



SERVICE CONNECTION STANDARDS

The following standards shall be followed in the preparation of water and sewer connection drawings and plans. This is not an exhaustive list and may be updated at DWSD's discretion. For general plan submission requirements, please see the DWSD Drawing/Plan Submittal Requirements document.

GENERAL

- No utilities shall run parallel along the top of DWSD utilities.
- Maintain separation between utilities.
 - Maintain a minimum horizontal clearance of 10 feet between water mains and sanitary/storm sewers.
 - Maintain a minimum horizontal clearance of 5 feet between water mains and other utilities.
 - Maintain a minimum horizontal clearance of 5 feet between laterals.
 - Maintain a minimum vertical clearance of 18 inches between utilities.
 - Water Main shall be above the sanitary sewer.
 - Storm sewers crossing above water mains shall be arranged such that the joints are equidistant and as far as possible from water main joints.
 - All storm sewer that cannot maintain the required clearance from water mains shall be placed in a DWSD approved encasement extending 10 feet on either side of the crossing.
- Minimum aerial clearance of overhangs, canopies, overhead utilities, etc. over utilities shall be 16 feet from ground cover.

EASEMENTS

- Easements shall be granted to DWSD for all public water main installations.
 - Water main shall be centered in an easement, free from all structures (i.e. buildings, foundation lines, decks, carports, etc.).
 - Width of Easement = $2 \times \text{Depth} + 10$ feet
 - Water main easements shall be a minimum of 20 feet wide.
- Easements shall be granted to DWSD for all public sewer installations.
 - Sewers shall be centered in an easement, free from all structures (i.e. buildings, foundation lines, decks, carports, etc.).
 - Width of Easement = $2 \times \text{Depth} + 10$ feet
 - Sewer easements shall be a minimum of 30 feet minimum
- Combined water main and sewer easements shall be a minimum of 30 feet wide.

WATER SYSTEMS

- Extension of the DWSD water system shall require an EGLE Act 399 Permit.
- Label size and material of proposed water main and water services.
 - All ductile iron pipes will be a minimum thickness Class 52 and polyethylene wrapped.
 - HDPE pipe shall be DR-11 for 200 psi pressure rating and Ductile Iron Pipe Size (DIPS).
 - Service lines less than 3 inches in diameter shall be copper, type K.
 - Service lines and mains 3 inches and larger in diameter shall be ductile iron.
- Pipe cover shall be a minimum of 5 feet from the top of pipe to the final surface.
- When water main is to be constructed in casing, include size, length, and cross-sectional details of casing.
- All fittings shall be labeled and stationed on the plan and profile sheets.
- Thrust blocks shall be utilized where applicable. Details shall be provided to meet DWSD standards.
- Show finished grade elevation of all proposed fire hydrants.
- Fire hydrant inlet connection size shall be 6 inches.
- Fire hydrants shall be dry-barrel, breakaway type, East Jordan 5-BR250, with Carroll Drain Assembly manufactured to Detroit Fire Department Standards.
- All valves shall be located in wells.
 - Gate wells shall be sized accordingly:

Gate Well Sizing Chart	
Water Main Diameter	Minimum Gate Well Inside Diameter
6" – 8"	5'-0"
12" – 16"	6'-0"
- Show proposed rim elevations for all wells.
- Gate well frame and covers shall be East Jordan 00104050L01 Ergo Cover and Frame or approved equal.
- Air relief valves are required in areas of severe grade changes.
- Gate valves shall be used on 6-inch to 12-inch mains.
- Butterfly valves or resilient wedge valves shall be used on mains 16 inches or larger.
- Furnish valves of diameters 24 inches and larger with bypass valves and gear operators.
- Water main taps must be one size smaller than the DWSD main.
 - Applicant may make a request for a same or larger connection. Requests require adequate information to demonstrate the need for the larger size and will be reviewed on a case by case basis by DWSD.
 - If a same size connection is permitted and the applicant is upsizing after the tap, the tap must be made with an adjacent valve. The reducers shall be after the valve. The water meter shall be located on the DWSD side of the valve.
- Taps of 3-inch or larger shall be made with tapping sleeve and valve or cut in tee. If the tap is smaller than or equal to half the size of the main, a tapping sleeve and valve may be used. Taps larger than half the size of the main shall be made using a cut-in tee.
- Provide a letter along with calculations supporting a proposed domestic water line size larger than 3 inches and indicating the existing pressure and flow is adequate.
- Stop boxes and valves must be adjacent to the City right-of-way.

