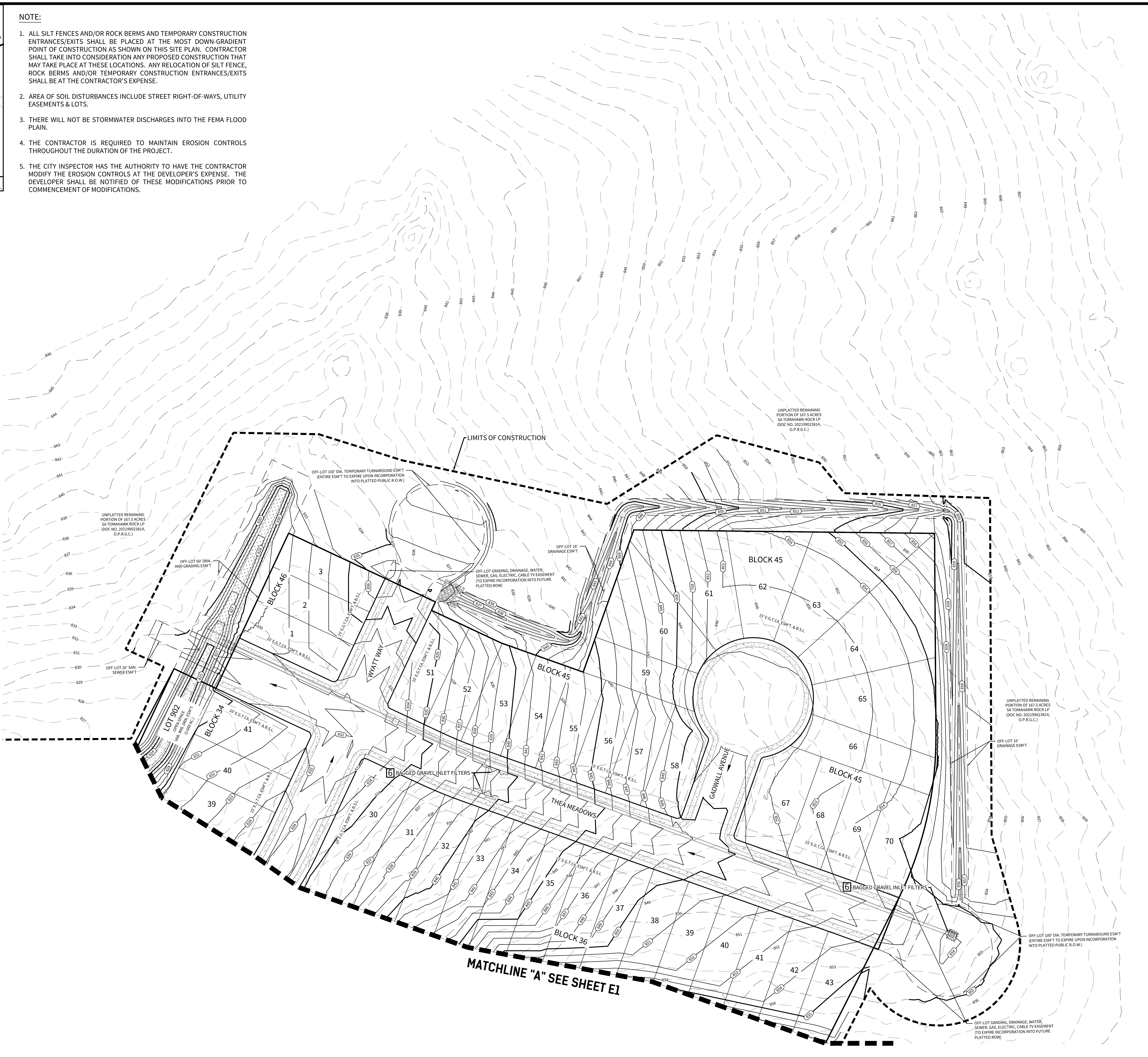
TEL: (210) 681-2951
FAX: (210) 523-7112

SCALE: 1"=50'
50 25 0 50


LIMITS OF CONSTRUCTION
OFF-LOT 100' DIA. TEMPORARY TURNAROUND ESM'T (ENTIRE ESM'T TO EXPIRE UPON INCORPORATION INTO PLATTED PUBLIC R.O.W.)
UNPLATTED REMAINING PORTION OF 167.5 ACRES SA TOMAHAWK ROCK LP (DOC NO. 202199023814, O.P.R.G.C.)
OFF-LOT 60' DRN. AND GRADING ESM'T
OFF-LOT 20' SAN. SEWER ESM'T
OFF-LOT 16' DRAINAGE ESM'T
OFF-LOT GRADING, DRAINAGE, WATER, SEWER, GAS, ELECTRIC, CABLE TV EASEMENT (TO EXPIRE INCORPORATION INTO FUTURE PLATTED ROW)
UNPLATTED REMAINING PORTION OF 167.5 ACRES SA TOMAHAWK ROCK LP (DOC NO. 202199023814, O.P.R.G.C.)
UNPLATTED REMAINING PORTION OF 167.5 ACRES SA TOMAHAWK ROCK LP (DOC NO. 202199023814, O.P.R.G.C.)
OFF-LOT 16' DRAINAGE ESM'T
BLOCK 46
BLOCK 45
BLOCK 34
BLOCK 36
LOT 902 OPEN SPACE DR. WID. DRN. ESM'T. (2.669 AC.)
WYATT WAY
THEA MEADOWS
GADWALL AVENUE
10' E.G.T.CA. ESM'T. & B.S.L.
15' E.G.T.CA. ESM'T. & B.S.L.
6 BAGGED GRAVEL INLET FILTERS
6 BAGGED GRAVEL INLET FILTERS
OFF-LOT 100' DIA. TEMPORARY TURNAROUND ESM'T (ENTIRE ESM'T TO EXPIRE UPON INCORPORATION INTO PLATTED PUBLIC R.O.W.)
OFF-LOT GRADING, DRAINAGE, WATER, SEWER, GAS, ELECTRIC, CABLE TV EASEMENT (TO EXPIRE INCORPORATION INTO FUTURE PLATTED ROW)
MATCHLINE "A" SEE SHEET E1
1
2
3
51
52
53
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57
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61
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64
65
66
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38
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40
41
42
43

LEGEND

PROPERTY LINE	──
EXISTING CONTOURS	— —930— —
BMP ITEM NUMBER	1
TEMPORARY CONSTRUCTION ENTRANCE/EXIT	▨
SILT FENCE	▬ SF ▬
FLOW ARROW	→
STAGING AREA	■
CONCRETE WASHOUT PIT	■
LIMITS OF CONSTRUCTION	- - -
BAGGED GRAVEL INLET FILTERS	⁄\/\/\/\

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CUDE ENGINEERS EST. 1980

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GRACE VALLEY RANCH
PHASE 3A

STORMWATER POLLUTION PREVENTION PLAN

DATE
05/17/2023

PROJECT NO.
03346.006

DRAWN BY
KMH/NNR/MOH/MAS

CHECKED BY
CJC

REVISIONS
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6.
7.
8.
9.

