

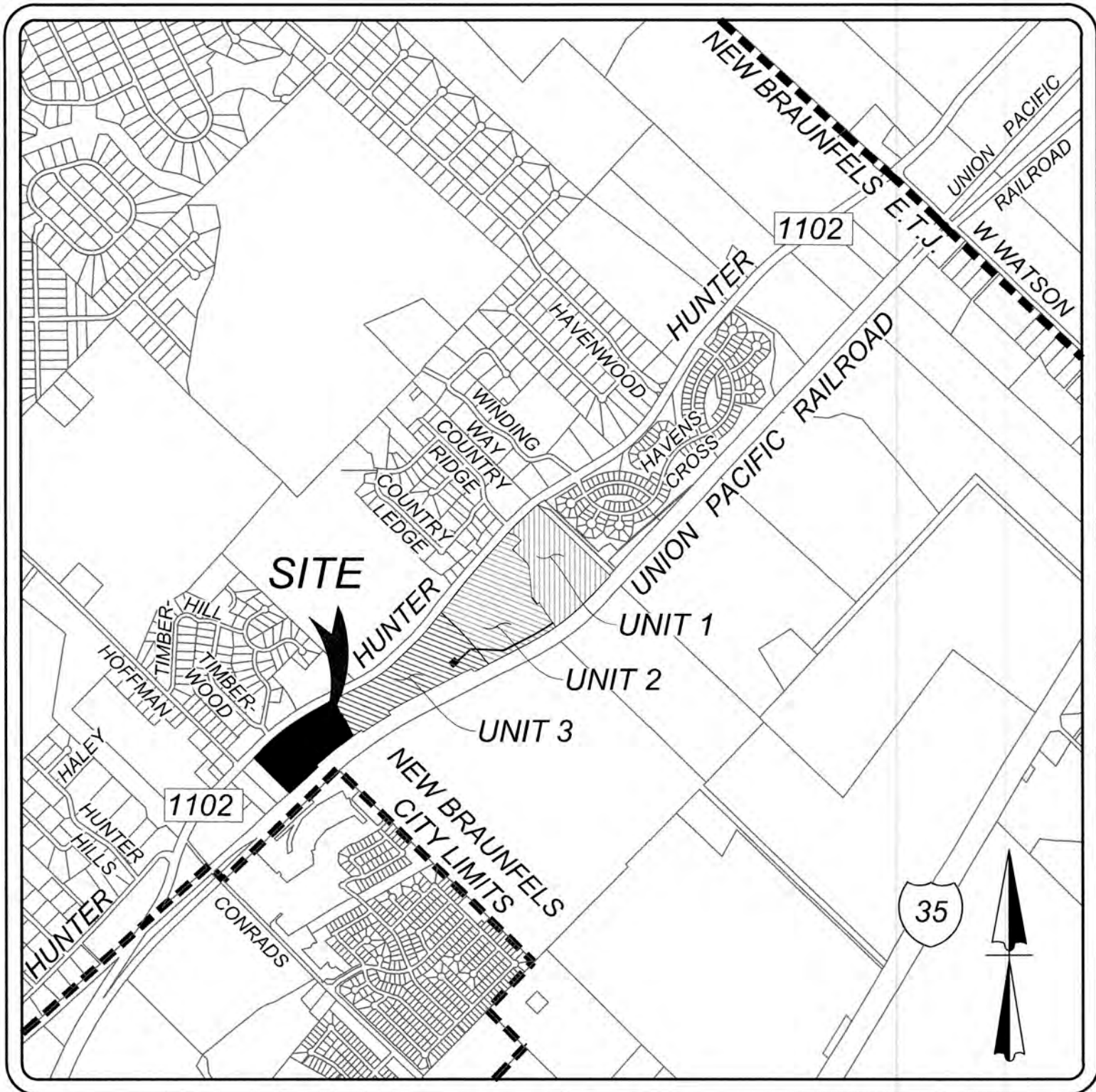
GATEHOUSE SUBDIVISION - UNIT 4

COMAL COUNTY, TEXAS STREET, DRAINAGE, WATER, SANITARY SEWER & UTILITY IMPROVEMENTS

KYNDWOOD MUNICIPAL UTILITY DISTRICT (MUD)

DISTRICT ENGINEER: KEN HEROY - JONES-HEROY ASSOCIATES, INC.

REVIEW OF THE PLANS BY THE DISTRICT IS LIMITED TO WATER, WASTEWATER, DRAINAGE, AND ROADS IF APPLICABLE TO THE DISTRICT, AND DOES NOT INDICATE A REVIEW OF THE ADEQUACY OF THE DESIGN FOR THE FACILITIES. IN APPROVING THESE PLANS, THE DISTRICT MUST RELY ON THE ADEQUACY OF THE WORK OF THE DESIGN ENGINEER.



LOCATION MAP
N.T.S.

IF CONSTRUCTION HAS NOT COMMENCED WITHIN ONE-YEAR OF COUNTY APPROVAL FOR CONSTRUCTION INSPECTION, THAT APPROVAL IS NO LONGER VALID.

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

SEQUENCE OF CONSTRUCTION:

CONSTRUCTION ACTIVITY WILL INCLUDE:

1. INSTALLATION OF TEMPORARY BMP'S
2. SITE CLEARING AND GRUBBING ACTIVITIES FOR STREETS.
3. ROUGH SUBGRADE PREPARATION: EARTHWORK, GRADING, STREETS, EXCAVATION AND EMBANKMENT.
4. UTILITY TRENCHING AND INSTALLATION.
5. FINAL STREET PREPARATION, CURBING, AND PAVING ACTIVITIES.
6. HOME CONSTRUCTION.
7. SITE CLEAN UP AND REMOVAL OF TEMPORARY BMP'S.

PERMITS OR APPROVALS MUST BE OBTAINED FROM THE FOLLOWING REGULATORY AGENCIES LISTED BELOW:

- COMAL COUNTY
- NEW BRAUNFELS UTILITIES - ELECTRIC
- CRYSTAL CLEAR SPECIAL UTILITY DISTRICT - WATER & SEWER

ANY REVISIONS REQUIRED PER THE REGULATORY AGENCIES THAT CHANGE THE CIVIL SITE PLANS MUST BE SUBMITTED TO COMAL COUNTY FOR ACCEPTANCE.

FEMA FLOODPLAIN

NO PORTION OF ANY RESIDENTIAL LOTS ON GATEHOUSE SUBDIVISION UNIT 4 ARE IN THE SPECIAL FLOOD HAZARD ZONE ACCORDING TO FEMA FLOOD MAP COMMUNITY PANELS NO. 48091C0290F AND NO. 48091C0290F, DATED SEPTEMBER 2, 2009.

EDWARDS AQUIFER

NO PORTION OF ANY LOTS ON GATEHOUSE SUBDIVISION UNIT 4 ARE LOCATED WITHIN EDWARDS CONTRIBUTING ZONE OR RECHARGE ZONE.

GAS UTILITY

GAS UTILITIES ARE NOT INCLUDED IN THE CIVIL CONSTRUCTION PLANS. FINAL GAS UTILITY DESIGN SHALL BE APPROVED BY THE COUNTY FOR ANY WORK WITHIN PUBLIC RIGHT-OF-WAY.

KNOW ALL MEN BY THESE PRESENTS:

I, THE UNDERSIGNED, A. NICHOLAS REYNOLDS, A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF TEXAS, HEREBY CERTIFY THAT PROPER ENGINEERING CONSIDERATION HAS BEEN GIVEN TO THESE PLANS AND ALL ENGINEERING ASPECTS ARE IN COMPLIANCE WITH CITY AND STATE ENGINEERING REGULATIONS AND LAWS.

DEVELOPER INFORMATION:
LENNAR HOMES OF TEXAS
100 NE LOOP 410, STE 1155
SAN ANTONIO, TEXAS 78216
PHONE: (210) 403-6282

REGISTERED PROFESSIONAL ENGINEER
P.E. REGISTRATION NO. 111666

CCSUD APPROVAL TO CONSTRUCT

REVIEW OF THESE UTILITY PLANS CONSTITUTES GENERAL COMPLIANCE WITH CRYSTAL CLEAR SPECIAL UTILITY DISTRICT'S (CCSUD) STANDARDS AND APPROVED NON-STANDARD SERVICE AGREEMENT. APPROVAL BY CCSUD (OR ITS REPRESENTATIVE) DOES NOT CONSTITUTE APPROVAL OF THE PLAN DESIGN OR ACCURACY OF THE ENGINEERING CALCULATIONS. ERRORS IN THE DESIGN OR CALCULATIONS REMAIN THE RESPONSIBILITY OF THE ENGINEER OF RECORD WHOSE STAMP AND SIGNATURE ARE AFFIXED TO THIS DOCUMENT. THE ENGINEER OF RECORD IS ALSO RESPONSIBLE FOR ACQUIRING/COMPLETING ALL REQUIRED REPORTS, PLANS, REVIEWS AND PERMITS PRIOR TO COMMENCING CONSTRUCTION. IF CONSTRUCTION OF WATER AND WASTEWATER (IF REQUIRED) UTILITIES HAS NOT COMMENCED WITHIN ONE (1) YEAR OF THE DATE OF THE APPROVAL BELOW, CONSTRUCTION PLANS FOR THOSE UTILITIES MUST BE RESUBMITTED TO CCSUD FOR REVIEW AND APPROVAL.

[Signature]
CCSUD REPRESENTATIVE

02/25/2025
DATE

INDEX	
DESCRIPTION	SHEET NO.
COVER SHEET	0.0
GENERAL NOTES	0.1
OVERALL UTILITY PLAN	1.0
EXISTING SCS DRAINAGE MAP	2.0
PROPOSED SCS DRAINAGE MAP	2.1
PROPOSED ONSITE DRAINAGE MAP	2.2
ULTIMATE SCS DRAINAGE MAP	2.3
ULTIMATE ONSITE DRAINAGE MAP	2.4
OVERALL GRADING PLAN	3.0
DRAIN A STA. 1+00 - 6+00	4.0
DRAIN A STA. 6+00 - 9+00	4.1
DRAIN A STA. 9+00 - END	4.2
DRAIN B STA. 1+00 - END	4.3
DRAIN C STA. 1+00 - END	4.4
DRAIN D STA. 1+00 - END	4.5
DRAIN E STA. 1+00 - END	4.6
BASIN A	4.7
DRAIN DETAILS	4.8
DRAIN DETAILS	4.9
DRAIN DETAILS	4.10
CHANNEL MAINTENANCE PLAN	4.11
AMARO WAY STA. 1+00.00 - END	5.0
PLATT RD STA. 1+00.00 - END	5.1
ALLING ST STA. 1+00.00 - END	5.2
STREET DETAIL SHEET	5.3
WHEELCHAIR RAMP DETAIL SHEET	5.4
TRAFFIC SIGNAGE & PEDESTRIAN ACCESSIBILITY PLAN	5.5
TRAFFIC SIGNAGE AND OBJECT MARKER DETAILS	5.6
SANITARY SEWER COVER	6.0
SANITARY SEWER GENERAL NOTES	6.1
OVERALL SANITARY SEWER PLAN	6.2
SEWER LINE A STA. 1+00.00 TO END	6.3
SEWER LINE B & LINE C STA. 1+00.00 TO END	6.4
SANITARY SEWER DETAILS	6.5
WATER DISTRIBUTION COVER	7.0
WATER DISTRIBUTION PLAN	7.1
WATER DETAILS	7.2
EROSION AND SEDIMENTATION CONTROL PLAN	8.0
TEMPORARY SEDIMENT BASIN	8.1
EROSION AND SEDIMENTATION CONTROL PLAN DETAILS	8.2

LEGAL DESCRIPTION GATEHOUSE SUBDIVISION UNIT 4

A 17.14 ACRE TRACT OF LAND SITUATED IN THE NANCY KENNER LEAGUE SURVEY NO. 3 ABSTRACT 306 COMAL COUNTY, TEXAS AND BEING A PORTION OF THAT CALLED 96.044 ACRE TRACT OF LAND CONVEYED TO LENNAR HOMES OF TEXAS LAND & CONSTRUCTION LTD AND RECORDED IN DOC.# 202206011832 OF THE OFFICIAL PUBLIC RECORDS OF COMAL COUNTY, TEXAS.



Engineering
& Design

www.colliersengineering.com

Copyright © 2025, Colliers Engineering & Design. All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reused, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Formerly Known as **KFW**
ENGINEERS & SURVEYORS



PROTECT YOURSELF
ALL STATES REQUIRE NOTIFICATION OF EXCAVATIONS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE.
Know what's below.
Call before you dig.
FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

DESCRIPTION	
DATE	
REV	



[Signature]

FINAL SUBDIVISION PLAN

FOR
GATEHOUSE
SUBDIVISION UNIT 4

CITY OF NEW BRAUNFELS
COMAL COUNTY
TEXAS



Engineering
& Design

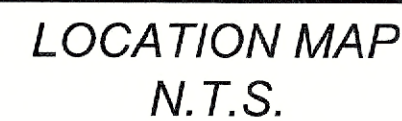
SCALE: AS SHOWN
DATE: 9/11/2024
PROJECT NUMBER: 24003556A
DRAWING NAME: COVER SHEET
CHECKED BY: WF

SHEET TITLE:
COVER SHEET

SHEET NUMBER:
0.0

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

COMAL COUNTY, TEXAS
SANITARY SEWER IMPROVEMENTS



NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION



SHEET NUMBER: 6.0

Date: Dec 23, 2024, 11:14am User ID: mglenn
File: U:\Projects\314\52\06\Design\Civil\SEWER\SANITARY SEWER COVER.dwg
Design: CIVIL\SEWER\SANITARY SEWER COVER.dwg
By: MGLENN

D:\pwr\Feb 10, 2005, 8:55am User: ID: rveldegen
L:\Projects\24003556A\Drawings\Sanitary Sewer\COVER.dwg
C:\ProgramData\Autodesk\LT2005\Drawings\Sanitary Sewer\COVER.dwg
C:\ProgramData\Autodesk\LT2005\Drawings\Sanitary Sewer\COVER.dwg

REV. 01/2025
CRYSTAL CLEAR SPECIAL UTILITY DISTRICT (CCSUD) WASTEWATER NOTES

1. THE CONTRACTOR SHALL MAINTAIN SERVICE TO EXISTING THE WASTEWATER SYSTEM AT ALL TIMES DURING CONSTRUCTION.

2. A MINIMUM OF 8" WASTEWATER PIPE AND FITTINGS (P.V.C., SDR-26, ASTM, D3034, D-3212, F-477) ARE REQUIRED ON NEW INSTALLATION.

3. ALL RESIDENTIAL WASTEWATER SERVICE LATERALS SHALL BE EXTENDED TO THE PROPERTY LINE AND A CLEANOUT SHALL BE INSTALLED AT THE PROPERTY LINE. SERVICES TO LOTS WILL EXTEND FOUR (4) FEET FROM THE UNDERGROUND ELECTRIC CONDUIT IF ELECTRIC IS INSTALLED IN THE FRONT EASEMENT. ALL SEWER CLEANOUTS THAT LEAD TO CCSUD MAINS SHALL BE INSTALLED WITH A PROTECTIVE UTILITY SHROUD AND PIVOTING MARKER POLE DURING TIME OF CONSTRUCTION.

4. PIPE BEDDING MATERIAL OF WASTEWATER MAINS SHALL BE COMPOSED OF WELL-GRADED, CRUSHED STONE, OR GRAVEL PER SECTION 01230 OF CCSUD'S SPECIFICATIONS.

5. SECONDARY AND GENERAL BACKFILL OF WASTEWATER MAINS SHALL BE APPROVED SOIL MATERIALS FOR BACKFILL AND FILL, FREE OF CLAY, ROCK, OR GRAVEL LARGER THAN 3 INCHES IN ANY DIMENSION, DEBRIS, WASTE, FROZEN MATERIALS, VEGETABLE, AND OTHER ORGANIC MATTER AND DELIVERABLE MATERIALS, PREVIOUSLY EXCAVATED MATERIALS MEETING THESE REQUIREMENTS MAY BE USED FOR BACKFILL.

6. ALL WASTEWATER MAINS SHALL HAVE COMPRESSION OR MECHANICAL JOINTS AS PER 30 TAC §217.53 (C)(2).

7. FOR WASTEWATER LINES LESS THAN 24" IN DIAMETER, SELECT INITIAL BACKFILL MATERIAL SHALL BE PLACED IN TWO LIFTS.

a. THE FIRST LIFT SHALL BE SPREAD UNIFORMLY AND SIMULTANEOUSLY ON EACH SIDE AND UNDER THE SHOULDERS OF THE PIPE TO THE MID POINT OR SPRING LINE OF THE PIPE.

b. THE SECOND LIFT SHALL BE PLACED TO A DEPTH AS SHOWN ON THE PIPE BACKFILL DETAIL, MAINS LARGER THAN 24", 12" MAXIMUM LIFTS SHALL BE USED.

8. ALL MANHOLES MUST BE WATERTIGHT; EITHER MONOLITHIC, CAST-IN-PLACE CONCRETE STRUCTURES OR PREFABRICATED MANHOLES SPECIFICALLY APPROVED BY CCSUD. THE MANHOLES SHALL HAVE WATER-TIGHT RINGS AND COVERS, WHEREVER THEY ARE WITHIN THE 100-YEAR FLOODPLAIN, THE MANHOLE COVERS SHALL BE BOLTED. EVERY THIRD MANHOLE IN SEQUENCE SHALL HAVE AN ALTERNATE MEANS OF VENTING, 30 TAC §213.5 (C) (3) (A) AND 30 TAC §217.55 (C).

9. ALL MANHOLES SHALL BE CONSTRUCTED SO THAT THE TOP OF THE RING IS TWO INCHES (2") ABOVE SURROUNDING GROUND EXCEPT WHEN LOCATED IN PAVED AREA. IN PAVED AREAS, THE MANHOLE RING SHALL BE FLUSH WITH PAVEMENT.

10. ALL NEW MANHOLES, UNLESS APPROVED BY CCSUD, ARE TO HAVE COVERS WITH 32" OPENINGS.

11. WASTEWATER MAIN CONNECTIONS TO PRE-CAST MANHOLES WILL BE COMPRESSION JOINTS OR MECHANICAL "BOOT TYPE" JOINT AS APPROVED BY CCSUD.

12. WASTEWATER MAINS SHALL BE TESTED FROM MANHOLE TO MANHOLE.

13. IN AREAS WHERE A NEW WASTEWATER MANHOLE IS TO BE CONSTRUCTED OVER AN EXISTING WASTEWATER SYSTEM, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO TEST THE EXISTING MANHOLES BEFORE CONSTRUCTION, AFTER THE PROPOSED MANHOLE(S) HAS BEEN BUILT. THE CONTRACTOR SHALL RE-TEST THE EXISTING SYSTEM TO THE SATISFACTION OF THE CONSTRUCTION INSPECTOR, (NO SEPARATE PAY ITEM).

