

AN AMERICAN NATIONAL STANDARD
IAPMO/ANSI WE•STAND 2020

WE Stand

Water Efficiency and Sanitation Standard
for the Built Environment

**READ ME
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2020

WE Stand

**Water Efficiency and Sanitation Standard
for the Built Environment**



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The Water Efficiency and Sanitation Standard (WE♠Stand) provides progressive codified requirements to optimize water use practices attributed to the built environment while maintaining protection of the public health, safety, and welfare. The need for WE♠Stand is in recognition that with increasing demand, constrained infrastructure and supplies, and pervasive droughts globally, there is a critical need to reduce water consumption attributed to the built environment through conservation and reuse. With this come increased risks to public health, safety, and building systems performance.

This second edition of WE♠Stand proudly introduces comprehensive requirements related to water quality, monitoring, design, construction, commissioning, alteration, repair, and operation requirements of blackwater and stormwater systems for non-potable water reuse. These requirements for a properly designed system, together with appropriate construction, operation, and maintenance, will help ensure blackwater and stormwater systems will be implemented safely and reliably. These requirements were each added into WE♠Stand as separate chapters. The composting toilets and urine diversion systems requirements were extracted from Chapter 4 into a separate chapter. These chapter additions resulted in several chapters to be renumbered.

IAPMO develops “full consensus” codes built on a foundation of maximum participation and agreement by a broad range of interests. This philosophy has led to producing technically sound codes that promote health and safety, yet do not stifle design or development.

The public at large is encouraged and invited to participate in the WE♠Stand development process. WE♠Stand meetings are open to the public and public input is solicited through a public proposal stage and public comment stage. The WE♠Stand updates every three years. Information regarding the WE♠Stand and its development is available at IAPMO’s website at www.iapmo.org/westand.

The 2020 WE♠Stand is supported by the Alliance for Water Efficiency (AWE), the Mechanical Contractors Association of America (MCAA), the Plumbing Contractors of America (PCA), the United Association (UA), and the World Plumbing Council (WPC). The presence of these logos, while reflecting support, does not imply ownership of the copyright to the WE♠Stand, which is held exclusively by IAPMO.

The addresses of the organizations are as follows:

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UA – Three Park Place • Annapolis, MD 21401 • 410-269-2000

WPC – World Plumbing Council Secretariat, Auf der Mauer 11 • Postfach CH 8021 • Zurich Switzerland • www.worldplumbing.org

Adoption

The WE♠Stand is available for adoption and use by jurisdictions in the United States and Internationally. Its use within a governmental jurisdiction is accomplished through adoption by reference in accordance with applicable jurisdictional laws. At adoption, jurisdictions should insert the applicable information in bracketed words in the sample ordinance. The sample legislation for adoption of the WE♠Stand on page iv provides key components, regulations, and resolutions.

Revision Markings

Solid vertical lines in the margins indicate a technical change from the requirements of the 2017 edition. An arrow in the margin indicates where an entire section, paragraph, exception, or table has been deleted, or an item in a list of items or in a table has been deleted. A reference in brackets [] following a section or paragraph indicates material that has been extracted from another document. The reprinted material is not the complete and official position of the source document on the referenced subject that is represented by the standard in its entirety.

SAMPLE LEGISLATION FOR ADOPTION OF WE♠STAND

WE♠Stand is designed to be adopted by jurisdictions through an ordinance. Jurisdictions wishing to adopt the 2020 WE♠Stand as an enforceable high efficiency provisions for the base plumbing code governing plumbing systems by reference should ensure the legal basis under which adoption and implementation are included in the ordinance.

The following sample ordinance is a guide for drafting an ordinance for adoption that addresses key components regulations and resolutions.

ORDINANCE NO.

An ordinance of the [JURISDICTION] adopting the 2020 edition of WE♠Stand, embedding high-efficiency water and energy efficient provisions into the base plumbing code regulating and controlling the design, construction, quality of materials, erection, installation, alteration, repair, location, relocation, replacement, addition to, use or maintenance of plumbing and mechanical systems in the [JURISDICTION]; providing for the issuance of permits and collection of fees therefor.

The [GOVERNING BODY] of the [JURISDICTION] does ordain as follows:

Section 1 Codes Adopted by Reference. That certain documents, three (3) copies of which are on file in the office of the [JURISDICTION'S KEEPER OF RECORDS] and the [JURISDICTION], being marked and designated as the 2020 WE♠Stand, including Appendix Chapters [FILL IN THE APPENDIX CHAPTERS BEING ADOPTED], as published by the International Association of Plumbing and Mechanical Officials, be and is hereby adopted as the Code of the [JURISDICTION], in the State of [STATE NAME] embedding high-efficiency water and energy efficient provisions into the base plumbing code regulating and controlling the design, construction, quality of materials, erection, installation, alteration, repair, location, relocation, replacement, addition to, use or maintenance of plumbing and mechanical systems as herein provided; providing for the issuance of permits and collection of fees therefor; and each and all of the regulations, provisions, penalties, conditions and terms of such 2020 WE♠Stand on file in the office of the [JURISDICTION] are hereby referred to, adopted, and made a part hereof, as if fully set out in this ordinance.

Section 2 Modifications. The following sections are hereby revised:

Section 101.1. Insert: [NAME OF JURISDICTION]

Section 104.5. Insert: [APPROPRIATE FEE SCHEDULE]

Section 3 Conflicting Ordinances Repealed. That Ordinance No. of [JURISDICTION] entitled [TITLE OF THE ORDINANCE OR ORDINANCES IN EFFECT AT THE PRESENT TIME SO THAT THEY WILL BE REPEALED BY MENTION] and all other ordinances or parts of ordinances in conflict herewith are hereby repealed.

Section 4 Preemption. [JURISDICTION] hereby fully occupies and preempts the entire field of water and energy efficiency provisions for the base code for regulation of design, construction, quality of materials, erection, installation, alteration, repair, location, relocation, replacement, addition to, use or maintenance of plumbing and mechanical systems; and provision for the issuance of permits and collection of fees therefor; within the boundaries of [JURISDICTION]. [AS APPROPRIATE] Cities, towns, and counties or other municipalities may enact only those laws and ordinances relating to this field as specifically authorized by state law and consistent with this ordinance. Local laws and ordinances that are inconsistent with, and, or, less efficient in terms of water or energy savings [ORDINANCE NO.] shall not be enacted and are hereby expressly preempted and repealed, regardless of the nature of the code, charter, or home rule status of such city, town, county, or municipality.

Section 5 Severability. That if any section, subsection, sentence, clause or phrase of this ordinance is, for any reason, held to be unconstitutional, such decision shall not affect the validity of the remaining portions of this ordinance. The [GOVERNING BODY] hereby declares that it would have passed this ordinance, and each section, subsection, clause or phrase thereof, irrespective of the fact that any one or more sections, subsections, sentences, clauses and phrases be declared unconstitutional.