KYLE M. HUDEK
138753
05/22/2023

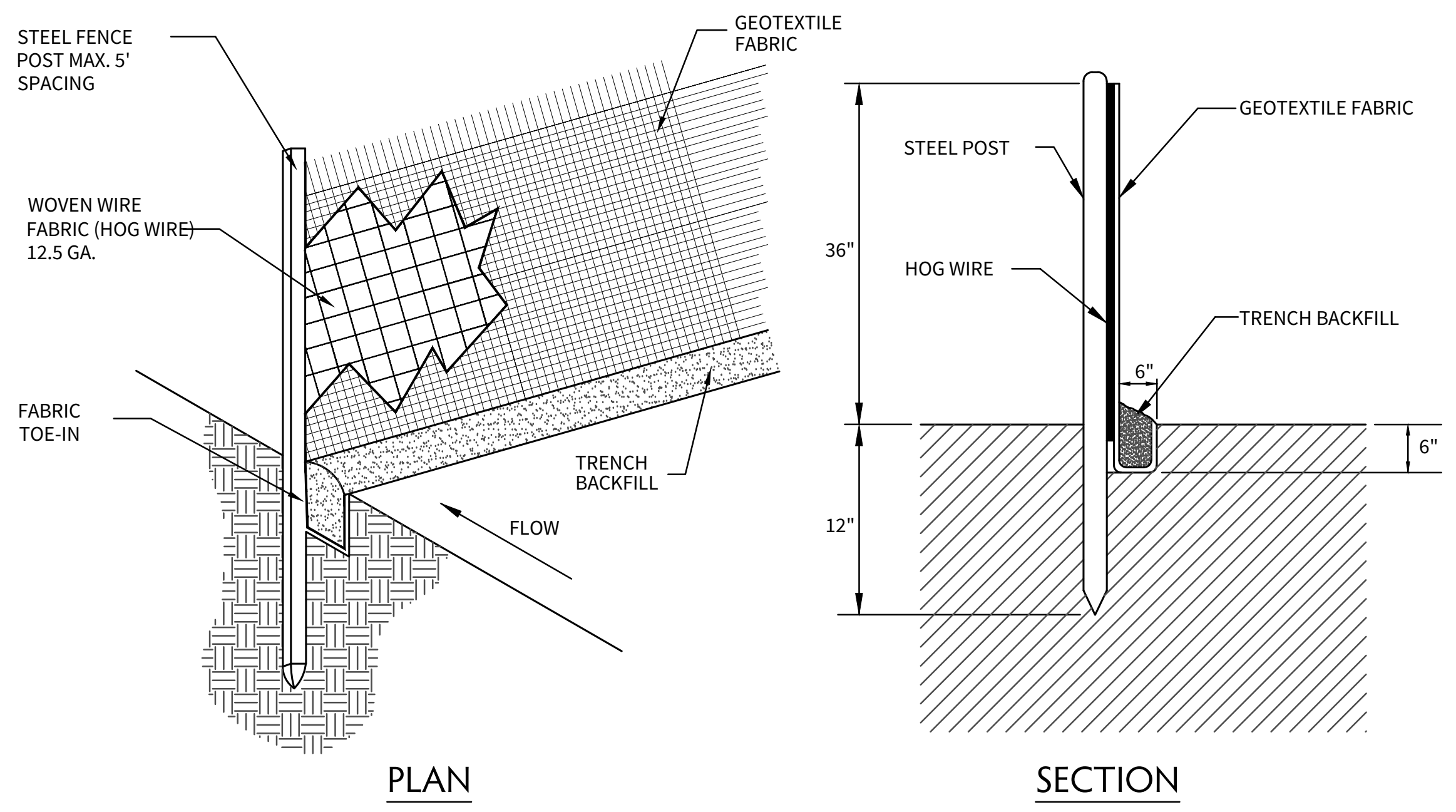
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

E2

2 OF 3

P:\03346\006\2-Drawings\08_E01 SWPPP.dwg 2023/05/17 11:01am msandoval

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

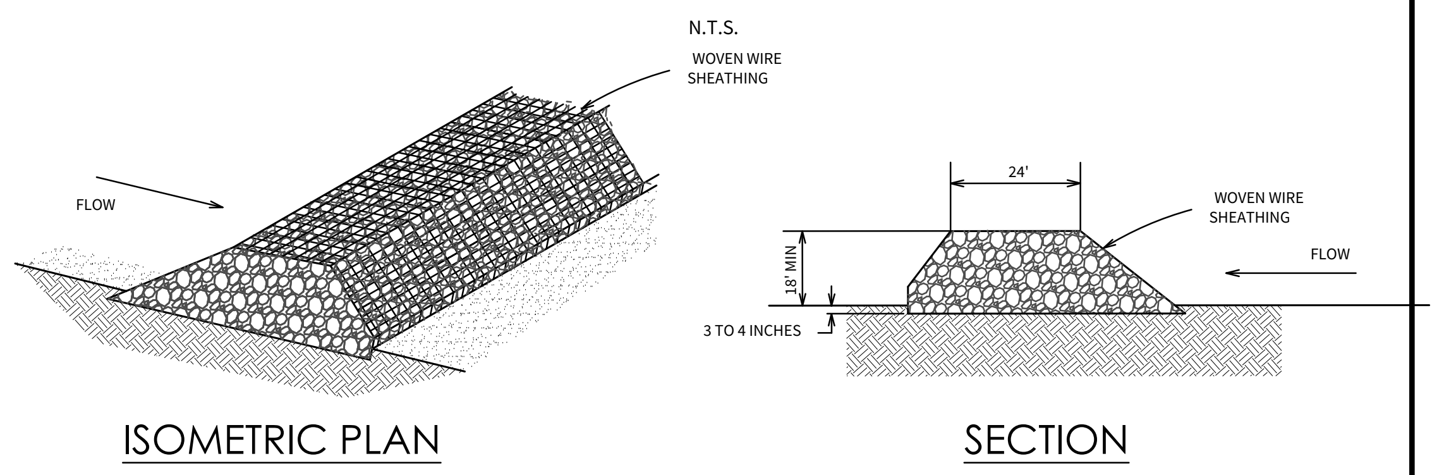


NOTES:

1. SILT FENCE MATERIAL SHOULD BE POLYPROPYLENE, POLYETHYLENE OR POLYAMIDE WOVEN OR NON WOVEN FABRIC. THE FABRIC WIDTH SHOULD BE 36 INCHES, WITH A MINIMUM UNIT WEIGHT OF 4.5 OZ/YD, MULLEN BURST STRENGTH EXCEEDING 190 LB/IN 2 , ULTRAVIOLET STABILITY EXCEEDING 70%, AND MINIMUM APPARENT OPENING SIZE OF U.S. SIEVE NO. 30.
2. FENCE POSTS SHOULD BE MADE OF HOT ROLLED STEEL, AT LEAST 4 FEET LONG WITH TEE OR Y-BAR CROSS SECTION, SURFACE PAINTED OR GALVANIZED, MINIMUM NOMINAL WEIGHT 1.25 LB/FT 2 , AND BRINDELL HARDNESS EXCEEDING 140.
3. WOVEN WIRE BACKING TO SUPPORT THE FABRIC SHOULD BE GALVANIZED 2" X 4" WELDED WIRE, 12.5 GAUGE MINIMUM.
4. STEEL POSTS, WHICH SUPPORT THE SILT FENCE, SHOULD BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF 1 FOOT DEEP AND SPACED NOT MORE THAN 5 FEET ON CENTER.
5. LAY OUT FENCING DOWN-SLOPE OF DISTURBED AREA, FOLLOWING THE CONTOUR AS CLOSELY AS POSSIBLE. THE FENCE SHOULD BE SITED SO THAT THE MAXIMUM DRAINAGE AREA IS ¼ ACRE/100 FEET OF FENCE.
6. THE TOE OF THE SILT FENCE SHOULD BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWN-SLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. WHERE FENCE CANNOT BE TRENCHED IN (E.G., PAVEMENT OR ROCK OUTCROP), WEIGHT FABRIC FLAP WITH 3 INCHES OF PEA GRAVEL ON UPHILL SIDE TO PREVENT FLOW FROM SEEPING UNDER FENCE.
7. THE TRENCH MUST BE A MINIMUM OF 6 INCHES DEEP AND 6 INCHES WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.
8. SILT FENCE SHOULD BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE, WHICH IS IN TURN ATTACHED TO THE STEEL FENCE POST. THERE SHOULD BE A 3-FOOT OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET.
9. SILT FENCE SHOULD BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
10. REMOVE SEDIMENT WHEN BUILDUP REACHES 6 INCHES, OR INSTALL A SECOND LINE OF FENCING PARALLEL TO THE OLD FENCE.
11. REPLACE ANY TORN FABRIC OR INSTALL A SECOND LINE OF FENCING PARALLEL TO THE TORN SECTION.
12. REPLACE OR REPAIR ANY SECTIONS CRUSHED OR COLLAPSED IN THE COURSE OF CONSTRUCTION ACTIVITY. IF A SECTION OF FENCE IS OBSTRUCTING VEHICULAR ACCESS, CONSIDER RELOCATING IT TO A SPOT WHERE IT WILL PROVIDE EQUAL PROTECTION, BUT WILL NOT OBSTRUCT VEHICLES. A TRIANGULAR FILTER DIKE MAY BE PREFERABLE TO A SILT FENCE AT COMMON VEHICLE ACCESS POINTS.

1 SILT FENCE DETAIL

SCALE: NONE

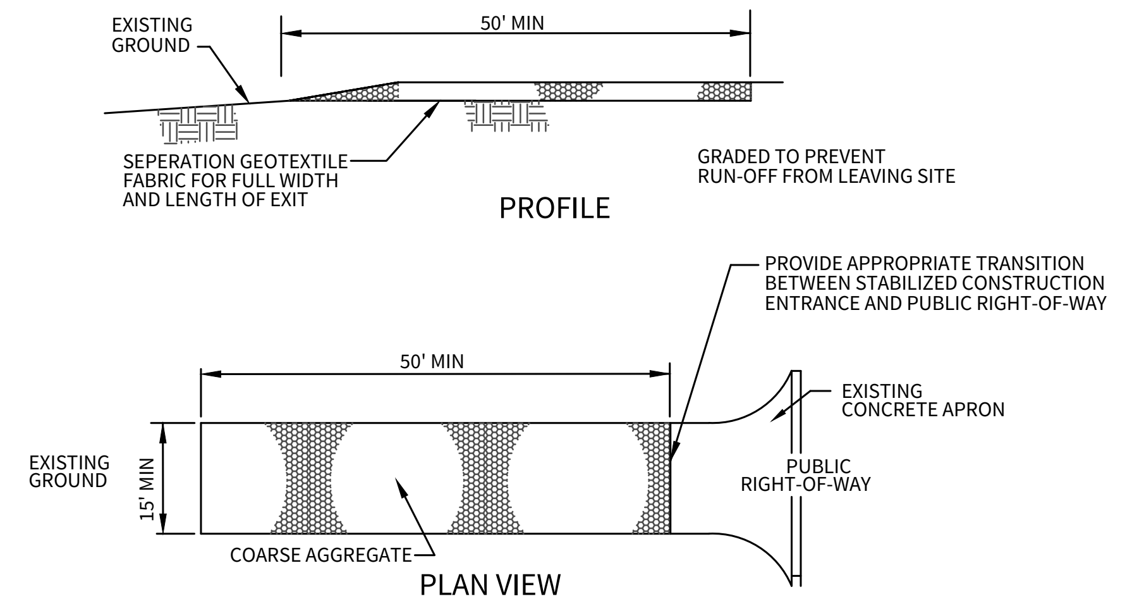


NOTES:

1. THE BERM STRUCTURE SHOULD BE SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM OPENING OF 1 INCH AND A MINIMUM WIRE DIAMETER OF 20 GAUGE GALVANIZED AND SHOULD BE SECURED WITH SHOAT RINGS.
2. CLEAN, OPEN GRADED 3 TO 5-INCH DIAMETER ROCK SHOULD BE USED, EXCEPT IN AREAS WHERE HIGH VELOCITIES OR LARGE VOLUMES OF FLOW ARE EXPECTED, WHERE 5-TO 8-INCH DIAMETER ROCKS MAY BE USED.
3. LAY OUT THE WOVEN WIRE SHEATHING PERPENDICULAR TO THE FLOW LINE.
4. BERM SHOULD HAVE A TOP WIDTH OF 2 FEET MINIMUM WITH SIDE SLOPES BEING 2:1 (H:V) OR FLATTER.
5. PLACE THE ROCK ALONG THE SHEATHING TO A HEIGHT NOT LESS THAN 18".
6. WRAP THE WIRE SHEATHING AROUND THE ROCK AND SECURE WITH TIE WIRE SO THAT THE ENDS OF THE SHEATHING OVERLAP AT LEAST 2 INCHES, AND THE BERM RETAINS ITS SHAPE WHEN WALKED UPON.
7. BERM SHOULD BE BUILT ALONG THE CONTOUR AT ZERO PERCENT GRADE OR AS NEAR AS POSSIBLE.
8. THE ENDS OF THE BERM SHOULD BE TIED INTO EXISTING UPSLOPE GRADE AND THE BERM SHOULD BE BURIED IN A TRENCH APPROXIMATELY 3 TO 4 INCHES DEEP TO PREVENT FAILURE OF THE CONTROL.
9. INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL BY THE RESPONSIBLE PARTY. FOR INSTALLATIONS IN STREAMBEDS, ADDITIONAL DAILY INSPECTIONS SHOULD BE MADE. THE BERM SHOULD BE RESHAPED AS NEEDED DURING INSPECTION.
10. REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6 INCHES AND DISPOSE OF THE ACCUMULATED SILT OF IN AN APPROVED MANNER AND REPAIR ANY LOOSE WIRE SHEATHING.
11. THE BERM SHOULD BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.
12. THE ROCK BERM SHOULD BE LEFT IN PLACE UNTIL ALL UPSTREAM AREAS ARE STABILIZED AND ACCUMULATED SILT REMOVED.

2 ROCK BERM DETAIL

SCALE: NONE


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

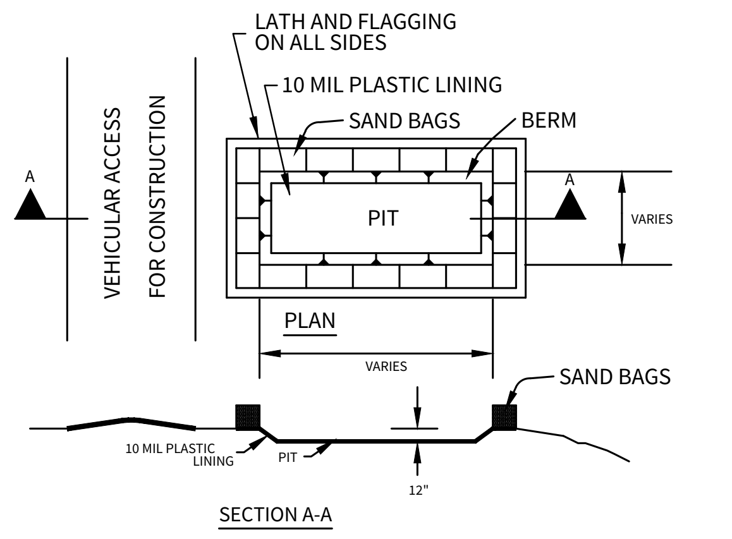
1. LENGTH SHALL BE AS SHOWN ON THE CONSTRUCTION DRAWINGS BUT NOT LESS THAN 50 FEET.
2. THICKNESS SHALL BE NOT LESS THAN 8 INCHES.
3. WIDTH SHALL BE NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS.
4. STABILIZED AREA MAY BE WIDENED OR LENGTHENED TO ACCOMODATE A TRUCK WASHING AREA WHEN SHOWN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