14. WHERE THE MINIMUM 9 FOOT SEPARATION DISTANCE BETWEEN WASTEWATER LINES AND WATER LINES CANNOT BE MAINTAINED, THE INSTALLATION OF WASTEWATER LINES SHALL BE IN STRICT ACCORDANCE WITH TCEQ. THE WASTEWATER LINE SHALL BE CONSTRUCTED OF CAST IRON, DUCTILE IRON OR PVC MEETING THE ASTM SPECIFICATION FOR BOTH PIPES AND JOINTS OF 180 PSI AND SHALL BE IN ACCORDANCE WITH 30 TAC §217.53 (D) AND 30 TAC §290.4 (E).

15. NO TESTING WILL BE PERFORMED PRIOR TO 30 DAYS FROM COMPLETE INSTALLATION OF THE WASTEWATER LINES. THE FOLLOWING SEQUENCE WILL BE STRICTLY ADHERED TO:

- a. PULL MANDREL.
- b. PERFORM AIR TEST
- c. CLEANING OF ANY DEBRIS
- d. FLUSHING OF SYSTEM
- e. TV INSPECTION (WITHIN 72 HOURS OF FLUSHING)

16. A MINIMUM OF 3 FEET OF COVER IS TO BE MAINTAINED OVER THE WASTEWATER MAIN AND LATERALS AT SUBGRADE, OTHERWISE CONCRETE ENCASEMENT WILL BE REQUIRED.

17. TCEQ AND EPA REQUIRE EROSION AND SEDIMENTATION CONTROL FOR CONSTRUCTION OF WASTEWATER COLLECTION SYSTEMS. DEVELOPER OR AUTHORIZED REPRESENTATIVE SHALL PROVIDE EROSION AND SEDIMENTATION CONTROL AS NOTES ON THE PROJECT'S PLAN AND PROFILE SHEETS. ALL TEMPORARY EROSION AND SEDIMENTATION CONTROLS SHALL BE REMOVED BY THE CONTRACTOR AT FINAL ACCEPTANCE OF THE PROJECT BY CCSUD.

18. ALL MANHOLES NOT WITHIN PAVED STREETS SHALL HAVE LOCKING CONCRETE COLLAR TO SECURE RING AND COVER TO MANHOLE CONE PER CCSUD DETAIL DRAWING #329.

19. ALL MANHOLES OVER THE EDWARDS AQUIFER RECHARGE ZONE SHALL HAVE LOCKING CONCRETE COLLAR TO SECURE RING AND COVER TO MANHOLE CONE PER CCSUD DETAIL DRAWING #329.

20. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING 98% COMPACTION ON ALL TRENCH BACKFILL AND PAYING FOR THE TESTS TO BE PERFORMED BY A THIRD PARTY. COMPACTION TESTS WILL BE DONE AT ONE LOCATION POINT RANDOMLY SELECTED OR AS INDICATED BY CCSUD INSPECTOR/TEST ADMINISTRATOR. PER EACH 10-INCH LOOSE LIFT 480 LINEAR FEET AT A MINIMUM. PERMITS WILL NOT BE ACCEPTED AND FINALIZED BY CCSUD WITHOUT THIS REQUIREMENT BEING MET AND VERIFIED BY PROVIDING ALL NECESSARY DOCUMENTED TEST RESULTS.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
ORGANIZED SEWAGE COLLECTION SYSTEM (SCS)
GENERAL CONSTRUCTION NOTES

1. THIS ORGANIZED SEWAGE COLLECTION SYSTEM (SCS) MUST BE CONSTRUCTED IN ACCORDANCE WITH 30 TEXAS ADMINISTRATIVE CODE (TAC) §213.5(C) AND ANY LOCAL GOVERNMENT STANDARD SPECIFICATIONS.

2. ALL CONTRACTORS CONDUCTING REGULATED ACTIVITIES ASSOCIATED WITH THIS PROPOSED REGULATED PROJECT MUST BE PROVIDED WITH COPIES OF THE SCS PLAN AND THE TCEQ LETTER INDICATING THE SPECIFIC CONDITIONS OF ITS APPROVAL. DURING THE COURSE OF THESE REGULATED ACTIVITIES, THE CONTRACTORS MUST BE REQUIRED TO KEEP ON-SITE COPIES OF THE PLAN AND THE APPROVAL LETTER.

3. A WRITTEN NOTICE OF CONSTRUCTION MUST BE SUBMITTED TO THE PRESIDING TCEQ REGIONAL OFFICE AT LEAST 48 HOURS PRIOR TO THE START OF ANY REGULATED ACTIVITIES. THIS NOTICE MUST INCLUDE:

- THE NAME OF THE APPROVED PROJECT;
- THE ACTIVITY START DATE; AND
- THE CONTACT INFORMATION OF THE PRIME CONTRACTOR.

4. ANY MODIFICATION TO THE ACTIVITIES DESCRIBED IN THE REFERENCED SCS APPLICATION FOLLOWING THE DATE OF APPROVAL MAY REQUIRE THE SUBMITTAL OF AN SCS APPLICATION TO MODIFY THIS APPROVAL, INCLUDING THE PAYMENT OF APPROPRIATE FEES AND ALL INFORMATION NECESSARY FOR ITS REVIEW AND APPROVAL.

5. PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITY, ALL TEMPORARY EROSION AND SEDIMENTATION (E&S) CONTROL MEASURES MUST BE PROPERLY INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS. THESE CONTROLS MUST REMAIN IN PLACE UNTIL THE DISTURBED AREAS HAVE BEEN PERMANENTLY STABILIZED.

6. IF ANY SENSITIVE FEATURES ARE DISCOVERED DURING THE WASTEWATER LINE TRENCHING ACTIVITIES, ALL REGULATED ACTIVITIES NEAR THE SENSITIVE FEATURE MUST BE SUSPENDED IMMEDIATELY. THE APPLICANT MUST IMMEDIATELY NOTIFY THE APPROPRIATE REGIONAL OFFICE OF THE TCEQ OF THE FEATURE DISCOVERED. A GEOLOGIST'S ASSESSMENT OF THE LOCATION AND EXTENT OF THE FEATURE DISCOVERED MUST BE REPORTED TO THAT REGIONAL OFFICE IN WRITING AND THE APPLICANT MUST SUBMIT A PLAN FOR ENSURING THE STRUCTURAL INTEGRITY OF THE SEWER LINE OR FOR MODIFYING THE PROPOSED COLLECTION SYSTEM ALIGNMENT AROUND THE FEATURE. THE REGULATED ACTIVITIES NEAR THE SENSITIVE FEATURE MAY NOT PROCEED UNTIL THE EXECUTIVE DIRECTOR HAS REVIEWED AND APPROVED THE METHODS PROPOSED TO PROTECT THE SENSITIVE FEATURE AND THE EDWARDS AQUIFER FROM ANY POTENTIALLY ADVERSE IMPACTS TO WATER QUALITY WHILE MAINTAINING THE STRUCTURAL INTEGRITY OF THE LINE.

7. SEWER LINES LOCATED WITHIN OR CROSSING THE 5-YEAR FLOODPLAIN OF A DRAINAGE WAY WILL BE PROTECTED FROM INUNDATION AND STREAM VELOCITIES WHICH COULD CAUSE EROSION AND SCOURING OF BACKFILL. THE TRENCH MUST BE CAPPED WITH CONCRETE TO PREVENT SCOURING OF BACKFILL, OR THE SEWER LINES MUST BE ENCASED IN CONCRETE. ALL CONCRETE SHALL HAVE A MINIMUM THICKNESS OF 6 INCHES.

8. ALL MANHOLES CONSTRUCTED OR REHABILITATED ON THIS PROJECT MUST HAVE WATERTIGHT SIZE ON SIZE RESILIENT CONNECTORS ALLOWING FOR DIFFERENTIAL SETTLEMENT. IF MANHOLES ARE CONSTRUCTED WITHIN THE 100-YEAR FLOODPLAIN, THE COVER MUST HAVE A GASKET AND BE BOLTED TO THE RING. WHERE GASKETED MANHOLE COVERS ARE REQUIRED FOR MORE THAN THREE MANHOLES IN SEQUENCE OR FOR MORE THAN 1500 FEET, ALTERNATE MEANS OF VENTING WILL BE PROVIDED. BRICKS ARE NOT AN ACCEPTABLE CONSTRUCTION MATERIAL FOR ANY PORTION OF THE MANHOLE.

THE DIAMETER OF THE MANHOLES MUST BE A MINIMUM OF FOUR FEET AND THE MANHOLE FOR ENTRY MUST HAVE A MINIMUM CLEAR OPENING DIAMETER OF 30 INCHES. THESE DIMENSIONS AND OTHER DETAILS SHOWING COMPLIANCE WITH THE COMMISSION'S RULES CONCERNING MANHOLES AND SEWER LINE/MANHOLE INVERTS DESCRIBED IN 30 TAC §217.55 ARE INCLUDED ON PLAN SHEET 6.7.

IT IS SUGGESTED THAT ENTRANCE INTO MANHOLES IN EXCESS OF FOUR FEET DEEP BE ACCOMPLISHED BY MEANS OF A PORTABLE LADDER. THE INCLUSION OF STEPS IN A MANHOLE IS PROHIBITED.

9. WHERE WATER LINES AND NEW SEWER LINE 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).

10. WHERE SEWERS LINES DEViate FROM STRAIGHT ALIGNMENT AND UNIFORM GRADE ALL CURVATURE OF SEWER PIPE MUST BE ACHIEVED BY THE FOLLOWING PROCEDURE WHICH IS RECOMMENDED BY THE PIPE MANUFACTURER. **NOT ALLOWED**

IF PIPE FLEXURE IS PROPOSED, THE FOLLOWING METHOD OF PREVENTING DEFLECTION OF THE JOINT MUST BE USED: **NOT ALLOWED**

SPECIFIC CARE MUST BE TAKEN TO ENSURE THAT THE JOINT IS PLACED IN THE CENTER OF THE TRENCH AND PROPERLY BEDDED IN ACCORDANCE WITH 30 TAC §217.54.

11. NEW SEWAGE COLLECTION SYSTEM LINES MUST BE CONSTRUCTED WITH STUB OUTS FOR THE CONNECTION OF ANTICIPATED EXTENSIONS. THE LOCATION OF SUCH STUB OUTS MUST BE MARKED ON THE GROUND SUCH THAT THEIR LOCATION CAN BE EASILY DETERMINED AT THE TIME OF CONNECTION OF THE EXTENSIONS. SUCH STUB OUTS MUST BE MANUFACTURED WYES OR TEES THAT ARE COMPATIBLE IN SIZE AND MATERIAL WITH BOTH THE SEWER LINE AND THE EXTENSION. AT THE TIME OF ORIGINAL CONSTRUCTION, NEW STUB-OUTS MUST BE CONSTRUCTED SUFFICIENTLY TO EXTEND BEYOND THE END OF THE STREET PAVEMENT. ALL STUB-OUTS MUST BE SEALED WITH A MANUFACTURED CAP TO PREVENT LEAKAGE. EXTENSIONS THAT WERE NOT ANTICIPATED AT THE TIME OF ORIGINAL CONSTRUCTION OR THAT ARE TO BE CONNECTED TO AN EXISTING SEWER LINE NOT FURNISHED WITH STUB OUTS MUST BE CONNECTED USING A MANUFACTURED SADDLE AND IN ACCORDANCE WITH ACCEPTED PLUMBING TECHNIQUES.

IF NO STUB-OUT IS PRESENT AN ALTERNATE METHOD OF JOINING LATERALS IS SHOWN IN THE DETAIL ON PLAN SHEET **NIA** (FOR POTENTIAL FUTURE LATERALS).

THE PRIVATE SERVICE LATERAL STUB-OUTS MUST BE INSTALLED AS SHOWN ON THE PLAN AND PROFILE SHEETS ON PLAN SHEET **NIA** AND MARKED AFTER BACKFILLING AS SHOWN IN THE DETAIL ON PLAN SHEET **NIA**.

12. TRENCHING, BEDDING AND BACKFILL MUST CONFORM WITH 30 TAC §217.54. THE BEDDING AND BACKFILL FOR FLEXIBLE PIPE MUST COMPLY WITH THE STANDARDS OF ASTM D-2321, CLASSES IA, IB, II OR III. RIGID PIPE BEDDING MUST COMPLY WITH THE REQUIREMENTS OF ASTM C 12 (ANSI A 106.2) CLASSES A, B OR C.

13. SEWER LINES MUST BE TESTED FROM MANHOLE TO MANHOLE. WHEN A NEW SEWER LINE IS CONNECTED TO AN EXISTING STUB OR CLEAN-OUT, IT MUST BE TESTED FROM EXISTING MANHOLE TO NEW MANHOLE. IF A STUB OR CLEAN-OUT IS USED AT THE END OF THE PROPOSED SEWER LINE, NO PRIVATE SERVICE ATTACHMENTS MAY BE CONNECTED BETWEEN THE LAST MANHOLE AND THE CLEANOUT UNLESS IT CAN BE CERTIFIED AS CONFORMING WITH THE PROVISIONS OF 30 TAC §213.5(C)(3)(E).

14. ALL SEWER LINES MUST BE TESTED IN ACCORDANCE WITH 30 TAC §217.57. THE ENGINEER MUST RETAIN COPIES OF ALL TEST RESULTS WHICH MUST BE MADE AVAILABLE TO THE EXECUTIVE DIRECTOR UPON REQUEST. THE ENGINEER MUST CERTIFY IN WRITING THAT ALL WASTEWATER LINES HAVE PASSED ALL REQUIRED TESTING TO THE APPROPRIATE REGIONAL OFFICE WITHIN 30 DAYS OF TEST COMPLETION AND PRIOR TO USE OF THE NEW COLLECTION SYSTEM. TESTING METHOD WILL BE:

- (a) FOR A COLLECTION SYSTEM PIPE THAT WILL TRANSPORT WASTEWATER BY GRAVITY FLOW, THE DESIGN MUST SPECIFY AN INFILTRATION AND EXFILTRATION TEST OR A LOW-PRESSURE AIR TEST. A TEST MUST CONFORM TO THE FOLLOWING REQUIREMENTS:
 - (i) LOW PRESSURE AIR TEST.
 - (A) A LOW PRESSURE AIR TEST MUST FOLLOW THE PROCEDURES DESCRIBED IN AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) C-828, ASTM C-924, OR ASTM F-1417 OR OTHER PROCEDURE APPROVED BY THE EXECUTIVE DIRECTOR, EXCEPT AS TO TESTING TIMES AS REQUIRED IN TABLE C.3 IN SUBPARAGRAPH (C) OF THIS PARAGRAPH OR EQUATION C.3 IN SUBPARAGRAPH (B)(II) OF THIS PARAGRAPH.
 - (B) FOR SECTIONS OF COLLECTION SYSTEM PIPE LESS THAN 36 INCH AVERAGE INSIDE DIAMETER, THE FOLLOWING PROCEDURE MUST APPLY, UNLESS A PIPE IS TO BE TESTED AS REQUIRED BY PARAGRAPH (2) OF THIS SUBSECTION.
 - (i) A PIPE MUST BE PRESSURIZED TO 3.5 POUNDS PER SQUARE INCH (PSI) GREATER THAN THE PRESSURE EXERTED BY GROUNDWATER ABOVE THE PIPE.
 - (ii) ONCE THE PRESSURE IS STABILIZED, THE MINIMUM TIME ALLOWABLE FOR THE PRESSURE TO DROP FROM 3.5 PSI GAUGE TO 2.5 PSI GAUGE IS COMPUTED FROM THE FOLLOWING EQUATION:
 - (ii) A PIPE MUST BE PRESSURIZED TO 3.5 POUNDS PER SQUARE INCH (PSI) GREATER THAN THE PRESSURE EXERTED BY GROUNDWATER ABOVE THE PIPE.
 - (iii) ONCE THE PRESSURE IS STABILIZED, THE MINIMUM TIME ALLOWABLE FOR THE PRESSURE TO DROP FROM 3.5 PSI GAUGE TO 2.5 PSI GAUGE IS COMPUTED FROM THE FOLLOWING EQUATION:

EQUATION C.3 $T = \frac{0.085 \times D \times K}{Q}$

WHERE:

T = TIME FOR PRESSURE TO DROP 1.0 POUND PER SQUARE INCH GAUGE IN SECONDS

K = 0.000419 X D X L, BUT NOT LESS THAN 1.0

D = AVERAGE INSIDE PIPE DIAMETER IN INCHES

L = LENGTH OF LINE OF SAME SIZE BEING TESTED, IN FEET

Q = RATE OF LOSS, 0.0015 CUBIC FEET PER MINUTE PER SQUARE FOOT INTERNAL SURFACE

(C) SINCE A K VALUE OF LESS THAN 1.0 MAY NOT BE USED, THE MINIMUM TESTING TIME FOR EACH PIPE DIAMETER IS SHOWN IN THE FOLLOWING TABLE C.3:

PIPE DIAMETER (INCHES)	MINIMUM TIME (SECONDS)	LENGTH FOR MINIMUM (FEET)	TIME FOR LONGER LENGTH (SECONDS/FOOT)
6	340	398	0.855
8	454	298	1.520
10	567	239	2.374
12	680	199	3.419
15	850	159	5.342
18	1020	133	7.693
21	1190	114	10.471
24	1360	100	13.676
27	1530	88	17.309
30	1700	80	21.369
33	1870	72	25.856

(D) AN OWNER MAY STOP A TEST IF NO PRESSURE LOSS HAS OCCURRED DURING THE FIRST 25% OF THE CALCULATED TESTING TIME.

- (E) IF ANY PRESSURE LOSS OR LEAKAGE HAS OCCURRED DURING THE FIRST 25% OF A TESTING PERIOD, THEN THE TEST MUST CONTINUE FOR THE ENTIRE TEST DURATION AS OUTLINED ABOVE OR UNTIL FAILURE.
- (F) WASTEWATER COLLECTION SYSTEM PIPES WITH A 27 INCH OR LARGER AVERAGE INSIDE DIAMETER MAY BE AIR TESTED AT EACH JOINT INSTEAD OF FOLLOWING THE PROCEDURE OUTLINED IN THIS SECTION.
- (G) A TESTING PROCEDURE FOR PIPE WITH AN INSIDE DIAMETER GREATER THAN 33 INCHES MUST BE APPROVED BY THE EXECUTIVE DIRECTOR.

(2) INFILTRATION/EXFILTRATION TEST.

