

SECTION 4.0

SPECIFICATIONS FOR WASTEWATER SYSTEMS DESIGN

4.1 GENERAL

- 4.1.1 The following specifications cover the general design, review of plans and specifications, and acceptance of wastewater collection systems, wastewater pumping stations, wastewater force mains, wastewater line extensions and all appurtenant items which are to be owned and maintained by Hillsborough County.
- 4.1.2 The Public Utilities Water Resources Department (WRD) Technical Specifications 333001 “Gravity Wastewater Sewers and Appurtenances”, 333002 “Wastewater Force Mains and Appurtenances”, and 333003 “Wastewater Pumping Stations”, provides additional clarification regarding design details, materials of construction, installation, and acceptance requirements. If further clarification is needed, contact the Site Engineering Review Section of the Development Services Department (DSD) or the Utility Design Section of WRD.
- 4.1.3 All improvements and modifications made to the Hillsborough County wastewater system must be done in accordance with plans approved by the Site Engineering Review Section of DSD. Material and workmanship must comply with Public Utilities Technical Specifications 333001, 333002, and 333003.

4.2 PLANS PREPARATION

- 4.2.1 All sanitary wastewater collection systems, wastewater pumping stations, wastewater transmission force mains, wastewater line extensions, and all appurtenant items must be designed in accordance with the applicable regulations of Hillsborough County, Hillsborough County Department of Health, the Florida Department of Environmental Protection, and the standard established herein.
- 4.2.2 When a wastewater main will serve existing or future developments beyond the borders of the proposed site, the County may request oversizing. If the County determines that a line needs to be “Oversized”, the procedures for sizing and reimbursement, as outlined in Appendix 3, must be followed.
- 4.2.3 The wastewater collection system or wastewater transmission system or any portion thereof, which is to become the property and sole responsibility of Hillsborough County WRD, must be designed and constructed within a public right-of-way or easement (design exception) which may be used for said purpose. Refer to the Hillsborough County Public Works Transportation Technical Manual Drawings, latest edition, for Recommended Utility Locations, TS-1.

4.3 PLANS REVIEW

- 4.3.1 For subdivision development, the Developer must comply with the procedures and requirements set forth in Article VI, Part 6.02.00 of the County's Land Development Code. For site developments, the Developer must comply with the procedures and requirements set forth in Article VI, Part 6.03.00 of the County's Land Development Code. The placement of appurtenances in Hillsborough County right-of-way must be as required in the Utility Accommodation Guide and Rights of Way Use Procedures Manual.

4.3.2 The Developer or authorized representative must submit plans and associated documentation in accordance with the procedures and requirements set forth in Article VI, Part 6.03.00 of the County's Land Development Code. The Site Engineering Review Section will either accept or reject the plans with notations for corrections required. All plans must comply with the requirements of Section 2.0 of the Hillsborough County Public Utilities Water, Wastewater, and Reclaimed Water Technical Manual.

4.4 PROJECT ACCEPTANCE

Following completion of construction and testing, the Developer's Engineer of Record must submit certified "Record" drawings and the Asset Data spreadsheet with the "as-built" information shown on the original design as outlined in Section 1.6 and Section 2.4. Information required on a "Record" drawing of a typical wastewater collection system is shown in Figure 4-1.

4.5 SYSTEM DESIGN AND FLOW CRITERIA

4.5.1 General: The provisions of this section set forth the general requirements for design and installation of wastewater collection/transmission systems and facilities. The Engineer must comply with all the requirements of the Florida Department of Environmental Protection in addition to the criteria contained herein.

4.5.2 Siting Requirements: Pump Stations must be sited to consider the potential for damage or interruption of operation because of flooding. Pump station structures and electrical and mechanical equipment must be designed to be protected from physical damage by the 100-year flood. Pump stations must be designed to remain fully operational and accessible during the 25- year flood unless lesser flood levels are appropriate based on local considerations, but not less than the 10-year flood. [62-604.400(2) (e), F.A.C.]

