

DEPARTMENT OF HEALTH AND SOCIAL SERVICES
DIVISION OF PUBLIC HEALTH

Statutory Authority: 16 Delaware Code, Chapter 79, §7903
(16 Del.C., Ch. 79, §7903)

FINAL

ORDER

4455 Delaware Regulations Governing a Detailed Plumbing Code

NATURE OF THE PROCEEDINGS:

Delaware Health and Social Services ("DHSS") initiated proceedings to adopt the State of Delaware *Regulations Governing A Detailed Plumbing Code*. The DHSS proceedings to adopt regulations were initiated pursuant to 29 **Delaware Code** Chapter 101 and authority as prescribed by 16 **Delaware Code**, Chapter 79, § 7903.

On April 1, 2010 (Volume 13, Issue 10), DHSS published in the *Delaware Register of Regulations* its notice of proposed regulations, pursuant to 29 **Delaware Code** Section 10115. It requested that written materials and suggestions from the public concerning the proposed regulations be delivered to DHSS by April 30, 2010, or be presented at a public hearing on April 22, 2010, after which time the DHSS would review information, factual evidence and public comment to the said proposed regulations.

Verbal comments were received during the public comment period and evaluated. The results of that evaluation are summarized in the accompanying "Summary of Evidence."

FINDINGS OF FACT:

Based on comments received, no changes were made to the proposed regulations. The Department finds that the proposed regulations, as set forth in the attached copy should be adopted in the best interest of the general public of the State of Delaware.

THEREFORE, IT IS ORDERED, that the proposed State of Delaware Regulations Governing A Detailed Plumbing Code are adopted and shall become effective July 10, 2010, after publication of the final regulation in the *Delaware Register of Regulations*.

Rita M. Landgraf, Secretary

SUMMARY OF EVIDENCE

In accordance with Delaware Law, public notices regarding proposed Department of Health and Social Services (DHSS) Regulations Governing A Detailed Plumbing Code were published in the Delaware State News, the News Journal and the Delaware Register of Regulations. Verbal comments were received on the proposed regulations during the public comment period (April 1, 2010 through April 30, 2010). Entities offering verbal comments included:

- Mr. Dean Sherman, Professional Plumber, Vice-Chair for the Plumbing & Heating Board of Professional Regulation
- Mr. Rob Briccotto, President of the DE State Plumbing & HVACR Board
- Mr. Bruce Collins, Plumbing Contractor
- Mr. Frank Bucci, Plumber, I.D. Griffith
- Mr. Mike Mulvaney, Licensed Plumber
- Mr. Charles Robbins, Professional Plumber, NCC Technical Advisory Committee
- Mr. Carey Sadler, Licensed Professional Plumber, Harry Caswell

- Mr. Curtis Mitchell, Ferguson Enterprises

Public comments and the DHSS (Agency) responses are as follows:

- There was a comment expressing concern “about some of the vagueness of some of the intent of the adoption of the 2009 plumbing code (International Plumbing Code - IPC) along with the amendments.” The individual commenting indicated that he did not have any issues or problems with the IPC itself, as the IPC is developed by professionals in the industry. Rather, he is concerned about “what the intent of the Division of Public Health is to do, with the language in the amendments, along with a couple other legislative pieces that are already in effect, House Bill 72 and Senate Bill 160 ... and part of that plumbing code is that there is a one hundred dollar permitting fee rolled up in that. That’s why I am here, to hopefully learn exactly what your intent is”.

Agency Response: The Agency appreciates and acknowledges your comment. The Division of Public Health is charged with enforcing Chapter 79 of Title 16 of the Delaware Code, Basic Plumbing Principles. Upon execution of the statewide plumbing regulations every political subdivision shall have the option of adopting and enforcing the proposed State of Delaware Regulations Governing a Detailed Plumbing Code, or adopting and enforcing the minimum standards set forth in the most recently adopted version of the International Plumbing Code. The Division of Public Health shall issue plumbing permits and a \$100 fee shall be assessed for all plumbing permits issued by the Division of Public Health. The Division of Public Health will not be issuing permits to a political subdivision that is adopting and enforcing the proposed State of Delaware Regulations Governing a Detailed Plumbing Code.

- There were multiple comments regarding a \$100 fee that the Division of Public Health shall assess for plumbing permits.

Agency Response: The Agency appreciates these comments but we are only taking comments from the public regarding the adoption of the most recent version of the International Plumbing Code as published in the April 1, 2010 edition of the Register of Regulations, Volume 13, Issue 10, the proposed Regulations Governing a Detailed Plumbing Code.

- The following comment was made, “I think where some of the unclarity comes, if you go to your amendment 2.27 that you’re trying to change. The last line says, and has a permit issued by the Delaware Division of Public Health. That’s all encompassing in the State of Delaware. You’re not defining areas that are already covered by municipalities and towns that have a plumbing inspection department. So I think the wording needs to be changed on that last line.”

Agency Response: The Agency respectfully disagrees. Amendment 2.27 states “Amend Subsection 917.1 by adding thereto after the last sentence the following: “Air admittance valves shall be approved by the Deputy Code Official prior to use or installation.”

- The following comment was made, “I did have a question on 2.7, where it says, any permit issued by the State of Delaware... I was saying if the municipality has an inspection agency that would take care of it; the permit wouldn’t need to be obtained from the state. Just some clarity...”

Agency Response: The Agency appreciates and acknowledges your comment. To provide clarity, the Division of Public Health is charged with enforcing Chapter 79 of Title 16 of the Delaware Code. Upon execution of the statewide plumbing regulations every political subdivision shall have the option of adopting and enforcing the proposed State of Delaware Regulations Governing a Detailed Plumbing Code, or adopting and enforcing the minimum standards set forth in the most recently adopted version of the International Plumbing Code. The Division of Public Health shall issue plumbing permits and a \$100 fee shall be assessed for all plumbing permits issued by the Division of Public Health. The Division of Public Health will not be issuing permits to anyone if there is a political subdivision that is adopting and enforcing the proposed State of Delaware Regulations Governing a Detailed Plumbing Code; therefore, if a municipality (political subdivision) has an inspection agency that adopts

and enforces the proposed State of Delaware Regulations Governing a Detailed Plumbing Code, the Division of Public Health will not be issuing a permit to anyone in that municipality.

- There was a comment made in regard to amendment (Section) 2.8. "By reading ...it appears that your department has the ability to, in the line that says, any person who shall fail to comply with the requirement thereof of the plumbing code shall be subject to penalties provided by Title 16, Chapter 79 of the Delaware Code. That puts you in the enforcement business of trying to address unlicensed plumbers out there". Additional comments were also made regarding this issue.

