

ENGINEERING DESIGN STANDARDS

SECTION 7 - RECORD DRAWINGS

7.0 GENERAL

This standard establishes the minimum requirements for record drawings in the Township.

Record drawings of water main, sanitary sewer, storm sewer, detention and retention basins, drainage ditches, and swales shall be submitted for review and approval prior to acceptance of the improvements by the Township.

7.1 PLAN REQUIREMENTS

Record drawing information shall be provided on the original approved construction drawings and shall contain, but not necessarily be limited to, the following items:

A. GENERAL ITEMS

1. All record drawings shall contain a statement by an engineer or land surveyor, registered in the State of Michigan certifying that the project improvements conform to the approved construction plans. The statement shall be signed and sealed by the engineer or land surveyor.
2. All record drawing elevations shall be based on U.S.G.S. Datum. Datum used shall be compatible with the GIS and noted on the plans.
3. All record drawing information shall be clearly marked as such.
4. Record drawing locations shall be shown on the plans to an accuracy of one (1) foot horizontal and 0.1 foot vertical.
5. All location changes of 10 feet or more horizontally and 0.5 feet vertically shall be redrawn on the plan and the original location shall be crossed out (X-ed) on the plan.
6. Upon final approval of the engineering plans the proprietor's engineer shall provide the Township with an electronic copy of the record drawings. This is required so that the completed improvements can be added to the Township's GIS database. The electronic files shall conform to the Township's engineers format criteria.

B. WATER MAINS

1. Location of all water mains with respect to property line, back of curb, or edge of pavement.
2. Rim elevation of gate wells.
3. Fire hydrant bury line/arrow elevations.
4. Top of pipe elevation at gate wells.
5. A minimum of three witnessed dimensions (or GPS coordinates) to each bend, gate well, meter pit, pressure reducing valve, water main stub, etc.
6. A minimum of three witnessed dimensions (or GPS coordinates) to each connection to an existing water main or restrained joint, and at each connection point for transition from ductile iron pipe (D.I.P.) to high-density polyethylene (HDPE).
7. The distance between the hydrant and water main.

ENGINEERING DESIGN STANDARDS

8. Accurately locate all utilities (storm, sanitary, water main, etc.) where the recommended separation horizontally or vertically is less than that required ten (10) feet horizontal and 18" vertical.
9. The Liber and Page number for any easement obtained for water main as well as any existing easement involved in the project shall be noted.
10. Length and location witnessed to three (3) points (or provide GPS coordinates) of any casing pipe.
11. Materials installed:
 - a. Size, length, type, class, joint, and manufacturer of pipe.
 - b. Size, brand, and manufacturer of valves and hydrants.
 - c. A total record drawing quantity list.

C. SANITARY AND STORM SEWER

1. Location of all sewers with respect to property line, back of curb, or edge of pavement.
2. Rim elevation of all structures.
3. Pipe invert elevations at all structures, end-sections, or headwalls.
4. Percent grade of all pipe runs.
5. A minimum of three (3) witnessed dimensions (or provide GPS coordinates) to each structure.
6. A minimum of three (3) witnessed dimensions (or provide GPS coordinates) to all force main bends.
7. Length of pipe from center to center of manholes, and length of stubs out of manholes.
8. Length and location witnessed to three (3) points (or provide GPS coordinates) of any casing pipe.
 - a. Materials installed:
 - b. Size, type, class, joint, and manufacturer of pipe.
 - c. For pressure sewers, a diagram of all appurtenances in each valve structure shall be drawn with flow arrow.
 - d. A total record drawing quantity list.
 - e. The Liber and Page number for each easement obtained for the construction of sewer as well as any existing easement involved in the project shall be noted.
9. House lead locations:
 - a. Information shall be obtained from inspection records and transferred to the plans.
 - b. Location of wye measured from downstream manhole or provide GPS coordinates.
 - c. Length of lead.
 - d. Length of any risers, if placed.

ENGINEERING DESIGN STANDARDS

- e. Location of end of lead measured from downstream manhole (or provide GPS coordinates).

D. DETENTION / RETENTION / INFILTRATION BASINS

1. Width and length of top and bottom of basin.
2. Elevations at sufficient intervals to verify basin side slopes and capacity.
3. Location, width, and elevations of basin overflow facility.
4. Invert elevation of inlet and outlet pipes.
5. Basin outlet restriction size.
6. Calculations of the basin volume between the high-water elevation and the invert of the outlet pipe for a detention basin, and the bottom of the basin for a retention basin (based on as-built elevations).

E. DRAINAGE DITCHES AND SWALES

1. Location of centerline of all ditches and swales with respect to property lines.
2. Elevations of top and bottom at lot corners.
3. Elevations at top and bottom along all road frontages.