CIVIL PLANS

- C0.00 – GENERAL NOTES

- C1.00 – STORM WATER POLLUTION PREVENTION PLAN
- C1.02 – EXISTING CONDITIONS & DEMO PLAN

- C2.00 – GRADING PLAN

- C3.00 – UTILITY PLAN

- C4.00 – SANITARY SEWER MASTER PLAN
- C4.01 – SANITARY SEWER PLAN & PROFILE – LINE "A"
- C4.02 – SANITARY SEWER PLAN & PROFILE – LINE "A"
- C4.03 – SANITARY SEWER PLAN & PROFILE – LINE "B"
- C4.04 – SANITARY SEWER PLAN & PROFILE – LINE "B"
- C4.05 – SANITARY SEWER PLAN & PROFILE – LINE "C"
- C4.D1 – SANITARY SEWER DETAILS
- C4.D2 – SANITARY SEWER DETAILS

- C5.00 – WATER DISTRIBUTION PLAN
- C5.D1 – WATER DISTRIBUTION DETAILS
- C5.D2 – WATER DISTRIBUTION DETAILS

- C6.00 – MASTER DRAINAGE PLAN
- C6.01 – DRAINAGE PLAN & PROFILE – DRAIN A
- C6.02 – DRAINAGE PLAN & PROFILE – DRAIN A
- C6.03 – DRAINAGE PLAN & PROFILE – DRAIN B
- C6.04 – DRAINAGE PLAN & PROFILE – DRAIN B
- C6.05 – DRAINAGE PLAN & PROFILE – DRAIN C
- C6.06 – DRAINAGE PLAN & PROFILE – DRAIN D
- C6.07 – DRAINAGE PLAN & PROFILE – DRAIN E
- C6.08 – DRAINAGE PLAN & PROFILE – DRAIN F
- C6.09 – DRAINAGE PLAN & PROFILE – DRAIN G
- C6.10 – DRAINAGE PLAN & PROFILE – DRAIN H
- C6.11 – DETENTION POND A
- C6.12 – DETENTION POND B
- C6.D1 – DRAINAGE DETAILS
- C6.D2 – DRAINAGE DETAILS
- C6.D3 – DRAINAGE DETAILS
- C6.D4 – CURB INLET DETAILS

- C7.00 – STREET PLAN & PROFILE – DONUT WAY
- C7.01 – STREET PLAN & PROFILE – DONUT WAY
- C7.02 – STREET PLAN & PROFILE – DEMURO RD
- C7.03 – STREET PLAN & PROFILE – HOOVIES TRAIL
- C7.04 – STREET PLAN & PROFILE – RACER WAY
- C7.D1 – STANDARD STREET DETAILS
- C7.D2 – STREET DETAILS
- C7.D3 – STREET DETAILS

- C8.00 – TRAFFIC SIGNAGE PLAN
- C8.D1 – TXDOT SIGN MOUNTING DETAILS
- C8.D2 – TXDOT SIGN MOUNTING DETAILS

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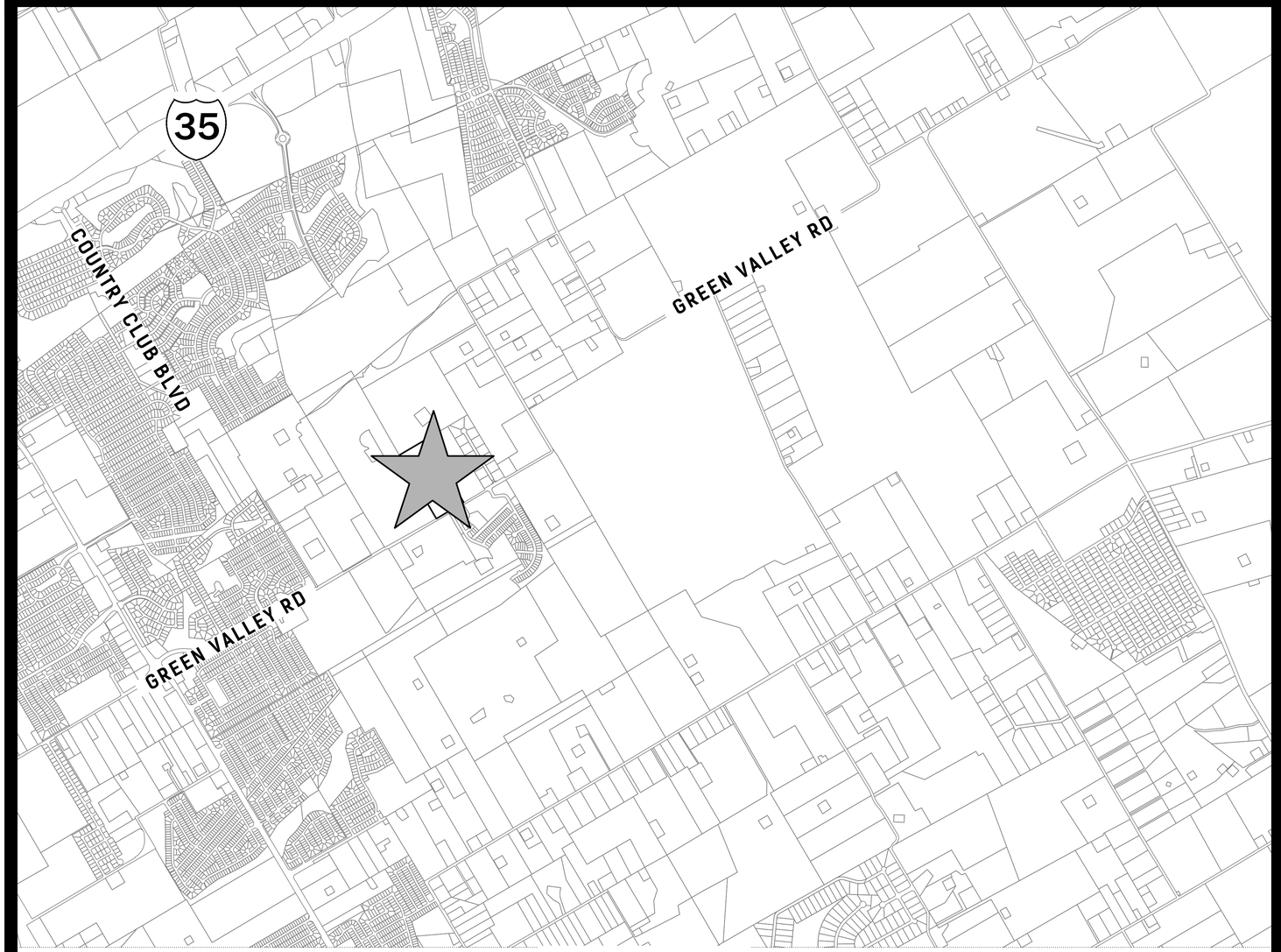
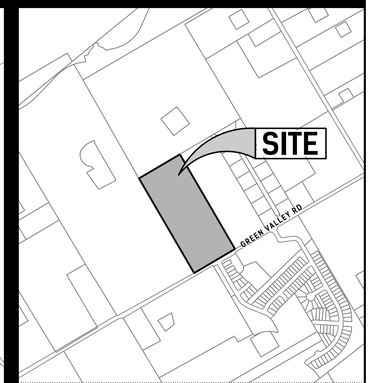
CONSTRUCTION DOCUMENTS FOR

SCHRYVER TRACT



VICINITY MAP
N.T.S.



LOCATION MAP
SCALE: 1" = 1000'

EST. 1980 CUDE ENGINEERS

SAN ANTONIO | AUSTIN | SAN MARCOS

4122 POND HILL ROAD, SUITE 101
SAN ANTONIO, TEXAS 78231
P:(210) 681.2951 F:(210) 523.7112
TBPE FIRM NO. 455
TBPLS FIRM NO. 10048500
SBE CERTIFIED FIRM

DEVELOPER:
KB HOME LONESTAR INC.
4800 FREDERICKSBURG RD
SAN ANTONIO, TX 78229

N W E S

PLAT :
SCHRYVER TRACT

PROJECT NUMBER:
04002.006

10/30/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

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

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

P:\04002\000\2-DWG\Plan\00_cvr.dwg, 2025/10/30 5:32pm, pmiller

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GENERAL NOTES

1. ALL CONSTRUCTION IS TO BE IN ACCORDANCE WITH THE FOLLOWING REGULATIONS AND SPECIFICATIONS. THE FIRST LISTED WILL HAVE PRIORITY OF THOSE LIST BELOW: PERMITS ISSUED FOR PROJECT BY ANY REGULATORY AGENCIES, GUADALUPE COUNTY CONSTRUCTION STANDARDS, PLANS FOR THIS PROJECT

2. VERIFY EXACT LOCATION OF UNDER GROUND UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON PLANS OR NOT.
   WATER/WASTEWATER G.V.S.U.D. (830) 914-2330
   ELECTRIC G.V.E.C. (800) 978-3500
   GAS CITY PUBLIC SERVICE (210) 978-3500
   TELEPHONE AT&T (800) 288-2020
   FIRE MARSHAL GUADALUPE COUNTY (830) 303-4188

3. TRENCH EXCAVATION PROTECTION SHALL BE ACCOMPLISHED AS REQUIRED BY THE PROVISIONS OF PART 1926, SUBPART P-EXCAVATION, TRENCHING AND SHORING OF THE OCCUPATIONAL SAFETY AND HEALTH STANDARDS AND INTERPRETATIONS, THE CONTRACTOR SHALL COMPLY WITH THE PROVISIONS INCLUDED IN ITEM 700, TRENCH EXCAVATION PROTECTION, GUADALUPE COUNTY STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.

4. ALL CONSTRUCTION ACTIVITIES SHALL BE CONFINED TO PROPERTY OWNED BY THE DEVELOPER OR PUBLIC RIGHT-OF-WAY AND EASEMENT UNLESS WRITTEN PERMISSION IS OBTAINED BY THE CONTRACTOR FROM THE PROPERTY OWNER AFFECTED.

5. 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.

6. IN ACCORDANCE WITH THE LAWS OF THE STATE OF THE TEXAS AND THE U.S. OCCUPATION SAFETY AND HEALTH ADMINISTRATION REGULATIONS, ALL TRENCHES OVER 5FEET IN DEPTH IN EITHER HARD OR STABLE OR SOFT AND UNSTABLE SOIL SHALL BE SLOPED, SHORED, SHEETED, BRACED OR OTHERWISE SUPPORTED. FURTHERMORE, ALL TRENCHES LESS THAN 5 FEET IN DEPTH SHALL ALSO BE EFFECTIVELY PROTECTED WHEN HAZARDOUS GROUND MARKET MAY BE EXPECTED. TRENCH SAFETY SYSTEMS TO BE UTILIZED FOR THIS PROJECT SHALL BE PROVIDED BY THE CONTRACTOR.

7. 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.

8. IN ACCORDANCE WITH THE U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION REGULATION, WHEN EMPLOYEES ARE REQUIRED TO BE IN TRENCHES 4 FEET DEEP OR MORE, ADEQUATE MEANS OF EXIT, SUCH AS A LADDER OR STEPS, MUST BE PROVIDED AND LOCATED SO AS TO REQUIRE TO MORE THAT 25 FEET OF LATERAL TRAVEL.

9. PRIOR TO THE BEGINNING OF CONSTRUCTION, THE DEVELOPER SHALL ARRANGE A PRE-CONSTRUCTION CONFERENCE AT GUADALUPE COUNTY. REPRESENTATIVES FROM THE FOLLOWING ORGANIZATIONS SHALL BE INVITED:
   GUADALUPE COUNTY STAFF, INCLUDING THE DIRECTOR OF PUBLIC WORKS
   CITY ENGINEER AND THE PUBLIC WORKS INSPECTOR.
   CONTRACTOR DESIGN ENGINEER ELECTRIC, GAS, PHONE AND CABLE UTILITY REPRESENTATIVES, IF APPROPRIATE.

10. IMPROVEMENTS AND ELEVATIONS SHOWN ARE EXISTING ON THE DATE OF THIS SURVEY AND MAY BE SUBJECT TO SUBSEQUENT CHANGES.

11. IF CONTRACTOR FINDS A DISCREPANCY WITH THE TOPOGRAPHICAL INFORMATION ON THESE PLANS, HE/SHE SHALL CONTACT THE CONSTRUCTION MANAGER/SUPERVISOR AND CIVIL ENGINEER IMMEDIATELY.

12. CONTRACTOR TO PROTECT ALL BENCHMARKS AND PROPERTY MONUMENTATION AND SHALL REPLACE OR REPAIR, AT HIS OR HER OWN EXPENSE, BENCHMARKS AND MONUMENTATION DISTURBED DURING CONSTRUCTION.

13. IF CONTRACTOR RELOCATES OR SETS NEW BENCHMARKS, THE VERTICAL ELEVATIONS OF THE BENCHMARKS SHALL BE SET TO A TOLERANCE OF 0.010 FT.

14. TREES SHOWN FOR REFERENCE ONLY, TREE REMOVAL, PROTECTION, AND TRANSPLANTING SHALL BE ACCORDING TO PROJECT TREE PRESERVATION PLAN AND LANDSCAPE PLANS AS APPLICABLE.

15. ALL STORMWATER POLLUTION PREVENTION PERMITS, BMP'S TO BE IN PLACE PRIOR TO COMMENCEMENT OF ANY WORK.

16. NO EDWARDS AQUIFER RECHARGE/CONTRIBUTING ZONE REQUIREMENTS FOR THIS SITE.

17. THE INFORMATION CONTAINED ON THESE DRAWINGS IN REGARDS TO EXISTING UTILITIES, TOPOGRAPHY, CONTOURS, OR SUBSURFACE CONDITIONS IS FURNISHED SOLELY AS THE BEST INFORMATION AVAILABLE AT THIS TIME. ITS ACCURACY IS NOT GUARANTEED AND ITS USE IN NO WAY RELIEVES THE CONTRACTOR OF ANY RESPONSIBILITY FOR LOSSES FOR TO ANY INACCURACIES.

18. THE LOCATION OF ALL EXISTING UTILITIES SHOWN ON THESE PLANS HAVE BEEN BASED UPON RECORD INFORMATION AND SURVEY INFORMATION FOR UTILITIES VISIBLE AT THE TIME OF SURVEY AND MAY NOT MATCH LOCATIONS AND/OR DEPTHS AS CONSTRUCTED. THE CONTRACTOR SHALL CONTACT EACH INDIVIDUAL UTILITY, FOR ASSISTANCE IN DETERMINING EXISTING UTILITY LOCATIONS AND DEPTHS PRIOR TO BEGINNING ANY CONSTRUCTION. CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF ALL UTILITY CROSSINGS PRIOR TO BEGINNING ANY CONSTRUCTION. THE CONTRACTOR IS TO MAKE EXPLORATORY EXCAVATIONS AND LOCATE EXISTING UNDERGROUND UTILITIES.

19. ALL REQUIRED RELOCATION'S OR ALTERATIONS OF TELEPHONE POLES, UNDERGROUND CONDUIT, POWER POLES AND ANY OTHER FACILITIES SHALL BE DONE BY THIS CONTRACTOR, UNLESS NOTED AS "BY OTHERS". THIS CONTRACTOR SHALL SCHEDULE AND COORDINATE HIS WORK WITH THAT OF OTHER CONTRACTORS AND UTILITY COMPANIES SO AS NOT TO DELAY THE PROJECT.

20. CONTRACTOR SHALL SECURE ALL PERMITS REQUIRED FOR CONSTRUCTION AND SHALL NOTIFY ALL RESPECTIVE GOVERNMENTAL OR UTILITY AGENCIES AFFECTED BY CONSTRUCTION PRIOR TO STARTING CONSTRUCTION.

21. ALL CONSTRUCTION OPERATIONS SHALL BE ACCOMPLISHED IN ACCORDANCE WITH APPLICABLE REGULATIONS OF THE U.S. OCCUPATIONAL HEALTH AND SAFETY ADMINISTRATION.

22. CONTRACTOR OR THE DEIGN ENGINEER SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION STAKING AND CUT SHEETS FOR PIPE LINES LAID ON GRADE AND ROAD CONSTRUCTION. CUT SHEETS SHALL BE DELIVERED TO THE CITY INSPECTOR 36 HOURS PRIOR TO CONSTRUCTION.

23. CONTRACTOR SHALL GIVE THE CITY A MINIMUM O F48 HOURS NOTICE BEFORE BEGINNING EACH PHASE OF CONSTRUCTION.

24. CONTRACTOR SHALL GIVE THE CITY INSPECTOR 36 HOURS NOTICE OF THE NEED FOR MATERIALS TESTING. ALL TESTING WILL BE ARRANGED AND PAID FOR BY THE CONTRACTOR. THE CITY SHALL RECEIVE A COPY OF TEST RESULTS.

25. CONTRACTOR IS RESPONSIBLE FOR TAKING (AND INCLUDING IN BID) ALL OF THE APPROPRIATE SECURITY MEASURES AT THE SITE, FOR THE DURATION OF THE CONSTRUCTION PERIOD.

26. CONTRACTOR IS TO PROVIDE "AS BUILTS" ON ALL UTILITY AND DRAINAGE IMPROVEMENTS, PUBLIC OR PRIVATE.

27. PERMANENT EROSION CONTROL/VEGETATION WILL BE COMPLETED BY CONTRACTOR.

28. CONTRACTOR SHALL MAKE ARRANGEMENTS WITH GVSUD FOR THE USE OF ALL WATER FOR CONSTRUCTION.

SITE CLEARING NOTES:

1. CONDUCT SITE CLEARING OPERATIONS TO THE EXTENT SHOWN ON THE DRAWINGS, INCLUDING BUT NOT LIMITED TO: REMOVAL OF TREES AND OTHER VEGETATION, TOPSOIL, STRIPPING. CLEARING AND GRUBBING, AND REMOVAL OF ALL IMPROVEMENTS ABOVE OR BELOW GRADE. REFER TO THE GEOTECHNICAL REPORT FOR THIS PROJECT FOR ADDITIONAL SITE PREPARATION REQUIREMENTS.

2. EXECUTION:
   A. SITE CLEARING OPERATIONS SHALL NOT DAMAGE OR INTERFERE WITH THE PUBLIC USE OF ROADS, WALKS, ADJACENT LAND OR FACILITIES AND EXISTING IMPROVEMENTS INTENDED TO REMAIN.
   B. EXISTING TREES TO REMAIN SHALL BE PROTECTED IN COMPLIANCE WITH - LANDSCAPE PLANS.
   C. CONTRACTOR SHALL REMOVE TREES, SHRUBS, GRASS AND OTHER VEGETATION, IMPROVEMENTS OR OBSTRUCTIONS INTERFERING WITH THE INSTALLATION OF NEW CONSTRUCTION OR AS SHOWN ON PLANS. CLEARING OPERATIONS SHALL INCLUDE REMOVAL OF STUMPS AND ROOTS.
   D. CONTRACTOR SHALL STRIP TOPSOIL IN A MANNER APPROPRIATE TO SEGREGATE FROM UNDERLYING SUBSOIL. TOPSOIL STRIPPING NEAR TREES INTENDED TO REMAIN SHALL BE COMPLETED IN COMPLIANCE LANDSCAPE PLANS.

3. SPOIL SHALL BE STORED ONLY IN AREAS SHOWN ON THE PLANS AND SHALL BE MAINTAINED IN ACCORDANCE WITH APPLICABLE POLLUTION PREVENTION PLANS OR PERMITS.

4. WASTE MATERIAL OR EXCESS TOPSOIL GENERATED AS A RESULT OF CLEARING AND GRADING OPERATIONS SHALL BECOME THE PROPERTY OF THE CONTRACTOR. APPROPRIATE DISPOSAL OF ALL SPOIL MATERIAL SHALL BE AT THE CONTRACTOR'S EXPENSE. BURNING ON THE OWNER'S PROPERTY IS NOT PERMITTED.

DEMOLITION NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING ALL NECESSARY PERMITS/APPROVALS BEFORE BEGINNING DEMOLITION.

2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING FROM THE SITE AL L ITEMS SHOWN TO BE DEMOLISHED UNLESS OTHERWISE INDICATED. ALL MATERIALS SHALL BE DEMOLISHED AND REMOVED FROM SITE IN ACCORDANCE WITH ALL APPLICABLE, FEDERAL, STATE AND LOCAL REGULATIONS.

3. ALL EXISTING ITEMS NOT SPECIFICALLY NOTED TO BE DEMOLISHED SHALL REMAIN. CONTRACTOR IS RESPONSE FOR REPLACING EXISTING ITEMS REMOVED DURING DEMOLITION THAT WERE TO REMAIN.

4. CONTRACTOR IS RESPONSIBLE FOR COORDINATION WITH ALL UTILITY COMPANIES REGARDING REMOVAL OF EXISTING SERVICES, POWER POLES TO BE REMOVED, VERIFYING UTILITIES ARE SHUT OFF OR DISCONNECTED, AND THAT ALL POSSIBLE SAFETY PRECAUTIONS HAVE BEEN ENACTED TO ENSURE THE SAFEST ENVIRONMENT FOR ALL PERSONNEL.

5. LOCATION AND DEPTH OF EXISTING UTILITIES SHOWN HERE ON ARE APPROXIMATE ONLY . ACTUAL LOCATIONS AN DEPTHS MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO THE CONSTRUCTION AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, THROUGHOUT ALL PHASES OF CONSTRUCTION.

6. ALL NECESSARY EROSION CONTROL MEASUR3ES ARE TO BE IN PLACE PRIOR TO CONSTRUCTION. EROSION CONTROL MEASURES ARE TO BE MAINTAINED AND IN WORKING CONDITIONS AT ALL TIMES.

7. CONTRACTOR SHALL CONFIRM WITH THE OWNER OF HIS DESIGNATE WHETHER TO SALVAGE AND MAKE ARRANGEMENTS TO STORE TRANSPLANTABLE TREES PRIOR TO REMOVAL.

8. FOR TREES SHOWN TO REMAIN, THE CONTRACTOR SHALL INSTALL TREE PROTECTION IN ACCORDANCE WITH THE PROJECT PLANS AND SPECIFICATIONS. THE CONTRACTOR SHALL NOT REMOVE OR DAMAGE ANY TREES WITHOUT A PERMIT TO DO SO.

9. NO PARKING AND/OR STORAGE SHALL BE ALLOWED WITHIN THE DRIP LINE OF THE TREES TO REMAIN.

10. THE CONTRACTOR SHALL SAW CUT EXISTING PAVEMENT, CURBS AND SIDEWALKS AT THE NEW PAVEMENT, CURB AND SIDEWALK JUNCTURES, NO JAGGED OR IRREGULAR CUTS WILL BE ACCEPTED.

11. THE CONTRACTOR SHALL PROTECT ALL PROPERTY PINS, BENCH MARKS, CONSTRUCTION STAKES, HUBS, OR OTHER KEY CONTROL POINTS. THE CONTRACTOR SHALL BE RESPONSIBLE TO RE-ESTABLISH ANY SUCH POINTS AT THEIR OWN EXPENSE.

12. DEMOLITION CONTRACTOR IS RESPONSE FOR CLEARING THE SITE OF ALL OBSTRUCTIONS THAT EXIST ON THIS SITE PRIOR TO THE START OF CONSTRUCTION OR DURING THE CONSTRUCTION SO AS TO NOT IMPEDE THE BUILDING CONSTRUCTION CONTRACTOR.

13. CONTRACTOR SHALL COORDINATE WITH THE OWNER TO IDENTIFY ANY MATERIAL OR EQUIPMENT SCHEDULED FOR REMOVAL TO BE SALVAGED AND/OR REUSED. CONTRACTOR SHALL REPLACE AT HIS EXPENSE ANY DESTROYED MATERIAL OR EQUIPMENT THAT WAS MARKED FOR SALVAGE.

14. NO EXISTING ASPHALT OR CONCRETE PAVING SCHEDULED FOR REMOVAL SHALL REMAIN ON-SITE OR BE USED AS FILL MATERIAL. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL AND DISPOSAL OF ALL HAZARDOUS MATERIAL OFFSITE FOLLOWING ALL APPLICABLE DISPOSABLE REGULATIONS.

15. CONTRACTOR SHALL ADJUST IRRIGATION LATERALS TO ALLOW PROPER FUNCTION OF ZONES AT COMPLETIONS OF CONSTRUCTION. WORK TO BE COORDINATED WITH THE OWNER.

16. CONTRACTOR SHALL NOT DEMOLISH ANY PUBLIC WATER OR SANITARY SEWER LINES WITHOUT APPROVAL. EXISTING WATER AND SANITARY SEWER SERVICES SHALL REMAIN OPERATIONAL UNTIL NEW SERVICE IS COMPLETE. CUT AND CAP ANY ABANDONED SANITARY SEWER AND WATER SERVICES AT THE EXISTING MAIN. NO ABANDONED SERVICES SHALL REMAIN CONNECTED TO THE PUBLIC MAIN.

17. THE USE OF EXPLOSIVES WILL NOT BE PROHIBITED.

18. ALL WASTE MATERIAL REMAINING AFTER THE OWNER SALVAGE IS COMPLETE AND RESULTING FROM DEMOTION OPERATIONS BECOMES THE PROPERTY OF THE CONTRACTOR. APPROPRIATE DISPOSAL OF WASTE MATERIAL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AT HIS OWN EXPENSE. OWNER WILL PROVIDE LIST OF ITEMS TO BE SALVAGED.

19. THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDED BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE, FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCT BANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT THE CONTRACTORS SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

20. THE CONTRACTOR SHALL MAINTAIN THE SITE IN A CLEAN AND ORDERLY MANNER.

21. THE CONTRACTOR SHALL MEET ALL LOCAL, STATE, AND FEDERAL REGULATIONS FOR DUST CONTROL. THE CONTRACTOR SHALL BE RESPONSIBLE AT THEIR OWN EXPENSE FOR ANY FUGITIVE DUST ON ADJOINING PROPERTIES.

UTILITY NOTES:

1. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS PROJECT SHALL FOLLOW TxDOT'S UTILITY ACCOMMODATION RULES (UAR) AND BE APPROVED BY TxDOT, GUADALUPE COUNTY TO COMPLY WITH THE FOLLOWING AS APPLICABLE:
   A. CURRENT GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD SPECIFICATIONS FOR CONSTRUCTION
   B. CURRENT GREEN VALLEY SPECIAL UTILITY DISTRICT UTILITY SERVICE REGULATIONS.
   C. CURRENT CPS UTILITY SERVICE REQUIREMENTS.
   D. CURRENT INTERNATIONAL BUILDING, PLUMBING & FIRE CODE.

2. UTILITIES SHOWN ON THE PLANS ARE FROM THE BEST INFORMATION SOURCES AVAILABLE AT THE TIME OF DESIGN BUT MAY NOT REPRESENT ALL EXISTING UTILITIES ON SITE. THE CONTRACTOR SHALL UNCOVER KNOWN EXISTING UTILITIES PRIOR TO CONSTRUCTION TO VERIFY SIZE, GRADE AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM THE PLANS, OR UPON THE DISCOVERY OF ADDITIONAL UTILITIES NOT SHOWN ON THE PLANS, PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE IMMEDIATELY REPORTED TO THE OWNER AND THE ENGINEER.

3. ALL UTILITY CONNECTIONS SHALL BE COORDINATED WITH THE ENGINEER.

4. CONTRACTOR SHALL PROVIDE FOR THE SAFE PASSAGE OF PEDESTRIAN AND VEHICULAR TRAFFIC DURING UTILITY CONSTRUCTION WITHIN PUBLIC RIGHT-OF-WAY PER GUADALUPE COUNTY AND TEXAS DEPARTMENT OF TRANSPORTATION REQUIREMENTS.

5. NO WATER JETTING WILL BE ALLOWED ON THIS PROJECT.

6. THE CONTRACTOR SHALL PROVIDE PLAN OF RECORD DRAWING(S), WITH FINAL MEASUREMENTS, TYPE OF PIPE, FITTINGS, AND APPURTENANCES TO THE OWNER PRIOR TO FINAL ACCEPTANCE OF ALL UTILITY SYSTEMS. PLAN(S) SHALL BE DIMENSIONED TO ACCURATELY LOCATE BURIED FITTINGS.

7. UNDER NO CIRCUMSTANCES WILL THE CONTRACTOR BE ALLOWED TO PROCEED WITH THE CONSTRUCTION OF ANY UTILITIES, BOTH UNDERGROUND AND OVERHEAD, UNTIL EVERYTHING HAS BEEN COORDINATED AND ALL PERMITS AND APPROVALS BY ALL GOVERNING AGENCIES ARE IN ORDER.

8. THE CONTRACTOR SHALL COMPLY WITH ALL NECESSARY GOVERNMENTAL REGULATIONS AND SHALL OBTAIN ALL REQUIRED PERMITS AND BEAR COST FOR THE SAME.

9. CONTRACTOR TO SUPPORT AND KEEP INTACT STORM DRAINS AND INLET STRUCTURES, EXISTING DRAINAGE PATTERNS AND FACILITIES ARE TO BE MAINTAINED THROUGHOUT PROJECT DURATION. ANY DAMAGES INCURRED WILL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

10. AFTER CONSTRUCTION IS COMPLETED, THE CONTRACTOR SHALL STABILIZE ALL DISTURBED SOIL AREAS IN ACCORDANCE WITH THE STORMWATER POLLUTION PREVENTION PLAN AND RE-SOD DISTURBED SOIL AREAS IN COMPLIANCE WITH LANDSCAPE PLANS OR WITH BERMUDA SODDING OR HYDROMULCH TO MATCH CONDITIONS PRIOR TO CONSTRUCTION.

11. THE CONTRACTOR SHALL BE REQUIRED TO COMMENCE CONSTRUCTION AND LAYING OF PIPE AT THE DOWNSTREAM END OF THE GRAVITY FLOW OUTFALL LINE AND PROCEED NON-STOP IN A FORWARD UPSTREAM DIRECTION. NO PIPE SHALL BE LAID WITHIN TEN FEET (10') OF ANY POINT WHERE EXCAVATION IS IN PROGRESS. PIPE LAYING SHALL PROCEED UPGRADE WITH THE TONGUE OR SPIGOT POINTING IN THE DIRECTION OF FLOW. PIPE SHALL BE LOWERED INTO THE TRENCH WITHOUT DISTURBING THE PREPARED FOUNDATION OR THE TRENCH SIDES.

12. ALL EXCAVATION SHALL BE UNCLASSIFIED AND SHALL INCLUDE ALL MATERIAL ENCOUNTERED REGARDLESS OF THEIR NATURE OR THE MANNER IN WHICH THEY ARE REMOVED.

13. ADJUST ALL EXISTING VALVES, UTILITY MANHOLES, METER BOXES, PULL BOXES, VALVE BOXES, ETC. TO REMAIN TO FINAL GRADE, UNLESS NOTED OTHERWISE. REFERENCE GRADING PLAN.

14. WHEN PRESSURE UTILITY SYSTEMS ARE IN VERTICAL CONFLICT WITH GRAVITY UTILITY SYSTEMS THE CONTRACTOR SHALL REROUTE PRESSURE UTILITY SYSTEMS VERTICAL AS NECESSARY FOR PROPOSED CONSTRUCTION.

15. NO OTHER UTILITY SERVICE/APPURTENANCES SHALL BE PLACED NEAR THE PROPERTY LINE, OR OTHER ASSIGNED LOCATION DESIGNATED FOR WATER AND WASTEWATER UTILITY SERVICE THAT WOULD INTERFERE WITH THE WATER AND WASTEWATER SERVICES.

16. CONTRACTOR SHALL FURNISH ALL UTILITY PIPE FITTINGS, MATERIALS, EQUIPMENT, ETC. AS NECESSARY FOR PROPOSED CONSTRUCTION.

17. FOR PRESSURE TAPS, FURNISH, INSTALL AND AIR TEST THE SLEEVE AND VALVE. CONCRETE BLOCKING SHALL BE PLACED BEHIND AND UNDER ALL TAP SLEEVES TWENTY-FOUR (24) HOURS PRIOR TO MAKING THE WET TAP.

18. JOINT RESTRAINTS SHALL BE IN ACCORDANCE WITH GVSUD REQUIREMENTS.

19. CONTRACTOR SHALL INSTALL ALL GRAVITY LINES FROM DOWNSTREAM END TO UPSTREAM END.

20. REFER TO LANDSCAPE PLANS FOR IRRIGATION SERVICE.

21. ALL PROPOSED ELECTRIC, GAS, PHONE, AND CABLE UTILITIES SHOWN FOR REFERENCE ONLY. CONTRACTOR TO VERIFY AND COORDINATE WITH UTILITY COMPANIES AND/OR ENGINEER.

22. IF REQUIRED, ALL WORK ASSOCIATED WITH PROVIDING NATURAL GAS INCLUDING TRENCHING, CONDUIT INSTALLATION, PAVEMENT REPLACEMENT/BACKFILL AND METER INSTALLATION AS DESCRIBED ON THESE PLANS SHALL BE COORDINATED WITH NATURAL GAS PROVIDER.

23. ALL PROPOSED ELECTRIC, PHONE AND CABLE CONDUITS SHALL BE PROVIDED WITH PULL STRINGS.

24. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.181, CITY PUBLIC SERVICE BOARD (C.P.S.B.) MUST MAINTAIN ACCESS TO ALL GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT AND WORK AROUND ANY GAS VALVES THAT ARE IN THE PROJECT AREA.

SOIL STABILIZATION PROCEDURE:

1. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED. WHERE THE INITIATION OF STABILIZATION MEASURES BY THE 14TH DAY AFTER CONSTRUCTION ACTIVITY TEMPORARILY OR PERMANENTLY CEASE IS PRECLUDED BY WEATHER CONDITIONS, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE. WHERE CONSTRUCTION ACTIVITY ON A PORTION OF THE SITE IS TEMPORARILY CEASED, AND EARTH DISTURBING ACTIVITIES WILL BE RESUMED WITHIN 21 DAYS, TEMPORARY STABILIZATION MEASURES DO NOT HAVE TO BE INITIATED ON THAT PORTION OF SITE. IN AREAS EXPERIENCING DROUGHTS WHERE THE INITIATION OF STABILIZATION MEASURES BY THE 14TH DAY AFTER CONSTRUCTION ACTIVITY HAS TEMPORARILY OR PERMANENTLY CEASED IS PRECLUDED BY SEASONAL ARID CONDITIONS, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE.

PAVEMENT NOTES:

1. DESIGN MIX SUBMITTALS SHALL BE PROVIDED FOR REVIEW BY THE GEOTECHNICAL AND/OR CIVIL ENGINEER AT LEAST 7 DAYS PRIOR TO PLACEMENT.

2. DO NOT UNLOAD OR USE ANY HEAVY CONSTRUCTION EQUIPMENT ON NEW CONCRETE FOR AT LEAST 7 DAYS AFTER CONCRETE IS POURED.

3. GENERAL CONTRACTOR OR APPLICABLE SUB-CONTRACTOR IS RESPONSIBLE FOR COORDINATING WORK SUCH THAT UTILITIES ARE INSTALLED PRIOR TO PAVEMENT BASE BEING INSTALLED OR ELSE LOCATE AND PLACE LINES FOR PROPOSED UNDERGROUND UTILITIES. LOCATE AND PLACE LINES OR SLEEVES FOR UNDERGROUND UTILITIES PRIOR TO PLACEMENT OF PAVEMENT BASE.

4. UNLESS OTHERWISE SHOWN ON THE PLANS, RECOMMENDED BY THE GEOTECHNICAL ENGINEER OR APPROVED BY THE ENGINEER, CONCRETE AREAS SHALL COMPLY WITH THE FOLLOWING ITEMS WITHIN ELSE TEXAS DEPARTMENT OF TRANSPORTATION 2014 STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS AND BRIDGES:

   * ITEM 247 - FLEXIBLE BASE
   * ITEM 360 - CONCRETE PAVING
   * ITEM 421 - PORTLAND CEMENT CONCRETE
   * ITEM 529 - CONCRETE CURBS, GUTTER AND COMBINED CURB AND GUTTER
   * ITEM 531 - SIDEWALKS

5. JOINTS SHALL BE PLACED IN ANY PROPOSED CONCRETE PAVEMENT AND CURBING AS RECOMMENDED IN THE APPLICABLE GEOTECHNICAL STUDY FOR THIS PROJECT. IF A GEOTECHNICAL STUDY WAS NOT PERFORMED OR IF DESIGN IS NOT INCLUDED IN CIVIL PLANS, THE JOINT LAYOUT AND DESIGN SHALL CONFORM TO THE AMERICAN CONCRETE PAVEMENT ASSOCIATION (ACPA) TECHNICAL PUBLICATION 150 61.01P, TABLE Z AND FIGURE 13.

6. ALL CONCRETE PAVING AND FLATWORK SHALL BE CURED IN CONFORMANCE WITH CURRENT AMERICAN CONCRETE PAVEMENT ASSOCIATION GUIDELINES.

7. ALL CONCRETE WORK SHALL CONFORM TO ALL APPLICABLE REQUIREMENTS OF ACI 330. FLY ASH CAN BE USED IN MIX DESIGNS WHERE SUITABLE.

8. ALL EXPOSED CORNERS FOR CONCRETE WORK SHALL BE CHAMFERED 1"

PAVEMENT MARKING NOTES:

1. UNLESS OTHERWISE NOTED, THE PAVEMENT MARKING PAINT TO BE USED ON THIS PROJECT WILL BE WHITE OR YELLOW ACRYLIC-LATEX PAINT. ALL PAVEMENT MARKINGS WITHIN PUBLIC ROW SHALL BE THERMOPLASTIC.

2. SURFACE PREPARATION: SURFACES WILL BE CLEAN, DRY AND FREE FROM LOOSE OR PEELING SURFACES. DO NOT APPLY WHEN AIR TEMPERATURES ARE BELOW 50° F. OR WHEN THE RELATIVE HUMIDITY EXCEEDS 85%, OR WHEN THE TEMPERATURE FALLS BELOW THE DEW POINT. IT IS RECOMMENDED TO PLACE AN INCONSPICUOUS TEST STRIP TO DETERMINE IF THE NEW PAVEMENT SURFACES HAVE CURED SUFFICIENTLY TO PAINT. WAIT 24 HOURS AFTER ANY RAIN TO PAINT ASPHALT SURFACES.

3. APPLICATION RATES: APPLY PAINT AT FILM THICKNESS AND SPREADING RATE AS RECOMMENDED BY THE PAINT SUPPLIER. ALL NEW STRIPING IN PARKING LOTS WILL BE PAINTED WITH TWO (2) COATS OF 15.0 MILS WET, 8.0 MILS DRY. THE FIRST COAT MUST BE COMPLETELY DRY BEFORE THE SECOND COAT IS APPLIED. WAIT A MINIMUM OF 10 DAYS BETWEEN THE ASPHALT SEAL COAT APPLICATION AND THE PERMANENT TRAFFIC STRIPING AND MARKINGS.

4. CLOSE AREAS TO TRAFFIC FOR DURATION OF DRYING TIME, WHICH SHALL BE NO LESS THAN THE MINIMUM RECOMMENDED BY THE PAINT MANUFACTURER.

5. MINIMUM LINE WIDTH IS 4 INCHES. PAVEMENT MARKINGS MUST COMPLY WITH LOCAL FIRE STANDARDS AND CURRENT ACCESSIBILITY CODE.

EARTHWORK NOTES:

1. SITE PREPARATION AND GRADING, FOUNDATION EXCAVATION AND FILL SHALL BE PERFORMED IN ACCORDANCE WITH THE GEOTECHNICAL REPORT AND CONCURRENTLY WITH THESE PLANS.

2. ALL FILL MATERIAL PROVIDED SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACING AND COMPACTING.

3. ALL EXCAVATION, BACKFILL AND COMPACTION SHALL BE PERFORMED AS SHOWN IN THE PLANS AND GEOTECHNICAL REPORT FOR THE SITE.

4. OWNER WILL ENGAGE, AT THE OWNER'S COST, SOIL TESTING AND INSPECTION SERVICE IN ACCORDANCE WITH MATERIAL TESTING SPECIFICATION TO VERIFY COMPLIANCE WITH THE PLANS & SPECIFICATIONS. REPLACEMENT AND RETESTING OF DEFICIENT WORK SHALL BE DONE BY THE CONTRACTOR AT NO ADDITIONAL COMPENSATION.

5. IF DATA ON SUBSURFACE CONDITIONS IS AVAILABLE TO THE CONTRACTOR. THE OWNER MAKES NO WARRANTY AS TO THE CORRECTIVENESS OF THESE REPORTS. THE CONTRACTOR MAY, AT HIS OWN EXPENSE, PERFORM ADDITIONAL TEST BORINGS.

6. THE EXCAVATION IS UNCLASSIFIED, AND CONTRACTOR SHALL PERFORM EXCAVATION TO THE ELEVATIONS INDICATED IN THE PLANS, REGARDLESS OF CHARACTER OF MATERIAL, WITH NO ADDITIONAL COMPENSATION FROM THE OWNER.

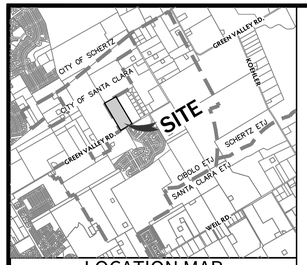
7. CONTRACTOR IS RESPONSIBLE FOR PROTECTING ADJACENT FACILITIES FROM DAMAGE.

8. EARTHWORK SHALL BE PERFORMED IN COMPLIANCE WITH LANDSCAPE PROTECTION.

9. OVER-EXCAVATION IS UNCOMPENSATED, AND SHALL BE BACKFILLED AND COMPACTED AS DIRECTED BY THE ENGINEER OR GEOTECH REPORT AT NO ADDITIONAL COST TO THE OWNER.

10. EARTHWORK SHALL BE PERFORMED TO THE TOLERANCES SHOWN IN THE PLANS AND/OR SPECIFIED IN THE GEOTECHNICAL REPORT FOR THE PROJECT.

11. TRENCHES SHALL BE BACKFILLED ONLY AFTER INSPECTION AND APPROVAL OF THE ENGINEER. BACKFILL MATERIAL AND PROCEDUR



LOCATION MAP
N.T.S.

OWNER/DEVELOPER:

KB HOME LONE STAR, INC.
CONTACT PERSON: JASON TOWNSLEY
4800 FREDERICKSBURG RD., SUITE 100
SAN ANTONIO,TX 78229
TEL: (210) 301-2821

CIVIL ENGINEER:

M.W. CUDE ENGINEERS, L.L.C.
CONTACT PERSON: SEAN McFARLAND, P.E.
4122 POND HILL ROAD, SUITE 101
SAN ANTONIO, TX 78231
TEL: (210) 681-2951
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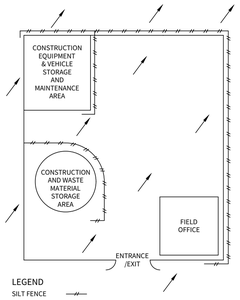
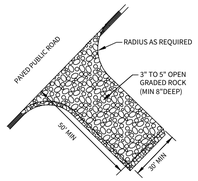


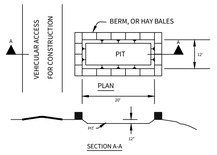
TYP. CONSTRUCTION STAGING AREA 1
N.T.S.



STABILIZED CONSTRUCTION EXIT NOTES:

1. WHEN NECESSARY, WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ON PUBLIC ROADWAY.
2. THE EXIT SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAYS. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC ROADWAYS MUST BE REMOVED IMMEDIATELY.

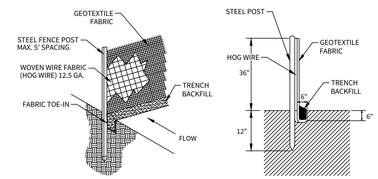
TEMPORARY CONSTRUCTION ENTRANCE/EXIT 2
N.T.S.



GENERAL NOTES:

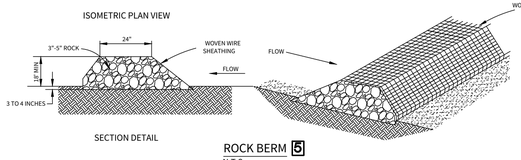
- DETAIL ABOVE ILLUSTRATES MINIMUM DIMENSIONS. PIT CAN BE INCREASED IN SIZE DEPENDING ON EXPECTED FREQUENCY USE.
- IF HAY BALES ARE USED, THEY SHALL BE PLACED IN ACCORDANCE WITH DETAILS SHOWN ON EXHIBIT FOR HAY BALES.
- WASHOUT PIT SHALL BE LOCATED IN AN AREA EASILY ACCESSIBLE TO CONSTRUCTION TRAFFIC.
- WASHOUT PIT SHALL NOT BE LOCATED IN AREAS SUBJECT TO INUNDATION FROM STORMWATER RUNOFF.
- WASHOUT PIT SHALL BE LINED WITH A 10-MIL THICK POLYETHLENE SHEETING FREE OF HOLES, TEARS AND OTHER DEFECTS.

CONCRETE TRUCK WASHOUT PIT 3
N.T.S.



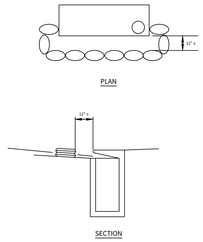
SILT FENCE DETAIL SECTION DETAIL

STANDARD SILT FENCE 4
N.T.S.



SECTION DETAIL

ROCK BERM 5
N.T.S.



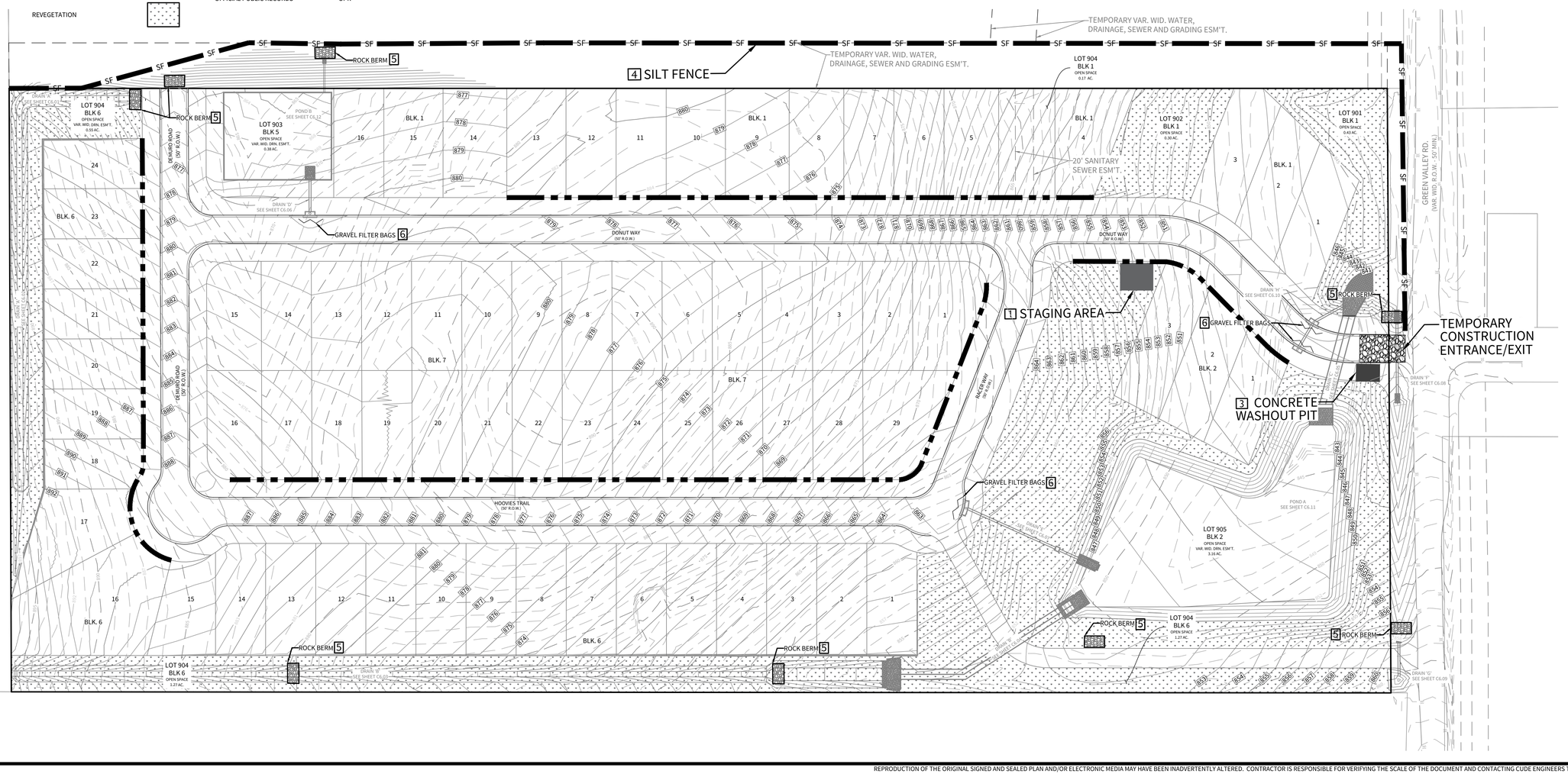
BAGGED GRAVEL INLET FILTER NOTES:

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 BAG IS 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 INTLETS. THE BAGS SHOULD BE TIGHTLY ABUTTED AGAINST EACH OTHER TO PREVENT RUNOFF FROM THE 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.

BAGGED GRAVEL INLET FILTER 6
N.T.S.

LEGEND

PROPERTY LINE		CONCRETE WASHOUT PIT	
EXISTING CONTOURS	930	LIMITS OF CONSTRUCTION	
BMP ITEM NUMBER	1		
TEMPORARY CONSTRUCTION ENTRANCE/EXIT		FLOODPLAIN LIMITS	
SILT FENCE	SF	DOCUMENT	DOC
PHASE II SILT FENCE		ELECTRIC, GAS, TELEPHONE, & CABLE TELEVISION	E.G.T.CA.
FLOW ARROW		EASEMENT	ESM'T.
		MINIMUM	MIN.
STAGING AREA		MAXIMUM	MAX.
		NOT TO SCALE	N.T.S.
REVEGETATION		RIGHT OF WAY	R.O.W.
		OFFICIAL PUBLIC RECORDS	OPR



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

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. THE COUNTY 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.
4. INSTALL SILT FENCE "J" HOOKS AS NECESSARY AT AN INTERVAL NO GREATER THAN 50' TO COMPLETE INSTALLATION.
5. ALL SWPPP PERMITS AND TEMPORARY CONTROLS TO BE IN PLACE PRIOR TO COMMENCEMENT OF CONSTRUCTION.
6. THE SWPPP PLAN AND BMP'S SHOWN ARE INTENDED TO BE PLACED BY THE CONTRACTOR PRIOR TO THE RESPECTIVE WORK TO BE PERFORMED. THE CONTRACTOR WILL BE REQUIRED TO PERFORM ROUTINE INSPECTIONS, MAINTAIN/ADJUST ALL BMP'S, AND LIKEWISE PROVIDE ADDITIONAL BMP'S IF ANY PROVE TO BE INEFFECTIVE AS REQUIRED BY TPDES CONSTRUCTION GENERAL PERMIT TXR150000.
7. REFER TO C7.D2 FOR ADDITIONAL EROSION CONTROL NOTES WITHIN GUADALUPE COUNTY ROW.

SCHRYVER TRACT

STORM WATER POLLUTION PREVENTION PLAN

DATE
10/30/2025

PROJECT NO.
04002.006

DRAWN BY
DAF/RM/JW

CHECKED BY
SPM

REVISIONS
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4.
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7.
8.
9.
10.