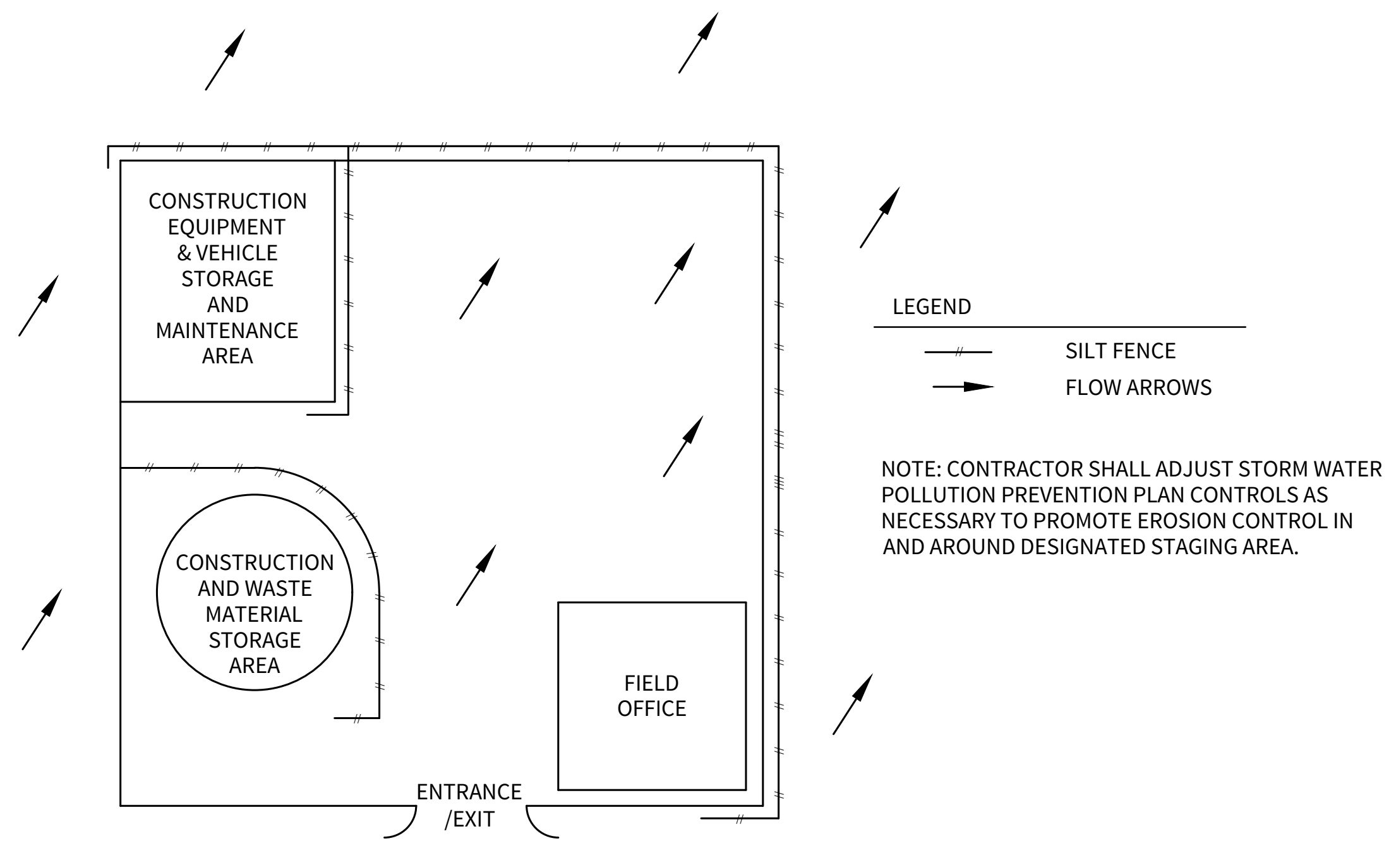


NOTES:

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

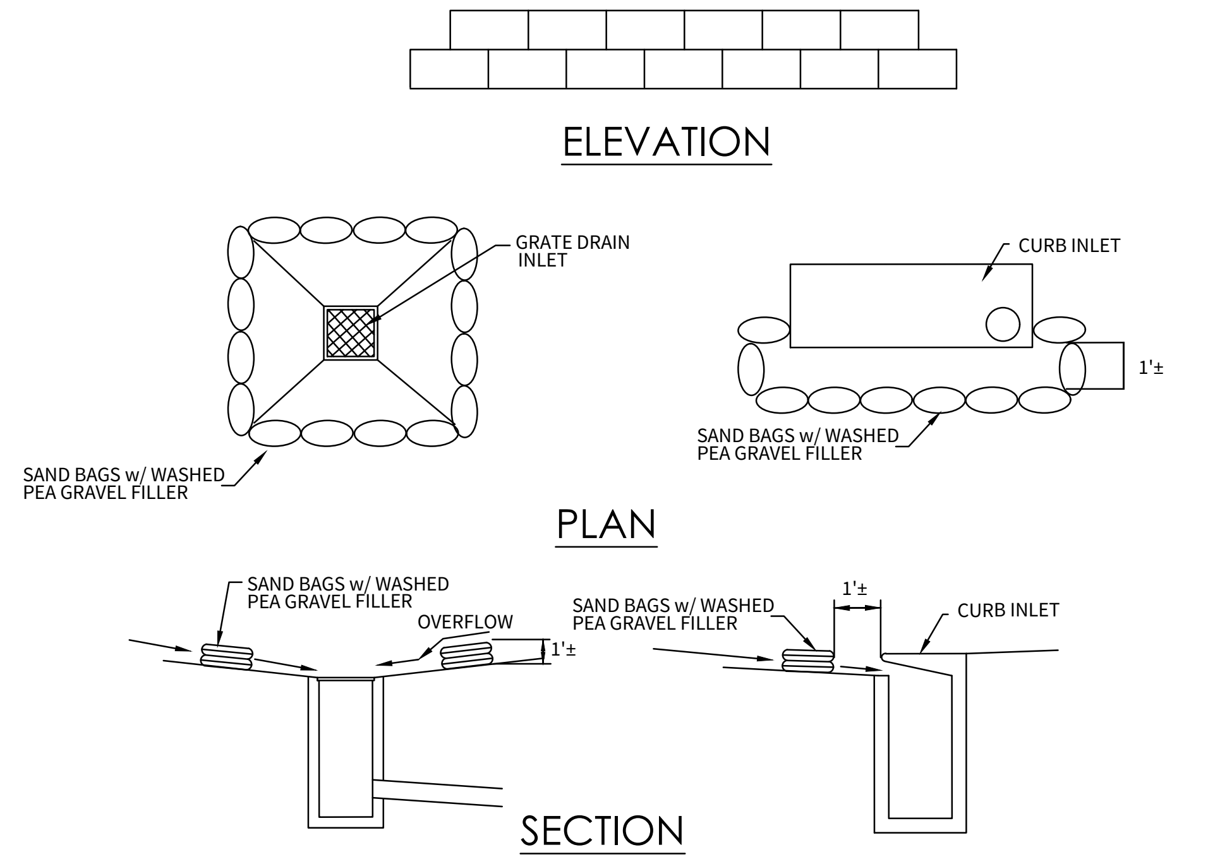
SCALE: NONE


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

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GRACE VALLEY RANCH
PHASE 3A

STORMWATER POLLUTION PREVENTION PLAN DETAILS

DATE
12/01/2022

PROJECT NO.
03346.006

DRAWN BY
KMH/NNR/MOH/MAS

CHECKED BY
CJC

REVISIONS
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KYLE M. HUDEK
138753
12/06/2022

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

E3

3 OF 3

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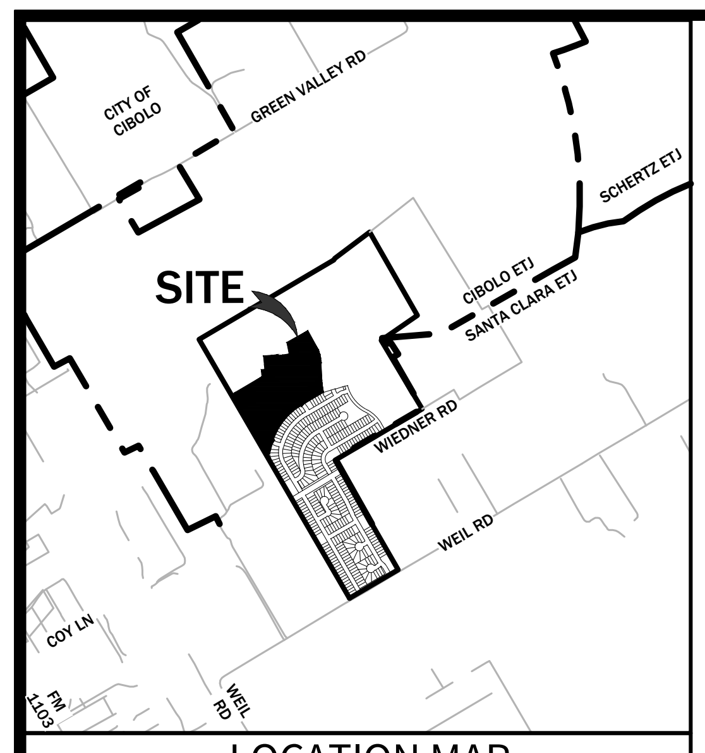