- (A) THE TOTAL EXFILTRATION, AS DETERMINED BY A HYDROSTATIC HEAD TEST, MUST NOT EXCEED 50 GALLONS PER INCH OF DIAMETER PER MILE OF PIPE PER 24 HOURS AT A MINIMUM TEST HEAD OF 2.0 FEET ABOVE THE CROWN OF A PIPE AT AN UPSTREAM MANHOLE.
- (B) AN OWNER SHALL USE AN INFILTRATION TEST IN LIEU OF AN EXFILTRATION TEST WHEN PIPES ARE INSTALLED BELOW THE GROUNDWATER LEVEL.
- (C) THE TOTAL EXFILTRATION, AS DETERMINED BY A HYDROSTATIC HEAD TEST, MUST NOT EXCEED 50 GALLONS PER INCH DIAMETER PER MILE OF PIPE PER 24 HOURS AT A MINIMUM TEST HEAD OF TWO FEET ABOVE THE CROWN OF A PIPE AT AN UPSTREAM MANHOLE, OR AT LEAST TWO FEET ABOVE EXISTING GROUNDWATER LEVEL, WHICHEVER IS GREATER.
- (D) FOR CONSTRUCTION WITHIN A 25-YEAR FLOOD PLAIN, THE INFILTRATION OR EXFILTRATION MUST NOT EXCEED 10 GALLONS PER INCH DIAMETER PER MILE OF PIPE PER 24 HOURS AT THE SAME MINIMUM TEST HEAD AS IN SUBPARAGRAPH (C) OF THIS PARAGRAPH.
- (E) IF THE QUANTITY OF INFILTRATION OR EXFILTRATION EXCEEDS THE MAXIMUM QUANTITY SPECIFIED, AN OWNER SHALL UNDERTAKE REMEDIAL ACTION IN ORDER TO REDUCE THE INFILTRATION OR EXFILTRATION TO AN AMOUNT WITHIN THE LIMITS SPECIFIED. AN OWNER SHALL RETEST A PIPE FOLLOWING A REMEDIATION ACTION.

(b) IF A GRAVITY COLLECTION PIPE IS COMPOSED OF FLEXIBLE PIPE, DEFLECTION TESTING IS ALSO REQUIRED. THE FOLLOWING PROCEDURES MUST BE FOLLOWED:

- (1) FOR A COLLECTION PIPE WITH INSIDE DIAMETER LESS THAN 27 INCHES, DEFLECTION MEASUREMENT REQUIRES A RIGID MANDREL.
 - (A) MANDREL SIZING.
 - (i) A RIGID MANDREL MUST HAVE AN OUTSIDE DIAMETER (OD) NOT LESS THAN 95% OF THE BASE INSIDE DIAMETER (ID) OR AVERAGE ID OF A PIPE, AS SPECIFIED IN THE APPROPRIATE STANDARD BY THE ASTM'S, AMERICAN WATER WORKS ASSOCIATION, UNI-BELL, OR AMERICAN NATIONAL STANDARDS INSTITUTE, OR ANY RELATED APPENDIX.
 - (ii) IF A MANDREL SIZING DIAMETER IS NOT SPECIFIED IN THE APPROPRIATE STANDARD, THE MANDREL MUST HAVE AN OD EQUAL TO 95% OF THE ID OF A PIPE. IN THIS CASE, THE ID OF THE PIPE, FOR THE PURPOSE OF DETERMINING THE OD OF THE MANDREL, MUST EQUAL BE THE AVERAGE OUTSIDE DIAMETER MINUS TWO MINIMUM WALL THICKNESSES FOR OD CONTROLLED PIPE AND THE AVERAGE INSIDE DIAMETER FOR ID CONTROLLED PIPE.
 - (iii) ALL DIMENSIONS MUST MEET THE APPROPRIATE STANDARD.
 - (B) MANDREL DESIGN.
 - (i) A RIGID MANDREL MUST BE CONSTRUCTED OF A METAL OR A RIGID PLASTIC MATERIAL THAT CAN WITHSTAND 200 PSI WITHOUT BEING DEFORMED.
 - (ii) A MANDREL MUST HAVE NINE OR MORE ODD NUMBER OF RUNNERS OR LEGS.
 - (iii) A BARREL SECTION LENGTH MUST EQUAL AT LEAST 75% OF THE INSIDE DIAMETER OF A PIPE.
 - (iv) EACH SIZE MANDREL MUST USE A SEPARATE PROVING RING.
 - (C) METHOD OPTIONS.
 - (i) AN ADJUSTABLE OR FLEXIBLE MANDREL IS PROHIBITED.
 - (ii) A TEST MAY NOT USE TELEVISION INSPECTION AS A SUBSTITUTE FOR A DEFLECTION TEST.
 - (iii) IF REQUESTED, THE EXECUTIVE DIRECTOR MAY APPROVE THE USE OF A DEFLECTOMETER OR A MANDREL WITH REMOVABLE LEGS OR RUNNERS ON A CASE-BY-CASE BASIS.
- (2) FOR A GRAVITY COLLECTION SYSTEM PIPE WITH AN INSIDE DIAMETER 27 INCHES AND GREATER, OTHER TEST METHODS MAY BE USED TO DETERMINE VERTICAL DEFLECTION.
- (3) A DEFLECTION TEST METHOD MUST BE ACCURATE TO WITHIN PLUS OR MINUS 0.2% DEFLECTION.
- (4) AN OWNER SHALL NOT CONDUCT A DEFLECTION TEST UNTIL AT LEAST 30 DAYS AFTER THE FINAL BACKFILL.
- (5) GRAVITY COLLECTION SYSTEM PIPE DEFLECTION MUST NOT EXCEED FIVE PERCENT (5%).
- (6) IF A PIPE SECTION FAILS A DEFLECTION TEST, AN OWNER SHALL CORRECT THE PROBLEM AND CONDUCT A SECOND TEST AFTER THE FINAL BACKFILL HAS BEEN IN PLACE AT LEAST 30 DAYS.

15. ALL MANHOLES MUST BE TESTED TO MEET OR EXCEED THE REQUIREMENTS OF 30 TAC §217.58.

- (a) ALL MANHOLES MUST PASS A LEAKAGE TEST.
- (b) AN OWNER SHALL TEST EACH MANHOLE (AFTER ASSEMBLY AND BACKFILLING) FOR LEAKAGE. SEPARATE AND INDEPENDENT OF THE COLLECTION SYSTEM PIPES BY HYDROSTATIC EXFILTRATION TESTING, VACUUM TESTING, OR OTHER METHOD APPROVED BY THE EXECUTIVE DIRECTOR.
 - (1) HYDROSTATIC TESTING.
 - (A) THE MAXIMUM LEAKAGE FOR HYDROSTATIC TESTING OR ANY ALTERNATIVE TEST METHODS IS 0.025 GALLONS PER FOOT DIAMETER PER FOOT OF MANHOLE DEPTH PER HOUR.
 - (B) TO PERFORM A HYDROSTATIC EXFILTRATION TEST, AN OWNER SHALL SEAL ALL WASTEWATER PIPES COMING INTO A MANHOLE WITH AN INTERNAL PIPE PLUG, FILL THE MANHOLE WITH WATER, AND MAINTAIN THE TEST FOR AT LEAST ONE HOUR.
 - (C) A TEST FOR CONCRETE MANHOLES MAY USE A 24-HOUR WETTING PERIOD BEFORE TESTING TO ALLOW SATURATION OF THE CONCRETE.
 - (2) VACUUM TESTING.
 - (A) TO PERFORM A VACUUM TEST, AN OWNER SHALL PLUG ALL LIFT HOLES AND EXTERIOR JOINTS WITH A NON-SHRINK GROUT AND PLUG ALL PIPES ENTERING A MANHOLE. NO GROUT MUST BE PLACED IN HORIZONTAL JOINTS BEFORE TESTING.
 - (B) STUB-OUTS, MANHOLE BOOTS, AND PIPE PLUGS MUST BE SECURED TO PREVENT MOVEMENT WHILE A VACUUM IS DRAWN.
 - (D) AN OWNER SHALL USE A MINIMUM 50 INCH/LB TORQUE WRENCH TO TIGHTEN THE EXTERNAL CLAMPS THAT SECURE A TEST COVER TO THE TOP OF A MANHOLE.
 - (E) A TEST HEAD MUST BE PLACED AT THE INSIDE OF THE TOP OF A CONE SECTION, AND THE SEAL INFLATED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
 - (F) THERE MUST BE A VACUUM OF 10 INCHES OF MERCURY INSIDE A MANHOLE TO PERFORM A VALID TEST.
 - (G) A TEST DOES NOT BEGIN UNTIL AFTER THE VACUUM PUMP IS OFF.
 - (H) A MANHOLE PASSES THE TEST IF AFTER 2.0 MINUTES AND WITH ALL VALVES CLOSED, THE VACUUM IS AT LEAST 9.0 INCHES OF MERCURY.

17. ALL PRIVATE SERVICE LATERALS MUST BE INSPECTED AND CERTIFIED IN ACCORDANCE WITH 30 TAC §213.5(C)(3)(U). 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.

18. PIPE MATERIAL FOR THE WASTEWATER LINE SHALL BE SDR 26 PVC.

CCSUD APPROVAL TO CONSTRUCT

REVIEW OF THESE UTILITY PLANS CONSTITUTES GENERAL COMPLIANCE WITH CRYSTAL CLEAR SPECIAL UTILITY DISTRICTS (CCSUD) STANDARDS AND APPROVED NON-STANDARD SERVICE AGREEMENT. APPROVAL BY CCSUD (OR ITS REPRESENTATIVE) DOES NOT CONSTITUTE APPROVAL OF THE PLAN DESIGN OR ACCURACY OF THE ENGINEERING CALCULATIONS. ERRORS IN THE DESIGN OR CALCULATIONS REMAIN THE RESPONSIBILITY OF THE ENGINEER OF RECORD WHOSE STAMP AND SIGNATURE ARE AFFIXED TO THIS DOCUMENT. THE ENGINEER OF RECORD IS ALSO RESPONSIBLE FOR ACCURATELY COMPLETING ALL REQUIRED REPORTS, PLANS, REVIEWS AND PERMITS PRIOR TO COMMENCING CONSTRUCTION. IF CONSTRUCTION OF WATER AND WASTEWATER OR THE REQUIRED UTILITIES HAS NOT COMMENCED WITHIN ONE (1) YEAR OF THE DATE OF THE APPROVAL BELOW, CONSTRUCTION PLANS FOR THOSE UTILITIES MUST BE RESUBMITTED TO CCSUD FOR REVIEW AND APPROVAL.

CCSUD REPRESENTATIVE

02/25/2025

DATE

CONTRACTOR TO RUN LEVEL LOOP THROUGH BMS PROVIDED TO CONFIRM BEFORE CONSTRUCTION. CONTACT ENGINEER/SURVEYOR IMMEDIATELY IF ELEVATIONS DO NOT MATCH THOSE SHOWN.

BENCHMARKS

BMH	NORTHING	EASTING	ELEVATION	DESCRIPTION
300	13833987.43	2266645.56	741.65	SBM
301	13833728.05	2266235.25	753.89	SBM
302	13833209.63	2267544.75	707.33	SBM

FINAL SUBDIVISION PLAN

FOR

GATEHOUSE

SUBDIVISION UNIT 4

CITY OF NEW BRAUNFELS
COMAL COUNTY
TEXAS

Colliers

Engineering & Design

NEW BRAUNFELS (KFW)

640 N. Walnut Ave.
Suite 1101
New Braunfels, TX 78130
Phone: 830.220.6042
COLLIERS ENGINEERING & DESIGN, INC.
TPEL Form # 1-1003
TPEL Form: 10194550

SCALE:

AS SHOWN

DATE:

9/11/2024

DRAWN BY:

MSG

CHECKED BY:

WF

PROJECT NUMBER:

24003556A

DRAWING NAME:

SANITARY SEWER COVER

SHEET TITLE:

SANITARY SEWER
GENERAL NOTES

SHEET NUMBER:

6.1

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

Colliers

Engineering & Design

www.colliersengineering.com

Copyright © 2025, Colliers Engineering & Design. All Rights Reserved. This drawing and all the information contained herein is submitted for use only by the party for whom the services were rendered or to whom it is certified. This drawing may not be copied, revised, distributed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Formerly Known as

KFW

811

Know what's below.
Call before you dig.

PROTECT YOURSELF
ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE

FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

STATE OF TEXAS

NICHOLAS REYNOLDS

11666

LICENSED PROFESSIONAL ENGINEER

Nicholas Reynolds, P.E.

FINAL SUBDIVISION PLAN

FOR

GATEHOUSE

SUBDIVISION UNIT 4

CITY OF NEW BRAUNFELS
COMAL COUNTY
TEXAS

Colliers

Engineering & Design

NEW BRAUNFELS (KFW)

640 N. Walnut Ave.
Suite 1101
New Braunfels, TX 78130
Phone: 830.220.6042
COLLIERS ENGINEERING & DESIGN, INC.
TPEL Form # 1-1003
TPEL Form: 10194550

SCALE:

AS SHOWN

DATE:

9/11/2024

DRAWN BY:

MSG

CHECKED BY:

WF

PROJECT NUMBER:

24003556A

DRAWING NAME:

SANITARY SEWER COVER

SHEET TITLE:

SANITARY SEWER
GENERAL NOTES

SHEET NUMBER:

6.1

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

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

DRY UTILITY CONDUIT NOTE:
CONDUIT LOCATIONS SHOWN ON PLAN ARE FOR GEOGRAPHICAL PURPOSES ONLY AND ARE APPROXIMATE. CONTRACTOR TO INSTALL PROPOSED CONDUITS IN ACCORDANCE WITH DRY UTILITY PURVEYOR'S SPECIFICATIONS. CONTRACTOR TO VERIFY THE CONDUIT LOCATIONS AND SIZES BASED ON THE DRY UTILITY PURVEYOR'S PLAN.

NOTE:

1. ALL UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS
2. NO VALVES, HYDRANTS, CLEANOUTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS.
3. ENSURE ALL DRIVEWAY APPROACHES ARE BUILT IN GENERAL ACCORDANCE WITH A.D.A. SPECIFICATIONS.
4. 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.

UTILITY TRENCH COMPACTION (STREET PAVEMENT / SIDEWALK):
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 COMPACTION OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 96% 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 COMAL COUNTY STREET 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 COMAL COUNTY STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE IMPLEMENTATION OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUESTED BY THE COMAL COUNTY INSPECTOR.

NBU AS-BUILT REQUIREMENTS:

NBU REQUIRES GPS POINTS FOR CERTAIN WATER, WASTEWATER AND ELECTRIC IMPROVEMENTS. SOME OF THIS INFORMATION/DATA MUST BE PERFORMED DURING CONSTRUCTION, PRIOR TO BACKFILLING OPERATIONS. CONTRACTOR SHALL COORDINATE WITH NBU INSPECTOR TO VERIFY ANY ADDITIONAL ITEMS NOT SHOWN BELOW THAT NEED TO BE GPS LOCATED AND THE SURVEY/ DELIVERY REQUIREMENTS REGARDING THIS INFORMATION.

ELECTRIC:

1. POLES
2. TRANSFORMERS, BOTH ABOVE AND UNDERGROUND (FRONT LOCK)
3. PULL BOXES
4. STREET LIGHTS

SEE NBU'S "CAD/GPS DELIVERABLES" ON NBU WEBSITE AT NBUTEXAS.COM FOR COMPLETE DETAILS AND REQUIREMENTS

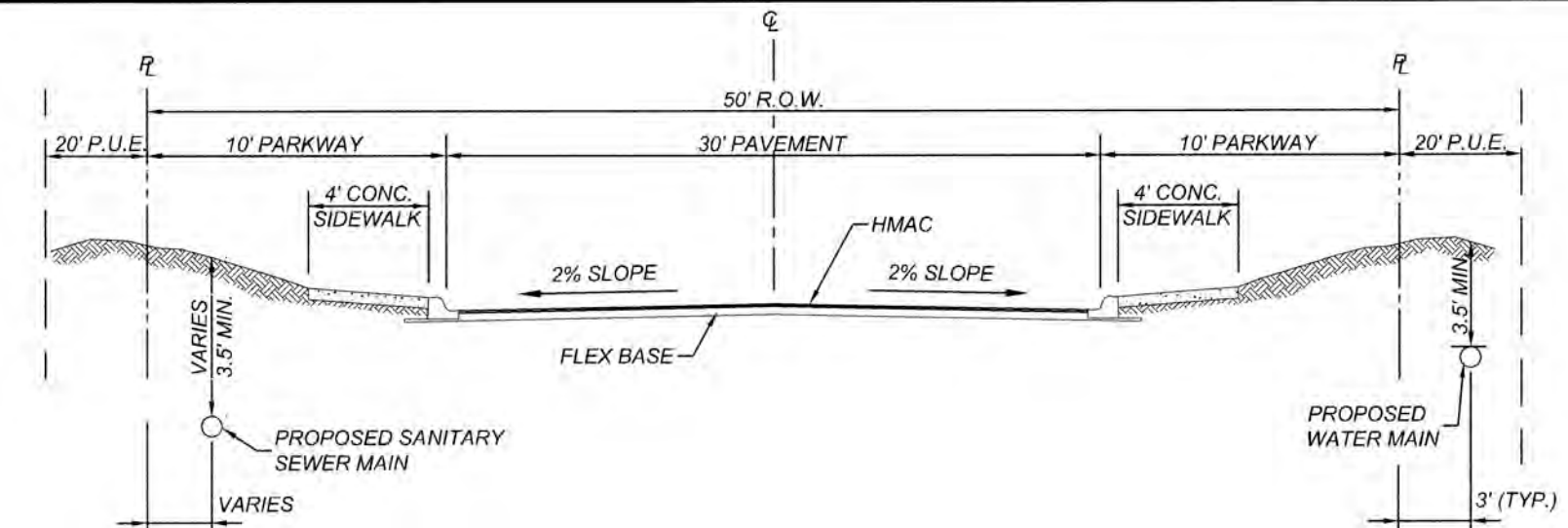
NBU AS-BUILT REQUIREMENTS:

NBU REQUIRES GPS POINTS FOR CERTAIN WATER, WASTEWATER AND ELECTRIC IMPROVEMENTS. SOME OF THIS INFORMATION/DATA MUST BE PERFORMED DURING CONSTRUCTION, PRIOR TO BACKFILLING OPERATIONS. CONTRACTOR SHALL COORDINATE WITH NBU INSPECTOR TO VERIFY ANY ADDITIONAL ITEMS NOT SHOWN BELOW THAT NEED TO BE GPS LOCATED AND THE SURVEY/ DELIVERY REQUIREMENTS REGARDING THIS INFORMATION.