10/30/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT
SCHRYVER TRACT

C1.00

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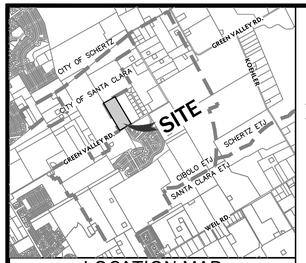
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



LOCATION MAP
N.T.S.

OWNER/DEVELOPER:

KB HOME LONE STAR, INC.
CONTACT PERSON: JASON TOWNSLEY
4800 FREDERICKSBURG RD., SUITE 100
SAN ANTONIO,TX 78229
TEL: (210) 301-2821

CIVIL ENGINEER:

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FAX: (210) 523-7112

LEGEND

- PROPERTY LINE
- 901 EXISTING MINOR CONTOUR
- 900 EXISTING MAJOR CONTOUR
- EXISTING EASEMENT
- SS EXISTING SANITARY SEWER MAIN
- W EXISTING WATER MAIN
- OHE EXISTING OVERHEAD ELECTRIC
- EXIST. FIRE HYDRANT
- EXIST. WATER VALVE
- EXIST. SANITARY SEWER MANHOLE
- EXIST. UTILITY POLE
- EXIST. SIGN
- PROPERTY CORNER
- SANITARY SEWER FLOW
- EXISTING SANITARY SEWER MANHOLE
- OHE GUY WIRE
- LIMITS OF ASPHALT PAVEMENT DEMOLITION
- EXISTING CONCRETE TO REMAIN
- EXISTING VEGETATION
- EXISTING CONCRETE TO BE REMOVED
- NEW STRIPING, PRIME COAT, & SEALER TO BE APPLIED TO EXISTING PARKING LOT
- EXISTING METAL STRUCTURE TO BE REMOVED
- TREE TO BE PRESERVED
- TREE TO BE REMOVED

DEMOLITION KEYNOTES:

1. EXISTING BUILDING TO BE REMOVED.
2. EXISTING FENCE TO BE REMOVED.
3. EXISTING CONCRETE PAVEMENT TO BE REMOVED.
4. EXISTING SPETIC TANK AND ALL APPURTENANCES TO BE REMOVED. CONTRACTOR TO VERIFY IF EXISTING SYSTEM UTILIZES DRIP OR SPRAY AND REMOVE ALL APPURTENANCES.
5. EXISTING WOOD STRUCTURE AND CONCRETE TO BE REMOVED.
6. EXISTING SHED TO BE REMOVED.
7. EXISTING METAL STRUCTURE TO BE REMOVED.
8. EXISTING IRON POST FENCE TO BE REMOVED.
9. EXISTING OVER HEAD ELECTRICAL AND POST TO BE REMOVED. CONTRACTOR TO COORDINATE WITH TELECOMMUNICATIONS AND GVEC PRIOR TO REMOVAL
10. EXISTING WOOD FENCE TO BE REMOVED.
11. EXISTING OVER HEAD ELECTRICAL TO REMAIN AND BE PROTECTED.
12. EXISTING GUY WIRE TO REMAIN AND BE PROTECTED
13. REMOVE EXISTING RESIDENTIAL ELECTRICAL METER AND APPURTENANCES, INCLUDING SERVICE FROM LAST OHE POLE. SERVICE TO HOME WILL NEED TO BE SHUT OFF AND ACCOUNT CLOSED BY HOME OWNER PRIOR TO START OF DEMOLITION. CONTRACTOR TO COORDINATE WITH GVEC AS NEEDED.
14. DEMO EXISTING SANITARY SEWER CLEANOUT. SERVICE REQUIRED TO BE SHUT OFF PRIOR TO DEMOLITION. ALL SANITARY SEWER PIPE AND ALL APPURTENANCES SHALL BE REMVOED.
15. NOT USED
16. NOT USED
17. EXISTING OHE TRANSMISSION LINES AND TOWERS TO REMAIN & BE PROTECTED.
18. NOT USED
19. EXISTING MAILBOX TO BE REMOVED/RELOCATED AND PROTECTED. FINAL LOCATION TO BE COORDINATED WITH PROPERTY OWNER.
20. EXISTING WATER METER TO BE REMOVED AND LINE CAPPED AT PROPERTY LINE. COORDINATE WITH GVSUD TO REMOVAL
21. EXISTING CHAIN LINK FENCE TO BE REMOVED.
22. EXISTING LIGHT TO BE REMOVED.
23. EXISTING DRIVEWAY TO BE REMOVED.
24. EXISTING GUY WIRE TO BE REMOVED.

CAUTION!!!

THE CONTRACTOR SHALL BE AWARE THAT AN EXISTING GAS MAIN AND OHE TRANSMISSION LINE 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.

SCALE: 1"=60'
0 60 120

LEGAL DESCRIPTION:

23.34 ACRES OF LAND LOCATED IN THE PEDRO SAN MIGUEL SURVEY 256, ABSTRACT 227, GUADALUPE COUNTY, TEXAS AND BEING ALL OF A CALLED 23.3285 ACRE TRACT OF LAND RECORDED IN DOCUMENT 202299016792 OF THE OFFICIAL PUBLIC RECORDS OF GUADALUPE COUNTY, TEXAS.

PLAT:

SCHRYVER TRACT
23.34 ACRES

BENCHMARKS / CONTROL POINT DATA:

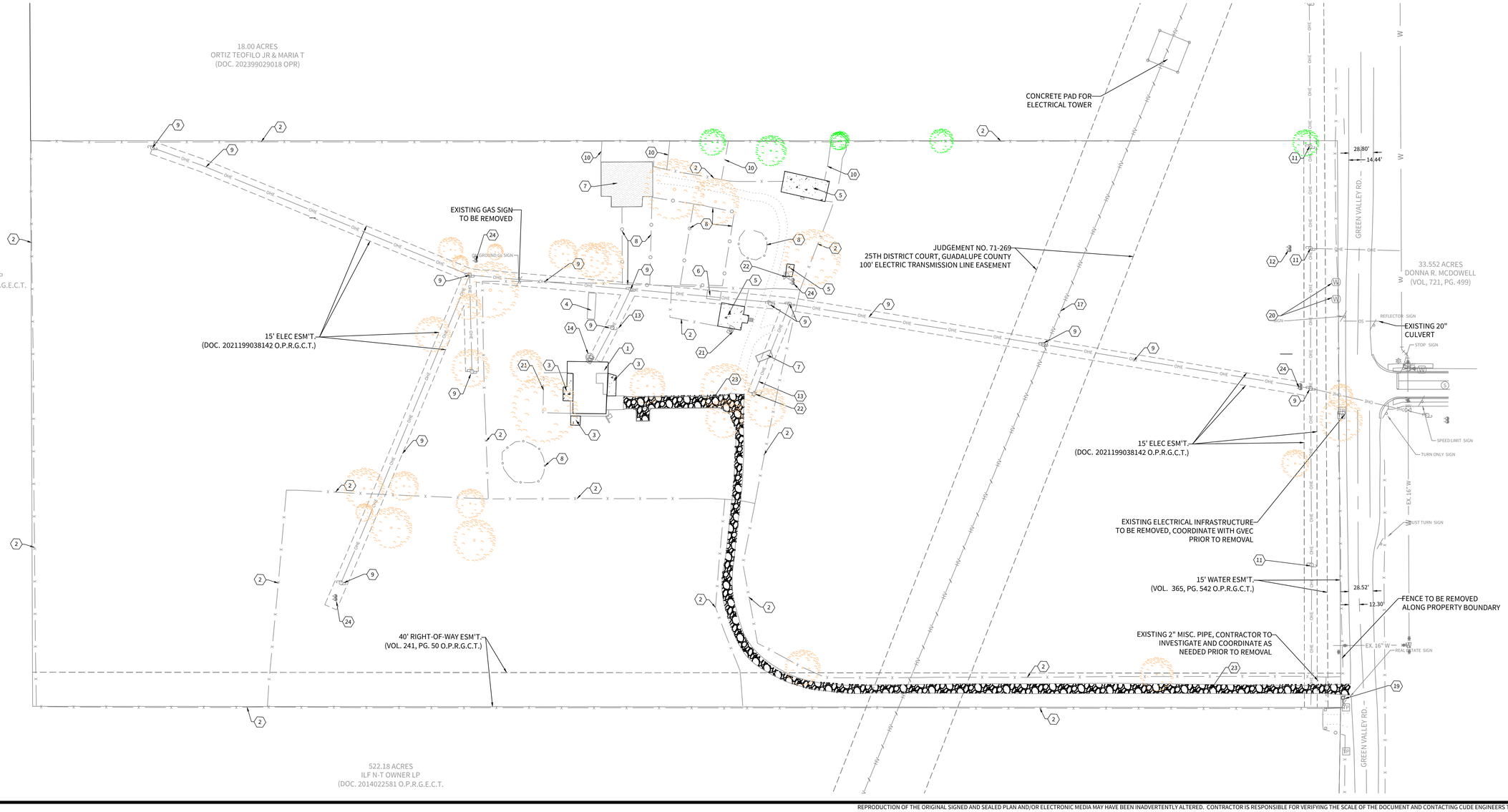
ELEVATIONS SHOWN HEREON ARE NAVD 88.

POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
10	13772073	2222634	861.29	CP IRSC CTL PT CAP
11	13772254	2222534	866.10	CP IRSC CTL PT CAP
12	13773791	2222601	851.15	CP IRSC CTL PT CAP
13	13772563	2220465	883.56	CP IRSC CTL PT CAP

NOTE:
CONTRACTOR TO RUN LEVEL LOOP THROUGH BM'S PROVIDED TO CONFIRM BEFORE CONSTRUCTION. CONTACT ENGINEER/SURVEYOR IMMEDIATELY IF ELEVATIONS DO NOT MATCH THOSE SHOWN.

NOTES:

1. CONTRACTOR IS TO PRESERVE ALL EXISTING CURB WITHIN PUBLIC R.O.W. UNLESS OTHERWISE NOTED IN PLANS. IF ANY CURB IS DAMAGED THROUGHOUT CONSTRUCTION, IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPLACE AS NECESSARY. CONTRACTOR TO REMOVE AND REPLACE ANY NECESSARY CONCRETE CURB WITHIN R.O.W. FOR NEW SIDEWALK TO BE ADA COMPLIANT.
2. CONTRACTOR IS TO COORDINATE/NOTIFY GVEC FOR ANY REMOVAL OF EXISTING POWER POLES/ELECTRIC SERVICE AND VERIFY FINAL GVEC DESIGN FOR PROPOSED SERVICES AND/OR RELOCATED SERVICES.
3. REMOVAL AND/OR RELOCATION OF EXISTING ELECTRICAL, GAS, WATER, SEWER SERVICES SHALL BE COORDINATED WITH ANY AND ALL PROPERTY OWNERS/GOVERNING ENTITIES PRIOR TO REMOVAL.
4. ANY EXISTING IRRIGATION SERVICES NOT DEEMED TO REMAIN SHALL BE REMOVED. NOTIFY ENGINEER OF ANY DISCREPANCIES.



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

SCHRYVER TRACT

EXISTING CONDITIONS & DEMO PLAN

DATE
10/30/2025

PROJECT NO.
04002.006

DRAWN BY
DAF/RM/JW

CHECKED BY
SPM

REVISIONS
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10.

10/30/2025
STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT
SCHRYVER TRACT

C1.02

P:\04002\006\CAD\PLAT\SHEETS\C1.02 EXISTING CONDITIONS & DEMO PLAN.dwg 2025/10/29 5:03pm jwatkins

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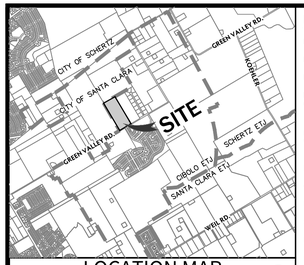

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SAN ANTONIO, TX 78231
TEL: (210) 681-2951
FAX: (210) 523-7112

LEGEND

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

KEYNOTES

1. 20' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT
2. 25' BUILDING SETBACK LINE

NOTE:

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

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

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

CONTOURS SHOWN ON STREET ARE TOP OF STREET.

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

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

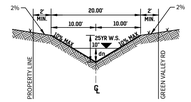
11. DENSITY TESTS

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

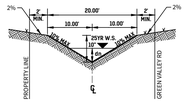
1. THE LAND TO BE FILLED (PREPARED SUBGRADE) SHALL BE PREPARED AND TESTED AT A FREQUENCY AS DETERMINED BY THE GEOTECHNICAL ENGINEER.
2. THE FIRST LIFT OF COMPACTED FILL (GENERALLY 8 TO 12-IN.) SHALL BE TESTED AS DETERMINED BY THE GEOTECHNICAL ENGINEER. ANY AREAS SUPPORTING THE PROPOSED STRUCTURES REQUIRING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

12. CUT/FILL LOTS

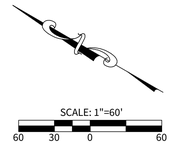
AREAS INVOLVING CUT ON ONE PORTION AND FILL ON ANOTHER PORTION OF A SPECIFIC LOT SHALL BE PREPARED TO A MINIMUM DEPTH OF 6-IN. AND WILL BE THE SAME MATERIAL CLASSIFICATION AT THE SAME COMPACTION AND MOISTURE CONTENT. A MINIMUM OF TWO (2) FIELD DENSITY TESTS SHALL BE REQUIRED ON EACH CUT/FILL LOT FOR THE PURPOSE OF DETERMINING UNIFORMITY OF THE AREA SUPPORTING THE PROPOSED STRUCTURES.



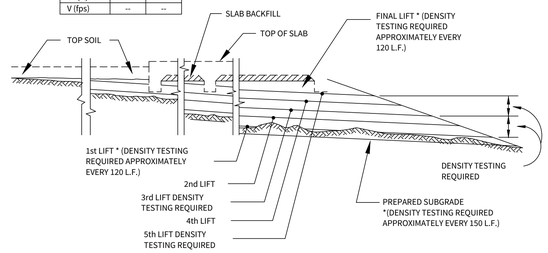
V-SWALE "A" SECTION (N.T.S.)



V-SWALE "B" SECTION (N.T.S.)

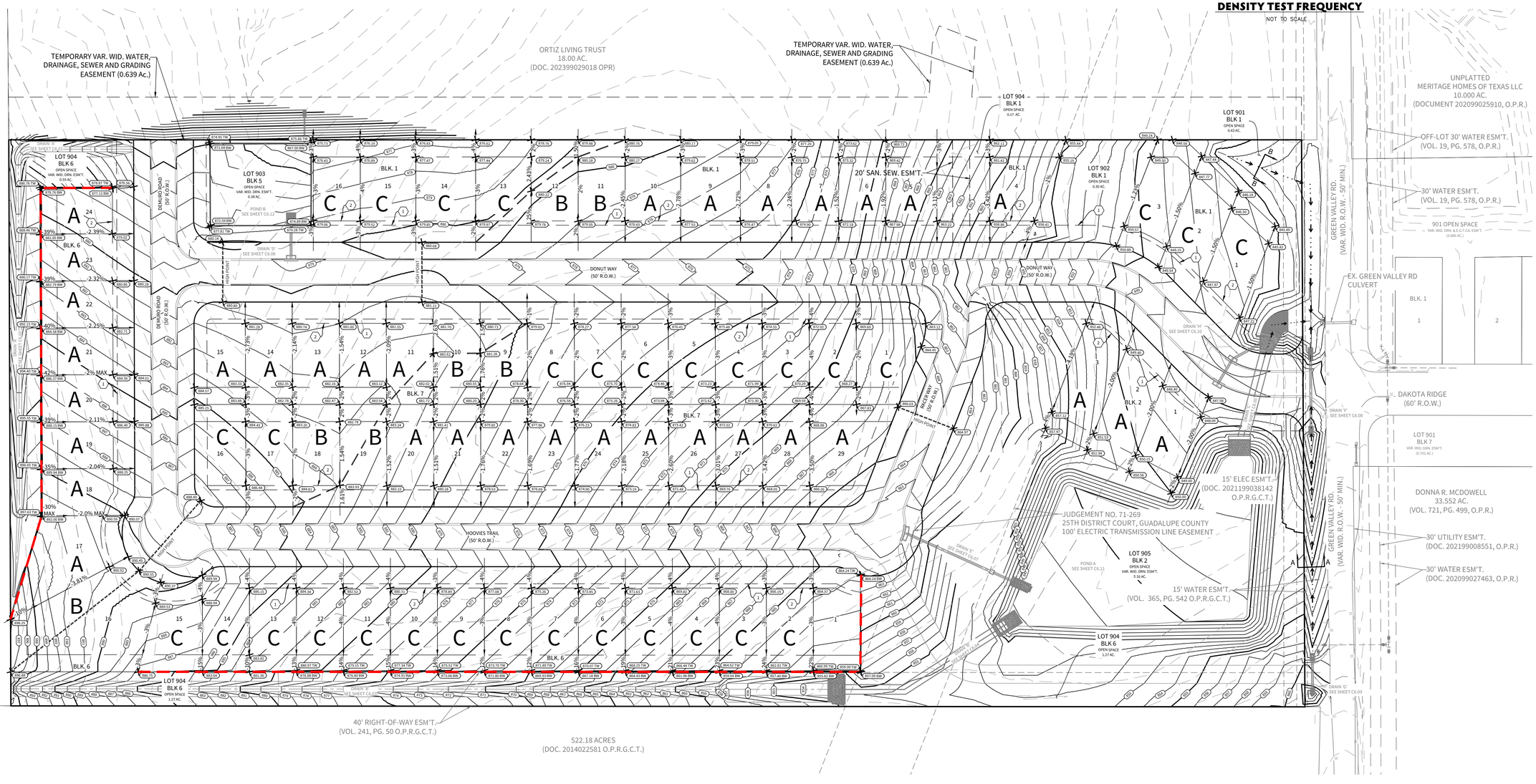


	"A"	"B"
Q_{25} (cfs)	--	--
B_W (ft)	0	0
z	10:1/10:1	10:1/10:1
n	0.035	0.035
S (%)	--	--
d_n (ft)	--	--
V (fps)	--	--



DENSITY TEST FREQUENCY

NOT TO SCALE



CUDEENGINEERS.COM

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SCHRYVER TRACT

GRADING PLAN

DATE
10/30/2025

PROJECT NO.
04002.006

DRAWN BY
DAF/RM/JW

CHECKED BY
SPM

REVISIONS
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10/30/2025

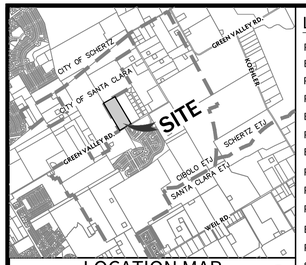
STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT
SCHRYVER TRACT

C2.00

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



LOCATION MAP
N.T.S.

LEGEND

- PROPOSED SANITARY SEWER MANHOLE
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER LATERAL
- PROPOSED SANITARY SEWER MAIN — 8"SS
- EXISTING SANITARY SEWER MAIN — EX. 8" SS
- PROPOSED WATER MAIN — 8"W
- EXISTING WATER MAIN — EX. 8" W
- PROPOSED STANDARD FIRE HYDRANT
- PROPOSED STANDARD GATE VALVE
- PROPOSED PERMANENT BLOWOFF
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- PROPOSED UNDERGROUND ELECTRIC
- SITE BOUNDARY
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- BUILDING SETBACK LINE — B.S.L.
- KEYNOTE — 1
- STREET LIGHT

KEYNOTES

1. 15' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT
2. 10' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE

CAUTION!!!

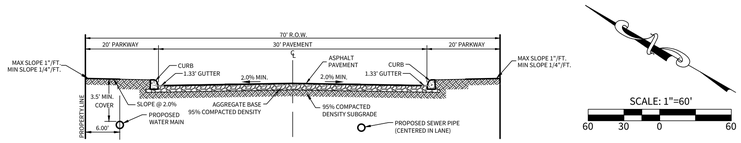
THE CONTRACTOR SHALL BE AWARE THAT EXISTING OVERHEAD ELECTRIC AND GAS MAIN ARE WITHIN THE SITE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING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

TRENCH EXCAVATION SAFETY PROTECTION

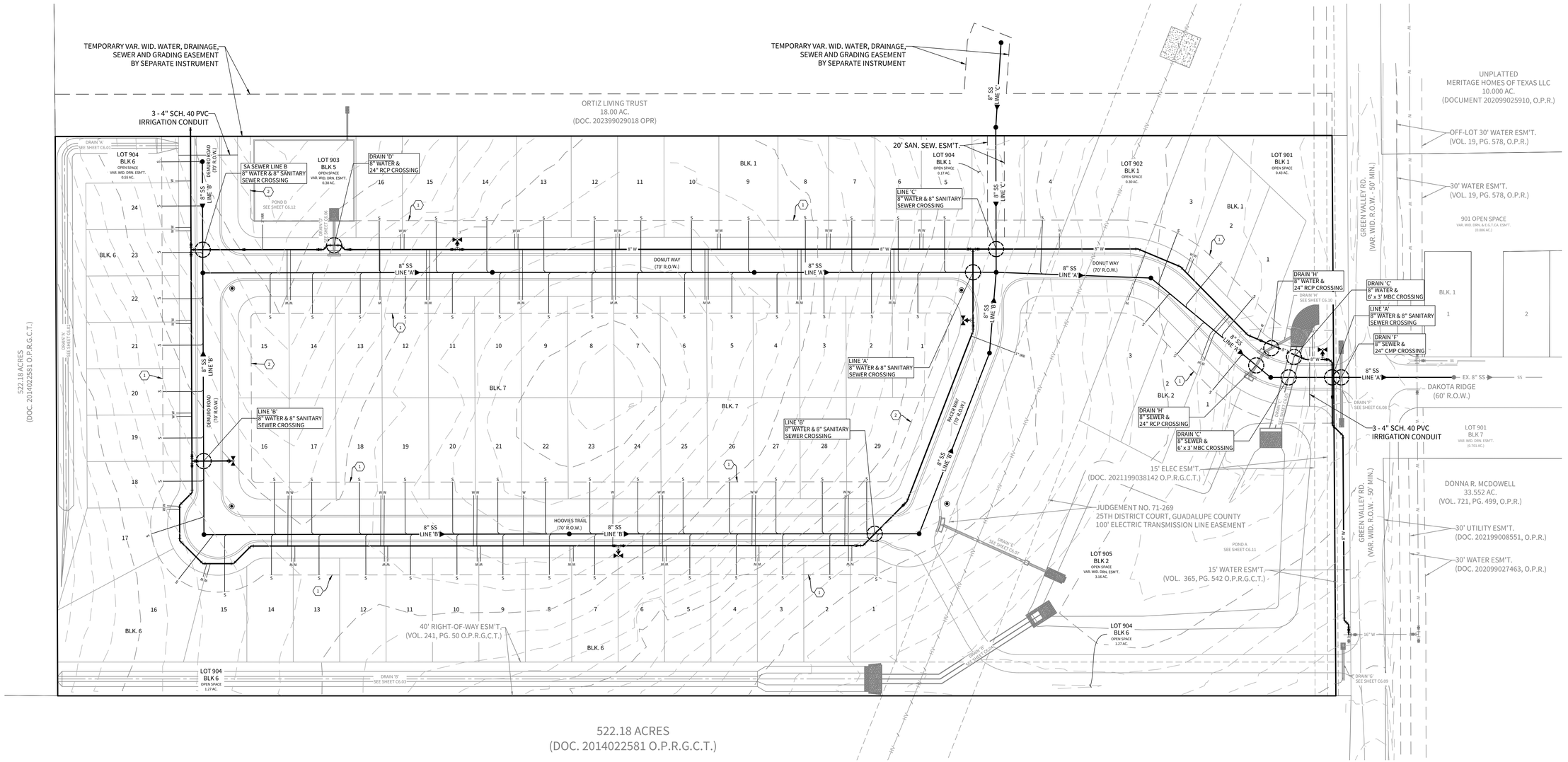
CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S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

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.



SECONDARY STREET CROSS-SECTION
N.T.S.



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CUDE ENGINEERS
4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
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SCHRYVER TRACT

UTILITY PLAN

DATE
10/30/2025

PROJECT NO.
04002.006

DRAWN BY
DAF/RM/JW

CHECKED BY
SPM

REVISIONS
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10/30/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT
SCHRYVER TRACT

C3.00

P:\04002\004002-2-ENG\4-Plans\C3.00 UTILITY PLAN.dwg 2025/10/30 7:13am jmatlock

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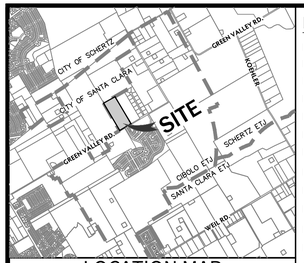

LOCATION MAP
N.T.S.

LEGEND

- PROPOSED SANITARY SEWER MANHOLE
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER LATERAL
- PROPOSED SANITARY SEWER MAIN — 8"SS
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- BUILDING SETBACK LINE — B.S.L.
- KEYNOTE — 1
- STREET LIGHT

KEYNOTES

1. 20' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE
2. 15' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE
3. TEMPORARY VAR. WID. WATER, DRAINAGE, SEWER AND GRADING EASEMENT

CAUTION!!!

THE CONTRACTOR SHALL BE AWARE THAT EXISTING OVERHEAD ELECTRIC AND GAS MAIN 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

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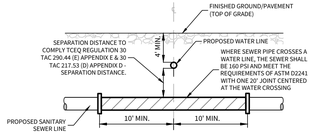
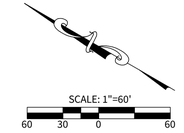
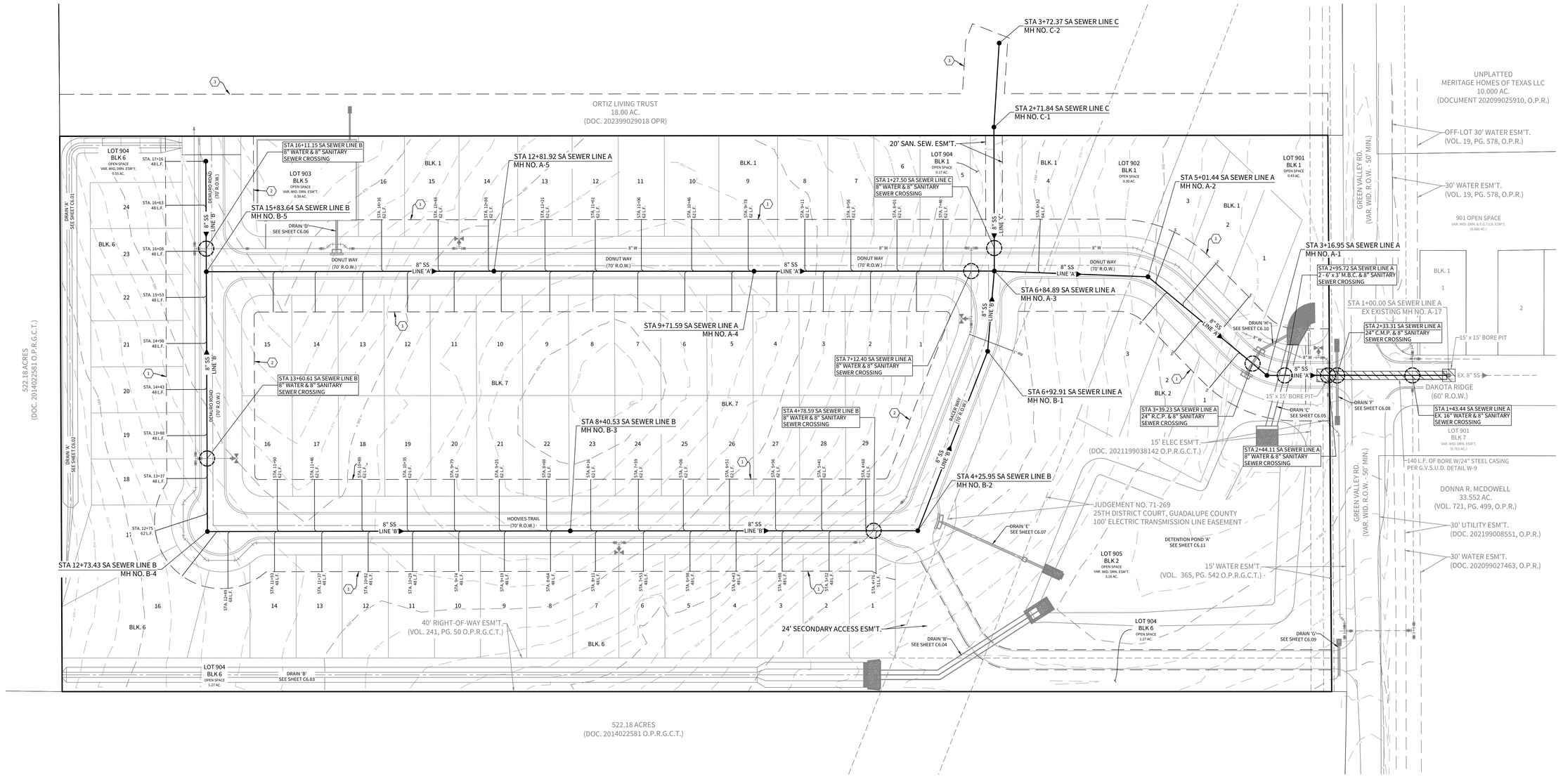


TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL
N.T.S.

SEWER/STORM DRAIN CROSSINGS	
LINE	STATION
'A'	1+43.44
'A'	2+33.31
'A'	2+95.72
'A'	3+39.23

SEWER/WATER LINE CROSSINGS	
LINE	STATION
'A'	2+44.11
'A'	7+12.40
'B'	4+78.59
'B'	13+60.61
'B'	16+11.15
'C'	1+27.50





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SCHRYVER TRACT

SANITARY SEWER MASTER PLAN

DATE
10/30/2025

PROJECT NO.
04002.006

DRAWN BY
DAF/RM/JW

CHECKED BY
SPM

REVISIONS
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10/30/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT
SCHRYVER TRACT

C4.00

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P:\04002\05\01 DWG\A Sheets\C4.00 SANITARY SEWER MASTER PLAN.dwg 2025/10/30 8:11am jwaldron

LEGEND

- PROPOSED SANITARY SEWER MANHOLE
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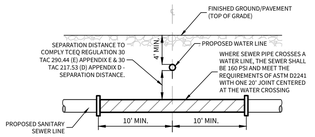

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL
N.T.S.

TRENCH EXCAVATION PROTECTION

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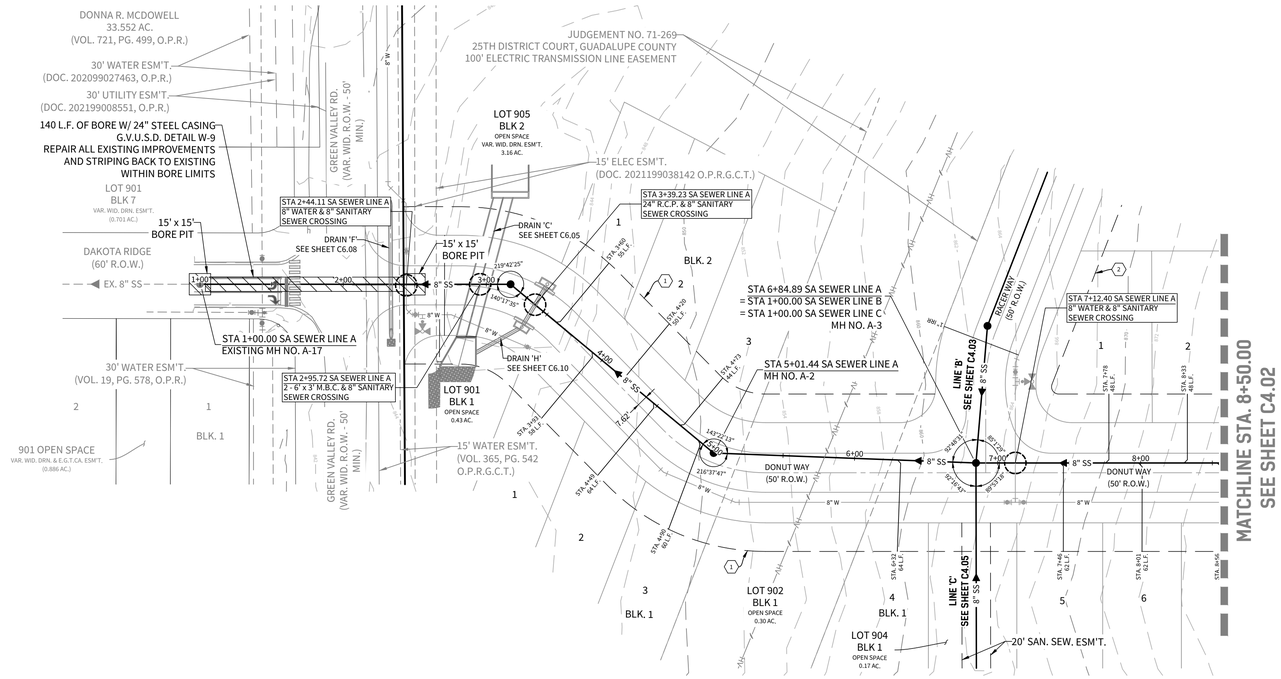
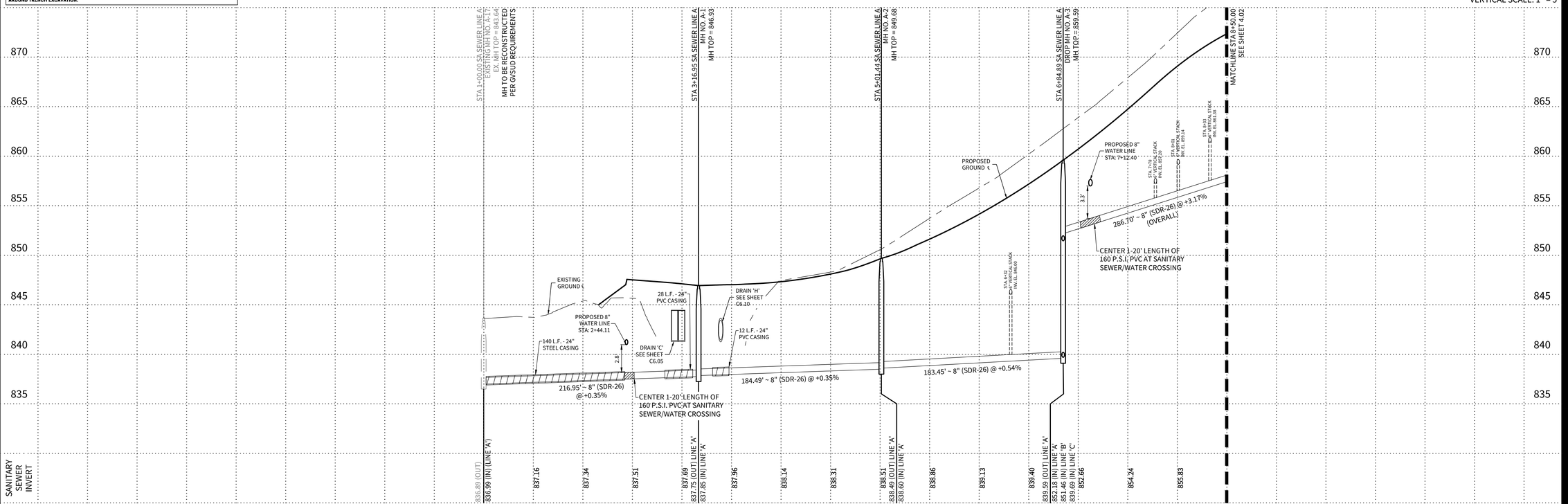


LINE "A"

STA. 1+00.00 TO STA. 8+50.00

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



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SCHRYVER TRACT

SANITARY SEWER PLAN & PROFILE - LINE "A"

DATE
10/30/2025

PROJECT NO.
04002.006

DRAWN BY
DAF/RM/JW

CHECKED BY
SPM

REVISIONS
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10/30/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT
SCHRYVER TRACT

C4.01

P:\04002\004002-2\04002-4 Plans\CAD\SANITARY SEWER\PLANS AND PROFILE - LINE "A".dwg 2025/10/30 3:33pm jmadkins

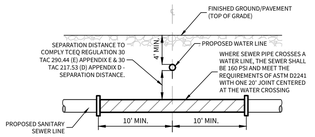
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

LEGEND

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

KEYNOTES

1. 20' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE
2. 15' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE



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

TRENCH EXCAVATION PROTECTION

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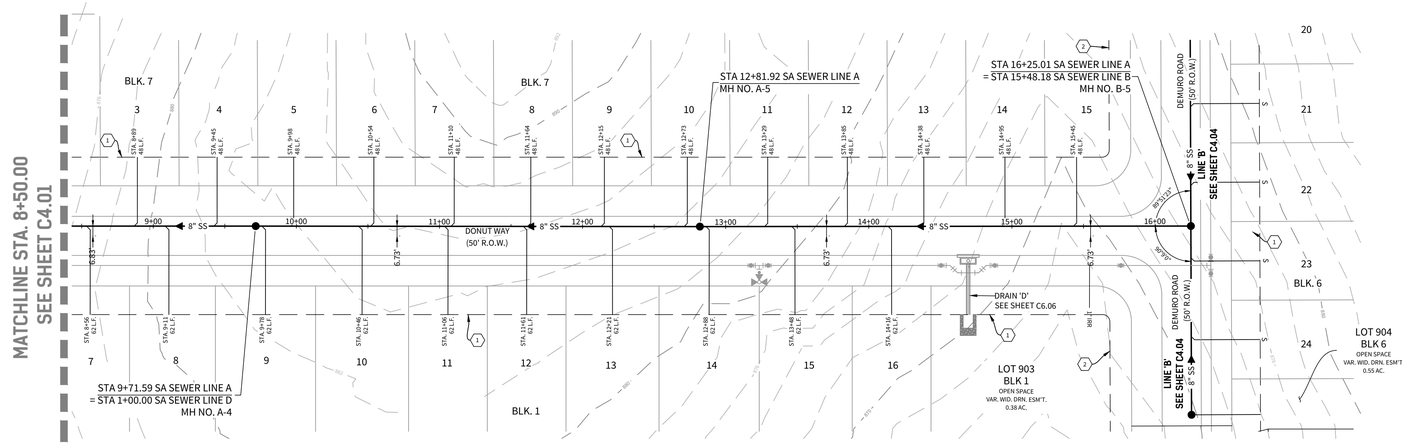
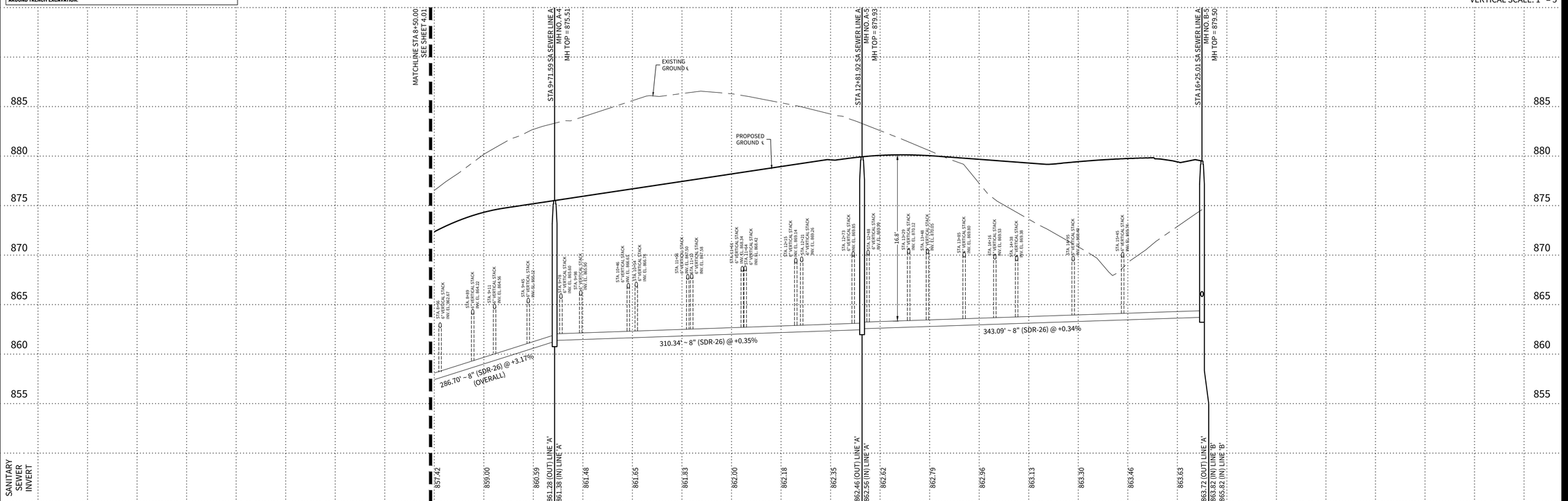


LINE "A"

STA. 8+50.00 TO STA. 16+25.01

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



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SCHRYVER TRACT

SANITARY SEWER PLAN & PROFILE - LINE "A"

SCALE: 1"=50'
0 50 100

DATE
10/30/2025

PROJECT NO.
04002.006

DRAWN BY
DAF/RM/JW

CHECKED BY
SPM

REVISIONS
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10/30/2025
STATE OF TEXAS — SEAN P. McFARLAND — 138893 — LICENSED PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT
SCHRYVER TRACT

C4.02

P:\04002\004002-2\DWG\4 Plans\C4.02 SANITARY SEWER PLAN AND PROFILE - LINE "A".dwg 2025/10/30 3:33pm jmadkins

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

LEGEND

- PROPOSED SANITARY SEWER MANHOLE
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER LATERAL — S
- PROPOSED SANITARY SEWER MAIN — 8"SS
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- PROPOSED WATER MAIN — 8"W
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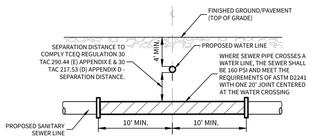
- PROPOSED PERMANENT BLOWOFF
- ELECTRIC, GAS, TELEPHONE, & CABLE T.V. EASEMENT — E.G.T.C.A. ESM'T
- BUILDING SETBACK LINE — B.S.L.

KEYNOTES

1. 20' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE
2. 15' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE



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

TRENCH EXCAVATION PROTECTION

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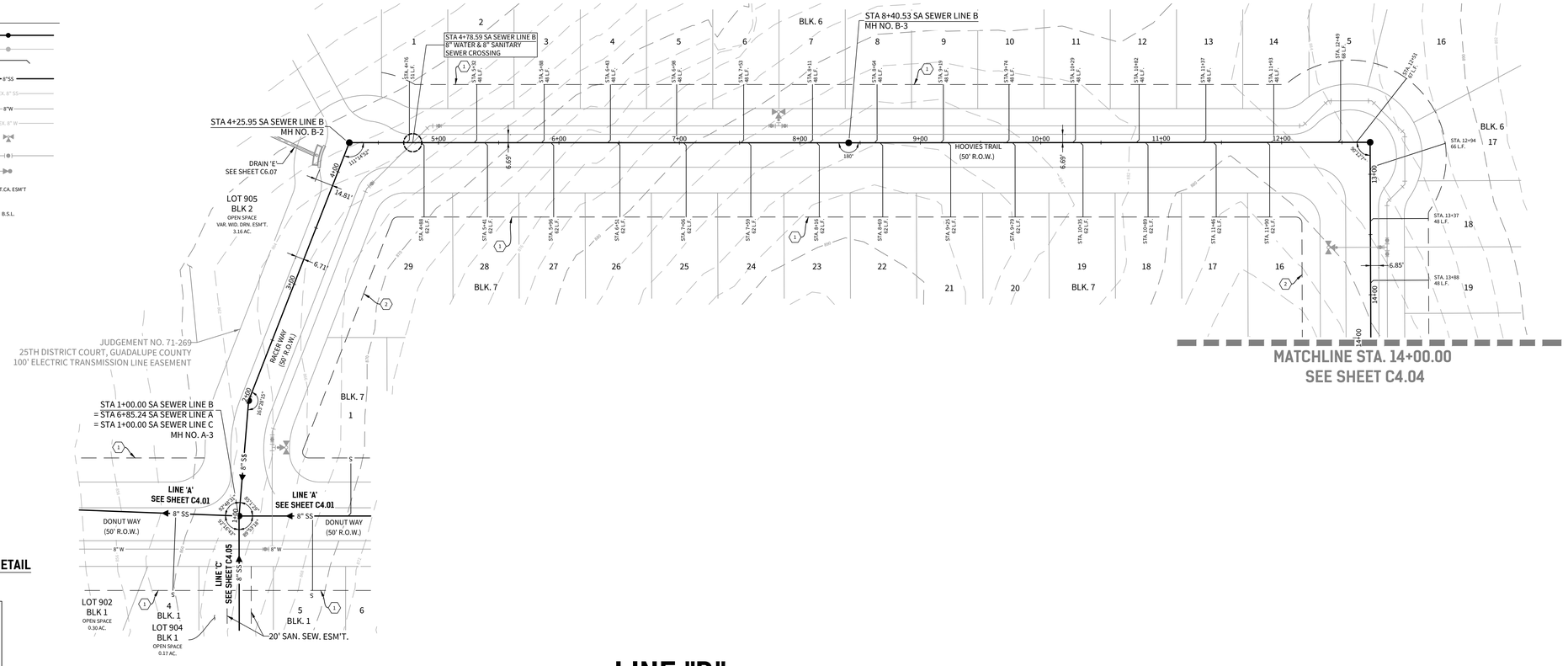
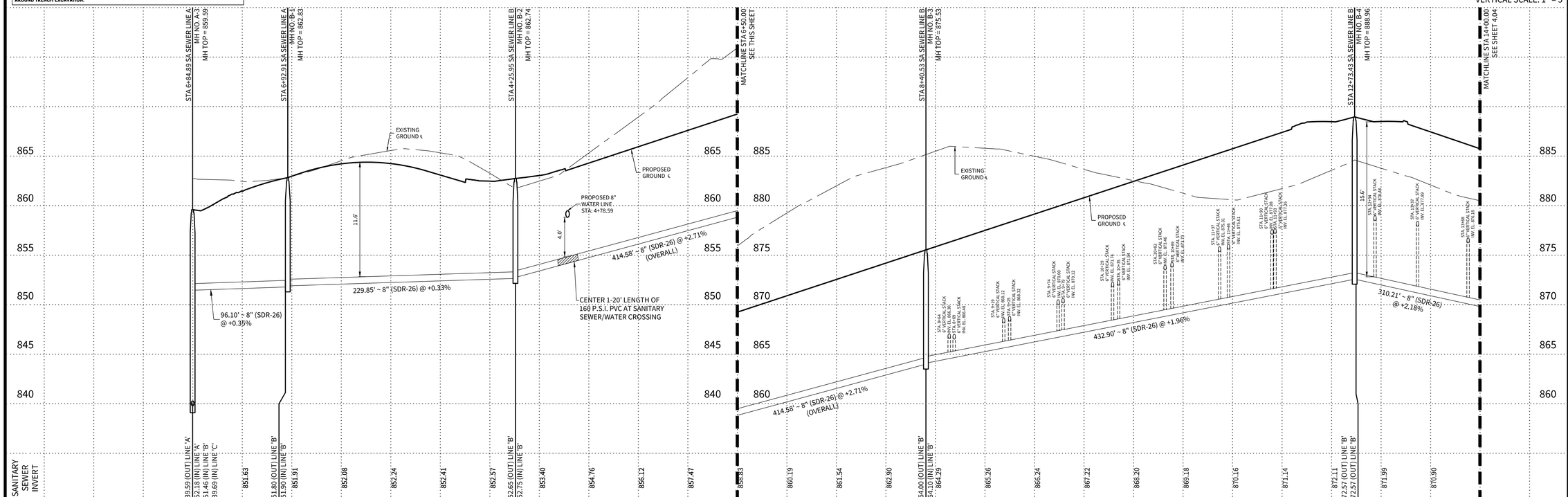


LINE "B"

STA. 1+00.00 TO STA. 14+00.00

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



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SCHRYVER TRACT

SANITARY SEWER PLAN & PROFILE - LINE "B"

DATE
10/30/2025

PROJECT NO.
04002.006

DRAWN BY
DAF/RM/JW

CHECKED BY
SPM

REVISIONS
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10/30/2025
STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER
SEAN P. McFARLAND

CUDE ENGINEERS
TBPELS No. 10048500

PLAT
SCHRYVER TRACT

C4.03

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P:\04002\004002-03\Civil\C4.03 SANITARY SEWER PLAN AND PROFILE - LINE "B".dwg 2025/10/30 8:42pm jmartinez

LEGEND

PROPOSED SANITARY SEWER MANHOLE	
EXISTING SANITARY SEWER MANHOLE	
PROPOSED SANITARY SEWER LATERAL	
PROPOSED SANITARY SEWER MAIN	8"SS
EXISTING SANITARY SEWER MAIN	EX. 8" SS
PROPOSED WATER MAIN	8"W
EXISTING WATER MAIN	EX. 8" W
PROPOSED STANDARD FIRE HYDRANT	
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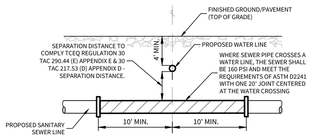
3. TEMPORARY VAR. WID. WATER, DRAINAGE, SEWER AND GRADING EASEMENT



TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.

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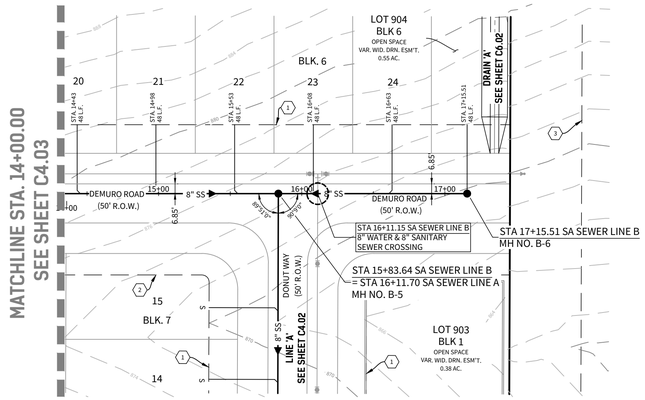
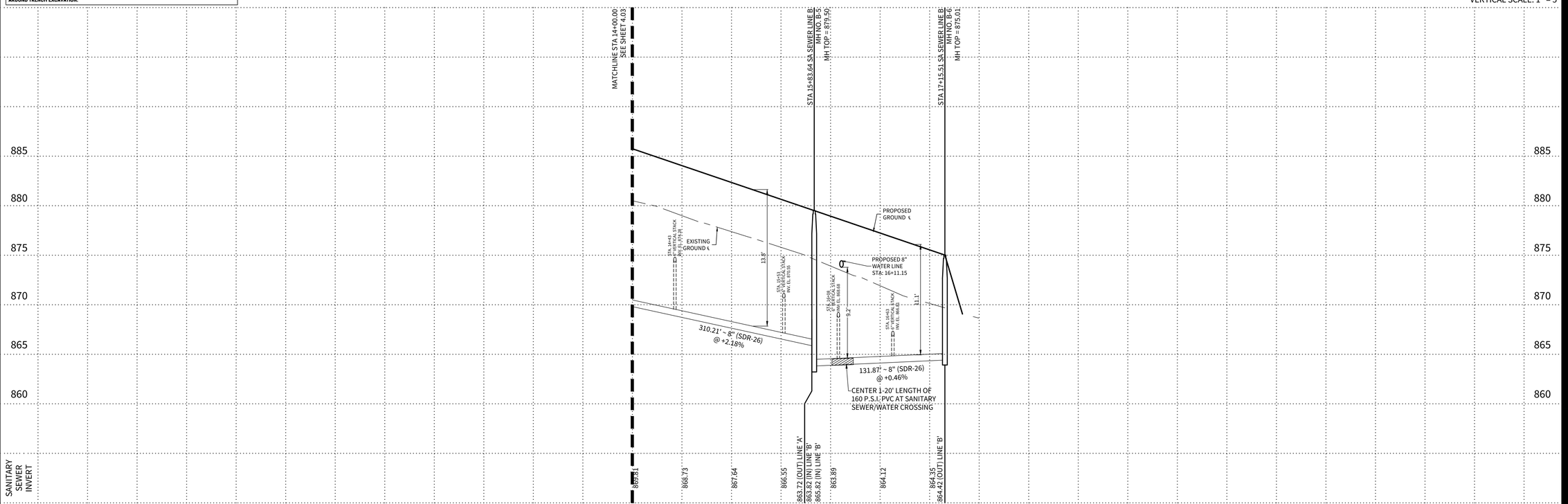


LINE "B"

STA. 14+00.00 TO STA. 17+15.51

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



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SCHRYVER TRACT

SANITARY SEWER PLAN & PROFILE - LINE "B"

DATE
10/30/2025

PROJECT NO.
04002.006

DRAWN BY
DAF/RM/JW

CHECKED BY
SPM

REVISIONS
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10/30/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT
SCHRYVER TRACT

C4.04

P:\04002\004002-2\DWG\4.04 SANITARY SEWER PLAN AND PROFILE - LINE "B".dwg 2025/10/30 8:42pm jmartinez

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BUILDING SETBACK LINE	B.S.L.