LOCATION MAP

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: CHRIS CHAFFEE, P.E.
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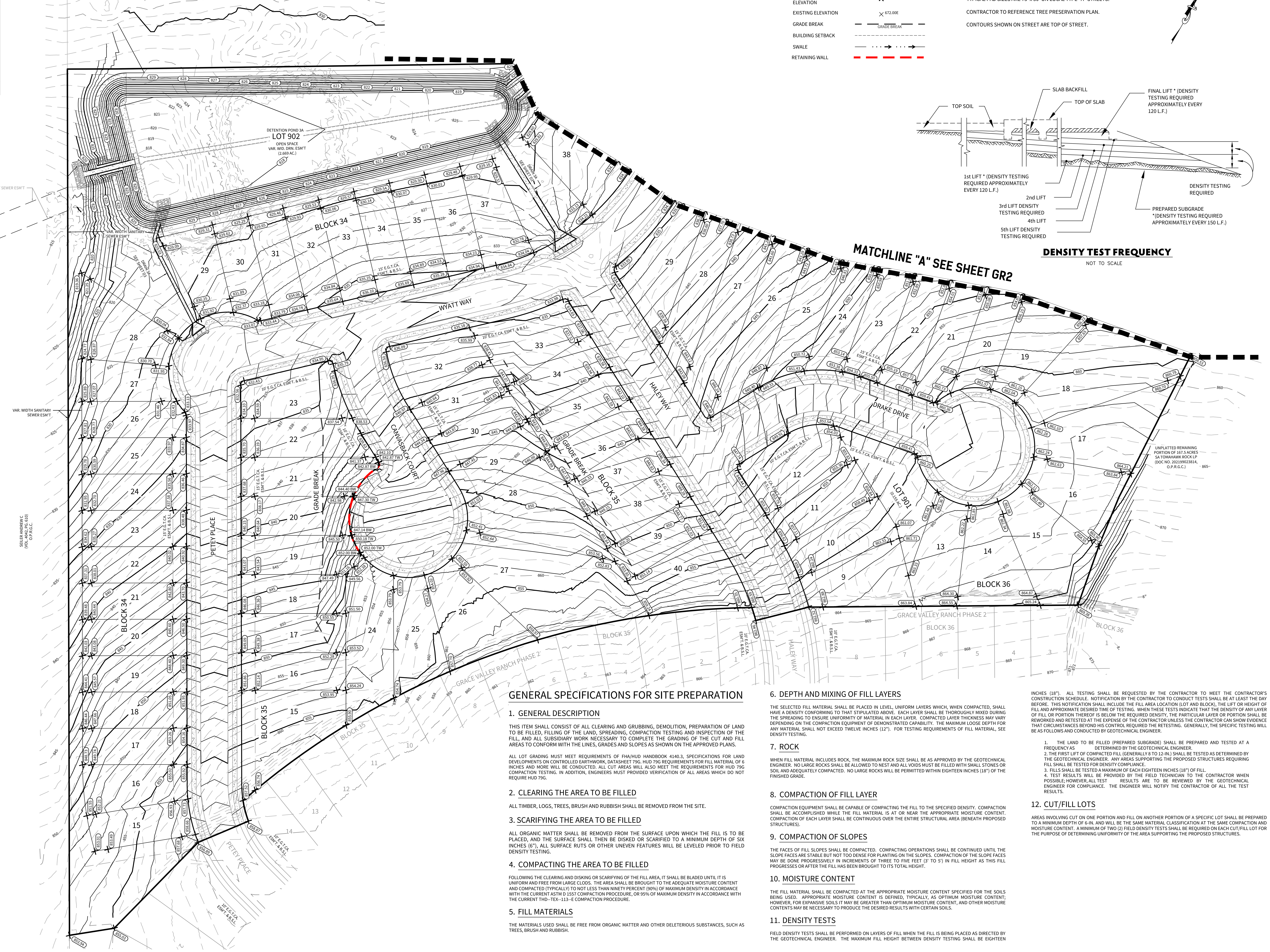
DETENTION POND 3A
LOT 902
OPEN SPACE
VAR. WID. DRN. ESM'T
(2.669 AC.)
24' SANITARY SEWER ESM'T
VAR. WIDTH SANITARY SEWER ESM'T
BLOCK 34
BLOCK 35
BLOCK 36
WYATT WAY
CANVASBACK COURT
PETEY PLACE
HALEY WAY
DRAKE DRIVE
GRADE BREAK
LOT 901
10' E.G.T.CA. ESM'T & B.S.L.
15' E.G.T.CA. ESM'T & B.S.L.
MATCHLINE "A" SEE SHEET GR2
UNPLATTED REMAINING PORTION OF 167.5 ACRES SA TOMAHAWK ROCK LP (DOC NO. 20219023814, O.P.R.G.C.)
SEILER ANDREW C (VOL 4942, PG. 610) O.P.R.G.C.
GRACE VALLEY RANCH PHASE 2

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	

NOTE:

LOT GRADING BASED ON SLABS BEING 15' BEHIND FRONT PROPERTY LINE.

MINIMUM SLAB EXPOSURE IS 1.0'.

ALL ELEVATIONS AT FRONT PROPERTY LINE ARE 0.30' ABOVE CURB ELEVATION ON LOCAL TYPE "A" STREETS.

TYPICAL PAD SIZES ARE 75' x 30' ON LOCAL TYPE "A" STREETS.

CONTRACTOR TO REFERENCE TREE PRESERVATION PLAN.

CONTOURS SHOWN ON STREET ARE TOP OF STREET.

SCALE: 1"=50'

50 25 0 50

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

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.

ALL LOT GRADING MUST MEET REQUIREMENTS OF FHA/HUD HANDBOOK 4140.3, SPECIFICATIONS FOR LAND DEVELOPMENTS ON CONTROLLED EARTHWORK, DATASHEET 79G. HUD 79G REQUIREMENTS FOR FILL MATERIAL OF 6 INCHES AND MORE WILL BE CONDUCTED. ALL CUT AREAS WILL ALSO MEET THE REQUIREMENTS FOR HUD 79G COMPACTION TESTING. IN ADDITION, ENGINEERS MUST PROVIDED VERIFICATION OF ALL AREAS WHICH DO NOT REQUIRE HUD 79G.

