

**Agenda
Item
VII.A.**

State of Oregon

Board memo

Building Codes Division

August 15, 2008

To: Oregon State Plumbing Board

From: Terry Swisher
Chief Plumbing Inspector

Subject: Commercial Water Conservation Systems Statewide Alternate Method Ruling No. OPSC 08-4

Action requested:

Review and approve the scientific and technical facts for water conservation systems in commercial and industrial structures as an alternate statewide method. The statewide alternate method addresses using treated wastewater for flushing toilets and urinals in commercial and industrial structures.

Background:

On June 20, 2008, the division presented to the board a statewide alternate method for plumbing systems that conserve water from certain plumbing fixtures, and specifying standards for the design and installation of non-potable water systems. At that time, the board approved the scientific and technical facts related to an alternate method ruling for water conservation systems for flushing toilets and urinals in residential structures and also product listings and standards associated with water conservation systems. The division has developed an alternate method to address commercial and industrial installations and is presenting it to the board for review of the scientific and technical facts. The previously approved products listed by any ANSI accredited listing program and recognized IAPMO IGC 207-2006 and CSA B128.1-2006 product standards are considered applicable under the proposed alternate method.

The division proposes the following scientific and technical facts for the alternate method. Many of the listed products are designed for commercial and industrial use. Commercial and industrial water conservation systems are being installed in California, New Mexico, Arizona, Washington, New York, Massachusetts, Texas, Vermont, and Utah. These states have used codes (including nationally recognized code standards published by the International Code Council (ICC) and the International Association of Plumbing and Mechanical Officials (IAPMO)), and statutes and rules to set standards for water conservation system installations. The approved product standards are not limited to only residential installations.

Recommendation:

Review and approve the scientific and technical facts relating to the attached statewide alternate method for commercial and industrial water conservation systems.

The following scientific and technical facts apply to commercial and industrial water conservation systems:

- Two acceptable standards for performance and installation of non-potable water conservation systems include IAPMO IGC 207-2006 and CSA B128.1-2006.
- Commercial water conservation systems are being installed in California, New Mexico, Arizona, Washington, New York, Massachusetts, Texas, Vermont, and Utah. These states have used codes (including nationally recognized code standards published by the International Code Council (ICC) and the International Association of Plumbing and Mechanical Officials (IAPMO) as the basis for the installations.

Approved commercial and industrial water conservation systems shall be installed as per the statewide plumbing code, the attached ruling, and any ANSI accredited product listings and to manufacturer's installation instructions.

Plumbing products related to this alternate method ruling and listed by any ANSI accredited product listing program, are approved for sale and installation in Oregon.

The alternate method and product standards are attached.

State of Oregon
Building Codes Division

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Alternate Method Ruling No. OPSC 08-4
(ORS 455.060)

Proposed for August 15, 2008

Approval of commercial and industrial wastewater conservation systems as an alternate method of providing water for flushing toilets and urinals

Statewide alternate methods are approved by the division administrator in consultation with the appropriate advisory board. The advisory board's review includes technical and scientific facts of the proposed alternate method. In addition:

- *Building officials shall approve the use of any material, design or method of constriction addressed in a statewide alternate method;*
- *The decision to use a statewide alternate method is at the discretion of the designer; and*
- *Statewide alternate methods do not limit the authority of the building official to consider other proposed alternate methods encompassing the same subject matter.*

Initiated By: The Building Codes Division

Applicable code sections:

None

Background:

Commercial or industrial wastewater conservation systems treat and distribute untreated wastewater that has not come into contact with toilet waste for the purpose of flushing toilets and urinals in commercial or industrial structures. Water conservation system water is limited to water used in bathtubs, showers, bathroom wash basins, clothes-washers, and laundry tubs. This ruling does not include wastewater from toilets, urinals, kitchen sinks or dishwashers.

A number of other states allow commercial and industrial wastewater conservation systems under plumbing codes and through alternate methods. Water conservation systems are being installed in commercial and residential structures in California, New Mexico, Arizona, Washington, New York, Massachusetts, Texas, Vermont, and Utah.

Procedural history:

The division initiated this alternate method ruling as a means of addressing sustainability in Oregon. On June 20, 2008, the division presented a statewide alternate method for plumbing systems that conserve water from certain plumbing fixtures, by specifying standards for the design and installation of non-potable water systems. At that time, the board approved both scientific and technical facts related to an alternate method ruling for water conservation systems for flushing toilets and urinals in residential structures and product listing and standards associated with water conservation systems. The division has developed this alternate method to address commercial and industrial installations.

Technical discussion:

Under Oregon law, when the division considers making an alternate method ruling on a method of construction, it must consider “standards and interpretations published by the body that promulgates any nationally recognized model code adopted as a specialty code of this state.” ORS 455.060.

The International Code Council (ICC) through its Evaluative Services and in the text of the International Plumbing Code (IPC), recognizes commercial or industrial water conservation systems. The IPC indicates that with adequate conditions placed upon installation and use, water conservation systems are effective. In terms of authoritativeness, several ICC model codes form the basis of the state building code in Oregon. Commercial water conservation systems are also listed by the International Association of Plumbing and Mechanical Officials (IAPMO), which promulgates the model plumbing code currently adopted by Oregon.