Agency Response: The Agency respectfully disagrees. Section 2.8 of the amendments refers to Chapter 79 of Title 16 of the Delaware Code. Section 7934 of the Code states:

"§ 7934. Penalties.

Whoever violates or assists in the violation of this chapter or any order, code or regulation issued under this chapter shall be, for each offense, fined not less than \$25 nor more than \$100 or imprisoned not more than 60 days, or both."

The issue of addressing unlicensed plumbers falls under Title 24 Chapter 18.

The public comment period was open from April 1 – April 30, 2010. Based on comments received, no changes were made to the proposed regulations.

Verifying documents are attached to the Hearing Officer's record. The regulation has been approved by the Delaware Attorney General's office and the Cabinet Secretary of DHSS.

4455 Delaware Regulations Governing a Detailed Plumbing Code

1.0 ~~Adoption and Effective Date~~

~~That certain document entitled, "The International Plumbing Code 2003" is made a part hereof and the supplements therein include, identified as "Section 2.0. Additions, Deletions, Amendments and Clarifications," are hereby adopted as the "State of Delaware Regulations Governing A Detailed Plumbing Code. These regulations shall be effective November 10, 2005.~~

~~***Please Note: Below are the Delaware specific amendments to the Delaware Plumbing Code. The 2003 International Plumbing Code is adopted by reference and a copy of the complete Delaware Plumbing Code and amendments is available for public view at Georgetown State Service Center, 544 South Bedford Street, Georgetown, DE 19947 (302-856-5496) or Thomas Collins Building, Suite 5, 540 S. Dupont Highway, Dover, DE 19901 (302-744-1220).**~~

2.0 ~~Additions, Deletions, Amendments and Clarifications~~

- 2.1 ~~Section 101.1 Title is deleted and replaced with the following: These Regulations shall be known as the "State of Delaware Regulations Governing A Detailed Plumbing Code hereinafter referred to as 'this Code'".~~
- 2.2 ~~Section 101.2 Scope is deleted and replaced by the following: The provisions of this code shall apply to the erection, installation, alteration, repair, relocation, replacement, addition to, use or maintenance of plumbing systems within this jurisdiction.~~
- 2.3 ~~Section 102.2 Existing installations is deleted and replaced by the following: The legal use and occupancy of any structure existing on the effective date of this Code, or for which it had been heretofore approved, may be continued without change except as may be specifically covered in this Code or deemed necessary by the Deputy Code Official(s) for the general safety and welfare of the occupants and the public.~~

Exception: ~~Except that upon change of permit holder in facilities and operations regulated by the Delaware Division of Public Health such systems shall comply with the requirements of this Code and applicable regulations promulgated and standards established by the Delaware Division of Public Health.~~

- 2.4 ~~Section 104.1 General is deleted and replaced by the following: For the purpose of this document "Code Official" refers to the Secretary, Delaware Health and Social Services, or their designee. "Plumbing Inspectors" shall have such duties and powers as are enumerated in Title 16, **Delaware Code**. Section 7907 and shall have the authority of a Deputy Code Official as referenced in Section 103.3 of this Code.~~
- 2.5 ~~Section 108.1 Unlawful acts is deleted and replaced by the following: It shall be unlawful for any person to work as a licensed plumber in the State of Delaware unless such person has received a license from the Delaware Department of Administrative Services, Division of Professional Regulation, showing that said person has been duly licensed as a plumber, except as provided by 24 **Delaware Code** 1813, and has a permit issued by the Division of Public Health.~~
~~Exception: The homeowner of a single family residence occupied, or to be occupied by him/her and not for sale, rent or lease, may perform plumbing work only on such residence itself, and/or auxiliary structures, and in compliance with a permit issued by the Division of Public Health, or applicable authority, and in compliance with all provisions of these regulations.~~
- 2.6 ~~Section 108.4 Violation penalties is deleted and replaced by the following: Any person who shall violate any provisions of this Code, or shall fail to comply with the requirements thereof, or who shall install plumbing work in violation of an approved plan or directive of the Code Official or the Deputy Code Official(s), or of a permit or certificate issued under the provisions of this Code, shall be subject to penalties as provided by Chapter 79, Title 16, **Delaware Code**.~~
- 2.7 ~~Section 108.5 Stop work orders is amended by deleting the language "shall be liable to a fine not less than [AMOUNT] dollars or more than [AMOUNT] dollars and replacing it with: shall be subject to penalties as provided by Chapters 1 and 79, Title 16, **Delaware Code**.~~
- 2.8 ~~Section 109 Means of Appeal is deleted in its entirety~~
- 2.9 ~~Section 202 General Definitions is amended by adding the following definitions:~~
~~**Licensed Plumber.** The term "Licensed Plumber" shall mean a person who has complied with the provisions of the Division of Professional Regulation and the Board of Plumbing Examiners, and has further met the certification, testing, bonding, and licensing requirements of the jurisdiction in which he/she plans to engage in the business of plumbing. The Licensed Plumber shall be recognized as being responsible for all work performed under a plumbing permit issued by the Division of Public Health.~~
~~**Supervision of Work.** For the purposes of these regulations, supervision of work shall be defined as work completed under the permit of a licensed plumber while employed by the licensed plumber, or the same firm, partnership, corporation, or owners of the company as the licensed plumber.~~
- 2.10 ~~Section 305.6.1 Sewer depth is deleted in its entirety~~
- 2.11 ~~Section 312.1 Required tests is amended by adding the following sentence at the end thereof: In lieu of the presence of the deputy code official witnessing the test, the Licensed Plumber may certify in writing upon a prescribed form, that the plumbing system piping is in accordance with Section 312 of the regulations. This shall be applicable between November 1 and April 1.~~
- 2.12 ~~Section 404 Accessible Plumbing Fixtures, Where required is deleted and replaced by the following: All regulations pertaining to handicapped facilities in the International Plumbing Code will be governed by the most recent edition of the "American National Standards Institute (ANSI).~~
- 2.13 ~~Section 502.1 Installation, General is amended by adding the following sentence at the end thereof: The first 12 inches of both hot and cold water lines shall be thermally rated for maximum water temperature produced by the hot water heater.~~
- 2.14 ~~Section 504.6.2 Safety Devices, Materials is deleted and replaced by the following: The discharge valve shall be equipped with an approved heat transfer fitting or metallic pipe.~~