KEYNOTES

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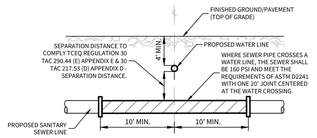

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL
N.T.S.

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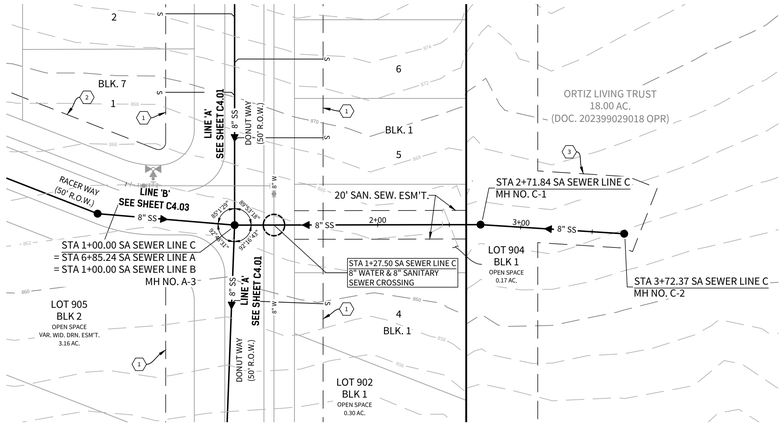
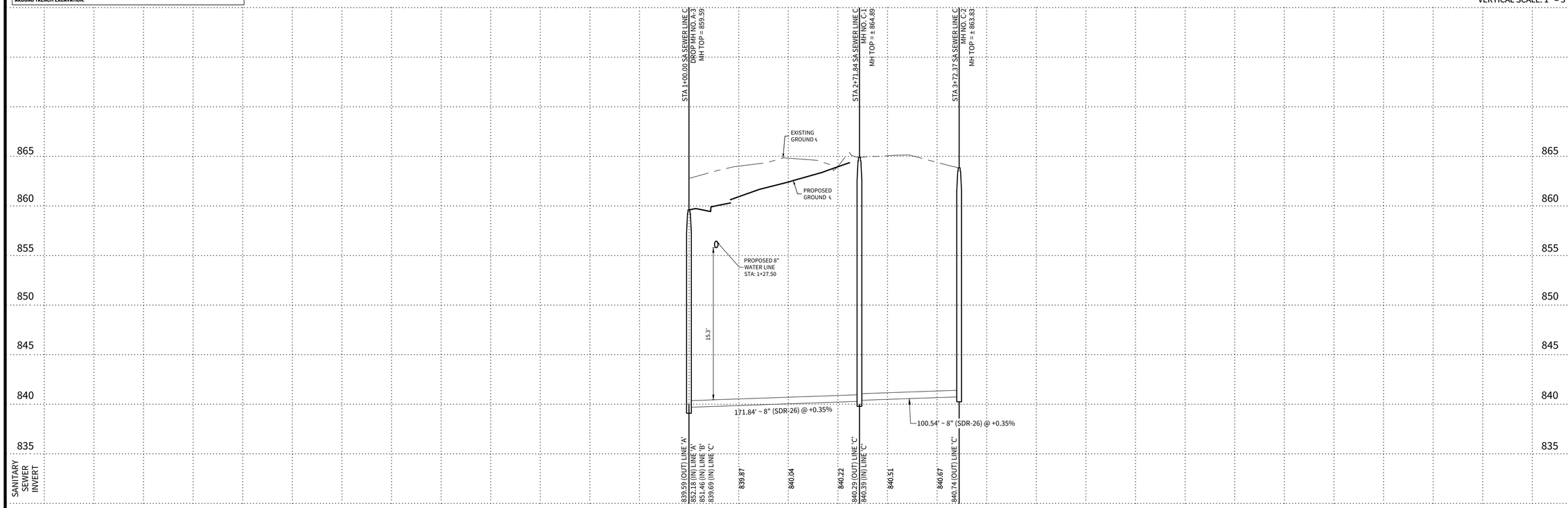


LINE "C"

STA. 1+00.00 TO STA. 2+72.37

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



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

SCALE: 1"=50'
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SCHRYVER TRACT

SANITARY SEWER PLAN & PROFILE - LINES "C"

DATE
10/30/2025

PROJECT NO.
04002.006

DRAWN BY
DAF/RM/JW

CHECKED BY
SPM

REVISIONS
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10/30/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT
SCHRYVER TRACT

C4.05

P:\04002\004002-2\DWG\4 Plans\C4.05 SANITARY SEWER PLAN AND PROFILE - LINE "C" - TX.dwg 2025/10/30 8:12am jmebben

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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 ID., 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 TEST HAS BE ASPHALTED IN NEW SUBDIVISIONS)
   D. VACUUM TEST ALL MANHOLES WITHIN THE PROJECT
   E. CCTV ALL NEW LINE PLUS 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 NOTATION FOR IS, 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" "Presto 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 390-400 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 EXTENDED 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 EXISTING THE MANHOLE WILL BE REPLACED AT CONTRACTORS 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 A DEPTH OF 8 FEET 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 WHERE 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 (F 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 NOT BE PERMITTED 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.
   B. BEDDING SHALL CONSIST OF TXDOT-GRADE 4 (1 ½"-1 5/8") COMMONLY KNOWN AS SEWER GRAVEL.
      i. THE BEDDING SHALL MEET THE FOLLOWING GRADATION:
         a. 2" 100.0%
         b. 1 ½" 100.0%
         c. 1 ½" 100.0%
         d. 1" 52.6%
         e. ⅝" 10.7%
         f. ⅜" 1.3%
   C. 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 A 90 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)
   AA. 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 ½" 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		GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	SANITARY SEWER SYSTEM GENERAL NOTES (1 OF 2)
REVISED: OCTOBER 2021		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 ½" 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, SCR 26 150 PSI, OR DUCTILE IRON PIPE, CONCRETE ENCASEMENT.

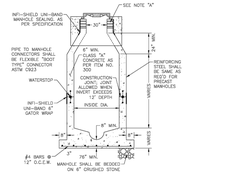
24. WHERE REQUIRED CONCRETE ENCASEMENT SHALL BE PLACED FOR FULL WIDTH OF THE TRENCH TO A PLAIN SIX (6) INCHES ABOVE THE TOP OF THE PIPE WITH PAY UNITS AS SHOWN ON THE STANDARD DETAILS SHEET.
25. A MINIMUM OF FOUR (4) FEET OF COVER IS TO BE MAINTAINED OVER THE SANITARY SEWER MAIN AND LATERALS AT GRADE, 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

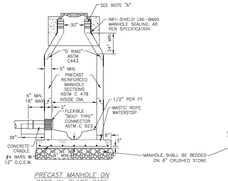
27. WHEN ALLOWABLE, BLASTING SHALL BE PREFORMED IN ACCORDANCE WITH THE ABOVE CRITERIA ESTABLISHED BY THE NATIONAL FIRE PROTECTON ASSOCIATION 312 TAC 313.5(C) (6).
28. BLASTING SEVER LINE EXCAVATION MUST BE DONE IN SUCH A MANNER AS TO MINIMIZE THE FRACTURING OF ROCK BEYOND THE REQUIRED EXCAVATION. THE 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

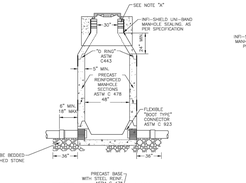
30. ALL SEWER LINES MUST BE TESTED IN ACCORDANCE WITH THE FOLLOWING:
   A. 317.2(a)(5)(B). DEFLECTION TEST FOR FLEXIBLE AND SEMI-RIGID PIPE CONDUCTED AFTER FINAL BACKFILL AS BEEN IN PLACE AT LEAST 30 DAYS.
   B. 317.2(A)(4)(A) & (B) OR GVSUD SPECIFICATIONS INFILTRATION AND OR EXFILTRATION AND OR LOW-PRESSURE AIR TEST
   C. 313.5(C)(10)(C) OR GVSUD 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. HANG A GOLF BALL IN FRONT OF CAMERA, PIPE GRADE IS OUT OF TOLERANCE IF GOLF BALL BECOMES 50% SUBMERGED.
33. AFTER CONSTRUCTION, TESTING WILL BE DONE BY PAINTLI TV CAMERA BY THE CONTRACTOR AND OBSERVED BY INSPECTOR AND ENGINEER AS NECESSARY TO EXAMINE ALIGNMENT, AND CONTRACTOR AS CAMERA IS RUN THROUGH THE LINES. PAINTLI 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 LATER



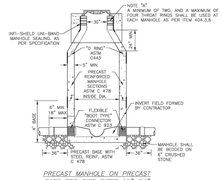
CAST-IN-PLACE MANHOLE



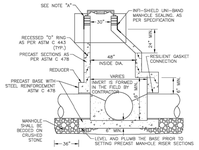
PRECAST MANHOLE ON CAST-IN-PLACE BASE



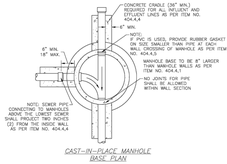
PRECAST MANHOLE ON PRECAST BASE FOR PIPE SIZES 8"-12"



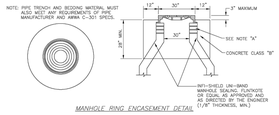
PRECAST MANHOLE ON PRECAST BASE FOR PIPE SIZES 15"-24"



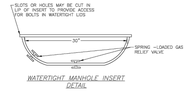
PRECAST MANHOLE ON PRECAST BASE FOR PIPE SIZES 24" AND LARGER



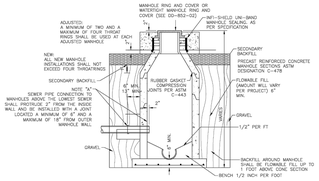
CAST-IN-PLACE MANHOLE BASE PLAN



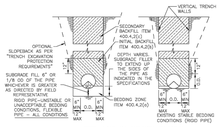
MANHOLE RING ENCASEMENT DETAIL



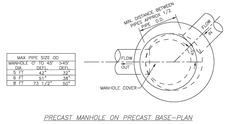
WATERTIGHT MANHOLE INSERT DETAIL



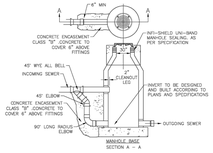
PRECAST MANHOLE ON PRECAST BASE



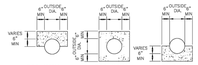
PIPE LAID IN TRENCH DETAILS

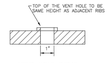


PRECAST MANHOLE ON PRECAST BASE--PLAN



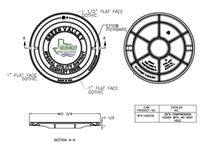
OUTSIDE DROP MANHOLE



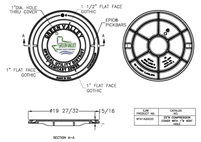


VENT HOLE DETAIL SECTION A – A

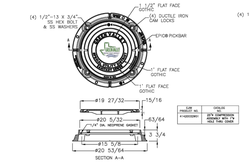
GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	SANITARY SEWER SYSTEM STANDARD DETAILS (1 OF 2)	
REVISED: OCTOBER 2021	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. S-1



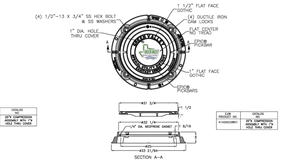
COMPRESSION COVER WITH NO HOLE



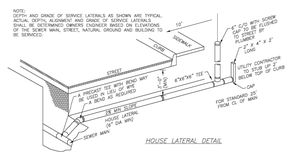
COMPRESSION COVER WITH HOLE



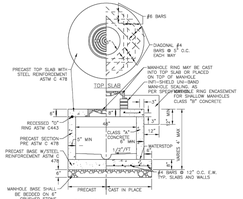
COMPRESSION ASSEMBLY WITH NO HOLE



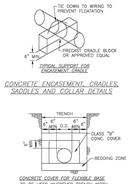
COMPRESSION ASSEMBLY WITH HOLE



HOUSE LATERAL DETAIL

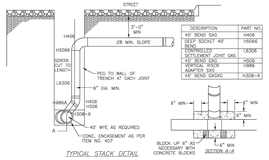


SHALLOW MANHOLE



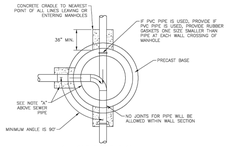
CONCRETE ENCASEMENT, CRADLES, SADDLES AND COLLAR DETAILS

CONCRETE COVER FOR FLEXIBLE BASE
TO BE USED WHENEVER TRENCH WIDTH IS GREATER THAN 2' PLUS O.D.



TYPICAL STACK DETAIL

DESCRIPTION	PART NO.
45° BEND SAG	H406
SDCP SOCKET 45° BEND	H5066
SDCP ADAPTER/ SETTLEMENT JOINT GAS	L6006
45° BEND 2006	H306
ADAPTER 2006	H866
45° BEND CAVCAS	H306-S



MANHOLE FLOOR PLAN

SANITARY SEWER GENERAL NOTES

ALL NEW EXISTING SANITARY SEWER MAINS AND MANHOLES IN THIS PROJECT ARE TO REMAIN ACTIVE AND SHALL BE PROTECTED BY THE CONTRACTOR. ALL NEW SEWER MAINS AND MANHOLES SHALL BE TESTED AFTER THEY ARE BUILT OR RECONSTRUCTED BY THE CONTRACTOR AT NO ADDITIONAL COST. NOTIFY GVSUD'S UTILITY INSPECTORS AT (210)372-2233 PRIOR TO ENDASING.

THE EXISTING CONDITIONS OF SEWER MAINS AND MANHOLES HAVE BEEN DOCUMENTED BY GVSUD. A PRE-/RECONSTRUCTION VIDEO OF THE LINES AND MANHOLES WILL BE PROVIDED TO THE CONTRACTOR. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE EXISTING CONDITION OF THE SEWER SYSTEM. IF POST CONSTRUCTION INSPECTION WORK SHOWS PORTIONS OF SANITARY SEWER MAINS OR MANHOLES HAVE BEEN DAMAGED BY THE CONTRACTOR'S OPERATIONS, REPAIR OR REPLACE THE SEWER MAIN AT THEIR EXPENSE, TO THE APPROVAL OF GVSUD'S INSPECTORS OR ENGINEER.

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

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

SCHRYVER TRACT

SANITARY SEWER DETAILS

DATE 10/30/2025

PROJECT NO. 04002.006

DRAWN BY DAF/RM/JW

CHECKED BY SPM

REVISIONS

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10/30/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

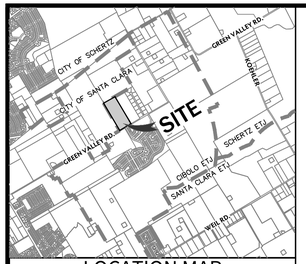
CUDE ENGINEERS
TBPELS No. 10048500

PLAT SCHRYVER TRACT

GVSUD XX-XXXX

C4.D2

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



LOCATION MAP
N.T.S.

LEGEND

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

KEYNOTES

1. 20' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE
2. 15' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE
3. TEMPORARY VAR. WID. WATER, DRAINAGE, SEWER AND GRADING EASEMENT (BY SEPARATE INSTRUMENT)
4. AFTER RELEASED FOR SERVICE, CONTRACTOR TO TIE NEW 8" WATER MAIN INTO EXIST. 16" WATER MAIN. CUT AS REQUIRED. VALVE TO REMAIN CLOSED UNTIL AFTER DISINFECTION & ACCEPTANCE BY GVSUD.

   CONTRACTOR TO REMOVE:
   - 1- 16" CAP, M.J.
   - 1- 16"X16" TEE

   CONTRACTOR TO INSTALL:
   - 1- 8" M.J. X 2" THR. D.I. ECCENTRIC (TEMP.)
   - 1- 2" BLOW-OFF ASSEMBLY (TEMP.)

   TO BE INSTALLED FOR TIE-IN AFTER NEW MAIN IS TESTED AND ACCEPTED.
   - 1- 16" SOLID SLEEVE, M.J.
   - 1- 16" X 8" ECCENTRIC REDUCER, M.J.
   - 1- 16" C909 PIPE AS REQUIRED
   - 1- 16"X16" CROSS, M.J.
5. - 1- 8" x 6" TEE, M.J., ANCHOR
   - 2- 8" GATE VALVE, M.J.
   - 1- 6" x 1/4 BEND, M.J.
   - 1- 6" GATE VALVE, M.J.
   - 3- 6" VALVE BOX, COMPLETE
   - 1- STD. FIRE HYDRANT
   - 1- 6" D.I. PIPE, CUT AS REQ'D.

   SEE G.V.C.U.D. STANDARD DTL. No. W-22 (SHEET C5.D2)
6. - 1- 2" BLOWOFF ASSEMBLY (PERM.)
   - 8" x 2" THR. DI. ECCENTRIC REDUCER, M.J. (PERM.)

   SEE GVSUD DETAIL W-28
7. CONTRACTOR TO INSTALL 24" C-909 CASING AROUND THE WATER MAIN FROM FITTING TO FITTING AT ALL PAVEMENT CROSSINGS. SEE GVSUD DETAILS W-6, W-7, W-8, SHEET C5.D1.
8. - 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.C.U.D. STANDARD DTL. No. W-22 (SHEET C5.D2)

CAUTION!!!

THE CONTRACTOR SHALL BE AWARE THAT EXISTING OVERHEAD ELECTRIC AND GAS MAIN 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.

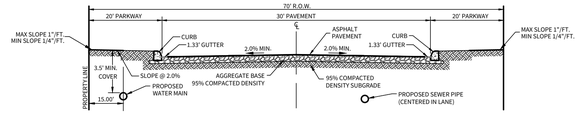
NOTES:

1. LOTS WITH CONFLICTING TRANSFORMER / SECONDARY ENCLOSURE ELECTRIC SERVICE AND WATER METER LOCATION SHALL HAVE WATER METER PLACED 5' FROM PROPERTY LINE WHERE THE CONFLICT OCCURS.
2. DISINFECTION SHALL BE BY MACHINE CHLORINATION.
3. CONTRACTOR TO UTILIZE APPROVED WATER LINE STOPS AND/OR MUELLER INSERTION-VALVES TO MINIMIZE WATER OUTAGES AS REQUIRED BY GVSUD DURING CONSTRUCTION.
4. MOISTURE DENSITY COMPACTION TESTING FREQUENCY- WATER MAIN TRENCHES REQUIRED EVERY 300 L.F. FOR EACH VERTICAL FOOT OF COMPACTED BACKFILL. SERVICES RANDOMLY SELECTED AS REQUIRED BY GVSUD INSPECTOR.
5. ALL TESTING AND TEST REPORTS SHALL BE COORDINATED WITH GVSUD INSPECTOR BY THE CONTRACTOR.
6. ALL DUCTILE IRON PIPE TO BE AMERICAN, ZINC COATED, AWWA/ANSI C-151
7. FIRE HYDRANTS SHALL BE MUELLER OR E.J TYPE AND SHALL BE 1' MINIMUM AND 7' MAXIMUM FROM THE BACK OF CURB.
8. CONTRACTOR TO COORDINATE INSPECTIONS OF WATER MAIN AND FHs PRIOR TO BACKFILL WITH GUADALUPE COUNTY FIRE MARSHALL OFFICE.

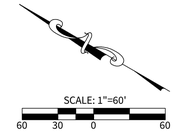
TRENCH EXCAVATION SAFETY PROTECTION

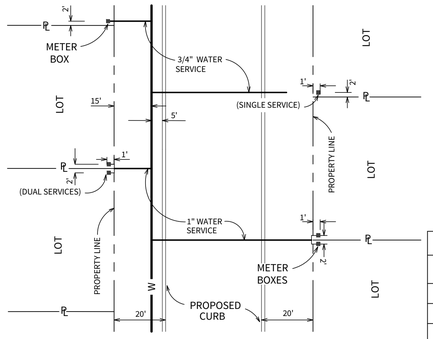
CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S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

SCHRYVER TRACT	
Water Quantities	
TRENCH EXCAVATION PROTECTION	3,487 L.F.
8" D.I. C-151 PIPE	33 L.F.
8" PVC C-909 PIPE	3,487 L.F.
FIRE HYDRANT ASSEMBLY W VALVE	5 EA.
8" GATE VALVE MJ W BOX, COMPLETE	21 EA.
METER BOXES	76 EA.
24" PVC CASING	303 L.F.
24" STEEL CASING	38 L.F.
12" SOLID SLEEVE, M.J	2 EA.
2" PERM. BLOW-OFF	1 EA.
2" TEMPORARY BLOW-OFF	1 EA.
8" X 6" ECCENTRIC REDUCER, M.J	1 EA.
8" X 2" THR D.I. ECCENTRIC REDUCER, M.J	2 EA.
12" X 2" THR D.I. ECCENTRIC REDUCER, M.J	2 EA.
8"X6" TEE, M.J	7 EA.
8"X8" TEE, M.J	3 EA.
8"X12" TEE, M.J	2 EA.
8" - 1/8 BEND, M.J	4 EA.
8" - 1/16 BEND, M.J	1 EA.
8" - 1/32 BEND, M.J	5 EA.
12" - 1/16 BEND, M.J	1 EA.
12" - 1/32 BEND, M.J	1 EA.
3/4" LONG WATER SERVICE (SINGLE)	32 EA.
3/4" SHORT WATER SERVICE (SINGLE)	41 EA.
3/4" IRRIGATION SERVICE	3 EA.
DISINFECTION AND HYDROSTATIC TESTING	1 EA.

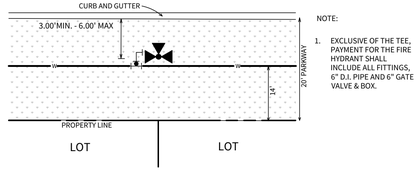


SECONDARY STREET CROSS-SECTION
N.T.S.





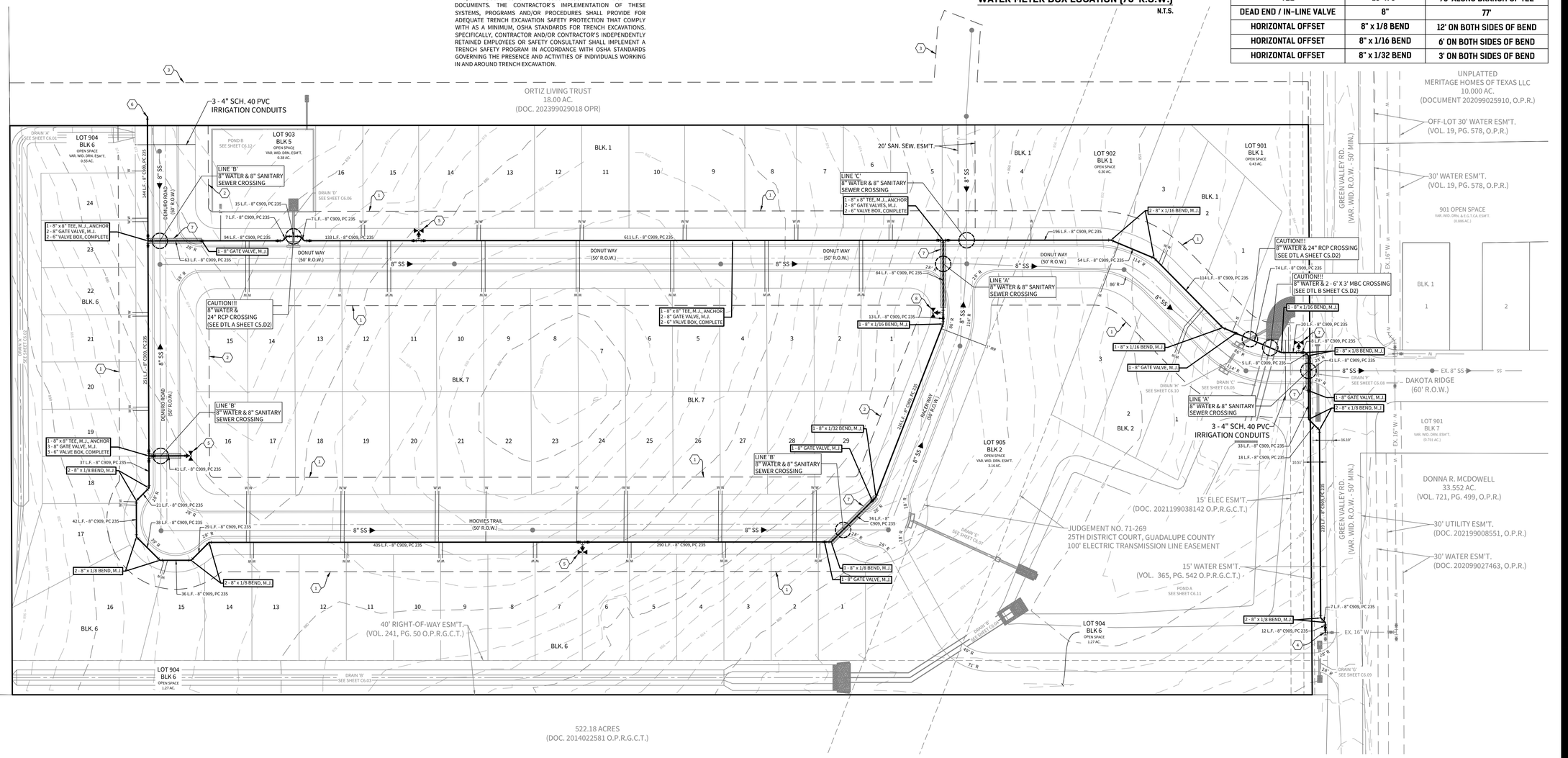
WATER METER BOX LOCATION (70' R.O.W.)
N.T.S.



LOCAL RESIDENTIAL FIRE HYDRANT DETAIL

JOINT RESTRAINT DIMENSION TABLE

TYPE	MAIN SIZES	RESTRAINT LENGTH(S)
TEE	12" x 8"	42' ALONG BRANCH OF TEE
TEE	8" x 8"	77' ALONG BRANCH OF TEE
TEE	8" x 6"	59' ALONG BRANCH OF TEE
TEE	16" x 8"	78' ALONG BRANCH OF TEE
DEAD END / IN-LINE VALVE	8"	77'
HORIZONTAL OFFSET	8" x 1/8 BEND	12' ON BOTH SIDES OF BEND
HORIZONTAL OFFSET	8" x 1/16 BEND	6' ON BOTH SIDES OF BEND
HORIZONTAL OFFSET	8" x 1/32 BEND	3' ON BOTH SIDES OF BEND



CUDEENGINEERS.COM

CUDE ENGINEERS

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

SCHRYVER TRACT
WATER DISTRIBUTION PLAN

DATE
10/30/2025

PROJECT NO.
04002.006

DRAWN BY
DAF/RM/JW

CHECKED BY
SPM

REVISIONS
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10/30/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT
SCHRYVER TRACT

C5.00

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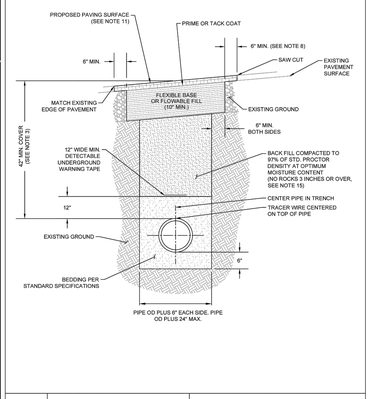
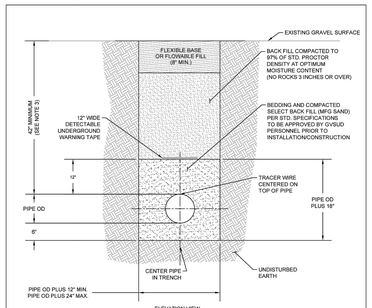


GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	TRENCH DETAIL FOR PAVED AREAS (1 OF 2)	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-1

NOTES:

1. ALL WASTEWATER PVC PIPING SHALL BE GREEN IN COLOR. NO WATER DESIGNATED PIPE SHALL BE USED IN WASTEWATER WITHOUT PRIOR APPROVAL FROM THE ENGINEER.
2. ALL WATER PIPING SHALL HAVE A MINIMUM PRESSURE CLASS OF 235 PSI WATER PVC PIPING SHALL BE BLUE IN COLOR.
3. ALL WATER LINES AND WASTEWATER FORCEMAIN SHALL HAVE 42 INCH MINIMUM COVER AND 72 INCH MAXIMUM COVER. WASTEWATER GRAVITY LINES SHALL HAVE 42 INCHES MINIMUM COVER AND 15 FEET MAXIMUM COVER.
4. GENERAL CONTRACTOR SHALL CONTACT THE APPROPRIATE STREET OWNER AND PROCESS, POST FISCAL SURETY, AND HAVE STREET CUT PERMIT ISSUED IN THEIR NAME.
5. CONTRACTOR TO REPAIR PAVED AREA TO STREET OWNER'S ROAD STANDARDS FOR ALL DISTURBED AREA. GREEN VALLEY SPECIAL UTILITY DISTRICT PAYS FOR QUANTITY OF REPAIR SHOWN IN DETAIL.
6. CONTRACTOR SHALL NOT EXCEED THE MAXIMUM TRENCH ALLOWED AS INDICATED IN THE PLANS AND SPECIFICATIONS.
7. THE EXISTING PAVED SURFACE SHALL BE SAW CUT IN A STRAIGHT LINE, A MINIMUM OF 12 INCHES WIDER THAN UNDISTURBED SIDES OF THE TRENCH AND SYMMETRICAL ABOUT THE CENTER LINE OF THE EXCAVATION.
8. ANY CONCRETE PAVING SHALL BE CUT 6 INCHES WIDER THAN UNDISTURBED SIDES OF EXCAVATION.
9. IF EXCAVATION AREA IS OPEN FOR TEMPORARY PUBLIC USE, THE SURFACE SHALL BE MAINTAINED LEVEL WITH ADJACENT RIDING SURFACE WITH TEMPORARY COLD MIX ASPHALT CONCRETE OR TEMPORARY HOT MIXED ASPHALT CONCRETE. TEMPORARY MIX SHALL BE PLACED OVER FLEXIBLE BASE.
10. FLEXIBLE BASE SHALL BE REPLACED IN KIND WITH BASE AND PAVEMENT THICKNESS WITH BASE EQUAL TO EXISTING BASE THICKNESS PLUS 3 INCHES, BUT IN NO CASE LESS THAN 10 INCHES.
11. DAMAGED PAVEMENT OUTSIDE THE TRENCH CUT SHALL BE REMOVED AND REPLACED WITH A MINIMUM OF 2 INCHES HOT MIXED ASPHALT CONCRETE AND A BASE OF 10 INCHES OR A THICKNESS MATCHING EXISTING, WHICHEVER IS GREATER.
12. TACK COAT ALL EXPOSED EDGES AND SURFACES.
13. TYPE AND THICKNESS OF PROPOSED PAVING SURFACE SHALL BE AS FOLLOWS:
    - TWO COURSE SURFACE TREATMENT: SHALL MATCH EXISTING SURFACE AND SHALL BE IN ACCORDANCE WITH SPECIFICATION 02770.
    - ASPHALT PAVING: SHALL BE IN ACCORDANCE WITH SPECIFICATION 02740. HOT MIXED ASPHALT CONCRETE TYPE 'D' SHALL BE USED FOR LIFT THICKNESS UP TO 2 INCHES, AND TYPE 'C' FOR LIFT THICKNESS OVER 2 INCHES AND UP TO 3 INCHES. LIFT THICKNESS SHALL NOT BE MORE THAN 3 INCHES.
14. DETECTABLE UNDERGROUND WARNING TAPE SHALL BE PLACED DIRECTLY ABOVE THE CENTERLINE OF THE PIPE AND ABOVE BEDDING, IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS. THE DETECTABLE UNDERGROUND WARNING TAPE SHALL CONFORM TO THE SPECIFICATIONS AND COLOR CODED IN ACCORDANCE WITH THE AMERICAN PUBLIC WORKS ASSOCIATION UNIFORM COLOR CODE.
15. PIPE BEDDING SHALL BE PLACED BEFORE PIPING IS LAID, UP TO BOTTOM OF PIPE, AND COMPACTED TO 97% STANDARD PROCTOR DENSITY.
16. PLACE PIPE BEDDING IN 12 INCH LIFTS AFTER PIPE IS LAID TO 12 INCHES ABOVE THE PIPE.
17. SELECT BACKFILL MATERIAL PLACED TO REQUIRED HEIGHT IN 6 INCH LIFTS.

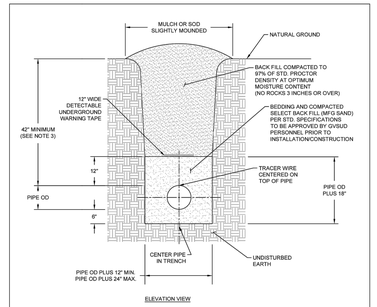
GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	TRENCH DETAIL FOR PAVED AREAS (2 OF 2)	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-1



NOTES:

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

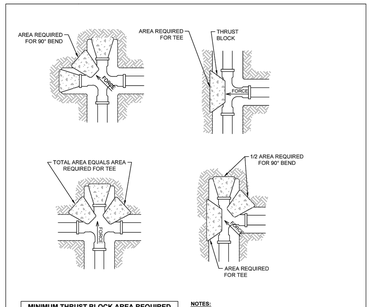
GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	TRENCH DETAIL FOR GRAVEL SURFACED AREAS	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-2



NOTES:

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

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

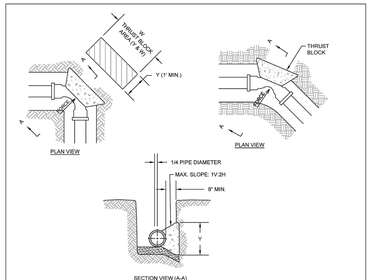


MINIMUM THRUST BLOCK AREA REQUIRED (Y AND W)		
	WATER PIPE	
PIPE SIZE	TEE, DEAD END, 90° BEND	45° AND 22.5° BENDS
4" & LESS	3 SQ. FEET	3 SQ. FEET
6"	4 SQ. FEET	3 SQ. FEET
8"	6 SQ. FEET	3 SQ. FEET
10"	9 SQ. FEET	5 SQ. FEET
12"	13 SQ. FEET	7 SQ. FEET
16"	23 SQ. FEET	12 SQ. FEET
18"	29 SQ. FEET	15 SQ. FEET

NOTES:

1. TABLE IS BASED ON SOILS WITH A MINIMUM BEARING CAPACITY OF 1,000 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: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-4

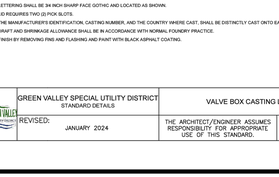


MINIMUM THRUST BLOCK AREA REQUIRED (Y AND W)		
	WATER PIPE	
PIPE SIZE	TEE, DEAD END, 90° BEND	45° AND 22.5° BENDS
4" & LESS	3 SQ. FEET	3 SQ. FEET
6"	4 SQ. FEET	3 SQ. FEET
8"	6 SQ. FEET	3 SQ. FEET
10"	9 SQ. FEET	5 SQ. FEET
12"	13 SQ. FEET	7 SQ. FEET
16"	23 SQ. FEET	12 SQ. FEET
18"	29 SQ. FEET	15 SQ. FEET

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.

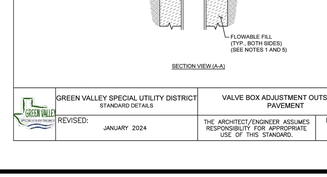
GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	CONCRETE THRUST BLOCKING (2 OF 2)	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-4



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: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-5

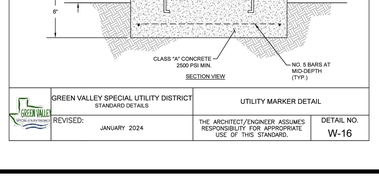


NOTE:
NUMBER OF RUNNERS AND CONFIGURATION SHALL COMPLY WITH TCEQ RULES AND REGULATIONS

NOTES:

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

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

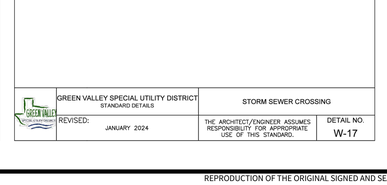


NOTES:

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

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

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

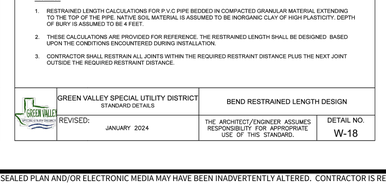


NOTES:

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

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

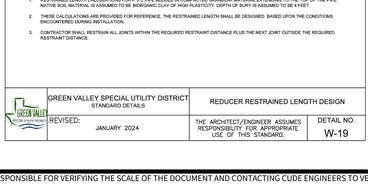
GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	INSTALLATION OF PIPE IN STEEL ENCASEMENT UNDER STREAMS / STORM SEWERS	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-8



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 5 FEET HORIZONTALLY FROM CROSSINGS.

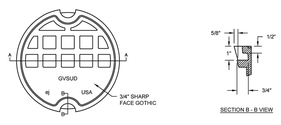
GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	UTILITIES CROSSING DETAIL	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-10



NOTES:

1. WELD 2 1/2 INCH X 2 INCH DEEP SOCKET TO 1 INCH (SCHEDULE 40) ROUND STEM EXTENSION AND ON OPERATING NUT. FOR PIPE EXTENSIONS OVER 10 FEET, STEM EXTENSION SHALL BE A SCHEDULE 80 PIPE.
2. VALVE EXTENSIONS ARE REQUIRED ON ALL VALVES THAT EXCEED 2 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.

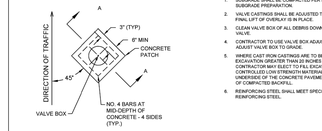
GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	NON-RISING STEM VERTICAL GATE VALVE WITH BOX ASSEMBLY	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-11



NOTES:

1. VALVE BOX COVER SHALL BE EJ GROUP, INC. 871 VALVE BOX COVER PRODUCT NUMBER 33171011, OR APPROVED EQUIVALENT WITH GVSUD LOGO.
2. TYPICAL FILLET IS 3/16 INCH RADIUS.
3. LETTERING SHALL BE 3/4 INCH SHARP FACE GOTHIC AND LOCATED AS SHOWN.
4. LID REQUIRES TWO (2) PICK SLOTS.
5. THE MANUFACTURER'S IDENTIFICATION, CASTING NUMBER, AND THE COUNTRY WHERE CAST, SHALL BE DISTINCTLY CAST ONTO EACH LID.
6. DRAFT AND SHRINKAGE ALLOWANCE SHALL BE IN ACCORDANCE WITH NORMAL FOUNDRY PRACTICE.
7. FINISH BY REMOVING FINS AND FLASHING AND PAINT WITH BLACK ASPHALT COATING.

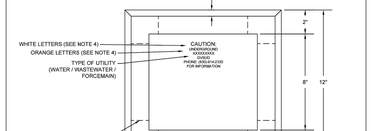
GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	VALVE BOX CASTING LID	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-12



NOTES:

1. SUBGRADE SHALL BE COMPACTED PER SPECIFICATIONS, SUBGRADE PREPARATION.
2. VALVE CASTINGS SHALL BE ADJUSTED TO GRADE AFTER FINAL LIFT OF OVERLAY IS IN PLACE.
3. CLEAN VALVE BOX OF ALL DEBRIS DOWN TO BASE OF THE VALVE.
4. CONTRACTOR TO USE VALVE BOX ADJUSTING RISER TO ADJUST VALVE BOX TO GRADE.
5. WHERE CAST IRON CASTINGS ARE TO BE REMOVED IN EXCAVATION GREATER THAN 20 INCHES DEEP, REPLACE WITH CAST IRON CASTINGS AND BACKFILL 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.

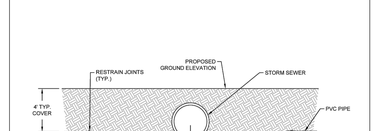
GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	VALVE BOX ADJUSTMENT OUTSIDE OF PAVEMENT	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-14

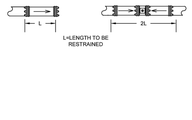


NOTES:

1. 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.

GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	UTILITY MARKER DETAIL	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-16


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.)
SECT



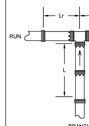
RESTRAINED LENGTH FOR DEAD ENDS/INLINE VALVES

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

NOTES:

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

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



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

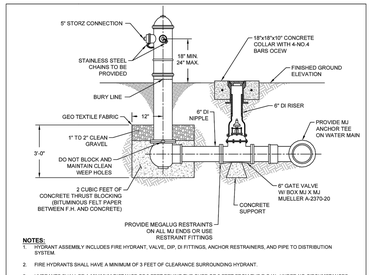
RESTRAINED LENGTH FOR TEES

PIPE SIZE (INCHES)	BRANCH SIZE (INCHES)	LENGTH OF RUN (FEET)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 PSI
6	4	0	42
6	4	5	7
6	4	10	1
6	6	0	59
6	6	5	35
6	6	10	11
8	4	0	42
8	4	5	1
8	6	0	59
8	6	5	28
8	6	10	1
8	8	0	77
8	8	5	53
8	8	10	30
8	8	15	8
12	4	0	42
12	4	5	1
12	6	0	59
12	6	5	13
12	6	10	1
12	8	0	77
12	8	5	42
12	8	10	7
12	8	15	1
12	12	0	109
12	12	5	66
12	12	10	53
12	12	15	39
16	4	0	42
16	4	5	1
16	6	0	59
16	6	5	1
16	8	0	78
16	8	5	39
16	8	10	1
16	12	0	110
16	12	5	84
16	12	10	59
16	12	15	33
16	12	20	7
16	16	0	142
16	16	5	123
16	16	10	104
16	16	15	85
16	16	20	65
24	24	5	169
24	24	10	136
24	24	15	103
24	24	20	70

NOTES:

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

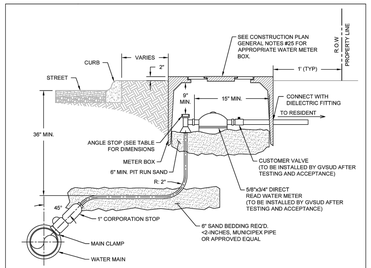
GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	TEE RESTRAINED LENGTH DESIGN	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-21



NOTES:

1. HYDRANT ASSEMBLY INCLUDES FIRE HYDRANT, VALVE, DIP, DI FITTINGS, ANCHOR RESTRAINERS, AND PIPE TO DISTRIBUTION SYSTEM.
2. FIRE HYDRANTS SHALL HAVE A MINIMUM OF 3 FEET OF CLEARANCE SURROUNDING HYDRANT.
3. HYDRANTS SHALL BE A MINIMUM DISTANCE OF 3 FEET BEHIND THE CURB OR 3 FEET FROM THE R.O.W. UNDER NO CIRCUMSTANCES SHALL VALVES OR HYDRANTS BE PLACED IN A CURB OR SIDEWALK. IN AREAS WITHOUT CURBS OR SIDEWALKS, HYDRANT SHALL BE PLACED 3-6 FEET FROM THE DISTRIBUTION SYSTEM.
4. FOR BURY DEPTHS GREATER THAN 5 FEET, ONE BARREL EXTENSION NOT EXCEEDING 3 FEET IN LENGTH SHALL BE INSTALLED DIRECTLY BELOW THE FIRE HYDRANT.
5. 1 CU FOOT (MIN) OF CRUSHED STONE OR GRAVEL SHALL BE PLACED AROUND WEEP HOLE FOR A RADIUS OF 12 INCHES AND EXTEND 12 INCHES ABOVE THE OUTLET.
6. VALVE, DUCTILE IRON PIPE, AND STANDARD FIRE HYDRANT SYSTEM SHALL BE RESTRAINT JOINT CONTINUOUSLY TOGETHER.
7. FIRE HYDRANT SHALL BE 6 INCH (D) WAY HYDRANT WITH BREAK AWAY BOLTS (SHOE TYPES) PROVIDED WITH STORZ CONNECTION. DEPTH OF BURY SHALL BE 42 INCHES MINIMUM. FIRE HYDRANTS MUST BE SET PLUMB. HOSE CONNECTION MUST FACE ROADWAY.
8. HYDRANT ASSEMBLY SHALL BE RESTRAINED FROM TEE TO HYDRANT.
9. IN THE CITY OF CIBOLO'S CITY LIMITS, FIRE HYDRANTS SHALL BE MUELLER TYPE AND SHALL BE 1 FOOT MINIMUM AND 7 FEET MAXIMUM FROM THE BACK OF CURB.
10. HYDRANTS UPPER BARREL SHALL BE FACTORY PAINTED RED WITH BONNET AND CAPS COATED PER CURRENT NFPA 291 STANDARDS.
11. HYDRANTS LOCATED IN RURAL AREAS SHALL HAVE 6' TALL POLLARD WATER FLEXIFLAG #PP968802.

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



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

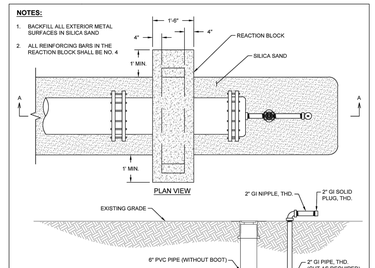
NOTES:

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

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

NOTES:

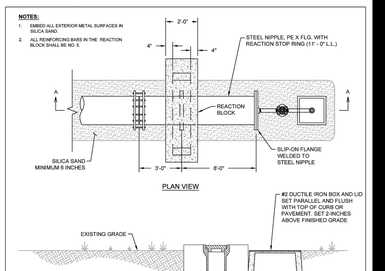
1. BACKFILL ALL EXTERIOR METAL SURFACES IN SILICA SAND
2. ALL REINFORCING BARS IN THE REACTION BLOCK SHALL BE NO. 4



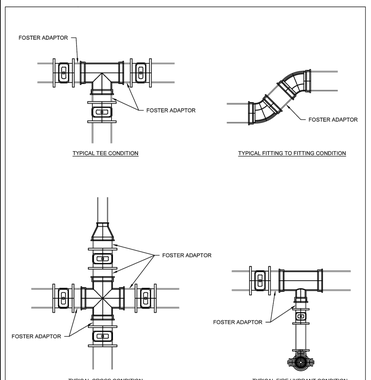
GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	2" TEMPORARY BLOW-OFF ASSEMBLY ON 12" TO 16" MAINS	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-25

NOTES:

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



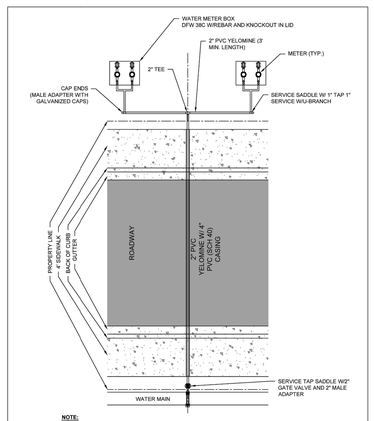
GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	2" & 4" PERMANENT URBAN BLOW-OFF ASSEMBLY	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-28



NOTE:

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

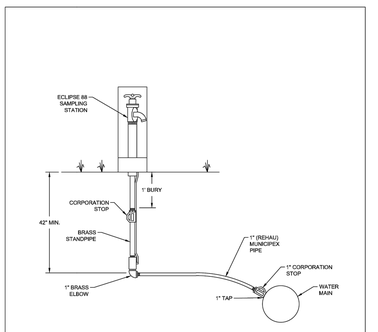
GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	MECHANICAL JOINT ADAPTOR DETAIL	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-31



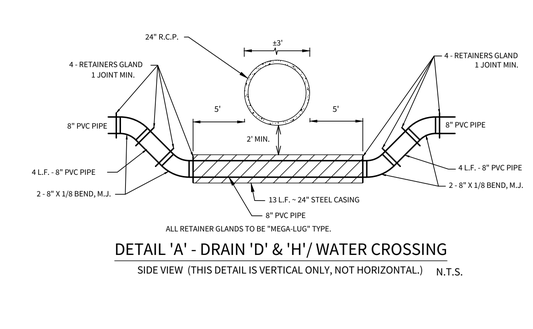
NOTE:

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

GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	MULTI-DWELLING UNIT WATER SERVICE DETAIL	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-32



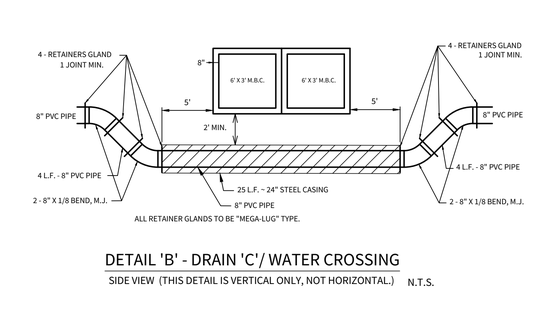
GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	WATER SAMPLING STATION DETAIL	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-33



ALL RETAINER GLANDS TO BE "MEGA-LUG" TYPE.

DETAIL 'A' - DRAIN 'D' & 'H'/ WATER CROSSING

SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.) N.T.S.



ALL RETAINER GLANDS TO BE "MEGA-LUG" TYPE.

DETAIL 'B' - DRAIN 'C'/ WATER CROSSING

SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.) N.T.S.

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

GVSUD CONSTRUCTION PLAN GENERAL NOTES

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.

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

SCHRYVER TRACT

WATER DISTRIBUTION DETAILS

DATE
10/30/2025

PROJECT NO.
04002.006

DRAWN BY
DAF/RM/JW

CHECKED BY
SPM

REVISIONS
1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

10/30/2025
STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

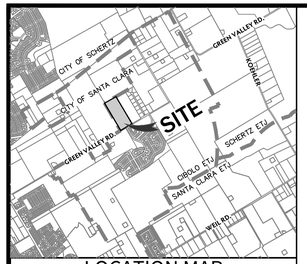
CUDE ENGINEERS
TBPELS No. 10048500

PLAT
SCHRYVER TRACT

C5.D2

P:\04002\000\2-2000\Fdwn\C5.D2 WATER DISTRIBUTION DETAILS.dwg 2025-10-30 9:22:00 jwatkins

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.