4.5.3 Flow Criteria: Flow estimates for design must be calculated based on full or projected ultimate development. The average daily flow (ADF) for single family or master-metered residences must be the per unit demand factors contained in the most current Hillsborough County Utility Rate Resolution. Industrial and commercial design flows for sanitary wastewater must be in accordance with Table 1 of the County's Utility Rate Resolution. Wastewater gravity collection systems, pumping stations, and force mains must be designed for average daily flow times the appropriate peak factor as shown in Table 4-1. If the County determines that a line needs to be "Oversized", the procedures for sizing and reimbursement, as outlined in Appendix 3, must be followed.

Table 4-1: Wastewater Flow Peaking Factors

Average Flow (MGD)	Peak Factor	Average Flow (MGD)	Peak Factor
0 - .10	3.00	.701 - .80	2.65
.101 - .20	2.95	.801 - .90	2.60
.201 - .30	2.90	.901 - 1.0	2.55
.301 - .40	2.85	1.01 - 2.0	2.50
.401 - .50	2.80	2.01 - 4.0	2.25
.501 - .60	2.75	>4.0	2.00
.601 - .70	2.70		

- 4.5.4 Connection Feasibility: If you are not required to connect to sewer per the Hillsborough County Land Development Code, the development will be evaluated for consideration of a septic system based on the availability criteria defined in Chapter 381 of Florida Statute.
- 4.5.5 Gravity Collection System
 - 4.5.5.1 Minimum Size of Gravity Mains: Gravity mains must be sized to accommodate peak flow (ref. 4.5.3) when flowing 1/2 full. No gravity sewer main shall be less than eight inches in diameter.
 - 4.5.5.2 Alignment: All gravity mains must be laid with straight alignment between manholes.
- 4.5.6 Wastewater Manholes
 - 4.5.6.1 Manholes must be installed at the end of each line, at all changes in grade, size or alignment, and at all gravity main collection intersections. The distance between manholes must not be greater than 400 feet unless prior approval is obtained from the County. Cleanouts may be used only for special conditions and must not be substituted for manholes.
 - 4.5.6.2 Design: The minimum diameter of manholes must be no less than 48 inches. A minimum access diameter of 24 inches must be provided. The minimum depth of manholes is five feet.
- 4.5.7 Force Main
 - 4.5.7.1 Minimum Size of Force Mains: The Developer must install the largest size force main that will maintain a minimum velocity of two feet per second (fps). The minimum size force main constructed within County Road right-of-way or dedicated easements must not be less than four inches in diameter.
 - 4.5.7.2 System Design: Force mains must be sized to carry the full development peak flow (ref. Section 4.5.3) from all connected pumping stations within the designated stations service area. Each force main system should be capable of transporting the peak flow from each pump station operating simultaneously without producing excessive pressure, i.e., not to exceed 100 feet Total Dynamic Head (TDH) anywhere in the system.
 - 4.5.7.3 Cover, as measured from finished grade to the top of the pipe, must not be less than 48 inches.
 - 4.5.7.4 When automatic air release valves are required, the depth of cover **of the entire line** must be increased to 52-inches(min.).
 - 4.5.7.5 Valve Locations: New force mains connecting to existing force mains must include a shutoff plug valve at the point of connection. The distance between in-line (isolation) valves must not exceed 1,000 feet.
- 4.5.8 Wastewater Pumping Stations
 - 4.5.8.1 Flows: Wastewater pumping stations must be designed to accommodate the full development flow from all contributing areas at peak flow computed in accordance with the "Flow Criteria" set forth in Section 4.5.3.
 - 4.5.8.2 Design: Wet well diameter must be six feet or greater and sized to both maximize holding time and minimize pump starts. Wet well depths must not exceed 25 feet.
- 4.5.9 Connection of Single Family Homes Using Individual Grinder Pumps: Per BOCC Policy 09.07.03.03, grinder pumps may be used for single family home connections to allow single family homes to be constructed in infill areas where sewage service is reasonably economically available only by the use of grinder pumps through a pressure force main to WRD mains. This policy is applicable only under the following conditions:

- 4.5.9.1 This exception to the standard gravity sewer/pumping station/force main systems, described in this manual, applies to existing lots to be developed for single family homes and to larger lots being subdivided into no more than five single family lots.
- 4.5.9.2 The requirement for the property owner, and all future owners, to operate and maintain the system will be noted on the deed of each property and on the appropriate plat, when applicable.
- 4.5.9.3 All pressure pipe, in the right-of-way, must be gasketed PVC pipe, restrained as necessary. Glued fittings or glued joints are not allowed. Connection to a WRD force main must be a tee with in-line and branch plug valves.

4.6 WASTEWATER DETAILS

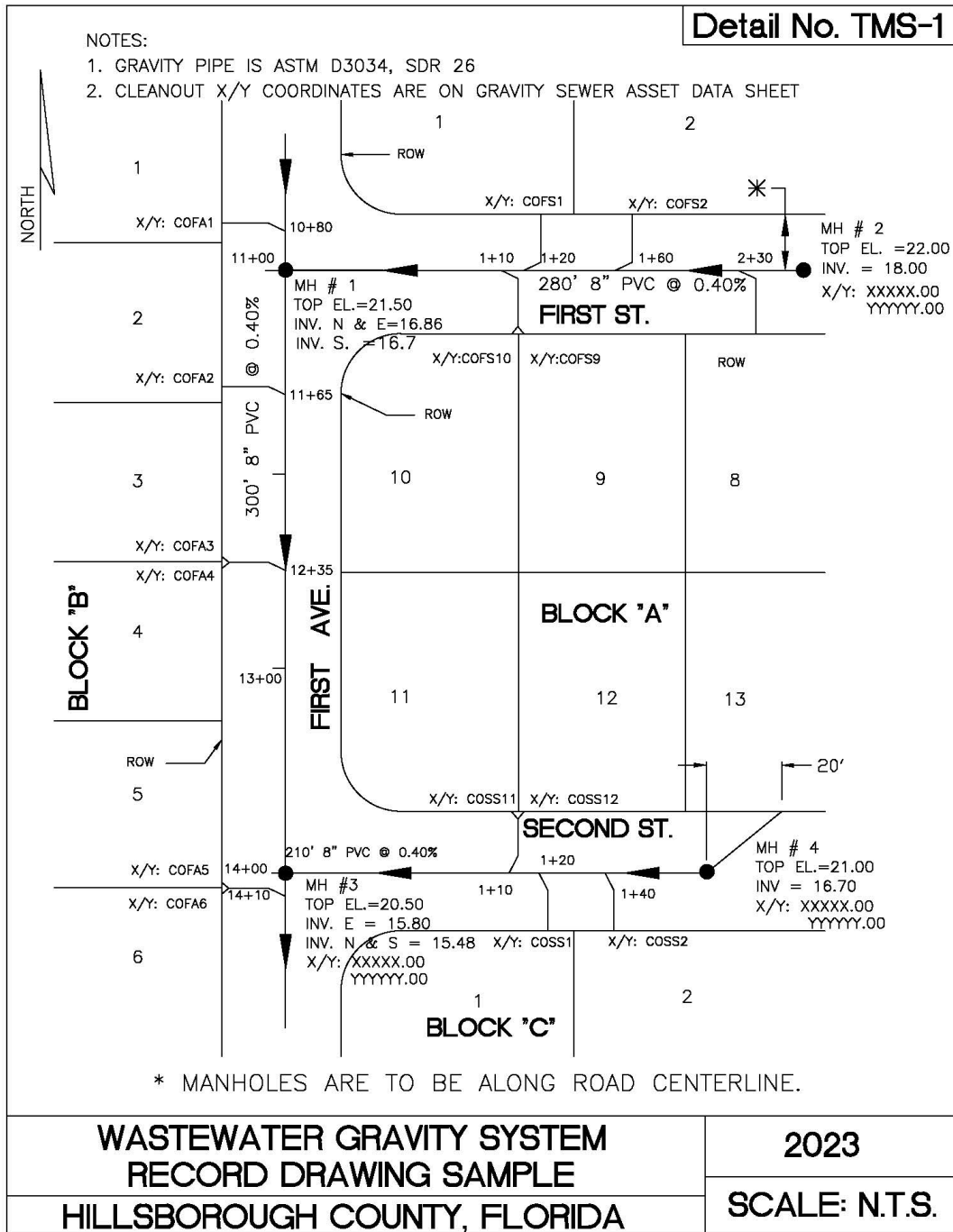


Figure 4-1: Wastewater Detail No. TMS-1