HORIZONTAL CONTROL			
POINT NO.	NORTHING	EASTING	DESCRIPTION
100	13,776,110.29	2,265,605.91	CP SET 1/2IRWRC
101	13,776,506.06	2,265,417.14	CP SET 1/2IRWRC

MCQUEENEY OAKS SUBDIVISION

STREETS, DRAINAGE, WATER AND WASTEWATER IMPROVEMENT PROJECT

GUADALUPE COUNTY, TEXAS

OWNER/DEVELOPER:
RS MCQUEENEY, LLC
RANDON MCKEE
9901 W. INTERSTATE 10, SUITE 725
SAN ANTONIO, TX 78230
(210) 298-2679

ENGINEER:
INK CIVIL
JAMES INGALLS, P.E. - ENGINEER
2021 SH 46 W. STE 105.
NEW BRAUNFELS, TX. 78132
(830) 358-7127

SURVEYOR:
CDS MUERY
DARRYL ZERCHER, R.P.L.S.
100 NE LOOP 410, SUITE 300
SAN ANTONIO, TX 78216
(210) 581-1111

DESIGN SPEED = 30 MPH

GUADALUPE COUNTY NOTES:
PRIOR TO COMMENCEMENT OF ANY WORK, THE COUNTY SHALL ATTEND A PRECONSTRUCTION MEETING INCLUDING (BUT NOT LIMITED TO) THE ENGINEER, CONTRACTOR, DEVELOPER'S INSPECTION REPRESENTATIVE, AND DEVELOPER'S CONSTRUCTION MATERIAL TESTING REPRESENTATIVE. DURING CONSTRUCTION, NOTIFY THE COUNTY AT CONSTRUCTION@GUADALUPETX.GOV AT LEASE 48 HOURS IN ADVANCE OF ANY WORK TO BE PERFORMED AFFECTING SUBGRADE, BASE, OR PAVEMENT INCLUDING BACKFILL OF ANY PROPOSED UTILITIES UNDERNEATH THE PAVEMENT AND FILL AREAS UPON WHICH PAVEMENT IS PROPOSED TO BE PLACED. SUCH NOTIFICATION IS ALSO REQUIRED BEFORE IMPLEMENTING ANY APPROVED TRAFFIC CONTROL PLANS ON EXISTING COUNTY-MAINTAINED ROADS. FULL CLOSURE OF COUNTY ROADS REQUIRES AT LEASE ONE MONTH ADVANCE NOTICE AND IS SUBJECT TO THE DISCRETION OF THE COUNTY ENGINEER AND MAY REQUIRE APPROVAL BY THE GUADALUPE COUNTY COMMISSIONERS COURT PER TRANSPORTATION CODE, CHAPTER 251. DURING CONSTRUCTION, PROVIDE ALL INSPECTION AND TESTING REPORTS TO THE COUNTY AT CONSTRUCTION@GUADALUPETX.GOV. AT THE COMPLETION OF CONSTRUCTION, PROVIDE AS-BUILT DRAWINGS AND A LETTER SIGNED AND SEALED BY THE ENGINEER OF RECORD CERTIFYING THAT:

A) ALL IMPROVEMENTS WERE MADE IN ACCORDANCE WITH THE APPROVED IMPROVEMENTS PLANS AND COUNTY REGULATIONS.

B) ANY CHANGED IMPROVEMENTS WERE MADE IN ACCORDANCE WITH THE COUNTY'S REGULATIONS.

C) THE ELEVATIONS AND GRADES WERE TAKEN BY AN ON-SITE SURVEY ON A DATE SPECIFIED TO ENSURE THAT ALL PAVEMENT, INLETS, MANHOLES AND APPURTENANCES ARE CONSTRUCTED TO GRADE AS SHOWN ON THE RECORD DRAWINGS AND ARE IN COMPLIANCE WITH THE APPROVED PLANS AND SPECIFICATIONS.

D) ALL TRUNK STORM SEWERS AND LEADS ARE OF THE PROPER SIZE AND THAT ALL IMPROVEMENTS ARE CAPABLE OF PERFORMANCE AS DESIGNED AND APPROVED.

GPS POINTS ARE REQUIRED FROM THE DEVELOPER'S CONTRACTOR OR ENGINEER. A MINIMUM OF THREE (3) COORDINATE POINTS FOR GEOREFERENCING ARE REQUIRED. THE WATER AND WASTEWATER GPS POINTS SHALL BE TO SURVEY GRADE AND ELECTRIC GPS POINTS SHALL BE MEASURED TO MAP GRADE.

REQUIRED MEASUREMENTS FOR THE WATER SYSTEM INCLUDE:
VERTICAL BENDS AND EDGES OF STEEL CASING (IF APPLICABLE) PRIOR TO BACKFILL
HORIZONTAL BENDS PRIOR TO BACKFILL
TEES PRIOR TO BACKFILL
FITTINGS (REDUCERS AND COUPLINGS) PRIOR TO BACKFILL
FIRE HYDRANTS (TOP OF FLANGE)
VALVES
METERS (TOP CENTER OF BOX)
BLOW OFF ASSEMBLIES
CORNER SLAB OF WATER TANKS & THE ISOLATION GATE VALVE ON THE WATER TANK

REQUIRED MEASUREMENTS FOR THE WASTEWATER SYSTEM
MANHOLES
CLEANOUTS
CORNER SLAB OF LIFT ALL STATIONS

REQUIRED MEASUREMENTS FOR THE ELECTRIC SYSTEM
POLES
TRANSFORMERS, BOTH ABOVE AND UNDERGROUND (FRONT LOCK)
PULL BOXES
STREET LIGHTS

GENERAL NOTES:

1. IF CONSTRUCTION HAS NOT COMMENCED WITHIN ONE-YEAR OF GUADALUPE COUNTY, GVSUD AND GBRA APPROVAL FOR CONSTRUCTION INSPECTION, THAT APPROVAL IS NO LONGER VALID.
2. ALL RESPONSIBILITY FOR THE ADEQUACY OF THESE PLANS REMAINS WITH THE ENGINEER OF RECORD. IN ACCEPTING THESE PLANS, GUADALUPE COUNTY MUST RELY UPON THE ADEQUACY OF THE WORK OF THE ENGINEER OF RECORD.
3. NO PORTION OF THE PROJECT IS LOCATED WITHIN THE EXISTING SPECIAL FLOOD HAZARD ZONE A, 100-YEAR FLOOD BOUNDARY, AS DEFINED BY THE GUADALUPE COUNTY, TEXAS MAP NUMBERS 48187C0115G, 48187C0120G, 48187C0260G AS PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY, EFFECTIVE DATE MARCH 27, 2024, AND MAP 48187C0255G AS PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY, EFFECTIVE DATE NOVEMBER 2, 2007.
4. THIS PROJECT IS NOT LOCATED WITHIN THE EAA JURISDICTIONAL BOUNDARY AND IS NOT LOCATED WITHIN ANY EDWARDS AQUIFER RECHARGE ZONES.
5. THE MOST CURRENT EDITIONS OF THE CITY OF SAN ANTONIO STANDARD SPECIFICATIONS AND THE TEXAS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS AND BRIDGES SHALL BE FOLLOWED FOR ALL CONSTRUCTION EXCEPT AS AMENDED BY GUADALUPE COUNTY STANDARD DETAILS.
6. ANY REQUIREMENT AMENDED BY THE GUADALUPE COUNTY STANDARD DETAILS SHALL BE INDENTIFIED. ASSUME THAT ANY COSA OR TXDOT DETAIL PROVIDED AS REFERENCED.
7. GAS UTILITIES ARE NOT INCLUDED IN THE CIVIL CONSTRUCTION PLANS AND ARE NOT CURRENTLY PROPOSED.
8. GUADALUPE COUNTY DOES NOT MAINTAIN SIDEWALKS, CURB, AND GUTTER, CURB RAMPS, PAVERS, LUMINARIES, STORM SEWER, OR DETENTION APPURTENANCES.
9. EXISTING UTILITY X,Y,Z LOCATIONS TO BE SURVEYED IN AND INCLUDED IN AS BUILT PLANS.
10. ACCEPTANCE OF COUNTY ROADS FOR COUNTY MAINTENANCE ARE SUBJECT TO ACTION BY COMMISSIONER'S COURT

NOTE TO CONTRACTOR:

BY THE ACT OF SUBMITTING A BID FOR THIS PROPOSED CONTRACT, THE BIDDER WARRANTS THAT THE BIDDER, AND ALL SUBCONTRACTORS AND MATERIAL SUPPLIERS HE INTENDS TO USE HAVE CAREFULLY AND THOROUGHLY REVIEWED THE DRAWINGS, SPECIFICATIONS AND ALL OTHER CONTRACT DOCUMENTS AND HAVE FOUND THEM COMPLETE AND FREE FROM ANY AMBIGUITIES AND SUFFICIENT FOR THE PURPOSE INTENDED. THE BIDDER FURTHER WARRANTS THAT TO THE BEST OF HIS OR HIS SUBCONTRACTORS' AND MATERIAL SUPPLIERS' KNOWLEDGE, ALL MATERIALS AND PRODUCTS SPECIFIED OR INDICATED HEREIN ARE ACCEPTABLE FOR ALL APPLICABLE CODES AND AUTHORITIES.

THE LOCATION OF ALL EXISTING UTILITIES SHOWN ON THESE PLANS HAS BEEN BASED UPON RECORD INFORMATION ONLY AND MAY NOT MATCH LOCATIONS AND/OR DEPTHS AS CONSTRUCTED. THE CONTRACTOR SHALL CONTACT EACH OF THE INDIVIDUAL UTILITIES 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.

LOCATION MAP
SCALE: 1" = 1000'

PREPARED BY:

INK CIVIL

2021 W SH46, STE 105
NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 ink-civil.com
TBPE FIRM F-13351

SUBMITTED BY:

JAMES INGALLS, P.E. #107416
INK CIVIL
TBPE FIRM #F-13351
2021 W SH46, STE 105
NEW BRAUNFELS, TX 78132

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED
PROFESSIONAL ENGINEER

12/16/2025

SUBMITTAL DATE: 3-21-2025

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9	DRAINAGE AREA MAP- EXISTING
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12	CHANNEL A STA 10+00 TO STA 18+00
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NO	DATE	ISSUES AND REVISIONS
1	3-21-2025	REVISED PER GVSUD COMMENTS
2	4-17-2025	REVISED PER GVSUD COMMENTS
3	7-29-2025	REVISED PER GVSUD & GBRA COMMENTS
4	8-20-2025	REVISED PER GVSUD & GBRA COMMENTS
5	8-25-2025	REVISED PER GVSUD COMMENTS
6	9-1-2025	REVISED PER GVSUD COMMENTS
7	9-5-2025	REVISED PER GVSUD COMMENTS
8	9-8-2025	REVISED PER GVSUD COMMENTS
9	9-16-2025	REVISED PER GBRA COMMENTS
10	10-14-2025	REVISED PER GBRA & GUADALUPE CO. COMMENTS
11	10-16-2025	REVISED PER GUADALUPE CO. COMMENTS
12	11-10-2025	STREET NAMES REVISED
13	11-26-2025	PAVEMENT DESIGN TABLE UPDATE
14	12-02-2025	REVISED PER GUADALUPE COUNTY COMMENTS
15	12-08-2025	REVISED PER GUADALUPE COUNTY COMMENTS
16	12-15-2025	REVISED PER GUADALUPE COUNTY COMMENTS
17	12-16-2025	REV PER GUADALUPE CO COMMENTS - RIBBON CURB DTL

MCQUEENEY OAKS SUBDIVISION
PERMIT SET

Drawing Name: N:\Projects\080002 Buck Property - 109ac\Civil\Construction Drawings\0 COVER SHEET.dwg User: jamesingalls Dec 16, 2025 - 11:11am

DESIGN AND DOCUMENTS

1. IF CONSTRUCTION HAS NOT COMMENCED WITHIN ONE (1) YEAR OF GBRA DESIGN APPROVAL, THAT APPROVAL IS NO LONGER VALID.

2. GBRA DESIGN APPROVAL IS RELIANT UPON THE ADEQUACY OF THE WORK OF THE ENGINEER OF RECORD. ALL RESPONSIBILITY FOR THE ADEQUACY OF THE DESIGN REMAINS WITH THE ENGINEER OF RECORD. PROVIDE COMPLETE DESIGN SUBMITTALS FOR GBRA REVIEW AND APPROVAL PRIOR TO BIDDING. INCLUDE MASTER PLAN, PLATS, EASEMENTS, DESIGN CALCULATIONS, SPECIFICATIONS, AND COMPLETE PROJECT DRAWINGS SETS INCLUDING ROADS, GRADING, STORM SEWER, SANITARY SEWER, WATER, DRY UTILITIES, ETC.

3. PROVIDE SIX (6) PRINTED AND BOUND HALF SIZE COPIES AND TWO (2) CD/PDF ELECTRONIC COPIES. ALLOW 30 CALENDAR DAYS FOR REVIEW.

4. ALL PIPING SHOWN ON DRAWINGS SHALL BE LABELED AS TO THE SIZE, TYPE, CLASS, PROCESS FLUID CONTAINED, AND FLOW DIRECTION.

5. SUBMIT EASEMENTS AND PRELIMINARY AND FINAL PLATS FOR GBRA REVIEW AND APPROVAL.

A. PROVIDE DEDICATED EASEMENTS IN THE NAME OF GBRA. EASEMENTS SHALL NOT OVERLAP OR BE WITHIN RESIDENTIAL LOTS.

B. WHERE OUTSIDE OF PUBLIC RIGHT-OF-WAY, PROVIDE DEDICATED EASEMENTS WITH A MINIMUM WIDTH EQUAL TO PIPE OUTSIDE DIAMETER, ROUNDED UP TO THE NEAREST FOOT, PLUS 10 FEET MINIMUM ON EACH SIDE. FOR EASEMENTS WITH MULTIPLE PIPES, PROVIDE 10 FEET MINIMUM HORIZONTAL CLEARANCE BETWEEN PIPES. PROVIDE ADDITIONAL WIDTH FOR EASEMENTS THAT ARE NOT LOCATED ADJACENT TO PUBLIC RIGHT-OF-WAY.

C. OTHER UTILITIES, STRUCTURES, GRADING, DRAINAGE, DETENTION/RETENTION PONDS, LANDSCAPING, TREES, ROADS, PARKING LOTS, FENCES, WALLS, CONSTRUCTION OF ANY TYPE, OR ANY OTHER IMPROVEMENTS OR OBSTRUCTIONS, ARE NOT ALLOWED WITHIN GBRA EASEMENTS.

D. DESIGNS FOR ANY PROPOSED ALTERATIONS OR CROSSINGS OF GBRA EASEMENTS MUST BE APPROVED IN WRITING BY GBRA AND THE INSTALLATION OF SUCH MUST BE INSPECTED AND APPROVED BY GBRA.

E. MAINTENANCE OF EASEMENTS IS THE RESPONSIBILITY OF THE PROPERTY OWNER.

F. THE PROPERTY OWNER MUST INSTALL 16 FOOT GATES IN ANY FENCES THAT CROSS GBRA EASEMENTS;GATES MUST BE CENTERED ACROSS GBRA UTILITIES.

G. CUSTOMER WATER AND WASTEWATER SERVICES SHALL NOT BE INSTALLED WITHIN FENCED AREAS.

5. COPIES OF EACH CONSTRUCTION SUBMITTAL (SHOP DRAWINGS, PRODUCT DATA, ETC.) SHALL BE PROVIDED FOR GBRA REVIEW AND APPROVAL PRIOR TO FABRICATION. USE CLOUDS, BOXES, ARROWS, ETC., TO CLEARLY MARK ALL PROPOSED OPTIONS AND PART NUMBERS. LIST ANY PROPOSED DEVIATIONS ON THE SUBMITTAL COVER SHEET. ALLOW 21 CALENDAR DAYS FOR REVIEW.

7. PROVIDE THE FOLLOWING MATERIALS PRIOR TO ACCEPTANCE OF FACILITIES BY GBRA. PROVIDE ONE (1) HARD COPY AND ONE (1) CD/PDF COPY UNLESS NOTED OTHERWISE:

A. ENGINEER'S CERTIFICATION OF COMPLETION IN ACCORDANCE WITH APPROVED PLANS, SPECIFICATIONS, AND PERMITS.

B. COPIES OF ALL CLOSE-OUT SUBMITTALS REQUIRED BY REGULATORY AGENCIES (CITY, COUNTY, TCEQ, ETC.).

C. O&M MANUALS: PROVIDE THREE (3) HARD COPIES AND THREE (3) CD/PDF SEARCHABLE ELECTRONIC COPIES OF EACH O&M MANUAL. HARD COPIES SHALL BE PRINTED DUPLEX 8.5"X11" IN COLOR ON 24# BOND PAPER WITH REINFORCED HOLES AND BOUND IN D-RING BINDERS (MAXIMUM 4" BINDERS PER VOLUME) WITH SHEET LIFTERS FRONT AND BACK, TABLE OF CONTENTS, GBRA STANDARDS AND DESIGN GUIDELINES FOR DEVELOPER UTILITIES AND TABBED SECTIONS. DRAWINGS AND SCHEMATICS SHALL BE 11"X17" AND Z-FOLDED. INCLUDE TEST REPORTS AND CALIBRATION CERTIFICATES. O&M DESCRIPTION, PROJECT NAME, CONTRACTOR NAME, AND SPECIFICATION SECTION SHALL BE PRINTED ON THE SPINE AND COVER OF EACH BINDER. ALL COPIES SHALL BE MANUFACTURER ORIGINAL QUALITY. SCANNED AND/OR PHOTOCOPIES ARE NOT ACCEPTABLE. SUBMIT ELECTRONIC PRELIMINARY COPIES FOR GBRA REVIEW AND APPROVAL PRIOR TO PRINTING FINAL COPIES. SUBMIT AT LEAST TWO (2) WEEKS PRIOR TO OPERATOR TRAINING.

D. WAIVER OF LIEN BY CONTRACTOR (AND SUBCONTRACTORS, AS APPROPRIATE).

E. WARRANTY CERTIFICATES, BOTH FROM CONTRACTOR AND FROM MANUFACTURER(S), VALID FOR ONE (1) YEAR FROM DATE OF PROJECT FINAL ACCEPTANCE. WARRANTY SHALL INCLUDE PARTS AND LABOR FOR REMOVAL, REPAIR, AND REPLACEMENT.

F. EXECUTED OPERATING CONTRACT OR BILL OF SALE TRANSFERRING FACILITIES TO GBRA.

G. AS-BUILT AND RECORD DRAWINGS: PROVIDE COMPLETE PROJECT DRAWING SETS INCLUDING DRY UTILITIES, ROADS, GRADING, STORM SEWER, SANITARY SEWER, WATER, ETC. SUBMIT ELECTRONIC PRELIMINARY COPIES FOR GBRA REVIEW AND APPROVAL PRIOR TO PRINTING FINAL COPIES.

I. CONTRACTOR SHALL PROVIDE ONE (1) PRINTED AND BOUND FULL SIZE COPY OF RED LINED ASBUILT DRAWINGS AND ONE (1) CD/PDF ELECTRONIC COPY, EACH SHEET STAMPED "ASBUILT DRAWING".

II. ENGINEER SHALL PREPARE CORRECTED CAD DRAWINGS, EACH SHEET STAMPED "RECORD DRAWING", AND SUBMIT TO GBRA FIVE (5) PRINTED AND BOUND HALF SIZE COPIES AND FIVE (5) CD/PDF SEARCHABLE ELECTRONIC COPIES OF THE CORRECTED CAD DRAWINGS. SCANNED AND/OR PHOTOCOPIES ARE NOT ACCEPTABLE.

H. RECORDED PLATS AND EASEMENTS.

I. TITLE COMPANY REVIEW FOR RELEASE OF ALL LIENS.

DESIGN REQUIREMENTS

1. DESIGN AND INSTALLATION SHALL BE IN ACCORDANCE WITH TCEQ RULES AND AWWA STANDARDS, AND IN ACCORDANCE WITH GBRA STANDARDS AS FURTHER DESCRIBED IN THIS DOCUMENT (SEE ATTACHMENTS).

2. NOISE AND ODOR IMPACTS SHALL BE CONSIDERED IN DESIGN.

3. THE DESIGNS OF WASTEWATER SYSTEMS SHALL BE BASED ON MINIMUM 300 GPD/EDU AVERAGE DAILY FLOW, 4.0 PEAK FACTOR, AND 300 GPD/ACRE INFLOW AND INFILTRATION.

4. PIPING FRICTION LOSSES SHALL BE CALCULATED WITH A HAZEN-WILLIAMS COEFFICIENT NO GREATER THAN 120 FOR PLASTIC PIPE, AND NO GREATER THAN 100 FOR CONCRETE OR METAL PIPE.

5. POTABLE AND RECLAIMED WATER DISTRIBUTION SYSTEMS SHALL BE DESIGNED TO PROVIDE 55 PSI MINIMUM AT CUSTOMER METERS.

6. GRAVITY WASTEWATER MAIN DEPTHS SHALL BE LIMITED TO 20 FEET MAXIMUM, AS MEASURED FROM PIPE INVERT TO FINISH GRADE.

7. LOW PRESSURE SANITARY SEWER COLLECTION SYSTEMS ARE NOT ALLOWED.

8. SANITARY TAPPING SADDLES ARE NOT ALLOWED.

9. MANHOLE INTERNAL DROPS ARE NOT ALLOWED.

10. WATER MAINS, FORCE MAINS, VALVES, HYDRANTS, SERVICES, AND CLEANOUTS SHALL BE LOCATED OUTSIDE OF ROADWAYS, PAVEMENT, CURBS, DRIVEWAYS, ETC., UNLESS SPECIFICALLY APPROVED OTHERWISE. INSTALL 4FT MINIMUM BEHIND BACK OF CURB.

11. GRAVITY WASTEWATER MAINS MAY BE INSTALLED WITHIN ROADWAYS. CENTER MAINS IN ONE LANE OF TRAFFIC, NOT IN CENTER OF ROADWAY.

12. ALL PIPING SHALL BE DESIGNED IN STRAIGHT ALIGNMENT VERTICALLY AND HORIZONTALLY. PIPE CURVATURE AND/OR DEFLECTION ARE NOT ALLOWED.

13. UTILIZE PRIMARILY DOUBLE SERVICES INSTALLED ON LOT CORNERS. MINIMIZE THE USE OF SINGLE SERVICES. WATER SERVICES SHALL BE INSTALLED ON OPPOSITE LOT CORNERS FROM WASTEWATER SERVICES. SERVICES SHALL NOT BE INSTALLED WITHIN FENCED AREAS.

14. WATER AND WASTEWATER PIPE LENGTHS SHALL BE CENTERED AT CROSSINGS WITH ALL OTHER UTILITIES, INCLUDING DRY UTILITY SERVICES. BOTH PIPES SHALL BE CENTERED AT WATER AND WASTEWATER CROSSINGS, INCLUDING WASTEWATER SERVICE LATERALS AND FIRE HYDRANT LEADS.

15. MAINTAIN A MINIMUM OF 10 FEET HORIZONTAL AND 12 INCHES VERTICAL CLEARANCE BETWEEN WATER AND WASTEWATER AND OTHER UTILITIES. SHARED TRENCHES ARE NOT ALLOWED.

16. WATER AND WASTEWATER PIPING (INCLUDING MAINS, SERVICES, AND LATERALS) SHALL BE SLEEVED IF LOCATED UNDER CONCRETE CHANNELS, BOX CULVERTS, OR MULTIPLE BARREL STORM SEWER CROSSINGS REGARDLESS OF SIZE AND SINGLE BARRELS 30" OR LARGER. 15

17. PROFILE ALL WATER, WASTEWATER, AND STORM PIPING REGARDLESS OF SIZE. SHOW ALL UTILITY CROSSINGS IN ALL PROFILES. SHOW WASTEWATER SERVICE LATERALS IN STORM AND WATER PIPING PROFILES. IN A LIGHTER SHADE, SHOW/OVERLAY WATER AND STORM PROFILES ONTO WASTEWATER PIPING PROFILES. SHOW ALL UTILITIES, INCLUDING DRY UTILITY MAINS AND SERVICES, ON ALL UTILITY PLAN SHEETS.

18. DRAINS SHALL BE PROVIDED FOR ALL WATER MAINS REGARDLESS OF MAIN SIZE.

19. AIR RELEASE VALVES SHALL BE PROVIDED FOR ALL WATER AND FORCE MAINS REGARDLESS OF MAIN SIZE.

20. SERVICES ARE NOT ALLOWED ON WATER TRANSMISSION LINES. NO EXCEPTIONS.

MATERIALS

1. BURIED WATER PIPING SHALL BE C900 DR14, BLUE COLOR FOR POTABLE, PURPLE COLOR FOR RECLAIMED. FITTINGS SHALL BE CEMENT LINED AWWA C153 COMPACT MECHANICAL JOINT DUCTILE IRON WITH FORD UNI-FLANGE SERIES 1500 RESTRAINTS. PIPE BELL JOINT RESTRAINTS SHALL BE FORD UNI-FLANGE SERIES 1300. FITTINGS FOR PROJECTS NEAR OR EAST OF INTERSTATE 35 SHALL BE FUSION BONDED EPOXY COATED.

2. EXPOSED WATER PIPING AND FITTINGS SHALL BE CEMENT LINED FLANGED DUCTILE IRON WITH FIELD PAINT COATINGS AS SPECIFIED HEREIN.

3. GRAVITY WASTEWATER PIPE AND FITTINGS SHALL BE GREEN COLOR GASKETED ASTM D3034 SDR26. AT WATER CROSSINGS INCLUDING FIRE HYDRANT LEADS, WHITE COLOR GASKETED ASTM D2241 SDR26 PIPE AND FITTINGS SHALL BE USED FOR MAINS AND LATERALS. SANITARY TAPPING SADDLES ARE NOT ALLOWED.

4. FORCE MAIN PIPING SHALL BE GREEN COLOR C900 DR18 MINIMUM. FITTINGS SHALL BE EPOXY LINED AWWA C153 COMPACT MECHANICAL JOINT DUCTILE IRON WITH FORD UNI-FLANGE SERIES 1500 RESTRAINTS. PIPE BELL JOINT RESTRAINTS SHALL BE FORD UNI-FLANGE SERIES 1300. FITTINGS FOR PROJECTS NEAR OR EAST OF INTERSTATE 35 SHALL BE FUSION BONDED EPOXY COATED.

5. MJ TEE BOLTS AND NUTS FOR BURIED LOCATIONS SHALL BE CORTEN, EXCEPT FOR PROJECTS NEAR OR EAST OF INTERSTATE 35 USE TYPE 304 STAINLESS STEEL. FIELD APPLY NICKEL ANTI-SEIZE COMPOUND TO THREADS PRIOR TO ASSEMBLY.

6. ALL OTHER FASTENERS SHALL BE TYPE 304 STAINLESS STEEL (E.G. HARDWARE, SCREWS, ANCHOR BOLTS, RODS, BOLTS, NUTS, ETC. FOR PIPING, VALVES, PUMPS, MOTORS, EQUIPMENT, ETC.) INCLUDING THOSE FOR FACTORY ASSEMBLY OF COMPONENTS. ALL BOLTS AND NUTS SHALL BE HEAVY HEX. ANCHOR BOLTS INSTALLED WITHIN HYDRAULIC STRUCTURES SHALL BE EPOXY TYPE. FIELD APPLY NICKEL ANTI-SEIZE COMPOUND TO THREADS PRIOR TO ASSEMBLY. STAINLESS STEEL ITEMS SHALL NOT BE PAINTED.

7. TAPPING SLEEVES 24" AND SMALLER SHALL BE AMERICAN FLOW CONTROL SERIES 2800. TAPPING SLEEVES 24" AND SMALLER SHALL BE FUSION BONDED EPOXY COATED FOR PROJECTS NEAR OR EAST OF INTERSTATE 35. TAPPING SLEEVES LARGER THAN 24" SHALL BE SMITH BLAIR MODEL 624. ALL TAPPING SLEEVES SHALL HAVE STAINLESS STEEL HARDWARE AND SPLIT MJ RESTRAINTS. FIELD APPLY NICKEL ANTI-SEIZE COMPOUND TO THREADS PRIOR TO ASSEMBLY. TAPPING SLEEVES SHALL BE INSTALLED 24" MINIMUM FROM THE NEAREST PIPE BELL AS MEASURED FROM THE EDGE OF THE TAPPING SLEEVE TO TAPER OF BELL. ASSEMBLY MUST BE SUCCESSFULLY DISINFECTED AND PRESSURE TESTED PRIOR TO TAPPING. PERFORM 100 PSI AIR TEST FOR 10 MINUTES DURATION, NO ALLOWABLE LEAKAGE. CONCRETE BLOCKING TO UNDISTURBED EARTH IS REQUIRED UNDER AND BEHIND TAPPING SLEEVES AND VALVES. INSTALL MECHANICAL RESTRAINTS 60 LF MINIMUM EACH WAY, INCLUDING ON EXISTING PIPING.

8. ALL BURIED METAL PIPE, FITTINGS, HYDRANTS, AND VALVES SHALL BE WRAPPED WITH 8MIL POLY.

9. DUAL PRESSURE REDUCING VALVES SHALL BE MANUFACTURED BY CLA-VAL WITH ANTI-CAVITATION TRIM. INSTALL INSIDE BURIED H-20 PRECAST CONCRETE VAULT WITH LOCKABLE ALUMINUM ACCESS HATCHES, ALUMINUM LADDER, AND FLOOR DRAIN OR COARSE GRAVEL BOTTOM.

10. PRESSURE GAUGE ASSEMBLIES SHALL INCLUDE THE FOLLOWING ITEMS:

A. STAINLESS STEEL FULL PORT ISOLATION BALL VALVE.

B. PRESSURE DIAPHRAGM SEAL AND PLAIN END BIBB SAMPLING VALVE, BOTH STAINLESS STEEL.

C. 4" PRESSURE GAUGE, COMPLYING WITH ASME B40.1, GRADE 1A, WITH 1% FULL SCALE ACCURACY, STAINLESS CASE AND STAINLESS STEEL WETTED PARTS, GLYCERIN FILLED.

D. GAUGES SHALL READ IN BOTH FTH2O AND PSI. SELECT RANGE FOR NORMAL WORKING PRESSURE TO BE MID-RANGE.

E. THE ENTIRE ASSEMBLY SHALL BE TYPE 316 STAINLESS STEEL FLANGE COUPLING ADAPTERS SHALL BE SMITH BLAIR MODEL 911.

11. FLANGE COUPLING ADAPTERS ARE NOT ALLOWED WITHIN HYDRAULIC STRUCTURES.

12. PVC MALE ADAPTERS ARE NOT ALLOWED.

13. PAINT SHALL BE WHITE COLOR HIGH-BUILD EPOXY WITH TOPCOAT OF POLYURETHANE. TOPCOAT COLOR SHALL BE SAFETY BLUE FOR WATER, SAFETY GREEN FOR SEWER, SAFETY PURPLE FOR RECLAIMED. DO NOT PAINT STAINLESS STEEL, HOT DIP GALVANIZED, BRASS, OR ALUMINUM ITEMS. INSTALL IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.

TESTING

1. ALL OTHER UTILITIES MUST BE COMPLETE PRIOR TO PERFORMING ANY WATER OR WASTEWATER TESTING.

2. ALL TESTING MUST BE COMPLETE PRIOR TO PAVING STREETS. TEST RESULTS AND WRITTEN ACCEPTANCE BY THE UTILITY SHALL BE PROVIDED TO THE COUNTY BEFORE PAVEMENT COMMENCES. THIS INFORMATION SHALL BE PROVIDED AS A PART OF THE OVERALL DEVELOPMENT TEST DATA.

3. GBRA STANDARDS AND DESIGN GUIDELINES FOR DEVELOPER UTILITIES ALL TESTING MUST BE COMPLETE PRIOR TO PERFORMING TIE-INS TO EXISTING WATER OR WASTEWATER SYSTEMS.

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4. CONTRACTOR SHALL PERFORM PRE-TESTING TO VERIFY PASSING RESULTS PRIOR TO REQUESTING GBRA INSPECTION. PROVIDE CONNECTION POINT FOR GBRA DIGITAL TEST GAUGE.

5. ALL TESTING SHALL BE PERFORMED BY THE CONTRACTOR AND WITNESSED BY GBRA.

6. PERFORM TRENCH BACKFILL DENSITY TESTING AT INTERVALS SPECIFIED BY THE DESIGN ENGINEER, EXACT LOCATIONS TO BE DESIGNATED BY INSPECTOR. SCHEDULE GBRA TO WITNESS TESTING. PROVIDE COPIES OF REPORTS TO GBRA.

7. FOLLOW AWWA PIPE TESTING PROCEDURES AND ALLOWABLE LEAKAGE FOR WATER LINES. TEST EVERY VALVED SECTION (I.E. TEST AGAINST EVERY VALVE IN CLOSED POSITION). TEST PRESSURE SHALL BE THE MAXIMUM RATING OF MATERIAL INSTALLED. TEST DURATION SHALL BE 2 HOURS.

8. FOLLOW AWWA PROCEDURES FOR FLUSHING AND DISINFECTION OF WATER PIPING. FLUSHING AND DISINFECTION MUST BE COMPLETE PRIOR TO PERFORMING TIE-INS TO EXISTING SYSTEMS.

9. ALL GRAVITY WASTEWATER PIPING SHALL BE SUBJECT TO LOW PRESSURE AIR TESTING IN ACCORDANCE WITH TCEQ REQUIREMENTS. INFILTRATION AND EXFILTRATION TESTING ARE NOT ALLOWED.

10. MANDREL TESTING SHALL BE PERFORMED FOR ALL GRAVITY WASTEWATER MAINS PRIOR TO INSTALLATION OF CORROSION RESISTANT MANHOLE LINING.

11. ALL MANHOLES, REGARDLESS OF VEHICULAR TRAFFIC DETOURING, SHALL BE VACUUM TESTED AFTER COMPLETION OF BACKFILL, COMPACTION, AND FINAL GRADING OF ROAD BASE BUT PRIOR TO PAVING STREETS AND PRIOR TO CORROSION RESISTANT MANHOLE LINING. VACUUM TESTING SHALL BE PERFORMED WITH A PLATE TYPE TEST HEAD PLACED ON TOP OF COMPLETED MANHOLE METAL CASTING RING WHICH HAS BEEN INSTALLED AND ENCASED IN CONCRETE AT FINAL GRADE. MANHOLES SHALL BE TESTED AT 10 INCHES OF MERCURY FOR 2 MINUTES DURATION. ALLOWABLE LOSS IS 1 INCH OF MERCURY. INFILTRATION AND EXFILTRATION TESTING ARE NOT ALLOWED.

12. PERFORM VIDEO INSPECTION AND GOLF BALL TESTING OF GRAVITY WASTEWATER PIPING AFTER CORROSION RESISTANT MANHOLE LINING BUT PRIOR TO PAVING STREETS. PIPE AND MANHOLES MUST BE CLEANED FREE OF DIRT, ROCKS, SCALE, MUD, SILT, AND ANY OTHER FOREIGN MATTER PRIOR TO PERFORMING VIDEO INSPECTION AND GOLF BALL TESTING. FLOOD SYSTEM WITH WATER IMMEDIATELY PRIOR TO PERFORMING VIDEO INSPECTION. HANG AND DRAG A GOLF BALL IN FRONT OF CAMERA. PIPE GRADE IS OUT OF TOLERANCE IF GOLF BALL BECOMES FULLY SUBMERGED. SCHEDULE GBRA TO WITNESS VIDEO INSPECTION. PROVIDE DVD'S AND WRITTEN REPORTS TO GBRA.

13. FOLLOW TCEQ PIPE TESTING PROCEDURES AND ALLOWABLE LEAKAGE FOR FORCE MAINS. TEST EVERY VALVED SECTION (I.E. TEST AGAINST EVERY VALVE IN CLOSED POSITION). TEST PRESSURE SHALL BE THE MAXIMUM RATING OF MATERIAL INSTALLED.

CONSTRUCTION NOTES 3

1. ALL WORK SHALL BE IN ACCORDANCE WITH GBRA STANDARDS AS PUBLISHED AT THE FOLLOWING WEBSITE: HTTPS://WWW.GBRA.ORG/OPERATIONS/DEVELOPER-RESOURCES/

2. COPIES OF EACH CONSTRUCTION SUBMITTAL (SHOP DRAWINGS, PRODUCT DATA, ETC.) SHALL BE PROVIDED FOR GBRA REVIEW AND APPROVAL PRIOR TO FABRICATION. USE CLOUDS, BOXES, ARROWS, ETC., TO CLEARLY MARK ALL PROPOSED OPTIONS AND PART NUMBERS. LIST ANY PROPOSED DEVIATIONS ON THE SUBMITTAL COVER SHEET. ALLOW 21 CALENDAR DAYS FOR REVIEW.

3. ALL WATER AND WASTEWATER INSTALLATIONS MUST BE INSPECTED AND APPROVED BY GBRA PRIOR TO BACKFILLING OR OTHERWISE COVERING THE WORK. THIS INCLUDES CROSSINGS OF WATER AND WASTEWATER BY OTHER UTILITIES. GBRA WILL PERFORM A MAXIMUM OF ONE (1) INSPECTION DAILY FOR ONE (1) HOUR DURATION BETWEEN 8:00AM AND 5:00PM EXCLUDING WEEKENDS AND HOLIDAYS. CALL 830-379-5822 TO SCHEDULE INSPECTIONS (48 HOURS ADVANCE NOTICE IS REQUIRED FOR ALL INSPECTIONS).

4. TRENCH EXCAVATION AND PIPE INSTALLATION WILL NOT BE PERMITTED UNTIL SUBGRADE HAS BEEN ESTABLISHED. SURVEY STAKING MUST BE INSTALLED PRIOR TO AND MAINTAINED DURING TRENCH EXCAVATION AND PIPE INSTALLATION. SURVEY STAKING SHALL INCLUDE HORIZONTAL AND VERTICAL CONTROL AT A MINIMUM OF 50 FOOT STATION INTERVALS. HORIZONTAL OFFSETS SHALL BE 15 FEET MAXIMUM. INSTALL PROPERTY PINS AND STAKES. MARK FINISH GRADE LINES WITH CUT/FILL ON OFFSET STAKES AND PROPERTY STAKES. ALL MARKS SHALL FACE THE PIPELINE. SURVEY STAKING SHALL BE PERFORMED BY THE CONTRACTOR.

5. BACKFLOW PREVENTION IN THE FORM OF A REDUCED PRESSURE BACKFLOW ASSEMBLY MUST BE PROVIDED FOR TEMPORARY CONNECTIONS TO EXISTING WATER LINES. BACKFLOW DEVICES SHALL BE TESTED BY A LICENSED BACKFLOW PREVENTION ASSEMBLY TESTER. SUBMIT TEST REPORTS.

6. PVC MALE ADAPTERS ARE NOT ALLOWED.

7. SANITARY TAPPING SADDLES ARE NOT ALLOWED.

8. MANHOLE INTERNAL DROPS ARE NOT ALLOWED.

9. PIPE BELLS SHALL BE INSTALLED IN UPSTREAM DIRECTION.

10. ALL PIPING SHALL BE DESIGNED IN STRAIGHT ALIGNMENT VERTICALLY AND HORIZONTALLY. PIPE CURVATURE AND/OR DEFLECTION ARE NOT ALLOWED.

11. INSTALL CONCRETE THRUST BLOCKING AND MECHANICAL RESTRAINTS FOR PRESSURE PIPING SYSTEMS.

12. MAINTAIN A MINIMUM OF 10 FEET HORIZONTAL AND 12 INCHES VERTICAL CLEARANCE BETWEEN WATER AND WASTEWATER AND OTHER UTILITIES. SHARED TRENCHES ARE NOT ALLOWED.

13. WATER AND WASTEWATER PIPE LENGTHS SHALL BE CENTERED AT CROSSINGS WITH ALL OTHER UTILITIES, INCLUDING DRY UTILITY SERVICES. BOTH PIPES SHALL BE CENTERED AT WATER AND WASTEWATER CROSSINGS, INCLUDING WASTEWATER SERVICE LATERALS AND FIRE HYDRANT LEADS.

14. WATER AND WASTEWATER PIPING (INCLUDING MAINS, SERVICES, AND LATERALS) SHALL BE SLEEVED IF LOCATED UNDER CONCRETE CHANNELS, BOX CULVERTS, OR MULTIPLE BARREL STORM SEWER CROSSINGS REGARDLESS OF SIZE AND SINGLE BARRELS 30" OR LARGER.

15. VALVE BOXES, EXPOSED PIPING AND VALVES, AND APPURTENANCES SHALL BE PAINTED. PROVIDE PAINTED CURB CUT MARKINGS AT VALVES AND SERVICES.

16. ALL EXPOSED VERTICAL AND HORIZONTAL CONCRETE EDGES SHALL BE FORMED WITH ¾" CHAMFER STRIPS.

17. EXISTING FACILITIES THAT ARE DISTURBED SHALL BE RESTORED AND TESTED TO BE IN FULL COMPLIANCE WITH CURRENT GBRA STANDARDS. THE CONTRACTOR SHALL ADJUST EXISTING WATER AND WASTEWATER FACILITIES TO PROPOSED FINISH GRADES INCLUDING BUT NOT LIMITED TO MANHOLES, CLEANOUTS, VALVES, HYDRANTS, APPURTENANCES, ETC.

18. EXISTING MANHOLES THAT ARE DISTURBED SHALL BE RESTORED TO BE IN FULL COMPLIANCE WITH CURRENT GBRA STANDARDS INCLUDING TESTING, CORROSION RESISTANT LINING, RINGS AND COVERS, ETC.

19. GBRA STANDARDS AND DESIGN GUIDELINES FOR DEVELOPER UTILITIES THE CONTRACTOR SHALL MAINTAIN SERVICE TO EXISTING WATER AND WASTEWATER SYSTEMS AT ALL TIMES DURING CONSTRUCTION. ANY WORK INVOLVING POWER OUTAGES, BYPASS PUMPING, PUMP AND HAUL, OR ANY OTHER INTERRUPTION OF FLOW MUST BE PERFORMED BETWEEN 8:00AM AND 5:00PM EXCLUDING WEEKENDS AND HOLIDAYS. ALL NECESSARY TEMPORARY POWER, BYPASS PUMPING, PUMP AND HAUL, TEMPORARY PLUGS, ETC., SHALL BE FURNISHED AND PERFORMED BY THE CONTRACTOR. COORDINATE AND SCHEDULE ANY SUCH ACTIVITIES WITH GBRA AT LEAST TWO (2) WEEKS IN ADVANCE.

20. EXPLOSIVES AND BLASTING ARE NOT ALLOWED.

CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES 48 HOURS PRIOR TO EXCAVATION:

GVSUD	830-914-2330
GBRA	830-379-5822
Spectrum Cable	830-625-3408
Centerpoint Gas	830-643-6434
Robert Sanders	830-643-6903
Damaged Line	888-876-5786
AT&T Telephone	830-303-1333
Erick White PM	210-283-1706
Scott McBrearty (Construction)	210-658-4886
Texas One Call	830-545-6005

C.P.E. LOCATOR

CALL CENTER POINT ENERGY LOCATOR AT 1-800-545-6005, 48HRS BEFORE BEGINNING ANY EXCAVATION. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.181, CENTER POINT ENERGY MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT AND WORK AROUND ANY GAS VALVES THAT ARE IN THE PROJECT AREA.

TELEPHONE LOCATOR

THE EXISTENCE AND LOCATION OF UNDERGROUND CABLE INDICATED ON THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR TO CONTACT THE TELEPHONE COMPANY CABLE LOCATOR 48HRS PRIOR TO EXCAVATION AT 1-800-545-6005,, CONTRACTOR HAS THE RESPONSIBILITY TO PROTECT AND SUPPORT TELEPHONE COMPANY DURING CONSTRUCTION.

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 CONTRACTORS IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA TITLE 29, PART 1926, SUBPART P 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 TITLE 29 PART 1926, SUBPART P STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATIONS.

THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR WILL AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE INCURRED BY THEIR FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES, STRUCTURES OR FACILITIES. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES 24-HOURS PRIOR TO COMMENCING CONSTRUCTION.

STANDARD ABBREVIATIONS

AC	ASBESTOS CONCRETE	HMAC	HOT MIX ASPHALTIC CONCRETE	PCCP	PRESTRESSED CONCRETE CYLINDER PIPE
AH	AHEAD	HRS	HOURS	PL	PROPERTY LINE
ASPH	ASPHALT	IAW	IN ACCORDANCE WITH	R	RADIUS
B-B	BACK TO BACK	I.D.	INSIDE DIAMETER	RR	RAILROAD
BC	BACK OF CURB	IP	IRON PIN	RCP	REINFORCED CONCRETE PIPE
BK	BACK	LF	LINEAR FEET	REQ'D	REQUIRED
BSL	BUILDING SETBACK LINE	LT	LEFT	RT	RIGHT
CI	CAST IRON	L	LENGTH	ROW	RIGHT-OF-WAY
CL	CENTERLINE	LP	LIGHT POLE	RWL	RECYCLE WATER LINE
CONC	CONCRETE	MH	MANHOLE	S	SLOPE
CP	CONTROL PANEL	MAX	MAXIMUM	SS	SANITARY SEWER
CSC	CONCRETE STEEL CYLINDER PIPE	MJ	MECHANICAL JOINT	SE	SOUTHEAST
CORP	CORPORATION	MIN	MINIMUM	SW	SOUTHWEST
CMP	CORRUGATED METAL PIPE	N	NORTH	STA	STATION
CPL	COUPLING	NE	NORTHEAST	STD	STANDARD
DWG	DRAWING	NW	NORTHWEST	SD	STORM SEWER/DRAINAGE
DI	DUCTILE IRON	NA	NOT APPLICABLE	T	TANGENT
E	EAST	NTS	NOT TO SCALE	T/P	TOP OF PIPE
ELEV / EL	ELEVATION	OC	ON CENTER	T/G	TOP OF GROUND
EP	EDGE OF PAVEMENT				
EX / EXIST	EXISTING	OD	OUTER DIAMETER	TEL	TELEPHONE
EW	EACH WAY	OHE	OVERHEAD ELECTRICAL	TBM	TEMPORARY BENCHMARK
EWEF	EACH WAY EACH FACE	OHT	OVERHEAD TELEPHONE	THD	THREADED
FC	FACE OF CURB	OHETC	OVERHEAD ELECTRICAL/TELEPHONE/CABLE	TYP	TYIPICAL
FO	FIBER OPTIC	PVMT	PAVEMENT	UG	UNDERGROUND
FH	FIRE HYDRANT	+/-	PLUS OR MINUS	UN	UNLESS NOTED
FL	FLOWLINE	PC	POINT OF CURVATURE	UNK	UNKNOWN
FND	FOUND	PE	PLAIN END	VERT	VERTICAL
GA	GAUGE	PI	POINT OF INTERSECTION	VPI	VERTICAL POINT OF INFLECTION
GI	GALVANIZED IRON	PT	POINT OF TANGENCY	VPC	VERTICAL POINT OF CURVATURE
GPS	GLOBAL POSITION STATION	PVC	POLYVINYL CHLORIDE PIPE	VPT	VERTICAL POINT OF TANGENCY
GRND	GROUND	PSI	POUNDS PER SQUARE INCH	WWF	WELDED WIRE FABRIC
HDPE	HIGH DENSITY POLYETHYLENE PIPE	PP	POWER POLE	TS	TEST STATION
HORZ	HORIZONTAL	PVI	POINT OF VERTICAL INTERSECTION		

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.

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.

19. SURVEY STAKING OFFSETS ARE REQUIRED FOR ALL WATER MAIN AND APPURTENANCES.

20. THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES INDICATED ON THE PLANS ARE TAKEN FROM AVAILABLE RECORDS AND ARE NOT GUARANTEED. CONTRACTOR SHALL INVESTIGATE AND FIELD VERIFY UTILITY LOCATIONS A MINIMUM OF 300 LF AHEAD OF CROSSING AND TIE-IN LOCATIONS. THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR ANY DAMAGE TO AND FOR MAINTENANCE PROTECTION OF THE EXISTING UTILITIES, WHETHER THEY ARE SHOWN ON THE PLANS OR NOT.

21. ALL WASTEWATER PIPES CROSSING THE POTABLE WATER DISTRIBUTION SYSTEM WILL BE HELD IN STRICT ACCORDANCE WITH TCEQ RULES AND REGULATIONS. PROPOSED SUB-GRADE LIMITS AND DIMENSIONS MUST BE SHOWN ON THE PLANS, AND CONSTRUCTION PROCEDURES WILL BE INSPECTED TO VERIFY COMPLIANCE WITH TCEQ 290.44(E).

22. OTHER UTILITIES SHALL NOT BE LOCATED CLOSER THAN 3-FEET TO WATER MAINS.

23. THE GREEN VALLEY INSPECTOR SHALL BE NOTIFIED AT LEAST FORTY-EIGHT HOURS PRIOR TO BACK FILLING OR TESTING.

24. A FIELD PRE-CONSTRUCTION MEETING SHALL BE HELD BEFORE CONSTRUCTION BEGINS AND MATERIAL SHALL BE AVAILABLE ON-SITE FOR INSPECTION.

25. CONTRACTOR SHALL CHLORINATE NEW MAINS PER TCEQ AND ANSI/AWWA C651 AND DECHLORINATE DURING FLUSHING PER ANSI/AWWA C655; THE CONTRACTOR SHALL COORDINATE WITH THE GVSUD INSPECTOR TO WITNESS CHLORINATING AND PRESSURE TESTING OF NEW MAINS. ALL TEST RESULTS MUST BE PROVIDED TO GVSUD.

26. OPERATION OF EXISITNG VALVES IN THE GVSUD WATER DISTRIBUTION SYSTEM SHALL ONLY BE AS APPROVED BY GVSUD AND IN THE PRESENCE OF GVSUD PERSONNEL. THE CONTRACTOR SHALL NOTIFY GVSUD WHEN A VALVE NEEDS TO BE OPERATED AND MAY ONLY OPERATE A VALVE IN THE PRESENCE OF THE GVSUD INSPECTOR.

27. NEW WATER MAINS AND APPURTENANCES SHALL PASS PRESSURE TESTING AND PASS THE MINIMUM PUBLIC HEALTH STANDARDS FOR BACTERIOLOGICAL QUALITY TESTING PRIOR TO ANY TIE IN TO THE EXISTING GVSUD WATER SYSTEM AS REQUIRED BY TCEQ AND ANSI/AWWA.

28. HYDROSTATIC PRESSURE TESTING SHALL BE EVERY 200 LF (MAX) OF LINE OR AS APPROVED BY THE ENGINEER. ALL ERRORS OF WORKMANSHIP SHALL BE CORRECTED IMMEDIATELY. ALL PARTS OF THE PIPELINE SHALL BE BACKFILLED AND BRACED SUFFICIENTLY TO PREVENT MOVEMENT UNDER PRESSURE.

29. CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH AND CONFINED SPACE ENTRY SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION AND ALL RELATED WORK. ANY TRENCH PROTECTION SAFETY VIOLATION WILL BE DOCUMENTED AND WILL RESULT IN AN IMMEDIATE WORK STOPPAGE BY THE GVSUD INSPECTOR AT MINUMUM UNTIL THE NEXT WORKDAY.

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

38. MOISTURE DENSITY COMPACTION TESTING SHALL BE REQUIRED EVERY 300 LF FOR EACH VERTICAL FOOT OF COMPACTED BACKFILL.

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

40. CONTRACTOR TO UTILIZE APPROVED WATER LINE STOPS AND/OR MUELLER INSERTION-VALVES TO MINIMIZE WATER OUTAGES AS REQUIRED BY GVSUD DURING CONSTRUCTION.

14 GENERAL NOTES

1. ANY REQUIREMENT AMENDED BY THE GUADALUPE COUNTY STANDARD DETAILS SHALL BE IDENTIFIED. ASSUME THAT ANY COSA OR TXDOT DETAIL PROVIDED AS REFERENCED.

2. THE MOST CURRENT EDITIONS OF THE CITY OF SAN ANTONIO STANDARD SPECIFICATIONS AND THE TEXAS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS AND BRIDGES SHALL BE FOLLOWED FOR ALL CONSTRUCTION EXCEPT AS AMENDED BY GUADALUPE COUNTY STANDARD DETAILS.

3. ALL RESPONSIBILITY FOR THE ADEQUACY OF THESE PLANS REMAINS WITH THE ENGINEER OF RECORD. IN ACCEPTING THESE PLANS, GUADALUPE COUNTY MUST RELY UPON THE ADEQUACY OF THE WORK OF THE ENGINEER OF RECORD.

4. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL CONTACT GUADALUPE COUNTY TO SCHEDULE A PRECONSTRUCTION MEETING.

5. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SEE THAT ALL TEMPORARY AND PERMANENT TRAFFIC CONTROL DEVICES ARE PROPERLY INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE PLANS AND LATEST EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. IF, IN THE OPINION OF THE ENGINEERING REPRESENTATIVE AND THE CONSTRUCTION INSPECTOR, THE BARRICADES AND SIGNS DO NOT CONFORM TO ESTABLISHED STANDARDS OR ARE INCORRECTLY PLACED OR ARE INSUFFICIENT IN QUANTITY TO PROTECT THE GENERAL PUBLIC, THE CONSTRUCTION INSPECTOR SHALL HAVE THE OPTION TO STOP OPERATIONS UNTIL SUCH TIME AS THE CONDITIONS ARE CORRECTED. IF THE NEED ARISES, ADDITIONAL TEMPORARY TRAFFIC CONTROL DEVICES MAY BE ORDERED BY THE ENGINEERING REPRESENTATIVE AT THE CONTRACTOR'S EXPENSE.

6. A TXDOT TYPE II B-B BLUE REFLECTIVE RAISED PAVEMENT MARKER SHALL BE INSTALLED IN THE CENTER OF THE ROADWAY ADJACENT TO ALL FIRE HYDRANTS. IN LOCATIONS WHERE HYDRANTS ARE SITUATED ON CORNERS, BLUE REFLECTIVE RAISED PAVEMENT MARKERS SHALL BE INSTALLED ON BOTH APPROACHES WHICH FRONT THE HYDRANT. THE RAISED PAVEMENT MARKER SHALL MEET TXDOT MATERIAL, EPOXY AND ADHESIVE SPECIFICATIONS.

GROUNDWATER

7. IT SHALL BE THE RESPONSIBILITY OF THE DEVELOPER, CONTRACTOR, SUBCONTRACTORS, BUILDERS, GEO-TECHNICAL ENGINEER, AND PROJECT ENGINEER TO IMMEDIATELY NOTIFY THE OFFICE OF THE COUNTY ENGINEER AND PROJECT ENGINEER IF THE PRESENCE OF GROUNDWATER WITHIN THE SITE IS EVIDENT. UPON NOTIFICATION THE PROJECT ENGINEER SHALL RESPOND WITH PLAN REVISIONS FOR THE MITIGATION OF THE GROUNDWATER ISSUE. THE COUNTY ENGINEER SHALL RESPOND WITHIN TWO (2) BUSINESS DAYS UPON RECEIPT OF THE MITIGATION PLAN. ALL CONSTRUCTION ACTIVITY, IMPACTED BY THE DISCOVERY OF GROUNDWATER, SHALL BE SUSPENDED UNTIL THE CITY ENGINEER GRANTS A WRITTEN APPROVAL OF THE GROUNDWATER MITIGATION PLAN.

RECORD DRAWINGS

8. WHEN ALL OF THE IMPROVEMENTS ARE FOUND TO BE CONSTRUCTED AND COMPLETED IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS AND WITH THE COUNTY'S STANDARDS, AND UPON RECEIPT OF ONE SET OF "RECORD DRAWING" PLANS, AND A DIGITAL COPY OF ALL PLANS (PDF COPY) THE COUNTY ENGINEER SHALL ACCEPT SUCH IMPROVEMENTS FOR THE GUADALUPE COUNTY, SUBJECT TO THE GUARANTY OF MATERIAL AND WORKMANSHIP PROVISIONS IN THIS SECTION. 14

CONSTRUCTION NOTE

9. ENGINEER OF RECORD IS RESPONSIBLE TO ENSURE THAT EROSION CONTROL MEASURES AND STORMWATER CONTROL SUFFICIENT TO MITIGATE OFF SITE IMPACTS ARE IN PLACE AT ALL STAGES OF CONSTRUCTION.

DRAINAGE NOTE

10. DRAINAGE IMPROVEMENTS SUFFICIENT TO MITIGATE THE IMPACT OF CONSTRUCTION SHALL BE INSTALLED PRIOR TO ADDING IMPERVIOUS COVER.

FINISHED FLOOR ELEVATIONS 14

11. THE ELEVATION OF THE LOWEST FLOOR SHALL BE AT LEAST 10 INCHES ABOVE THE FINISHED GRADE OF THE SURROUNDING GROUND, WHICH SHALL BE SLOPED IN A FASHION SO AS TO DIRECT STORMWATER AWAY FROM THE STRUCTURE. PROPERTIES ADJACENT TO STORMWATER CONVEYANCE STRUCTURES MUST HAVE FLOOR SLAB ELEVATION OR BOTTOM OF FLOOR JOISTS A MINIMUM OF ONE FOOT ABOVE THE 100-YEAR WATER FLOW ELEVATION IN THE STRUCTURE. DRIVEWAYS SERVING HOUSES ON THE DOWNHILL SIDE OF THE STREET SHALL HAVE A PROPERLY SIZED CROSS SWALE PREVENTING RUNOFF FROM ENTERING THE GARAGE.

SOILS TESTING

12. PROCTORS SHALL BE SAMPLED FROM ON-SITE MATERIAL (ON-SITE IS DEFINED AS LIMITS OF CONSTRUCTION FOR THIS PLAN SET) AND A COPY OF THE PROCTOR RESULTS SHALL BE DELIVERED TO THE GUADALUPE COUNTY INSPECTOR PRIOR TO ANY DENSITY TESTS.

ROADWAY

13. ALL ROADWAY COMPACTION TESTS SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEOTECHNICAL ENGINEER. FLEXIBLE BASE OR FILL/EMBANKMENT MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED EIGHT INCHES (8") LOOSE. THE REQUIRED DENSITY FOR THE FILL/EMBANKMENT MATERIAL SHALL MEET THE REQUIREMENTS OF TXDOT'S SPECIFICATION ITEM 132. THE REQUIRED DENSITY FOR THE FLEXIBLE BASE MATERIAL SHALL MEET THE REQUIREMENTS OF TXDOT'S SPECIFICATION ITEM 247. EACH LAYER OF MATERIAL, INCLUSIVE OF SUBGRADE, SHALL BE COMPACTED AS SPECIFIED AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE GUADALUPE COUNTY STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 200 LF FOR EACH LIFT. UPON COMPLETION OF TESTING, THE GEOTECHNICAL ENGINEER WILL PROVIDE THE GUADALUPE COUNTY STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FLEXIBLE BASE, AND FILL MATERIAL, AND SUBGRADE, HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUESTED BY THE GUADALUPE COUNTY INSPECTOR. 15

UTILITY TRENCH COMPACTION

14. ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT/SIDEWALK SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEOTECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTING OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE GUADALUPE COUNTY INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 200 LF FOR EACH LIFT AND EVERY OTHER SERVICE LINE. UPON COMPLETION OF TESTING THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE GUADALUPE COUNTY INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUESTED BY THE GUADALUPE COUNTY INSPECTOR. FLOWABALE FILL IS ALLOWABLE AND SHALL BE A SELF-COMPACTING CEMENTIOUS MATERIAL WITHA 28 DAY COMPRESSIVE STRENGTH BETWEEN 30 PSI AND 200 PSI.

CURB CUT DUE TO CONSTRUCTION OF NEW RIGHT-OF-WAY CONSTRUCTION

15. CURB CUTS SHALL BE THE FOLLOWING METHODS AND INDICATED ON THE PLANS IN DETAIL WHERE APPLICABLE.

18.1 SAWCUT EXISTING STREET AND MATCH TO NEW CONSTRUCTION.

18.2 SAWCUT EXISTING CURB TO TIE INTO EXISTING CONSTRUCTION.

CONSTRUCTION STABILIZED ENTRANCE 14

16. SAWCUT CURB FOR CONSTRUCTION ENTRANCE.

17. STABILIZED CONSTRUCTION AREA SHALL BE CONSTRUCTED OF 3"X5" ROCK TO BE PLACED A MINIMUM LENGTH OF 25-FT. AND MAINTAINED SO THAT CONSTRUCTION DEBRIS DOES NOT FALL WITHIN THE COUNTY/ STATE RIGHT-OF-WAY. RIGHT-OF-WAY MUST BE CLEARED FROM MUD, ROCKS, ETC. AT ALL TIMES. AND SHALL COMPLY WITH TXDOT REQUIREMENTS.

SIGNING AND PAVEMENT MARKING PLAN NOTES

18. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL REGULATORY AND WARNING SIGNS, STREETS NAME SIGNS AND SIGN MOUNTS IN ACCORDANCE WITH APPROVED ENGINEERING PLANS. THE COUNTY WILL INSPECT ALL SIGNS AT FINAL INSPECTION.

19. THE CONTRACTOR SHALL INSTALL ALL PAVEMENT MARKINGS IN ACCORDANCE WITH APPROVED ENGINEERING PLANS.

20. THE CONTRACTOR SHALL NOTIFY THE COUNTY AT LEAST TWENTY-FOUR (24) HOURS PRIOR TO THE INSTALLATION OF ALL SEALER AND FINAL MARKINGS. THE CITY WILL INSPECT ALL MARKINGS AT FINAL APPLICATION.

SEEDING AND ESTABLISHMENT OF VEGETATION WITHIN EARTHEN CHANNELS, STORMWATER BASINS AND DISTURBED AREAS

15

1. SEEDING FOR THE PURPOSE OF ESTABLISHING VEGETATION WITHIN CONSTRUCTED EARTHEN CHANNELS, BASINS AND DISTURBED AREAS SHALL BE CONDUCTED IN ACCORDANCE WITH ITEM 164 (SEEDING FOR EROSION CONTROL) OF TXDOT'S STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS AND BRIDGES MANUAL. ONLY SEED TYPES AND MIXES SPECIFIED FOR THE SAN ANTONIO DISTRICT (DISTRICT 15) IN TABLES 1 AND 2 UNDER ITEM 164 SHALL BE UTILIZED. DURING THE COOL SEASON (SEPT 1-NOV 30), CEREAL RYE AND SEED SPECIES SPECIFIED FOR THE SAN ANTONIO DISTRICT IN TABLE 3 MAY BE USED. FOR COOL SEASON SEEDING APPLICATIONS, COOL SEASON SEED MIXES SHALL BE USED IN CONJUNCTION WITH SEED MIXES FOR THE SAN ANTONIO DISTRICT AS SPECIFIED IN TABLE 1 AND 2 UNDER ITEM 164.
100% COVERAGE SHALL BE ACHIEVED FOR ACCEPTANCE.

2. IT MAY BE DEEMED NECESSARY TO INCORPORATE TOPSOIL AND SOIL AMENDMENTS (I.E. COMPOST/ FERTILIZER) INTO EXISTING SOIL IN ORDER TO FACILITATE VEGETATION GROWTH. TOPSOIL, COMPOST AND FERTILIZER ADDITIONS SHALL BE CONDUCTED ACCORDING TO ITEMS 160, 161 AND 166 OF TXDOT'S STANDARD SPECIFICATIONS MANUAL, RESPECTIVELY.

3. AREAS REQUIRING PERMANENT VEGETATION (EARTHEN CHANNELS, PONDS, ETC.) ARE REQUIRED TO MEET TXDOT SPECIFICATIONS FOR ITEM 160 TOPSOIL. TESTING PER TEX-128-E WILL BE REQUIRED AT THE COUNTY'S REQUEST.

4. WATERING MAY ALSO BE NECESSARY TO FACILITATE AND EXPEDITE THE SPROUTING AND GROWTH OF VEGETATION. ITEM 168 OF TXDOT'S STANDARD SPECIFICATIONS MANUAL SHALL BE ADHERED TO FOR VEGETATIVE WATERING.

5. IF EXTENDED DROUGHT CONDITIONS EXIST THAT HINDER OR PROHIBIT THE GROWTH AND ESTABLISHMENT OF VEGETATION, THE CONTRACT/ DEVELOPER SHALL PROVIDE A PLAN TO GUADALUPE COUNTY DESCRIBING THE MEASURES THAT WILL BE TAKEN TO STABILIZE EARTHEN DRAINAGE INFRASTRUCTURE UNTIL A TIME WHEN GROWING CONDITIONS BECOME MORE FAVORABLE. CONTRACTOR SHALL EXECUTE THE ACTIONS NECESSARY TO ESTABLISH THE 100% REQUIRED COVERAGE.

SEQUENCE OF CONSTRUCTION:

1. OBTAIN APPROVED SITE PREPARATION PLANS, AND TPDES PERMIT (NOT A COPY OF THE TPDES APPLICATION TO TCEQ), IF APPLICABLE.
2. INSTALL TEMPORARY EROSION AND SEDIMENTATION CONTROLS.
3. BEGIN DEMOLITION ACTIVITIES, IF APPLICABLE.
4. BEGIN SITE CLEARING AND GRADING.
5. INSTALL SEWER AND WATER IMPROVEMENTS.
6. INSTALL ELECTRIC IMPROVEMENTS.
7. INSTALL ROADWAY IMPROVEMENTS (ASPHALT, CURBS, SIDEWALKS, ETC.)
8. RESTORE AND REVEGETATE ALL DISTURBED AREAS NOT UNDER IMPERMEABLE IMPROVEMENTS.
9. COMPLETE ANY REMAINING "PUNCH LIST" ITEMS.
10. CONTRACTOR SHALL REMOVE TEMPORARY EROSION CONTROLS AFTER PERMANENT STABILIZATION IS AT LEAST 70% EVENLY ESTABLISHED. RYE IS NOT ACCEPTED.

1 ADDED GVSUD NOTES: 38-40

REVISED GENERAL NOTES 2, 3, 7, 11

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED
PROFESSIONAL ENGINEER
12/08/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

GENERAL NOTES I

SHEET 1 OF 64

NO	DATE	ISSUES AND REVISIONS
1	3-21-2025	REVISED PER GVSUD COMMENTS
3	7-29-2025	REVISED PER GVSUD and GBRA COMMENTS
14	12-02-2025	REVISED PER GUADALUPE COUNTY COMMENTS
15	12-08-2025	REVISED PER GUADALUPE COUNTY COMMENTS

INK CIVIL
2021 W SH46, STE 105
NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 ink-civil.com
TBPE FIRM F-13351

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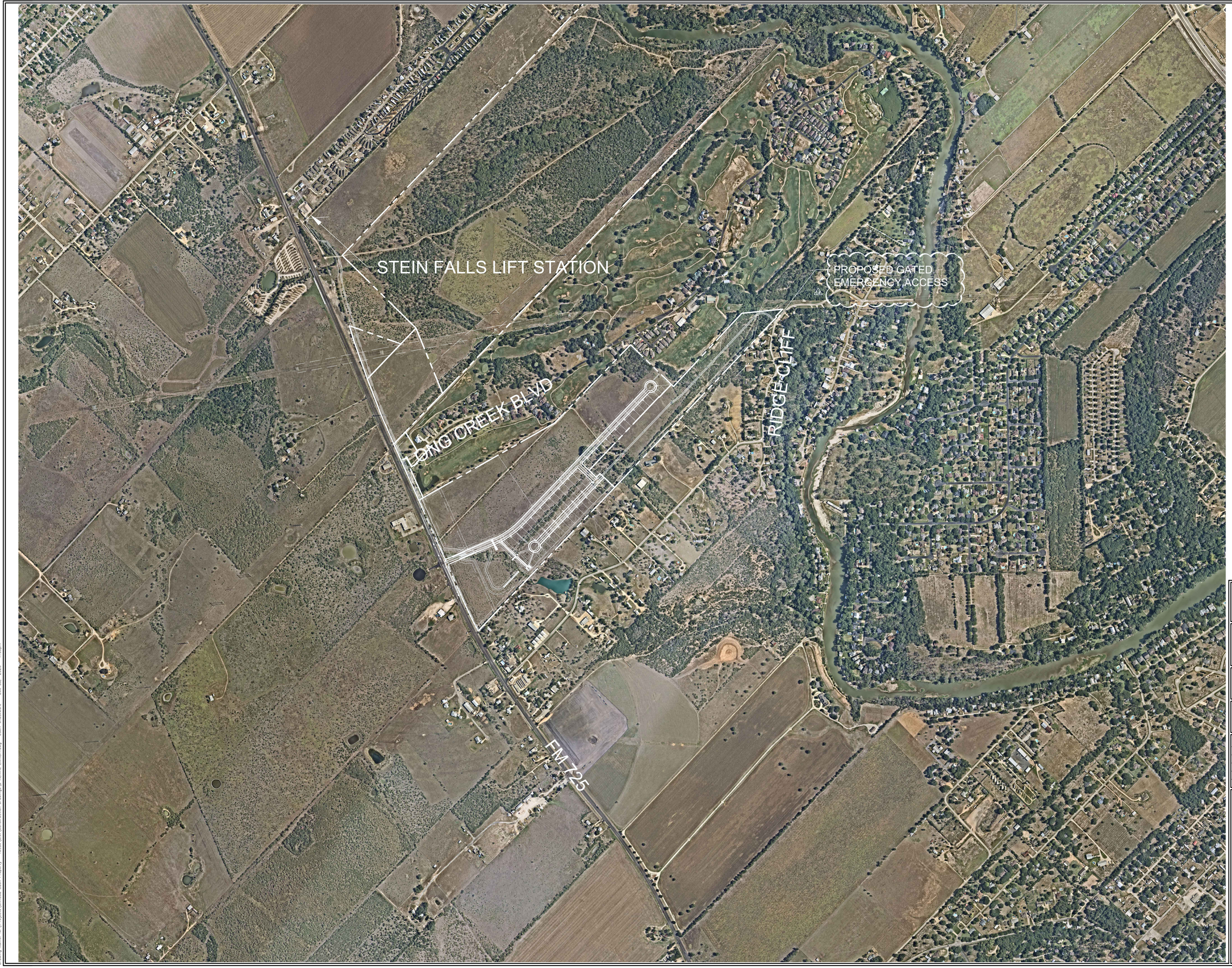

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0 500' 1000'
SCALE: 1"=500'

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED
PROFESSIONAL ENGINEER
12/08/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

AERIAL EXHIBIT

SHEET 2 OF 64

NO	DATE	ISSUES AND REVISIONS
1	12-02-2025	REVISED PER GUADALUPE COUNTY COMMENTS

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NOTE:

THIS PLAT IS IN COMPLIANCE WITH ALL GUADALUPE COUNTY PLATTING REQUIREMENTS.

NOT FINAL PLAT

UNDER REVIEW

FINAL PLAT ESTABLISHING

MCQUEENEY OAKS SUBDIVISION UNIT 1

BEING 85.35 ACRES OF A 107.12 TRACT OF LAND SITUATED IN THE WILLIAM BRACKEN SURVEY NO. 23, ABSTRACT 52 IN GUADALUPE COUNTY, TEXAS AND BEING 1.00 ACRE OF LAND SITUATED IN THE WILLIAM BRACKEN SURVEY NO. 23, ABSTRACT 52 IN GUADALUPE COUNTY, TEXAS AS DESCRIBED IN DOC. NO. 202199044427 IN THE O.P.R.G.C. AND BEING 1.00 ACRE OF LAND SITUATED IN THE WILLIAM BRACKEN SURVEY NO. 23, ABSTRACT 52 IN GUADALUPE COUNTY, TEXAS AS DESCRIBED IN DOC. NO. 202199044427 IN THE O.P.R.G.C.

GREEN VALLEY SPECIAL UTILITY DISTRICT (GVSUD) WATER NOTES:

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

STATE OF TEXAS
COUNTY OF GUADALUPE

I, THE UNDERSIGNED OWNER OF THE LAND SHOWN ON THIS PLAT, AND DESIGNATED HEREIN AS THE MCQUEENEY OAKS SUBDIVISION UNIT 1 TO THE COUNTY OF GUADALUPE, TEXAS, AND WHOSE NAME IS SUBSCRIBED HERETO, DO HEREBY SUBDIVIDE SUCH PROPERTY AND DEDICATE TO THE USE OF THE PUBLIC ALL STREETS, ALLEYS, PARKS, DRAINS, EASEMENTS, AND PUBLIC PLACES THEREON SHOWN FOR THE PURPOSES AND CONSIDERATION THEREIN EXPRESSED.

_____

OWNER:
RS MCQUEENEY LLC
9901 W. INTERSTATE 10, SUITE 725
SAN ANTONIO, TX 78230

STATE OF TEXAS
COUNTY OF

THIS INSTRUMENT WAS ACKNOWLEDGED BEFORE ME ON THIS ___DAY OF_____20___

BY _____

_____
NOTARY PUBLIC, STATE OF TEXAS
MY COMMISSION EXPIRES: _____

KNOW ALL MEN BY THESE PRESENTS:

I, THE UNDERSIGNED, DARRYL L. ZERCHER, A REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF TEXAS, HEREBY CERTIFY THAT THIS PLAT IS TRUE AND CORRECTLY MADE UNDER MY SUPERVISION AND IN COMPLIANCE WITH COUNTY AND STATE SURVEY REGULATIONS AND LAWS AND MADE ON THE GROUND AND THAT THE CORNER MONUMENTS WERE PROPERLY PLACED UNDER MY SUPERVISION.

_____

DARRYL L ZERCHER
R.P.L.S. REGISTERED PROFESSIONAL LAND SURVEYOR NO. 5609
CDS MUERY
100 NE LOOP 410, STE. 300
SAN ANTONIO, TEXAS 78216
FIRM# F-1733 | TBPLS NO: 100495-00

INK CIVIL
2021 W SH46, STE 105
NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 ink-civil.com
TBPE FIRM F-13351

LEGEND:
P.O.B. = POINT OF BEGINNING
U.E. = UTILITY EASEMENT
R.O.W. = RIGHT-OF-WAY
O.P.R.G.C.T. = OFFICIAL PUBLIC RECORDS OF GUADALUPE COUNTY, TEXAS
ESMT. = EASEMENT
DOC. = DOCUMENT NUMBER
AC = ACRES
IRFO = 1/2" IRON PIN SET
IRFN = IRON PIN FOUND

GENERAL NOTES:

1. ALL LOTS WITHIN THE SUBDIVISION WILL BE PROVIDED WATER BY GREEN VALLEY SUD AND SEWER BY GUADALUPE-BLANCO RIVER AUTHORITY. ELECTRIC SERVICE WILL BE PROVIDED BY GUADALUPE VALLEY ELECTRIC COOPERATIVE.
2. LOT 900 BLOCK 1, IS AN HOA LOT AND IS A NON-BUILDABLE LOT. THIS LOT WILL BE OWNED AND MAINTAINED BY THE PROPERTY OWNER'S ASSOCIATION, THEIR SUCCESSOR'S OR ASSIGNS, AND SHALL NOT BE THE RESPONSIBILITY OF GUADALUPE COUNTY.
3. THE SUBDIVISION IS WITHIN THE SEGUIN INDEPENDENT SCHOOL DISTRICT AND COUNTY PRECINCT 1.
4. ALL BEARINGS AND COORDINATES SHOWN HEREON ARE IN GRID BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, TEXAS SOUTH CENTRAL ZONE (4204), NORTH AMERICAN DATUM 1983. DISTANCES SHOWN HEREON ARE SURFACE USING COMBINED SCALE FACTOR OF 1.00015.
5. MONUMENTS WERE FOUND OR SET AT EACH CORNER OF THE SURVEY BOUNDARY OF THE SUBDIVISION. MONUMENTS AND MARKERS WILL BE SET WITH 1/2" IRON PIN WITH PLASTIC CAP STAMPED "CDS MUERY," IMMEDIATELY AFTER COMPLETION OF UTILITY INSTALLATION AND STREET CONSTRUCTION UNLESS NOTED OTHERWISE.
6. THE PROPOSED USE OF THE SUBDIVISION IS MIXED USE COMMERCIAL, MULTIFAMILY, AND SINGLE FAMILY RESIDENTIAL.
7. MCQUEENEY OAKS SUBDIVISION UNIT 1, ESTABLISHING A TOTAL OF 68 LOTS, WITH 67 BEING BUILDABLE.
8. NO STRUCTURES, WALLS OR OTHER OBSTRUCTIONS OF ANY KIND SHALL BE PLACED WITHIN THE LIMITS OF THE DRAINAGE EASEMENTS SHOWN ON THIS PLAT, NO LANDSCAPING, FENCES, OR OTHER TYPE OF MODIFICATIONS WHICH ALTER THE CROSS SECTIONS OF THE DRAINAGE EASEMENTS OR DECREASES THE HYDRAULIC CAPACITY OF THE EASEMENT, AS APPROVED, SHALL BE ALLOWED WITHOUT THE APPROVAL OF THE GUADALUPE COUNTY ENGINEER.
9. THE ELEVATION OF THE LOWEST FLOOR SHALL BE AT LEAST 10 INCHES ABOVE THE FINISHED GRADE OF THE SURROUNDING GROUND, WHICH SHALL BE SLOPED IN A FASHION SO AS TO DIRECT STORMWATER AWAY FROM THE STRUCTURE. PROPERTIES ADJACENT TO STORMWATER CONVEYANCE STRUCTURES MUST HAVE A FLOOR SLAB ELEVATION OR BOTTOM OF FLOOR JOISTS A MINIMUM OF ONE FOOT ABOVE THE 100-YEAR WATER FLOW ELEVATION IN THE STRUCTURE. DRIVEWAYS SERVING HOUSES ON THE DOWNHILL SIDE OF THE STREET SHALL HAVE A PROPERLY SIZED CROSS SWALE PREVENTING RUNOFF FROM ENTERING THE GARAGE AND SHALL PREVENT WATER FROM LEAVING THE STREET.
10. NO STRUCTURES IN THIS SUBDIVISION SHALL BE OCCUPIED UNTIL CONNECTED TO A PUBLIC WATER AND SEWER SYSTEM WHICH HAS BEEN APPROVED BY GREEN VALLEY SUD AND GUADALUPE-BLANCO RIVER AUTHORITY.
11. MAINTENANCE OF DRAINAGE EASEMENT DESIGNATED WITHIN A LOT SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNERS ASSOCIATION.
12. NO PORTION OF THE SUBDIVISION IS LOCATED WITHIN THE EXISTING SPECIAL FLOOD HAZARD ZONE A, 100-YEAR FLOOD BOUNDARY, AS DEFINED BY THE GUADALUPE COUNTY, TEXAS COMMUNITY PANEL NUMBER 48187C0115G AND 48187C0120G, REVISED MARCH 27, 2024 AS PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY.
13. EACH LOT OWNER SHALL BE RESPONSIBLE FOR VERIFYING THE DEPTH OF THE SEWER SERVICE STUB OUT AND DETERMINING THE MINIMUM SERVICEABLE FINISH FLOOR ELEVATION.
14. ANY DRIVEWAY CONSTRUCTION ON COUNTY ROADS WITHIN THE UNINCORPORATED AREAS OF GUADALUPE COUNTY MUST BE PERMITTED BY THE GUADALUPE COUNTY ROAD DEPARTMENT.
15. NO PORTION OF THIS PROPERTY IS WITHIN THE EDWARDS AQUIFER RECHARGE ZONE.
16. 2' CONTOURS ARE SOURCED FROM ON THE GROUND TOPOGRAPHIC SURVEY AND ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, TEXAS SOUTH CENTRAL ZONE (4204), NORTH AMERICAN DATUM 1988.
17. IN ORDER TO PROMOTE SAFE USE OF STREETS AND PRESERVE THE CONDITION OF THE PUBLIC STREETS, NO DRIVEWAY CONSTRUCTED ON ANY LOT WITHIN THIS SUBDIVISION SHALL BE PERMITTED ACCESS ONTO A PUBLICLY DEDICATED COUNTY RIGHT-OF-WAY UNLESS A DRIVEWAY PERMIT HAS BEEN ISSUED BY THE GUADALUPE COUNTY ROAD AND BRIDGE DEPARTMENT.
18. NO FENCING OR STRUCTURES THAT WILL INTERFERE WITH ALL APPROPRIATE DRAINAGE FLOW WILL BE ALLOWED ON OR ACROSS SUCH LINES.
19. ALL SUBDIVISION DRIVEWAYS SHALL HAVE A CULVERT WITH A 15" RCP PIPES PLACED AT LOW POINT OF BOTH SIDES OF AND PARALLEL TO THE EDGE OF PAVEMENT.

GUADALUPE BLANCO RIVER AUTHORITY (GBRA) SEWER NOTES:

1. THE GUADALUPE BLANCO RIVER AUTHORITY (GBRA) IS HEREBY DEDICATED THE EASEMENTS AND RIGHTS-OF-WAY IN THE AREAS DESIGNATED ON THIS PLAT AS "GBRA" EASEMENTS OR UTILITY EASEMENTS FOR THE PURPOSE OF INSTALLING, RECONSTRUCTING, OPERATING, MAINTAINING, INSPECTING, REPAIRING, REMOVING, AND RELOCATING BURIED AND/OR EXPOSED SANITARY SEWER FACILITIES AND APPURTENANCES.
2. TOGETHER WITH THE RIGHT OF INGRESS AND EGRESS, GBRA SHALL HAVE THE RIGHT TO REMOVE SAID EASEMENTS OF ALL TREES OR PARTS THEREOF, OR ANY OTHER OBSTRUCTIONS WHICH MAY ENDANGER, OR INTERFERE WITH MAINTENANCE OF, THE FACILITIES AND APPURTENANCES.
3. OTHER UTILITIES, STRUCTURES, GRADING, DRAINAGE, DETENTION/ RETENTION PONDS, LANDSCAPING, TREES, ROADS, PARKING LOTS, FENCES, WALLS, CONSTRUCTION OF ANY TYPE, OR ANY OTHER IMPROVEMENTS OR OBSTRUCTIONS, ARE NOT ALLOWED WITHIN GBRA EASEMENTS.
4. DESIGNS FOR ANY PROPOSED ALTERATIONS OR CROSSINGS OF GBRA EASEMENTS MUST BE APPROVED IN WRITING BY GBRA AND THE INSTALLATION OF SUCH MUST BE INSPECTED AND APPROVED BY GBRA.
5. MAINTENANCE OF EASEMENTS IS THE RESPONSIBILITY OF THE OWNER.
6. THE PROPERTY OWNER MUST INSTALL 16 FOOT GATES IN ANY FENCES THAT CROSS GBRA UTILITIES; GATES MUST BE CENTERED ACROSS GBRA UTILITIES.
7. CUSTOMER SANITARY SEWER SERVICES SHALL NOT BE INSTALLED WITHIN FENCED AREAS.

TXDOT NOTES:

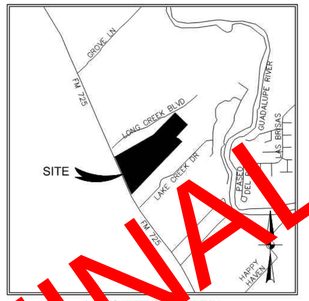
1. FOR RESIDENTIAL DEVELOPMENT DIRECTLY ADJACENT TO STATE RIGHT-OF-WAY, THE DEVELOPER SHALL BE RESPONSIBLE FOR ADEQUATE SETBACK AND/OR SOUND ABATEMENT MEASURES FOR FUTURE NOISE MITIGATION.
2. THE OWNER/DEVELOPER IS RESPONSIBLE FOR PREVENTING ANY ADVERSE IMPACT TO THE EXISTING DRAINAGE SYSTEM WITHIN THE HIGHWAY RIGHT-OF-WAY. OUTFALLS FOR WATER QUALITY AND/OR DETENTION PONDS TREATING IMPERVIOUS COVER RELATED TO THE DEVELOPMENT AND STRUCTURES FOR REDUCTION OF DISCHARGE VELOCITY WILL NOT ENCROACH BY STRUCTURE OR GRADING INTO STATE ROW OR INTO AREAS OF ROW RESERVATION OR DEDICATION. NO NEW EASEMENTS OF ANY TYPE SHOULD BE LOCATED IN AREAS OF ROW RESERVATION OR DEDICATION.
3. MAXIMUM ACCESS POINTS TO STATE HIGHWAY FROM THIS PROPERTY WILL BE REGULATED AS DIRECTED BY TXDOT'S, "ACCESS MANAGEMENT MANUAL". ACCESS TO THE PROPERTY MAY BECOME RIGHT-IN/OUT ONLY WITH THE FUTURE EXPANSION OF FM 725. WHERE TOPOGRAPHY OR OTHER EXISTING CONDITIONS MAKE IT INAPPROPRIATE OR NOT FEASIBLE TO CONFORM TO THE CONNECTION SPACING INTERVALS, THE LOCATION OF REASONABLE ACCESS WILL BE DETERMINED WITH CONSIDERATION GIVEN TO TOPOGRAPHY, ESTABLISHED PROPERTY OWNERSHIPS, UNIQUE PHYSICAL LIMITATIONS, AND/OR PHYSICAL DESIGN CONSTRAINTS. THE SELECTED LOCATION SHOULD SERVE AS MANY PROPERTIES AND INTERESTS AS POSSIBLE TO REDUCE THE NEED FOR ADDITIONAL DIRECT ACCESS TO THE HIGHWAY. IN SELECTING LOCATIONS FOR FULL MOVEMENT INTERSECTIONS, PREFERENCE WILL BE GIVEN TO PUBLIC ROADWAYS THAT ARE ON LOCAL THOROUGHFARE PLANS.
4. IF SIDEWALKS ARE REQUIRED BY APPROPRIATE CITY ORDINANCE, A SIDEWALK PERMIT MUST BE APPROVED BY TXDOT, PRIOR TO CONSTRUCTION WITHIN STATE RIGHT-OF-WAY. LOCATIONS OF SIDEWALKS WITHIN STATE RIGHT OF WAY SHALL BE AS DIRECTED BY TXDOT.
5. ANY TRAFFIC CONTROL MEASURES (LEFT-TURN LANE, RIGHT-TURN LANE SIGNALS, ETC.) FOR ANY ACCESS FRONTING A STATE MAINTAINED ROADWAY SHALL BE THE RESPONSIBILITY OF THE DEVELOPER/OWNER.

GUADALUPE VALLEY ELECTRIC COOPERATIVE:

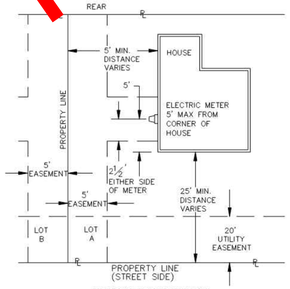
1. WHERE UNDERGROUND SERVICES ARE UTILIZED GVEC WILL REQUIRE A 5-FOOT SIDE EASEMENT TO THE SERVICE METER LOCATION. EASEMENT TO FOLLOW SERVICE LINE AND WILL VARY DEPENDING ON LOCATION OF BUILDING OR STRUCTURE.
2. GVEC SHALL HAVE ACCESS TO METER LOCATIONS FROM THE FRONT YARD WITH METER LOCATION NOT BEING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

GUADALUPE COUNTY NOTES:

1. FUTURE IMPROVEMENTS WILL BE CONSIDERED CUMULATIVELY WITH PRIOR AND EXISTING STRUCTURES ON SITE FOR THE PURPOSES OF DRAINAGE IMPACT.
2. SUBSEQUENT SUBDIVISION OF THE PROPERTY INTO SMALLER TRACTS WILL NULLIFY THIS APPROVAL AND WILL REQUIRE SUBMITTAL OF A DRAINAGE STUDY FOR REVIEW IN ADDITION TO APPLICABLE PLATTING REQUIREMENTS. DETENTION OR OTHER MITIGATION MAY BE REQUIRED PER PROPOSED TRACT AND ACCOUNT FOR EXISTING IMPROVEMENTS.
3. CHANGE IN USE OF THE IMPROVEMENTS REQUIRES APPROVAL BY GUADALUPE COUNTY AND DETENTION OR OTHER DRAINAGE MITIGATION MAY BE REQUIRED AT THAT TIME.
4. TRANSFER OF PROPERTY OWNERSHIP DOES NOT RELEASE SUBSEQUENT OWNER(S) FROM THE OBLIGATIONS IMPOSED HEREIN.
5. MAINTENANCE RESPONSIBILITY FOR DRAINAGE WILL NOT BE ACCEPTED BY THE COUNTY OTHER THAN THAT ACCEPTED IN CONNECTION WITH DRAINING OR PROTECTING THE ROAD SYSTEM. MAINTENANCE RESPONSIBILITY FOR STORM WATER MANAGEMENT CONTROLS WILL REMAIN WITH THE OWNER.
6. MAINTENANCE RESPONSIBILITY OF THE DETENTION POND ON LOT 900 WILL BE ASSUMED BY THE HOA, MCQUEENEY OAKS SUBDIVISION HOA
7. THE EMERGENCY ACCESS IS IDENTIFIED AS TEMPORARY IN UNIT 2, THIS WILL BE PLATTED AS THE RIGHT OF WAY IN UNIT 2. THE ACCESS WILL BE PERMANENT, BUT THERE IS NOT NEED FOR THE EASEMENT WHEN UNIT 2 IS PLATTED.



