

# **OAKLAND COUNTY WATER RESOURCES COMMISSIONER**

## **WATER SYSTEM**

### **DESIGN STANDARDS**



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## **Water System Design Standards**

### **I. PURPOSE**

- To provide standard requirements, rules and design criteria for all water supply systems operated and maintained by the Oakland County Water Resources Commissioner.
- Compliance with the State of Michigan Department of Environmental Quality Drinking Water and Radiological Protection Division, Safe Drinking Water Act, Act 399, P.A. 1976.

### **II. SCOPE**

- These standards are intended to serve as a guide in the design and preparation of water system plans and specifications operated and maintained by the Oakland County Water Resources Commissioner. Adherence to the requirements listed will allow Oakland County Water Resources Commissioner Operations and Maintenance Staff to provide a high level of service to the community.

### **III. DESIGN STANDARDS**

- All water mains, booster stations, storage tanks, wells, well houses, and all other water system appurtenances shall meet the following design standards.
  1. Recommended Standards for Water Works (10 States Standards). Includes but not limited to Part 1, Part 2, Part 6, Part 7, and Part 8. A report of the committee of the Great Lakes – Upper Mississippi River Board of State Public Health and Environmental Managers. (Web site [www.hes.org](http://www.hes.org))
  2. State of Michigan Department of Environmental Quality Drinking Water and Radiological Protection Division **Safe Drinking Water Act**. Act 399, P.A. 1976 and Administrative Rules. Includes but not limited to Part 10 through Part 14. (Web site [www.deq.state.mi.us/dwr](http://www.deq.state.mi.us/dwr))
  3. CVT Design Standards, as determined by local CVT.
  4. Oakland County Water Resources Commissioner Operations and Maintenance Design Standards, including water main standard detail sheets, water main plan review check list (Form DC-253) and Oakland County Water Resources Commissioner Wells and Well Houses Design Standards. (Web site [Water Resources Commissioner Home - Water Resources Commissioner | Oakland County, Michigan](http://WaterResourcesCommissionerHome-WaterResourcesCommissionerOaklandCountyMichigan)).

**IV. WATER MAIN PLAN REVIEW CHECKLIST**

**General Plan Requirements**

1. Plans shall be submitted on 24" x 36" blue or black line prints. Acceptable scales shall be 1"=20'; 1"=30'; 1"=40'; or 1"=50', according to the size of the site.
2. An overall site plan must be provided. This plan should show the lots, streets and their names, pavement, all units, utilities and site dimensions. A location map shall be indicated with each site plan showing the approximate location of the site relative to major thoroughfares.
3. A legal description of the property must be provided.
4. All plans submitted for review must be prepared and sealed by a Professional Engineer licensed to practice in the State of Michigan. All correspondence concerning the design of the site will be directed at the Engineer whose seal appears on the plan. The name, address, and telephone number of the owner, engineer shall be on the plan.
5. All plans submitted for review must be stamped approved by the CVT or their consultant.
6. All water main 12" and larger must provide profile elevations, having a vertical scale of 1"=5'. The profile view shall be shown below the plan view where possible.
7. Record Drawing Mylar drawings and plans on electronic media in AutoCAD format (latest version) will be required prior to final approval of the construction and release of any taps.
8. A riser diagram must be submitted for review on all non-residential sites.
9. The Oakland County Water Resources Commissioner water main standard detail sheet must be attached to each and every set of plans.
10. A quantity list itemizing all proposed water main construction must appear on the plans.

### **Water Main**

1. The minimum size water main shall be eight inches. Six-inch mains may be used for single fire hydrant leads having a maximum length of one length of pipe (20 ft.). No service leads are allowed from a six-inch main.
2. On all ¼ section lines and main roads the minimum size of water main shall be twelve-inches.
3. Looping of mains will be required wherever possible, the existing and future distribution system should be considered to determine current and future looping alternatives. All water mains must end with a hydrant or blow-off, and gate valve.
4. No private water service taps will be allowed on water main larger than 16 inches in diameter unless approved by the Oakland County Water Resources Commissioner.
5. No water main shall be placed longitudinally under any sidewalk or roadway.
6. Depth of cover shall be 5-½ feet minimum below finished grade.
7. All water mains shall have a 10-foot separation from any parallel sewer.
8. A minimum clearance of 18 inches between water mains and sewers
9. The extension of water main will generally be required across the entire frontage of the site.
10. Type and class of pipe will be in accordance with Oakland County Water Resources Commissioner standards.
11. All OCDC field inspection and punch list items must be completed and approved prior to the release of any taps.

### **Gate Valves**

1. Gate Valve spacing shall be a maximum of 1000 feet.
2. Gate Valves will be in accordance with Oakland County Water Resources Commissioner standards.
3. All Gate Valves larger than 2 inches will be in a **well**, not a box.
4. Sufficient gate valves provided for maximum of 26 homes for each isolated section.
5. On all water mains to be extended in the future, install a 10-foot stub with gate valve and plug for future connection.
6. Gate Valves are not allowed in pavement area.
7. At high points in water mains where air can accumulate, provisions shall be made to remove the air by means of air relief valves.

## **Hydrants**

1. Hydrant spacing shall be a maximum of 500 feet.
2. Hydrants or blow-off valves shall be installed at the ends of all dead end water mains.
3. Hydrants will be in accordance with Oakland County Water Resources Commissioner standards.

## **Service Lines**

1. Domestic service and fire service lines to buildings must have separate taps, separate shut-off valves, and separate services. No domestic service taps will be allowed off fire service lines.
2. All taps 2 inches or smaller are made by Oakland County Water Resources Commissioner.
3. A "detecto" meter is required on all fire service lines. Gate valve and wells are required on all lines larger than 2 inches.
4. A cross connection control plumbing detail (riser diagram) must be provided to this department for review.

## **Materials**

1. All materials shall be in conformance with the Oakland County Water Resources Commissioner current standards and specifications.

## **Easements**

1. All public water mains must be located in an easement or public right-of-way.
2. A 20-foot easement is required centered on the water main.
3. All easement documentation will be required prior to final approval of the construction and release of any taps. (Exceptions: the City of Farmington Hills and the Township of Commerce acquire their own easement documentation.)



VI. DISTRIBUTION LIST

Book	Position	Division/ Unit	Date	Controlled/ Uncontrolled
1.	N/A			
2.	N/A			
3.	N/A			
4.	N/A			
5.	N/A			
6.	N/A			
7.	N/A			
8.	N/A			
9.	N/A			
10.	N/A			
11.	N/A			
12.	N/A			
13.	N/A			
14.	N/A			
15.	N/A			
16.	N/A			
17.	N/A			
18.	Asst. Chief Engr. – Water Systems	O&M/Water Systems	06/10/02	Controlled
19.	N/A			
20.	N/A			
21.	N/A			
22.	N/A			
23.	N/A			
24.	N/A			
25.	N/A			
26.	N/A			
27.	Manager – Operations & Maintenance	O&M/Administration	06/10/02	Controlled
28.	N/A			
29.	Chief Engineer	E&C/Administration	06/10/02	Controlled