Section 6 Legal Notice. That the [JURISDICTION'S KEEPER OF RECORDS] is hereby ordered and directed to cause this ordinance to be published. (An additional provision may be required to direct the number of times the ordinance is to be published and to specify that it is to be in a newspaper in general circulation. Posting may also be required.)

Section 7 Violations and Penalties. [INCORPORATE PENALTIES FOR VIOLATIONS]

Section 8 Effective Date. That this ordinance and the rules, regulations, provisions, requirements, orders and matters established and adopted hereby shall take effect and be in full force and effect [TIME PERIOD] from and after the date of its final passage and adoption.

These lists represent the membership at the time the Committee approved the final text of this edition. Since that time, changes in the membership may have occurred.

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COMMITTEE MEMBERSHIP CLASSIFICATION ABBREVIATIONS

These classifications apply to Technical Committee members and represent their principal interest in the activity of a committee.

C	Consumer: A person who is or represents the ultimate purchaser of a product, system or service affected by the Document but who is not a User as defined in 3-2.5.1(g).
DP	Design Professional: A person who is in the business of designing systems affected by the standard.
E	Enforcing Authority: A representative of an agency or an organization that promulgates or enforces the Document.
I/M	Installer/Maintainer: A representative of an entity that is in the business of installing or maintaining a product, assembly, or system affected by the Document.
L	Labor: A labor representative or employee concerned with safety in the workplace within the scope of the Document.
M	Manufacturer: A representative of a maker or marketer of a product, assembly or system, or portion thereof, that is affected by the Document.
U	User: A representative of an entity that is subject to the provisions of the Document or that voluntarily uses the Document.
SE	Special Expert: A person not representing 3.5.6 (a) through (g) and who has special expertise in the scope of the Document or portion thereof.

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CHAPTER 1

ADMINISTRATION

101.0 Title, Scope, and General.

101.1 Title. This document shall be known as the “Water Efficiency and Sanitation Standard (WEStand),” shall be cited as such, and will be referred to herein as “this standard.”

101.2 Purpose. The purpose of this standard is to provide minimum requirements to optimize water use practices attributed to the built environment while maintaining protection of the public health, safety and welfare. This standard is not intended to circumvent the health, safety and general welfare requirements of the codes referenced in Section 101.6.

101.3 Plans Required. The Authority Having Jurisdiction shall be permitted to require the submission of plans, specifications, drawings, and such other information as the Authority Having Jurisdiction may deem necessary, prior to the commencement of, and at any time during the progress of, any work regulated by this standard. The issuance of a permit upon plans and specifications shall not prevent the Authority Having Jurisdiction from thereafter requiring the correction of errors in said plans and specifications or from preventing construction operations being carried on thereunder when in violation of this standard or of any other pertinent ordinance or from revoking any certificate of approval when issued in error.

101.4 Scope. The provisions of this standard shall apply to the erection, installation, alteration, repair, relocation, replacement, addition to, use, or maintenance of plumbing and mechanical systems covered by the scope of this standard within this jurisdiction.

101.4.1 Repairs and Alterations. In existing buildings or premises in which plumbing and mechanical installations that were designed and installed in accordance with this standard are to be altered, repaired, or renovated, deviations from the provisions of this standard are permitted, provided such deviations are found to be necessary and are first approved by the Authority Having Jurisdiction.

101.4.2 Existing Construction. No provision of this standard shall be deemed to require a change in any portion of a plumbing or mechanical system or any other work regulated by this standard in or on an existing building or lot when such work was installed and is maintained in accordance with law in effect prior to the effective date of this standard, except when any such plumbing or mechanical system is determined by the Authority Having Jurisdiction to be dangerous, unsafe, insanitary, a nuisance or a menace to life, health, or property.

101.5 Appendices. The provisions in the appendices are intended to augment the requirements of this standard and shall not be considered part of this standard unless formally adopted as such.

101.6 Referenced Codes and Standards. The codes and standards referenced in this standard shall be considered part of the requirements of this standard to the prescribed extent of each such reference.

101.6.1 Building. The provisions of the building code shall apply to the construction, alteration, movement, enlargement, replacement, repair, use and occupancy, location, maintenance, removal and demolition of every structure or any appurtenances connected or attached to such buildings or structures.

101.6.2 Electrical. The provisions of the electrical code shall apply to the installation of electrical systems, including but not limited to, alterations, repair, replacement, equipment, appliances, fixtures, fittings, and appurtenances thereto.

101.6.3 Mechanical. The provisions of the mechanical code shall apply to the installation, alterations, repair and replacement of mechanical systems, including equipment, appliances, including ventilating, heating, cooling, air-conditioning and refrigeration systems. Where a mechanical code is not adopted or where the content of the mechanical code adopted by the jurisdiction is not applicable, then mechanical code shall mean the Uniform Mechanical Code (UMC) promulgated by the International Association of Plumbing and Mechanical Officials (IAPMO).

101.6.4 Plumbing. The provisions of the plumbing code shall apply to the installation, alteration, repair and replacement of plumbing systems, including equipment, appliances, fixtures, fittings and appurtenances. Where a plumbing code is not adopted or where the content of the plumbing code adopted by the jurisdiction is not applicable, then plumbing code shall mean the Uniform Plumbing Code (UPC) promulgated by the International Association of Plumbing and Mechanical Officials (IAPMO).

101.6.5 Solar. Solar energy systems shall be installed in accordance with the Uniform Solar Energy Code (USEC) promulgated by the International Association of Plumbing and Mechanical Officials (IAPMO).

101.6.6 Swimming Pool. The provisions of the swimming pool code shall apply to the erection, installation, alteration, repair, relocation, replacement, addition to, use and maintenance of swimming pools, spas, or hot tub systems. Where a swimming pool code is not adopted or where the content of the swimming pool code adopted by the jurisdiction is not applicable, then swimming pool code shall mean the Uniform Swimming Pool, Spa & Hot Tub Code (USPSHTC) promulgated by the International Association of Plumbing and Mechanical Officials (IAPMO).

101.7 Conflicts. Where, in any specific case, different sections of this standard or referenced standards specify different materials, methods of construction, or other require-

ments, the most restrictive shall govern as determined by the Authority Having Jurisdiction. When there is a conflict between a general requirement and a specific requirement, the specific requirement shall be applicable.

