

4.7 RECORD DRAWINGS

4.7.01 General

- A. This Section specifies requirements for preparing Record Drawings of public water and sewer facilities and for submitting them to the Department of Public Utilities (DPU) for review and approval.
- B. Record Drawings shall accurately depict the actual locations and elevations of all water and sewer facilities constructed as part of the approved plans.
- C. Facilities shall be located via a field survey using conventional surveying methods and/or GPS, with horizontal datum NAD83 Virginia State Plane South and vertical datum NAVD 88.
- D. Record Drawings shall be based on a field survey and the red-line drawings maintained by the Contractor during the construction process.
- E. Record Drawings shall clearly indicate areas where construction substantially deviated from the approved plans.
- F. The Record Drawings, and all subsequent revisions to the drawings, shall be properly sealed and signed by a licensed Professional Engineer registered in the Commonwealth of Virginia.

4.7.02 Preparation Requirements for Record Drawings

Record Drawings shall be black and white with all Record data distinctly marked, labeled, and clouded in red where it differs from design drawings. Record Drawings shall include the following information, appropriately called out and labeled in a legible format:

- A. Gravity Sewer Lines: Plans and profiles corrected to accurately depict the locations of all gravity sewer lines, including pipe size & material; length; alignment; slope; location(s) & dimensions of cradles, encasements, and other special construction.
- B. Sanitary Sewer Manholes: Plans and profiles corrected to accurately depict the location of each sanitary sewer manhole including northing and easting coordinates; rim elevation; inverts in and out; diameter; and verification of the type of frame and cover used (standard, vandal-proof, watertight, bolted or gasketed) and if required, acid-resistant lining used (FRP, PVC, or HDPE).
- C. Pressure Sewer Pipes (Force Mains): Plans and Profiles updated to accurately depict the alignment, size, and material of each force main including tie-in points, and the location and type of each valve and fitting. Northing and

Easting coordinates shall be provided for valves and other above-ground appurtenances.

- D. Sanitary Sewer Service Connections and Cleanouts: Plans and Profiles updated to accurately depict each sanitary sewer service connection, service lateral and cleanout, including pipe size & material; northing and easting coordinates of connection point and cleanout; top elevation of cleanout; ground elevation at the cleanout; and invert elevations of the service lateral at the main and at the cleanout.
- E. Oil/Water Separators & Grease Traps: Plans, Profiles and Details updated to accurately depict the location and elevation of each oil/water separator and grease trap, including elevations of access hatch rim(s) and top of slab; northing and easting coordinates of access hatch rim(s) & corners of the structure; internal piping elevations including inverts in & out; detailed information regarding any instance where the installed structure differs from the plan detail; manufacturer and model number; dimensions; total volume capacity; baffle wall location(s); and location(s) and elevation(s) of orifice(s) in baffle wall(s).
- F. Sewage Pump Stations: Site Plan, Plans and Profiles updated to accurately depict the locations, dimensions, and elevations of all structures, buildings, vaults, slabs, fences, etc. associated with the pump station including; finished floor elevation(s) of building(s); top/rim elevation(s) of the wet well, vaults,, and other structures; ground elevations at wet well, vaults, and other structures; total wet well depth; bottom elevation of wet well, vaults and other structures; pump controls and alarm elevations; diameter(s) and Invert(s) In for any/all pipes entering the wet well; inside and outside diameters of wet well; as well as detailed information regarding any instance where construction deviated from the approved Plans and Specifications; and an Engineer's statement verifying that all other pieces of equipment (e.g. guide rails, hatches, pumps, etc.) shown on the plans and specifications are present and installed correctly. Northing and Easting coordinates shall be provided for all property corners, buildings, structures, slabs, fences, gates, and other major above-ground components of the pump station.
- G. Water Lines and Fittings: Plans and profiles updated to accurately depict the location of all water lines and fittings. Water line record drawings shall clearly show and label the alignment, pipe size & material, pipe length, and depth of cover over pipe for all water lines associated with the project.
- H. Water Line Valves, Bends, Tees, and Other Fittings: Plans and Profiles updated to accurately depict, as applicable, the size, type, material, angle (22.5, 45, etc.), direction (vertical, horizontal). Northing & Easting coordinates shall be provided for all valve boxes, hydrants, meter boxes, , and other appurtenances visible at the surface.

- I. Fire Hydrants and Flushing Valves: Plans and profiles updated to accurately depict the location of fire hydrants and flushing hydrants, including Northing & Easting coordinates of the hydrant and valve box, as well as elevation at the base of the hydrant. The manufacturer, model, and year of manufacture shall be provided for each fire hydrant.
- J. Other Infrastructure: The Record Drawing Plan and Profile sheets shall also accurately show and label all other pipes, fittings, structures, and appurtenances not mentioned above.
- K. Additional Information: Each plan sheet in the Record Drawings shall have a minimum of 3 Northing/Easting cross points and a note identifying the coordinate system used. Horizontal datum shall be Virginia State Plane South, NAD 83. Vertical datum shall be NAVD 88. Accuracy of data shall be survey-grade.
- L. Project Identification: The appropriate POD, LDP, and/or UTP Number shall be included on each sheet of the Record Drawings.
- M. Materials and Quantities List: The Cover Sheet of the Record Drawings shall include updated charts showing comprehensive materials lists which provide actual quantities installed for: 1) Water pipes, fittings, and appurtenances; and 2) Sewer pipes, fittings, structures, and appurtenances.

4.7.03 Submission of Record Drawings

A complete Record Drawings Submission Package for the project must be prepared and submitted prior to, or along with, the Acceptance Request. The complete package shall be delivered to the Department for review, and shall include the following:

- A. One paper copy and one digital copy in pdf-compatible format, of the Contractor's red-line construction drawings.
- B. Two paper sets of the Record Drawings with seal and signature of the professional engineer or licensed surveyor who prepared the drawings.
- C. Digital file(s) of the Record Drawings in .pdf compatible format.
- D. A single geo-referenced AutoCAD drawing file (.dwg) compatible with the most recent version of AutoCAD LT. The file shall contain all required and relevant as-built information for the project.

END OF SECTION 4.7