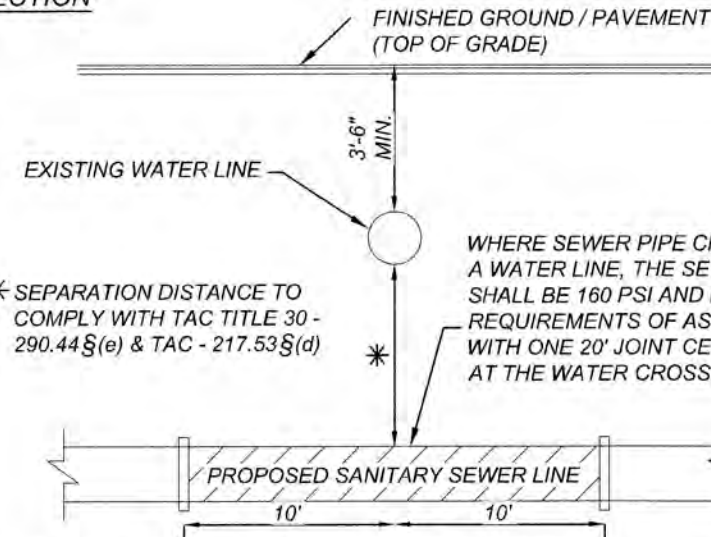
ELECTRIC:

1. POLES
2. TRANSFORMERS, BOTH ABOVE AND UNDERGROUND (FRONT LOCK)
3. PULL BOXES
4. STREET LIGHTS

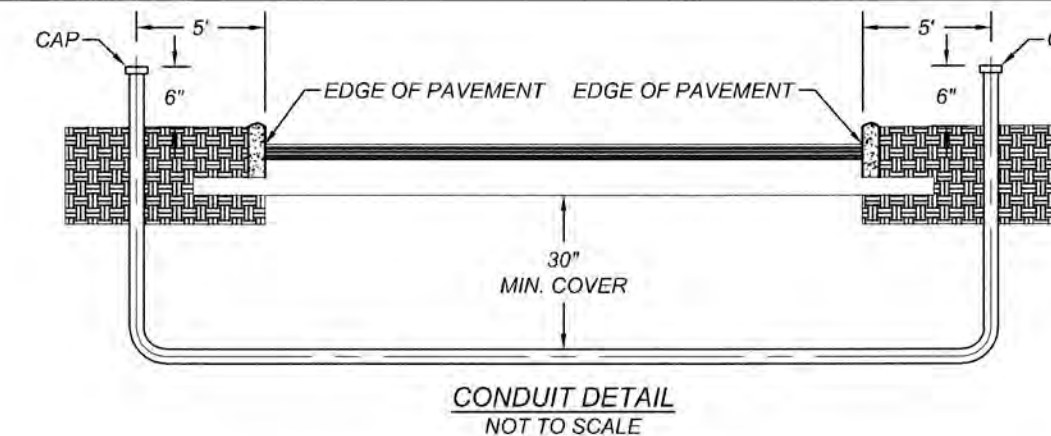
SEE NBU'S "CAD/GPS DELIVERABLES" ON NBU WEBSITE AT NBUTEXAS.COM FOR COMPLETE DETAILS AND REQUIREMENTS



TYPICAL 50' STREET SECTION
NOT-TO-SCALE



TYPICAL SANITARY SEWER / WATER CROSSING DETAIL
NOT TO SCALE



CONDUIT DETAIL
NOT TO SCALE

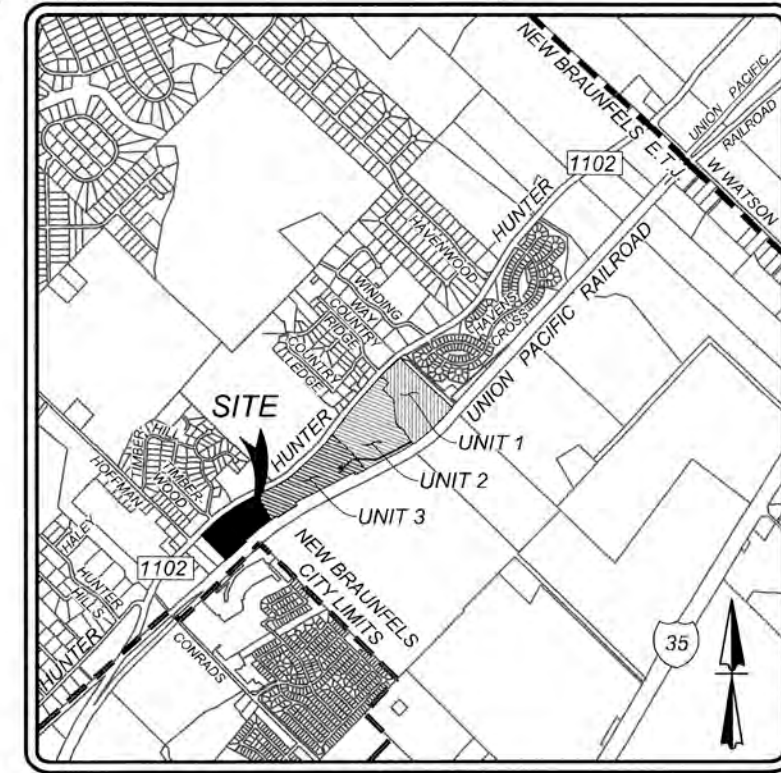
PVC SCHEDULE 80 CONDUIT
SEE PLAN SHEETS FOR SIZE LOCATION AND NUMBER OF CONDUITS

NOTE:

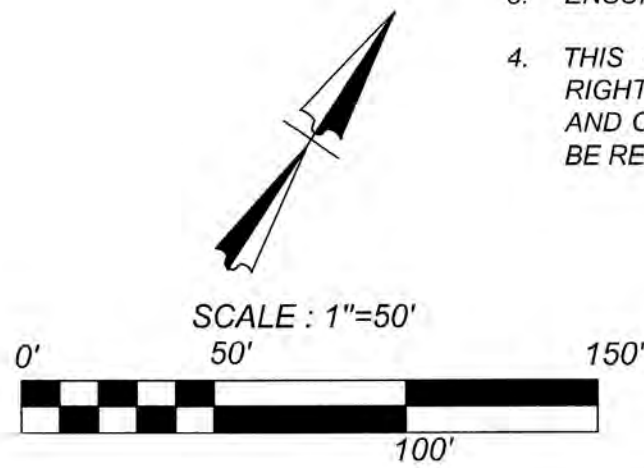
- CONTRACTOR SHALL BE RESPONSIBLE FOR PLACING CONDUIT SLEEVES FOR EACH NBU FACILITY AT ALL STREETS AND DRAIN CROSSING. CONSTRUCTION SLEEVES MUST ALSO BE LOCATED FOR NBU CREWS DURING CONSTRUCTION. (SEPARATE ITEM) SEE FINAL ELECTRIC PROVIDERS DESIGN AND SPECIFICATION.
- CONTRACTOR TO CONTACT ENGINEER FOR APPROPRIATE NUMBER AND SIZE OF CONDUITS FOR TELECOMMUNICATIONS
- CONTRACTOR TO CONTACT ENGINEER FOR ELECTRICAL PLANS
- CONTRACTOR SHALL INSTALL PERMANENT MARKERS IN PROPOSED CURB WHERE CONDUITS CROSS THE ROADWAY (BOTH SIDES)
- CONDUITS SHALL BE PVC WITH 30 INCHES OF MINIMUM COVER FROM STREET SUBGRADE. SCHEDULE 80 TO BE USED FOR CPS CONDUITS. ALL OTHER CONDUITS ARE SCHEDULE 40.
- ALL CONDUITS SHALL BE EXTENDED BEHIND CURBS OR PROPOSED SIDEWALKS A MINIMUM OF 3 FEET AND CARRIED FOR FUTURE USE
- ALL CONDUIT SLEEVES TO BE USED FOR ELECTRIC, GAS, OR TELECOMMUNICATION UTILITY CROSSINGS SHALL BE INSTALLED TO MEET OR EXCEED DESIGN REQUIREMENTS FOR THE UTILITY AGENCY WHICH THEY ARE SERVING, INCLUDING BUT NOT LIMITED TO THE DEPTH, TYPICAL PLACEMENT, AND PROXIMITY TO OTHER UTILITIES. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR VERIFYING AND INSTALLING THE CONDUIT SLEEVES TO MEET THESE SPECIFICATIONS INCLUDING COORDINATING WITH THE UTILITY AGENCY FOR ANY REQUIRED INSPECTIONS
- CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING AND INSTALLING CONDUIT SLEEVES FOR EACH DRAIN CROSSING PRIOR TO THE INSTALLATION OF EACH DRAIN.

NOTE:

SEWER SERVICE LATERALS OVER 100-FT IN LENGTH SHALL BE TESTED FOR INFILTRATION AND EXFILTRATION PER CCUSD STANDARD SPECIFICATION 03410



LOCATION MAP
N.T.S.

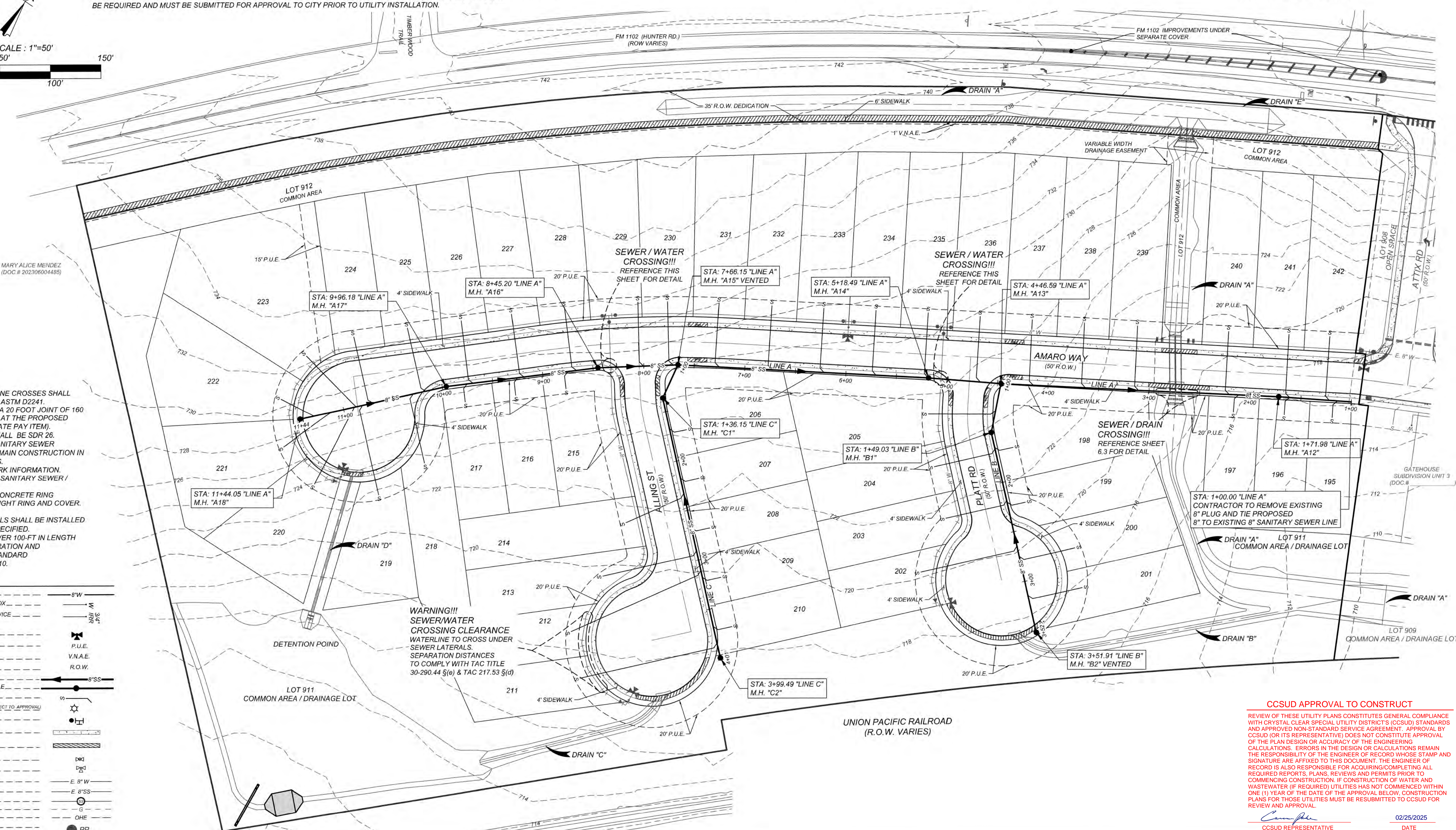


- NOTE:**
1. SEWER PIPE WHERE WATER LINE CROSSES SHALL MEET THE REQUIREMENTS OF ASTM D2241. CONTRACTOR SHALL CENTER A 20 FOOT JOINT OF 160 P.S.I. PRESSURE RATED P.V.C. AT THE PROPOSED WATER CROSSING (NO SEPARATE PAY ITEM).
 2. ALL SANITARY SEWER PIPE SHALL BE SDR 26. REFERENCE SHEET 6.1 FOR SANITARY SEWER NOTES/CRITERIA FOR SEWER MAIN CONSTRUCTION IN THE VICINITY OF WATER MAINS.
 3. SEE SHEET 6.1 FOR BENCHMARK INFORMATION.
 4. SEE THIS SHEET FOR TYPICAL SANITARY SEWER / WATER CROSSING DETAIL.
 5. ALL MANHOLES SHALL HAVE CONCRETE RING ENCASEMENT AND A WATER TIGHT RING AND COVER. SEE SHEET 6.5 FOR DETAILS.
 6. ALL SANITARY SEWER LATERALS SHALL BE INSTALLED AT 2% UNLESS OTHERWISE SPECIFIED.
 7. SEWER SERVICE LATERALS OVER 100-FT IN LENGTH SHALL BE TESTED FOR INFILTRATION AND EXFILTRATION PER CCUSD STANDARD SPECIFICATIONS SECTION 03410.

LEGEND

PROPOSED WATER MAIN	8\"W
PROPOSED WATER SERVICE & METER BOX	3/4\"
PROPOSED WATER 3/4\" IRRIGATION SERVICE & W/ 3/4\" WATER METER & METER BOX	W 3/4\"
PROPOSED FIRE HYDRANT	+
PUBLIC UTILITY EASEMENT	P.U.E.
VEHICULAR NON-ACCESS EASEMENT	V.N.A.E.
RIGHT OF WAY	R.O.W.
PROPOSED 8\" SANITARY SEWER MAIN	8\"SS
PROPOSED 8\" SANITARY SEWER MANHOLE	8\"SS
PROPOSED SANITARY SEWER LATERAL	8\"SS
PROPOSED STREET LIGHT POLE (SUBJECT TO APPROVAL)	+
PROPOSED TEE & WATER VALVE	+
PROPOSED SIDEWALK	---
DEVELOPER INSTALLED SIDEWALK	---
EXISTING WATER VALVE	+
EXISTING FIRE HYDRANT	+
EXISTING WATER MAIN	E 8\" W
EXISTING SANITARY SEWER MAIN	E 8\" SS
EXISTING SANITARY SEWER MANHOLE	+
EXISTING NATURAL GAS LINE	+
EXISTING OVERHEAD UTILITY LINE	OHE
EXISTING POWER POLE	PP

WARNING!!!
SEWER/WATER CROSSING CLEARANCE WATERLINE TO CROSS UNDER SEWER LATERALS. SEPARATION DISTANCES TO COMPLY WITH TAC TITLE 30-290.44 §(e) & TAC 217.53 §(d)



CCUSD APPROVAL TO CONSTRUCT
REVIEW OF THESE UTILITY PLANS CONSTITUTES GENERAL COMPLIANCE WITH CCUSD SPECIAL UTILITY DISTRICTS (CCUSD) STANDARDS AND APPROVED NON-STANDARD SERVICE AGREEMENT. APPROVAL BY CCUSD (OR ITS REPRESENTATIVE) DOES NOT CONSTITUTE APPROVAL OF THE PLAN DESIGN OR ACCURACY OF THE ENGINEERING CALCULATIONS. ERRORS IN THE DESIGN OR CALCULATIONS REMAIN THE RESPONSIBILITY OF THE ENGINEER OF RECORD WHOSE STAMP AND SIGNATURE ARE AFFIXED TO THIS DOCUMENT. THE ENGINEER OF RECORD IS ALSO RESPONSIBLE FOR ACQUIRING/COMPLETING ALL REQUIRED REPORTS, PLANS, REVIEWS AND PERMITS PRIOR TO COMMENCING CONSTRUCTION. IF CONSTRUCTION OF WATER AND WASTEWATER (IF REQUIRED) UTILITIES HAS NOT COMMENCED WITHIN ONE (1) YEAR OF THE DATE OF THE APPROVAL BELOW, CONSTRUCTION PLANS FOR THOSE UTILITIES MUST BE RESUBMITTED TO CCUSD FOR REVIEW AND APPROVAL.

CCUSD REPRESENTATIVE
DATE: 02/25/2025

Colliers
Engineering & Design
www.colliersengineering.com
Formerly Known as **KFW**
811
Know what's below. Call before you dig.
FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

PROTECT YOURSELF
ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE

STATE OF TEXAS
NICHOLAS R. HENRICH
11666
PROFESSIONAL ENGINEER
Vance R. Henrich, P.E.

FINAL SUBDIVISION PLAN
FOR
GATEHOUSE SUBDIVISION UNIT 4

CITY OF NEW BRAUNFELS
COMAL COUNTY
TEXAS

Colliers
Engineering & Design
NEW BRAUNFELS (KFW)
640 N. Walnut Ave.
Suite 1101
New Braunfels, TX 78130
Phone: 830.220.6042
COLLIERS ENGINEERING & DESIGN, P.C.
TXBEP-15-00003
TXBEP-15-00003

SCALE: AS SHOWN
DATE: 9/11/2024
PROJECT NUMBER: 24003556A
DRAWING NAME: 6.2 OVERALL SANITARY SEWER PLAN
SHEET TITLE: OVERALL SANITARY SEWER PLAN
SHEET NUMBER: 6.2

DATE: 02/25/2025
DATE

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

User: ID: dgonzalez
File: U:\Projects\314\32\06\Design\Civil\SEWER\6.3 SEWER LINE A STA. 1+00.00 TO END.dwg
Date: Feb 13, 2025, 3:44pm
Printed: 2/13/2025 3:44pm

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 SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

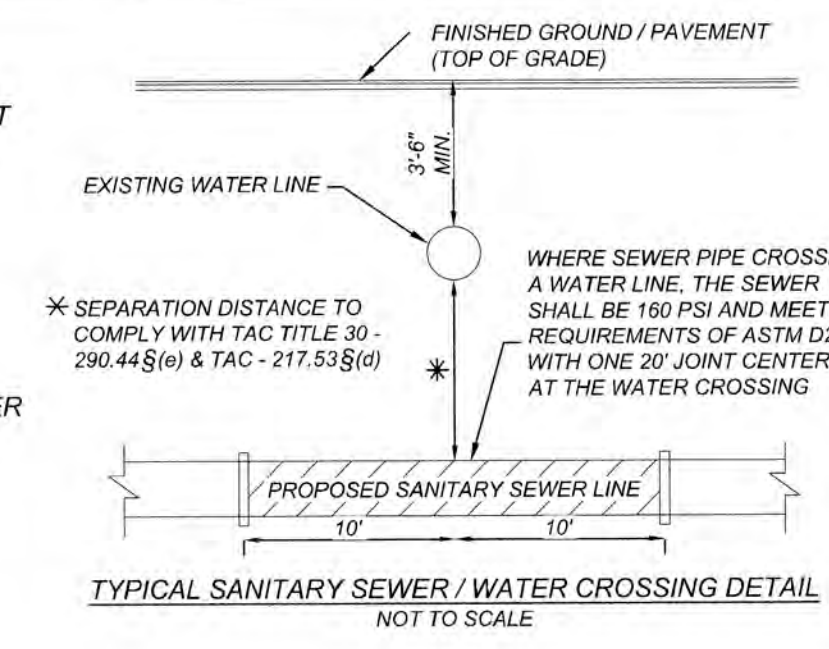
CAUTION!!!
THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS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

DRY UTILITY CONDUIT NOTE:
CONDUIT LOCATIONS SHOWN ON PLAN ARE FOR GEOGRAPHICAL PURPOSES ONLY AND ARE APPROXIMATE. CONTRACTOR TO INSTALL PROPOSED CONDUITS IN ACCORDANCE WITH DRY UTILITY PURVEYOR'S SPECIFICATIONS. CONTRACTOR TO VERIFY THE CONDUIT LOCATIONS AND SIZES BASED ON THE DRY UTILITY PURVEYOR'S PLAN.

