

PLAN REVIEW GUIDELINES

The intent of the following procedural guidelines is to aid consultants in water main design and submittal procedures. All the following review guidelines and practices are currently under review by the Division of Water's New Construction Committee. These guidelines are subject to change. Once a project is approved, the approval will be valid for a period of one year from the date the plans are stamped approved and signed by the Commissioner of Water. After approval has expired, preliminary plans must be resubmitted and re-reviewed prior to being re-approved.

The Codified Ordinance 535.35 states that no water mains shall be laid or extended within the City of Cleveland or in any direct service suburb unless properly submitted plans have been approved by the Commissioner of Water. These plans shall be in accordance with the Constructions and Materials Specifications of the City of Cleveland, Division of Water.

535.35 Approval of Water Main Plans within City and Direct Service Metropolitan Area.

- (a) No water mains shall be laid or extended within the City or in any direct service suburb unless properly submitted plans have been approved by the Commissioner of Water and as being in accordance with the Department of Public Utilities construction and material specifications.
- (b) After installation no water main laid in the City or in any direct service suburb shall be placed into service carrying potable water unless the installation has been approved by the Commissioner as meeting the Department of Public Utilities Construction and Material Specifications, and samples of water taken from the new main installation have passed bacteriological testing as required by the Ohio Environmental Protection Agency.
- (c) Authority to approve water mains in subsections (a) and (b) hereof and as outlined in service agreements with master meter suburbs shall be vested solely in the Commissioner. ***(Ord. No. 1231-74. Passed April 14, 1975. Effective April 17, 1975.)***

IN ORDER TO EXPEDITE THE PROCESSING FOR WATER MAIN APPROVAL, THE FOLLOWING PROCEDURES AND REGULATIONS ARE UTILIZED.

PROCEDURES FOR PROCESSING PLANS

1. Submit two (2) sets of Preliminary Plans. Water main extension projects the following additional requirements :

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- Proposed dedicated plat or original standard water main easement (with copy of resolution and drawing).
 - Peak demand requirements for domestic and fire protection calculated and sealed by a Professional Engineer.
2. One (1) set of marked up preliminary plans will be returned to the consulting engineer for his/her use in preparing the final plans as well as any additional requirements.
 3. One (1) set of revised final plans must be returned to Plan Review Unit for final approval, along with any information previously requested.
 4. Once final plans have been reviewed and approved, the consulting engineer is contacted and instructed to submit a minimum of nine (9) sets of drawings to be stamped with CWD approval. Four (4) of the sets must have the municipal engineer's signature. All sets of drawings must have the consulting engineer's seal and signature. One (1) set of stamped plans will be returned to the consulting engineer.

Submit Plans To:

Division of Water /Plan Review Unit
2nd Floor Engineering
1201 Lakeside Avenue
Cleveland, Ohio 44114

Plan Format

Title sheet

1. Title block should contain name of street, easement, or project, name of consultant, name of city, village or township, scale and date of preparation.
2. If more than one sheet, sheets should be numbered consecutively with each sheet containing definite match lines. A drawing reference should be included with descriptions on title sheet. (CWD may ask to omit sheets that are not needed)
3. Place must be provided on title sheet for Municipal engineer's signature.
4. The site plan or location map shall have a scale of 1"= 400'.

Scales

1. Use a scale graduation of 1"=20', 30', 40' or 50' for horizontal and 1"= 5' on vertical. The use of architect's scale is not permitted.

General

1. Sheets are to be 24" x 36" in size and must show water main and sewers in plan and profile.
2. All sheets of plans should be provided with a directional arrow indicating north .
3. Street or easements must have stationing noted along the Center Line with appurtenances and bends referenced to Center Line and Stationing. Planned measurements may be used along main instead of stations.