- 2.15 Section 504.7 Required Pan is amended by adding the following:
Exception: Tankless Hot Water Heaters shall not require a drain pan.
- 2.16 Tables 605.4 and 605.5 are amended by deleting the letters "M" and "WM" from copper tubing.
- 2.17 Section 605.16.2 Solvent cementing is amended by adding the following sentence at the end thereof:
The use of all purpose glue is prohibited.
- 2.18 Section 903.1 Stack required is amended by adding the following sentence at the end thereof: The stack shall be no less than 2" in diameter.
- 2.19 Section 912.1 Type of fixtures is amended by deleting the last sentence.
- 2.20 Section 917.1 Air Admittance Valves, General is amended by adding the following sentence at the end thereof: Air admittance valves shall be approved by the Deputy Code Official prior to use or installation.
- 2.21 Section 919 Computerized Vent Design is deleted in its entirety.
- 2.22 Section 1003.3.4 Grease trap and grease interceptors is amended by deleting the "." as it appears at the end and it with the following: , or be otherwise approved by the Code Official.
- 2.23 Chapter 12 Special Piping and Storage Systems is deleted in its entirety.
- 2.24 Plan Review and Approval Plumbing Requirements for Food Establishment Premises
 - 2.24.1 General All plumbing shall be installed by a licensed plumber under a valid, current plumbing permit in accordance with the "State of Delaware Regulations Governing a Detailed Plumbing Code."
 - 2.24.2 Water Supply and Sewage Disposal Facilities served by a public water supply and sewage systems do not require further evaluation. Private wells must comply with chemical and bacteriological standards; a satisfactory analysis is required before an operating permit may be issued. Individual sewage disposal systems require the approval of the Department of Natural Resources and Environmental Control prior to operating the food establishment.
 - 2.24.3 Backflow Prevention
 - 2.24.3.1 Air gap, supply: An air gap between the water supply and the flood rim level of the plumbing fixture, equipment, or nonfood equipment shall be at least twice the diameter of the water supply inlet and may not be less than 1 inch (DE Food Code, §5.202.13).
 - 2.24.3.2 Air gap, drainage: No direct connection may exist between the sewage system and any drain originating from equipment in which food is placed (DE Food Code, §5.402.11). Equipment and fixtures utilized for the storage, preparation and handling of food shall discharge through an indirect waste pipe by means of an air gap (IPC2003, §802.1.1).
 - 2.24.3.3 Floor drains: Floor drains located within walk-in refrigerators or freezers in food establishments shall be indirectly connected to the sanitary drainage system by means of an air gap (IPC2003, §802.1.2).
 - 2.24.3.4 Backflow prevention device: A backflow or backsiphonage prevention device shall meet American Society of Sanitary Engineering (ASSE) standards for construction, installation, maintenance, inspection, and testing for that specific application and type of device (DE Food Code, §5.202.14).
 - 2.24.3.5 Plumbing fixtures: The supply lines or fittings for every plumbing fixture shall be installed so as to prevent backflow (IPC2003, §608.2).
 - 2.24.3.6 Devices, appliances: All devices that connect to the water supply shall be provided with protection against backflow (IPC2003, §608.3). This includes devices used for food preparation and processing, steamers, the storage of ice or food, warewashing machines, and other food service equipment.
 - 2.24.3.7 Hose Connections: Sillcocks, hose bibbs, wall hydrants and other openings with a hose connection shall be protected by an atmospheric type or pressure type vacuum breaker or a permanently attached hose connection vacuum breaker. Exceptions: water heater drain valve, clothes washing machine (IPC2003, §608.15.4.2).

- 2.24.3.8 ~~Beverage Dispensers: The water supply connection to carbonated beverage dispensers shall be protected against backflow by a backflow preventer conforming to ASSE 1022 or by an air gap. The backflow preventer device and the piping downstream therefrom shall not be affected by carbon dioxide gas (IPC2003, §608.16.1).~~
- 2.24.4 ~~Utility Service Installation~~
- 2.24.4.1 ~~Utility lines including gas, plumbing and electrical shall be installed inside walls, above ceilings or below floors whenever structurally practical, and in accordance with applicable code requirements.~~
- 2.24.4.2 ~~If lines are run in front of walls, lines shall be installed with stand-off brackets or other secure mounting method, such that a minimum clearance of one inch (1") exists between line and wall.~~
- 2.24.4.3 ~~Exposed horizontal utility service, including water supply and drain lines, may not be installed on the floor.~~
- 2.24.5 ~~Joint Sealing Joints formed by fixtures in contact with walls or floors shall be sealed with an approved sealant. Where installation does not allow access for cleaning, fixtures shall be sealed to walls or adjoining equipment. Where not structurally practical, a minimum gap of one inch (1") shall exist between the fixture and walls or adjoining equipment.~~
- 2.24.6 ~~Toilet Facilities~~
- 2.24.6.1 ~~At least 1 toilet and not fewer than the toilets required by law shall be provided. If authorized by law and urinals are substituted for toilets, the substitution shall be done as specified in law (DE Food Code, §5-203.12).~~
- 2.24.6.2 ~~A handwashing facility shall be located in, or immediately adjacent to, toilet rooms (DE Food Code, §5-204.11).~~
- 2.24.6.3 ~~A toilet room shall be completely enclosed and provided with a tight fitting and self-closing door (DE Food Code, §6-202.14).~~
- 2.24.6.4 ~~Toilet rooms shall be conveniently located and accessible to employees during all hours of operation (DE Food Code, §6-402-11).~~
~~Note: State of Delaware Regulations Governing a Detailed Plumbing Code adopts International Plumbing Code 2003 (IPC2003). Applicable excerpts are listed below.~~
- 2.24.6.5 ~~IPC2003 Table 403.1 Minimum Number of Plumbing Facilities The fixtures shown are based on one fixture being the minimum required for the number of persons indicated or any fraction of the number of persons indicated. The number of occupants shall be determined by the building code.~~

Table 4		
Occupancy:	Assembly, Restaurants	
Water Closets:	Male:	1 per 75
	Female:	1 per 75
Lavatories:		1 per 200
Drinking Fountains:		1 per 500
Others:		1 service sink

- 2.24.6.6 ~~IPC2003, Section 403.5 Location of Employee Toilet Facilities In Mercantile And Assembly Occupancies. Employees shall be provided with toilet facilities in building and tenant spaces utilized as restaurants. The employees' facilities shall be either separate facilities or combined employee and public customer facilities. The required toilet facilities shall be~~

located not more than one story above or below the employee's regular work area and the path of travel to such facilities, in other than covered malls, shall not exceed a distance of 500 feet. The path of travel to required facilities in covered malls shall not exceed a distance of 300 feet.

Exception: Employee toilet facilities shall not be required in tenant spaces where the travel distance from the main entrance of the tenant space to a central toilet area does not exceed 300 feet and such central toilet facilities are located not more than one story above or below the tenant space.