LOCATION MAP
SCALE: 1"=2,000'



TYPICAL EASEMENT ON INTERIOR PROPERTY LINE

THE SUBDIVISION PLAT OF MCQUEENEY OAKS SUBDIVISION UNIT 1 HAS BEEN SUBMITTED TO AND APPROVED BY GUADALUPE VALLEY ELECTRIC COOPERATIVE INC. FOR EASEMENTS

_____ DATE

_____ AGENT FOR GUADALUPE VALLEY ELECTRIC COOP., INC.

COMMISSIONERS

_____ JACQUELINE OTT, PRECINCT 1

_____ DREW ENGELKE, PRECINCT 2

_____ MICHAEL CARPENTER, PRECINCT 3

_____ STEPHEN GERMANN, PRECINCT 4

THIS PLAT OF MCQUEENEY OAKS SUBDIVISION UNIT 1 HAS BEEN SUBMITTED TO AND CONSIDERED BY THE COMMISSIONERS COURT OF GUADALUPE COUNTY, TEXAS, WHICH COURT ACKNOWLEDGES THAT THE PLAT CONFORMS TO THE SUBDIVISION REGULATIONS OF SAID COUNTY AND DOES HEREBY APPROVE SAID PLAT

DATED THIS_____ DAY OF _____, 20____

_____ KYLE KUTCHER COUNTY JUDGE

_____ TERESA KIEL COUNTY CLERK

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED
PROFESSIONAL ENGINEER
12/08/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

SUBDIVISION PLAT I

SHEET 3 OF 64

NO	DATE	ISSUES AND REVISIONS
1	04-17-2025	REVISED PER GVSUD COMMENTS
2	11-10-2025	STREET NAMES REVISED
3	12-02-2025	REVISED PER GUADALUPE COUNTY COMMENTS

INK CIVIL
2021 W SH46, STE 105
NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 ink-civil.com
TBPE FIRM F-13351

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Drawing Name: N:\Projects\089002 Buck Property - 109ac\Civil\Construction Drawings\5 SUBDIVISION PLAT III.dwg User: chuckwere Dec 08, 2025 - 6:11pm
Drawing Name: N:\Projects\089002 Buck Property - 109ac\Planning\Platting\McQueeney Tract Plat Unit 1.dwg User: chuckwere Dec 08, 2025 - 7:06pm

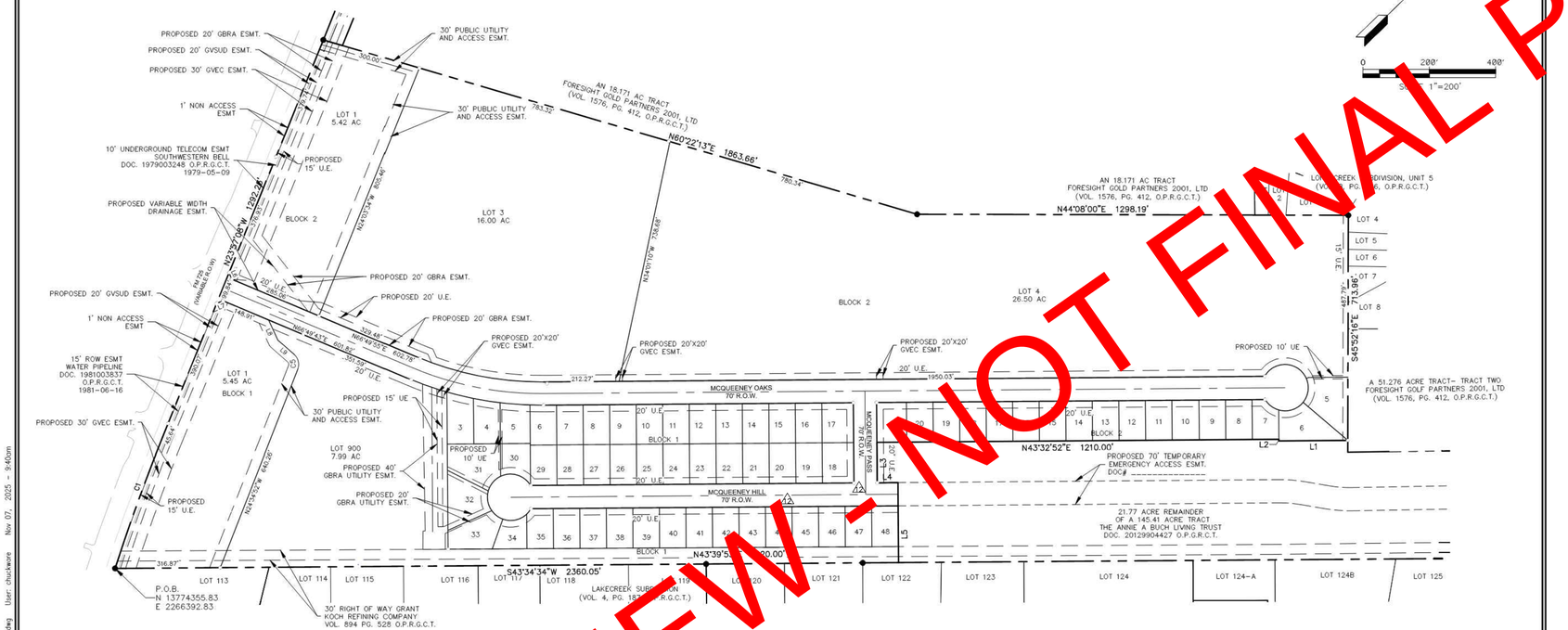
NOTE:

THIS PLAT IS IN COMPLIANCE WITH ALL GUADALUPE COUNTY PLATTING REQUIREMENTS.

FINAL PLAT ESTABLISHING

MCQUEENEY OAKS SUBDIVISION UNIT 1

BEING 85.35 ACRES OF A 107.12 TRACT OF LAND SITUATED IN THE WILLIAM BRACKEN SURVEY NO. 23, ABSTRACT 52 IN GUADALUPE COUNTY, TEXAS AND BEING 1.00 ACRE OF LAND SITUATED IN THE WILLIAM BRACKEN SURVEY NO. 23, ABSTRACT 52 IN GUADALUPE COUNTY, TEXAS AS DESCRIBED IN DOC. NO. 202199044427 IN THE O.P.R.G.C. AND BEING 1.00 ACRE OF LAND SITUATED IN THE WILLIAM BRACKEN SURVEY NO. 23, ABSTRACT 52 IN GUADALUPE COUNTY, TEXAS AS DESCRIBED IN DOC. NO. 202199044427 IN THE O.P.R.G.C.



CURVE TABLE						
CURVE	LENGTH	RADIUS	DELTA	TANGENT	CHORD LENGTH	CHORD BEARING
C1	417.99'	5679.85'	4°12'59"	209.09'	417.90'	N26°03'33"W
C2	392.16'	965.00'	23°17'03"	198.82'	389.47'	N55°11'24"E
C3	420.61'	1035.00'	23°17'03"	213.25'	417.72'	N55°11'24"E
C4	366.52'	70.00'	300°00'00"	40.41'	70.00'	N46°27'08"W
C5	48.93'	40.00'	70°05'07"	28.05'	45.93'	N59°37'21"E
C6	366.52'	70.00'	300°00'00"	40.41'	70.00'	S46°27'08"E

LINE TABLE		
LINE	LENGTH	BEARING
L1	62.52'	N43°32'52"E
L2	120.00'	S46°27'08"E
L3	62.52'	S43°32'52"W
L4	171.00'	N46°27'08"W
L5	171.36'	S69°33'49"E
L7	20.00'	S21°49'55"W
L8	66.75'	N70°50'18"W
L9	65.37'	S85°20'00"W

EASEMENT LINE TABLE		
	LENGTH	BEARING
L10	272.03'	N83°45'24"W
L11	278.84'	S83°45'24"E
L12	17.83'	S43°32'52"W
L13	48.56'	S46°25'36"E
L14	67.55'	S43°45'29"W
L15	56.04'	N45°33'47"W
L16	6.73'	N43°07'19"E

NOTE:

THE EMERGENCY ACCESS IS IDENTIFIED AS TEMPORARY BECAUSE IN UNIT 2, THIS WILL BE PLATTED AS A RIGHT OF WAY THE EASEMENT IS TEMPORARY, BUT THE ACCESS IS PERMANENT.

INK CIVIL
2021 W SH46, STE 105
NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 ink-civil.com
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LEGEND
P.O.B. = POINT OF BEGINNING
U.E. = UTILITY EASEMENT
R.O.W. = RIGHT-OF-WAY
O.P.R.G.C.T. = OFFICIAL PUBLIC RECORDS OF GUADALUPE COUNTY, TEXAS
ESMT. = EASEMENT
DOC# = DOCUMENT NUMBER
AC = ACRES
○ = 1/2" IRON PIN SET
● = IRON PIN FOUND

PREPARED: November 7, 2025

PAGE 2 OF 3

UNDER REVIEW - NOT FINAL PLAT

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED
PROFESSIONAL ENGINEER
12/08/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

SUBDIVISION PLAT II

SHEET 4 OF 64

NO	DATE	ISSUES AND REVISIONS
1	04-17-2025	REVISED PER GVSUD COMMENTS
2	11-10-2025	STREET NAMES REVISED
3	12-02-2025	REVISED PER GUADALUPE COUNTY COMMENTS
4	12-08-2025	REVISED PER GUADALUPE COUNTY COMMENTS

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Drawing Name: N:\Projects\080902 Buch Property - 109ac\Civil\Construction Drawings\3 SUBDIVISION PLAT II.dwg User: dhickware Dec 08, 2025 - 7:06pm

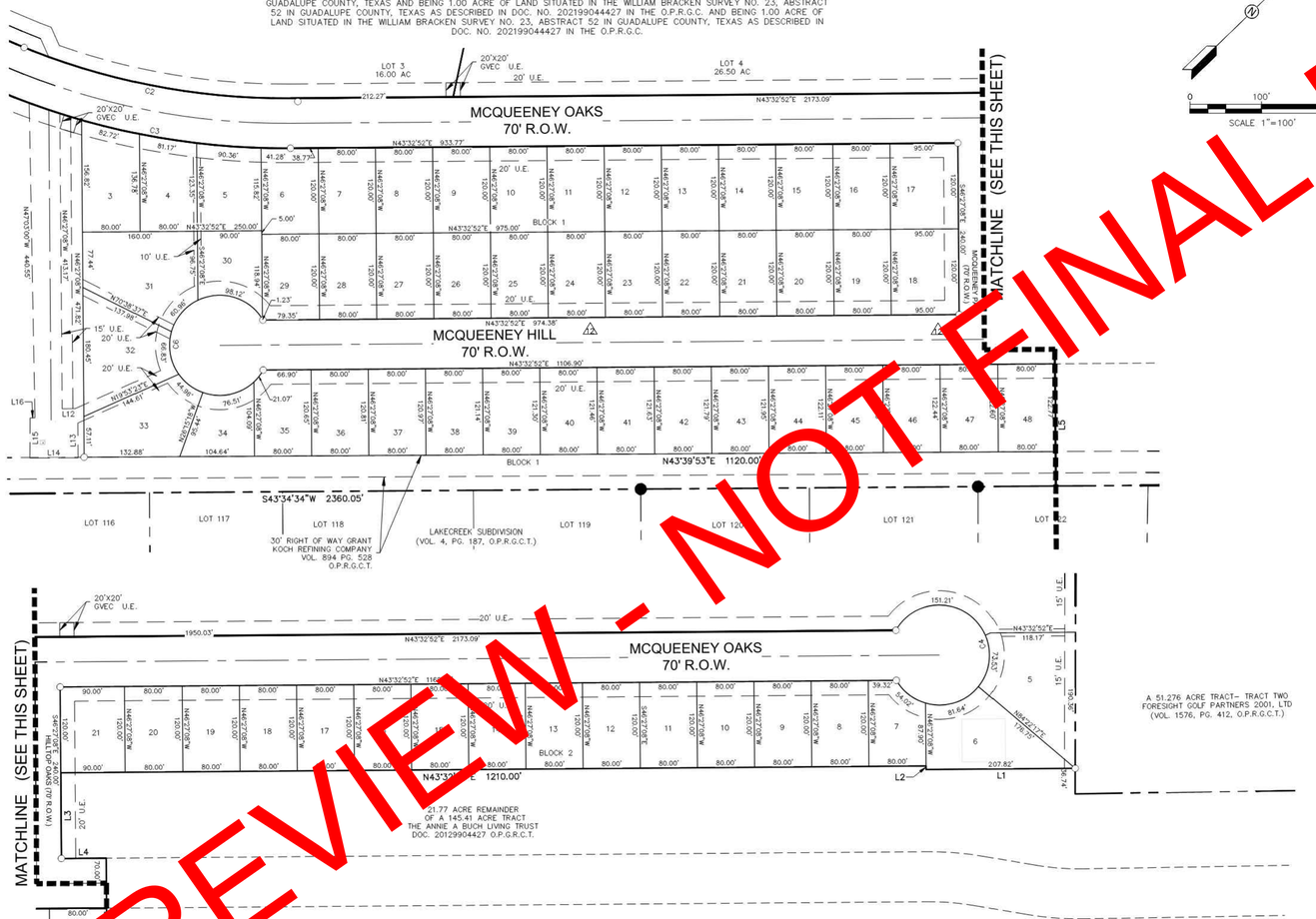
NOTE:

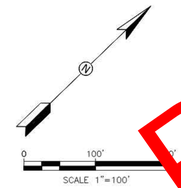
THIS PLAT IS IN COMPLIANCE WITH ALL GUADALUPE COUNTY PLATTING REQUIREMENTS. ⚠3

FINAL PLAT ESTABLISHING

MCQUEENEY OAKS SUBDIVISION- UNIT 1

BEING 85.35 ACRES OF A 107.12 TRACT OF LAND SITUATED IN THE WILLIAM BRACKEN SURVEY NO. 23, ABSTRACT 52 IN GUADALUPE COUNTY, TEXAS AND BEING 1.00 ACRE OF LAND SITUATED IN THE WILLIAM BRACKEN SURVEY NO. 23, ABSTRACT 52 IN GUADALUPE COUNTY, TEXAS AS DESCRIBED IN DOC. NO. 202199044427 IN THE O.P.R.G.C. AND BEING 1.00 ACRE OF LAND SITUATED IN THE WILLIAM BRACKEN SURVEY NO. 23, ABSTRACT 52 IN GUADALUPE COUNTY, TEXAS AS DESCRIBED IN DOC. NO. 202199044427 IN THE O.P.R.G.C.





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UNDER REVIEW - NOT FINAL PLAT

PREPARED November 10, 2025

12/08/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

SUBDIVISION PLAT III

SHEET 5 OF 64

NO	DATE	ISSUES AND REVISIONS
⚠1	04-17-2025	REVISED PER GVSUD COMMENTS
⚠2	11-10-2025	STREET NAMES REVISED
⚠3	12-02-2025	REVISED PER GUADALUPE COUNTY COMMENTS

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Drawing Name: N:\Projects\089002 Buch Property - 109ac\Civil\Construction Drawings\5 SUBDIVISION PLAT III.dwg User: chuckwere Dec 08, 2025 - 7:06pm

0 100' 200'
SCALE: 1"=100'

LEGEND

- SF — SILT FENCE
- LOC — LIMITS OF CONSTRUCTION
- 900 — EXISTING CONTOURS
- 900 — PROPOSED CONTOURS
- OHE — EXISTING OVERHEAD ELECTRIC
- UCM — EXISTING UNDERGROUND COMM LINE
- FLOW ARROWS
- STABILIZED CONSTRUCTION ENTRANCE/EXIT (FIELD LOCATE)
- TRUCK WASH OUT PIT (FIELD LOCATE)
- CONSTRUCTION STAGING AREA (FIELD LOCATE)
- ROCK BERM
- GRAVEL FILTER BAGS
- EXISTING STORM DRAIN MANHOLE
- AREA TO BE RE-VEGETATED (HYDRAULIC MULCH)
- POTENTIAL WATERS OF THE U.S.– TO BE UNDISTURBED
- POTENTIAL WATERS OF THE U.S. – REMOVED (0.019 AC)

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED
PROFESSIONAL ENGINEER
12/08/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

EROSION CONTROL

SHEET 6 OF 64

NO	DATE	ISSUES AND REVISIONS
1	11-10-2025	STREET NAMES REVISED
2	12-02-2025	REVISED PER GUADALUPE COUNTY COMMENTS

INK CIVIL
2021 W SH46, STE 105
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Drawing Name: N:\Projects\080002 Bloch Property - 109ac\Civil\Construction Drawings\7 EROSION CONTROL PLAN II.dwg User: chuckwire Dec 08, 2025 - 7:06pm

SEQUENCE OF CONSTRUCTION:

1. OBTAIN CITY APPROVED SITE PREPARATION PLANS, AND TPDES PERMIT (NOT A COPY OF THE TPDES APPLICATION TO TCEQ), IF APPLICABLE.
2. INSTALL TEMPORARY EROSION AND SEDIMENTATION CONTROLS.
3. BEGIN DEMOLITION ACTIVITIES, IF APPLICABLE.
4. BEGIN SITE CLEARING AND GRADING.
5. INSTALL SEWER AND WATER IMPROVEMENTS.
6. INSTALL ELECTRIC IMPROVEMENTS.
7. INSTALL ROADWAY IMPROVEMENTS (ASPHALT, CURBS, SIDEWALKS, ETC.)
8. RESTORE AND REVEGETATE ALL DISTURBED AREAS NOT UNDER IMPERMEABLE IMPROVEMENTS.
9. COMPLETE ANY REMAINING "PUNCH LIST" ITEMS.
10. CONTRACTOR SHALL REMOVE TEMPORARY EROSION CONTROLS AFTER PERMANENT STABILIZATION IS AT LEAST 100% EVENLY ESTABLISHED. RYE IS NOT ACCEPTED. VEGETATION SHALL CONSIST OF "NATIVE SUN TURF GRASS" AS SUPPLIED BY NATIVE AMERICAN SEED IN JUNCTION, TX, CONSISTING OF 34% BLUE GRAMA AND 64% BUFFALO GRASS, OR ENGINEER APPROVED EQUAL. SEED MIXTURE SHALL CONSIST OF A PURE LIVE SEED OF 90-95%.

SOIL STABILIZATION NOTE

PER TPDES REQUIREMENTS, DISTURBED AREAS ON WHICH CONSTRUCTION ACTIVITIES HAVE CEASED (TEMPORARILY OR PERMANENTLY) SHALL BE STABILIZED WITHIN 14 DAYS UNLESS ACTIVITY RESUMES WITHIN 21 DAYS. SEEDING DOES NOT CONSTITUTE AS STABILIZATION.

HYDRAULIC MULCH

MATERIALS:

HYDRAULIC MULCHES: WOOD FIBER MULCH CAN BE APPLIED ALONE OR AS A COMPONENT OF HYDRAULIC MATRICES. WOOD FIBER APPLIED ALONE IS TYPICALLY APPLIED AT THE RATE OF 2,000 TO 4,000 LB/ACRE. WOOD FIBER MULCH IS MANUFACTURED FROM WOOD OR WOOD WASTE FROM LUMBER MILLS OR FROM URBAN SOURCES.

HYDRAULIC MATRICES: HYDRAULIC MATRICES INCLUDE A MIXTURE OF WOOD FIBER AND ACRYLIC POLYMER OR OTHER TACKIFIER AS BINDER. APPLY AS A LIQUID SLURRY USING A HYDRAULIC APPLICATION MACHINE (I.E., HYDRO SEEDER) AT THE FOLLOWING MINIMUM RATES, OR AS SPECIFIED BY THE MANUFACTURER TO ACHIEVE COMPLETE COVERAGE OF THE TARGET AREA: 2,000 TO 4,000 LB/ACRE WOOD FIBER MULCH, AND 5 TO 10% (BY WEIGHT) OF TACKIFIER (ACRYLIC COPOLYMER, GUAR, PSYLLIUM, ETC.)

BONDED FIBER MATRIX: BONDED FIBER MATRIX (BFM) IS A HYDRAULICALLY APPLIED SYSTEM OF FIBERS AND ADHESIVES THAT UPON DRYING FORMS AN EROSION RESISTANT BLANKET THAT PROMOTES VEGETATION, AND PREVENTS SOIL EROSION. BFMS ARE TYPICALLY APPLIED AT RATES FROM 3,000 LB/ACRE TO 4,000 LB/ACRE BASED ON THE MANUFACTURER'S RECOMMENDATION. A BIODEGRADABLE BFM IS COMPOSED OF MATERIALS THAT ARE 100% BIODEGRADABLE. THE BINDER IN THE BFM SHOULD ALSO BE BIODEGRADABLE AND SHOULD NOT DISSOLVE OR DISPERSE UPON RE-WETTING. TYPICALLY, BIODEGRADABLE BFMS SHOULD NOT BE APPLIED IMMEDIATELY BEFORE, DURING OR IMMEDIATELY AFTER RAINFALL IF THE SOIL IS SATURATED, DEPENDING ON THE PRODUCT, BFMS TYPICALLY REQUIRE 12 TO 24 HOURS TO DRY AND BECOME EFFECTIVE.

INSTALLATION:

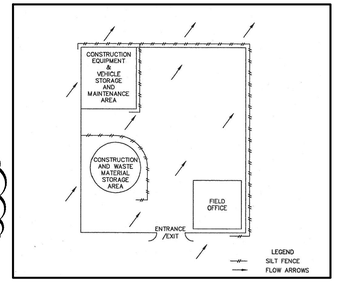
1. PRIOR TO APPLICATION, ROUGHEN EMBANKMENT AND FILL AREAS BY ROLLING WITH A CRIMPING OR PUNCHING TYPE ROLLER OR BY TRACK WALKING. TRACK WALKING SHALL ONLY BE USED WHERE OTHER METHODS ARE IMPRACTICAL.
2. TO BE EFFECTIVE, HYDRAULIC MATRICES REQUIRE 24 HOURS TO DRY BEFORE RAINFALL OCCURS.
3. AVOID MULCH OVER SPRAY ONTO ROADS, SIDEWALKS, DRAINAGE CHANNELS, EXISTING VEGETATION, ETC.
4. 4" OF TOP SOIL SHALL BE PLACED.

INSPECTION AND MAINTENANCE GUIDELINES:

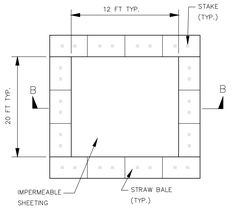
1. MULCHED AREAS SHOULD BE INSPECTED WEEKLY AND AFTER EACH RAIN EVENT TO LOCATE AND REPAIR ANY DAMAGE.
2. AREAS DAMAGED BY STORMS OR NORMAL CONSTRUCTION ACTIVITIES SHOULD BE REGRADED AND HYDRAULIC MULCH REAPPLIED AS SOON AS PRACTICAL.

EROSION CONTROL NOTES:

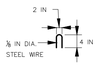
1. LIMITS OF CONSTRUCTION AND OTHER EROSION CONTROL IMPROVEMENTS SHOWN OUTSIDE THE PROPERTY ARE SHOWN FOR GRAPHICAL PURPOSE ONLY. IF NEAR PROPERTY LINE, THE INTENT IS TO BE PLACED NEAR THE PROPERTY LINE, NOT ON THE ADJACENT PROPERTY.
2. DO NOT DISTURB VEGETATED AREAS (TREES, GRASS, WEEDS, BRUSH, ETC.) ANY MORE THAN NECESSARY FOR CONSTRUCTION.
3. CONSTRUCTION ENTRANCE/EXIT LOCATION, CONCRETE WASH-OUT PIT, AND CONSTRUCTION EQUIPMENT AND MATERIAL STORAGE YARD TO BE DETERMINED IN THE FIELD.
4. STORM WATER POLLUTION PREVENTION CONTROLS MAY NEED TO BE MODIFIED IN THE FIELD TO ACCOMPLISH THE DESIRED EFFECT. ALL MODIFICATIONS ARE TO BE NOTED IN THE SWPPP DOCUMENTS AND SIGNED AND DATED BY THE RESPONSIBLE PARTY.
5. RESTRICT ENTRY/EXIT TO THE PROJECT SITE TO DESIGNATED LOCATIONS BY USE OF ADEQUATE FENCING, IF NECESSARY.
6. ALL STORM WATER POLLUTION PREVENTION CONTROLS SHALL BE MAINTAINED AND IN WORKING CONDITIONS AT ALL TIMES.
7. STORM WATER POLLUTION PREVENTION STRUCTURES SHALL BE CONSTRUCTED WITHIN THE SITE BOUNDARIES. SOME OF THESE FEATURES MAY BE SHOWN OUTSIDE THE SITE BOUNDARIES ON THIS PLAN FOR VISUAL CLARITY.
8. ALL DISTURBED SOIL THAT WILL NOT BE COVERED BY IMPERVIOUS COVER SUCH AS PARKWAY AREAS, EASEMENT AREAS, EMBANKMENT SLOPES, ETC. WILL BE STABILIZED PER APPLICABLE PROJECT SPECIFICATIONS. (REFERENCE SOIL STABILIZATION NOTE, THIS SHEET)
9. BEST MANAGEMENT PRACTICES MAY BE INSTALLED IN STAGES TO COINCIDE WITH THE DISTURBANCE OF UP-GRADIENT AREAS.
10. BEST MANAGEMENT PRACTICES MAY BE REMOVED IN STAGES ONCE THE WATERSHED FOR THAT PORTION CONTROLLED BY THE BEST MANAGEMENT PRACTICES HAS BEEN STABILIZED IN ACCORDANCE WITH TPDES REQUIREMENTS.
11. UPON COMPLETION OF THE PROJECT, INCLUDING SITE STABILIZATION, AND BEFORE FINAL PAYMENT IS ISSUED, CONTRACTOR SHALL REMOVE ALL SEDIMENT AND EROSION CONTROL MEASURES, PAYING SPECIAL ATTENTION TO ROCK BERMS IN DRAINAGE FEATURES.
12. STRIPPING OF VEGETATION FROM PROJECT SITES SHALL BE PHASED SO AS TO EXPOSE THE MINIMUM AMOUNT OF AREA TO SOIL EROSION FOR THE SHORTEST POSSIBLE PERIOD OF TIME.



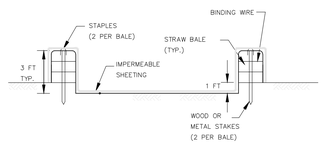
TYPICAL CONSTRUCTION STAGING AREA



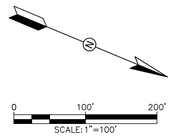
PLAN



STAPLE DETAIL



SECTION B-B



LEGEND

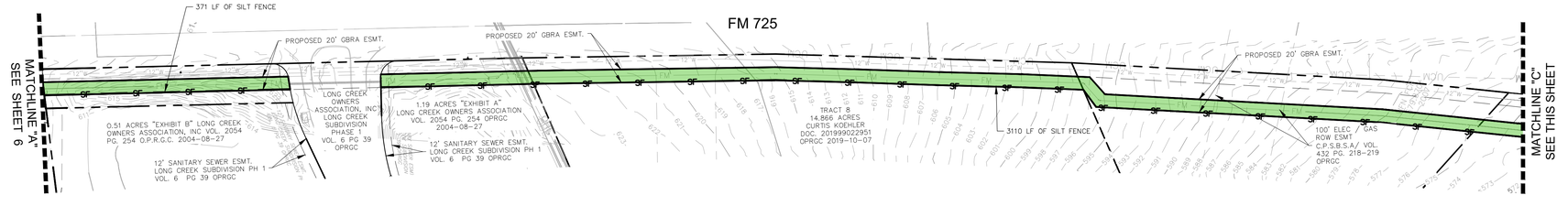
	PROPERTY LINE
SF	SILT FENCE
LOC	LIMITS OF CONSTRUCTION
900	EXISTING CONTOURS
900	PROPOSED CONTOURS
OHE	EXISTING OVERHEAD ELECTRIC
UCM	EXISTING UNDERGROUND COMM LINE
12"W	PROPOSED 12" WATER MAIN
FM	PROPOSED FORCE MAIN

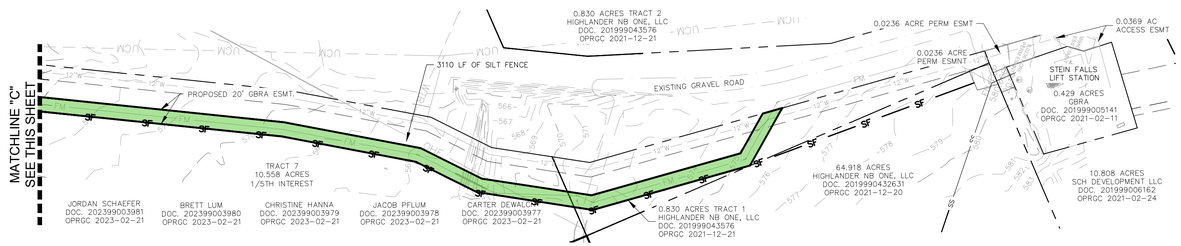
GRAVEL FILTER BAGS

MATERIALS:

INLET GRAVEL FILTER BAGS TO BE 3/4" GRAVEL CONTAINED IN PERVIOUS BURLAP BAGS OR SYNTHETIC NET BAGS (1/8" MESH) APPROX. 24" LONG, 12" WIDE AND 6" HIGH.

TYPICAL CONCRETE TRUCK WASHOUT PIT





STATE OF TEXAS
JAMES INGALLS
107416
LICENSED PROFESSIONAL ENGINEER
12/08/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

EROSION CONTROL PLAN II

SHEET 7 OF 64

NO	DATE	ISSUES AND REVISIONS
1	12-02-2025	REVISED PER GUADALUPE COUNTY COMMENTS

INK CIVIL
2021 W SH46, STE 105
NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 ink-civil.com
TBPE FIRM F-13351

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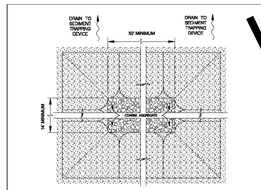
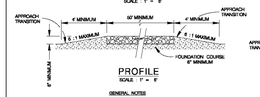
Drawing Name: N:\Projects\QR0002 Buck Property - 109ac\Civil\Construction Drawings\7 EROSION CONTROL PLAN II.dwg User: chuckware Dec 08, 2025 - 7:09pm

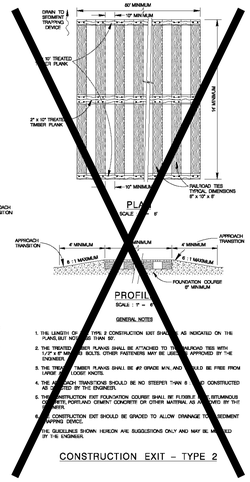




GENERAL NOTES

1. THE LENGTH OF THE TYPE 1 CONSTRUCTION EXIT SHALL BE AS INDICATED ON THE PLANS, BUT NOT LESS THAN 50'.
2. THE COARSE AGGREGATE SHOULD BE OPEN GRADED WITH A SIZE OF 4" TO 8".
3. THE APPROACH TRANSITIONS SHOULD BE NO STEEPER THAN 6:1 AND CONSTRUCTED AS DIRECTED BY THE ENGINEER.
4. THE CONSTRUCTION EXIT FOUNDATION COURSE SHALL BE FLEXIBLE AND BITUMINOUS CONCRETE, PORTLAND CEMENT CONCRETE OR OTHER MATERIAL AS APPROVED BY THE ENGINEER.
5. THE CONSTRUCTION EXIT SHALL BE GRADED TO ALLOW DRAINAGE TO A SEDIMENT TRAPPING DEVICE.
6. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

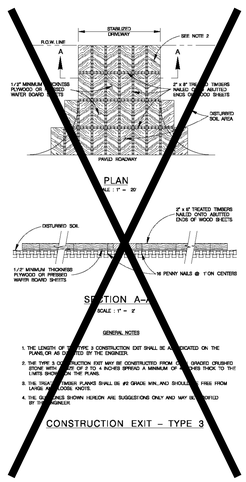
CONSTRUCTION EXIT - TYPE 1



GENERAL NOTES

1. THE LENGTH OF THE TYPE 2 CONSTRUCTION EXIT SHALL BE AS INDICATED ON THE PLANS, BUT NOT LESS THAN 50'.
2. THE TREATED TIMBER PLANKS SHALL BE ATTACHED TO ALL RAILROAD TIES WITH 1/2" x 6" MINIMUM BOLTS. OTHER FASTENERS MAY BE USED IF APPROVED BY THE ENGINEER.
3. THE TREATED TIMBER PLANKS SHALL BE #1 GRADE MIN. AND SHALL BE FREE FROM LARGE KNOTS OR LOOSE KNOTS.
4. THE APPROACH TRANSITIONS SHOULD BE NO STEEPER THAN 6:1 AND CONSTRUCTED AS DIRECTED BY THE ENGINEER.
5. THE CONSTRUCTION EXIT FOUNDATION COURSE SHALL BE FLEXIBLE AND BITUMINOUS CONCRETE, PORTLAND CEMENT CONCRETE OR OTHER MATERIAL AS APPROVED BY THE ENGINEER.
6. THE CONSTRUCTION EXIT SHOULD BE GRADED TO ALLOW DRAINAGE TO A SEDIMENT TRAPPING DEVICE.
7. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

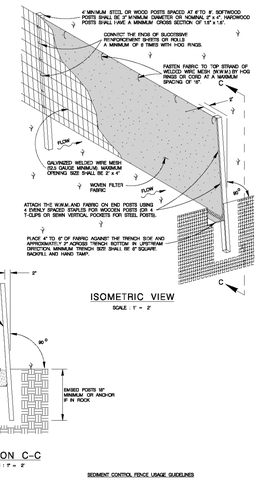
CONSTRUCTION EXIT - TYPE 2

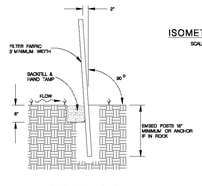


GENERAL NOTES

1. THE LENGTH OF THE TYPE 3 CONSTRUCTION EXIT SHALL BE AS INDICATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
2. THE TYPE 3 CONSTRUCTION EXIT MAY BE CONSTRUCTED FROM CLEAN, GRADED, CRUSHED STONE WITH A DEPTH OF 2 TO 4 INCHES SPREAD A MINIMUM OF 6 INCHES THICK TO THE LIMITS SHOWN ON THE PLANS.
3. THE TEMPORARY GRAVEL ROADS SHALL BE #2 GRADE MIN. AND SHOULD BE FREE FROM LARGE AND LOOSE KNOTS.
4. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

CONSTRUCTION EXIT - TYPE 3





SEDIMENT CONTROL FENCE USAGE GUIDELINES

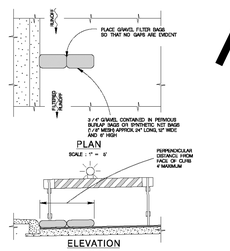
A SEDIMENT CONTROL FENCE MAY BE CONSTRUCTED NEAR THE DOWNSTROAM PERIMETER OF A DISTURBED AREA ALONG A CONTOUR TO INTERCEPT SEDIMENT FROM OVERLAND RUN-OFF. A 2 YEAR STORM FREQUENCY MAY BE USED TO CALCULATE THE FLOW RATE TO BE FILTERED.

SEDIMENT CONTROL FENCE SHOULD BE SIZED TO FILTER A MAXIMUM FLOW THRU RATE OF 100 GPM / FT SQUARED. SEDIMENT CONTROL FENCE IS NOT RECOMMENDED TO CONTROL EROSION FROM A DRAINAGE AREA LARGER THAN 2 ACRES.

GENERAL NOTES

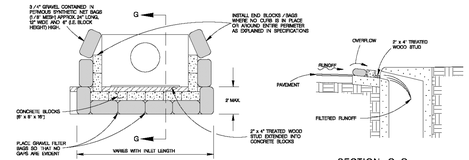
1. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

TEMPORARY SEDIMENT CONTROL FENCE



NOTE:
STAGGLE GRAVEL FILTER BAGS WITH TYPE 1 BARRICADES MOUNTED WITH TWO 2" X 4" PLASTIC WARNING LIGHT. SEE BARRICADE CONSTRUCTION DETAILS. PLACE BARRICADES 2' AWAY FROM CUTTER FLUSH WITH OUTSIDE EDGE OF BAG CONFIGURATION.

GRAVEL FILTER BAGS



CURB INLET GRAVEL FILTER

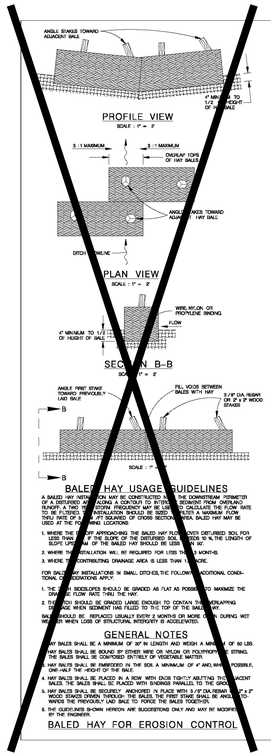
JANUARY 2005

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

TEMPORARY EROSION, SEDIMENT & WATER POLLUTION CONTROL MEASURES STANDARDS 1

N. SUBMITTAL PROJECT NO.:		DATE:
DRAWN BY: V. VASQUEZ	DESIGN BY:	CHKD. BY:

SHEET NO. ___ OF ___



BALED HAY USAGE GUIDELINES

A BALED HAY BARRIER MAY BE CONSTRUCTED NEAR THE DOWNSTREAM PERIMETER OF A DISTURBED AREA ALONG A CONTOUR TO INTERCEPT SEDIMENT FROM OVERLAND RUNOFF. A TWO (2) YEAR STORM FREQUENCY MAY BE USED TO CALCULATE THE FLOW RATE TO BE FILTERED. AN INSTALLATION SHOULD BE SIZED TO FILTER A MAXIMUM FLOW THRU RATE OF 100 GPM / FT SQUARED OF CROSS SECTIONAL AREA. BALED HAY MAY BE USED AT THE FOLLOWING LOCATIONS:

1. WHERE THE TOE OF SLOPE APPROACHING THE BALED HAY FILTER SLOPES DISTURBED SOIL FOR A DISTANCE OF 100' OR LESS AND THE GRADIENT OF THE SLOPE IS 10% OR LESS. THE LENGTH OF SLOPE MAXIMUM OF THE BALED HAY SHOULD BE LESS THAN 50'.
2. WHERE THE INSTALLATION WILL BE REQUIRED FOR LESS THAN 3 MONTHS.
3. WHERE THE CONTRIBUTING DRAINAGE AREA IS LESS THAN 1 ACRE.

FOR SMALL DRAINAGE INSTALLATIONS IN SMALL DITCHES, THE FOLLOWING ADDITIONAL CONDITIONS AND SPECIFICATIONS APPLY:

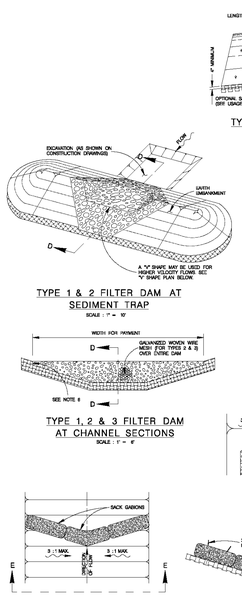
1. THE DRAINAGE DITCH SIDE SLOPES SHOULD BE GRADED AS FLAT AS POSSIBLE TO MAXIMIZE THE CAPACITY OF THE FLOW RATE THRU THE HAY.
2. THE DITCH SHOULD BE GRADED LARGE ENOUGH TO CONTAIN THE OVERLAPPING BALES AFTER WHEN SEDIMENT HAS FILLED TO THE TOP OF THE BALES.

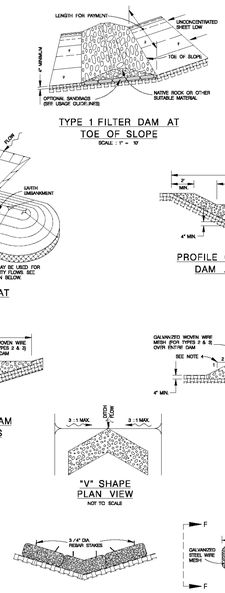
BALES SHOULD BE REPLACED USUALLY EVERY 2 MONTHS OR MORE OFTEN DURING WET WEATHERS WHEN LOSS OF STRUCTURAL INTEGRITY IS ACCELERATED.

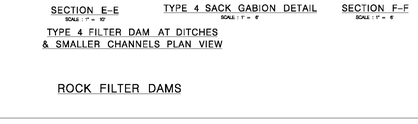
GENERAL NOTES

1. HAY BALES SHALL BE A MINIMUM OF 36" IN LENGTH AND WEIGH A MINIMUM OF 50 LBS. HAY BALES SHALL BE BOUND BY STRIPS WIRE OR NYLON OR POLYPROPYLENE STRING. HAY BALES SHALL BE FREE FROM WEEDS OR SEEDS OF VEGETABLE MATTER.
2. HAY BALES SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF 4" AND, WHEN POSSIBLE, ONE-HALF THE HEIGHT OF THE BALE.
3. HAY BALES SHALL BE PLACED IN A ROW WITH ENDS TIGHTLY ABUTTING SAID ADJACENT BALES. THE BALES SHALL BE PLACED WITH BINDINGS PARALLEL TO THE GROUND.
4. HAY BALES SHALL BE SECURELY ANCHORED IN PLACE WITH 2 / 2" DIA. REBAR OR 2" x 2" WOOD STAKES DRIVEN THROUGH THE BALES. THE FIRST STAKE SHALL BE ANGLED TOWARDS THE PREVIOUSLY LAID BALE TO FORCE THE BALES TOGETHER.
5. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

BALED HAY FOR EROSION CONTROL







ROCK FILTER DAM USAGE GUIDELINES

ROCK FILTER DAMS SHOULD BE CONSTRUCTED DOWNSTREAM FROM DISTURBED AREAS TO INTERCEPT SEDIMENT FROM OVERLOAD RUNOFF AND / OR CONCENTRATED FLOW. THE DAMS SHOULD BE SIZED TO FILTER A MAXIMUM FLOW THRU RATE OF 50 GPM / FT SQUARED OF CROSS SECTIONAL AREA. A 2 YEAR STORM FREQUENCY MAY BE USED TO CALCULATE THE FLOW RATE.

TYPE 1 DIP HIGH, WITH NO WIRE MESH:

TYPE 1 MAY BE USED AT THE TOE OF SLOPES AROUND INLETS, IN SMALL DITCHES AND AT DRO OR SWALE OUTLETS. THE TYPE OF DAM IS RECOMMENDED TO CONTROL EROSION FROM A DRAINAGE AREA OF 1 ACRE OR LESS. TYPE 1 MAY NOT BE USED IN CONCENTRATED FLOW AREAS OR AT OUTFALLS WHERE SCOUR IS EXPECTED. WHERE CONCENTRATE WASH OUT MAY OCCUR, SANDBAGS MAY BE USED AT THE EMBEDDED FOUNDATION (4" DEEP MIN.) FOR BETTER FILTERING EFFICIENCY OF LOW FLOWS IF CALLED FOR ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

TYPE 2 DIP HIGH, MESH, WIRE, MESH:

TYPE 2 MAY BE USED IN DITCHES AND AT DRO OR SWALE OUTLETS.

TYPE 3 DIP WITH WIRE MESH:

TYPE 3 MAY BE USED IN STREAM FLOW AND SHOULD BE SECURED TO THE STREAM BED.

TYPE 4 SACK GABIONS:

TYPE 4 MAY BE USED IN DITCHES AND SMALLER CHANNELS TO FORM AN EROSION CONTROL DAM.

GENERAL NOTES

1. IF SHOWN ON THE PLANS OR DIRECTED BY THE ENGINEER, FILTER DAMS SHOULD BE PLACED NEAR THE TOE OF SLOPES WHERE EROSION IS ANTICIPATED, UPSTREAM AND / OR DOWNSTREAM AT DRAINAGE STRUCTURES AND IN ROADWAY DITCHES AND CHANNELS TO COLLECT SEDIMENT.
2. MATERIALS (AGGREGATES, WIRE MESH, SANDBAGS, ETC.) SHALL BE AS INDICATED BY THE SPECIFICATION FOR ROCK FILTER DAMS FOR EROSION AND SEDIMENTATION CONTROL.
3. THE ROCK FILTER DAM DIMENSIONS SHALL BE AS INDICATED ON THE STORM WATER POLLUTION PREVENTION PLANS.
4. SIDE SLOPES SHOULD BE 2 : 1 OR FLATTER. DAMS WITHIN THE SAFETY ZONE SHALL HAVE SIDE SLOPES OF 3 : 1 OR FLATTER.
5. MAINTAIN A MINIMUM OF 1' BETWEEN TOP OF ROCK FILTER DAM WEIR AND TOP OF EMBANKMENT FOR FILTER DAMS AT SEDIMENT TRAPS.
6. FILTER DAMS SHOULD BE EMBEDDED A MINIMUM OF 4" INTO THE EXISTING GROUND.
7. THE SEDIMENT TRAP FOR PONDING OF SEDIMENT LADEN RUNOFF SHALL BE OF THE DIMENSIONS SHOWN ON THE PLANS.
8. ROCK FILTER DAM TYPES 2 & 3 SHALL BE SECURED WITH 20 GAUGE GALVANIZED WOVEN WIRE MESH WITH 1" DIAMETER HEXAGONAL OPENINGS. THE AGGREGATE SHALL BE PLACED ON THE MESH TO THE HEIGHT AND SLOPES SPECIFIED. THE MESH SHALL BE FOLDED OVER THE AGGREGATE AT THE DOWNSTREAM END AND SHALL BE SECURED TO ITSELF ON THE DOWNSTREAM SIDE USING WIRE TIES OR HOG RINGS. IN STREAM USE, THE MESH SHOULD BE SECURED OR STAKED TO THE STREAM BED PRIOR TO AGGREGATE PLACEMENT.
9. SACK GABIONS SHOULD BE STAKED DOWN WITH 3 / 4" DIA REBAR STAKES.
10. FLOW OUTLET SHOULD BE OVTO A STABILIZED AREA (AGGITATION, ROCK ETC.).
11. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

GENERAL NOTES

JANUARY 2005

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

TEMPORARY EROSION, SEDIMENT & WATER POLLUTION CONTROL MEASURES STANDARDS 2

N. SUBMITTAL PROJECT NO.:		DATE:
DRAWN BY: V. VASQUEZ	DESIGN BY:	CHKD. BY:

SHEET NO. ___ OF ___

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED
PROFESSIONAL ENGINEER
12/08/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

EROSION CONTROL DETAILS I

SHEET 8 OF 64

NO	DATE	ISSUES AND REVISIONS
1		

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2021 W SH46, STE 105
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PH: 830-358-7127 ink-civil.com
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Drawing Name: N:\VProjects\080002 Bluch Property - 109ac\Civil\Construction Drawings\8 EROSION CONTROL DETAILS I.dwg User: chuckwere Dec 08, 2025 - 7:07pm

HYDROLOGY CALCULATIONS

Inlet/Study Point	Structure/ Description	Contributing Areas	Area	Area	CN	Initial Abstraction	Overland Flow *(Eq. 3-3 Urban Hydrology for Small Watersheds TR-55)*					Shallow Concentrated Flow *(Eq. 3-1, TR-55)*				Channel Flow			Total Time of Conc.	Tc Lag
							Surface Description	Manning's "n"	P2	Length	Slope	Tc	Surface Roughness	Length	Slope	Tc	Length	Velocity	Tch	Tc	0.6Tc
			(acres)	(sq.mi.)					(in.)	(ft)	(ft/ft)	(min)		(ft)	(ft/ft)	(min)	(ft)	(ft/s)	(min)	(min)	(min)
Existing Conditions																				
A1		A1	257.80	0.4028125	80.0	0.5	Dense Grasses	0.24	3.98	100	0.005	22.3	Unpaved	2919	0.03	17.4	1259	5.0	4.2	44	26
A1.1		A1.1	161.80	0.2528125	80.0	0.5	Dense Grasses	0.24	3.98	100	0.005	22.3	Unpaved	2919	0.03	17.4	0	5.0	0.0	40	24
B1		B1	46.91	0.0732969	80.0	0.5	Bermudagrass	0.41	3.98	100	0.010	25.9	Unpaved	2000	0.03	11.9	1000	5.0	3.3	41	25

Runoff Results Table						
Constributing Areas	Structure/ Description	Area	Q_2*	Q_{10}*	Q_{25}*	Q_{100}*
		(acres)	(cfs)	(cfs)	(cfs)	(cfs)
Existing						
A1.1	FM 725 Culvert	161.80	251.20	456.10	594.40	812.30
A1	-	257.80	383.70	702.50	913.40	1245.60
Proposed						
A1 Bypass	Channel	199.00	308.00	552.20	713.60	967.90
A2 (Pond In)	Detention Pond	58.80	130.00	203.70	251.70	327.40
Outfall Structure (Pond Out)	-	-	71.30	147.80	197.80	279.90
Combined A1+A2	-	257.80	363.70	676.00	896.70	1238.60
Existing vs Proposed						
-	-	-	**-20.00**	**-26.50**	**-16.70**	**-7.00**

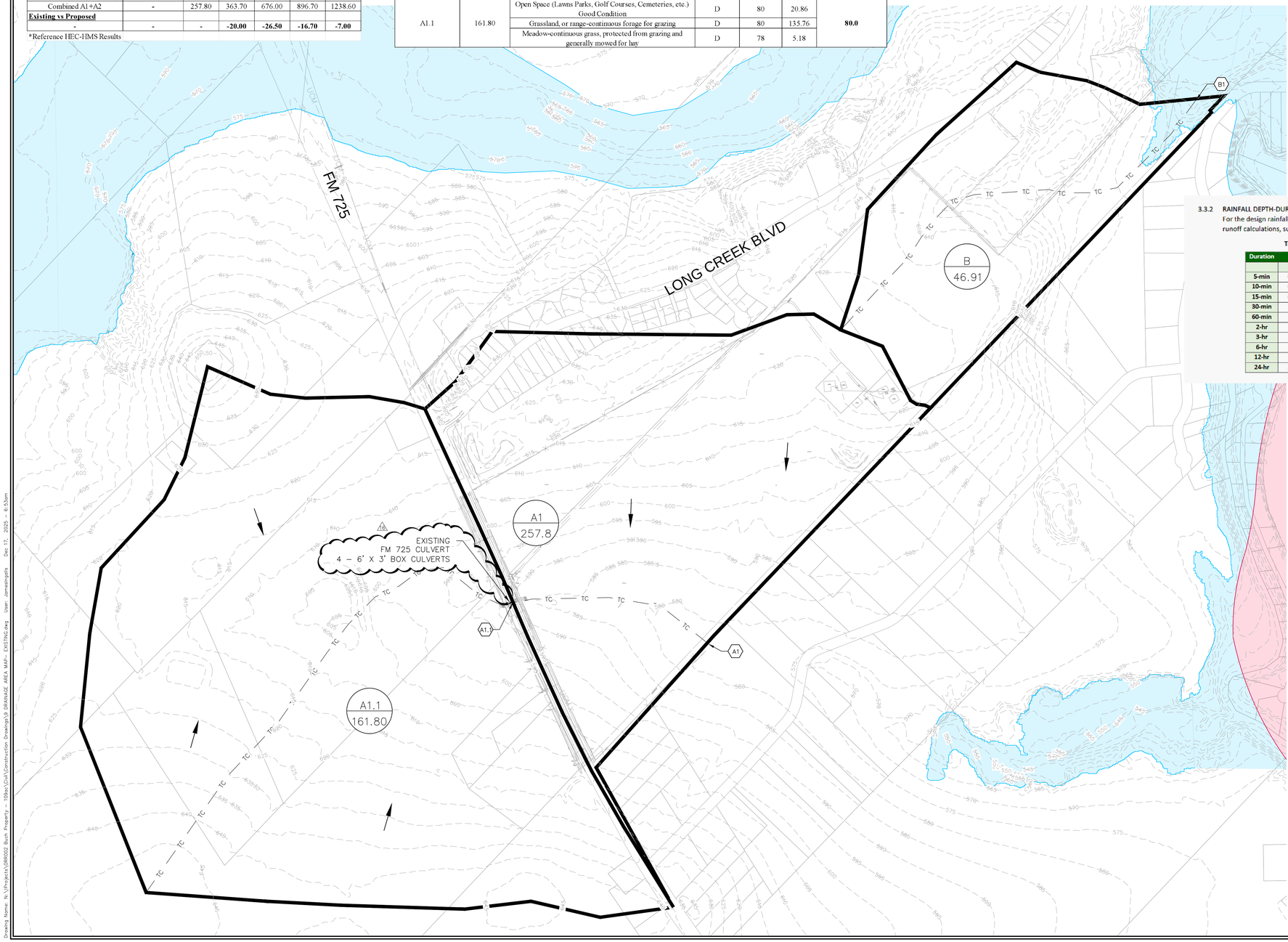
*Reference HEC-HMS Results

Drainage Area	Tot. Area	Land Description	Soil Rating	CN Values	Area	CN COMPOSITE
	(acres)				(acres)	
A1	257.80	Open Space (Lawns Parks, Golf Courses, Cemeteries, etc.) Good Condition	D	80	20.86	**80.0**
		Grassland, or range-continuous forage for grazing	D	80	231.76	
		Meadow-continuous grass, protected from grazing and generally mowed for hay	D	78	5.18	
A1.1	161.80	Open Space (Lawns Parks, Golf Courses, Cemeteries, etc.) Good Condition	D	80	20.86	**80.0**
		Grassland, or range-continuous forage for grazing	D	80	135.76	
		Meadow-continuous grass, protected from grazing and generally mowed for hay	D	78	5.18	

Drainage Area	Tot. Area	Land Description	Soil Rating	Impervious Cover Percentage %	Area	CN COMPOSITE
	(acres)				(acres)	
A1	257.80	Single Family Residential-R1	D	60%	4.18	**8%**
		Multi-Family-High Density	D	85%	0	
		Commerical	D	80%	0	
		Paved Areas	D	98%	17.53	
		Undeveloped	D	0%	236.09	
A1.1	161.80	Single Family Residential-R1	D	60%	0	**8%**
		Multi-Family-High Density	D	85%	0	
		Commerical	D	80%	0	
		Paved Areas	D	98%	13.02	
		Undeveloped	D	0%	148.78	

ADDED EXISTING AREA A1.1 AND UPDATED ALL HYDROLOGY CALCULATIONS
NO OTHER CALCULATIONS CHANGES OCCURRED ON THIS SHEET. (2)

(1)



N

0 150' 300'

SCALE: 1"=300'

LEGEND

- LIMITS OF DRAINAGE AREA
- TC — TC — TIME OF CONCENTRATION
- 900 EXISTING CONTOURS
- FLOW ARROWS
- A / 9.0 DRAINAGE BASIN LABEL
- BASIN AREA (AC)
- A1 ANALYSIS POINT LABEL
- 100 YEAR FEMA FLOOD PLAIN
- 100 YEAR FEMA FLOOD PLAIN

3.3.2 RAINFALL DEPTH-DURATION-FREQUENCY FOR UNIT HYDROGRAPH METHOD (ATLAS 14)

For the design rainfall, a 24-hour rainfall distribution must be applied for hydrograph-based runoff calculations, such as the unit hydrograph method.

Table 3-2. Design Storm Depth (inches) by Storm Frequency

Duration	Storm Frequency (years)								
	1	2	5	10	25	50	100	200	500
5-min	0.44	0.52	0.65	0.77	0.92	1.04	1.17	1.30	1.48
10-min	0.70	0.83	1.05	1.23	1.48	1.68	1.88	2.08	2.35
15-min	0.90	1.06	1.32	1.53	1.84	2.07	2.32	2.58	2.93
30-min	1.26	1.49	1.84	2.14	2.56	2.88	3.21	3.58	4.09
60-min	1.62	1.93	2.41	2.83	3.40	3.85	4.32	4.85	5.61
2-hr	1.93	2.36	3.03	3.62	4.47	5.17	5.93	6.80	8.08
3-hr	2.09	2.62	3.40	4.12	5.18	6.07	7.07	8.21	9.90
6-hr	2.38	3.06	4.04	4.97	6.38	7.59	8.99	10.60	13.01
12-hr	2.69	3.50	4.65	5.76	7.47	8.96	10.71	12.75	15.86
24-hr	3.03	3.98	5.29	6.58	8.58	10.33	12.39	14.82	18.57

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED
PROFESSIONAL ENGINEER

12/16/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

DRAINAGE AREA MAP- EXISTING

SHEET 9 OF 64

NO	DATE	ISSUES AND REVISIONS
1	10-16-2025	REVISED PER GUADALUPE CO. COMMENTS
2	12-16-2025	REVISED PER GUADALUPE CO. SWMP COMMENTS

INK CIVIL
2021 W SH46, STE 105
NEW BRAUNFELS, TX. 78132
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Drawing Name: N:\Projects\080002 Buch Property - 100ac\Civil\Construction Drawings\0 DRAINAGE AREA MAP- EXISTING.dwg User: jamesingalls Dec 17, 2025 - 6:53pm

HYDROLOGY CALCULATIONS

Inlet/Study Point	Structure/ Description	Contributing Areas	Area	Area	CN	Initial Abstraction	Overland Flow *(Eq. 3-3 Urban Hydrology for Small Watersheds TR-55)*					Shallow Concentrated Flow *(Eq. 3-1, TR-55)*				Channel Flow			Total Time of Conc.	Tc Lag
							Surface Description	Manning's "n"	P2	Length	Slope	Tov.	Surface Roughness	Length	Slope	Tsc.	Length	Velocity	Tch	Tc	0.6Tc
			(acres)	*(sq.mi.)*					*(in.)*	*(ft)*	*(ft/ft)*	*(min)*		*(ft)*	*(ft/ft)*	*(min)*	*(ft)*	*(ft/s)*	*(min)*	*(min)*	*(min)*
Existing Conditions																				
A1		A1	257.80	0.4028125	80.0	0.5	Dense Grasses	0.24	3.98	100	0.005	22.3	Unpaved	2919	0.03	17.4	1259	5.0	4.2	44	26
A1.1		A1.1	161.80	0.2528125	80.0	0.5	Dense Grasses	0.24	3.98	100	0.005	22.3	Unpaved	2919	0.03	17.4	0	5.0	0.0	40	24
B1		B1	46.91	0.0732969	80.0	0.5	Bermudagrass	0.41	3.98	100	0.010	25.9	Unpaved	2000	0.03	11.9	1000	5.0	3.3	41	25
Proposed Conditions																				
A1		A1	199.00	0.3109375	80.0	0.5	Dense Grasses	0.24	3.98	100	0.005	22.3	Unpaved	2919	0.03	17.4	1259	5.0	4.2	44	26
A2		A2	58.80	0.0918750	80.0	0.5	Bermudagrass	0.41	3.98	100	0.010	25.9	Unpaved	388	0.01	4.0	2052	5.0	6.8	37	22
B1		B1	46.91	0.0732969	80.0	0.5	Bermudagrass	0.41	3.98	100	0.010	25.9	Unpaved	2000	0.03	11.9	1000	5.0	3.3	41	25

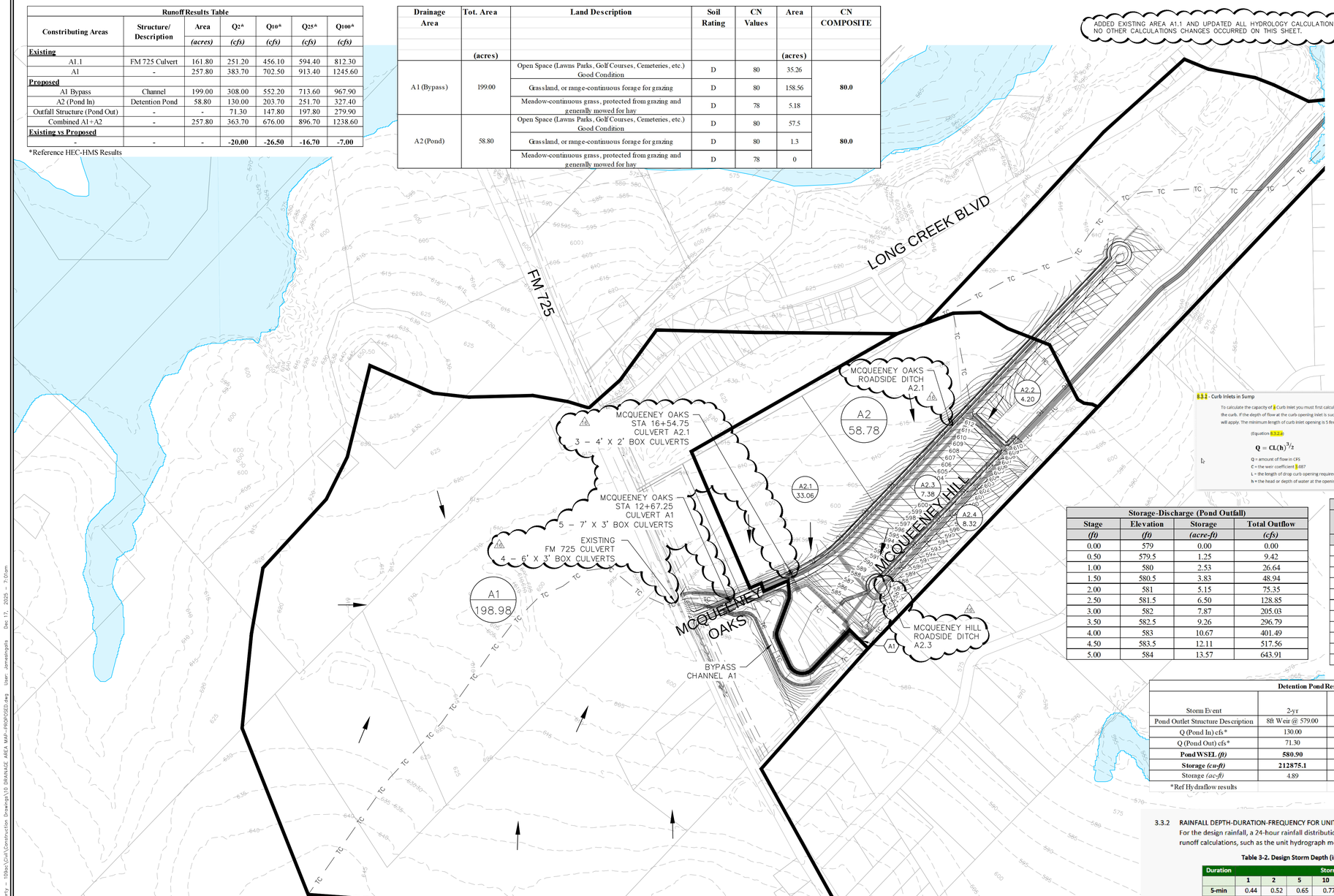
Drainage Area	Tot. Area	Land Description	Soil Rating	Impervious Cover Percentage %	Area	CN COMPOSITE
	(acres)				(acres)	
A1 (Bypass)	199.00	Single Family Residential-R1	D	60%	4.18	**14%**
		Multi-Family-High Density	D	85%	0	
		Commerical	D	80%	10.87	
		Paved Areas	D	98%	17.53	
		Undeveloped	D	0%	166.42	
A2 (Pond)	58.80	Single Family Residential-R2	D	60%	38.76	**62%**
		Multi-Family-High Density	D	85%	15.69	
		Commerical	D	80%	0	
		Paved Areas	D	98%	0	
		Undeveloped	D	0%	4.35	

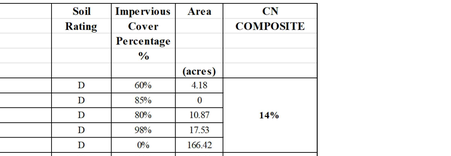
Runoff Results Table

Constributing Areas	Structure/ Description	Area	Q2*	Q10*	Q25*	Q100*
		(acres)	*(cfs)*	*(cfs)*	*(cfs)*	*(cfs)*
Existing						
A1.1	FM 725 Culvert	161.80	251.20	456.10	594.40	812.30
A1	-	257.80	383.70	702.50	913.40	1245.60
Proposed						
A1 Bypass	Channel	199.00	308.00	552.20	713.60	967.90
A2 (Pond In)	Detention Pond	58.80	130.00	203.70	251.70	327.40
Outfall Structure (Pond Out)	-	-	71.30	147.80	197.80	279.90
Combined A1+A2	-	257.80	363.70	676.00	896.70	1238.60
Existing vs Proposed						
-	-	-	**-20.00**	**-26.50**	**-16.70**	**-7.00**

*Reference HEC-HMS Results

Drainage Area	Tot. Area	Land Description	Soil Rating	CN Values	Area	CN COMPOSITE
	(acres)				(acres)	
A1 (Bypass)	199.00	Open Space (Lawns Parks, Golf Courses, Cemeteries, etc.) Good Condition	D	80	35.26	**80.0**
		Grassland, or range-continuous forage for grazing	D	80	158.56	
		Meadow-continuous grass, protected from grazing and generally mowed for hay	D	78	5.18	
A2 (Pond)	58.80	Open Space (Lawns Parks, Golf Courses, Cemeteries, etc.) Good Condition	D	80	57.5	**80.0**
		Grassland, or range-continuous forage for grazing	D	80	1.3	
		Meadow-continuous grass, protected from grazing and generally mowed for hay	D	78	0	





LEGEND

- LIMITS OF DRAINAGE AREA
- LIMITS OF SUB-DRAINAGE AREA
- TC — TC — TIME OF CONCENTRATION
- 900 EXISTING CONTOURS
- FLOW ARROWS
- A / 9.0 DRAINAGE BASIN LABEL – SCS / BASIN AREA (AC)
- A1 / 2.0 SUB-DRAINAGE AREA LABEL – RATIONAL / SUB-DRAINAGE AREA (AC)
- A1 INLET LABEL
- A1 ANALYSIS POINT LABEL
- 100 YEAR FEMA FLOOD PLAIN

Storage-Discharge (Pond Outfall)

Stage	Elevation	Storage	Total Outflow
(ft)	*(ft)*	*(acre-ft)*	*(cfs)*
0.00	579	0.00	0.00
0.50	579.5	1.25	9.42
1.00	580	2.53	26.64
1.50	580.5	3.83	48.94
2.00	581	5.15	75.35
2.50	581.5	6.50	128.85
3.00	582	7.87	205.03
3.50	582.5	9.26	296.79
4.00	583	10.67	401.49
4.50	583.5	12.11	517.56
5.00	584	13.57	643.91

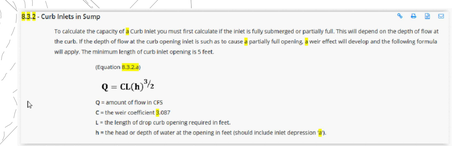
Detention Pond Stage-Storage

Depth	Stage	Cumulative Storage	Cumulative Storage
ft	*ft*	*cu.ft.*	*acre-ft*
0	579	0.0	0.00
0.5	579.5	54659.2	1.25
1	580	110285.9	2.53
1.5	580.5	166887.4	3.83
2	581	224470.6	5.15
2.5	581.5	283042.8	6.50
3	582	342611.0	7.87
3.5	582.5	403182.2	9.26
4	583	464763.6	10.67
4.5	583.5	527362.3	12.11
5	584	590079.9	13.57

Detention Pond Results Table

Storm Event	2-yr	10-yr	25-yr	100-yr
Pond Outlet Structure Description	8ft Weir @ 579.00	20ft Weir @ 581.00	-	-
Q (Pond In) cfs*	130.00	203.70	251.70	327.40
Q (Pond Out) cfs*	71.30	147.80	197.80	279.90
Pond WSEL *(ft)*	**580.90**	**581.60**	**582.00**	**582.40**
Storage *(cu-ft)*	**212875.1**	**294876.5**	**342611.0**	**390987.4**
Storage *(ac-ft)*	4.89	6.77	7.87	8.98

*Ref Hydraflow results



3.3.2 - Curb Inlets in Sump

To calculate the capacity of a curb inlet you must first calculate if the inlet is fully submerged or partially full. This will depend on the depth of flow at the curb. If the depth of flow at the curb opening inlet is such as to cause a partially full opening, a weir effect will develop and the following formula will apply. The minimum length of curb inlet opening is 5 feet.

(Equation 8.3.2.a)

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

Q = amount of flow in CFS
C = the weir coefficient 3.087
L = the length of drop curb opening required in feet.
h = the head or depth of water at the opening in feet (should include inlet depression 'a').

3.3.2 RAINFALL DEPTH-DURATION-FREQUENCY FOR UNIT HYDROGRAPH METHOD (ATLAS 14)

For the design rainfall, a 24-hour rainfall distribution must be applied for hydrograph-based runoff calculations, such as the unit hydrograph method.

Table 3-2. Design Storm Depth (inches) by Storm Frequency

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15-min	0.90	1.06	1.32	1.53	1.84	2.07	2.32	2.58	2.93
30-min	1.26	1.49	1.84	2.14	2.56	2.88	3.21	3.58	4.09
60-min	1.62	1.93	2.41	2.83	3.40	3.85	4.32	4.85	5.61
2-hr	1.93	2.36	3.03	3.62	4.47	5.17	5.93	6.80	8.08
3-hr	2.09	2.62	3.40	4.12	5.18	6.07	7.07	8.21	9.90
6-hr	2.38	3.06	4.04	4.97	6.38	7.59	8.99	10.60	13.01
12-hr	2.69	3.50	4.65	5.76	7.47	8.96	10.71	12.75	15.86
24-hr	3.03	3.98	5.29	6.58	8.58	10.33	12.39	14.82	18.57

STATE OF TEXAS
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107416
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12/16/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

DRAINAGE AREA MAP-PROPOSED

SHEET 10 OF 64

NO	DATE	ISSUES AND REVISIONS
1	10-16-2025	REVISED PER GUADALUPE CO. COMMENTS
2	12-16-2025	REVISED PER GUADALUPE CO. SWMP COMMENTS

INK CIVIL
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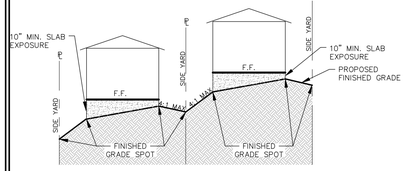
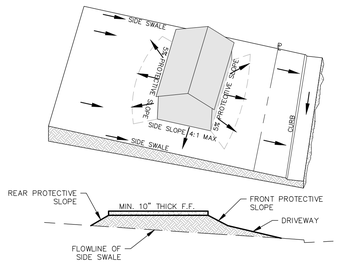
Drawing Name: N:\Projects\080002 Buch Property - 100yr\Civil\Construction Drawings\10 DRAINAGE AREA MAP-PROPOSED.dwg User: Jamesingalls Dec 17, 2025 - 7:01am



TYPICAL SIDE YARD GRADING

NOT TO SCALE



TYPE A LOT GRADING

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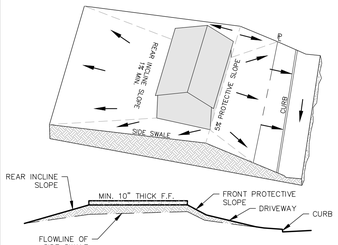
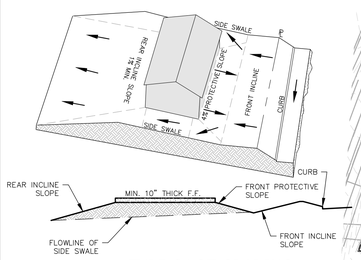


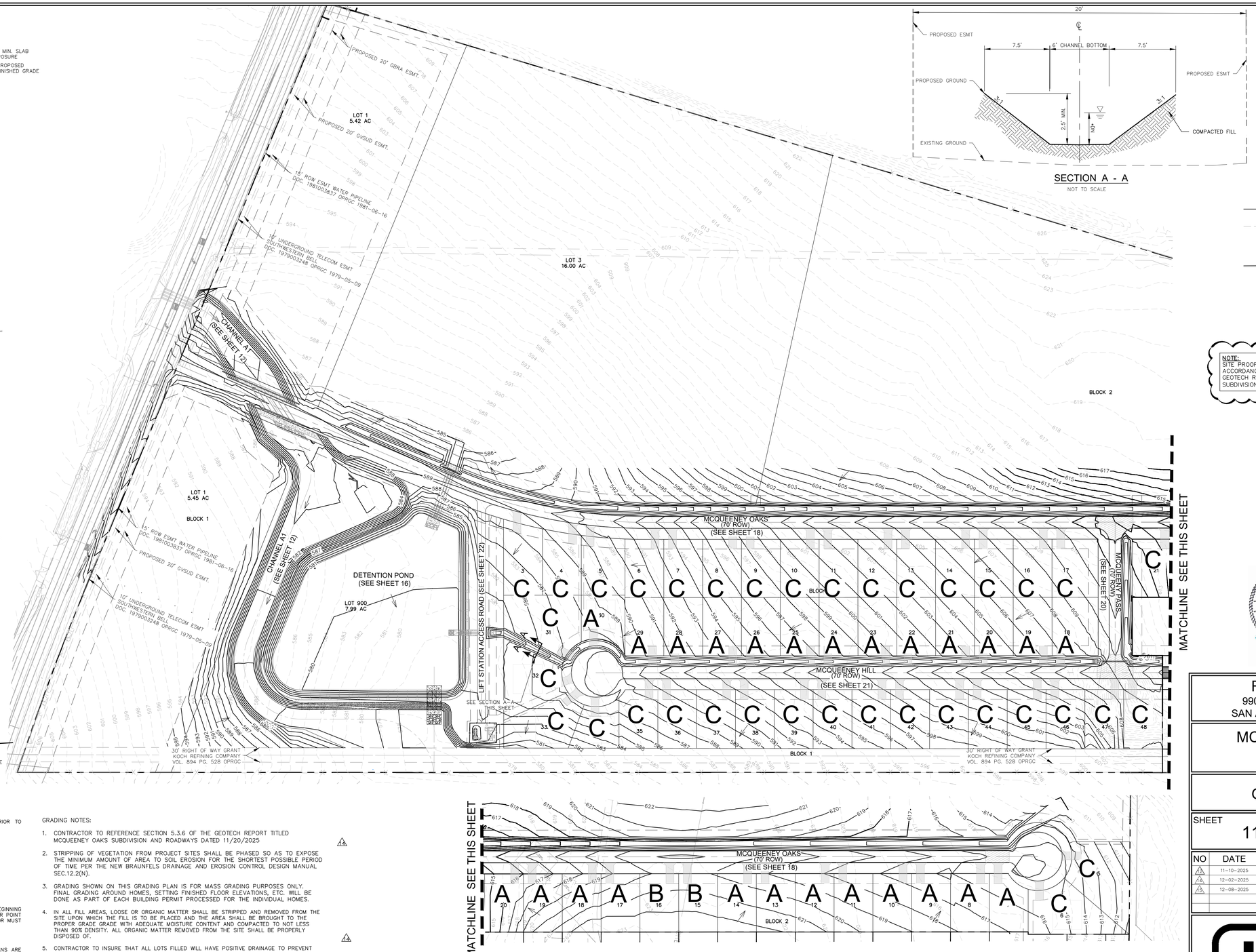
TYPE B LOT GRADING

NOT TO SCALE



TYPE C LOT GRADING

NOT TO SCALE



SECTION A - A

NOT TO SCALE

0 100' 200'

SCALE: 1"=100'

LEGEND

- 900 — PROPOSED CONTOUR
- 900 — EXISTING CONTOUR
- DRAINAGE FLOW ARROW
- GRADE BREAK/SWALE

NOTE:

THE LONGITUDINAL SLOPE OF THE ROADSIDE SWALE FLOWLINE IS TO MIRROR THE STREET SLOPE.

NOTE:
SITE PROOF-ROLL SPECIFICATIONS TO BE IN ACCORDANCE WITH SECTION 5.3.2 OF THE GEOTECH REPORT TITLED MCQUEENEY OAKS SUBDIVISION AND ROADWAYS DATED 11/20/2025

CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES 48 HOURS PRIOR TO EXCAVATION:

GVSUD	830-914-2330
GBRA	830-379-5822
Spectrum Cable	830-625-3408
Centerpoint Gas	830-643-6434
Robert Sanders	830-643-6903
Damaged Line	888-876-5786
AT&T Telephone	830-303-1333
Erick White PM	210-283-1706
Scott McBrearty (Construction)	210-658-4886
Texas One Call	830-545-6005

C.P.E. LOCATOR

CALL CENTER POINT ENERGY LOCATOR AT 1-800-545-6005, 48HRS BEFORE BEGINNING ANY EXCAVATION. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.181, CENTER POINT ENERGY MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT AND WORK AROUND ANY GAS VALVES THAT ARE IN THE PROJECT AREA.

TELEPHONE LOCATOR

THE EXISTENCE AND LOCATION OF UNDERGROUND CABLE INDICATED ON THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR TO CONTACT THE TELEPHONE COMPANY CABLE LOCATOR 48HRS PRIOR TO EXCAVATION. AT 1-800-545-6005,, CONTRACTOR HAS THE RESPONSIBILITY TO PROTECT AND SUPPORT TELEPHONE COMPANY DURING CONSTRUCTION.

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 CONTRACTORS IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA TITLE 29, PART 1926, SUBPART P 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 TITLE 29 PART 1926, SUBPART P STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATIONS.

THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR WILL AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE INCURRED BY THEIR FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES, STRUCTURES OR FACILITIES. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES 24-HOURS PRIOR TO COMMENCING CONSTRUCTION.

GRADING NOTES:

1. CONTRACTOR TO REFERENCE SECTION 5.3.6 OF THE GEOTECH REPORT TITLED MCQUEENEY OAKS SUBDIVISION AND ROADWAYS DATED 11/20/2025 ⚠3
2. STRIPPING OF VEGETATION FROM PROJECT SITES SHALL BE PHASED SO AS TO EXPOSE THE MINIMUM AMOUNT OF AREA TO SOIL EROSION FOR THE SHORTEST POSSIBLE PERIOD OF TIME PER THE NEW BRAUNFELS DRAINAGE AND EROSION CONTROL DESIGN MANUAL SEC.12.2(N).
3. GRADING SHOWN ON THIS GRADING PLAN IS FOR MASS GRADING PURPOSES ONLY. FINAL GRADING AROUND HOMES, SETTING FINISHED FLOOR ELEVATIONS, ETC. WILL BE DONE AS PART OF EACH BUILDING PERMIT PROCESSED FOR THE INDIVIDUAL HOMES.
4. IN ALL FILL AREAS, LOOSE OR ORGANIC MATTER SHALL BE STRIPPED AND REMOVED FROM THE SITE UPON WHICH THE FILL IS TO BE PLACED AND THE AREA SHALL BE BROUGHT TO THE PROPER GRADE GRADE WITH ADEQUATE MOISTURE CONTENT AND COMPACTED TO NOT LESS THAN 90% DENSITY. ALL ORGANIC MATTER REMOVED FROM THE SITE SHALL BE PROPERLY DISPOSED OF. ⚠3
5. CONTRACTOR TO INSURE THAT ALL LOTS FILLED WILL HAVE POSITIVE DRAINAGE TO PREVENT ANY PONDING OF WATER AND PROVIDE A MINIMUM FINAL GRADE OF 1.2% WITHIN THE LOT.
6. CONTRACTOR TO CONTACT OWNER PRIOR TO ANY LOT FILLING TO DETERMINE IF TREES WITHIN THE FILL AREA CAN BE SAVED.
7. ALL LARGE ROCKS 10" OR LARGER SHALL BE KEPT OUT OF THE FILL SITE UNLESS INSTRUCTED BY THE OWNER TO PLACE SUCH ROCKS ON THE SITE.
8. CONTRACTOR TO ENSURE POSITIVE DRAINAGE FOR ALL GRADING WITHIN LIMITS OF PROJECT.
9. ⚠3 FINISHED FLOOR ELEVATION FOR HOMES WILL BE A MINIMUM OF 12" ABOVE THE TOP OF CURB FRONTING THE LOT, AND ON C LOTS' DRIVEWAY SWALE FLOWLINE WILL BE A MINIMUM OF 6" BELOW THE FINISHED FLOOR OF THE HOUSE.

HORIZONTAL CONTROL

POINT NO.	NORTHING	EASTING	DESCRIPTION
100	13,776,110.29	2,265,605.91	CP SET 1/2"RWRC
101	13,776,506.06	2,265,417.14	CP SET 1/2"RWRC

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED PROFESSIONAL ENGINEER
12/08/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

GRADING PLAN

SHEET 11 OF 64

NO	DATE	ISSUES AND REVISIONS
1	11-10-2025	STREET NAMES REVISED
2	12-02-2025	REVISED PER GUADALUPE COUNTY COMMENTS
3	12-08-2025	REVISED PER GUADALUPE COUNTY COMMENTS

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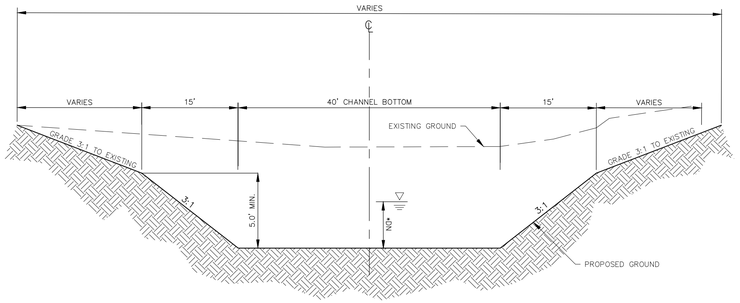
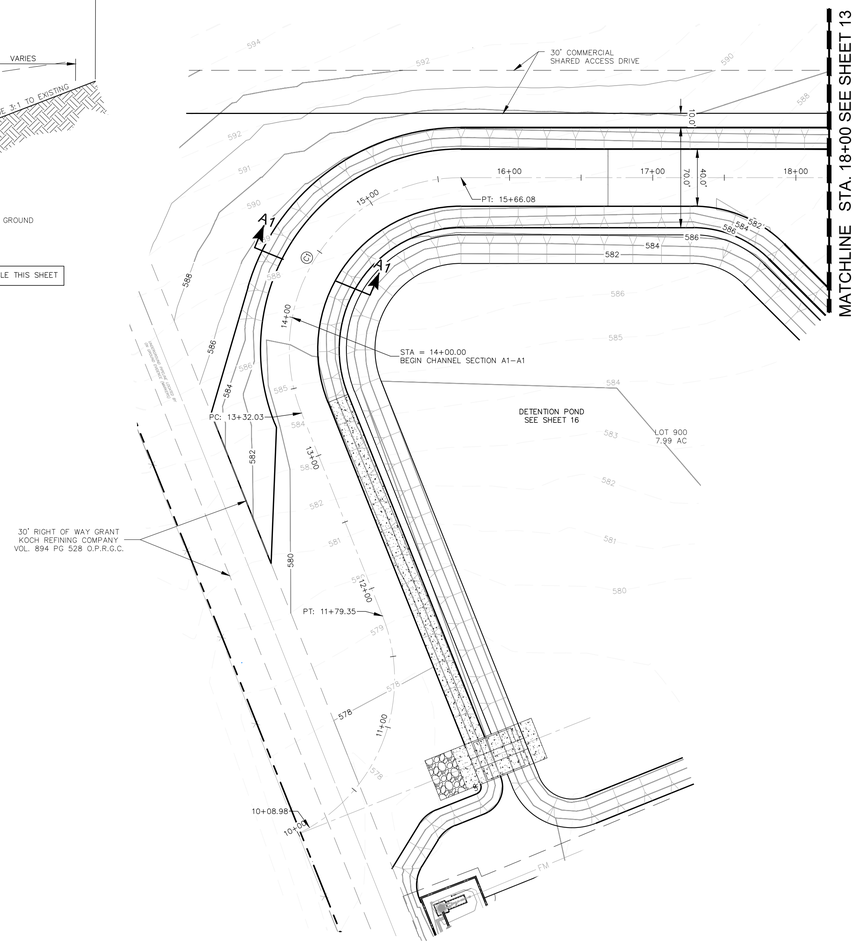


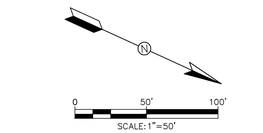
SECTION A1 - A1

NOT TO SCALE

*NOTE: – SEE CHANNEL HYDRAULIC TABLE THIS SHEET

CURVE TABLE					
CURVE #	RADIUS	LENGTH	CHORD DIRECTION	CHORD LENGTH	TANGENT
C1	120	234.06	N80° 27' 30.35"W	198.68	177.09

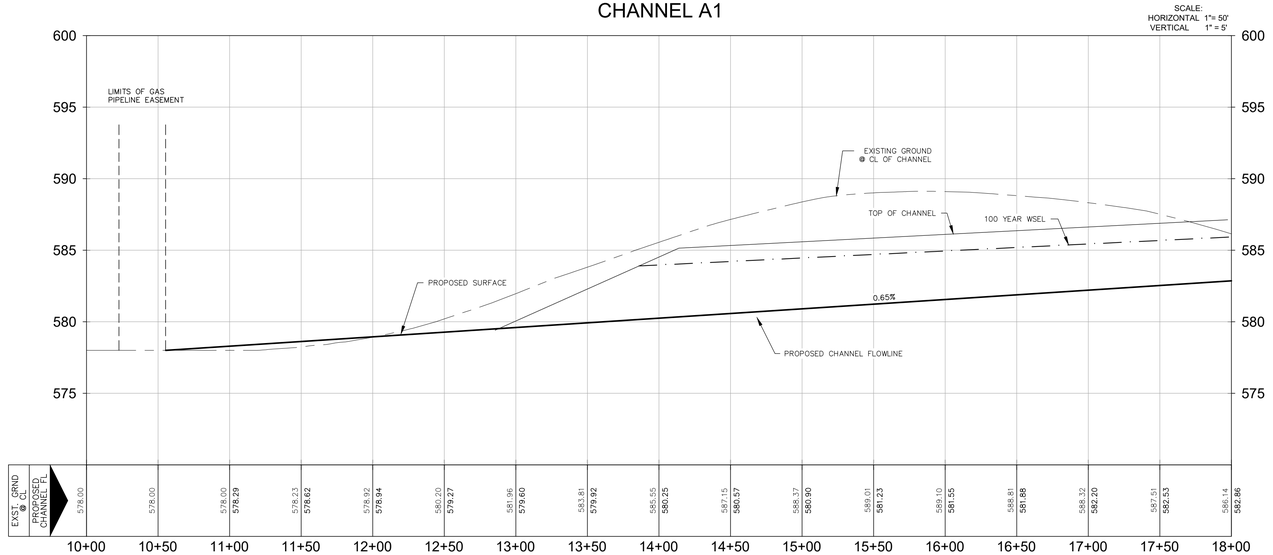




LEGEND

- COMPACTED FILL
- CONCRETE
- ROCK RIP–RAP
- CHANNEL CENTERLINE
- EXISTING CONTOUR
- 900 PROPOSED CONTOUR
- PROPERTY LINE

CHANNEL A1



Channel Section A1					
Q_2 (CFS)	S (%)	n	V_2 (FT/S)	dn (FT)	DEPTH PROVIDED (D) (FT)
236.39	0.65	0.035	3.91	1.37	5.00
Q_5 (CFS)	S (%)	n	V_5 (FT/S)	dn (FT)	DEPTH PROVIDED (D) (FT)
378.76	0.65	0.035	4.63	1.80	5.00
Q_{25} (CFS)	S (%)	n	V_{25} (FT/S)	dn (FT)	DEPTH PROVIDED (D) (FT)
464.72	0.65	0.035	4.99	2.02	5.00
Q_{100} (CFS)	S (%)	n	V_{100} (FT/S)	dn (FT)	DEPTH PROVIDED (D) (FT)
603.51	0.65	0.035	5.46	2.35	5.00

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED
PROFESSIONAL ENGINEER
12/08/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

CHANNEL A STA 10+00 TO STA 18+00

SHEET 12 OF 64

NO	DATE	ISSUES AND REVISIONS
△		

INK CIVIL
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NEW BRAUNFELS, TX. 78132
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TBPE FIRM F–13351

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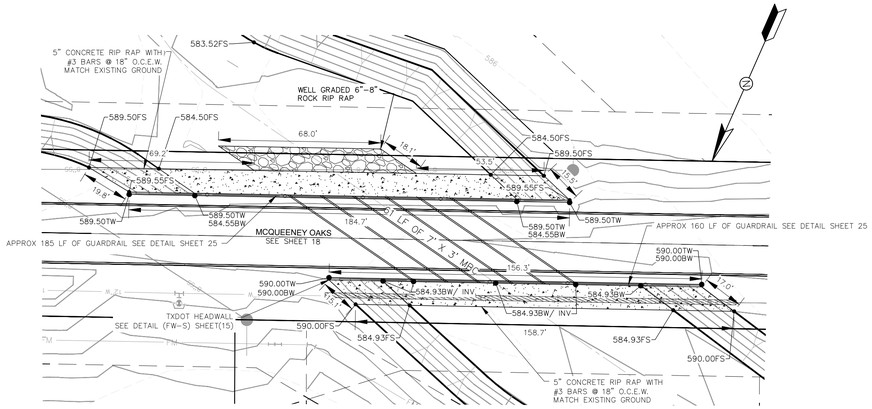
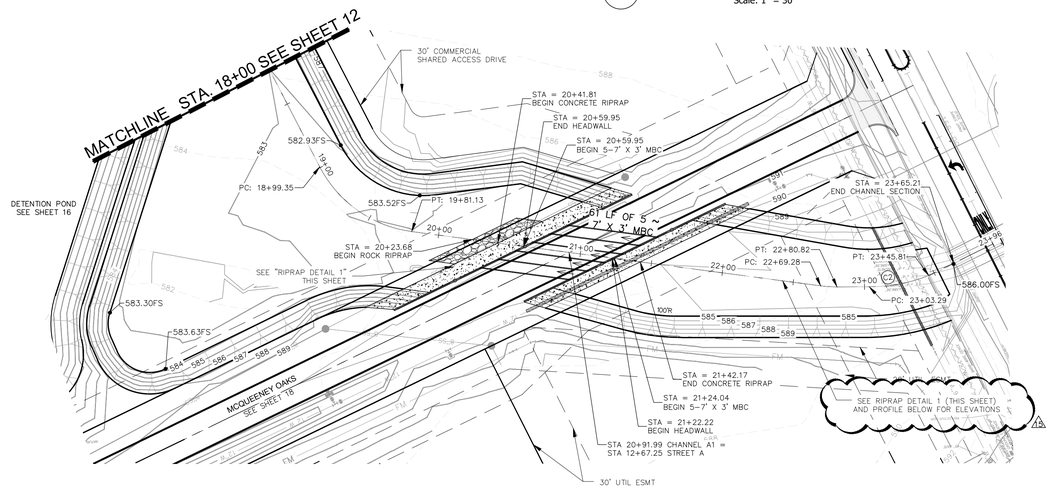
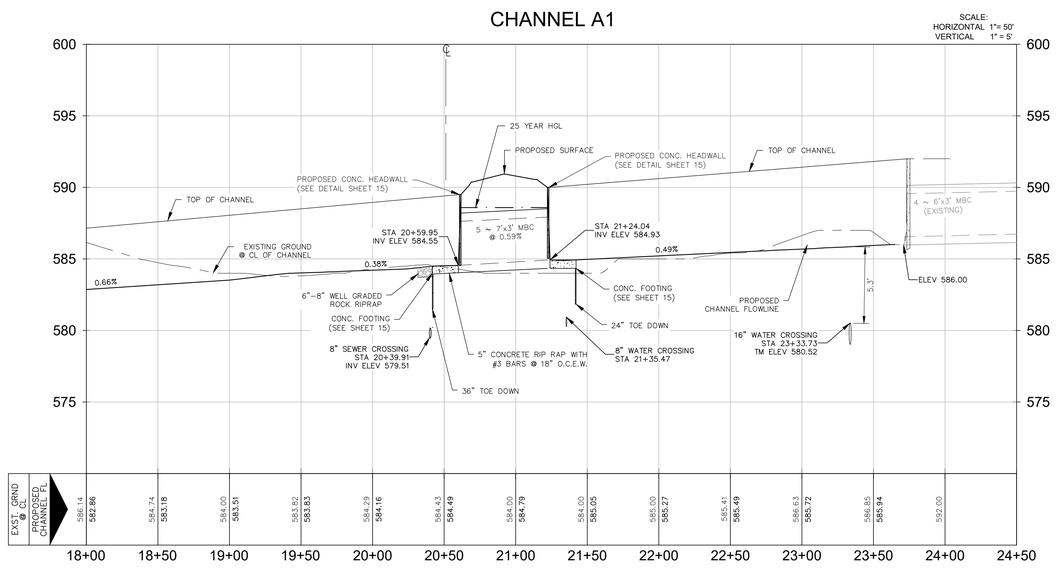
Drawing Name: N:\Projects\089002 Buck Property – 109ac\Civil\Construction Drawings\12 CHANNEL A STA 10+00 TO STA 18+00.dwg User: chuckware Dec 08, 2025 - 7:09pm

CURVE TABLE					
CURVE #	RADIUS	LENGTH	CHORD DIRECTION	CHORD LENGTH	TANGENT
C2	109	42.53	S82° 00' 14.44"W	42.25	21.54

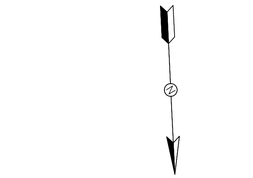


1 RIPRAP DETAIL
Scale: 1" = 30'





Channel Section A1					
Q_2 (CFS)	S (%)	n	V_2 (FT/S)	dn (FT)	DEPTH PROVIDED (D) (FT)
340.20	0.50	0.035	4.12	1.80	5.00
Q_5 (CFS)	S (%)	n	V_5 (FT/S)	dn (FT)	DEPTH PROVIDED (D) (FT)
501.38	0.50	0.035	4.70	2.30	5.00
Q_{25} (CFS)	S (%)	n	V_{25} (FT/S)	dn (FT)	DEPTH PROVIDED (D) (FT)
903.12	0.50	0.035	5.71	3.20	5.00
Q_{100} (CFS)	S (%)	n	V_{100} (FT/S)	dn (FT)	DEPTH PROVIDED (D) (FT)
1368.64	0.50	0.035	6.52	4.00	5.00



LEGEND

- COMPACTED FILL
- CONCRETE
- ROCK RIP-RAP
- CHANNEL CENTERLINE
- PROPOSED CASING PIPE
- 900 PROPOSED CONTOURS
- 900 EXISTING CONTOURS
- 16"W PROPOSED 16" WATER MAIN
- 12"W 12" WATER MAIN TO BE ABANDONED
- 8"SS PROPOSED 8" SEWER MAIN

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

CHANNEL A1 STA 18+00 TO STA 23+53

SHEET 13 OF 64

NO	DATE	ISSUES AND REVISIONS
1	12-02-2025	REVISED PER GUADALUPE COUNTY COMMENTS
2	12-08-2025	REVISED PER GUADALUPE COUNTY COMMENTS

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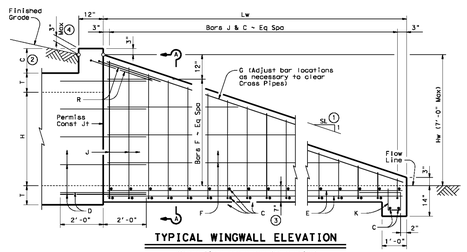
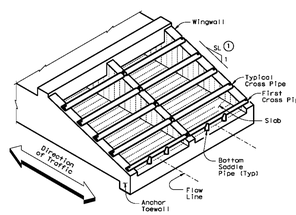
Drawing Name: N:\Projects\080002 Buck Property - 109ac\Civil\Construction Drawings\13 CHANNEL A1 STA 18+00 TO STA 23+53.dwg User: chuckwere Dec 08, 2025 - 7:09pm



TYPICAL WINGWALL ELEVATION

(Cross Pipes not shown for clarity)



ISOMETRIC VIEW OF TYPICAL INSTALLATION

(Showing Bolted Anchor Option)

Formulas: (All values are in Feet)

Hw = H + T + C − 0.250'

Lw = (Nw − 0.250') (SL)

For Cast-In-place culverts:

Atw = (N) (S) + (N+1) (U)

For Precast culverts:

Atw = (N) (2U+S) + (N−1) (0.500')

Total Wingwall Area (S,F,)

= (0.5) (Hw + 0.250') (Lw) (N + 1)

Total Concrete Volume (C,Y.)