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4. Lot lines must be shown on drawing with frontage dimensions given.
5. Proposed and existing connections with connection numbers should be noted on drawings for connections involved in project. (CWD is preparing a policy on approval of single-feed residential connection only)
6. A measurement tie-in between the location of the proposed street/easement and the closest intersecting street or thoroughfare centerline and the proposed water main and visible water main appurtenances must be noted.
7. Plans of water main installations through easements for apartments, office buildings, factories, or condominiums shall follow scheme for normal installation in right-of-way. (Exception: single-feed connection policy)

Water Mains

Sizing

1. Water mains to be sized according to Codified Ordinance Section 535-34.

535.34 Size of Water Mains

- (a) Distribution mains shall be not less than eight inches and no more than sixteen inches in nominal diameter.
- (b) The distribution water mains shall be laid out in a properly segmented grid system, so that the interruption of service to consumers is kept to a minimum in case of breaks or repairs.
- (c) The Commissioner of Water shall determine the size of and materials used for all water mains with the following minimums as to sizes for new improvements or replacement of existing distribution water mains:
 - (1) Streets within residential areas, eight inches size, provided such streets do not exceed 1,500 feet in length between intersecting streets improved with water mains.
 - (2) In county roads, crossings under freeways and railroads, crossing in bridges and in streets adjoining commercial or industrial developments, twelve inches in size.
 - (3) In streets extending through several municipalities and designated as State or county streets, roads or highways, sixteen inches in size.
(Ord. No. 1824-68. Passed September 30 1968. Effective October 1, 1968.)

Depth

1. Cover over all 8" and 12" pipe should normally be at least 6'-0" from established centerline grade and from the top of ground over the water main to the top of the pipe. All 16" pipe should have 5' of cover. A variance of 1'-0" above and 2' below is only permissible while crossing over or under obstructions. In certain cases, where

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no connections are involved and only when approved by the Commissioner of Water CWD Engineer minimum cover may be less than 5'. deeper than 8'-0" requires the use of bends.

Location

1. Water mains must be located a minimum of 9'-0" from the property line or 10'-0" from the easement line in the street or easement in which it is to be installed. Under this provision, service stop boxes (curb boxes) or meter vault manhole ring and covers will not fall within proposed sidewalk areas. ("9'-Rule) In no case should any portion of the water main or hydrants fall less than 5' from an easement or right-of-way line.
2. In all allotment layouts, water mains in proposed streets must be extended to the further most limit of the allotments. (frontage rule)
3. Intersection pipe for future streets must be installed to the abutting property line, and a line valve and box or flush pipe installed at the property line, as directed by CWD Engineer

Dead-Ends/Looping

1. All dead-end pipes, must have a plug and complete 2" flushing pipe assembly with box or hydrant installed. (Tee hydrants may be installed with a plug on the hydrant tee)

Utility/Obstruction Clearances

1. Sewers-Sanitary

Water mains shall be laid at least 10 feet horizontally from any existing or proposed sanitary sewer. The distance shall be measured from the outside of the water main to the outside of the sewer. One full length of water pipe shall be located so both joints will be as far from the sewer as possible with a minimum of 1'-6" clearance from outside to outside of pipes or structures in a vertical plane.

2. Vertical/Lateral Clearance

*See detail clearance.

3. Depths Over 7 Feet

To clear obstructions which result in main being 8 feet or greater, bends to be used. Divisional valves are to be installed at both ends to be used in the event of a water main break. When determined by CWD Engineer, usually large streams, rivers, large culverts, freeways.

4. River Crossings

*See river crossing detail.

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Valves

General Location

1. Line valves should be provided between 1,000 feet and 1,500 feet along run of pipe between intersecting streets. (If run between 2 streets is 1800' then put a valve at 900')
2. Valves installed between intersections shall be located one length of pipe from hydrant tee on the run of the pipe.
3. For new mains, there must be a minimum of two (2) valves at tee intersecting streets and a minimum of three (3) valves installed at cross intersecting streets. When looping is an issue you can install 3 valves at tee intersections and 4 valves at cross intersection.

Tapping Sleeves & Valves

1. An existing tee at an intersection of proposed project shall not be used. Normally the existing tee is removed and a new cut-in-anchor tee and valve are installed. A tapping sleeve and valve shall be installed so that service to users will be maintained whenever possible. Boxes for tapping sleeves and valves are to be supplied by the Contractor
2. Where a branch sleeve and valve with valvebox is installed on an existing main, if said main is over 8 lineal feet from the abutting property line, then a line valve and box must be installed at said property line.
3. Where a tapping sleeve, valve and box are installed, the connecting run of pipe must be installed at right angles from the distribution main to the line valve located at the property line. A bend will then be installed, if necessary, to align the run of pipe in the proposed street or easement.