~~2.24.6.7 IPC2003, Section 403.6 Public Facilities. Customers, patrons, and visitors shall be provided with public toilet facilities in structures and tenant spaces intended for public utilization. Public toilet facilities shall be located not more than one story above or below the space required to be provided with public toilet facilities and the path of travel to such facilities shall not exceed a distance of 500 feet.~~

~~2.24.6.8 IPC2003, Section 403.2 Separate Facilities. Where plumbing fixtures are required, separate facilities shall be provided for each sex.~~

~~Exceptions: Separate employee facilities (for each sex) shall not be required in occupancies in which 15 or less people are employed. Separate facilities (for each sex) shall not be required in structures or tenant spaces with a total occupant load, including both employees and customers, of 15 or less.~~

~~2.24.7 Sinks All sinks shall be supplied with hot and cold running water under pressure.~~

~~2.24.7.1 Splashguard Dividers: Where less than 18 inches lateral separation exists between sinks and adjacent fixtures, food contact surfaces or open storage shelving, a splashguard divider constructed of a material which is durable, easily cleanable, non-toxic and impervious to moisture shall be installed; such divider may be wall attached or fixture attached, and shall extend outward to the leading edge of the sink and extend vertically a minimum of 18 inches above the level plane of the sink bowl.~~

~~2.24.7.2 Handwashing sinks: These fixtures, when located in food preparation, food dispensing, beverage dispensing (including bar service area), food storage and warewashing areas, must be certified or classified under an approved industry standard for food equipment, such as NSF International, ETL Sanitation, UL for Sanitation, BISSC, or equivalent.~~

~~2.24.7.2.1 A separate, single-compartment handwashing sink is REQUIRED in food preparation, food dispensing, and warewashing areas; and in, or immediately adjacent to, toilet rooms. Handsinks shall be installed within 25 travel feet within a direct line access of each primary work location. Hand soap, paper towels and a trash receptacle must be kept at these sinks.~~

~~2.24.7.2.2 A minimum hot water temperature of 100 F, delivered through a mixing valve or combination faucet, is REQUIRED.~~

~~2.24.7.2.3 If installed, self-closing, slow-closing, or metering faucets shall provide a flow of water for at least 15 seconds without the need to reactivate the faucet.~~

~~2.24.7.2.4 A handwashing sink may not be used for any other purpose.~~

~~2.24.7.2.5 An indirect drainline connection is not required. Connection to a grease trap is not required.~~

~~2.24.7.3 Food preparation sink(s): Any sink in which food is washed or thawed under running water as part of the food preparation process must be certified or classified under an approved industry standard for food equipment, such as NSF International, ETL Sanitation, UL for Sanitation, BISSC, or equivalent.~~

~~2.24.7.3.1 A food preparation sink may not be used for disposal of mop water or liquid wastes.~~

~~2.24.7.3.2 An indirect drainline connection through an air-gap is REQUIRED.~~

~~2.24.7.3.3 Connection to properly sized grease trap is REQUIRED.~~

- ~~2.24.7.3.4 If a food preparation sink has two or more compartments, a separate wasteline connection from each sink compartment through an air gap into a floor sink is REQUIRED.~~
- ~~2.24.7.4 Warewashing sink: This fixture must be certified or classified under an approved industry standard for food equipment, such as NSF International, ETL Sanitation, UL for Sanitation, BISSC, or equivalent.~~
 - ~~2.24.7.4.1 A sink of at least three separate compartments with coved corners and integral drainboards at each end shall be provided for manually washing, rinsing and sanitizing equipment and utensils. Each sink compartment shall be large enough to accommodate the immersion of the largest equipment item or utensil. A chemical test kit that matches the type of sanitizing agent in use is required in the warewashing area.~~
 - ~~2.24.7.4.2 A warewashing sink may not be used for handwashing or disposal of liquid wastes.~~
 - ~~2.24.7.4.3 Connection to a properly sized grease trap is REQUIRED.~~
 - ~~2.24.7.4.4 An indirect drainline connection is not required, unless this fixture is used for food preparation. (See paragraph (3)(e) below for alternative use provision.)~~
 - ~~2.24.7.4.5 Alternative use provision for warewashing sink: If the warewashing sink will be used for washing or thawing food, a separate wasteline connection from each sink compartment through an air gap into a floor sink is REQUIRED. The installation of a properly sized grease trap downstream of the floor sink is REQUIRED. Alternative use of a warewashing sink for food preparation requires prior approval from the Division of Public Health.~~
- ~~2.24.7.5 Service sink: (for use as janitorial sink, utility sink or mop sink)~~
 - ~~2.24.7.5.1 Wherever practical, install this fixture outside of the food preparation, food dispensing, food storage and warewashing areas.~~
 - ~~2.24.7.5.2 This fixture, when located in food preparation, food dispensing, food storage and warewashing areas, must be certified or classified under an approved industry standard for food equipment, such as NSF International, ETL Sanitation, UL for Sanitation, BISSC, or equivalent.~~
 - ~~2.24.7.5.3 A minimum of one service sink or receptor is REQUIRED on each floor level of food operations. This fixture may be a sink or a curbed receptor.~~
 - ~~2.24.7.5.4 The dual use of a utility sink as a handwashing sink is not approved in new construction, conversion of a structure to a food establishment, nor remodeling of an existing facility.~~
 - ~~2.24.7.5.5 An indirect drainline connection is not required.~~
 - ~~2.24.7.5.6 Connection to a grease trap not required.~~
- ~~2.24.7.6 Prewash sink: This fixture must be certified or classified under an approved industry standard for food equipment, such as NSF International, ETL Sanitation, UL for Sanitation, BISSC, or equivalent.~~
 - ~~2.24.7.6.1 An indirect drainline connection is not required.~~
 - ~~2.24.7.6.2 Connection to a properly sized grease trap is REQUIRED.~~
 - ~~2.24.7.6.3 If a food waste grinder is installed on this fixture, the grease trap must be designed and rated for such application, or a solids interceptor is required upstream of the grease trap.~~
- ~~2.24.8 Mechanical Warewasher: This equipment item must be certified or classified under an approved industry standard for food equipment, such as NSF International, ETL Sanitation, UL for Sanitation, or equivalent.~~
 - ~~2.24.8.1 A warewashing machine, using hot water or a chemical rinse to sanitize, may be installed. Large cookware which does not fit into the machine must be sanitized in a three compartment sink. Facilities without a three compartment sink whose warewashers are found functioning improperly may be directed to temporarily close until the machine is~~

repaired. If a chemical sanitizing agent is used, a test kit that matches the chemical sanitizing agent is required.

2.24.8.2 Connection to a grease trap is NOT APPROVED due to high temperature, pressure and detergents.

2.24.8.3 An indirect drainline connection through an air gap is REQUIRED. (See paragraph 2.24.8.4 below for alternative installation provision.)

