

Checklist - Sanitary Sewer

1. General Design Criteria for proposed sanitary sewer main.
 - a. Sanitary Sewer mains design must comply with TCEQ, City of New Braunfels, and NBU Water Systems Rules and Regulations, and any other governing entity ordinance or codes. These agency requirements supersede any of the requirements listed on these guidelines. Sanitary sewer shall be laid in straight alignment with uniform grade between manholes.
 - b. Consultant/Engineer shall insure that all wastewater service laterals is laid at a minimum of 2% slope with a minimum of 36 inches of cover.
 - c. Pipe material must be an approved material accepted by NBU and TCEQ.
 - d. The minimum diameter of all sanitary sewer mains shall be eight (8) inches.
 - e. Lift Stations should comply with TCEQ rules and regulations and meet NBU Criteria. Consultant/Engineer shall contact TCEQ and NBU personnel to obtain information on Lift Station requirements. Consultant to determine the type of proposed pipe for a force-main.
 - f. On any sewer main aligned parallel to a proposed or existing storm structure, the Consultant must assure that all lateral services have a min. of 2% slope and do not conflict with the existing/proposed storm structures.
 - g. Consultant is to field verify the existing sanitary sewer invert elevations.
 - h. All sanitary sewer inverts should be constructed in a way that TV equipment can access the invert.
 - i. All sanitary sewer laterals and/or stacks should be shown with stations.
 - j. Consultant should indicate on plans the point of connections(s), size and project name of existing sewer main in which the proposed line will be connected to.
 - k. Proposed wastewater mains to be a minimum of 36 inches from top of pipe to bottom of subgrade.
 - l. Proposed wastewater service laterals to be a minimum of 36 inches from top of pipe to finished grade.
 - m. Curves on the sewer main construction are not permitted unless written approval has been given by NBU.
 - n. All sanitary sewer mains and manholes shall be contained within a 20 FT utility easement or ROW.
2. Proposed and Existing Sanitary Sewer Mains are to be protected as follows:
 - a. Concrete encasement to be used if there is less than 3 feet of cover between the top of proposed sewer main to bottom of subgrade. Concrete saddle to be used if there is less than 3 feet of cover between the top of an existing sewer main and service laterals to bottom of subgrade.
 - b. Concrete encasement should be used if there is less than 2 feet between outside diameters of existing sanitary sewer main and storm sewer.
3. Sanitary Sewer manholes are installed as follows:
 - a. Install a manhole at the end of a proposed sewer main. (Clean outs are not accepted).

- b. Install a manhole at each points of change in alignment or grade.
- c. Maximum distance between manholes is 500 feet.
- d. Design a sanitary sewer line using least amount of manholes, while meeting the above criteria.
- e. Provide Drop Manholes and show a detail when the difference in the inlet to outlet elevation is 24” or more. Use internal drops for 6” and 8” mains.

4. Sanitary Sewer Plans:

- a. A north arrow is shown on all plans sheets.
- b. The plan scale is 1”=20’ (horizontal), and 1”=5’ (vertical) or 1”=50’ (horizontal), and 1”=5’ (vertical). Any other scale will not be accepted.
- c. Plans should be by American National Standard Institution “D” size –24” x 36”.
- d. Plans and Profiles are drawn from left to right, low point to high point.
- e. Inverts are shown at each manhole with Inflow, Outflow and Rim elevations in the profile view and at every 50 feet intervals.
- f. Stationing is shown at each manhole, at every 50 feet intervals and at each service lateral.
- g. Street names, NCB, R.O.W., Block No, Lot Numbers shall be shown.
- h. Existing and proposed sanitary sewer, storm sewer, and all utilities are shown on plan and profile views.
- i. Indicate sewer main lengths, slopes and distances between manholes on plan and profile sheets.
- j. An NBU cover sheet with applicable general sanitary sewer notes, job number, and location map showing project limits is required. If Consultant does not have a job number contact NBU personnel and a job number will be provided after initial plan review.
- k. Trench Excavation Safety Protection notes shall be shown on each plan sheet.
- l. USGS, NBU, or TxDOT benchmarks to be shown and called out.
- m. Flow arrows on all plan sheets.
- n. Erosion & Sedimentation control sheet is included, if project is over Edwards Aquifer.
- o. All proposed manholes shall be watertight.
- p. Show all property lines, ROW, turnarounds, creeks, existing and proposed sanitary sewer easements on plans.
- q. Show any permanent and temporary construction easements on plans.
- r. Plans should indicate Matchline from one sheet to the next sheet, indicating stationing and Sheet No (example, matchline station 5+00, see sheet xx of xx).
- s. No turns less than 90 degrees or greater than 270° is allowed.
- t. Show cut and replace existing asphalt or sidewalk, if applicable.
- u. Engineer’s Seal with signature needs to be on the final plans for NBU acceptance.
- v. Engineering firm name and registered number (format F-xxxxx) on all sheets.
- w. General Notes and Standard Details:
 - i. Updated NBU Sanitary Sewer Notes should be included.

- ii. If over Edward Recharge Zone, TCEQ Notes should be included (See website www.tceq.state.tx.us).
 - iii. If over Edward Recharge Zone, Standard Detail Drawings are required.
 - x. Miscellaneous:
 - i. Consultant to provide cut sheets to Inspection Division prior to Construction.
5. Final Acceptance:
- a. Upon completion of construction for the project, Developer's Contractor shall coordinate with the assigned water/wastewater inspector for Field Acceptance. The following items must be completed by the Contractor:
 - i. Pre-Bacteriological Test
 - ii. Hydrostatic test
 - iii. Bacteriological Test
 - iv. Deflection Test (Mandrel Test)
 - v. CCTV Sewer Inspection (digital DVD format, PACP format)
 - vi. NBU Field Acceptance Checklist
 - b. Upon completion of this project, Developer's Consultant shall send project closure submittals to NBU. The following items must be submitted concurrently for final acceptance of the system by NBU:
 - i. "Record Drawings" Submittal (paper and digital format, refer to CAD Deliverables in Appendix)
 - ii. Contractor redline drawings,
 - iii. Digital copy (PDF) of the Planning Commission approved plat or amended plat.
 - iv. Developer Customer's and Contractors Payment and Receipt Affidavit (if applicable),
 - v. Backflow Prevention Test & Maintenance (T&M) report (if applicable)
 - c. The Developer shall require his Contractor to guarantee the construction of all work performed in connection with the water and wastewater system for a period of one-year. The one-year warranty on all water and wastewater facilities shall commence immediately upon Final Acceptance of the project work by NBU.
 - d. All items listed in Item 5.a-c. must be submitted prior to Final Acceptance by NBU. NBU will assume ownership and maintenance of the system upon the issuance of a Final Acceptance letter for the project.