102.0 Alternate Materials, Designs, and Methods of Construction Equivalency.

102.1 General. Nothing in this standard is intended to prevent the use of systems, methods, or devices of equivalent or superior quality, strength, fire resistance, effectiveness, durability, and safety over those prescribed by this standard. Technical documentation shall be submitted to the Authority Having Jurisdiction to demonstrate equivalency. The Authority Having Jurisdiction shall have the authority to approve or disapprove the system, method, or device for the intended purpose.

However, the exercise of this discretionary approval by the Authority Having Jurisdiction shall have no effect beyond the jurisdictional boundaries of said Authority Having Jurisdiction. Any alternate material or method of construction so approved shall not be considered as in accordance with the requirements, intent or both of this standard for any purpose other than that granted by the Authority Having Jurisdiction when the submitted data does not prove equivalency.

103.0 Plans and Specifications.

103.1 Construction Documents. Construction documents, engineering calculations, diagrams, and other data shall be submitted in two or more sets with each application for a permit. The construction documents, computations, and specifications shall be prepared by, and the plumbing designed by, a registered design professional. Construction documents shall be drawn to scale with clarity to identify that the intended work to be performed is in accordance with the code.

Exception: The Authority Having Jurisdiction shall be permitted to waive the submission of construction documents, calculations, or other data where the Authority Having Jurisdiction finds that the nature of the work applied for is such that reviewing of construction documents is not necessary to obtain compliance with this standard.

103.2 Supplemental Information. Supplemental information necessary to verify compliance with this standard, such as calculations, worksheets, compliance forms, product listings, or other data, shall be made available when required by the Authority Having Jurisdiction.

104.0 Permit Issuance.

104.1 Permit Issuance. The application, construction documents, and other data filed by an applicant for a permit shall be reviewed by the Authority Having Jurisdiction. Such plans shall be permitted to be reviewed by other departments of this jurisdiction to verify compliance with applicable laws under their jurisdiction. Where the Authority Having Jurisdiction finds that the work described in an application for permit and the plans, specifications, and other data filed there-

with are in accordance with the requirements of the code and other pertinent laws and ordinances, and that the fees specified in Section 104.3 have been paid, the Authority Having Jurisdiction shall issue a permit therefore to the applicant.

104.2 Approved Plans or Construction Documents.

Where the Authority Having Jurisdiction issues the permit where plans are required, the Authority Having Jurisdiction shall endorse in writing or stamp the construction documents "APPROVED." Such approved construction documents shall not be changed, modified, or altered without authorization from the Authority Having Jurisdiction, and the work shall be done in accordance with approved plans.

104.3 Permit Fees. The fees shall be determined and adopted by the Authority Having Jurisdiction.

105.0 Inspections.

105.1 General. Plumbing and mechanical systems for which a permit is required by this standard or the applicable code shall be inspected by the Authority Having Jurisdiction. No portion of any plumbing or mechanical system shall be concealed until inspected and approved. Neither the Authority Having Jurisdiction nor the jurisdiction shall be liable for expense entailed in the removal or replacement of material required to permit inspection. When the installation of a plumbing or mechanical system is complete, an additional and final inspection shall be made.

106.0 Connection Approval.

106.1 Connections. No person shall make connection to any plumbing system regulated by this standard for which a permit is required unless approved by the Authority Having Jurisdiction.

106.2 Energy Connections. No person shall make connections from a source of energy or fuel to any system or equipment regulated by this standard and for which a permit is required until approved by the Authority Having Jurisdiction.

106.3 Temporary Connections. The Authority Having Jurisdiction shall be permitted to authorize temporary connection of the plumbing or mechanical equipment to the source of energy or fuel for the purpose of testing the equipment.

107.0 Maintenance.

107.1 General. Plumbing and mechanical systems, materials, and appurtenances, both existing and new, and parts thereof shall be maintained in proper operating condition in accordance with the original design and in a safe and hazard-free condition. Devices or safeguards that are required by this standard shall be maintained in conformance with the standard edition under which installed. The owner or the owner's designated agent shall be responsible for maintenance of plumbing and mechanical systems and equipment. To determine compliance with this subsection, the Authority Having Jurisdiction shall be permitted to cause a plumbing or mechanical system or equipment to be reinspected.

107.2 Information Required. Information, such as manufacturer's instructions, owner's manuals or other information shall be provided for all products and systems that require regular maintenance to achieve the effective use of energy and water. A maintenance schedule that includes clear instructions of the maintenance action and makes reference to the owner's manual shall be required and made available.

CHAPTER 2

DEFINITIONS

201.0 General. For the purpose of this standard, the following terms have the meanings indicated in this chapter.

No attempt is made to define ordinary words, which are used in accordance with their established dictionary meanings, except where a word has been used loosely and it is necessary to define its meaning as used in this standard to avoid misunderstanding.

The definitions of terms are arranged alphabetically according to the first word of the term.

202.0 Definition of Terms.

203.0 –A–

Accessible. Where applied to a fixture, connection, appliance, or equipment, “accessible” means having access thereto, but which first may require the removal of an access panel, door, or similar obstruction.

Air Gap, Drainage. The unobstructed vertical distance through the free atmosphere between the lowest opening from a pipe, plumbing fixture, appliance, or appurtenance conveying waste to the flood-level rim of the receptor.

Air Gap, Water Distribution. The unobstructed vertical distance through the free atmosphere between the lowest opening from a pipe or faucet conveying potable water to the flood-level rim of a tank, vat, or fixture.

Alternate Water Source. Nonpotable source of water that includes but not limited to gray water, on-site treated nonpotable water, rainwater, and reclaimed (recycled) water.

Authority Having Jurisdiction. The organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, installations, or procedures. The Authority Having Jurisdiction shall be a federal, state, local, or other regional department or an individual such as a plumbing official, mechanical official, labor department official, health department official, building official, or others having statutory authority. In the absence of a statutory authority, the Authority Having Jurisdiction may be some other responsible party. This definition shall include the Authority Having Jurisdiction’s duly authorized representative.

204.0 –B–

Blackwater. Waste water containing bodily or other biological wastes discharged from toilets and kitchen sink waste.

Bottle Filling Station. A plumbing fixture that is connected to the potable water distribution and building drainage system that is designed and intended for filling personal use drinking water bottles or containers not less than 10 inches (250 mm) in height. Such fixtures can be separate from or integral to a drinking fountain and can incorporate a water filter and a cooling system for chilling the drinking water.

Branch. A part of the piping system other than a main, riser, or stack.

Building Code. The building code that is adopted by the jurisdiction.

205.0 –C–

Catch Can Test. Method to measure the precipitation rate of an irrigation system by placing catchment containers at various random positions in the irrigation zone for a prescribed amount of time during irrigation application. The volumes of water in the containers are measured, averaged and calculated to determine precipitation rate. Tests are conducted using irrigation industry accepted practices.