IAPMO has the following product standard for water conservation systems, IAPMO IGC 207-2006. In addition to this standard by the entity that publishes Oregon’s model codes, another authoritative source, the Canadian Standards Association (CSA) publishes CSA B128.1-2006 as the standard for water conservation systems. Neither standard is limited to residential installations.

Facts:

As approved by the Oregon State Plumbing Board, the following scientific and technical facts apply to commercial and industrial water conservation systems as an alternate method:

- The acceptable standards for performance and installation of commercial or industrial water conservation systems includes IAPMO IGC 207-2006 and CSA B128.1-2006.
- Commercial and residential water conservation systems are being installed in California, New Mexico, Arizona, Washington, New York, Massachusetts, Texas, Vermont, and Utah. These states have used codes (including nationally recognized codes standard published by the International Code Council (ICC) and the International Association of Plumbing and Mechanical Officials (IAPMO) as the basis for the installations.

- Approved commercial and industrial water conservation systems shall be installed as per the statewide plumbing code, the attached ruling, any ANSI accredited product listing program and the manufacturer's installation instructions.

Scope of ruling:

This ruling addresses water conservation systems for commercial and industrial installations for the use of flushing toilets and urinals. This ruling is limited to used water from bathtubs, showers, bathroom wash basins, clothes-washers, and laundry tubs. It does not include wastewater from toilets, urinals, kitchen sinks or dishwashers. The system shall have no direct connection to any potable water system. The proper system design, maintenance, and use are the responsibility of the building owner. The acceptability of commercial and industrial water conservation systems as an alternate method of construction are contingent on construction meeting the following conditions:

1. Except as otherwise provided for in this alternate method, the provisions of the Oregon plumbing code shall be applicable to commercial and industrial water conservation installations. The alternate use of commercial and industrial water conservation systems are in addition to the other requirements of the plumbing code.
2. The type of system shall be listed to the IAPMO IGC 207-2006 or CSA B128.1-2006 standard or be listed by an American National Standards Institute (ANSI) accredited product listing program. The system, except as otherwise approved, shall consist of a holding tank or tanks, pump, and automatic chemical treatment device.
3. All piping and plumbing component materials and products used in the installation of a commercial and industrial water conservation system shall be as approved for the specific use in the Oregon Plumbing Code or be listed by any ANSI accredited product listing program.
4. No commercial and industrial water conservation system or part thereof shall discharge water outside of the building served unless approved by the Oregon Department of Environmental Quality.
5. System components shall be properly identified as to the manufacturer.
6. Installation shall conform with the equipment and installation methods identified by the manufacturer and product listing.
7. A flow test shall be performed through the system to the point of water conservation use. All lines and components shall be watertight.
8. Holding tanks shall be installed per the manufacturer's installation instructions and listing, and shall be secured or anchored against overturning. Holding tanks shall be filled with water to the overflow line prior to and during inspection. All seams and joints shall be left exposed, and the tank shall remain watertight.
9. Each holding tank shall be vented as required by Chapter 9 of the plumbing code and shall have a locking, gasketed access opening or approved equivalent to allow for inspection and cleaning.

10. Each holding tank shall have its rated capacity permanently marked on the unit. In addition, a sign stating WATER CONSERVATION SYSTEM WATER, NON-POTABLE WATER shall be permanently marked on the holding tank. This signage is not required for the toilet tank.
11. Each holding tank shall have an overflow drain. The system must be designed so that the tank overflow will gravity drain to the existing sewer line or septic tank. The tank shall be protected against sewer line backflow by a backwater valve. The overflow drains shall have a connection to the building drain or building sewer, upstream of septic tanks, if any. The overflow drain shall not be equipped with a shutoff valve.
12. The overflow drain pipes shall not be less in size than the inlet pipe. The vent size shall be determined based on the total drainage fixture units as outlined in Table 7-5 of the plumbing code. Unions or equally effective fittings shall be provided for all piping connected to the holding tank.
13. Each holding tank shall be structurally designed to withstand all anticipated loads.
14. Holding tanks shall be constructed of solid, durable materials not subject to excessive corrosion or decay, both externally and internally, by an approved coating or other acceptable means and shall be watertight. Holding tanks shall meet nationally recognized standards for the intended use and be listed by an ANSI accredited listing agency.
15. Holding tanks constructed of alternate material may be approved by the municipality, provided they comply with approved applicable standards or are listed by an ANSI accredited listing agency.
16. All valves, shall be accessible. A backwater valve installed pursuant to this code shall be provided on all holding tank drain connections to the sanitary drain or sewer piping.
17. Other collection and distribution systems may be approved by the local municipality, as allowed by Section 301.0 of the plumbing code and this ruling.
18. Marking on pipe for commercial and industrial water conservation systems shall be permanent, distinct, and easily recognizable.
19. All commercial and industrial water conservation system piping shall be purple in color or be marked by a continuous purple tape, painted purple or be marked with the words NON-POTABLE WATER or with an equivalent international symbol.
20. Marking on piping shall be repeated at intervals of not more than five feet.



Universal Symbol for Non-Potable Water

Conclusion:

After considering the technical and scientific approval by the Oregon State Plumbing Board, the division rules that commercial and industrial water conservation systems are acceptable as a construction method, subject to stated limitations, and Alternate Method Ruling No. OPSC 08-4 is approved.

Mark S. Long, Administrator
Building Codes Division

Date