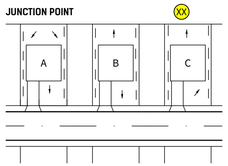


LOCATION MAP
N.T.S.

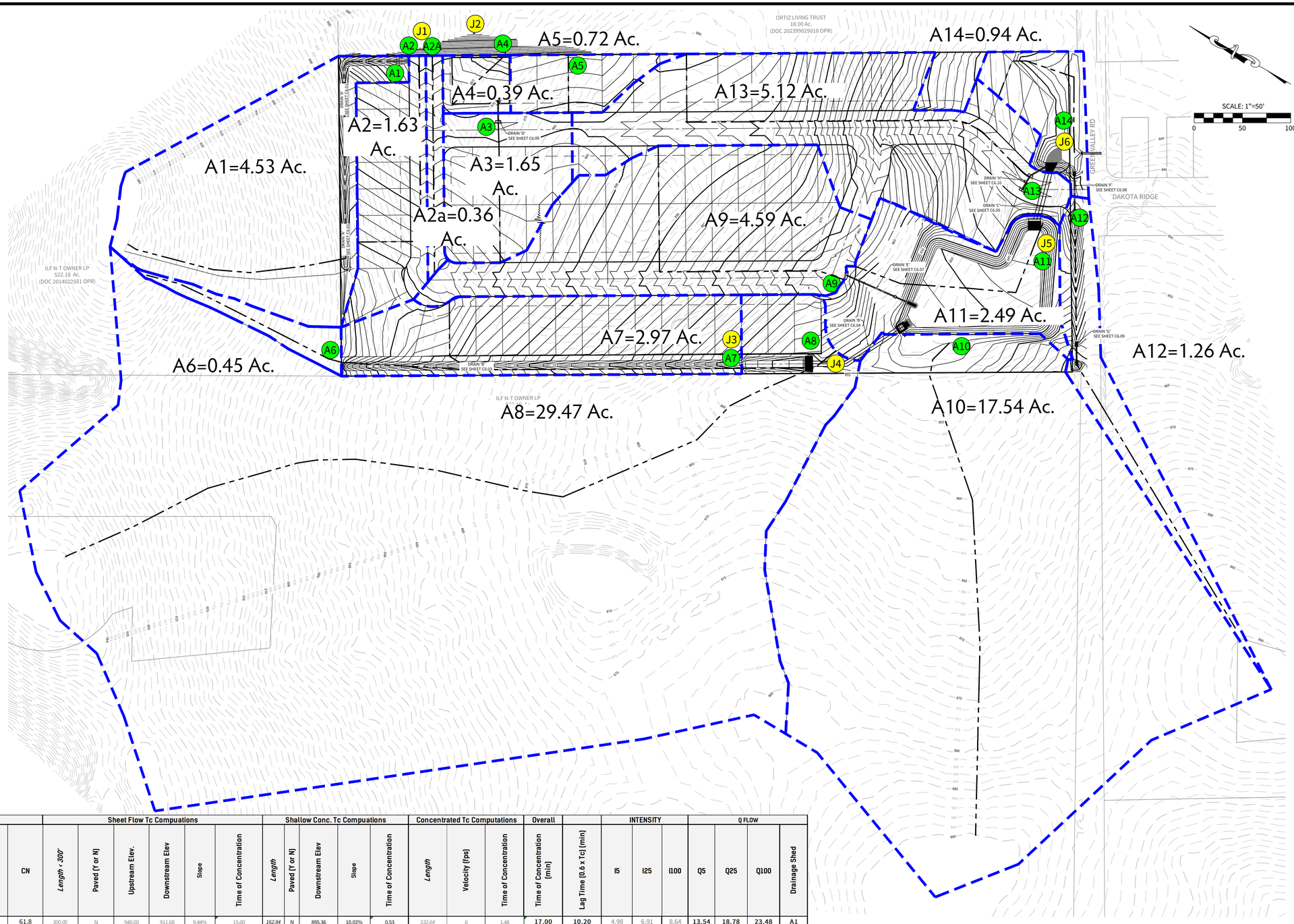
OWNER/DEVELOPER:
KB HOME LONE STAR, INC.
CONTACT PERSON: JASON TOWNSLEY
4800 FREDERICKSBURG RD., SUITE 100
SAN ANTONIO,TX 78229
TEL: (210) 301-2821

CIVIL ENGINEER:
M.W. CUDE ENGINEERS, L.L.C.
CONTACT PERSON: SEAN McFARLAND, P.E.
4122 POND HILL ROAD, SUITE 101
SAN ANTONIO, TX 78231
TEL: (210) 681-2951
FAX: (210) 523-7112

LEGEND
- SITE BOUNDARY
- 1% CHANCE ANNUAL FEMA F/P
- DRAINAGE AREA
- Tc FLOW PATH
- ACCUMULATION POINT (X)
- JUNCTION POINT (XX)



TYPICAL LOT SITE PLAN
N.T.S.



HYDROLOGY						Sheet Flow Tc Computations						Shallow Conc. Tc Computations					Concentrated Tc Computations			Overall		INTENSITY			Q FLOW			
Drainage Shed	Shed Area (Ac.)	Total Shed Area (Ac.)	AREA OF ACCUMULATION (Ac.)	C	CN	*Length - 300'*	Paved (Y or N)	Upstream Elev.	Downstream Elev	Slope	Time of Concentration	*Length*	Paved (Y or N)	Downstream Elev	Slope	Time of Concentration	*Length*	Velocity (fps)	Time of Concentration	Time of Concentration (min)	Lag Time (0.6 x Tc) (min)	I5	I25	I100	Q5	Q25	Q100	Drainage Shed
A1	4.53	4.53	= A1	0.60	61.8	*300.00*	N	940.00	911.68	9.44%	15.00	*162.84*	N	895.36	10.02%	0.53	*532.64*	6	1.48	**17.00**	**10.20**	4.98	6.91	8.64	**13.54**	**18.78**	**23.48**	A1
A2	1.63	1.63	= A2	0.72	87.8	*129.33*	N	893.48	887.35	4.74%	12.12	*386.92*	Y	873.81	3.50%	1.67				**13.00**	**7.80**	5.71	7.96	10.02	**6.70**	**9.34**	**11.76**	A2
A2A	0.36	0.36	= A2A	0.72	87.8	*300.00*	Y	888.87	879.03	3.28%	5.00	*152.59*	Y	873.86	3.39%	0.67				**10.00**	**6.00**	6.36	8.88	11.23	**1.65**	**2.30**	**2.91**	A2A
J1	-	6.16	= A1 + A2 + A2A	0.68	73.8	*300.00*	N	940.00	911.68	9.44%	15.00	*162.84*	N	895.36	10.02%	0.53	*532.64*	6	1.48	**17.00**	**10.20**	4.98	6.91	8.64	**20.86**	**28.94**	**36.19**	J1
A3	1.65	1.65	= A3	0.69	90.0	*240.00*	N	885.35	879.71	2.35%	18.00	*24.18*	N	878.84	3.60%	0.13				**18.00**	**10.80**	4.83	6.71	8.38	**5.50**	**7.64**	**9.54**	A3
A4	0.39	0.39	= A4	0.72	90.0	*144.20*	N	873.00	867.00	4.16%	13.05	*0.00*	N		0.00%					**13.00**	**7.80**	5.71	7.96	10.02	**1.60**	**2.24**	**2.81**	A4
A5	0.72	0.72	= A5	0.72	90	*120.00*	N	881.06	876.83	3.52%	12.48									**12.00**	**7.20**	5.92	8.25	10.41	**3.07**	**4.28**	**5.40**	A5
J2	-	8.92	= J1 + A3:A5	0.69	78.9	*240.00*	N	885.35	879.71	2.35%	18.00	*24.18*	N	878.84	3.60%	0.13				**18.00**	**10.80**	4.83	6.71	8.38	**29.73**	**41.30**	**51.58**	J2
A6	0.45	0.45	= A6	0.53	66.5	*300.00*	N	935.00	907.86	9.05%	15.00	*144.71*	N	896.57	7.80%	0.53	*0.00*			**15.00**	**9.00**	5.32	7.40	9.27	**1.27**	**1.76**	**2.21**	A6
A7	2.97	2.97	= A7	0.72	90.0	*165.50*	N	889.50	882.33	4.33%	13.76						*561.41*	6	1.56	**15.00**	**9.00**	5.32	7.40	9.27	**11.38**	**15.82**	**19.82**	A7
J3	-	3.42	= A6 + A7	0.70	86.9	*300.00*	N	935.00	907.86	9.05%	15.00	*144.71*	N	896.57	7.80%	0.53	*829.55*	6	2.30	**17.00**	**10.20**	4.98	6.91	8.64	**11.92**	**16.54**	**20.68**	J3
A8	29.47	29.47	= A8	0.54	77.8	*300.00*	N	945.00	917.16	9.28%	15.00	*778.41*	N	870.00	6.06%	3.26	*649.67*	6	1.80	**20.00**	**12.00**	4.57	6.35	7.92	**72.73**	**101.05**	**126.04**	A8
J4	-	32.89	= J3 + A8	0.56	78.7	*300.00*	N	940.00	911.68	9.44%	15.00	*162.84*	N	895.36	10.02%	0.53	*532.64*	6	1.48	**17.00**	**10.20**	4.98	6.91	8.64	**91.72**	**127.27**	**159.13**	J4
A9	4.59	4.59	= A9	0.72	90.0	*240.00*	N	878.71	874.46	1.77%	18.92						*405.19*	6	1.13	**20.00**	**12.00**	4.57	6.35	7.92	**15.10**	**20.99**	**26.17**	A9
A10	17.54	17.54	= A10	0.54	77.8	*300.00*	N	890.00	874.03	5.32%	16.68	*395.32*	N	860.00	3.55%	2.16	*306.74*	6	0.85	**19.00**	**11.40**	4.69	6.52	8.14	**44.42**	**61.75**	**77.10**	A10
A11	2.49	2.49	= A11	0.72	90.0	*100.00*	N	863.55	849.07	14.48%	10.00						*394.92*	6	1.10	**11.00**	**6.60**	6.13	8.56	10.81	**10.99**	**15.35**	**19.38**	A11
J5	-	57.51	= J4 + A9:A11	0.58	79.8	*300.00*	N	940.00	911.68	9.44%	15.00	*162.84*	N	895.36	10.02%	0.53	*532.64*	6	1.48	**17.00**	**10.20**	4.98	6.91	8.64	**166.11**	**230.49**	**288.19**	J5
A12	1.26	1.26	= A12	0.72	90.0	*300.00*	N	889.00	876.79	4.07%	17.93	*233.78*	N	865.08	5.01%	1.08	*439.15*	6	1.22	**20.00**	**12.00**	4.57	6.35	7.92	**4.15**	**5.76**	**7.19**	A12
A13	5.12	5.12	= A13	0.72	90.0	*120.00*	N	880.76	877.82	2.45%	13.10						*774.11*	6	2.15	**15.00**	**9.00**	5.32	7.40	9.27	**19.61**	**27.28**	**34.17**	A13
A14	0.94	0.94	= A14	0.72	90.0	*213.19*	N	849.33	841.61	3.62%	15.79	*156.58*	N	840.75	0.55%	2.15				**17.00**	**10.20**	4.98	6.91	8.64	**3.37**	**4.68**	**5.85**	A14

CUDEENGINEERS.COM

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

SCHRYVER TRACT

MASTER DRAINAGE PLAN

DATE
10/30/2025

PROJECT NO.
04002.006

DRAWN BY
DAF/RM/JW

CHECKED BY
SPM

REVISIONS
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10/30/2025
STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

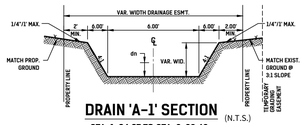
CUDE ENGINEERS
TBPELS No. 10048500

PLAT
SCHRYVER TRACT

C6.00

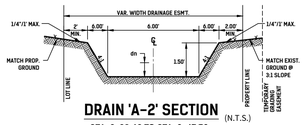
P:\2025\04002.DWG\4-Plans\CAD\FINAL\DRAINAGE\MASTER PLAN - PROPOSED CONDITIONS.dwg 2025/10/30 2:13pm jmartin

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.



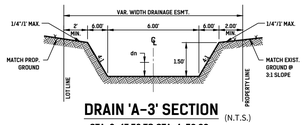
DRAIN 'A-1' SECTION (N.T.S.)

STA. 1+94.97 TO STA. 2+20.42



DRAIN 'A-2' SECTION (N.T.S.)

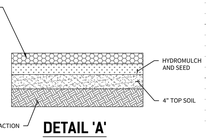
STA. 2+20.42 TO STA. 3+47.53



DRAIN 'A-3' SECTION (N.T.S.)

STA. 3+47.53 TO STA. 4+50.00

	'A-1'	'A-2'	'A-3'
Q_{25PROP} (cfs)	18.78	18.78	18.78
B_W (ft)	6.00	6.00	6.00
z	4:1	4:1	4:1
n	0.035	0.035	0.035
S (%)	1.00	6.89	3.10
d_n (ft)	0.74	0.44	0.55
V (fps)	2.83	5.50	4.16
Max Shear Stress 25yr	0.34	1.52	0.82
Shear Stress Class	VEGETATION	SEE NOTE 3	VEGETATION

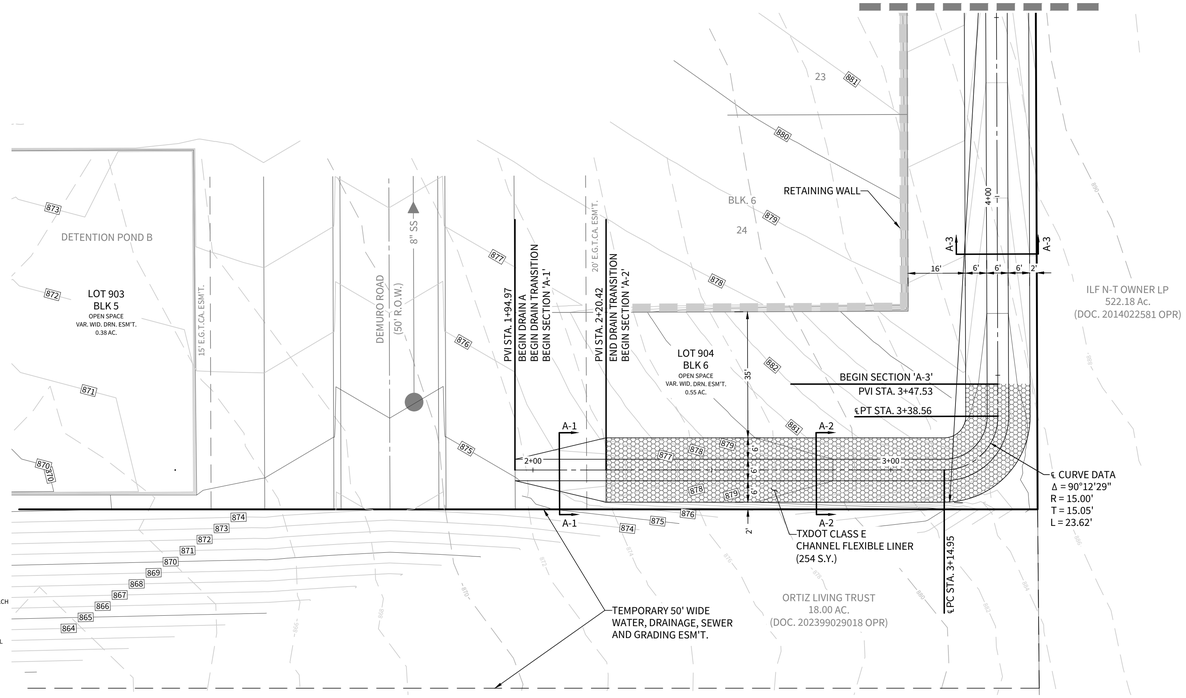


DETAIL 'A'

NOTES:

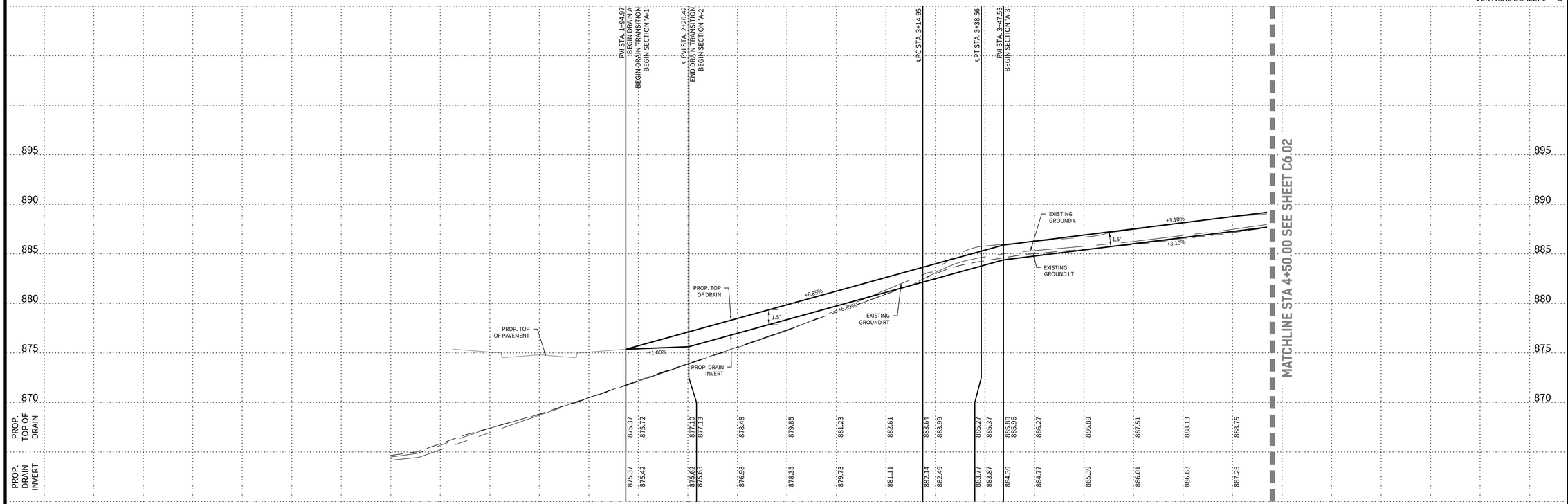
1. CONTRACTOR TO REFERENCE MANUFACTURER RECOMMENDATIONS FOR INSTALLATION OF CHANNEL FLEXIBLE LINERS.
2. CONTRACTOR TO COORDINATE PRE-CONSTRUCTION MEETING WITH COUNTY, ENGINEER AND MANUFACTURER PRIOR TO INSTALLATION OF EROSION MEASURES.
3. CONTRACTOR TO INSTALL TXDOT CLASS 2 TYPE E CHANNEL FLEXIBLE LINER. SEE DETAIL A

MATCHLINE STA 4+50.00 SEE SHEET C6.02



DRAIN A

STA. 1+94.97 TO STA. 4+50.00



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

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CUDE ENGINEERS EST. 1980

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

SCHRYVER TRACT

DRAINAGE PLAN & PROFILE - DRAIN A

DATE
10/30/2025

PROJECT NO.
04002.006

DRAWN BY
DAF/RM/JW

CHECKED BY
SPM

REVISIONS
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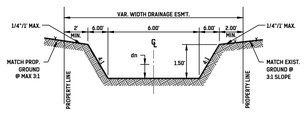
10/30/2025
STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT
SCHRYVER TRACT

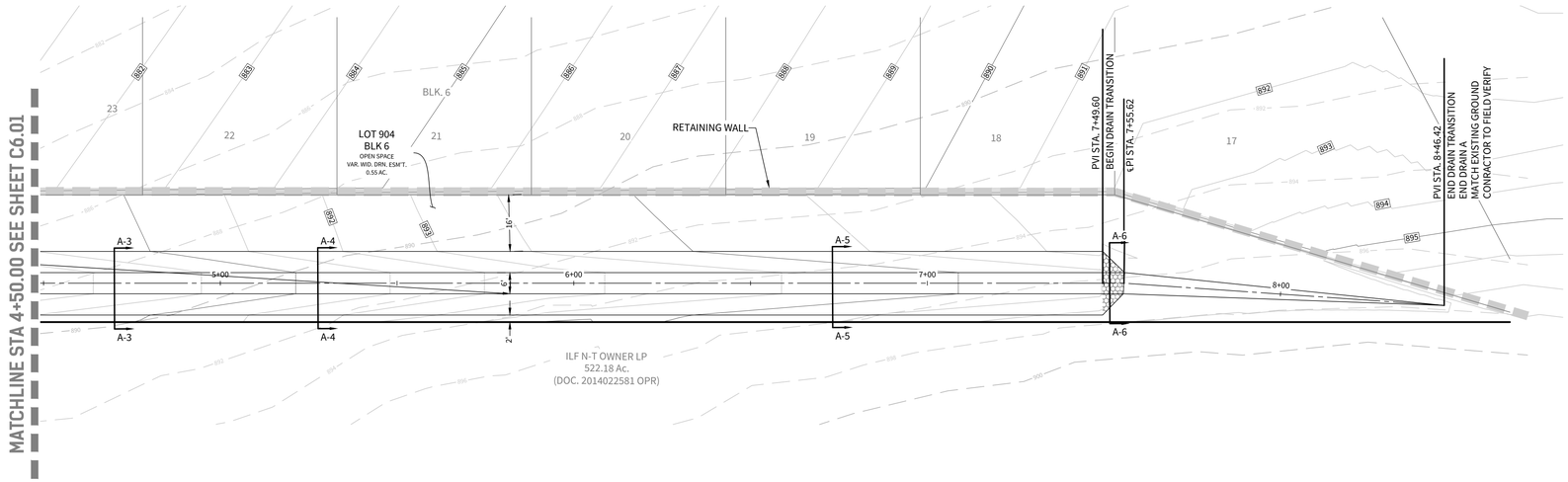
C6.01

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



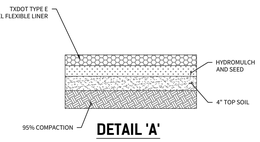
DRAIN 'A-3', 'A-4', 'A-5' & 'A-6' SECTION

(N.T.S.)



	'A-3'	"A-4"	"A-5"	"A-6"
$Q_{25yr,T}$ (cfs)	18.78	18.78	18.78	18.78
B_W (ft)	6.00	6.00	6.00	6.00
z	4:1	4:1	4:1	4:1
n	0.035	0.035	0.035	0.035
S (%)	3.10	3.75	2.00	6.58
d_n (ft)	0.55	0.52	0.62	0.45
V (fps)	4.16	4.47	3.57	5.35
Max Shear Stress 25yr	0.82	0.95	0.59	1.48
Shear Stress Class	VEGETATION	VEGETATION	VEGETATION	SEE NOTE 3

'A-3' STA. 4+50.00 - 4+86.75
'A-4' STA. 4+86.75 - 5+92.98
'A-5' STA. 5+92.98 - 7+49.60
'A-6' STA. 7+49.60 - 7+55.62
'A-7' STA. 7+55.62 - END



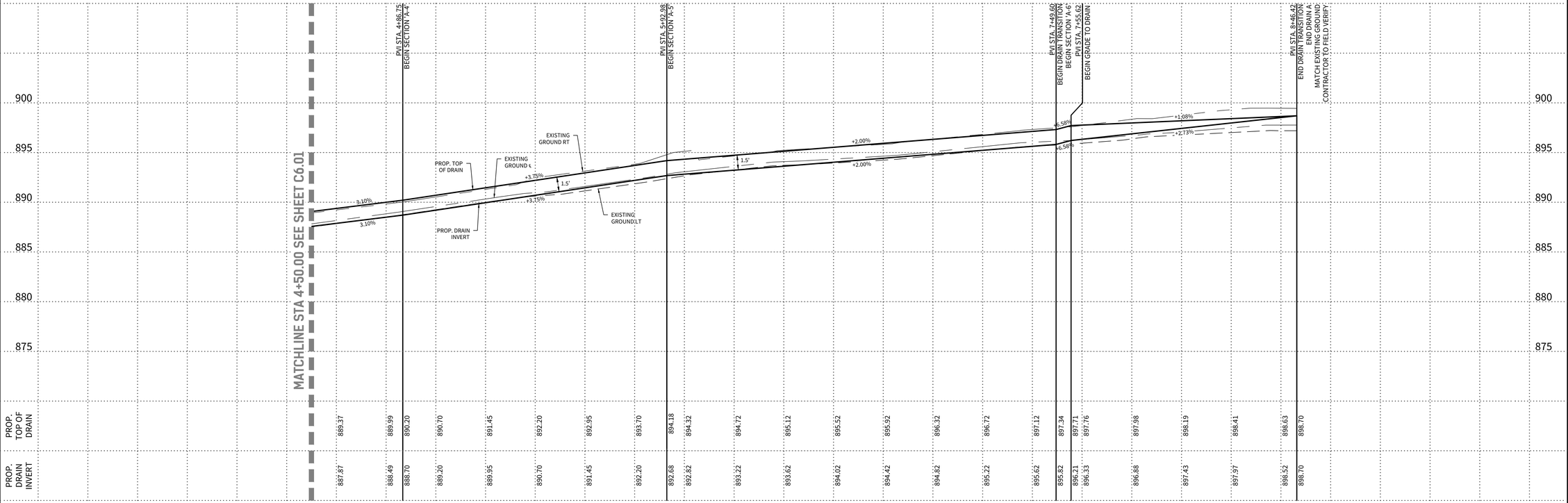
DETAIL 'A'

NOTES:

1. CONTRACTOR TO REFERENCE MANUFACTURER RECOMMENDATIONS FOR INSTALLATION OF CHANNEL FLEXIBLE LINERS.
2. CONTRACTOR TO COORDINATE PRE-CONSTRUCTION MEETING WITH COUNTY, ENGINEER AND MANUFACTURER PRIOR TO INSTALLATION OF EROSION MEASURES.
3. CONTRACTOR TO INSTALL TXDOT CLASS 2 TYPE E CHANNEL FLEXIBLE LINER. SEE DETAIL A

DRAIN A

STA. 4+50.00 TO STA. 8+46.42



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

CUDEENGINEERS.COM

CUDE ENGINEERS EST. 1980

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

SCHRYVER TRACT

DRAINAGE PLAN & PROFILE - DRAIN A

DATE
10/30/2025

PROJECT NO.
04002.006

DRAWN BY
DAF/RM/JW

CHECKED BY
SPM

REVISIONS
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10/30/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

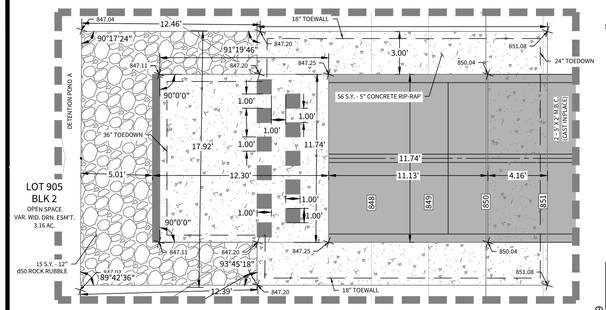
CUDE ENGINEERS
TBPELS No. 10048500

PLAT
SCHRYVER TRACT

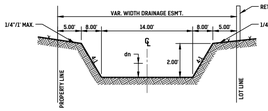
C6.02

P:\04002\004002-2\04\Civil\Sheets\C6.02 DRAINAGE PLAN & PROFILE - DRAIN A.dwg 10/31/25 8:53am jmehlers

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.

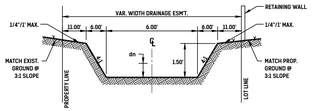


DETAIL 'A'
(SCALE: 1" = 5')



DRAIN 'B-1', 'B-2' & 'B-3' SECTION (N.T.S.)

B-1 STA. 3+41.23 TO STA. 3+46.23
B-2 STA. 3+46.23 TO STA. 4+19.71
B-3 STA. 4+19.71 TO STA. 4+63.11



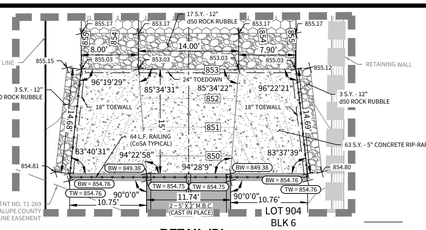
DRAIN 'B-4', 'B-5' & 'B-6' SECTION (N.T.S.)

B-4 STA. 4+63.11 TO STA. 4+73.11
B-5 STA. 4+73.11 TO STA. 5+66.99
B-6 STA. 5+66.99 TO STA. 7+00.00

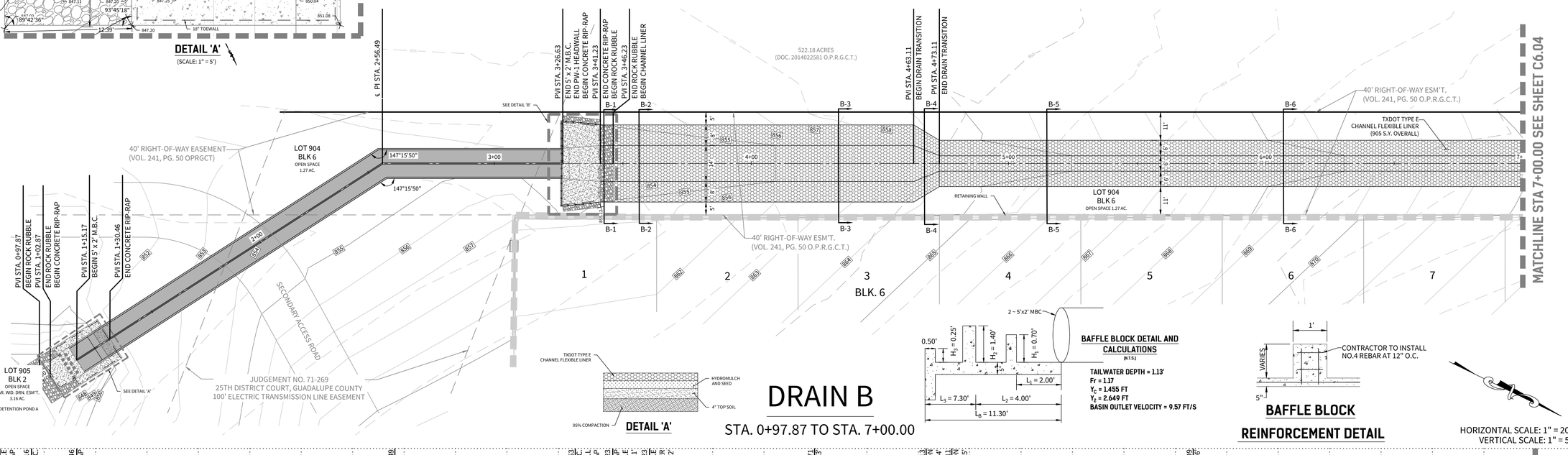
	"B-1"	"B-2"	"B-3"	"B-4"	"B-5"	"B-6"
Q_{MULT} (cfs)	127.27	127.27	127.27	15.82	15.82	15.82
B_W (ft)	14	14	14	6	6	6
z	4:1	4:1	4:1	4:1	4:1	4:1
n	0.041	0.035	0.035	0.035	0.035	0.035
S (%)	2.90	2.90	3.50	10.00	4.25	5.00
d_n (ft)	1.17	1.07	1.02	0.36	0.46	0.44
V (fps)	5.82	6.51	6.90	5.91	4.39	4.63
Max Shear Stress 25yr	1.67	1.55	1.80	1.86	0.98	1.11
Shear Stress Class	ROCK RUBBLE	SEE NOTE 3	SEE NOTE 3	SEE NOTE 3	SEE NOTE 3	SEE NOTE 3

NOTES:

1. CONTRACTOR TO REFERENCE MANUFACTURER RECOMMENDATIONS FOR INSTALLATION OF CHANNEL FLEXIBLE LINERS.
2. CONTRACTOR TO COORDINATE PRE-CONSTRUCTION MEETING WITH COUNTY, ENGINEER AND MANUFACTURER PRIOR TO INSTALLATION OF EROSION MEASURES.
3. CONTRACTOR TO INSTALL TXDOT CLASS 2 TYPE E CHANNEL FLEXIBLE LINER. SEE DETAIL A



DETAIL 'B'
(SCALE: 1" = 10')



DETAIL 'A'

DRAIN B

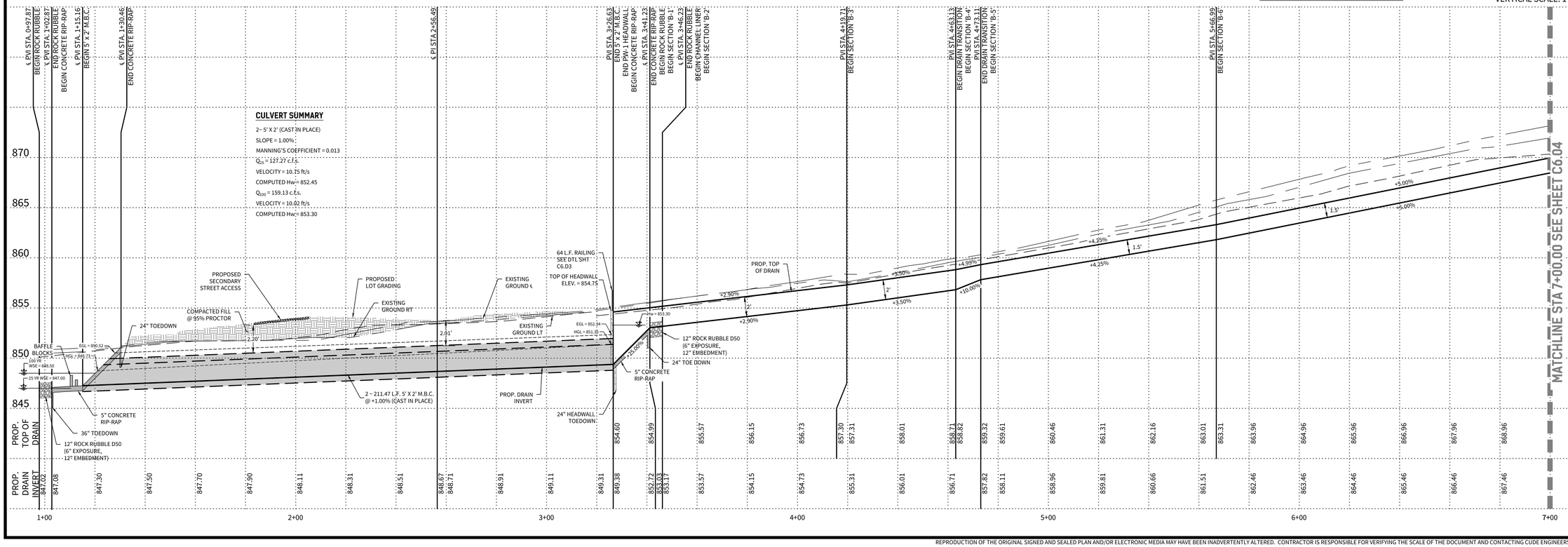
STA. 0+97.87 TO STA. 7+00.00

BAFFLE BLOCK DETAIL AND CALCULATIONS
(N.T.S.)

TAILWATER DEPTH = 1.13'
Fr = 1.17
Y_c = 1.455 FT
Y_n = 2.649 FT
BASIN OUTLET VELOCITY = 9.57 FT/S

BAFFLE BLOCK REINFORCEMENT DETAIL

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



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

SCHRYVER TRACT

DRAINAGE PLAN & PROFILE - DRAIN B

DATE
10/30/2025

PROJECT NO.
04002.006

DRAWN BY
DAF/RM/JW

CHECKED BY
SPM

REVISIONS
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10/30/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

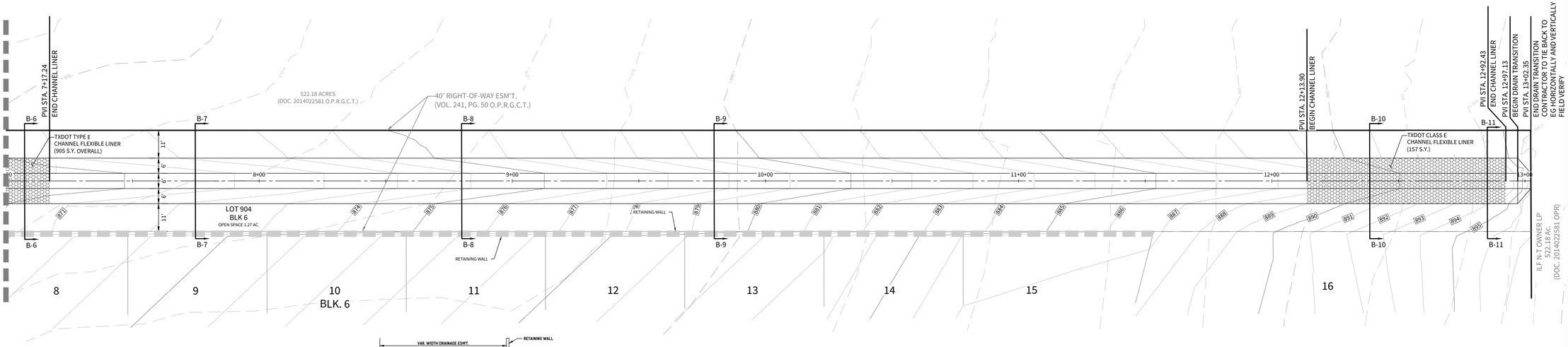
CUDE ENGINEERS
TBPELS No. 10048500

PLAT
SCHRYVER TRACT

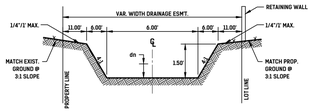
C6.03

P:\04002\DWG\04002-4 Plan\CAD\DRAINAGE PLAN & PROFILE - DRAIN 'B'.dwg 2025/10/30 8:30am jmadrid

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.



	"B-6"	"B-7"	"B-8"	"B-9"	"B-10"	"B-11"
Q_{DSLT} (cfs)	15.82	15.82	15.82	15.82	15.82	15.82
B_W (ft)	6	6	6	6	6	6
z	4:1	4:1	4:1	4:1	4:1	4:1
n	0.035	0.035	0.035	0.035	0.035	0.035
S (%)	5.00	2.30	3.45	4.15	6.87	6.87
d_n (ft)	0.44	0.54	0.49	0.46	0.46	0.46
V (fps)	4.63	3.59	4.06	4.39	4.39	4.39
Max Shear Stress 25yr	1.11	0.62	0.84	0.95	1.40	1.40
Shear Stress Class	SEE NOTE 3	VEGETATION	VEGETATION	VEGETATION	SEE NOTE 3	SEE NOTE 3



DRAIN 'B–6' – 'B–11' SECTION (N.T.S.)

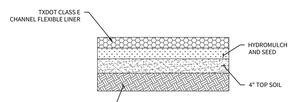
B–6 STA. 7+00.00 TO STA. 7+17.24
B–7 STA. 7+17.24 TO STA. 8+09.56
B–8 STA. 8+09.56 TO STA. 9+16.28
B–9 STA. 9+16.28 TO STA. 12+13.91
B–10 STA. 12+13.91 TO STA. 12+80.90
B–11 STA. 12+80.90 TO STA. 12+92.43

NOTES:

1. CONTRACTOR TO REFERENCE MANUFACTURER RECOMMENDATIONS FOR INSTALLATION OF CHANNEL FLEXIBLE LINERS.
2. CONTRACTOR TO COORDINATE PRE-CONSTRUCTION MEETING WITH COUNTY, ENGINEER AND MANUFACTURER PRIOR TO INSTALLATION OF EROSION MEASURES.
3. CONTRACTOR TO INSTALL TXDOT CLASS 2 TYPE E CHANNEL FLEXIBLE LINER. SEE DETAIL A

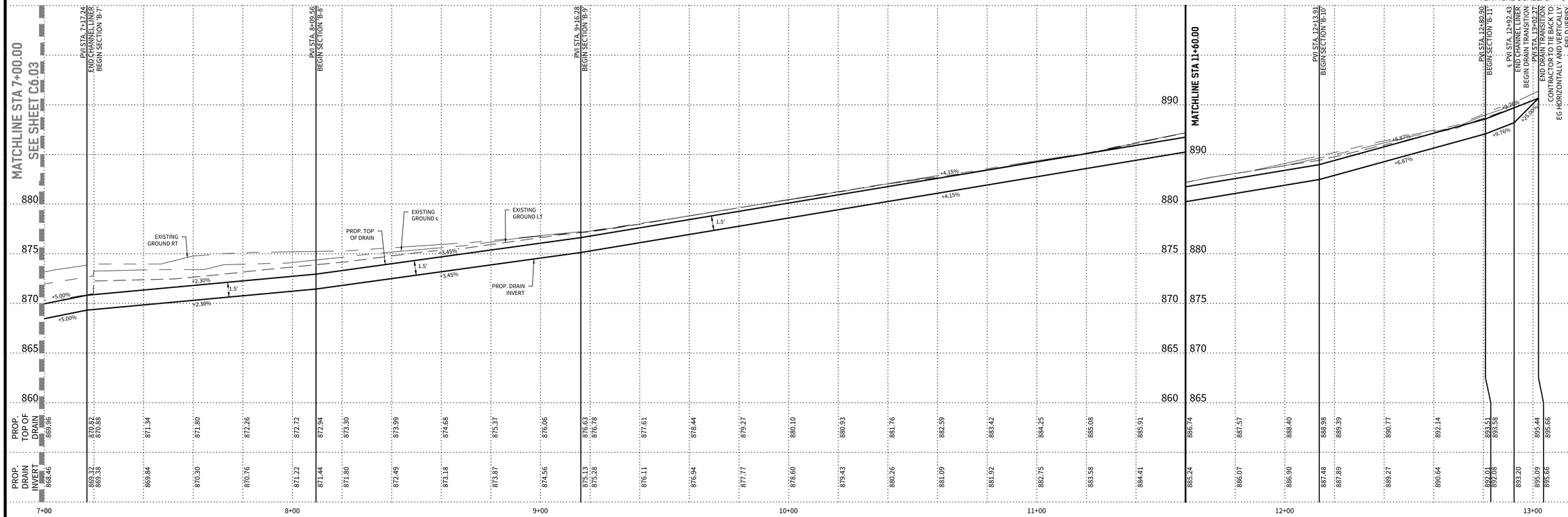
DRAIN B

STA. 7+00.00 TO STA. 13+02.26



DETAIL 'A'

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



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SCHRYVER TRACT

DRAINAGE PLAN & PROFILE - DRAIN B

DATE
10/30/2025

PROJECT NO.
04002.006

DRAWN BY
DAF/RM/JW

CHECKED BY
SPM

REVISIONS

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10/30/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

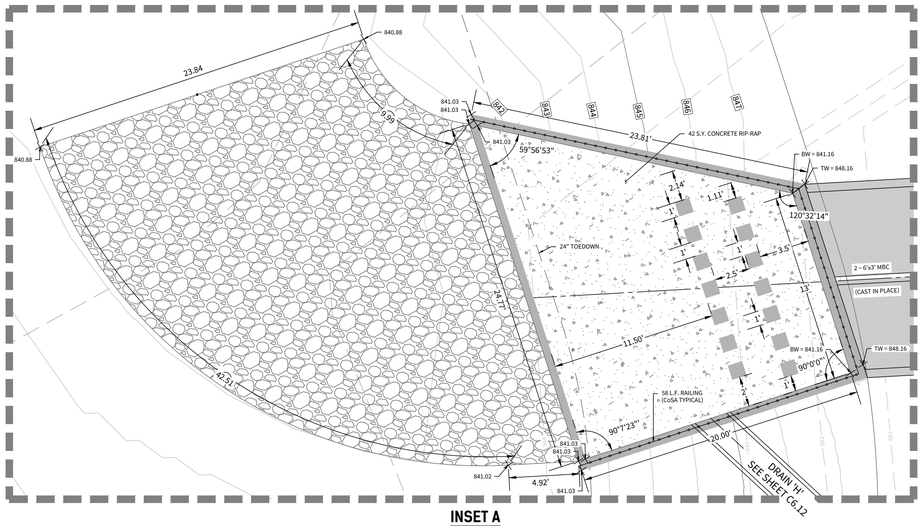
CUDE ENGINEERS
TBPELS No. 10048500

PLAT
SCHRYVER TRACT

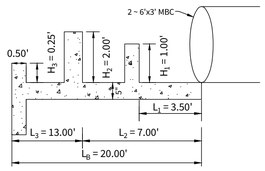
C6.04

P:\04002\004002-2\MICA\Exhibits\DRAINAGE PLAN & PROFILE - Drains 'B' dwg, 10/30/2025 8:53:03 AM, jwatkins

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.

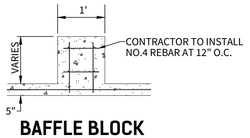


INSET A
(SCALE: 1" = 5')

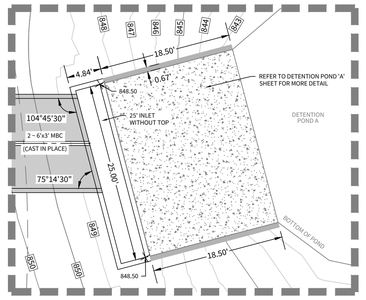


BAFFLE BLOCK DETAIL AND CALCULATIONS
(N.T.S.)

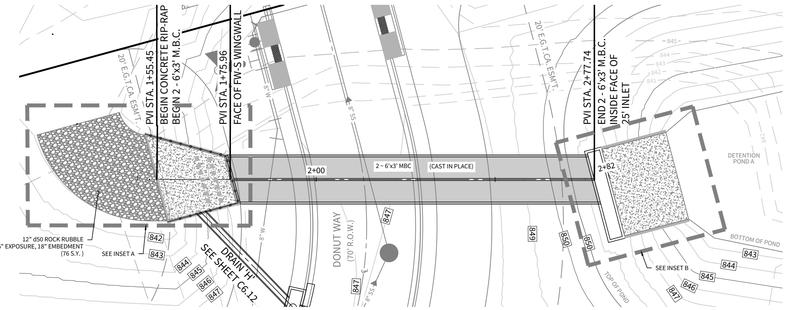
TAILWATER DEPTH = 2.82'
Fr = 1.17
Y_C = 2.849 FT
Y_2 = 4.101 FT
BASIN OUTLET VELOCITY = 8.77 FT/S



BAFFLE BLOCK
REINFORCEMENT DETAIL



INSET B
(SCALE: 1" = 5')



NOTES:

1. REFER TO GENERAL NOTES AND SPECIFICATIONS C0.00.
2. CONTRACTOR TO ENSURE POSITIVE DRAINAGE AT ALL GRADE BREAKS.
3. THE CONTRACTOR SHALL NOTIFY A UTILITY COORDINATOR AT LEAST 48 HOURS PRIOR TO PERFORMING ANY EXCAVATION ACTIVITY ADJACENT TO THE CONSTRUCTION OF AN ON-SITE DRAINAGE FACILITIES TO PROTECT ANY UNIDENTIFIED EXISTING UNDERGROUND UTILITY FACILITY FROM DAMAGE OR HARM. THE CONTRACTOR SHALL HAVE THE SOLE RESPONSIBILITY FOR ANY DAMAGES TO UTILITIES AS A RESULT OF NOT LOCATING UNDERGROUND UTILITY RESOURCES.
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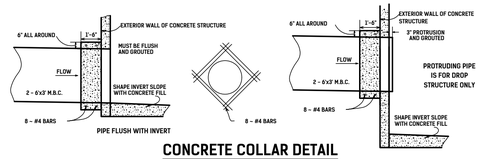
5. ALL CONCRETE SHALL BE A MINIMUM OF 3500 PSI @ 28 DAYS COMPRESSIVE STRENGTH UNLESS OTHERWISE SPECIFIED HEREIN ON THESE DOCUMENTS.
6. 85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY GUADALUPE COUNTY. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
7. REFERENCE TYPICAL CONCRETE CHANNEL RIP-RAP STANDARDS FOUND ON SHEET C7.D3.
8. CONTRACTOR TO GROUT BOTTOM/FLOW LINE OF SEWER MANHOLE AND/OR CURB INLETS AS NECESSARY TO PROVIDE POSITIVE DRAINAGE.



CONCRETE COLLAR 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.

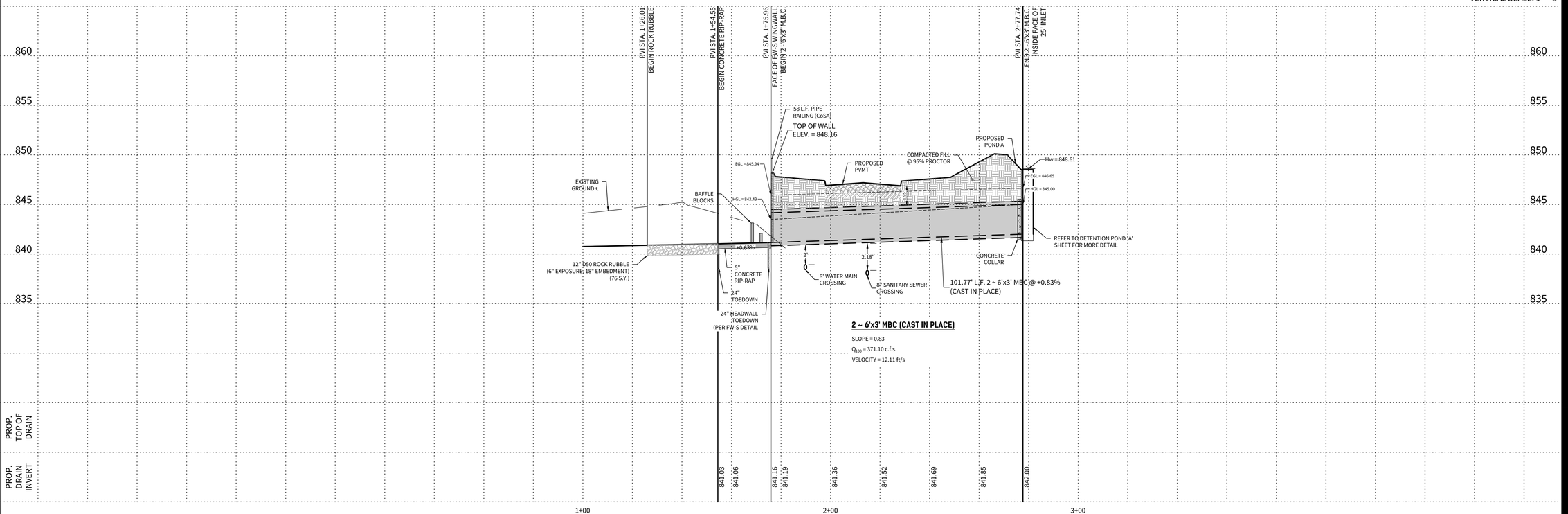
GENERAL SPECIFICATIONS FOR COMPACTED FILL

1. 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.
2. THE MATERIALS USED SHALL BE FREE FROM ORGANIC MATTER AND OTHER DELETERIOUS SUBSTANCES, SUCH AS TREES, BRUSH AND RUBBISH.
3. THE FILL MATERIAL SHALL BE COMPACTED AT THE APPROPRIATE MOISTURE CONTENT SPECIFIED FOR THE SOILS BEING USED. APPROPRIATE MOISTURE CONTENT IS DEFINED, TYPICALLY, AS OPTIMUM MOISTURE CONTENT; HOWEVER, FOR EXPANSIVE SOILS IT MAY BE GREATER THAN OPTIMUM MOISTURE CONTENT, AND OTHER MOISTURE CONTENTS MAY BE NECESSARY TO PRODUCE THE DESIRED RESULTS WITH CERTAIN SOILS.