Challenge Test. The evaluation of a unit treatment process for pathogen log₁₀ reduction performance using selected surrogate or indigenous constituents. This includes a detailed technology evaluation study conducted to challenge the treatment technology over a wide range of operational conditions.

Combination Ovens. A device that combines the function of hot air convection (oven mode) and saturated and superheated steam heating (steam mode), or both, to perform steaming, baking, roasting, rethermalizing, and proofing of various food products. In general, the term combination oven is used to describe this type of equipment, which is self contained. The combination oven is also referred to as a combination oven/steamer, combi or combo.

Commissioning. The activities associated with bringing a new process into normal working condition.

Commode. The composting toilet fixture for collecting, containing, or transporting excreta to the compost processor.

Compost Additives. Any material such as sawdust, wood shavings, and other compostable material added to the commode or compost processor to maintain operational conditions within the composting toilet system.

Composting Toilet System. A system designed to safely collect and process excreta and compost additives into humus through aerobic decomposition.

Compost Processor. The site of aerobic decomposition transforming excreta and compost additives into humus.

Condensate. Liquid water separated from a gaseous state due to changes in temperature or pressure, or both, and remains liquid at standard conditions.

Conditioned Space. An area, room, or space normally occupied and being heated or cooled for human habitation by any equipment.

Cross-connection. A connection or arrangement, physical or otherwise, between a potable water supply system and a plumbing fixture or a tank, receptor, equipment, or device, through which it may be possible for nonpotable, used, unclean, polluted, and contaminated water, or other

DEFINITIONS

substances to enter into a part of such potable water system under any condition.

206.0

–D–

Debris Excluder. A device installed on a rainwater or stormwater catchment conveyance system to prevent the accumulation of leaves, needles, or other debris in the system.

Dedicated Meter. A water measuring device used at a subsection or end use of a water supply system for any of the following purposes: billing, water management, collecting and analyzing water usage data, detection of leaks, equipment failure, water waste, and irregular or abnormal use for a specific application. Also called a submeter.

Desiccation. The process of dehydrating excreta or leachate.

Disposal Field. An intended destination for gray water, including but not limited to, a mulch basin or receiving landscape feature, gray water leach field, or other approved method of disposal.

Diverted Urine. Urine that is collected and has not made contact with feces.

Dry Weather Runoff. Water that flows along a surface, in a channel or sub-surface including groundwater seepage, and is not associated with a rain event.

207.0

–E–

Energy Star. A joint program of the U.S. Environmental Protection Agency and the U.S. Department of Energy. Energy Star is a voluntary program designed to identify and promote energy-efficient products and practices.

ETc. Evapotranspiration rate of the plants derived by multiplying ET_o by the appropriate plant factor or coefficient.

ET_o. Reference evapotranspiration for a cool-season grass as calculated by the standardized Penman-Monteith equation based on weather-station data.

Evapotranspiration (ET). The water transpired from vegetation, evaporated from the soil, water, and plant surfaces. Evapotranspiration rates are values expressed in inches per unit of time (day, week, month, or year). Evapotranspiration rates vary by components of weather conditions, including insolation, humidity, temperatures and wind, and time of year.

Excreta. Includes but is not limited to urine, feces, menses, toilet paper, and other human body emissions and biodegradable cleaning products.

208.0

–F–

Field Verification. Performance confirmation study conducted using challenge testing, including surrogate microorganisms and/or other non-biological surrogates, usually during startup and commissioning.

Flow-Through Design. A fitting or a fitting configuration with two primary inlet connections and one, or more outlet connections with the purpose to supply water to a fixture fitting.

Food Steamers (Steam Cookers). A cooking appliance

wherein heat is imparted to food in a closed compartment by direct contact with steam. The compartment can be at or above atmospheric pressure. The steam can be static or circulated.

209.0

–G–

Gang Showers. Shower compartments designed and intended for use by multiple persons simultaneously.

Geothermal. Renewable energy generated by deep-earth.

Gray Water. Untreated waste water that has not come into contact with toilet waste, kitchen sink waste, dishwasher waste or similarly contaminated sources. Gray water includes waste water from bathtubs, showers, lavatories, clothes washers and laundry tubs. Also known as grey water, graywater, and greywater.

Gray Water Diverter Valve. A valve that directs gray water to the sanitary drainage system or to a subsurface irrigation system.

Ground Source Heat Pump. A heat pump that uses the thermal energy of the ground or groundwater to provide space conditioning or water heating.

210.0

–H–

Humus. The biologically decomposed, soil-like output of the compost processor.

Hydrozone. A grouping of plants with similar water requirements that are irrigated by the same irrigation zone.

211.0

–I–

Irrigation Control System. An irrigation control system consists of a combination of a programmable controller using one or more inputs or sensors that, in combination, estimate or measure the availability of moisture for plants in order to operate an irrigation system, in such a manner that the system replenishes water as needed while minimizing excess water use. A properly programmed irrigation control system requires initial site specific set-up and will make irrigation schedule adjustments, including run times and required cycles throughout the irrigation season without human intervention.

Irrigation Demand. The amount of water not supplied by natural precipitation that is needed to maintain landscape plant life in good condition. Irrigation demand is calculated by subtracting natural effective precipitation from the ET rate adjusted by the landscape coefficient which includes the functional purpose and desired quality of the plant being irrigated.

Irrigation Emission Device. The various landscape irrigation equipment terminal fittings or outlets that emit water for irrigating vegetation in a landscape.

Irrigation Zone. The landscape area that is irrigated by a set of landscape irrigation emission devices installed on the same water supply line downstream of a single valve.

212.0

–J–

No Definitions.

213.0 **–K–**

Kitchen and Bar Sink Faucets. A faucet that discharges into a kitchen or bar sink in domestic or commercial installations. Supply fittings that discharge into other type sinks, including clinic sinks, floor sinks, service sinks and laundry trays are not included.

214.0 **–L–**

Lavatory. 1) a basin or vessel, for washing. 2) a plumbing fixture, as defined in (1), especially placed for use in personal hygiene. Principally not used for laundry purposes and never used for food preparation, or utensils, in food services. 3) a fixture designed for the washing of the hands and face. Sometimes called a wash basin.

Lavatory Faucet. A faucet that discharges into a lavatory in a domestic or commercial installation.

Leachate. Liquid draining from the compost processor.

Listed (Third-party Certified). Equipment or materials included in a list published by a listing agency (accredited conformity assessment body) that maintains periodic inspection on current production of listed equipment or materials and whose listing states either that the equipment or material complies with approved standards or has been tested and found suitable for use in a specified manner.