2.24.8.4 Alternative installation provision for mechanical warewasher: If approved by the Division of Public Health, a direct drainline connection may be installed if the machine wastewater outlet is located within five feet of a properly trapped vented floor drain and the machine outlet is connected to the inlet side of the same properly vented floor drain trap.

2.24.9 Grease trap: The grease trap must be sized in accordance with PDI standard G101.

2.24.9.1 Connection to a properly sized grease trap is REQUIRED for all fixtures that discharge grease-laden waste, e.g. warewashing sinks, food prep sinks, pre-wash sinks for warewashers, woks, and other cooking equipment.

2.24.9.2 Alternative use provision for warewashing sink: If the warewashing sink will be used for washing or thawing food, a separate wasteline connection from each sink compartment through an air gap into a floor sink is REQUIRED. The installation of a properly sized grease trap downstream of the floor sink is REQUIRED. Alternative use of a warewashing sink for food preparation requires prior approval from the Division of Public Health.

PROCEDURE FOR SIZING A GREASE TRAP TO A SPECIFIC FIXTURE

1. Determine the liquid volume of the fixture in cubic inches (cu in) draining to the grease trap.
2. Determine the liquid capacity of the fixture in gallons (gal).
3. Determine the actual drainage load (75% of fixture capacity).
4. Determine the unit flow rate minimum for drainage period of 2 minutes.
Determine the unit liquid holding capacity minimum (40% of fixture capacity).
5. Select a unit corresponding to minimum unit flow rate and liquid holding capacity.

EXAMPLE OF SIZING FOR GREASE TRAP SELECTION

Select a grease trap for a three compartment warewashing sink with bowl dimensions of 18" W x 24" L x 12" D

1. Volume = (18in x 24in x 2in) x 3 cmpts = (5,184 cu in) x 3 = 15,552 cubic inches
2. Capacity = Volume (cu in)/231(cu in/gal) = 15,552/ 231 = 67.3 gallons
3. Drainage load = 67.3 gal x 0.75 = 50.4, or approx. 50 gallons
4. Unit flow rate minimum = 50 gallons/2 minutes = 25 gallons per minute (gpm)
Unit liquid holding capacity minimum = 67.3 x 0.40 = 26.9 gallons
5. Select a grease trap with a minimum flow rate equal to or greater than 25 gpm
The selected trap also must have a minimum liquid holding capacity of 26.9 gal.

GREASE TRAP SIZING FOR TYPICAL SINK INSTALLATIONS

2.24.10 Water heater: Hot Water Supply

2.24.10.1 The water heater shall be sized to provide hot water as required to supply both the continuous requirements and the hourly peak demands of the facility. The continuous and hourly demands are based on the type of equipment and number of fixtures consuming hot water as required for food operations.

2.24.10.2 The total hot water availability in gallons per hour (gph) from a water heater is the sum of the unit storage capacity plus the recovery rate at a 100 F rise.

2.24.10.3 A fuel-fired (gas or oil) water heater in a food establishment shall have a minimum storage capacity of thirty (30) gallons; an electric water heater shall have a minimum storage capacity of forty (40) gallons. Storage capacities larger than the minimum shall be required, based on the type of equipment and number of fixtures consuming hot water.

- 2.25 ~~Appendix F Structural Safety is deleted in its entirety~~
- 2.26 ~~Appendix G Vacuum Drainage System is deleted in its entirety~~
- 2.27 ~~Procedures for License~~
~~Every person desiring to register as a plumber engaged in the business of plumbing in the State of Delaware shall file an application with the Division of Professional Regulation, 861 Silver Lake Blvd. Dover, DE 19904.~~
- 2.28 ~~Variances~~
~~Upon receipt of written application for a variance, the Deputy Code Official may:~~
 - 2.28.1 ~~From time to time recommend granting written permission to vary from particular provisions set forth in this Regulation, when the extent of the variation is clearly specified and it is documented to the Secretary, Health and Social Services, or his/her appointed designee's satisfaction that:~~
 - 2.28.1.1 ~~Such variation is necessary to obtain a beneficial use of an existing facility, and:~~
 - 2.28.1.2 ~~The variation is necessary to prevent a practical difficulty or unnecessary hardship; and~~
 - 2.28.1.3 ~~Appropriate alternative measures have been taken to protect the health and safety of the public and assure that the purpose of the provisions from which the variation is sought will be observed.~~
 - 2.28.2 ~~Within thirty (30) business days of the receipt of a written application for a variance, the Deputy Code Official shall recommend either granting the variance, or denying the variance or will request further information from the applicant.~~
 - 2.28.3 ~~If the applicant has been denied a variance upon the recommendation of the Deputy Code Official, the applicant may appeal the decision by filing a written Notice of Appeal to the Secretary, Health and Social Services, or his/her designee, Division of Public Health, 417 Federal Street, Dover, Delaware 19901.~~

9 DE Reg. 786 (11/01/05)

1.0 State of Delaware Plumbing Code

These Regulations shall hereby be known as the "State of Delaware Plumbing Code".

2.0 Adoption of International Plumbing Code.

The State of Delaware Plumbing Code adopts, as if fully set forth herein, "The International Plumbing Code 2009" as amended herein:

- 2.1 Amend **Subsection 101.1** by deleting the subsection in its entirety.
- 2.2 Amend **Subsection 101.2** by deleting the subsection in its entirety and by inserting in lieu thereof the following: "The provisions of this Code shall apply to the erection, installation, alteration, repair, relocation, replacement, addition to, use or maintenance of plumbing systems within this jurisdiction."
- 2.3 Amend **Subsection 102.2** by deleting the subsection in its entirety and by inserting in lieu thereof the following: "The legal use and occupancy of any structure existing on the effective date of this Code, or for which it had been heretofore approved, may be continued without change except as may be specifically covered in this Code or deemed necessary by the Deputy Code Official(s) for the general safety and welfare of the occupants and the public.
 - Exception:** Except that upon change of permit holder in facilities and operations regulated by the Delaware Division of Public Health such systems shall comply with the requirements of this Code and applicable regulations promulgated and standards established by the Delaware Division of Public Health."
- 2.4 Amend **Subsection 102.10** by deleting the words "local, state or federal law" and inserting in lieu thereof the following: "the Delaware Code."
- 2.5 Amend **Subsection 104.1** by deleting the subsection in its entirety and by inserting in lieu thereof the following: "For the purpose of this document the term "Code Official" refers to the Secretary of the Delaware Department of Health and Social Services, or his/her designee. "Plumbing Inspectors" shall