UTILITY TRENCH COMPACTION (STREET PAVEMENT / SIDEWALK):
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 COMAL COUNTY STREET 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 COMAL 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 COMAL COUNTY INSPECTOR.

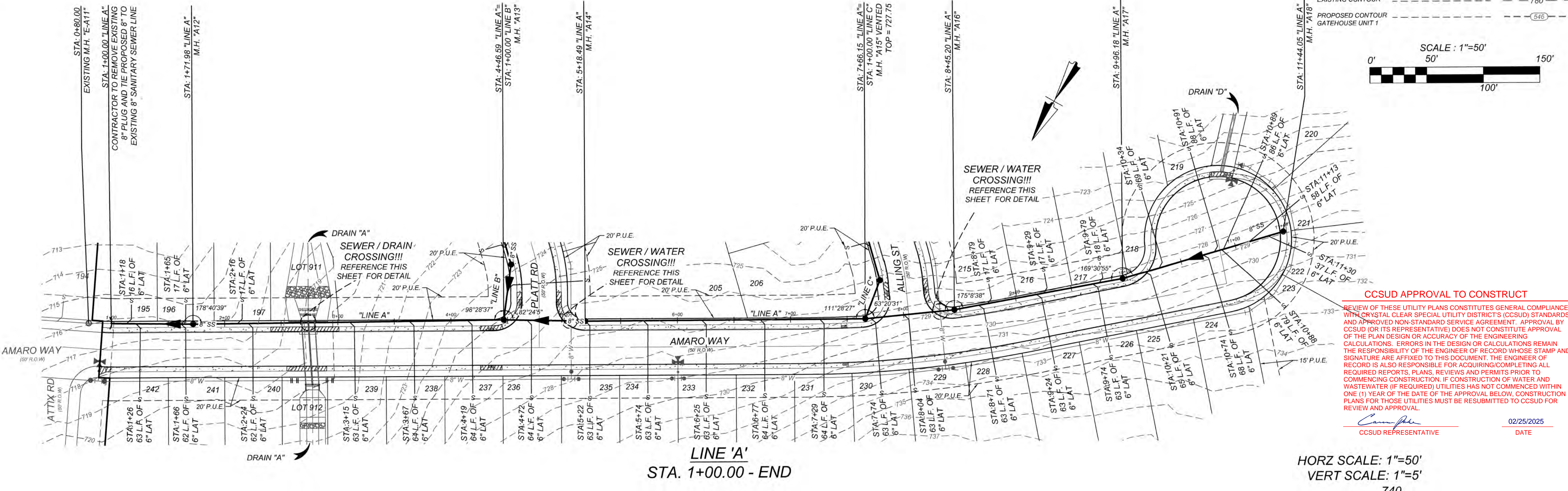
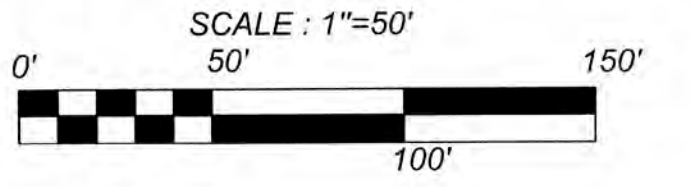
- NOTE:**
1. ALL UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS
 2. NO VALVES, HYDRANTS, CLEANOUTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS.
 3. ENSURE ALL DRIVEWAY APPROACHES ARE BUILT IN GENERAL ACCORDANCE WITH A.D.A. SPECIFICATIONS.
 4. THIS PROJECT INCLUDES UTILITY INSTALLATIONS 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.

- NOTE:**
1. SEWER PIPE WHERE WATER LINE CROSSES SHALL MEET THE REQUIREMENTS OF ASTM D2241. CONTRACTOR SHALL CENTER A 20 FOOT JOINT OF 160 P.S.I. PRESSURE RATED P.V.C. AT THE PROPOSED WATER CROSSING (NO SEPARATE PAY ITEM).
 2. ALL SANITARY SEWER PIPE SHALL BE SDR 26. REFERENCE SHEET 6.1 FOR SANITARY SEWER NOTES/CRITERIA FOR SEWER MAIN CONSTRUCTION IN THE VICINITY OF WATER MAINS.
 3. SEE SHEET 6.1 FOR BENCHMARK INFORMATION.
 4. SEE THIS SHEET FOR TYPICAL SANITARY SEWER / WATER CROSSING DETAIL.
 5. ALL MANHOLES SHALL HAVE CONCRETE RING ENCASUREMENT AND A WATER TIGHT RING AND COVER. SEE SHEET 6.5 FOR DETAILS.
 6. ALL SANITARY SEWER LATERALS SHALL BE INSTALLED AT 2% UNLESS OTHERWISE SPECIFIED.
 7. SEWER SERVICE LATERALS OVER 100-FT IN LENGTH SHALL BE TESTED FOR INFILTRATION AND EXFILTRATION PER CCSUD STANDARD SPECIFICATIONS SECTION 03410.



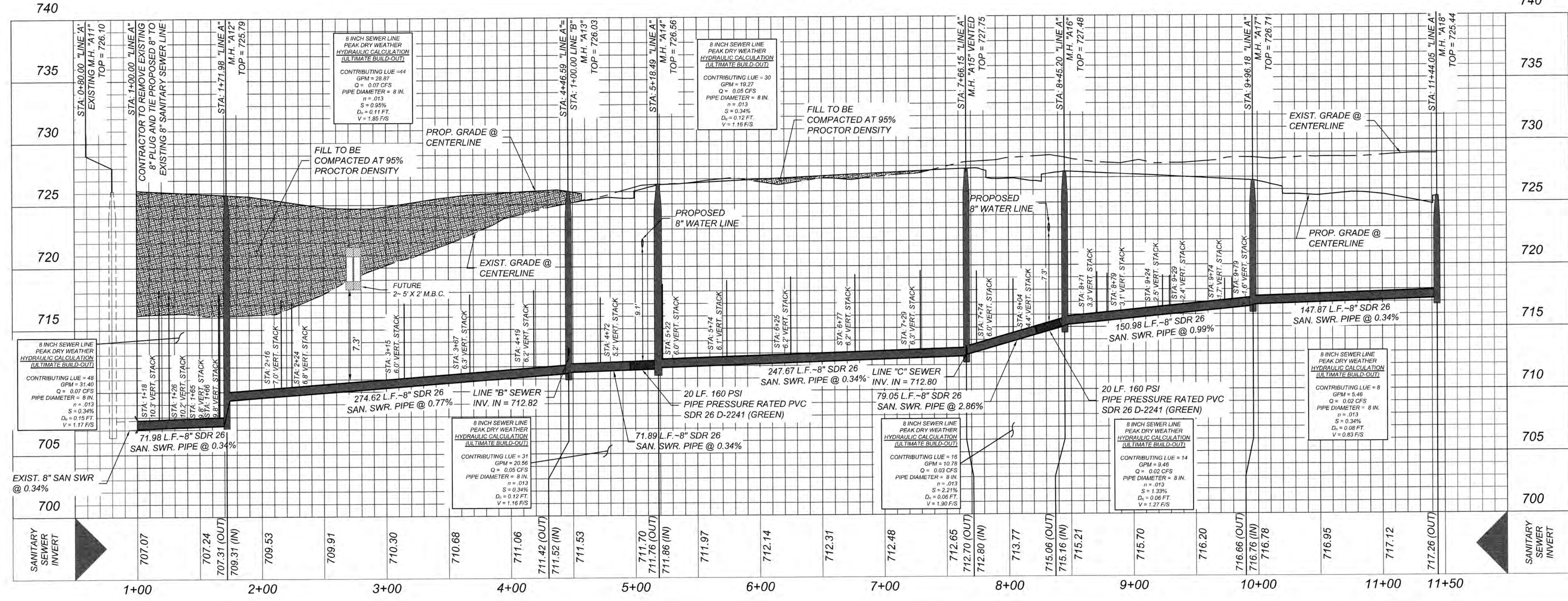
LEGEND

PROPOSED WATER MAIN	8" W
PROPOSED FIRE HYDRANT	P.U.E.
PUBLIC UTILITY EASEMENT	V.N.A.E.
VEHICULAR NON-ACCESS EASEMENT	R.O.W.
RIGHT OF WAY	
PROPOSED 8" SANITARY SEWER MAIN	
PROPOSED 8" SANITARY SEWER MANHOLE	
PROPOSED TEE & WATER VALVE	
PROPOSED SANITARY SEWER LATERAL	
EXISTING SANITARY SEWER LATERAL	
EXISTING WATER VALVE	
EXISTING FIRE HYDRANT	
EXISTING WATER MAIN	8" W
EXISTING SANITARY SEWER MAIN	8" SS
EXISTING SANITARY SEWER MANHOLE	FM
EXISTING SANITARY SEWER FORCE MAIN	FM
EXISTING NATURAL GAS LINE	G
EXISTING OVERHEAD UTILITY LINE	OHE
EXISTING POWER POLE	PP
EXISTING CONTOUR	780
PROPOSED CONTOUR	780
GATEHOUSE UNIT 1	546



CCSUD APPROVAL TO CONSTRUCT
REVIEW OF THESE UTILITY PLANS CONSTITUTES GENERAL COMPLIANCE WITH CRYSTAL CLEAR SPECIAL UTILITY DISTRICT'S (CCSUD) STANDARDS AND APPROVED NON-STANDARD SERVICE AGREEMENT. APPROVAL BY CCSUD (OR ITS REPRESENTATIVE) DOES NOT CONSTITUTE APPROVAL OF THE PLAN DESIGN OR ACCURACY OF THE ENGINEERING CALCULATIONS. ERRORS IN THE DESIGN OR CALCULATIONS REMAIN THE RESPONSIBILITY OF THE ENGINEER OF RECORD WHOSE STAMP AND SIGNATURE ARE AFFIXED TO THIS DOCUMENT. THE ENGINEER OF RECORD IS ALSO RESPONSIBLE FOR ACQUIRING/COMPLETING ALL REQUIRED REPORTS, PLANS, REVIEWS AND PERMITS PRIOR TO COMMENCING CONSTRUCTION. IF CONSTRUCTION OF WATER AND WASTEWATER (IF REQUIRED) UTILITIES HAS NOT COMMENCED WITHIN ONE (1) YEAR OF THE DATE OF THE APPROVAL BELOW, CONSTRUCTION PLANS FOR THOSE UTILITIES MUST BE RESUBMITTED TO CCSUD FOR REVIEW AND APPROVAL.

CSUD REPRESENTATIVE *DATE* 02/25/2025



CONTRACTOR TO VERIFY DEPTH OF EXISTING SEWER MAIN PRIOR TO START OF CONSTRUCTION & NOTIFY ENGINEER IMMEDIATELY OF ANY DISCREPANCIES

Colliers

Engineering & Design

www.colliersengineering.com

Copyright © 2025, Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted and to whom it is issued. This drawing may not be copied, reprinted, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Formerly Known as **KFW**

811

Know what's below. Call before you dig.

FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

PROTECT YOURSELF

ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANNOUNCE IN MANY STATES.

STATE OF TEXAS

NICHOLAS RETNOLD

11666

PROFESSIONAL ENGINEER

2/13/25

Nicholas Retnold

FINAL SUBDIVISION PLAN

FOR

GATEHOUSE

SUBDIVISION UNIT 4

CITY OF NEW BRAUNFELS

COMAL COUNTY

TEXAS

NEW BRAUNFELS (KFW)

640 N. Walnut Ave.

Suite 1101

New Braunfels, TX 78130

Phone: 830.226.6042

COLLIERS ENGINEERING & DESIGN, INC.

TYPE FORM: E-1009

189.5 FORM: 03/05/05

SCALE: AS SHOWN	DATE: 9/11/2024	DRAWN BY: MSG	CHECKED BY: WF
PROJECT NUMBER: 24003556A	DRAWING NAME: 6.3 SEWER LINE A STA. 1+00.00 TO END		
SHEET TITLE: SEWER LINE A STA. 1+00.00 TO END			
SHEET NUMBER: 6.3			

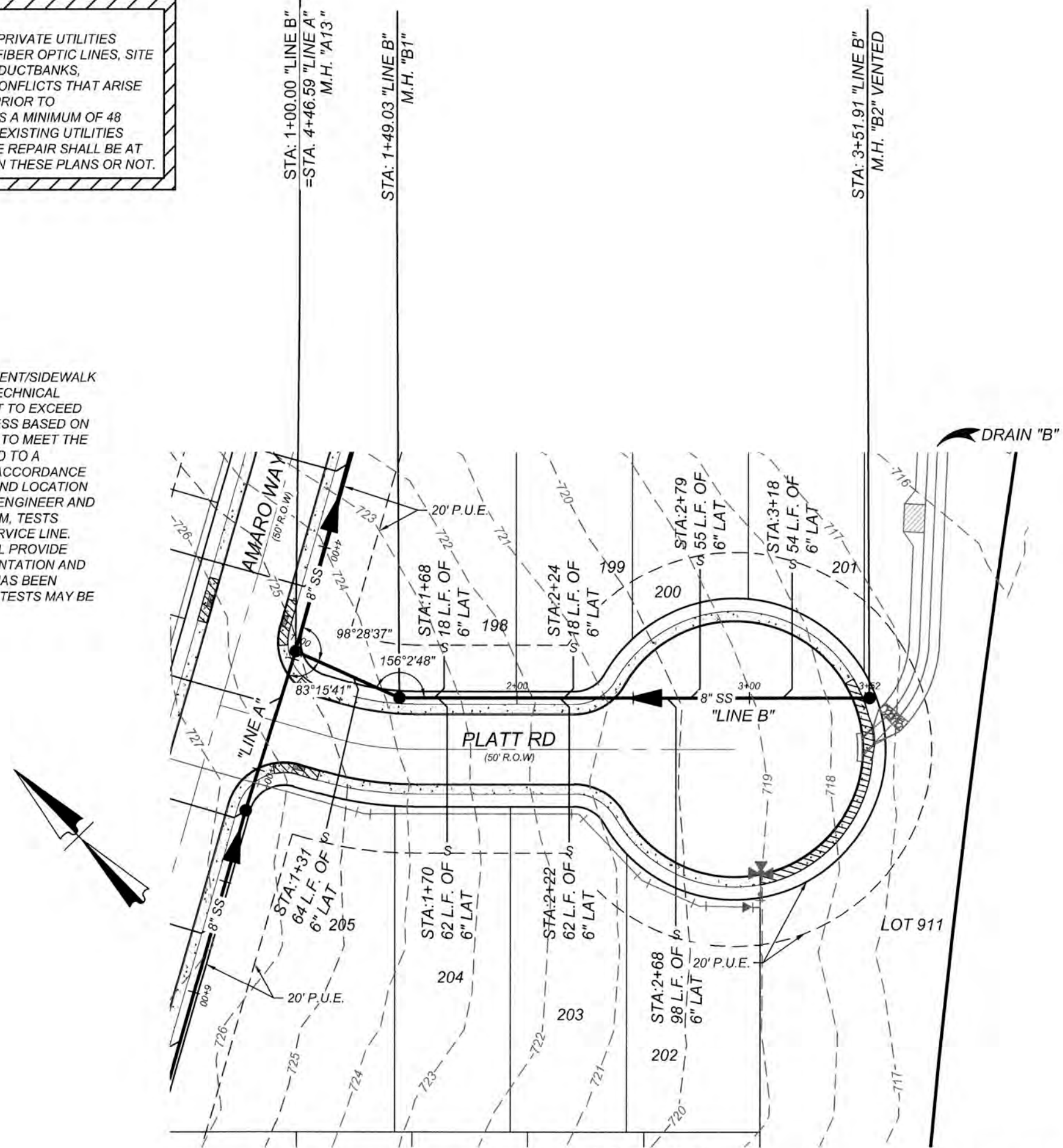
NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