Listing Agency. An agency accredited by an independent and authoritative conformity assessment body to operate a material and product listing and labeling (certification) system and that is accepted by the Authority Having Jurisdiction, which is in the business of listing or labeling. The system includes initial and ongoing product testing, a periodic inspection on current production of listed (certified) products, and that makes available a published report of such listing in which specific information is included that the material or product in accordance with applicable standards and found safe for use in a specific manner.

Log₁₀ Reduction. The removal of a pathogen or surrogate in a unit process expressed in log₁₀ units of the effluent concentration over the influent concentration.

Note: A 1-log reduction equates to 90% removal, 2-log reduction to 99% removal, 3-log reduction to 99.9% removal, and so on.

Log₁₀ Reduction Target (LRT). The log₁₀ reduction target for the specified pathogen group (e.g., viruses, bacteria, or protozoa) to achieve the identified level of risk to individuals (e.g., 10⁻⁴ infection per year).

Low Application Rate Irrigation. A means of irrigation using Low Precipitation Rate Sprinkler Heads or Low Flow Emitters in conjunction with cycling irrigation schedules to apply water at a rate less than the soil absorption rate.

Low Flow Emitter. Low flow irrigation emission device designed to dissipate water pressure and discharge a small uniform flow or trickle of water at a constant flow rate.

Low Precipitation Rate Sprinkler Heads. Landscape irrigation emission devices or sprinkler heads with maximum

precipitation rate of 1 inch per hour over the applied irrigation area.

215.0 **–M–**

Main. The principal artery of a system of continuous piping to which branches may be connected.

Maintenance. The upkeep of property or equipment by the owner of the property in compliance with the requirements of this standard.

Mechanical Code. The mechanical code that is adopted by the jurisdiction. Where a mechanical code is not adopted or where the content of the mechanical code adopted by the jurisdiction is not applicable, then mechanical code shall mean the Uniform Mechanical Code (UMC) promulgated by the International Association of Plumbing and Mechanical Officials (IAPMO).

Metering Faucet. A self-closing faucet that dispenses a specific volume of water for each actuation cycle. The volume or cycle duration can be fixed or adjustable.

Modified Evapotranspiration. Numeric values, expressed in inches/hr., of evapotranspiration rates, derived by altering ET_o rates by applying factors of specific needs of the vegetation and local climate conditions. Modified evapotranspiration rates are used as a factor in estimating the irrigation water needs of landscapes. Common usage includes reference evapotranspiration as the base rate, modified by coefficients or factors for specific plant types and densities.

Mulch. Organic materials, such as wood chips and fines, tree bark chips, and pine needles that are used in a mulch basin to conceal gray water outlets and permit the infiltration of gray water.

Mulch Basin. A subsurface catchment area for gray water that is filled with mulch and of sufficient depth and volume to prevent ponding, surfacing or runoff.

Multi-Occupant Spaces. Indoor spaces used as a place of congregation for activities such as presentations and training, including classrooms and conference rooms.

216.0 **–N–**

Nonwater Urinal with Drain Cleansing Action. A nonwater urinal that conveys waste into the drainage system without the use of water for flushing and automatically performs a drain-cleansing action after a predetermined amount of time.

Non-sewered Sanitation System. A prefabricated integrated sewage treatment unit that is not connected to a public sewer or private sewage disposal system.

217.0 **–O–**

On-Site Treated NonPotable Water. Nonpotable water, that has been collected, treated, and intended to be used on-site and is suitable for direct beneficial use.

Owner's Manual. A manual provided to the owner containing instructions for all management aspects of that system.

DEFINITIONS

218.0

–P–

Plumbing Code. The plumbing code that is adopted by the jurisdiction. Where a plumbing code is not adopted or where the content of the plumbing code adopted by the jurisdiction is not applicable, then plumbing code shall mean the Uniform Plumbing Code (UPC) promulgated by the International Association of Plumbing and Mechanical Officials (IAPMO).

Potable Water. Water that is satisfactory for drinking, culinary, and domestic purposes and that meets the requirements of the Health Authority Having Jurisdiction.

Precipitation Rate. The sprinkler head application rate of water applied to landscape irrigation zone, measured as inches (millimeters) per hour. Precipitation rates of sprinkler heads are calculated according to the flow rate, pattern and spacing of the sprinkler heads.

Pre-Rinse Spray Valve. A handheld device for use with commercial dishwashing and ware washing equipment that sprays water on dishes, flatware, and other food service items for the purpose of removing food residue before cleaning and sanitizing the items.

Public Water System. A system for the provision to the public of water for human consumption through pipes or other constructed conveyances, if such system has at least fifteen service connections or regularly serves an average of twenty-five individuals daily for at least 60 days per year.

219.0

–Q–

Quick-Disconnect Device. A hand-operated device that provides a means for connecting and disconnecting a hose to a water supply and that is equipped with a means to shut off the water supply when the device is disconnected.

220.0

–R–

Rainwater. Natural precipitation that lands on a man-made, impervious above ground surface and can be collected on-site for beneficial uses.

Rainwater Catchment System. A system that collects and stores rainwater for the intended purpose of beneficial use. Also known as Rainwater Harvesting System.

Recirculation System. A system of hot water supply and return piping with shutoff valves, balancing valves, circulating pumps, and a method of controlling the circulating system.

Reclaimed (Recycled) Water. Nonpotable water provided by a water/wastewater utility that, as a result of treatment of domestic wastewater, meets requirements of the Authority Having Jurisdiction for its intended uses.

Reference Evapotranspiration (ET_o). Numeric value, expressed in inches/hr., calculated as the water necessary to produce maximum biomass based upon a cool-season turf grass 4-6 inches tall. Common sources for obtaining local reference evapotranspiration rates are local agriculture extension services, state departments of agriculture, water agencies, irrigation professionals, the United States Geological Survey, and internet websites.

Registered Design Professional. An individual who is registered or licensed by the laws of the state to perform such design work in the jurisdiction.

Reverse Osmosis Reject Water. Water that does not pass through a membrane of a reverse osmosis system.

Roof Washer. A device or method for removal of sediment and debris from a collection surface by diverting initial rainfall from entry into the cistern(s). Also known as a first flush device.

Run Out. The developed length of pipe that extends away from the circulating loop system to a fixture(s).

221.0

–S–

Secondary Composting. Additional retention and continued decomposition of humus removed from compost processors in order to meet a safe retention time.

Self Closing Faucet. A faucet that closes itself after the actuation or control mechanism is deactivated. The actuation or control mechanism can be mechanical or electronic.

Single Occupant Spaces. Private offices, workstations in open offices, reception workstations, and ticket booths.

Site-Built. Constructed at the site of use.

Soil Absorption Rate. The rate of the soil's ability to allow water to percolate or infiltrate the soil and be retained in the root zone of the soil, expressed as inches (millimeters) per hour.