DRAIN 'C'

STA. 1+55.55 TO STA. 3+04.05

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



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SCHRYVER TRACT

DRAINAGE PLAN & PROFILE - DRAIN C

DATE
10/30/2025

PROJECT NO.
04002.006

DRAWN BY
DAF/RM/JW

CHECKED BY
SPM

REVISIONS
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10/30/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

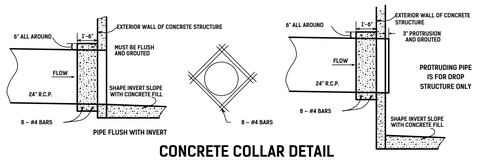
CUDE ENGINEERS
TBPELS No. 10048500

PLAT
SCHRYVER TRACT

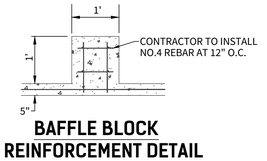
C6.05

P:\04002\004002-2\ENG\4-Plans\CAD\Drainage PLAN & PROFILE - DRAIN 'C' dwg 10/30/2025 10:39 jwatkins

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.



CONCRETE COLLAR DETAIL
(N.T.S.)



BAFFLE BLOCK REINFORCEMENT DETAIL

NOTES:

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2. CONTRACTOR TO ENSURE POSITIVE DRAINAGE AT ALL GRADE BREAKS.
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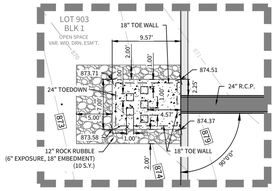
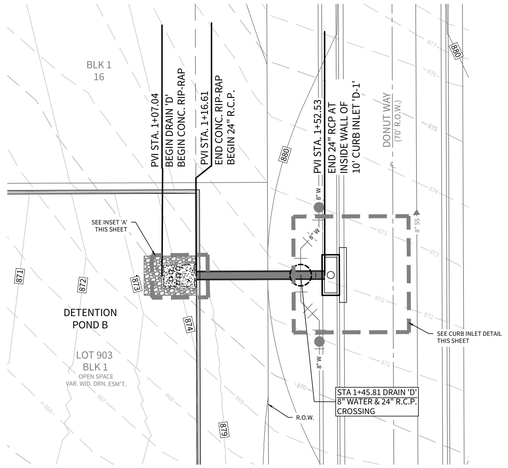
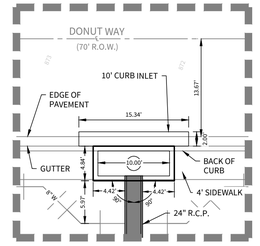


INSET 'A'
(SCALE: 1" = 10')



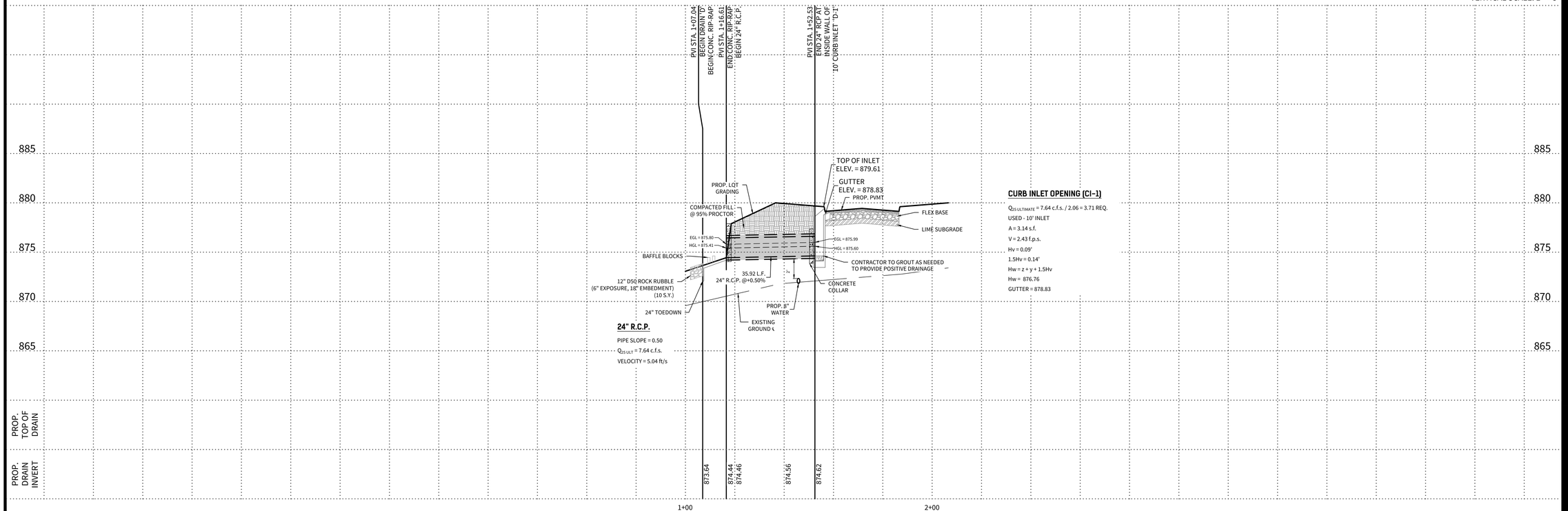


CURB INLET DETAIL
(SCALE: 1" = 10')

DRAIN 'D'

STA. 1+16.61 TO STA. 1+52.53

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



24" R.C.P.

PIPE SLOPE = 0.50
$Q_{25\,ULT}$ = 7.64 c.f.s.
VELOCITY = 5.04 ft/s

CURB INLET OPENING (CI-1)

$Q_{25\,ULTIMATE}$ = 7.64 c.f.s. / 2.06 = 3.71 REQ.
USED - 10' INLET
A = 3.14 s.f.
V = 2.43 f.p.s.
Hv = 0.09'
1.5Hv = 0.14'
Hw = z + y + 1.5Hv
Hw = 876.76
GUTTER = 878.83

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San Antonio, Texas 78231
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SCHRYVER TRACT

DRAINAGE PLAN & PROFILE - DRAIN D

DATE
10/30/2025

PROJECT NO.
04002.006

DRAWN BY
DAF/RM/JW

CHECKED BY
SPM

REVISIONS
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10/30/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT
SCHRYVER TRACT

C6.06

P:\04002\004-2 DWG\4-8 Sheets\C6.06 DRAINAGE PLAN & PROFILE - DRAIN 'D'.dwg 10/30/2025 10:33:15 Sean.mcfarland

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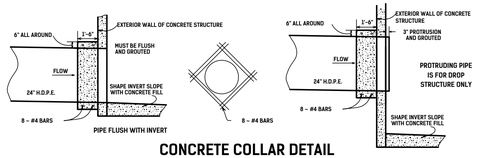

CONCRETE COLLAR DETAIL

NOTES:

1. REFER TO GENERAL NOTES AND SPECIFICATIONS C0.00.
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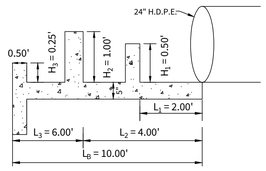
6. 85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY GUADALUPE COUNTY. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
7. REFERENCE TYPICAL CONCRETE CHANNEL RIP-RAP STANDARDS FOUND ON SHEET C7.03.
8. CONTRACTOR TO GROUT BOTTOM/FLOW LINE OF SEWER MANHOLE AND/OR CURB INLETS AS NECESSARY TO PROVIDE POSITIVE DRAINAGE.

GENERAL SPECIFICATIONS FOR COMPACTED FILL

1. 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.
2. THE MATERIALS USED SHALL BE FREE FROM ORGANIC MATTER AND OTHER DELETERIOUS SUBSTANCES, SUCH AS TREES, BRUSH AND RUBBISH.
3. THE FILL MATERIAL SHALL BE COMPACTED AT THE APPROPRIATE MOISTURE CONTENT SPECIFIED FOR THE SOILS BEING USED. APPROPRIATE MOISTURE CONTENT IS DEFINED, TYPICALLY, AS OPTIMUM MOISTURE CONTENT; HOWEVER, FOR EXPANSIVE SOILS IT MAY BE GREATER THAN OPTIMUM MOISTURE CONTENT, AND OTHER MOISTURE CONTENTS MAY BE NECESSARY TO PRODUCE THE DESIRED RESULTS WITH CERTAIN SOILS.

TRENCH EXCAVATION PROTECTION

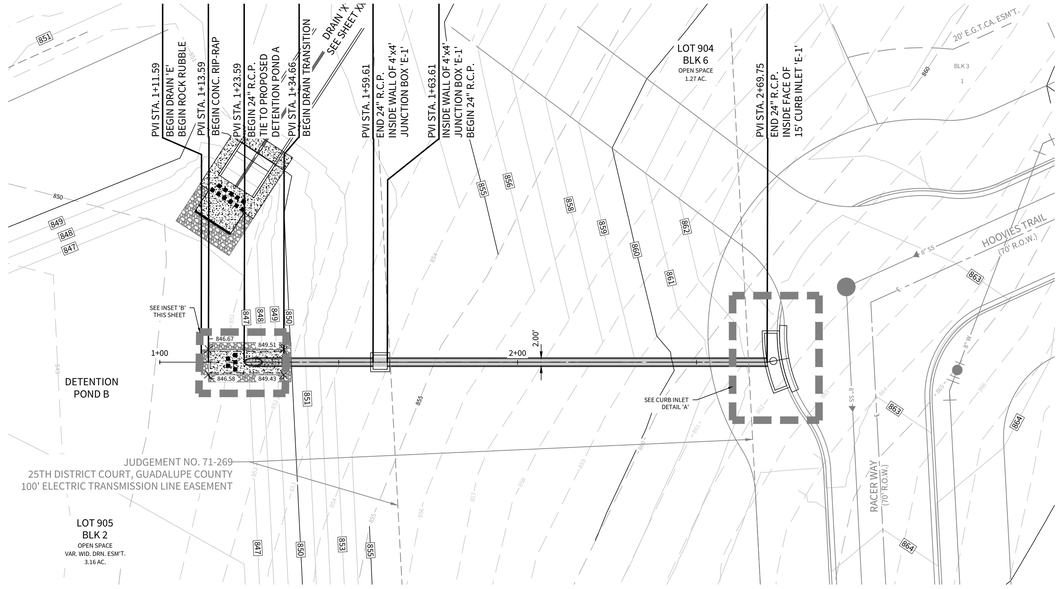
CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S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



BAFFLE BLOCK DETAIL AND CALCULATIONS

(N.T.S.)

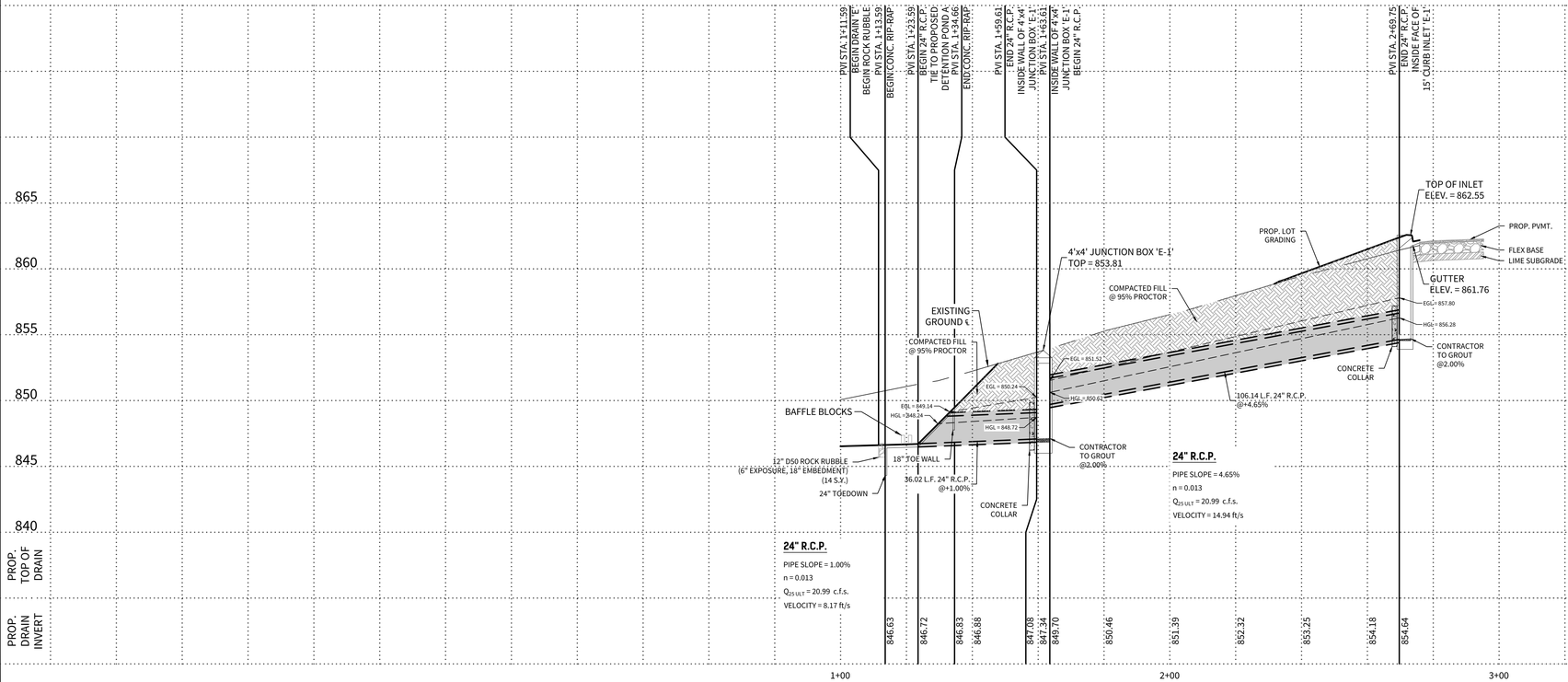
TAILWATER DEPTH = 848.24'
Fr = 1.353
Y_C = 0.879 FT
Y_2 = 1.912 FT
Y_3 = 0.879 FT
BASIN OUTLET VELOCITY = 4.896 FT/S



DRAIN 'E'

STA. 1+08.60 TO STA. 2+69.75

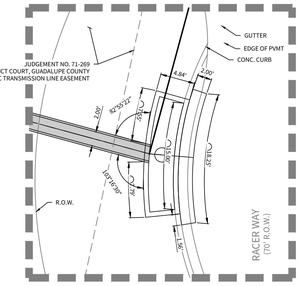
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 5'



24" R.C.P.
PIPE SLOPE = 1.00%
n = 0.013
$Q_{25\ ULT}$ = 20.99 c.f.s.
VELOCITY = 8.17 ft/s

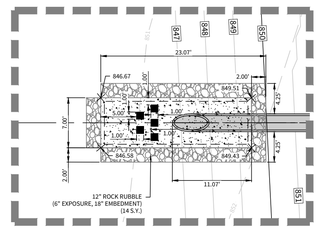
24" R.C.P.
PIPE SLOPE = 4.65%
n = 0.013
$Q_{25\ ULT}$ = 20.99 c.f.s.
VELOCITY = 14.94 ft/s

CURB INLET OPENING (CI-1)
$Q_{25\ ULTIMATE}$ = 20.99 c.f.s. / 2.06 = 10.19 REQ.
USED - 15' INLET
A = 3.14 s.f.
V = 6.68 f.p.s.
Hv = 0.69'
1.5Hv = 1.04'
Hw = z + y + 1.5Hv
Hw = 857.68
GUTTER = 861.76



CURB INLET DETAIL 'A'

(SCALE: 1" = 10')



INSET 'B'

(SCALE: 1" = 10')

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

SCHRYVER TRACT

DRAINAGE PLAN & PROFILE - DRAIN E

DATE
10/30/2025

PROJECT NO.
04002.006

DRAWN BY
DAF/RM/JW

CHECKED BY
SPM

REVISIONS
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10/30/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT
SCHRYVER TRACT

C6.07

P:\04002\004002-2\ENG\4-Plans\CAD\DRAINAGE PLAN & PROFILE - DRAIN 'E'.dwg 2025/10/30 10:13:13am jmartinez

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. REFER TO GENERAL NOTES AND SPECIFICATIONS C0.00.
2. CONTRACTOR TO ENSURE POSITIVE DRAINAGE AT ALL GRADE BREAKS.
3. THE CONTRACTOR SHALL NOTIFY A UTILITY COORDINATOR AT LEAST 48 HOURS PRIOR TO PERFORMING ANY EXCAVATION ACTIVITY ADJACENT TO THE CONSTRUCTION OF AN ON-SITE DRAINAGE FACILITIES TO PROTECT ANY UNIDENTIFIED EXISTING UNDERGROUND UTILITY FACILITY FROM DAMAGE OR HARM. THE CONTRACTOR SHALL HAVE THE SOLE RESPONSIBILITY FOR ANY DAMAGES TO UTILITIES AS A RESULT OF NOT LOCATING UNDERGROUND UTILITY RESOURCES.
4. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF GUADALUPE COUNTY.
5. ALL CONCRETE SHALL BE A MINIMUM OF 3500 PSI @ 28 DAYS COMPRESSIVE STRENGTH UNLESS OTHERWISE SPECIFIED HEREIN ON THESE DOCUMENTS.
6. 85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY GUADALUPE COUNTY. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
7. REFERENCE TYPICAL CONCRETE CHANNEL RIP-RAP STANDARDS FOUND ON SHEET C7.03.
8. CONTRACTOR TO GROUT BOTTOM/FLOW LINE OF SEWER MANHOLE AND/OR CURB INLETS AS NECESSARY TO PROVIDE POSITIVE DRAINAGE.

GENERAL SPECIFICATIONS FOR COMPACTED FILL

1. 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.
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TRENCH EXCAVATION PROTECTION

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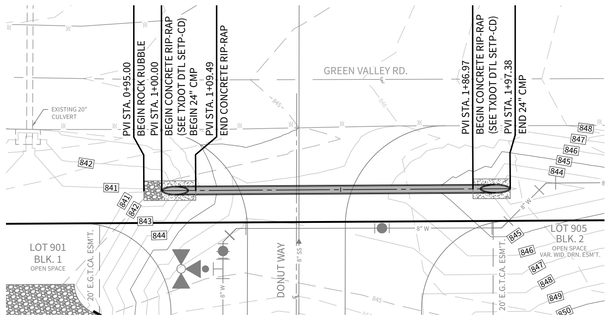
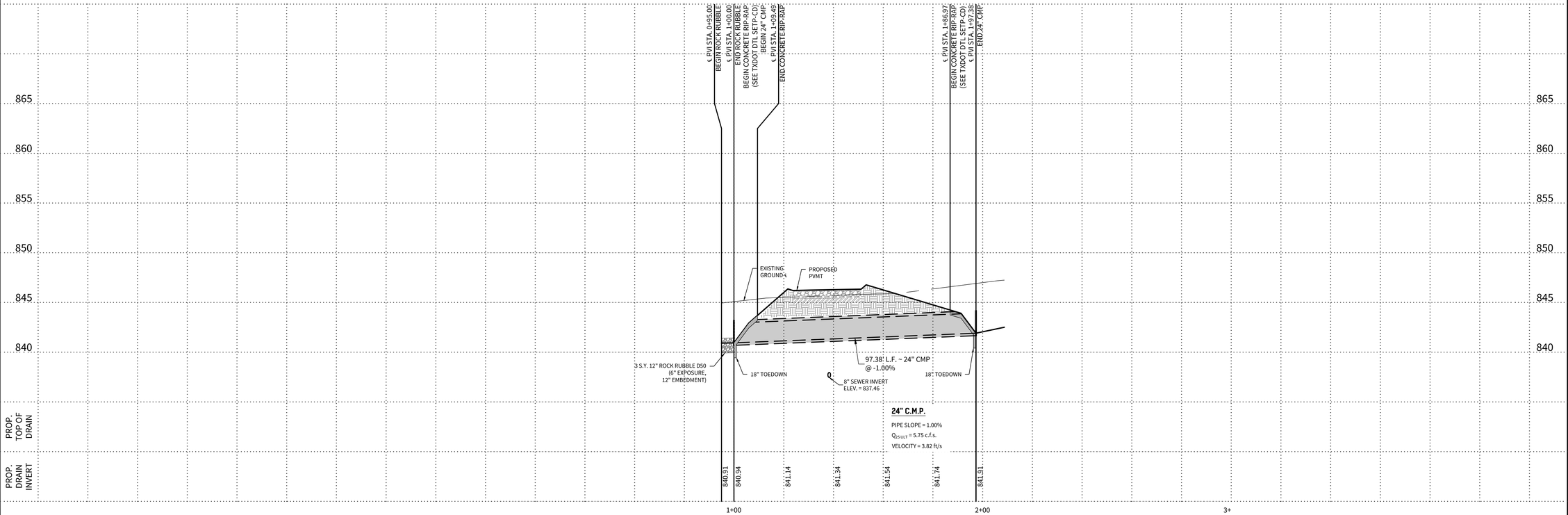


DRAIN 'F'

STA. 0+95.00 TO STA. 1+97.38

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



CUDEENGINEERS.COM

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

SCHRYVER TRACT

DRAINAGE PLAN & PROFILE - DRAIN F

DATE
10/30/2025

PROJECT NO.
04002.006

DRAWN BY
DAF/RM/JW

CHECKED BY
SPM

REVISIONS
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10/30/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT
SCHRYVER TRACT

C6.08

P:\04002\004-2 DWG\4-8 Sheets\CAD\Drainage PLAN & PROFILE - Drain F.dwg 10/30/2025 11:30:13 Sean Jenkins

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:

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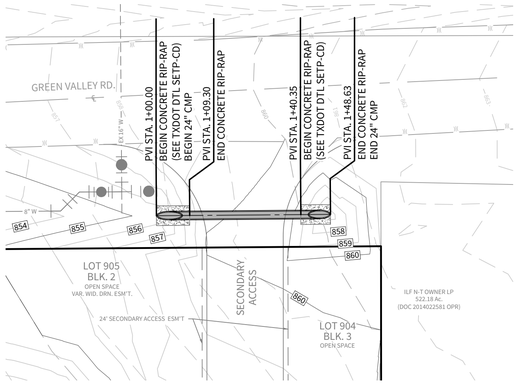
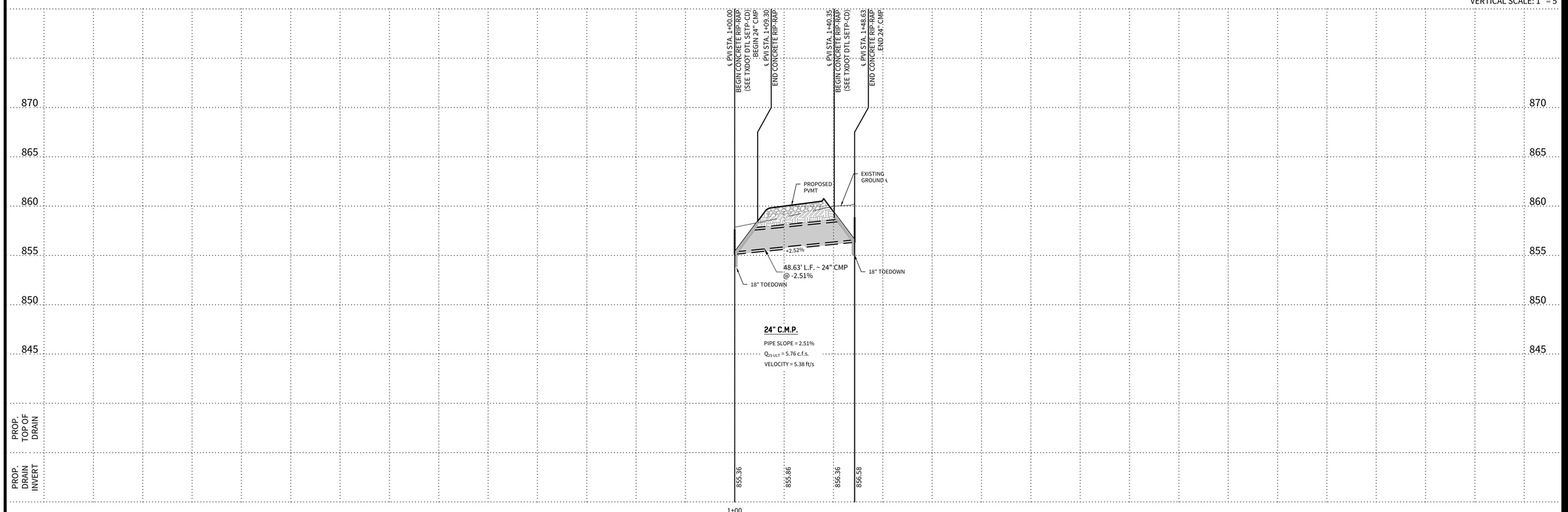


DRAIN 'G'

STA. 1+00.00 TO STA. 1+48.63

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



24" C.M.P.

PIPE SLOPE = 2.51%
$Q_{25\,ULT}$ = 5.76 c.f.s.
VELOCITY = 5.38 ft/s

CUDEENGINEERS.COM

CUDE ENGINEERS

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

SCHRYVER TRACT

DRAINAGE PLAN & PROFILE - DRAIN G

DATE
10/30/2025

PROJECT NO.
04002.006

DRAWN BY
DAF/RM/JW

CHECKED BY
SPM

REVISIONS

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10/30/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

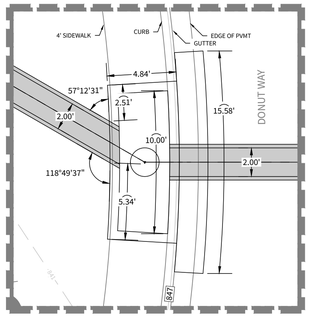
CUDE ENGINEERS
TBPELS No. 10048500

PLAT
SCHRYVER TRACT

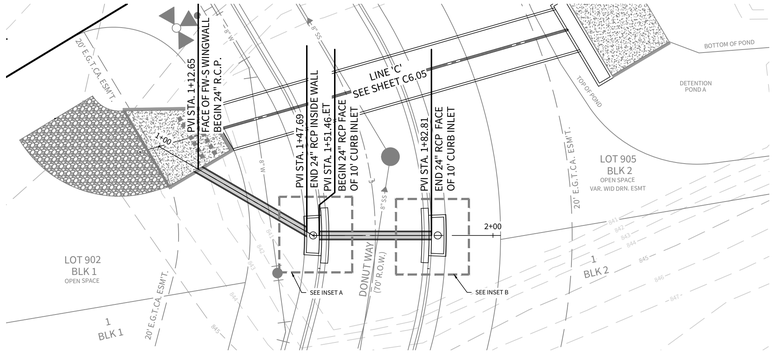
C6.09

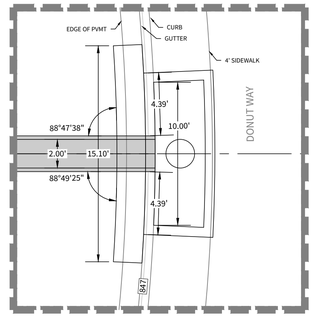
P:\04002\004002-2-ENG\C4-0\Sheets\C6.09 DRAINAGE PLAN & PROFILE - DRAIN 'G'.dwg 10/30/2025 03:33:15 PM jwatkins

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.



INSET A
(SCALE: 1" = 5')





INSET B
(SCALE: 1" = 5')

GENERAL SPECIFICATIONS FOR COMPACTED FILL

1. 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.
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DRAIN H

STA. 1+55.45 TO STA. 3+04.05

NOTES:

1. REFER TO GENERAL NOTES AND SPECIFICATIONS C0.00.
2. CONTRACTOR TO ENSURE POSITIVE DRAINAGE AT ALL GRADE BREAKS.
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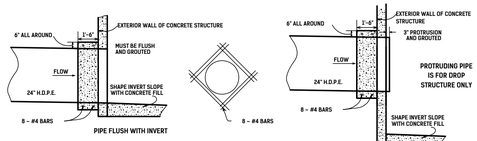
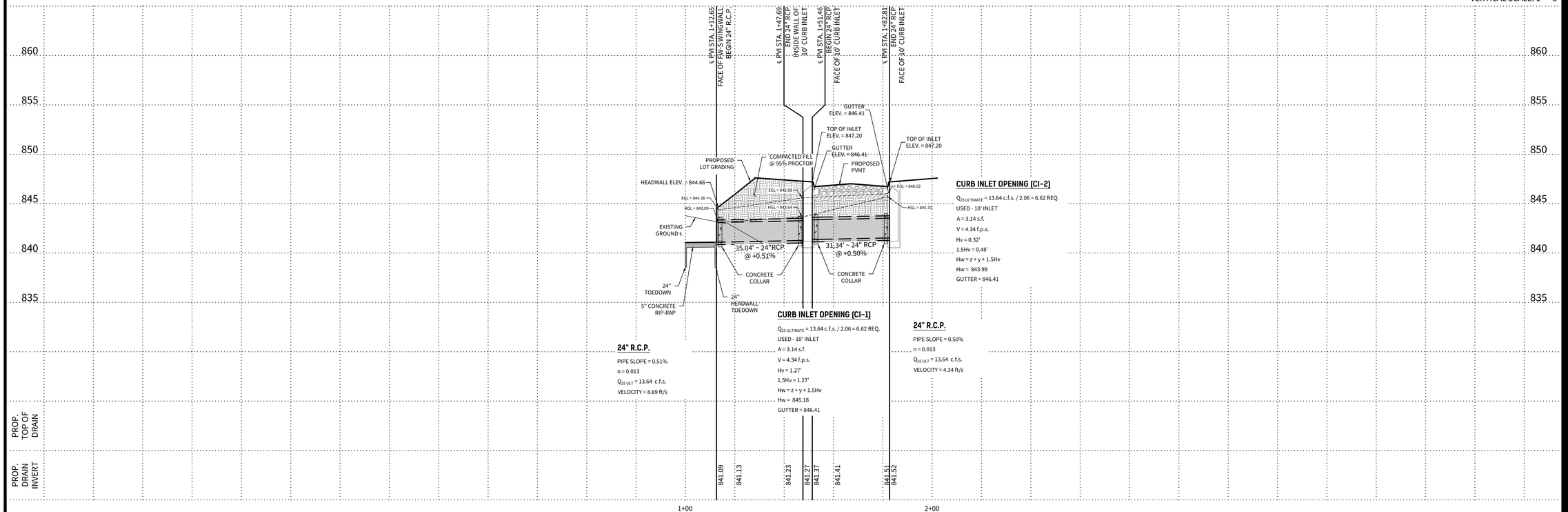


CONCRETE COLLAR DETAIL
(N.T.S.)

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



24" R.C.P.
PIPE SLOPE = 0.51%
n = 0.013
$Q_{25\ ULT}$ = 13.64 c.f.s.
VELOCITY = 8.69 ft/s

CURB INLET OPENING (CI-1)
$Q_{25\ ULTIMATE}$ = 13.64 c.f.s. / 2.06 = 6.62 REQ.
USED - 10' INLET
A = 3.14 s.f.
V = 4.34 f.p.s.
Hv = 1.27'
1.5Hv = 1.27'
Hw = z + y + 1.5Hv
Hw = 845.18
GUTTER = 846.41

24" R.C.P.
PIPE SLOPE = 0.50%
n = 0.013
$Q_{25\ ULT}$ = 13.64 c.f.s.
VELOCITY = 4.34 ft/s

CURB INLET OPENING (CI-2)
$Q_{25\ ULTIMATE}$ = 13.64 c.f.s. / 2.06 = 6.62 REQ.
USED - 10' INLET
A = 3.14 s.f.
V = 4.34 f.p.s.
Hv = 0.32'
1.5Hv = 0.48'
Hw = z + y + 1.5Hv
Hw = 843.99
GUTTER = 846.41

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CUDE ENGINEERS
EST. 1980

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

SCHRYVER TRACT

DRAINAGE PLAN & PROFILE - DRAIN H

DATE
10/30/2025

PROJECT NO.
04002.006

DRAWN BY
DAF/RM/JW

CHECKED BY
SPM

REVISIONS
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10/30/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT
SCHRYVER TRACT

C6.10

P:\04002\004-2 SHEETS & Plans\C6.10 DRAINAGE PLAN & PROFILE - DRAIN 'H'.dwg 10/31/25 8:23pm mtada

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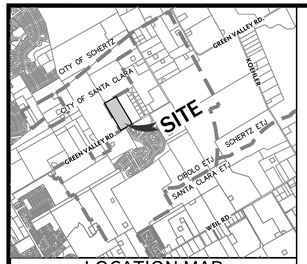


LOCATION MAP

N.T.S.

LEGEND:

1290 = EXISTING CONTOUR

1290 = PROPOSED CONTOUR

= SCHRYVER TRACT PLAT BOUNDARY

0.67% = PROPOSED FLOW ARROW

GENERAL SPECIFICATIONS FOR SITE PREPARATION

1. 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.

2. FILL MATERIALS

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

3. COMPACTION OF SLOPES

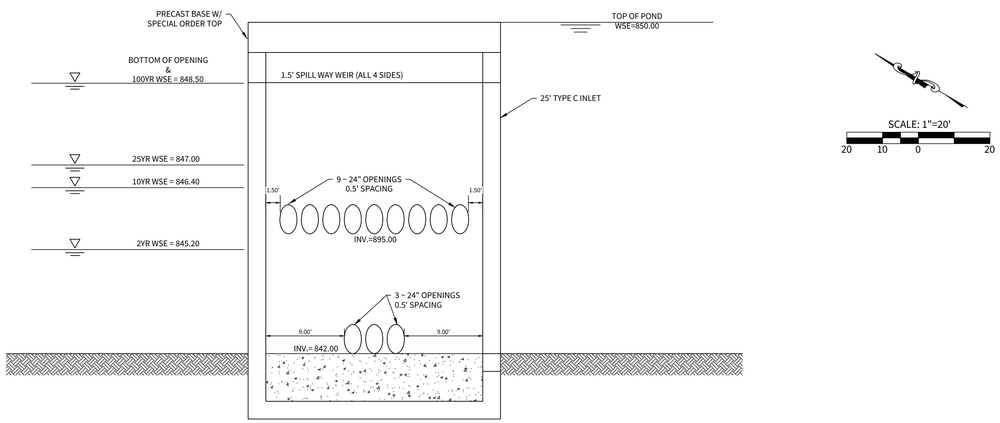
   THE FACES OF FILL SLOPES SHALL BE COMPACTED. COMPACTING OPERATIONS SHALL BE CONTINUED UNTIL THE SLOPE FACES ARE STABLE BUT NOT TOO DENSE FOR PLANTING ON THE SLOPES. COMPACTION OF THE SLOPE FACES MAY BE DONE PROGRESSIVELY IN INCREMENTS OF THREE TO FIVE FEET (3' TO 5') IN FILL HEIGHT AS THIS FILL PROGRESSES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

4. MOISTURE CONTENT

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

DETENTION POND OVERFLOW WEIR SUMMARY:

STORM EVENT	POND OUTLET FLOW (CFS)	DEPTH (FT)
25 YR (OVERALL UNDETAINED)	287.1	1.39



OUTFALL STRUCTURE DETAIL A

(N.T.S.)

SCALE: 1"=20'

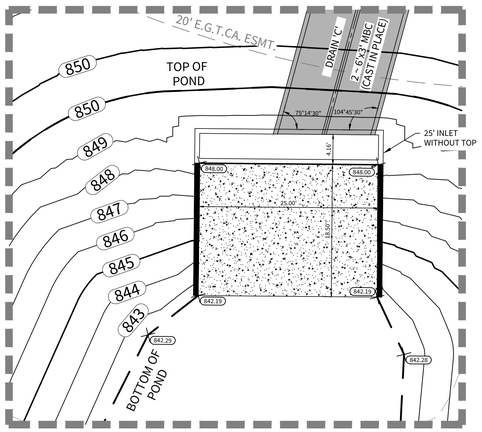
20 10 0 20

OWNER/DEVELOPER:

KB HOME LONE STAR, INC.
CONTACT PERSON: JASON TOWNSLEY
4800 FREDERICKSBURG RD., SUITE 100
SAN ANTONIO,TX 78229
TEL: (210) 301-2821

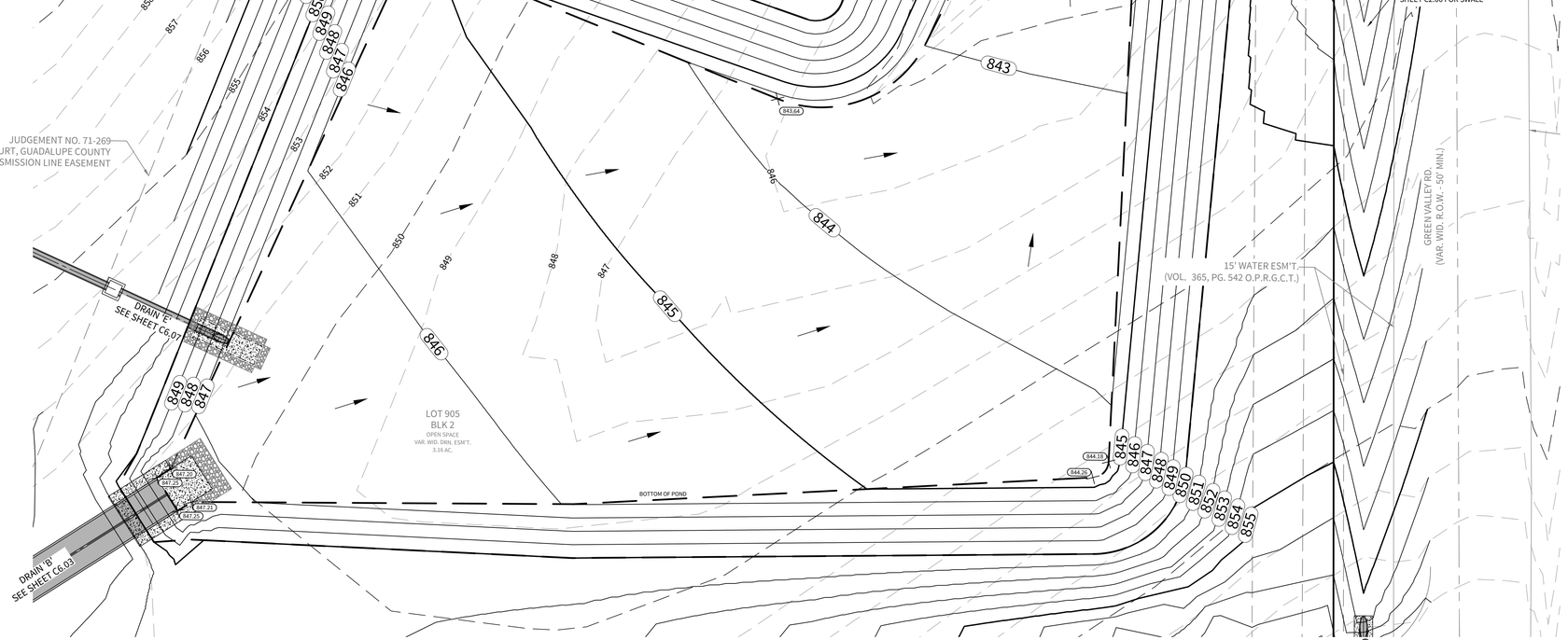
CIVIL ENGINEER:

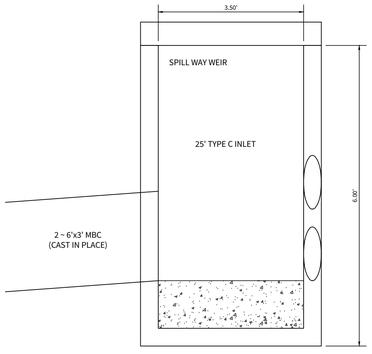
M.W. CUDE ENGINEERS, L.L.C.
CONTACT PERSON: SEAN McFARLAND, P.E.
4122 POND HILL ROAD, SUITE 101
SAN ANTONIO, TX 78231
TEL: (210) 681-2951
FAX: (210) 523-7112



INSET A

(SCALE: 1" = 10')





OUTFALL STRUCTURE DETAIL B

(N.T.S.)

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SCHRYVER TRACT

DETENTION POND A

DATE
10/30/2025

PROJECT NO.
04002.006

DRAWN BY
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SPM

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10/30/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

XX-XXXX

C6.11

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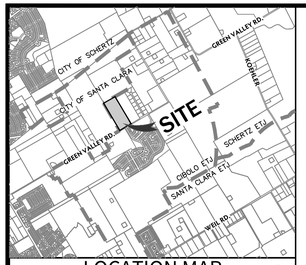
P:\04002\004002-20\Civil\Plans\DLA\11 DETENTION POND.dwg 2025/10/30 7:42pm jswilkins



LOCATION MAP

N.T.S.

LEGEND:

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- 1290 = PROPOSED CONTOUR
- =SCHRYVER TRACT PLAT BOUNDARY
- 0.67% = PROPOSED FLOW ARROW

GENERAL SPECIFICATIONS FOR SITE PREPARATION

1. COMPACTING THE AREA TO BE FILLED

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NOTES:

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

SCALE: 1"=10'

10 5 0 10

OWNER/DEVELOPER:

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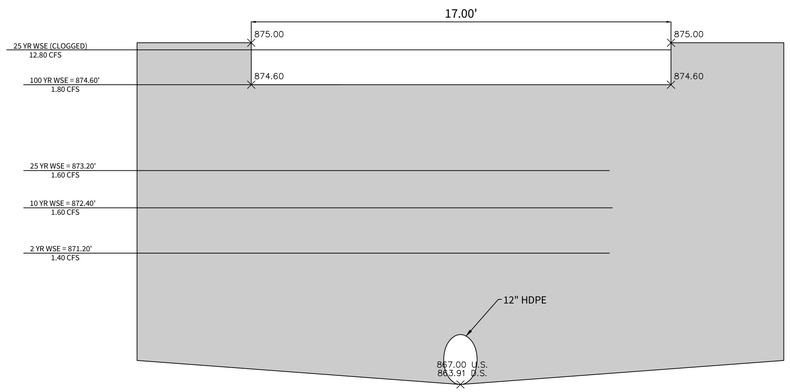
TEL: (210) 681-2951
FAX: (210) 523-7112

DETENTION POND OVERFLOW WEIR SUMMARY:

STORM EVENT	POND OUTLET FLOW (CFS)	VELOCITY (FPS)	DEPTH (FT)
25 YR	12.80	1.93	0.39



SECTION "A-A"

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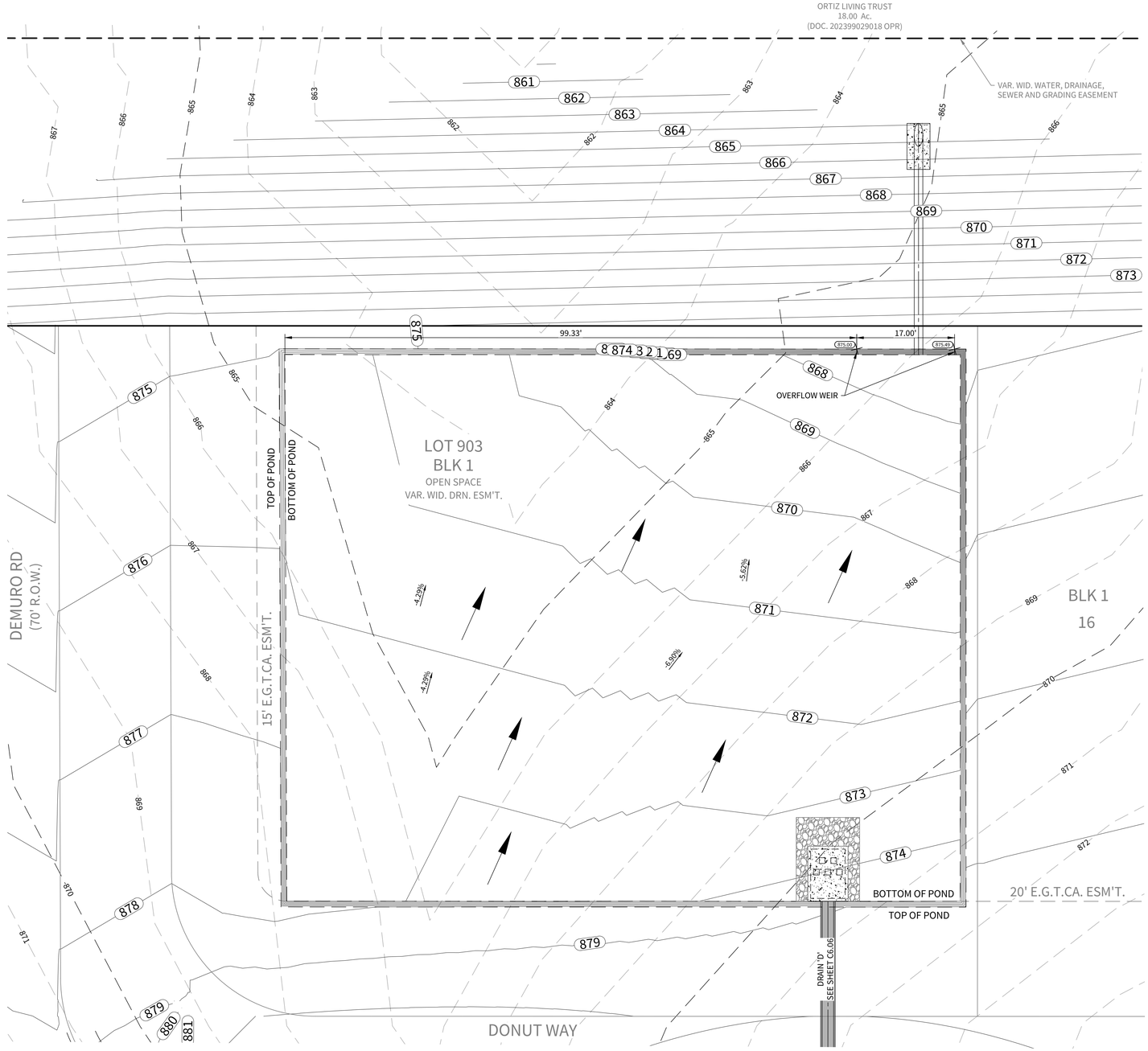

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SCHRYVER TRACT

DETENTION POND B

DATE
10/30/2025

PROJECT NO.
04002.006

DRAWN BY
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REVISIONS
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10/30/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

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C6.12

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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.

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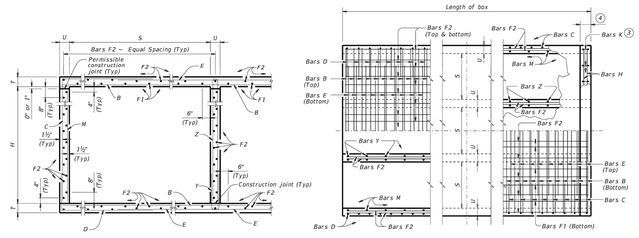
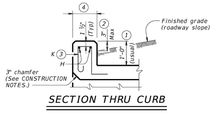


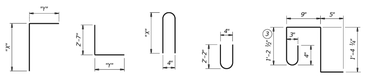
TYPICAL SECTION

BOTTOM SLAB PART PLANS TOP SLAB



SECTION THRU CURB

TABLE OF BAR DIMENSIONS		
H	"X"	"Y"
2'-0"	2'-6 ½"	3'-8 ½"
3'-0"	3'-6 ½"	3'-8 ½"
4'-0"	4'-6 ½"	3'-8 ½"
5'-0"	5'-6 ½"	3'-8 ½"



1. 0" Min to 9'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0", refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Rail Anchorage Curb (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
2. For vehicle safety, the following requirements must be met:
   - For structures without bridge rail, construct curbs no more than 3" above finished grade.
   - For structures with bridge rail, construct curbs flush with finished grade.

   Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and additional compensation will be allowed for this work.
3. For curbs less than 1'-0" high, tilt Bars K or reduce bar height as necessary to maintain cover. For curbs less than 3" high, Bars K may be omitted.
4. 1'-0" typical. 2'-3" when the Rail Anchorage Curb (RAC) standard sheet is referred to elsewhere in the plans.

The Contractor may replace Bars B, C, D, E, F1, F2, M, Y, and/or Z with deformed welded wire reinforcement (WWR) meeting the requirements of ASTM A1064. The area of required reinforcement may be reduced by the ratio of 60 ksi / 70 ksi. Spacing of WWR is limited to 4" Min and 18" Max. When required, provide lap splices in the WWR of the same length required for the equivalent bar size, rounded up for wire sizes between conventional bar sizes. The lap length required for WWR is never less than the lap length required for uncoated #4 bars.

Example conversion: Replacing No. 6 Gr 60 at 6" Spacing with WWR.
Required WWR = (0.44 sq. in. per 0.5 ft.) x (60 ksi / 70 ksi) = 0.755 sq. in. per ft.
If D30.6 wire is used to meet the 0.755 sq. in. per ft. requirement in this example, the required spacing = (0.306 sq. in.) / (0.755 sq. in. per ft.) x (12 in. per ft.) = 4.86" Max spacing. Required lap length for the provided D30.6 wire is 2'-1" (the same minimum lap length required for uncoated #5 bars, as listed under MATERIAL NOTES).

CONSTRUCTION NOTES:
Do not use permanent forms.
Chamfer the bottom edge of the top slab 3" at the entrance.
Optionally, raise construction joints shown at the flow line by a maximum of 6". If this option is taken, Bars M may be cut off or raised, Bars C and D may be reversed, and Bars Y and Z may be reversed.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
Provide Class C concrete (f'_c = 3,600 psi) for culvert barrel and curb, with the following exceptions: provide Class S concrete (f'_c = 4,000 psi) for top slabs of:
- culverts with overlay,
- culverts with 1-to-2 course surface treatment, or
- culverts with the top slab as the final riding surface.

Provide bar laps, where required, as follows:
- Uncoated or galvanized – #4 = 1'-8" Min
- Uncoated or galvanized – #5 = 2'-1" Min
- Uncoated or galvanized – #6 = 2'-6" Min

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications for the range of fill heights shown.
See Box Culvert Double Box Culverts Cast-In-Place Miscellaneous Detail (MC-MD) standard sheet for details pertaining to skewed ends, angle sections, and lengthening.

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

HL93 LOADING SHEET 1 OF 2

Texas Department of Transportation | Bridge Division Standard

MULTIPLE BOX CULVERTS CAST-IN-PLACE
5'-0" SPAN
0' TO 20' FILL
MC-5-20

FILE: CD-MC520-20.dgn	DN: TXDOT	CK: BWP	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.

DATE: FILE:

DISCLAIMER:
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BILLS OF REINFORCING STEEL (For Box Length = 40 feet)

NUMBER OF SPANS	SECTION DIMENSIONS				Bars B				Bars C & D						Bars E				Bars F1 ~ #4				Bars F2 ~ #4				Bars M ~ #4				Bars Y & Z ~ #4						Bars H 4 ~ #4		Bars K		QUANTITIES			
													Bars C			Bars D															Bars Y			Bars Z								Per Foot of Barrel		Curb		Total	
	S	H	T	U	No.	Size	Spa	Length	No.	Size	Spa	Length	Wt	Length	Wt	No.	Size	Spa	Length	Wt	No.	Size	Spa	Length	Wt	No.	Size	Spa	Length	Wt	No.	Size	Spa	Length	Wt	Length	Wt	Length	Wt	No.	Wt	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)
2	5'-0"	2'-0"	8"	7"	108	#5	9"	11'-6"	1,295	108	#5	9"	6'-3"	704	6'-4"	713	108	#5	9"	8'-8"	976	8	18"	39'-9"	212	38	18"	39'-9"	1,009	108	9"	2'-0"	144	54	9"	4'-7"	165	5'-3"	189	11'-6"	31	26	72	0.710	135.2	0.9	103	29.3	5,510
3	5'-0"	2'-0"	8"	7"	108	#5	9"	17'-1"	1,924	108	#5	9"	6'-3"	704	6'-4"	713	108	#5	9"	14'-3"	1,605	12	18"	39'-9"	319	54	18"	39'-9"	1,434	108	9"	2'-0"	144	108	9"	4'-7"	331	5'-3"	379	17'-1"	46	38	106	1.029	188.8	1.3	152	42.4	7,705
4	5'-0"	2'-0"	8"	7"	108	#5	9"	22'-8"	2,553	108	#5	9"	6'-3"	704	6'-4"	713	108	#5	9"	19'-10"	2,234	16	18"	39'-9"	425	70	18"	39'-9"	1,859	108	9"	2'-0"	144	162	9"	4'-7"	496	5'-3"	568	22'-8"	61	48	134	1.348	242.4	1.7	195	53.6	9,891
5	5'-0"	2'-0"	8"	7"	108	#5	9"	28'-3"	3,182	108	#5	9"	6'-3"	704	6'-4"	713	108	#5	9"	25'-5"	2,863	20	18"	39'-9"	531	86	18"	39'-9"	2,284	108	9"	2'-0"	144	216	9"	4'-7"	661	5'-3"	758	28'-3"	75	60	167	1.667	296.0	2.1	242	66.8	12,082
6	5'-0"	2'-0"	8"	7"	108	#5	9"	33'-10"	3,811	108	#5	9"	6'-3"	704	6'-4"	713	108	#5	9"	31'-0"	3,492	24	18"	39'-9"	637	102	18"	39'-9"	2,708	108	9"	2'-0"	144	270	9"	4'-7"	827	5'-3"	947	33'-10"	90	70	195	1.986	349.6	2.5	285	82.0	14,268
2	5'-0"	3'-0"	8"	7"	108	#6	9"	11'-6"	1,865	108	#5	9"	7'-3"	817	6'-4"	713	108	#5	9"	8'-8"	976	8	18"	39'-9"	212	44	18"	39'-9"	1,168	108	9"	3'-0"	216	54	9"	4'-7"	165	7'-3"	262	11'-6"	31	26	72	0.715	159.9	0.9	103	31.9	6,497
3	5'-0"	3'-0"	8"	7"	108	#6	9"	17'-1"	2,771	108	#5	9"	7'-3"	817	6'-4"	713	108	#5	9"	14'-3"	1,605	12	18"	39'-9"	319	62	18"	39'-9"	1,646	108	9"	3'-0"	216	108	9"	4'-7"	331	7'-3"	523	17'-1"	46	38	106	1.115	223.5	1.3	152	45.9	9,093
4	5'-0"	3'-0"	8"	7"	108	#6	9"	22'-8"	3,677	108	#5	9"	7'-3"	817	6'-4"	713	108	#5	9"	19'-10"	2,234	16	18"	39'-9"	425	80	18"	39'-9"	2,124	108	9"	3'-0"	216	162	9"	4'-7"	496	7'-3"	785	22'-8"	61	48	134	1.456	287.2	1.7	195	59.9	11,682
5	5'-0"	3'-0"	8"	7"	108	#6	9"	28'-3"	4,583	108	#5	9"	7'-3"	817	6'-4"	713	108	#5	9"	25'-5"	2,863	20	18"	39'-9"	531	98	18"	39'-9"	2,602	108	9"	3'-0"	216	216	9"	4'-7"	661	7'-3"	1,046	28'-3"	75	60	167	1.796	350.8	2.1	242	73.9	14,274
6	5'-0"	3'-0"	8"	7"	108	#6	9"	33'-10"	5,488	108	#5	9"	7'-3"	817	6'-4"	713	108	#5	9"	31'-0"	3,492	24	18"	39'-9"	637	116	18"	39'-9"	3,080	108	9"	3'-0"	216	270	9"	4'-7"	827	7'-3"	1,308	33'-10"	90	70	195	2.137	414.5	2.5	285	88.0	16,863
2	5'-0"	4'-0"	8"	7"	108	#6	9"	11'-6"	1,865	108	#5	9"	8'-3"	929	6'-4"	713	108	#5	9"	8'-8"	976	8	18"	39'-9"	212	44	18"	39'-9"	1,168	108	9"	4'-0"	289	54	9"	4'-7"	165	9'-3"	334	11'-6"	31	26	72	0.840	166.3	0.9	103	34.5	6,754
3	5'-0"	4'-0"	8"	7"	108	#6	9"	17'-1"	2,771	108	#5	9"	8'-3"	929	6'-4"	713	108	#5	9"	14'-3"	1,605	12	18"	39'-9"	319	62	18"	39'-9"	1,646	108	9"	4'-0"	289	108	9"	4'-7"	331	9'-3"	667	17'-1"	46	38	106	1.202	231.8	1.3	152	49.4	9,422
4	5'-0"	4'-0"	8"	7"	108	#6	9"	22'-8"	3,677	108	#5	9"	8'-3"	929	6'-4"	713	108	#5	9"	19'-10"	2,234	16	18"	39'-9"	425	80	18"	39'-9"	2,124	108	9"	4'-0"	289	162	9"	4'-7"	496	9'-3"	1,001	22'-8"	61	48	134	1.564	297.2	1.7	195	64.3	12,083
5	5'-0"	4'-0"	8"	7"	108	#6	9"	28'-3"	4,583	108	#5	9"	8'-3"	929	6'-4"	713	108	#5	9"	25'-5"	2,863	20	18"	39'-9"	531	98	18"	39'-9"	2,602	108	9"	4'-0"	289	216	9"	4'-7"	661	9'-3"	1,335	28'-3"	75	60	167	1.926	362.7	2.1	242	79.1	14,748
6	5'-0"	4'-0"	8"	7"	108	#6	9"	33'-10"	5,488	108	#5	9"	8'-3"	929	6'-4"	713	108	#5	9"	31'-0"	3,492	24	18"	39'-9"	637	116	18"	39'-9"	3,080	108	9"	4'-0"	289	270	9"	4'-7"	827	9'-3"	1,668	33'-10"	90	70	195	2.288	428.1	2.5	285	94.0	17,408
2	5'-0"	5'-0"	8"	7"	108	#6	9"	11'-6"	1,865	108	#5	9"	9'-3"	1,042	6'-4"	713	108	#5	9"	8'-8"	976	8	18"	39'-9"	212	50	18"	39'-9"	1,328	108	9"	5'-0"	361	54	9"	4'-7"	165	11'-3"	406	11'-6"	31	26	72	0.904	176.7	0.9	103	37.0	7,171
3	5'-0"	5'-0"	8"	7"	108	#6	9"	17'-1"	2,771	108	#5	9"	9'-3"	1,042	6'-4"	713	108	#5	9"	14'-3"	1,605	12	18"	39'-9"	319	70	18"	39'-9"	1,859	108	9"	5'-0"	361	108	9"	4'-7"	331	11'-3"	812	17'-1"	46	38	106	1.288	243.3	1.3	152	52.8	9,965
4	5'-0"	5'-0"	8"	7"	108	#6	9"	22'-8"	3,677	108	#5	9"	9'-3"	1,042	6'-4"	713	108	#5	9"	19'-10"	2,234	16	18"	39'-9"	425	90	18"	39'-9"	2,390	108	9"	5'-0"	361	162	9"	4'-7"	496	11'-3"	1,217	22'-8"	61	48	134	1.672	313.9	1.7	195	68.4	12,750
5	5'-0"	5'-0"	8"	7"	108	#6	9"	28'-3"	4,583	108	#5	9"	9'-3"	1,042	6'-4"	713	108	#5	9"	25'-5"	2,863	20	18"	39'-9"	531	110	18"	39'-9"	2,921	108	9"	5'-0"	361	216	9"	4'-7"	661	11'-3"	1,623	28'-3"	75	60	167	2.056	382.5	2.1	242	84.3	15,540
6	5'-0"	5'-0"	8"	7"	108	#6	9"	33'-10"	5,488	108	#5	9"	9'-3"	1,042	6'-4"	713	108	#5	9"	31'-0"	3,492	24	18"	39'-9"	637	130	18"	39'-9"	3,452	108	9"	5'-0"	361	270	9"	4'-7"	827	11'-3"	2,029	33'-10"	90	70	195	2.439	451.0	2.5	285	100.1	18,326

HL93 LOADING SHEET 2 OF 2

Texas Department of Transportation | Bridge Division Standard

MULTIPLE BOX CULVERTS CAST-IN-PLACE
5'-0" SPAN
0' TO 20' FILL
MC-5-20

FILE: CD-MC520-20.dgn	DN: TXDOT	CK: BWP	DW: TxDOT	CK: TxDOT
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REVISIONS	DIST	COUNTY		SHEET NO.

DATE: FILE:

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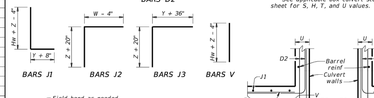
TABLE OF DIMENSIONS AND REINFORCING STEEL (Wings for one structure end)														
	Dimensions				Variable Reinforcing				Estimated Quantities per Ft of wing (2–wings) ④		Estimated Quantities per Ft of Toewall (1–toewall)	
Maximum Wingwall Height Hw	W	X	Y	Z	Bars J1		Bars J2		Reinf (Lb/Ft)	Conc (CY/Ft)	Reinf (Lb/Ft)	Conc (CY/Ft)
					Size	Spa	Size	Spa				
2'-6"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	48.64	0.406	6.85	0.071
2'-9"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	49.31	0.424	6.85	0.071
3'-0"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	49.98	0.444	6.85	0.071
3'-3"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	53.32	0.462	6.85	0.071
3'-6"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	53.98	0.480	6.85	0.071
4'-0"	3'-2"	1'-2"	1'-0"	7"	#4	1'-0"	#4	1'-0"	55.77	0.532	6.85	0.071
4'-6"	3'-2"	1'-2"	1'-0"	7"	#4	1'-0"	#4	1'-0"	59.77	0.568	6.85	0.071
5'-0"	3'-9"	1'-7"	1'-2"	7"	#4	1'-0"	#4	1'-0"	63.45	0.632	6.96	0.075
5'-6"	3'-9"	1'-7"	1'-2"	7"	#4	1'-0"	#4	1'-0"	67.46	0.668	6.96	0.075
6'-0"	4'-4"	2'-0"	1'-4"	7"	#4	1'-0"	#4	1'-0"	81.30	0.730	7.07	0.078
6'-6"	4'-4"	2'-0"	1'-4"	7"	#5	1'-0"	#5	1'-0"	85.05	0.768	7.07	0.078
7'-0"	5'-0"	2'-3"	1'-9"	8"	#5	1'-0"	#5	1'-0"	92.15	0.864	8.07	0.093
7'-6"	5'-0"	2'-3"	1'-9"	8"	#5	1'-0"	#5	1'-0"	96.54	0.902	8.07	0.093
8'-0"	5'-6"	2'-8"	1'-10"	8"	#5	6"	#5	6"	139.04	0.962	8.13	0.095
8'-6"	5'-6"	2'-8"	1'-10"	8"	#5	6"	#5	6"	144.47	1.000	8.13	0.095
9'-0"	6'-0"	2'-10"	2'-2"	9"	#5	6"	#5	6"	156.93	1.136	8.41	0.110
10'-6"	6'-5"	3'-0"	2'-5"	9"	#6	6"	#5	6"	196.27	1.234	8.57	0.117
11'-6"	7'-2"	3'-6"	2'-8"	11"	#6	6"	#6	6"	230.13	1.438	9.52	0.140
12'-6"	7'-8"	3'-9"	2'-11"	1'-0"	#7	6"	#6	6"	283.41	1.592	9.74	0.157
13'-6"	8'-2"	4'-0"	3'-2"	1'-2"	#8	6"	#6	6"	348.72	1.804	10.02	0.186
14'-6"	8'-10"	4'-5"	3'-5"	1'-4"	#9	6"	#6	6"	432.94	2.046	10.30	0.218
15'-6"	9'-6"	4'-10"	3'-8"	1'-6"	#9	6"	#7	6"	489.52	2.302	11.24	0.253
16'-0"	9'-11"	5'-0"	3'-11"	1'-7"	#9	6"	#7	6"	505.72	2.448	11.47	0.279

TABLE OF WINGWALL REINFORCING (2–wings)			
Bar	Size	No.	Spa
D1	#6	–	1'-0"
D2	#6	–	1'-0"
E1	#4	–	1'-0"
F	#4	–	1'-0"
G	#6	–	8"
M1	#4	4	–
P	#4	–	1'-0"
V	#4	–	1'-0"

TABLE OF TOEWALL REINFORCING			
Bar	Size	No.	Spa
J3	#4	–	1'-0"
M2	#4	–	–
E2	#4	–	1'-0"

BARS D1

BARS D2



WING DIMENSION FORMULAS:

(All values are in feet.)

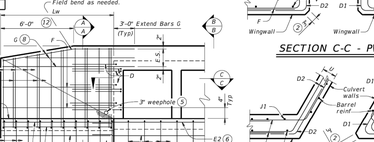
Hw = H + T + C
Lw = (Hw) (SL) + cosine (θ) for Type PW–1
= (Hw – 1) (SL) + cosine (θ) for Type PW–2 and Hw ≥ 4'
= (Hw – 0.5') (SL) + cosine (θ) for Type PW–2 and Hw < 4'

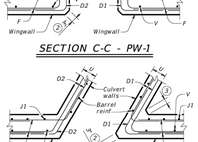
For cast–in–place culverts:
Ltw = [(N) (S) + (N + 1) (U)] + cosine (θ)

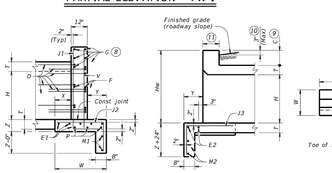
For precast culverts:
Ltw = [(N) (2 U + S) + (N – 1) (0.5')] + cosine (θ)
Total Wingwall Area (two wings – SF)
= (2)(Hw)(Lw) for Type PW–1
= (2)(Hw)(Lw) – 6 SF for Type PW–2 and Hw ≥ 4'
= (2)(Hw)(Lw) – 1.5 SF for Type PW–2 and Hw < 4'

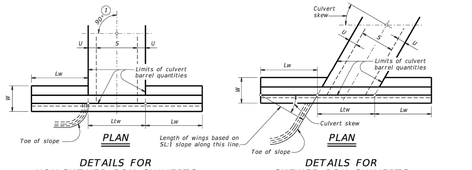
Hw = Height of wingwall
Lw = Length of wingwall
Ltw = Culvert toewall length
N = Number of culvert spans
SL:1 = Channel slope ratio (Horizontal:) vertical, usual value is 2:1)
θ = Culvert skew

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









1. Skew = 0°
2. At discharge end, chamfer may be ¾" minimum.
3. For 15° skew – 1"
   For 30° skew – 2"
   For 45° skew – 3"
4. Quantities shown are for two Type PW–1 wings. Adjust concrete volume for Type PW–2 wings. To determine estimated quantities for two wings, multiply the tabulated values by Lw. Quantities shown do not include weight of Bars D.
5. Provide weepholes for Hw = 5'-0" and greater. Fill around weepholes with coarse gravel.
6. Extend Bars E2 1'-6" minimum into the wingwall footing.
7. Lap Bars M1 1'-0" minimum with Bars M2.
8. Place Bars G as shown, equally spaced at 8" maximum. Provide at least two pairs of Bars G per wing.
9. 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0", refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
10. For vehicle safety, the following requirements must be met:
    - For structures without bridge rail, construct curbs no more than 3" above finished grade.
    - For structures with bridge rail, construct curbs flush with finished grade.

    Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
11. 1'-0" typical. 2'-3" when the Box Culvert Rail Mounting Details (RAC) standard sheet is referred to elsewhere in the plans.
12. 3'-0" for Hw < 4'.
13. 6" for Hw < 4'.

DESIGNER NOTES:
Type PW–1 can be used for all applications and must be used if railing is to be mounted to the wingwall.
Type PW–2 can only be used for applications without a railing mounted to the wingwall.

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

GENERAL NOTES:
Designed in accordance with AASHTO LRFD Bridge Design Specifications.
Depth of toewalls for wingwalls and culverts may be reduced or eliminated when founded on solid rock, when directed by the Engineer.
See Box Culvert Supplement (BCS) standard sheet for wingwall type and additional dimensions and information.
Quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for the Contractor's information only.

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

Texas Department of Transportation | Bridge Division Standard

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

FILE: CD-PW-20.dgn	DN: CAF	CK: CAF	DW: TxDOT	CK: TxDOT
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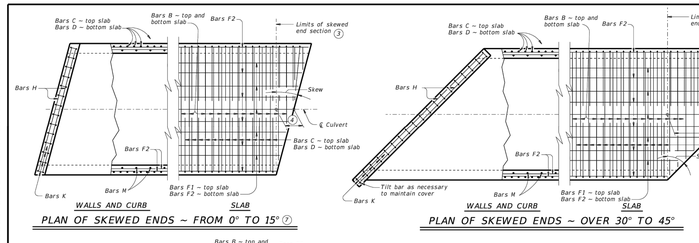
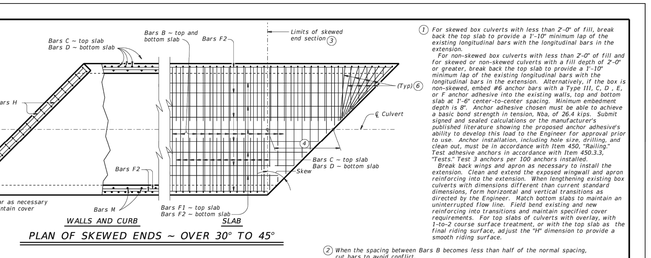
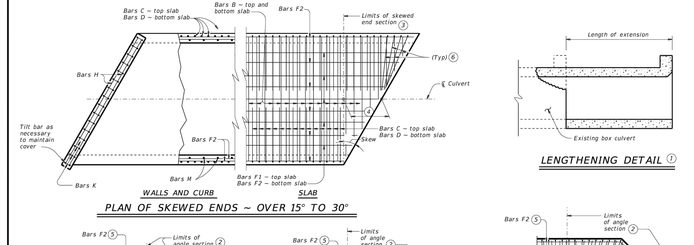
REVISIONS	DIST	COUNTY		SHEET NO.



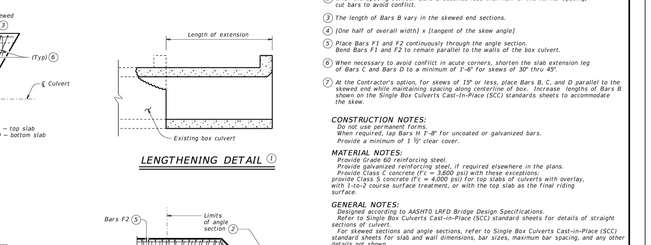
PLAN OF SKEWED ENDS ~ FROM 0° TO 15° ②



PLAN OF SKEWED ENDS ~ OVER 30° TO 45°



PLAN OF SKEWED ENDS ~ OVER 15° TO 30°



LENGTHENING DETAIL ⑦

1. For skewed box culverts with less than 2'-0" of fill, break back the top slab to provide a 1'-10" minimum lap of the existing longitudinal bars with the longitudinal bars in the extension.
   For non-skewed box culverts with less than 2'-0" of fill and for skewed or non-skewed culverts with a fill depth of 2'-0" or greater, break back the top slab to provide a 1'-10" minimum lap of the existing longitudinal bars with the longitudinal bars in the extension. Alternatively, if the box is not lengthened, adhesive anchors with #5 bars, per Item 450, Railing, adhesive into the existing top slab at 1'-0" center-to-center spacing. Minimum embedment depth is 8". Anchor adhesive chosen must be able to achieve a basic bond strength in tension, N_{ba}, of 26.4 kips. Submit signed and sealed calculations or the manufacturer's published literature showing the proposed anchor adhesive's ability to develop this load to the Engineer for approval prior to use. Anchor installation, including hole size, drilling, and clean out, must be in accordance with Item 450, "Railing." Test adhesive anchors in accordance with Item 450.3.3, "Tests." Test 3 anchors per 100 anchors installed.
   Break back wings and apron as necessary to install the extension. Clean and paint the exposed reinforcing and apron reinforcing steel. For skewed box culverts, shape lengthening box culverts with dimensions different from current standard dimensions, form horizontal and vertical transitions as directed by the Engineer. Match bottom slabs to maintain an uninterrupted flow line. Field bend existing and new reinforcing into transitions and maintain specified cover requirements. For top slabs of culverts with overlay, with 1-to-2 course surface treatment, or with the top slab as the final riding surface, adjust the "H" dimension to provide a smooth riding surface.
2. When the spacing between Bars B becomes less than half of the normal spacing, cut bars to avoid conflict.
3. The length of Bars B vary in the skewed end sections.
4. (One half of overall width) x (tangent of the skew angle)
5. Place Bars F1 and F2 continuously through the angle section.
   Bend Bars F1 and F2 to remain parallel to the walls of the box culvert.
6. When necessary to avoid conflict in acute corners, shorten the slab extension leg of Bars C and Bars D to a minimum of 1'-6" for skews of 30° thru 45°.
7. At the Contractor's option, for skews of 15° or less, place Bars B, C, and D parallel to the skewed end while maintaining spacing along centerline of box. Increase lengths of Bars B shown on the Single Box Culverts Cast–In–Place (SCC) standards sheets to accommodate the skew.

CONSTRUCTION NOTES:
Do not use permanent forms.
When required, lap Bars H 1'-8" for uncoated or galvanized bars.
Provide a minimum of 1 ½" clear cover.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel, if required elsewhere in the plans.
Provide Class C concrete (f'_c = 3,600 psi) with these exceptions: provide Class S concrete (f'_c = 4,000 psi) for top slabs of culverts with overlay, with 1-to-2 course surface treatment, or with the top slab as the final riding surface.

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
Refer to Single Box Culverts Cast–In–Place (SCC) standard sheets for details of straight sections of culvert.
For skewed sections and angle sections, refer to Single Box Culverts Cast–In–Place (SCC) standard sheets for slab and wall dimensions, bar sizes, maximum bar spacing, and any other details not shown.
For skewed ends with curbs, adjust length of Bars H, number of Bars K, curb concrete volume, and reinforcing steel weight by dividing the values shown on the culvert Single Box Culverts Cast–In–Place (SCC) standard sheets by the cosine of the skew angle.

Cover dimensions are clear dimensions, unless noted otherwise.

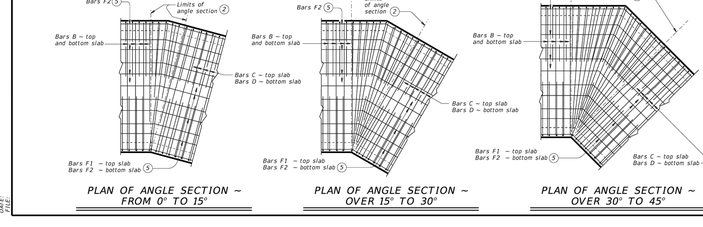

Bars F2 ⑤
Limits of angle section ②
Bars B – top and bottom slab
B

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

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

TABLE OF WINGWALL REINFORCING
(2-wings)

Bar	Size	No.	Spa
DL	#5	–	1'-0"
DS	#5	–	1'-0"
E	#4	–	1'-0"
F	#4	–	1'-0"
G	#6	4	–
M	#4	4	–
P	#4	–	1'-0"
RS	#5	3	–
RL	#5	3	–
V	#4	–	1'-0"

TABLE OF ESTIMATED CULVERT TOEWALL QUANTITIES

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

WING DIMENSION FORMULAS:

(All values are in feet.)

Hw = H + T + C – 0.250'
A = (Hw – 0.333'(SL))
B = (A) (tangent θ + 1'5½)
Lw = (A) + (cosine θ + 1'5½)

For cast-in-place culverts:
Ltw = [(N) (2U + S) + (N – 1) (U)] ÷ cosine θ

For precast culverts:
Ltw = [(N) (2U + S) + (N – 1) (0.5')] ÷ cosine θ

Total wingwall area (two wings = SF) = 0.5 (Hw + 0.333') (Lw + A)

Hw = Height of wingwall
SL:1 = Side slope ratio (horizontal:1 vertical)
A = Length of short wingwalls
B = Length of long wingwall
Ltw = Length of toewall length
N = Number of culvert spans
θ = Culvert skew

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

BARS DS (Short wing)

BARS DL (Long wing)

BARS RS (Short wing)

BARS RL (Long wing)

BARS J1

BARS V

BARS L

BARS J2

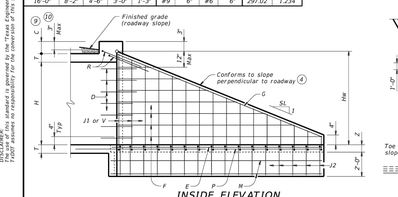
1. Extend Bars P 3'-0" minimum into bottom slab of box culvert.
2. Adjust as necessary to maintain 1 1#2" clear cover and 4" minimum between bars.
3. Quantities shown are based on an average wing height for two wings (one structure end). To determine total quantities for two wings, multiply the tabulated values by 0.5 x (A + Lw).
4. Recommended values of side slope are: 2:1, 3:1, 4:1, and 6:1.
5. When shown elsewhere on the plans, construct 5" deep concrete riprap. Payment for riprap is as required by Item 432, "Riprap." Unless otherwise shown on the plans or directed by the Engineer, provide a 6" wide by 1'-6" deep reinforced concrete toewall along all edges of the riprap adjacent to natural ground; reinforce the toewall by extending typical riprap reinforcing into the toewall; and extend the riprap 2'-0" over grass to the full distance in the direction of flow and to the full distance of the riprap at intervals of approximately 20'. When such riprap is provided, the culvert toewall shown in SECTION B-B will not be required.
6. At Contractor's option, culvert toewall may be ended flush with wingwall toewall. Adjust reinforcing as needed.
7. Applicable values of skew are: 15°, 30°, and 45°.
8. Typical wingwall angle for all skews.
9. 0° Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0, refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
10. For vehicle safety, the following requirements must be met:
    - For structures without bridge rail, construct curbs no more than 3" above finished grade.
    - For structures with bridge rail, construct curbs flush with finished grade.

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

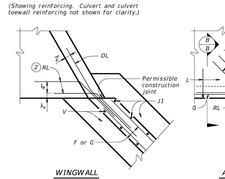
MATERIAL NOTES:
Provide Class C concrete (f'c=3,600 psi).
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
In riprap concrete, synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing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

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
When structure is founded on solid rock, depth of toewall and wingwall embedment may be reduced or eliminated as directed by the Engineer.
See Box Culvert Supplement (BCS) standard sheet for additional dimensions and information.
The quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for Contractor's information only.

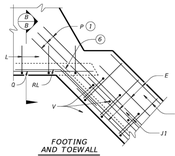
Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing dimensions are out-to-out of bars.



SECTION A-A

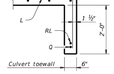


WINGWALL

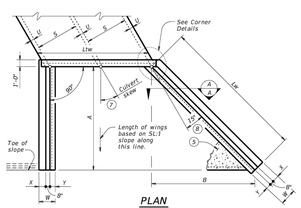


FOOTING AND TOEWALL

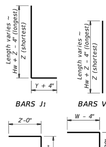
CORNER DETAILS
(Culvert and culvert toewall reinforcing not shown for clarity.)

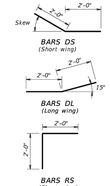


SECTION B-B ③



PLAN
(Showing dimensions and 30° skew.)





Texas Department of Transportation — Bridge Division Standard

CONCRETE WINGWALLS
WITH FLARED WINGS FOR
SKEWED BOX CULVERTS

FW-S

FILE: CD-FWS-20.dgn | DN: GAF | CK: CAE | DW: TxDOT | CK: TxDOT
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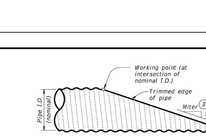
CROSS PIPE LENGTHS AND PIPE RUNNER LENGTHS ① ②

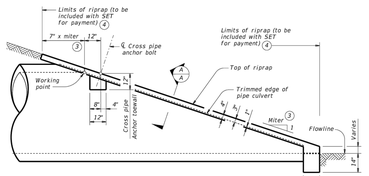
Nominal Culvert I.D.	Pipe Culvert Spa – G	Cross Pipe Length	Pipe Runner Length: 3:1 Side Slope: 0° Skew	15° Skew	30° Skew	45° Skew	4:1 Side Slope: 0° Skew	15° Skew	30° Skew	45° Skew	6:1 Side Slope: 0° Skew	15° Skew	30° Skew	45° Skew
24"	1'-7"	3'-5"	N/A	N/A	N/A	5'-10"	N/A	N/A	N/A	8'-1"	N/A	N/A	N/A	12'-9"
27"	1'-8"	3'-8"	N/A	N/A	5'-5"	6'-11"	N/A	N/A	7'-7"	9'-7"	N/A	N/A	11'-11"	14'-11"
30"	1'-10"	3'-11"	N/A	N/A	6'-4"	8'-0"	N/A	N/A	8'-9"	11'-0"	N/A	N/A	13'-8"	17'-0"
33"	1'-11"	4'-2"	6'-2"	6'-5"	7'-3"	9'-1"	8'-6"	8'-10"	10'-0"	12'-5"	13'-3"	13'-9"	15'-5"	19'-2"
36"	2'-1"	4'-5"	6'-11"	7'-3"	8'-2"	10'-2"	9'-6"	9'-11"	11'-2"	13'-10"	14'-9"	15'-3"	17'-2"	21'-3"
42"	2'-4"	4'-11"	8'-6"	8'-10"	9'-11"	12'-4"	11'-7"	12'-0"	13'-6"	16'-8"	17'-9"	18'-5"	20'-8"	25'-7"
48"	2'-7"	5'-5"	10'-1"	10'-5"	11'-9"	N/A	13'-7"	14'-2"	15'-10"	N/A	20'-9"	21'-6"	24'-2"	N/A
54"	3'-0"	5'-11"	11'-8"	12'-1"	N/A	N/A	15'-8"	16'-3"	N/A	N/A	23'-10"	24'-8"	N/A	N/A
60"	3'-3"	6'-5"	13'-3"	N/A	N/A	N/A	17'-9"	N/A	N/A	N/A	26'-10"	N/A	N/A	N/A



NOTE: All pipe runners, calculations, and dimensions are based on the pipe culverts mitered as shown in this detail. Alternate styles of mitered ends will require that appropriate adjustments be made to the values presented on this standard.

SIDE ELEVATION OF TYPICAL PIPE CULVERT MITER

(Showing corrugated metal pipe (CMP) culvert. Details of reinforced concrete pipe (RCP) culvert are similar.)



SIDE ELEVATION OF CAST-IN-PLACE CONCRETE

(Showing reinforced concrete pipe (RCP) culvert. Details of corrugated metal pipe (CMP) culvert are similar. Pipe runners not shown for clarity)

TYPICAL PIPE CULVERT MITERS ③

Side Slope	0° Skew	15° Skew	30° Skew	45° Skew
3:1	3:1	3.106:1	3.464:1	4.243:1
4:1	4:1	4.141:1	4.619:1	5.657:1
6:1	6:1	6.212:1	6.928:1	8.485:1

CONDITIONS WHERE PIPE RUNNERS ARE NOT REQUIRED ②

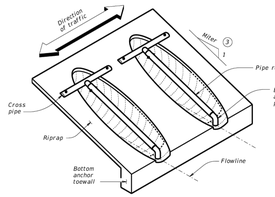
Nominal Culvert I.D.	Single Pipe Culvert	Multiple Pipe Culverts
12" thru 21"	Skews thru 45°	Skews thru 45°
24"	Skews thru 45°	Skews thru 30°
27"	Skews thru 30°	Skews thru 15°
30"	Skews thru 15°	Skews thru 15°
33"	Skews thru 15°	Always required
36"	Normal (no skew)	Always required
42" thru 60"	Always required	Always required

STANDARD PIPE SIZES AND MAX PIPE RUNNER LENGTHS ①

Pipe Size	Pipe O.D.	Pipe I.D.	Max Pipe Runner Length
2" STD	2.375"	2.067"	N/A
3" STD	3.500"	3.068"	10'-0"
4" STD	4.500"	4.026"	19'-8"
5" STD	5.563"	5.047"	34'-2"

ESTIMATED CONCRETE RIPRAP QUANTITIES (CY) ⑤

Nominal Culvert I.D.	3:1 Side Slope: 0° Skew	15° Skew	30° Skew	45° Skew	4:1 Side Slope: 0° Skew	15° Skew	30° Skew	45° Skew	6:1 Side Slope: 0° Skew	15° Skew	30° Skew	45° Skew
12"	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.6	0.7	0.7	0.7	0.8
15"	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.9
18"	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.8	0.8	0.9	1.0
21"	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.9	0.9	0.9	1.0	1.2
24"	0.6	0.7	0.7	0.8	0.8	0.8	0.8	1.0	1.0	1.0	1.1	1.3
27"	0.7	0.7	0.8	0.9	0.8	0.9	0.9	1.1	1.1	1.1	1.2	1.4
30"	0.8	0.8	0.8	0.9	0.9	0.9	1.0	1.2	1.2	1.2	1.3	1.6
33"	0.8	0.8	0.9	1.0	1.0	1.0	1.1	1.3	1.3	1.4	1.5	1.7
36"	0.9	0.9	0.9	1.1	1.1	1.1	1.2	1.4	1.4	1.5	1.6	1.8
42"	1.0	1.0	1.1	1.3	1.2	1.3	1.3	1.6	1.6	1.7	1.8	2.1
48"	1.1	1.1	1.2	N/A	1.4	1.4	1.5	N/A	1.9	1.9	2.1	N/A
54"	1.3	1.3	N/A	N/A	1.6	1.6	N/A	N/A	2.1	2.1	N/A	N/A
60"	1.4	N/A	N/A	N/A	1.7	N/A	N/A	N/A	2.3	N/A	N/A	N/A



ISOMETRIC VIEW OF TYPICAL INSTALLATION

(Showing installation with no skew.)

① Provide pipe runner of the size shown in the tables. Provide cross pipe from the same size as the pipe runner. Provide cross pipe stub out and bottom anchor pipe of the next smaller size pipe as shown in the Standard Pipe Sizes and Max Pipe Runner Lengths table.

② This standard allows for the placement of only one pipe runner across each culvert pipe opening. In order to limit the clear opening to be traversed by an errant vehicle, the following conditions must be met:

For 60" culvert pipes, the skew must not exceed 0°.
For 54" culvert pipes, the skew must not exceed 15°.
For 48" culvert pipes, the skew must not exceed 30°.
For all culvert pipe sizes 42" and less, the skew must not exceed 45°.

If the above conditions cannot be met, the designer should consider using a safety end treatment with flared wings. For further information, refer to the TxDOT Roadway Design Manual.

③ Miter = slope of mitered end of pipe culvert.

④ Riprap placed beyond the limits shown will be paid for as concrete riprap in accordance with Item 432, "Riprap."

⑤ Quantities shown are for one end of one reinforced concrete pipe (RCP) culvert. For multiple pipe culverts or for corrugated metal pipe (CMP) culverts, quantities will need to be adjusted. Riprap quantities are for Contractor's information only.

SHEET 1 OF 2

Texas Department of Transportation — Bridge Division Standard

SAFETY END TREATMENT
FOR 12" DIA TO 60" DIA
PIPE CULVERTS
TYPE II – CROSS DRAINAGE

SETP-CD

FILE: CD-SETP-CD-20.dgn | DN: GAF | CK: CAE | DW: JRP | CK: GAF
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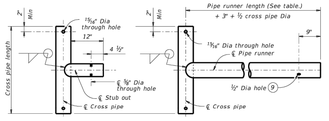
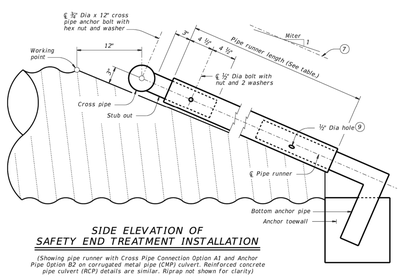


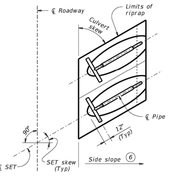
OPTION A1 OPTION A2

CROSS PIPE AND CONNECTIONS DETAILS

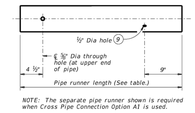


SIDE ELEVATION OF SAFETY END TREATMENT INSTALLATION

(Showing pipe runner with Cross Pipe Connection Option A1 and Anchor Pipe Option B2 on corrugated metal pipe (CMP) culvert. Reinforced concrete pipe culvert (RCP) details are similar. Riprap not shown for clarity)

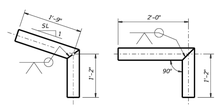


PLAN OF SKEWED INSTALLATION



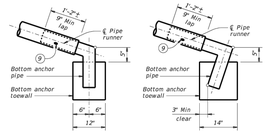
NOTE: The separate pipe runner shown is required when Cross Pipe Connection Option A1 is used.

PIPE RUNNER DETAILS



OPTION B1 OPTION B2

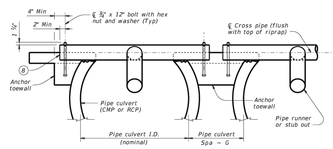
BOTTOM ANCHOR PIPE DETAILS ⑩



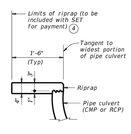
OPTION B1 OPTION B2

BOTTOM ANCHOR TOEWALL DETAILS

(Culvert and riprap not shown for clarity.)



SHOWING CROSS PIPE AND ANCHOR TOEWALL



SHOWING TYPICAL PIPE CULVERT AND RIPRAP

SECTION A-A

④ Riprap placed beyond the limits shown will be paid for as concrete riprap in accordance with Item 432, "Riprap."

⑥ Recommended values of side slope are 3:1, 4:1, and 6:1. All quantities, calculations, and dimensions shown herein are based on these recommended values. Slope of 3:1 or flatter is required for vehicle safety.

⑦ Note that actual slope of pipe runner may vary slightly from side slope of riprap and trimmed culvert pipe edge.

⑧ Ensure that riprap concrete does not flow into the cross pipe so as to permit disassembly of the bolted connection to allow cleanout access.

⑨ After installation, inspect the ½" hole to ensure that the lap of the pipe runner with the bottom anchor pipe is adequate.

⑩ At fabricator's option, a heat bend to a smooth 5" radius or a manufactured elbow (of the same material as the runner) may be substituted for the mitered and welded joint in the bottom anchor pipe.

MATERIAL NOTES:
Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.
Provide pipe runners, cross pipes, and anchor pipes conforming to the requirements of ASTM A53 (Type E or S, Gr B), ASTM A500 Gr B, or API 5L/X52.
Provide ASTM A307 bolts and nuts.
Galvanize all steel components, except concrete reinforcing, after fabrication.
Repair galvanizing damaged during transport or construction in accordance with the specifications.

GENERAL NOTES:
Pipe runners are designed for a traversing load of 1,800 pounds at yield as recommended by Research Report 280-1, "Safety Treatment of Roadside Cross-Drainage Structures", Texas Transportation Institute, March 1981.
Safety end treatments (SETs) shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the pipe runners.
Payment for riprap and toewall is included in the price bid for each safety end treatment.
Construct concrete riprap and all necessary inverts in accordance with the requirements of Item 432, "Riprap."

SHEET 2 OF 2

Texas Department of Transportation — Bridge Division Standard

SAFETY END TREATMENT
FOR 12" DIA TO 60" DIA
PIPE CULVERTS
TYPE II – CROSS DRAINAGE

SETP-CD

FILE: CD-SETP-CD-20.dgn | DN: GAF | CK: CAE | DW: JRP | CK: GAF
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CUDE ENGINEERS

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

SCHRYVER TRACT

DRAINAGE DETAILS

DATE
10/30/2025

PROJECT NO.
04002.006

DRAWN BY
DAF/RM/JW

CHECKED BY
SPM

REVISIONS
1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

10/30/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT
SCHRYVER TRACT

C6.D2

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

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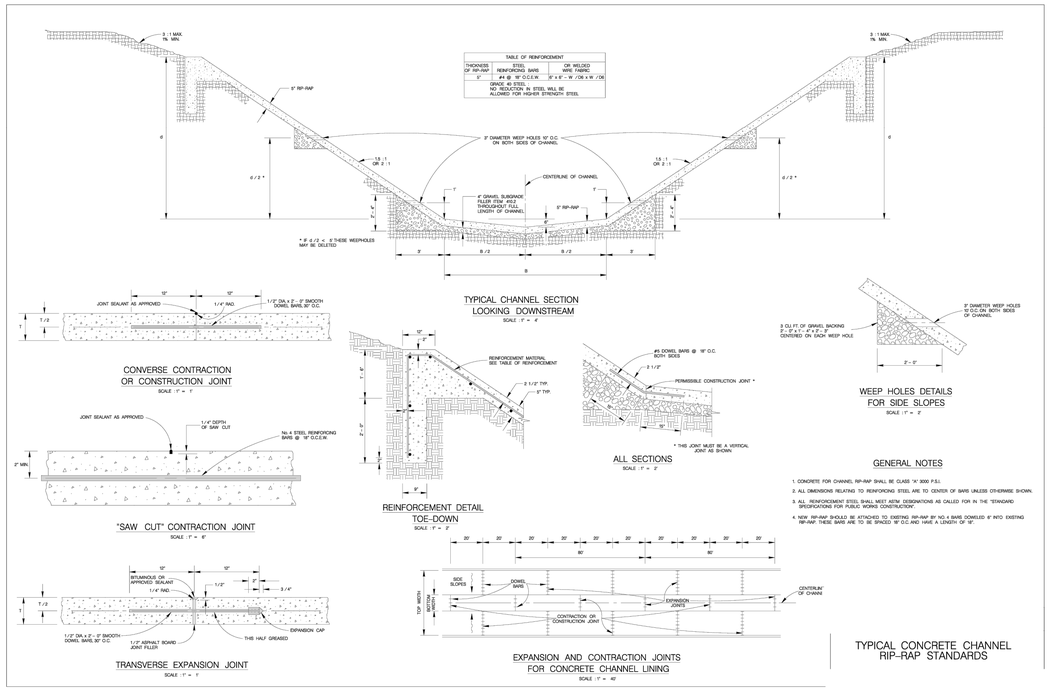

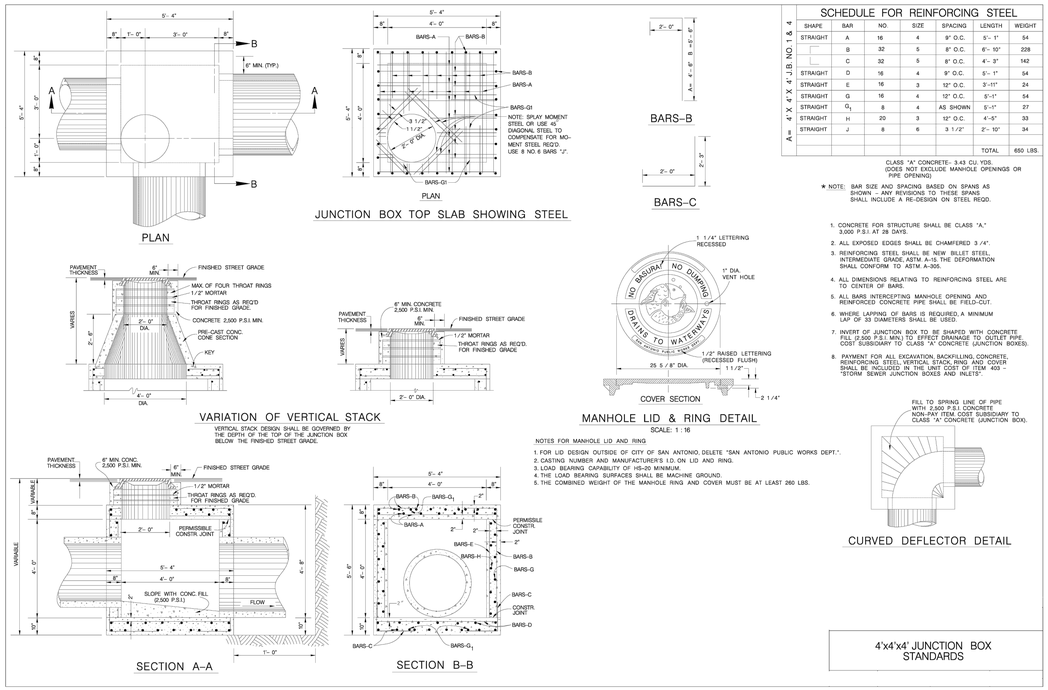

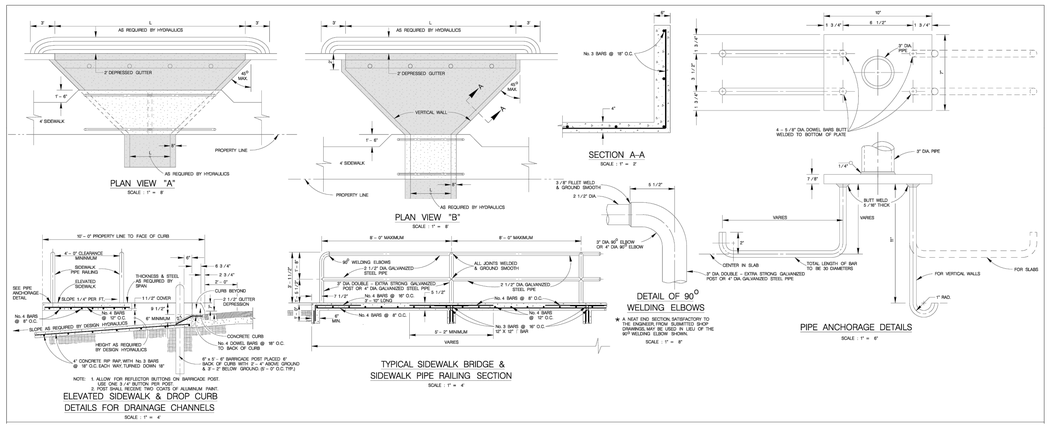

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CUDE ENGINEERS EST. 1980
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San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

SCHRYVER TRACT

DRAINAGE DETAILS

DATE
10/30/2025

PROJECT NO.
04002.006

DRAWN BY
DAF/RM/JW

CHECKED BY
SPM

REVISIONS
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10/30/2025
STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT
SCHRYVER TRACT

C6.D3

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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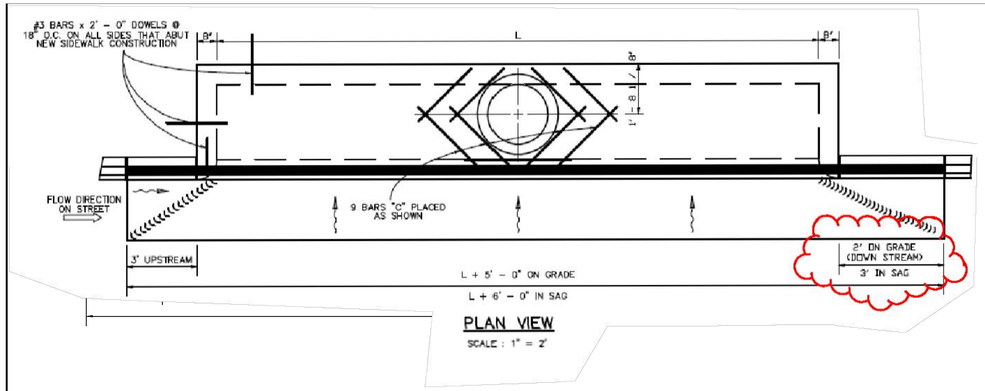
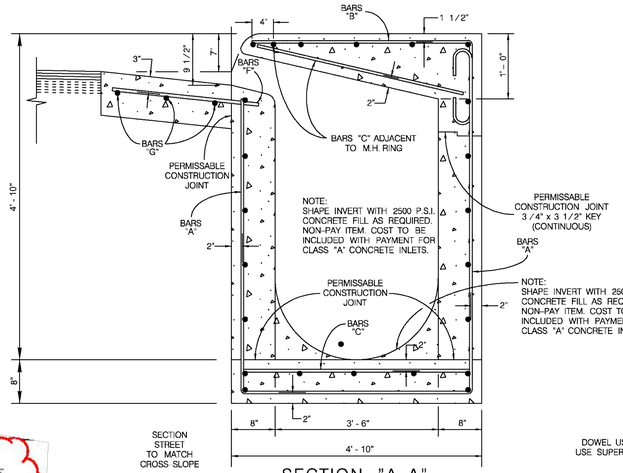


PLAN VIEW

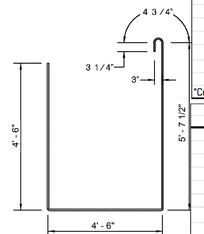
SCALE : 1" = 2'



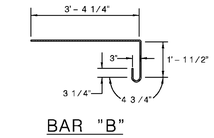
SECTION "A-A"

SCALE : 1" = 1'

SECTION STREET TO MATCH CROSS SLOPE



BAR "A"



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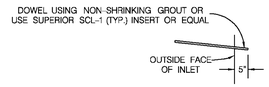
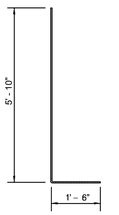
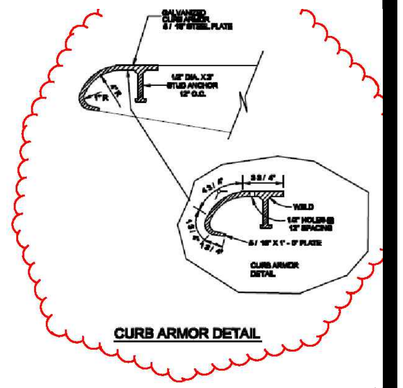


BAR "F"



BAR "E"



CURB ARMOR DETAIL

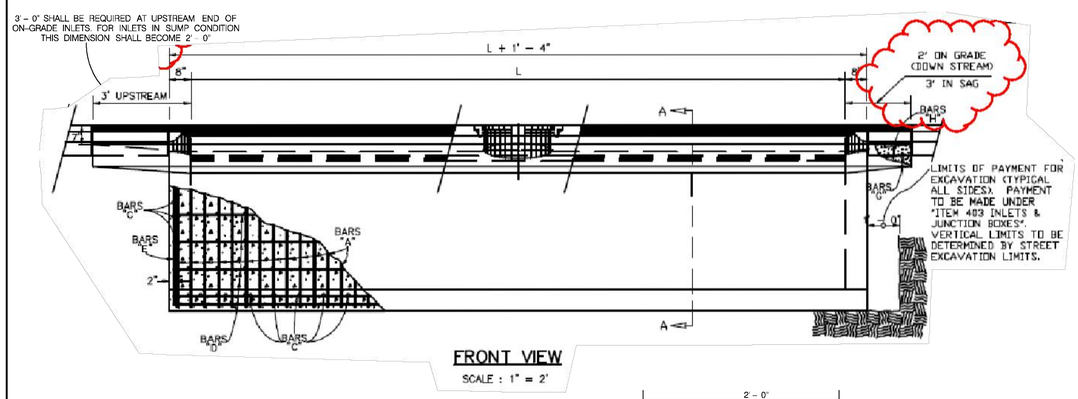
* THESE FIGURES DO NOT EXCLUDE CONCRETE & STEEL INTERCEPTED BY MANHOLE AND REINFORCED CONC. PIPE
* INCLUDES CONCRETE GUTTER FOR ON GRADE INLET. REDUCE BY .05 C.Y. FOR INLETS IN SUMP.

INLET LENGTH	REINFORCING STEEL SCHEDULE					
	BAR	No.	Size	Spa.	Length	Weight lbs.
	A	27	4	5' o.c.	14' 9 1/2"	266.78
DRAIN "D"	B	27	4	5"	6' 1 3/4"	110.85
L= 10'	C	37	4	9"	4' 6"	111.22
DEPTH= 5'	D	24	4	10"	11' 1"	177.69
	E	12	4	10 1/2"	6' 10"	54.78
	F	12	5	12"	2' 3"	28.16
	G	3	4	12"	14' 8"	29.39
	H	5	5	12"	1' 8"	8.69

*Concrete Total = 6.25 C.Y. Manhole Casting = 260 lbs. Steel Total = 1047.56 lbs.

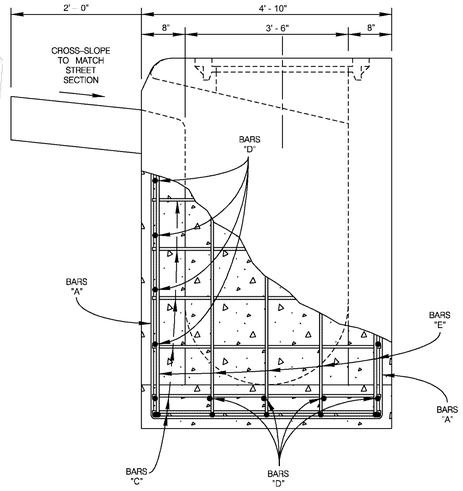
INLET LENGTH	REINFORCING STEEL SCHEDULE					
	BAR	No.	Size	Spa.	Length	Weight lbs.
	A	39	4	5' o.c.	20' 9 1/2"	541.66
DRAIN "E"	B	39	4	5"	9' 1 3/4"	238.27
L= 15'	C	39	4	9"	4' 6"	153.31
DEPTH= 8'	D	51	4	10"	16' 1"	311.57
	E	29	4	10 1/2"	9' 10"	78.82
	F	12	5	12"	2' 3"	39.89
	G	17	4	12"	19' 8"	39.41
	H	3	5	12"	1' 8"	8.69

*Concrete Total = 11.64 C.Y. Manhole Casting = 260 lbs. Steel Total = 1671.63 lbs.



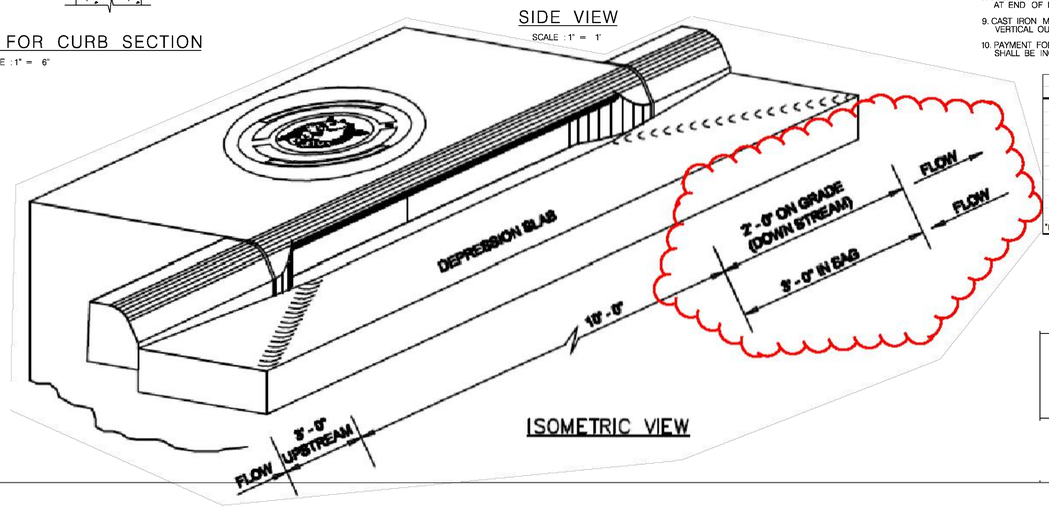
FRONT VIEW

SCALE : 1" = 2'

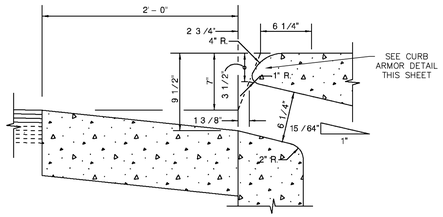


SIDE VIEW

SCALE : 1" = 1'

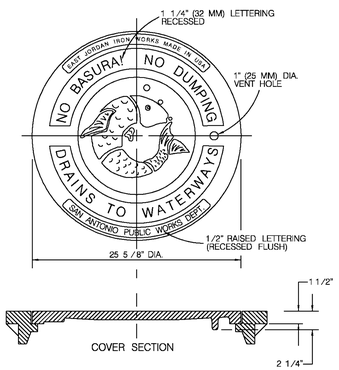


ISOMETRIC VIEW



OPENING DETAIL FOR CURB SECTION

SCALE : 1" = 6"



MANHOLE LID & RING DETAIL (ITEM 409)

SCALE : 1" = 8"

COVER SECTION

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.

GENERAL NOTES

1. ALL BARS INTERCEPTING MANHOLE RING & REINFORCING CONCRETE PIPE SHALL BE FIELD CUT.
2. CONCRETE FOR STRUCTURES SHALL BE CLASS "A", 3000 PSI IN 28 DAYS.
3. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER BARS.
4. ALL EXPOSED CORNERS SHALL BE CHAMFERED TO 3 /4".
5. CONSTRUCTION JOINT SHOWN AT FLOWLINE MAY BE RAISED A MAXIMUM OF 6" AT THE CONTRACTOR'S DISCRETION. ADJUST LENGTH OF VERTICAL STEEL AS REQUIRED.
6. ALL REINFORCING STEEL SHALL CONFORM TO A.S.T.M. A 615, GRADE 60 REQUIREMENTS.
7. INVERT OF DROP INLET TO BE SHAPED WITH CONCRETE FILL TO AFFECT DRAINAGE TO OUTLET PIPE.
8. DELETE 4 "C" BARS FROM SCHEDULE QUANTITIES IF MANHOLE RING AND COVER ARE PLACED AT END OF INLET.
9. 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.
10. PAYMENT FOR ALL EXCAVATION, BACK FILLING, CONCRETE, REINFORCING STEEL, RING AND COVER SHALL BE INCLUDED IN THE UNIT COST OF ITEM 403 "STORM SEWER JUNCTION BOXES AND INLETS".

INLET LENGTH	REINFORCING STEEL SCHEDULE					
	BAR	No.	Size	Spa.	Length	Weight lbs.
	A	27	4	5' o.c.	16' 9 1/2"	302.85
DRAIN "H-1, H-2"	B	27	4	5"	7' 1 3/4"	128.88
L= 10'	C	27	4	9"	4' 6"	117.23
DEPTH= 6'	D	39	4	10"	11' 1"	192.50
	E	26	4	10 1/2"	7' 10"	62.79
	F	12	5	12"	2' 3"	28.16
	G	12	4	12"	14' 8"	29.39
	H	3	5	12"	1' 8"	8.69

*Concrete Total = 6.98 C.Y. Manhole Casting = 260 lbs. Steel Total = 1130.5 lbs.

TYPE "C" INLET DETAILS

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

SCHRYVER TRACT

DRAINAGE DETAILS

DATE
10/30/2025

PROJECT NO.
04002.006

DRAWN BY
DAF/RM/JW

CHECKED BY
SPM

REVISIONS
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10/30/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT
SCHRYVER TRACT

C6.D4

P:\04002\004002-SWGI\e Plans\CAD\C6.D4 INLET DETAILS.dwg 10/31/2025 2:24pm jwatkins

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LEGEND

PROPERTY BOUNDARY		E.G.T.CA.	ELECTRIC, GAS, TELEPHONE, & CABLE	RT	RIGHT	R	RADIUS
PROPOSED LOT LINE		CONC.	CONCRETE	LT	LEFT	ELEV.	ELEVATION
PROPOSED RIGHT OF WAY		R.O.W.	RIGHT OF WAY	PROP.	PROPOSED	T.O.C.	TOP OF CURB
E.G.T.CA. EASEMENT		ESM'T.	EASEMENT	EX.	EXISTING		
EXISTING 1' CONTOUR		STA.	STATION	PVM'T	PAVEMENT		
EXISTING 5' CONTOUR		PI	POINT OF INTERSECTION	PG	PROPOSED GROUND		
PROPOSED 1' CONTOUR	XXX	RET	RETURN	℄ OR CL	CENTERLINE		
PROPOSED 5' CONTOUR	XXX						
CONCRETE CURB & GUTTER							
DRIVEWAY TO BE BUILT WITH HOMEBUILDING							

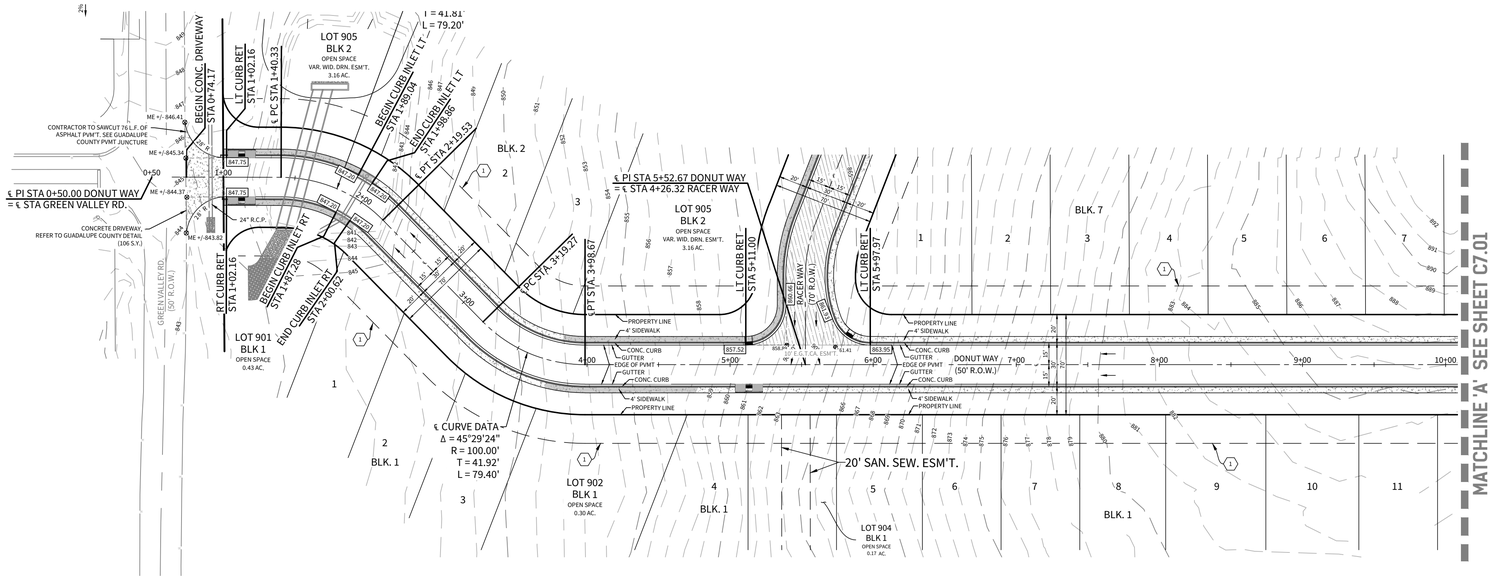
SIDEWALK TO BE BUILT WITH INFRASTRUCTURE. ALL REMAINING TO BE BUILT WITH HOMEBUILDING

ADA SIDEWALK CURB RAMP SEE DETAIL SHEET C20

ADA SIDEWALK PASSING SPACE

STREET DIRECTIONAL SLOPE

STREET SIDE SLOPE 2%



KEYNOTES

1. 20' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE
2. 15' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE

ELEVATIONS:

- XXXX.XX PROPOSED TOP OF CONCRETE CURB ELEVATION
- XXXX.XX PROPOSED ASPHALT PAVEMENT ELEVATION

- STREET WASHOUT (SEE DETAIL SHEET C7.D1)
- SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE

TxDOT TYPE "2" WHEEL CHAIR RAMPS ARE INDICATED THUS " " UNLESS OTHERWISE NOTED. (SHEET C7.D3)

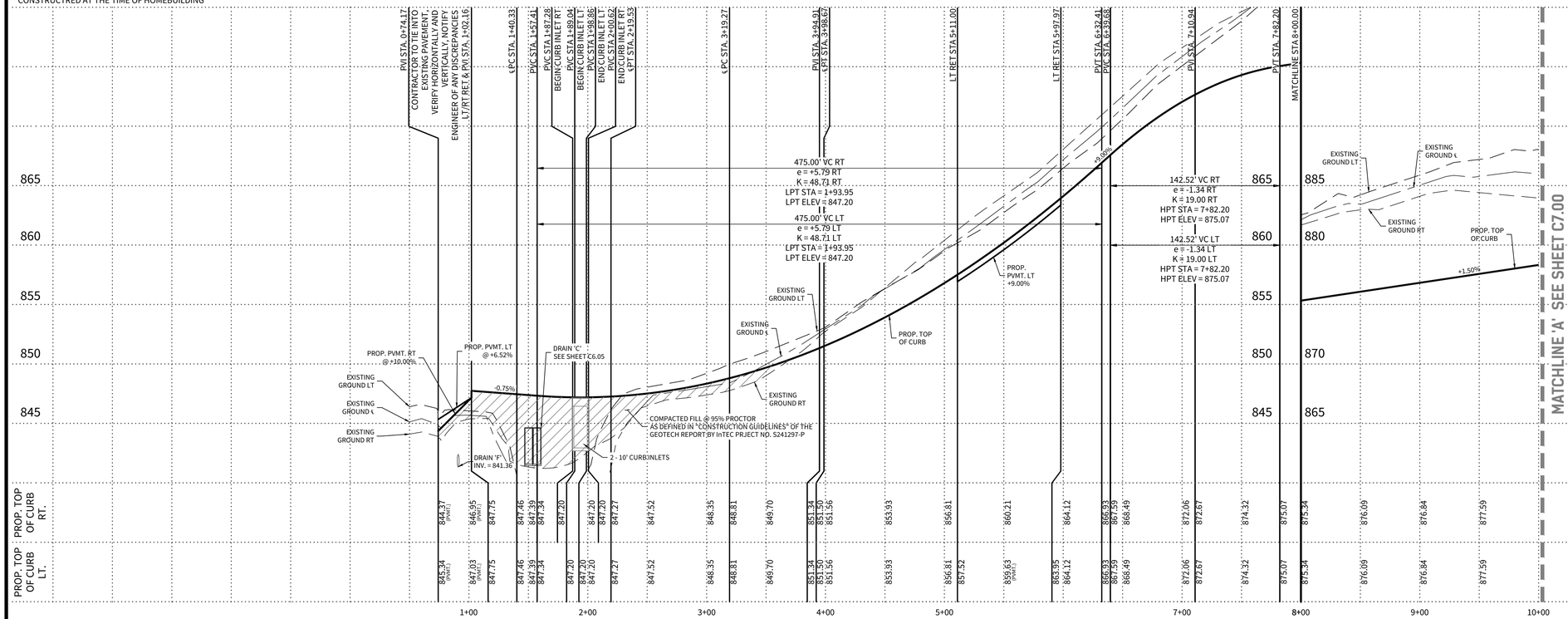
FOR ADA RAMPS AT SIDEWALK INTERSECTIONS . DETECTABLE WARNING PAVER WITH TRUNCATED DOMES ONLY. ADA RAMPS TO BE CONSTRUCTED WITH INFRASTRUCTURE. WHERE RESIDENTIAL LOT FRONTAGE DOES NOT EXIST, ALL ADA RAMPS ADJACENT TO A RESIDENTIAL LOT SHALL BE CONSTRUCTRED AT THE TIME OF HOMEBUILDING

DONUT WAY

STA. 0+50.00 TO STA. 10+00.00

NOTE: A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY RIGHT OF WAY

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



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SCHRYVER TRACT

STREET PLAN & PROFILE - DONUT WAY

DATE
10/30/2025

PROJECT NO.
04002.006

DRAWN BY
DAF/RM/JW

CHECKED BY
SPM

REVISIONS
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10/30/2025
STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT
SCHRYVER TRACT

GVSUD
XX-XXXX

C7.00

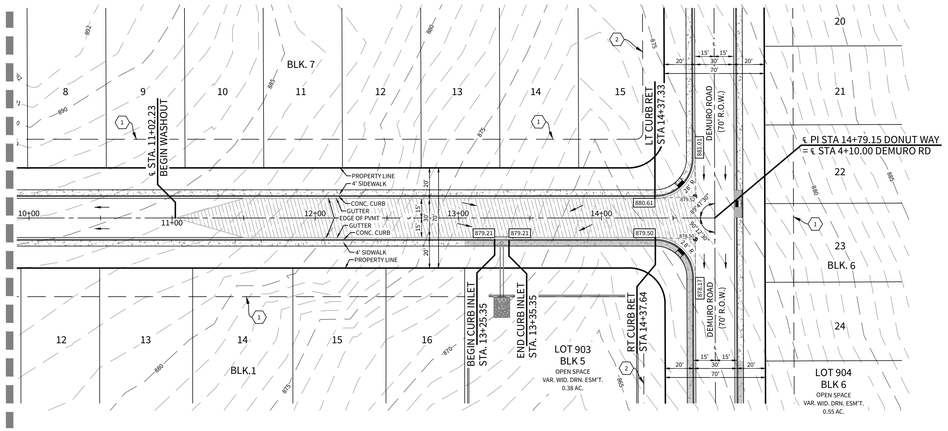
P:\04002\000\2-ENGR\4-Plans\C7.00 STREET PLANS & PROFILE - DONUT WAY.dwg 2025.10.30 3:54pm jmehlich

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

LEGEND

PROPERTY BOUNDARY	SIDEWALK TO BE BUILT WITH INFRASTRUCTURE. ALL REMAINING TO BE BUILT WITH HOMEBUILDING	E.G.T.CA.	ELECTRIC, GAS, TELEPHONE, & CABLE
PROPOSED LOT LINE		CONC.	CONCRETE
PROPOSED RIGHT OF WAY	ADA SIDEWALK CURB RAMP SEE DETAIL SHEET C20	R.O.W.	RIGHT OF WAY
E.G.T.CA. EASEMENT		ESM'T.	EASEMENT
EXISTING 1' CONTOUR	ADA SIDEWALK PASSING SPACE	STA.	STATION
EXISTING 5' CONTOUR	STREET DIRECTIONAL SLOPE	PI	POINT OF INTERSECTION
PROPOSED 1' CONTOUR	STREET SIDE SLOPE	RET	RETURN
PROPOSED 5' CONTOUR		RT	RIGHT
CONCRETE CURB & GUTTER		LT	LEFT
DRIVEWAY TO BE BUILT WITH HOMEBUILDING		PROP.	PROPOSED

EX.	EXISTING		
PVM'T	PAVEMENT		
PG	PROPOSED GROUND		
℄ OR CL	CENTERLINE		
R	RADIUS		
ELEV.	ELEVATION		
T.O.C.	TOP OF CURB		



KEYNOTES

1. 20' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE
2. 15' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE

ELEVATIONS:

- XXXX.XX — PROPOSED TOP OF CONCRETE CURB ELEVATION
- XXXX.XX — PROPOSED ASPHALT PAVEMENT ELEVATION

- STREET WASHOUT (SEE DETAIL SHEET C7.D1)
- SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE

TxDOT TYPE "2" WHEEL CHAIR RAMPS ARE INDICATED THUS " " UNLESS OTHERWISE NOTED. (SHEET C7.D3)

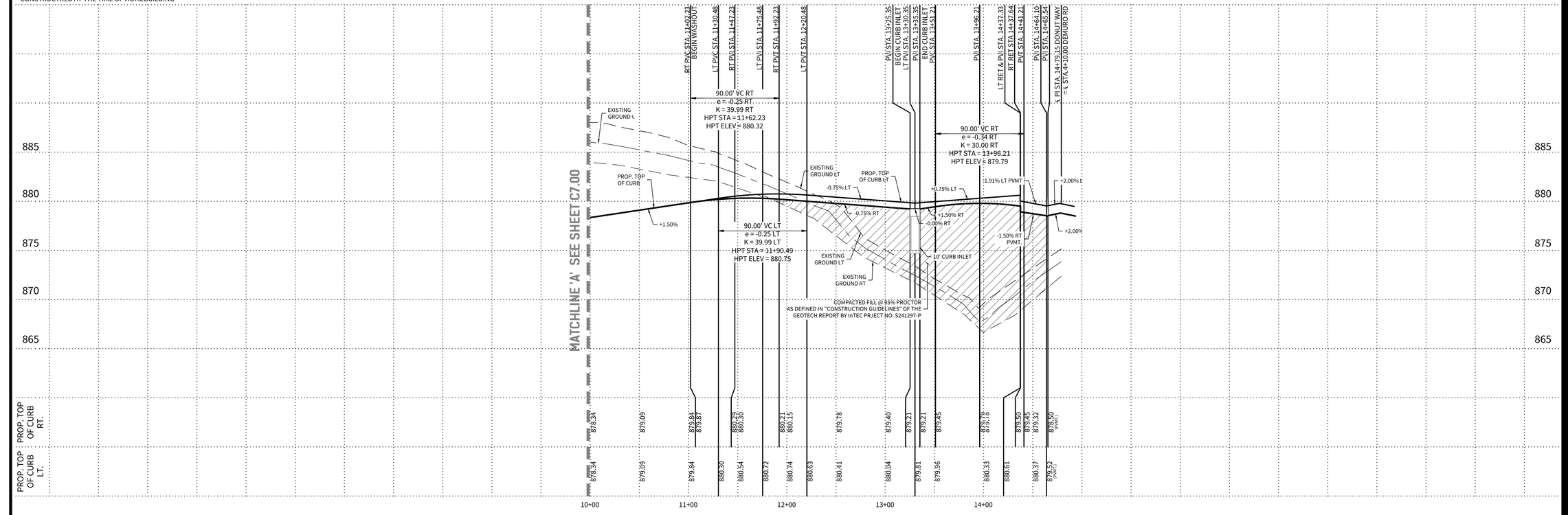
FOR ADA RAMPS AT SIDEWALK INTERSECTIONS . DETECTABLE WARNING PAVER WITH TRUNCATED DOMES ONLY. ADA RAMPS TO BE CONSTRUCTED WITH INFRASTRUCTURE. WHERE RESIDENTIAL LOT FRONTAGE DOES NOT EXIST, ALL ADA RAMPS ADJACENT TO A RESIDENTIAL LOT SHALL BE CONSTRUCTRED AT THE TIME OF HOMEBUILDING

DONUT WAY

STA. 10+00.00 TO STA. 14+79.15

NOTE: A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY RIGHT OF WAY

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



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SCHRYVER TRACT

STREET PLAN & PROFILE - DONUT WAY

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SPM

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STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT
SCHRYVER TRACT

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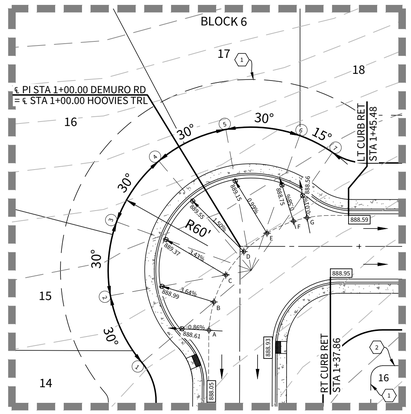
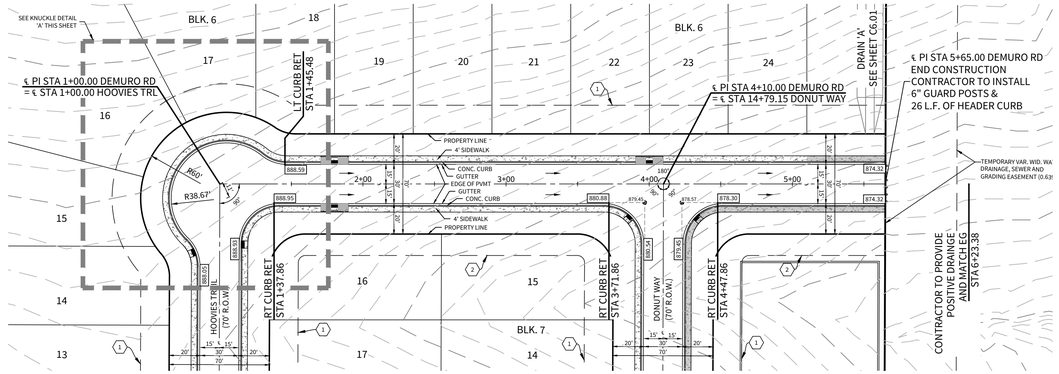
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



KNUCKLE DETAIL 'A'

SCALE: 1" = 30'



KEYNOTES

1. 20' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE
2. 15' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE

ELEVATIONS:

- XXXX.XX — PROPOSED TOP OF CONCRETE CURB ELEVATION
- XXXX.XX — PROPOSED ASPHALT PAVEMENT ELEVATION
- STREET WASHOUT (SEE DETAIL SHEET C7.D1)
- SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE

TxDOT TYPE "2" WHEEL CHAIR RAMPS ARE INDICATED THUS " " UNLESS OTHERWISE NOTED. (SHEET C7.D3)

PAVEMENT ELEVATIONS	
POINT	Elevation
A	888.66
B	888.76
C	888.91
D	889.01
E	888.84
F	888.64
G	888.52

LEGEND

- PROPERTY BOUNDARY
- PROPOSED LOT LINE
- PROPOSED RIGHT OF WAY
- E.G.T.CA. EASEMENT
- EXISTING 1' CONTOUR
- EXISTING 5' CONTOUR
- PROPOSED 1' CONTOUR
- PROPOSED 5' CONTOUR
- CONCRETE CURB & GUTTER
- DRIVEWAY TO BE BUILT WITH HOMEBUILDING
- SIDEWALK TO BE BUILT WITH INFRASTRUCTURE. ALL REMAINING TO BE BUILT WITH HOMEBUILDING
- ADA SIDEWALK CURB RAMP SEE DETAIL SHEET C20
- ADA SIDEWALK PASSING SPACE
- STREET DIRECTIONAL SLOPE
- STREET SIDE SLOPE

E.G.T.CA.	ELECTRIC, GAS, TELEPHONE, & CABLE	EX.	EXISTING
CONC.	CONCRETE	PVM'T	PAVEMENT
R.O.W.	RIGHT OF WAY	PG	PROPOSED GROUND
ESM'T.	EASEMENT	℄ OR CL	CENTERLINE
STA.	STATION	R	RADIUS
PI	POINT OF INTERSECTION	ELEV.	ELEVATION
RET	RETURN	T.O.C.	TOP OF CURB
RT	RIGHT		
LT	LEFT		
PROP.	PROPOSED		

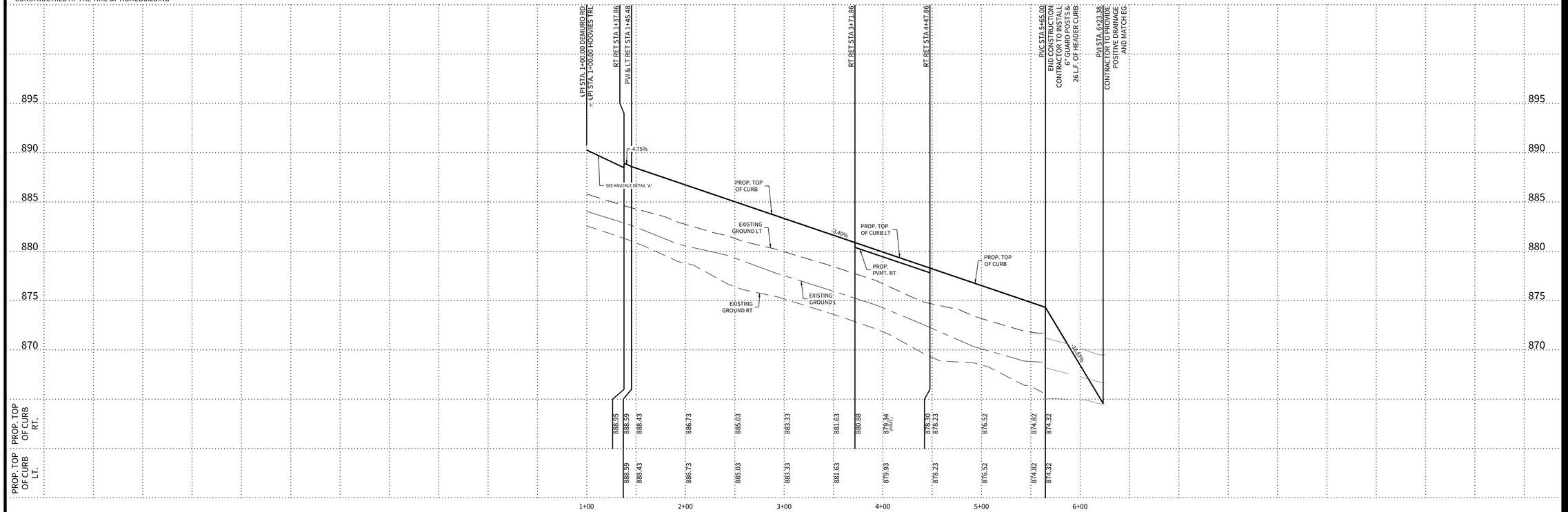
DEMURO RD

STA.1+00.00 TO STA. 5+65.13

FOR ADA RAMPS AT SIDEWALK INTERSECTIONS . DETECTABLE WARNING PAVER WITH TRUNCATED DOMES ONLY. ADA RAMPS TO BE CONSTRUCTED WITH INFRASTRUCTURE. WHERE RESIDENTIAL LOT FRONTAGE DOES NOT EXIST, ALL ADA RAMPS ADJACENT TO A RESIDENTIAL LOT SHALL BE CONSTRUCTRED AT THE TIME OF HOMEBUILDING

NOTE: A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY RIGHT OF WAY

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



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CUDE ENGINEERS

4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
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SCHRYVER TRACT

STREET PLAN & PROFILE - DEMURO RD

DATE
10/30/2025

PROJECT NO.
04002.006

DRAWN BY
DAF/RM/JW

CHECKED BY
SPM

REVISIONS
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10/30/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

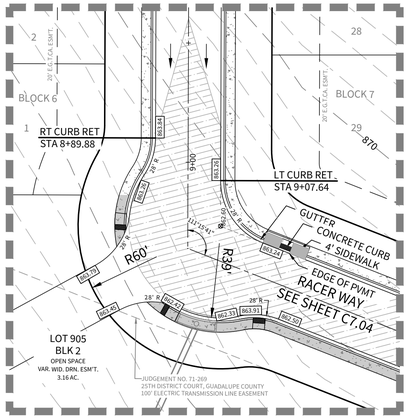
CUDE ENGINEERS
TBPELS No. 10048500

PLAT
SCHRYVER TRACT

C7.02

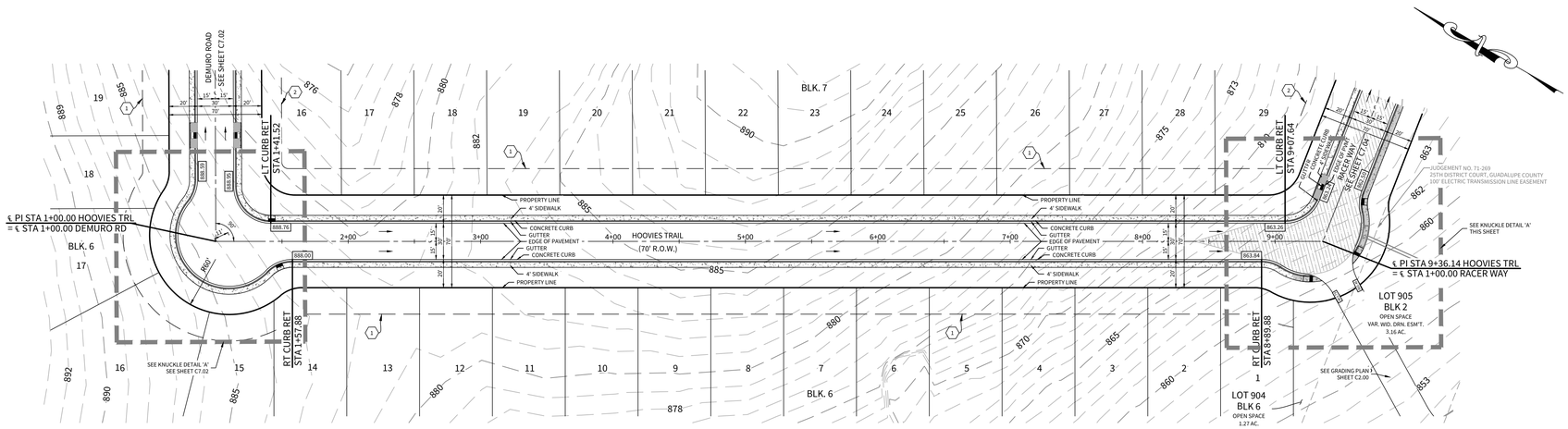
P:\04002\004002-2400\Civil\Cad\1 STREET PLANS & PROFILE - DEMURO RD.dwg 2025-10-30 9:53pm jmartinez

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.



KNUCKLE DETAIL 'A'

SCALE: 1" = 30'



KEYNOTES

1. 20' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE
2. 15' ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION EASEMENT & BUILDING SETBACK LINE

ELEVATIONS:

- XXXX.XX — PROPOSED TOP OF CONCRETE CURB ELEVATION
- XXXX.XX — PROPOSED ASPHALT PAVEMENT ELEVATION

- STREET WASHOUT (SEE DETAIL SHEET C7.D1)
- SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE

TxDOT TYPE "2" WHEEL CHAIR RAMPS ARE INDICATED THUS " " UNLESS OTHERWISE NOTED. (SHEET C7.D3)

FOR ADA RAMPS AT SIDEWALK INTERSECTIONS .
DETECTABLE WARNING PAVER WITH TRUNCATED DOMES ONLY.
ADA RAMPS TO BE CONSTRUCTED WITH INFRASTRUCTURE.
WHERE RESIDENTIAL LOT FRONTAGE DOES NOT EXIST, ALL ADA RAMPS ADJACENT TO A RESIDENTIAL LOT SHALL BE CONSTRUCTRED AT THE TIME OF HOMEBUILDING

LEGEND

PROPERTY BOUNDARY	E.G.T.CA.	ELECTRIC, GAS, TELEPHONE, & CABLE	EX.	EXISTING
PROPOSED LOT LINE	CONC.	CONCRETE	PVM'T	PAVEMENT
PROPOSED RIGHT OF WAY	R.O.W.	RIGHT OF WAY	PG	PROPOSED GROUND
E.G.T.CA. EASEMENT	ESM'T.	EASEMENT	℄ OR CL	CENTERLINE
EXISTING 1' CONTOUR	STA.	STATION	R	RADIUS
EXISTING 5' CONTOUR	PI	POINT OF INTERSECTION	ELEV.	ELEVATION
PROPOSED 1' CONTOUR	RET	RETURN	T.O.C.	TOP OF CURB
PROPOSED 5' CONTOUR	RT	RIGHT		
CONCRETE CURB & GUTTER	LT	LEFT		
DRIVEWAY TO BE BUILT WITH HOMEBUILDING	PROP.	PROPOSED		

SIDEWALK TO BE BUILT WITH INFRASTRUCTURE. ALL REMAINING TO BE BUILT WITH HOMEBUILDING

ADA SIDEWALK CURB RAMP SEE DETAIL SHEET C20

ADA SIDEWALK PASSING SPACE

STREET DIRECTIONAL SLOPE

STREET SIDE SLOPE

HOOVIES TRAIL

STA.1+00.00 TO STA. 9+36.14

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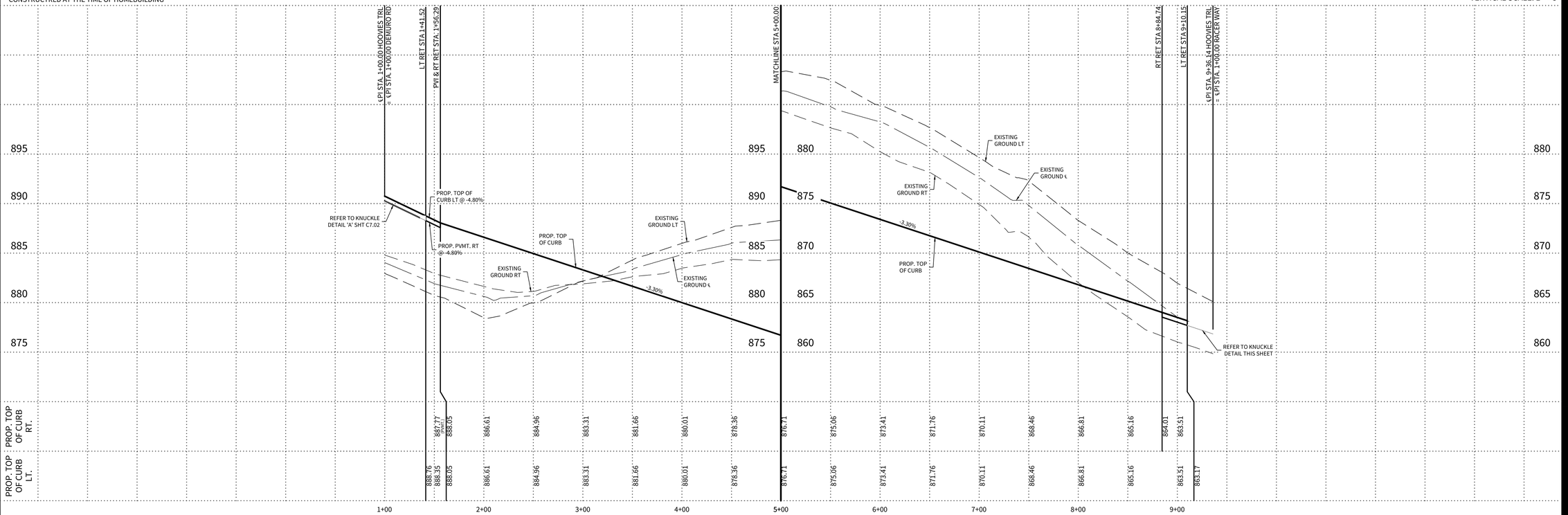

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SCHRYVER TRACT

STREET PLAN & PROFILE - HOOVIES TRAIL

DATE 10/30/2025

PROJECT NO. 04002.006

DRAWN BY DAF/RM/JW

CHECKED BY SPM

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10/30/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT SCHRYVER TRACT

C7.03

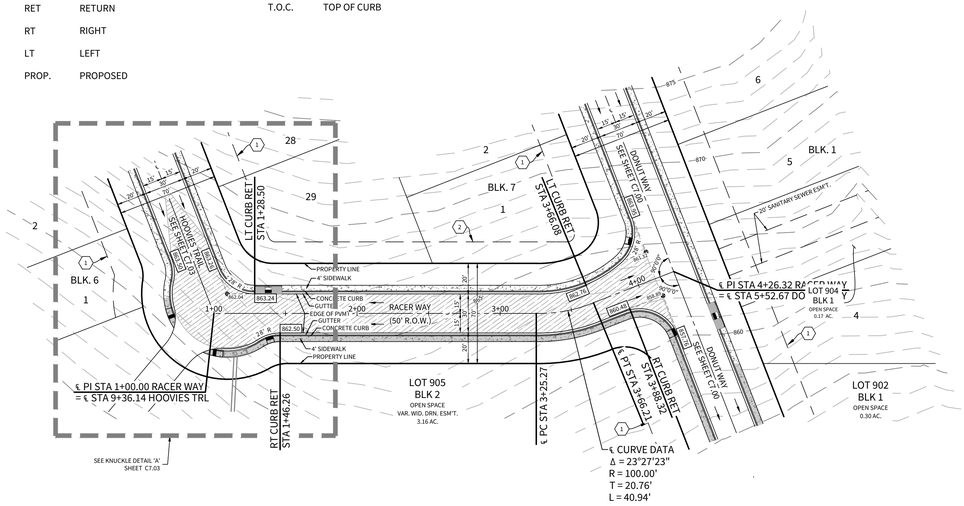
P:\04002\Dwg\2-Civil\C-03 SHEET PLANS PROFILE - HOOVIES TRL.dwg 10/31/2025 9:51pm jmartinez

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

LEGEND

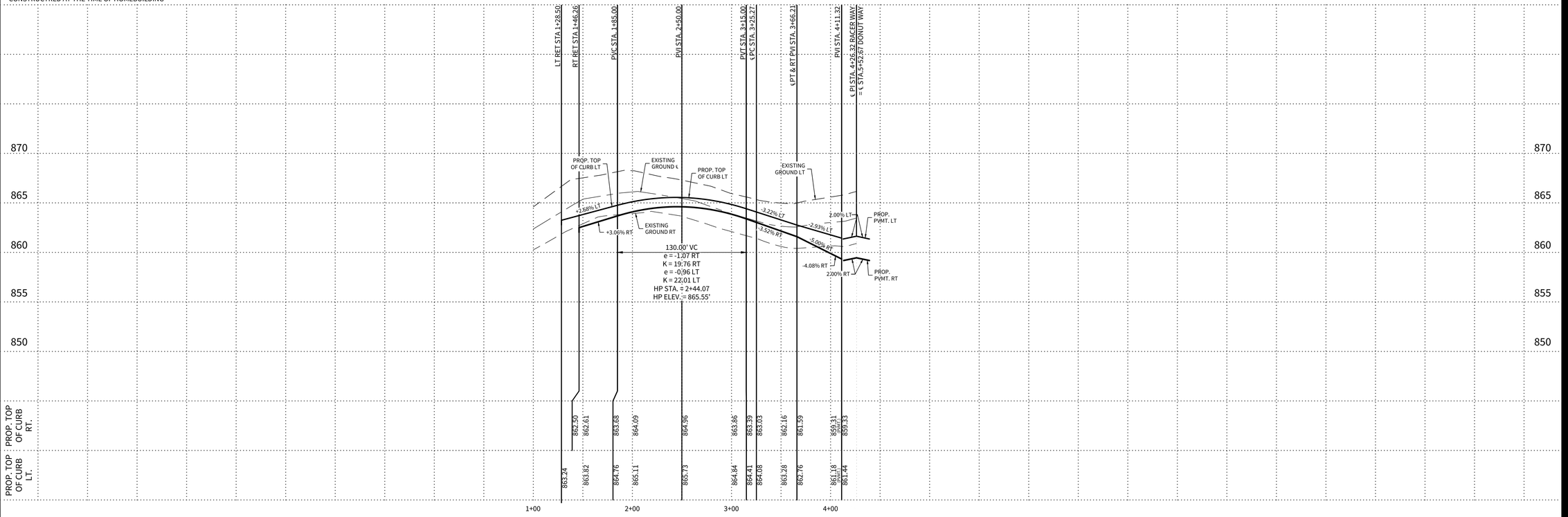
PROPERTY BOUNDARY		SIDEWALK TO BE BUILT WITH INFRASTRUCTURE. ALL REMAINING TO BE BUILT WITH HOMEBUILDING		E.G.T.CA.	ELECTRIC, GAS, TELEPHONE, & CABLE
PROPOSED LOT LINE		ADA SIDEWALK CURB RAMP SEE DETAIL SHEET C20		CONC.	CONCRETE
PROPOSED RIGHT OF WAY		ADA SIDEWALK PASSING SPACE		R.O.W.	RIGHT OF WAY
E.G.T.CA. EASEMENT		STREET DIRECTIONAL SLOPE		ESM'T.	EASEMENT
EXISTING 1' CONTOUR		STREET SIDE SLOPE		STA.	STATION
EXISTING 5' CONTOUR				PI	POINT OF INTERSECTION
PROPOSED 1' CONTOUR	XXX			RET	RETURN
PROPOSED 5' CONTOUR	XXX			RT	RIGHT
CONCRETE CURB & GUTTER				LT	LEFT
DRIVEWAY TO BE BUILT WITH HOMEBUILDING				PROP.	PROPOSED

EX.	EXISTING		
PVM'T	PAVEMENT		
PG	PROPOSED GROUND		
℄ OR CL	CENTERLINE		
R	RADIUS		
ELEV.	ELEVATION		
T.O.C.	TOP OF CURB		



RACER WAY

STA. 1+00.00 TO STA. 4+26.32



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VERTICAL SCALE: 1" = 5'

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SCHRYVER TRACT

STREET PLAN & PROFILE - RACER WAY

DATE
10/30/2025

PROJECT NO.
04002.006

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SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT
SCHRYVER TRACT

GVSUD
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C7.04

P:\04002\004002-2\DWG\4 Plans\C7.04 STREET PLANS & PROFILE - RACER WAY.dwg 10/30/2025 08:35:53pm jmartinez

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

STREET PAVEMENT DESIGN OPTIONS (INTEC , INC. - S241297-P)

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

SUBGRADE NOTES (*):

- THE SUBGRADE WILL BE PROOF ROLLED TO IDENTIFY SOFT AREAS BEFORE STABILIZATION.
- THE SUBGRADE PLASTICITY INDEX VALUE IS EXPECTED TO BE GREATER THAN 20. SUBGRADE LIME STABILIZATION IS NEEDED.
- UNDERCUT SOFT, WEAK, AND UNSTABLE SOILS BY EXCAVATING BELOW SUBGRADE LEVEL TO EXPOSE STABLE SOILS. THE EXCAVATED SOIL CAN BE USED TO RESTORE THE EXCAVATION SUBGRADE, PROVIDED THAT THE SOILS ARE RELATIVELY FREE AND CLEAN OF DELETERIOUS MATERIAL AND MATERIALS EXCEEDING 3 INCHES IN MAXIMUM DIMENSION. THE EXCAVATED SOIL, OR IMPORTED FILL SOIL, SHALL BE PLACED IN MAXIMUM 6-INCH COMPACTED LIFTS. EACH LIFT OF SOIL SHALL BE MOISTURE CONDITIONED BETWEEN PLUS OR MINUS TWO (±2) PERCENTAGE POINTS OF THE OPTIMUM MOISTURE CONTENT AND COMPACTED TO AT LEAST 95 PERCENT OF THE MAXIMUM DRY DENSITY DETERMINED IN ACCORDANCE WITH THE STANDARD COMPACTION EFFORT (ASTM D 698). IF UNDERCUTTING DEEPER THAN ABOUT 3 FEET IS NEEDED, CONTACT TTL, INC.
- SOIL SUBGRADE AREAS REQUIRING FILL PLACEMENT SHOULD BE SCARIFIED TO A DEPTH OF ABOUT EIGHT (8) INCHES AND MOISTURE CONDITIONED BETWEEN PLUS OR MINUS TWO (±2) POINTS OF THE OPTIMUM MOISTURE CONTENT. THE MOISTURE CONDITIONED SUBGRADE SHOULD THEN BE COMPACTED TO AT LEAST 95 PERCENT OF THE MAXIMUM DRY DENSITY DETERMINED IN ACCORDANCE WITH THE STANDARD COMPACTION EFFORT (ASTM D 6998). THE SUBGRADE SHOULD BE MOISTURE CONDITIONED JUST PRIOR TO FILL PLACEMENT SO THE SUBGRADE MAINTAINS ITS COMPACTION MOISTURE LEVELS AND DOES NOT DRY OUT.
- ON-SITE SOILS (GENERAL FILL), SELECT FILL OR GRANULAR FILL SOIL SHOULD BE PLACED TO ACHIEVE THE DESIRED ELEVATION.

GENERAL NOTES (**) FROM GEOTECH REPORT

- INPUT PARAMETERS ARE SHOWN IN TABLE NO. A. PLEASE CALL US TO PROVIDE PAVEMENT RECOMMENDATIONS, IF NEEDED, FOR DIFFERENT INPUT VALUES.
- IF REPETITIVE TRUCK OR HEAVY TRUCK TRAFFIC IS ANTICIPATED, PLEASE CONTACT US FOR REVISED PAVEMENT RECOMMENDATIONS.
- PAVEMENT SECTION RECOMMENDATIONS ARE BASED ON A CBR VALUE OF 2.0. THE PAVEMENT RECOMMENDATIONS PRESENTED ABOVE ARE NOT BASED ON THE SHRINK / SWELL CHARACTERISTICS OF THE UNDERLYING SOILS. IF WATER IS ALLOWED TO GET UNDERNEATH THE ASPHALT / CONCRETE OR IF MOISTURE CONTENT OF THE BASE OR SUBGRADE CHANGES SIGNIFICANTLY, THEN PAVEMENT DISTRESS WILL OCCUR. MOISTURE PENETRATION UNDERNEATH THE ASPHALT PAVEMENT SURFACE WILL BE REDUCED BY USING DEEPER CURBS; CURBS EXTENDING A MINIMUM OF 6 INCHES INTO BASE.

SUBGRADE VERIFICATION:

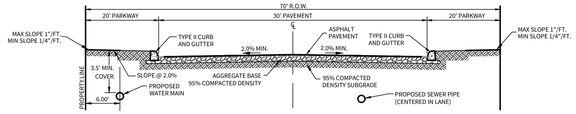
- AT THE TIME OF CONSTRUCTION, THE FINAL PAVEMENT SUBGRADE WILL BE OBSERVED AND VERIFIED BY A REPRESENTATIVE OF INTEC, INC.

PRIME COAT:

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

TACK COAT:

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

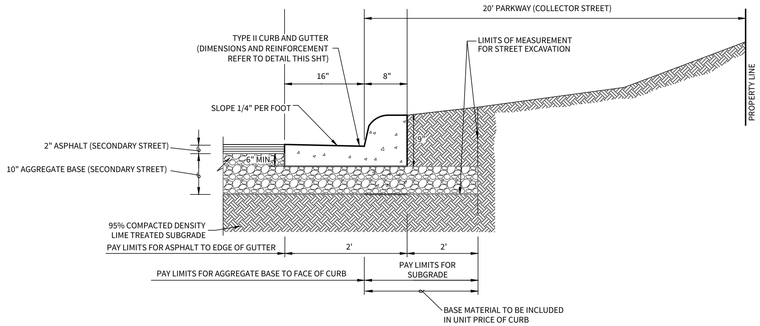


SECONDARY STREET CROSS-SECTION (70' R.O.W.)

N.T.S.

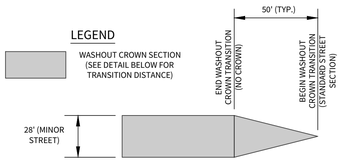
STREET TYPE	HMAC TYPE "D"	FLEX BASE (TY A OR B GR 2)	LIME SUBGRADE	STRUCTURAL NUMBER
SECONDARY STREET (LOCAL A)	2"	10"	8" (46 LB/SY)	2.92
SECONDARY ACCESS	CHIP SEAL/ SEAL COAT	8"	--	--

STREET PAVEMENT DESIGN



SECONDARY STREET - CURB & GUTTER DETAIL

N.T.S.