Service Divides

Where a change of service occurs in an existing street or allotment in which a water main is to be installed, the Hydraulic Division will determine the location of the point of service change and a standard gate valve and box will be required at that point in the run of pipe. This valve will then be kept closed during normal service. In regulated zones a pressure regulator may be required.

Pipe Fittings

1. Vertical Bends: the maximum vertical bend shall be 22 1/2° (1/16). Offsets may be used in place of bends where possible. 90° bends should not be used.
2. Horizontal Bends: Where right angle turns occur in run of pipe, if main may be extended in the future, a tee should be installed and the unused branch plugged and clamped instead of using a 90° bend. 90° bends are rarely used.

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Thrust Restraints

Thrust Blocks

1. Thrust blocks (concrete piers) are required behind all tees, horizontal bends, and hydrant elbows, the contractor shall also install a concrete thrust block behind all tapping sleeves in which the nominal tap is one half or greater than the nominal diameter of the pipe to be tapped. The concrete pier behind the tapping sleeve, as herein stated, is required on all connecting mains and service connections.
2. Thrust Blocks normally installed where access for concrete trucks is available.

Hydrants

Spacing

1. Hydrant spacing is 300' on average (325' maximum) in accordance with ordinance Section 535.36 in residential areas. Commercial and industrial streets an average spacing of 250' to 280'.

535.36 Size of Fire Hydrants.

Fire hydrants shall be placed on all new distribution water main improvements or replacements of existing distribution water mains and shall be of six-inch size having a six-inch nominal diameter of the main valve opening. Each hydrant shall be connected to the water main with a six-inch branch with gate valve installed on each hydrant branch approximately three feet from the water main, and of the same size as hydrant. Fire hydrants shall be placed at street intersections wherever spacing will permit. Fire hydrants in residential streets are to be installed at the center of sublots and spaced on an average of 300 feet apart. In commercial and industrial areas, hydrants shall have an average spacing of 250 feet apart, with a maximum distance of 280 feet apart. **(Ord. No. 1824-68. Passed September 30, 1968. Effective October 1, 1968.)**

Location & Setting

1. All hydrants must be contained within the dedicated right-of-way or easement lateral limits, no closer than 5' from an easement or right-of-way line.
2. *See standard hydrant details.

Abandonment

1. Where existing hydrants are to be abandoned, they must be plugged at the distribution main. They cannot be plugged at the hydrant valves.

Connections

NEW SERVICE CONNECTIONS REQUIRE SEPARATE APPROVAL. NEW CONNECTIONS SHALL BE SHOWN ON WATER MAIN INSTALLATION PLANS AS REFERENCE ONLY. CONTACT PERMITS & SALES OFFICE REGARDING APPROVAL FOR NEW WATER SERVICE CONNECTIONS.

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Abandonment

1. All inactive service connections on allotment frontage on abutting streets must be plugged at main, unless they fall within frontage of subdivision and will be used. Property lines must be shown to determine use. The appropriate call outs are to be added to plan and profile sheets.
2. Where unused connections are to be abandoned, they must be plugged at the distribution main. They cannot be plugged at the water service stops.

New

1. No tees for water service connections are to be installed on new water main run. Taps for connections will be made by the Division of Water after the main has been tested and chlorinated.
2. If an abandoned intersection of pipe is to be converted to a service connection feed in the future, then a valve and box must be installed on this line at a point where the curb valve would normally fall, as determined by CWD Engineer. The use of this pipe for such purpose must be approved by the Commissioner of Water. If refused, then a separate tap must be made for the connection and unused intersection pipe plugged at the main.

Location

1. Where a hydrant is located at the end of a run of pipe, as in cul-de-sacs, connections must be taken off ahead of the reducer on the hydrant branch. No connection can be taken off of the hydrant branch on feed hydrants.
2. All connection vaults must be contained within the dedicated right-of-way or water main easement lateral limits. In situations approved by Division of Water meter vaults can be placed adjacent to the right-of-way or easement in a meter vault easement obtained from the Permits & Sales Unit.

“Other Approvals”

1. Engineer for the local municipality or water district must sign off on at least four copies of the plans prior to final stamping by CWD.
2. OEPA must review and approve plans for “substantial changes to the water distribution system. We receive a letter from OEPA when they have approved the plans. Construction is, by law, not permitted to start until approval by OEPA is granted.

Revised 2/7/00