Sprinkler Head. Landscape irrigation emission device discharging water in the form of sprays or rotating streams, not including Low Flow Emitters.

Stormwater. Natural precipitation that has contacted a surface at grade, below grade, or above ground parking surfaces.

Stormwater Catchment System. A system that collects and stores stormwater for the intended purpose of beneficial use. Also known as Stormwater Harvesting System.

Submeter. A meter installed subordinate to a site meter. Also known as a dedicated meter.

Subsoil Irrigation Field. Gray water irrigation field installed in a trench within the layer of soil below the topsoil. This system is typically used for irrigation of deep rooted plants.

Subsurface Irrigation Field. Gray water irrigation field installed below finished grade within the topsoil.

Surge Tank. A reservoir to modify the fluctuation in flow rates to allow for uniform distribution of gray water to the points of irrigation.

Surrogate. A biological, chemical, or physical parameter used to verify pathogen reductions performances.

222.0

–T–

Transfer. The controlled transfer of excreta or partially processed humus between commode and composting processor or between multi-stage composting processors.

223.0

–U–

Urine Diversion. Separation of urine from other excreta that

occurs at the commode.

224.0 –V–

Validation Report. Report documenting the results of a challenge test conducted during field verification.

Vectors. An organism that has the potential to transmit disease.

225.0 –W–

WaterSense. A voluntary program of the U.S. Environmental Protection Agency designed to identify and promote water-efficient products and practices.

Water Closet. A fixture with a water-containing receptor that receives liquid and solid body waste and on actuation conveys the waste through an exposed integral trap into a drainage system. Also referred to as a toilet.

Water Factor (WF). A measurement and rating of appliance water efficiency, most often used for residential and light commercial clothes washers, as follows:

Clothes Washer (residential and commercial).

The quantity of water in gallons used to complete a full wash and rinse cycle per measured cubic foot capacity of the clothes container.

Water/Wastewater Utility. A public or private entity which may treat, deliver or do both functions to reclaimed (recycled) water, potable water, or both to wholesale or retail customers.

226.0 –X–

No definitions.

227.0 –Y–

No definitions.

228.0 –Z–

No definitions.

CHAPTER 3

GENERAL REGULATIONS

301.0 Scope. This chapter covers the general requirements for plumbing and mechanical systems covered by this standard. Such systems shall be in accordance with the requirements of this standard, the plumbing code and the mechanical code.

302.0 Approval.

302.1 Minimum Standards. Pipe, pipe fittings, traps, fixtures, material, and devices used in a plumbing system shall be listed (third-party certified) by a listing agency (accredited conformity assessment body) as complying with the approved applicable recognized standards referenced in this standard, and shall be free from defects. Unless otherwise provided for in this standard, materials, fixtures, or devices used or entering into the construction of plumbing systems, or parts thereof, shall be submitted to the Authority Having Jurisdiction for approval prior to being installed.

302.1.1 Plastic Pipe, Plastic Pipe Fittings, and Components. Plastic pipe, plastic pipe fittings, and components other than those for gas shall comply with NSF 14.

302.2 Mechanical Systems. Mechanical equipment and appliances shall be approved by the Authority Having Jurisdiction or comply with the applicable nationally referenced standards as evidenced by the listing and label of an approved agency.

303.0 Installation.

303.1 Plumbing and Mechanical Systems. Plumbing and mechanical systems covered by this standard shall be installed in a manner conforming to the plumbing, mechanical, other applicable codes, and the manufacturer's installation and operating instructions.

303.2 Rehabilitation of Piping Systems. When pressure piping systems are rehabilitated using an epoxy lining system it shall meet ASTM F2831.

303.3 Qualifications. Where permits are required, the Authority Having Jurisdiction shall have the authority to require contractors, installers, or service technicians to demonstrate competency. Where determined by the Authority Having Jurisdiction, the contractor, installer or service technician shall be licensed to perform such work.

304.0 Disposal of Liquid Waste.

304.1 Disposal. It shall be unlawful for any person to cause, suffer, or permit the disposal of sewage, human excrement, or other liquid wastes, in any place or manner, except through and by means of an approved drainage system, installed and maintained in accordance with the provisions of the plumbing code and this standard.

Exception: Composting toilets.

304.2 Connections to Plumbing System Required.

Plumbing fixtures, drains, appurtenances, and appliances, used to receive or discharge liquid wastes or sewage, shall be connected properly to the drainage system of the building or premises, in accordance with the requirements of the plumbing code and this standard.

Exceptions:

- (1) Composting toilets.
- (2) Non-sewered sanitation systems.

305.0 Abandonment.

305.1 General. Every abandoned system or part thereof covered under the scope of this standard shall be disconnected from any remaining systems, drained, plugged, and capped in an approved manner.

305.2 Underground Tank. Every underground water storage tank that has been abandoned or otherwise discontinued from use in a system covered under the scope of this standard shall be completely drained and filled with earth, sand, gravel, concrete, or other approved material or removed in a manner satisfactory to the Authority Having Jurisdiction.

CHAPTER 4

WATER EFFICIENCY AND CONSERVATION

401.0 General.

401.1 Scope. The provisions of this chapter establish the means of conserving potable and nonpotable water used in and around a building.

402.0 Water-Conserving Plumbing Fixtures and Fittings.

402.1 General. The maximum water consumption of fixtures and fixture fittings shall comply with the flow rates specified in Table 402.1 and Section 402.2 through Section 402.10.

402.2 Water Closets. No water closet shall have an effective flush volume exceeding 1.28 gallons (4.8 Lpf) per flush (gpf).

402.2.1 Gravity, Pressure Assisted and Electro-Hydraulic Tank Type Water Closets. Gravity, pressure assisted, and electro-hydraulic tank type water closets shall have a maximum effective flush volume of not more than 1.28 gallons (4.8 Lpf) of water per flush in accordance with ASME A112.19.2/CSA B45.1 or ASME A112.19.14 and shall also be listed to the EPA WaterSense Specification for Tank-Type Toilets. The effective flush volume for dual-flush toilets is defined as the composite, average flush volume of two reduced flushes and one full flush.

TABLE 402.1 MAXIMUM FIXTURE AND FIXTURE FITTINGS FLOW RATES	
FIXTURE TYPE	FLOW RATE
Showerheads	2.0 gpm @ 80 psi ¹
Kitchen faucets residential ⁴	1.8 gpm @ 60 psi
Lavatory faucets residential	1.5 gpm @ 60 psi
Lavatory faucets other than residential	0.5 gpm @ 60 psi
Metering faucets	0.25 gallons/cycle
Metering faucets for wash fountains	One (1) 0.25 gal per cycle fixture fitting for each 20 inches rim space
Wash fountains	One (1) 2.2 gpm @ 60 psi fixture fitting for each 20 inches rim space
Water Closets	1.28 gallons/flush ²
Urinals	0.5 gallons/flush ³
Commercial Pre-Rinse Spray Valves	1.3 gpm @ 60 psi

¹ For multiple showerheads serving one shower compartment see Section 402.6.1

² Shall also be listed to EPA WaterSense Specification for Tank-Type Toilets.