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

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

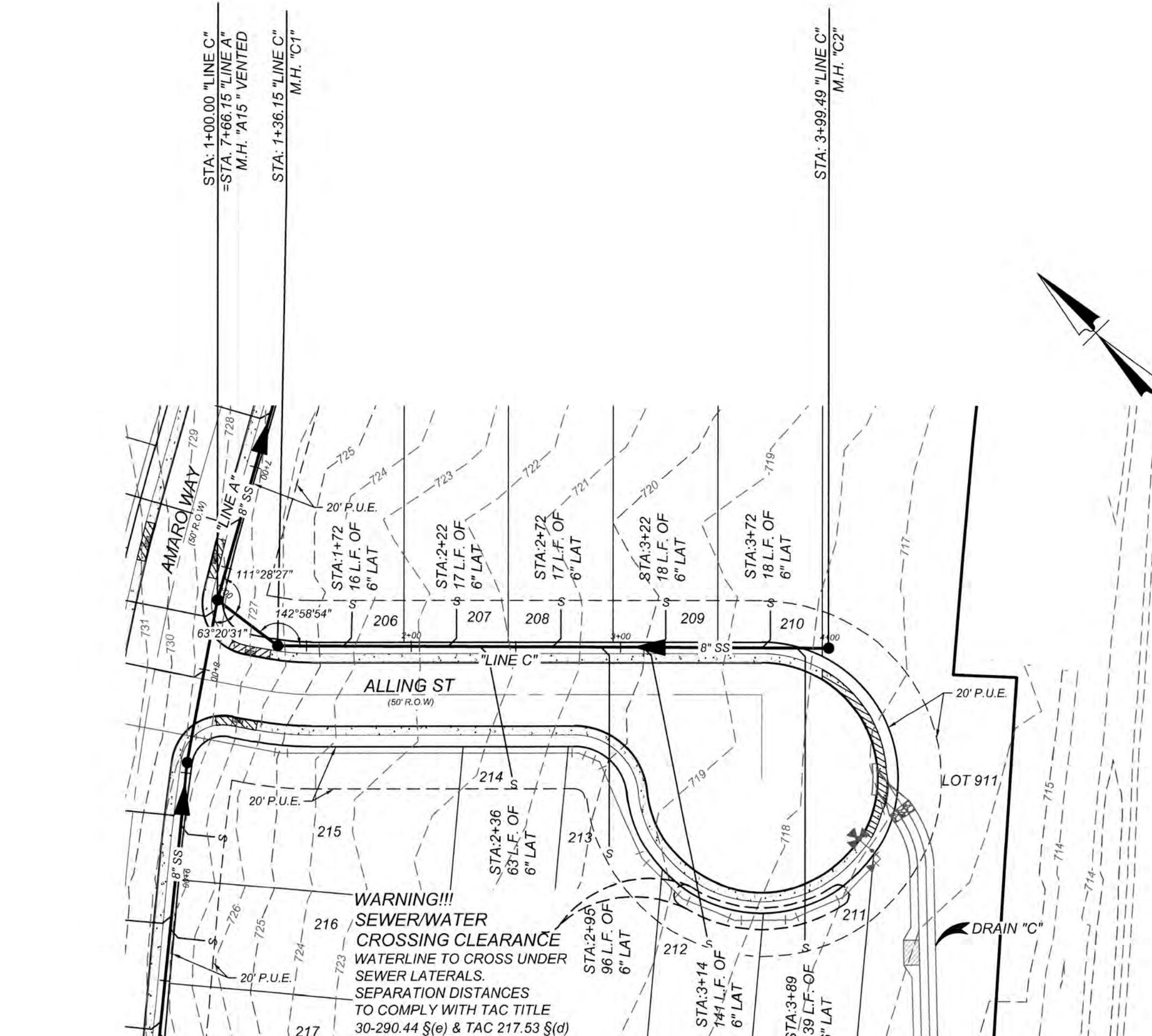
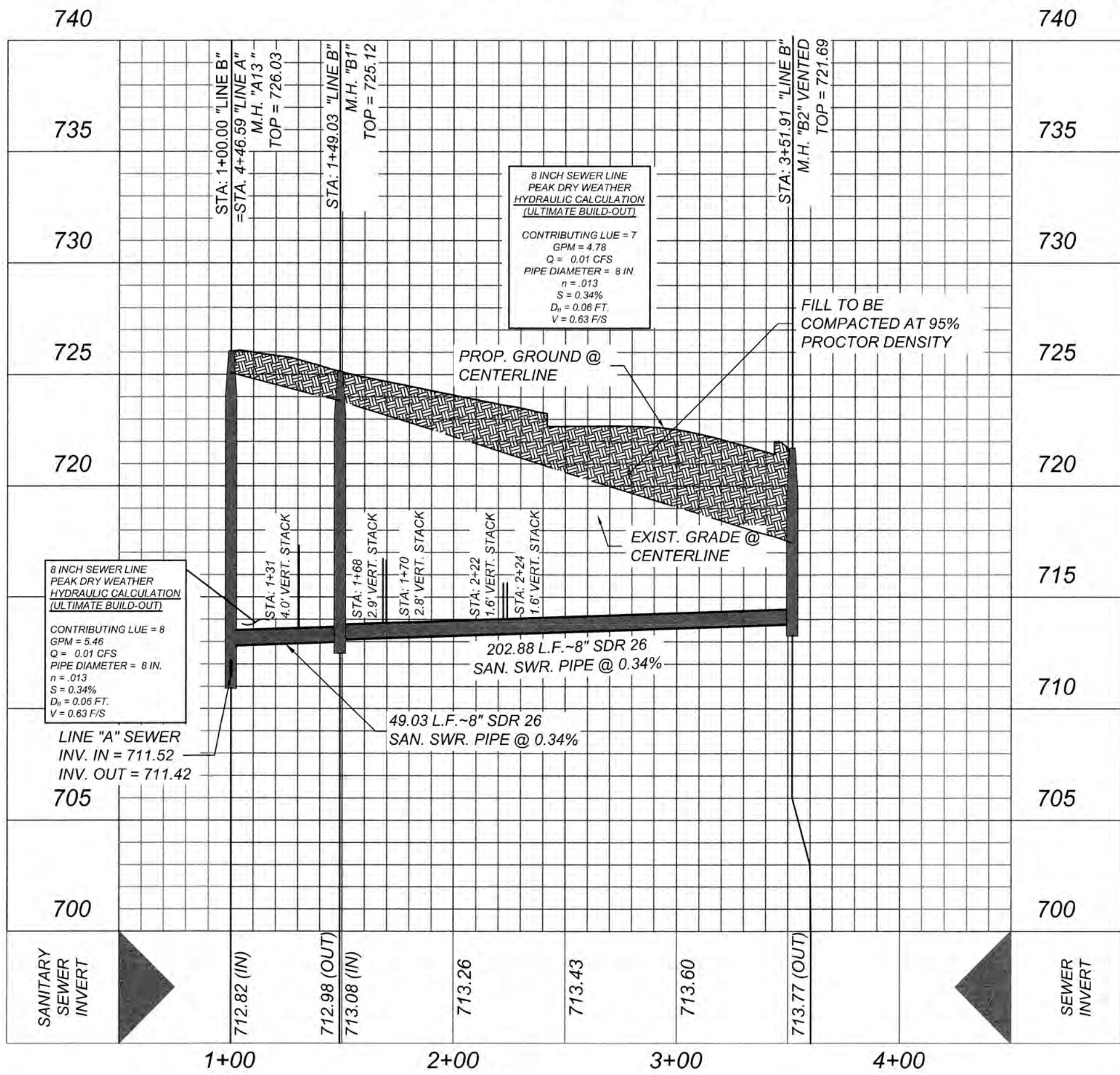
DRY UTILITY CONDUIT NOTE:
CONDUIT LOCATIONS SHOWN ON PLAN ARE FOR GEOGRAPHICAL PURPOSES ONLY AND ARE APPROXIMATE. CONTRACTOR TO INSTALL PROPOSED CONDUITS IN ACCORDANCE WITH DRY UTILITY PURVEYOR'S SPECIFICATIONS. CONTRACTOR TO VERIFY THE CONDUIT LOCATIONS AND SIZES BASED ON THE DRY UTILITY PURVEYOR'S PLAN.

UTILITY TRENCH COMPACTION (STREET PAVEMENT / SIDEWALK)
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") THICK. 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 COMAL COUNTY STREET 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 COMAL 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 COMAL COUNTY INSPECTOR.



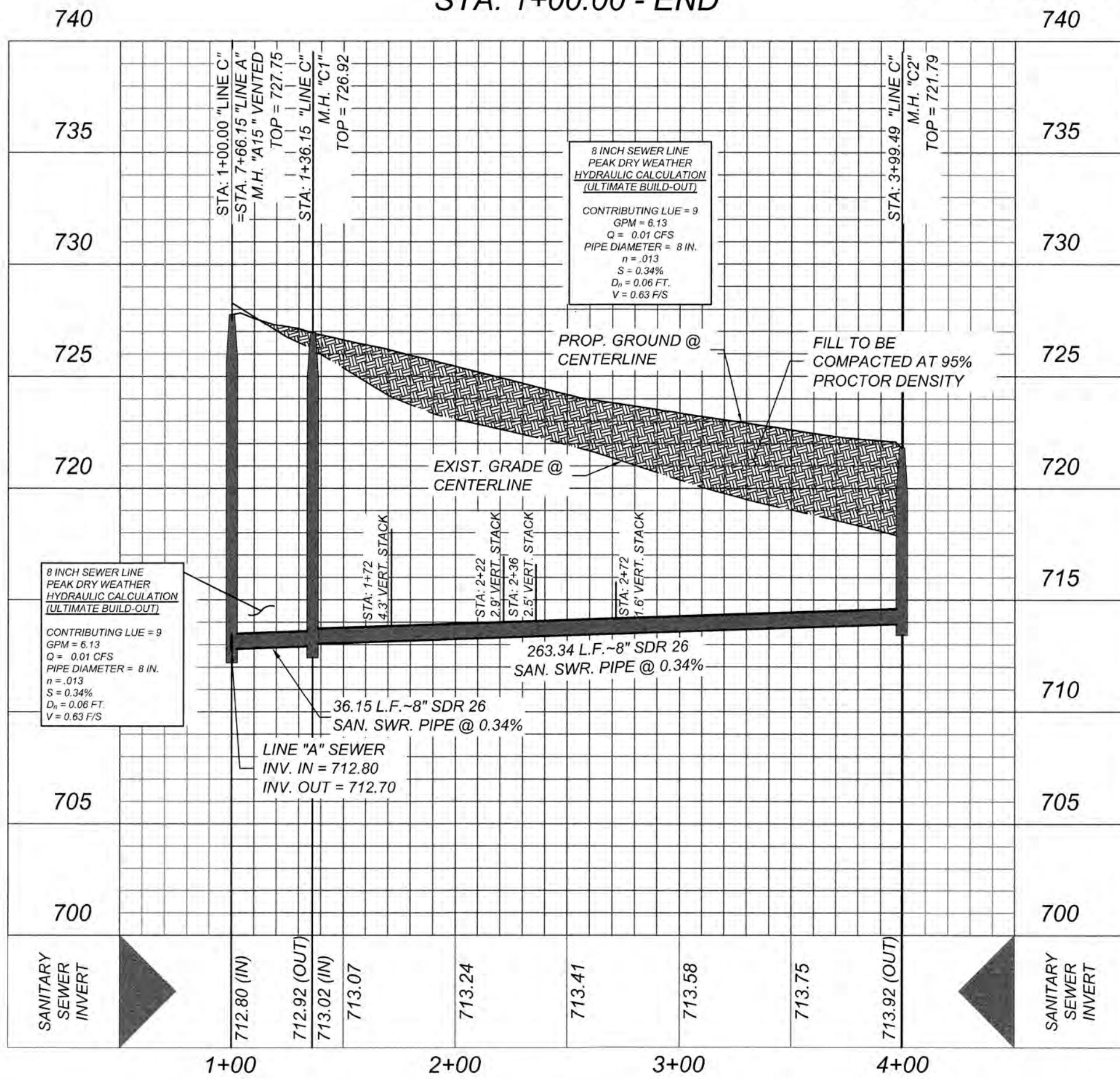
LINE 'B'
STA. 1+00.00 - END

HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'



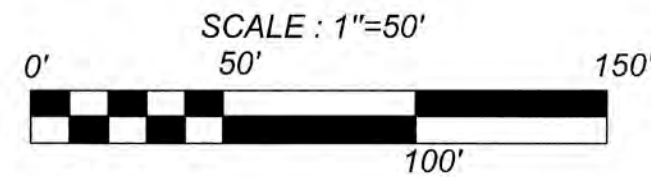
LINE 'C'
STA. 1+00.00 - END

HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'



LEGEND

PROPOSED WATER MAIN	8" W
PROPOSED FIRE HYDRANT	P.U.E.
PUBLIC UTILITY EASEMENT	V.N.A.E.
VEHICULAR NON-ACCESS EASEMENT	R.O.W.
RIGHT OF WAY	
PROPOSED 8" SANITARY SEWER MAIN	
PROPOSED 8" SANITARY SEWER MANHOLE	
PROPOSED TEE & WATER VALVE	
PROPOSED SANITARY SEWER LATERAL	
EXISTING SANITARY SEWER LATERAL	
EXISTING WATER VALVE	
EXISTING FIRE HYDRANT	
EXISTING WATER MAIN	E. 8" W
EXISTING SANITARY SEWER MAIN	E. 8" SS
EXISTING SANITARY SEWER MANHOLE	E. PM
EXISTING SANITARY SEWER FORCE MAIN	G
EXISTING NATURAL GAS LINE	CHE
EXISTING OVERHEAD UTILITY LINE	
EXISTING POWER POLE	PP
EXISTING CONTOUR	780
PROPOSED CONTOUR	545
GATEHOUSE UNIT 1	



CCSUD APPROVAL TO CONSTRUCT

REVIEW OF THESE UTILITY PLANS CONSTITUTES GENERAL COMPLIANCE WITH CRYSTAL CLEAR SPECIAL UTILITY DISTRICT'S (CCSUD) STANDARDS AND APPROVED NON-STANDARD SERVICE AGREEMENT. APPROVAL BY CCSUD (OR ITS REPRESENTATIVE) DOES NOT CONSTITUTE APPROVAL OF THE PLAN DESIGN OR ACCURACY OF THE ENGINEERING CALCULATIONS. ERRORS IN THE DESIGN OR CALCULATIONS REMAIN THE RESPONSIBILITY OF THE ENGINEER OF RECORD WHOSE STAMP AND SIGNATURE ARE AFFIXED TO THIS DOCUMENT. THE ENGINEER OF RECORD IS ALSO RESPONSIBLE FOR ACQUIRING/COMPLETING ALL REQUIRED REPORTS, PLANS, REVIEWS AND PERMITS PRIOR TO COMMENCING CONSTRUCTION. IF CONSTRUCTION OF WATER AND WASTEWATER (IF REQUIRED) UTILITIES HAS NOT COMMENCED WITHIN ONE (1) YEAR OF THE DATE OF THE APPROVAL BELOW, CONSTRUCTION PLANS FOR THOSE UTILITIES MUST BE RESUBMITTED TO CCSUD FOR REVIEW AND APPROVAL.

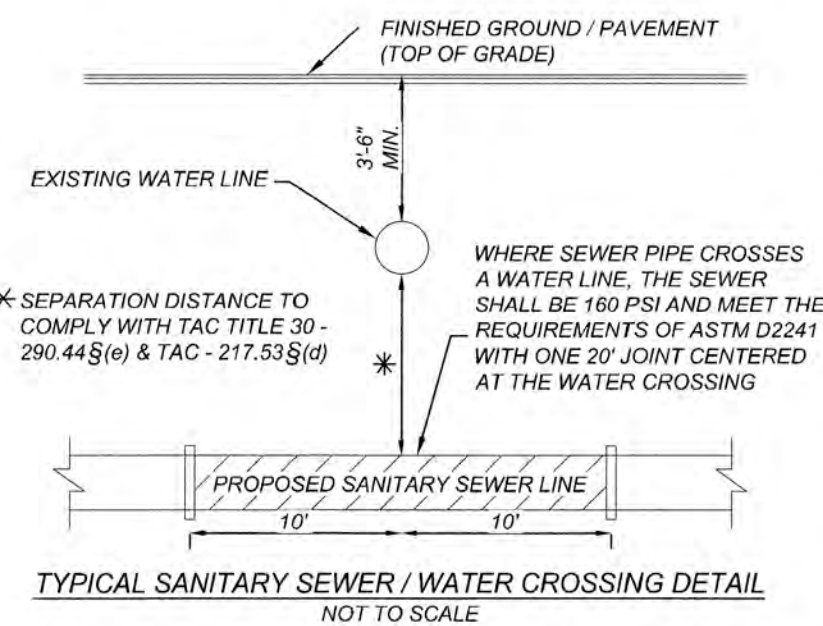
CCSUD REPRESENTATIVE
DATE

NOTE:

- SEWER PIPE WHERE WATER LINE CROSSES SHALL MEET THE REQUIREMENTS OF ASTM D2241. CONTRACTOR SHALL CENTER A 20 FOOT JOINT OF 160 P.S.I. PRESSURE RATED P.V.C. AT THE PROPOSED WATER CROSSING (NO SEPARATE PAY ITEM).
- ALL SANITARY SEWER PIPE SHALL BE SDR 26.
- REFERENCE SHEET 6.1 FOR SANITARY SEWER NOTES/CRITERIA FOR SEWER MAIN CONSTRUCTION IN THE VICINITY OF WATER MAINS.
- SEE SHEET 6.1 FOR BENCHMARK INFORMATION.
- SEE THIS SHEET FOR TYPICAL SANITARY SEWER / WATER CROSSING DETAIL.
- ALL MANHOLES SHALL HAVE CONCRETE RING ENCASUREMENT AND A WATER TIGHT RING AND COVER. SEE SHEET 6.5 FOR DETAILS.
- ALL SANITARY SEWER LATERALS SHALL BE INSTALLED AT 2% UNLESS OTHERWISE SPECIFIED.
- SEWER SERVICE LATERALS OVER 100-FT IN LENGTH SHALL BE TESTED FOR INFILTRATION AND EXFILTRATION PER CCSUD STANDARD SPECIFICATIONS SECTION 03410.

NOTE:

- ALL UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.
- NO VALVES, HYDRANTS, CLEANOUTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS.
- ENSURE ALL DRIVEWAY APPROACHES ARE BUILT IN GENERAL ACCORDANCE WITH A.D.A. SPECIFICATIONS.
- 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.



Colliers

Engineering
& Design

www.colliersengineering.com

Copyright © 2025, Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reused, altered, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Formerly Known as KFW

Date: Feb 10, 2025, 9:35am User ID: rwnlden
File: U:\Projects\434\52\05 Design\Civil\WATER\7.0 WATER DISTRIBUTION COVER.dwg
C:\Users\ADMIN\OneDrive\Documents\434\52\05 Design\Civil\WATER\7.0 WATER DISTRIBUTION COVER.dwg
By: RWNLDEN

GATEHOUSE SUBDIVISION - UNIT 4

COMAL COUNTY, TEXAS

WATER IMPROVEMENTS

TCEQ WATER DISTRIBUTION SYSTEM GENERAL CONSTRUCTION NOTES

1. THIS WATER DISTRIBUTION SYSTEM MUST BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS 30 TEXAS ADMINISTRATIVE CODE (TAC) CHAPTER 290 SUBCHAPTER D. WHEN CONFLICTS ARE NOTED WITH LOCAL STANDARDS, THE MORE STRINGENT REQUIREMENT SHALL BE APPLIED. AT A MINIMUM, CONSTRUCTION FOR PUBLIC WATER SYSTEMS MUST ALWAYS MEET TCEQ'S RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS."

2. ALL NEWLY INSTALLED PIPES AND RELATED PRODUCTS MUST CONFORM TO AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)/NSF INTERNATIONAL STANDARD 61 AND MUST BE CERTIFIED BY AN ORGANIZATION ACCREDITED BY ANSI (§290.44(A)(1)).

3. PLASTIC PIPE FOR USE IN PUBLIC WATER SYSTEMS MUST BEAR THE NSF INTERNATIONAL SEAL OF APPROVAL (NSF-PW) AND HAVE AN ASTM DESIGN PRESSURE RATING OF AT LEAST 150 PSI OR A STANDARD DIMENSION RATIO OF 26 OR LESS (§290.44(A)(2)).

4. NO PIPE WHICH HAS BEEN USED FOR ANY PURPOSE OTHER THAN THE CONVEYANCE OF DRINKING WATER SHALL BE ACCEPTED OR RELOCATED FOR USE IN ANY PUBLIC DRINKING WATER SUPPLY (§290.44(A)(3)).

5. ALL WATER LINE CROSSINGS OF WASTEWATER MAINS SHALL BE PERPENDICULAR (§290.44(E)(4)(B)).

6. WATER TRANSMISSION AND DISTRIBUTION LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. HOWEVER, THE TOP OF THE WATER LINE MUST BE LOCATED BELOW THE FROST LINE AND IN NO CASE SHALL THE TOP OF THE WATER LINE BE LESS THAN 24 INCHES BELOW GROUND SURFACE (§290.44(A)(4)).

7. THE MAXIMUM ALLOWABLE LEAD CONTENT OF PIPES, PIPE FITTINGS, PLUMBING FITTINGS, AND FIXTURES IS 0.25 PERCENT (§290.44(B)).

8. THE CONTRACTOR SHALL INSTALL APPROPRIATE AIR RELEASE DEVICES WITH VENT OPENINGS TO THE ATMOSPHERE COVERED WITH 16-MESH OR FINER, CORROSION RESISTANT SCREENING MATERIAL OR AN ACCEPTABLE EQUIVALENT (§290.44(D)(1)).

9. THE CONTRACTOR SHALL NOT PLACE THE PIPE IN WATER OR WHERE IT CAN BE FLOODED WITH WATER OR SEWAGE DURING ITS STORAGE OR INSTALLATION (§290.44(F)(1)).