= (Wingwall Area) (0.583') +

(Lw) (Atw) (0.583') +

(Atw) (1.000') (1.167' − 0.583')] + (27)

Total Reinforcing (Lbs)

= (1.55) (Lw) (Atw) +

(4.43) (Atw) +

(K) (Hw) (N + 1) (Lw)

C = Height of Curb above top of Top Slab
Hw = Height of Wingwall
K = Constant Value for use in formulas
Slope SL:1 K
6:1 ~ 10.41
Atw = Anchor Toewall Length
Lw = Length of Wingwall
N = Number of Culvert Barrels
S = Clear Span of each Barrel
SL:1 = Side Slope Ratio (Horizontal : 1 Vertical)

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

GENERAL NOTES:

Designed according to AASHTO LRFD Specifications.

The Safety End Treatments shown herein are intended for use in those installations where out of control vehicles are likely to traverse the Cross Pipes approximately perpendicular to the Cross Pipes.

Cross Pipes are designed for a traveling load of 10,000 pounds at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981.

All concrete shall be Class "C" and shall have a minimum compressive strength of 3600 psi.

All reinforcing steel shall be Grade 60. All reinforcing shall be adjusted as necessary to provide a minimum clear cover of 1½".

The quantities for concrete, reinforcing steel, and Cross Pipes resulting from the formulas given herein are for Contractor's information only.

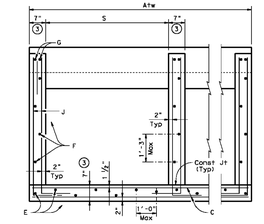
Cross Pipes, Sleeve Pipes, and Saddle Pipes shall conform to the requirements of ASTM A53 (Type E or S, Grade B), ASTM A500 (Grade B), or API 5LX52.

Bolts and nuts shall conform to ASTM A307.

All steel components, except the concrete reinforcing, shall be galvanized after fabrication. Galvanizing damaged during transport or construction shall be repaired in accordance with the specifications.

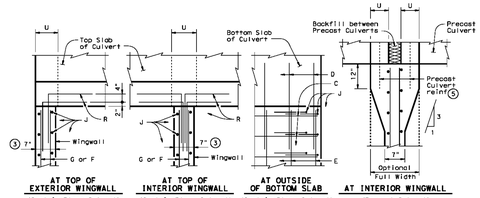
See BCS standard sheet for additional dimensions and information.

Alternate design drawings bearing the seal of a professional engineer will be acceptable for precast construction of the Safety End Treatments.



SECTION A-A

(Showing typical Wingwall and Wing Slab reinforcing) (Pipe Runners not shown for clarity)



AT TOP OF EXTERIOR WINGWALL (Cast-In-Place Culvert)

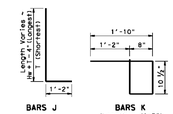
AT TOP OF INTERIOR WINGWALL (Cast-In-Place Culvert)

AT OUTSIDE OF BOTTOM SLAB (Cast-In-Place Culvert)

AT INTERIOR WINGWALL (Precast Culvert)

PLAN VIEWS OF CORNER DETAILS

TABLE OF REINFORCING BAR SIZES & SPACING		
Bar	Size	Spacing
C	#4	10" Max
D	#4	match F & E
E	#4	1'- 0" Max
F	#4	1'- 3" Max
G	#6	Shown
J	#4	10" Max
K	#4	1'- 0" Max
R	#4	Shown



BARS J

BARS K (Length = 4'-3")

BARS R

1. Slope will be 6:1 or flatter.
2. 0" min to 5'-0" max. Estimated curb heights are shown elsewhere in the plans. For structures without rolling and curbs taller than 1'-0", refer to ECD standards.
3. Wingwall and slab thicknesses may be the same as the adjacent culvert wall and slab thicknesses (7" Minimum). If thicknesses greater than the minimum (7") are used, no changes will be made in quantities and no additional compensation will be allowed.
4. For vehicle safety, curbs shall project no more than 3" above finished grade. Curb heights shall be reduced, if necessary, to meet these requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
5. For Culverts with C > 0", the precast culvert reinforcing may extend 1'-0" minimum into Wingwalls. Wingwall Bars D and R may be omitted. Otherwise, refer to the "Wingwall Connection Detail" on the SCP-MD standard.

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

DATE: FILE:

SHEET 1 OF 2

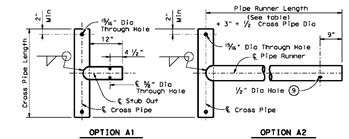
Texas Department of Transportation — Bridge Division Standard

SAFETY END TREATMENT

FOR BOX CULVERTS
(MAXIMUM Hw = 7'-0")
TYPE I ~ PARALLEL DRAINAGE

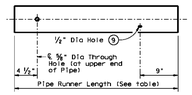
SETB-PD

FILE:	setpdse.dgn	DN: SAF	CK: CAT	DW: JRP	CK: SAF
©TxDOT	February 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS					
		DIST	COUNTY		SHEET NO.



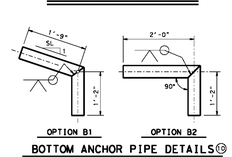
OPTION A1 OPTION A2

CROSS PIPE AND CONNECTIONS DETAILS



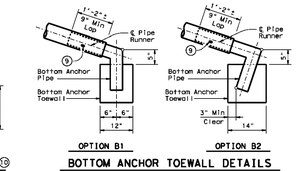
NOTE: The separate Pipe Runner shown is required when Cross Pipe Connection Option A1 is used.

PIPE RUNNER DETAILS



OPTION B1 OPTION B2

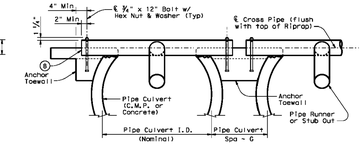
BOTTOM ANCHOR PIPE DETAILS ⑩



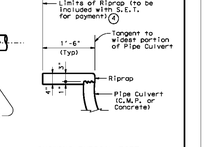
OPTION B1 OPTION B2

BOTTOM ANCHOR TOEWALL DETAILS

(Culvert & Riprap not shown for clarity)



SHOWING CROSS PIPE & ANCHOR TOEWALL



SHOWING TYPICAL PIPE CULVERT & RIPRAP

SECTION A-A

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

⑥ Recommended values of side slope are 3:1, 4:1, & 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 Care shall be taken to 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, the ½" hole shall be inspected 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.

GENERAL NOTES:

Pipe Runners are designed for a traveling 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 shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the Cross Pipes.

Riprap and all necessary inverts shall be Concrete Riprap conforming to the requirements of Item 432, "Riprap".

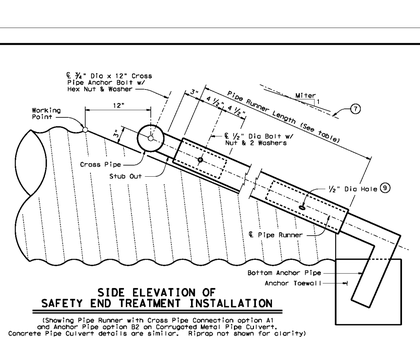
Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

Payment for riprap and toewall is included in the Price Bid for each Safety End Treatment.

Pipe Runners, Cross Pipes, and Anchor Pipes shall conform to the requirements of ASTM A53 (Type E or S, Grade B), ASTM A500 (Grade B), or API 5LX52.

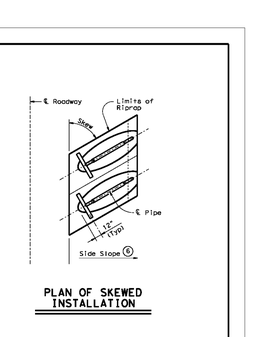
Bolts and nuts shall conform to ASTM A307.

All steel components, except concrete reinforcing, shall be galvanized after fabrication. Galvanizing damaged during transport or construction shall be repaired in accordance with the specifications.



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 Culvert. Concrete Pipe Culvert details are similar. Riprap not shown for clarity)



PLAN OF SKEWED INSTALLATION

SHEET 2 OF 2

Texas Department of Transportation — Bridge Division Standard

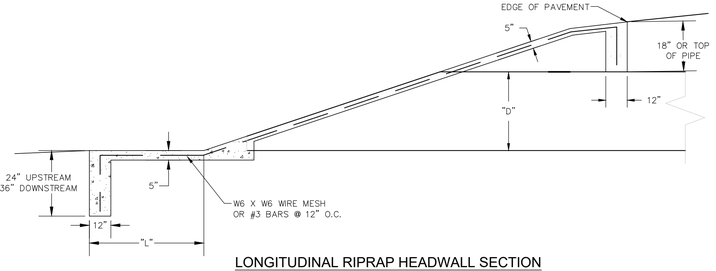
SAFETY END TREATMENT

FOR 12" DIA TO 60" DIA
PIPE CULVERTS
TYPE II ~ CROSS DRAINAGE

SETP-CD

FILE:	setpcdse.dgn	DN: SAF	CK: CAT	DW: JRP	CK: SAF
©TxDOT	February 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS					
12-20: Add note for synthetic fibers		DIST	COUNTY		SHEET NO.

EDGE OF PAVEMENT



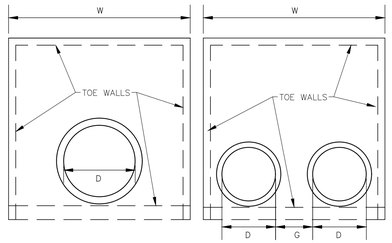
LONGITUDINAL RIPRAP HEADWALL SECTION

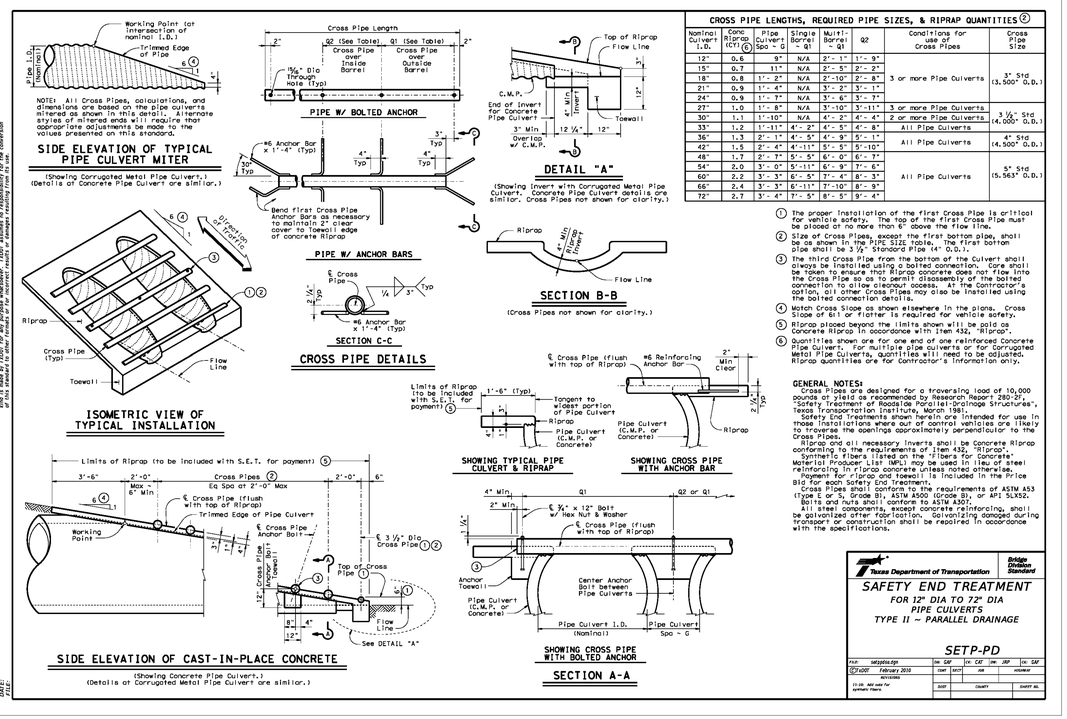
NOT TO SCALE

CONCRETE NOTES:

1. ALL CONCRETE SHALL BE CLASS "A" (3000 PSI).
2. ALL REINFORCING STEEL SHALL BE GRADE 60.
3. ALL REINFORCING SHALL HAVE A MINIMUM COVER OF 2 INCHES.
4. UNLESS OTHERWISE NOTED, ALL BARS SHALL BE CENTERED WITHIN CONCRETE THICKNESS.
5. NON-SHRINKING GROUT OR APPROVED EPOXY SHALL BE USED WITH DOWEL BARS. IN LIEU OF DRILLING AND ROUTING, DOWELS MAY BE PLACED WITH FIRST STRUCTURE OR APRON CONSTRUCTED.

DIMENSIONS FOR CIRCULAR PIPE CULVERT						
"D"	"L"	"G"			"W"	
INSIDE DIA. OF PIPE		PVC/CMP	RCP		SINGLE	DOUBLE
12"	1'-6"	1'-0"	0'-7"		4'-0"	6'-0"
18"	2'-0"	1'-2"	0'-9"		4'-6"	7'-2"
24"	3'-0"	1'-5"	0'-11"		6'-0"	9'-5"
30"	4'-0"	1'-8"	1'-1"		7'-6"	11'-8"
36"	5'-0"	1'-11"	1'-3"		9'-0"	13'-11"
42"	6'-0"	2'-2"	1'-5"		10'-6"	16'-2"
48"	7'-0"	2'-5"	1'-7"		12'-0"	18'-5"
54"	8'-0"	2'-8"	1'-9"		13'-6"	20'-8"
60"	9'-0"	2'-11"	1'-11"		15'-0"	22'-11"





CROSS PIPE LENGTHS, REQUIRED PIPE SIZES, & RIPRAP QUANTITIES ②						
Nominal Culvert I.D.	Conc. Riprap (CY) ⑥	Pipe Culvert Spa ~ G	Single Barrel ~ Q1	Multi-Barrel ~ Q1	Q2	Conditions for use of Cross Pipes
12"	0.6	9"	N/A	2'- 1"	1'- 9"	
15"	0.7	11"	N/A	2'- 5"	2'- 2"	
18"	0.8	1'- 2"	N/A	2'-10"	2'- 8"	3 or more Pipe Culverts
21"	0.9	1'- 4"	N/A	3'- 2"	3'- 1"	
24"	0.9	1'- 7"	N/A	3'- 6"	3'- 7"	
27"	1.0	1'- 8"	N/A	3'-10"	3'-11"	3 or more Pipe Culverts
30"	1.1	1'-10"	N/A	4'- 2"	4'- 4"	3 or more Pipe Culverts
33"	1.2	1'-11"	4'- 2"	4'- 5"	4'- 8"	All Pipe Culverts
36"	1.3	2'- 1"	4'- 5"	4'- 9"	5'- 1"	All Pipe Culverts
42"	1.5	2'- 4"	4'-11"	5'- 5"	5'-10"	
48"	1.7	2'- 7"	5'- 5"	6'- 0"	6'- 7"	
54"	2.0	3'- 0"	5'-11"	6'- 9"	7'- 6"	
60"	2.2	3'- 3"	6'- 5"	7'- 4"	8'- 3"	All Pipe Culverts
66"	2.4	3'- 3"	6'-11"	7'-10"	8'- 9"	
72"	2.7	3'- 4"	7'- 5"	8'- 5"	9'- 4"	

① The proper installation of the first Cross Pipe is critical for vehicle safety. The top of the first Cross Pipe must be placed at no more than 6" above the flow line.

② Size of Cross Pipes, except the first bottom pipe, shall be as shown in the PIPE SIZE table. The first bottom pipe shall be 3 ½" Standard Pipe (4" O.D.).

③ The third Cross Pipe from the bottom of the Culvert shall always be installed using a bolted connection. Care shall be taken to ensure that Riprap concrete does not flow into the Cross Pipe so as to permit disassembly of the bolted connection to allow cleanout access. At the Contractor's option, all other Cross Pipes may also be installed using the bolted connection details.

④ Match Cross Slope as shown elsewhere in the plans. Cross Slope of 6:1 or flatter is required for vehicle safety.

⑤ Riprap placed beyond the limits shown will be paid as Concrete Riprap in accordance with Item 432, "Riprap".

⑥ Quantities shown are for one end of one reinforced concrete Pipe Culvert. For multiple pipe culverts or for Corrugated Metal Pipe Culverts, quantities will need to be adjusted. Riprap quantities are for Contractor's information only.

GENERAL NOTES:

Cross Pipes are designed for a traveling load of 10,000 pounds at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981.

Safety End Treatments shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the Cross Pipes.

Riprap and all necessary inverts shall be Concrete Riprap conforming to the requirements of Item 432, "Riprap".

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.

Payment for riprap and toewall is included in the Price Bid for each Safety End Treatment.

Cross Pipes shall conform to the requirements of ASTM A53 (type E or S, Grade B), ASTM A500 (Grade B), or API 5LX52.

Bolts and nuts shall conform to ASTM A307.

All steel components, except concrete reinforcing, shall be galvanized after fabrication. Galvanizing damaged during transport or construction shall be repaired in accordance with the specifications.

Texas Department of Transportation — Bridge Division Standard

SAFETY END TREATMENT

FOR 12" DIA TO 72" DIA
PIPE CULVERTS
TYPE II ~ PARALLEL DRAINAGE

SETP-PD

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REVISIONS					
12-20: Add note for synthetic fibers		DIST	COUNTY		SHEET NO.

STATE OF TEXAS — JAMES INGALLS — 107416 — LICENSED PROFESSIONAL ENGINEER

12/08/2025

ROCKSPRING
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SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

DRAINAGE DETAILS

SHEET 14 OF 64

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Drawing Name: N:\Projects\080002 Buck Property - 100ac\Civil\Construction Drawings\15 DRAINAGE DETAILS II.dwg User: chuckware Dec 08, 2025 - 7:09pm

Drawing Name: N:\!Projects\ORR002 Buch Property – 109ac\Civil\Construction Drawings\15 DRAINAGE DETAILS II.dwg User: chuckware Dec 08, 2025 – 7:09pm

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

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

TABLE OF WINGWALL REINFORCING (2~wings)

Bar	Size	No.	Spa
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 + 15°)]
Lw = (A) ÷ [cosine (θ + 15°)]

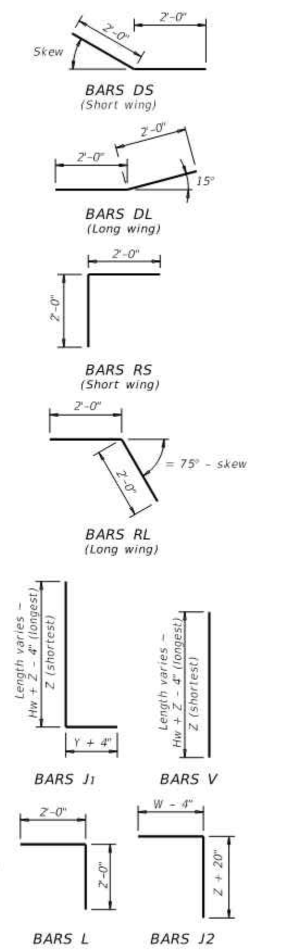
For cast-in-place culverts:
Ltw = [(N) (S) + (N + 1) (U)] ÷ cosine θ

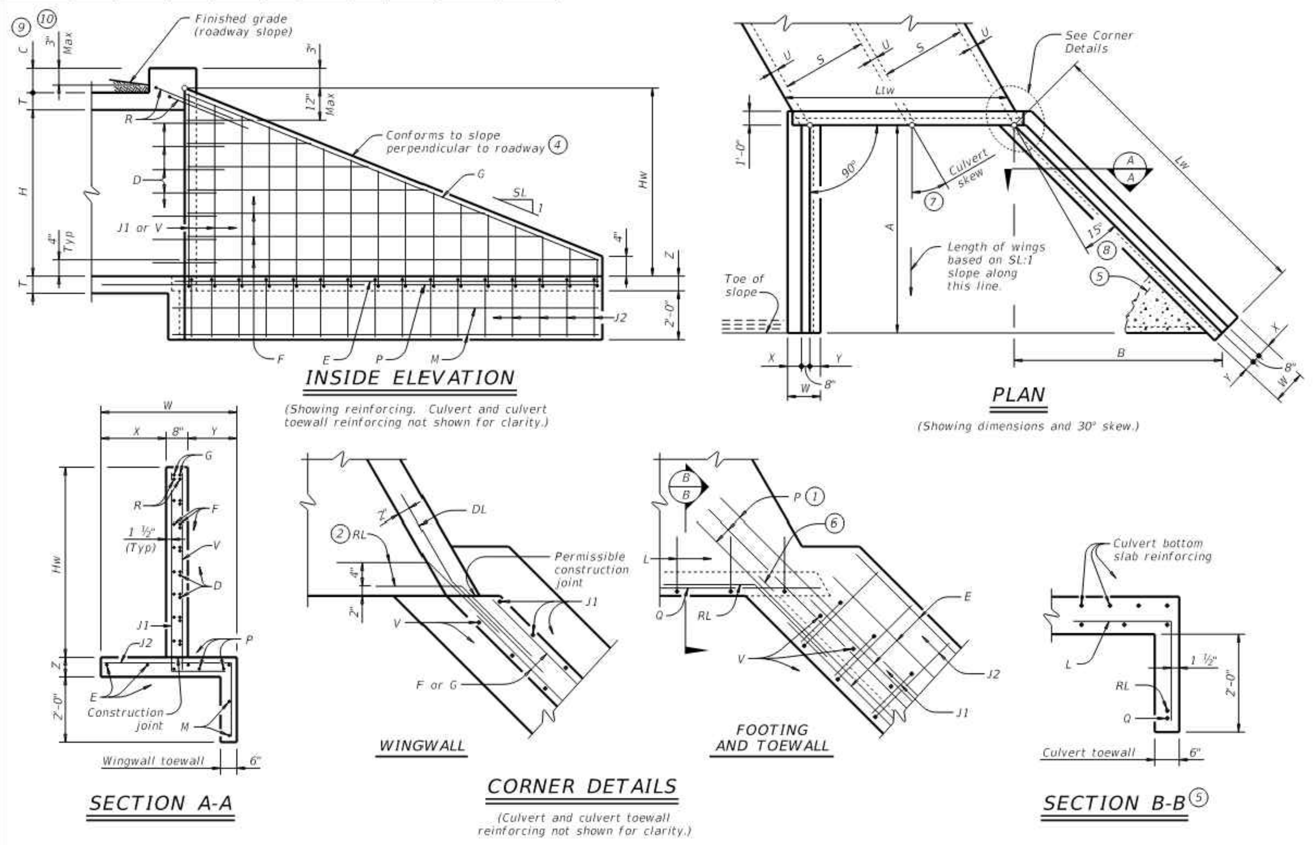
For precast culverts:
Ltw = [(N) (2U + S) + (N - 1) (0.5')] ÷ cosine θ

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
Lw = Length of long wingwall
Ltw = Culvert 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


INSIDE ELEVATION (Showing reinforcing. Culvert and culvert toewall reinforcing not shown for clarity.)
PLAN (Showing dimensions and 30° skew.)
SECTION A-A
CORNER DETAILS (Culvert and culvert toewall reinforcing not shown for clarity.) — WINGWALL — FOOTING AND TOEWALL
SECTION B-B (5)

(1) Extend Bars P 3'-0" minimum into bottom slab of box culvert.
(2) Adjust as necessary to maintain 1 1#2" clear cover and 4" minimum between bars.
(3) Quantities shown are based on an average wing height for two wings (one structure end). To determine total quantities for two wings, multiply the tabulated values by 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 construction joints or grooved joints oriented in the direction of flow across the full distance of the riprap at intervals of approximately 20'. When such riprap is provided, the culvert toewall shown in SECTION B-B will not be required.
(6) At Contractor's option, culvert toewall may be ended flush with wingwall toewall. Adjust reinforcing as needed.
(7) 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 toewalls for culverts and wingwalls may be reduced or eliminated as directed by the Engineer.
See Box Culvert Supplement (BCS) standard sheet for additional dimensions and information.
The quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for Contractor's information only.

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

Texas Department of Transportation — Bridge Division Standard

CONCRETE WINGWALLS WITH FLARED WINGS FOR SKEWED BOX CULVERTS

FW-S

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

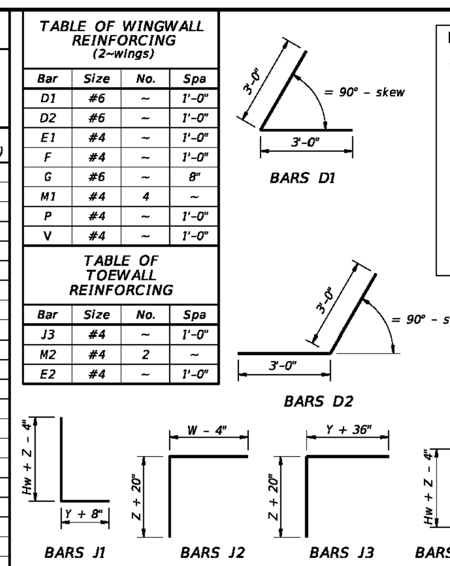
Maximum Wingwall Height Hw	W	X	Y	Z	Bars J1 Size	Bars J1 Spa	Bars J2 Size	Bars J2 Spa	Estimated Quantities per ft of wing (2~wings) (4) Reinf (Lb/Ft)	Conc (CY/Ft)	Estimated Quantities per ft of Toewall (1~toewall) Reinf (Lb/Ft)	Conc (CY/Ft)
2'-6"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	48.64	0.406	6.85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

TABLE OF WINGWALL REINFORCING (2~wings)

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

TABLE OF TOEWALL REINFORCING

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


BARS D1 — BARS D2 — BARS J1 — BARS J2 — BARS J3 — BARS V

WING DIMENSION FORMULAS:
(All values are in feet.)

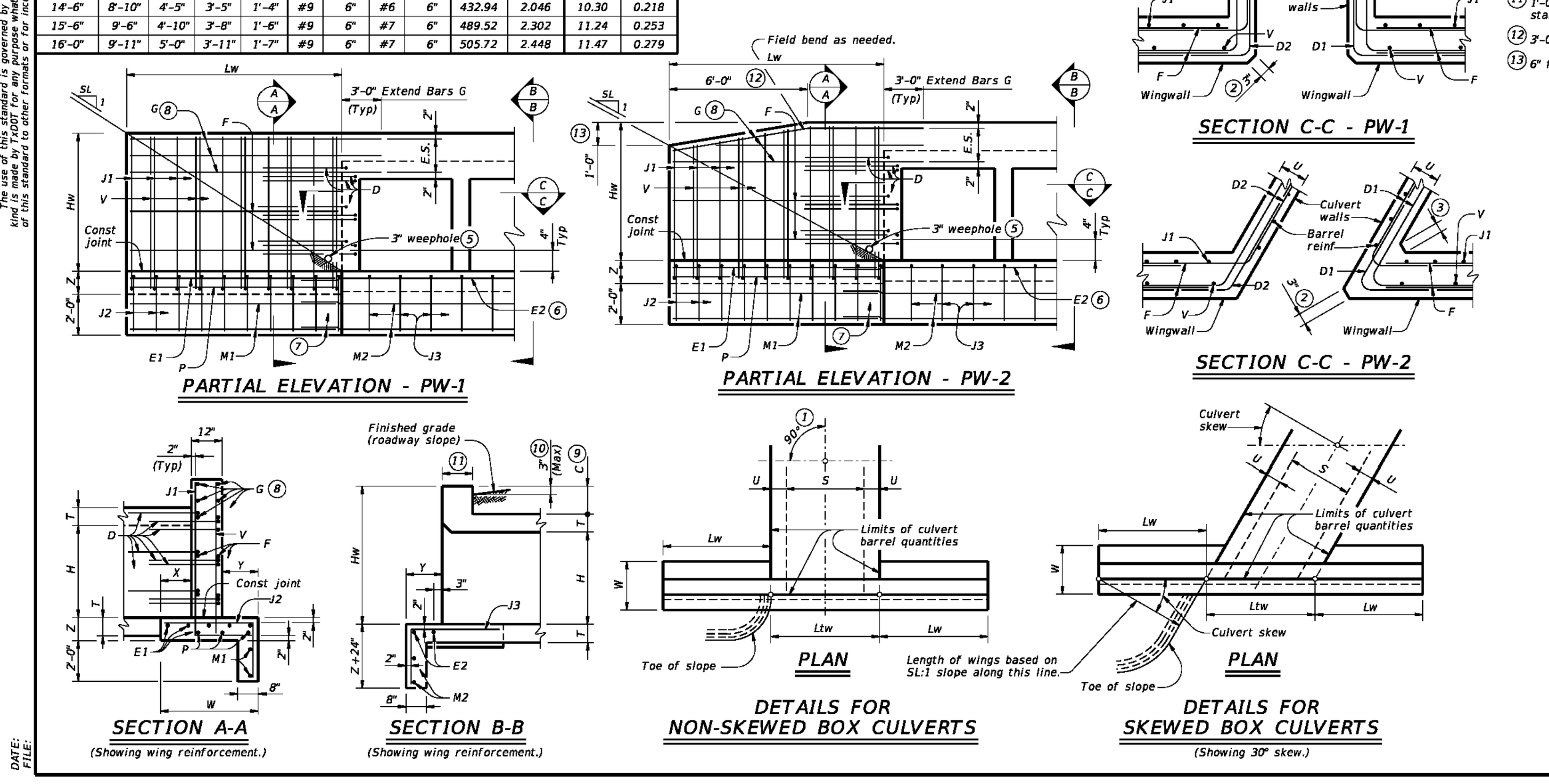
Hw = H + T + C
Lw = (Hw) (SL) ÷ cosine (θ) for Type PW-1
= (Hw - 1') (SL) ÷ cosine (θ) for Type PW-2 and Hw ≥ 4'
= (Hw - 0.5') (SL) ÷ cosine (θ) for Type PW-2 and Hw < 4'

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

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

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

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


SECTION C-C - PW-1
SECTION C-C - PW-2
PARTIAL ELEVATION - PW-1
PARTIAL ELEVATION - PW-2
SECTION A-A (Showing wing reinforcement.)
SECTION B-B (Showing wing reinforcement.)
DETAILS FOR NON-SKEWED BOX CULVERTS
DETAILS FOR SKEWED BOX CULVERTS (Showing 30° skew.)

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

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

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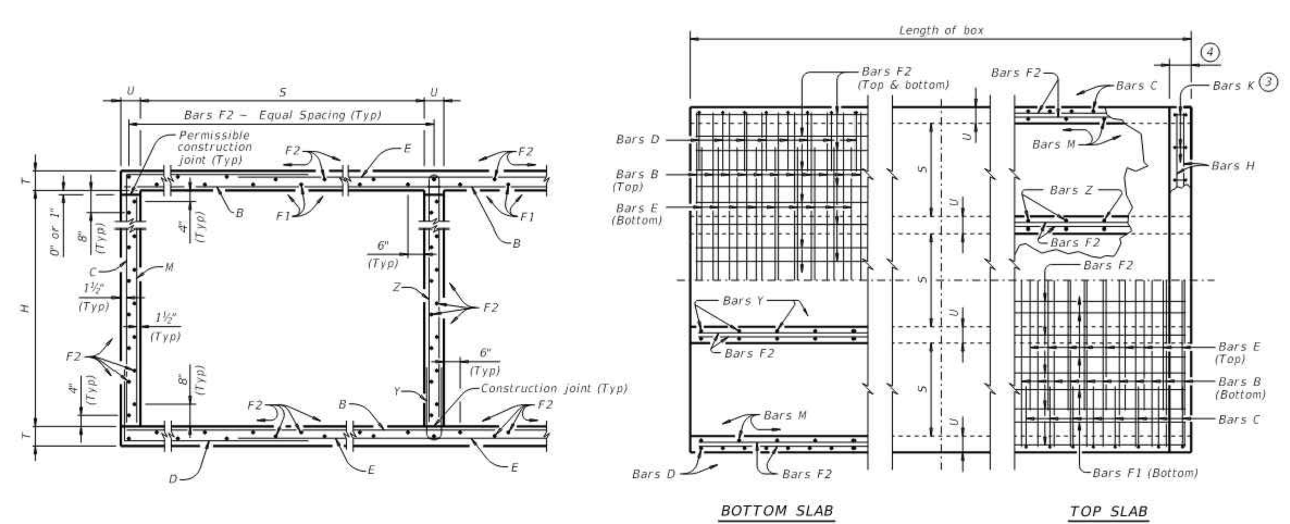

TYPICAL SECTION
BOTTOM SLAB — PART PLANS — TOP SLAB

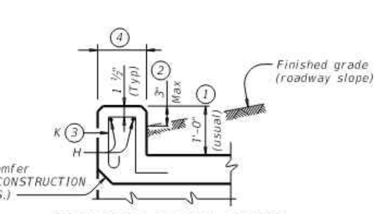
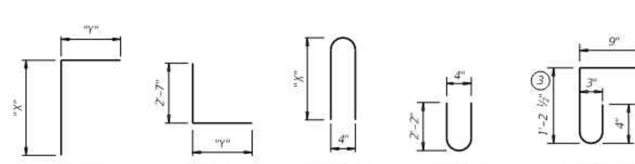

SECTION THRU CURB

TABLE OF BAR DIMENSIONS

H	"X"	"Y"
3'-0"	3'-6 ½"	4'-5"
4'-0"	4'-6 ½"	4'-5"
5'-0"	5'-6 ½"	4'-5"
6'-0"	6'-6 ½"	4'-5"
7'-0"	7'-6 ½"	4'-5"


BARS C — BARS D — BARS Z — BARS Y — BARS K (#4) (Spa = 1'-0" Max) (Length = 4'-2")

(1) 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 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 no 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 the Multiple 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 7'-0" SPAN 0' TO 10' FILL

MC-7-10

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

Section dimensions and Bars B, C & D, E:

Number of Spans	S	H	T	U	Bars B No.	Size	Spa	Length	Wt	Bars C & D No.	Size	Spa	Bars C Length	Bars C Wt	Bars D Length	Bars D Wt	Bars E No.	Size	Spa	Length	Wt
2	7' - 0"	3' - 0"	8"	7"	108	#6	9"	15' - 6"	2,514	162	#5	6"	7' - 11"	1,338	7' - 0"	1,183	108	#6	9"	11' - 5"	1,852
3	7' - 0"	3' - 0"	8"	7"	108	#6	9"	23' - 1"	3,744	162	#5	6"	7' - 11"	1,338	7' - 0"	1,183	108	#6	9"	19' - 0"	3,082
4	7' - 0"	3' - 0"	8"	7"	108	#6	9"	30' - 8"	4,975	162	#5	6"	7' - 11"	1,338	7' - 0"	1,183	108	#6	9"	26' - 7"	4,312
5	7' - 0"	3' - 0"	8"	7"	108	#6	9"	38' - 3"	6,205	162	#5	6"	7' - 11"	1,338	7' - 0"	1,183	108	#6	9"	34' - 2"	5,542
6	7' - 0"	3' - 0"	8"	7"	108	#6	9"	45' - 10"	7,435	162	#5	6"	7' - 11"	1,338	7' - 0"	1,183	108	#6	9"	41' - 9"	6,773
2	7' - 0"	4' - 0"	8"	7"	108	#6	9"	15' - 6"	2,514	162	#5	6"	8' - 11"	1,507	7' - 0"	1,183	108	#6	9"	11' - 5"	1,852
3	7' - 0"	4' - 0"	8"	7"	108	#6	9"	23' - 1"	3,744	162	#5	6"	8' - 11"	1,507	7' - 0"	1,183	108	#6	9"	19' - 0"	3,082
4	7' - 0"	4' - 0"	8"	7"	108	#6	9"	30' - 8"	4,975	162	#5	6"	8' - 11"	1,507	7' - 0"	1,183	108	#6	9"	26' - 7"	4,312
5	7' - 0"	4' - 0"	8"	7"	108	#6	9"	38' - 3"	6,205	162	#5	6"	8' - 11"	1,507	7' - 0"	1,183	108	#6	9"	34' - 2"	5,542
6	7' - 0"	4' - 0"	8"	7"	108	#6	9"	45' - 10"	7,435	162	#5	6"	8' - 11"	1,507	7' - 0"	1,183	108	#6	9"	41' - 9"	6,773
2	7' - 0"	5' - 0"	8"	7"	108	#6	9"	15' - 6"	2,514	162	#5	6"	9' - 11"	1,676	7' - 0"	1,183	108	#6	9"	11' - 5"	1,852
3	7' - 0"	5' - 0"	8"	7"	108	#6	9"	23' - 1"	3,744	162	#5	6"	9' - 11"	1,676	7' - 0"	1,183	108	#6	9"	19' - 0"	3,082
4	7' - 0"	5' - 0"	8"	7"	108	#6	9"	30' - 8"	4,975	162	#5	6"	9' - 11"	1,676	7' - 0"	1,183	108	#6	9"	26' - 7"	4,312
5	7' - 0"	5' - 0"	8"	7"	108	#6	9"	38' - 3"	6,205	162	#5	6"	9' - 11"	1,676	7' - 0"	1,183	108	#6	9"	34' - 2"	5,542
6	7' - 0"	5' - 0"	8"	7"	108	#6	9"	45' - 10"	7,435	162	#5	6"	9' - 11"	1,676	7' - 0"	1,183	108	#6	9"	41' - 9"	6,773
2	7' - 0"	6' - 0"	8"	7"	108	#6	9"	15' - 6"	2,514	162	#5	6"	10' - 11"	1,845	7' - 0"	1,183	108	#6	9"	11' - 5"	1,852
3	7' - 0"	6' - 0"	8"	7"	108	#6	9"	23' - 1"	3,744	162	#5	6"	10' - 11"	1,845	7' - 0"	1,183	108	#6	9"	19' - 0"	3,082
4	7' - 0"	6' - 0"	8"	7"	108	#6	9"	30' - 8"	4,975	162	#5	6"	10' - 11"	1,845	7' - 0"	1,183	108	#6	9"	26' - 7"	4,312
5	7' - 0"	6' - 0"	8"	7"	108	#6	9"	38' - 3"	6,205	162	#5	6"	10' - 11"	1,845	7' - 0"	1,183	108	#6	9"	34' - 2"	5,542
6	7' - 0"	6' - 0"	8"	7"	108	#6	9"	45' - 10"	7,435	162	#5	6"	10' - 11"	1,845	7' - 0"	1,183	108	#6	9"	41' - 9"	6,773
2	7' - 0"	7' - 0"	8"	7"	108	#6	9"	15' - 6"	2,514	162	#5	6"	11' - 11"	2,014	7' - 0"	1,183	108	#6	9"	11' - 5"	1,852
3	7' - 0"	7' - 0"	8"	7"	108	#6	9"	23' - 1"	3,744	162	#5	6"	11' - 11"	2,014	7' - 0"	1,183	108	#6	9"	19' - 0"	3,082
4	7' - 0"	7' - 0"	8"	7"	108	#6	9"	30' - 8"	4,975	162	#5	6"	11' - 11"	2,014	7' - 0"	1,183	108	#6	9"	26' - 7"	4,312
5	7' - 0"	7' - 0"	8"	7"	108	#6	9"	38' - 3"	6,205	162	#5	6"	11' - 11"	2,014	7' - 0"	1,183	108	#6	9"	34' - 2"	5,542
6	7' - 0"	7' - 0"	8"	7"	108	#6	9"	45' - 10"	7,435	162	#5	6"	11' - 11"	2,014	7' - 0"	1,183	108	#6	9"	41' - 9"	6,773

Bars F1, F2, M (continued):

Number of Spans	H	Bars F1 ~ #4 No.	Spa	Length	Wt	Bars F2 ~ #4 No.	Spa	Length	Wt	Bars M ~ #4 No.	Spa	Length	Wt
2	3' - 0"	10	18"	39' - 9"	266	54	18"	39' - 9"	1,434	108	9"	3' - 0"	216
3	3' - 0"	15	18"	39' - 9"	398	77	18"	39' - 9"	2,045	108	9"	3' - 0"	216
4	3' - 0"	20	18"	39' - 9"	531	100	18"	39' - 9"	2,655	108	9"	3' - 0"	216
5	3' - 0"	25	18"	39' - 9"	664	123	18"	39' - 9"	3,266	108	9"	3' - 0"	216
6	3' - 0"	30	18"	39' - 9"	797	146	18"	39' - 9"	3,877	108	9"	3' - 0"	216
2	4' - 0"	10	18"	39' - 9"	266	54	18"	39' - 9"	1,434	108	9"	4' - 0"	289
3	4' - 0"	15	18"	39' - 9"	398	77	18"	39' - 9"	2,045	108	9"	4' - 0"	289
4	4' - 0"	20	18"	39' - 9"	531	100	18"	39' - 9"	2,655	108	9"	4' - 0"	289
5	4' - 0"	25	18"	39' - 9"	664	123	18"	39' - 9"	3,266	108	9"	4' - 0"	289
6	4' - 0"	30	18"	39' - 9"	797	146	18"	39' - 9"	3,877	108	9"	4' - 0"	289
2	5' - 0"	10	18"	39' - 9"	266	60	18"	39' - 9"	1,593	108	9"	5' - 0"	361
3	5' - 0"	15	18"	39' - 9"	398	85	18"	39' - 9"	2,257	108	9"	5' - 0"	361
4	5' - 0"	20	18"	39' - 9"	531	110	18"	39' - 9"	2,921	108	9"	5' - 0"	361
5	5' - 0"	25	18"	39' - 9"	664	135	18"	39' - 9"	3,585	108	9"	5' - 0"	361
6	5' - 0"	30	18"	39' - 9"	797	160	18"	39' - 9"	4,248	108	9"	5' - 0"	361
2	6' - 0"	10	18"	39' - 9"	266	66	18"	39' - 9"	1,752	108	9"	6' - 0"	433
3	6' - 0"	15	18"	39' - 9"	398	93	18"	39' - 9"	2,469	108	9"	6' - 0"	433
4	6' - 0"	20	18"	39' - 9"	531	120	18"	39' - 9"	3,186	108	9"	6' - 0"	433
5	6' - 0"	25	18"	39' - 9"	664	147	18"	39' - 9"	3,903	108	9"	6' - 0"	433
6	6' - 0"	30	18"	39' - 9"	797	174	18"	39' - 9"	4,620	108	9"	6' - 0"	433
2	7' - 0"	10	18"	39' - 9"	266	66	18"	39' - 9"	1,752	108	9"	7' - 0"	505
3	7' - 0"	15	18"	39' - 9"	398	93	18"	39' - 9"	2,469	108	9"	7' - 0"	505
4	7' - 0"	20	18"	39' - 9"	531	120	18"	39' - 9"	3,186	108	9"	7' - 0"	505
5	7' - 0"	25	18"	39' - 9"	664	147	18"	39' - 9"	3,903	108	9"	7' - 0"	505
6	7' - 0"	30	18"	39' - 9"	797	174	18"	39' - 9"	4,620	108	9"	7' - 0"	505

Bars Y & Z, H, K and Quantities (continued):

Number of Spans	H	Bars Y & Z ~ #4 No.	Spa	Bars Y Length	Bars Y Wt	Bars Z Length	Bars Z Wt	Bars H 4 ~ #4 Length	Wt	Bars K No.	Wt	Per Foot of Barrel Conc (CY)	Reinf (Lb)	Curb Conc (CY)	Reinf (Lb)	Total Conc (CY)	Reinf (Lb)
2	3' - 0"	54	9"	4' - 7"	165	7' - 3"	262	15' - 6"	41	34	95	0.972	230.8	1.2	136	40.0	9,366
3	3' - 0"	108	9"	4' - 7"	331	7' - 3"	523	23' - 1"	62	50	139	1.412	321.5	1.7	201	58.2	13,061
4	3' - 0"	162	9"	4' - 7"	496	7' - 3"	785	30' - 8"	82	64	178	1.851	412.3	2.3	260	76.3	16,751
5	3' - 0"	216	9"	4' - 7"	661	7' - 3"	1,046	38' - 3"	102	80	223	2.290	503.0	2.8	325	94.4	20,446
6	3' - 0"	270	9"	4' - 7"	827	7' - 3"	1,308	45' - 10"	122	94	262	2.729	593.9	3.4	384	112.6	24,138
2	4' - 0"	54	9"	4' - 7"	165	9' - 3"	334	15' - 6"	41	34	95	1.037	238.6	1.2	136	42.6	9,680
3	4' - 0"	108	9"	4' - 7"	331	9' - 3"	667	23' - 1"	62	50	139	1.498	331.2	1.7	201	61.6	13,447
4	4' - 0"	162	9"	4' - 7"	496	9' - 3"	1,001	30' - 8"	82	64	178	1.959	423.7	2.3	260	80.6	17,209
5	4' - 0"	216	9"	4' - 7"	661	9' - 3"	1,335	38' - 3"	102	80	223	2.420	516.3	2.8	325	99.6	20,977
6	4' - 0"	270	9"	4' - 7"	827	9' - 3"	1,668	45' - 10"	122	94	262	2.881	608.9	3.4	384	118.6	24,740
2	5' - 0"	54	9"	4' - 7"	165	11' - 3"	406	15' - 6"	41	34	95	1.102	250.4	1.2	136	45.2	10,152
3	5' - 0"	108	9"	4' - 7"	331	11' - 3"	812	23' - 1"	62	50	139	1.584	346.1	1.7	201	65.1	14,045
4	5' - 0"	162	9"	4' - 7"	496	11' - 3"	1,217	30' - 8"	82	64	178	2.067	441.8	2.3	260	85.0	17,932
5	5' - 0"	216	9"	4' - 7"	661	11' - 3"	1,623	38' - 3"	102	80	223	2.549	537.5	2.8	325	104.8	21,825
6	5' - 0"	270	9"	4' - 7"	827	11' - 3"	2,029	45' - 10"	122	94	262	3.032	633.2	3.4	384	124.7	25,713
2	6' - 0"	54	9"	4' - 7"	165	13' - 3"	478	15' - 6"	41	34	95	1.167	262.2	1.2	136	47.8	10,624
3	6' - 0"	108	9"	4' - 7"	331	13' - 3"	956	23' - 1"	62	50	139	1.671	361.0	1.7	201	68.6	14,642
4	6' - 0"	162	9"	4' - 7"	496	13' - 3"	1,434	30' - 8"	82	64	178	2.175	459.9	2.3	260	89.3	18,655
5	6' - 0"	216	9"	4' - 7"	661	13' - 3"	1,912	38' - 3"	102	80	223	2.679	558.7	2.8	325	110.0	22,673
6	6' - 0"	270	9"	4' - 7"	827	13' - 3"	2,390	45' - 10"	122	94	262	3.183	657.6	3.4	384	130.7	26,687
2	7' - 0"	54	9"	4' - 7"	165	15' - 3"	550	15' - 6"	41	34	95	1.231	270.0	1.2	136	50.4	10,937
3	7' - 0"	108	9"	4' - 7"	331	15' - 3"	1,100	23' - 1"	62	50	139	1.757	370.7	1.7	201	72.0	15,027
4	7' - 0"	162	9"	4' - 7"	496	15' - 3"	1,650	30' - 8"	82	64	178	2.283	471.3	2.3	260	93.6	19,112
5	7' - 0"	216	9"	4' - 7"	661	15' - 3"	2,200	38' - 3"	102	80	223	2.809	571.9	2.8	325	115.2	23,202
6	7' - 0"	270	9"	4' - 7"	827	15' - 3"	2,750	45' - 10"	122	94	262	3.334	672.6	3.4	384	136.8	27,288

HL93 LOADING — SHEET 2 OF 2

Texas Department of Transportation — Bridge Division Standard

MULTIPLE BOX CULVERTS CAST-IN-PLACE 7'-0" SPAN 0' TO 10' FILL

MC-7-10

FILE: CD-MC710-20.dgn | DN: TBE | CK: BMP | DW: TxDOT | CK: TxDOT
©TxDOT February 2020 | CONT | SECT | JOB | HIGHWAY
REVISIONS | DIST | COUNTY | SHEET NO.

DATE: FILE:

STATE OF TEXAS — JAMES INGALLS — 107416 — LICENSED PROFESSIONAL ENGINEER — 12/08/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

DRAINAGE DETAILS II

SHEET 15 OF 64

NO	DATE	ISSUES AND REVISIONS
△		

INK CIVIL
2021 W SH46, STE 105
NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 ink-civil.com
TBPE FIRM F-13351

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DETENTION POND NOTES

EARTHFILL

1. SCOPE
THE WORK CONSISTS OF THE CONSTRUCTION OF EARTH EMBANKMENTS, OTHER EARTHFILLS, AND EARTH BACKFILLS REQUIRED BY THE DRAWINGS AND SPECIFICATIONS.

EARTHFILL IS COMPOSED OF NATURAL EARTH MATERIALS THAT CAN BE PLACED AND COMPACTED BY CONSTRUCTION EQUIPMENT OPERATED IN A CONVENTIONAL MANNER.

EARTH BACKFILL IS COMPOSED OF NATURAL EARTH MATERIAL PLACED AND COMPACTED IN CONFINED SPACES OR ADJACENT TO STRUCTURES (INCLUDING PIPES) BY HAND TAMPING, MANUALLY DIRECTED POWER TAMPERS OR VIBRATING PLATES, OR THEIR EQUIVALENT.

FOR EMBANKMENT REQUIREMENTS, SEE FILL BERM SECTION (TYP), SHEET 17. 4

2. MATERIAL
FILL MATERIALS SHALL CONTAIN NO FROZEN SOIL, SOD, BRUSH, ROOTS, OR OTHER PERISHABLE MATERIAL. UNLESS OTHERWISE NOTED ON THE PLANS, ROCK PARTICLES LARGER THAN 6" SHALL BE REMOVED PRIOR TO COMPACTION OF THE FILL.

THE TYPES OF MATERIAL USED IN THE VARIOUS FILLS SHALL BE AS LISTED AND DESCRIBED IN THE SPECIFICATIONS AND DRAWINGS.

3. FOUNDATION PREPARATION 4
FOUNDATIONS FOR EARTHFILL SHALL BE STRIPPED TO REMOVE VEGETATION AND OTHER UNSUITABLE MATERIAL OR SHALL BE EXCAVATED AS SPECIFIED. SEE NOTE 9 FOR PROOF ROLLING REQUIREMENTS.

EXCEPT AS OTHERWISE SPECIFIED, EARTH FOUNDATION SURFACES SHALL BE GRADED TO REMOVE SURFACE IRREGULARITIES AND SHALL BE SCARIFIED PARALLEL TO THE AXIS OF THE FILL OR OTHERWISE ACCEPTABLY SCORED AND LOOSENED TO A MINIMUM DEPTH OF 2 INCHES. THE MOISTURE CONTENT OF THE LOOSENED MATERIAL SHALL BE CONTROLLED AS SPECIFIED FOR THE EARTHFILL, AND THE SURFACE MATERIAL OF THE FOUNDATION SHALL BE COMPACTED AND BONDED WITH THE FIRST LAYER OF EARTHFILL AS SPECIFIED OR SUBSEQUENT LAYERS OF EARTHFILL.

EARTH ABUTMENT SURFACES SHALL BE FREE OF LOOSE, UNCOMPACTED EARTH IN EXCESS OF 2 INCHES IN DEPTH NORMAL TO THE SLOPE AND SHALL BE AT SUCH A MOISTURE CONTENT THAT THE EARTHFILL CAN BE COMPACTED AGAINST THEM TO PRODUCE A GOOD BOND BETWEEN THE FILL AND THE ABUTMENTS.

ROCK FOUNDATION AND ABUTMENT SURFACES SHALL BE CLEARED OF ALL LOOSE MATERIAL BY HAND OR OTHER EFFECTIVE MEANS AND SHALL BE FREE OF STANDING WATER WHEN FILL IS PLACED UPON THEM. OCCASIONAL ROCK OUTCROPS IN EARTH FOUNDATIONS FOR EARTHFILL, EXCEPT IN DAMS AND OTHER STRUCTURES DESIGNED TO RESTRAIN THE MOVEMENT OF WATER, SHALL NOT REQUIRE SPECIAL TREATMENT IF THEY DO NOT INTERFERE WITH COMPACTION OF THE FOUNDATION AND INITIAL LAYERS OF THE FILL OR THE BOND BETWEEN THE FOUNDATION AND THE FILL.

FOUNDATION AND ABUTMENT SURFACES SHALL BE NO STEEPER THAN ONE HORIZONTAL TO ONE VERTICAL UNLESS OTHERWISE SPECIFIED. TEST PITS OR OTHER CAVITIES SHALL BE FILLED WITH COMPACTED EARTHFILL CONFORMING TO THE SPECIFICATIONS FOR THE EARTHFILL TO BE PLACED UPON THE FOUNDATION.

4. PLACEMENT
EARTHFILL SHALL BE PLACED IN APPROXIMATELY HORIZONTAL LAYERS. THE THICKNESS OF EACH LAYER BEFORE COMPACTION SHALL NOT EXCEED THE MAXIMUM THICKNESS SPECIFIED AS SHOWN ON THE DRAWINGS. MATERIALS PLACED BY DUMPING IN PILES OR WINDOWS SHALL BE SPREAD UNIFORMLY TO NOT MORE THAN THE SPECIFIED THICKNESS BEFORE BEING COMPACTED.

HAND COMPACTED EARTH BACKFILL SHALL BE PLACED IN LAYERS WHOSE THICKNESS BEFORE COMPACTION DOES NOT EXCEED THE MAXIMUM THICKNESS SPECIFIED FOR LAYERS OF EARTH BACKFILL COMPACTED BY MANUALLY DIRECTED POWER TAMPERS.

EARTH BACKFILL SHALL BE PLACED IN A MANNER THAT PREVENTS DAMAGE TO THE STRUCTURES AND ALLOWS THE STRUCTURES TO ASSUME THE LOADS FROM THE EARTH BACKFILL GRADUALLY AND UNIFORMLY. THE HEIGHT OF THE EARTH BACKFILL ADJACENT TO A STRUCTURE SHALL BE INCREASED AT APPROXIMATELY THE SAME RATE ON ALL SIDES OF THE STRUCTURE.

EARTHFILL AND EARTH BACKFILL IN DAMS, LEVEES, AND OTHER STRUCTURES DESIGNED TO RESTRAIN THE MOVEMENT OF WATER SHALL BE PLACED TO MEET THE FOLLOWING ADDITIONAL REQUIREMENTS:

(a) THE DISTRIBUTION OF MATERIALS THROUGHOUT EACH ZONE SHALL BE ESSENTIALLY UNIFORM, AND THE EARTHFILL SHALL BE FREE FROM LENSES, POCKETS, STREAKS, OR LAYERS OF MATERIAL DIFFERING SUBSTANTIALLY IN TEXTURE, MOISTURE CONTENT, OR GRADATION FROM THE SURROUNDING MATERIAL. ZONE EARTHFILLS SHALL BE CONSTRUCTED CONCURRENTLY UNLESS OTHERWISE SPECIFIED.

(b) IF THE SURFACE OF ANY LAYER BECOMES TOO HARD AND SMOOTH FOR PROPER BOND WITH THE SUCCEEDING LAYER, IT SHALL BE SCARIFIED PARALLEL TO THE AXIS OF THE FILL TO A DEPTH OF NOT LESS THAN 2 INCHES BEFORE THE NEXT LAYER IS PLACED.

(c) THE TOP SURFACE OF EMBANKMENTS SHALL BE MAINTAINED APPROXIMATELY LEVEL DURING CONSTRUCTION WITH TWO EXCEPTIONS: A CROWN OR CROSS-SLOPE OF ABOUT 2 PERCENT SHALL BE MAINTAINED TO ENSURE EFFECTIVE DRAINAGE, OR AS OTHERWISE SPECIFIED FOR DRAINFILL OR SECTIONAL ZONES.

(d) DAM EMBANKMENTS SHALL BE CONSTRUCTED IN CONTINUOUS LAYERS FROM ABUTMENT TO ABUTMENT EXCEPT WHERE OPENINGS TO FACILITATE CONSTRUCTION OR TO ALLOW THE PASSAGE OF STREAM FLOW DURING CONSTRUCTION ARE SPECIFICALLY AUTHORIZED IN THE CONTRACT.

(e) EMBANKMENTS BUILT AT DIFFERENT LEVELS AS DESCRIBED UNDER (C) OR (D) ABOVE SHALL BE CONSTRUCTED SO THAT THE SLOPE OF THE BONDING SURFACES BETWEEN EMBANKMENT IN PLACE AND EMBANKMENT TO BE PLACED IS NOT STEEPER THAN 3 FEET HORIZONTAL TO 1 FOOT VERTICAL. THE BONDING SURFACE OF THE EMBANKMENT IN PLACE SHALL BE STRIPPED OF ALL MATERIAL NOT MEETING THE REQUIREMENTS OF THIS SPECIFICATION AND SHALL BE SCARIFIED, MOISTENED, AND RECOMPACTED WHEN THE NEW EARTHFILL IS PLACED AGAINST IT. THIS ENSURES A GOOD BOND WITH THE NEW EARTHFILL AND OBTAINS THE SPECIFIED MOISTURE CONTENT AND DENSITY AT THE CONTACT OF THE INPLACE AND NEW EARTHFILLS.

(f) THE FILL MATERIAL SHALL BE FREE OF ORGANIC MATTER AND OTHER OBJECTIONABLE MATERIAL. PLACING AND SPREADING OF FILL SHALL BEGIN ON THE LOWEST PART OF THE WORKING AREA AND CONTINUE IN HORIZONTAL LAYERS OF APPROXIMATE UNIFORM THICKNESS, NOT EXCEEDING 9 INCHES BEFORE COMPACTION. WHERE THE BORROW YIELDS MATERIALS OF VARYING TEXTURE AND GRADATION, THE MORE IMPERVIOUS MATERIAL SHALL BE PLACED TOWARD THE WATERSIDE OF THE BERM. THE CONSTRUCTION EQUIPMENT SHALL BE OPERATED OVER THE AREA OF EACH LAYER IN A MANNER TO BREAK UP LARGE CLODS AND OBTAIN COMPACTION.

5. CONTROL OF MOISTURE CONTENT
DURING PLACEMENT AND COMPACTION OF EARTHFILL AND EARTH BACKFILL, THE MOISTURE CONTENT OF THE MATERIAL BEING PLACED SHALL BE MAINTAINED WITHIN THE SPECIFIED RANGE.

THE APPLICATION OF WATER TO THE EARTHFILL MATERIAL SHALL BE ACCOMPLISHED AT THE BORROW AREAS INSOFAR AS PRACTICABLE. WATER MAY BE APPLIED BY SPRINKLING THE MATERIAL AFTER PLACEMENT ON THE EARTHFILL, IF NECESSARY. UNIFORM MOISTURE DISTRIBUTION SHALL BE OBTAINED BY DISKING.

MATERIAL THAT IS TOO WET WHEN DEPOSITED ON THE EARTHFILL SHALL EITHER BE REMOVED OR BE DRIED TO THE SPECIFIED MOISTURE CONTENT PRIOR TO COMPACTION.

IF THE TOP SURFACE OF THE PRECEDING LAYER OF COMPACTED EARTHFILL OR A FOUNDATION OR ABUTMENT SURFACE IN THE ZONE OF CONTACT WITH THE EARTHFILL BECOMES TOO DRY TO PERMIT SUITABLE BOND, IT SHALL EITHER BE REMOVED OR SCARIFIED AND MOISTENED BY SPRINKLING TO AN ACCEPTABLE MOISTURE CONTENT BEFORE PLACEMENT OF THE NEXT LAYER OF EARTHFILL.

6. COMPACTION
EARTHFILL – EARTHFILL SHALL BE COMPACTED ACCORDING TO THE FOLLOWING REQUIREMENTS FOR THE CLASS OF COMPACTION SPECIFIED:

CLASS A COMPACTION – EACH LAYER OF EARTHFILL SHALL BE COMPACTED AS NECESSARY TO PROVIDE THE DENSITY OF THE EARTHFILL MATRIX NOT LESS THAN THE MINIMUM DENSITY SPECIFIED ON THE DRAWINGS. THE EARTHFILL MATRIX IS DEFINED AS THE PORTION OF THE EARTHFILL MATERIAL FINER THAN THE MAXIMUM PARTICLE SIZE USED IN THE COMPACTION TEST METHOD SPECIFIED.

COMPACTION OF ALL EARTHEN EMBANKMENTS SHALL HAVE A NON-PERMEABLE CORE, SHALL BE BASED ON A GEOTECHNICAL INVESTIGATION OF THE SITE, AND SHALL BE COMPACTED TO 90% STANDARD PROCTOR.

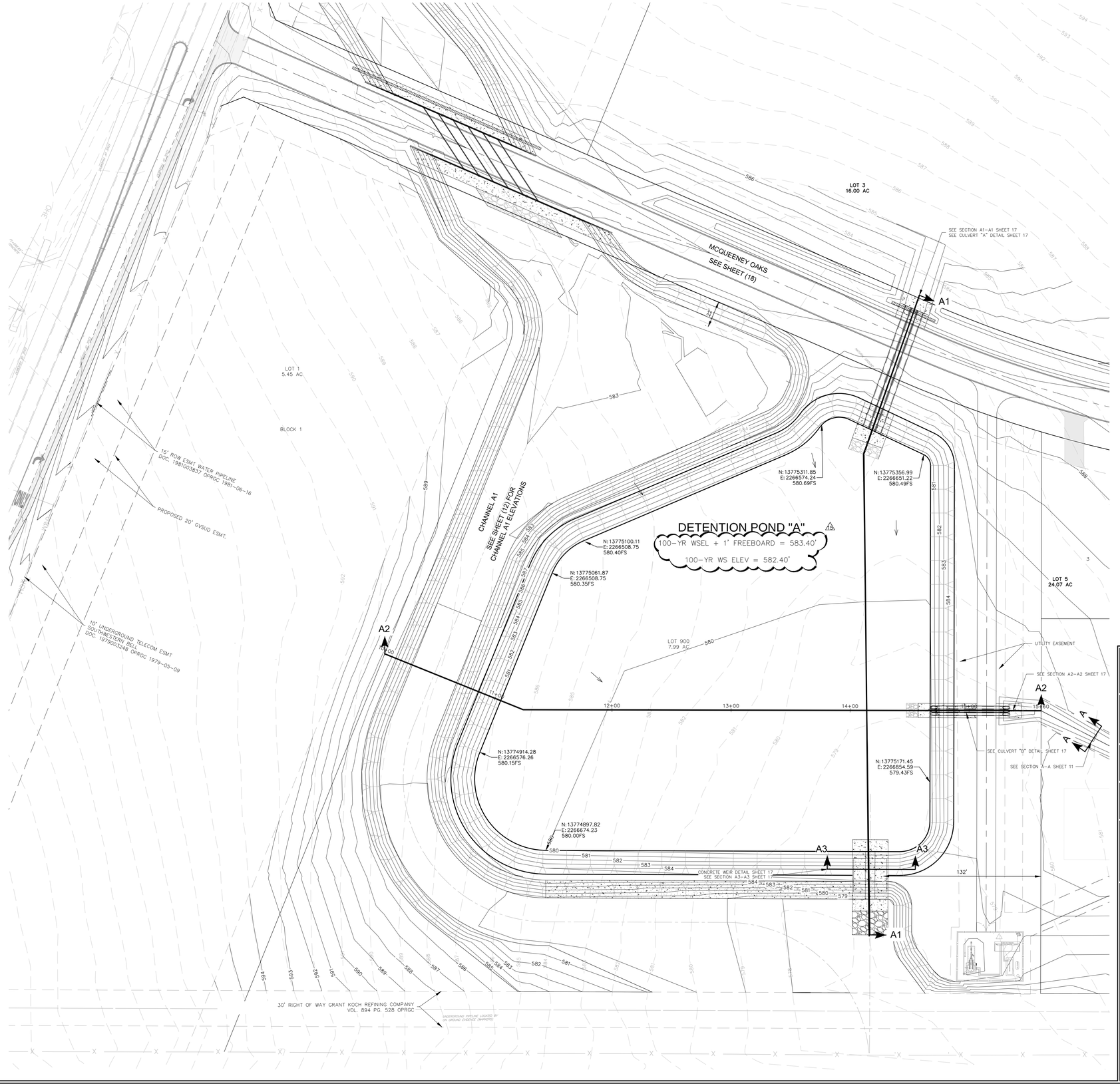
7. REWORKING OR REMOVAL AND REPLACEMENT OF DEFECTIVE EARTHFILL
EARTHFILL PLACED AT DENSITIES LOWER THAN THE SPECIFIED MINIMUM DENSITY OR AT MOISTURE CONTENTS OUTSIDE THE SPECIFIED ACCEPTABLE RANGE OF MOISTURE CONTENT OR OTHERWISE NOT CONFORMING TO THE REQUIREMENTS OF THE SPECIFICATIONS SHALL BE REWORKED TO MEET THE REQUIREMENTS OR REMOVED AND REPLACED BY ACCEPTABLE EARTHFILL. THE REPLACEMENT EARTHFILL AND THE FOUNDATION, ABUTMENT, AND EARTHFILL SURFACES UPON WHICH IT IS PLACED SHALL CONFORM TO ALL REQUIREMENTS OF THIS SPECIFICATION FOR FOUNDATION PREPARATION, APPROVAL, PLACEMENT, MOISTURE CONTROL, AND COMPACTION.

8. TESTING
DURING THE COURSE OF THE WORK, THE CONTRACTOR WILL PERFORM QUALITY CONTROL TEST REQUIRED TO IDENTIFY MATERIAL; DETERMINE COMPACTION CHARACTERISTICS; DETERMINE MOISTURE CONTENT; AND DETERMINE DENSITY OF EARTHFILL IN PLACE. TESTS PERFORMED WILL BE SUBMITTED TO THE ENGINEER OF RECORD TO VERIFY THAT THE EARTHFILLS CONFORM TO CONTRACT REQUIREMENTS OF THE SPECIFICATIONS.

9. SITE PROOF-ROLL SPECIFICATIONS TO BE IN ACCORDANCE WITH SECTION 5.3.2 OF THE GEOTECH REPORT TITLED MCQUEENEY OAKS SUBDIVISION AND ROADWAYS DATED 11/20/2025 4

DENSITIES OF EARTHFILL REQUIRING CLASS A COMPACTION WILL BE DETERMINED IN ACCORDANCE WITH ASTM D 698, D 1556, D 2167, D 2922, OR D 2937 EXCEPT THAT THE VOLUME AND MOIST WEIGHT OF INCLUDED ROCK PARTICLES LARGER THAN THOSE USED IN THE COMPACTION TEST METHOD SPECIFIED FOR THE TYPE OF FILL WILL BE DETERMINED AND DEDUCTED FROM THE VOLUME AND MOIST WEIGHT OF THE TOTAL SAMPLE BEFORE COMPUTATION OF DENSITY OR, IF USING THE NUCLEAR GAUGE, ADDED TO THE SPECIFIED DENSITY TO BRING IT TO THE MEASURE OF EQUIVALENT COMPOSITION FOR COMPARISON (SEE ASTM D 4718). THE DENSITY SO COMPUTED IS USED TO DETERMINE THE PERCENT COMPACTION OF THE EARTHFILL MATRIX. UNLESS OTHERWISE SPECIFIED, MOISTURE CONTENT IS DETERMINED BY ONE OF THE FOLLOWING METHODS: ASTM D 2216, D 3017, D 4643, D 4944, OR D 4959.

IMPERVIOUS CORE COMPACTION NOTE:
COMPACTED CLAY CORE TO BE PLACED A MINIMUM OF 2' BELOW EXISTING GRADE ALONG THE ENTIRE LENGTH OF THE BERM. MATERIAL TO HAVE A PI OF 30 OR GREATER, MINIMUM COMPACTED DRY DENSITY OF 90% AND GROUND CONTENT NO MORE THAN 5% BY WEIGHT LARGER THAN NO.4 SIEVE.



0 40' 80'
SCALE: 1"=40'

LEGEND

- 900 EXISTING CONTOUR
- 900 PROPOSED CONTOUR
- DRAINAGE FLOW ARROW
- GRADE BREAK/SWALE

DETENTION POND NOTES:
CONSTRUCTION SPECIFICATION – TOP SOIL

1. VEGETATION OF POND BOTTOM – THE WORK CONSISTS OF PLACEMENT OF TOP SOIL ON NEW EARTH EMBANKMENTS, OTHER EARTHFILLS, AND EARTH BACKFILLS REQUIRED BY THE DRAWINGS.

2. MATERIAL – THE TOPSOIL SHALL BE FERTILE SOIL, CONSISTING PRIMARILY OF CLAY AND CLAYEY MATERIALS, WITH A PLASTICITY INDEX GREATER THAN 15, AND SHALL BE FREE OF LARGE ORGANIC OR ROCK MATERIAL.

3. APPLICATION – TOPSOIL SHALL BE PLACED AT GRADES INDICATED ON THE PLANS AND ROLLED TO REDUCE EROSION. PERIODIC INSPECTION ARE REQUIRED AND ADDITIONAL TOPSOIL ADDED AS NEEDED UNTIL VEGETATION HAS ESTABLISHED

CONSTRUCTION SPECIFICATION – VEGETATION

1. VEGETATION OF EMBANKMENT – THE WORK CONSISTS OF ESTABLISHING VEGETATION ON NEW EARTH EMBANKMENTS, OTHER EARTHFILLS, AND EARTH BACKFILLS REQUIRED BY THE DRAWINGS.

2. MATERIAL – VEGETATION SHALL CONSIST OF "NATIVE SUN TURF GRASS" AS SUPPLIED BY NATIVE AMERICAN SEED IN JUNCTION, TX, CONSISTING OF 34% BLUE GRAMA AND 64% BUFFALO GRASS, OR ENGINEER APPROVED EQUAL. SEED MIXTURE SHALL CONSIST OF A PURE LIVE SEED OF 90-95%

3. APPLICATION – THE SEED MIXTURE SHALL BE INSTALLED PER DISTRIBUTORS RECOMMENDATIONS AT A RATE OF 1 LB PER 400 SQFT. SEED MIXTURE SHALL BE WATERED AS REQUIRED UNTIL VEGETATION IS ESTABLISHED.

DRAINAGE INFRASTRUCTURE MAINTENANCE AND MONITORING GUIDELINES

- SEASONAL MOWING AND LAWN CARE – IF THE DETENTION POND IS MADE UP OF TURF GRASS, IT SHOULD BE MOWED AS NEEDED TO LIMIT VEGETATION HEIGHT TO 18 INCHES, USING A MULCHING MOWER (OR REMOVAL OF CLIPPINGS). IF NATIVE GRASSES ARE USED, THE POND MAY REQUIRE LESS FREQUENT MOWING, BUT A MINIMUM OF TWICE ANNUALLY. REGULAR MOWING SHOULD ALSO INCLUDE WEED CONTROL PRACTICES, HOWEVER HERBICIDE USE SHOULD BE KEPT TO A MINIMUM. HEALTHY GRASS CAN BE MAINTAINED WITHOUT USING FERTILIZERS BECAUSE RUNOFF USUALLY CONTAINS SUFFICIENT NUTRIENTS. IRRIGATION OF THE SITE CAN HELP ASSURE A DENSE AND HEALTHY VEGETATIVE COVER.
- INSPECTION – INSPECT DETENTION POND AT LEAST TWICE ANNUALLY FOR EROSION OR DAMAGE TO VEGETATION. HOWEVER, ADDITIONAL INSPECTION AFTER PERIODS OF HEAVY RUNOFF IS MOST DESIRABLE. MORE FREQUENT INSPECTIONS OF THE GRASS COVER DURING THE FIRST FEW YEARS AFTER ESTABLISHMENT WILL HELP TO DETERMINE IF ANY PROBLEMS ARE DEVELOPING, AND TO PLAN FOR LONG-TERM RESTORATIVE MAINTENANCE NEEDS. BARE SPOTS AND AREAS OF EROSION IDENTIFIED DURING SEMI-ANNUAL INSPECTIONS MUST BE REPLANTED AND RESTORED TO MEET SPECIFICATIONS.
- DEBRIS AND LITTER REMOVAL – THE DETENTION POND SHOULD BE KEPT FREE OF OBSTRUCTIONS TO REDUCE FLOATABLES BEING FLUSHED DOWNSTREAM, AND FOR AESTHETIC REASONS. THE NEED FOR THIS PRACTICE IS DETERMINED THROUGH PERIODIC INSPECTION, BUT SHOULD BE PERFORMED NO LESS THAN 2 TIMES PER YEAR.
- SEDIMENT REMOVAL – SEDIMENT MAY ACCUMULATE WITHIN THE DETENTION POND, PREVENTING UNIFORM OVERLAND FLOW. SEE ATTACHED EXHIBIT FOR SEDIMENT MARKER LOCATION NEAR THE POND OUTFALL. SEDIMENT IS TO BE REMOVED WHEN THE ACCUMULATED OR AT LEAST EVERY 10 YEARS.

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED
PROFESSIONAL ENGINEER
12/08/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

DETENTION POND PLAN

SHEET 16 OF 64

NO	DATE	ISSUES AND REVISIONS
1	12-02-2025	REVISED PER GUADALUPE COUNTY COMMENTS
2	12-08-2025	REVISED PER GUADALUPE COUNTY COMMENTS

INK CIVIL
2021 W SH46, STE 105
NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 ink-civil.com
TBPE FIRM F-13351

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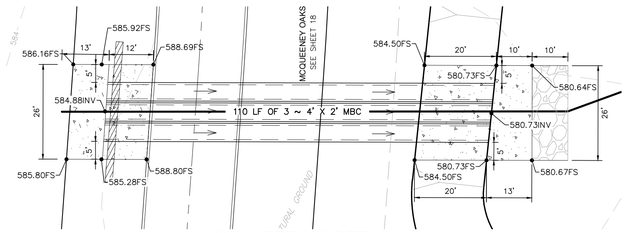
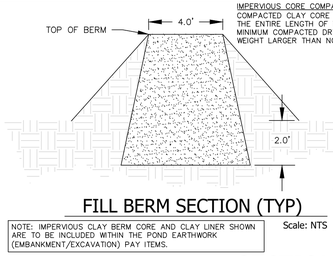


CULVERT "A" DETAIL

SCALE: 1"=20'



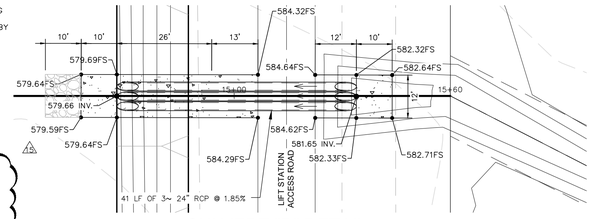
FILL BERM SECTION (TYP)

Scale: NTS

NOTE: IMPERVIOUS CLAY BERM CORE AND CLAY LINER SHOWN ARE TO BE INCLUDED WITHIN THE POND EARTHWORK (EMBANKMENT/EXCAVATION) PAY ITEMS.

IMPERVIOUS CORE COMPACTION NOTE:
COMPACTED CLAY CORE TO BE PLACED A MINIMUM OF 2' BELOW EXISTING GRADE ALONG THE ENTIRE LENGTH OF THE BERM. MATERIAL TO HAVE A PI OF 30 OR GREATER, MINIMUM COMPACTED DRY DENSITY OF 90% AND GROUND CONTENT NO MORE THAN 5% BY WEIGHT LARGER THAN NO.4 SIEVE.

NOTE:
SITE PROOF-ROLL SPECIFICATIONS TO BE IN ACCORDANCE WITH SECTION 5.3.2 OF THE GEOTECH REPORT TITLED MCQUEENEY OAKS SUBDIVISION AND ROADWAYS DATED 11/20/2025



CULVERT "B" DETAIL

SCALE: 1"=20'

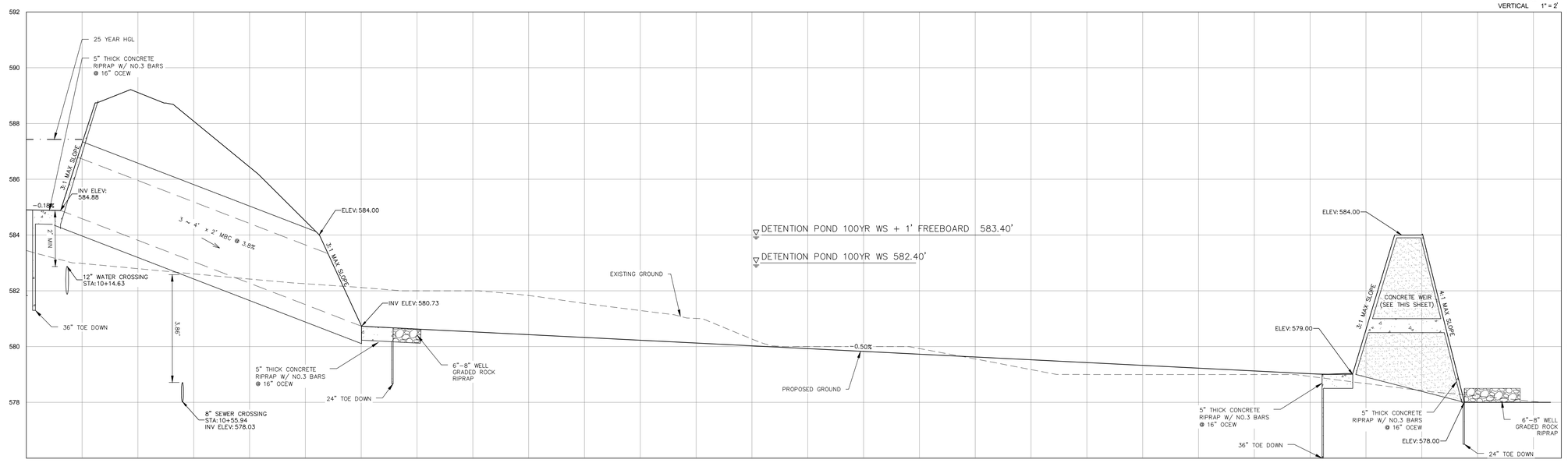
SEE SHEET 16 - DETENTION POND PLAN FOR SECTION MARKER LOCATIONS

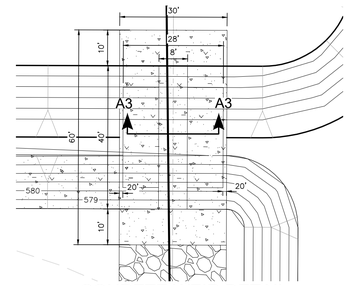
LEGEND

- COMPACTED FILL
- CONCRETE
- ROCK RIP-RAP
- COMPACTED CLAY CORE
- PROPOSED CASING PIPE
- 900 PROPOSED CONTOURS
- 900 EXISTING CONTOURS
- 12"W PROPOSED 12" WATER MAIN
- 8"SS PROPOSED 8" SEWER MAIN

SECTION A1-A1

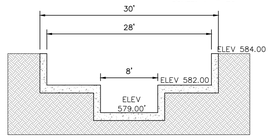
SCALE:
HORIZONTAL 1"= 20'
VERTICAL 1" = 2'





CONRETE WEIR DETAIL

SCALE: 1" = 20'



SECTION A3-A3

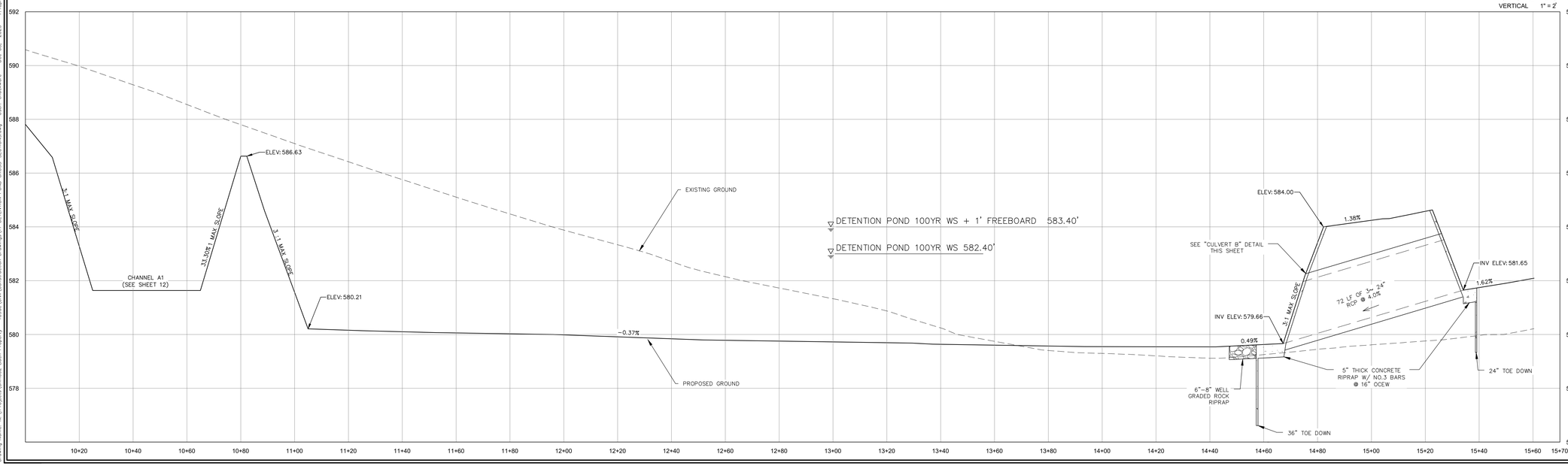
NOT TO SCALE

NOTE:
MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS IS REQUIRED FOR CONCRETE

12/08/2025

SECTION A2-A2

SCALE:
HORIZONTAL 1"= 20'
VERTICAL 1" = 2'



ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

DETENTION POND CROSS-SECTIONS

SHEET 17 OF 64

NO	DATE	ISSUES AND REVISIONS
1	10-16-2025	REVISED PER GUADALUPE CO. COMMENTS
2	12-2-2025	REVISED PER GUADALUPE COUNTY COMMENTS

INK CIVIL
2021 W SH46, STE 105
NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 ink-civil.com
TBPE FIRM F-13351

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Drawing Name: N:\Projects\080002 Buch Property - 109ac\Civil\Construction Drawings\17 DETENTION POND CROSS-SECTIONS.dwg User: chuckwire Dec 08, 2025 - 7:10pm

CONSTRUCTION NOTES:

1. DIMENSIONS SHOWN ARE TYPICALLY TO EDGE OF PAVEMENT, UNLESS OTHERWISE NOTED. SEE STREET SECTIONS AND CURB DETAILS FOR ADDITIONAL DETAIL.
2. SEE SHEET 23 FOR STREET SECTIONS AND DETAILS.
3. SEE SHEET 24 FOR STREET SIGNAGE.
4. ALL CURB RIBBON CURB UNLESS OTHERWISE NOTED

Curve Table						
Curve #	Radius	Length	Delta	Tangent	Chord Length	Chord Direction
C1	1000.00	406.39	23°17'03"	206.04'	403.59'	N55° 11' 23.96"E

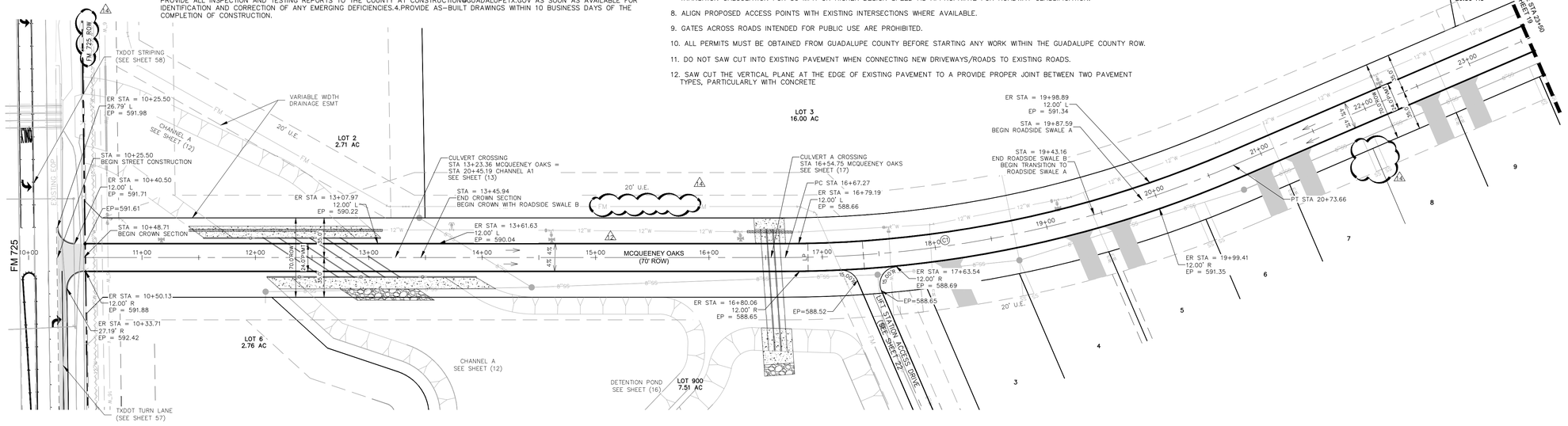
FOR ROADS INTENDED FOR PRIVATE MAINTENANCE:

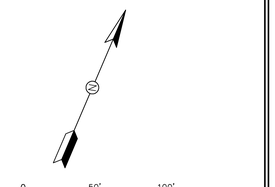
1. PRIOR TO THE COMMENCEMENT OF ANY WORK, THE COUNTY SHALL ATTEND A PRECONSTRUCTION MEETING INCLUDING (BUT NOT LIMITED TO) THE CITY, ENGINEER, CONTRACTOR, DEVELOPER'S INSPECTION REPRESENTATIVE, AND DEVELOPER'S CONSTRUCTION MATERIAL TESTING REPRESENTATIVE.
2. DURING CONSTRUCTION, NOTIFY THE COUNTY AT CONSTRUCTION@GUADALUPETX.GOV AT LEAST 48 HOURS IN ADVANCE OF ANY WORK TO BE PERFORMED AFFECTING SUBGRADE, BASE, OR PAVEMENT INCLUDING BACKFILL OF ANY PROPOSED UTILITIES UNDERNEATH THE PAVEMENT AND FILL AREAS UPON WHICH PAVEMENT IS PROPOSED TO BE PLACED. SUCH NOTIFICATION IS ALSO REQUIRED BEFORE IMPLEMENTING ANY APPROVED TRAFFIC CONTROL PLANS ON EXISTING COUNTY-MAINTAINED ROADS. FULL CLOSURE OF COUNTY ROADS REQUIRES AT LEAST ONE MONTH ADVANCE NOTICE AND IS SUBJECT TO THE DISCRETION OF THE COUNTY ENGINEER AND POSSIBLE APPROVAL BY GUADALUPE COUNTY COMMISSIONERS COURT PER TRANSPORTATION CODE, CHAPTER 251.3.DURING CONSTRUCTION, PROVIDE ALL INSPECTION AND TESTING REPORTS TO THE COUNTY AT CONSTRUCTION@GUADALUPETX.GOV AS SOON AS AVAILABLE FOR IDENTIFICATION AND CORRECTION OF ANY EMERGING DEFICIENCIES.4.PROVIDE AS-BUILT DRAWINGS WITHIN 10 BUSINESS DAYS OF THE COMPLETION OF CONSTRUCTION.

GUADALUPE COUNTY STREET NOTES

1. FOR PHASED CONSTRUCTION OUTSIDE PLAT LIMITS, SHOW LEFT AND RIGHT TURN LANE SIGNING AND STRIPING ON CONNECTING ROADS OR NOTE WHEN THOSE DETAILS WILL BE PROVIDED.
2. FOR ASPHALT PAVEMENT SECTIONS, PROVIDE CURB AND GUTTER INSTEAD OF CURB ONLY TO REDUCE FUTURE BASE FAILURES CAUSED BY THE INFILTRATION OF WATER INTO THE PAVEMENT BASE AND SUBGRADE.
3. PROVIDE A VERTICAL CURVE FOR GRADE BREAKS GREATER THAN 1%.
4. DO NOT REVERSE CROWN KNUCKLE AREA TO CREATE A VALLEY DRAIN IN ASPHALT PAVEMENT. WHEN A VALLEY IS CREATED, PROVIDE CONCRETE SWALE INSTEAD OF AN ASPHALT CONSTRUCTED DRAIN PATHWAY.
5. PROVIDE POSITIVE DRAINAGE (GRADE) ALONG CURB AND GUTTER THROUGH KNUCKLE OR PROVIDE CONCRETE SWALE THROUGH CURVE.
6. WHERE WATER CROSSES INTERSECTIONS, PROVIDE CONCRETE SWALE THROUGH THE INTERSECTION INSTEAD OF ASPHALT VALLEY GUTTER.
7. FOR CROSS SLOPE TRANSITION AREAS (WASHOUTS IN PARTICULAR), SPECIFY 25' MINIMUM AND EXPRESSLY STATE TRANSITION LENGTH IN ROADWAY PLAN AND PROFILE SHEETS PER TXDOT ROADWAY DESIGN MANUAL TABLE 2.8 AND SUBSEQUENT CROSS SLOPE TRANSITION CALCULATION FOR 30 MPH OR HIGHER DESIGN SPEED AS APPROPRIATE FOR ROADWAY CLASSIFICATION.
8. ALIGN PROPOSED ACCESS POINTS WITH EXISTING INTERSECTIONS WHERE AVAILABLE.
9. GATES ACROSS ROADS INTENDED FOR PUBLIC USE ARE PROHIBITED.
10. ALL PERMITS MUST BE OBTAINED FROM GUADALUPE COUNTY BEFORE STARTING ANY WORK WITHIN THE GUADALUPE COUNTY ROW.
11. DO NOT SAW CUT INTO EXISTING PAVEMENT WHEN CONNECTING NEW DRIVEWAYS/ROADS TO EXISTING ROADS.
12. SAW CUT THE VERTICAL PLANE AT THE EDGE OF EXISTING PAVEMENT TO A PROVIDE PROPER JOINT BETWEEN TWO PAVEMENT TYPES, PARTICULARLY WITH CONCRETE

NOTE:
SITE PROOF-ROLL SPECIFICATIONS TO BE IN ACCORDANCE WITH SECTION 5.3.2 OF THE GEOTECH REPORT TITLED MCQUEENEY OAKS SUBDIVISION AND ROADWAYS DATED 11/20/2025



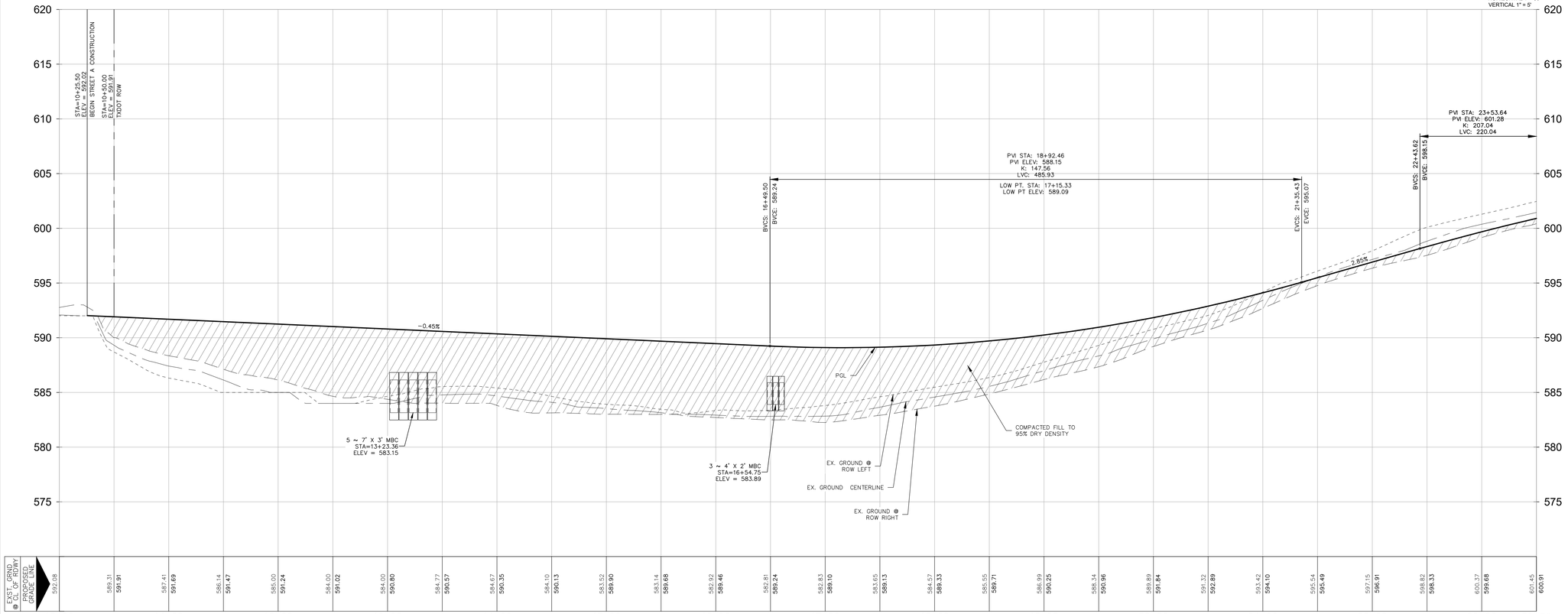


LEGEND

- ROCK RIP-RAP
- CONCRETE RIPRAP
- PROPOSED 12" WATER MAIN
- PROPOSED 8" SEWER MAIN
- PROPERTY LINE
- PROPOSED 8" FORCE MAIN
- PROPOSED 8" SANITARY SEWER
- PROPOSED MANHOLE
- PROPOSED DOUBLE WASTEWATER SERVICE LATERAL
- PROPOSED SINGLE WASTEWATER SERVICE LATERAL
- PROPOSED SINGLE METERED WATER SERVICE
- PROPOSED DUAL METERED WATER SERVICE
- PROPOSED FIRE HYDRANT

MCQUEENEY OAKS

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



ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

MCQUEENEY OAKS
PLAN AND PROFILE
STA 10+00 TO STA 23+50

SHEET 18 OF 64

NO	DATE	ISSUES AND REVISIONS
1	11-10-2025	STREET NAMES REVISED
2	12-02-2025	REVISED PER GUADALUPE COUNTY COMMENTS
3	12-08-2025	REVISED PER GUADALUPE COUNTY COMMENTS

INK CIVIL
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NEW BRAUNFELS, TX. 78132
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Drawing Name: N:\Projects\098002 Buck Property - 109ac\Civil\Construction Drawings\18 MCQUEENEY OAKS PLAN AND PROFILE STA 10+00 TO STA 23+50.dwg User: chuckwere Dec 08, 2025 - 7:11pm

CONSTRUCTION NOTES:

1. DIMENSIONS SHOWN ARE TYPICALLY TO EDGE OF PAVEMENT, UNLESS OTHERWISE NOTED. SEE STREET SECTIONS AND CURB DETAILS FOR ADDITIONAL DETAIL.
2. SEE SHEET 23 FOR STREET SECTIONS AND DETAILS.
3. SEE SHEET 24 FOR STREET SIGNAGE.
4. ALL CURB RIBBON CURB UNLESS OTHERWISE NOTED

GUADALUPE COUNTY STREET NOTES

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FOR ROADS INTENDED FOR PRIVATE MAINTENANCE:

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NOTE:
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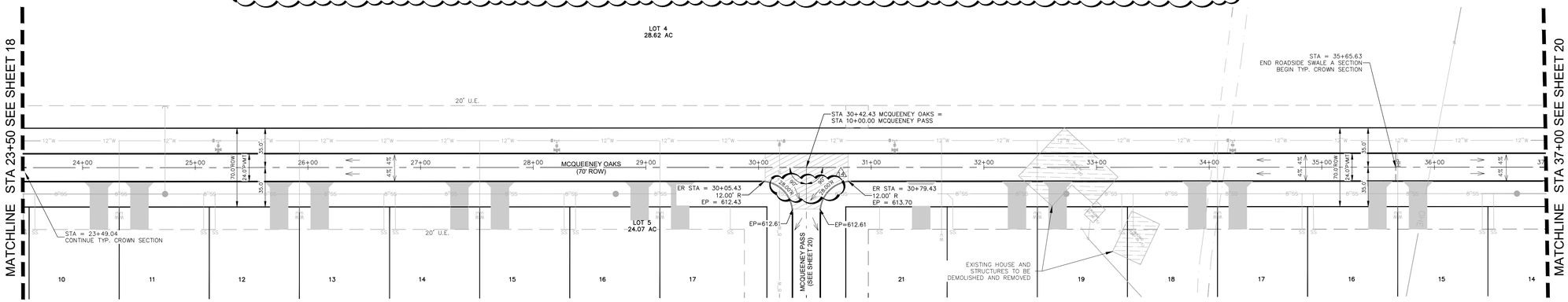

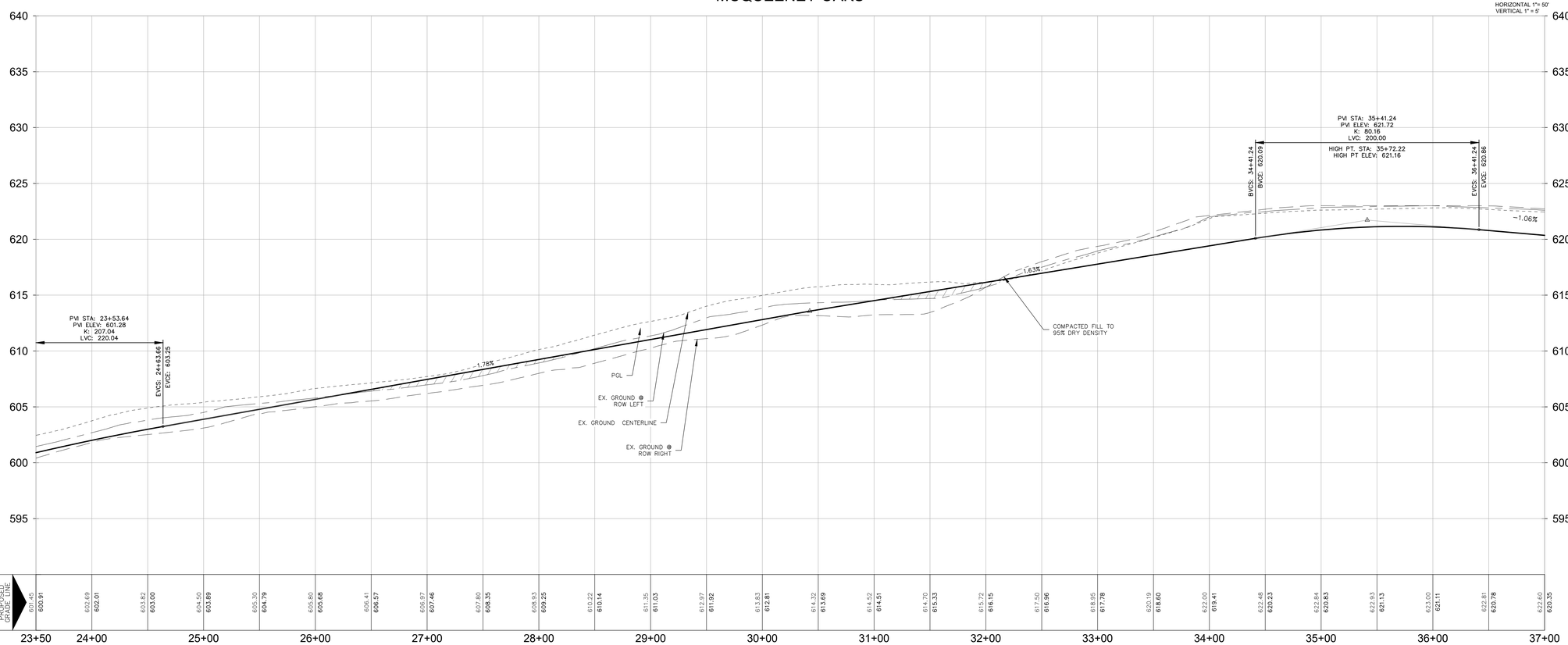

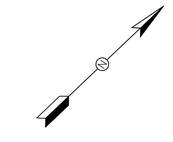

LEGEND

- VERTICAL PAVEMENT TRANSITION (WASHOUT CROWN)
- TO BE REMOVED
- 12"W — PROPOSED 12" WATER MAIN
- 8"SS — PROPOSED 8" SEWER MAIN
- PROPERTY LINE
- FM — PROPOSED 8" FORCE MAIN
- SS — PROPOSED 8" SANITARY SEWER
- PROPOSED MANHOLE
- PROPOSED DOUBLE WASTEWATER SERVICE LATERAL
- PROPOSED SINGLE WASTEWATER SERVICE LATERAL
- PROPOSED SINGLE METERED WATER SERVICE
- PROPOSED DUAL METERED WATER SERVICE
- PROPOSED FIRE HYDRANT

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

MCQUEENEY OAKS
PLAN AND PROFILE
STA 23+50 TO STA 37+00

SHEET 19 OF 64

NO	DATE	ISSUES AND REVISIONS
1	12-02-2025	REVISED PER GUADALUPE COUNTY COMMENTS
2	12-08-2025	REVISED PER GUADALUPE COUNTY COMMENTS

INK CIVIL
2021 W SH46, STE 105
NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 ink-civil.com
TBPE FIRM F-13351

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Drawing Name: N:\Projects\080002 Buck Property - 109ac\Civil\Construction Drawings\19 MCQUEENEY OAKS PLAN AND PROFILE STA 23+50 TO STA 37+00.dwg User: chuckware Dec 08, 2025 - 7:11pm

CONSTRUCTION NOTES:

1. DIMENSIONS SHOWN ARE TYPICALLY TO EDGE OF PAVEMENT, UNLESS OTHERWISE NOTED. SEE STREET SECTIONS AND CURB DETAILS FOR ADDITIONAL DETAIL.
2. SEE SHEET 23 FOR STREET SECTIONS AND DETAILS.
3. SEE SHEET 24 FOR STREET SIGNAGE.
4. ALL CURB RIBBON CURB UNLESS OTHERWISE NOTED

GUADALUPE COUNTY STREET NOTES

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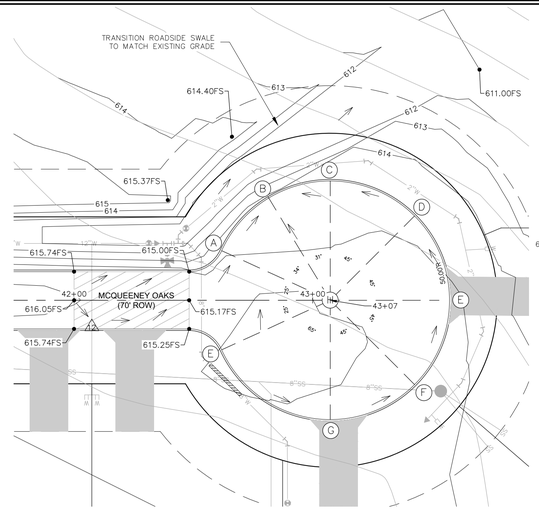
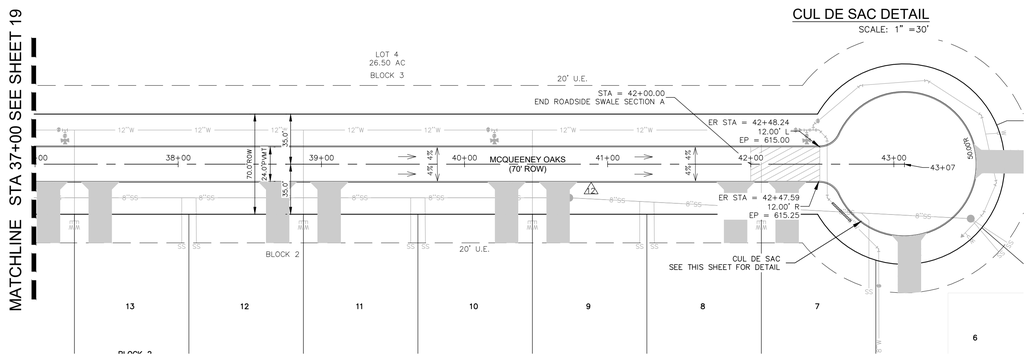
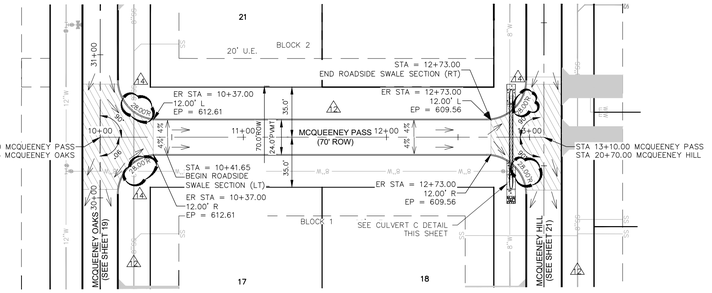
KNUCKLE SAC HUB ELEV	
HUB	EP
A	614.87
B	614.20
C	614.42
D	614.75
E	615.10
F	615.42
G	615.76
H	615.77
E	616.04



CUL DE SAC DETAIL

SCALE: 1" =30'





FOR ROADS INTENDED FOR PRIVATE MAINTENANCE:

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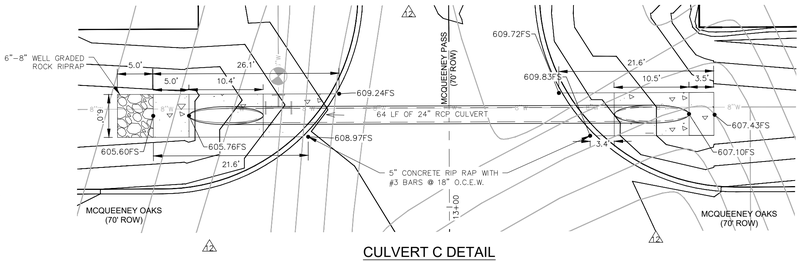
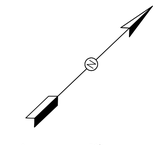


CULVERT C DETAIL

SCALE: 1" =10'

NOTE:

SEE LONGITUDINAL RIPRAP HEADWALL SECTION SHEET 14



LEGEND

- ROCK RIPRAP
- CONCRETE RIPRAP
- VERTICAL PAVEMENT TRANSITION (WASHOUT CROWN)
- 12"W — PROPOSED 12" WATER MAIN
- 8"SS — PROPOSED 8" SEWER MAIN
- PROPERTY LINE
- FM — PROPOSED 8" FORCE MAIN
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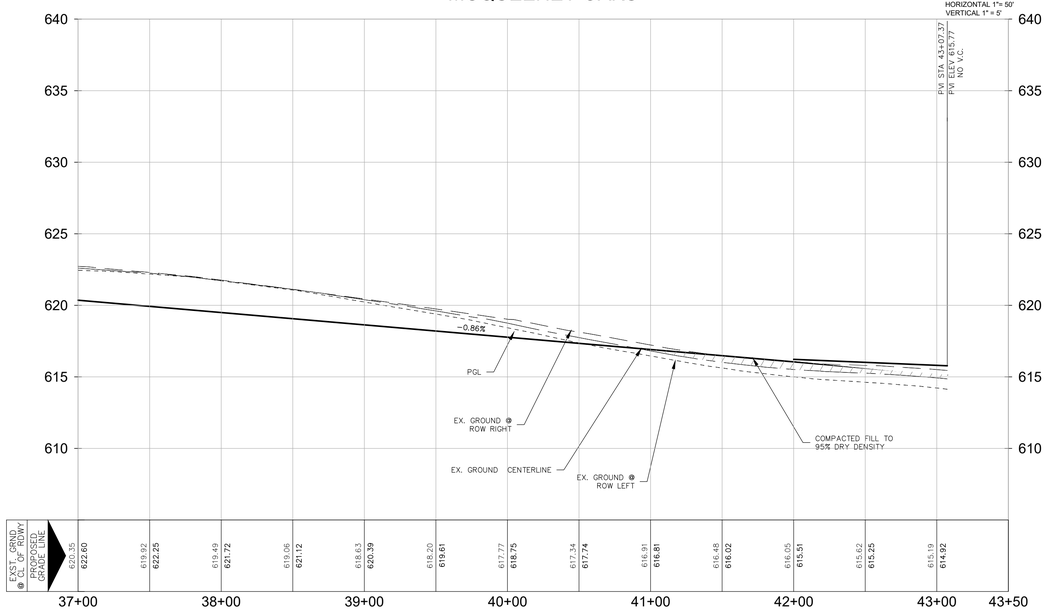
- PROPOSED FIRE HYDRANT

NOTE:
SITE PROOF-ROLL SPECIFICATIONS TO BE IN ACCORDANCE WITH SECTION 5.3.2 OF THE GEOTECH REPORT TITLED MCQUEENEY OAKS SUBDIVISION AND ROADWAYS DATED 11/20/2025

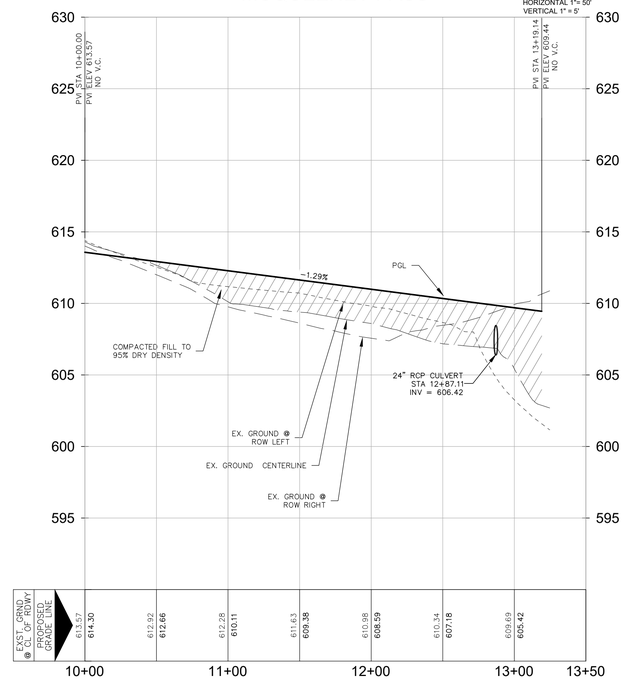
MCQUEENEY OAKS

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



MCQUEENEY PASS

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



STATE OF TEXAS
JAMES INGALLS
107416
LICENSED PROFESSIONAL ENGINEER
12/08/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

MCQUEENEY OAKS STA 37+00 TO END
MCQUEENEY PASS
PLAN AND PROFILE

SHEET 20 OF 64

NO	DATE	ISSUES AND REVISIONS
1	11-10-2025	STREET NAMES REVISED
2	12-2-2025	REVISED PER GUADALUPE COUNTY COMMENTS
3	12-08-2025	REVISED PER GUADALUPE COUNTY COMMENTS

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Drawing Name: N:\Projects\080002 Buck Property - 109ac\Civil\Construction Drawings\20 MCQUEENEY OAKS STA 37+00 TO END MCQUEENEY PASS.dwg User: dhuckaere Dec 08, 2025 - 7:12pm

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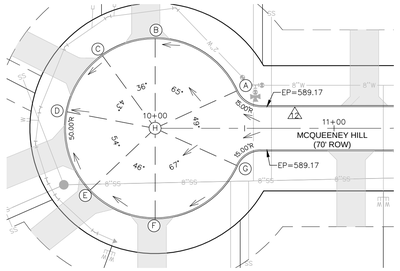

CUL DE SAC DETAIL
SCALE: 1" =40'

KNUCKLE SAC HUB ELEV	
HUB	EP
A	588.75
B	587.80
C	587.56
D	587.27
E	587.56
F	587.88
G	588.28
H	588.43

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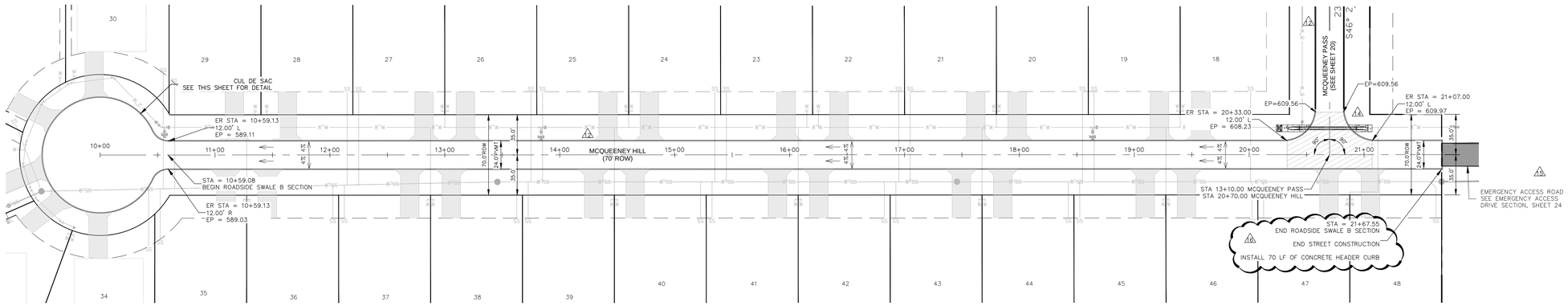

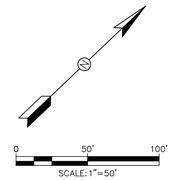

LEGEND

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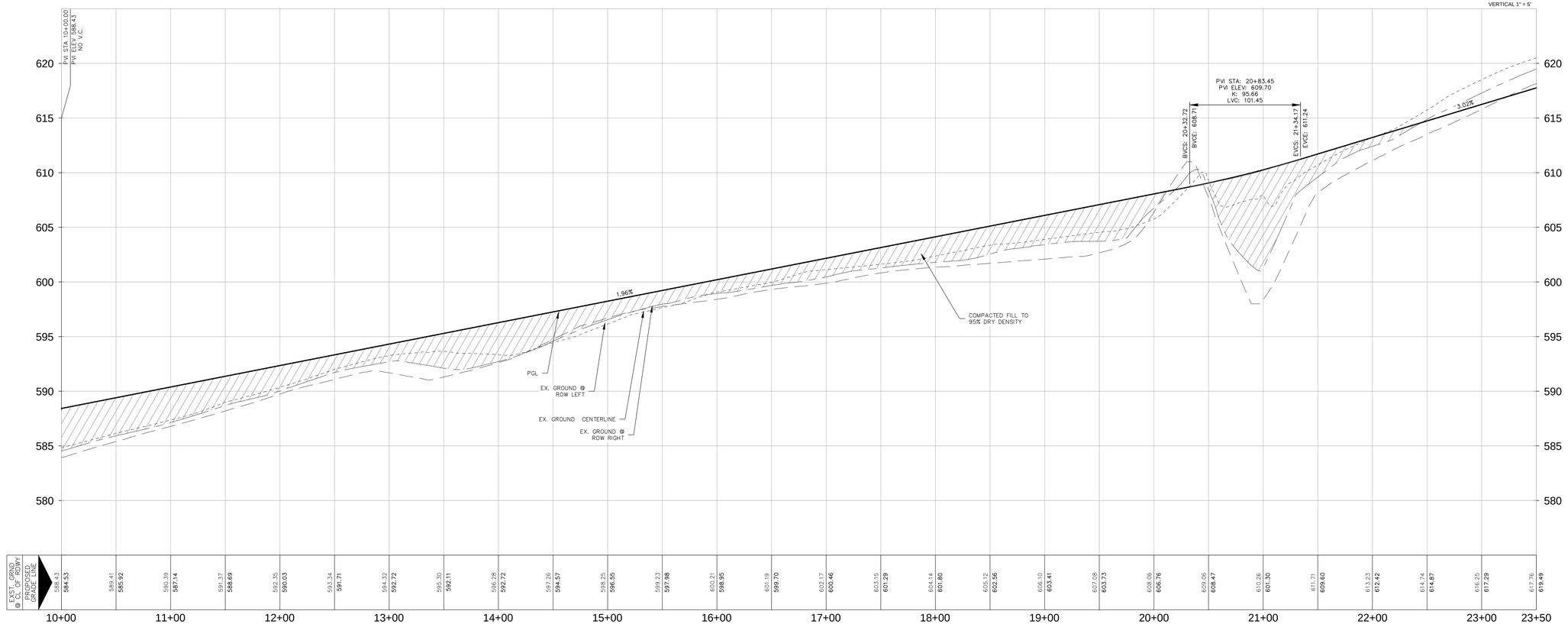
MCQUEENEY HILL

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



ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

MCQUEENEY HILL
PLAN AND PROFILE
STA 10+00 TO STA 23+50

SHEET 21 OF 64

NO	DATE	ISSUES AND REVISIONS
1	11-10-2025	STREET NAMES REVISED
2	12-2-2025	REVISED PER GUADALUPE COUNTY COMMENTS
3	12-08-2025	REVISED PER GUADALUPE COUNTY COMMENTS
4	12-15-2025	REVISED PER GUADALUPE COUNTY COMMENTS

INK CIVIL
2021 W SH46, STE 105
NEW BRAUNFELS, TX. 78132
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Drawing Name: N:\Projects\098003 Buch Property - 109ac\Civil\Construction Drawings\21 MCQUEENEY HILL PLAN AND PROFILE STA 10+00 TO STA 23+50.dwg User: jamesingalls Dec 15, 2025 - 6:08pm

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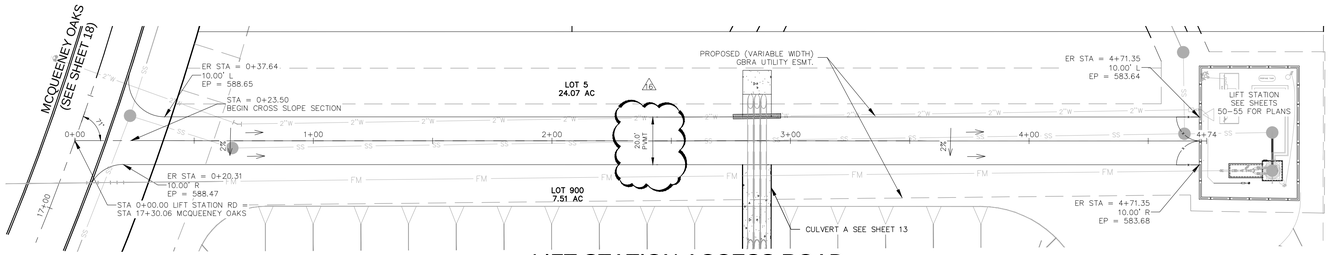

LIFT STATION ACCESS ROAD

NOTE:
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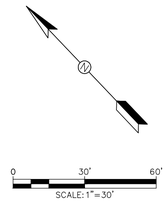

LEGEND

- ROCK RIPRAP
- CONCRETE RIPRAP
- PROPOSED 12" WATER MAIN
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- PROPOSED 8" FORCE MAIN
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- PROPOSED FIRE HYDRANT

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED
PROFESSIONAL ENGINEER
12/15/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS
SUBDIVISION

ACCESS ROAD PLAN

SHEET 22 OF 64

NO	DATE	ISSUES AND REVISIONS
1	12-2-2025	REVISED PER GUADALUPE COUNTY COMMENTS
2	12-08-2025	REVISED PER GUADALUPE COUNTY COMMENTS
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INK CIVIL
2021 W SH46, STE 105
NEW BRAUNFELS, TX. 78132
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TBPE FIRM F-13351

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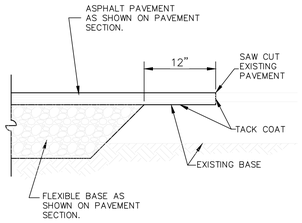
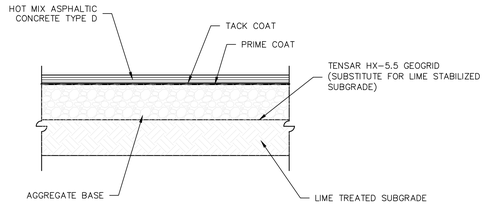
Drawing Name: N:\Projects\080002 Buck Property - 109ac\Civil\Construction Drawings\22 ACCESS ROAD PLAN.dwg User: chuckware Dec 15, 2025 - 2:10pm



NEW PAVEMENT TO EXISTING

SCALE: NTS



TYPICAL PAVEMENT SECTION - LOCAL A OR COLLECTOR STREET

Scale: NTS

Flexible Pavement Design (Required AASHTO 18-Kip ESAL = 1,000,000)					
Paving Use	Asphalt Thickness (inches)	Aggregate Base with Geogrid (inches) [1]	Aggregate Base (inches)	Lime Treated Subgrade (inches) [2]	Calculated ESAL
"Minor Collector" Street	5	13	---	6	1,247,300
	5	---	15	6	1,066,300

Note:
1. ***Geogrid should be placed beneath the aggregate base material and on top of the lime stabilized subgrade. Geogrid should be Tensar HX-5.5, or equivalent, and should be placed and overlapped in accordance with the manufacturer's recommendations.***
2. Pavement subgrade should be lime stabilized per section 6.1.

Flexible Pavement Design (Required AASHTO 18-Kip ESAL = 250,000)					
Paving Use	Asphalt Thickness (inches)	Aggregate Base with Geogrid (inches) [1]	Aggregate Base (inches)	Lime Treated Subgrade (inches) [2]	Calculated ESAL
"Local A" Street	3	9	---	6	321,100
	3	---	11	6	327,600

Note:
1. ***Geogrid should be placed beneath the aggregate base material and on top of the lime stabilized subgrade. Geogrid should be Tensar HX-5.5, or equivalent, and should be placed and overlapped in accordance with the manufacturer's recommendations.***
2. Pavement subgrade should be lime stabilized per section 6.1.

NOTE:

1. RESIDENTIAL PAVEMENT SECTION LIMITS

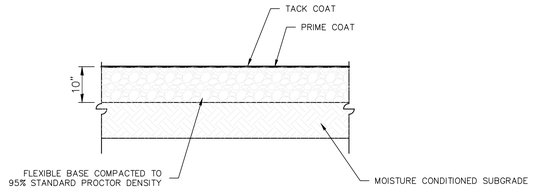
   – MINOR COLLECTOR STREET MCQUEENEY OAKS LOCAL A STREETS MCQUEENEY PASS, AND MCQUEENEY HILL.

2. CONTRACTOR TO REFERENCE GEOTECHNICAL ENGINEERING STUDY "MCQUEENEY OAKS SUBDIVISION AND ROADWAYS" PREPARED BY UES PROFESSIONAL SOLUTIONS 45 LLC, INC. PROJECT NO.: A252534–REVISION 1 DATED NOVEMBER 20, 2025.

   ACCORDING TO THE GEOTECHNICAL ENGINEERING STUDY "MCQUEENEY OAKS SUBDIVISION AND ROADWAYS" PREPARED BY UES PROFESSIONAL SOLUTIONS 45 LLC, INC. PROJECT NO.: A252534–REVISION 1 DATED NOVEMBER 20, 2025. THE SUBGRADE SOILS SHALL BE TESTED AT TIME OF CONSTRUCTION TO DETERMINE THE LIME REQUIREMENT TO ACHIEVE A PH VALUE OF 12.4 OR GREATER.

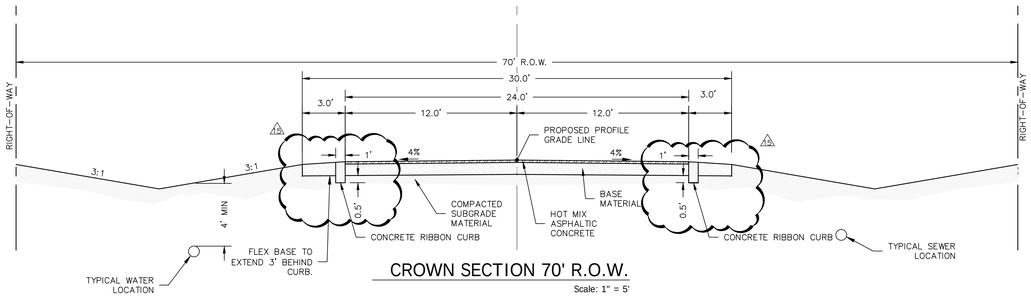
3. SUBGRADE SOILS SHOULD BE TESTED FOR SOLUBLE SULFATE CONTENT PRIOR TO TREATMENT.

NOTE:
SITE PROOF–ROLL SPECIFICATIONS TO BE IN ACCORDANCE WITH SECTION 5.3.2 OF THE GEOTECH REPORT TITLED MCQUEENEY OAKS SUBDIVISION AND ROADWAYS DATED 11/20/2025



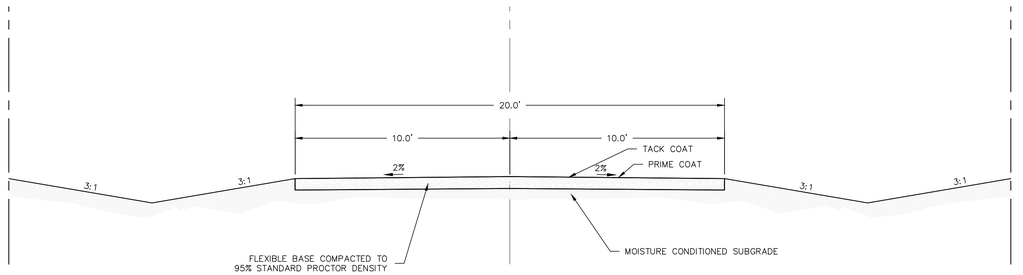
EMERGENCY ACCESS DRIVE SECTION

Scale: NTS



CROWN SECTION 70' R.O.W.

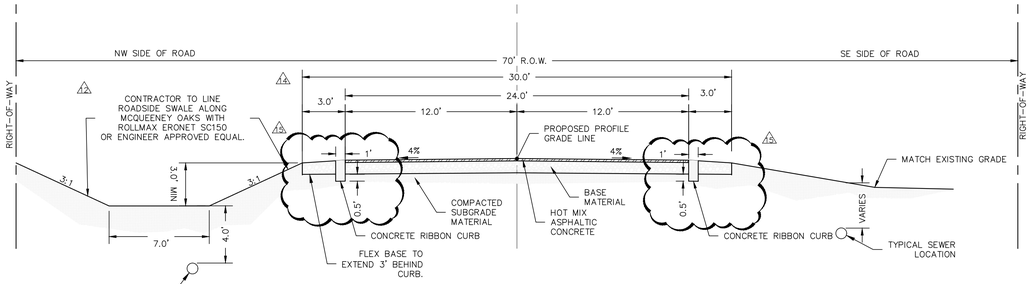
Scale: 1" = 5'



EMERGENCY ACCESS DRIVE SECTION

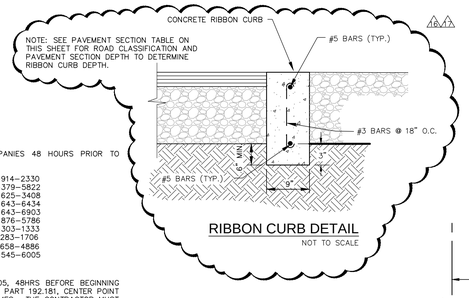
Scale: 1" = 5'

*FOC – FACE OF CURB
*BOC– BACK OF CURB



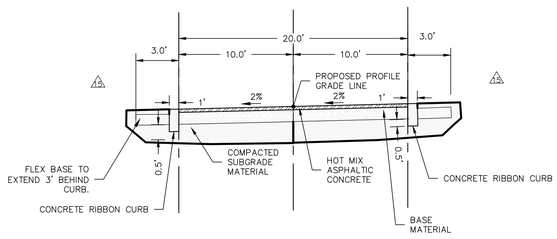
CROWN SECTION 70' R.O.W. WITH ROADSIDE SWALE A

Scale: 1" = 5'



RIBBON CURB DETAIL

NOT TO SCALE



LIFT STATION ACCESS ROAD CROSS SLOPE SECTION

Scale: 1" = 5'

CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES 48 HOURS PRIOR TO EXCAVATION:

GVSUD	830–914–2330
GBRA	830–379–5822
Spectrum Cable	830–625–3408
Centerpoint Gas	830–643–6434
Robert Sanders	830–643–6903
Damaged Line	888–876–5786
AT&T Telephone	830–303–1333
Erick White PM	210–283–1706
Scott McBrearty (Construction)	210–658–4886
Texas One Call	830–545–6005

C.P.E. LOCATOR

CALL CENTER POINT ENERGY LOCATOR AT 1–800–545–6005, 48HRS BEFORE BEGINNING ANY EXCAVATION. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.181, CENTER POINT ENERGY MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT AND WORK AROUND ANY GAS VALVES THAT ARE IN THE PROJECT AREA.

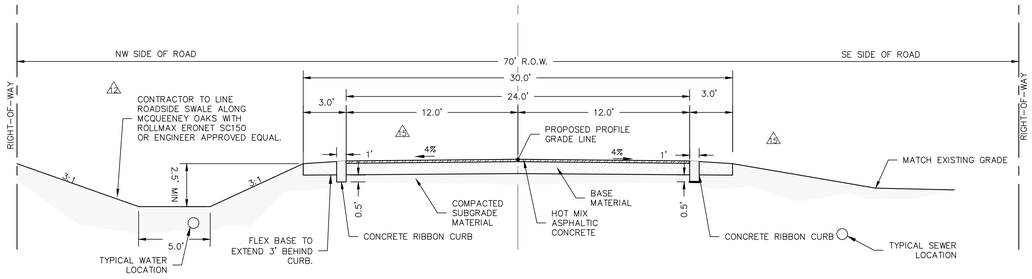
TELEPHONE LOCATOR

THE EXISTENCE AND LOCATION OF UNDERGROUND CABLE INDICATED ON THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR TO CONTACT THE TELEPHONE COMPANY CABLE LOCATOR 48HRS PRIOR TO EXCAVATION AT 1–800–545–6005,. CONTRACTOR HAS THE RESPONSIBILITY TO PROTECT AND SUPPORT TELEPHONE COMPANY DURING CONSTRUCTION.

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 CONTRACTORS IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA TITLE 29, PART 1926, SUBPART P 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 TITLE 29 PART 1926, SUBPART P STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATIONS.

THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR WILL AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE INCURRED BY THEIR FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES, STRUCTURES OR FACILITIES. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES 24–HOURS PRIOR TO COMMENCING CONSTRUCTION.



CROWN SECTION 70' R.O.W. WITH ROADSIDE SWALE B

Scale: 1" = 5'

TYPICAL STREET CROSS SECTIONS

STATE OF TEXAS
JAMES INCALLS
107416
LICENSED PROFESSIONAL ENGINEER
12/16/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

STREET SECTIONS AND DETAILS

SHEET 23 OF 64

NO	DATE	ISSUES AND REVISIONS
1	11–26–2025	PAVEMENT DESIGN TABLE UPDATE
4	12–02–2025	REVISED PER GUADALUPE COUNTY COMMENTS
3	12–08–2025	REVISED PER GUADALUPE COUNTY COMMENTS
2	12–15–2025	REVISED PER GUADALUPE COUNTY COMMENTS
1	12–16–2025	REVISED PER GUADALUPE COUNTY COMMENTS

INK CIVIL
2021 W SH46, STE 105
NEW BRAUNFELS, TX. 78132
PH: 830–358–7127 ink–civil.com
TBPE FIRM F–13351

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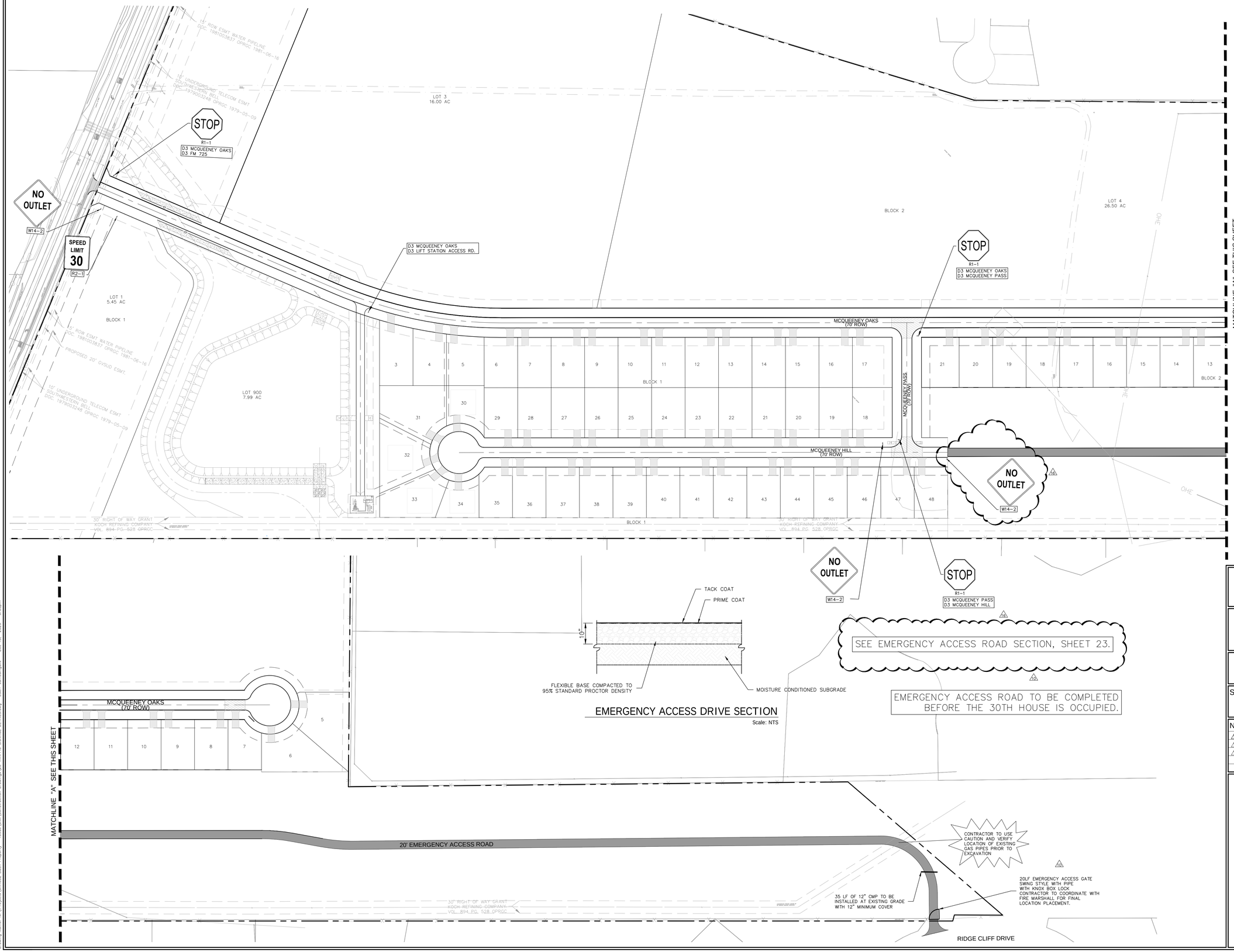
Drawing Name: N:\Projects\080002 Buck Property – 100ac\Civil\Construction Drawings\23 STREET SECTIONS AND DETAILS.dwg User: jamesingalls Dec 16, 2025 – 11:06am



STATE OF TEXAS
JAMES INGALLS
107416
LICENSED
PROFESSIONAL ENGINEER
12/15/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

TRAFFIC SIGNAGE PLAN

SHEET 24 OF 64

NO	DATE	ISSUES AND REVISIONS
1	10-14-2025	REVISED PER GUADALUPE CO COMMENTS - EMERGENCY ACCESS
2	11-10-2025	STREET NAMES REVISED
3	12-15-2025	REVISED PER GUADALUPE COUNTY COMMENTS

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Drawing Name: N:\Projects\080002 Buck Property - 100ac\Civil\Construction Drawings\23 TRAFFIC SIGNAGE DETAILS.dwg User: jamesingalls Dec 15, 2025 - 6:05pm

REFLECTOR UNIT SIZES FOR DELINEATORS AND OBJECT MARKERS

	SIZE 1	SIZE 2	SIZE 3	SIZE 4
DEVICE	3" ± 1/16" × 1/4"	4" ± 1/16" × 1/4"	6" ± 1/16" × 12" ± 1/16"	3" ± 1/16" × 12" ± 1/16"
SHEETING	Yellow, White or Red Type B or C reflective sheeting			
NOTE	1. Size 1 and 4 - Direct applied reflective sheeting for use on flexible post (fix). 2. Size 2 and 3 - For use on wing channel (wc) post only. Use approved metal, plastic or fiberglass backplate with 17/64" mounting holes.			

DELINEATORS

DEVICE	SINGLE		DOUBLE	
	4" × 4"	3" × 4"	4" × 1/4" Max	3" × 1/4" Max
	1-Size 2 reflector unit	1-Size 1 reflector unit	2-Size 2 reflector units	2-Size 1 reflector units
SHEETING	Yellow, White or Red Type B or C Reflective Sheeting			
POST TYPE	WC	FLX	WC	FLX
MOUNT TYPE	GND	GND, SRF	GND	GND, SRF

D & OM DESCRIPTIVE CODES

INSTL DEL ASSM (D-XX)SZ X (XXX)XXX(XX)

- NUMBER OF REFLECTORS: S = Single; D = Double
- COLOR OF REFLECTORS: W = White; Y = Yellow; R = Red
- REFLECTOR UNIT SIZE: 1 or 2
- TYPE OF POST OR DELINEATOR: WC = Wing Channel Post; FLX = Flexible Post; BRF = Barrier Reflector
- TYPE OF MOUNT: GND = Embedded (drivable or set in concrete); CTB = Concrete Barrier Mount; GF1 or GF2 = Guard Fence Attachment; SRF = Surface Mount
- DIRECTION: If Required; BI = Bi-Directional; BR = Bi-Directional Post with red on back

INSTL OM ASSM (OM-XX) (XXX)XXX(XX)

- TYPE OF OBJECT MARKER: 1, 2, 3, or 4
- NUMBER OF REFLECTORS OR DIRECTION: R = 1-Size 2 reflector units (Type 2 only); Y = 1-Size 1 reflector unit (Type 2 only); Z = 2-Size 1 or 1-Size 4 reflector units(Type 2 only); L = Left Side (Type 3 Object Marker only); R = Right Side (Type 3 Object Marker only); C = Center (Type 3 Object Marker only)
- TYPE OF POST: WC = Wing Channel Post; FLX = Flexible Post; TMT = Thin Walled Tubing
- TYPE OF MOUNT: GND = Embedded (drivable); SRF = Surface Mount; WAS = Wedge Anchor Steel; WAP = Wedge Anchor Plastic
- DIRECTION: If Required; BI = Bi-Directional

OBJECT MARKERS

	Type 1 (OM-1)	Type 2 (OM-2)			Type 3 (OM-3)			Type 4 (OM-4)
	OM-1	OM-2X	OM-2Y	OM-2Z	OM-3L	OM-3R	OM-3C	OM-4
DEVICE	18" × 18"	4" × 12"	6" × 12"	3" × 12"	12" × 36"	12" × 36"	12" × 36"	18" × 18"
		3-Size 2 reflector units	1-Size 3 reflector unit	3-Size 1 reflector units or 1-Size 4 reflector unit				
SHEETING	Yellow-Type B_L or C_L Sheeting	Yellow - Type B or C Sheeting			Alternating acrylic black and retroflective yellow - Type B_L or C_L Sheeting			Red -Type B_L or C_L Sheeting
POST TYPE	TMT	WC	WC	FLX	TMT			TMT
MOUNT TYPE	WAS, WAP	GND	GND	GND, SRF	WAS, WAP			WAS, WAP

DEPARTMENTAL MATERIAL SPECIFICATIONS

FLEXIBLE DELINEATOR & OBJECT MARKER POSTS (EMBEDDED & SURFACE MOUNT TYPES)	DMS-4400
SIGN FACE MATERIALS	DMS-8300
DELINEATORS, OBJECT MARKERS AND BARRIER REFLECTORS	DMS-8600

BARRIER REFLECTORS (BRF)

	GF1	GF2	CTB
DEVICE			
	1. Barrier reflectors shall meet the requirements of DMS 8600. 2. Approved Barrier Reflectors are listed on the "Barrier Reflectors" Material Producer List at: www.txdot.gov.		
SHEETING	Yellow, White, Red		
NOTE	1. Minimum 9 square inches of reflective sheeting surface area.		

CHEVRONS

DEVICE	W1-8			
SIZE (W x L)	18"x 24" (Conventional)	24"x 30" (Conventional Oversize)	30"x 36" (Expressway)	36" x 48" (Freeway)
MOUNTING HEIGHT	4'-0" or 7'-0"		7'-0" Only	
NOTE	1. CHEVRON (W1-8) signs and ONE DIRECTION LARGE ARROW (W1-6) Signs shall be installed per Sign Mounting Details (SMD) Standard Sheets and paid under Item 644 (Small Roadside Sign Assemblies). 2. The Texas version of the ONE DIRECTION LARGE ARROW sign (W1-9T) may be used instead of the ONE DIRECTIONAL LARGE ARROW (W1-6).			

ONE DIRECTION LARGE ARROW

DEVICE	W1-6	
SIZE (W x L)	48" x 24" (Conventional)	60" x 30" (Expressway & Freeway)
MOUNTING HEIGHT	7'-0"	

NOTE: Delineator and object marker backplates and sign substrates shall be 0.080" Aluminum sign blank to conform to ASTM B-209 Alloy 6061-T6 or approved alternative.

Texas Department of Transportation — Traffic Operations Division Standard

DELINEATOR & OBJECT MARKER MATERIAL DESCRIPTION
D & OM(1)-15

FILE: dom1-15.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS				
10-09 3-15	DIST	COUNTY		SHEET NO.
4-10				

SIGN REQUIREMENTS

1. TRAFFIC SIGNS SHALL BE USED IN ACCORDANCE WITH THE LATEST REVISION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) AND WHERE JUSTIFIED BY ENGINEERING JUDGMENT OR STUDY. TRAFFIC SIGNS INCLUDE REGULATOR SIGNS, WARNING SIGNS, STREET NAME SIGNS AND OBJECT MARKERS.
2. ALL SIGNS SHALL BE SHOWN IN THE ENGINEERING PLANS FOR REVIEW AND APPROVAL AS PART OF THE PLAN AND PROFILE SHEET OR SEPARATE SIGNING AND PAVEMENT MARKING LAYOUT SHEET. THE ENGINEERING PLANS SHALL INCLUDE SIGN LOCATION, NAME, DESIGNATION AND SIZE. SIGN STANDARDS SHALL BE INCLUDED IN THE ENGINEERING PLANS.

INSTALLATION

1. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL REGULATORY, WARNING AND STREET NAME SIGNS AND SIGN MOUNTS IN ACCORDANCE WITH APPROVED ENGINEERING PLANS.

MOUNTING

1. THE WEDGE ANCHOR STEEL SYSTEM AND THIN-WALLED TUBING POST SHALL BE USED FOR SIGNS WITH UP TO 10 SQUARE FEET OF SIGN AREA. MATERIALS AND INSTALLATION SHOULD FOLLOW THE TEXAS DEPARTMENT OF TRANSPORTATION (TXDOT) TRAFFIC STANDARDS SMD(GEN)-08 AND SMD(TWT)-08.
2. THE TRIANGULAR SLIP BASE SYSTEM AND 10 BWG TUBING POST SHALL BE USED FOR SIGNS THAT HAVE 10 TO 16 SQUARE FEET OF SIGN AREA. MATERIALS AND INSTALLATION SHOULD FOLLOW THE TXDOT TRAFFIC STANDARDS SMD(GEN)-08 AND SMD(SLIP-1-3)-08.
3. OBJECT MARKERS MATERIALS AND INSTALLATION SHOULD FOLLOW THE TXDOT TRAFFIC STANDARDS D&OM(1-5)-10.

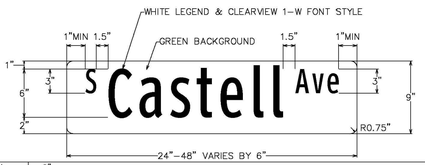
MATERIALS

1. SIGN MATERIALS INCLUDING ALUMINUM SING BLANKS AND SIGN FACE MATERIALS SHOULD FOLLOW THE TXDOT TRAFFIC STANDARDS TSR(1-5)-08 AND DEPARTMENTAL MATERIAL SPECIFICATIONS DMS-7110 AND DMS-8300.
2. THE CITY OF NEW BRAUNFELS WILL INSPECT ALL SIGNS AT FINAL INSPECTION.

PAVEMENT MARKING REQUIREMENTS

1. PAVEMENT MARKINGS SHALL BE USED IN ACCORDANCE WITH THE LATEST REVISION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) AND WHERE JUSTIFIED BY ENGINEERING JUDGMENT OR STUDY.
2. ALL PAVEMENT MARKINGS SHALL BE SHOWN IN THE ENGINEERING PLANS FOR REVIEW AND APPROVAL AS PART OF THE PLAN AND PROFILE SHEET OR SEPARATE SIGNING AND PAVEMENT MARKING LAYOUT SHEET. DESIGN, MATERIALS AND INSTALLATION SHOULD FOLLOW TXDOT TRAFFIC STANDARDS PM(1-4)-12. CITY OF SAN ANTONIO TRAFFIC ENGINEERING STANDARDS FOR PAVEMENT MARKINGS DESIGNATING TRAFFIC LANES, LANE USAGE AND LANE REGULATIONS AND PEDESTRIAN/BICYCLIST ACCOMMODATIONS MAY BE USED FOR ADDITIONAL STANDARD DESIGN DETAILS. MARKING STANDARDS SHALL BE INCLUDED IN THE ENGINEERING PLANS.
3. ALL PAVEMENT MARKINGS SHALL BE TYPE I HOT APPLIED THERMOPLASTIC AND MEET TXDOT DEPARTMENTAL MATERIAL SPECIFICATIONS DMS-8200.
4. THE CONTRACTOR SHALL NOTIFY GUADALUPE COUNTY AT LEAST TWENTY-FOUR (24) HOURS PRIOR TO THE INSTALLATION OF ALL SEALER AND FINAL MARKINGS. THE CONTRACTOR MAY BE RESPONSIBLE FOR PLACING SPOT TABS BEFORE MARKING APPLICATION. THE COUNTY WILL INSPECT ALL MARKINGS AT FINAL APPLICATION.

STREET SIGN DETAIL - GROUND MOUNT

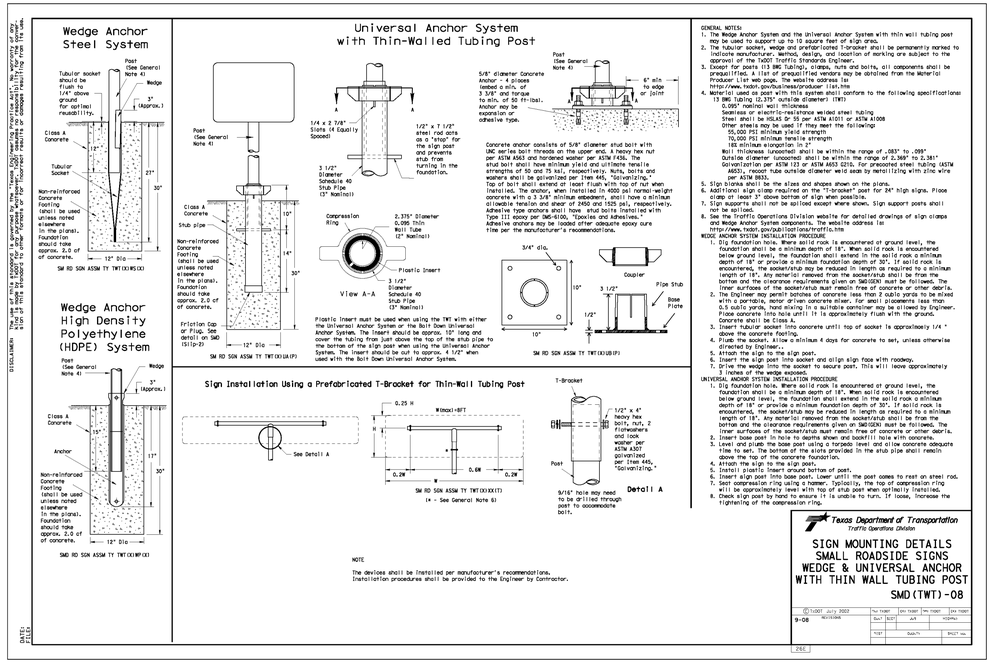


Height	9"
Length	24" min 48" max 6" increments in length
Thickness	0.080"
Substrate	Flat aluminum sheeting with 3/8" radius circular fillets at corners conforming to the requirements of ASTM B 209, Alloys 6061-T-6, or 5052-H38.
Sign Face Materials	Green film over High Intensity Prismatic sheeting
Legend	Legends shall be Clearview 1-W font style. Reduced spacing between the letters or words should not be used as a means of reducing the overall size of a street name sign unless approved by the City Traffic Engineer.
Color	White legend on green background

Notes:

1. Street name signs shall be double sided when center mounted on top of sign post. Only one street name sign should be installed on top of sign post with STOP or YIELD sign.
2. When two sets of street name signs are required (e.g. at "T" intersections), one double-sided street name sign shall be mounted on sign post. The sign assembly shall meet minimum height requirements as required in the Texas Manual on Uniform Traffic Control Devices (TMUTCD). When required, DEAD END (W14-1a) or NO OUTLET (W14-2a) signs shall also be mounted on the sign post.
3. Street name signs greater than 36" long and center mounted on top of sign post shall be mounted on post top bracket with 12" slot. All other street name signs center mounted on top of sign post shall be mounted on post top bracket with 5 1/4" slot.
4. Street name signs mounted on sign post shall be mounted with double-sided round pole brackets. Two holes should be punched in the center of the 9" street name sign blank 1" from edge of the blank with 7"spacing between holes.
5. The lettering for names of streets shall be composed of a combination of lower-case letters with initial upper-case letters. Acceptable abbreviations per TMUTCD may be used except for the street name itself.
6. Red background (red film over High Intensity Prismatic) should be used for private street name signs.

Street Sign Detail - Ground Mount			ENGINEERING DIVISION
ISSUE DATE: February 2013	DWG. NO: ST-024	SCALE: N.T.S.	City of New Braunfels 424 S. CASTELL AVE. NEW BRAUNFELS, TEXAS 78130 PHONE: 830 221-4020 FAX: 830 620-3600
DRAWN BY: RAS	CONTACT: GF	SHEET: 1 OF 1	
P:\2010 ENGINEERING-AUTOCAD\DETAILS\NB-PUBLIC WORKS DETAILS\NB-UNAPPROVED DETAILS-2013\ST-2013.024 STREET SIGN DETAIL - GROUND MOUNT.DWG			

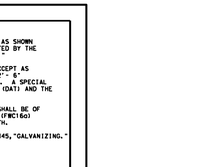


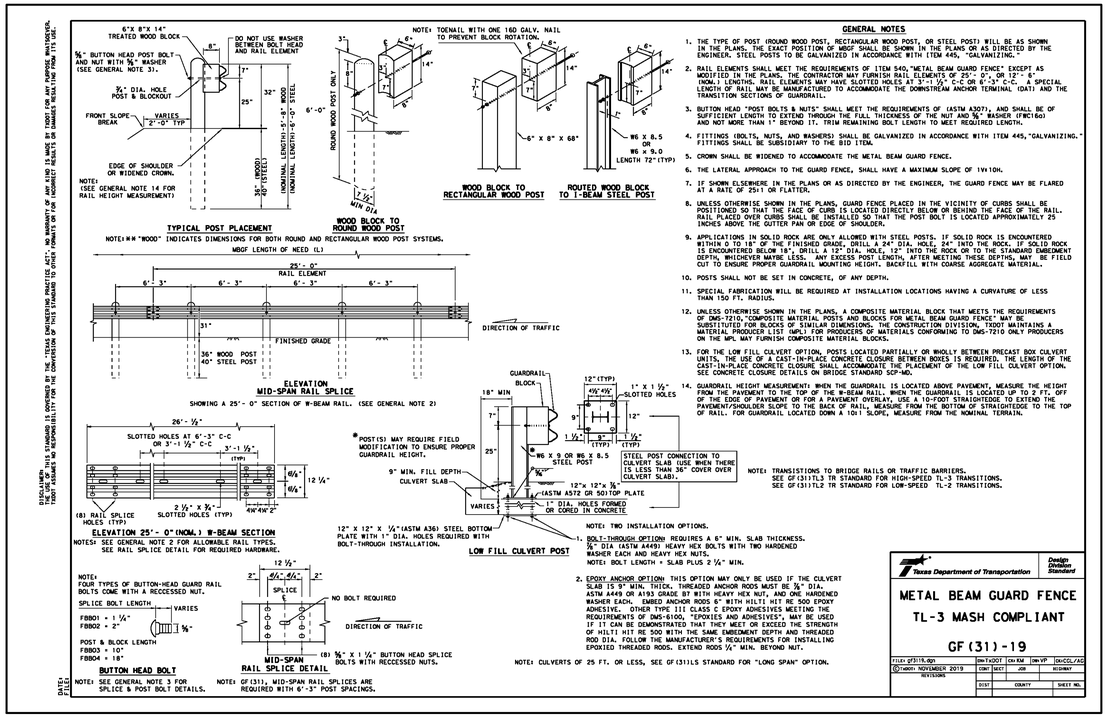
NOTE: THE CONTRACTOR SHALL FURNISH AND INSTALL ALL REGULATORY AND WARNING SIGNS, STREETS NAME SIGNS AND SIGN MOUNTS IN ACCORDANCE WITH APPROVED ENGINEERING PLANS. THE CITY WILL INSPECT ALL SIGNS AT FINAL INSPECTION.

Texas Department of Transportation — Traffic Operations Division

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

©TxDOT JULY 2022	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
REVISIONS	8-07	8-07	JVR	HIGHWAY
9-08	DIST	COUNTY		SHEET NO.





Texas Department of Transportation — Design Division Standard

METAL BEAM GUARD FENCE
TL-3 MASH COMPLIANT
GF(31)-19

FILE: gf3119.dgn	DN: TxDOT	CK: KM	DW: VP	CK: CO/CL/AC
©TxDOT NOVEMBER 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

TRAFFIC SIGNAGE DETAILS

SHEET 25 OF 64

NO	DATE	ISSUES AND REVISIONS
1		

INK CIVIL
2021 W SH46, STE 105
NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 ink-civil.com
TBPE FIRM F-13351

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Drawing Name: N:\Projects\080002 Bloch Property - 1059ac\Civil\Construction Drawings\25 TRAFFIC SIGNAGE DETAILS.dwg User: chuckwire Dec 08, 2025 - 7:15pm

CONSTRUCTION NOTES:

1. WHERE WATER LINES AND NEW SEWER LINES ARE INSTALLED WITH A SEPARATION DISTANCE CLOSER THAN NINE FEET (I.E., WATER LINES CROSSING WASTEWATER LINES, WATER LINES PARALLELING WASTEWATER LINES, OR WATER LINES NEXT TO MANHOLES) THE INSTALLATION MUST MEET THE REQUIREMENTS OF 30 TAC §217.53(D) (PIPE DESIGN) AND 30 TAC §290.44(E) (WATER DISTRIBUTION).
2. WHERE A 9' (NINE FOOT) SEPARATION FROM WATER AND SEWER LINES CROSSING CANNOT BE MAINTAINED, THE NEW WATER LINE SHALL BE ABOVE THE SEWER LINE AS SHOWN ON THE WATER / SEWER LINE CROSSING DETAIL. AT NO TIME SHALL A WATER LINE OR WATER SERVICE BE PLACED UNDER A SEWER LINE OR SEWER SERVICE.
3. WHERE A NEW POTABLE WATERLINE CROSSES AN EXISTING, PRESSURE RATED WASTEWATER MAIN OR LATERAL, ONE SEGMENT OF THE WATERLINE PIPE SHALL BE CENTERED OVER THE WASTEWATER MAIN OR LATERAL SUCH THAT THE JOINTS OF THE WATERLINE PIPE ARE EQUIDISTANT AND AT LEAST NINE FEET HORIZONTALLY FROM THE CENTERLINE OF THE WASTEWATER MAIN OR LATERAL. THE POTABLE WATERLINE SHALL BE AT LEAST SIX INCHES ABOVE THE WASTEWATER MAIN OR LATERAL WHENEVER POSSIBLE. THE CROSSING SHALL BE CENTERED BETWEEN THE JOINTS OF THE WASTEWATER MAIN OR LATERAL. IF THE EXISTING WASTEWATER MAIN OR LATERAL SHOWS SIGNS OF LEAKING, IT SHALL BE REPLACED FOR AT LEAST NINE FEET IN BOTH DIRECTIONS (18 FEET TOTAL) WITH AT LEAST 150 PSI PRESSURE RATED PIPE.
4. ALL PRIVATE SERVICE LATERALS MUST BE INSPECTED AND CERTIFIED IN ACCORDANCE WITH 30 TAC §213.5(C)(3)(I). AFTER INSTALLATION OF AND, PRIOR TO COVERING AND CONNECTING A PRIVATE SERVICE LATERAL TO AN EXISTING ORGANIZED SEWAGE COLLECTION SYSTEM, A TEXAS LICENSED PROFESSIONAL ENGINEER, TEXAS REGISTERED SANITARIAN, OR APPROPRIATE CITY INSPECTOR MUST VISUALLY INSPECT THE PRIVATE SERVICE LATERAL AND THE CONNECTION TO THE SEWAGE COLLECTION SYSTEM, AND CERTIFY THAT IT IS CONSTRUCTED IN CONFORMITY WITH THE APPLICABLE PROVISIONS OF THIS SECTION. THE OWNER OF THE COLLECTION SYSTEM MUST MAINTAIN SUCH CERTIFICATIONS FOR FIVE YEARS AND FORWARD COPIES TO THE APPROPRIATE REGIONAL OFFICE UPON REQUEST. CONNECTIONS MAY ONLY BE MADE TO AN APPROVED SEWAGE COLLECTION SYSTEM.
5. UTILITY SERVICES TO HAVE A MINIMUM A 3' COVER UNLESS OTHERWISE NOTED OR REQUIRED BY THE UTILITY COMPANY.
6. FIRE HYDRANTS SHALL NOT BE INSTALLED WITHIN NINE FEET VERTICALLY OR HORIZONTALLY OF ANY WASTEWATER MAIN, WASTEWATER LATERAL, OR WASTEWATER SERVICE LINE REGARDLESS OF CONSTRUCTION.
7. ENSURE ALL DRIVEWAY APPROACHES ARE BUILT IN GENERAL ACCORDANCE WITH A.D.A SPECIFICATIONS.
8. NO VALVES, HYDRANTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS.
9. CONTRACTOR TO PROTECT INSTALLED PIPE FROM BEING CONTAMINATED OR DAMAGED PRIOR TO PLACING INTO SERVICE. ANY PIPE NBU INSPECTIONS DETERMINES IS CONTAMINATED, DIRTY, OR DAMAGED, SHALL BE REPLACED. (NSP)
10. REFERENCE TO "CAP" ON THE DESIGN PLANS MEANS CAP OR PLUG. CAPS SHALL BE USED ON ALL SPIGOT ENDS AND PLUGS ON ALL BELL ENDS PER NBU SPECIFICATIONS.
11. INITIAL BACKFILL OF WATER LINES SHALL BE 3/4" TO DUST OR PEA GRAVEL.
12. THE LOCATIONS AND DEPTHS OF EXISTING UTILITIES, INCLUDING SERVICE LATERALS, AND DRAINAGE STRUCTURES SHOWN ON THE PLANS ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION AND DEPTHS OF UNDERGROUND UTILITIES AT LEAST 48 HOURS PRIOR TO CONSTRUCTION WHETHER SHOWN ON PLANS OR NOT, AND TO PROTECT THE SAME DURING CONSTRUCTION.
13. CONTRACTOR TO PRE-DIG TO VERIFY SIZE, TYPE AND LOCATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION. ALL EXISTING UTILITIES MUST BE MAINTAINED UNTIL FINAL ACCEPTANCE OF NEW SYSTEM AND SWITCH OVER OCCURS (NSP)
14. CONTRACTOR TO UTILIZE WATER LINE STOPPERS TO MINIMIZE OUTAGES..
15. CONTRACTOR WILL KEEP THE AREA ON TOP OF AND AROUND THE WATER METER BOX FREE OF ALL OBJECTS AND DEBRIS.
16. NO METER BOXES TO BE SET IN DRIVEWAYS. ANY METER BOXES SET IN DRIVEWAYS WILL BE RELOCATED AT CONTRACTOR'S AND/OR DEVELOPER'S EXPENSE.
17. METER BOXES MUST BE SET AT PROPOSED GRADE. ANY METER BOXES THAT ARE NOT SET AT THE FINAL GRADE WILL BE ADJUSTED AT CONTRACTOR'S AND/OR DEVELOPER'S EXPENSE.
18. EXISTING PIPE MATERIALS ARE UNKNOWN. CONTRACTOR WILL BE REQUIRED TO TIE PROPOSED WATER MAINS TO EXISTING WATER MAINS PER NBU SPECIFICATIONS. ADDITIONAL PIPE NEEDED TO MAKE THE TIE IN WILL BE PAID FOR UNDER THE UNIT BID PRICE OF WATER PIPE OF THE SIZE INSTALLED. FITTINGS NEEDED TO MAKE THE CONNECTION TO THE EXISTING PIPE WILL BE PAID AS PART OF ITEM 510, PIPE. NO SEPARATE PAYMENT WILL BE MADE FOR THESE FITTINGS.
19. DOMESTIC SERVICE BACKFLOW PREVENTER TO BE SPECIFIED AS: WATTS SERIES 909M1QT (REDUCED PRESSURE ZONE ASSEMBLY) OR ENGINEER APPROVED EQUAL
20. ALL UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.
21. ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT/SIDEWALK SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEOTECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTING OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT A MINIMUM TESTS SHALL BE TAKEN EVERY 200 LF FOR EACH LIFT AND EERY OTHER SERVICE LINE. UPON COMPLETION OF TESTING THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE CITY OF NEW BRAUNFELS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS.
22. CONTRACTOR TO COORDINATE SANITARY SEWER AND WATER CONNECTIONS TO BUILDING WITH M.E.P. PLANS.
23. CONTRACTOR TO COORDINATE ELECTRIC, TELEPHONE, AND GAS SERVICES WITH UTILITY PROVIDERS AND M.E.P. PLANS.
24. THE GAS AND TELECOMMUNICATIONS SERVICES SHOWN ARE PRELIMINARY. REFERENCE THE M.E.P. PLANS FOR EXACT LOCATIONS OF ELECTRICAL, GAS, AND TELECOMMUNICATIONS SERVICES ARE NOT PART OF THE CIVIL DESIGN PLANS.
25. CONNECTION TO SANITARY SEWER MAIN SHALL BE IN ACCORDANCE WITH GBRA STANDARDS FOR DEVELOPER UTILITIES. REFERENCE: HTTP://WWW.GBRA.ORG/OPERATIONS/DEVELOPER-RESOURCES/

GVSUD NOTES

1. CONTRACTOR TO CURB CUT V'S FOR VALVES AND X'S FOR METERS.
2. CONTRACTOR TO VERIFY LOCATION OF EXISTING WATER MAIN A MINIMUM OF 300 LF AHEAD OF NEW MAIN INSTALLATION AT ALL TIE-IN LOCATIONS OR CROSSINGS, AND NOTIFY GVSUD INSPECTOR.
3. CONTRACTOR MUST PROTECT ALL UNATTENDED TRENCHES AND EXCAVATIONS WITH TEMPORARY FENCING OR OTHER APPROVED MEANS.
4. CONTRACTOR TO UTILIZE APPROVED WATER LINE STOPS AND/OR MUELLER INSERTION VALVES TO MINIMIZE WATER OUTAGES AS REQUIRED BY GVSUD DURING CONSTRUCTION.

CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES 48 HOURS PRIOR TO EXCAVATION:

GVSUD	830-914-2330
GBRA	830-379-5822
Spectrum Cable	830-625-3408
Centerpoint Gas	830-643-6434
Robert Sanders	830-643-6903
Damaged Line	888-876-5786
AT&T Telephone	830-303-1333
Erick White PM	210-283-1706
Scott McBrearty (Construction)	210-658-4886
Texas One Call	830-545-6005

C.P.E. LOCATOR

CALL CENTER POINT ENERGY LOCATOR AT 1-800-545-6005, 48HRS BEFORE BEGINNING ANY EXCAVATION. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.181, CENTER POINT ENERGY MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT AND WORK AROUND ANY GAS VALVES THAT ARE IN THE PROJECT AREA.

TELEPHONE LOCATOR

THE EXISTENCE AND LOCATION OF UNDERGROUND CABLE INDICATED ON THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR TO CONTACT THE TELEPHONE COMPANY CABLE LOCATOR 48HRS PRIOR TO EXCAVATION AT 1-800-545-6005,. CONTRACTOR HAS THE RESPONSIBILITY TO PROTECT AND SUPPORT TELEPHONE COMPANY DURING CONSTRUCTION.

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 CONTRACTORS IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA TITLE 29, PART 1926, SUBPART P 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 TITLE 29 PART 1926, SUBPART P STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATIONS.

THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR WILL AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE INCURRED BY THEIR FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES, STRUCTURES OR FACILITIES. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES 24-HOURS PRIOR TO COMMENCING CONSTRUCTION.

HORIZONTAL CONTROL			
POINT NO.	NORTHING	EASTING	DESCRIPTION
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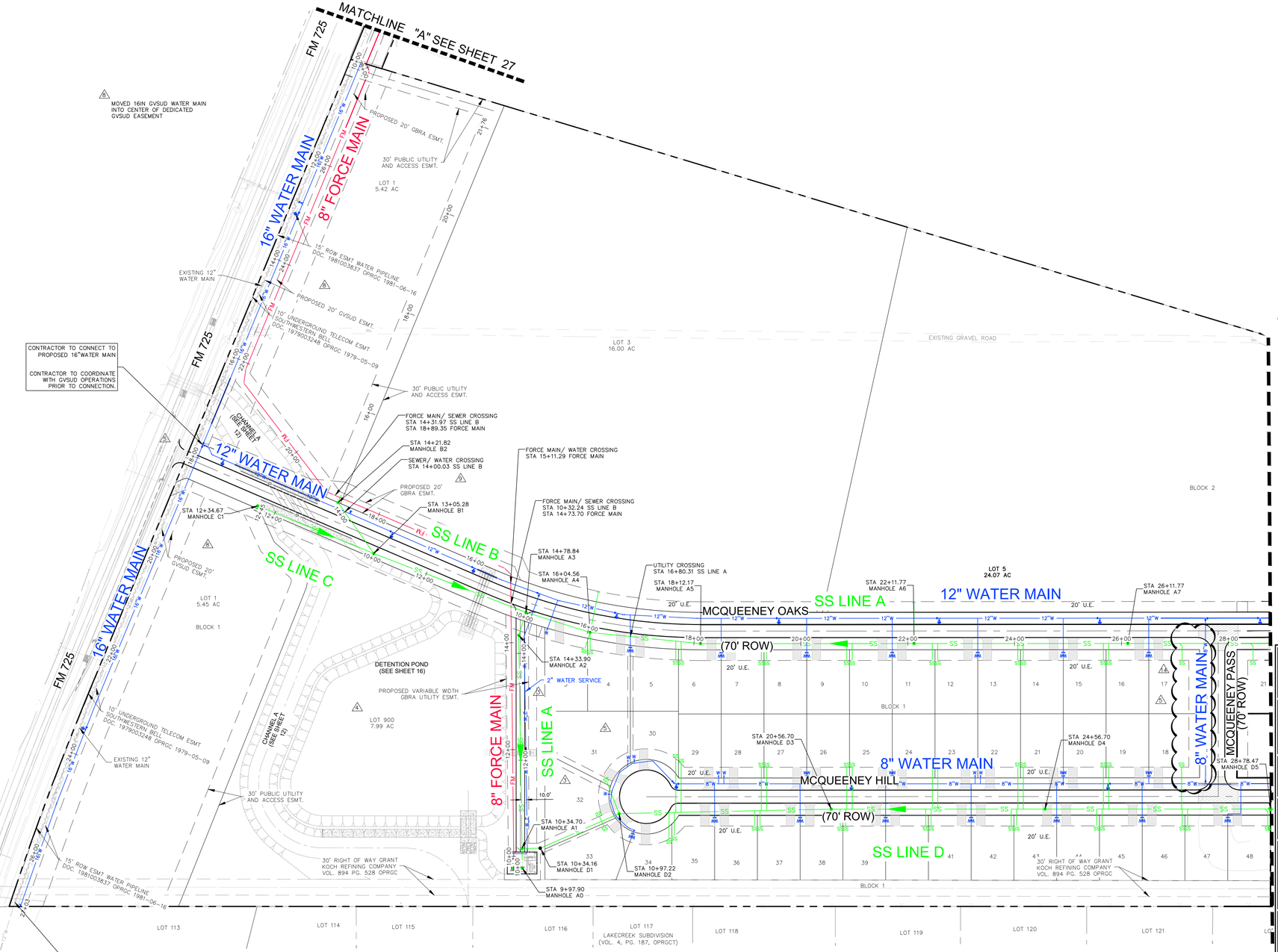
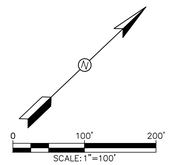
101	13,776,506.06	2,265,417.14	CP SET 1/2IRWRC





LEGEND

- PROPERTY LINE
- FM — PROPOSED 8" FORCE MAIN
- SS — PROPOSED 8" SANITARY SEWER
- PROPOSED MANHOLE
- PROPOSED DOUBLE WASTEWATER SERVICE LATERAL
- PROPOSED SINGLE WASTEWATER SERVICE LATERAL
- 12"W — PROPOSED 12" WATER MAIN
- 16"W — PROPOSED 16" WATER MAIN
- 8"W — PROPOSED 8" WATER MAIN
- 1"W — PROPOSED 1" WATER SERVICE
- PROPOSED SINGLE METERED WATER SERVICE
- PROPOSED DUAL METERED WATER SERVICE
- PROPOSED FIRE HYDRANT
- 12"W — EXISTING 12" WATER MAIN
- OHE — EXISTING OVERHEAD ELECTRIC
- UCM — EXISTING UNDERGROUND COMM LINE
- X — EXISTING FENCE
- EXISTING 12" TO BE ABANDONED IN PLACE

GUADALUPE COUNTY UTILITY NOTES

1. DO NOT PLACE PARALLEL WET UTILITIES BENEATH OR WITHIN 5'OF EDGE OF PAVEMENT.
2. ENCASE WET UTILITIES 10' BEYOND EDGE OF PAVEMENT EDGE WHERE UTILITY CROSSES BENEATH PAVEMENT, INCLUDING SERVICE LINES.
3. PLACE WATER SERVICE LINES NEAR PROPERTY BOUNDARIES TO PREVENT PLACEMENT BENEATH FUTURE DRIVEWAYS.
4. PLACE SEWER SERVICE LINES NEAR PROPERTY BOUNDARIES TO PREVENT PLACEMENT BENEATH FUTURE DRIVEWAYS.
5. ALIGN UTILITY SERVICE LINES PERPENDICULAR TO THE PAVEMENT.
6. ADD NOTE TO ALL SHEETS WHERE EXISTING GUADALUPE COUNTY ROW IS AFFECTED.NOTE: ALL PERMITS MUST BE OBTAINED FROM GUADALUPE COUNTY BEFORE STARTING ANY WORK WITHIN THE GUADALUPE COUNTY ROW.
7. IDENTIFY UTILITIES THAT WILL BE ABANDONED IN PLACE.
8. FILL PIPES ABANDONED IN PLACE GREATER THAN 6" IN DIAMETER WITH FLOWABLE (PROVIDE FLOWABLE FILL MIX DESIGN WITH AS-BUILT DRAWINGS).

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED
PROFESSIONAL ENGINEER
12/08/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

OVERALL UTILITY PLAN

SHEET 26 OF 64

NO	DATE	ISSUES AND REVISIONS
1	9-8-2025	REVISED PER GVSUD COMMENTS
2	9-16-2025	REVISED PER GBRA COMMENTS
3	10-14-2025	REVISED PER GBRA COMMENTS - REMOVAL OF DUAL LATERALS
4	11-10-2025	STREET NAMES REVISED
5	12-02-2025	REVISED PER GUADALUPE COUNTY COMMENTS

INK CIVIL
2021 W SH46, STE 105
NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 ink-civil.com
TBPE FIRM F-13351

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Drawing Name: N:\Projects\080003 Buck Property - 109ac\Civil\Construction Drawings\07 OVERALL UTILITY PLAN 1.dwg User: dhuskeye Dec 08, 2025 - 7:16pm

CONSTRUCTION NOTES:

1. WHERE WATER LINES AND NEW SEWER LINES ARE INSTALLED WITH A SEPARATION DISTANCE CLOSER THAN NINE FEET (I.E., WATER LINES CROSSING WASTEWATER LINES, WATER LINES PARALLELING WASTEWATER LINES, OR WATER LINES NEXT TO MANHOLES) THE INSTALLATION MUST MEET THE REQUIREMENTS OF 30 TAC §217.53(D) (PIPE DESIGN) AND 30 TAC §290.44(E) (WATER DISTRIBUTION).