³ Shall also be listed to EPA WaterSense Specification for Flushing Urinals. Nonwater urinals shall meet the specifications listed in Section 402.3.1.

⁴ See Section 402.4.

402.2.2 Flushometer-Valve Activated Water Closets. Flushometer-valve activated water closets shall have a maximum flush volume of not more than 1.28 gallons (4.8 L) of water per flush in accordance with ASME A112.19.2/CSA B45.1 and shall be listed to the EPA WaterSense Specification for Flushometer-Valve Water Closets.

402.3 Urinals. Urinals shall have a maximum flush volume of not more than 0.50 gallons (1.9 L) of water per flush in accordance with ASME A112.19.2/CSA B45.1 or CSA B45.5/IAPMO Z124. Flushing urinals shall be listed to the EPA WaterSense Specification for Flushing Urinals.

402.3.1 Nonwater Urinals. Nonwater urinals shall comply with ASME A112.19.3/CSA B45.4, ASME A112.19.19 or CSA B45.5/IAPMO Z124. Nonwater urinals shall be cleaned and maintained in accordance with the manufacturer's instructions after installation. Where nonwater urinals are installed they shall have a water distribution line roughed-in to the urinal location at a height not less than 56 inches (1422 mm) above finished floor to allow for the installation of an approved backflow prevention device in the event of a retrofit. Such water distribution lines shall be installed with shutoff valves located as close as possible to the distributing main to prevent the creation of dead ends. Where nonwater urinals are installed, not less than one water supplied fixture rated at not less than 1 drainage fixture unit (DFU) shall be installed upstream on the same drain line to facilitate drain line flow and rinsing.

Exception: Nonwater urinals used as part of a composting toilet system.

402.3.2 Nonwater Urinals with Drain Cleansing Action. Nonwater Urinals with drain cleansing action shall comply with ASME A112.19.19 and shall be cleaned, maintained and installed in accordance with the manufacturer's installation instructions.

402.4 Residential Kitchen Faucets. The maximum flow rate of residential kitchen faucets shall not exceed 1.8 gallons per minute (gpm) (6.8 L/m) at 60 pounds-force per square inch (psi) (414 kPa). Kitchen faucets are permitted to temporarily increase the flow above the maximum rate, but not to exceed 2.2 gpm (8.3 L/m) at 60 psi (414 kPa), and must revert to a maximum flow rate of 1.8 gpm (6.8 L/m) at 60 psi (414 kPa) upon valve closure.

402.5 Lavatory Faucets. The maximum water flow rate of faucets shall be in accordance with Section 402.5.1 and Section 402.5.2.

402.5.1 Lavatory Faucets in Residences, Apartments, and Private Bathrooms in Lodging Facilities, Hospitals, and Patient Care Facilities. The flow rate for lavatory faucets installed in residences, apartments, and private bathrooms in lodging, hospitals, and patient

care facilities (including skilled nursing and long-term care facilities) shall not exceed 1.5 gpm (5.7 L/m) at 60 psi (414 kPa) in accordance with ASME A112.18.1/CSA B125.1 and shall be listed to the U.S. EPA WaterSense High-Efficiency Lavatory Faucet Specification.

402.5.2 Lavatory Faucets in Other Than Residences, Apartments, and Private Bathrooms in Lodging Facilities. Lavatory faucets installed in bathrooms of buildings or occupancies other than those specified in Section 402.5.1 shall be in accordance with Section 402.5.2.1 or Section 402.5.2.2.

402.5.2.1 Maximum Flow Rate. The flow rate shall not exceed 0.5 gpm (1.9 L/m) at 60 psi (414 kPa) in accordance with ASME A112.18.1/CSA B125.1.

402.5.2.2 Metering Faucets. Metering faucets shall deliver not more than 0.25 gallons (1.0 L) of water per cycle.

402.6 Showerheads. Showerheads shall not exceed a flow rate of 2.0 gpm (7.6 L/m) at 80 psi (552 kPa) and shall be listed to ASME A112.18.1/CSA B125.1 and the EPA WaterSense Specification for Showerheads.

402.6.1 Multiple Showerheads Serving One Shower Compartment. The total allowable flow rate of water from multiple showerheads flowing at any given time, with or without a diverter, including rain systems, waterfalls, bodysprays, and jets, shall not exceed 2.0 gpm (7.6 L/m) per shower compartment, where the floor area of the shower compartment is less than 1800 square inches (1.161 m²). For each increment of 1800 square inches (1.161 m²) of floor area thereafter or part thereof, additional showerheads are allowed, provided the total flow rate of water from all flowing devices shall not exceed 2.0 gpm (7.6 L/m) for each such increment.

Exceptions:

- (1) Gang showers in non-residential occupancies. Singular showerheads or multiple show outlets serving one showering position in gang showers shall not have more than 2.0 gpm (7.6 L/m) total flow.
- (2) Where provided, shower compartments required for persons with disabilities in accordance with Table 1201.1 shall not have more than 4.0 gpm (15.0 L/m) total flow, where one outlet is the hand shower.

402.7 Bath and Shower Diverters. Tub spout bath and shower diverters, while operating in the shower mode, shall perform with zero leakage.

402.8 Shower Valves. Shower valves shall meet the temperature control performance requirements of ASSE 1016/ASME A112.1016/CSA B125.16 when tested for the rated flow rate of the installed showerhead.

402.8.1 Marking. Control valves for showers and tub-shower combinations shall be tagged, labeled, or marked with the manufacturer's minimum rated flow and such marking shall be visible after installation.

402.9 Commercial Pre-Rinse Spray Valves. The flow rate for a pre-rinse spray valve installed in a commercial

kitchen to remove food waste from cookware and dishes prior to cleaning shall not be more than 1.28 gpm (4.8 L/m) at 60 psi (414 kPa). Where pre-rinse spray valves with maximum flow rates of 1.0 gpm (3.8 L/m) or less are installed, the static pressure shall be not less than 30 psi (207 kPa). Commercial kitchen pre-rinse spray valves shall be equipped with an integral automatic shutoff.

402.10 Emergency Safety Showers and Eye Wash Stations. Emergency safety showers and emergency eye wash stations shall not be limited in their water supply flow rates.

402.11 Drinking Fountains and Bottle Filling Stations. Bottle filling stations shall be included on or used as a substitute to meet the requirements of drinking fountains in at least 50 percent of the requirements for drinking fountains. Bottle filling stations and drinking fountains shall be self closing.

