

SECTION 01990

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes requirements for final Record Drawings (AKA "As-Builts") that must be submitted to and approved by the Holland BPW prior to final acceptance of any and all public utilities that are installed, relocated or replaced.
- B. This Section shall apply to all areas where public water mains and public sanitary sewer mains are operated and maintained by the Holland BPW.

1.2 GENERAL REQUIREMENTS

- A. Any and all recorded easements must be outlined on the Record Drawings with the corresponding Liber and Page numbers from the County's Register of Deeds.
- B. All measurements and dimensions used in the approved design drawing must be updated or confirmed to reflect as constructed measurements and dimensions.
- C. Any and all references to "Proposed" utilities should be struck through with a single line unless they were not installed.
- D. Any and all utilities (including services) must be redrawn from the original design if the as-constructed location varied by more than 5' horizontal or 6" vertical.
- E. House numbers or addresses must be shown for all parcels and/or buildings that are within the influence of the Record Drawing. If an address has yet to be assigned, then a lot number or parcel ID (Tax ID) number must be shown.
- F. The basis for the vertical datum used for elevations on the drawing shall be shown as well as any and all benchmarks used for the design and layout of the proposed utilities.
- G. The completion date of the construction of the utilities must be shown on all sheets.
- H. The General Contractor who was responsible for the installation of the utilities must be shown on all sheets.
- I. The developer's name and address, where applicable, shall be shown on all sheets.
- J. The design engineer's name shall be shown on all sheets.
- K. The latest revision of the drawing shall be shown on all sheets.
- L. All Record Drawings shall bear the seal of a Professional Engineer or Registered Land Surveyor licensed to practice in the State of Michigan.

1.3 WITNESS REQUIREMENTS

A. Horizontal Witnesses:

1. Whenever possible, witness measurements shall be taken from permanent and prominent features in the vicinity.
2. Measurements shall be taken by right angle measurements wherever and whenever possible. Example: *5' North & 10.5' East of hydrant.*
 - a. The preferred basis for witness measurements for water main features would be fire hydrants.
 - b. The preferred basis for witness measurements for water service features would be nearest building corners.
 - c. The preferred basis for witness measurements for sanitary sewer main and service features would be sanitary manholes.
3. Horizontal witness accuracy must be within 6".

B. Vertical Witnesses

1. Vertical witness accuracy must within 0.02' unless otherwise described within this Section.

1.4 WATER MAIN REQUIREMENTS

A. All sheets that pertain to public water mains shall contain the following at a minimum:

1. MDEQ Permit number assigned to the associated project.
2. Holland BPW Project number assigned to the associated project.
3. As constructed and measured water main length, itemized by diameter, per sheet (no duplicates or overlapping between sheets)
4. Water main pipe manufacturer, thickness class, pressure rating and material, corrosion protection (if applicable)
5. Water mainline valve type (i.e. butterfly, double-disc gate, resilient wedge gate), manufacturer, model number, AWWA specification, direction of operation, and as constructed depth to valve nut from valve cover. If valve is designed to be normally in the "closed" position, it must be indicated on the Record Drawing.
6. Water service pipe material
7. Water service valve type (i.e. plug, ball), manufacturer and model number
8. Fire hydrant manufacturer, model number, weep drain status, and manufacture date

- B. The following items shall be specifically and individually witnessed:
1. Water mainline valves (to nearest hydrant that is connected to the same water main)
 2. Water service valves (to nearest hydrant that is connected to the same water main, nearest building corner being served or to nearest property corner being served if no building exists)
 3. Fire hydrant isolation valves (to hydrant)
 4. Meter or valve pits (to nearest hydrant)
 5. Major fittings such as sleeves, horizontal or vertical bends, tees, crosses, reducers, caps or plugs, pressure reducers, air relief or blow valves, etc. (to nearest hydrant or valve that is connected to the same water main)
 6. Changes in vertical alignment with change in depth given to the nearest 6"
 7. The capped ends of service stubs or future water main stubs (to nearest hydrant that is connected to the same water main or service). The ends of service stubs may be witnessed linearly from the service valve.
 8. Locating devices installed
- C. Any and all sections of water main installed that is restrained shall be indicated in some fashion. The type of restraint used shall be indicated on the Record Drawings.

1.5 SANITARY SEWER REQUIREMENTS

- A. All sheets that pertain to public sanitary sewer mains shall contain the following at a minimum:
1. MDEQ Permit number assigned to the associated project.
 2. Holland BPW Project number assigned to the associated project.
 3. As constructed and measured sanitary sewer main length, itemized by diameter, per sheet (no duplicates or overlapping between sheets)
 4. Sewer main pipe manufacturer, thickness class, pressure rating and material, corrosion protection (if applicable)
 5. Sewer service pipe material
 6. Sewer manhole wall material
- B. The following items shall be specifically and individually witnessed:
1. Manhole rim elevation (always taken from the northernmost edge of rim and according to datum shown on the Record Drawings)

2. All pipe invert elevations at manholes (according to datum used on the Record Drawings). Depth from manhole rim to invert elevation is acceptable with as-constructed rim elevation.
3. Horizontal distance between manholes (from center of manhole to center of manhole)
4. Sewer service wye branch location (to downstream manhole – no exceptions)
5. Vertical changes in elevation in a sewer service beyond the normal laying slope (i.e. riser height). The location of the changes in elevation must be indicated as either at the main or at the property line or at another location that is field measured from the main sewer. Vertical changes in services must be accurate within 6”.
6. The capped ends of service stubs or the reconnection point to a live sewer service (to nearest sanitary manhole, nearest building corner being served or to nearest property corner being served if no building exists). The Record Drawing must clearly depict which services were reconnected and which ones were stubs at the end of the project.
7. Cleanout locations (horizontally to nearest building corner being served or to nearest property corner being served if no building exists)
8. The vertical depth from the final grade must be shown to the end of the stub or the reconnection point to a live sewer service and must be accurate within 6”.

PART 2 - PRODUCTS

2.1 SUBMITTALS

- A. A draft submittal shall be reviewed and approved by Holland BPW Water/Wastewater Services prior to final submittal. Draft submittal shall be no larger than 24” x 36”.
- B. The final submittal shall include all of the following:
 1. Tagged Image File (.TIF) scaled to print at 100% on 24” x 36” paper.
 2. Autodesk AutoCAD File (.DWG) with corresponding color-dependent plot style tables (.CTB) spatially referenced to Lambert Conformal Conic, NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl

PART 3 - EXECUTION

3.1 RESPONSIBILITY OF MEASUREMENTS

- A. The developer or property owner of the proposed utility extension is responsible for the acquisition of all the necessary measurements. Holland BPW personnel may, during routine field inspections, take periodic measurements during construction to verify the accuracy of Record Drawings submitted. These periodic measurements may be used as an aid to generate Record Drawings, but shall not be considered the sole source of information. The Holland BPW shall not be responsible for the accuracy of the Record Drawings until approval and acceptance of the Record Drawings and upon the expiration of any and all warranties for the installation, relocation or replacement of the utilities.

3.2 REQUIRED PRIOR TO CONNECTION

- A. Approved Record Drawings shall be required for any and all public water main and/or public sanitary sewer main extensions, relocations, or replacements. No active or live connections shall be allowed to newly installed public utility extensions or relocations without submittal and approval of the appropriate Record Drawings. The Holland BPW reserves the right to refuse to install or provide a water meter for a service connected to a public utility without an approved corresponding Record Drawing as specified in this Section.

END OF SECTION