- have such duties and powers as are enumerated in Title 16, Section 7907 of the **Delaware Code** and shall have the authority of a Deputy Code Official as referenced in Section 103.3 of this Code.”
- 2.6 Amend **Subsection 106.6.3** by adding thereto a new numbered paragraph following numbered paragraph “3” to read as follows: “4. The State of Delaware Plumbing Code Office does not refund plumbing permit fees.”
- 2.7 Amend **Subsection 108.1** by deleting the subsection in its entirety and by inserting in lieu thereof the following: “It shall be unlawful for any person to work as a licensed plumber in the State of Delaware unless such person has received a license from the Delaware Department of Administrative Services, Division of Professional Regulation, showing that said person has been duly licensed as a plumber, except as provided by Title 24, Section 1807(c) of the **Delaware Code**, and has a permit issued by the Delaware Division of Public Health.
- Exception:** The homeowner of a single-family residence occupied, or to be occupied by the homeowner and not for sale, rent or lease, may perform plumbing work only on such residence itself or auxiliary structures, and in compliance with a permit issued by the Delaware Division of Public Health, or applicable authority, and in compliance with all provisions of these regulations.”
- 2.8 Amend **Subsection 108.4** by deleting the subsection in its entirety and by inserting in lieu thereof the following: “Any person who shall violate any provisions of this Code, or shall fail to comply with the requirements thereof, or who shall install plumbing work in violation of an approved plan or directive of the Code Official or the Deputy Code Official(s), or of a permit or certificate issued under the provisions of this Code, shall be subject to penalties as provided by Title 16, Chapter 79 of the **Delaware Code**.”
- 2.9 Amend **Subsection 108.5** by deleting the words: “shall be liable to a fine of not less than [AMOUNT] dollars or more than [AMOUNT] dollars” as it appears therein and inserting in lieu thereof the following: “shall be subject to penalties as provided by Title 16, Chapters 1 and 79 of the **Delaware Code**.”
- 2.10 **Section 202 General Definitions**
- 2.10.1 Amend **Section 202** by adding thereto a new definition after the definition “**Leader**” and before the definition “**Local Vent Stack**” to read as follows: “**Licensed Plumber.** A person who has complied with the provisions of the Delaware Division of Professional Regulation and the Board of Plumbing Examiners, and has further met the certification, testing, bonding, and licensing requirements of the jurisdiction in which he/she plans to engage in the business of plumbing. A Licensed Plumber shall be recognized as being responsible for all work performed under a plumbing permit issued by the Delaware Division of Public Health.”
- 2.10.2 Amend **Section 202** by adding thereto a new definition after the definition “**Soil Pipe**” and before the definition “**Spillproof Vacuum Breaker**” to read as follows: “**Solvent cement.** The sealant used to connect pipes and fittings. This Code prohibits the use of all purpose glue in any reference to solvent cement.”
- 2.10.3 Amend **Section 202** by adding thereto a new definition after the definition “**Sump Vent**” and before the definition “**Supports**” to read as follows: “**Supervision of Work.** Work completed under the permit of a licensed plumber while employed by the licensed plumber, or the same firm, partnership, corporation, or owners of the company as the licensed plumber.”
- 2.11 Amend **Subsection 305.6.1** by deleting the subsection in its entirety.
- 2.12 Amend **Subsection 312.3** by adding thereto after the last sentence the following: “In lieu of the presence of the Deputy Code Official witnessing the test, the Licensed Plumber may certify in writing upon a prescribed form that the plumbing system piping is in accordance with Section 312 of these regulations. This shall be applicable between November 1 and April 1 of each calendar year.”
- 2.13 Amend **Subsection 312.4** by deleting the subsection in its entirety.
- 2.14 Amend **Subsection 404.1** by deleting the subsection in its entirety and by inserting in lieu thereof the following: “All regulations pertaining to handicapped facilities in the International Plumbing Code will be governed by the most recent edition of the “American National Standards Institute (ANSI).”
- 2.15 Amend **Section 407** by adding thereto a new subsection after subsection 407.4 to read as follows: “**407.5 Overflow devices.** Overflow devices on all bathtubs shall be evaluated by the Division of Public Health on a case by case basis.”

- 2.16 Amend **Subsection 502.1** by adding thereto after the last sentence the following: "The first 12 inches of both hot and cold water lines shall be thermally rated for maximum water temperature produced by the hot water heater."
- 2.17 Amend **Subsection 504.6** by adding thereto a new numbered paragraph after numbered paragraph "13" to read as follows: "14. The discharge valve shall be equipped with an approved heat transfer fitting or metallic pipe."
- 2.18 Amend **Table 604.3** by adding thereto in the second row, first column, after the words "Bathtub, balanced-pressure, thermostatic or combination balanced pressure/thermostatic mixing valve" the following: "for hand held shower fixtures."
- 2.19 Amend **Table 605.3** by deleting in the parenthetical in the seventh row, first column after the words "Copper or copper-alloy tubing" the letters "M" and "WM".
- 2.20 Amend **Table 605.4** by deleting in the parenthetical in the fifth row, first column after the words "Copper or copper-alloy tubing" the letters "M" and "WM".
- 2.21 Amend **Subsection 605.16.2** by adding thereto after the words "above or below ground" the following sentence: "The use of all purpose glue is prohibited."
- 2.22 Amend **Subsection 607.3** by adding thereto after the words "in accordance with Section 607.3.1 and 607.3.2" the following: "All public water installations shall be required to have an expansion tank installed."
- 2.23 Amend **Subsection 608.3** by adding thereto a new subsection after subsection 608.3.1 to read: "608.3.2 **Special equipment, water supply protection.** There shall be sufficient space around special equipment for accessibility."
- 2.24 Amend **Subsection 903.2** by adding thereto after the first sentence the following sentence: "The stack shall be no less than 2 inches in diameter."
- 2.25 Amend **Subsection 903.3** by deleting the words "or to a stack-type air admittance valve in accordance with Section 917."
- 2.26 Amend **Subsection 912.1** by deleting the last sentence in its entirety.
- 2.27 Amend **Subsection 917.1** by adding thereto after the last sentence the following: "Air admittance valves shall be approved by the Deputy Code Official prior to use or installation."
- 2.28 Amend **Section 919** by deleting the section in its entirety.
- 2.29 Amend **Subsection 1003.3.4** by adding thereto in the last sentence after the words "shall be installed in accordance with the manufacturer's instructions" the following: "or be otherwise approved by the Code Official."
- 2.30 Amend **Chapter 12** by deleting the Chapter in its entirety.