10. WHEN WATERLINES ARE LAID UNDER ANY FLOWING OR INTERMITTENT STREAM OR SEMI-PERMANENT BODY OF WATER THE WATERLINE SHALL BE INSTALLED IN A SEPARATE WATERTIGHT PIPE ENCASUREMENT. VALVES MUST BE PROVIDED ON EACH SIDE OF THE CROSSING WITH FACILITIES TO ALLOW THE UNDERWATER PORTION OF THE SYSTEM TO BE ISOLATED AND TESTED (§290.44(F)(2)).

11. PURSUANT TO 30 TAC §290.44(A)(5), THE HYDROSTATIC LEAKAGE RATE SHALL NOT EXCEED THE AMOUNT ALLOWED OR RECOMMENDED BY THE MOST CURRENT AWWA FORMULAS FOR PVC PIPE, CAST IRON AND DUCTILE IRON PIPE. INCLUDE THE FORMULAS IN THE NOTES ON THE PLANS.

• THE HYDROSTATIC LEAKAGE RATE FOR POLYVINYL CHLORIDE (PVC) PIPE AND APPURTENANCES SHALL NOT EXCEED THE AMOUNT ALLOWED OR RECOMMENDED BY FORMULAS IN AMERICA WATER WORKS ASSOCIATION (AWWA) C-805 AS REQUIRED IN 30 TAC §290.44(A)(5). PLEASE ENSURE THAT THE FORMULA FOR THIS CALCULATION IS CORRECT AND MOST CURRENT FORMULA IS IN USE:

$$Q = \frac{(LD)^3}{148,000}$$

WHERE:

- Q = THE QUANTITY OF MAKEUP WATER IN GALLONS PER HOUR.
- L = THE LENGTH OF THE PIPE SECTION BEING TESTED, IN FEET.
- D = THE NOMINAL DIAMETER OF THE PIPE IN INCHES, AND
- P = THE AVERAGE TEST PRESSURE DURING THE HYDROSTATIC TEST IN POUNDS PER SQUARE INCH (PSI).

• THE HYDROSTATIC LEAKAGE RATE FOR DUCTILE IRON (DI) PIPE AND APPURTENANCES SHALL NOT EXCEED THE AMOUNT ALLOWED OR RECOMMENDED BY FORMULAS IN AMERICA WATER WORKS ASSOCIATION (AWWA) C-800 AS REQUIRED IN 30 TAC §290.44(A)(5). PLEASE ENSURE THAT THE FORMULA FOR THIS CALCULATION IS CORRECT AND MOST CURRENT FORMULA IS IN USE:

$$L = \frac{(SD)^3}{148,000}$$

WHERE:

- L = THE QUANTITY OF MAKEUP WATER IN GALLONS PER HOUR.
- S = THE LENGTH OF THE PIPE SECTION BEING TESTED, IN FEET.
- D = THE NOMINAL DIAMETER OF THE PIPE IN INCHES, AND
- P = THE AVERAGE TEST PRESSURE DURING THE HYDROSTATIC TEST IN POUNDS PER SQUARE INCH (PSI).

12. THE CONTRACTOR SHALL MAINTAIN A MINIMUM SEPARATION DISTANCE IN ALL DIRECTIONS OF NINE FEET BETWEEN THE PROPOSED WATERLINE AND WASTEWATER COLLECTION FACILITIES INCLUDING MANHOLES. IF THIS DISTANCE CANNOT BE MAINTAINED, THE CONTRACTOR MUST IMMEDIATELY NOTIFY THE PROJECT ENGINEER FOR FURTHER DIRECTION. SEPARATION DISTANCES, INSTALLATION METHODS, AND MATERIALS UTILIZED MUST MEET §290.44(E)(1)-(4).

13. THE SEPARATION DISTANCE FROM A POTABLE WATERLINE TO A WASTEWATER MAIN OR LATERAL MANHOLE OR CLEANOUT SHALL BE A MINIMUM OF NINE FEET. WHERE THE NINE-FOOT SEPARATION DISTANCE CANNOT BE ACHIEVED, THE POTABLE WATERLINE SHALL BE ENCASED IN A JOINT OF AT LEAST 150 PSI PRESSURE CLASS PIPE AT LEAST 18 FEET LONG AND TWO NOMINAL SIZES LARGER THAN THE NEW CONVEYANCE. THE SPACE AROUND THE CARRIER PIPE SHALL BE SUPPORTED AT FIVE-FOOT INTERVALS WITH SPACERS OR BE FILLED TO THE SPRINGLINE WITH WASHED SAND. THE ENCASEMENT PIPE SHALL BE CENTERED ON THE CROSSING AND BOTH ENDS SEALED WITH CEMENT GROUT OR MANUFACTURED SEALANT (§290.44(E)(5)).

14. FIRE HYDRANTS SHALL NOT BE INSTALLED WITHIN NINE FEET VERTICALLY OR HORIZONTALLY OF ANY WASTEWATER LINE, WASTEWATER LATERAL, OR WASTEWATER SERVICE LINE REGARDLESS OF CONSTRUCTION (§290.44(E)(6)).

15. SUCTION MAINS TO PUMPING EQUIPMENT SHALL NOT CROSS WASTEWATER MAINS, WASTEWATER LATERALS, OR WASTEWATER SERVICE LINES. RAW WATER SUPPLY LINES SHALL NOT BE INSTALLED WITHIN FIVE FEET OF ANY TILE OR CONCRETE WASTEWATER MAIN, WASTEWATER LATERAL, OR WASTEWATER SERVICE LINE (§290.44(E)(7)).

16. WATERLINES SHALL NOT BE INSTALLED CLOSER THAN TEN FEET TO SEPTIC TANK DRAINFIELDS (§290.44(E)(8)).

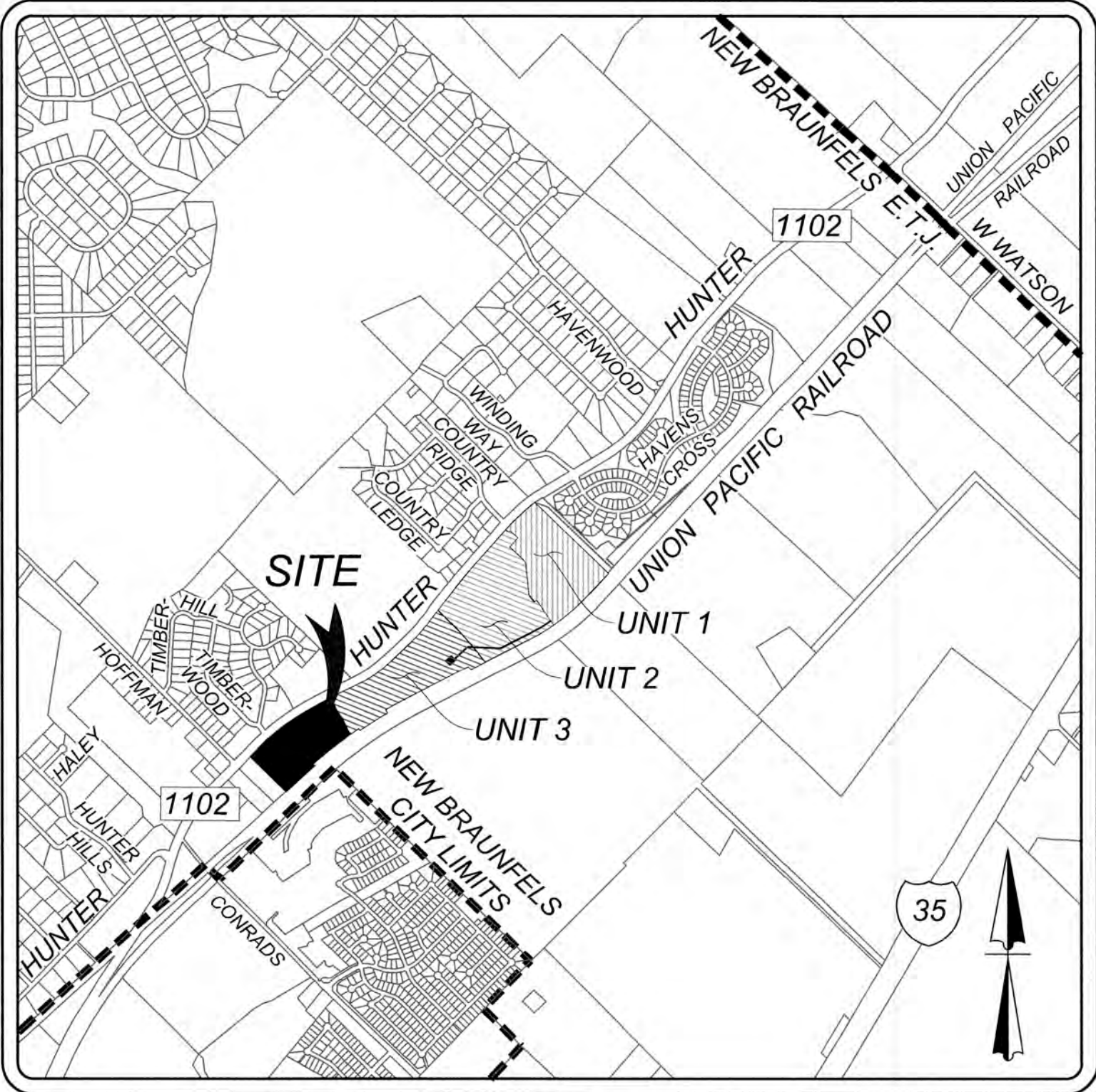
17. THE CONTRACTOR SHALL DISINFECT THE NEW WATERLINES IN ACCORDANCE WITH AWWA STANDARD C-651-14 OR MOST RECENT, THEN FLUSH AND SAMPLE THE LINES BEFORE BEING PLACED INTO SERVICE. SAMPLES SHALL BE COLLECTED FOR MICROBIOLOGICAL ANALYSIS TO CHECK THE EFFECTIVENESS OF THE DISINFECTION PROCEDURE WHICH SHALL BE REPEATED IF CONTAMINATION PERSISTS. A MINIMUM OF ONE SAMPLE FOR EACH 1,000 FEET OF COMPLETED WATERLINE WILL BE REQUIRED OR AT THE NEXT AVAILABLE SAMPLING POINT BEYOND 1,000 FEET AS DESIGNATED BY THE DESIGN ENGINEER (§290.44(F)(3)).

18. DECHLORINATION OF DISINFECTING WATER SHALL BE IN STRICT ACCORDANCE WITH CURRENT AWWA STANDARD C655-08 OR MOST RECENT.

REV. 1/2025

CRYSTAL CLEAR SPECIAL UTILITY DISTRICT (CCSUD) WATER MAIN NOTES

- CONSTRUCTION OF ALL CCSUD WATER UTILITY INFRASTRUCTURE MUST ADHERE TO CCSUD'S TECHNICAL SPECIFICATIONS, DETAILS AND APPROVED EQUIPMENT LIST.
- REMOVE ONLY VEGETATION, TREES, STUMPS, RUBBISH, AND OTHER MATERIAL NECESSARY FOR CONSTRUCTION AND DISPOSE OF OFF SITE.
- THE CONNECTION LOCATIONS LISTED IN THE PLANS ARE BASED ON BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL FIELD LOCATE EXISTING WATER MAIN LOCATIONS AT ALL TIE-IN LOCATIONS TO VERIFY SIZE, ELEVATION, AND MATERIAL PRIOR TO ORDERING MATERIALS FOR CONNECTION.
- THE CONTRACTOR SHALL MAINTAIN MINIMUM SEPARATION BETWEEN UTILITIES PER TCEQ STANDARDS.
- UNLESS OTHERWISE SPECIFIED, ALL PVC WATER MAINS SHALL BE C900/C905 DR 18, COLORED BLUE.
- ALL DUCTILE IRON WATER MAINS SHALL BE PRESSURE CLASS CONFORMING TO AWWA C151 AND CEMENT LINED.
- WATER MAINS SHALL BE RESTRAINED WITH RESTRAINT LENGTHS OF FITTINGS SHOWN IN PLANS. THRUST BLOCKING IS REQUIRED AT ALL FITTINGS AND BENDS IN ACCORDANCE WITH THE THRUST BLOCKING DETAIL PROVIDED AND SPECIFICATION SECTION 02680 - JOINT RESTRAINTS AND THRUST BLOCKING.
- LOCATIONS OF COMBINATION AIR VALVES SHOWN ARE APPROXIMATE. INSTALL AIR RELEASE VALVES AT THE HIGH POINT IN THE WATER MAIN FOR THE LOCATIONS GIVEN.
- THE CONTRACTOR SHALL COORDINATE PRESSURE TESTING OF NEW WATER MAINS WITH OWNER AND ENGINEER AT LEAST TWO BUSINESS DAYS PRIOR. PRESSURE TESTING REQUIREMENTS ARE INCLUDED IN THE SPECIFICATIONS.
- ALL WATER MAINS SHALL BE DISINFECTED PER AWWA AND TCEQ STANDARDS.
- THE OWNER SHALL SUPPLY ALL WATER NEEDED FOR CONSTRUCTION TESTING AND DISINFECTION. THE CONTRACTOR SHALL NOT BE REQUIRED TO PAY FOR THIS WATER.
- UNLESS NOTED OTHERWISE, ALL WATER MAIN P.L.'S SHALL BE ACHIEVED USING THE WATER MAIN MANUFACTURER'S ALLOWABLE JOINT DEFLECTION.
- WATER MAINS, FIRE HYDRANTS, APPURTENANCES, AND VALVES THAT ARE ABANDONED SHALL BE CUT AND PLUGGED PER SPECIFICATION SECTION 02600 - ABANDONMENT OF WATER INFRASTRUCTURE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING 98% COMPACTION ON ALL TRENCH BACKFILL AND PAYING FOR THE TESTS TO BE PERFORMED BY A THIRD PARTY. COMPACTION TESTS WILL BE DONE AT ONE LOCATION POINT RANDOMLY SELECTED OR AS INDICATED BY CCSUD INSPECTOR/TEST ADMINISTRATOR, PER EACH 12-INCH LOOSE LIFT 400 LINEAR FEET AT A MINIMUM. PERMITS WILL NOT BE ACCEPTED AND FINALIZED BY CCSUD WITHOUT THIS REQUIREMENT BEING MET AND VERIFIED BY PROVIDING ALL NECESSARY DOCUMENTED TEST RESULTS.



IF CONSTRUCTION HAS NOT COMMENCED WITHIN ONE-YEAR OF COUNTY APPROVAL FOR CONSTRUCTION INSPECTION, THAT APPROVAL IS NO LONGER VALID.

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

FEMA FLOODPLAIN

NO PORTION OF ANY RESIDENTIAL LOTS ON GATEHOUSE SUBDIVISION UNIT 4 ARE IN THE SPECIAL FLOOD HAZARD ZONE ACCORDING TO FEMA FLOOD MAP COMMUNITY PANELS NO. 48091C0290F AND NO. 48091C0295F, DATED SEPTEMBER 2, 2009.

EDWARDS AQUIFER

NO PORTION OF ANY LOTS ON GATEHOUSE SUBDIVISION UNIT 4 ARE LOCATED WITHIN EDWARDS CONTRIBUTING ZONE OR RECHARGE ZONE. GATEHOUSE SUBDIVISION IS LOCATED WITHIN EDWARDS AQUIFER TRANSITION ZONE.

GAS UTILITY

GAS UTILITIES ARE NOT INCLUDED IN THE CIVIL CONSTRUCTION PLANS. FINAL GAS UTILITY DESIGN SHALL BE APPROVED BY THE COUNTY FOR ANY WORK WITHIN PUBLIC RIGHT-OF-WAY.

DEVELOPER INFORMATION:
LENNAR HOMES OF TEXAS
100 NE LOOP 410, STE 1155
SAN ANTONIO, TEXAS 78216
PHONE: (210) 403-6282

KNOW ALL MEN BY THESE PRESENTS:

I, THE UNDERSIGNED, NICHOLAS REYNOLDS, A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF TEXAS, HEREBY CERTIFY THAT PROPER ENGINEERING CONSIDERATION HAS BEEN GIVEN TO THESE PLANS AND ALL ENGINEERING ASPECTS ARE IN COMPLIANCE WITH CITY AND STATE ENGINEERING REGULATIONS AND LAWS.

REGISTERED PROFESSIONAL ENGINEER
P.E. REGISTRATION NO. 111666

CCSUD APPROVAL TO CONSTRUCT

REVIEW OF THESE UTILITY PLANS CONSTITUTES GENERAL COMPLIANCE WITH CRYSTAL CLEAR SPECIAL UTILITY DISTRICT'S (CCSUD) STANDARDS AND APPROVED NON-STANDARD SERVICE AGREEMENT. APPROVAL BY CCSUD (OR ITS REPRESENTATIVE) DOES NOT CONSTITUTE APPROVAL OF THE PLAN DESIGN OR ACCURACY OF THE ENGINEERING CALCULATIONS. ERRORS IN THE DESIGN OR CALCULATIONS REMAIN THE RESPONSIBILITY OF THE ENGINEER OF RECORD WHOSE STAMP AND SIGNATURE ARE AFFIXED TO THIS DOCUMENT. THE ENGINEER OF RECORD IS ALSO RESPONSIBLE FOR ACQUIRING/COMPLETING ALL REQUIRED REPORTS, PLANS, REVIEWS AND PERMITS PRIOR TO COMMENCING CONSTRUCTION. IF CONSTRUCTION OF WATER AND WASTEWATER (IF REQUIRED) UTILITIES HAS NOT COMMENCED WITHIN ONE (1) YEAR OF THE DATE OF THE APPROVAL BELOW, CONSTRUCTION PLANS FOR THOSE UTILITIES MUST BE RESUBMITTED TO CCSUD FOR REVIEW AND APPROVAL.

Carrie Miller
CCSUD REPRESENTATIVE

02/25/2025
DATE



Engineering
& Design

www.colliersengineering.com

Copyright © 2025, Colliers Engineering & Design. All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were rendered or to whom it is loaned. This drawing may not be copied, republished, distributed or used in any other manner without the express written consent of Colliers Engineering & Design.

Formerly Known as

KFW
KIEWIT FLOOD CONTROL



Know what's below.
Call before you dig.

FOR STATE SPECIFIC DIRECT PHONE NUMBERS
VISIT: WWW.CALL811.COM

PROTECT YOURSELF

ALL STATES REQUIRE NOTIFICATION OF
EXCAVATORS, DESIGNERS, OR ANY PERSON
PREPARING TO DISTURB THE EARTH'S
SURFACE ANYWHERE IN ANY STATE

DESCRIPTION
DRAWN BY
DATE
REV



Nicholas Reynolds

FINAL SUBDIVISION PLAN

FOR
GATEHOUSE
SUBDIVISION UNIT 4.

