

Sewage Collection System over the Edwards Aquifer

1. This Sewage Collection System (SCS) must be designed and constructed in accordance with the Texas Commission on Environmental Quality (TCEQ) Edwards Aquifer Rules 30 Texas Administrative Code (TAC) §213.5 (c), the Design Criteria for Domestic Wastewater Systems: 30 TAC 217 Subchapter C (§§217.51-217.70), and New Braunfels Utilities Standard Specifications.
2. All contractors conducting regulated activities associated with this proposed regulated project must be provided with copies of the Sewage Collection System 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. Prior to commencing any regulated activity, the applicant or his agent must notify the Austin Regional Office, in writing, of the date on which the regulated activity will begin.
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. The temporary erosion and sedimentation controls must be installed prior to initiating any other construction activity and maintained in accordance with the requirements of the construction area is stabilized.
6. The wastewater line trench details showing the cross section with the dimensions, pipe placement, and backfill instructions are included on The Plan Details sheets of these plans. All wastewater pipes joints must meet the requirements in 30 TAC §217.53 (c).

Gravity lines must be SDR 26 or less. Pressurized sewer systems must have pipe with a minimum working pressure rating of 150 psi.

The ASTM, ANSI, or AWWA specification numbers for the pipe(s) and joints are specified in the Standard Specifications.

The pipe material, the pressure classes, and the SDR and/or DR designations are specified in the Standard Specifications.

7. If any sensitive features are discovered during the wastewater line trenching activities, all regulated activities near the sensitive feature must be suspended immediately. The owner must notify the appropriate regional office of the TCEQ in writing within two working days of the feature discovered. 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.

8. 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 six (6) inches.
9. Blasting procedures for protection of existing sewer lines and other utilities will be in accordance with the National Fire Protection Association criteria. Sand is not allowed as bedding or backfill in trenches that have been blasted. If any existing sewer lines are damaged, the lines must be repaired and retested.
10. 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.

All manholes must be water tight, with watertight rings and covers, and must be constructed and tested to meet the requirements of §217.58 of this title (relatively to Sewage Collection System.)

The diameter of the manholes must be a minimum of 48 inches and the manhole covers must have a minimum nominal diameter of 32 inches. These dimensions and other details showing compliance with the commission's rules concerning manholes and pipe line/manhole inverts described in 30 TAC §217.55 (1) (2) are included on Plan Detail Sheets.

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.

11. Where water lines and new wastewater 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) or 30 TAC §290.44 (e) (Water Distribution).

12. Where wastewater lines deviate from straight alignment and uniform grade all curvature of wastewater pipe must be achieved by the following procedure which is recommended by the pipe manufacturer: Joint Deflection.

If pipe flexure is proposed, the following method of preventing deflection of the joint must be used: Permitted on this project.

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.

13. New wastewater 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 the location of such “stub outs” 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 edge(s) of any street pavement under which they will pass to the property line. 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 wastewater 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 plan detail sheets. (For potential future laterals).

The private service lateral stub-outs must be installed as shown on the plan and profile sheets and marked after backfilling as shown in the plan detail on Plan Sheets.

14. Trenching, bedding and backfill must conform to 30 TAC §217.54. The bedding and backfill for flexible pipe must comply with the standards of ASTM D-2321, Classes IA, IB, II, III. Rigid pipe bedding must comply with the requirements of ASTM C 12 (ANSI A 106.2) classes A, B or C.
15. Wastewater lines must be tested from manhole to manhole. When a new wastewater 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).
16. All wastewater 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. Infiltration or Exfiltration Tests. 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 the pipe at the upstream manhole. When pipes are installed below the groundwater level an infiltration test must be used in lieu of the exfiltration test. The total infiltration, 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 the pipe at the upstream manhole, or at least two feet above existing groundwater level, whichever is greater. For construction within the 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. If the quantity of infiltration or exfiltration exceeds the maximum quantity specified, remedial action must be undertaken in order to reduce the infiltration or exfiltration to an amount within the limits specified.
- b. Low Pressure Air Test. The procedure for the low-pressure air test must conform to the procedures described in ASTM C-828, ASTM C-924, ASTM F-1417 or other appropriate procedures, except for testing times. The test times must be as outlined in this section. For sections of pipe less than 36-inch average inside diameter, the following procedure must apply unless the pipe is to be joint tested. The pipe must be pressurized to 3.5 psi greater than the pressure exerted by groundwater above the pipe. Once the pressure is stabilized, the minimum time allowable for the pressure to drop from 3.5 pounds per square inch gauge to 2.5 pounds per square inch gauge must be computed from the following equation:

where:

$$T = \frac{(0.085 \times D \times K)}{Q}$$

T = time for pressure to drop 1.0 pound per square inch gauge in seconds

K=0.000419×D×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 will be used.

Table 1 - Minimum Testing Times for Low-Pressure Air Test

Pipe Diameter (inches)	Minimum Time (seconds)	Maximum Length for Minimum Time (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

The test may be stopped if no pressure loss has occurred during the first 25% of the calculated testing time. If any pressure loss or leakage has occurred during the first 25% of the testing period, then the test must continue for the entire test duration as outlined above or until failure. Lines with a 27-inch average inside diameter and larger may be air tested at each joint. Pipe greater than 36-inch diameter must be tested for leakage at each joint. If the joint test is used, a visual inspection of the joint must be performed immediately after testing. The pipe is to be pressurized to 3.5 psi greater than the pressure exerted by groundwater above the pipe. Once the pressure has stabilized, the minimum time allowable for the pressure to drop from 3.5 pounds per square inch gauge to 2.5 pounds per square inch gauge must be 10 seconds.

- (C) Deflection Testing. Deflection tests must be performed on all flexible pipes. For pipelines with inside diameters less than 27 inches, a rigid mandrel must be used to measure deflection.

For pipelines with an inside diameter of 27 inches and greater, a method approved by the executive director must be used to test for vertical deflections. Other methods must provide a precision of +/- two tenths of one percent (0.2%) deflection. The test must be conducted after the final backfill has been in place at least 30 days. No pipe will exceed a deflection of five percent. If a pipe should fail to pass the deflection test, the problem must be corrected and a second test must be conducted after the final backfill has been in place an additional 30 days. The tests must be performed without mechanical pulling devices. The design engineer should recognize that this is a maximum deflection criterion for all pipes and a deflection test less than five percent may be more appropriate for specific types and sizes of pipe. Upon completion of construction, the design engineer or other Texas Licensed Professional Engineer appointed

by the owner must certify, to the Executive Director, that the entire installation has passed the deflection test. This certification may be made in conjunction with the notice of completion required in §217.14 of this title (relating to Completion Notice). This certification must be provided for the Commission to consider the requirements of the approval to have been met.