Guidelines for Design of
Potable Water Distribution Facilities
In New Developments

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1. Development Review Process for Potable Water Distribution Facilities
   a. These guidelines apply to potable water distribution facilities that are designed and constructed by developers as part of new developments located within the OUC water service area, and that are subsequently conveyed to OUC for ownership, operation and maintenance.
   b. Potable water distribution facilities consist of pipes, fittings, valves, fire hydrants, blow-offs, casing pipes, service lines, meters, meter boxes, backflow preventers owned and maintained by OUC, and any other appurtenances that are required to deliver potable water to customer points of service, measure water usage, and protect the potable water distribution system.
   c. The overall objective of OUC's development review process for potable water distribution facilities is to obtain facilities that meet OUC's standards, can be efficiently and effectively operated and maintained at reasonable cost and at minimum risk to OUC and the public, and can eventually be replaced at reasonable cost and at minimum risk to OUC and the public.
   d. OUC's development review process for potable water distribution facilities generally consists of four (4) phases:
      1. Phase 1 is receipt of initial submittals and coordination with other OUC services, which is facilitated by OUC's Development Services;
      2. Phase 2 is pre-construction design review and approval, which is conducted by OUC's Water Business Unit, Water Resources and Engineering Division (WRE);
      3. Phase 3 is construction inspection and acceptance, which is conducted by OUC's Water Business Unit, Water Distribution Division (WDIS);
      4. Phase 4 is post-construction document review and acceptance, which is conducted by both WDIS and WRE.

2. Phase 1: Receipt of Initial Submittals & Coordination with Other OUC Services
    a. Initial submittals for potable water distribution facilities must be submitted to OUC Development Services to initiate the pre-construction design review and approval process. OUC Development Services will describe other services that OUC could provide to the development, and will serve as coordinator between the developer and OUC departments directly responsible for design review and approval.
    b. Initial submittals for potable water distribution facilities shall consist of initial design drawings, specifications and the Water Engineering Design Information Request.
    c. Initial design drawings for potable water distribution facilities shall consist of site plan and details; all utility plan, profile and detail drawings, including potable water; roadway plan, profile and detail; and other drawings requested by OUC.
    d. Initial submittals for potable water distribution facilities must be submitted together as a package. The pre-construction design review and approval phase will not commence until all materials are received by OUC WRE through Development Services.

3. Phase 2: Pre-Construction Design Review & Approval
    a. General
        1. All design drawings, specifications and Florida Department of Environmental Protection (FDEP) permits for the construction of potable water distribution facilities serving new developments located within the OUC water service area must be reviewed and approved by WRE prior to the start of construction.
        2. Developers should use these guidelines as a guide when preparing design drawings, specifications and FDEP permits for the construction of potable water distribution facilities serving new developments located within the OUC water service area.
        3. These guidelines are not intended to be all-inclusive. Compliance with these guidelines does not impose any obligation on WRE to approve the overall design. WRE' review and approval of design drawings, specifications and FDEP permits for potable water distribution facilities will consider adherence to these guidelines, as well as other considerations, such as the acceptability of the overall design, including the impact of the new development on the overall OUC potable water distribution system; OUC administrative policies related to potable water distribution facilities; regulations pertaining to potable water distribution facilities; other standards that conform to good engineering practice; and reasonable engineering judgment exercised by WRE.
        4. The developer must submit all permits, including FDEP permit, and other materials requested by WRE to complete its review. Permits and other materials must be submitted in a form acceptable to WRE.

5. These guidelines for design of potable water distribution facilities in new developments are subject to change without prior notice.

b. Design Guidelines

1. Pipe Size and Layout: Pipes shall be sized to handle domestic and fire flow water demands. Design pipe velocity shall not exceed 7 feet per second. Detention time of water in pipes shall be considered for water quality purposes. When fire flow water demands dictate large pipes, and such pipes carry small domestic water demands, dual pipes or other appropriate measures shall be incorporated into the design to maintain satisfactory water quality. Pipes within the development shall generally be laid out in a grid or loop fashion. Dead-end pipes shall be avoided. If they cannot be avoided, a blow-off or other acceptable flushing device shall be installed at an appropriate location. If flushing of the pipelines is required in order to maintain water quality whether for large pipes or dead end pipes, the developer will be responsible for the cost and installation of the flushing device and all costs and permitting required for the disposal of the flushing water. If requested by WRE, the developer shall submit hydraulic modeling results to verify performance of the proposed pipe system.

2. Location: Pipes shall be located in publicly dedicated road rights-of-way, preferably in the area between the edge of roadway and the right-of-way line. Pipes shall generally run parallel to, and a consistent distance from, the centerline of the road. Potable water distribution facilities shall not be located under retention ponds, retention pond berms, landscaping mounds, tennis courts, or any type of structures. Generally, they shall not be installed along side or rear lot lines.

3. Design Pressure: All pipes and appurtenances shall be designed to maintain a minimum pressure of 35 PSI at all points in the distribution system under all flow conditions. The normal working distribution system pressure shall be 55 PSI or greater. The minimum design pressure under coincident fire flow demands plus maximum day demands shall comply with the requirements of the fire department having jurisdiction, but shall not be less than 20 PSI at the design fire flow location.

4. Fire Hydrant Location and Spacing: The location and spacing of fire hydrants shall comply with the requirements of the fire department having jurisdiction. The design fire flow demands, and the location and spacing of fire hydrants must be reviewed and approved by the fire department having jurisdiction prior to final approval of the potable water distribution facilities design by WRE.

5. Valves: Valves shall be located so as to facilitate isolation of pipe segments for the purpose of making repairs or maintaining potable water distribution facilities, or to facilitate future expansion of the system. Valves in commercial, industrial, and high-density residential areas shall be spaced at 1000-foot intervals or less. Valves shall be provided at all locations where pipes

intersect. No more than 3 valve closures shall be necessary to isolate any pipe segment.