3.0 Miscellaneous Provisions

- 3.1 **Procedures for License.** Every person desiring to register as a plumber engaged in the business of plumbing in the State of Delaware shall file an application with the Delaware Division of Professional Regulation.
- 3.2 **Variances**
 - 3.2.1 **Permission for a variance.** Upon receipt of a written application for a variance, the Deputy Code Official may recommend granting written permission to vary from particular provisions set forth in these Regulations, when the extent of the variation is clearly specified and it is documented to the Secretary of the Delaware Department of Health and Social Services or his/her appointed designee's satisfaction that:
 - 3.2.1.1 Such variation is necessary to obtain a beneficial use of an existing facility;
 - 3.2.2.2 The variation is necessary to prevent a practical difficulty or unnecessary hardship; and
 - 3.2.2.3 Appropriate alternative measures have been taken to protect the health and safety of the public and assure that the purpose of the provisions from which the variation is sought will be observed.

- 3.2.2 **Time for recommendation.** Within thirty (30) business days of the receipt of a written application for a variance, the Deputy Code Official shall recommend either: granting the variance, denying the variance or requesting further information from the applicant.
- 3.2.3 **Appeal of denial.** If the applicant has been denied a variance upon the recommendation of the Deputy Code Official, the applicant may appeal the decision by filing a written Notice of Appeal to the Secretary of the Delaware Department of Health and Social Services, or his/her designee.

4.0 Special Provisions Regarding Plumbing For Food Establishments

- 4.1 **Scope.** These Special Provisions shall be followed in addition to and shall not supersede the International Plumbing Code, the Delaware Food Code or these Regulations.
- 4.2 **Use of Licensed Plumber.** All plumbing shall be installed by a licensed plumber under a valid, current plumbing permit in accordance with these Regulations.
- 4.3 **Water Supply and Sewage Disposal**
- 4.3.1 **No further evaluation.** Water Supply and Sewage Disposal Facilities served by a public water supply and sewage system do not require further evaluation.
- 4.3.2 **Private wells.** Private wells must comply with chemical and bacteriological standards; a satisfactory analysis is required before an operating permit may be issued.
- 4.3.3 **Individual systems.** Individual sewage disposal systems require the approval of the Department of Natural Resources and Environmental Control prior to operating the food establishment.
- 4.4 **Backflow Prevention**
- 4.4.1 **Air gap, supply.** An air gap between the water supply and the flood rim level of the plumbing fixture, equipment, or nonfood equipment shall be at least twice the diameter of the water supply inlet and may not be less than 25 mm (1 inch). (See also DE Food Code, §5.202).
- 4.4.2 **Air gap, drainage.** A direct connection may not exist between the sewage system and a drain originating from equipment in which food, portable equipment, or utensils are placed, except that this requirement does not apply to floor drains that originate in refrigerated spaces that are constructed as an integral part of the building, and except that this requirement does not apply to a warewashing machine with a direct connection between its waste outlet and a floor drain when the machine is located within 1.5 m (5 feet) of a trapped floor drain and the machine outlet is connected to the inlet side of a properly vented floor drain trap. Equipment and fixtures utilized for the storage, preparation and handling of food shall discharge through an indirect waste pipe by means of an air gap. (See also IPC2009 § 802.1.1).
- 4.4.3 **Floor drains.** Floor drains located within walk-in refrigerators or freezers in food establishments shall be indirectly connected to the sanitary drainage system by means of an air gap except as allowed in IPC2009 § 2.24.3.2. (See also IPC2009, § 802.1.2)
- 4.4.4 **Backflow prevention device.** A backflow or back siphonage prevention device installed on a water supply system shall meet American Society of Sanitary Engineering (ASSE) standards for construction, installation, maintenance, inspection, and testing for that specific application and type of device. (See also DE Food Code, § 5-202.14).
- 4.4.5 **Plumbing fixtures.** The supply lines or fittings for every plumbing fixture shall be installed so as to prevent backflow. Plumbing fixture fittings shall provide backflow protection in accordance with ASSE A112.18.1. (See also IPC2009, § 608.2).
- 4.4.6 **Devices, appliances.** All devices that connect to the water supply shall be provided with protection against backflow. This includes devices used for food preparation and processing, steamers, the storage of ice or food, warewashing machines, and other food service equipment. (See also IPC2009, § 608.3)
- 4.4.7 **Hose connections.** Sillcocks, hose bibs, wall hydrants and other openings with a hose connection shall be protected by an atmospheric-type or pressure-type vacuum breaker or a permanently attached hose connection vacuum breaker. This subsection does not apply to water heater drain valve or clothes washing machines. (See also IPC2009, § 608.15.4.2).

4.4.8 **Beverage dispensers.** The water supply connection to carbonated beverage dispensers shall be protected against backflow by a backflow preventer conforming to ASSE 1022 or by an air gap. The portion of the backflow preventer device downstream from the second check valve and the piping downstream therefrom shall not be affected by carbon dioxide gas. (See also IPC2009, § 608.16.1).

4.5 **Utility Service Installation**

4.5.1 **Installation location.** Utility lines including gas, plumbing and electrical shall be installed inside walls, above ceilings or below floors whenever structurally practical, and in accordance with applicable code requirements.

4.5.1.1 **Front of wall lines.** If lines are run in front of walls, lines shall be installed with stand-off brackets or other secure mounting method, such that a minimum clearance of one inch (1") exists between line and wall.

4.5.1.2 **No floor installation.** Exposed horizontal utility service, including water supply and drain lines, may not be installed on the floor.

4.6 **Joint Sealing**

4.6.1 **Joint sealing.** Joints formed by fixtures in contact with walls or floors shall be sealed with an approved sealant. Where installation does not allow access for cleaning, fixtures shall be sealed to walls or adjoining equipment. Where not structurally practical, a minimum gap of one inch (1") shall exist between the fixture and walls or adjoining equipment.

4.7 **Toilet Facilities**

4.7.1 **Number required.** At least one (1) toilet and not fewer than the toilets required by law shall be provided. If authorized by law and urinals are substituted for toilets, the substitution shall be done as specified by law. (See also DE Food Code, § 5-203.12).

4.7.2 **Handwashing facility.** A handwashing facility shall be located in, or immediately adjacent to, toilet rooms. (See also DE Food Code, § 5-204.11).

4.7.3 **Toilet room.** A toilet room shall be completely enclosed and provided with a tight-fitting and self-closing door, except that this requirement does not apply where a toilet room is located outside a food establishment and does not open directly into the food establishment such as a toilet room that is provided by the management of a shopping mall. (See also DE Food Code, § 6-202.14).

4.7.3.1 **Location.** Toilet rooms shall be conveniently located and accessible to employees during all hours of operation (See also DE Food Code, § 6-402-11).