2. WHERE A 9' (NINE FOOT) SEPARATION FROM WATER AND SEWER LINES CROSSING CANNOT BE MAINTAINED, THE NEW WATER LINE SHALL BE ABOVE THE SEWER LINE AS SHOWN ON THE WATER / SEWER LINE CROSSING DETAIL AT NO TIME SHALL A WATER LINE OR WATER SERVICE BE PLACED UNDER A SEWER LINE OR SEWER SERVICE.

3. WHERE A NEW POTABLE WATERLINE CROSSES AN EXISTING, PRESSURE RATED WASTEWATER MAIN OR LATERAL, ONE SEGMENT OF THE WATERLINE PIPE SHALL BE CENTERED OVER THE WASTEWATER MAIN OR LATERAL SUCH THAT THE JOINTS OF THE WATERLINE PIPE ARE EQUIDISTANT AND AT LEAST NINE FEET HORIZONTALLY FROM THE CENTERLINE OF THE WASTEWATER MAIN OR LATERAL. THE POTABLE WATERLINE SHALL BE AT LEAST SIX INCHES ABOVE THE WASTEWATER MAIN OR LATERAL. WHENEVER POSSIBLE, THE CROSSING SHALL BE CENTERED BETWEEN THE JOINTS OF THE WASTEWATER MAIN OR LATERAL. IF THE EXISTING WASTEWATER MAIN OR LATERAL SHOWS SIGNS OF LEAKING, IT SHALL BE REPLACED FOR AT LEAST NINE FEET IN BOTH DIRECTIONS (18 FEET TOTAL) WITH AT LEAST 150 PSI PRESSURE RATED PIPE.

4. ALL PRIVATE SERVICE LATERALS MUST BE INSPECTED AND CERTIFIED IN ACCORDANCE WITH 30 TAC §213.5(C)(3)(I). AFTER INSTALLATION OF AND, PRIOR TO COVERING AND CONNECTING A PRIVATE SERVICE LATERAL TO AN EXISTING ORGANIZED SEWAGE COLLECTION SYSTEM, A TEXAS LICENSED PROFESSIONAL ENGINEER, TEXAS REGISTERED SANITARIAN, OR APPROPRIATE CITY INSPECTOR MUST VISUALLY INSPECT THE PRIVATE SERVICE LATERAL AND THE CONNECTION TO THE SEWAGE COLLECTION SYSTEM, AND CERTIFY THAT IT IS CONSTRUCTED IN CONFORMITY WITH THE APPLICABLE PROVISIONS OF THIS SECTION. THE OWNER OF THE COLLECTION SYSTEM MUST MAINTAIN SUCH CERTIFICATIONS FOR FIVE YEARS AND FORWARD COPIES TO THE APPROPRIATE REGIONAL OFFICE UPON REQUEST. CONNECTIONS MAY ONLY BE MADE TO AN APPROVED SEWAGE COLLECTION SYSTEM.

5. UTILITY SERVICES TO HAVE A MINIMUM A 3' COVER UNLESS OTHERWISE NOTED OR REQUIRED BY THE UTILITY COMPANY.

6. FIRE HYDRANTS SHALL NOT BE INSTALLED WITHIN NINE FEET VERTICALLY OR HORIZONTALLY OF ANY WASTEWATER MAIN, WASTEWATER LATERAL, OR WASTEWATER SERVICE LINE REGARDLESS OF CONSTRUCTION.

7. ENSURE ALL DRIVEWAY APPROACHES ARE BUILT IN GENERAL ACCORDANCE WITH A.D.A SPECIFICATIONS.

8. NO VALVES, HYDRANTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS.

9. CONTRACTOR TO PROTECT INSTALLED PIPE FROM BEING CONTAMINATED OR DAMAGED PRIOR TO PLACING INTO SERVICE. ANY PIPE NBU INSPECTIONS DETERMINES IS CONTAMINATED, DIRTY, OR DAMAGED, SHALL BE REPLACED. (NSP)

10. REFERENCE TO "CAP" ON THE DESIGN PLANS MEANS CAP OR PLUG. CAPS SHALL BE USED ON ALL SPIGOT ENDS AND PLUGS ON ALL BELL ENDS PER NBU SPECIFICATIONS.

11. INITIAL BACKFILL OF WATER LINES SHALL BE 3/4" TO DUST OR PEA GRAVEL.

12. THE LOCATIONS AND DEPTHS OF EXISTING UTILITIES, INCLUDING SERVICE LATERALS, AND DRAINAGE STRUCTURES SHOWN ON THE PLANS ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION AND DEPTHS OF UNDERGROUND UTILITIES AT LEAST 48 HOURS PRIOR TO CONSTRUCTION WHETHER SHOWN ON PLANS OR NOT, AND TO PROTECT THE SAME DURING CONSTRUCTION.

13. CONTRACTOR TO PRE-DIG TO VERIFY SIZE, TYPE AND LOCATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION. ALL EXISTING UTILITIES MUST BE MAINTAINED UNTIL FINAL ACCEPTANCE OF NEW SYSTEM AND SWITCH OVER OCCURS (NSP)

14. CONTRACTOR TO UTILIZE WATER LINE STOPPERS TO MINIMIZE OUTAGES..

15. CONTRACTOR WILL KEEP THE AREA ON TOP OF AND AROUND THE WATER METER BOX FREE OF ALL OBJECTS AND DEBRIS.

16. NO METER BOXES TO BE SET IN DRIVEWAYS. ANY METER BOXES SET IN DRIVEWAYS WILL BE RELOCATED AT CONTRACTOR'S AND/OR DEVELOPER'S EXPENSE.

17. METER BOXES MUST BE SET AT PROPOSED GRADE. ANY METER BOXES THAT ARE NOT SET AT THE FINAL GRADE WILL BE ADJUSTED AT CONTRACTOR'S AND/OR DEVELOPER'S EXPENSE.

18. EXISTING PIPE MATERIALS ARE UNKNOWN. CONTRACTOR WILL BE REQUIRED TO TIE PROPOSED WATER MAINS TO EXISTING WATER MAINS PER NBU SPECIFICATIONS. ADDITIONAL PIPE NEEDED TO MAKE THE TIE IN WILL BE PAID FOR UNDER THE UNIT BID PRICE OF WATER PIPE OF THE SIZE INSTALLED. FITTINGS NEEDED TO MAKE THE CONNECTION TO THE EXISTING PIPE WILL BE PAID AS PART OF ITEM 510, PIPE. NO SEPARATE PAYMENT WILL BE MADE FOR THESE FITTINGS.

19. DOMESTIC SERVICE BACKFLOW PREVENTER TO BE SPECIFIED AS:
WATTS SERIES 909M1QT (REDUCED PRESSURE ZONE ASSEMBLY) OR ENGINEER APPROVED EQUAL

20. ALL UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.

21. ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT/SIDEWALK SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEOTECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTING OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT A MINIMUM TESTS SHALL BE TAKEN EVERY 200 LF FOR EACH LIFT AND EERY OTHER SERVICE LINE. UPON COMPLETION OF TESTING THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE CITY OF NEW BRAUNFELS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS.

22. CONTRACTOR TO COORDINATE SANITARY SEWER AND WATER CONNECTIONS TO BUILDING WITH M.E.P. PLANS.

23. CONTRACTOR TO COORDINATE ELECTRIC, TELEPHONE, AND GAS SERVICES WITH UTILITY PROVIDERS AND M.E.P. PLANS.

24. THE GAS AND TELECOMMUNICATIONS SERVICES SHOWN ARE PRELIMINARY. REFERENCE THE M.E.P. PLANS FOR EXACT LOCATIONS OF ELECTRICAL, GAS, AND TELECOMMUNICATIONS SERVICES ARE NOT PART OF THE CIVIL DESIGN PLANS.

25. CONNECTION TO SANITARY SEWER MAIN SHALL BE IN ACCORDANCE WITH GBRA STANDARDS FOR DEVELOPER UTILITIES. REFERENCE:
HTTP: //WWW.GBRA.ORG/PUBLIC/WATERWASTEWATERSERVICES.ASPX

GVSUD NOTES

1. CONTRACTOR TO CURB CUT V'S FOR VALVES AND X'S FOR METERS.

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THE EXISTENCE AND LOCATION OF UNDERGROUND CABLE INDICATED ON THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR TO CONTACT THE TELEPHONE COMPANY CABLE LOCATOR 48HRS PRIOR TO EXCAVATION AT 1-800-545-6005,. CONTRACTOR HAS THE RESPONSIBILITY TO PROTECT AND SUPPORT TELEPHONE COMPANY DURING CONSTRUCTION.

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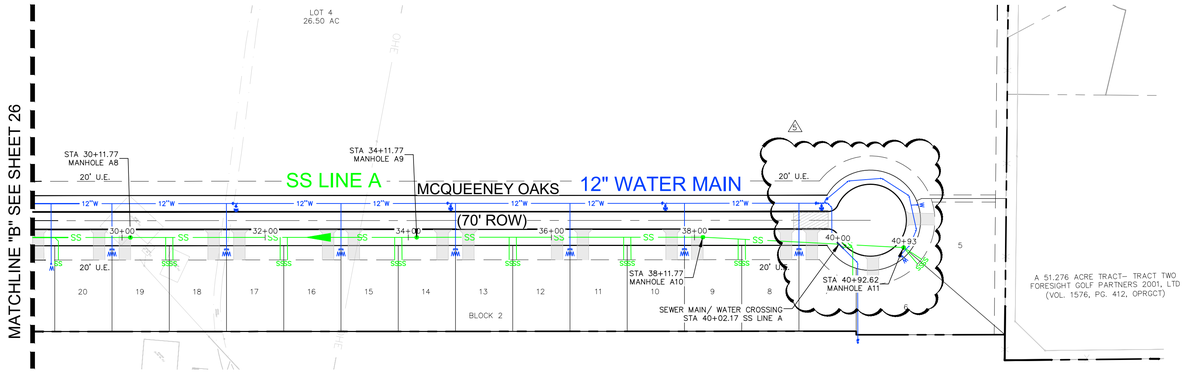
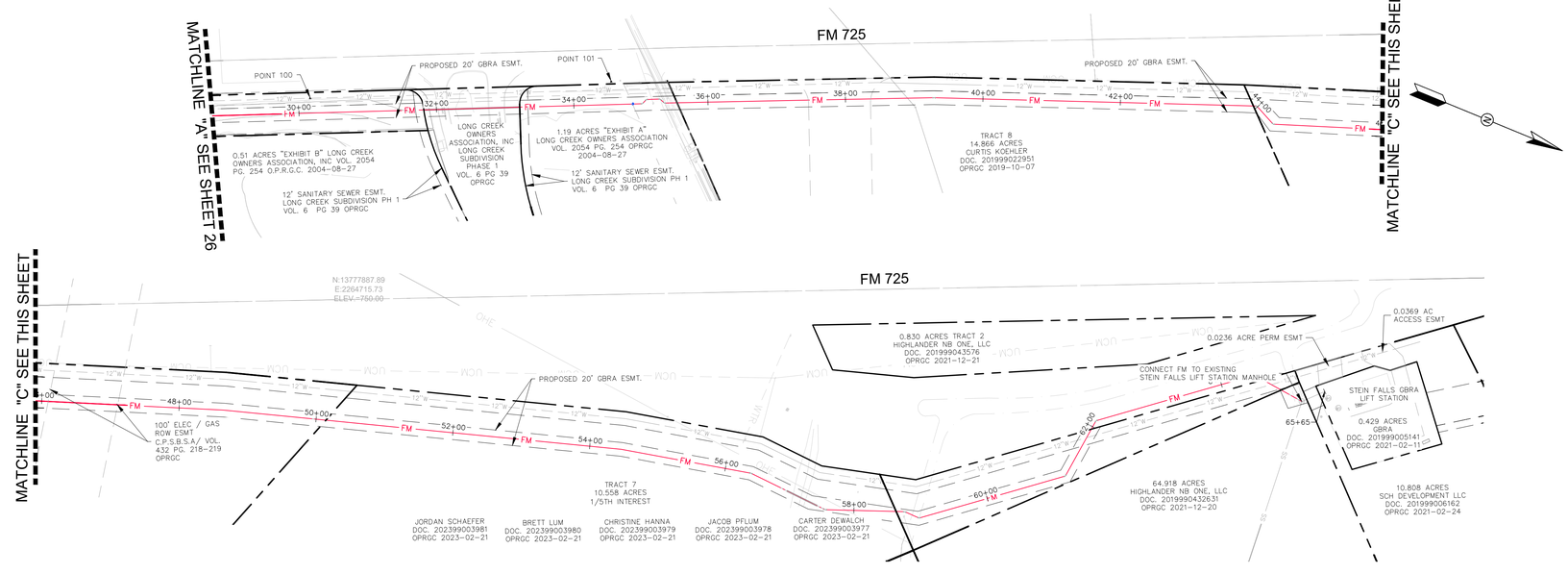
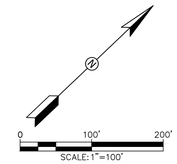
HORIZONTAL CONTROL

POINT NO.	NORTHING	EASTING	DESCRIPTION
100	13,776,110.29	2,265,605.91	CP SET 1/2IRWRC
101	13,776,506.06	2,265,417.14	CP SET 1/2IRWRC







LEGEND

- PROPERTY LINE
- FM — PROPOSED 8" FORCE MAIN
- SS — PROPOSED 8" SANITARY SEWER
- PROPOSED MANHOLE
- PROPOSED DOUBLE WASTEWATER SERVICE LATERAL
- PROPOSED SINGLE WASTEWATER SERVICE LATERAL
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- 12"W — EXISTING 12" WATER MAIN
- OHE — EXISTING OVERHEAD ELECTRIC
- UCM — EXISTING UNDERGROUND COMM LINE
- X — EXISTING FENCE

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED
PROFESSIONAL ENGINEER
12/08/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

OVERALL UTILITY PLAN II

SHEET 27 OF 64

NO	DATE	ISSUES AND REVISIONS
1	08-20-2025	REVISED PER GBRA AND GVSUD COMMENTS
2	8-25-2025	REVISED PER GVSUD COMMENTS
3	11-10-2025	STREET NAMES REVISED

INK CIVIL
2021 W SH46, STE 105
NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 ink-civil.com
TBPE FIRM F-13351

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Drawing Name: N:\Projects\080002 Block Property - 109ac\Civil\Construction Drawings\07 OVERALL UTILITY PLAN II.dwg User: chuckwire Dec 08, 2025 - 7:14pm

CONSTRUCTION NOTES:

1. WHERE WATER LINES AND NEW SEWER LINES ARE INSTALLED WITH A SEPARATION DISTANCE CLOSER THAN NINE FEET (I.E., WATER LINES CROSSING WASTEWATER LINES, WATER LINES PARALLELING WASTEWATER LINES, OR WATER LINES NEXT TO MANHOLES) THE INSTALLATION MUST MEET THE REQUIREMENTS OF 30 TAC §217.53(D) (PIPE DESIGN) AND 30 TAC §290.44(E) (WATER DISTRIBUTION).
2. WHERE A 9' (NINE FOOT) SEPARATION FROM WATER AND SEWER LINES CROSSING CANNOT BE MAINTAINED, THE NEW WATER LINE SHALL BE ABOVE THE SEWER LINE AS SHOWN ON THE WATER/SEWER LINE CROSSING DETAIL. AT NO TIME SHALL A WATER LINE OR WATER STRUCTURE BE PLACED UNDER A SEWER LINE OR SEWER SERVICE.
3. WHERE A NEW POTABLE WATERLINE CROSSES AN EXISTING, PRESSURE RATED WASTEWATER MAIN OR LATERAL, ONE SEGMENT OF THE WATERLINE PIPE SHALL BE CENTERED OVER THE WASTEWATER MAIN OR LATERAL SUCH THAT THE JOINTS OF THE WATERLINE PIPE ARE EQUIDISTANT AND AT LEAST NINE FEET HORIZONTALLY FROM THE CENTERLINE OF THE WASTEWATER MAIN OR LATERAL. THE POTABLE WATERLINE SHALL BE AT LEAST SIX INCHES ABOVE THE WASTEWATER MAIN OR LATERAL. WHENEVER POSSIBLE, THE CROSSING SHALL BE CENTERED BETWEEN THE JOINTS OF THE WASTEWATER MAIN OR LATERAL. IF THE EXISTING WASTEWATER MAIN OR LATERAL SHOWS SIGNS OF LEAKING, IT SHALL BE REPLACED FOR AT LEAST NINE FEET IN BOTH DIRECTIONS (18 FEET TOTAL) WITH AT LEAST 150 PSI PRESSURE RATED PIPE.
4. ALL PRIVATE SERVICE LATERALS M12UST BE INSPECTED AND CERTIFIED IN ACCORDANCE WITH 30 TAC §213.5(C)(3)(I). AFTER INSTALLATION OF AND, PRIOR TO COVERING AND CONNECTING A PRIVATE SERVICE LATERAL TO AN EXISTING ORGANIZED SEWAGE COLLECTION SYSTEM, A TEXAS LICENSED PROFESSIONAL ENGINEER, TEXAS REGISTERED SANITARIAN, OR APPROPRIATE CITY INSPECTOR MUST VISUALLY INSPECT THE PRIVATE SERVICE LATERAL AND THE CONNECTION TO THE SEWAGE COLLECTION SYSTEM, AND CERTIFY THAT IT IS CONSTRUCTED IN CONFORMITY WITH THE APPLICABLE PROVISIONS OF THIS SECTION. THE OWNER OF THE COLLECTION SYSTEM MUST MAINTAIN SUCH CERTIFICATIONS FOR FIVE YEARS AND FORWARD COPIES TO THE APPROPRIATE REGIONAL OFFICE UPON REQUEST. CONNECTIONS MAY ONLY BE MADE TO AN APPROVED SEWAGE COLLECTION SYSTEM.
5. FIRE HYDRANTS SHALL NOT BE INSTALLED WITHIN NINE FEET VERTICALLY OR HORIZONTALLY OF ANY WASTEWATER MAIN, WASTEWATER LATERAL, OR WASTEWATER SERVICE LINE REGARDLESS OF CONSTRUCTION.
6. METER BOXES MUST BE SET AT PROPOSED FINISHED GRADE, ANY METER BOXES THAT ARE NOT SET AT THE FINAL GRADE WILL BE ADJUSTED BY THE CONTRACTOR AT NO ADDITIONAL COSTS.
7. CONTRACTOR TO COORDINATE WITH GVSUD IF EXISTING WATER MAINS WILL BE REMOVED FROM SERVICE AT ANY TIME.
8. ALL UTILITIES SHALL BE CONSTRUCTED PRIOR TO STREETS.
9. ENSURE ALL DRIVEWAY APPROACHES ARE BUILT IN GENERAL ACCORDANCE WITH A.D.A SPECIFICATIONS.
10. NO VALVES, FIRE HYDRANTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS OR DRIVEWAYS.
11. ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEO-TECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTING OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX- 114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEO- TECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 200LF FOR EACH LIFT AND EVERY OTHER SERVICE LINE. UPON COMPLETION OF TESTING THE GEO-TECHNICAL ENGINEER SHALL PROVIDE THE GUADALUPE COUNTY STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUESTED BY THE STREET INSPECTOR.
12. THIS PROJECT INCLUDES UTILITY INSTALLATIONS GREATER THAN 5-FEET IN DEPTH LOCATED IN PUBLIC RIGHT-OF-WAY OR EASEMENTS. DEEP TRENCHES POSE COMPACTION TESTING AND CONSTRUCTION CHALLENGES AND CITY METHODS FOR TESTING AND COMPACTION MAY NOT BE ACHIEVABLE. A UTILITY COMPACTION PLAN WILL BE REQUIRED AND MUST BE SUBMITTED FOR APPROVAL TO CITY PRIOR TO UTILITY INSTALLATION.
13. MINIMUM DEPTH OF COVER FOR THE UPPERMOST PROJECTION OF THE WATER PIPE AND ALL APPURTENANCES SHALL BE 48 INCHES. ADD CONCRETE CAP OR ENCASEMENT IF COVER IS LESS THAN 48 INCHES.
14. GATE VALVES ON FIRE HYDRANT LEADS SHALL BE RESTRAINED AT THE TEE. SEE THIS SHEET FOR CALLOUTS FOR ANCHOR TEES FOR FIRE HYDRANTS.
15. THE MAIN SUPPLY LINE THAT SUPPLIES ALL DOMESTIC METERS WITHIN THIS PROJECT SHALL REQUIRE AN RP BACKFLOW PREVENTION.
16. ALL IRRIGATION METERS SHALL HAVE AN RP BACKFLOW PREVENTION.
17. DISINFECTION SHALL BE BY MACHINE CHLORINATION.
18. MOISTURE DENSITY COMPACTION TESTING SHALL BE REQUIRED EVERY 300LF FOR EACH VERTICAL FOOT OF COMPACTED BACKFILL.
19. ALL TESTING AND TEST REPORTS SHALL BE COORDINATED WITH GVSUD INSPECTOR BY THE CONTRACTOR.
20. ALL DUCTILE IRON PIPE TO BE AMERICAN, ZINC COATED, AWWA/ANSI C-151.
21. CONTRACTOR TO UTILIZE APPROVED WATER LINE STOPS AND/OR MUELLER INSERTION VALVES TO MINIMIZE WATER OUTAGES AS REQUIRED BY GVSUD DURING CONSTRUCTION.

GVSUD NOTES

1. CONTRACTOR TO CURB CUT V'S FOR VALVES AND X'S FOR METERS.
2. CONTRACTOR TO VERIFY LOCATION OF EXISTING WATER MAIN A MINIMUM OF 300 LF AHEAD OF NEW MAIN INSTALLATION AT ALL TIE-IN LOCATIONS OR CROSSINGS, AND NOTIFY GVSUD INSPECTOR.
3. CONTRACTOR MUST PROTECT ALL UNATTENDED TRENCHES AND EXCAVATIONS WITH TEMPORARY FENCING OR OTHER APPROVED MEANS.
4. CONTRACTOR TO UTILIZE APPROVED WATER LINE STOPS AND/OR MUELLER INSERTION VALVES TO MINIMIZE WATER OUTAGES AS REQUIRED BY GVSUD DURING CONSTRUCTION.

MCQUEENEY OAKS SUBDIVISION	
ITEM	QTY.
⚠6 WATER MAIN (8" PVC C-909)	2138 LF
WATER MAIN (12" PVC C-909)	3187 LF
⚠1 WATER MAIN (16" PVC C-900)	1714 LF
⚠6 2" WATER SERVICE (YELOMINE)	977 LF
2" WATER METER	1 EA.
DUAL WATER SERVICES	26 EA.
SINGLE WATER SERVICES	11 EA.
WATER METERS	63 EA.
FIRE HYDRANTS	17 EA.
FIRE LINES	170 LF

NOTE:

1. ALL WATER LINES CROSSING STORM DRAINS MUST BE ENCASED IN STEEL THAT IS DOUBLE THE DIAMETER OF THE PIPE.

CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES 48 HOURS PRIOR TO EXCAVATION:

GVSUD	830-914-2330
GBRA	830-379-5822
Spectrum Cable	830-625-3408
Centerpoint Gas	830-643-6434
Robert Sanders	830-643-6903
Damaged Line	888-876-5786
AT&T Telephone	830-303-1333
Erick White PM	210-283-1706
Scott McBearty (Construction)	210-658-4886
Texas One Call	830-545-6005

C.P.E. LOCATOR

CALL CENTER POINT ENERGY LOCATOR AT 1-800-545-6005, 48HRS BEFORE BEGINNING ANY EXCAVATION. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.181, CENTER POINT ENERGY MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT AND WORK AROUND ANY GAS VALVES THAT ARE IN THE PROJECT AREA.

TELEPHONE LOCATOR

THE EXISTENCE AND LOCATION OF UNDERGROUND CABLE INDICATED ON THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR TO CONTACT THE TELEPHONE COMPANY CABLE LOCATOR 48HRS PRIOR TO EXCAVATION AT 1-800-545-6005,. CONTRACTOR HAS THE RESPONSIBILITY TO PROTECT AND SUPPORT TELEPHONE COMPANY DURING CONSTRUCTION.

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 CONTRACTORS IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA TITLE 29, PART 1926, SUBPART P 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 TITLE 29 PART 1926, SUBPART P STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATIONS.

THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR WILL AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE INCURRED BY THEIR FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES, STRUCTURES OR FACILITIES. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES 24-HOURS PRIOR TO COMMENCING CONSTRUCTION.

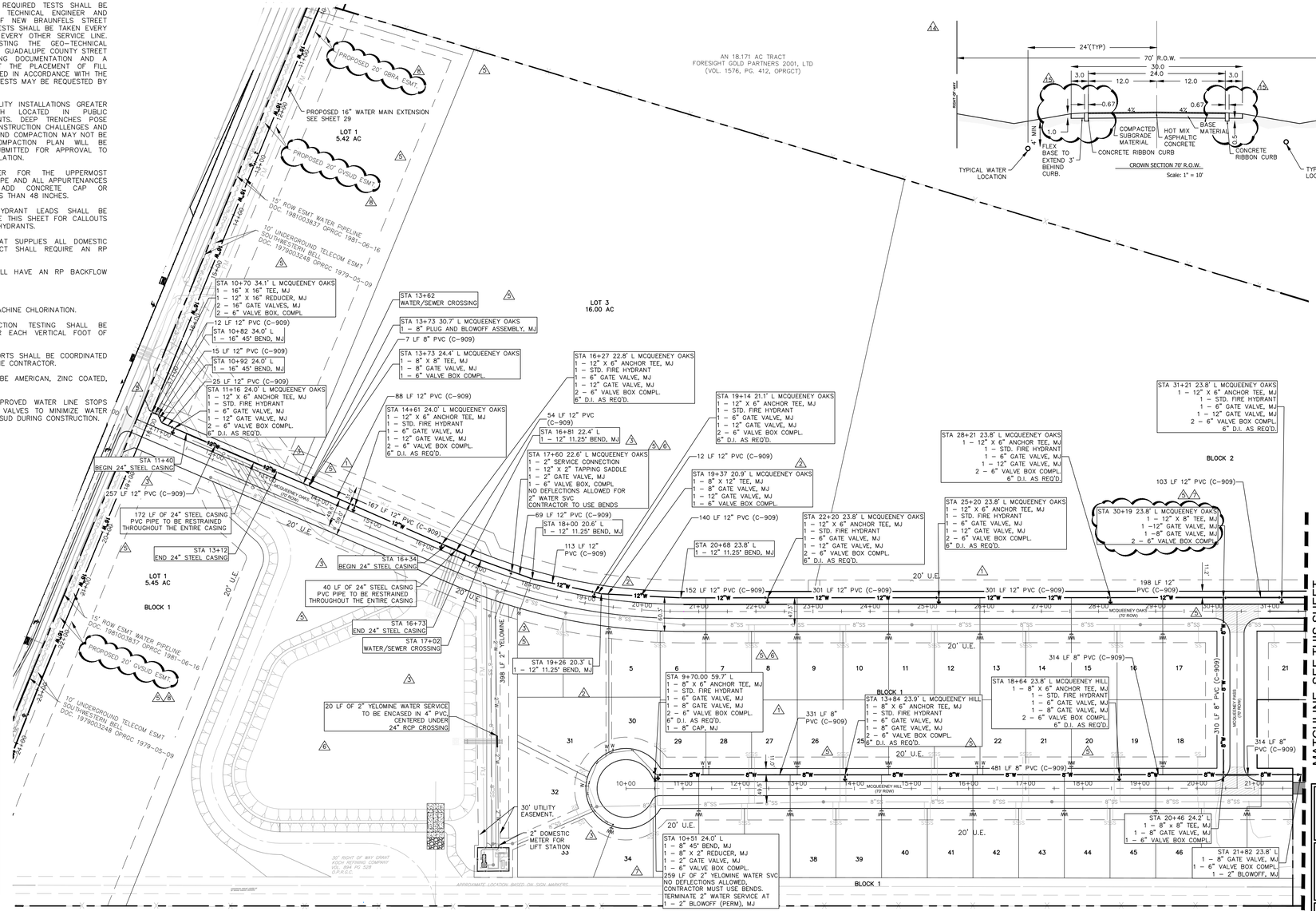
Development Summary					
Tract	Description	Area (ac)	Density (Units/ac)	Units	LUE
1	Commercial North[1]	5.42			43
2	Commercial South[1]	5.60			45
3	Multi-Family[2]	16.00	18.75	300	300
4	SFR-North	28.84	8	230.72	231
5	SFR-South	22.86	8	182.88	183
6	Single Family	16.33	3.00	49	49
				Total	851

[1]Commercial Density assumes a 2in water meter per 1ac Tract. A 2in water meter is = 8 LUE

[2]GBRA Apts (6+ Units/AC to 24 Units/AC) 0.7 per Unit

Phase 1 Summary					
Tract	Description	5/8" Meter	1" Meter	Units	LUE
6	Single Family	63		63	63
6	Lift Station		1	2.5	2.5
				Total	65.5

NOTE: ALL SPECIFICS RELEVANT TO THE WATER LINES PER UTILITY PROVIDER SHALL BE ADHERED TO. OTHER REQUIREMENTS PER COUNTY ARE IN ADDITION TO.



NOTES:
1. STATIONING FOR 12" AND 8" WATER MAIN IS BASED ON ROAD ALIGNMENT.
2. ALL METERS MUST HAVE A BACKFLOW PREVENTER
3. SEE GVSUD DETAIL W-40 SHEET 32, FOR METER PLACEMENT
4. MATERIAL FOR ALL PIPE FITTINGS (BENDS, TEES, REDUCERS, CAPS, ETC) SHALL BE DUCTILE IRON UNLESS OTHERWISE NOTED.

LEGEND

- PROPERTY LINE
- FM — PROPOSED 8" FORCE MAIN
- 8"SS — PROPOSED 8" SANITARY SEWER
- PROPOSED MANHOLE
- PROPOSED DOUBLE WASTEWATER SERVICE LATERAL
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- 12"W — EXISTING 12" WATER MAIN
- OHE — EXISTING OVERHEAD ELECTRIC
- UCM — EXISTING UNDERGROUND COMM LINE
- X — EXISTING FENCE

MATCHLINE SEE THIS SHEET

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED PROFESSIONAL ENGINEER
12/08/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

WATER DISTRIBUTION PLAN

SHEET 28 OF 64

NO	DATE	ISSUES AND REVISIONS
⚠5	9-5-2025	REVISED PER GVSUD COMMENTS
⚠4	9-8-2025	REVISED PER GVSUD COMMENTS
⚠3	11-10-2025	STREET NAMES REVISED
⚠2	12-02-2025	REVISED PER GUADALUPE COUNTY COMMENTS
⚠1	12-08-2025	REVISED PER GUADALUPE COUNTY COMMENTS

INK CIVIL
2021 W SH46, STE 105
NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 ink-civil.com
TBPE FIRM F-13351

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Drawing Name: N:\Projects\GRROD_Bush Property - 109a\Civil Construction Drawings\28 WATER DISTRIBUTION PLAN.dwg User: chuckwork Dec 08, 2025 - 7:15pm

CONSTRUCTION NOTES:

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MCQUEENEY OAKS SUBDIVISION

ITEM	QTY.
WATER MAIN (8" PVC C-909)	2138 LF
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2" WATER METER	1 EA.
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SINGLE WATER SERVICES	11 EA.
WATER METERS	63 EA.
FIRE HYDRANTS	17 EA.
FIRE LINES	170 LF

Development Summary					
Tract	Description	Area (ac)	Density (Units/ac)	Units	LUE
1	Commercial North[1]	5.42			43
2	Commercial South[1]	5.60			45
3	Multi-Family[2]	16.00	18.75	300	300
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5	SFR- South	22.86	8	182.88	183
6	Single Family	16.33	3.00	49	49
				Total	851

[1]Commercial Density assumes a 2in water meter per 1ac Tract. A 2in water meter is =8 LUE
[2]GBRA Apts (6+ Units/AC to 24 Units/AC) 0.7 per Unit

Phase 1 Summary					
Tract	Description	5/8" Meter	1" Meter	Units	LUE
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6	Lift Station		1	2.5	2.5
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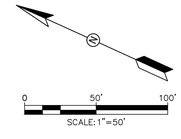

LEGEND

PROPERTY LINE
PROPOSED 8" FORCE MAIN
PROPOSED 8" SANITARY SEWER
PROPOSED MANHOLE
PROPOSED DOUBLE WASTEWATER SERVICE LATERAL
PROPOSED SINGLE WASTEWATER SERVICE LATERAL
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PROPOSED SINGLE METERED WATER SERVICE
PROPOSED DUAL METERED WATER SERVICE
PROPOSED FIRE HYDRANT
EXISTING 12" WATER MAIN
EXISTING OVERHEAD ELECTRIC
EXISTING UNDERGROUND COMM LINE
EXISTING FENCE

NOTES:
1. ALL 16" PVC LABELS SHALL BE PVC C-900.
2. ABANDON IN PLACE 12IN WATER MAIN +/-1700 LF

LABEL REMOVED

LOT 1
5.42 AC

30' PUBLIC UTILITY AND ACCESS EASEMENT

10+00
16" X 2" PLUG AND BLOWOFF ASSEMBLY

3 LF 16" PVC (C-900)

PROPOSED 20' GBRA ESMT.

CONTRACTOR TO VERIFY SPACING

PROPOSED 20' GVSUD ESMT.

23 LF 16" PVC (C-900)

STA 13+0816in WATER MAIN
1 – 16" X 6" ANCHOR TEE, MJ
1 – STD. FIRE HYDRANT
1 – 6" GATE VALVE, MJ
1 – 16" GATE VALVE, MJ
2 – 6" VALVE BOX COMPL.
6" D.I. AS REQ'D.

15' ROW ESMT WATER PIPELINE DOC. 1981003837 OPRGC 1981-06-16

278 LF 16" PVC (C-900)

326 LF 16" PVC (C-900)

STA 10+03 16in WATER MAIN
1 – 16" X 16" TEE, MJ
1 – 16" X 8" REDUCER, MJ

STA 12+85 16in WATER MAIN
1 – 16" X 16" TEE, MJ

1 – 8" X 16" REDUCER

1 – 8" GATE VALVE, MJ
1 – 6" VALVE BOX COMPL

EXISTING 8" WATER LINE

STA 10+03 16in WATER MAIN
1 – 16" X 16" TEE, MJ
1 – 16" X 12" REDUCER, MJ
1 – 8" GATE VALVE, MJ
1 – 12" GATE VALVE, MJ
1 – 16" GATE VALVE, MJ
3 – 6" VALVE BOX COMPL
1 – 12" X 12" CUT IN TEE, MJ
1 – 16" CAP, MJ
1 – 12" PLUG, MJ

EXISTING 12" WATER MAIN

CONTRACTOR TO CONNECT TO EXISTING 12" WATER MAIN

CONTRACTOR TO LOCATE HORIZONTAL AND VERTICAL POSITION PRIOR TO CONSTRUCTION OF PROPOSED WATER MAIN.

CONTRACTOR TO IMMEDIATELY NOTIFY ENGINEER IF CONDITIONS IN THE FIELD DIFFER FROM DESIGN SHOWN.

CONTRACTOR TO COORDINATE WITH GVSUD OPERATIONS ON ISOLATION OF EXISTING WATER MAIN

CONTRACTOR TO INSTALL 2" BLOWOFF (TEMP), TO BE REMOVED FOR TIE-IN AFTER NEW MAIN IS TESTED AND ACCEPTED.

CONTRACTOR TO CONNECT TO EXISTING 8" WATER MAIN

CONTRACTOR TO LOCATE HORIZONTAL AND VERTICAL POSITION PRIOR TO CONSTRUCTION OF PROPOSED WATER MAIN.

CONTRACTOR TO IMMEDIATELY NOTIFY ENGINEER IF CONDITIONS IN THE FIELD DIFFER FROM DESIGN SHOWN.

CONTRACTOR TO COORDINATE WITH GVSUD OPERATIONS ON ISOLATION OF EXISTING WATER MAIN

CONTRACTOR TO INSTALL 2" BLOWOFF (TEMP), TO BE REMOVED FOR TIE-IN AFTER NEW MAIN IS TESTED AND ACCEPTED.

FM 725

PROPOSED 12" WATER MAIN SEE SHEET 28

PROPOSED 8" FORCE MAIN SEE SHEET 44

95 LF 16" PVC (C-900)
PVC PIPE TO BE RESTRAINED THROUGHOUT THE ENTIRE CASING

STA 16+39
BEGIN 30" STEEL ENCASEMENT

STA 16+37 16in WATER MAIN
1 – 45° VERTICAL BEND, MJ

STA 16+33 16in WATER MAIN
1 – 45° VERTICAL BEND, MJ

STA 17+31
BEGIN 30" STEEL ENCASEMENT

STA 17+35 16in WATER MAIN
1 – 45° VERTICAL BEND, MJ

50 LF 16" PVC (C-900)

STA 18+30
END 30" STEEL ENCASEMENT
PVC PIPE TO BE RESTRAINED THROUGHOUT THE ENTIRE CASING

510 LF 16" PVC (C-900)

5 LF 16" PVC (C-900)

3 LF 16" PVC (C-900)

10" UNDERGROUND TELECOM ESMT SOUTHWESTERN BELL DOC. 1979003248 OPRGC 1979-05-09

STA 17+86
BEGIN 30" STEEL ENCASEMENT

1 – 12" X 16" REDUCER

STA 17+74 16in WATER MAIN
1 – 16" X 16" TEE, MJ

STA 17+35 16in WATER MAIN
1 – 45° VERTICAL BEND, MJ

MATCHLINE STA 20+00.00
SEE SHEET 30

CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES 48 HOURS PRIOR TO EXCAVATION:

GVSUD	830-914-2330
GBRA	830-379-5822
Spectrum Cable	830-625-3408
Centerpoint Gas	830-643-6434
Robert Sanders	830-643-6903
Damaged Line	888-876-5786
AT&T Telephone	830-303-1333
Erick White PM	210-283-1706
Scott McBrearty (Construction)	210-658-4886
Texas One Call	830-545-6005

C.P.E. LOCATOR

CALL CENTER POINT ENERGY LOCATOR AT 1-800-545-6005, 48HRS BEFORE BEGINNING ANY EXCAVATION. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.181, CENTER POINT ENERGY MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT AND WORK AROUND ANY GAS VALVES THAT ARE IN THE PROJECT AREA.

TELEPHONE LOCATOR

THE EXISTENCE AND LOCATION OF UNDERGROUND CABLE INDICATED ON THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR TO CONTACT THE TELEPHONE COMPANY CABLE LOCATOR 48HRS PRIOR TO EXCAVATION. AT 1-800-545-6005,. CONTRACTOR HAS THE RESPONSIBILITY TO PROTECT AND SUPPORT TELEPHONE COMPANY DURING CONSTRUCTION.

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 CONTRACTORS IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA TITLE 29, PART 1926, SUBPART P 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 TITLE 29 PART 1926, SUBPART P STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATIONS.

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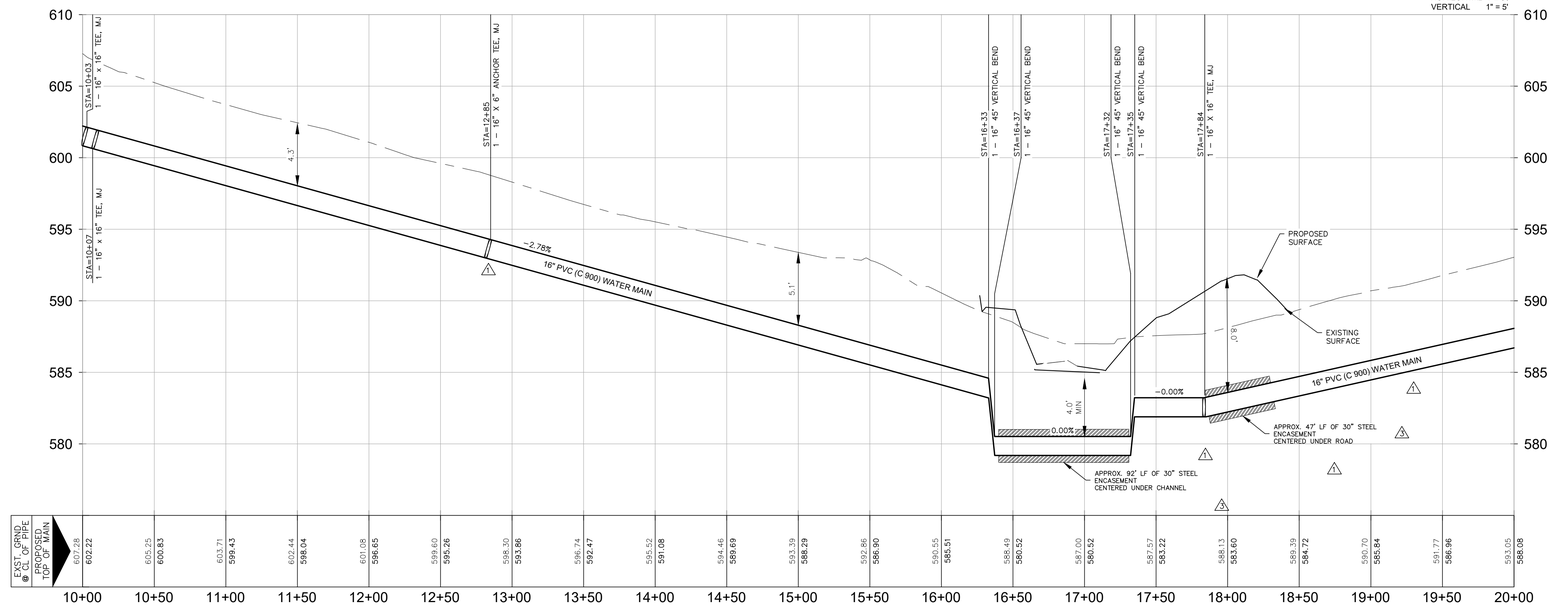
16in WATER MAIN

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



STATE OF TEXAS
JAMES INGALLS
107416
LICENSED PROFESSIONAL ENGINEER
12/08/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

WATER MAIN EXTENSION

SHEET 29 OF 64

NO	DATE	ISSUES AND REVISIONS
1	4-17-2025	REVISED PER GVSUD COMMENTS
2	7-29-2025	REVISED PER GVSUD & GBRA COMMENTS
3	8-25-2025	REVISED PER GVSUD COMMENTS
4	9-1-2025	REVISED PER GVSUD COMMENTS
5	9-8-2025	REVISED PER GVSUD COMMENTS

INK CIVIL
2021 W SH46, STE 105
NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 ink-civil.com
TBPE FIRM F-13351

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Drawing Name: N:\Projects\080002 Buck Property - 100ac\Civil\Construction Drawings\29 WATER MAIN EXTENSION.dwg User: chuckwere Dec 08, 2025 - 7:15pm

CONSTRUCTION NOTES:

1. WHERE WATER LINES AND NEW SEWER LINES ARE INSTALLED WITH A SEPARATION DISTANCE CLOSER THAN NINE FEET (I.E., WATER LINES CROSSING WASTEWATER LINES, WATER LINES PARALLELING WASTEWATER LINES, OR WATER LINES NEXT TO MANHOLES) THE INSTALLATION MUST MEET THE REQUIREMENTS OF 30 TAC §217.53(D) (PIPE DESIGN) AND 30 TAC §290.44(E) (WATER DISTRIBUTION).
2. WHERE A 9' (NINE FOOT) SEPARATION FROM WATER AND SEWER LINES CROSSING CANNOT BE MAINTAINED, THE NEW WATER LINE SHALL BE ABOVE THE SEWER LINE AS SHOWN ON THE WATER/SEWER LINE CROSSING DETAIL. AT NO TIME SHALL A WATER LINE OR WATER SERVICE BE PLACED UNDER A SEWER LINE OR SEWER SERVICE.
3. WHERE A NEW POTABLE WATERLINE CROSSES AN EXISTING, PRESSURE RATED WASTEWATER MAIN OR LATERAL, ONE SEGMENT OF THE WATERLINE PIPE SHALL BE CENTERED OVER THE WASTEWATER MAIN OR LATERAL SUCH THAT THE JOINTS OF THE WATERLINE PIPE ARE EQUIDISTANT AND AT LEAST NINE FEET HORIZONTALLY FROM THE CENTERLINE OF THE WASTEWATER MAIN OR LATERAL. THE POTABLE WATERLINE SHALL BE AT LEAST SIX INCHES ABOVE THE WASTEWATER MAIN OR LATERAL WHENEVER POSSIBLE. THE CROSSING SHALL BE CENTERED BETWEEN THE JOINTS OF THE WASTEWATER MAIN OR LATERAL. IF THE EXISTING WASTEWATER MAIN OR LATERAL SHOWS SIGNS OF LEAKING, IT SHALL BE REPLACED FOR AT LEAST NINE FEET IN BOTH DIRECTIONS (18 FEET TOTAL) WITH AT LEAST 150 PSI PRESSURE RATED PIPE.
4. ALL PRIVATE SERVICE LATERALS M12UST BE INSPECTED AND CERTIFIED IN ACCORDANCE WITH 30 TAC §213.5(C)(3)(I). AFTER INSTALLATION OF AND, PRIOR TO COVERING AND CONNECTING A PRIVATE SERVICE LATERAL TO AN EXISTING ORGANIZED SEWAGE COLLECTION SYSTEM, A TEXAS LICENSED PROFESSIONAL ENGINEER, TEXAS REGISTERED SANITARIAN, OR APPROPRIATE CITY INSPECTOR MUST VISUALLY INSPECT THE PRIVATE SERVICE LATERAL AND THE CONNECTION TO THE SEWAGE COLLECTION SYSTEM, AND CERTIFY THAT IT IS CONSTRUCTED IN CONFORMITY WITH THE APPLICABLE PROVISIONS OF THIS SECTION. THE OWNER OF THE COLLECTION SYSTEM MUST MAINTAIN SUCH CERTIFICATIONS FOR FIVE YEARS AND FORWARD COPIES TO THE APPROPRIATE REGIONAL OFFICE UPON REQUEST. CONNECTIONS MAY ONLY BE MADE TO AN APPROVED SEWAGE COLLECTION SYSTEM.
5. FIRE HYDRANTS SHALL NOT BE INSTALLED WITHIN NINE FEET VERTICALLY OR HORIZONTALLY OF ANY WASTEWATER MAIN, WASTEWATER LATERAL, OR WASTEWATER SERVICE LINE REGARDLESS OF CONSTRUCTION.
6. METER BOXES MUST BE SET AT PROPOSED FINISHED GRADE. ANY METER BOXES THAT ARE NOT SET AT THE FINAL GRADE WILL BE ADJUSTED BY THE CONTRACTOR AT NO ADDITIONAL COSTS.
7. CONTRACTOR TO COORDINATE WITH GVSUD IF EXISTING WATER MAINS WILL BE REMOVED FROM SERVICE AT ANY TIME.
8. ALL UTILITIES SHALL BE CONSTRUCTED PRIOR TO STREETS.
9. ENSURE ALL DRIVEWAY APPROACHES ARE BUILT IN GENERAL ACCORDANCE WITH A.D.A SPECIFICATIONS.
10. NO VALVES, FIRE HYDRANTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS OR DRIVEWAYS.
11. ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEO–TECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTING OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX–113–E, TEX– 114–E, TEX–115–E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEO–TECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 200LF FOR EACH LIFT AND EVERY OTHER SERVICE LINE. UPON COMPLETION OF TESTING THE GEO–TECHNICAL ENGINEER SHALL PROVIDE THE CITY OF NEW BRAUNFELS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUESTED BY THE CITY OF NEW BRAUNFELS INSPECTOR.
12. THIS PROJECT INCLUDES UTILITY INSTALLATIONS GREATER THAN 5–FEET IN DEPTH LOCATED IN PUBLIC RIGHT–OF–WAY OR EASEMENTS. DEEP TRENCHES POSE COMPACTION TESTING AND CONSTRUCTION CHALLENGES AND CITY METHODS FOR TESTING AND COMPACTION MAY NOT BE ACHIEVABLE. A UTILITY COMPACTION PLAN WILL BE REQUIRED AND MUST BE SUBMITTED FOR APPROVAL TO CITY PRIOR TO UTILITY INSTALLATION.
13. MINIMUM DEPTH OF COVER FOR THE UPPERMOST PROJECTION OF THE WATER PIPE AND ALL APPURTENANCES SHALL BE 48 INCHES. ADD CONCRETE CAP OR ENCASEMENT IF COVER IS LESS THAN 48 INCHES.
14. GATE VALVES ON FIRE HYDRANT LEADS SHALL BE RESTRAINED AT THE TEE. SEE THIS SHEET FOR CALLOUTS FOR ANCHOR TEES FOR FIRE HYDRANTS.
15. THE MAIN SUPPLY LINE THAT SUPPLIES ALL DOMESTIC METERS WITHIN THIS PROJECT SHALL REQUIRE AN RP BACKFLOW PREVENTION.
16. ALL IRRIGATION METERS SHALL HAVE AN RP BACKFLOW PREVENTION.
17. DISINFECTION SHALL BE BY MACHINE CHLORINATION.
18. MOISTURE DENSITY COMPACTION TESTING SHALL BE REQUIRED EVERY 300LF FOR EACH VERTICAL FOOT OF COMPACTED BACKFILL.
19. ALL TESTING AND TEST REPORTS SHALL BE COORDINATED WITH GVSUD INSPECTOR BY THE CONTRACTOR.
20. ALL DUCTILE IRON PIPE TO BE AMERICAN, ZINC COATED, AWWA/ANSI C–151.
21. CONTRACTOR TO UTILIZE APPROVED WATER LINE STOPS AND/OR MUELLER INSERTION VALVES TO MINIMIZE WATER OUTAGES AS REQUIRED BY GVSUD DURING CONSTRUCTION.

⚠3

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GBRA	830–379–5822
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Centerpoint Gas	830–643–6434
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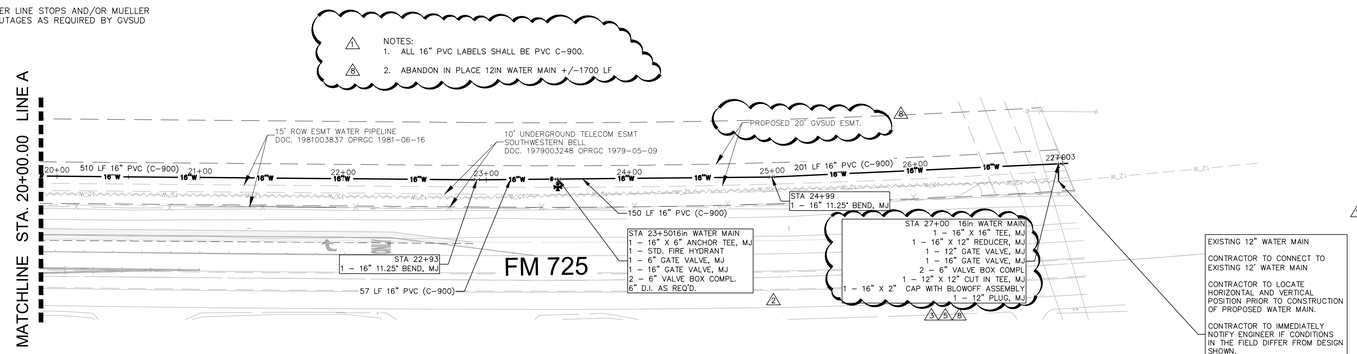
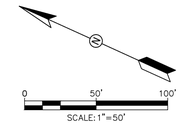
GVSUD NOTES

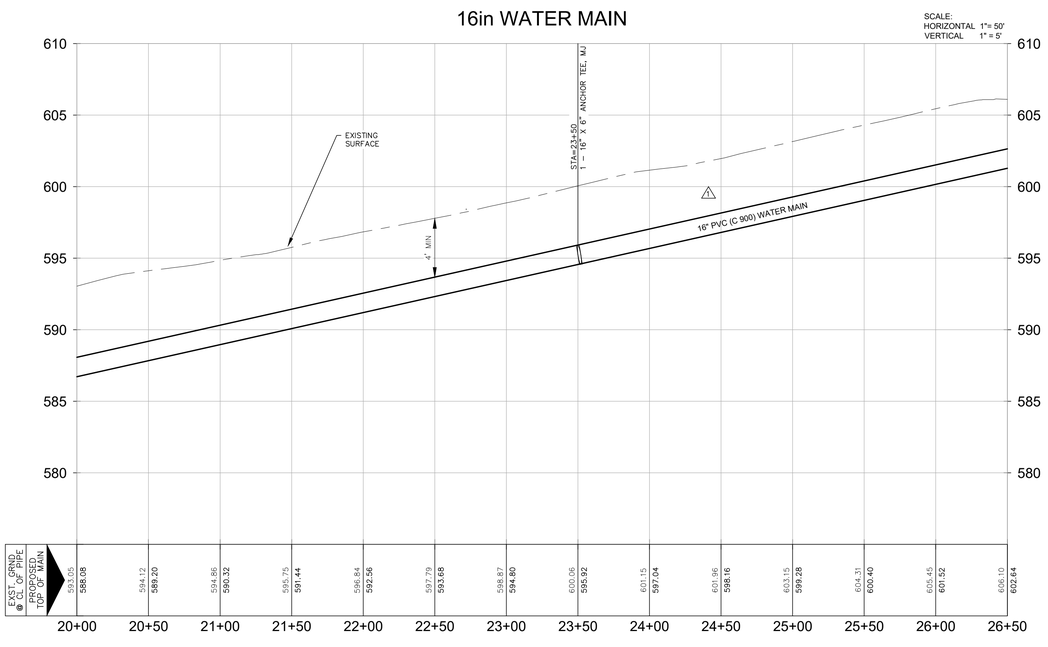
1. CONTRACTOR TO CURB CUT V'S FOR VALVES AND X'S FOR METERS.
2. CONTRACTOR TO VERIFY LOCATION OF EXISTING WATER MAIN A MINIMUM OF 300 LF AHEAD OF NEW MAIN INSTALLATION AT ALL TIE–IN LOCATIONS OR CROSSINGS, AND NOTIFY GVSUD INSPECTOR.
3. CONTRACTOR MUST PROTECT ALL UNATTENDED TRENCHES AND EXCAVATIONS WITH TEMPORARY FENCING OR OTHER APPROVED MEANS.
4. CONTRACTOR TO UTILIZE APPROVED WATER LINE STOPS AND/OR MUELLER INSERTION VALVES TO MINIMIZE WATER OUTAGES AS REQUIRED BY GVSUD DURING CONSTRUCTION.





LEGEND

- PROPERTY LINE
- FM — PROPOSED 8" FORCE MAIN
- 8"SS — PROPOSED 8" SANITARY SEWER
- PROPOSED MANHOLE
- PROPOSED DOUBLE WASTEWATER SERVICE LATERAL
- PROPOSED SINGLE WASTEWATER SERVICE LATERAL
- 12"W — PROPOSED 12" WATER MAIN
- 8"W — PROPOSED 8" WATER MAIN
- 16"W — PROPOSED 16" WATER MAIN
- 1"W — PROPOSED 1" WATER SERVICE
- PROPOSED SINGLE METERED WATER SERVICE
- PROPOSED DUAL METERED WATER SERVICE
- PROPOSED FIRE HYDRANT
- 12"W — EXISTING 12" WATER MAIN
- OHE — EXISTING OVERHEAD ELECTRIC
- UCM — EXISTING UNDERGROUND COMM LINE
- X — EXISTING FENCE



⚠1

NOTES:
1. STATIONING FOR 12" AND 8" WATER MAIN IS BASED ON ROAD ALIGNMENT.
2. ALL METERS MUST HAVE A BACKFLOW PREVENTER
3. SEE GVSUD DETAIL W–40 SHEET 32, FOR METER PLACEMENT
4. MATERIAL FOR ALL PIPE FITTINGS (BENDS, TEES, REDUCERS, CAPS, ETC) SHALL BE DUCTILE IRON UNLESS OTHERWISE NOTED.

⚠2

MCQUEENEY OAKS SUBDIVISION	
ITEM	QTY.
WATER MAIN (8" PVC C–909)	2230 LF
WATER MAIN (12" PVC C–909)	3187 LF
WATER MAIN (16" PVC C–900)	1714 LF
2" WATER SERVICE (YELOMINE)	490 LF
2" WATER METER	1 EA.
DUAL WATER SERVICES	26 EA.
SINGLE WATER SERVICES	11 EA.
WATER METERS	63 EA.
FIRE HYDRANTS	17 EA.
FIRE LINES	170 LF

⚠3

Development Summary					
Tract	Description	Area (ac)	Density (Units/ac)	Units	LUE
1	Commercial North[1]	5.42			43
2	Commercial South[1]	5.60			45
3	Multi-Family[2]	16.00	18.75	300	300
4	SFR- North	28.84	8	230.72	231
5	SFR- South	22.86	8	182.88	183
6	Single Family	16.33	3.00	49	49
				Total	851
[1] Commercial Density assumes a 2in water meter per 1ac Tract. A 2in water meter is = 8 LUE					
[2] GBRA Apts (6+ Units/AC to 24 Units/AC) 0.7 per Unit					

Phase 1 Summary					
Tract	Description	5/8" Meter	1" Meter	Units	LUE
6	Single Family	63		63	63
6	Lift Station		1	2.5	2.5
				Total	65.5

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

WATERMAIN EXTENSION II

SHEET 30 OF 64

NO	DATE	ISSUES AND REVISIONS
1	3–21–2025	REVISED PER GVSUD COMMENTS
2	4–17–2025	REVISED PER GVSUD COMMENTS
3	7–29–2025	REVISED PER GVSUD COMMENTS
4	8–25–2025	REVISED PER GVSUD COMMENTS
5	9–8–2025	REVISED PER GVSUD COMMENTS

INK CIVIL
2021 W SH46, STE 105
NEW BRAUNFELS, TX. 78132
PH: 830–358–7127 ink–civil.com
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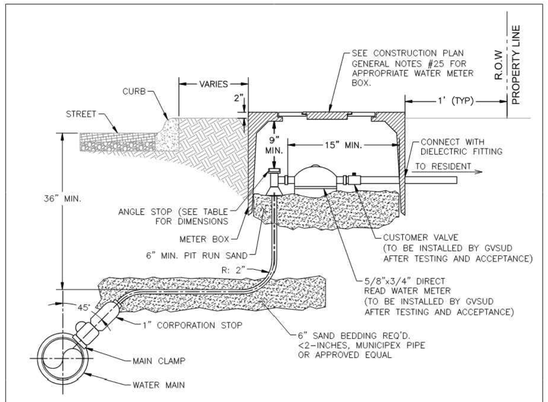
Drawing Name: N:\Projects\0900\Buch Property – 109ac\Civil Construction Drawings\30 WATERMAIN EXTENSION II.dwg User: dhuckeba Dec 08, 2025 – 7:16pm

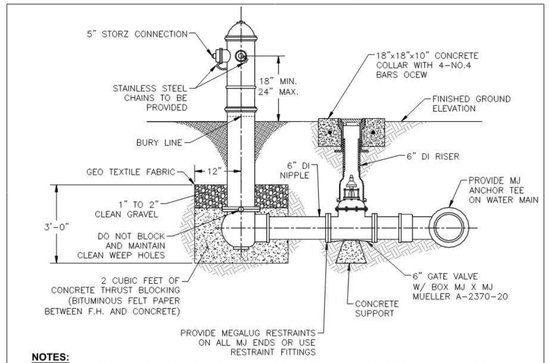


MAIN SIZE	METER SIZE	MAIN SADDLE	CORPORATION	ANGLE STOP
<12"	5/8" OR 3/4"	S-91804 IP	H-15028 IP 1"	B-24258N: 1"x 3/4"
<12"	1"	S-91804 IP	H-15028 IP 1"	B-24258N: 1"X1"

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.

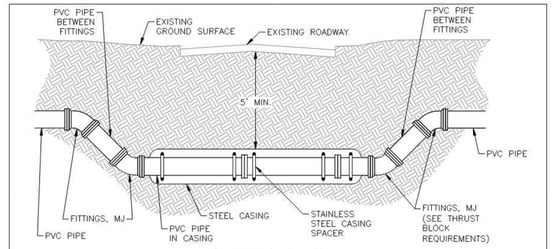
GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	STANDARD SERVICE CONNECTION	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-23



NOTES:

1. HYDRANT ASSEMBLY INCLUDES FIRE HYDRANT, VALVE, DIP, DI FITTINGS, ANCHOR RESTRAINERS, AND PIPE TO DISTRIBUTION SYSTEM.
2. FIRE HYDRANTS SHALL HAVE A MINIMUM OF 3 FEET OF CLEARANCE SURROUNDING HYDRANT.
3. HYDRANTS SHALL BE A MINIMUM DISTANCE OF 3 FEET BEHIND THE CURB OR 3 FEET FROM THE R.O.W. UNDER NO CIRCUMSTANCES SHALL VALVES OR HYDRANTS BE PLACED IN A CURB OR SIDEWALK. IN AREAS WITHOUT CURBS OR SIDEWALKS, HYDRANT SHALL BE PLACED 3-6 FEET FROM THE DISTRIBUTION SYSTEM.
4. FOR BURY DEPTHS GREATER THAN 5 FEET, ONE BARREL EXTENSION NOT EXCEEDING 3 FEET IN LENGTH SHALL BE INSTALLED DIRECTLY BELOW THE FIRE HYDRANT.
5. 1 CU FOOT (MIN) OF CRUSHED STONE OR GRAVEL SHALL BE PLACED AROUND WEEP HOLE FOR A RADIUS OF 12 INCHES AND EXTEND 12 INCHES ABOVE THE OUTLET.
6. VALVE, DUCTILE IRON PIPE, AND STANDARD FIRE HYDRANT SYSTEM SHALL BE RESTRAINT JOINT CONTINUOUSLY TOGETHER.
7. FIRE HYDRANT SHALL BE 6 INCH (3) WAY HYDRANT WITH BREAK AWAY BOLTS (SHOE TYPES) PROVIDED WITH STORZ CONNECTION. DEPTH OF BURY SHALL BE 42 INCHES MINIMUM. FIRE HYDRANTS MUST BE SET PLUMB. HOSE CONNECTION MUST FACE ROADWAY.
8. HYDRANT ASSEMBLY SHALL BE RESTRAINED FROM TEE TO HYDRANT.
9. IN THE CITY OF CIBOLO'S CITY LIMITS, FIRE HYDRANTS SHALL BE MUELLER TYPE AND SHALL BE 1 FOOT MINIMUM AND 7 FEET MAXIMUM FROM THE BACK OF CURB.
10. HYDRANTS UPPER BARREL SHALL BE FACTORY PAINTED RED WITH BONNET AND CAPS COATED PER CURRENT NFPA 291 STANDARDS.
11. HYDRANTS LOCATED IN RURAL AREAS SHALL HAVE 6' TALL POLLARD WATER FLEXIFLAG #PP68802.

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



ROADWAY BORE DETAIL

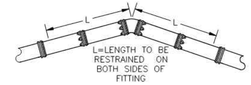
NOTES:

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

WATER LINE IN ENCASEMENT PIPE

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

GREEN VALLEY SPECIAL UTILITY DISTRICT 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



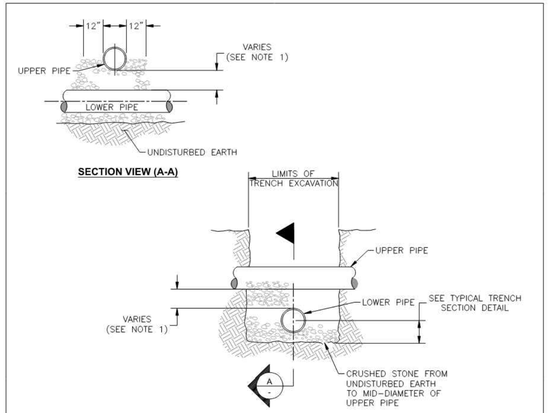
RESTRAINED LENGTH FOR BENDS

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

NOTES:

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

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



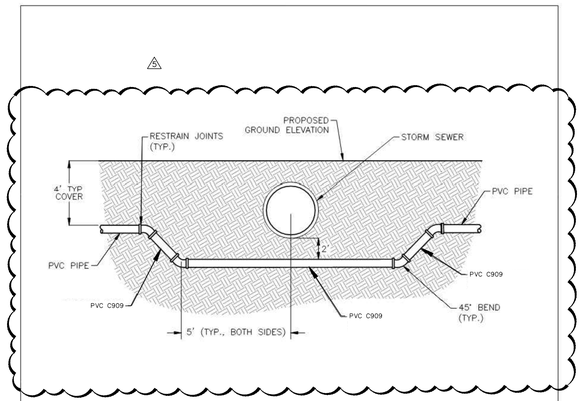
SECTION VIEW (A-A)

TYPICAL SECTION

NOTES:

1. MAINTAIN A MINIMUM 5 FOOT HORIZONTAL AND 2 FOOT VERTICAL SEPARATION FROM BETWEEN UTILITIES AND WATER AND WASTEWATER PIPES AND SERVICES. GAS, ELECTRIC, CABLE, ETC. TO BE LOCATED OPPOSITE SIDES OF PROPERTIES.
2. UTILITY CROSSINGS SEPARATED BY LESS THAN 5 FEET SHALL BE ENCASED WITH A MINIMUM OF 6 INCHES OF CONCRETE.
3. SPECIFICATIONS: BEDDING MATERIAL MUST BE APPROVED BY AUTHORIZED GVSUD PERSONNEL, BEFORE START OF JOB.
4. AT ANY CREEK CROSSING OR DRAINAGE DITCH THE MAIN SHALL BE ENCASED WITH STEEL PIPE AND/OR 6 INCHES CONCRETE ENCASEMENT TO WITHIN 10 FEET OUTSIDE OF CREEK OR DRAINAGE DITCH AREA.
5. PIPE JOINTS SHALL BE AT LEAST 9 FEET HORIZONTALLY FROM CROSSINGS.

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



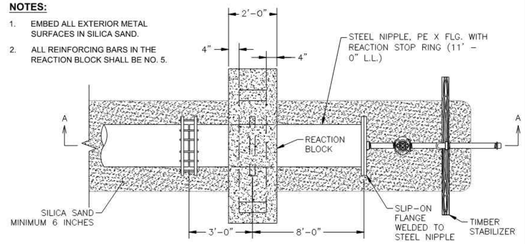
NOTES:

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

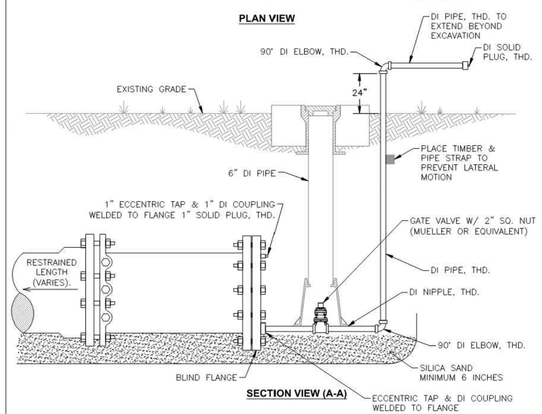
GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	STORM SEWER CROSSING	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-17

NOTES:

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



PLAN VIEW



SECTION VIEW (A-A)

GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	2" & 4" PERMANENT RURAL BLOW-OFF ASSEMBLY	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-27

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED
PROFESSIONAL ENGINEER
12/08/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

WATER DETAILS I

SHEET 31 OF 64

NO	DATE	ISSUES AND REVISIONS
1	8-25-2025	REVISED PER GVSUD COMMENTS

INK CIVIL
2021 W SH46, STE 105
NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 ink-civil.com
TBPE FIRM F-13351

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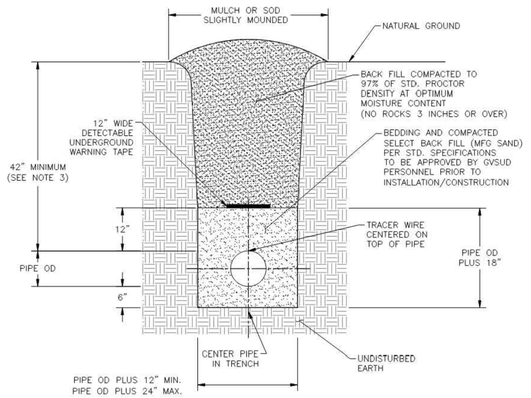
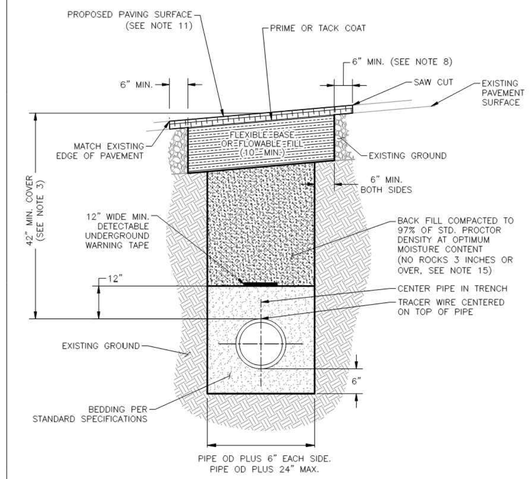


ELEVATION VIEW

NOTES:

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

GREEN VALLEY SPECIAL UTILITY DISTRICT 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

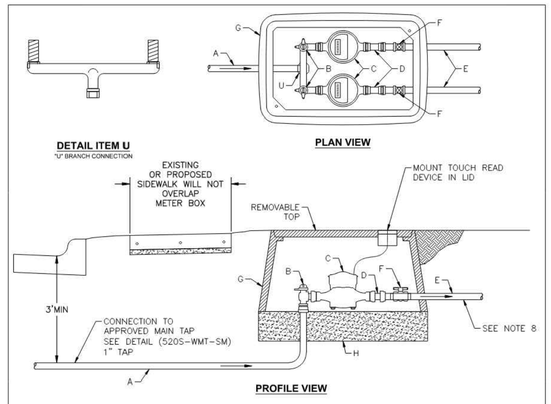


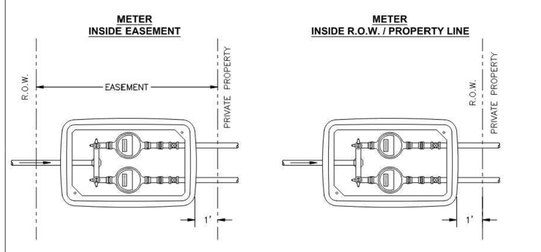
GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	TRENCH DETAIL FOR PAVED AREAS (1 OF 2)	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-1

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 INCH MINIMUM COVER AND 15 FOOT MAXIMUM COVER.
4. GENERAL CONTRACTOR SHALL CONTACT THE APPROPRIATE STREET OWNER AND PROCESS, POST FISCAL SURETY, AND HAVE STREET CUT PERMIT ISSUED IN THEIR NAME.
5. CONTRACTOR TO REPAIR PAVED AREA TO STREET OWNER'S ROAD STANDARDS FOR ALL DISTURBED AREA. GREEN VALLEY SPECIAL UTILITY DISTRICT PAYS FOR QUANTITY OF REPAIR SHOWN IN DETAIL.
6. CONTRACTOR SHALL NOT EXCEED THE MAXIMUM TRENCH ALLOWED AS INDICATED IN THE PLANS AND SPECIFICATIONS.
7. THE EXISTING PAVED SURFACE SHALL BE SAW CUT IN A STRAIGHT LINE, A MINIMUM OF 12 INCHES WIDER THAN UNDISTURBED SIDES OF THE TRENCH AND SYMMETRICAL ABOUT THE CENTER LINE OF THE EXCAVATION.
8. ANY CONCRETE PAVING SHALL BE CUT 6 INCHES WIDER THAN UNDISTURBED SIDES OF EXCAVATION.
9. IF EXCAVATION AREA IS OPEN FOR TEMPORARY PUBLIC USE, THE SURFACE SHALL BE MAINTAINED LEVEL WITH ADJACENT RIDING SURFACE WITH TEMPORARY COLD MIX ASPHALT CONCRETE OR TEMPORARY HOT MIXED ASPHALT CONCRETE. TEMPORARY MIX SHALL BE PLACED OVER FLEXIBLE BASE.
10. FLEXIBLE BASE SHALL BE REPLACED IN KIND WITH BASE AND PAVEMENT THICKNESS WITH BASE EQUAL TO EXISTING BASE THICKNESS PLUS 3 INCHES, BUT IN NO CASE LESS THAN 10 INCHES.
11. DAMAGED PAVEMENT OUTSIDE THE TRENCH CUT SHALL BE REMOVED AND REPLACED WITH A MINIMUM OF 2 INCHES HOT MIXED ASPHALT CONCRETE AND A BASE OF 10 INCHES OR A THICKNESS MATCHING EXISTING, WHICHEVER IS GREATER.
12. TACK COAT ALL EXPOSED EDGES AND SURFACES.
13. TYPE AND THICKNESS OF PROPOSED PAVING SURFACE SHALL BE AS FOLLOWS:
    - TWO COURSE SURFACE TREATMENT: SHALL MATCH EXISTING SURFACE AND SHALL BE IN ACCORDANCE WITH SPECIFICATION 02770.
    - ASPHALT PAVING: SHALL BE IN ACCORDANCE WITH SPECIFICATION 02740. HOT MIXED ASPHALT CONCRETE TYPE 'D' SHALL BE USED FOR LIFT THICKNESS UP TO 2 INCHES, AND TYPE 'C' FOR LIFT THICKNESS OVER 2 INCHES AND UP TO 3 INCHES. LIFT THICKNESS SHALL NOT BE MORE THAN 3 INCHES.
14. DETECTABLE UNDERGROUND WARNING TAPE SHALL BE PLACED DIRECTLY ABOVE THE CENTERLINE OF THE PIPE AND ABOVE BEDDING, IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS. THE DETECTABLE UNDERGROUND WARNING TAPE SHALL CONFORM TO THE SPECIFICATIONS AND COLOR CODED IN ACCORDANCE WITH THE AMERICAN PUBLIC WORKS ASSOCIATION UNIFORM COLOR CODE.
15. PIPE BEDDING SHALL BE PLACED BEFORE PIPING IS LAID, UP TO BOTTOM OF PIPE, AND COMPACTED TO 97% STANDARD PROCTOR DENSITY.
16. PLACE PIPE BEDDING IN 12 INCH LIFTS AFTER PIPE IS LAID TO 12 INCHES ABOVE THE PIPE.
17. SELECT BACKFILL MATERIAL PLACED TO REQUIRED HEIGHT IN 6 INCH LIFTS.

GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	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





GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	5/8", & 3/4" DUAL METER SERVICE CONNECTIONS (IRRIGATION OR DOMESTIC) (1 OF 2)	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-40

MATERIAL LIST			
LABEL	ITEMS	METER SIZE	
		5/8"	3/4"
A*	TUBING SHALL BE REHAU MUNICIPEX WITH CTS 200 PSI PLASTIC INSERT	1"	1"
B	APPROVED ANGLE METER STOP WITH PADLOCK WING. (FORD TYPE Q COMPRESSION FITTING OR APPROVED EQUIVALENT.)	5/8"	3/4"
C	WATER METER	5/8"	3/4"
D	WATER METER COUPLING - CONNECTION SWIVEL NUT	5/8"	3/4"
E	CUSTOMER YARD PIPE - AS SPECIFIED		
F	CUT-OFF VALVE **		
G	PLASTIC METER BOX AND LID WITH REBAR, ARM, AND KNOCKOUT		
H	6" COMPACTED SAND		
U	"U" BRANCH CONNECTION (COMPRESSION - TYPE FITTING)	1"X3/4"	1"X3/4"

* ALL FITTING CONNECTED TO POLYETHYLENE PIPE WILL REQUIRE A STAINLESS STEEL INSERT.
** TO BE INSTALLED BY GVSUD AFTER TESTING AND ACCEPTANCE

NOTES:

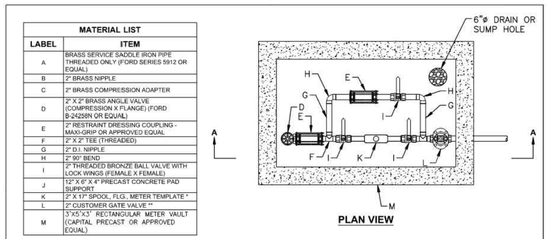
1. REFERENCE GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAIL W-23 FOR METER AND METER BOX DIMENSIONS.
2. TOP OF METER BOX SHALL BE 1" ABOVE GRADE AFTER REVEGETATION OR FLUSH WITH PAVEMENT SURFACE. METER BOX ARE PROHIBITED IN ANY SIDEWALKS, DRIVEWAYS, OR ROADWAYS.
3. FOR PIPES AND FITTINGS OUTSIDE THE METER BOX SHALL BE EMBEDDED AND BACKFILLED, 6" SAND BEDDING MINIMUM, WITHIN THE R.O.W. OR EASEMENT.
4. WATER METER WILL BE HORIZONTALLY CENTERED WITH THE METER BOX.
5. TAP TO CITY WATER LINE SHALL HAVE A 1" CORPORATION STOP AND A 1" TAP TO THE MAIN.
6. CUT-OFF VALVE AND CONNECTION TO YARD PIPING TO BE SUBMITTED FOR APPROVAL.
7. METERS TO BE SUPPLIED BY CONTRACTOR FOR COMMERCIAL ACCOUNTS.
8. ALL PARTS WILL BE PER THE CURRENT GREEN VALLEY SPECIAL UTILITY DISTRICT WATER STANDARDS AND DESIGN CRITERIA.

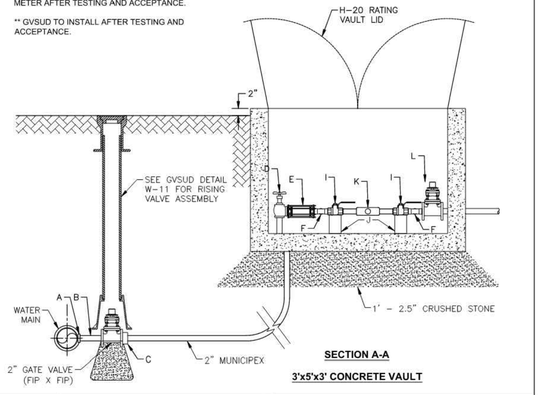
GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	5/8", & 3/4" DUAL METER SERVICE CONNECTIONS (IRRIGATION OR DOMESTIC) (2 OF 2)	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-40

MATERIAL LIST	
LABEL	ITEM
A	BRASS SERVICE SADDLE IRON PIPE THREADED ONLY (FORD SERIES 5912 OR EQUAL)
B	2" BRASS NIPPLE
C	2" BRASS COMPRESSION ADAPTER
D	2" X 2" BRASS ANGLE VALVE (COMPRESSION X FLANGE) (FORD B-24209N OR EQUAL)
E	2" RESTRAINT DRESSING COUPLING - MAXI-GRIP OR APPROVED EQUAL
F	2" X 2" TEE (THREADED)
G	2" D.I. NIPPLE
H	2" 90° BEND
I	2" THREADED BRONZE BALL VALVE WITH LOCK WINGS (FEMALE X FEMALE)
J	12" X 6" X 4" PRECAST CONCRETE PAD SUPPORT
K	2" X 11" SPOOL, FLG., METER TEMPLATE *
L	2" CUSTOMER GATE VALVE **
M	3'X5'X3' RECTANGULAR METER VAULT (CAPITAL PRECAST OR APPROVED EQUAL)

* CONFIRM SPOOL PIECE METER TEMPLATE DIMENSION WITH GVSUD PRIOR TO INSTALLATION. GVSUD TO INSTALL METER AFTER TESTING AND ACCEPTANCE.

** GVSUD TO INSTALL AFTER TESTING AND ACCEPTANCE.





GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	2-INCH METER INSTALLATION	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-36

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

WATER DETAILS II

SHEET 32 OF 64

NO	DATE	ISSUES AND REVISIONS
1	8-25-2025	REVISED PER GVSUD COMMENTS

INK CIVIL
2021 W SH46, STE 105
NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 ink-civil.com
TBPE FIRM F-13351

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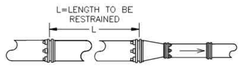


RESTRAINED LENGTH FOR REDUCERS

PIPE SIZE (INCHES)	SMALL SIZE (INCHES)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 PSI
6	4	30
8	4	55
8	6	32
12	4	95
12	6	80
12	8	58
16	4	131
16	6	120
16	8	104
16	12	60
24	16	110

NOTES:

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

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

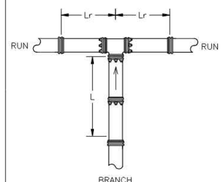
RESTRAINED LENGTH FOR BENDS

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

NOTES:

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

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



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

RESTRAINED LENGTH FOR TEES

PIPE SIZE (INCHES)	BRANCH SIZE (INCHES)	LENGTH OF RUN (FEET)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 PSI
6	4	0	42
6	4	5	7
6	4	10	1
6	6	0	59
6	6	5	35
6	6	10	11
8	4	0	42
8	4	5	1
8	6	0	59
8	6	5	28
8	6	10	1
8	8	0	77
8	8	5	53
8	8	10	30
8	8	15	6
12	4	0	42
12	4	5	1
12	6	0	59
12	6	5	13
12	6	10	1
12	8	0	77
12	8	5	42
12	8	10	7
12	8	15	1
12	12	0	109
12	12	5	86
12	12	10	63
12	12	15	39
16	4	0	42
16	4	5	1
16	6	0	59
16	6	5	1
16	8	0	78
16	8	5	39
16	8	10	1
16	12	0	110
16	12	5	84
16	12	10	59
16	12	15	33
16	12	20	7
16	16	0	142
16	16	5	123
16	16	10	104
16	16	15	85
16	16	20	65
24	24	5	169
24	24	10	136
24	24	15	103
24	24	20	70

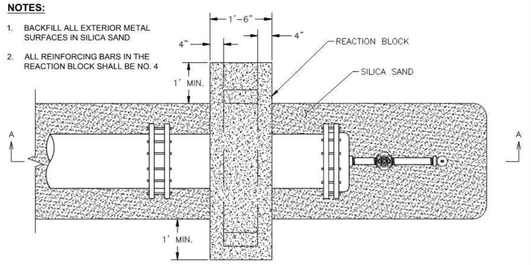
NOTES:

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.

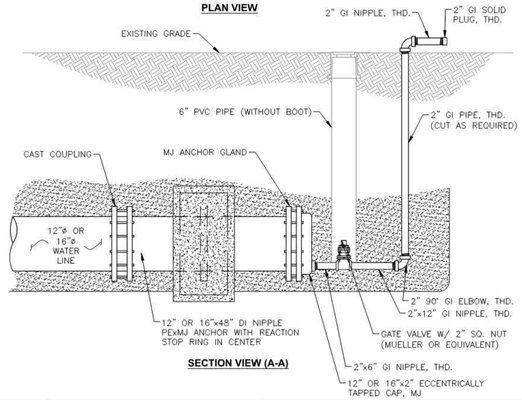
GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	TEE RESTRAINED LENGTH DESIGN	
REVISED: JANUARY 2024	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. W-21

NOTES:

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

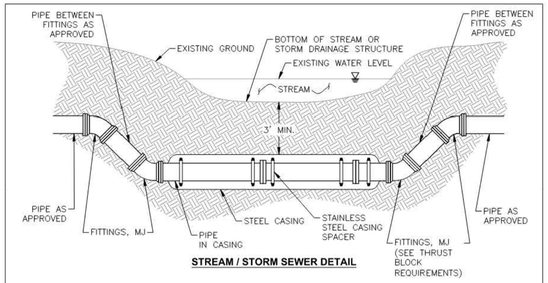


PLAN VIEW



SECTION VIEW (A-A)

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



STREAM / STORM SEWER DETAIL

NOTES:

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

WATER LINE IN ENCASEMENT PIPE

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

GREEN VALLEY SPECIAL UTILITY DISTRICT 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

12/08/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

WATER DETAILS III

SHEET 33 OF 64

NO	DATE	ISSUES AND REVISIONS
1		

INK CIVIL
2021 W SH46, STE 105
NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 ink-civil.com
TBPE FIRM F-13351

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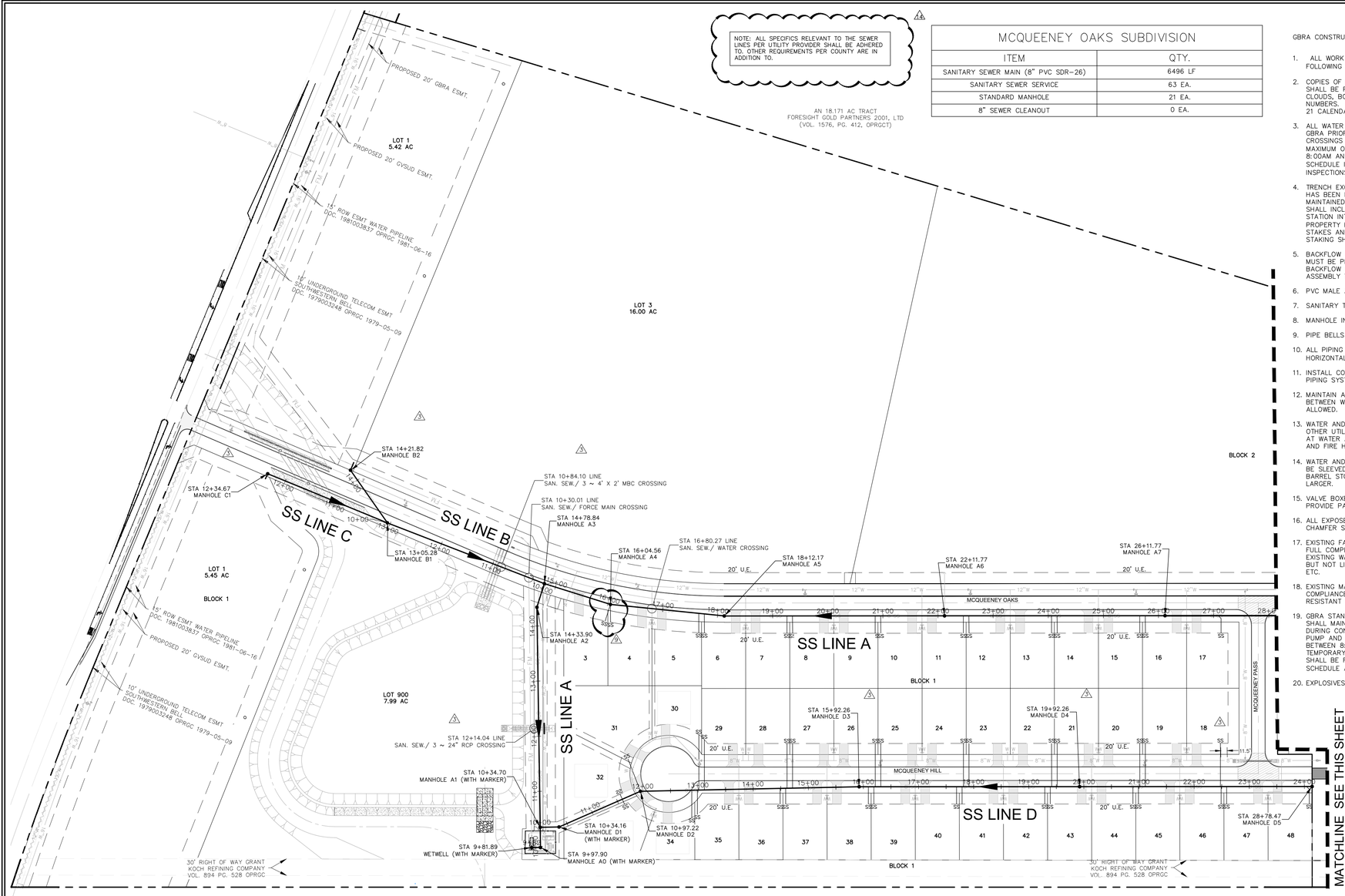
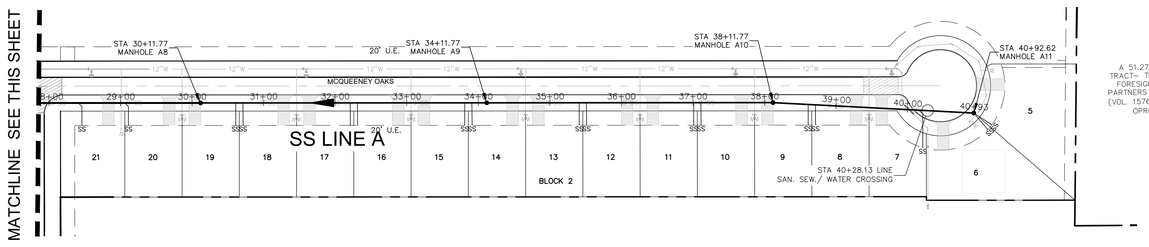
Drawing Name: N:\Projects\080002 Buck Property - 109ac\Civil\Construction Drawings\13 WATER DETAILS III.dwg User: chuckwere Dec 08, 2025 - 7:16pm

NOTE: ALL SPECIFICS RELEVANT TO THE SEWER LINES PER UTILITY PROVIDER SHALL BE ADHERED TO. OTHER REQUIREMENTS PER COUNTY ARE IN ADDITION TO.

MCQUEENEY OAKS SUBDIVISION	
ITEM	QTY.
SANITARY SEWER MAIN (8" PVC SDR-26)	6496 LF
SANITARY SEWER SERVICE	63 EA.
STANDARD MANHOLE	21 EA.
8" SEWER CLEANOUT	0 EA.





CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES 48 HOURS PRIOR TO EXCAVATION:

GVSUD	830-914-2330
GBRA	830-379-5822
Spectrum Cable	830-625-3408
Centerpoint Gas	830-643-6434
Robert Sanders	830-643-6903
Damaged Line	888-876-5786
AT&T Telephone	830-303-1333
Erick White PM	210-283-1706
Scott McBrearty (Construction)	210-658-4886
Texas One Call	830-545-6005

C.P.E. LOCATOR

CALL CENTER POINT ENERGY LOCATOR AT 1-800-545-6005, 48HRS BEFORE BEGINNING ANY EXCAVATION. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.181, CENTER POINT ENERGY MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT AND WORK AROUND ANY GAS VALVES THAT ARE IN THE PROJECT AREA.

TELEPHONE LOCATOR

THE EXISTENCE AND LOCATION OF UNDERGROUND CABLE INDICATED ON THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR TO CONTACT THE TELEPHONE COMPANY CABLE LOCATOR 48HRS PRIOR TO EXCAVATION AT 1-800-545-6005,. CONTRACTOR HAS THE RESPONSIBILITY TO PROTECT AND SUPPORT TELEPHONE COMPANY DURING CONSTRUCTION.

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 CONTRACTORS IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA TITLE 29, PART 1926, SUBPART P 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 TITLE 29 PART 1926, SUBPART P STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATIONS.

THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR WILL AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE INCURRED BY THEIR FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES, STRUCTURES OR FACILITIES. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES 24-HOURS PRIOR TO COMMENCING CONSTRUCTION.

GBRA CONSTRUCTION NOTES:

1. ALL WORK SHALL BE IN ACCORDANCE WITH GBRA STANDARDS AS PUBLISHED AT THE FOLLOWING WEBSITE: HTTP://WWW.GBRA.ORG/OPERATIONS/DEVELOPER-RESOURCES/
2. COPIES OF EACH CONSTRUCTION SUBMITTAL (SHOP DRAWINGS, PRODUCT DATA, ETC.) SHALL BE PROVIDED FOR GBRA REVIEW AND APPROVAL PRIOR TO FABRICATION. USE CLOUDS, BOXES, ARROWS, ETC., TO CLEARLY MARK ALL PROPOSED OPTIONS AND PART NUMBERS. LIST ANY PROPOSED DEVIATIONS ON THE SUBMITTAL COVER SHEET. ALLOW 21 CALENDAR DAYS FOR REVIEW.
3. ALL WATER AND WASTEWATER INSTALLATIONS MUST BE INSPECTED AND APPROVED BY GBRA PRIOR TO BACKFILLING OR OTHERWISE COVERING THE WORK. THIS INCLUDES CROSSINGS OF WATER AND WASTEWATER BY OTHER UTILITIES. GBRA WILL PERFORM A MAXIMUM OF ONE (1) INSPECTION DAILY FOR ONE (1) HOUR DURATION BETWEEN 8:00AM AND 5:00PM EXCLUDING WEEKENDS AND HOLIDAYS. CALL 830-379-5822 TO SCHEDULE INSPECTIONS (48 HOURS ADVANCE NOTICE IS REQUIRED FOR ALL INSPECTIONS).
4. TRENCH EXCAVATION AND PIPE INSTALLATION WILL NOT BE PERMITTED UNTIL SUBGRADE HAS BEEN ESTABLISHED. SURVEY STAKING MUST BE INSTALLED PRIOR TO AND MAINTAINED DURING TRENCH EXCAVATION AND PIPE INSTALLATION. SURVEY STAKING SHALL INCLUDE HORIZONTAL AND VERTICAL CONTROL AT A MINIMUM OF 50 FOOT STATION INTERVALS. HORIZONTAL OFFSETS SHALL BE 15 FEET MAXIMUM. INSTALL PROPERTY PINS AND STAKES. MARK FINISH GRADE LINES WITH CUT/FILL ON OFFSET STAKES AND PROPERTY STAKES. ALL MARKS SHALL FACE THE PIPELINE. SURVEY STAKING SHALL BE PERFORMED BY THE CONTRACTOR.
5. BACKFLOW PREVENTION IN THE FORM OF A REDUCED PRESSURE BACKFLOW ASSEMBLY MUST BE PROVIDED FOR TEMPORARY CONNECTIONS TO EXISTING WATER LINES. BACKFLOW DEVICES SHALL BE TESTED BY A LICENSED BACKFLOW PREVENTION ASSEMBLY TESTER. SUBMIT TEST REPORTS.
6. PVC MALE ADAPTERS ARE NOT ALLOWED.
7. SANITARY TAPPING SADDLES ARE NOT ALLOWED.
8. MANHOLE INTERNAL DROPS ARE NOT ALLOWED.
9. PIPE BELLS SHALL BE INSTALLED IN UPSTREAM DIRECTION.
10. ALL PIPING SHALL BE DESIGNED IN STRAIGHT ALIGNMENT VERTICALLY AND HORIZONTALLY. PIPE CURVATURE AND/OR DEFLECTION ARE NOT ALLOWED.
11. INSTALL CONCRETE THRUST BLOCKING AND MECHANICAL RESTRAINTS FOR PRESSURE PIPING SYSTEMS.
12. MAINTAIN A MINIMUM OF 10 FEET HORIZONTAL AND 12 INCHES VERTICAL CLEARANCE BETWEEN WATER AND WASTEWATER AND OTHER UTILITIES. SHARED TRENCHES ARE NOT ALLOWED.
13. WATER AND WASTEWATER PIPE LENGTHS SHALL BE CENTERED AT CROSSINGS WITH ALL OTHER UTILITIES, INCLUDING DRY UTILITY SERVICES. BOTH PIPES SHALL BE CENTERED AT WATER AND WASTEWATER CROSSINGS, INCLUDING WASTEWATER SERVICE LATERALS AND FIRE HYDRANT LEADS.
14. WATER AND WASTEWATER PIPING (INCLUDING MAINS, SERVICES, AND LATERALS) SHALL BE SLEEVED IF LOCATED UNDER CONCRETE CHANNELS, BOX CULVERTS, OR MULTIPLE BARREL STORM SEWER CROSSINGS REGARDLESS OF SIZE AND SINGLE BARRELS 30"OR LARGER.
15. VALVE BOXES, EXPOSED PIPING AND VALVES, AND APPURTENANCES SHALL BE PAINTED. PROVIDE PAINTED CURB CUT MARKINGS AT VALVES AND SERVICES.
16. ALL EXPOSED VERTICAL AND HORIZONTAL CONCRETE EDGES SHALL BE FORMED WITH ¾" CHAMFER STRIPS.
17. EXISTING FACILITIES THAT ARE DISTURBED SHALL BE RESTORED AND TESTED TO BE IN FULL COMPLIANCE WITH CURRENT GBRA STANDARDS. THE CONTRACTOR SHALL ADJUST EXISTING WATER AND WASTEWATER FACILITIES TO PROPOSED FINISH GRADES INCLUDING BUT NOT LIMITED TO MANHOLES, CLEANOUTS, VALVES, HYDRANTS, APPURTENANCES, ETC.
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19. GBRA STANDARDS AND DESIGN GUIDELINES FOR DEVELOPER UTILITIES THE CONTRACTOR SHALL MAINTAIN SERVICE TO EXISTING WATER AND WASTEWATER SYSTEMS AT ALL TIMES DURING CONSTRUCTION. ANY WORK INVOLVING POWER OUTAGES, BYPASS PUMPING, PUMP AND HAUL, OR ANY OTHER INTERRUPTION OF FLOW MUST BE PERFORMED BETWEEN 8:00AM AND 5:00PM EXCLUDING WEEKENDS AND HOLIDAYS. ALL NECESSARY TEMPORARY POWER, BYPASS PUMPING, PUMP AND HAUL, TEMPORARY PLUGS, ETC., SHALL BE FURNISHED AND PERFORMED BY THE CONTRACTOR. COORDINATE AND SCHEDULE ANY SUCH ACTIVITIES WITH GBRA AT LEAST TWO (2) WEEKS IN ADVANCE.
20. EXPLOSIVES AND BLASTING ARE NOT ALLOWED.

N

0 100' 200'
SCALE: 1"=100'

LEGEND

- PROPERTY LINE
- FM — PROPOSED 8" FORCE MAIN
- PROPOSED 8" SANITARY SEWER
- PROPOSED MANHOLE
- SSSS — PROPOSED DOUBLE WASTEWATER SERVICE LATERAL
- SS — PROPOSED SINGLE WASTEWATER SERVICE LATERAL
- 12"W — PROPOSED 12" WATER MAIN
- 16"W — PROPOSED 16" WATER MAIN
- 8"W — PROPOSED 8" WATER MAIN
- 1"W — PROPOSED 1" WATER SERVICE
- PROPOSED SINGLE METERED WATER SERVICE
- PROPOSED DUAL METERED WATER SERVICE
- PROPOSED FIRE HYDRANT
- 12"W — EXISTING 12" WATER MAIN
- OHE — EXISTING OVERHEAD ELECTRIC
- UCM — EXISTING UNDERGROUND COMM LINE
- X — EXISTING FENCE

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED
PROFESSIONAL ENGINEER
12/08/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

OVERALL SANITARY SEWER PLAN

SHEET 34 OF 64

NO	DATE	ISSUES AND REVISIONS
1	8-20-2025	REVISED PER GBRA AND GVSUD COMMENTS
2	9-16-2025	REVISED PER GBRA COMMENTS
3	10-14-2025	REVISED PER GBRA COMMENTS - REMOVAL OF DUAL LATERALS
4	11-10-2025	STREET NAMES REVISED
5	12-02-2025	REVISED PER GUADALUPE COUNTY COMMENTS

INK CIVIL
2021 W SH46, STE 105
NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 ink-civil.com
TBPE FIRM F-13351

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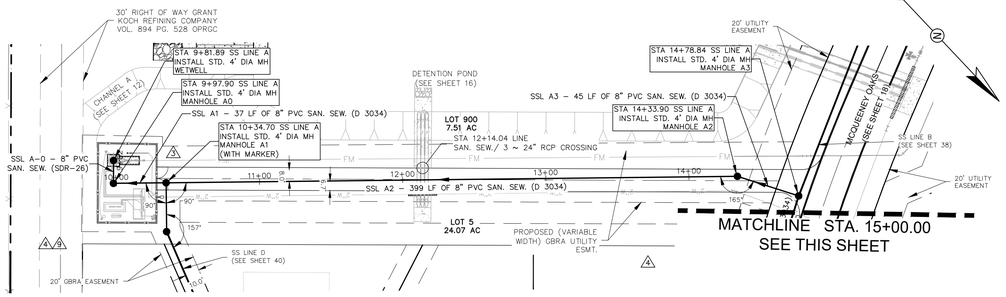
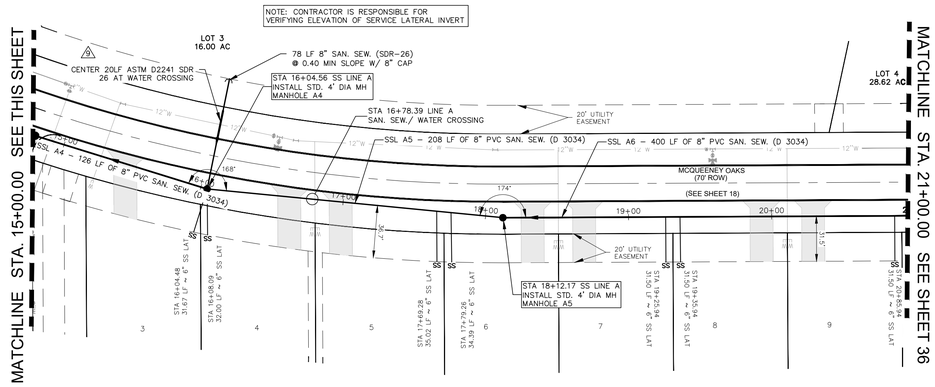
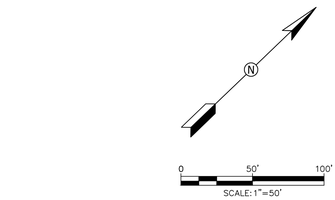


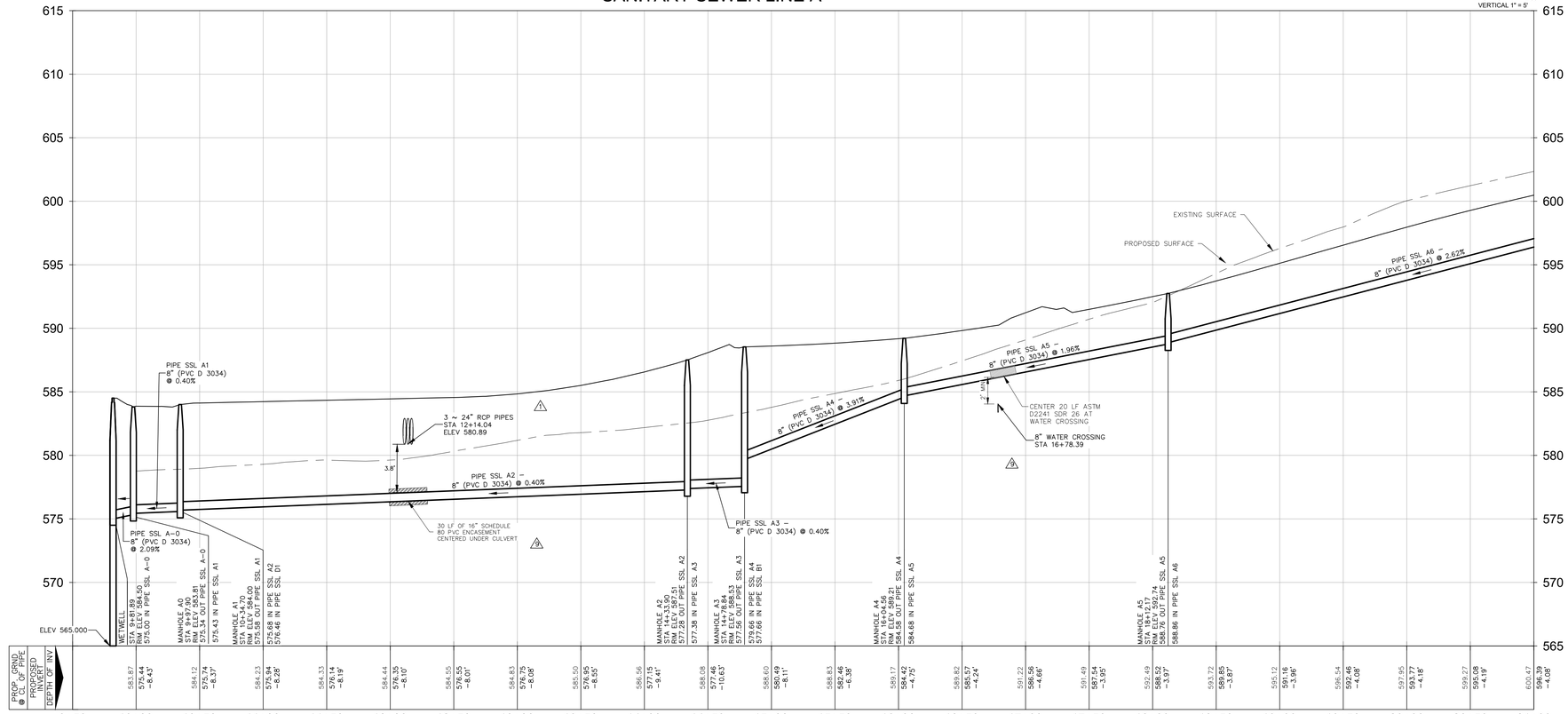




LEGEND

- PROPERTY LINE
- PROPOSED 8" SANITARY SEWER
- PROPOSED MANHOLE
- PROPOSED 8" WATER
- PROPOSED 12" WATER MAIN
- PROPOSED FIRE HYDRANT
- PROPOSED DOUBLE WASTEWATER SERVICE LATERAL
- PROPOSED SINGLE WASTEWATER SERVICE LATERAL
- NEW DOUBLE METERED DUAL WATER SERVICE
- PROPOSED SINGLE METERED WATER SERVICE

SANITARY SEWER LINE A



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JAMES INGALLS
107416
LICENSED
PROFESSIONAL ENGINEER
12/08/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

SANITARY SEWER LINE A
STA 10+00 TO STA 21+00

SHEET 35 OF 64

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INK CIVIL
2021 W SH46, STE 105
NEW BRAUNFELS, TX. 78132
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Drawing Name: N:\Projects\080002 Buck Property - 100ac\Civil\Construction Drawings\35 SANITARY SEWER LINE A STA 10+00 TO STA 21+00.dwg User: chuckwere Dec 08, 2025 - 7:17pm

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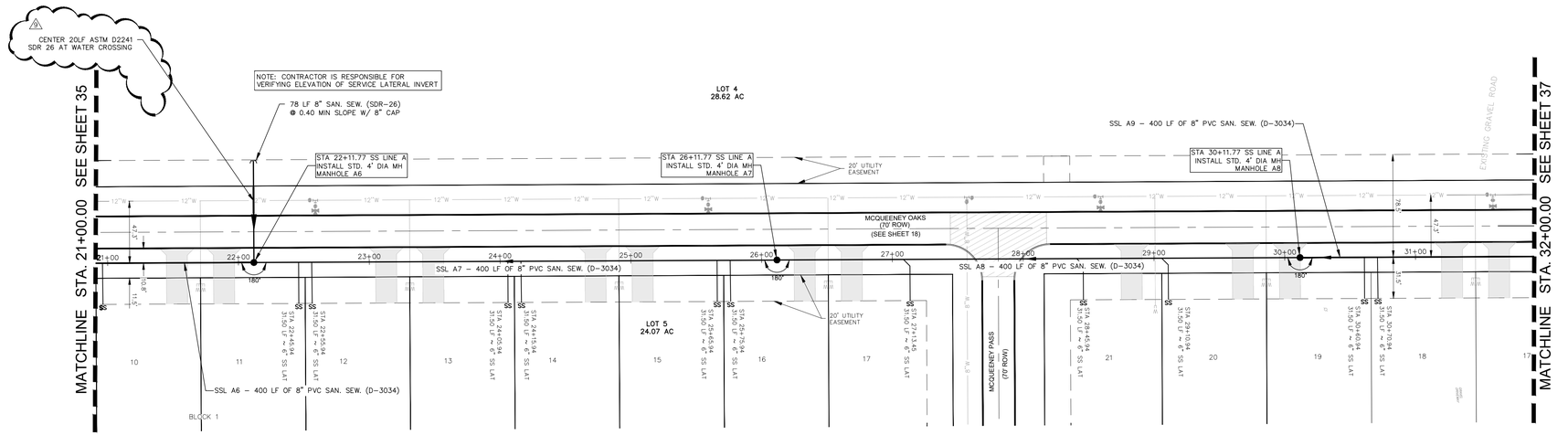

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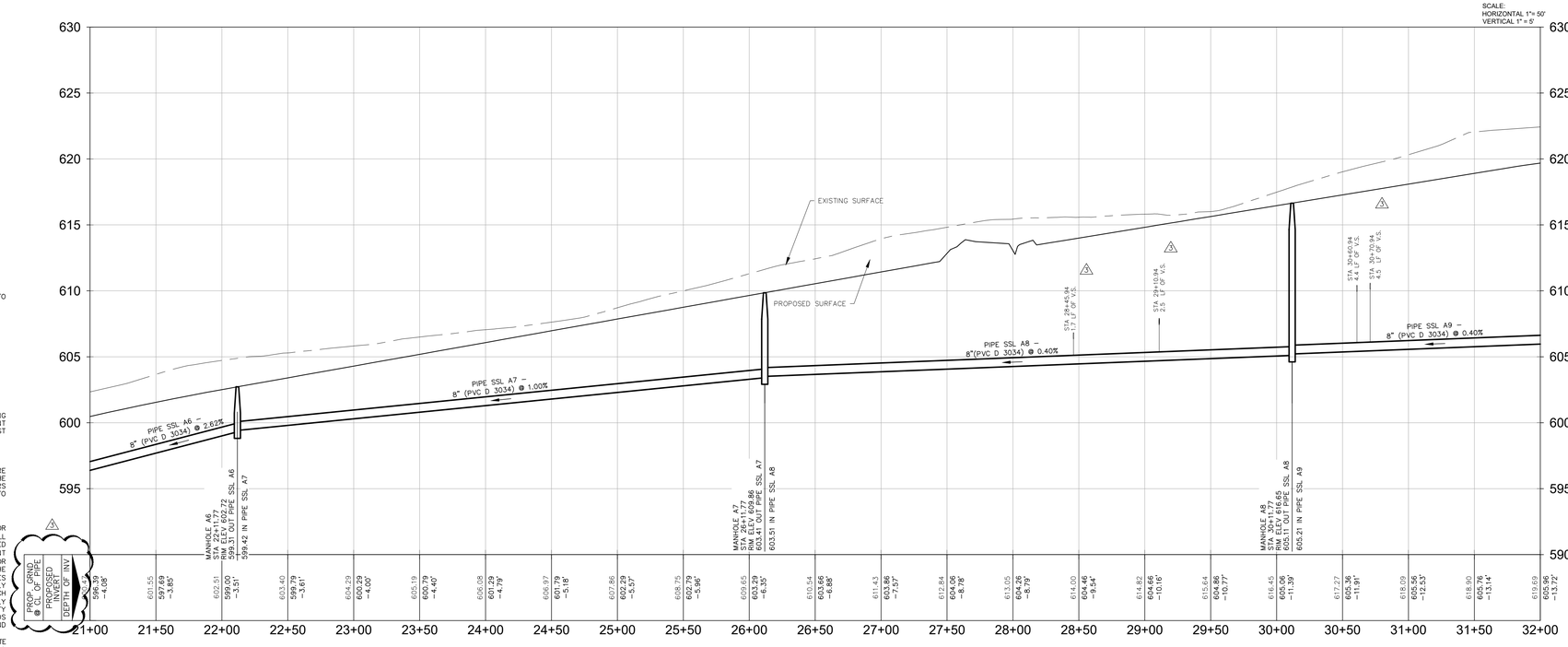

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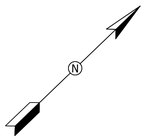

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SANITARY SEWER LINE A STA 21+00 TO STA 32+00

SHEET 36 OF 64

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5	11-10-2025	STREET NAMES REVISED

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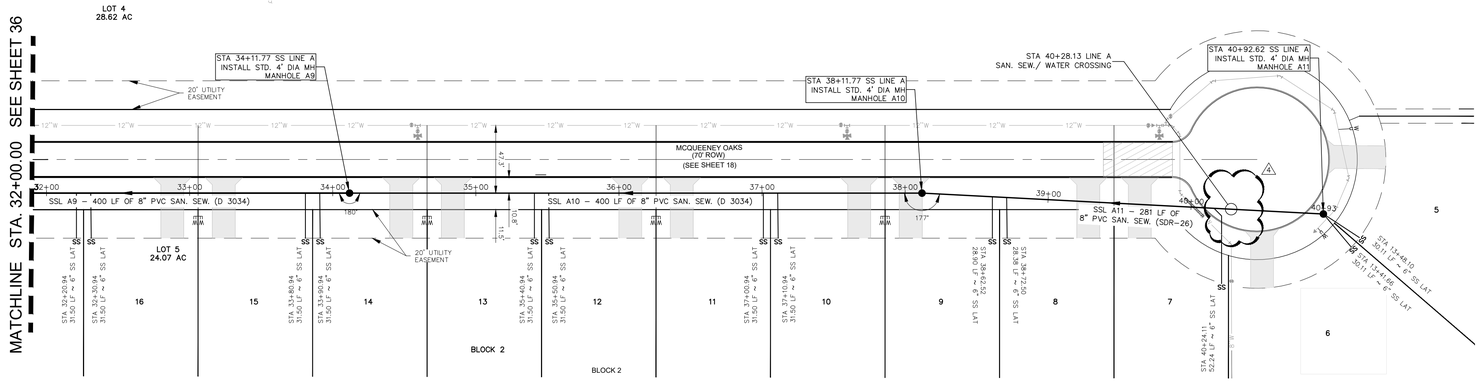

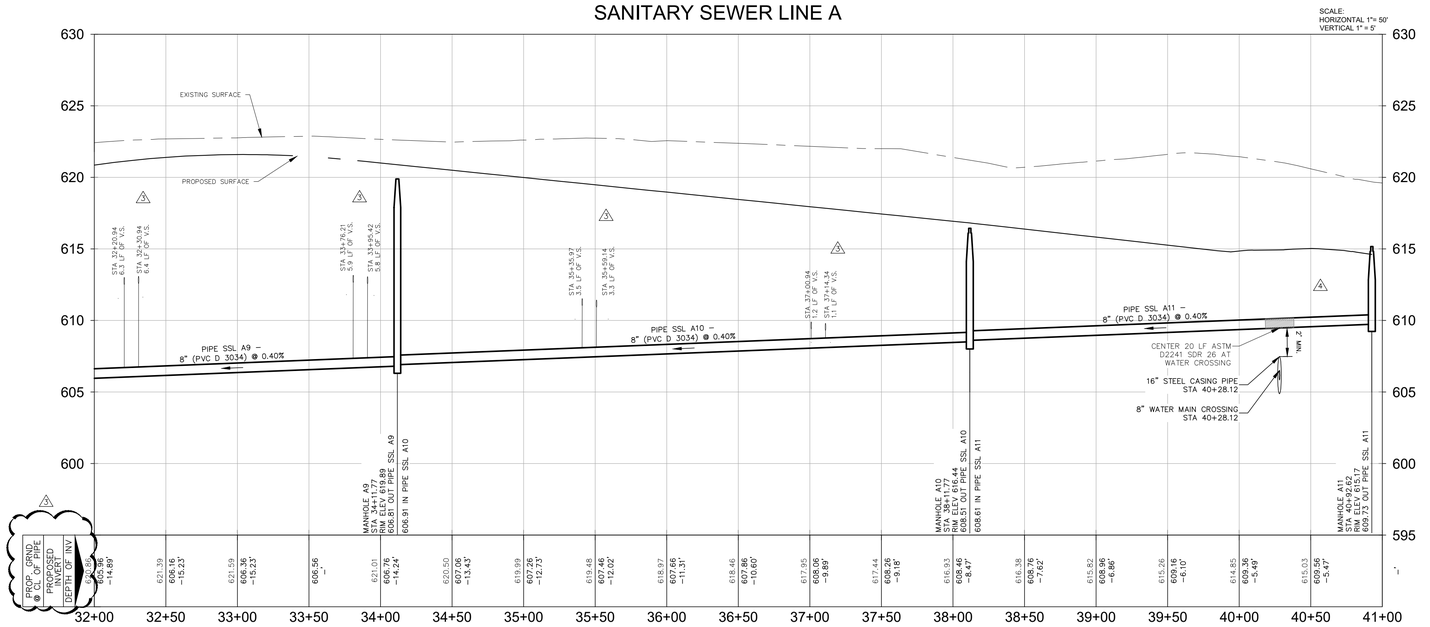

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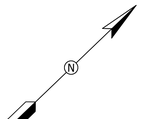

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107416
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SANITARY SEWER LINE A STA 32+00 TO END

SHEET 37 OF 64

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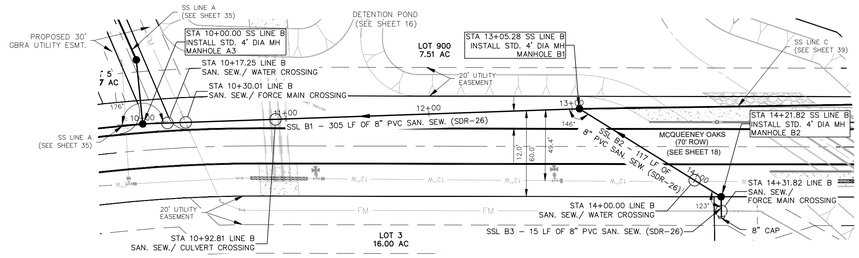
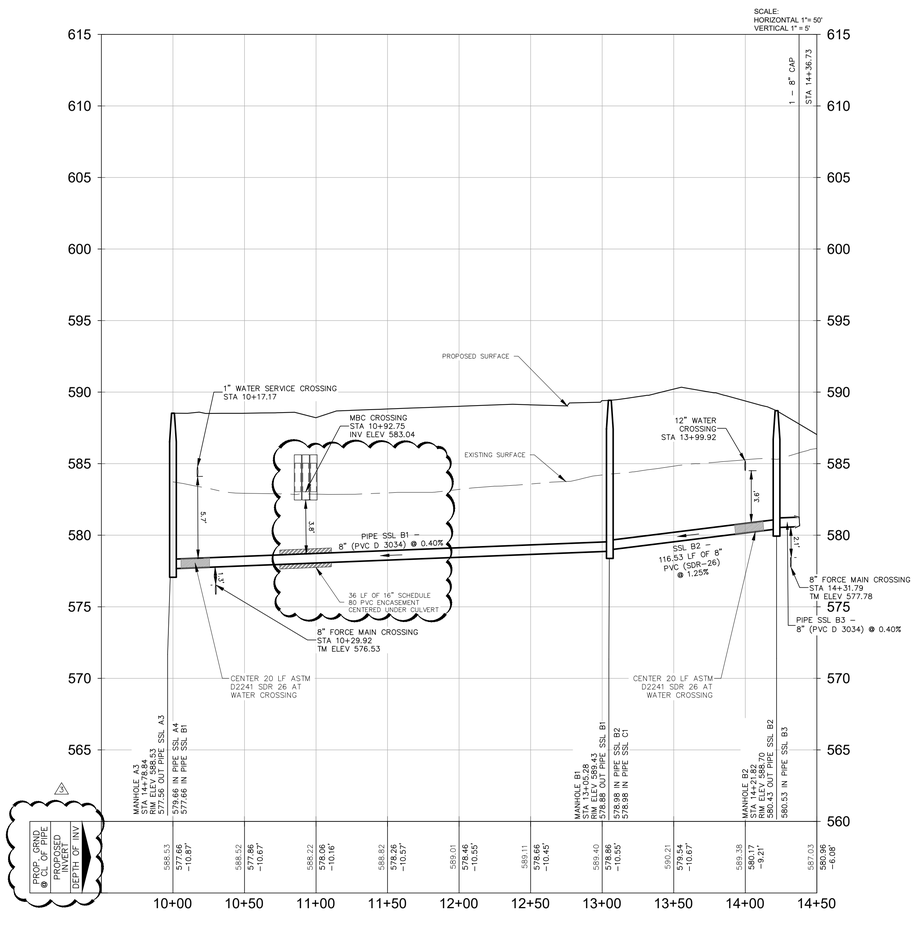
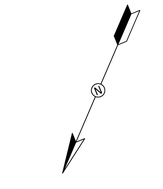


SANITARY SEWER LINE B





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- PROPOSED 12" WATER MAIN
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ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

SANITARY SEWER LINE B

SHEET 38 OF 64

NO	DATE	ISSUES AND REVISIONS
1	07-29-2025	REVISED PER GBRA AND GVSUD COMMENTS
2	08-20-2025	REVISED PER GBRA AND GVSUD COMMENTS

INK CIVIL
2021 W SH46, STE 105
NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 ink-civil.com
TBPE FIRM F-13351

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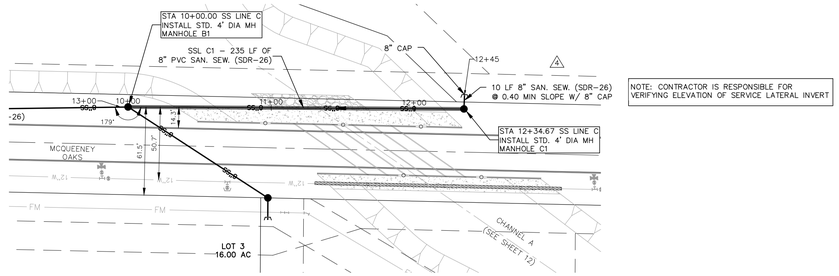
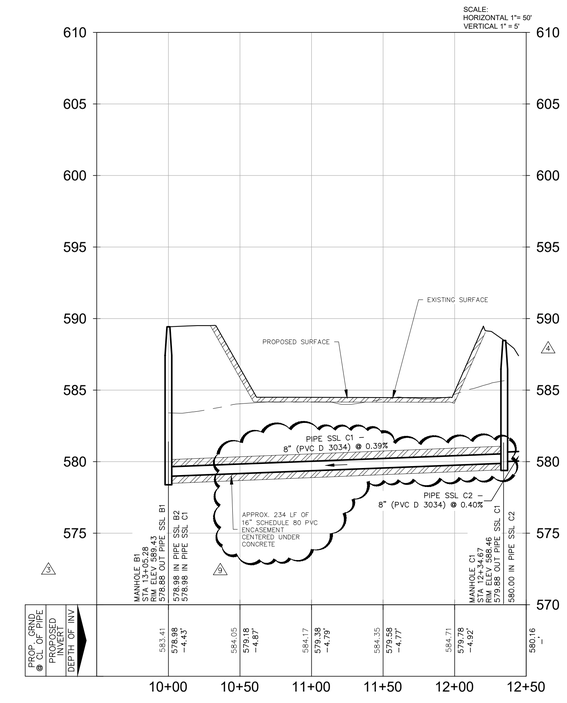
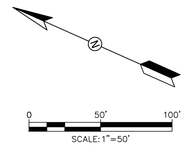


SANITARY SEWER LINE C





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ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

SANITARY SEWER LINE C

SHEET 39 OF 64

NO	DATE	ISSUES AND REVISIONS
1	7-29-2025	REVISED PER GBRA AND GVSUD COMMENTS
2	8-20-2025	REVISED PER GBRA AND GVSUD COMMENTS
3	9-16-2025	REVISED PER GBRA COMMENTS

INK CIVIL
2021 W SH46, STE 105
NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 ink-civil.com
TBPE FIRM F-13351

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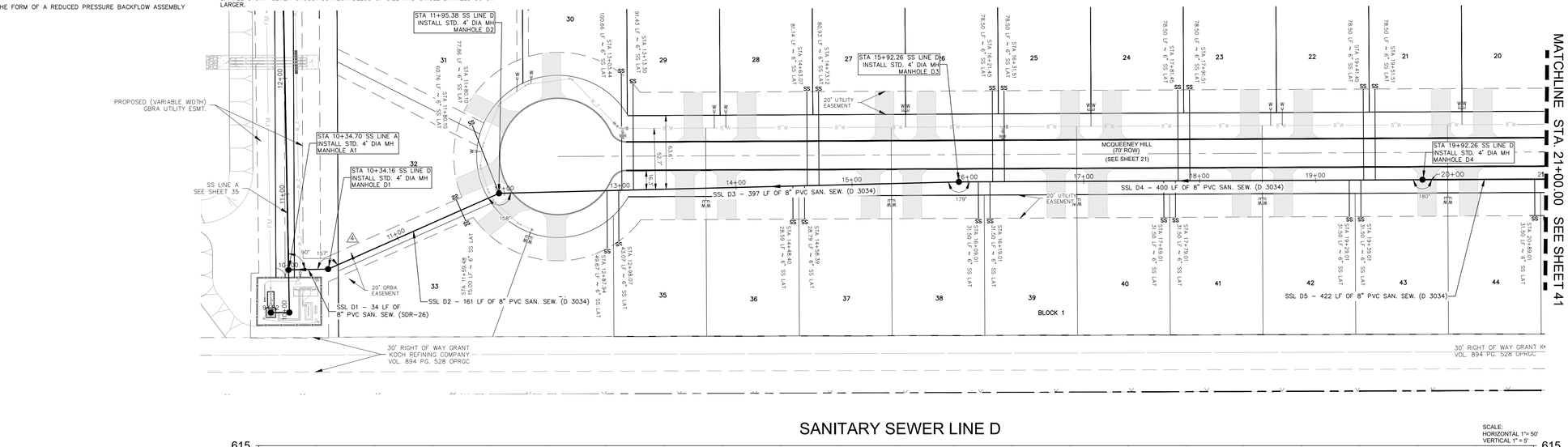
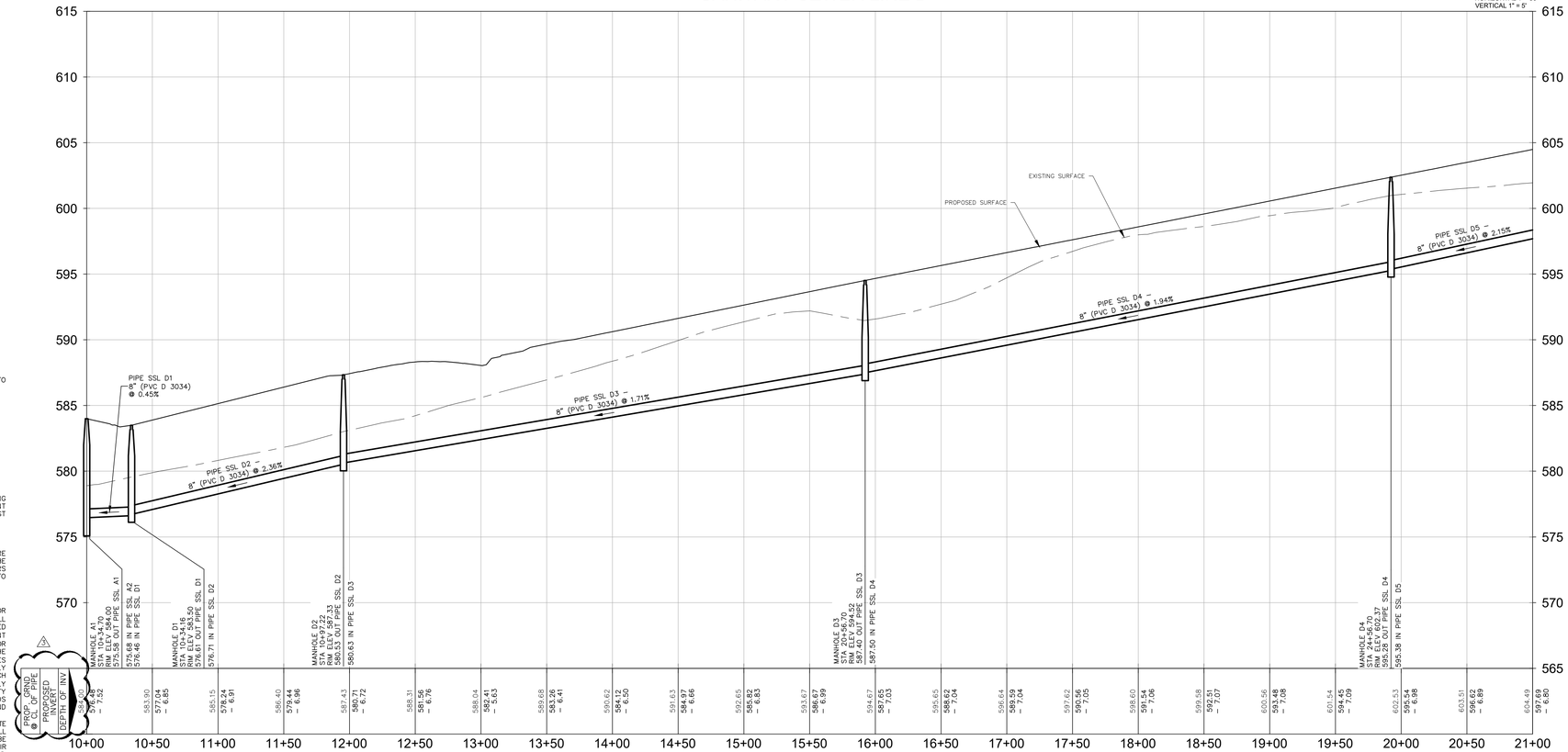


SANITARY SEWER LINE D



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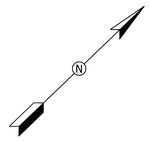
THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR WILL AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE INCURRED BY THEIR FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES, STRUCTURES OR FACILITIES. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES 24-HOURS PRIOR TO COMMENCING CONSTRUCTION.



LEGEND

- PROPERTY LINE
- PROPOSED 8" SANITARY SEWER
- PROPOSED MANHOLE
- 8"W PROPOSED 8" WATER
- 12"W PROPOSED 12" WATER MAIN
- PROPOSED FIRE HYDRANT
- SS PROPOSED SINGLE WASTEWATER SERVICE LATERAL
- NEW DOUBLE METERED DUAL WATER SERVICE
- PROPOSED SINGLE METERED WATER SERVICE

12/08/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

SANITARY SEWER LINE D STA 10+00 TO STA 21+00

SHEET 40 OF 64

NO	DATE	ISSUES AND REVISIONS
1	07-29-2025	REVISED PER GBRA AND GVSUD COMMENTS
2	08-20-2025	REVISED PER GBRA AND GVSUD COMMENTS
3	10-14-2025	REVISED PER GBRA COMMENTS - REMOVAL OF DUAL LATERALS
4	11-10-2025	STREET NAMES REVISED

INK CIVIL
2021 W SH46, STE 105
NEW BRAUNFELS, TX. 78132
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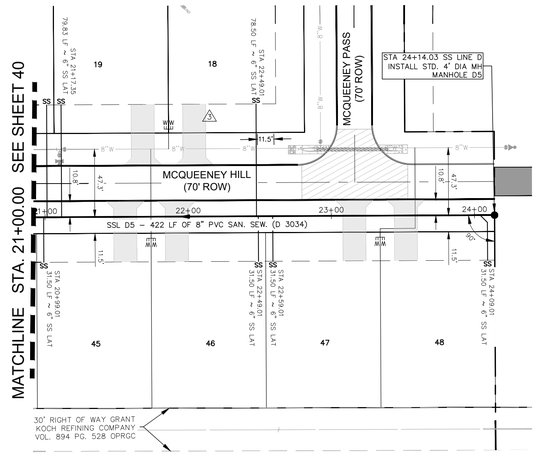
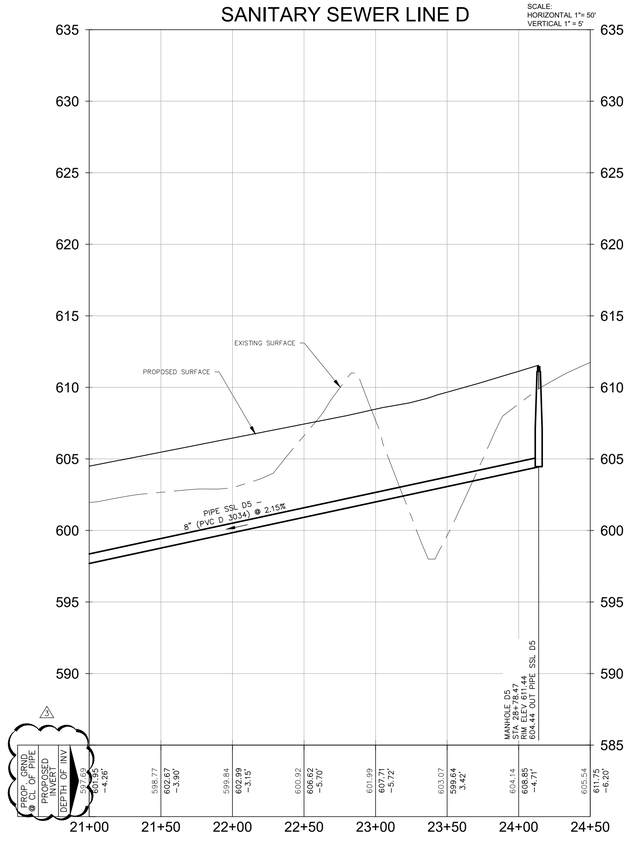
Drawing Name: N:\Projects\080002 Bush Property - 109ac\Civil\Construction Drawings\40 SANITARY SEWER LINE D STA 10+00 TO STA 21+00.dwg User: chuckware Dec 08, 2025 - 7:19pm

GBRA SPECIFIC CONSTRUCTION NOTES:

1. ALL WORK SHALL BE IN ACCORDANCE WITH GBRA STANDARDS AS PUBLISHED AT THE FOLLOWING WEBSITE: HTTP://WWW.GBRA.ORG/PUBLIC/WATERWASTEWATERSERVICES.ASPX
2. COPIES OF EACH CONSTRUCTION SUBMITTAL (SHOP DRAWINGS, PRODUCT DATA, ETC.) SHALL BE PROVIDED FOR GBRA REVIEW AND APPROVAL PRIOR TO FABRICATION. USE CLOUDS, BOXES, ARROWS, ETC., TO CLEARLY MARK ALL PROPOSED OPTIONS AND PART NUMBERS. LIST ANY PROPOSED DEVIATIONS ON THE SUBMITTAL COVER SHEET. ALLOW 21 CALENDAR DAYS FOR REVIEW.
3. ALL WATER AND WASTEWATER INSTALLATIONS MUST BE INSPECTED AND APPROVED BY GBRA PRIOR TO BACKFILLING OR OTHERWISE COVERING THE WORK. THIS INCLUDES CROSSINGS OF WATER AND WASTEWATER BY OTHER UTILITIES. GBRA WILL PERFORM A MAXIMUM OF ONE (1) INSPECTION DAILY FOR ONE (1) HOUR DURATION BETWEEN 8:00AM AND 5:00PM EXCLUDING WEEKENDS AND HOLIDAYS. CALL 830-379-5822 TO SCHEDULE INSPECTIONS (48 HOURS ADVANCE NOTICE IS REQUIRED FOR ALL INSPECTIONS).
4. TRENCH EXCAVATION AND PIPE INSTALLATION WILL NOT BE PERMITTED UNTIL SUBGRADE HAS BEEN ESTABLISHED. SURVEY STAKING MUST BE INSTALLED PRIOR TO AND MAINTAINED DURING TRENCH EXCAVATION AND PIPE INSTALLATION. SURVEY STAKING SHALL INCLUDE HORIZONTAL AND VERTICAL CONTROL AT A MINIMUM OF 50 FOOT STATION INTERVALS. HORIZONTAL OFFSETS SHALL BE 15 FEET MAXIMUM. INSTALL PROPERTY PINS AND STAKES. MARK FINISH GRADE LINES WITH CUT/FILL ON OFFSET STAKES AND PROPERTY STAKES. ALL MARKS SHALL FACE THE PIPELINE. SURVEY STAKING SHALL BE PERFORMED BY THE CONTRACTOR.
5. BACKFLOW PREVENTION IN THE FORM OF A REDUCED PRESSURE BACKFLOW ASSEMBLY MUST BE PROVIDED FOR TEMPORARY CONNECTIONS TO EXISTING WATER LINES. BACKFLOW DEVICES SHALL BE TESTED BY A LICENSED BACKFLOW PREVENTION ASSEMBLY TESTER. SUBMIT TEST REPORTS.
6. PVC MALE ADAPTERS ARE NOT ALLOWED.
7. SANITARY TAPPING SADDLES ARE NOT ALLOWED.
8. MANHOLE INTERNAL DROPS ARE NOT ALLOWED.
9. PIPE BELLS SHALL BE INSTALLED IN UPSTREAM DIRECTION.
10. ALL PIPING SHALL BE DESIGNED IN STRAIGHT ALIGNMENT VERTICALLY AND HORIZONTALLY. PIPE CURVATURE AND/OR DEFLECTION ARE NOT ALLOWED.
11. INSTALL CONCRETE THRUST BLOCKING AND MECHANICAL RESTRAINTS FOR PRESSURE PIPING SYSTEMS.
12. MAINTAIN A MINIMUM OF 10 FEET HORIZONTAL AND 12 INCHES VERTICAL CLEARANCE BETWEEN WATER AND WASTEWATER AND OTHER UTILITIES. SHARED TRENCHES ARE NOT ALLOWED.
13. WATER AND WASTEWATER PIPE LENGTHS SHALL BE CENTERED AT CROSSINGS WITH ALL OTHER UTILITIES, INCLUDING DRY UTILITY SERVICES. BOTH PIPES SHALL BE CENTERED AT WATER AND WASTEWATER CROSSINGS, INCLUDING WASTEWATER SERVICE LATERALS AND FIRE HYDRANT LEADS.
14. WATER AND WASTEWATER PIPING (INCLUDING MAINS, SERVICES, AND LATERALS) SHALL BE SLEEVED IF LOCATED UNDER CONCRETE CHANNELS, BOX CULVERTS, OR MULTIPLE BARREL STORM SEWER CROSSINGS REGARDLESS OF SIZE AND SINGLE BARRELS 30"OR LARGER.
15. VALVE BOXES, EXPOSED PIPING AND VALVES, AND APPURTENANCES SHALL BE PAINTED. PROVIDE PAINTED CURB CUT MARKINGS AT VALVES AND SERVICES.
16. ALL EXPOSED VERTICAL AND HORIZONTAL CONCRETE EDGES SHALL BE FORMED WITH ½"CHAMFER STRIPS.
17. EXISTING FACILITIES THAT ARE DISTURBED SHALL BE RESTORED AND TESTED TO BE IN FULL COMPLIANCE WITH CURRENT GBRA STANDARDS. THE CONTRACTOR SHALL ADJUST EXISTING WATER AND WASTEWATER FACILITIES TO PROPOSED FINISH GRADES INCLUDING BUT NOT LIMITED TO MANHOLES, CLEANOUTS, VALVES, HYDRANTS, APPURTENANCES, ETC.
18. EXISTING MANHOLES THAT ARE DISTURBED SHALL BE RESTORED TO BE IN FULL COMPLIANCE WITH CURRENT GBRA STANDARDS INCLUDING TESTING, CORROSION RESISTANT LINING, RINGS AND COVERS, ETC.
19. GBRA STANDARDS AND DESIGN GUIDELINES FOR DEVELOPER UTILITIES THE CONTRACTOR SHALL MAINTAIN SERVICE TO EXISTING WATER AND WASTEWATER SYSTEMS AT ALL TIMES DURING CONSTRUCTION. ANY WORK INVOLVING POWER OUTAGES, BYPASS PUMPING, PUMP AND HAUL, OR ANY OTHER INTERRUPTION OF FLOW MUST BE PERFORMED BETWEEN 8:00AM AND 5:00PM EXCLUDING WEEKENDS AND HOLIDAYS. ALL NECESSARY TEMPORARY POWER, BYPASS PUMPING, PUMP AND HAUL, TEMPORARY PLUGS, ETC., SHALL BE FURNISHED AND PERFORMED BY THE CONTRACTOR. COORDINATE AND SCHEDULE ANY SUCH ACTIVITIES WITH GBRA AT LEAST TWO (2) WEEKS IN ADVANCE.
20. EXPLOSIVES AND BLASTING ARE NOT ALLOWED.





CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES 48 HOURS PRIOR TO EXCAVATION:

GVSUD	830-914-2330
GBRA	830-379-5822
Spectrum Cable	830-625-3408
Centerpoint Gas	830-643-6434
Robert Sanders	830-643-6903
Damaged Line	888-876-5786
AT&T Telephone	830-303-1333
Erick White PM	210-283-1706
Scott McBrearty (Construction)	210-658-4886
Texas One Call	830-545-6005

C.P.E. LOCATOR

CALL CENTER POINT ENERGY LOCATOR AT 1-800-545-6005, 48HRS BEFORE BEGINNING ANY EXCAVATION. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.181, CENTER POINT ENERGY MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT AND WORK AROUND ANY GAS VALVES THAT ARE IN THE PROJECT AREA.

TELEPHONE LOCATOR

THE EXISTENCE AND LOCATION OF UNDERGROUND CABLE INDICATED ON THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR TO CONTACT THE TELEPHONE COMPANY CABLE LOCATOR 48HRS PRIOR TO EXCAVATION AT 1-800-545-6005,. CONTRACTOR HAS THE RESPONSIBILITY TO PROTECT AND SUPPORT TELEPHONE COMPANY DURING CONSTRUCTION.

TRENCH EXCAVATION SAFETY PROTECTION

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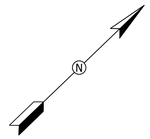

LEGEND

- PROPERTY LINE
- PROPOSED 8" SANITARY SEWER
- PROPOSED MANHOLE
- PROPOSED 8" WATER
- PROPOSED 12" WATER MAIN
- PROPOSED FIRE HYDRANT
- PROPOSED DOUBLE WASTEWATER SERVICE LATERAL
- PROPOSED SINGLE WASTEWATER SERVICE LATERAL
- NEW DOUBLE METERED DUAL WATER SERVICE
- PROPOSED SINGLE METERED WATER SERVICE

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

SANITARY SEWER LINE D
STA 21+00 TO STA 32+00

SHEET 41 OF 64

NO	DATE	ISSUES AND REVISIONS
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INK CIVIL
2021 W SH46, STE 105
NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 ink-civil.com
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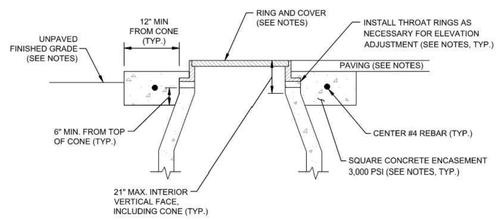
Drawing Name: N:\Projects\080002 Buck Property - 109ac\Civil\Construction Drawings\41 SANITARY SEWER LINE D STA 21+00 TO STA 32+00.dwg User: dhuskeare Dec 08, 2025 - 7:19pm



NOTES:
1. MANHOLE RING CONCRETE ENCASEMENT IS REQUIRED FOR ALL MANHOLES.
2. INSTALL CONCRETE ENCASEMENT SQUARE WITH CURB.
3. MANHOLE RIM ELEVATIONS SHOWN IN PLAN AND PROFILE VIEWS ARE APPROXIMATE.
4. IN UNPAVED AREAS, ASSEMBLY SHALL BE INSTALLED PLUMB/LEVEL. TOP OF CONCRETE ENCASEMENT SHALL BE 2" ABOVE FINISHED GRADE, COVERS SHALL BE 2" ABOVE TOP OF CONCRETE ENCASEMENT, ALL EXPOSED VERTICAL AND HORIZONTAL CONCRETE EDGES SHALL BE FORMED WITH 3/4" CHAMFER STRIPS.
5. IN PAVED AREAS, RINGS AND COVERS SHALL BE FLUSH WITH PAVING AND SLOPED TO MATCH PAVING.
6. THROAT RINGS SHALL BE PRECAST CONCRETE. ALL INTERIOR SURFACES OF MANHOLES SHALL BE CHEMICAL RESISTANT INCLUDING THROAT. UTILIZE NON-SHRINK GROUT FOR INSTALLATION OF THROAT RINGS. GROUT SHALL BE COMPATIBLE WITH THE CHEMICAL RESISTANT SYSTEM.
7. MANHOLE RINGS AND COVERS SHALL BE EJCO PRODUCT NUMBER 42432109W01, SIP INDUSTRIES ITEM NUMBER 4087, OR EQUAL.
8. SCHEDULE GBRA INSPECTOR TO WITNESS FINAL BOLTING OF MANHOLE COVERS.

GBRA Guadalupe-Blanco River Authority	WASTEWATER MANHOLE RING ENCASEMENT	REVISED	SCALE
		JUL. 28, 2025	NONE
		DETAIL NO. 600	

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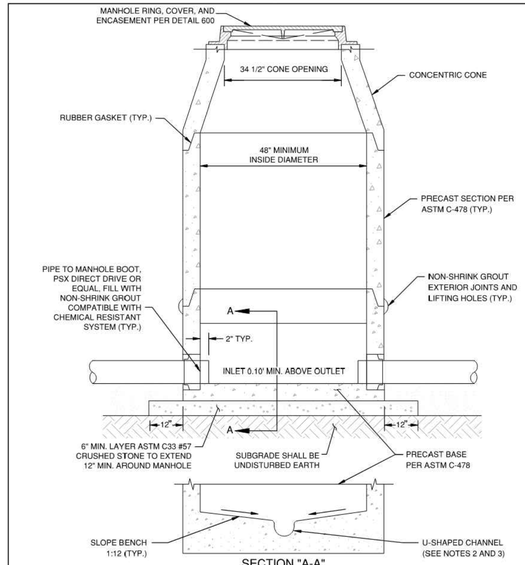

SECTION "A-A"
TYPICAL PRECAST BASE

NOTES:
1. UNLESS INDICATED OTHERWISE, INSTALL COMPONENTS PLUMB/LEVEL.
2. ALL INTERIOR SURFACES SHALL BE CHEMICAL RESISTANT INCLUDING THROAT RINGS, BENCH, AND CHANNEL INVERTS. REFERENCE GBRA STANDARDS FOR CHEMICAL RESISTANT MATERIAL REQUIREMENTS.
3. IF CHEMICAL RESISTANT LINING IS UTILIZED, ADJUST CHANNEL INVERTS TO ACCOMMODATE THICKNESS OF LINING SUCH THAT CHANNEL INVERTS, AFTER LINING, MATCH PIPE INVERTS.
4. PROVIDE 6" MINIMUM CLEARANCE BETWEEN CONCRETE PENETRATIONS, AND BETWEEN CONCRETE PENETRATIONS AND CONCRETE JOINTS, AS MEASURED FROM NEAREST EDGE TO NEAREST EDGE.

GBRA Guadalupe-Blanco River Authority	WASTEWATER PRECAST MANHOLE	REVISED	SCALE
		JUL. 28, 2025	NONE
		DETAIL NO. 620	

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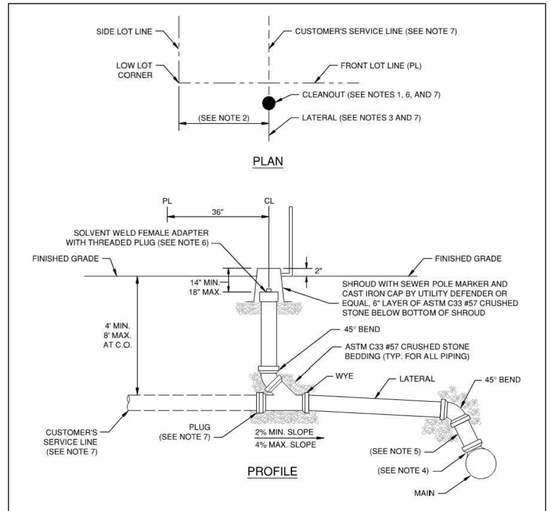

PLAN

PROFILE

NOTES:
1. CLEANOUTS (C.O.) ARE NOT ALLOWED WITHIN DRIVEWAYS.
2. PROVIDE SINGLE WASTEWATER SERVICES 5 FT FROM LOW LOT CORNER (TYPICAL). PROVIDE 8 FT WHERE LOT CORNER IS SHARED WITH DRY UTILITIES AND 10 FT WHERE LOT CORNER IS SHARED WITH A FIRE HYDRANT OR AIR RELEASE VALVE.
3. PIPE AND FITTINGS SHALL BE 6" DIAMETER, GREEN COLOR, GASKETED ASTM D3034 SDR26, UNLESS NOTED OTHERWISE. AT WATER CROSSINGS PIPE AND FITTINGS SHALL BE WHITE COLOR, GASKETED, AND 150 PSI MINIMUM PRESSURE RATED.
4. UTILIZE SANITARY TEES FOR NEW CONSTRUCTION. UTILIZE TAPPING SADDLES FOR EXISTING MAINS (NAPCO PART H4308-6R OR EQUAL, ADJUST PART NUMBER FOR SIZE REQUIRED). TAPPING SADDLES ARE NOT ALLOWED FOR NEW CONSTRUCTION.
5. INSTALL PIPE BETWEEN FITTINGS IF NECESSARY. INSTALL PER VERTICAL STACK DETAIL 580 IF NECESSARY OR WHERE SHOWN.
6. CLEANOUT RISER AND SHROUD SHALL BE INSTALLED PLUMB/LEVEL. CENTERLINE (CL) OF CLEANOUT RISER SHALL BE 3 FT FROM PROPERTY LINE (PL).
7. ENTIRE ASSEMBLY SHALL BE FURNISHED AND INSTALLED BY THE STREET UTILITY CONTRACTOR, WITH EXCEPTION OF CUSTOMER'S SERVICE LINE. CUSTOMER'S PLUMBER SHALL REMOVE PLUG, INSTALL CUSTOMER'S SERVICE LINE, VERIFY ANY FINISHED GRADE MODIFICATIONS AND ADJUST ASSEMBLY ACCORDINGLY, AND RESTORE ANY DISTURBED WORK.

GBRA Guadalupe-Blanco River Authority	WASTEWATER LATERAL AND CLEANOUT	REVISED	SCALE
		JUL. 28, 2025	NONE
		DETAIL NO. 570	

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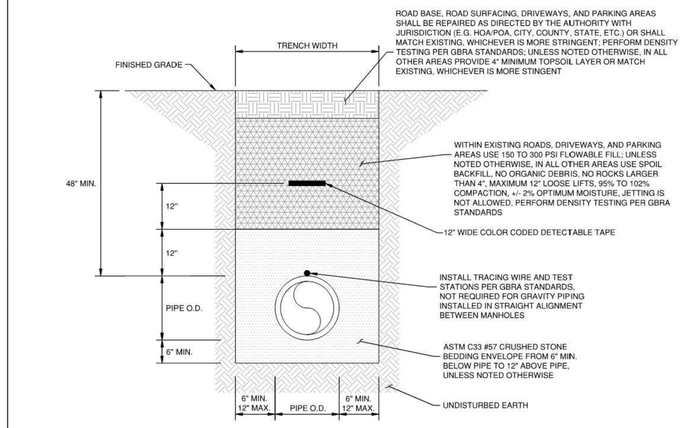

GBRA Guadalupe-Blanco River Authority	PIPE TRENCH	REVISED	SCALE
		JUL. 28, 2025	NONE
		DETAIL NO. 420	

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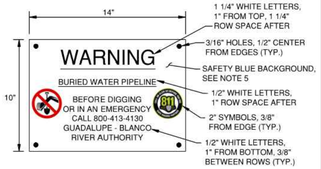
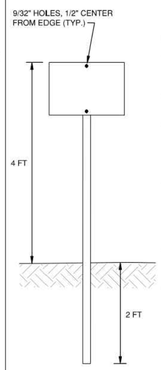
TYPE 1 PIPELINE MARKER	TYPE 2 PIPELINE MARKER



NOTES:
1. MARKERS SHALL BE FABRICATED IN ACCORDANCE WITH TXDOT ITEM 636 TYPE B.
2. INCLUDE "NO DIG" SYMBOL AND "811 CALL OR CLICK" SYMBOL.
3. INSTALL TYPE 1 MARKERS ON PIPE CENTERLINE AT ALL GATE AND FENCE CROSSINGS AND AT ANY OTHER LOCATIONS INDICATED ON THE DRAWINGS AS DIRECTED BY GBRA.
4. ATTACH TO GATES AND FENCES WITH 14 GAUGE STAINLESS STEEL WIRE.
5. COLORS AND LABELS SHOWN ARE FOR POTABLE WATER. FOR WASTEWATER, CHANGE BACKGROUND TO SAFETY GREEN AND REPLACE "WATER" WITH "SEWER". FOR RECLAIMED, CHANGE BACKGROUND TO SAFETY PURPLE AND REPLACE "WATER" WITH "RECLAIMED WATER". FOR RAW WATER, CHANGE BACKGROUND TO TAN AND REPLACE "WATER" WITH "RAW WATER".
6. INSTALL PLUMB/LEVEL.



NOTES:
1. REFERENCE TYPE 1 MARKER DETAIL FOR SIGN REQUIREMENTS. ATTACHMENT HOLES WILL DIFFER AS SHOWN.
2. POST SHALL BE DRIVE-IN TYPE GALVANIZED U-CHANNEL (MCMASTER-CARR 5735T61 OR EQUAL).
3. USE 1/4" DIAMETER HOT DIP GALVANIZED BOLTS, FLAT WASHERS, LOCK WASHERS, AND NUTS TO ATTACH SIGN TO POST. INSTALL FLAT WASHERS AT BOLTS AND NUTS. INSTALL BOLT HEADS ON SIGN FACE WITH NUTS ON POST. DO NOT OBSTRUCT LETTERING.
4. TYPE 2 MARKERS ARE REQUIRED IN UNPAVED AREAS AT: ALL MANHOLES AND VAULTS, CENTERLINE OF ALL MAIN LINE BENDS, CENTERLINE OF ALL PLUGS/CAPS, 3 FT FROM ALL VALVE BOXES, AND AT ANY OTHER LOCATIONS INDICATED ON THE DRAWINGS AS DIRECTED BY GBRA.
5. SIGNS SHALL BE INSTALLED PARALLEL WITH PIPELINES AND SHALL FACE ADJACENT ROADS, EXACT LOCATION AND ORIENTATION AS DIRECTED BY GBRA.
6. INSTALL PLUMB/LEVEL.

GBRA Guadalupe-Blanco River Authority	PIPELINE MARKERS	REVISED	SCALE
		JUL. 28, 2025	NONE
		DETAIL NO. 460	

Page 155

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED
PROFESSIONAL ENGINEER
12/08/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

SANITARY SEWER DETAILS I

SHEET 42 OF 64

NO	DATE	ISSUES AND REVISIONS
1	08-20-2025	REVISED PER GBRA AND GVSUD COMMENTS

INK CIVIL
2021 W SH46, STE 105
NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 ink-civil.com
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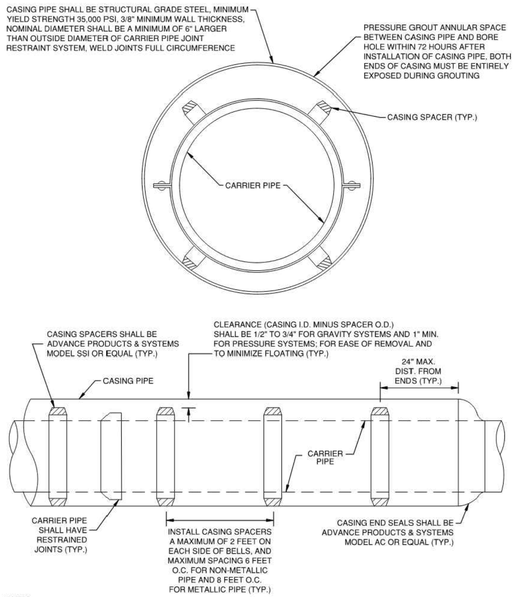
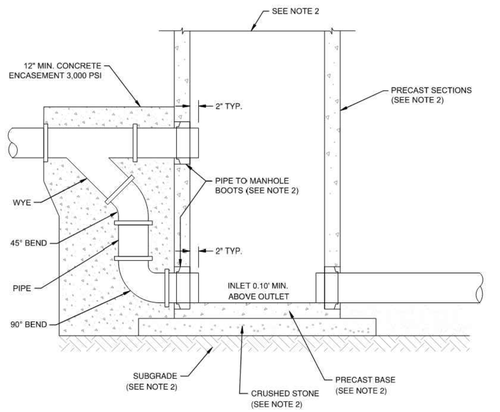
Drawing Name: N:\Projects\086002 Buck Property - 109ac\Civil\Construction Drawings\43 SANITARY SEWER DETAILS II.dwg User: dhuckaba Dec 05, 2025 - 7:19pm



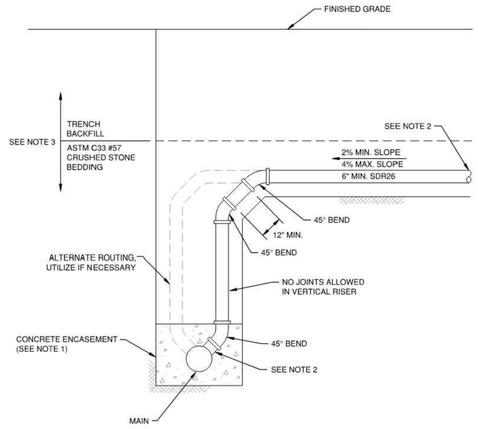
NOTES:
THE MATERIALS SHOWN APPLY TO JACK AND BORE INSTALLATIONS AND STREAM/RIVER CROSSING. FOR ROAD CROSSINGS, CASING SHALL EXTEND 5 FEET MINIMUM BEYOND ROW ON EACH END. OPEN CUT SLEEVING OF SUBDIVISION UTILITIES UNDER STORM SEWER MAY BE C900 DR18 CASING (COLOR TO MATCH CARRIER PIPE) AND ADVANCE PRODUCTS & SYSTEMS MODEL CI SPACERS, OR EQUAL, WITH STAINLESS STEEL HARDWARE. REFERENCE GBRA STANDARDS AND DESIGN GUIDELINES FOR ADDITIONAL SLEEVE REQUIREMENTS. THE CLEARANCE AND DIMENSIONS SHOWN APPLY TO ALL INSTALLATIONS.

GBRA Guadalupe-Blanco River Authority	CASING AND SPACERS	REVISED	SCALE
		JUL. 28, 2025	NONE
		DETAIL NO. 230	



NOTES:
1. A WASTEWATER COLLECTION SYSTEM PIPE, INCLUDING SERVICE LATERALS, ENTERING A MANHOLE MORE THAN 24" ABOVE THE MANHOLE OUT INVERT MUST HAVE AN EXTERNAL DROP PIPE. INTERNAL DROPS ARE NOT ALLOWED.
2. REFERENCE DETAIL 620 FOR ADDITIONAL REQUIREMENTS.

GBRA Guadalupe-Blanco River Authority	WASTEWATER DROP MANHOLE	REVISED	SCALE
		JUL. 28, 2025	NONE
		DETAIL NO. 560	



NOTES:
1. CONCRETE ENCASEMENT SHALL BE PLACED, UPON AND AGAINST UNDISTURBED EARTH.
2. REFERENCE DETAIL 570 FOR ADDITIONAL REQUIREMENTS.
3. REFERENCE DETAIL 420 FOR ADDITIONAL REQUIREMENTS.
4. UNLESS INDICATED OTHERWISE, INSTALL COMPONENTS PLUMB/LEVEL.

GBRA Guadalupe-Blanco River Authority	WASTEWATER LATERAL VERTICAL STACK	REVISED	SCALE
		JUL. 28, 2025	NONE
		DETAIL NO. 580	

Drawing Name: N:\Projects\GBR002 Buck Property - 109ac\Civil Construction Drawings\43 SANITARY SEWER DETAILS II.dwg User: dhuckaere Dec 08, 2025 - 7:19pm

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED
PROFESSIONAL ENGINEER
12/08/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

SANITARY SEWER DETAILS II

SHEET 43 OF 64

NO	DATE	ISSUES AND REVISIONS
1	08-20-2025	REVISED PER GBRA AND GVSUD COMMENTS
2	10-14-2025	REVISED PER GBRA COMMENTS - REMOVAL OF DUAL LATERALS

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NOTES:

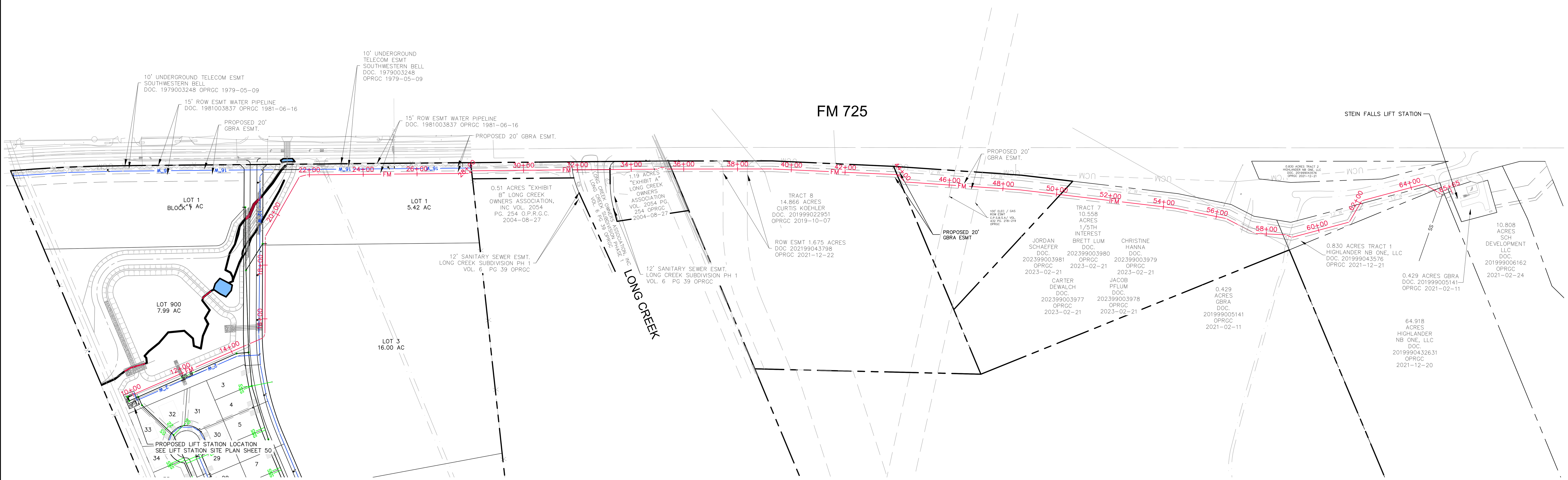
1. GATE VALVES ON FIRE HYDRANT LEADS SHALL BE RESTRAINED AT THE TEE. SEE THIS SHEET FOR CALLOUTS FOR ANCHOR TEES FOR FIRE HYDRANTS.
2. THE MAIN SUPPLY LINE THAT SUPPLIES ALL DOMESTIC METERS WITHIN THIS PROJECT SHALL REQUIRE AN RP BACKFLOW PREVENTION.
3. ALL IRRIGATION METERS SHALL HAVE AN RP BACKFLOW PREVENTION.
4. THE ENTIRE HYDRANT ASSEMBLY FROM THE MAIN TO THE HYDRANT IS TO BE RESTRAINED.
5. MINIMUM SLOPE ALLOWED FOR SEWER SERVICE LATERALLS SHALL BE 2%

MCQUEENEY TRACT	
ITEM	QTY.
SANITARY SEWER FORCE MAIN (8" DR-18 PVC-900) GREEN PIPE	5483 LF

0 200' 400'
SCALE: 1"=200'

LEGEND

— — —	PROPERTY LINE
FM	PROPOSED 8" FORCE MAIN
SS	PROPOSED 8" SANITARY SEWER
●	PROPOSED MANHOLE
SS	PROPOSED SEWER LATERAL
12"W	PROPOSED 12" WATER MAIN
16"W	PROPOSED 16" WATER MAIN
8"W	PROPOSED 8" WATER MAIN
1"W	PROPOSED 1" WATER SERVICE
	PROPOSED SINGLE METERED WATER SERVICE
	NEW FIRE HYDRANT
12"W	EXISTING 12" WATER MAIN
	EXISTING POWER POLE
OHE	EXISTING OVERHEAD ELECTRIC
UCM	EXISTING UNDERGROUND COMM LINE
X	EXISTING FENCE



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SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

OVERALL FORCE MAIN PLAN

SHEET 44 OF 64

NO	DATE	ISSUES AND REVISIONS
△		

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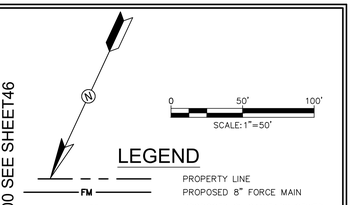
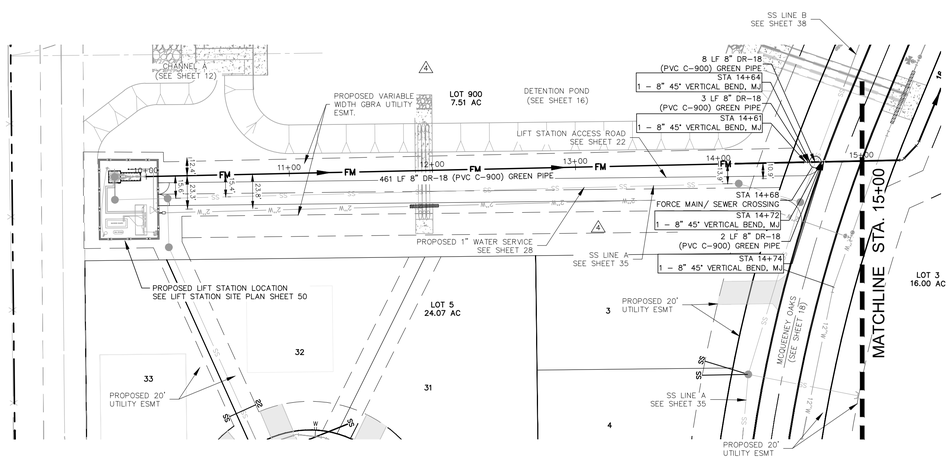
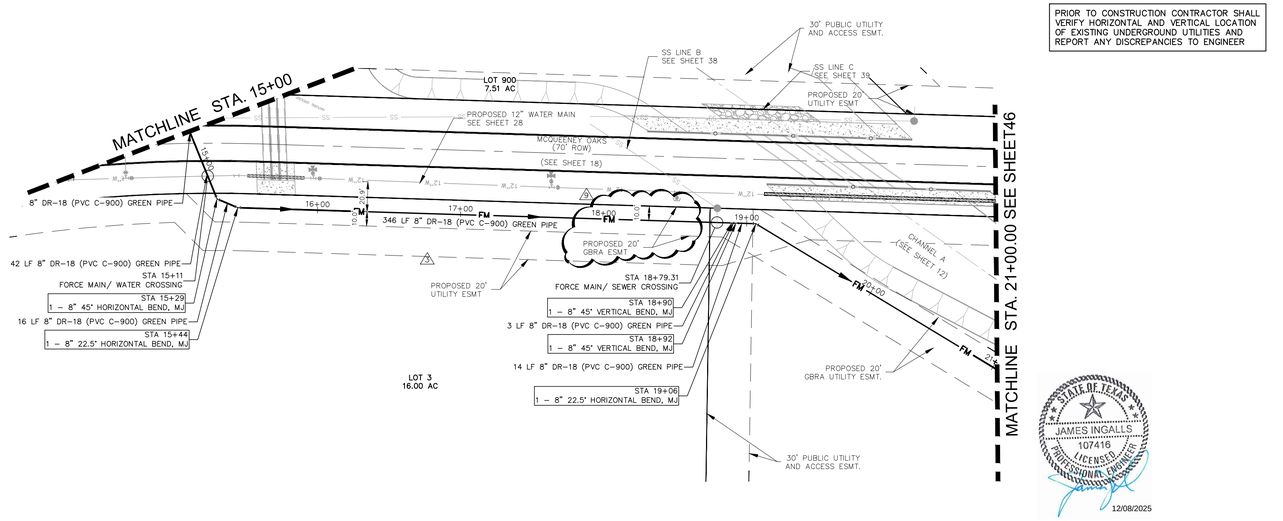


PRIOR TO CONSTRUCTION CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL LOCATION OF EXISTING UNDERGROUND UTILITIES AND REPORT ANY DISCREPANCIES TO ENGINEER





CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES 48 HOURS PRIOR TO EXCAVATION:

GVSUD	830-914-2330
GBRA	830-379-5822
Spectrum Cable	830-625-3408
Centerpoint Gas	830-643-6434
Robert Sanders	830-643-6903
Damaged Line	888-876-5786
AT&T Telephone	830-303-1333
Erick White PM	210-283-1706
Scott McBrearty (Construction)	210-658-4886
Texas One Call	830-545-6005

C.P.E. LOCATOR

CALL CENTER POINT ENERGY LOCATOR AT 1-800-545-6005, 48HRS BEFORE BEGINNING ANY EXCAVATION. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.181, CENTER POINT ENERGY MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT AND WORK AROUND ANY GAS VALVES THAT ARE IN THE PROJECT AREA.

TELEPHONE LOCATOR

THE EXISTENCE AND LOCATION OF UNDERGROUND CABLE INDICATED ON THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR TO CONTACT THE TELEPHONE COMPANY CABLE LOCATOR 48HRS PRIOR TO EXCAVATION AT 1-800-545-6005,. CONTRACTOR HAS THE RESPONSIBILITY TO PROTECT AND SUPPORT TELEPHONE COMPANY DURING CONSTRUCTION.