6. Separation From Other Utilities: Potable water distribution facilities shall be separated from other parallel, underground utilities by at least 3 feet, measured from the outside edge of the potable water distribution facility to the nearest outside edge of the other utility. Wider separation requirements may apply to critical pipes, large diameter pipes and pipes that have large amounts of cover. The design shall also comply with FDEP separation requirements.

7. Water Services: Water services shall be for domestic, irrigation or fire service. Water services shall be limited to 1", 2", 4", 6", 8" and 10" diameter pipes. OUC WDIS personnel or others authorized by OUC WDIS shall connect water services to existing distribution pipes owned, operated and maintained by OUC; such connections shall not be made until after payment of applicable fees and charges. All service connections to existing or new potable water distribution pipes shall be located on the same side of the pipe as the customer is located. Water services shall not be located on side or rear lot lines. All water services shall be terminated at the right-of-way line. All services shall be designed in accordance with requirements established by WRE.

8. Meters: All domestic and irrigation water services shall be metered. The meter size, type and location shall be approved by WRE. Meter size shall be determined based on design flows, water quality considerations, meter accuracy, customer/developer requirements and water conservation considerations. Meter installation design is subject to WRE approval.

9. Domestic and Metered Fire Protection Services: When both domestic and fire protection service is requested, OUC will determine how such service will be provided. This is determined after consideration of the customer's/developer's needs and OUC's needs, such as water quality and accurate metering. At OUC's option, these services can be provided through the installation of a dual range meter, or through a separate meter for domestic service and a separate unmetered fire service.

10. Cross Connection Control: In order to protect the potable water distribution system from contamination or pollution due to cross connections, appropriate OUC-approved backflow prevention devices are required where there is an actual or potential cross connection.

11. Detail Sheet: The design of potable water distribution facilities must comply with, and the design drawings must contain, the most recent Water Detail Sheet & Installation Instructions.

12. Additional Design Guidelines Applicable to Potable Water Distribution Facilities Installed on Private Property: All potable water distribution facilities owned, operated and maintained by OUC shall be installed within publicly dedicated road rights-of-way. OUC may own, operate and maintain potable

water distribution facilities located on private property if the following minimum criteria are met in addition to the other guidelines for design set forth in this document. These additional guidelines are intended to minimize the potential for damage to private property in the event of a water pipe break, provide space and clearance for operation and maintenance activities, provide access by OUC personnel and OUC contractors, and reduce risk to OUC:

1) If the development contains road rights-of-way that are sixty (60) feet wide, and the potable water distribution facilities are installed within the rights-of-way, some or all of these additional design guidelines may be waived by WRE.

2) It must be advantageous to the overall integrity of OUC's water system as determined by WRE.

3) The maximum cover from ground surface to the top of distribution pipes shall not exceed four (4) feet.

4) All distribution pipes that run generally parallel to curbs or gutters shall be located four (4) feet or more from the curb or gutter, measured from the edge of curb or gutter to the nearest edge of the pipe.

5) All distribution pipes shall be located eighteen (18) feet or more from the edge of buildings, measured from the edge of the building, including any roof overhang, to the nearest edge of the pipe.

6) All distribution pipes shall have a minimum of eighteen (18) feet clear workspace over the entire length of the pipe. The clear space shall exist at ground surface and above, and shall be measured at right angles to the pipe. A minimum of six (6) feet of clear space shall be provided on one side of the pipe, with the remainder provided on the opposite side of the pipe. No permanent structures, obstructions, trees, or vehicle parking spaces are allowed within the clear workspace. If the clear workspace covers any portion of a roadway used for vehicular traffic, a minimum ten (10) foot wide travel lane shall be available outside of, but adjacent to, the clear workspace for temporary movement of traffic during operation or maintenance activities.

7) Service lines, meters, meter boxes and backflow preventers owned and maintained by OUC shall be located a minimum of ten (10) feet from buildings, including roof overhangs, structures and tree trunks, measured from outside edge to outside edge.

8) Meters, meter boxes and backflow preventers owned and maintained by OUC shall be located in grass areas.

9) All potable water distribution facilities shall be installed in easements which provide OUC with certain minimum rights, place certain restrictions on the property owner, and are in a form acceptable to WRE and the OUC Property Section. During plan review the reviewer will provide information on the type and size of the easement required. The clear workspace shall serve as the easement for distribution pipes

unless otherwise required by OUC. Service lines, meters, meter boxes and backflow preventers owned and maintained by OUC shall be centered in eight (8) feet wide easements. Additional easement widths shall be provided when the pipe diameter or depth of cover so dictate, or when other utilities are allowed to occupy the easement.

10) Developer, as a condition of final acceptance by OUC, shall provide an as-built survey prepared by a registered surveyor to verify compliance with these guidelines. Survey shall be provided in a form acceptable to WRE.

11) If the development restricts access by means of a security gate, the property owner shall provide OUC with an agreement that provides for immediate, unrestricted access by any OUC employee and equipment at any time. The agreement shall be in a form acceptable to OUC.

12) Other requirements may be imposed by WRE depending on the nature of the development.

4. Phase 3: Construction Inspection and Acceptance

   a. All potable water distribution facilities that are conveyed to OUC for ownership, operation and maintenance are subject to inspection and acceptance by OUC personnel in accordance with the OUC Construction Standards Manual.

5. Phase 4: Post-Construction Document Review and Acceptance

   a. All post-construction documents identified in the OUC Construction Standards Manual must be submitted by the developer to OUC for review and approval prior to OUC accepting the facilities for ownership, operation and maintenance. All documents must be in a form acceptable to OUC.