402.12 Recirculating Shower Systems. Recirculating shower systems shall comply with IAPMO IGC330.

402.13 Installation. Water-conserving fixtures and fixture fittings shall be installed in accordance with the manufacturers' instructions to maintain their rated performance.

403.0 Appliances.

403.1 Dishwashers. Residential and commercial dishwashers shall be in accordance with the Energy Star program requirements.

403.2 Clothes Washers. Residential clothes washers shall be in accordance with the Energy Star program requirements. Commercial clothes washers shall be in accordance with Energy Star program requirements, where such requirements exist.

404.0 Non-Sewered Sanitation Systems.

404.1 General. Non-sewered sanitation systems shall comply with ISO 30500.

404.2 Installation. The installation of non-sewered sanitation systems shall be in accordance with the manufacturer's installation instructions and Section 404.2.1 through Section 404.2.5.

404.2.1 Operating Conditions. A non-sewered sanitation system in either a conditioned or unconditioned space shall be installed where the ambient temperature, ambient humidity, and altitude (atmospheric pressure) are in accordance with the manufacturer's installation instructions or product listing.

404.2.2 Clearances for Servicing and Maintenance. A non-sewered sanitation system shall be located to permit access and sufficient clearance for service and maintenance. Unless otherwise specified by the manufacturer's installation instructions, not less than 30 inches (762 mm) in depth, width, and height of working space shall be provided at any access panel.

404.2.3 Backflow Prevention. A domestic water supply connection to a non-sewered sanitation system shall be protected in accordance with the plumbing code.

404.2.4 Effluent Storage. Any container or vessel for the storage of effluent discharged from a non-sewered sanitation system and not integral to such system shall be installed in accordance with the plumbing code.

404.2.5 Systems Employing Combustion. A non-sewered sanitation system employing combustion shall comply with the mechanical code.

Exception: A non-sewered sanitation system listed for unvented use.

404.3 Operation and Maintenance Manual. Non-sewered sanitation systems shall have an operation and maintenance manual provided by the manufacturer.

404.4 System Output. The use or disposal of all substances exiting the non-sewered sanitation system shall be determined by the Authority Having Jurisdiction.

405.0 Pressure Regulator.

405.1 Installation. Pressure regulators shall be installed in accordance with the plumbing code.

406.0 Water Softeners and Treatment Devices.

406.1 Water Softeners. Water softeners shall be listed to NSF 44. Water softeners shall have a rated salt efficiency exceeding 3400 grains (gr) (0.2200 kg) of total hardness exchange per pound (lb) (0.5 kg) of salt, based on sodium chloride (NaCl) equivalency, and shall not generate more than 4 gallons (15.1 L) of water per 1000 grains (0.0647 kg) of hardness removed during the service cycle.

406.2 Water Softener Limitations. In residential buildings, where the supplied potable water hardness is equal to or less than 8 grains per gallon (gr/gal) (137 mg/L) measured as total calcium carbonate equivalents, water softening equipment that discharges water into the wastewater system during the service cycle shall not be allowed, except as required for medical purposes.

406.3 Point-of-Use Reverse Osmosis Water Treatment Systems. Reverse osmosis water treatment systems shall be equipped with automatic shutoff valves to prevent discharge when there is no call for producing treated water. Reverse osmosis water treatment systems shall comply with NSF58.

406.4 Drinking Water Treatment Systems. Drinking water treatment systems shall be listed to WQA/ASPE S-803.

407.0 Commercial Food Service.

407.1 Ice Makers. Ice makers shall be air cooled and shall be in accordance with Energy Star for energy use for commercial ice machines. Ice makers producing cubed-type ice shall not exceed 20 gallons (76 L) of water per 100 pounds (45 kg) of ice produced. Ice makers producing nugget and flake ice shall not exceed 14 gallons (53 kg) of water per 100 pound (45 kg) of ice produced.

407.2 Food Steamers. Boilerless type steamers shall not consume more than 2.0 gallons (7.6 L) per compartment. Boiler type steamers shall not consume more than 1.5 gallons (5.7 L) per pan per hour.

407.3 Combination Ovens. Combination ovens shall not use water in the convection mode except when utilizing a moisture nozzle for food products in the oven. The total amount of water used by the moisture nozzle in the convection mode shall not exceed a half a gallon per hour per oven cavity. When operating in the steamer mode, combination ovens shall not use more than 1.5 gallons (5.7 L) per hour per pan.

407.4 Grease Interceptors. Grease interceptor maintenance procedures shall not include post-pumping/cleaning refill using potable water. Refill shall be by connected appliance accumulated discharge only.

407.4.1 Temperature. Grease Interceptors shall be designed and installed to maintain a mean temperature not exceeding 95°F (35°C). FOG (fats, oils, and greases) disposal systems in compliance with ASME A112.14.6 using biological cultures shall not exceed 104°F (40°C). Passive or active cooling and heat recovery to be employed where applicable.

407.5 Dipper Well Faucets. Where dipper wells have a permanent water supply, the faucet shall have metered or sensor activated flow. The volume of water dispensed into a dipper well in each activation cycle of a self-closing fixture fitting shall not exceed the water capacity of the dipper well, and the maximum flow shall not exceed 0.2 gpm (0.8 L/m) at a supply pressure of 60 psi (414 kPa).

407.6 Food Waste Devices. Where installed food waste devices shall be in accordance with Section 407.6.1 through Section 407.6.5.

407.6.1 Pulpers and Mechanical Strainers. The water use for the pulpers or mechanical strainers shall not exceed 2 gpm (7.64 L/m). A flow restrictor shall be installed on the water supply to limit the water flow.

407.6.2 Food Waste Disposers. The water use for the food waste grinder shall not exceed the 8 gpm under full load condition and 1 gpm (3.8 L/m) under no-load condition. Flow restrictors shall be installed on the water supply to limit the water flow rate to a maximum of 8 gpm (30 L/m). A load sensing device shall be installed to monitor current demand and regulate water flow.

407.6.3 Time Out and Shut Off. Pulpers, mechanical strainers, and food waste disposers shall have a time out system with push button to reactivate. The maximum allowable run time cycle shall be 10 minutes.

407.6.4 Sink Drain Outlets. Where a strainer or basket is installed they shall be readily removable.

407.6.5 Strainer Baskets. Strainer (scraper) baskets shall either fit over a sink compartment or be attached to a drain system. The strainer baskets shall be readily removable for emptying.

407.7 Tempering Water. The discharge waste from commercial dishwashers, ware washers, combination ovens, and food steamers that exceeds 140°F (60°C) shall not be tempered with potable water.