TRENCH EXCAVATION SAFETY PROTECTION

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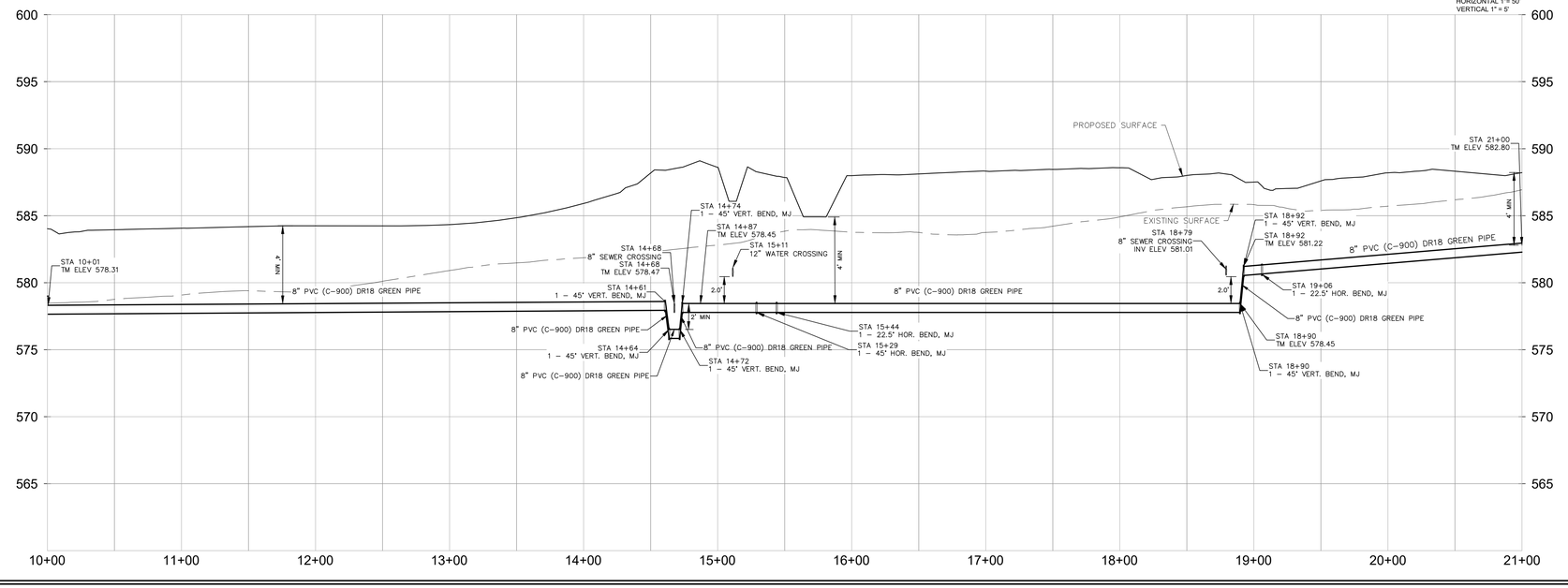
FORCE MAIN

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



NO	DATE	ISSUES AND REVISIONS
1	7-29-2025	REVISED PER GBRA AND GVSUD COMMENTS
2	8-20-2025	REVISED PER GBRA AND GVSUD COMMENTS
3	9-16-2025	REVISED PER GBRA COMMENTS

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS
SUBDIVISION

FORCE MAIN
STA 10+00 TO STA 21+00

SHEET 45 OF 64

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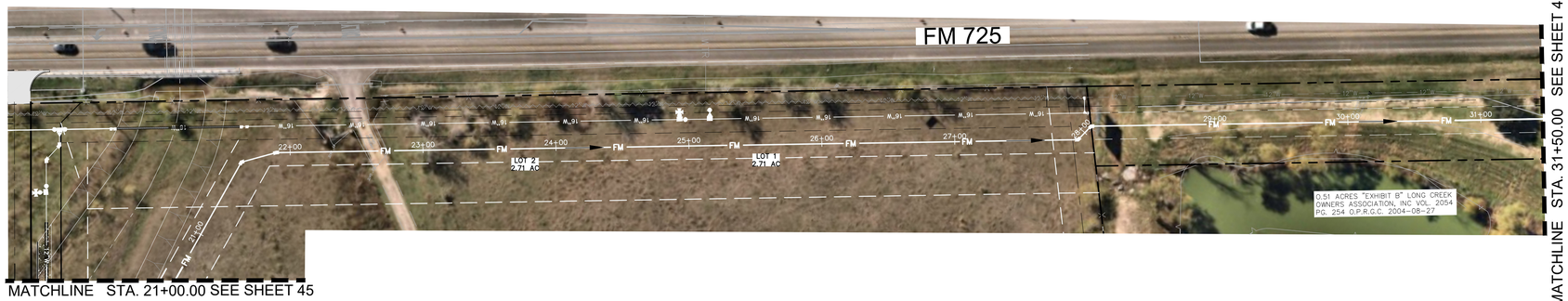
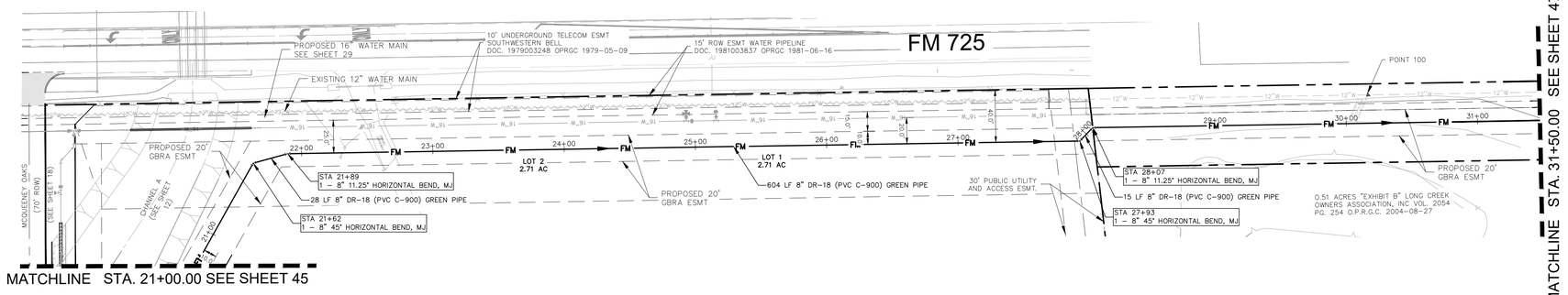
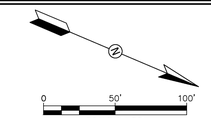


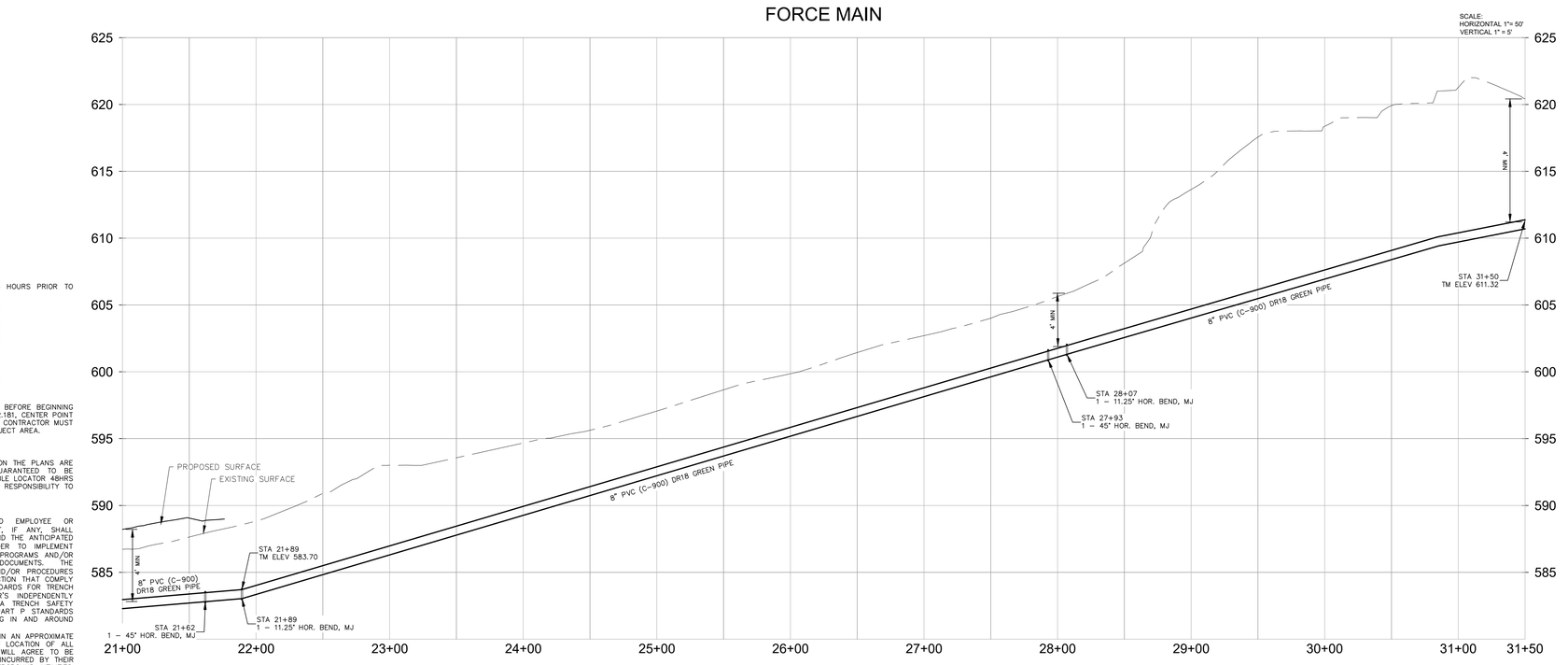




LEGEND

- PROPERTY LINE
- FM — PROPOSED 8" FORCE MAIN
- SS — PROPOSED 8" SANITARY SEWER
- PROPOSED MANHOLE
- PROPOSED SEWER LATERAL
- 12"W — PROPOSED 12" WATER MAIN
- 16"W — PROPOSED 16" WATER MAIN
- 1"W — PROPOSED 1" WATER SERVICE
- PROPOSED SINGLE METERED WATER SERVICE
- NEW FIRE HYDRANT
- EXISTING POWER POLE
- OHE — EXISTING OVERHEAD ELECTRIC
- UCM — EXISTING UNDERGROUND COMM LINE
- X — EXISTING FENCE

PRIOR TO CONSTRUCTION CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL LOCATION OF EXISTING UNDERGROUND UTILITIES AND REPORT ANY DISCREPANCIES TO ENGINEER



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AT&T Telephone	830-303-1333
Erick White PM	210-283-1706
Scott McBrearty (Construction)	210-658-4886
Texas One Call	830-545-6005

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STATE OF TEXAS
JAMES INGALLS
107416
LICENSED
PROFESSIONAL ENGINEER
12/08/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

FORCE MAIN STA 21+00 TO STA 31+50

SHEET 46 OF 64

NO	DATE	ISSUES AND REVISIONS
1	07-29-2025	REVISED PER GBRA AND GVSUD COMMENTS

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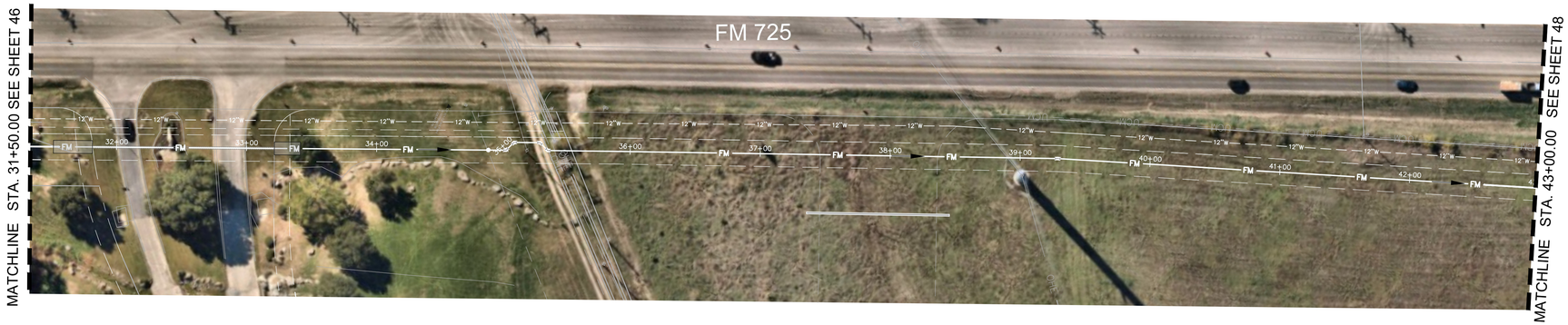

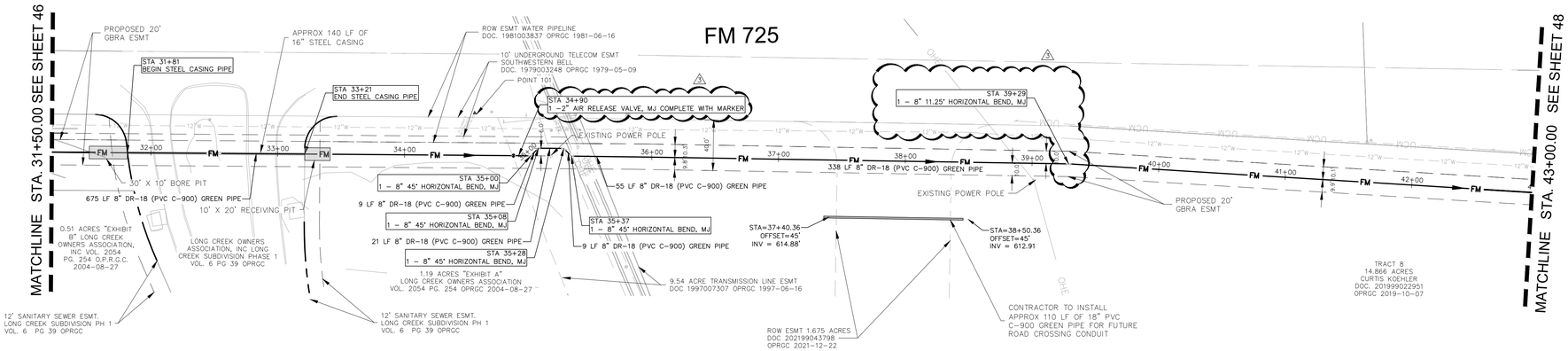

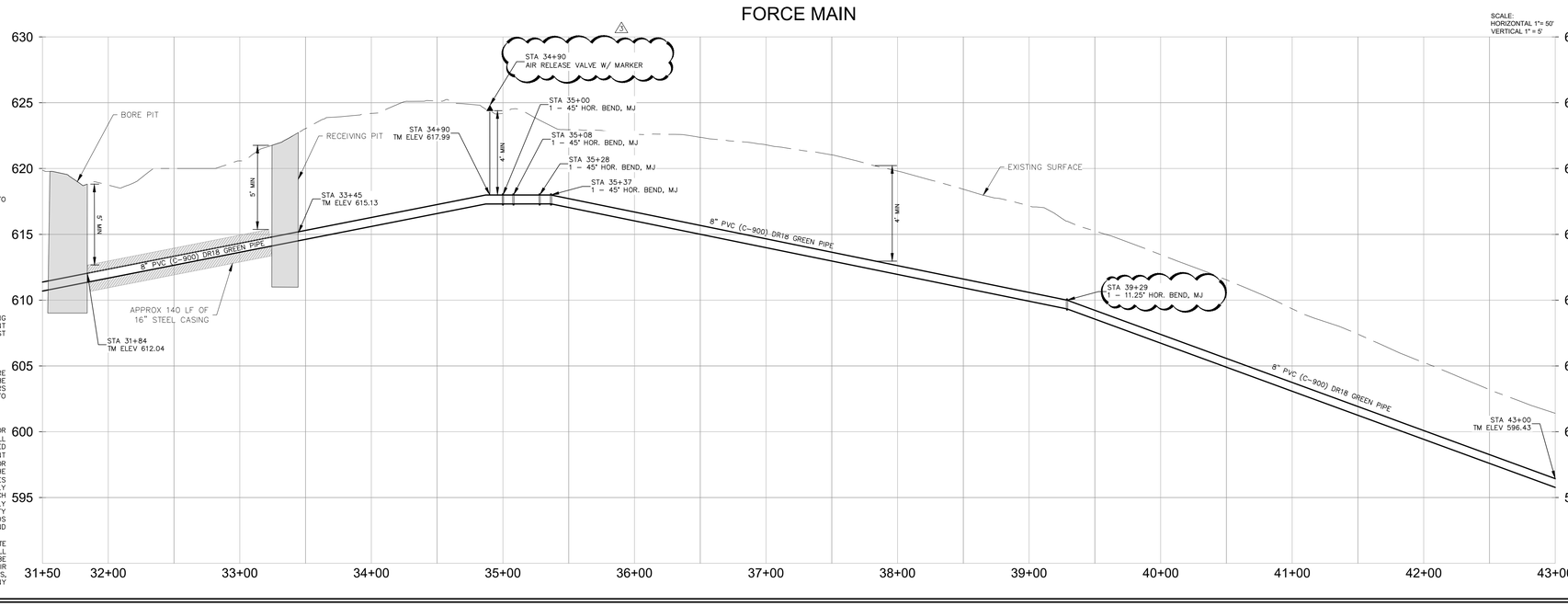

LEGEND

- PROPERTY LINE
- FM — PROPOSED 8" FORCE MAIN
- SS — PROPOSED 8" SANITARY SEWER
- PROPOSED MANHOLE
- PROPOSED SEWER LATERAL
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- PROPOSED SINGLE METERED WATER SERVICE
- NEW FIRE HYDRANT
- EXISTING POWER POLE
- OHE — EXISTING OVERHEAD ELECTRIC
- UCM — EXISTING UNDERGROUND COMM LINE
- X — EXISTING FENCE

0 50' 100'
SCALE: 1"=50'

PRIOR TO CONSTRUCTION CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL LOCATION OF EXISTING UNDERGROUND UTILITIES AND REPORT ANY DISCREPANCIES TO ENGINEER

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STATE OF TEXAS
JAMES INGALLS
107416
LICENSED
PROFESSIONAL ENGINEER
12/08/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

FORCE MAIN
STA 31+50 TO STA 43+00

SHEET 47 OF 64

NO	DATE	ISSUES AND REVISIONS
1	07-29-2025	REVISED PER GBRA AND GVSUD COMMENTS

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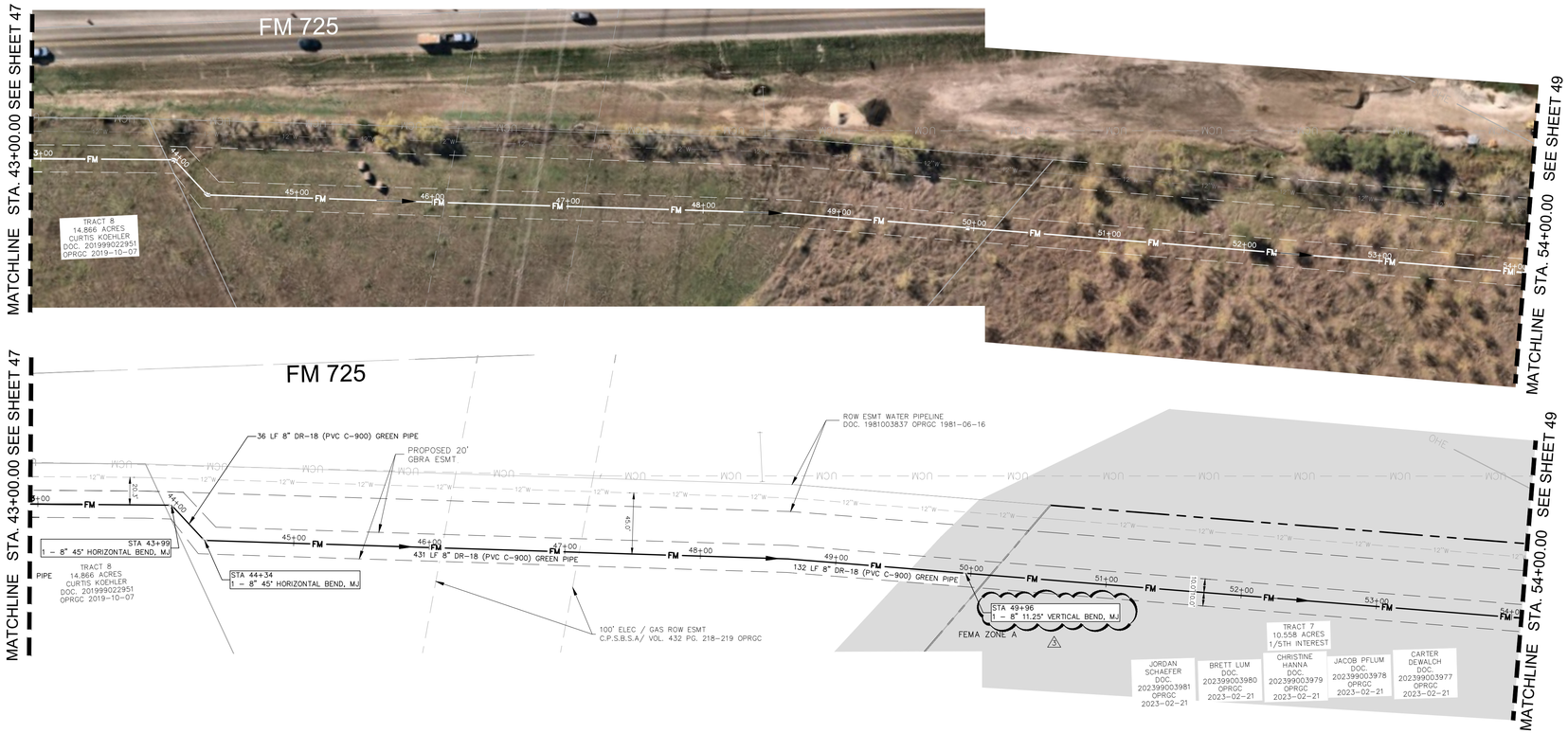

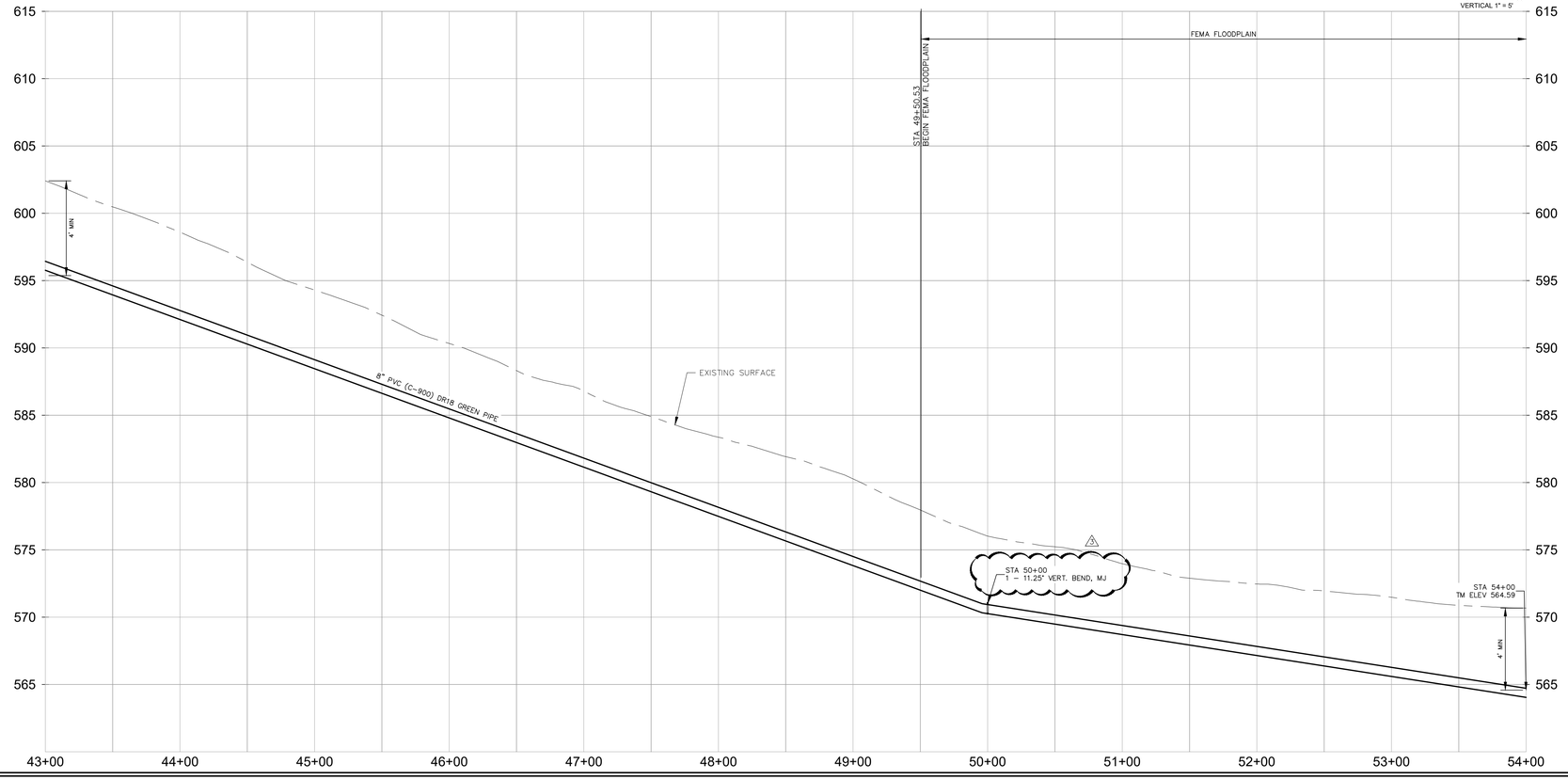

SCALE: 1"=50'

LEGEND

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- FM — PROPOSED 8" FORCE MAIN
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- PROPOSED MANHOLE
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- X — EXISTING FENCE
- FEMA ZONE A

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12/08/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

FORCE MAIN
STA 43+00 TO STA 54+00

SHEET 48 OF 64

NO	DATE	ISSUES AND REVISIONS
1	07-29-2025	REVISED PER GBRA AND GVSUD COMMENTS

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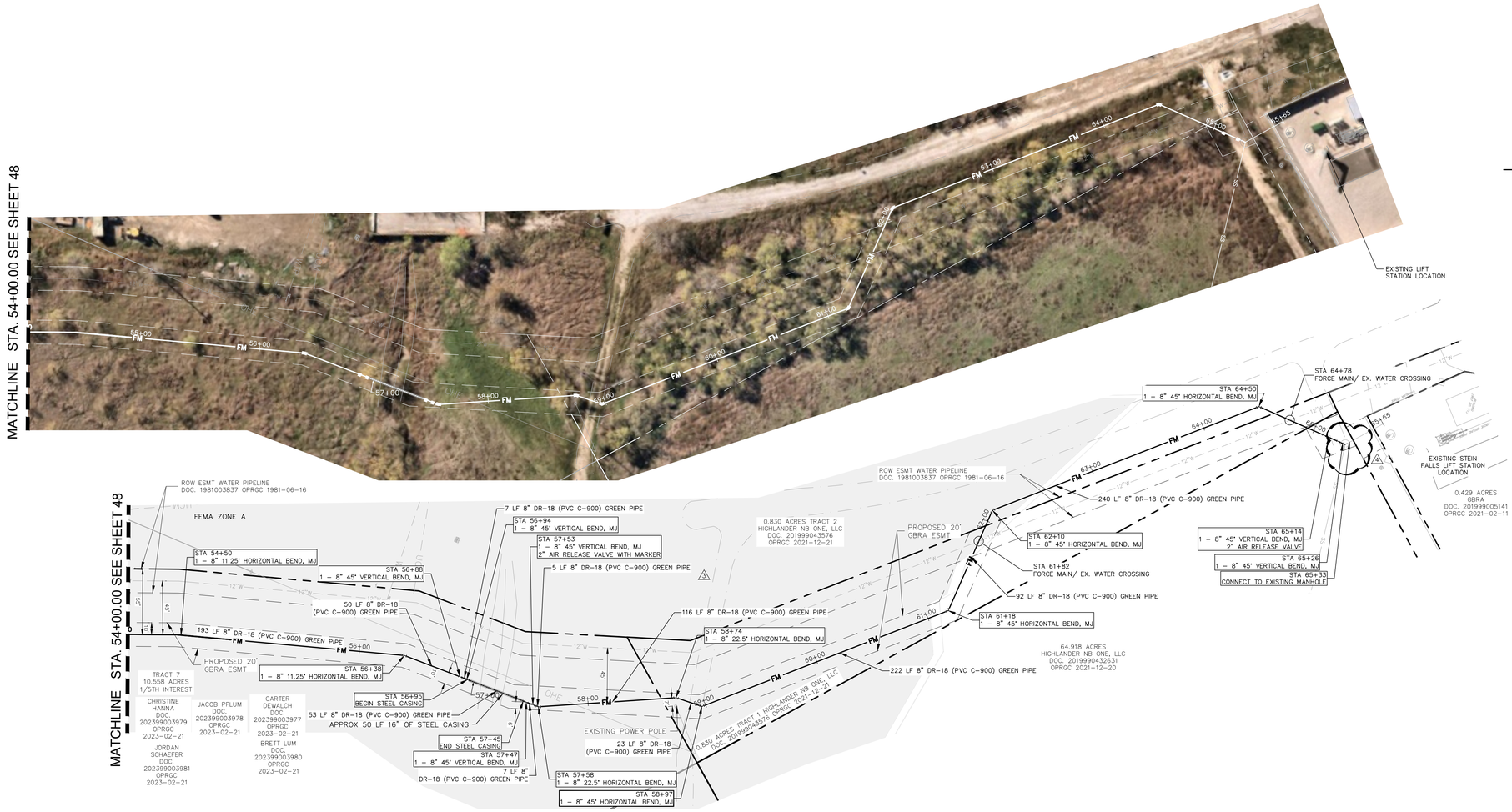
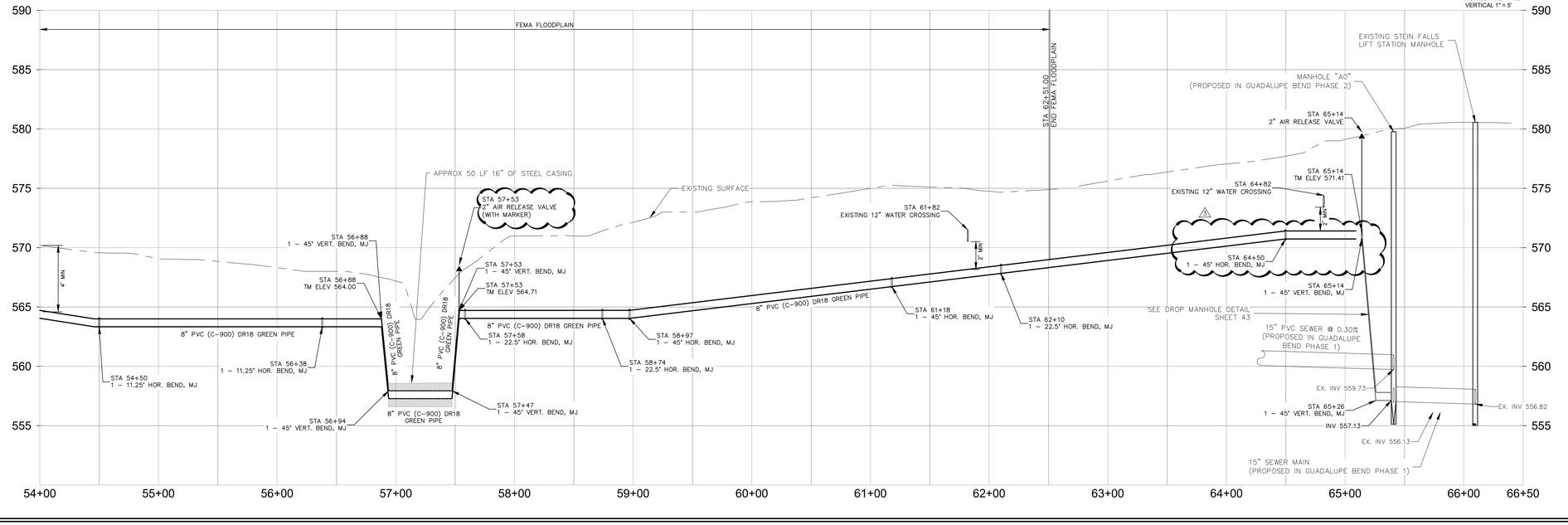


PRIOR TO CONSTRUCTION CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL LOCATION OF EXISTING UNDERGROUND UTILITIES AND REPORT ANY DISCREPANCIES TO ENGINEER

FORCE MAIN



STATE OF TEXAS
JAMES INGALLS
107416
LICENSED
PROFESSIONAL ENGINEER
12/08/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

FORCE MAIN STA 54+00 TO 66+55

SHEET 49 OF 64

NO	DATE	ISSUES AND REVISIONS
1	07-29-2025	REVISED PER GBRA AND GVSUD COMMENTS
2	8-20-2025	REVISED PER GVSUD & GBRA COMMENTS

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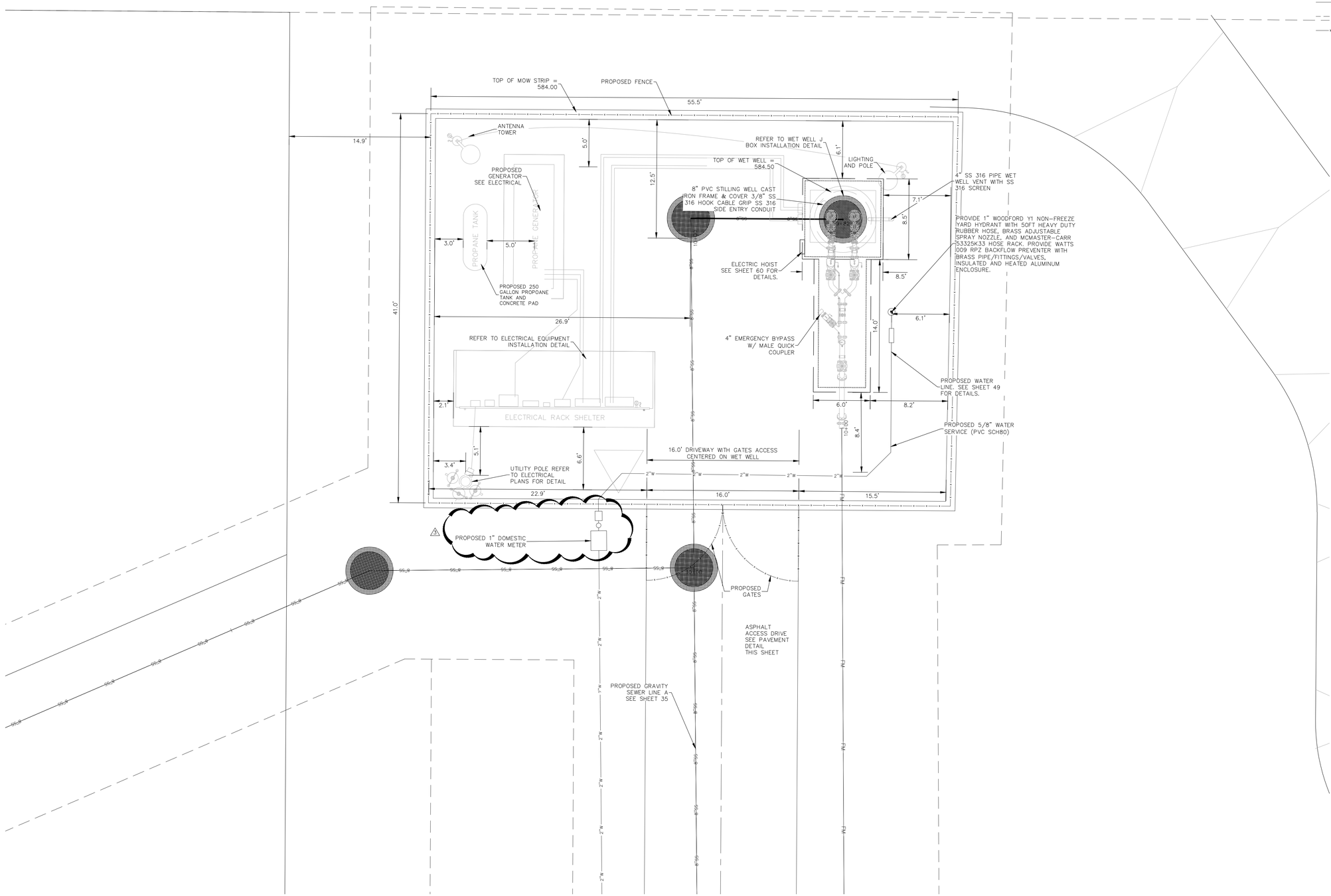

LEGEND

- SS — NEW SANITARY SEWER
- FM — NEW FORCE MAIN LINE
- UTILITY EASEMENT
- PROPOSED WATER LINE
- PROPOSED LIGHTING POLE LOCATION

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED PROFESSIONAL ENGINEER
12/08/2025

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MCQUEENEY OAKS SUBDIVISION

LIFT STATION SITE PLAN

SHEET 50 OF 64

NO	DATE	ISSUES AND REVISIONS
1	07-29-2025	REVISED PER GBRA AND GVSUD COMMENTS

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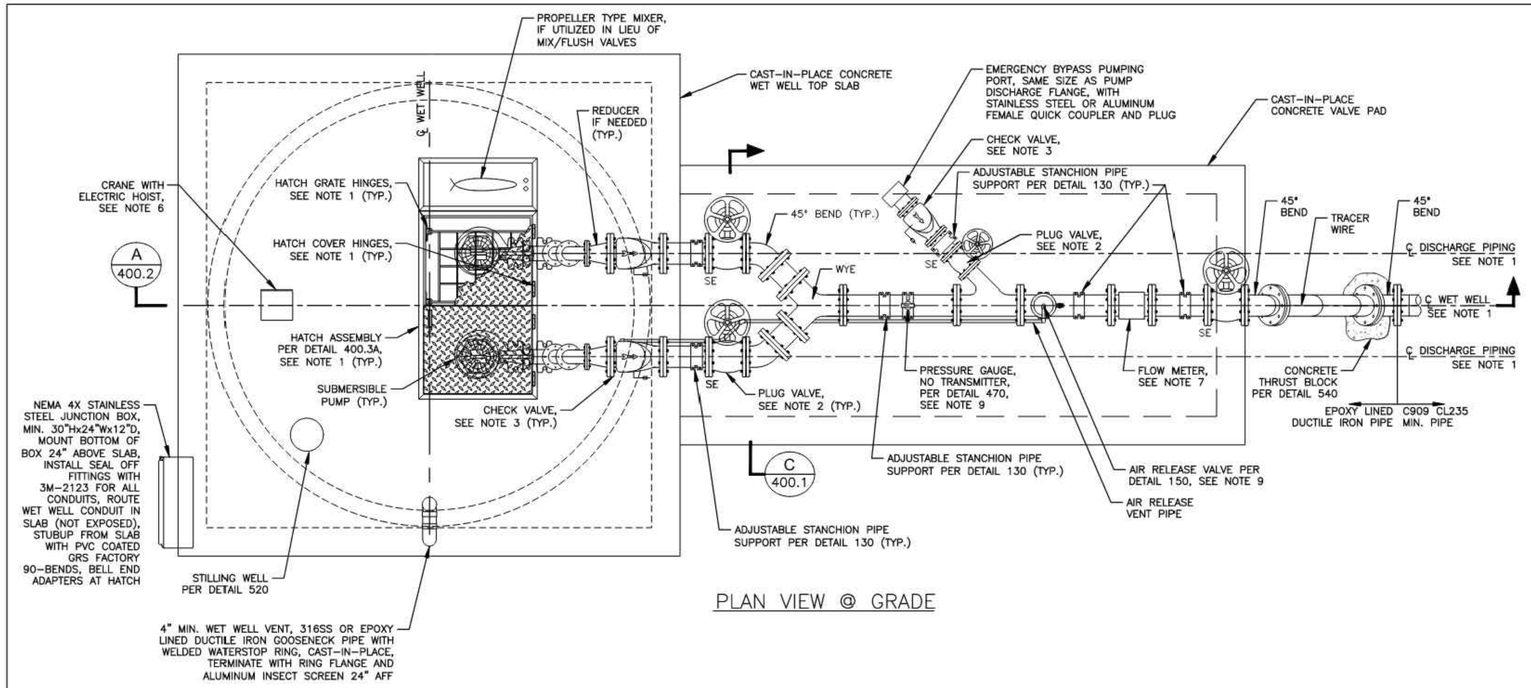
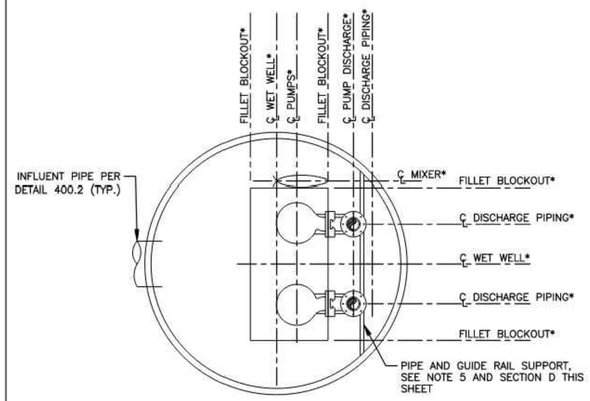
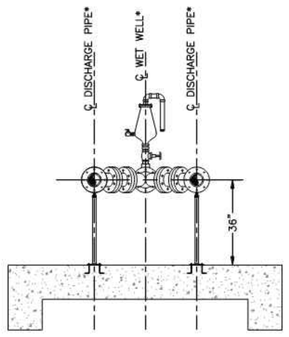


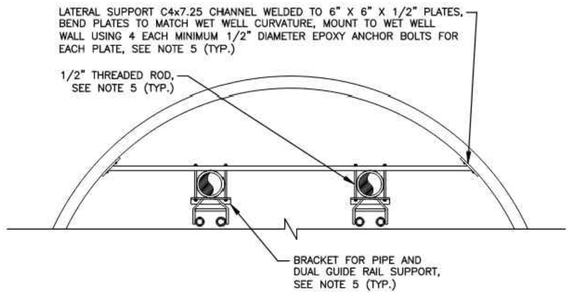
PLAN VIEW @ GRADE



SECTION B 400.2
* SEE NOTE 1



SECTION C 400.1
* SEE NOTE 1



SECTION D 400.2

NOTES TO DESIGN ENGINEER:

A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF GUADALUPE-BLANCO RIVER AUTHORITY WASTEWATER LIFT STATIONS WITH SUBMERSIBLE PUMPS. THEIR INTENDED USE IS AS A FRAME WORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS. IT IS THE RESPONSIBILITY OF THE CONTRACTED DESIGN ENGINEER TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION HEREIN CONTAINED AND TO ADJUST ACCORDING TO SPECIFIC SITE REQUIREMENTS.

B. ELEVATIONS AND INFORMATION OMITTED ARE DETERMINED BY DESIGN ENGINEER FOR SPECIFIC SITE REQUIREMENTS.

C. THE DESIGN ENGINEER SHALL INCORPORATE ONLY THE NECESSARY STANDARD GUIDELINE DRAWINGS AND DETAILS INTO THE PROJECT CONTRACT DOCUMENTATION PACKAGE, AND SHALL ADJUST PAGE NUMBERS AND CROSS REFERENCING ACCORDINGLY.

D. THE DESIGN ENGINEER SHALL CONSULT THE LATEST GUADALUPE-BLANCO RIVER AUTHORITY DESIGN GUIDELINES MANUAL AND THE LATEST TCEQ RULES FOR FURTHER INSTRUCTIONS AND INFORMATION PERTINENT TO THESE STANDARD DESIGN GUIDELINE DRAWINGS.

E. DESIGN ENGINEER SHALL VERIFY THE SIZE AND LOCATION OF WET WELL HATCHES ACCORDING TO THE CLEARANCES SPECIFIED HEREIN AND THE SELECTED PUMP, MIXER, AND VALVE MANUFACTURERS' REQUIREMENTS; VERIFY SUFFICIENT SPACE BETWEEN PUMPS, MIXERS, PIPING, VALVES, HATCHES, ETC.

F. SUBGRADE AND STRUCTURAL SHALL BE DESIGNED BASED ON THE WET WELL DIMENSIONS, SOIL CONDITIONS, BUOYANCY, ETC.

G. THE DESIGN ENGINEER SHALL REMOVE THESE NOTES, ALL REFERENCES TO THESE NOTES, AND ANY OTHER EXTRANEOUS INFORMATION FROM THE DESIGN GUIDELINE DRAWINGS. DESIGN ENGINEER SHALL PROVIDE ANY NOTES OR OTHER APPROPRIATE INFORMATION NECESSARY TO COMPLETE THE LIFT STATION DESIGN.

NOTES:

1. CONTRACTOR SHALL CONFIRM THE SIZE AND LOCATION OF WET WELL HATCHES PER SELECTED PUMP, MIXER, AND VALVE MANUFACTURERS' REQUIREMENTS. PROVIDE 4" MIN. CLEARANCE IN ALL DIRECTIONS FROM PUMPS AND MIXERS TO HATCH CLEAR OPENING. PRIOR TO ORDERING HATCHES AND PIPING, CONTRACTOR SHALL SUBMIT DIMENSIONED LAYOUT DRAWINGS OF WET WELL AND VALVE PAD, INCLUDING PIPE/FITTING/VALVE LAY LENGTHS AND CONDUIT ROUTING, DEMONSTRATING ALL REQUIRED CLEARANCES BETWEEN PUMPS, MIXERS, PIPING, VALVES, HATCHES, TOP SLAB PENETRATIONS, HOIST, ETC.
2. INSTALL FLANGED JOINT ROUND PORT PLUG VALVES WITH HORIZONTAL SHAFT, CLOSING DOWNWARD. INSTALL ORIENTATION OF SEAT END ("SE") AS SHOWN ON DRAWINGS.
3. INSTALL SWING TYPE CHECK VALVES WITH EXTERNAL LEVER AND WEIGHT.
4. PAINT TOPCOAT FOR PUMP DISCHARGE PIPE, VALVES, AND FITTINGS OUTSIDE OF WET WELL SHALL BE GREY PANTONE #431-U COLOR.
5. ALL SUPPORTS, GUIDE RAILS, BRACKETS, AND ANCHORS WITHIN THE WET WELL SHALL BE TYPE 316 STAINLESS STEEL; ANY ASSOCIATED BOLTS, RODS, AND NUTS SHALL HAVE FLAT WASHERS; NUTS SHALL BE LOCK NUTS.
6. CRANE SHALL BE HOT DIP GALVANIZED. ELECTRIC HOIST SHALL BE EPOXY COATED. WIRE ROPE SHALL BE STAINLESS STEEL. MINIMUM LIFTING CAPACITY SHALL BE TWICE THE COMBINED PUMP AND MOTOR WEIGHT.
7. FLOW METER SHALL BE PER GBRA STANDARD SPECIFICATION 13442. PROVIDE UNOBSTRUCTED UPSTREAM AND DOWNSTREAM STRAIGHT PIPE DIAMETERS IN ACCORDANCE WITH PUBLISHED MANUFACTURER RECOMMENDATIONS.
8. PROVIDE SINGLE RAIL SYSTEM FOR FLOATS. RAIL SHALL BE SOLVENT WELD 2" SCH 80 PVC. BOTTOM OF RAIL SHALL BE CAPPED AND FILLED WITH 12" OF GROUT; CAP SHALL REST ON WET WELL FLOOR. TOP OF RAIL SHALL BE CAPPED AND ATTACHED TO HATCH OPENING WITH STRUT AND STRUT CLAMPS. SECURE FLOAT CABLES TO RAIL WITH DOUBLE ZIP TIES AT 4 FT MAX. SPACING.
9. PROVIDE HEAT TRACING, INSULATION, AND ALUMINUM JACKETING PER GBRA STANDARDS.
10. REFERENCE GBRA STANDARDS FOR ADDITIONAL REQUIREMENTS.
11. INSTALL COMPONENTS PLUMB/LEVEL.

GBRA

SUBMERSIBLE LIFT STATION PLAN VIEW

REVISED JUL. 28, 2025

(NOT TO SCALE)

DETAIL NO. 400.1

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED PROFESSIONAL ENGINEER
12/08/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

LIFT STATION MECHANICAL PLAN

SHEET 51 OF 64

NO	DATE	ISSUES AND REVISIONS
1	07-29-2025	REVISED PER GBRA AND GVSUD COMMENTS
1	08-20-2025	REVISED PER GBRA AND GVSUD COMMENTS

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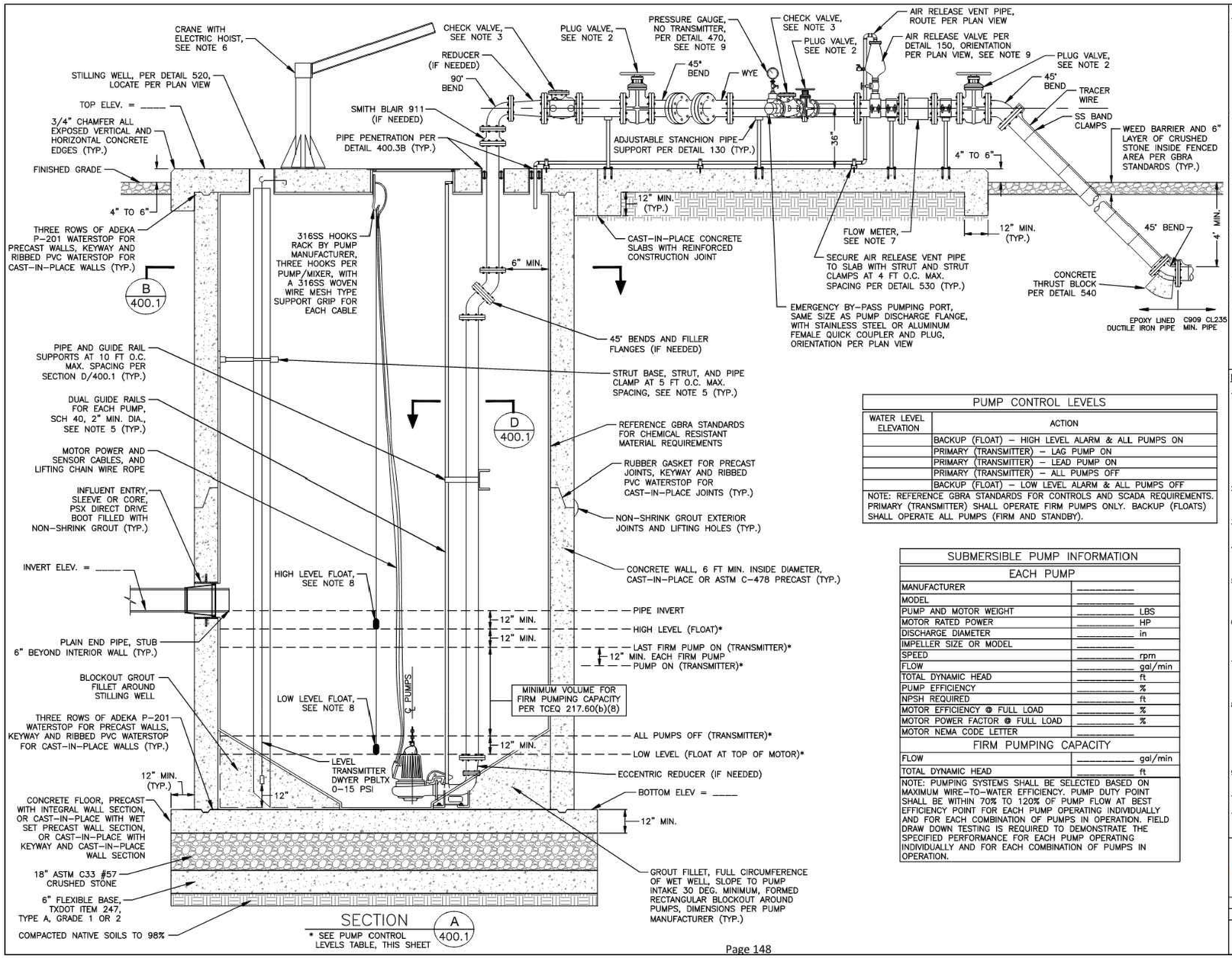

PUMP CONTROL LEVELS	
WATER LEVEL ELEVATION	ACTION
	BACKUP (FLOAT) – HIGH LEVEL ALARM & ALL PUMPS ON
	PRIMARY (TRANSMITTER) – LAG PUMP ON
	PRIMARY (TRANSMITTER) – LEAD PUMP ON
	PRIMARY (TRANSMITTER) – ALL PUMPS OFF
	BACKUP (FLOAT) – LOW LEVEL ALARM & ALL PUMPS OFF

NOTE: REFERENCE GBRA STANDARDS FOR CONTROLS AND SCADA REQUIREMENTS. PRIMARY (TRANSMITTER) SHALL OPERATE FIRM PUMPS ONLY. BACKUP (FLOATS) SHALL OPERATE ALL PUMPS (FIRM AND STANDBY).

SUBMERSIBLE PUMP INFORMATION	
EACH PUMP	
MANUFACTURER	_____
MODEL	_____
PUMP AND MOTOR WEIGHT	_____ LBS
MOTOR RATED POWER	_____ HP
DISCHARGE DIAMETER	_____ in
IMPELLER SIZE OR MODEL	_____
SPEED	_____ rpm
FLOW	_____ gal/min
TOTAL DYNAMIC HEAD	_____ ft
PUMP EFFICIENCY	_____ %
NPSH REQUIRED	_____ ft
MOTOR EFFICIENCY @ FULL LOAD	_____ %
MOTOR POWER FACTOR @ FULL LOAD	_____ %
MOTOR NEMA CODE LETTER	_____
FIRM PUMPING CAPACITY	
FLOW	_____ gal/min
TOTAL DYNAMIC HEAD	_____ ft

NOTE: PUMPING SYSTEMS SHALL BE SELECTED BASED ON MAXIMUM WIRE-TO-WATER EFFICIENCY. PUMP DUTY POINT SHALL BE WITHIN 70% TO 120% OF PUMP FLOW AT BEST EFFICIENCY POINT FOR EACH PUMP OPERATING INDIVIDUALLY AND FOR EACH COMBINATION OF PUMPS IN OPERATION. FIELD DRAW DOWN TESTING IS REQUIRED TO DEMONSTRATE THE SPECIFIED PERFORMANCE FOR EACH PUMP OPERATING INDIVIDUALLY AND FOR EACH COMBINATION OF PUMPS IN OPERATION.

NOTES TO DESIGN ENGINEER:

A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF GUADALUPE-BLANCO RIVER AUTHORITY WASTEWATER LIFT STATIONS WITH SUBMERSIBLE PUMPS. THEIR INTENDED USE IS AS A FRAME WORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS. IT IS THE RESPONSIBILITY OF THE CONTRACTED DESIGN ENGINEER TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION HEREIN CONTAINED AND TO ADJUST ACCORDING TO SPECIFIC SITE REQUIREMENTS.

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NOTES:

1. CONTRACTOR SHALL CONFIRM THE SIZE AND LOCATION OF WET WELL HATCHES PER SELECTED PUMP, MIXER, AND VALVE MANUFACTURERS' REQUIREMENTS. PROVIDE 4" MIN. CLEARANCE IN ALL DIRECTIONS FROM PUMPS AND MIXERS TO HATCH CLEAR OPENING. PRIOR TO ORDERING HATCHES AND PIPING, CONTRACTOR SHALL SUBMIT DIMENSIONED LAYOUT DRAWINGS OF WET WELL AND VALVE PAD, INCLUDING PIPE/FITTING/VALVE LAY LENGTHS AND CONDUIT ROUTING, DEMONSTRATING ALL REQUIRED CLEARANCES BETWEEN PUMPS, MIXERS, PIPING, VALVES, HATCHES, TOP SLAB PENETRATIONS, HOIST, ETC.
2. INSTALL FLANGED JOINT ROUND PORT PLUG VALVES WITH HORIZONTAL SHAFT, CLOSING DOWNWARD. INSTALL ORIENTATION OF SEAT END ("SE") AS SHOWN ON DRAWINGS.
3. INSTALL SWING TYPE CHECK VALVES WITH EXTERNAL LEVER AND WEIGHT.
4. PAINT TOPCOAT FOR PUMP DISCHARGE PIPE, VALVES, AND FITTINGS OUTSIDE OF WET WELL SHALL BE GREY PANTONE #431-U COLOR.
5. ALL SUPPORTS, GUIDE RAILS, BRACKETS, AND ANCHORS WITHIN THE WET WELL SHALL BE TYPE 316 STAINLESS STEEL; ANY ASSOCIATED BOLTS, RODS, AND NUTS SHALL HAVE FLAT WASHERS; NUTS SHALL BE LOCK NUTS.
6. CRANE SHALL BE HOT DIP GALVANIZED. ELECTRIC HOIST SHALL BE EPOXY COATED. WIRE ROPE SHALL BE STAINLESS STEEL. MINIMUM LIFTING CAPACITY SHALL BE TWICE THE COMBINED PUMP AND MOTOR WEIGHT.
7. FLOW METER SHALL BE PER GBRA STANDARD SPECIFICATION 13442. PROVIDE UNOBSTRUCTED UPSTREAM AND DOWNSTREAM STRAIGHT PIPE DIAMETERS IN ACCORDANCE WITH PUBLISHED MANUFACTURER RECOMMENDATIONS.
8. PROVIDE SINGLE RAIL SYSTEM FOR FLOATS. RAIL SHALL BE SOLVENT WELD 2" SCH 80 PVC. BOTTOM OF RAIL SHALL BE CAPPED AND FILLED WITH 12" OF GROUT; CAP SHALL REST ON WET WELL FLOOR. TOP OF RAIL SHALL BE CAPPED AND ATTACHED TO HATCH OPENING WITH STRUT AND STRUT CLAMPS. SECURE FLOAT CABLES TO RAIL WITH DOUBLE ZIP TIES AT 4 FT MAX. SPACING.
9. PROVIDE HEAT TRACING, INSULATION, AND ALUMINUM JACKETING PER GBRA STANDARDS.
10. REFERENCE GBRA STANDARDS FOR ADDITIONAL REQUIREMENTS.
11. INSTALL COMPONENTS PLUMB/LEVEL.

GBRA Guadalupe-Blanco River Authority

SUBMERSIBLE LIFT STATION SECTION VIEW

REVISED JUL. 28, 2025

(NOT TO SCALE)

DETAIL NO. 400.2

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED
PROFESSIONAL ENGINEER
12/08/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

LIFT STATION MECHANICAL SECTION

SHEET 52 OF 64

NO	DATE	ISSUES AND REVISIONS
1	08-20-2025	REVISED PER GBRA AND GVSUD COMMENTS

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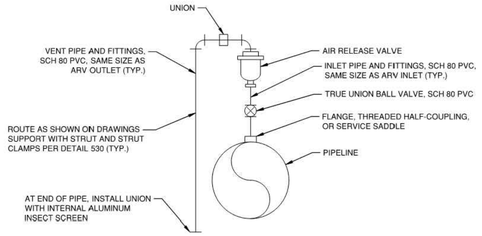
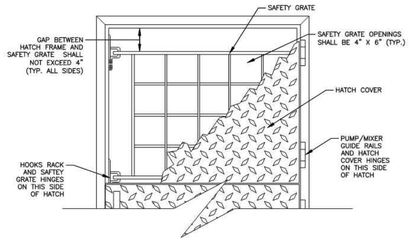


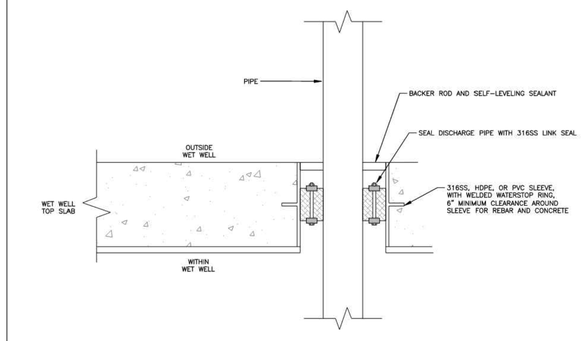
NOTES:
1. FOR WATER, AIR RELEASE VALVE SHALL BE 2" A.R.I. MODEL D-040L-RN WITH THREADED INLET AND OUTLET.
2. FOR WASTEWATER, AIR RELEASE VALVE SHALL BE 2" A.R.I. MODEL D-025-RN WITH THREADED INLET AND OUTLET, AND STAINLESS STEEL BODY CLAMP.
3. PVC MALE ADAPTER ARE NOT ALLOWED.
4. SERVICE SADDLE SHALL BE SMITH BLAIR 317 OR EQUAL.
5. TRUE UNION BALL VALVE SHALL BE GF, HAYWARD, NIBCO, OR SPEARS.
6. UNLESS INDICATED OTHERWISE, INSTALL ASSEMBLY PLUMB/LEVEL.

GBRA Guadalupe-Blanco River Authority	AIR RELEASE VALVE TYPE 2	REVISED	SCALE
		JUL. 28, 2025	NONE
		DETAIL NO. 150	



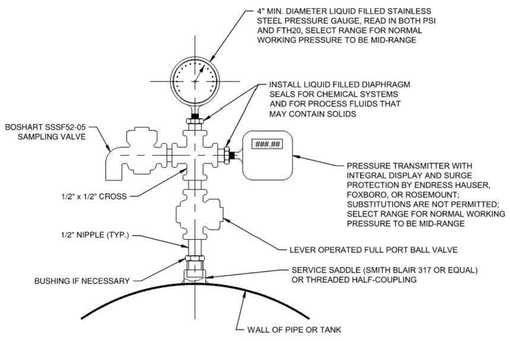
DETAIL 400.3A
WET WELL HATCH

NOTES:
1. TOP OF SAFETY GRATES SHALL BE 1/2" MAXIMUM BELOW TOP OF CONCRETE SLAB.
2. TOP OF HATCH COVERS SHALL BE INSTALLED FLUSH WITH TOP OF CONCRETE SLAB.
3. HATCH ASSEMBLY SHALL BE EJCO SAFE HATCH OR EQUAL WITH ALUMINUM FRAME, GRATES, COVERS AND 316SS HARDWARE, FASTENERS, AND HINGES. HATCH ASSEMBLY SHALL BE RATED FOR 300 PSF LIVE LOAD.
4. COVERS SHALL BE EQUIPPED WITH SLAM LOCKS AND PADLOCK STAPLES. PROVIDE 2 EACH HATCH KEYS.
5. PROVIDE 4" MINIMUM CLEARANCE IN ALL DIRECTIONS FROM PUMPS AND MIXERS TO HATCH CLEAR OPENING.
6. INSTALL BITUMINOUS COATING ON ALL SURFACES IN CONTACT WITH CONCRETE.



DETAIL 400.3B
WET WELL TOP SLAB PIPE PENETRATION

GBRA	SUBMERSIBLE LIFT STATION DETAILS	
REVISED JUL. 28, 2025	(NOT TO SCALE)	
	DETAIL NO. 400.3	



NOTES:
1. UNLESS CHEMICAL COMPATIBILITY REQUIRES OTHERWISE, ENTIRE ASSEMBLY SHALL BE STAINLESS STEEL WITH NICKEL PTFE ANTI-SEIZE THREAD SEALANT TAPE; 304SS FOR WATER PROJECTS, 316SS FOR WASTEWATER PROJECTS.
2. PRESSURE RATING OF EACH ASSEMBLY COMPONENT SHALL BE GREATER THAN OR EQUAL TO PRESSURE RATING OF THE SYSTEM TO WHICH THE ASSEMBLY IS CONNECTED.
3. DIAPHRAGM SEALS SHALL BE ASHCROFT TYPE 101 OR EQUAL BY WIKA.
4. GAUGES SHALL BE WIKA TYPE 233.30, ASHCROFT TYPE T6500, OR ASHCROFT TYPE 1209.
5. LIQUID FILL MATERIAL SHALL BE COMPATIBLE WITH THE CHEMICAL/PROCESS FLUID.
6. POSITION GAUGE AND TRANSMITTER DISPLAYS LEVEL AND FACING DIRECTION OF OPERATOR ACCESS, INSTALL BEND FITTINGS AS NECESSARY.
7. UNLESS INDICATED OTHERWISE, INSTALL COMPONENTS PLUMB/LEVEL.

GBRA Guadalupe-Blanco River Authority	PRESSURE TRANSMITTER AND GAUGE	REVISED	SCALE
		JUL. 28, 2025	NONE
		DETAIL NO. 470	

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED
PROFESSIONAL ENGINEER
12/08/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

LIFT STATION DETAILS

SHEET 53 OF 64

NO	DATE	ISSUES AND REVISIONS
1	08-20-2025	REVISED PER GBRA AND GVSUD COMMENTS

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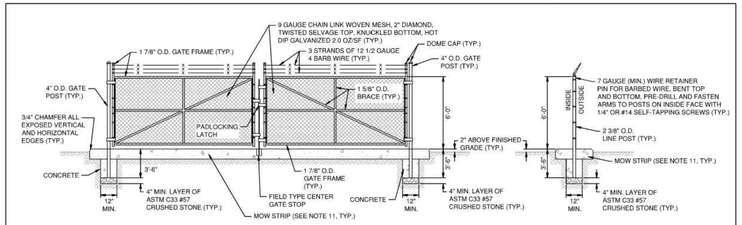

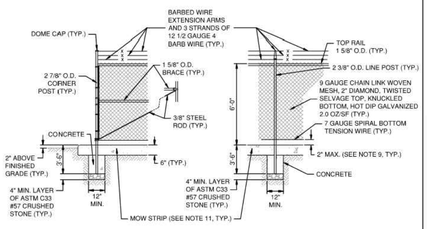

NOTES:
1. SPLICING OF MATERIAL IS NOT ALLOWED.
2. ALL PIPE SHALL BE ASTM F1043 GROUP IC. ALL OTHER MATERIAL SHALL BE HOT DIP GALVANIZED AFTER FABRICATION. GALVANIZING REPAIRS SHALL BE MINIMUM TWO (2) BRUSH COATS OF ZRC GALVILITE.
3. INSTALL A DUCK BILL HOLD BACK FOR EACH GATE LEAF WITH 12" MINIMUM POST DEPTH.
4. TENSION BARS SHALL BE 3/16 " X 3/4".
5. TENSION BANDS SHALL BE MINIMUM 14 GAUGE AND 3/4" WIDTH.
6. BRACE BANDS SHALL BE MINIMUM 12 GAUGE AND 3/4" WIDTH.
7. POST BURY DEPTH MAY BE REDUCED IF 24" MINIMUM IN SOLID ROCK BELOW BOTTOM OF MOW STRIP.
8. MAXIMUM 10' POST SPACING.
9. MAXIMUM 2" GAP AT BOTTOM OF FENCE AND GATES.
10. INSTALL POSTS AND GATES PLUMB/LEVEL IN STRAIGHT ALIGNMENT BETWEEN CORNER POSTS.
11. MOW STRIP SHALL BE 6"D X 24"W REINFORCED CONCRETE CENTERED ON POSTS 2" ABOVE FINISHED GRADE, #4 REBAR @ 18" O.C.E.W., TOOL JOINTS CENTERED BETWEEN POSTS, BROOM FINISH (TYP.). INSTALL 1 1/2" PVC PIPE WEEPS BELOW REBAR AT 12' O.C. THRU MOW STRIP AT LOW POINTS. INSTALL 6" MIN. LAYER OF ASTM C33 #57 CRUSHED STONE OUTSIDE FENCE AND PERFORM GRADING OUTSIDE FENCE TO PROMOTE SITE DRAINAGE.

GBRA Guadalupe-Blanco River Authority

CHAIN LINK FENCE AND GATES

REVISED	SCALE
JUL. 28, 2025	NONE
DETAIL NO. 240	

△1

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED
PROFESSIONAL ENGINEER
12/08/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

LIFT STATION DETAILS II

SHEET 54 OF 64

NO	DATE	ISSUES AND REVISIONS
△1	08-20-2025	REVISED PER GBRA AND GVSUD COMMENTS

INK CIVIL
2021 W SH46, STE 105
NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 ink-civil.com
TBPE FIRM F-13351

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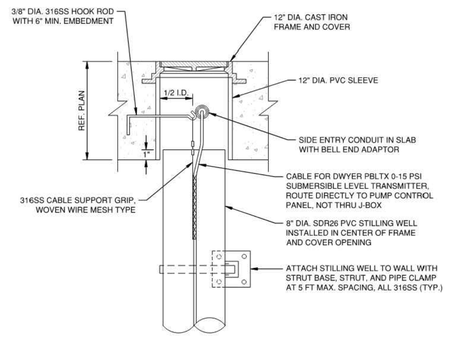
Drawing Name: N:\Projects\080002 Buck Property - 109ac\Civil\Construction Drawings\04 LIFT STATION DETAILS II.dwg User: chuckware Dec 08, 2025 - 7:23pm



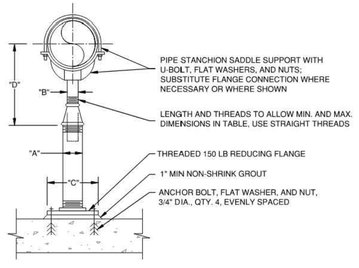
NOTES:
1. INSTALL COMPONENTS PLUMB/LEVEL.

GBRA Guadalupe-Blanco River Authority

STILLING WELL

REVISED	SCALE
JUL. 28, 2025	NONE
DETAIL NO. 520	

ADJUSTABLE PIPE SUPPORT SCHEDULE DIMENSIONS IN INCHES					
PIPE SIZE	"A"	"B"	"C"	"D" MINIMUM	"D" MAXIMUM
≤ 2 1/2	2 1/2	1 1/2	9	8	13
3	2 1/2	1 1/2	9	8 1/2	13 1/2
3 1/2	2 1/2	1 1/2	9	8 1/2	13 1/2
4	3	2 1/2	9	9 1/2	14
6	3	2 1/2	9	10 1/2	15 1/2
8	3	2 1/2	9	11 1/2	16 1/2
10	3	2 1/2	9	13 1/2	18 1/2
12	3	2 1/2	9	15	19 1/2
14	4	3	11	16 1/2	20 1/2
16	4	3	11	17 1/2	22 1/2
18	6	3 1/2	13 1/2	19 1/2	24
20	6	3 1/2	13 1/2	21	25 1/2
24	6	4	13 1/2	23 1/2	28 1/2
30	6	4	13 1/2	27	31 1/2
32	6	4	13 1/2	28 1/2	32 1/2
36	6	4	13 1/2	30 1/2	34 1/2

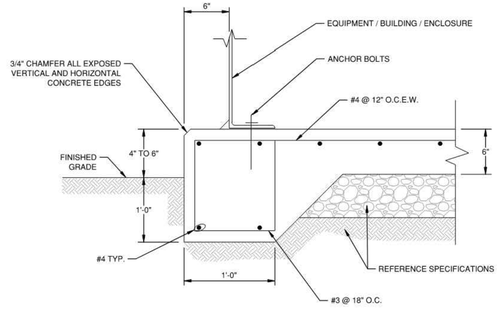


NOTES:
1. INSTALL WHERE SHOWN ON DRAWINGS.
2. ASSEMBLY SHALL BE MANUFACTURED BY B-LINE OR EQUAL.
3. PIPE SHALL BE SCHEDULE 40.
4. INSTALL ASSEMBLY PLUMB/LEVEL.

GBRA Guadalupe-Blanco River Authority

ADJUSTABLE STANCHION PIPE SUPPORT

REVISED	SCALE
JUL. 28, 2025	NONE
DETAIL NO. 130	

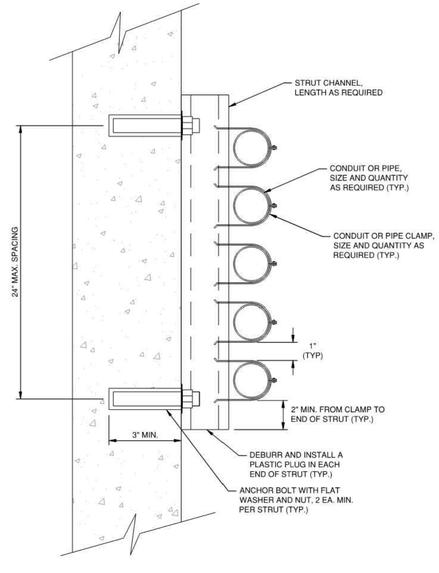


NOTES:
1. THIS DETAIL SHALL BE UTILIZED FOR FIBERGLASS BUILDINGS, GENERATORS, TRANSFORMERS, BLOWERS, PUMP SKIDS, RPZ ENCLOSURES, AND OTHER MISCELLANEOUS EQUIPMENT EXCEPT WHERE SPECIFIED MORE STRINGENT BY THE DESIGN ENGINEER.
2. UNLESS INDICATED OTHERWISE, INSTALL ASSEMBLY PLUMB/LEVEL.
3. FOR SLOPED FLOORS, CLEARANCE BELOW SLAB REBAR MAY BE REDUCED TO 2" MINIMUM.

GBRA Guadalupe-Blanco River Authority

EQUIPMENT PAD

REVISED	SCALE
JUL. 28, 2025	NONE
DETAIL NO. 320	



NOTES:
1. INSTALL COMPONENTS PLUMB/LEVEL.

GBRA Guadalupe-Blanco River Authority

STRUT AND CLAMP

REVISED	SCALE
JUL. 28, 2025	NONE
DETAIL NO. 530	

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED
PROFESSIONAL ENGINEER
12/08/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

LIFT STATION DETAILS III

SHEET 55 OF 64

NO	DATE	ISSUES AND REVISIONS
1	08-20-2025	REVISED PER GBRA AND GVSUD COMMENTS

INK CIVIL
2021 W SH46, STE 105
NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 ink-civil.com
TBPE FIRM F-13351

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TXDOT GENERAL CONSTRUCTION NOTES

1. THE DESIGN AND CONSTRUCTION WILL PROVIDE FOR PRESERVING ALL EXISTING FEATURES IN OR NEAR THE STATE RIGHT OF WAY BEING AFFECTED BY THE WIDENING. THIS INCLUDES BUT IS NOT LIMITED TO, EXISTING DRIVEWAY GATE SET-BACKS, RELOCATION OF ELECTRONIC PRIVATE PROPERTY GATES, MAILBOX TURNOUTS, MAILBOXES AND SUPPORTS, CATTLE GUARDS, ROADWAY SIGNING, EXISTING RIP-RAP OR OTHER PERMANENT EROSION CONTROL FEATURES, DIVERSIONARY BERMS, SWALES, DITCHES, AMOUNT AND CONFIGURATION OF DRIVEWAY FLARES AND DRIVEWAY CENTERLINE PROFILE, METAL BEAM GUARD FENCE AND END TREATMENTS, ETC. EXISTING DRIVEWAY CULVERTS AND SAFETY END TREATMENTS IF EFFECTED BY ROADWAY WIDENING WILL BE RECONSTRUCTED TO PRESERVE EXISTING FRONT SLOPE RATES. THE COORDINATION OF ITEMS THAT EFFECT EXISTING PRIVATE PROPERTY ACCESS, MAIL DELIVERY, ETC. IS THE RESPONSIBILITY OF THE DEVELOPER. THE WRITTEN CONCURRENCE OF ANY EFFECTED PROPERTY OWNERS FOR CONSTRUCTION EFFECTING THEIR DRIVEWAYS OR MAILBOX. TURNOUTS MUST BE OBTAINED AND PROVIDED TXDOT PRIOR TO TXDOT DRIVEWAY PERMITS BEING ISSUED.

2. FOR WORK IN STATE RIGHT OF WAY, THE DEVELOPER IS RESPONSIBLE FOR COORDINATION OF, OBTAINING PERMITS FOR, AND COMPLYING WITH ANY AND ALL STATE AND FEDERAL REGULATORY AGENCIES AND ALL APPLICABLE LAWS, RULES AND REGULATIONS PERTAINING TO THE REGULATION OF DRAINAGE, PRESERVATION OF CULTURAL RESOURCES, NATURAL RESOURCES AND THE ENVIRONMENT. THE DEVELOPER IS RESPONSIBLE FOR DETERMINING IF THE PROJECT IS IN AN ENVIRONMENTALLY SENSITIVE AREA SUCH AS WITHIN THE RECHARGE OR CONTRIBUTING ZONE OF PROTECTED AQUIFERS, AND ACT IN ACCORDANCE WITH ALL RESOURCE AGENCY REGULATIONS.

   A. IF TXDOT HAS A CZP OR WPAP ON FILE WITH TCEQ, THE DEVELOPER IS RESPONSIBLE FOR A ENDING TXDOT'S PER IT, OBTAINING TCEQ APPROVAL AND PROVIDING TXDOT WITH THE APPROVED AMENDED PERMIT. THE A ENDED PER IT WILL ADDRESS THE RELOCATION OF TXDOT PERMANENT BMP'S INCLUDING VEGETATIVE FILTER STRIPS THAT MAY BE IMPACTED BY WORK DONE WITHIN TXDOT.
   B. IF TXDOT DOES NOT HAVE A CZP OR WPAP ON FILE WITH TCEQ, ANY PERMANENT BMP'S INCLUDING VEGETATIVE FILTER STRIPS, THAT MAY BE REQUIRED IN ORDER TO TREAT ADDITIONAL IMPERVIOUS COVER PLACED IN TXDOT ROW WILL BE LOCATED IN PRIVATE PROPERTY AND THE DEVELOPER WILL PROVIDE TXDOT WITH EVIDENCE OF TCEQ APPROVAL OF THE ADDITIONAL IMPERVIOUS COVER."
   C. THE DEVELOPER MAY NOT OPERATE UNDER RESOURCE AGENCY ENVIRONMENTAL CLEARANCE OF A PREVIOUS OR ONGOING TXDOT PROJECT, BUT WILL BE REQUIRED TO OBTAIN SEPARATE RESOURCE/ENVIRONMENTAL AGENCY CLEARANCE.

3. IF WASTE AREAS OR MATERIAL SOURCE AREAS RESULT FROM THIS PROJECT, THE CONTRACTOR IS REMINDED TO FOLLOW SUPERSEDES ALL OTHER SPECIFICATIONS IN THE PLANS THE REQUIREMENTS OF THE TEXAS AGGREGATE QUARRY AND PIT SAFETY ACT. IN ADDITION, IT IS REQUESTED THAT THESE AREAS NOT BE VISIBLE FROM ANY HIGHWAY ON THE STATE SYSTEM.

   A. ANY MATERIALS REMOVED AND NOT REUSED AND DETERMINED TO BE SALVAGEABLE SHALL BE STORED WITHIN THE PROJECT LIMITS AT AN APPROVED LOCATION OR DELIVERED UNDAMAGED TO THE STORAGE YARD AS DIRECTED. PROPERLY DISPOSE UNSALVAGEABLE MATERIALS IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS. DEFACE TRAFFIC SIGNS SO THAT THEY WILL NOT REAPPEAR IN PUBLIC AS SIGNS.

4. ANY TREES EXISTING WITHIN STATE RIGHT OF WAY ARE THE NATURAL RESOURCES OF THE STATE AND WILL BE PROTECTED. IN THE EVENT THAT TREES MUST BE REMOVED, TXDOT WRITTEN PERMISSION WILL BE RECEIVED IN ADVANCE AND WILL IDENTIFY THE SPECIFIC TREES BY SPECIES, DIAMETER AND LOCATION TO BE REMOVED. THE DEVELOPER WILL BE FINED FOR ANY UNPERMITTED REMOVAL OF TREES.

   A. IN THE EVENT THAT THERE ARE AREAS OF PUBLIC ROW DEDICATION RESULTING FROM THE PLATTING PROCESS, THE AREA WITHIN THE PUBLIC ROW DEDICATION DOES NOT PASS INTO TXDOT OWNERSHIP AS A RESULT OF PLATTING. HOWEVER, THE DEVELOPER WILL REMOVE ANY OLD FENCING, GATES AND UNSIGHTLY VEGETATION WITHIN THE AREA OF THE ROW DEDICATION, LEAVING IT IN AN AESTHETICALLY PLEASING CONDITION THE AREA OF ROW DEDICATION WILL NOT BE MOWED OR OTHERWISE MAINTAINED BY TXDOT. PRIOR TO REMOVAL OF TREES IN THE AREA OF ROW DEDICATION, THE TREES WILL FIRST BE EVALUATED IN ACCORDANCE WITH THE REQUIREMENTS OF LOCAL TREE PROTECTION ORDINANCES AND THE WRITTEN CONCURRENCE OF THE LOCAL JURISDICTION WILL BE PROVIDED TO TXDOT.

5. THE DEVELOPER WILL MAINTAIN AT THE PROJECT SITE, AND MAKE AVAILABLE UPON REQUEST, COPIES OF ALL APPROVED JOINT ENVIRONMENTAL PLANS AND PERMITS RELATING TO WORK IN STATE RIGHT OF WAY.

6. PRIOR TO BEGINNING GRADING ACTIVITY, THE CONTRACTOR WILL SET AND MAINTAIN ROADWAY STATIONING, CONTROL POINTS, MARKS, STAKES TO ESTABLISH LINES, SLOPES, GRADES AND CENTERLINES.

7. ANY SLOPES IN STATE RIGHT OF WAY WHICH BECOME STEEPER THAN 3:1 AS A RESULT OF THE WORK WILL BE TREATED WITH 4" THICK REINFORCED CONCRETE RIP-RAP AND BE TREATED WITH METAL BEAM GUARD FENCE. THIS MAY ENTAIL ADDITIONAL RIP-RAP BEYOND THAT SHOWN IN THE PLANS.

   A. UNLESS OTHERWISE SHOWN ON THE PLANS, WHERE EXISTING CONCRETE RIP-RAP IS REMOVED, MODIFIED OR EXTENDED, THE PORTION TO BE REMOVED WILL BE NEATLY SAW-CUT PRIOR TO REMOVAL AND THE NEW RIP-RAP WILL BE FORMED TO MATCH THE EXISTING LINES AND GRADES OF THE EXISTING RIP-RAP AND WILL BE DOWELED INTO THE EXISTING RIP-RAP WITH #3 BARS ON 12"CENTERS. THE DOWEL BARS WILL BE EPOXIED IN PLACE WITH EPOXY MEETING TXDOT REQUIREMENTS. THE MINIMUM EMBEDMENT LENGTH IS 9 INCHES. THIS APPLIES TO ANY TYPE OF CONCRETE RIP-RAP INCLUDING METAL BEAM GUARD FENCE OR CABLE BARRIER MOW STRIPS.

8. DUANE HOFFERICHTER (830) 609-0707 IN NEW BRAUNFELS, TRAVIS YOUNG (830) 303-0130 IN SEGUIN, CHAD LUX (830) 816-2430 IN BOERNE, MARK ANDREWS (830) 393-3144 IN FLORESVILLE, TXDOT MAINTENANCE OFFICE WILL BE CONTACTED BY THE CONTRACTOR 48 HOURS PRIOR TO WORK OCCURRING IN STATE RIGHT OF WAY.

9. STATE RIGHT OF WAY WILL NOT BE USED AS AN AREA FOR CONTRACTOR PARKING OR FOR STAGING THE RECEIPT OF MATERIALS OR EQUIPMENT.

10. TRAFFIC CONTROL AND CONSTRUCTION BARRICADES WILL MEET THE REQUIREMENTS OF THE TEXAS MUTCD.

11. THE CONTRACTOR WILL PROVIDE ADVANCE NOTIFICATION TO THE ENGINEER OF IMPENDING/UPCOMING LANE CLOSURES FOR ALL TEMPORARY AND/OR PERMANENT LANE, RAMP, CONNECTOR, FRONTAGE, SHOULDER, MEDIAN CROSSOVER, ETC. CLOSURES OR DETOURS.

12. ACCESS TO ADJOINING PROPERTY MUST BE MAINTAINED AT ALL TIMES.

13. UNLESS OTHERWISE NOTED IN THE PLANS AND/OR AS DIRECTED BY THE AREA ENGINEER OR MAINTENANCE SUPERVISOR, DAILY LANE CLOSURES SHALL BE LIMITED ACCORDING TO THE FOLLOWING RESTRICTIONS:
   A. NIGHTTIME: MAINTENANCE SUPERVISOR AND/OR AREA ENGINEER APPROVAL REQUIRED. (WITH UNIFORMED OFF DUTY LAW ENFORCEMENT OFFICERS)
   B. WEEKEND CLOSURES: MAINTENANCE SUPERVISOR AND/OR AREA ENGINEER APPROVAL REQUIRED.

14. NO LANE CLOSURES OR ROADWAY CLOSURES WILL BE PERMITTED FOR THE FOLLOWING KEY DATES AND/OR SPECIAL EVENTS:
   A. BETWEEN DECEMBER 15 AND JANUARY 1;
   B. WEDNESDAY BEFORE THANKSGIVING THRU THE SUNDAY AFTER THANKSGIVING
   C. SATURDAY AND SUNDAY BEFORE MEMORIAL DAY AND LABOR DAY
   D. SATURDAY OR SUNDAY WHEN JULY 4 FALLS ON A FRIDAY OR MONDAY.

15. AT NO TIME WILL THE ROADWAY TRAVEL WAY BE BLOCKED.

16. LANE CLOSURES WILL ONLY BE PERMITTED WITH 48 HOUR PRIOR APPROVAL OF THE TXDOT MAINTENANCE SUPERVISOR.LANE CLOSURES WILL BE PERMITTED ONLY BETWEEN 9: 00 A.M. AND 4: 00 P.M. MONDAY THROUGH FRIDAY.
   A. FOR LANE CLOSURES ON TWO-LANE TWO-WAY ROADWAYS, INCLUDING DURING PILOT CAR OPERATIONS, FLAGGERS WILL BE PLACED AT THE BEGINNING AND END OF THE WORK ZONE AS WELL AS AT EACH INDIVIDUAL DRIVEWAY AND SIDE ROAD INTERSECTION WITHIN THE LIMITS OF THE WORK ZONE AND EXTENDING FOR A MINIMUM OF THE BEGINNING OF ADVANCED WARNING SIGNS EITHER END OF THE WORK ZONE TO CONTROL, WARN AND DIRECT SIDE ROAD AND DRIVEWAY TRAFFIC OF THE CHANGE IN TRAFFIC OPERATIONS. WHENEVER ONE WAY TRAFFIC CONTROL IS ACCOMPLISHED BY TRAFFIC SIGNALS WORK ZONE FLAGGERS WILL BE SIMILARLY STATIONED AT EACH INDIVIDUAL DRIVEWAY AND SIDE ROAD INTERSECTION WITHIN THE LIMITS OF THE WORK ZONE AND EXTENDING FOR A MINIMUM OF THE BEGINNING OF THE ADVANCED WARNING SIGNS EITHER END OF THE WORK ZONE. ALL FLAGGERS WILL BE IN CONSTANT RADIO CONTACT.

17. A MINIMUM 3:1(H:V) TEMPORARY SAFETY SLOPE OF STABLE COMPACTED MATERIAL WILL BE REQUIRED ADJACENT TO THE STATE HIGHWAY EDGE OF PAVEMENT AT ALL TIMES DURING NON-WORKING HOURS.

18. ONLY ONE SIDE OF THE ROADWAY WILL BE OPEN TO CONSTRUCTION AT A TIME. WORK WILL BE COMPLETED, AND PAVEMENT EDGES BACKFILLED ON ONE SIDE OF THE ROAD BEFORE WORK WILL BEGIN ON THE OPPOSITE SIDE OF THE ROADWAY.

19. ALL MILLING, PAVING AND SEAL COAT OPERATIONS SHALL PROCEED IN THE DIRECTION OF TRAFFIC.

20. ANY PAVEMENT EDGE DROP-OFFS BETWEEN 1 AND 2 INCHES IN HEIGHT WILL HAVE CW 8-11 WARNING SIGNS. ANY PAVEMENT EDGE DROP-OFF 2 INCHES OR GREATER WILL HAVE A 3:1 COMPACTED SAFETY SLOPE AND CW 8-9A OR CW 8-11 SIGNS PLUS CHANNELIZING DEVICES. PAVEMENT EDGES WILL BE SHOULDERED UP WITH COMPACTED EMBANKMENT MATERIAL AND 4 INCHES OF TOPSOIL AS SOON AS POSSIBLE AFTER PAVING IS COMPLETED ON THE SIDE OF THE ROAD BEING WIDENED.

21. PROOF ROLLING OF SUBGRADE IS REQUIRED AND SHALL BE WITNESSED BY TXDOT PRIOR TO PLACEMENT OF PAVEMENT STRUCTURE UNLESS OTHERWISE APPROVED BY THE TXDOT MAINTENANCE SUPERVISOR. THE REQUIREMENT FOR PROOF-ROLLING OF SUBGRADE IS NOT SUPERSEDED BY ANY OTHER REQUIREMENTS INCLUDING THOSE OF ANY GEOTECHNICAL REPORT.

22. ALL FLEXIBLE BASE WILL HAVE A MINIMUM PLASTICITY INDEX OF 4.

23. ALL COURSES OF ASPHALTIC CONCRETE PAVEMENT (REGARDLESS OF TYPE) WILL BE PLACED WITH AN ASPHALT PAVING EQUIPMENT MEETING THE REQUIREMENTS OF TXDOT ITEM 320, "EQUIPMENT FOR ASPHALT CONCRETE PAVEMENT", UNLESS OTHERWISE APPROVED BY THE MAINTENANCE SUPERVISOR.

A. TACK COAT WILL BE APPLIED WITH AN ASPHALT DISTRIBUTOR AND SPREAD ACROSS THE SURFACE RECEIVING THE TACK COAT BY MULTIPLE PASSES OF A PNEUMATIC ROLLER. THE APPLICATION OF TACK COAT AND THE NUMBER OF PASSES OF THE PNEUMATIC ROLLER WILL BE SUFFICIENT TO MAKE THE SURFACE AND EXPOSED EDGES CONSISTENTLY BLACK WITH NO AREAS DEVOID OF TACK. ASPHALT FOR TACK COAT SHALL MEET TXDOT SPECS AND BE FROM A TXDOT APPROVED SOURCE.

24. ALL SURFACE AGGREGATES WILL MEET THE REQUIREMENTS OF TXDOT FRICTION CLASSIFICATION "B" AND WILL MEET PG BINDER GRADE 70-22.

25. ALL SURFACE ASPHALT CONCRETE PAVEMENT WILL BE UNDER-SEALED WITH A ONE COURSE SURFACE TREATMENT.

26. ALL ASPHALTIC CONCRETE PAVEMENT USED IN BASE COURSES WILL BE TYPE "A"OR "B" AND WILL MEET PG BINDER GRADE 64-22.

27. ALL PAVEMENT WIDENING INCLUDING SHOULDERS WILL MATCH THE EXISTING PAVEMENT CROSS SLOPE.

28. ALL PAVEMENT MARKINGS WILL BE TYPE I THERMOPLASTIC (100MIL) WILL UNDER-SEAL MEETING THE REQUIREMENTS OF TXDOT ITEM 666, REFLECTORIZED PAVEMENT MARKINGS. THE CONTRACTOR WILL PLACE GUIDE MARKS IN ACCORDANCE WITH ITEM 666 AND WILL MAKE ARRANGEMENTS FOR TXDOT INSPECTION OF THE PAVEMENT MARKING LAYOUT PRIOR TO PLACEMENT OF STRIPING. EQUIPMENT USED FOR THE PLACEMENT OF STRIPING WILL MEET THE PRODUCTION REQUIREMENTS OF ITEM 666 UNLESS OTHERWISE APPROVED IN ADVANCE BY THE TXDOT MAINTENANCE SUPERVISOR.

29. EXISTING PAVEMENT MARKINGS THAT CONFLICT WITH PROPOSED PAVEMENT MARKINGS WILL BE LIGHTLY GROUND IN A MANNER THAT DOES NOT DAMAGE THE PAVEMENT SURFACE, TO REMOVE ANY PAVEMENT MARKING ACCUMULATION, AND WILL BE COVERED WITH A STRIP SEAL OF 18" MINIMUM WIDTH, CONSISTING OF PRECOATED GRADE 5, FRICTION CLASS B AGGREGATE.

30. ALL MATERIALS AND CONSTRUCTION METHODS USED IN STATE RIGHT OF WAY WILL MEET TXDOT SPECIFICATIONS. THIS SUPERSEDES ALL OTHER SPECIFICATIONS IN THE PLANS.

31. ALL TURN LANE CONCRETE PAVEMENT IN STATE ROW WILL MEET THE REQUIREMENTS OF TXDOT ITEM 360 CONCRETE AND WILL BE BATCHED AT CONCRETE PLANTS HAVING A CURRENT APPROVED MIX DESIGN. CLASS P CONCRETE SHALL HAVE 7 AND 28 DAY COMPRESSIVE STRENGTH OF 3200 PSI AND 4400 PSI RESPECTIVELY.

32. WHEN WIDENING EXISTING CONCRETE PAVEMENTS, JOINTS IN THE NEW PAVEMENT WILL MATCH JOINTS IN EXISTING PAVEMENT AND CURB.

33. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT TXDOT APPROVED MATERIALS, MIX DESIGNS, APPROVED SOURCES AND PRODUCTS ARE USED FOR ALL WORK IN STATE ROW. THE CONTRACTOR WILL ARRANGE FOR THE SERVICES OF A QUALIFIED TESTING LABORATORY FOR ALL ITEMS REQUIRING TESTING AND WILL NOTIFY TXDOT OF ANY DISCREPANCIES BETWEEN TEST RESULTS AND TXDOT SPECS IN A TIMELY MANNER. THE CONTRACTOR WILL PROVIDE TO TXDOT INVOICES AND TESTING RESULTS AS SOON THEY ARE AVAILABLE. FAILURE TO DO THIS WILL RESULT IN REJECTION OF THE WORK.

34. SAWING OF CONTRACTION/CONSTRUCTION JOINTS IN CONCRETE PAVEMENT WILL BE ACCOMPLISHED AS SOON AS PERSONNEL CAN WALK ON THE CONCRETE WITHOUT DAMAGING THE SURFACE REGARDLESS OF TIME OF DAY OR WEATHER CONDITIONS. STAND-BY POWER DRIVEN CONCRETE SAWS WILL BE PROVIDED DURING THE SAWING OPERATION. CURING COMPOUND WILL BE RE-APPLIED TO THE SAWED JOINT IMMEDIATELY UPON SAWING THE JOINT.

35. GUARDRAIL SETS WILL BE TYPE 3 UNLESS OTHERWISE APPROVED BY THE TXDOT MAINTENANCE SUPERVISOR. GUARDRAIL MOWSTRIP PLACED ADJACENT TO OTHER CONCRETE RIP-RAP WILL BE SEPARATED BY A FORMED CONSTRUCTION JOINT.

36. ANY CONCRETE CURB TO BE REMOVED WILL BE SAW-CUT AT THE LIMITS OF REMOVAL AND BE REMOVED ENTIRELY. SLICING THE TOP PORTION OF THE CURB OFF AND LEAVING REMAINING PORTION OF CURB IN PLACE IS UNACCEPTABLE.

37. ANY DAMAGE TO TXDOT FACILITIES WILL BE REPAIRED AT NO EXPENSE TO THE STATE, TO TXDOT'S SATISFACTION.

38. SIDEWALKS PLACED IN THE HIGHWAY RIGHT-OF-WAY WILL BE A MINIMUM WIDTH OF FIVE FEET OR COMPLY WITH THE MORE STRINGENT WIDTH AS REQUIRED BY CITY ORDINANCE AND WILL MEET ALL OTHER REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT. PEDESTRIAN RAMPS WILL BE PROVIDED AT STREET AND DRIVEWAY INTERSECTIONS AS SHOWN ON THE CURRENT STATE STANDARD FOR PEDESTRIAN FACILITIES. COLOR CONTRAST AND TEXTURING OF PEDESTRIAN RAMPS WILL BE PLACE AT STREET INTERSECTION RAMPS ONLY AS SHOWN ON THE CURRENT STATE STANDARD FOR PEDESTRIAN FACILITIES. PEDESTRIAN RAMPS AT DRIVEWAY INTERSECTIONS WILL NOT RECEIVE ANY COLOR CONTRAST OR TEXTURING. METAL PLATING FOR SIDEWALK BRIDGES WILL MATCH THE TYPICAL WIDTH OF THE APPROACH SIDEWALK. TIS MAY RESULT IN A WIDTH THAT IS GREATER THAN SHOWN IN THE STANDARD DETAILS INCLUDED IN THE PLANS.

39. THE CONTRACTOR WILL USE BEST MANAGEMENT PRACTICES (BMP'S) TO MINIMIZE EROSION AND SEDIMENTATION IN THE STATE RIGHT OF WAY RESULTING FROM THE PROPOSED CONSTRUCTION. RE-VEGETATION OF DISTURBED AREAS WILL BE COMPLETED IN ACCORDANCE WITH TXDOT STANDARD SPECIFICATIONS. PERMANENT VEGETATIVE COVER MUST ACHIEVE 70% COVERAGE PRIOR TO PROJECT ACCEPTANCE. SOIL RETENTION BLANKETS MAY BE REQUIRED TO PREVENT EROSION OF TOPSOIL PRIOR TO VEGETATION RE-ESTABLISHMENT.

40. PRIOR TO SEEDING OR RE-VEGETATION THE FRONT SLOPES WILL BE SHOULDERED UP WITH TOPSOIL TO ELIMINATE ANY PAVEMENT EDGE DROP-OFF.

41. MUD TRACKED ONTO THE ROADWAY FROM THE SITE WILL BE IMMEDIATELY REMOVED TO THE SATISFACTION OF TXDOT.

42. IT WILL BE THE DEVELOPER/OWNER'S RESPONSIBILITY TO CLEAN OUT, TO THE STATE'S SATISFACTION, ANY DRAINAGE STRUCTURE OR STORM SEWER SYSTEM THAT BECOMES SILTED AS A RESULT OF THEIR OPERATIONS.

43. THE ADJUSTMENT OF ANY UTILITIES IN STATE RIGHT OF WAY OR ADJACENT PRIVATE EASEMENT WILL BE THE RESPONSIBILITY OF THE DEVELOPER/OWNER.

44. THE CONTRACTOR IS RESPONSIBLE FOR PLACING AND MAINTAINING EXISTING SIGNS ON TXDOT APPROVED TEMPORARY MOUNTS UNTIL PERMANENT SIGNS ARE PLACED.