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

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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 3A

GRADING PLAN

DATE
07/03/2023

PROJECT NO.
03346.006

DRAWN BY
KMH/NNR/MOH/MAS

CHECKED BY
CJC

REVISIONS
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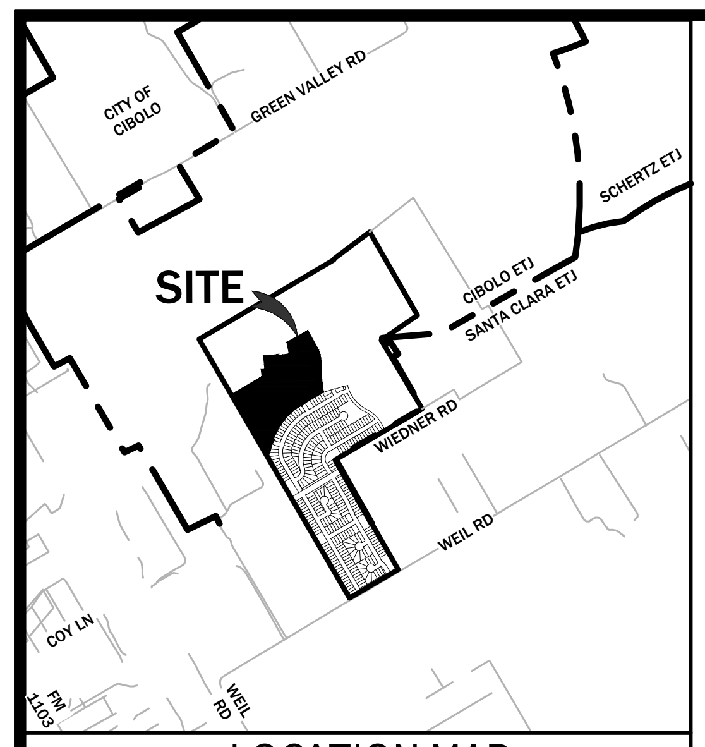
KYLE M. HUDEK
138753
K. Hudek 07/19/2023

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

GR1

1 OF 2



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

LEGEND

PROPOSED CONTOUR	1000
EXISTING CONTOUR	1000
PROPOSED ELEVATION	✕ 1297.58
EXISTING ELEVATION	✕ 672.00E
GRADE BREAK	GRADE BREAK
BUILDING SETBACK	
SWALE	···→···→

NOTE:

LOT GRADING BASED ON SLABS BEING 15' BEHIND FRONT PROPERTY LINE.

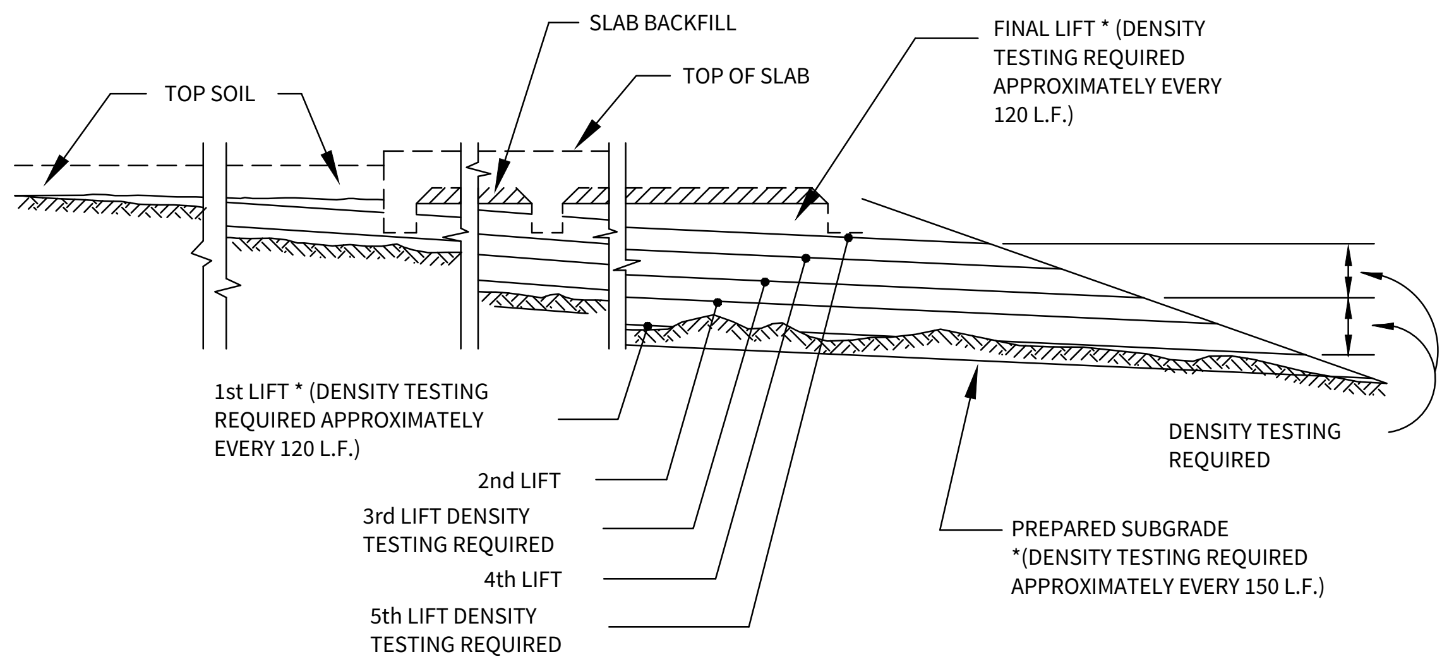
MINIMUM SLAB EXPOSURE IS 1.0'.

ALL ELEVATIONS AT FRONT PROPERTY LINE ARE 0.30' ABOVE CURB ELEVATION ON LOCAL TYPE "A" STREETS.

TYPICAL PAD SIZES ARE 75' x 30' ON LOCAL TYPE "A" STREETS.

CONTRACTOR TO REFERENCE TREE PRESERVATION PLAN.

CONTOURS SHOWN ON STREET ARE TOP OF STREET.


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

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.

ALL LOT GRADING MUST MEET REQUIREMENTS OF FHA/HUD HANDBOOK 4140.3, SPECIFICATIONS FOR LAND DEVELOPMENTS ON CONTROLLED EARTHWORK, DATASHEET 79G. HUD 79G REQUIREMENTS FOR FILL MATERIAL OF 6 INCHES AND MORE WILL BE CONDUCTED. ALL CUT AREAS WILL ALSO MEET THE REQUIREMENTS FOR HUD 79G COMPACTION TESTING. IN ADDITION, ENGINEERS MUST PROVIDED VERIFICATION OF ALL AREAS WHICH DO NOT REQUIRE HUD 79G.

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

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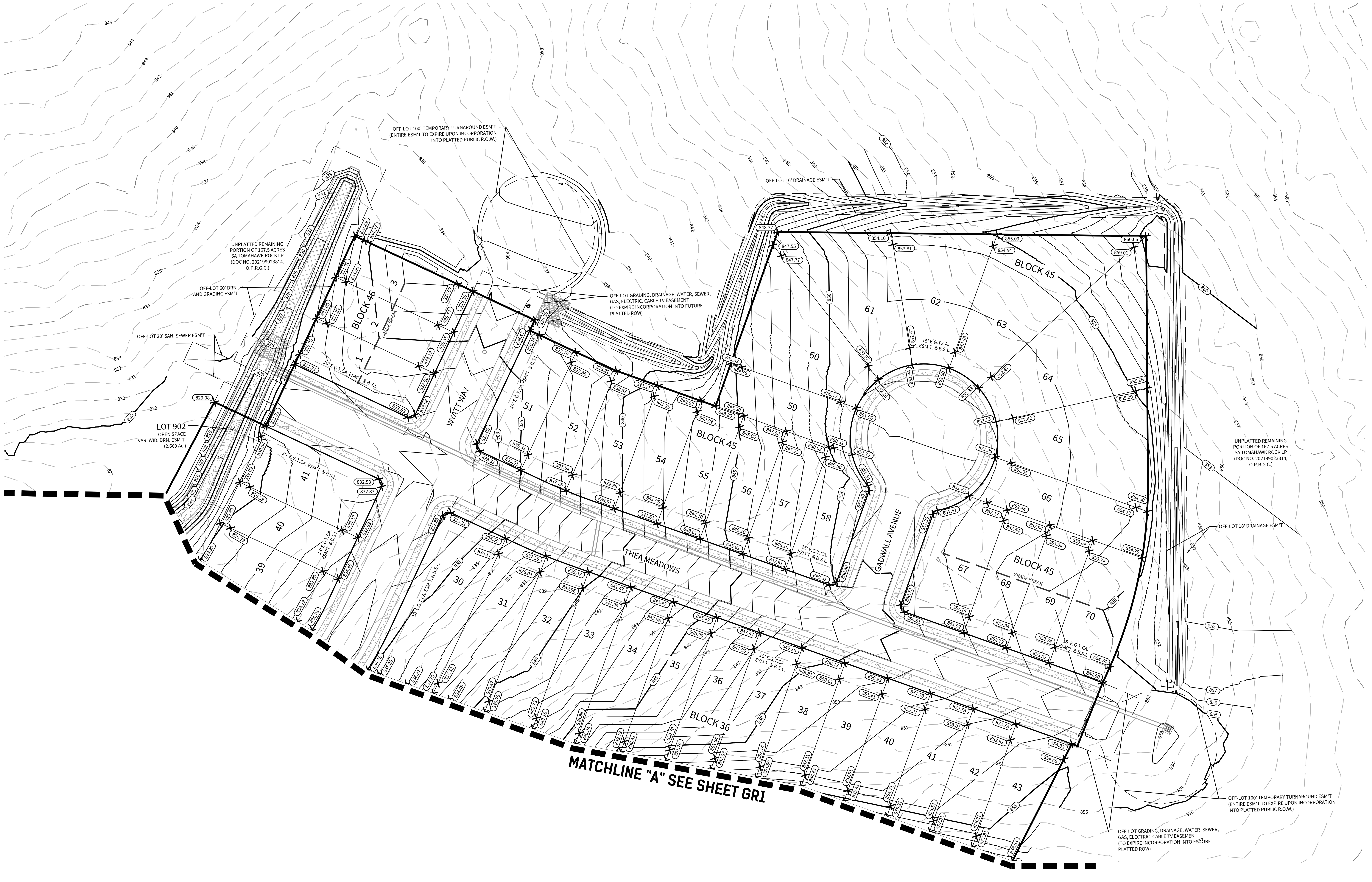
OFF-LOT 100' TEMPORARY TURNAROUND ESM'T (ENTIRE ESM'T TO EXPIRE UPON INCORPORATION INTO PLATTED PUBLIC R.O.W.)
UNPLATTED REMAINING PORTION OF 167.5 ACRES SA TOMAHAWK ROCK LP (DOC NO. 202199023814, O.P.R.G.C.)
OFF-LOT 60' DRN. AND GRADING ESM'T
OFF-LOT 20' SAN. SEWER ESM'T
LOT 902
OPEN SPACE
VAR. WID. DRN. ESM'T.
(2.669 Ac.)
BLOCK 46
GRADE BREAK
10' E.G.T.CA. ESM'T. & B.S.L.
WYATT WAY
OFF-LOT GRADING, DRAINAGE, WATER, SEWER, GAS, ELECTRIC, CABLE TV EASEMENT (TO EXPIRE INCORPORATION INTO FUTURE PLATTED ROW)
OFF-LOT 16' DRAINAGE ESM'T
BLOCK 45
15' E.G.T.CA. ESM'T. & B.S.L.
GADWALL AVENUE
THEA MEADOWS
BLOCK 36
UNPLATTED REMAINING PORTION OF 167.5 ACRES SA TOMAHAWK ROCK LP (DOC NO. 202199023814, O.P.R.G.C.)
OFF-LOT 18' DRAINAGE ESM'T
OFF-LOT 100' TEMPORARY TURNAROUND ESM'T (ENTIRE ESM'T TO EXPIRE UPON INCORPORATION INTO PLATTED PUBLIC R.O.W.)
OFF-LOT GRADING, DRAINAGE, WATER, SEWER, GAS, ELECTRIC, CABLE TV EASEMENT (TO EXPIRE INCORPORATION INTO FUTURE PLATTED ROW)
MATCHLINE "A" SEE SHEET GR1

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CUDE ENGINEERS EST. 1980

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GRACE VALLEY RANCH
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CJC

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KYLE M. HUDEK
138753
07/19/2023

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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