- Stop boxes and valves in private driveways must be road rated.
- Fenkell connections are not permitted. For multi-unit buildings or multiple structures on one property, there must either be one master meter or each unit must have an individual service with meter.
- Water services shall enter a building/property perpendicular to the main.
- Water services shall enter the building/property on the same street the tap is made.
- A waiver letter is required for service lines more than 130 feet in length.
- If a previously disconnected water service is in usable condition and is proposed for reconnection and reuse, a permit must be requested to reconnect. DWSD recommends all lead service lines be replaced. Full or partial lead service lines will only be allowed with DWSD's review and approval.
- If an existing water service is desired to be used for new construction, a permit must be requested. The service must be connected and in usable condition, and the property must not be slated for demolition. DWSD recommends all lead service lines be replaced. Full or partial lead service lines will only be allowed with DWSD's review and approval.
- No new water services are to be constructed in an alleyway.
- For all proposed fire lines:
 - A flow test is required and must be requested from DWSD. Tests are generally performed from April 1 to December 1, weather permitting. Tests are valid for one year.
 - Provide calculations supporting proposed fire line service size and showing the pressure and flow is adequate.
 - Provide a letter from the fire suppression designer supporting proposed fire line service size and showing the pressure and flow is adequate.
 - Fire Marshal approval is required.
- There can be no services on a fire line.
- There can be no valve on a fire line except the double detector check valve assembly. Double detector check valve assembly must be installed on the fire line as per DWSD standard and specifications. The meter is to be built into the double detector check valve assembly.
- Water meter/detector check valve is not to be installed until the backflow preventer is placed as per BOCA code within 15 feet downstream of water meter.
- Any size pipe may be metered inside a building if the applicant has enough room; however, the preference is the meter located in a pit at the property line.
- For an applicant splitting their service into a fire line and a domestic line, the split can be done inside the meter pit before the meter on the domestic service. The fire service shall have a backflow preventer with a meter built in. The backflow preventer must be within 16 feet of the split.
- Obtain meter template instructions from DWSD.
- Provide meter pit design as necessary.
 - Show pit on private property.
 - Submit drawing approved by a registered engineer showing details of reinforcement, wall thickness, hatch details, equipment, etc.
- Abandoned water main shall be cut and capped at the main, not the property line.

SANITARY SEWER

- Extensions of the DWSD sanitary system shall require an EGLE Part 41 Permit.
- Continuous sanitary service must be provided. If proposing a sanitary sewer removal or relocation, plans shall be submitted for providing temporary services. A CCTV video shall be required to determine service locations.
- PVC sanitary sewers shall be minimum SDR 26 pipe.
- Reinforced Concrete Pipe (RCP) sanitary sewers shall be Class IV with minimum Wall Type B.
- All sewers 42 inches or less shall be designed and constructed to provide a minimum velocity of 2 feet per second when flowing full based on Manning's formula using an "n" value of 0.013. Sewers 48 inches or larger shall be designed and constructed to provide a minimum velocity of 3 feet per second when flowing full based on Manning's formula using an "n" value of 0.013.
- Sanitary sewers shall have a minimum of 5 feet of cover from the top of sewer to the final surface.
- Sewer laterals shall have a minimum of 4 feet of cover from the top of the lateral to the final surface.
- For a sewer connection, the incoming (new) sewer must be less than 50% of the size of the existing sewer. If two sewer lines are entering the sewer, the two lines combined cannot exceed 50% of the existing sewer size.
- Standard 48-inch manholes shall have a minimum access of 24 inches. Provide larger access for larger manholes.
- Manhole covers shall be East Jordan 00104050L01 Ergo Cover and Frame or approved equal.
- Sewer connections greater than 18 inches above the manhole outlet invert shall utilize a drop connection.
 - New manholes shall utilize exterior drop connections.
 - A maximum of two 12-inch or smaller interior drop connections may be utilized in one existing manhole. Additional drop connections shall be exterior drop connections.
 - Interior drop connection manholes shall be a minimum of 5 feet in diameter.
- Not more than three sewer service leads may be designed to tap into a manhole.
- For a cut in sewer connection, a new manhole shall be constructed over the DWSD sewer. The manhole sizing shall be as follows:

Manhole Sizing	
Sewer Pipe Size	Manhole Diameter
≤ 24"	4'-0"
27" – 30"	5'-0"
33" – 42"	6'-0"

- Where a manhole over the existing sewer is not possible, an offset manhole may be allowed. The offset manhole shall follow the following requirements:
 - Must be within 5 feet of the existing DWSD asset.
 - A PVC pipe up to 12 inches may be used to connect the offset manhole to the DWSD asset. The maximum slope shall produce a maximum velocity of 8 feet per second.
 - When a concrete pipe is used to connect the offset manhole to the DWSD asset, the minimum slope shall follow standard pipe slope requirements.
 - Pipe connection into DWSD asset should be located at the spring line of the DWSD asset.

- If the pipe connection into the DWSD asset is not at the spring line, the applicant must mortar/concrete around the connecting pipe.
- Storm and sanitary can be combined in an offset manhole.
- Service leads shall have a minimum grade of 1.0% and be 6 inches in diameter. Lead shall connect to the main at a minimum 45-degree angle.
- Applicants may reuse 4-inch laterals provided all conditions for reuse (below) are met; however, new taps shall be 6 inches.
 - A CCTV video of the existing service is provided.
 - A Master Plumber must certify the lateral is in usable condition.
- PVC wye connections shall be minimum SDR 23.5.
- DWSD will allow a blind tap in an alley; however, connections in a street must be done via manhole.
- A sampling manhole is required for sewers that carry industrial waste.
- Sanitary and storm sewer cannot be combined on site. Both lines must run parallel and only combine at the DWSD sewer.
- Abandoned sanitary sewer must either be removed or filled with flowable fill.

Storm Sewer

- Stormwater from private property shall not sheet flow to the public right-of-way/DWSD sewer.
- Storm connections to a DWSD catch basin are not allowed. New storm must connect with a manhole. If there is not an existing manhole in the location, the applicant shall construct one over the existing sewer.
- DWSD does not allow more than two connections to a catch basin (one incoming and one outgoing pipe).
- Applicants are not permitted to convert a DWSD manhole into a catch basin. If the applicant is trying to collect run off, a separate catch basin shall be built before the manhole connection. Private manholes may be converted into catch basins.
- Storm sewers shall have a minimum of 2 feet of cover from the top of sewer to the final surface.
- Minimum pipe size for public storm sewers shall be 12 inches in diameter.
- Minimum pipe size for privately owned storm sewers shall be 8 inches in diameter.
- For connection of a proposed storm to a DWSD asset, the connecting pipe shall be half the size of the existing DWSD asset. DWSD will allow a 12-inch connection to an existing 12-inch DWSD sewer if the applicant is managing the stormwater per ordinance and restricting flow to 0.15 cubic feet per second.
- The minimum design flow velocity (full flow) shall be 3 feet per second.
- The maximum design flow velocity (full flow) shall be 10 feet per second.
- Public storm sewers shall be Reinforced Concrete Pipe (RCP) Class IV with minimum Wall Type B.
- Service line connections to sewers shall be PVC SDR 26 minimum.
- The last manhole of a storm sewer on the property before tapping the DWSD sewer shall be trapped.