45. THE FINAL PLACEMENT OF PERMANENT SIGNS WILL BE COORDINATED PRIOR TO PLACEMENT WITH THE LOCAL TXDOT MAINTENANCE SUPERVISOR.

46. FOR WORK WITHIN THE STATE RIGHT OF WAY WHERE REMOVAL OF MATERIALS OR DEBRIS WITHIN THE CONSTRUCTION LIMITS AND NOT INCORPORATED IN THE FINISHED ROADWAY SECTION OF RIGHT OF WAY, WILL BE DISPOSED OF IN A MANNER ACCEPTABLE TO THE MAINTENANCE SUPERVISOR AT NO EXPENSE TO THE STATE. MATERIALS THAT ARE NOT DETERMINED TO BE SALVAGEABLE BY THE MAINTENANCE SUPERVISOR BECOME THE PROPERTY OF THE CONTRACTOR FOR PROPER DISPOSAL AT THEIR EXPENSE. MATERIALS DETERMINED TO BE SALVAGEABLE WILL BE RETURNED TO THE STATE AND DELIVERED TO THE LOCATION AS DETERMINED BY THE MAINTENANCE SUPERVISOR.

47. REGARDLESS OF ERRORS AND OMISSIONS IN INFORMATION PROVIDED IN THE PLANS OR CROSS-SECTIONS THE PERMITEE IS RESPONSIBLE FOR PROVIDING FOR POSITIVE DRAINAGE OUTFALLS WITHIN AND OFF THE LIMITS OF THE PROJECT.
   A. KEEP THE SIGNALS IN OPERATION AT ALL TIMES EXCEPT WHEN NECESSARY FOR SPECIFIC INSTALLATION OPERATIONS, INCLUDING ANY MODIFICATIONS TO EXISTING SIGNAL HEADS TO MAINTAIN CLEAR VISIBILITY AT ALL TIMES. WHEN IT IS NECESSARY FOR A SIGNAL TO BE TURNED OFF, HIRE OFF DUTY POLICE OFFICERS TO CONTROL THE TRAFFIC UNTIL THE SIGNALS ARE BACK IN SATISFACTORY CONDITION.

48. (FOR WORK IN CITY OF NEW BRAUNFLES) ALL TRAFFIC SIGNALS ON THE STATE HIGHWAY SYSTEM WITHIN THE NEW BRAUNFELS CITY LIMITS, WITH THE EXPECTION OF SIGNALS ON IH 35, ARE THE RESPONSIBILITY OF THE CITY OF NEW BRAUNFELS AND THE CITY OF NEW BRAUNFELS WILL PERFORM CONSTRUCTION INSPECTION. CONTACT GARRY FORD, P.E. AT (830) 221-4645, 48 HOURS PRIOR TO THE NEED FOR ANY INSPECTIONS. ALSO WHEN NON- TRAFFIC SIGNAL WORK IS BEING PERFORMED WITHIN 400 FEET OF AN EXISTING SIGNALIZED INTERSECTION, FLASHING BEACON OR SCHOOL ZONE FLASHER OR OTHER TYPE OF SIGNAL; IF WITHIN THE CITY OF NEW BRAUNFELS AREA OF RESPONSIBILITY CONTACT GARRY FORD, P.E. TO DETERMINE/VERIFY THE LOCATION OF LOOP DETECTORS, CONDUIT, GROUND-BOXES, ETC. FOR ALL OTHER LOCATIONS, CONTACT TXDOT REPRESENTATIVE, MIKE GARZA, AT (210) 615-6028, E-MAIL IS MIKE.GARZA@TXDOT.GOV. THE CONTRACTOR IS RESPONSIBLE FOR REPAIR OR REPLACEMENT OF ANY SIGNAL EQUIPMENT DAMAGED BY CONSTRUCTION OPERATIONS. THE METHOD OF REPAIR OR REPLACEMENT SHALL BE PRE-APPROVED AND INSPECTED. DEPENDING ON THE TYPE AND EXTENT OF THE DAMAGE, THE ENGINEER RESERVES THE RIGHT TO PERFORM THE REPAIR OR REPLACEMENT WORK AND THE CONTRACTOR WILL BE BILLED FOR THIS WORK. WHEN WORKING NEAR AERIAL ELECTRICAL LINES OR UTILITY POLES, COMPLY WITH FEDERAL, STATE AND LOCAL REGULATIONS.

49. (FOR AREAS OTHER THAN CITY OF NEW BRAUNFELS) WHEN NON- TRAFFIC SIGNAL WORK IS BEING PERFORMED WITHIN 400 FEET OF AN EXISTING SIGNALIZED INTERSECTION, FLASHING BEACON OR SCHOOL ZONE FLASHER OR OTHER TYPE OF SIGNAL, CONTACT TXDOT REPRESENTATIVE, MIKE GARZA, AT (210) 615-6028, E-MAIL IS MIKE.GARZA@TXDOT.GOV. THE CONTRACTOR IS RESPONSIBLE FOR REPAIR OR REPLACEMENT OF ANY SIGNAL EQUIPMENT DAMAGED BY CONSTRUCTION OPERATIONS. THE METHOD OF REPAIR OR REPLACEMENT SHALL BE PRE-APPROVED AND INSPECTED. DEPENDING ON THE ON THE TYPE AND EXTENT OF THE DAMAGE, TXDOT RESERVE THE RIGHT TO PERFORM THE REPAIR OR REPLACEMENT WORK AND THE CONTRACTOR WILL BE BILLED FOR THIS WORK WHEN WORKING NEAR AERIAL ELECTRICAL LINES OR UTILITY POLES, COMPLY WITH FEDERAL, STATE AND LOCAL REGULATIONS.

NOTE:

CONTRACTOR TO ADHERE TO ALL TXDOT REQUIREMENTS

CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES 48 HOURS PRIOR TO EXCAVATION:

GVSUD	830-914-2330
GBRA	830-379-5822
Spectrum Cable	830-625-3408
Centerpoint Gas	830-643-6434
Robert Sanders	830-643-6903
Damaged Line	888-876-5786
AT&T Telephone	830-303-1333
Erick White PM	210-283-1706
Scott McBrearty (Construction)	210-658-4886
Texas One Call	830-545-6005

C.P.E. LOCATOR

CALL CENTER POINT ENERGY LOCATOR AT 1-800-545-6005, 48HRS BEFORE BEGINNING ANY EXCAVATION. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.181, CENTER POINT ENERGY MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT AND WORK AROUND ANY GAS VALVES THAT ARE IN THE PROJECT AREA.

TELEPHONE LOCATOR

THE EXISTENCE AND LOCATION OF UNDERGROUND CABLE INDICATED ON THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR TO CONTACT THE TELEPHONE COMPANY CABLE LOCATOR 48HRS PRIOR TO EXCAVATION AT 1-800-545-6005,. CONTRACTOR HAS THE RESPONSIBILITY TO PROTECT AND SUPPORT TELEPHONE COMPANY DURING CONSTRUCTION.

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 CONTRACTORS IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA TITLE 29, PART 1926, SUBPART P 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 TITLE 29 PART 1926, SUBPART P STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATIONS.

THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR WILL AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE INCURRED BY THEIR FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES, STRUCTURES OR FACILITIES. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES 24-HOURS PRIOR TO COMMENCING CONSTRUCTION.

1. TXDOT MAINTENANCE OFFICE WILL BE CONTACTED BY THE CONTRACTOR 48 HOURS PRIOR TO WORK OCCURRING IN STATE RIGHT OF WAY.

GUADALUPE COUNTY	TRAVIS YOUNG	(830) 303-0130 IN SEGUIN
COMAL COUNTY	DUANE HOFFERICHTER	(830) 609-0707 IN NEW BRAUNFELS

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED
PROFESSIONAL ENGINEER
12/08/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

TXDOT GENERAL NOTES

SHEET 56 OF 64

NO	DATE	ISSUES AND REVISIONS
1	12-02-2025	REVISED PER GUADALUPE COUNTY COMMENTS

INK CIVIL
2021 W SH46, STE 105
NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 ink-civil.com
TBPE FIRM F-13351

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Drawing Name: N:\Projects\080002 Buck Property - 109ac\Civil\Construction Drawings\04 TXDOT GENERAL NOTES.dwg User: chuckwere Dec 08, 2025 - 7:23am

HORIZONTAL CONTROL			
POINT NO.	NORTHING	EASTING	DESCRIPTION
100	13,776,110.29	2,265,605.91	CP SET 1/2IRWRC
101	13,776,506.06	2,265,417.14	CP SET 1/2IRWRC
BENCHMARK			
59	13,776,097.150	2,265,493.765	BENCHMARK

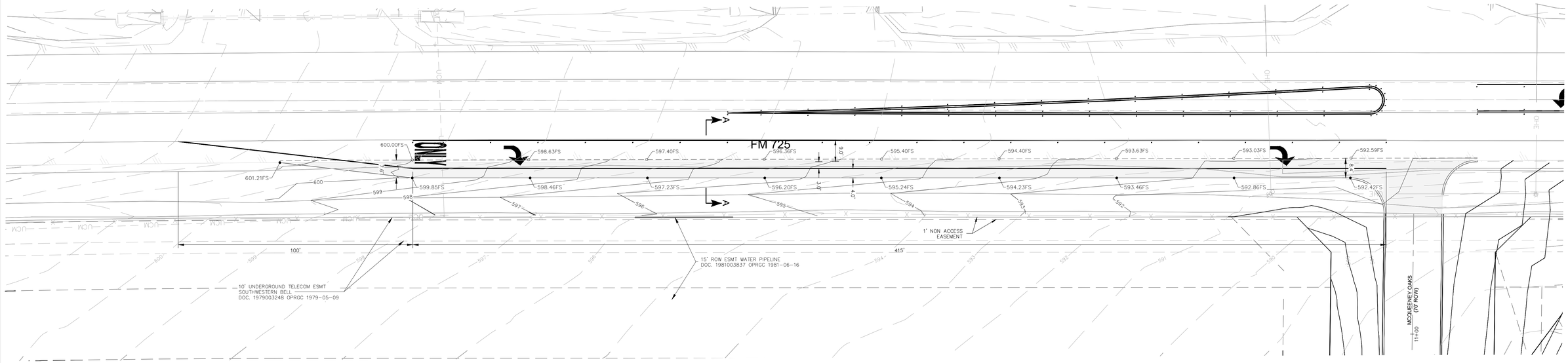
LEGEND

- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPERTY LINE
- PAVEMENT CUT
- PROPOSED PAVEMENT
- EXISTING OVERHEAD ELECTRIC
- EXISTING UNDERGROUND COMM LINE
- EXISTING FENCE
- EXISTING EDGE OF PAVEMENT

N

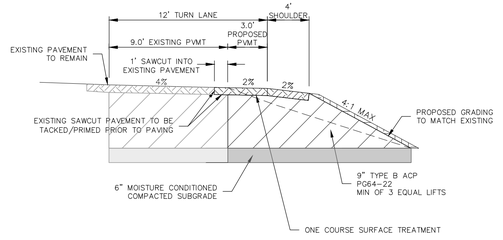
0 20' 40'

SCALE: 1"=20'



NOTE:

1. CONTRACTOR TO MILL DOWN THE EXISTING SHOULDER 4" AND RECONSTRUCT THE EXISTING SHOULDER WITH 4" OF TYPE B ACP OF PG 64–22.
2. THE SHOULDER MILLING WILL EXTEND 1 FOOT INTO THE EXISTING TRAVEL LANE.
3. THE MATERIAL REMOVED SHALL LIMITED TO WHAT CAN BE REPLACED IN A DAYTIME WORK ZONE OPERATION BETWEEN THE HOURS OF 9:00AM AND 4:00PM.
4. NEW PAVEMENT WIDENING WILL BE PERFORMED WITH 12" TYPE B ACP BINDER 64–22 IN 3 EQUAL LIFTS.
8. THE TYPE B ACP WILL RECEIVE A ONE COURSE SURFACE TREATMENT (OCST) OF TYPE PB GRADE 4 AGGREGATE WHICH SHALL EXTEND FROM THE EDGE OF PAVEMENT TO ONE (1) FOOT PAST THE AREA OF MILLING.
9. THE FINAL PAVING WILL BE A ONE SURFACE COARSE TREATMENT EXTENDING FROM EDGE OF PAVEMENT TO EDGE OF PAVEMENT ALL THE WAY ACROSS THE ROADWAY AND WILL CONSIST OF GRADE 3 PB SAC B AGGREGATE AND AC 20–5 TR ASPHALT.
10. THE SUBGRADE WILL BE MOISTURE CONDITIONED AND COMPACTED BY ORDINARY COMPACT MEETING THE REQUIREMENTS OF TXDOT ITEM 132 AND WILL BE PROOF ROLLED WITH A FULLY LOADED WATER TRUCK PRIOR TO PAVING WITH TYPE B ACP.
11. PROOF ROLLING SHALL BE WITNESSED BY THE TXDOT INSPECTOR AND ANY WEAK SPOTS WILL BE CORRECTED TO THE TXDOT INSPECTOR'S SATISFACTION.



STATE OF TEXAS
JAMES INGALLS
107416
LICENSED
PROFESSIONAL ENGINEER
12/08/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

TXDOT RIGHT TURN LANE

SHEET 57 OF 64

NO	DATE	ISSUES AND REVISIONS
1		

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HORIZONTAL CONTROL			
POINT NO.	NORTHING	EASTING	DESCRIPTION
100	13,776,110.29	2,265,605.91	CP SET 1/2IRWRC
101	13,776,506.06	2,265,417.14	CP SET 1/2IRWRC
BENCHMARK			
59	13,776,097.150	2,265,493.765	BENCHMARK

SITE PLAN KEYNOTES

ITEM	NOTE
(A)	REFL PAV MRK TY I & II (W)(SLD)(4")
(B)	REFL PAV MRK TY I & II (W)(SLD)(8")
(C)	REFL PAV MRK TY I & II (Y)(ARROW) (ONLY)
(D)	REFL PAV MRK TY I & II (Y)(SLD)(DBL 4")
(E)	REFL PAV MRK TY II A-A
(F)	REFL PAV MRK TY I C

NOTE: REFER TO TXDOT PM STANDARD SHEETS FOR PAVEMENT MARKING PLACEMENT & SPACING.

NOTE:

1. CONTRACTOR TO MILL DOWN THE EXISTING SHOULDER 4" AND RECONSTRUCT THE EXISTING SHOULDER WITH 4" OF TYPE B ACP OF PG 64-22.
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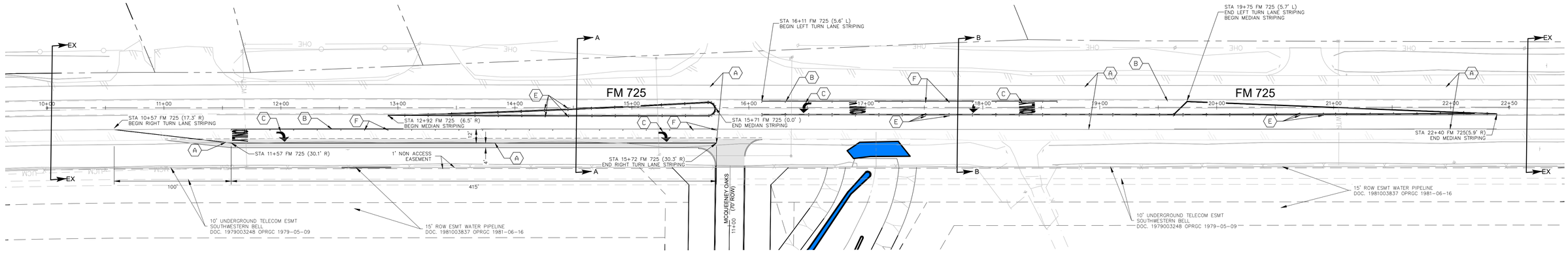
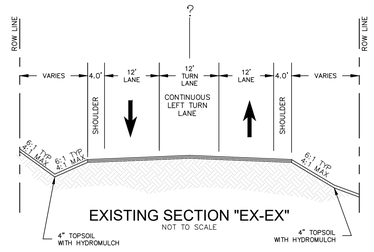
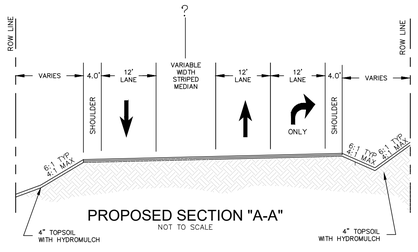


FM 725 STRIPING PLAN

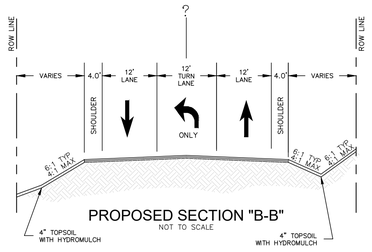
SCALE: 1" = 40'



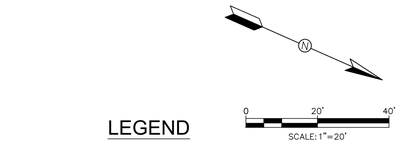
EXISTING SECTION "EX-EX"
NOT TO SCALE



PROPOSED SECTION "A-A"
NOT TO SCALE



PROPOSED SECTION "B-B"
NOT TO SCALE



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ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

TXDOT STRIPING PLAN

SHEET 58 OF 64

NO	DATE	ISSUES AND REVISIONS
1		

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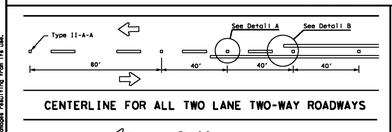
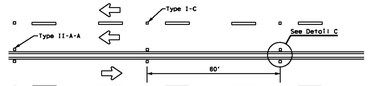
STATE LAWS: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by the Texas Department of Transportation for any purpose whatsoever. Texas law requires all plans prepared to be sealed by a professional engineer. The Texas Department of Transportation will not be responsible for the engineering in this plan and bears no responsibility for any revisions to this standard unless the design engineer is employed by the Texas Department of Transportation. Texas law requires all plans prepared to be sealed by a professional engineer. The Texas Department of Transportation will not be responsible for the engineering in this plan and bears no responsibility for any revisions to this standard unless the design engineer is employed by the Texas Department of Transportation.

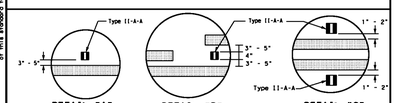
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE

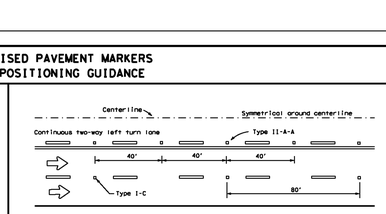


CENTERLINE FOR ALL TWO LANE TWO-WAY ROADWAYS

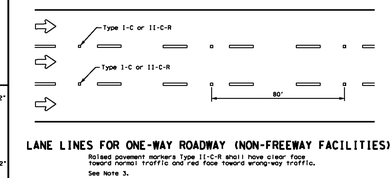


CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY ROADWAYS





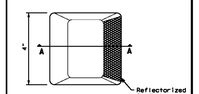
CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



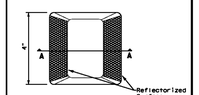
LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

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

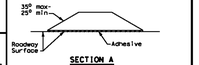
See Note 3.



Type I (Top View)



Type II (Top View)

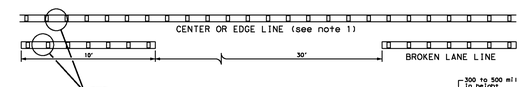


SECTION A

RAISED PAVEMENT MARKERS

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

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



REFLECTORIZED PROFILE PATTERN DETAIL

USING REFLECTIVE PROFILE PAVEMENT MARKINGS

6" EDGE LINE, 6" CENTERLINE OR 6" LANE LINE

A quick field check for the thickness of base line and profile marking is approximately equal to a stack of 3 quarters to a maximum height of 7 quarters.

NOTES

1. Edge lines should typically be 6" wide and the materials shall be specified in the plans.
2. Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

GENERAL NOTES

1. All raised pavement markers placed along broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.
3. Use raised pavement marker Type I-C with undivided roadways, flush medians and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.

Texas Department of Transportation — Traffic Safety Division Standard

POSITION GUIDANCE USING RAISED MARKERS RELECTORIZED PROFILE MARKINGS PM(2)-22

FILE:	pm1-22.dgn	DN:	CK:	DW:	CK:
©TxDOT	December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS					
4-77 8-00 8-20		DIST	COUNTY		SHEET NO.
4-92 2-10 12-22					
5-00 2-12					

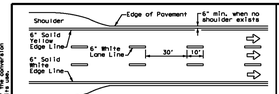
369

TYPICAL STANDARD PAVEMENT MARKINGS

PM(1)-22

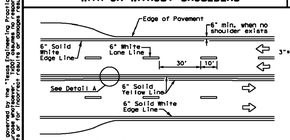
FILE:	pm1-22.dgn	DN:	CK:	DW:	CK:
©TxDOT	December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS					
11-78 8-00 1-20		DIST	COUNTY		SHEET NO.
9-90 3-03 12-22					
5-00 2-12					

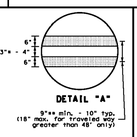
368



EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS

TYPICAL TWO-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS

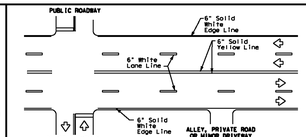




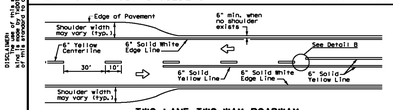
CENTERLINE AND LANE LINES FOUR LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS

* 2" minimum for restripe projects when approved by the Engineer.

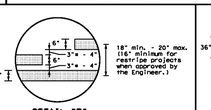
** 8" minimum for restripe projects when approved by the Engineer.



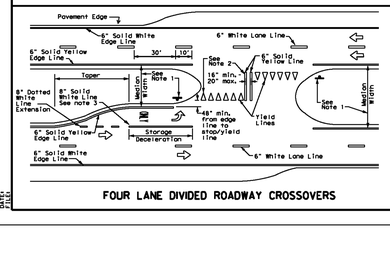
TYPICAL MULTI-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS



TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



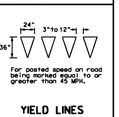
* 2" minimum for restripe projects when approved by the Engineer.



FOUR LANE DIVIDED ROADWAY CROSSOVERS

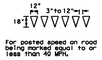
NOTES

1. Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections. Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling width to determine if signs are required. Yield signs are the typical intersection control. Stop signs and stop bars are optional as determined by the Engineer.
2. Install median striping (double yellow centerlines and stop lines/yield lines) when a 50' or greater median centerline can be placed. Stop lines shall only be used with stop signs. Yield lines shall only be used with yield signs.
3. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer.



For posted speed on road being signed equal to or greater than 45 MPH.

YIELD LINES



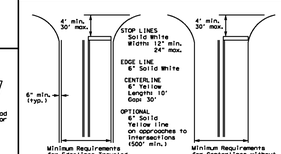
For posted speed on road being signed equal to or less than 45 MPH.

GENERAL NOTES

1. Edge line striping shall be as shown in the plans or as directed by the Engineer. The edge line should not be placed less than 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edge lines are not required in curb and gutter sections of roadways.
2. The traveled way includes only that portion of the roadway used for vehicular travel. It does not include the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the center of edge line to the center of edge line of a two lane roadway.

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

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



NOTE: Traveled way is exclusive of shoulder widths. Refer to General Note 2 for additional details.

GUIDE FOR PLACEMENT OF STOP LINES, EDGE LINE & CENTERLINE

Based on Traveled Way and Pavement Widths for Undivided Roadways

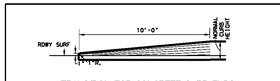
Texas Department of Transportation — Traffic Safety Division Standard

TYPICAL STANDARD PAVEMENT MARKINGS

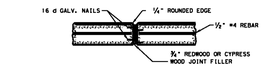
PM(1)-22

FILE:	pm1-22.dgn	DN:	CK:	DW:	CK:
©TxDOT	December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS					
11-78 8-00 1-20		DIST	COUNTY		SHEET NO.
9-90 3-03 12-22					
5-00 2-12					

368A

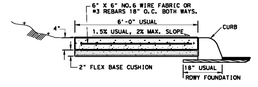


TRANSITION FOR CONCRETE CURB ENDS



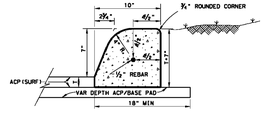
EXPANSION JOINTS TO BE PLACED AT BEGINNING AND END OF CURVES, DRIVEWAYS WHEELCHAIR RAMPS, INLETS, ILLUMINATION/ SIGNAL FOUNDATIONS AND OTHER FIXED OBJECTS.

TYPICAL CURB EXPANSION JOINT DETAIL

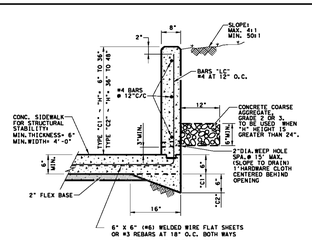


TYPICAL SIDEWALK SECTION

GROOVED JOINTS IN THE SIDE WALK SHALL BE AT A MAX. SPACING OF 10 FT. AND SHALL HAVE ¾" EXPANSION JOINTS AT A MAX. SPACING OF 60' AND TO COINSIDE WITH THE CURB EXP. JOINTS.

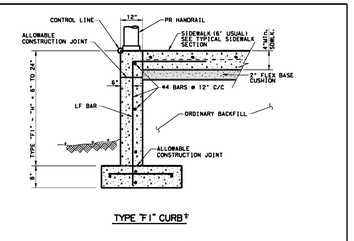


CONCRETE CURB (TYPE 1)

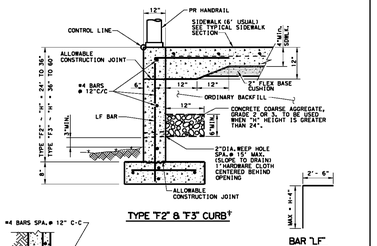


TYPE "C1" & "C2" CURB

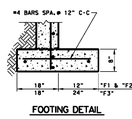
BAR "LC"



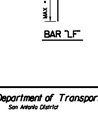
TYPE "F1" CURB†



TYPE "F2" & "F3" CURB†



FOOTING DETAIL



BAR "LF"

GENERAL NOTES:
All Concrete shall be Class "C".
All Reinforcing Steel shall be Grade 60.
†Until the sidewalk is complete, lateral support for the "F" curbs will be required.

DESIGN SOIL PARAMETERS:
Soil Unit Wt.= 120 pcf
PHI = 30 Degrees
Cohesion = 50 psf
Min. PI = 15
Max. PI = 30
SURCHARGE:
TYPE F CURB a = 2' Adjacent to sidewalk
Max. slope behind TYPE C Curb = 4:1
Min. Factor of Safety against sliding is 1.5.
Designed in accordance with current AASHTO Standards and Interim Specifications.

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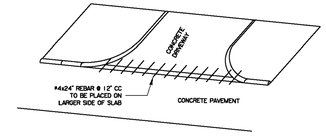
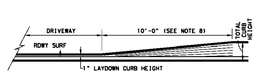
MISCELLANEOUS CURB AND SIDEWALK DETAILS

San Antonio District Standard

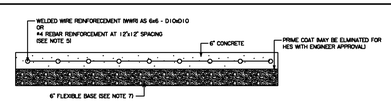
C:\Projects\Standards\Curb\miscpdetails.dgn	PREPARED BY AND FOR USE OF TxDOT			
ORIGINAL DRAWING DATE: 8/1/2020	USER NAME: scottjohnson	DESIGN: AJS	PROJECT:	CHECK:
REVISIONS		DRAWN:	CHECK:	QUANTITY:
08-18 ST widened to width equals 9' when		DIST	COUNTY	SHEET NO.



TIE BAR PLACEMENT WITH CRCP



LAYDOWN CURB AT DRIVEWAYS DETAIL

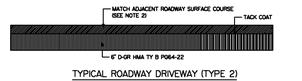


TYPICAL CONCRETE DRIVEWAY

* NOTE: STEEL SHALL BE CENTERED VERTICALLY IN CONCRETE. PAID AS DRIVEWAYS CONC REIF OR DRIVEWAYS CONCF

TYPICAL ROADWAY DRIVEWAY (TYPE 1)

PAID AS DRIVEWAYS ACP (TYPE 1)



TYPICAL ROADWAY DRIVEWAY (TYPE 2)

PAID AS DRIVEWAYS ACP (TYPE 2)

NOTES:

1. USE CLASS A CONCRETE UNLESS OTHERWISE NOTED.
2. DENSE GRADED HMA MAY BE USED WHEN APPROVED BY THE ENGINEER IF THE ROADWAY SURFACE COURSE IS A PERFORMANCE MIX.
3. REFER TO PLAN SHEETS FOR GEOMETRIC DESIGN DETAILS.
4. FOR CONCRETE DRIVEWAYS, PROVIDE EXPANSION JOINT 20 FT C-C FOR WIDTH OR LENGTH OVER 25 FT.
5. FIBER REINFORCEMENT IS NOT ALLOWED.
6. MACHINE LAID HMA IS REQUIRED UNLESS OTHERWISE APPROVED BY THE ENGINEER.
7. FURNISH BASE MEETING THE REQUIREMENTS FOR ANY TYPE OF GRADE IN ACCORDANCE WITH ITEM 247, FLEXIBLE BASE. COMPRESSIVE STRENGTHS ARE WAIVED. BASE IS SUBSIDIARY TO THE ITEM.
8. WHERE SIDEWALK IS PRESENT, SLOPE AND LENGTH OF CURB TRANSITION SHOULD MATCH THE SIDEWALK AND MEET ADA REQUIREMENTS.
9. IF ROOTS ARE ENCOUNTERED VERIFY WITH THE ENGINEER PRIOR TO ACCOMODATING OR REMOVING 2 IN. DIAMETER OR LARGER ROOTS. ROOT REMOVAL MUST BE IN ACCORDANCE WITH ITEM 752-4.2. ROOTS MAY REMAIN IN THE BASE. FOR IMPROVEMENTS WITHIN 6 IN. OF A ROOT, THE CONCRETE THICKNESS MAY BE REDUCED BY 1 IN. AND THE BASE INCREASED BY 1 IN. TO MINIMIZE THE IMPACT TO THE ROOTS. ADJUST BASE AND SURFACE PROFILE TO PROVIDE A 1 IN. BASE CUSHION AROUND THE ROOTS. THE SURFACE PROFILE MAY BE ADJUSTED TO THE EXTENT ALLOWED BY ADA. THIS WORK IS SUBSIDIARY.

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DRIVEWAY DETAILS

San Antonio District Standard

Sheet 1 of 1

C:\Projects\Standards\Curb\rwaydetails.dgn	PREPARED BY AND FOR USE OF TxDOT			
ORIGINAL DRAWING DATE: 8/1/2020	USER NAME: scottjohnson	DESIGN: AJS	PROJECT:	CHECK:
REVISIONS		DRAWN:	CHECK:	QUANTITY:
		DIST	COUNTY	SHEET NO.

STATE OF TEXAS — JAMES INGALLS — 107416 — LICENSED PROFESSIONAL ENGINEER — 12/08/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

TXDOT DETAILS I

SHEET 59 OF 64

NO	DATE	ISSUES AND REVISIONS
1		

INK CIVIL
2021 W SH46, STE 105
NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 ink-civil.com
TBPE FIRM F-13351

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Drawing Name: N:\Projects\080002 Buck Property - 108ac\Civil\Construction Drawings\Kit TXDOT DETAILS V.dwg User: shockware Dec 08, 2025 - 7:24pm

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DATE:
FILE:

SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

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

Post Type

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

Number of Posts (1 or 2)

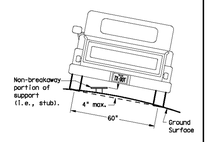
Anchor Type

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))

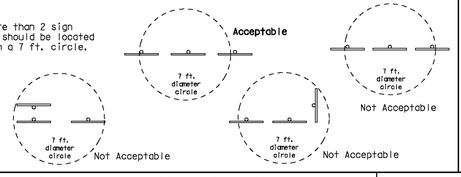
Sign Mounting Designation

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

REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT

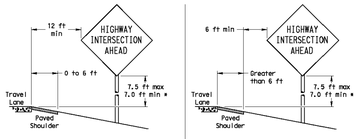


To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel pathsl.



SIGN LOCATION

PAVED SHOULDERS



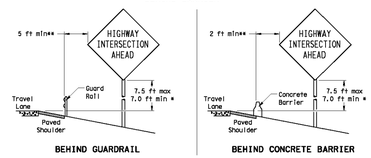
LESS THAN 6 FT. WIDE

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.

BEHIND BARRIER

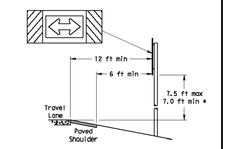


BEHIND GUARDRAIL

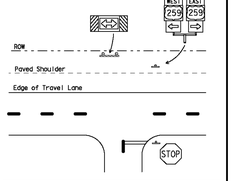
BEHIND CONCRETE BARRIER

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

T-INTERSECTION



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



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

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

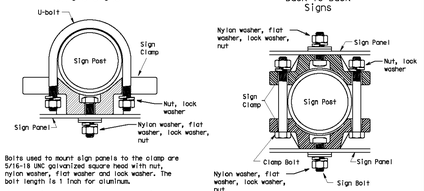
(2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

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

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

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

TYPICAL SIGN ATTACHMENT DETAIL



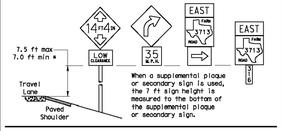
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

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

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

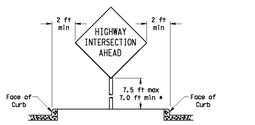
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES

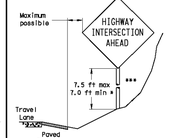


When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

CURB & GUTTER OR RAISED ISLAND



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



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

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

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

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

©TxDOT July 2002		TxDOT	DIV. TXDOT	TPK TXDOT	DIV. TXDOT
9-08 REVISIONS	DIST	COUNTY		HIGHWAY	
	7157	Dallas		SHEET No.	

26A

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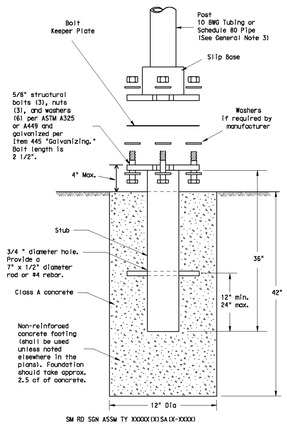
DATE:
FILE:

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.

GENERAL NOTES:

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

ASSEMBLY PROCEDURE

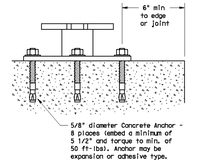
Foundation

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

Support

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

CONCRETE ANCHOR



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

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

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08

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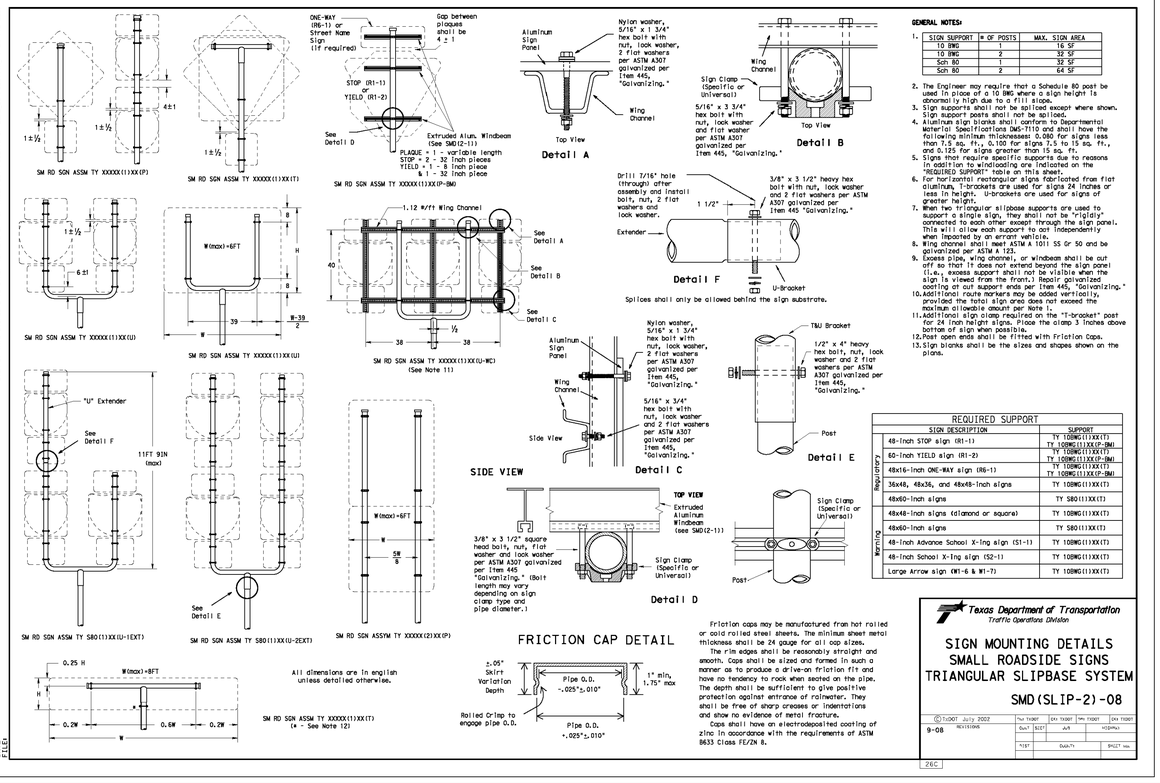
9-08 REVISIONS	DIST	COUNTY		HIGHWAY	
	7157	Dallas		SHEET No.	

26B



GENERAL NOTES:

1. | SIGN SUPPORT | # OF POSTS | MAX. SIGN AREA |
   |---|---|---|
   | 10 BWG | 1 | 16 SF |
   | 10 TWG | 2 | 32 SF |
   | Sch 80 | 1 | 32 SF |
   | Sch 80 | 2 | 64 SF |
2. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
5. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
6. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
7. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
8. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
9. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
10. Additional route markers may be added vertically, provided the total sign area does not exceed the maximum allowable amount per Note 1.
11. Additional sign clamp required on the "T-bracket" post for 24 inch height signs. Place the clamp 3 inches above bottom of sign when possible.
12. Post open ends shall be fitted with Friction Caps.
13. Sign blanks shall be the sizes and shapes shown on the plans.

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

Friction caps may be manufactured from hot rolled or cold rolled steel sheets. The minimum sheet metal thickness shall be 24 gauge for all cap sizes.

The rim edges shall be reasonably straight and smooth. Caps shall be sized and formed in such a manner as to produce a drive-on friction fit and have no tendency to rock when seated on the pipe. The depth shall be sufficient to give positive protection against entrance of rainwater. They shall be free of sharp creases or indentations and show no evidence of metal fracture.

Caps shall have an electrodeposited coating of zinc in accordance with the requirements of ASTM B633 Class FE/ZN 8.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-2)-08

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	7157	Dallas		SHEET No.	

26C

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED
PROFESSIONAL ENGINEER
12/08/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

TXDOT DETAILS II

SHEET 60 OF 64

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1		

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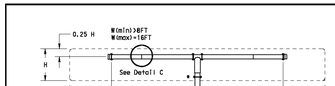
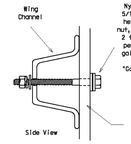
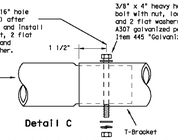


SM RD SGN ASSM TY XXXXX(1)XX(T-EXT)
(* - See Note 12)



Detail B



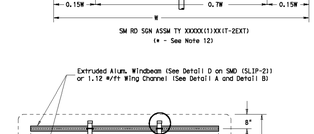
Detail C

Splices shall only be allowed behind the sign substrate.

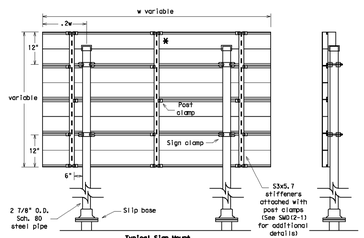
GENERAL NOTES:

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

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



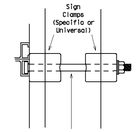
SM RD SGN ASSM TY XXXXX(1)XX(U-XX)



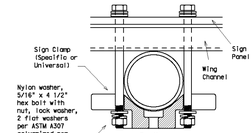
SM RD SGN ASSM TY SB0(2)XX(P-EXAL)

Typical Sign Mount

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

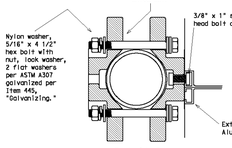


Detail E

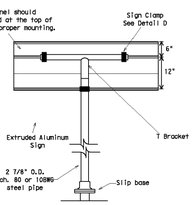


Top View

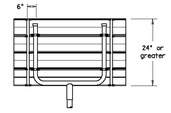
Detail A



Detail D
EXTRUDED ALUMINUM SIGN WITH T BRACKET



Extruded Aluminum Sign
With T Bracket



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

See Detail E for clamp installation

REQUIRED SUPPORT		
	SIGN DESCRIPTION	SUPPORT
Regulatory	48-Inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BW)
	60-Inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BW)
	48x16-Inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BW)
	36x48, 48x36, and 48x48-Inch signs	TY 10BWG(1)XX(T)
	48x60-Inch signs	TY SB0(1)XX(T)
	48x48-Inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-Inch signs	TY SB0(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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9-08 REVISIONS	DIST	JOB		HIGHWAY
	FED.RD. DIV.NO.		PROJECT NO.	
	STATE	DISTRICT	COUNTY	SHEET NO.

260

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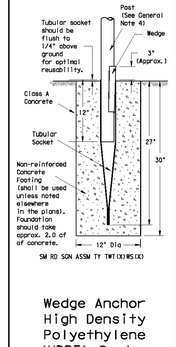
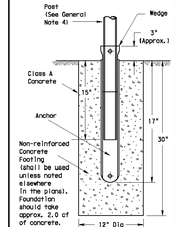
Wedge Anchor Steel System



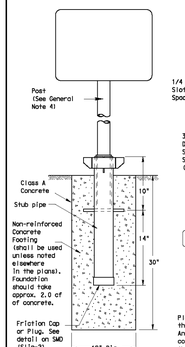
SM RD SGN ASSM TY TWT(X)WS(X)

Wedge Anchor High Density Polyethylene (HDPE) System

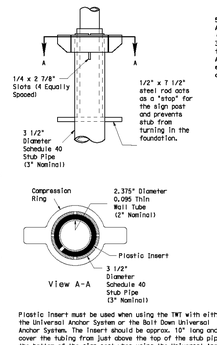


SMD RD SGN ASSM TY TWT(X)WP(X)

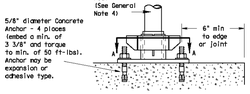
Universal Anchor System with Thin-Walled Tubing Post



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

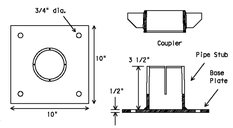


Plastic Insert must be used when using the TWT with either the Universal Anchor System or the Bolt Down Universal Anchor System. The insert should be approx. 10" long and cover the tubing from just above the top of the stub pipe to the bottom of the sign post when using the Universal Anchor System. The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



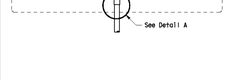
5/8" diameter Concrete Anchor - 4 places (embed a min. of 3 3/8" and torque to min. of 50 ft-lbs). Anchor may be expansion or adhesive type.

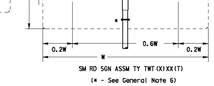
Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. A heavy hex nut per ASTM A563 and hardened washer per ASTM F436. The stud bolt shall have minimum yield and ultimate tensile strengths of 50 and 75 ksi, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Top of bolt shall extend at least flush with top of nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 3 3/8" minimum embedment, shall have a minimum allowable tension and shear of 2450 and 1525 psi, respectively. Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations.



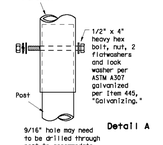
SM RD SGN ASSM TY TWT(X)UB(P)

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. Method, design, and location of marking are subject to the approval of the TxDOT Traffic Standards Engineer.
3. Except for posts (13 BWG Tubing), clamps, nuts and bolts, all components shall be prequalified. A list of prequalified vendors may be obtained from the Material Producer List web page. The website address is: http://www.txdot.gov/business/producer list.htm
4. Material used as post with this system shall conform to the following specifications:
   13 BWG Tubing (2.375" outside diameter) (TWT)
   0.095" nominal wall thickness
   Seamless or electric-resistance welded steel tubing
   Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   Other steels may be used if they meet the 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), precoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
5. Sign blanks shall be the sizes and shapes shown on the plans.
6. Additional sign clamp required on the "T-bracket" post for 24" high signs. Place clamp at least 3" above bottom of sign when possible.
7. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
8. See the Traffic Operations Division website for detailed drawings of sign clamps and Wedge Anchor System components. The website address is: http://www.txdot.gov/publications/traffic.htm

WEDGE ANCHOR SYSTEM INSTALLATION PROCEDURE

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

UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURE

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. Insert base post in hole to depths shown and backfill hole with concrete.
3. Level and plumb the base post using a torpedo level and allow concrete adequate time to set. The bottom of the slots provided in the stub pipe shall remain above the top of the concrete foundation.
4. Attach the slip 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

©TxDOT July 2022	THU TXDOT	DIV TXDOT	FRI TXDOT	DIV TXDOT
9-08 REVISIONS	DIST	JOB		HIGHWAY
	FED.RD. DIV.NO.		PROJECT NO.	
	STATE	DISTRICT	COUNTY	SHEET NO.

26E

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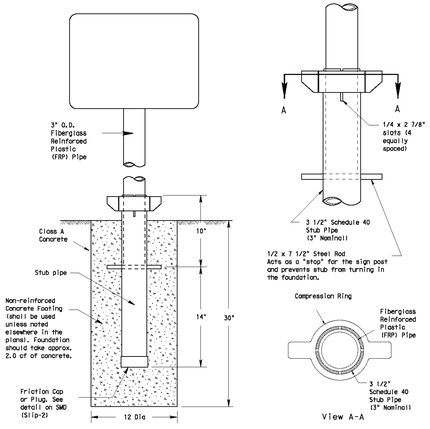
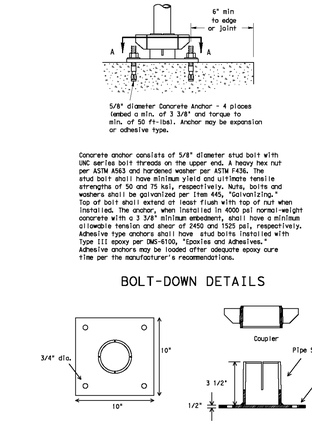
Universal Anchor System with Fiberglass Reinforced Plastic (FRP) Post



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



Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. A heavy hex nut per ASTM A563 and hardened washer per ASTM F436. The stud bolt shall have minimum yield and ultimate tensile strengths of 50 and 75 ksi, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Top of bolt shall extend at least flush with top of nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 3 3/8" minimum embedment, shall have a minimum allowable tension and shear of 2450 and 1525 psi, respectively. Adhesive type anchors shall have stud bolts installed with type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations.

BOLT-DOWN DETAILS

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

GENERAL NOTES:

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

FRP POST REQUIREMENTS

1. Materials shall conform to the requirements of Departmental Material Specification DMS-4410 and will be furnished in a yellow or gray color as specified elsewhere in the plans.
2. Thickness of FRP sign support is 0.125" + 0.031", - 0.0".
3. FRP sign supports are prequalified by the Traffic Operations Division.
   Prequalification procedures are obtained by writing:
   Texas Department of Transportation
   Traffic Operations Division
   125 East 11th Street
   Austin, Texas 78701-2483

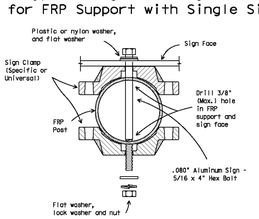
UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURES

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
3. Insert base post in foundation hole to depths shown and fill hole with concrete. Cut base post from bottom and ensure a minimum of 18" embedment if installed in solid rock.
4. Level and plumb the base post with coupler using a torpedo level and let concrete set a minimum of 4 days, unless otherwise directed by Engineer. Bottom of base post slots shall be above the concrete footing.
5. Attach slip 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.

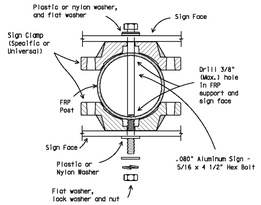
BOLT DOWN SIGN SUPPORT

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 slip to FRP post.
4. Insert bottom of sign post into pipe stub.
5. Use hammer to ensure the coupler is firmly seated. Top of coupler should be level with top of base post in most instances.
6. Check sign to ensure there is no twist. If loose, increase the tightening of coupler.

Typical Sign Mounting Detail for FRP Support with Single Sign



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



Texas Department of Transportation
Traffic Operations Division

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

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9-08 REVISIONS	DIST	JOB		HIGHWAY
	FED.RD. DIV.NO.		PROJECT NO.	
	STATE	DISTRICT	COUNTY	SHEET NO.

26F

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED
PROFESSIONAL ENGINEER
12/08/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

TXDOT DETAILS III

SHEET 61 OF 64

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Drawing Name: N:\Projects\018002 Buch Property - 108ac\Civil\Construction Drawings\64 TXDOT DETAILS V1.dwg User: chuckware Dec 08, 2025 - 1:24pm

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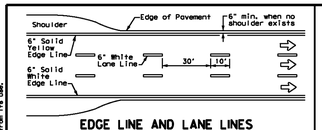
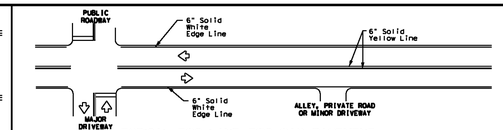
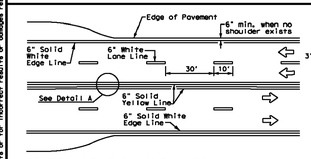
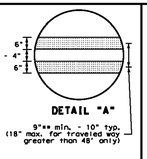


EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS



TYPICAL TWO-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS

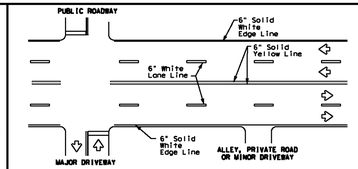




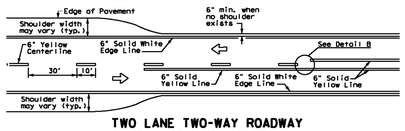
DETAIL "A"
9"** min. - 10" typ. (18" max. for traveled way greater than 48" only)

* 2" minimum for restripe projects when approved by the Engineer.
** 8" minimum for restripe projects when approved by the Engineer.

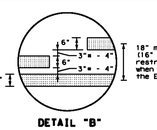
CENTERLINE AND LANE LINES FOUR LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



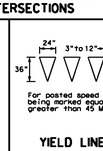
TYPICAL MULTI-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS



TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



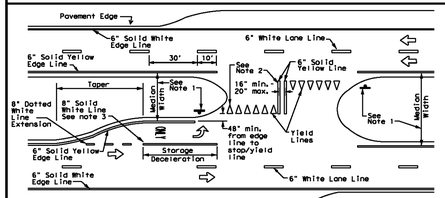
DETAIL "B"
* 2" minimum for restripe projects when approved by the Engineer.



For posted speed on road being marked equal to or greater than 45 MPH.

YIELD LINES

For posted speed on road being marked equal to or less than 40 MPH.



FOUR LANE DIVIDED ROADWAY CROSSOVERS

NOTES

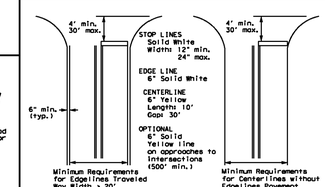
1. Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections. Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling width to determine if signs are required. Yield signs are the typical intersection control. Stop signs and stop bars are optional as determined by the Engineer.
2. Install median striping (double yellow centerlines and stop lines/yield lines) when a 50' or greater median centerline can be placed. Stop lines shall only be used with stop signs. Yield lines shall only be used with yield signs.
3. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer.

GENERAL NOTES

1. Edge line striping shall be as shown in the plans or as directed by the Engineer. The edge line should not be placed less than 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edge lines are not required in curb and gutter sections of roadways.
2. The traveled way includes only that portion of the roadway used for vehicular travel. It does not include the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the center of edge line to the center of edge line of a two lane roadway.

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

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



NOTE: Traveled way is exclusive of shoulder widths. Refer to General Note 2 for additional details.

GUIDE FOR PLACEMENT OF STOP LINES, EDGE LINE & CENTERLINE

Based on Traveled Way and Pavement Widths for Undivided Roadways

Texas Department of Transportation — Traffic Safety Division Standard

TYPICAL STANDARD PAVEMENT MARKINGS

PM(1)-22

FILE: pm1-22.dgn	DN:	CK:	DW:	CK:
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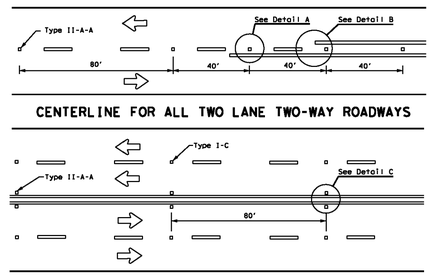
REVISIONS 11-78 8-00 1-20 8-95 1-03 12-22 5-00 2-12	DIST	COUNTY		SHEET NO.

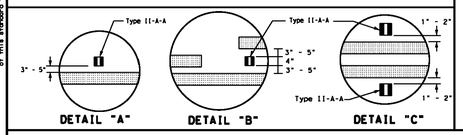
278

REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE

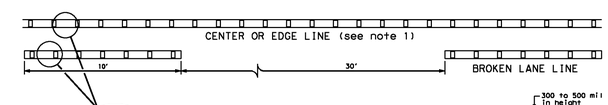


CENTERLINE FOR ALL TWO LANE TWO-WAY ROADWAYS

CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY ROADWAYS

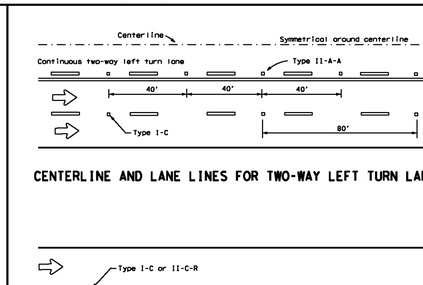


DETAIL "A" DETAIL "B" DETAIL "C"

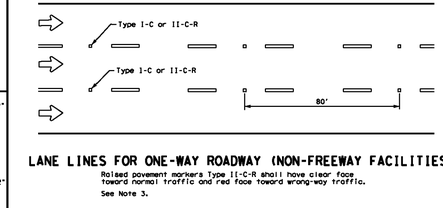


REFLECTORIZED PROFILE PATTERN DETAIL

USING REFLECTIVE PROFILE PAVEMENT MARKINGS



CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



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

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

See Note 3.

NOTES

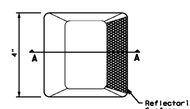
1. Edge lines should typically be 6" wide and the materials shall be specified in the plans.
2. Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

GENERAL NOTES

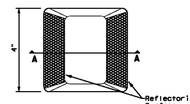
1. All raised pavement markers placed along broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.
3. Use raised pavement marker Type I-C with undivided roadways, flush medians and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.

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

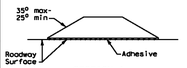
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)



Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS

Texas Department of Transportation — Traffic Safety Division Standard

POSITION GUIDANCE USING RAISED MARKERS RELECTORIZED PROFILE MARKINGS PM(2)-22

FILE: pm2-22.dgn	DN:	CK:	DW:	CK:
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REVISIONS 4-77 8-00 1-20 4-92 2-10 12-22 5-00 2-12	DIST	COUNTY		SHEET NO.

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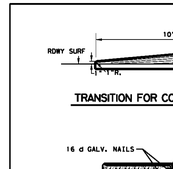
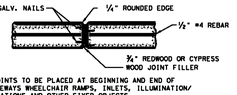
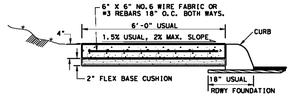


TRANSITION FOR CONCRETE CURB ENDS



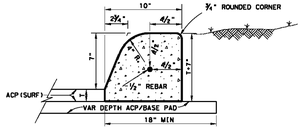
EXPANSION JOINTS TO BE PLACED AT BEGINNING AND END OF CURVES, DRIVEWAYS WHEELCHAIR RAMPS, INLETS, ILLUMINATION/ SIGNAL FOUNDATIONS AND OTHER FIXED OBJECTS.

TYPICAL CURB EXPANSION JOINT DETAIL

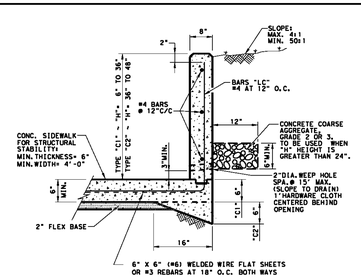


TYPICAL SIDEWALK SECTION

GROOVED JOINTS IN THE SIDE WALK SHALL BE AT A MAX. SPACING OF 10 FT. AND SHALL HAVE ¾" EXPANSION JOINTS AT A MAX. SPACING OF 60' AND TO COINSIDE WITH THE CURB EXP. JOINTS.

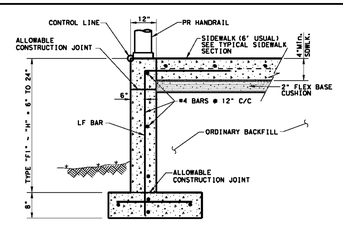


CONCRETE CURB (TYPE I)

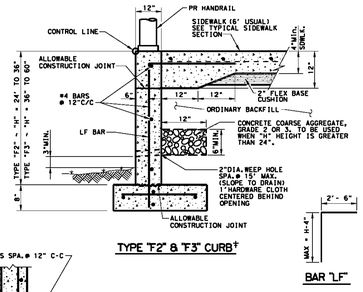


TYPE "C1" & "C2" CURB

BAR "LC"

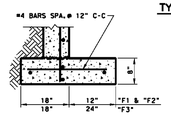


TYPE "F1" CURB†



TYPE "F2" & "F3" CURB†

BAR "LF"



FOOTING DETAIL

GENERAL NOTES:
All Concrete shall be Class "C".
All Reinforcing Steel shall be Grade 60.

†Until the sidewalk is complete, lateral support for the "F" curbs will be required.

DESIGN SOIL PARAMETERS:
Soil Unit Wt.= 120 pcf
Phi = 30 Degrees
Cohesion = 50 psf
Min. PI = 15
Max. PI = 30
SURCHARGE:
TYPE F CURB q = 2' Adjacent to sidewalk
Max. slope behind TYPE C Curb = 4:1
Min. Factor of Safety against sliding is 1.5.
Designed in accordance with current AASHTO Standards and Interim Specifications.

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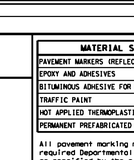
MISCELLANEOUS CURB AND SIDEWALK DETAILS

San Antonio District Standard

T:\Projects\Standards\M\miscurbsmisc1a.dgn	PREPARED BY AND FOR USE OF TxDOT.			
ORIGINAL DRAWING DATE:	STATE	DISTRICT	FEDERAL AID PROJECT	SHEET
REVISIONS	6			
89-01-00 10-19-17 sidewalk width equals 5' usual	COUNTY	CONTROL	SECTION	JOB	HIGHWAY



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TXDOT DETAILS IV

SHEET 62 OF 64

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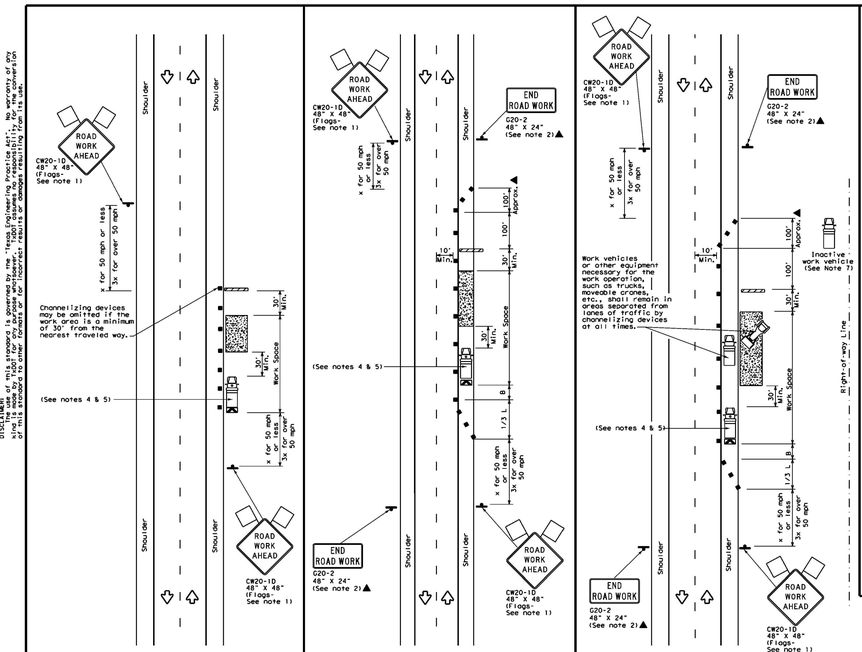

TCP (2-1a)

WORK SPACE NEAR SHOULDER

Conventional Roads

TCP (2-1b)

WORK SPACE ON SHOULDER

Conventional Roads

TCP (2-1c)

WORK VEHICLES ON SHOULDER

Conventional Roads

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board		Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing Distance	Suggested Longitudinal Buffer Space "B"
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45		450'	495'	540'	45'	90'	320'	195'
50	L=WS	500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

* Conventional Roads Only
** Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	✓	✓	✓	✓

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated in the plans, or for routine maintenance work, when approved by the Engineer.
3. Stockpiled material should be placed a minimum of 30 feet from nearest traveled way.
4. Shadow Vehicle with TMA and high intensity rotating, flashing, oscillating or strobe lights, A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
5. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.
6. See TCP(1S-1) for shoulder work on divided highways, expressways and freeways.
7. Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
8. CW21-5 "SHOULDER WORK" signs may be used in place of CW20-1D "ROAD WORK AHEAD" signs for shoulder work on conventional roadways.

Texas Department of Transportation — Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
CONVENTIONAL ROAD
SHOULDER WORK

TCP(2-1)-18

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2-94 4-98		DIST	COUNTY		SHEET NO.
8-95 2-12					
1-97 7-18					

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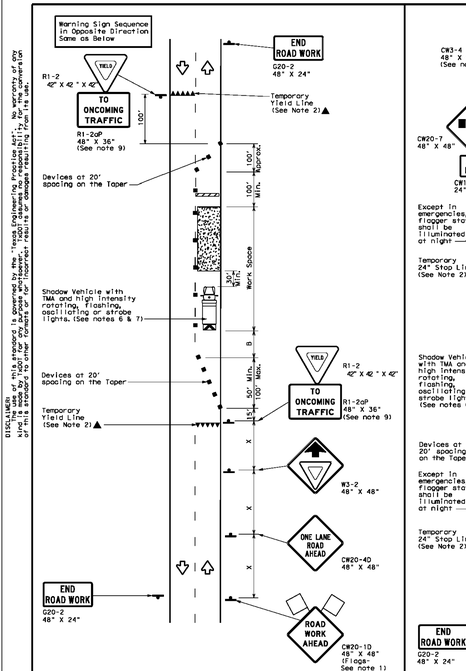


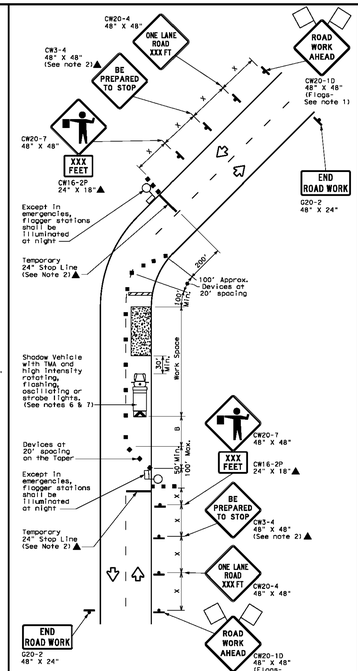
TCP (2-2a)

2-LANE ROADWAY WITHOUT PAVED SHOULDERS

ONE LANE TWO-WAY

CONTROL WITH YIELD SIGNS

(Less than 2000 ADT - See Note 9)



TCP (2-2b)

2-LANE ROADWAY WITHOUT PAVED SHOULDERS

ONE LANE TWO-WAY

CONTROL WITH FLAGGERS

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board		Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"	Stopping Sight Distance
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'	200'
35		205'	225'	245'	35'	70'	160'	120'	250'
40		265'	295'	320'	40'	80'	240'	155'	305'
45		450'	495'	540'	45'	90'	320'	195'	360'
50	L=WS	500'	550'	600'	50'	100'	400'	240'	425'
55		550'	605'	660'	55'	110'	500'	295'	495'
60		600'	660'	720'	60'	120'	600'	350'	570'
65		650'	715'	780'	65'	130'	700'	410'	645'
70		700'	770'	840'	70'	140'	800'	475'	730'
75		750'	825'	900'	75'	150'	900'	540'	820'

* Conventional Roads Only
** Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	✓	✓	✓	✓

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4 "ONE LANE ROAD XXX FT" sign, but proper sign spacing shall be maintained.
4. Flaggers should use two-way radios or other methods of communication to control traffic.
5. Length of work space should be based on the ability of flaggers to communicate.
6. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
7. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.

TCP (2-2a)

8. The R1-2 "YIELD" sign traffic control may be used on projects with approaches that have adequate sight distance. For projects in urban areas, work space should be no longer than one half city block. In rural areas, roadways with less than 2000 ADT, work space should be no longer than 400 feet.
9. The R1-2aP "YIELD TO ONCOMING TRAFFIC" sign shall be placed on a support at a 7 foot minimum mounting height.

TCP (2-2b)

10. Channelizing devices on the center line may be omitted when a pilot car is leading traffic and approved by the Engineer.
11. If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain stopping sight distance to the flagger and a queue of stopped vehicles. (See table above).
12. Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situations.

Texas Department of Transportation — Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
ONE-LANE TWO-WAY
TRAFFIC CONTROL

TCP(2-2)-18

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1b.2

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BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

1. The Barricade and Construction Standard Sheets (BC sheets) are intended to show typical examples for placement of temporary traffic control devices, construction pavement markings, and typical work zone signs. The information contained in these sheets meet or exceed the requirements shown in the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
2. The development and design of the Traffic Control Plan (TCP)is the responsibility of the Engineer.
3. The Contractor may propose changes to the TCP that are signed and sealed by a licensed professional engineer for approval. The Engineer may develop, sign and seal Contractor proposed changes.
4. The Contractor is responsible for installing and maintaining the traffic control devices as shown in the plans. The Contractor may not move or change the approximate location of any device without the approval of the Engineer.
5. Geometric design of lane shifts and detours should, when possible, meet the applicable design criteria contained in manuals such as the American Association of State Highway and Transportation Officials (AASHTO), "A Policy on Geometric Design of Highways and Streets," the TxDOT "Roadway Design Manual" or engineering judgment.
6. When projects abut, the Engineer(s) may omit the END ROAD WORK, TRAFFIC FINES DOUBLE, and other advance warning signs if the signing would be redundant and the work areas appear continuous to the motorists. If the adjacent project is completed first, the Contractor shall erect the necessary warning signs as shown on these sheets, the TCP sheets or as directed by the Engineer. The BEGIN ROAD WORK NEXT X MILES sign shall be revised to show appropriate work zone distance.
7. The Engineer may require duplicate warning signs on the median side of divided highways where median width will permit and traffic volumes justify the signing.
8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition. Sign details not shown in this manual shall be shown in the plans or the Engineer shall provide a detail to the Contractor before the sign is manufactured.
9. The temporary traffic control devices shown in the illustrations of the BC sheets are examples. As necessary, the Engineer will determine the most appropriate traffic control devices to be used.
10. Where highway construction or maintenance work is being undertaken, other than mobile operations as defined by the Texas Manual on Uniform Traffic Control Devices, CSJ limit signs are required. CSJ limit signs are shown on BC(2). The OBEY WARNING SIGNS STATE LAW sign, STAY ALERT TALK OR TEXT LATER and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits. For mobile operations, CSJ limit signs are not required.
11. Traffic control devices should be in place only while work is actually in progress or a definite need exists.
12. The Engineer has the final decision on the location of all traffic control devices.
13. Inactive equipment and work vehicles, including workers' private vehicles must be parked away from travel lanes. They should be as close to the right-of-way line as possible, or located behind a barrier or guardrail, or as approved by the Engineer.

WORKER SAFETY NOTES:

1. Workers on foot who are exposed to traffic or to construction equipment within the right-of-way shall wear high-visibility safety apparel meeting the requirements of ISEA "American National Standard for High-Visibility Apparel," or equivalent revisions, and labeled as ANSI 107-2004 standard performance for Class 2 or 3 risk exposure. Class 3 garments should be considered for high traffic volume work areas or night time work.
2. Except in emergency situations, flagger stations shall be illuminated when flagging is used at night.

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

1. Only pre-qualified products shall be used. The "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources.
2. Work zone traffic control devices shall be compliant with the Manual for Assessing Safety Hardware (MASH).

THE DOCUMENTS BELOW CAN BE FOUND ON-LINE AT http://www.txdot.gov
COMPLIANT WORK ZONE TRAFFIC CONTROL DEVICES LIST (CWZTCD)
DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS)
MATERIAL PRODUCER LIST (MPL)
ROADWAY DESIGN MANUAL - SEE "MANUALS (ONLINE MANUALS)"
STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS (SHSD)
TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD)
TRAFFIC ENGINEERING STANDARD SHEETS

SHEET 1 OF 12

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

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BC.1

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MCQUEENEY OAKS SUBDIVISION

TXDOT DETAILS V

SHEET 63 OF 64

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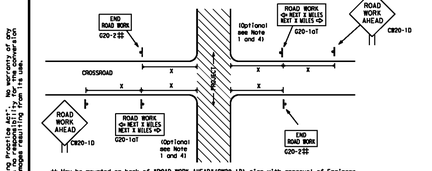
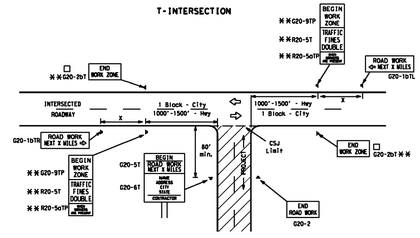
TYPICAL LOCATION OF CROSSROAD SIGNS



T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

1. The Engineer will determine the types and location of any additional traffic control devices, such as a flagger and accompanying signs, or other signs, that should be used when work is being performed at or near an intersection.
2. If construction closes the road at a T-Intersection, the Contractor shall place the "CONTRACTOR NAME" (G20-6T) sign behind the Type 3 Barricades for the road closure (see BC(1)) also). The "ROAD WORK NEXT X MILES" left arrow (G20-1bTL) and "ROAD WORK NEXT X MILES" right arrow (G20-1bTR)* signs shall be replaced by the detour signing called for in the plans.

TYPICAL CONSTRUCTION WARNING SIGN SIZE AND SPACING[1,2,5]

Sign Number or Series	SIZE: Conventional Road	SIZE: Expressway/ Freeway	SPACING: Posted Speed	SPACING: Sign△ Spacing "X"
G20-2[4]			MPH	Feet (approx.)
CW21	48" x 48"	48" x 48"	30	120
CW22			35	160
CW23			40	240
CW25			45	320
CW1, CW2, CW7, CW8, CW9, CW11, CW14	36" x 36"	48" x 48"	50	400
			55	500[2]
			60	600[2]
CW3, CW4, CW5, CW6, CW8-3, CW10, CW12	48" x 48"	48" x 48"	65	700[2]
			70	800[2]
			75	900[2]
			80	1000[2]
			*	*[3]

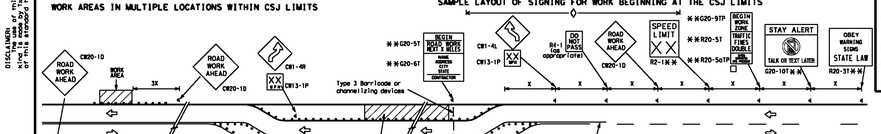
※ For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

△ Minimum distance from work area to first Advance Warning sign nearest the work area and/or distance between each additional sign.

GENERAL NOTES

1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D)signs may be used on low volume crossroads at the discretion of the Engineer as per TMUTCD Part 5. See Note 2 under "Typical Location of Crossroad Signs".
5. Only diamond shaped warning sign sizes are indicated.
6. See sign size listing in "TMUTCD", Sign Appendix or the "Standard Highway Sign Designs for Texas" manual for complete list of available sign design sizes.

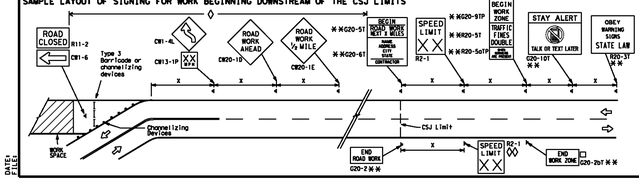
WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



When extended distances occur between minimal work spaces, the Engineer/Inspector should ensure additional "ROAD WORK AHEAD"(CW20-1D)signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing of signs and channelizing devices.

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING DOWNSTREAM OF THE CSJ LIMITS



NOTES

The Contractor shall determine the appropriate distance to be placed on the G20-1 series signs and "BEGIN ROAD WORK NEXT X MILES"(G20-5T)sign for each specific project. This distance shall replace the "X" and shall be rounded to the nearest whole mile with the approval of the Engineer. No decimals shall be used.

□ The "BEGIN WORK ZONE"(G20-9TP) and "END WORK ZONE" (G20-2bT) shall be used as shown on the sample layout when advance signs are required outside the CSJ limits. They inform the motorist of entering or leaving a part of the work zone lying outside the CSJ limits where traffic fines may double if workers are present.

※※ CSJ limit signing is required for highway construction and maintenance work, with the exception of mobile operations.

◊ Area for placement of "ROAD WORK AHEAD" (CW20-1D)sign and other signs or devices as called for on the Traffic Control Plan.

◊◊ Contractor will install a regulatory speed limit sign at the end of the work zone.

LEGEND

⟼	Type 3 Barricade
○○○	Channelizing Devices
▬	Sign
X	See Typical Construction Warning Sign Size and Spacing chart or the TMUTCD for sign spacing requirements.

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

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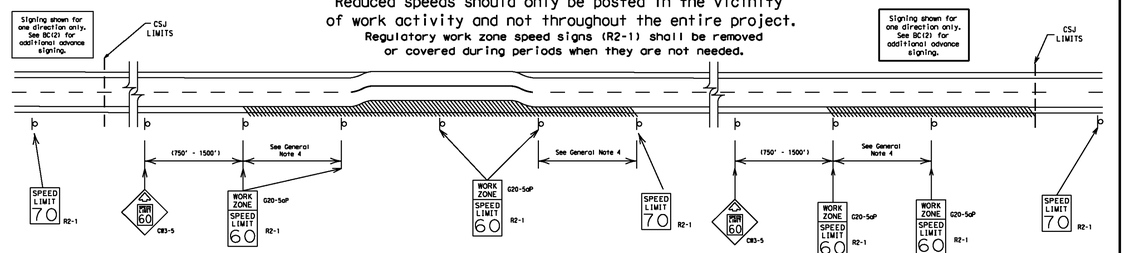
TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

Work zone speed limits shall be regulatory, established in accordance with the "Procedures for Establishing Speed Zones," and approved by the Texas Transportation Commission, or by City Ordinance when within Incorporated City Limits.

Reduced speeds should only be posted in the vicinity of work activity and not throughout the entire project.
Regulatory work zone speed signs (R2-1) shall be removed or covered during periods when they are not needed.



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

This type of work zone speed limit should be included on the design of the traffic control plans when restricted geometrics with a lower design speed are present in the work zone and modification of the geometrics to a higher design speed is not feasible.

Long/Intermediate Term Work Zone Speed Limit signs, when approved as described above, should be posted and visible to the motorist when work activity is present. Work activity may also be defined as a change in the roadway that requires a reduced speed for motorists to safely negotiate the work area, including:

a) rough road or damaged pavement surface
b) substantial alteration of roadway geometrics (diversions)
c) construction detours
d) grade
e) width
f) other conditions readily apparent to the driver

As long as any of these conditions exist, the work zone speed limit signs should remain in place.

SHORT TERM WORK ZONE SPEED LIMITS

This type of work zone speed limit may be included on the design of the traffic control plans when workers or equipment are not behind concrete barrier, when work activity is within 10 feet of the traveled way or actually in the traveled way.

Short Term Work Zone Speed Limit signs should be posted and visible to the motorists only when work activity is present. When work activity is not present, signs shall be removed or covered.
(See Removing or Covering on BC(4)).

GENERAL NOTES

1. Regulatory work zone speed limits should be used only for sections of construction projects where speed control is of major importance.
2. Regulatory work zone speed limit signs shall be placed on supports at a 7 foot minimum mounting height.
3. Speed zone signs are illustrated for one direction of travel and are normally posted for each direction of travel.
4. Frequency of work zone speed limit signs should be:
   40 mph and greater 0.2 to 2 miles
   35 mph and less 0.2 to 1 mile
5. Regulatory speed limit signs shall have black legend and border on a white reflective background (See "Reflective Sheeting" on BC(4)).
6. Fabrication, erection and maintenance of the"ADVANCE SPEED LIMIT"(CW3-5)sign, "WORK ZONE"(G20-5aP) plaque and the "SPEED LIMIT"(R2-1)signs shall not be paid for directly, but shall be considered subsidiary to Item 502.
7. Turning signs from view, laying signs over or down will not be allowed, unless as otherwise noted under "REMOVING OR COVERING" on BC(4).
8. Techniques that may help reduce traffic speeds include but are not limited to:
   A. Law enforcement.
   B. Flagger stationed next to sign.
   C. Portable changeable message sign (PCMS).
   D. Low-power (drone) radar transmitter.
   E. Speed monitor trailers or signs.
9. Speeds shown on details above are for illustration only. Work Zone Speed Limits should only be posted as approved for each project.
10. For more specific guidance concerning the type of work, work zone conditions and factors impacting allowable regulatory construction speed zone reduction see TxDOT form #1204 in the TxDOT e-form system.

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

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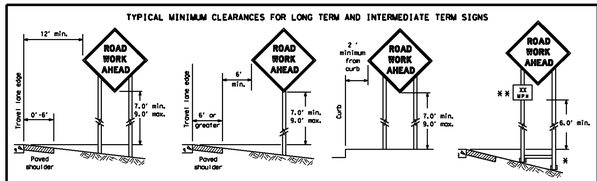
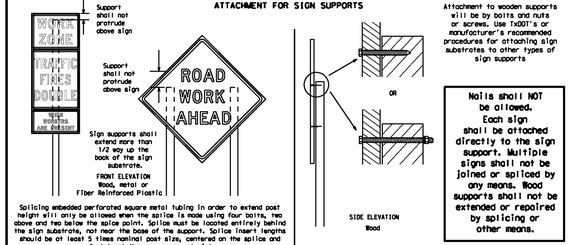
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



※ When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

※※ When plaques are placed on dual-leg supports, they should be attached to the upright nearest the travel lane. Supplemental plaques (advisory or distance) should not cover the surface of the parent sign.

ATTACHMENT FOR SIGN SUPPORTS

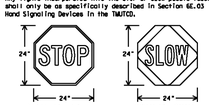


Splicing embedded perforated square metal tubing in order to extend post height will only be allowed when the splice is made using four bolts, two above and two below the splice point. Splice must be located entirely behind the sign substrate, not near the base of the support. Splice insert lengths should be at least 5 times nominal post size, centered on the splice and of at least the same gauge material.

Nails shall NOT be allowed. Each sign shall be attached directly to the sign support. Multiple signs shall not be joined or spliced by any means. Wood supports shall not be extended or repaired by splicing or other means.

STOP/SLOW PADDLES

1. STOP/SLOW paddles are the primary method to control traffic by Flaggers. The STOP/SLOW paddle size should be 24" x 24".
2. STOP/SLOW paddles shall be retroreflectorized when used at night.
3. STOP/SLOW paddles may be attached to a staff with a minimum length of 6' to the bottom of the sign.
4. Any lights incorporated into the STOP or SLOW paddle faces shall only be as specifically described in Section 6E.03 Hand Signaling Devices in the TMUTCD.



SHEETING REQUIREMENTS (WHEN USED AT NIGHT)		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	RED	TYPE B OR C SHEETING
BACKGROUND	ORANGE	TYPE B_L OR C_L SHEETING
LEGEND & BORDER	WHITE	TYPE B OR C SHEETING
LEGEND & BORDER	BLACK	ACRYLIC NON-REFLECTIVE FILM

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

1. Permanent signs are used to give notice of traffic laws or regulations, call attention to conditions that are potentially hazardous to traffic operations, show route designations, destinations, directions, distances, services, points of interest, and other geographical, recreational, specific service (LOGO), or cultural information. Drivers not proceeding through a work zone need the same, if not better route guidance as normally installed on a roadway without construction.
2. When permanent regulatory or warning signs conflict with work zone conditions, remove or cover the permanent signs until the permanent sign message matches the roadway conditions. For details for covering large guide signs see the TS-CD standard.
3. When existing permanent signs are moved and relocated due to construction purposes, they shall be visible to motorists at all times.
4. If existing signs are to be relocated on their original supports, they shall be installed on crashworthy bases as shown on the SMD Standard sheets. The signs shall meet the required mounting heights shown on the BC Sheets or the SMD Standards. This work should be paid for under the appropriate pay item for relocating existing signs.
5. If permanent signs are to be removed and relocated using temporary supports, the Contractor shall use crashworthy supports as shown on the BC standard sheets, TLRS standard sheets or the CWZTCD list. The signs shall meet the required mounting heights shown on the BC, or the SMD standard sheets during construction. This work should be paid for under the appropriate pay item for relocating existing signs.
6. Any sign or traffic control device that is struck or damaged by the Contractor or his/her construction equipment shall be replaced as soon as possible by the Contractor to ensure proper guidance for the motorists. This will be subsidiary to Item 502.

GENERAL NOTES FOR WORK ZONE SIGNS

1. Contractor shall install and maintain signs in a straight and plumb condition and/or as directed by the Engineer.
2. Wooden sign posts shall be painted white.
3. Barricades shall NOT be used as sign supports.
4. All signs shall be installed in accordance with the plans or as directed by the Engineer. Signs shall be used to regulate, warn, and guide the traveling public safely through the work zone.
5. The Contractor may furnish either the sign design shown in the plans or in the "Standard Highway Sign Designs for Texas" (SHSD). The Engineer/Inspector may require the Contractor to furnish other work zone signs that are shown in the TMUTCD but may have been omitted from the plans. Any variation in the plans shall be documented by written agreement between the Engineer and the Contractor's Responsible Person. All changes must be documented in writing before being implemented. This can include documenting the changes in the Inspector's TxDOT diary and having both the Inspector and Contractor initial and date the agreed upon changes.
6. The Contractor shall furnish sign supports listed in the "Compliant Work Zone Traffic Control Device List" (CWZTCD) for small roadside signs. Supports for temporary large roadside signs shall meet the requirements detailed on the Temporary Large Roadside Signs (TLRS) standard sheets. The Contractor shall install the sign support in accordance with the manufacturer's recommendations. If there is a question regarding installation procedures, the Contractor shall furnish the Engineer a copy of the manufacturer's installation recommendations so the Engineer can verify the correct procedures are being followed.
7. The Contractor is responsible for installing signs on approved supports and replacing signs with damaged or cracked substrates and/or damaged or marred reflective sheeting as directed by the Engineer/Inspector.
8. Identification markings may be shown only on the back of the sign substrate. The maximum height of letters and/or company logos used for identification shall be 1 inch.
9. The Contractor shall replace damaged wood posts. New or damaged wood sign posts shall not be spliced.

DURATION OF WORK (as defined by the "Texas Manual on Uniform Traffic Control Devices" Part 6)

1. The types of sign supports, sign mounting height, the size of signs, and the type of sign substrates can vary based on the type of work being performed. The Engineer is responsible for selecting the appropriate size sign for the type of work being performed. The Contractor is responsible for ensuring the sign support, sign mounting height and substrate meets manufacturer's recommendations in regard to crashworthiness and duration of work requirements.
   a. Long-term stationary - work that occupies a location more than 3 days.
   b. Intermediate-term stationary - work that occupies a location more than one daylight period up to 3 days, or nighttime work lasting more than one hour.
   c. Short-term stationary - daytime work that occupies a location for more than 1 hour in a single daylight period.
   d. Short, duration - work that occupies a location up to 1 hour.
   e. Mobile - work that moves continuously or intermittently (stopping for up to approximately 15 minutes.)

SIGN MOUNTING HEIGHT

1. The bottom of Long-Term/Intermediate-term signs shall be at least 7 feet, but not more than 9 feet, above the paved surface, except as shown for supplemental plaques mounted below other signs.
2. The bottom of Short-term/Short Duration signs shall be a minimum of 1 foot above the pavement surface but no more than 2 feet above the ground.
3. Long-Term/Intermediate-term Signs may be used in lieu of Short-term/Short Duration signing.
4. Short-term/Short Duration signs shall be used only during daylight and shall be removed at the end of the workday or raised to appropriate Long-term/Intermediate sign height.
5. Regulatory signs shall be mounted at least 7 feet, but not more than 9 feet, above the paved surface regardless of work duration.

SIZE OF SIGNS

1. The Contractor shall furnish the sign sizes shown on BC (2) unless otherwise shown in the plans or as directed by the Engineer.

SIGN SUBSTRATES

1. The Contractor shall ensure the sign substrate is installed in accordance with the manufacturer's recommendations for the type of sign support that is being used. The CWZTCD lists each substrate that can be used on the different types and models of sign supports.
2. "Mesh" type materials are NOT an approved sign substrate, regardless of the tightness of the weave.
3. All wooden individual sign panels fabricated from 2 or more pieces shall have one or more plywood cleat, 1/2" thick by 6" wide, fastened to the back of the sign and extending fully across the sign. The cleat shall be attached to the back of the sign using wood screws that do not penetrate the face of the sign panel. Screws shall be placed on both sides of the splice and spaced at 6" centers. The Engineer may approve other methods of splicing the sign face.

REFLECTIVE SHEETING

1. All signs shall be retroreflective and constructed of sheeting meeting the color and retro-reflectivity requirements of DMS-8300 for rigid signs or DMS-8310 for roll-up signs. The web address for DMS specifications is shown on BC(1).
2. White sheeting, meeting the requirements of DMS-8300 Type A, shall be used for signs with a white background.
3. Orange sheeting, meeting the requirements of DMS-8300 Type B_L or Type C_L, shall be used for rigid signs with orange backgrounds.

SIGN LETTERS

1. All sign letters and numbers shall be clear, and open rounded type uppercase alphabet letters as approved by the Federal Highway Administration (FHWA) and as published in the "Standard Highway Sign Design for Texas" manual. Signs, letters and numbers shall be of first class workmanship in accordance with Department Standards and Specifications.

REMOVING OR COVERING

1. When sign messages may be confusing or do not apply, the signs shall be removed or completely covered.
2. Long-term stationary or Intermediate stationary signs installed on square metal tubing may be turned away from traffic 90 degrees when the sign message is not applicable. This technique may not be used for signs installed in the median of divided highways or near any intersections where the sign may be seen from approaching traffic.
3. Signs installed on wooden skids shall not be turned at 90 degree angles to the roadway. These signs should be removed or completely covered when not required.
4. When signs are covered, the material used shall be opaque, such as heavy all black plastic, or other materials which will cover the entire sign face and maintain their opaque properties under darkness to headlights at night, without damaging the sign sheeting.
5. Burlap shall NOT be used to cover signs.
6. Duct tape or other adhesive material shall NOT be affixed to a sign face.
7. Signs and anchor stubs shall be removed and holes backfilled upon completion of work.

SIGN SUPPORT WEIGHTS

1. Where sign supports require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand should be used.
2. The sandbags will be tied shut to keep the sand from splitting and to maintain a constant weight.
3. Rock, concrete, iron, steel or other solid objects shall not be permitted for use as sign support weights.
4. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs.
5. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall NOT be used.
6. Rubber ballasts designed for channelizing devices should not be used for ballast on portable sign supports. Sign supports designed and manufactured with rubber bases may be used when shown on the CWZTCD list.
7. Sandbags shall only be placed along or laid over the base supports of the traffic control device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners. Sandbags shall be placed along the length of the skids to weigh down the sign support.
8. Sandbags shall NOT be placed under the skid and shall not be used to level sign supports placed on slopes.

FLAGS ON SIGNS

1. Flags may be used to draw attention to warning signs. When used, the flag shall be 16 inches square or larger and shall be orange or fluorescent red-orange in color. Flags shall not be allowed to cover any portion of the sign face.

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

FILE:	bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS		DIST	COUNTY		SHEET NO.
9-07 8-14					
7-13 5-21					

STATE OF TEXAS — JAMES INGALLS — 107416 — LICENSED PROFESSIONAL ENGINEER
12/08/2025

ROCKSPRING
9901 W IH-10, SUITE 725
SAN ANTONIO, TEXAS 78230

MCQUEENEY OAKS SUBDIVISION

TXDOT DETAILS VI

SHEET 64 OF 64

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INK CIVIL
2021 W SH46, STE 105
NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 ink-civil.com
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