ORANGE COUNTY DEPARTMENT OF HEALTH
WATER SYSTEM IMPROVEMENT CHECKLIST
(MAINS, PUMPS, AND TANKS)

An initial submission must include the following items:

1. Application form, DOH-348 completely filled out and signed by the applicant and engineer.
2. Refer to Fee Schedule for appropriate plan review fee.
3. An engineers report that addresses water supply capacity, proposed demands, pressure ranges under various flow conditions, and available flow at each proposed fire hydrant and/or other locations of concern.
4. Technical specifications signed and sealed by the engineer.
5. Complete and legible plans, signed and sealed by the engineer and suitable for construction.
6. One set of plans and specifications are required for use by this office. We will keep this copy for our records. One copy of all documents is generally adequate for the initial submission; additional copies of plans and specifications may be requested at time of approval. Electronic versions of documents may also be required at time of approval.
7. Design must be in accordance with the latest edition of "Recommended Standards for Water Works" (a.k.a. 10 State Standards) and Part 5 of the New York State Sanitary Code. Applicable AWWA Standards (latest revision) should be specified.
8. Provide verification that any construction work performed within the watershed of a public water supply source will be performed in a manner considered satisfactory to the water supplier and in compliance with any existing Watershed Rules and Regulations.
9. The Design Professional will be required to submit scanned copies of the approved documents to the OCHD within 30 days following OCHD approval. Please provide an email address that will be used to submit these documents so that it can be entered in our Sharefile system. Failure to submit these documents may delay our review and/or approval of subsequent projects.

Installation, separation and protection of watermains:

1. Refer to sections 8.7-8.13 of "Recommended Standards for Water Works".
2. Provide clear plan views and profiles of all proposed water lines and other facilities. Provide 2' contours on plans. Plans shall be drawn at a scale no smaller than 1 inch = 60 feet.
3. Provide 10' minimum horizontal separation between water lines and pipe lines carrying non-potable water (e.g. sanitary sewer, storm sewer, fire suppression, etc.) or design alternative protection.
4. At crossings:
   a. Provide 18" min. vertical separation or design alternative protection.
   b. Alternative protection must be addressed in the engineer's report and approved on a case by case basis.
   c. A full length of each pipe must be centered on the crossing.
5. Provide 10' minimum between waterline joints and pipes carrying non-potable water, or provide alternate protection.
6. Provide valves on each side of any major stream crossing. See requirements in section 8.9 of "Recommended Standards for Water Works."
7. Show 100 year flood elevation where applicable.
8. Describe backflow prevention where applicable. All containment backflow prevention devices (i.e. those separating the building from the water system) must either be included, or be separately approved by this office.
9. Review documents to ensure compliance with the "No Lead Law".

Domestic flow:

1. Normal working pressure must be 35 psi min., 100 psi max. 60 psi recommended.
2. Calculate added demand created by project: avg. day, max. day, max. hour.
3. Can the existing system handle the proposed additional flow?
4. Provide pressure reducing devices on the main when pressure is expected to exceed 100 psi. Individual household devices are not generally acceptable.

Fire flow design:

1. Provide hydrant flow test results. Show the location and elevation of the test hydrants.
2. 20 psi min. pressure must be maintained in all mains under the fire flow conditions.
3. Provide blow-offs or hydrants at low points, air relief valves or hydrants at high points.
4. Indicate size and material of service lines. Provide larger diameter lines for longer service lines. Provide a connection detail.
5. Hydrants should be located to facilitate flushing and to provide air relief at high points.
6. Hardy-Cross analysis may be required for extensive projects.
7. We request that plan submittals include a determination of flow available at all proposed fire hydrants (and/or any other areas of concern), while maintaining the necessary minimum of 20 psi at all points in the distribution system. We also request that one (1) of the following notes be placed on the plans at a prominent location (and will also be a condition that will appear on our certificate of approval):

   This project has demonstrated an available flow of _____ gpm while maintaining a minimum of 20 psi at all points in the distribution system. This value should be compared to the Needed Fire Flow (NFF) for the proposed construction in accordance with the Insurance Services Office (ISO) guidelines, per the Recommended Standards for Water Works (NYS Sanitary Code Part 5, Appendix 5-A). The Needed Fire Flow for the proposed construction has not been evaluated by the Orange County Dept. of Health.

   Or

   This project has indicated the intention to provide adequate fire flow by the proposed installation of sprinkler systems meeting NFPA requirements, and is; therefore, considered exempt from the Needed Fire Flow guidelines of the Insurance Services Office (ISO). The proposed sprinkler system design has not been evaluated by the Orange County Dept. of Health for compliance with NFPA requirements.

Pipe and appurtenances:

1. Refer to sections 8.0-8.6 of "Recommended Standards for Water Works".
2. Specify the material of pipe. PVC pipe should comply with AWWA C900, ductile iron should comply with AWWA C151, and copper service lines should be type K or heavier. Indicate the type of joints.
3. Fittings: Meet AWWA Standards (include valves, wet taps, and hydrants).
4. Valves – type, spacing (500' max. commercial, 800' max. residential).
5. Thrust restraint (rodding and/or thrust blocks).
6. Blowoffs or hydrants at low points, air relief valves or hydrants at high points.
7. Refer to section 8.4 for hydrants, in particular section 8.4.4 regarding hydrant drainage. Note on plans and/or specifications that hydrant drains are to be plugged if groundwater is expected within 2 ft. or less below base. When drains are plugged, the barrels must be pumped out after use and these hydrants must be marked/labeled to indicate as such.
8. Indicate size and material of service lines. Provide larger diameter lines for longer service lines. Provide a connection detail.
9. Installation (as per AWWA C600 for ductile iron, C605 for PVC):
   a. Trench (bedding, cover, width, backfill material, etc.)
   b. During construction, provide watertight plugs in end of pipes while work is not in process.
   c. Leakage and hydrostatic pressure testing (testing at 1.5 times working pressure).
   d. Maximum deflection at joints.

10. Disinfection as per AWWA C651 (tablet method not accepted). Describe bacteriological sampling.

Chambers: Pumping, metering, buried tanks, etc.:

1. Show all valving and piping. Provide bypass if appropriate.
2. Address drainage of the structure, protection from flooding and flotation.
3. Provide appropriate instrumentation, gauges, etc.
4. Address ventilation, lighting, and access relative to confined space regulations.

Pumping facilities:

1. Refer to section 6 of "Recommended Standards for Water Works."
2. Provide performance curves and catalog cuts.
3. If water is to be pumped through existing lines, flow tests must be performed.
4. There should typically be redundant pumps and bypass piping.
5. Provide a narrative description of controls and pump performance throughout expected pressure range.
6. Address any need for auxiliary power.

Water storage tanks:

1. Refer to section 7 of "Recommended Standards for Water Works."
2. Grading and drainage around tank.
3. Protection from vandalism (lock covers, block access to ladder, provide fencing if appropriate).
4. Adequate storage capacity for average daily flow (and fire flow if applicable).
5. Structural design (ring wall, foundation, welds).
6. Accessories: silt stop, manholes, vents, ladders.
7. Overflow: designed for max. pumping rate, discharge 12"-24" above grade, screened. Address drainage.
8. Provide facilities for draining the tank. Separate inlet and outlet recommended to improve turnover.
9. Description of control settings (alarms, if appropriate) and pressure provided.
10. Disinfection and bacteriological testing as per AWWA 652.
11. Interior coating must be NSF approved, or equivalent.
12. Specify testing for VOC's if paint or sealant contains organic chemicals.
13. Address turnover and frost protection.
14. Address any need for altitude valves.
15. Address any need for cathodic protection.

Hydropneumatic systems:

1. Refer to section 7.2 of "Recommended Standards for Water Works."
2. Generally not acceptable for fire flow or systems over 150 service connections.
3. Capacity of pumps into tank(s) $\geq$10 times average daily demand.
4. Gross volume of tank $\geq$10 times pump capacity.
5. Accessories: access manhole, site glass, drain, pressure gages.
6. Address controls (level controls, pressure controls).
7. Address required system pressure.
8. Interior coating must be NSF approved, or equivalent.
9. Protection from vandalism.
10. Address the need for adding air.
11. Address frost protection.