WASHOUT CROWN TRANSITION DETAIL

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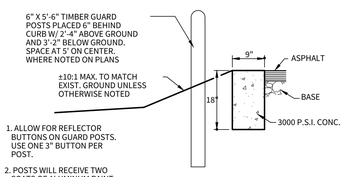
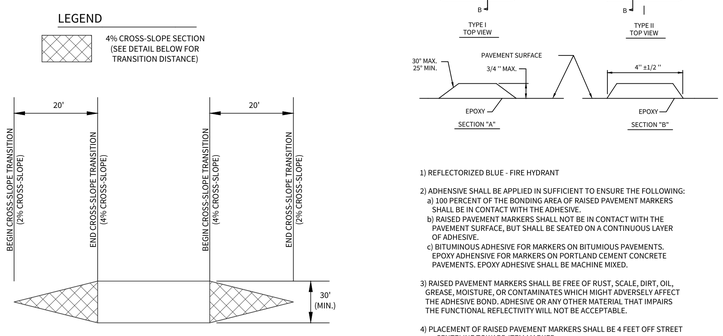
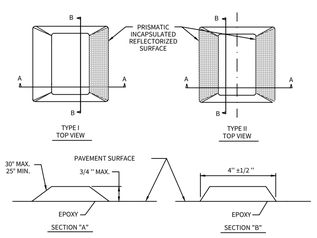


HEADER CURB DETAIL

N.T.S.



CROSS-SLOPE TRANSITION DETAIL



1) REFLECTORIZED BLUE - FIRE HYDRANT

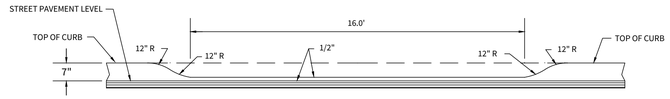
2) ADHENSIVE SHALL BE APPLIED IN SUFFICIENT TO ENSURE THE FOLLOWING:
a) 100 PERCENT OF THE BONDING AREA OF RAISED PAVEMENT MARKERS SHALL BE IN CONTACT WITH THE ADHESIVE.
b) RAISED PAVEMENT MARKERS SHALL NOT BE IN CONTACT WITH THE PAVEMENT SURFACE, BUT SHALL BE SEATED ON A CONTINUOUS LAYER OF ADHESIVE.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

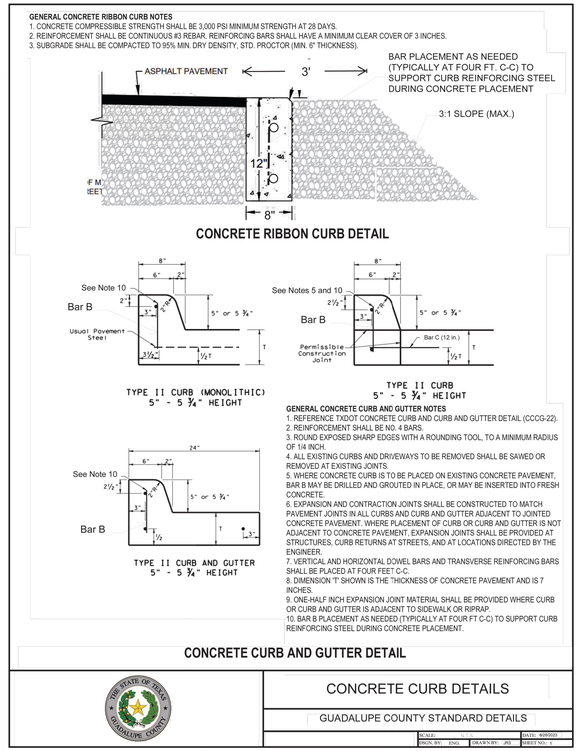
4) PLACEMENT OF RAISED PAVEMENT MARKERS SHALL BE 4 FEET OFF STREET CENTELINE TOWARD ITEM MARKED.

PAVEMENT REFLECTORS DETAIL

N.T.S.



TYPICAL DRIVEWAY CUT SECTION

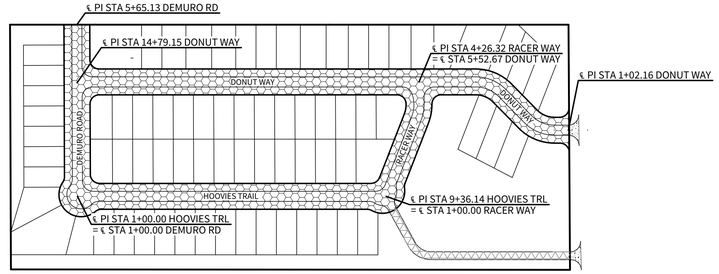


PAVEMENT DESIGN SCHEMATIC N.T.S.

NOTE:
REFERENCE GEOTECHNICAL REPORT INTEC, INC NO. S241297-P FOR BORING INFORMATION AND CBR LOCATIONS.

LEGEND:

SECONDARY STREET		
DONUT WAY	STA. 01+02.16 - 14+79.15	
DEMURO ROAD	STA. 01+00.00 - 05+65.13	
HOOVIES TRAIL	STA. 01+00.00 - 09+36.14	
RACER WAY	STA. 01+00.00 - 04+26.32	
CONCRETE DRIVEWAY GC STANDARD		
SECONDARY ACCESS SEE GRADING PLAN		



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SCHRYVER TRACT

STANDARD STREET DETAILS

DATE
10/30/2025

PROJECT NO.
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STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT
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P:\04002\006\CAD\PLAT\SHEET\C7.D1 STDP.dwg, 2025.10.30 7:58:00 pm, jrsellers

SITE PREPARATION AND DRAINAGE
1. AT A MINIMUM, WHERE SITE SURFACE SOILS CONSIST OF CLAY OR CLAYEY MATERIALS, A MINIMUM OF 6 INCHES OF SURFACE SOILS SHALL BE EXCAVATED. IN THE CASE OF HEAVY BLACK OR BROWN CLAYS, THE MINIMUM DEPTH OF SOILS REMOVAL IS RECOMMENDED AT 8 INCHES. PROOF ROLLING, SOILS CONSOLIDATION, AND COMPACTING ARE RECOMMENDED. IN THE ABSENCE OF ANY GEOTECHNICAL REPORT, SELECT STRUCTURAL FILLS ARE TO BE PROVIDED AT THE LOCATION OF THE DRIVEWAY FOUNDATION. A MINIMUM DEPTH OF FILL MATERIAL SHALL BE SPECIFIED IN THE GEOTECHNICAL REPORT, OR EQUAL TO THE DEPTH OF SURFACE SOILS EXCAVATION. THEREAFTER, ADDITIONAL FILL MATERIAL SHALL BE PROVIDED TO FORM A STRUCTURAL BASED AT THE GREATER OF A MINIMUM OF 12 INCHES IN HEIGHT, OR AS REQUIRED FOR PROPER FOUNDATION EXPOSURE. THE STRUCTURAL FILLS SHALL CONSIST OF TYPE A CRUSHED LIMESTONE, OR TYPE B CLAYEY CRUSHED GRAVEL, IN ACCORDANCE WITH TXDOT SPECIFICATION ITEM 247 FOR GRADE 1 FILL MATERIALS. STRUCTURAL FILL SHALL BE PLACED IN LIFTS OF 8 INCHES, AND COMPACTED ACCORDANCE WITH TXDOT SPECIFICATION TEX-113-E, WITH MOISTURE CONTENT CONTROLLED TO CONFORM TO TXDOT SPECIFICATION ITEM 204 "SPRINKLING".

2. TREES WITH A DISTANCE TO THE SLAB OF ONE TIMES THE MATURE TREE HEIGHT MAY DAMAGE THE FOUNDATION. TREE REMOVAL SHALL BE REQUIRED AT THE DIRECTION OF THE COUNTY ROAD ADMINISTRATOR.

3. VOIDS (HOLES) CREATED AS A RESULT OF DEMOLITION AND REMOVAL OF EXISTING STRUCTURES, TREES, AND OTHER EXISTING OBJECTS SHALL BE FILLED WITH WELL COMPACTED SELECT FILL MATERIAL.

4. SITE SURFACE DRAINAGE DURING CONSTRUCTION SHALL BE CONTROLLED BY PROVIDING POSITIVE DRAINAGE AWAY FROM THE DRIVEWAY SLAB. THE APPLICANT IS RESPONSIBLE FOR THE INSTALLATION OF BERMS OR SWALES ON THE UPHILL SIDE OF THE CONSTRUCTION AREA TO DIVERT SURFACE RUNOFF AWAY FROM THE SLAB DURING CONSTRUCTION.

FOUNDATION CONSTRUCTION
1. FILL MATERIAL PLACED BENEATH THE SLAB SHALL BE WELL GRADED GRANULAR LOW PLASTICITY SELECT FILL MATERIAL HAVING A PI OF 5 TO 20 WITH A LIQUID LIMIT NOT EXCEEDING 40 PERCENT. THE FILL MATERIAL SHALL BE FREE OF ORGANICS, TRASH, RUBBLE, OR OTHER DELETERIOUS MATERIALS AND SHALL HAVE NO PARTICLE SIZE GREATER THAN 3 INCHES IN DIAMETER. CRUSHED LIMESTONE OR CRUSHED AND UNCRUSHED GRAVEL FMATERIAL MEETING THE REQUIREMENTS OF TXDOT ITEM 247, TYPE A OR B, GRADE 1 OR 2 IS REQUIRED.

2. SLAB FILL MATERIAL SHALL BE A MINIMUM OF 12 INCHES THICK BENEATH ALL SLAB AREAS AND PLACED TO FINISH GRADE ELEVATION EQUAL TO THE GRADE ELEVATION AT THE BOTTOM OF THE SLAB. THE SLAB FILL MATERIAL SHALL BE PLACED IN 6 INCH LIFTS AND MACHINE TAMPED TO REDUCE FILL SETTLEMENT.

3. ALL CONCRETE SHALL BE PLACED IN ACCORDANCE WITH ACI 302.1R.

4. PROPER CURING OF ALL CONCRETE SURFACES SHALL BE PROVIDED BY THE APPLICANT AND IN ACCORDANCE WITH THE LATEST EDITION OF ACI 308.

5. DO NOT PLACE CONCRETE WHEN TEMPERATURE IS BELOW 40 DEGREES FAHRENHEIT UNLESS COLD WEATHER CONCRETE PROCEDURES ARE FOLLOWED. CALCIUM CHLORIDE SHALL NOT BE USED. PROVIDE SPECIAL CARE TO PREVENT HIGH TEMPERATURES DURING HOT WEATHER CONDITIONS IN FRESH CONCRETE, USE WATER REDUCING SET RETARDING ADMIXTURES IN SUCH QUANTITIES AS SPECIFICALLY RECOMMENDED BY THE MANUFACTURER TO ASSURE THE CONCRETE REMAINS WORKABLE.

6. NO HORIZONTAL JOINTS WILL BE PERMITTED IN THE CONCRETE EXCEPT AS NOTED.

CONCRETE AND REINFORCING STEEL
1. ALL CONCRETE AND REINFORCING STEEL SHALL MEET THE LATEST EDITION OF ASTM A615 AND ACI 117 "STANDARD TOLERANCES FOR CONCRETE CONSTRUCTION AND MATERIALS".

2. TESTING SHALL BE THE SOLE RESPONSIBILITY OF THE APPLICANT.

3. CONCRETE COMPRESSIBLE STRENGTH SHALL BE 4,000 PSI MINIMUM STRENGTH AT 28 DAYS.

4. CEMENT SHALL BE TYPE 1 (GRAY) PORTLAND. MAXIMUM WATER CEMENT RATIO SHALL BE 0.5 AND A SLUMP RANGE OF 2 TO 5 INCHES. THE APPLICANT SHALL SATISFY FOR THEMSELVES THAT THE MIX DESIGN IS ACCEPTABLE FOR ITS INTENDED PURPOSE.

5. REINFORCING STEEL SHALL MEET LATEST EDITION OF A-615, GRADE 60 DEFORMED BARS.

6. ALL REINFORCEMENT SHALL BE SECURELY SUPPORTED AT 48 INCHES ON CENTER TO PREVENT VERTICAL AND HORIZONTAL MOVEMENT DURING THE PLACEMENT OF CONCRETE. METAL, PLASTIC, CONCRETE, OR MASONRY CHAIRS MAY BE USED TO SUPPORT REINFORCEMENT. SLAB REINFORCEMENT SHALL BE CENTERED IN CONCRETE SLAB THICKNESS.

7. SLAB REINFORCING BARS SHALL BE TIED AT EVERY OTHER INTERSECTION AND SUPPORTED AT 48 INCHES ON CENTER WITH METAL, PLASTIC, CONCRETE, OR MASONRY CHAIRS. WOOD OR OTHER ORGANIC MATERIAL IS PROHIBITED. EVERY STIRRUP BAR SHALL BE TIED AT BOTH TOP AND BOTTOM BEAM REINFORCING BAR LOCATION. STIRRUPS ARE TO INSTALLED VERTICALLY. ANGLED STIRRUPS ARE NOT PERMITTED.

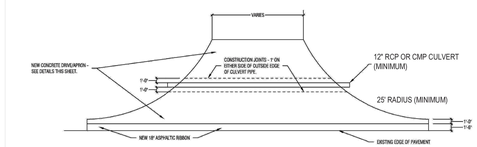
8. ALL BEAM REINFORCING BARS SHALL HAVE A MINIMUM CLEAR COVER OF 3 INCHES FROM THE BOTTOM OF THE BEAM AND 2 INCHES FROM THE TOP AND SIDES OF THE BEAM.

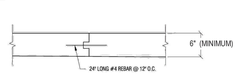
9. REINFORCING STEEL LAPS AND SPLICES SHALL BE A MINIMUM OF 30 BAR DIAMETERS, BUT NO LESS THAN 12 INCHES, SPLICES OF THE TOP AND BOTTOM BEAM REINFORCEMENT SHALL BE PER TXDOT SPECIFICATION ITEM 440, TABLE 6.

CONCRETE DRIVEWAY DETAIL NOTES

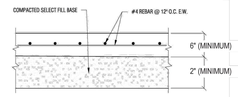
GUADALUPE COUNTY STANDARD DETAILS

SCALE: N.T.S. | DATE: 03/2025
DSGN. BY: ENG. | DRAWN BY: JRE | SHEET NO.: 4 OF 5





CONSTRUCTION JOINT (IF NEEDED) (NTS)



TYPICAL SECTION (NTS)

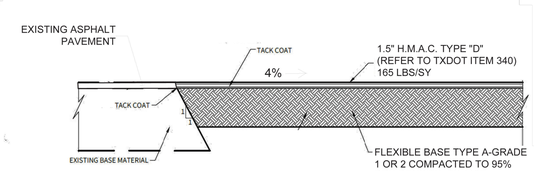
TYPE	WIDTH		CONCRETE THICKNESS	DRIVEWAY BASE
	MIN.	MAX.		
RESIDENTIAL	10'	24'	6"	2' (MIN.) GRAVEL, CRUSHED ROCK OR FLEX BASE
COMMERCIAL	24'	40'		

GENERAL NOTES
1. SAWCUT (IF REQUIRED) AND EXCAVATION OF DRIVEWAY AREA WILL NOT BEGIN WITHOUT ALL MATERIALS IN PLACE TO COMPLETE THE WORK WITHIN ONE BUSINESS DAY. EXCAVATION LEFT OPEN ADJACENT TO THE COUNTY ROAD WILL NOT BE ALLOWED.
2. SAWCUT INTO EXISTING COUNTY ROAD IS NOT PERMITTED.
3. WELDED WIRE MESH OF EQUAL OR GREATER EQUIVALENT CROSS SECTIONAL AREA MAY BE PERMITTED WITH GUADALUPE COUNTY APPROVAL.

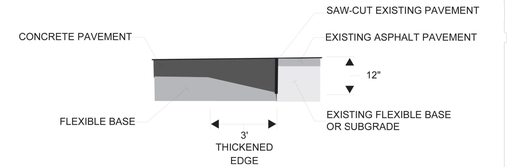
CONCRETE DRIVEWAY DETAIL

GUADALUPE COUNTY STANDARD DETAILS

SCALE: N.T.S. | DATE: 8/2025
DSGN. BY: ENG. | DRAWN BY: JRE | SHEET NO.: TOP 2



ROADWAY WIDENING DETAIL



CONCRETE TO ASPHALT PAVEMENT JUNCTION DETAIL

CONCRETE/ASPHALT PAVEMENT JUNCTION DETAIL NOTES
1. CONCRETE PAVEMENT SHALL BE JOINTED REINFORCED CONCRETE PAVEMENT (JRCP) ONLY.

MISCELLANEOUS DETAILS

GUADALUPE COUNTY STANDARD DETAILS

SCALE: N.T.S. | DATE: 8/2025
DSGN. BY: ENG. | DRAWN BY: JRE | SHEET NO.: 5

RIGHT-OF-WAY EROSION CONTROL (GUADALUPE COUNTY)

THIS ITEM SHALL CONSIST OF PREPARING A SEED BED TO THE LINES AND GRADES INDICATED, SOWING OF SEEDS, FERTILIZING, MULCHING WITH STRAW, CELLULOSE FIBER, AND OTHER MANAGEMENT PRACTICES IN THE ROW FROM STREET TO PROPERTY LINE AND ACROSS SUCH AREAS AS ARE INDICATED OR AS DIRECTED BY THE COUNTY OR ITS DESIGNATED REPRESENTATIVE.

1. ANY DISTURBANCE OF VEGETATED SURFACES SHALL BE REPAIRED (SOWING OF GRASS OR SODDED) AND MAINTAINED (WATERED AND/OR REPAIRED DUE TO EROSION OCCURRING BEFORE GROWTH IS ESTABLISHED) UNTIL 100% DENSITY COVERAGE OF THE DAMAGE OR DISTURBED AREA IS ACCOMPLISHED. THE CONTRACTOR SHALL OBTAIN IN WRITING FROM THE COUNTY ACCEPTANCE OF REESTABLISHED VEGETATION.

2. PREPARING THE SEED BED- AFTER THE DESIGNATED AREAS HAVE BEEN ROUGH GRADED TO THE LINES, GRADES AND TYPICAL SECTIONS INDICATED ON THE PLANS AND ANY OTHER SOIL AREA DISTURBED BY THE CONSTRUCTION, A SUITABLE SEEDBED SHALL BE PREPARED. THE SEEDBED SHALL CONSIST OF EITHER 4-INCHES OF APPROVED TOPSOIL OR 4-INCHES OF APPROVED SALVAGED TOPSOIL CULTIVATED AND ROLLED SUFFICIENTLY TO A STATE OF GOOD TILTH, WHICH COULD PREVENT THE SEED FROM BEING COVERED TOO DEEP FOR OPTIMUM GERMINATION. THE OPTIMUM DEPTH FOR SEEDING SHALL BE 0.25-INCH. WATER SHALL BE APPLIED AS REQUIRED TO PREPARE THE SEEDBED. SEEDING SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS HEREIN AFTER DESCRIBED.

3. WATERING- THE SEEDED AREAS SHALL IMMEDIATELY BE WATERED WITH A MINIMUM OF 5 GALLONS OF WATER PER SQUARE YARD OR AS NEEDED. WATER SHALL BE APPLIED AT A MINIMUM RATE OF 10 GALLONS PER SQUARE YARD WEEKLY, EXCEPT WHEN RAINFALL OF 0.5-INCH OR GREATER OCCURS ON THE SITE, UNTIL THE GRASS IS UNIFORMLY 1.5-INCHES IN HEIGHT.

4. BROADCAST SEEDING- THE SEED OR SEED MIXTURE IN THE QUANTITY SPECIFIED SHALL BE UNIFORMLY DISTRIBUTED OVER THE PREPARED SEED BED AREAS INDICATED OR WHERE DIRECTED. IF THE SOWING OF SEED IS BY HAND, RATHER THAN MY MECHANICAL METHODS, THE SEED SHALL BE SOWN IN TWO DIRECTIONS AT RIGHT ANGLES TO EACH OTHER. IF MECHANICAL EQUIPMENT IS USED, ALL VARIETIES OF SEED, AS WELL AS FERTILIZER, MAY BE DISTRIBUTED AT THE SAME TIME, PROVIDED THAT EACH COMPONENT IS UNIFORMLY APPLIED AT THE SPECIFIED RATE. AFTER PLANTING, THE PLANTED AREA SHALL BE ROLLED WITH A CORRUGATED ROLLER OF THE "CULTIPACKER" TYPE. ALL ROLLING OF THE SLOPE AREAS SHALL BE ON THE CONTOUR.

5. HYDRAULIC PLANTING- THE SEEDBED SHALL BE PREPARED, AS SPECIFIED ABOVE, AND HYDRAULIC PLANTING EQUIPMENT, WHICH CAN PLACE ALL MATERIALS IN A SINGLE OPERATION, SHALL BE USED.

a. MARCH 1 TO SEPTEMBER 1 HYDRAULIC PLANTING MIXTURE AND MINIMUM RATE OF APPLICATION PER 1000 SQUARE FEET:
(1) HULL BERMUDA SEED (PURE LIVE SEED = 0.83) - 1 POUND
(2) WATER SOLUBLE FERTILIZER - 15 POUNDS
(3) CELLULOSE FIBER MULCH - 45.9 POUNDS
(4) SOIL TESTIFIER- 1.4 POUNDS

b. SEPTEMBER 15 TO MARCH 1
ADD 7 POUNDS PER 1000 SQUARE FEET OF WINTER RYE WITH A PURE LIVE SEED = 0.83 TO THE ABOVE MIXTURE .
(1) ALTERNATIVE SEEDING- OTHER METHODS OR TYPES OF GRASS MAY BE USED WITH THE PERMISSION OF THE COUNTY.

CUDEENGINEERS.COM

CUDE ENGINEERS EST. 1980

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

SCHRYVER TRACT

GUADALUPE COUNTY
STREET DETAILS AND NOTES

DATE
10/30/2025

PROJECT NO.
04002.006

DRAWN BY
DAF/RM/JW

CHECKED BY
SPM

REVISIONS
1.
2.
3.
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5.
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7.
8.
9.
10.

10/30/2025

STATE OF TEXAS
SEAN P. McFARLAND
138993
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT
SCHRYVER TRACT

GVSUD
XX-XXXX

C7.D2

P:\04002\05\01 DWG\4 Sheets\C7.D2 - STDP.dwg, 2025.10.30 3:53 PM, jwatkins

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.

TYPICAL RESIDENTIAL DRIVEWAY SECTION

WITH SIDEWALK ABUTTING CURB
ITEM 503.1

TYPICAL RESIDENTIAL DRIVEWAY SECTION

WITH SIDEWALK SEPARATED FROM CURB
ITEM 503.1

TYPICAL RESIDENTIAL DRIVEWAY SECTION

WHERE PROPERTY IS LOWER THAN STREET & SIDEWALK IS ABUTTING CURB
ITEM 503.1

TYPICAL RESIDENTIAL DRIVEWAY SECTION

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

CONCRETE DRIVEWAY NOTES

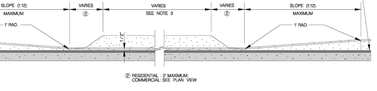
1. DRIVEWAY PENETRATION REFERS TO A PORTION OF THE DRIVEWAY THAT MAY BE NECESSARY TO RECONSTRUCT WITHIN PRIVATE PROPERTY TO COMPLY WITH A MAXIMUM DRIVEWAY SLOPE. THE PORTION OF THE DRIVEWAY SHALL BE PAID FOR UNDER THE FOLLOWING ITEMS AS MAY APPLY:
   A) CONCRETE DRIVEWAY PAID FOR UNDER ITEM NO.503.1 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. 2" MINIMUM HEIGHT WILL NOT NECESSARILY OCCUR AT THE PROPERTY LINE, IT MAY OCCUR WITHIN THE RIGHT OF WAY OR WITHIN THE DRIVEWAY PENETRATION ON PRIVATE PROPERTY.
3. THE PROPOSED DRIVEWAY SHOULD MATCH THE EXISTING WIDTH AT THE PROPERTY LINE BUT UNLESS AUTHORIZED BY THE CITY TRAFFIC ENGINEER, THE WIDTH SHALL BE WITHIN THE FOLLOWING VALUES:

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

4. FOR LOCAL TYPE "A" STREETS, SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 4' AND IF SEPARATED FROM THE CURB, THE SIDEWALK SHALL BE LOCATED A MINIMUM OF 7' FROM THE BACK OF CURB.
5. FOR OTHER THAN LOCAL TYPE "A" STREETS, THE SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 6' AND SEPARATED A MINIMUM OF 7' FROM THE BACK OF CURB OR, AS AN OPTION, THE SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 8' 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 3.46" 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.

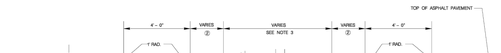
CURB PROFILE AT DRIVEWAY

WITH SIDEWALK ABUTTING CURB



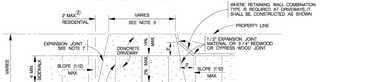
TYPICAL DRIVEWAY PLAN VIEW

WITH SIDEWALK ABUTTING CURB



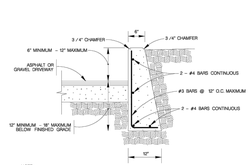
CURB PROFILE AT DRIVEWAY

WITH SIDEWALK SEPARATED FROM CURB



TYPICAL DRIVEWAY PLAN VIEW

WITH SIDEWALK SEPARATED FROM CURB



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

DRIVEWAY – CONCRETE RETAINING WALL

ON COMPACTED SUBGRADE
ITEM 307.1

MAY 2009

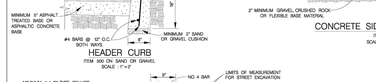
CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

CONCRETE DRIVEWAY STANDARDS

% SUBMITTAL	PROJECT NO.:	DATE:
DRAWN BY: V. VASQUEZ	DSGN BY:	CHKD BY: R.S. HOSSEINI, P.E.	SHEET NO.:	OF:

HEADER CURB

ITEM 529 ON SAND OR GRAVEL
SCALE : 1"=2"



CONCRETE SIDEWALK SECTION

ITEM 502
SCALE : 1"=2"

NOTE:
THIS DETAIL TO BE USED WHENEVER A POWER POLE ENCROACHES ON SIDEWALK. A MINIMUM UNOBSTRUCTED CLEARANCE OF 4' IS TO BE MAINTAINED AROUND THE POLE AT THE LOCATIONS.

CONCRETE SIDEWALK @ UTILITY POWER POLE DETAIL

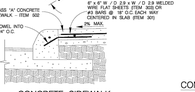
SCALE : 1"=4'

CONCRETE RETAINING WALL – COMBINATION TYPE

ITEM 308
SCALE : 1"=2"

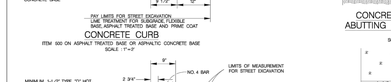
CONCRETE CURB

ITEM 500 ON ASPHALT TREATED BASE OR ASPHALTIC CONCRETE BASE
SCALE : 1"=2"



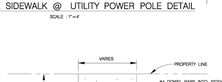
CONCRETE SIDEWALK DRAIN DETAIL

SCALE : 1"=4'



CONCRETE CURB

ITEM 500 ON FLEXIBLE BASE MATERIAL
SCALE : 1"=2"



PLAN VIEW

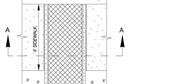
ITEM 104
SCALE : 1"=4'

SECTION "C–C"

SCALE : 1"=2"

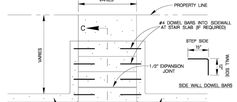
CONCRETE CURB

ITEM 500 ON FLEXIBLE BASE MATERIAL
SCALE : 1"=2"



CONCRETE SIDEWALK DRAIN DETAIL

SCALE : 1"=4'



CONCRETE STEPS

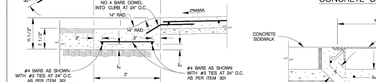
ITEM 524

TYPICAL CURB & GUTTER DETAIL

ITEM 500 ON ASPHALT TREATED BASE OR ASPHALTIC CONCRETE BASE
SCALE : 1"=2"

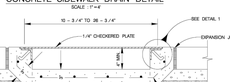
MOUNTABLE CURB

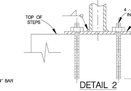
ITEM 500 ON COMPACTED SUBGRADE
SCALE : 1"=2"



TYPICAL CURB & GUTTER DETAIL

ITEM 500 ON ASPHALT TREATED BASE OR ASPHALTIC CONCRETE BASE
SCALE : 1"=2"





NOTES:
1. PLACE STEPS TO CONFORM WITH PROPOSED PARKWAY GRADING.
2. 1-1/4" DIA GALVANIZED STEEL PIPE HANDRAIL REQUIRED ON ONE SIDE OF THE STEPS OR RAMP AS SHOWN ON PLANS OR AS DIRECTED BY ENGINEER TO BE PAID UNDER ITEM 522

HANDRAIL FOR CONCRETE STEPS

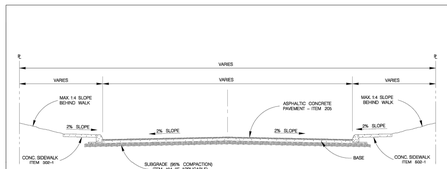
ITEM 522

MAY 2009

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

MISCELLANEOUS CONSTRUCTION STANDARDS I

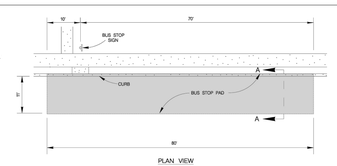
% SUBMITTAL	PROJECT NO.:	DATE:
DRAWN BY: V. VASQUEZ	DSGN BY:	CHKD BY: R.S. HOSSEINI, P.E.	SHEET NO.:	OF:



NOTE:
FOR STREETS OTHER THAN LOCAL TYPE "A" STREETS, THE EDGE OF THE SIDEWALK MUST BE LOCATED A MINIMUM OF TWO FEET AWAY FROM THE BACK OF THE CURB.

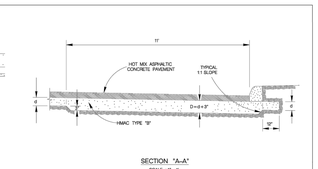
TYPICAL STREET SECTION

SCALE : 1"=8'



PLAN VIEW

SCALE : 1"=20'



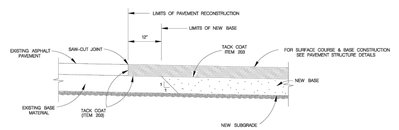
SECTION "A–A"

SCALE : 1"=4'

NOTES
1. EXCAVATION FOR THICKENED PAVEMENT SECTION WILL BE PAID UNDER ITEM NO.104 "STREET EXCAVATION".
2. BASE MATERIALS
   A) IF THE MEASUREMENT FOR THE HMAC MATERIAL IS PER TON, THICKENED PAVEMENT SECTION WILL BE PAID FOR UNDER ITEM NO.208, TYPE "B", PER TON.
   B) IF THE MEASUREMENT FOR THE HMAC MATERIAL IS PER SQUARE YARD, NO EXTRA PAYMENT WILL BE MADE FOR THE THICKENED PAVEMENT.

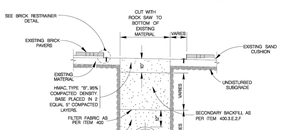
HMAC BUS STOP PAD

NEED CITY ENGINEER'S APPROVAL TO USE HMAC BUS PAD



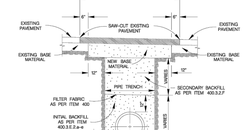
PAVEMENT JUNCTION DETAILS

SCALE : 1"=2"



TYPICAL BASE REPLACEMENT FOR BRICK SURFACED STREET SECTION

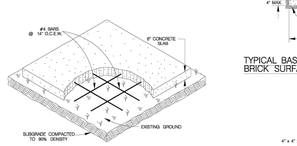
ITEM 511.3
SCALE : 1"=4'



NOTES
1. PDR LOCAL TYPE "A" & "B" STREETS (RESIDENTIAL) USE 4" ASPHALT CONCRETE BASE. TYPE "B" 90% 1-1/2" TYPE "D" HOT MIX ASPHALTIC CONCRETE PAVEMENT LEVELING-UP COURSE & 1-1/2" TYPE "D" HOT MIX ASPHALTIC CONCRETE PAVEMENT SURFACE COURSE.

TYPICAL PAVEMENT REPLACEMENT

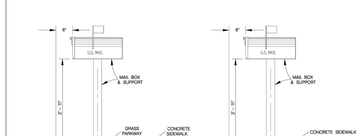
ITEM 511
SCALE : 1"=4'



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

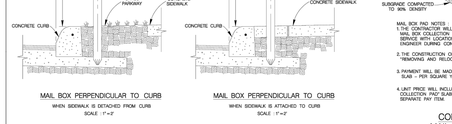
COMMUNITY MAIL BOX SLAB

ITEM 513.2
SCALE : 1"=4'



MAIL BOX LOCATION

ITEM 513.1



BRICK RESTRAINER DETAIL

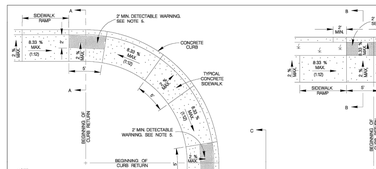
SCALE = 1 : 6

FEBRUARY 2010

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

MISCELLANEOUS CONSTRUCTION STANDARDS II

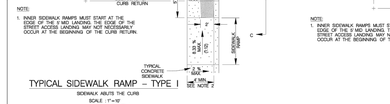
% SUBMITTAL	PROJECT NO.:	DATE:
DRAWN BY: V. VASQUEZ	DSGN BY:	CHKD BY: R.S. HOSSEINI, P.E.	SHEET NO.:	OF:



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"=5'



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"=5'

TYPICAL SIDEWALK RAMP – TYPE II

USED AT TEE INTERSECTIONS WHERE SIDEWALK ABUTS CURB
SCALE : 1"=5'

TYPICAL SIDEWALK RAMP – TYPE IV

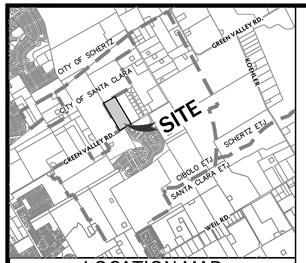
USED AT TEE INTERSECTIONS WHERE SIDEWALK IS SEPARATED FROM CURB
SCALE : 1"=5'

DETECTABLE WARNING SURFACE

SCALE : 1"=4'

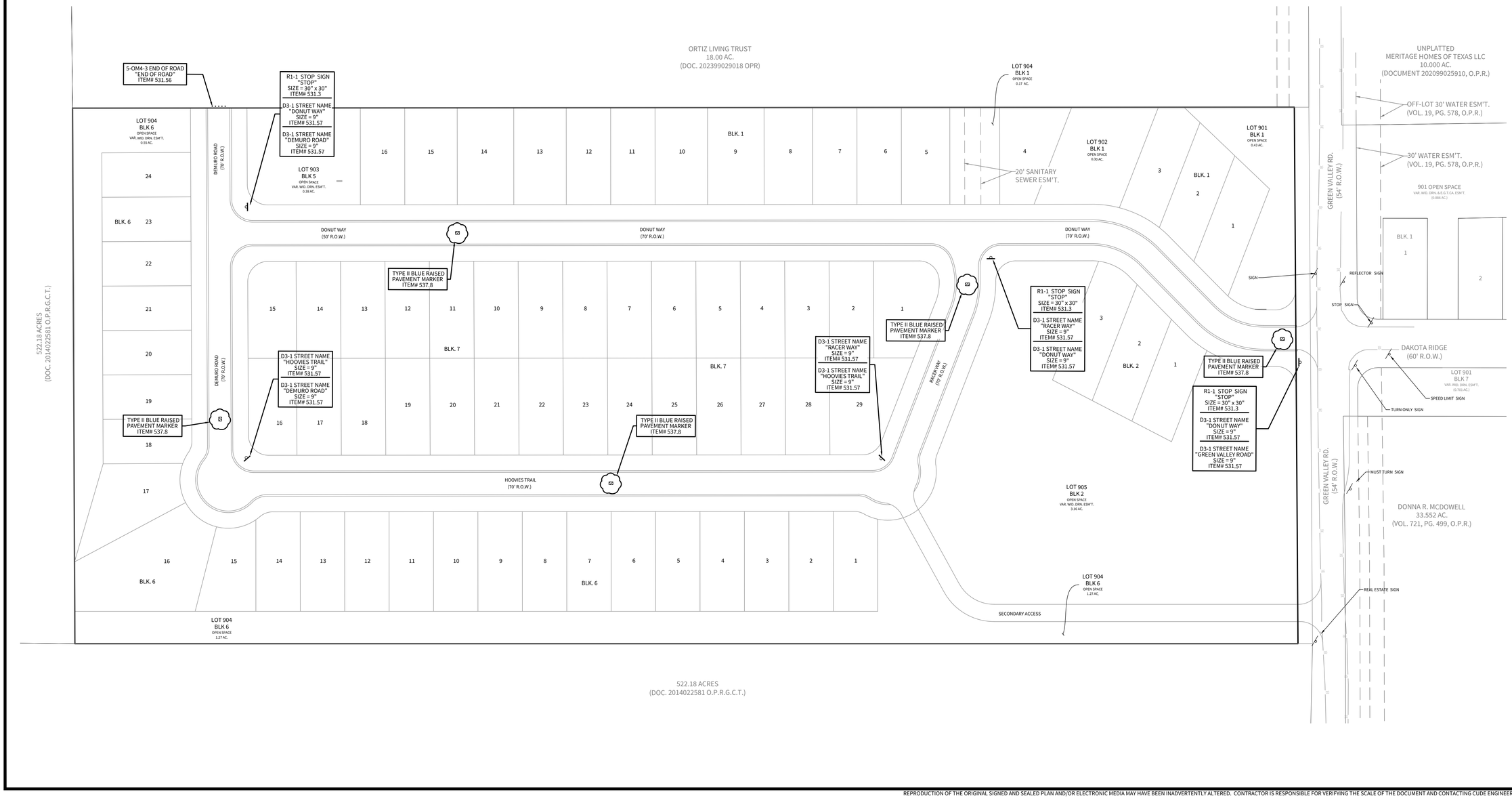
TYPICAL SIDEWALK RAMP – TYPE V

SIDEWALK ABUTS CURB
SCALE : 1"=10'



LOCATION MAP
N.T.S.

SCALE: 1"=60'
60 30 0 60



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

SCHRYVER TRACT

TRAFFIC SIGNAGE PLAN

DATE
10/30/2025

PROJECT NO.
04002.006

DRAWN BY
DAF/RM/JW

CHECKED BY
SPM

REVISIONS
1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

10/30/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT
SCHRYVER TRACT

C8.00

© 2025 CUDE ENGINEERS
G:\2025\04002.006\CAD\Sheets\C8.00 TRAFFIC SIGNAGE PLAN.dwg, 10/30/25 8:56am, jwatkins

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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)

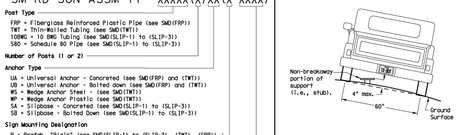
Post Type
- FRP = Fiberglass Reinforced Plastic Pipe (see SMD(FRP))
- TWT = Thin-Walled Tubing (see SMD(TWT))
- 10SWG = 10 SWG Tubing (see SMD(SLIP-1) to (SLIP-3))
- SCH = Schedule 80 Pipe (see SMD(SLIP-1) to (SLIP-3))

Number of Posts (1 or 2)

Anchor Type
- 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. "Plate" (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
- 1(X) or 2(X) - Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
- BW = 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))

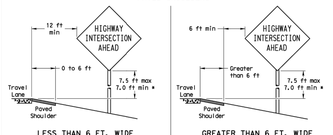
REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



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 pathsl.

SIGN LOCATION

PAVED SHOULDERS



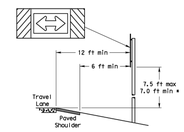
LESS THAN 6 FT. WIDE

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

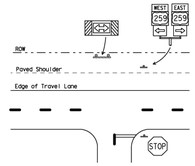
GREATER THAN 6 FT. WIDE

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

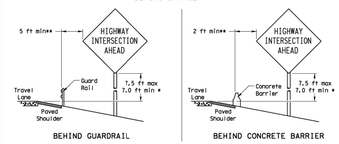
T-INTERSECTION



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



BEHIND BARRIER



BEHIND GUARDRAIL

BEHIND CONCRETE BARRIER

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

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

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

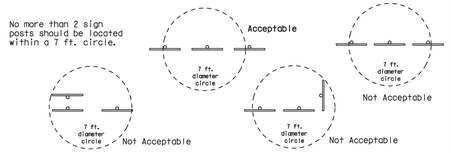
(2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

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

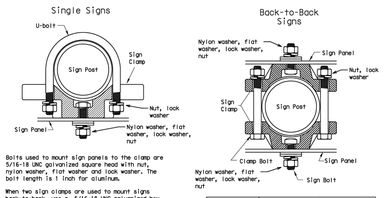
See the Traffic Operations Division website for detailed drawings of sign clamps, Triangular Slipbase System components and Wedge Anchor System components.

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

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



TYPICAL SIGN ATTACHMENT DETAIL



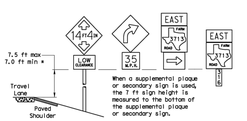
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

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.

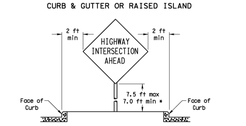
Sign clamps may be either the specific size clamp or the universal clamp.

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

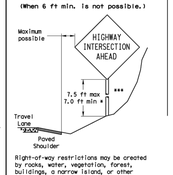


CURB & GUTTER OR RAISED ISLAND



RESTRICTED RIGHT-OF-WAY

(When 6 ft min. is not possible.)



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

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

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

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

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9-08 REVISIONS	DATE	SCET	JUN	HIGHWAY
	FED.RD. DIV. NO.	STATE	CONTROL	SHEET NO.

26A

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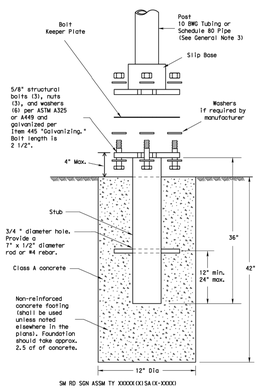
TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS

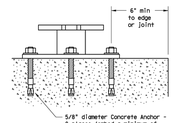


SM RD SGN ASSM TY XXXXX(X)SA(X-XXXX)

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.

CONCRETE ANCHOR



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.

GENERAL NOTES:

1. Slip base shall be permanently marked to indicate manufacturer. Methods, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
2. Material used as post within this system shall conform to the following specifications:
   10 SWG Tubing (2.875" outside diameter)
   0.134" nominal wall thickness
   Seamless or electric-resistance welded steel tubing or pipe
   Steel shall be YGL45 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. Frame 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 traveleay (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 traveleay. The cut shall be plumb and straight.
2. Attach sign to support using connections shown. When multiple signs are installed on the same support, ensure the minimum clearance between each sign is maintained. See SMD(SLIP-2) for clearances based on sign types.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08

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9-08 REVISIONS	DATE	SCET	JUN	HIGHWAY
	FED.RD. DIV. NO.	STATE	CONTROL	SHEET NO.

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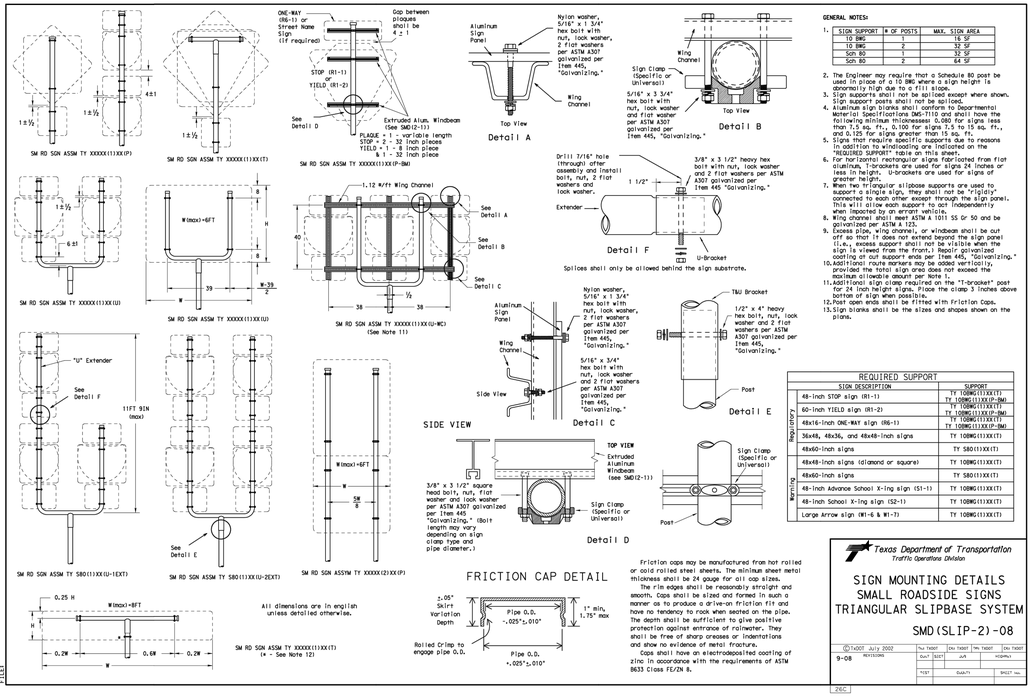

GENERAL NOTES:

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

1. The Engineer may require that a Schedule 80 post be used in place of a 10 SWG where a sign height is considered high due to its location.
2. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
3. 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.
4. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
5. 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.
6. Two or more 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.
7. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
8. Excess plaw, wing channel, or w'indbeam 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."
9. Additional route markers may be added vertically, provided that the total sign area does not exceed the maximum allowable design per Note 7.
10. 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.
11. Post open ends shall be fitted with friction Caps.
12. 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 10SWG(1)XX(P-BW)
	60-inch YIELD sign (R1-2)	TY 10SWG(1)XX(P-BW) TY 10BWG(1)XX(T)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10SWG(1)XX(P-BW)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
Warning	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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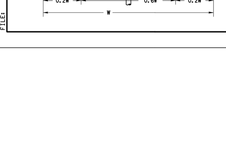
26C

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 crevices 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.



All dimensions are in english unless detailed otherwise.

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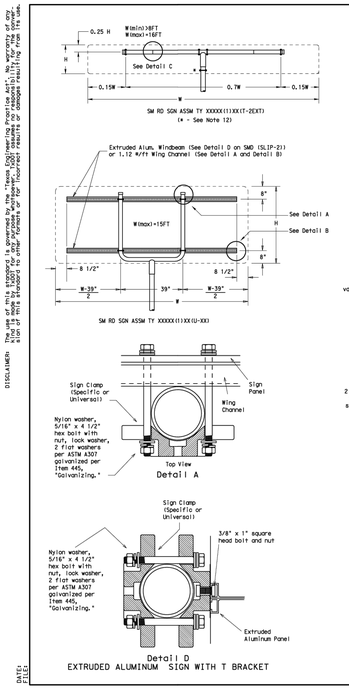

GENERAL NOTES:

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

1. The Engineer may require that a Schedule 80 post be used in place of a 10 SWG where a sign height is considered high due to its location.
2. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
3. 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.
4. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
5. 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.
6. Two or more 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.
7. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
8. Excess plaw, wing channel, or w'indbeam 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."
9. Additional route markers may be added vertically, provided that the total sign area does not exceed the maximum allowable design per Note 7.
10. 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.
11. 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 10SWG(1)XX(P-BW)
	60-inch YIELD sign (R1-2)	TY 10SWG(1)XX(P-BW) TY 10BWG(1)XX(T)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10SWG(1)XX(P-BW)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
Warning	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-3)-08

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DATE:
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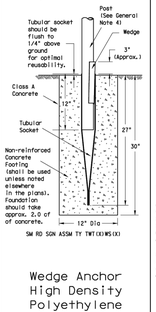
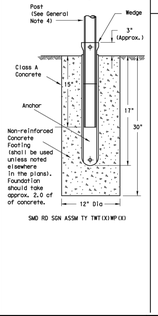
Wedge Anchor Steel System



SMD RD SGN ASSM TY TWT(X)WS(X)

Wedge Anchor High Density Polyethylene (HDPE) System



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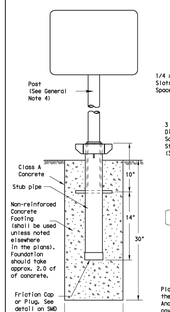
Universal Anchor System with Thin-Walled Tubing Post



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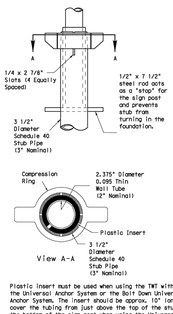
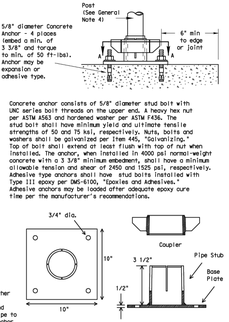


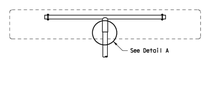
View A-A

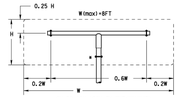
Plastic insert must be used when using the TWT with either the Universal Anchor System or the Bolt Down Universal Anchor System. The insert should be approx. 10" long and cover the tubing from just above the top of the stub pipe to the bottom of the sign post when using the Universal Anchor System. The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



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

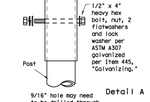
Sign Installation Using a Prefabricated T-Bracket for Thin-Wall Tubing Post





SM RD SGN ASSM TY TWT(X)X(T)

(* - See General Note 6)



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. Methods, 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 followings:
   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), repaint 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: https://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 free 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 approximately 1/4 " above the surrounding 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 free 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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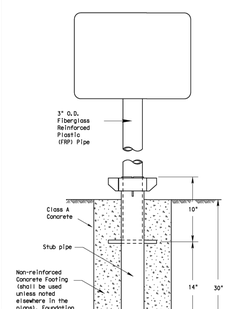
Universal Anchor System with Fiberglass Reinforced Plastic (FRP) Post



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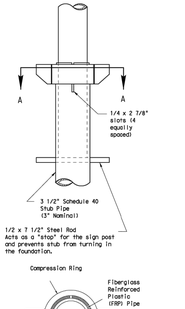
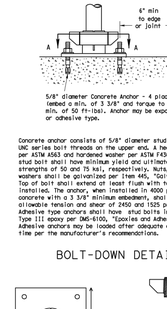


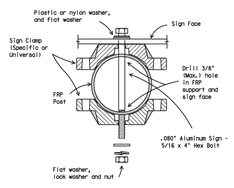
View A-A

BOLT-DOWN DETAILS

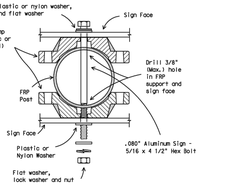


SM RD SGN ASSM TY FRP(X)UB(P)

Typical Sign Mounting Detail for FRP Support with Single Sign



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



GENERAL NOTES:

1. FRP sign supports for a single type sign support may be used for signs up to and including 12 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-4610 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 free 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.

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Traffic Operations Division

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

SMD(FRP)-08

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