CITY OF NEW BRAUNFELS
COMAL COUNTY
TEXAS



Engineering
& Design

NEW BRAUNFELS (KFW)
640 N. Walnut Ave.
Suite 1101
New Braunfels, TX 78130
Phone: 830.220.6042
COLLIERS ENGINEERING & DESIGN, INC.
1001 E. Loop West, Suite 1100
Tomball, TX 77375
TDR, L.S. Permit: 10194550

SCALE: AS SHOWN DATE: 01/11/2024 DRAWN BY: MSGS CHECKED BY: WF

PROJECT NUMBER: 24003556A DRAWING NAME: 7.0 WATER DISTRIBUTION COVER

SHEET TITLE:

WATER DISTRIBUTION COVER

SHEET NUMBER:
7.0

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

DRY UTILITY CONDUIT NOTE:
CONDUIT LOCATIONS SHOW ON PLAN ARE FOR
GEOGRAPHICAL PURPOSES ONLY AND ARE APPROXIMATE.
CONTRACTOR TO INSTALL PROPOSED CONDUITS IN
ACCORDANCE WITH DRY UTILITY PURVEYOR'S SPECIFICATIONS.
CONTRACTOR TO VERIFY THE CONDUIT LOCATIONS AND SIZES
BASED ON THE DRY UTILITY PURVEYOR'S PLAN.

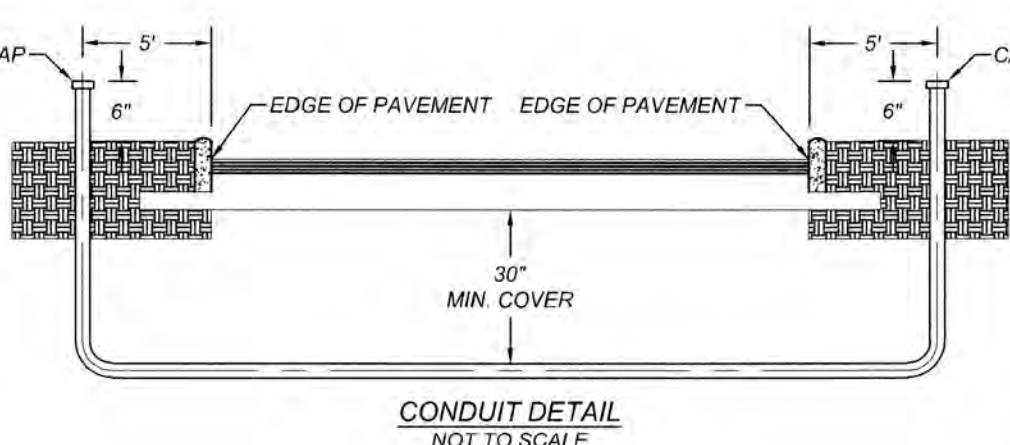
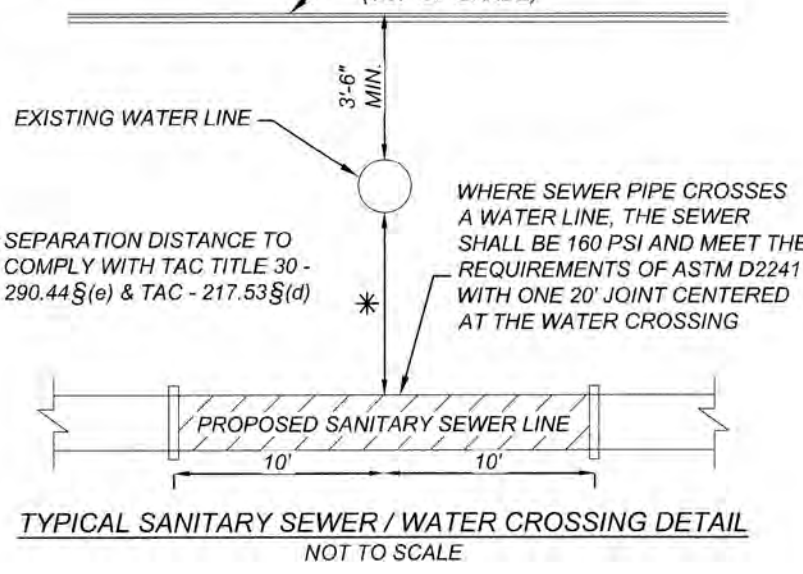
MISCELLANEOUS NOTE:

1. ALL UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.
2. NO VALVES, HYDRANTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS.
3. ENSURE ALL DRIVEWAY APPROACHES ARE BUILT IN GENERAL ACCORDANCE WITH A.D.A. SPECIFICATIONS.

GENERAL NOTE:

1. 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 COUNTY METHODS FOR TESTING AND COMPACTION MAY NOT BE ACHIEVABLE. A UTILITY COMPACTION PLAN WILL BE REQUIRED AND MUST BE SUBMITTED FOR APPROVAL TO COUNTY PRIOR TO UTILITY INSTALLATION.

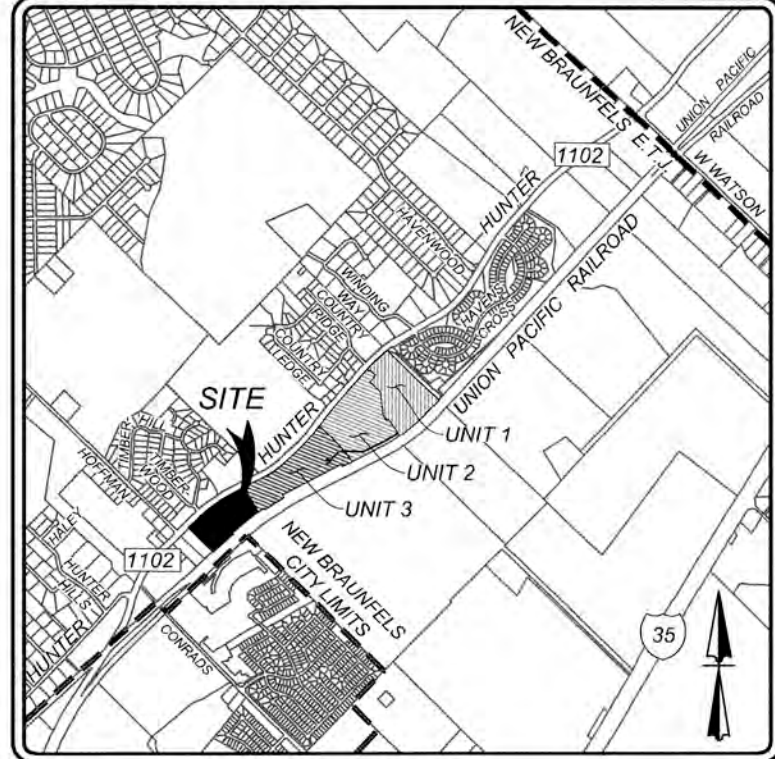
7144



*PVC SCHEDULE 80 CONDUIT
SEE PLAN SHEETS FOR SIZE LOCATION AND NUMBER OF CONDUITS

NOTE:
CONTRACTOR SHALL BE RESPONSIBLE FOR PLACING CONDUIT SLEEVES FOR EACH NBU FACILITY

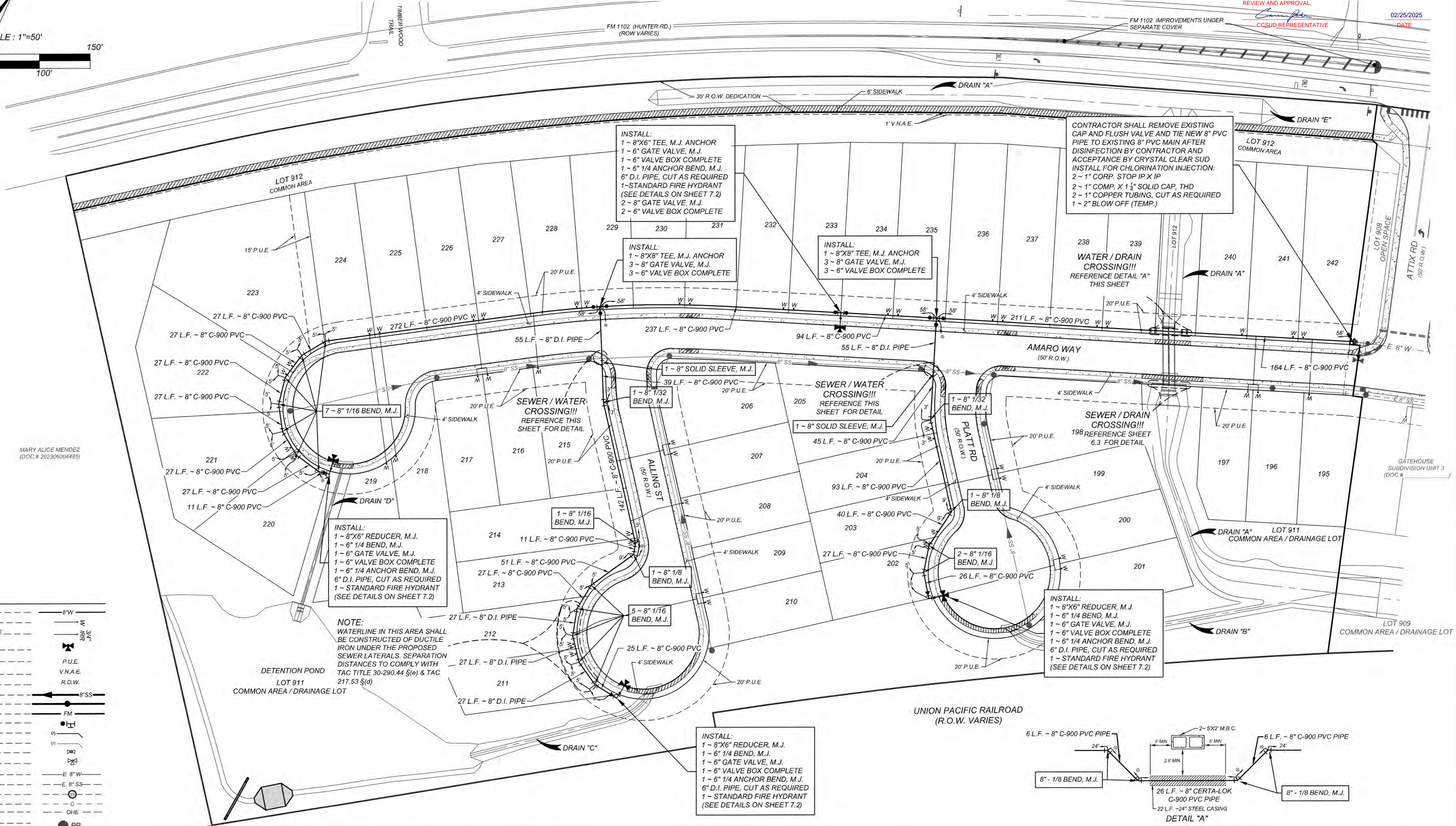
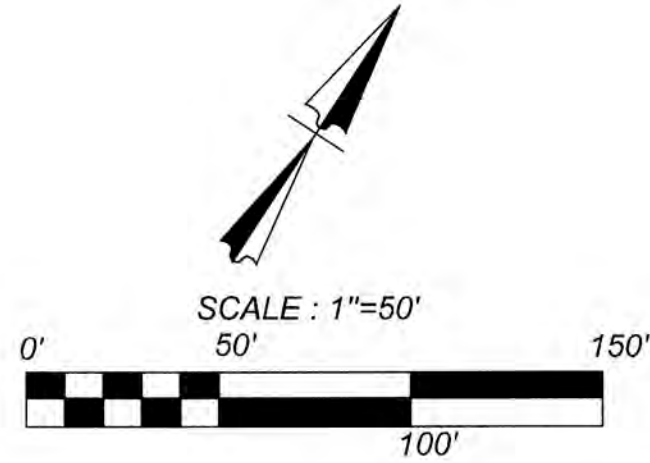
NB: CLOSING DURING CONSTRUCTION. (SEPARATE ITEM SEE FINAL ELECTRICIAN'S DESIGN)
 CONTRACTOR TO CONTACT ENGINEER FOR APPROPRIATE NUMBER AND SIZE OF CONDUITS FOR
 TELECOMMUNICATIONS
 CONTRACTOR TO CONTACT ENGINEER FOR ELECTRICAL PLANS
 CONTRACTOR SHALL INSTALL PERMANENT MANHOLES IN PROPOSED CURBS WHERE CONDUITS
 CROSS THE ROADWAY (TWO SIDES)
 CONDUITS SHALL BE PC WITH 30 INCHES OF MINIMUM COVER OVER STREET SUBGRADE.
 CONDUITS SHALL BE 12 INCHES FOR CONDUITS. ALL OTHER CONDUITS ARE SCHEDULE 40
 ALL CONDUITS SHALL BE EXTENDED BEYOND CURBS OR PROPOSED SIDEWALKS A MINIMUM OF
 5 FEET AND CAPPED FOR FUTURE USE.
 ALL CONDUIT FLUTES TO BE USED FOR ELECTRIC, GAS, OR TELECOMMUNICATION UTILITY
 CONDUITS SHALL BE INSTALLED TO MEET OR EXCEED CODE REQUIREMENTS FOR THE UTILITY
 AGENCY WHICH THEY ARE SERVING, INCLUDING BUT NOT LIMITED TO THE DEPTH, TRENCH
 BACKFILL, AND PROTECTION OF CONDUITS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR
 VERIFYING AND INSTALLING THE CONDUITS FLUTES TO MEET THIS SPECIFICATION INCLUDING
 COORDINATING WITH THE UTILITY AGENCY FOR ANY REQUIRED INSPECTIONS.
 CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING AND INSTALLING CONDUIT
 PROTECTIVE COVERS PRIOR TO THE INSTALLED CURB REQUIREMENTS.











CCSUD APPROVAL TO CONSTRUCT

REVIEW OF THESE UTILITY PLANS CONSTITUTES GENERAL COMPLIANCE WITH CRYSTAL CLEAR SPECIAL UTILITY DISTRICT'S (CCUSD) STANDARDS AND APPROVED NON-STANDARD-SERVICE AGREEMENT. APPROVAL BY CCUSD (OR ITS REPRESENTATIVE) DOES NOT CONSTITUTE APPROVAL OF THE DESIGN OR CALCULATIONS. THE ENGINEER OF RECORD IS RESPONSIBLE FOR ALL CALCULATIONS. ERRORS IN THE DESIGN OR CALCULATIONS REMAIN THE RESPONSIBILITY OF THE ENGINEER OF RECORD WHOSE STAMP AND SIGNATURE ARE AFFIXED TO THIS DOCUMENT. THE ENGINEER OF RECORD IS ALSO RESPONSIBLE FOR THE PREPARATION OF ALL REQUIRED REPORTS, PLANS, REVIEWS AND PERMITS PRIOR TO COMMENCING CONSTRUCTION. IF CONSTRUCTION OF WATER AND WASTEWATER (IF REQUIRED) UTILITIES HAS NOT COMMENCED WITHIN ONE (1) YEAR OF THE DATE OF THE APPROVAL BELOW, CONSTRUCTION PERMITS AND ALL THE UTILITIES MUST BE RESUBMITTED TO CCUSD FOR REVIEW AND APPROVAL.

CCSUD REPRESENTATIVE _____ DATE 02/25/2025



LEGEND

PROPOSED WATER MAIN	— 8" W
PROPOSED WATER SERVICE & METER BOX	W METER
PROPOSED WATER 3/4" IRRIGATION SERVICE & W 3/4" WATER METER & METER BOX	3/4" METER
PROPOSED FIRE HYDRANT	
PUBLIC UTILITY EASEMENT	P.U.E.
VEHICULAR NON-ACCESS EASEMENT	V.N.A.E.
RIGHT OF WAY	R.O.W.
PROPOSED 8" SANITARY SEWER MAIN	— 8" SS
PROPOSED 8" SANITARY SEWER MANHOLE	
PROPOSED SANITARY SEWER FORCE MAIN	FM
PROPOSED TEE & WATER VALVE	
PROPOSED SANITARY SEWER LATERAL	S
EXISTING SANITARY SEWER LATERAL	
EXISTING WATER VALVE	
EXISTING FIRE HYDRANT	
EXISTING WATER MAIN	— E 8" W
EXISTING SANITARY SEWER MAIN	— E 8" SS
EXISTING SANITARY SEWER MANHOLE	
EXISTING NATURAL GAS LINE	— G
EXISTING OVERHEAD UTILITY LINE	— OH
EXISTING POWER POLE	

Colliers

Engineering
& Design

www.colliersengineering.com

Copyright © 2015, Colliers Engineering & Design. All Rights Reserved. This drawing and all the information contained herein is submitted for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, revised, distributed, distributed or used for any other purpose without the express written consent of Colliers Engineering & Design.

Formerly Known as

KFW
ENGINEERS - SURVEYORS

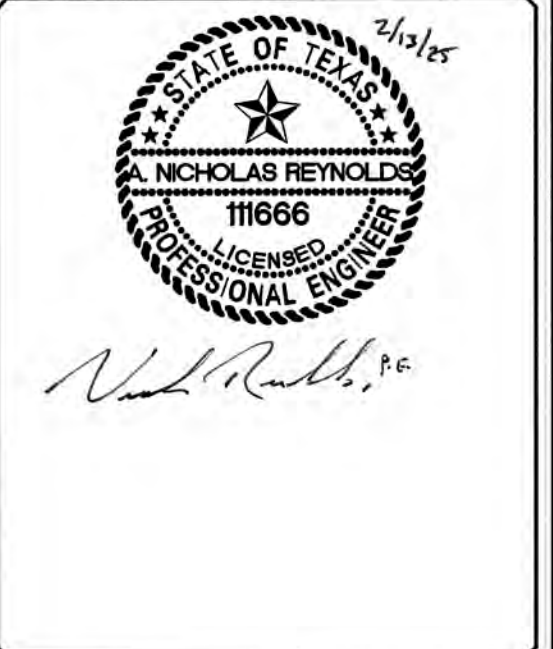
PROTECT YOURSELF
CALL BEFORE YOU DIG

ALL STATES REQUIRE NOTIFICATION OF
EXCAVATORS, DESIGNERS, OR ANY PERSON
PREPARING TO DISTURB THE EARTH'S
SURFACE ANYWHERE IN ANY STATE

Know what's below.
Call before you dig.

FOR STATE SPECIFIC DIRECT PHONE NUMBERS
VISIT: WWW.CALL811.COM

REV	DATE	DRAWN BY	DESCRIPTION
1	10/10/10		
2	10/10/10		
3	10/10/10		
4	10/10/10		
5	10/10/10		
6	10/10/10		
7	10/10/10		
8	10/10/10		
9	10/10/10		
10	10/10/10		



FINAL SUBDIVISION PLAN
FOR
GATEHOUSE
SUBDIVISION UNIT 4

CITY OF NEW BRAUNFELS
COMAL COUNTY
TEXAS

Colliers

Engineering
& Design

NEW BRAUNFELS (KFW)
640 N. Walnut Ave.
Suite 1101
New Braunfels, TX 78130
Phone: 830.220.6042

COLLIERS ENGINEERING & DESIGN, INC.
TBDL Firm#: F-14909
TBDL Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	9/11/2024	MSG	WF
PROJECT NUMBER:	DRAWING NAME:		
24003556A	7.1 WATER DISTRIBUTION PLAN		
SHEET TITLE:			
WATER DISTRIBUTION PLAN			
SHEET NUMBER:			
7.1			

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION

