



Wastewater Standards and Design Guidelines for Developer Utilities

(Adopted February 2020)

Prepared by:



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The following standards are for the design of developer utilities to be dedicated to GVSUD and/or operated by GVSUD. Please review the following guidelines carefully and contact GVSUD for a consultation meeting to address any related variances or other construction related matters.

Variances shall be accompanied by a cover letter, details and drawings of the proposed variance as well as payment of fees for review by the District's Engineer

For Owner or Developer information, or for information on provision of wastewater services by GVSUD and/or to set an initial meeting, please contact:

Pat Allen
General Manager
Green Valley Special Utility District
529 S. Center St,
Marion, TX 78124
Phone: 830-914-2330
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For technical questions, or to request technical information, please contact:

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Design and Documents

1. If construction has not commenced within one (1) year of GVSUD design approval, that approval is no longer valid.
2. Provide complete design submittals for GVSUD review and approval prior to bidding. Include design calculations, drawings, specifications, storm sewer, and dry utilities. Provide six (6) half-size hard copies and two (2) CD/PDF format copies. Allow 30-calendar days for review.
3. All piping shown on drawings shall be labeled as to the size, type, class, process fluid contained, and flow direction.
4. Copies of each construction submittal (shop drawings, product data, etc.) shall be provided for GVSUD review and approval prior to fabrication. Allow 14-calendar days for review.
5. Copies of all test reports and results shall be provided to GVSUD.
6. Provide the following materials prior to acceptance of facilities by GVSUD. Provide one (1) hard copy and one (1) electronic copy unless noted otherwise:
 - a. Engineer's certification of completion in accordance with approved plans, specifications, and permits.
 - b. Copies of all close-out submittals required by regulatory agencies (city, county, TCEQ, etc.).
 - c. O&M manuals: Provide three (3) hard copies and three (3) CD searchable PDF copies of each O&M manual. Hard copy O&M manuals shall be printed in color on 24# bond paper with reinforced holes and bound in D-ring binders (maximum 4" binders per volume) with sheet lifters front and back, table of contents, and tabbed sections. Drawings shall be 11x17 and z-folded. Provide separate manuals for each item. O&M description, project name, contractor name, and specification section shall be printed on spine of binder. Submit electronic preliminary copies for GVSUD review and approval prior to printing final copies.
 - d. Waiver of lien by contractor (and subcontractors, as appropriate).
 - e. Warranty certificates, both from contractor and from manufacturer(s), valid for one (1) year from date of project final acceptance.
 - f. Executed operating contract or bill of sale transferring facilities to GVSUD.
 - g. Record drawings and other documents. Contractor shall provide one (1) complete full size set of "red lined" as-built drawings in hard copy and one (1) digital copy in CD/PDF format. Engineer shall prepare corrected CAD drawings (each sheet signed and stamped "record drawing") and submit to GVSUD five (5) half-size hard copies and five (5) CD searchable PDF copies. Include storm sewer and dry utilities.
 - h. All easements in the name of GVSUD as required for operation of the facilities.
 - i. Title Company review for release of all liens.

Design Requirements

1. Design and installation shall be in accordance with TCEQ rules and AWWA standards, and in accordance with GVSUD standards as further described in this document (see attachments).
2. Noise and odor impacts shall be considered in design.
3. Piping friction losses shall be calculated with a Hazen-Williams coefficient no greater than 130.

4. Potable and reclaimed water distribution systems shall be designed to provide 55 PSI minimum at customer meters.
5. Sanitary tapping saddles are not allowed.
6. Low pressure sanitary sewer collection systems are not allowed.
7. Force mains, and valves shall be located outside of roadways, pavement, curbs, etc., unless specifically approved otherwise. Install 4ft minimum behind back of curb.
8. Gravity wastewater mains may be installed within roadways. Center mains in one lane of traffic, not in center of roadway.
9. All piping shall be designed in straight alignment. Pipe curvature is not allowed. Gravity mains shall not be more than 20 feet below finished grade as measured from pipe invert to finished grade.
10. Wastewater pipe joints shall be centered at crossings with all other utilities. Both pipe joints shall be centered where water crosses wastewater, including wastewater laterals.
11. Maintain a minimum of 10ft horizontal and 12in vertical clearance between water/wastewater and other utilities. Shared trenches are not allowed.
12. Wastewater piping (including mains, services, and laterals) shall be sleeved if located under box culverts or multiple barrel storm sewer crossings regardless of size and single barrels 30" or larger.
13. Profile all wastewater, and storm piping regardless of size. Show all utility crossings on all profiles. Show wastewater service laterals on storm. Show/overlay water and storm profiles onto wastewater piping profiles.
14. Air release valves shall be provided for all force mains regardless of main size.
15. Trees may not be planted along any pipeline routes or within pipeline easements, including any future/planned pipeline routes or easements.

Materials

1. Gravity wastewater pipe and fittings shall be green color gasketed ASTM D3034 SDR26. At water crossings including fire hydrant leads, white color gasketed ASTM D2241 SDR26 shall be used for mains and laterals. Sanitary tapping saddles are not allowed.
2. Force main piping shall be green color C900 DR18 minimum. Fittings shall be AWWA C153 compact mechanical joint ductile iron with Ford Uni-Flange Series 1500 restraints. Pipe bell joint restraints shall be Ford Uni-Flange Series 1300.
3. MJ tee bolts and nuts for buried locations shall be Corten. For projects near or east of Interstate 35, use 304 stainless steel. Field apply anti-seize compound prior to assembly.
4. All other fasteners shall be 304 stainless steel (e.g. hardware, screws, anchor bolts, rods, flange bolts and nuts, etc.). All bolts and nuts shall be heavy hex. Field apply anti-seize compound prior to assembly. Bolts and nuts shall not be painted.
5. All buried metal pipe, fittings, hydrants, and valves shall be wrapped with 8mil poly.
6. Paint shall be high-build epoxy with topcoat of polyurethane.

Testing

1. All testing shall be arranged and paid for by the contractor and witnessed by GVSUD.

2. All testing must be complete prior to paving streets.
3. All testing must be complete prior to performing tie-ins to existing wastewater systems.
4. All other utilities must be complete prior to performing wastewater pressure testing.
5. Contractor shall perform pre-testing to verify passing results prior to requesting GVSUD inspection. Provide connection point for GVSUD digital test gauge.
6. Perform trench backfill density testing at intervals specified by the design engineer, exact locations to be designated by inspector. Schedule with GVSUD to witness 48 hours prior to test. Provide copies of reports to GVSUD.
7. All gravity wastewater piping shall be subject to low pressure air testing in accordance with TCEQ requirements. Infiltration and exfiltration testing are not allowed.
8. Mandrel shall be pulled by hand thru all gravity wastewater mains prior to installation of corrosion resistant manhole lining, but no earlier than 30 days after backfilling is complete.
9. All manholes, regardless of vehicular traffic detouring, shall be vacuum tested after completion of backfill, compaction, and final grading of road base but prior to installation of asphalt paving and prior to installation of corrosion resistant manhole lining. Vacuum testing shall be performed with a plate type test head placed on top of completed manhole metal casting ring which has been installed and encased in concrete at final grade. Manholes shall be tested at 10- inches of mercury for 2-minutes duration. Allowable loss is 1-inch of mercury. Infiltration and exfiltration testing are not allowed.
10. Perform video inspection of gravity wastewater piping after application of corrosion resistant manhole lining. Flood system with water immediately prior to performing video inspection. Hang and drag a golf ball in front of camera. Pipe grade is out of tolerance if water level is more than ½ of golf ball. Schedule GVSUD to witness video inspection. Provide DVD's and written reports to GVSUD.
11. Follow TCEQ pipe testing procedures and allowable leakage for force mains. Test every valve section (i.e. test against every valve in closed position). Test pressure shall be the maximum rating of material installed.

Construction Notes

1. All work shall be in accordance with GVSUD standards as published at the following website:
<http://www.gvsud.org/>
2. Material submittals shall be provided for GVSUD review and approval. Allow 14-calendar days for review.
3. All water and wastewater installations must be inspected and approved by GVSUD prior to backfilling or otherwise covering the work. This includes crossings of water and wastewater by other utilities. GVSUD will perform a maximum of one (1) inspection daily for one (1) hour duration between 8:00am and 5:00pm excluding weekends and holidays. Call to schedule inspections (48-hours advance notice is required for all inspections).
4. Trench excavation and pipe installation will not be permitted until subgrade has been established. Survey staking must be installed prior to and maintained during trench excavation and pipe installation. Survey staking shall include horizontal and vertical control at a minimum of 50-foot station intervals. Survey staking shall be performed by the contractor.
5. Backflow prevention in the form of a reduced pressure backflow assembly must be provided for temporary connections to existing water lines. Backflow devices shall be tested by a licensed backflow

prevention assembly tester.

6. Sanitary tapping saddles are not allowed.
7. Pipe bells shall be installed in upstream direction.
8. All piping shall be installed in straight alignment. Pipe curvature is not allowed.
9. Install concrete thrust blocking and mechanical restraints for pressure piping systems.
10. Water and wastewater pipe joints shall be centered at crossings with all other utilities. Both pipe joints shall be centered where water crosses wastewater, including wastewater laterals.
11. Maintain a minimum of 10ft horizontal and 12in vertical clearance between water and wastewater and other utilities. Shared trenches are not allowed.
12. Wastewater piping shall be sleeved if located under box culverts or multiple barrel storm sewer crossings regardless of size and single barrels 30" or larger.
13. Valve boxes and appurtenances shall be painted. Provide painted curb cut markings at valves and services. Safety green for sewer, safety purple for reclaimed.
14. All exposed vertical and horizontal concrete edges shall be formed with ¾" chamfer strips. Concrete in unpaved areas shall be 2" above finish grade.
15. Existing manholes that are disturbed shall be restored to be in full compliance with current standards including testing, corrosion resistant lining, rings and covers, etc.