4.8 **Sinks**

4.8.1 **Water supply.** All sinks shall be supplied with hot and cold running water under pressure.

4.8.2 **Splashguard Dividers.** Where less than 18 inches lateral separation exists between sinks and adjacent fixtures, food contact surfaces or open storage shelving, a splashguard divider constructed of a material which is durable, easily cleanable, non-toxic and impervious to moisture shall be installed; such divider may be wall-attached or fixture-attached, and shall extend outward to the leading edge of the sink and extend vertically a minimum of 18 inches above the level plane of the sink bowl.

4.8.3 **Handwashing sinks.** These fixtures, when located in food preparation, food dispensing, beverage dispensing (including bar service area), food storage and warewashing areas, must be certified or classified under an approved industry standard for food equipment, such as NSF International, ETL Sanitation, UL for Sanitation, BISSC, or equivalent.

4.8.3.1 **Separate sink required.** A separate, single-compartment handwashing sink is REQUIRED in food preparation, food dispensing, and warewashing areas; and in, or immediately adjacent to, toilet rooms. Handsinks shall be installed within 25 travel feet within a direct line access of each primary work location.

4.8.3.2 **Temperature.** Tempered water temperature at a minimum of 100°F and a maximum of 110°F, delivered through a mixing valve or combination faucet, is REQUIRED.

4.8.3.3 **Faucets.** If installed, self-closing, slow-closing, or metering faucets shall provide a flow of water for at least 15 seconds without the need to reactivate the faucet.

4.8.3.4 **No other purpose.** A handwashing sink may not be used for any other purpose.

4.9 **Food Preparation Sinks**

4.9.1 **Food preparation sinks.** Any sink in which food is washed or thawed under running water as part of the food preparation process must be certified or classified under an approved industry standard for food equipment, such as NSF International, ETL Sanitation, UL for Sanitation, BISSC, or equivalent.

4.9.2 **No disposal.** A food preparation sink may not be used for disposal of mop water or liquid wastes.

4.9.3 **Required indirect drain line.** An indirect drain line connection through an air-gap is REQUIRED.

4.9.4 **Grease trap connection.** Connection to a properly sized grease trap is REQUIRED.

4.9.5 **Multiple compartments.** If a food preparation sink has two or more compartments, a separate wasteline connection from each sink compartment through an air gap into a floor sink is REQUIRED.

4.10 **Warewashing Sinks**

4.10.1 **Industry standard.** Warewashing sinks must be certified or classified under an approved industry standard for food equipment, such as NSF International, ETL Sanitation, UL for Sanitation, BISSC, or equivalent.

4.10.2 **Three compartments.** A sink of at least three separate compartments with covered corners and integral drainboards at each end shall be provided for manually washing, rinsing and sanitizing equipment and utensils. Each sink compartment shall be large enough to accommodate the immersion of the largest equipment item or utensil. **A chemical test kit that matches the type of sanitizing agent in use is required in the warewashing area.**

4.10.3 **No handwashing or disposal.** A warewashing sink may not be used for handwashing or disposal of liquid wastes.

4.10.4 **Grease trap connection.** Connection to a properly sized grease trap is REQUIRED.

4.10.5 **Alternative use provision for warewashing sink.** If the warewashing sink will be used for washing or thawing food, a separate wasteline connection from each sink compartment through an air-gap into a floor sink is REQUIRED. The installation of a properly sized grease trap downstream of the floor sink is REQUIRED. Alternative use of a warewashing sink for food preparation requires prior approval from the Delaware Division of Public Health.

4.11 **Service Sinks** (for use as a janitorial sink, utility sink or mop sink)

4.11.1 **Installation location.** Wherever practical, fixture service sink must be installed outside of the food preparation, food dispensing, food storage and warewashing areas.

4.11.2 **Industry standard.** Service sinks, when located in food preparation, food dispensing, food storage and warewashing areas, must be certified or classified under an approved industry standard for food equipment, such as NSF International, ETL Sanitation, UL for Sanitation, BISSC, or equivalent.

4.11.3 **Minimum number required.** A minimum of one service sink or receptor is REQUIRED on each floor level of food operations. This fixture may be a sink or a curbed receptor.

4.11.4 **Dual use.** The dual use of a utility sink as a handwashing sink is not approved in new construction, conversion of a structure to a food establishment, nor remodeling of an existing facility.

4.11.5 **Grease trap connection.** Connection to a grease trap is not required.

4.12 **Prewash Sinks.**

4.12.1 **Industry standard.** Prewash sinks must be certified or classified under an approved industry standard for food equipment, such as NSF International, ETL Sanitation, UL for Sanitation, BISSC, or equivalent.

4.12.2 **Grease trap connection.** Connection to a properly sized grease trap is REQUIRED.

- 4.12.3 **Food waste grinder.** If a food waste grinder is installed on fixture prewash sink, the grease trap must be designed and rated for such application, or a solids interceptor is required upstream of the grease trap.
- 4.13 **Mechanical Warewasher**
- 4.13.1 **Industry standard.** Mechanical warewashers must be certified or classified under an approved industry standard for food equipment, such as NSF International, ETL Sanitation, UL for Sanitation, or equivalent.
- 4.13.2 **Warewashing machine.** A warewashing machine, using hot water or a chemical rinse to sanitize, may be installed. Large cookware which does not fit into the machine must be sanitized in a three compartment sink. Facilities without a three compartment sink whose warewashers are found functioning improperly may be directed to temporarily close until the machine is repaired. **If a chemical sanitizing agent is used, a test kit that matches the chemical sanitizing agent is required.**
- 4.13.3 **Grease trap connection.** Connection to a grease trap is NOT APPROVED due to high temperature, pressure and detergents.
- 4.13.4 **Indirect drainline connection.** An indirect drainline connection through an air-gap is REQUIRED. (See paragraph below for alternative installation provision.)
- 4.14 **Alternative Installation Provision**
- 4.14.1 **Alternative installation provision for mechanical warewasher.** If approved by the Delaware Division of Public Health, a direct drainline connection may be installed if the machine wastewater outlet is located within five feet of a properly trapped vented floor drain and the machine outlet is connected to the inlet side of the same properly vented floor drain trap.
- 4.15 **Water Heater**
- 4.15.1 **Hot water supply.** The water heater shall be sized to provide hot water as required to supply both the continuous requirements and the hourly peak demands of the facility. The continuous and hourly demands are based on the type of equipment and number of fixtures consuming hot water as required for food operations.
- 4.15.2 **Total availability.** The total hot water availability in gallons per hour (gph) from a water heater is the sum of the unit storage capacity plus the recovery rate at a 100°F rise.
- 4.15.3 **Minimum storage capacity.** A fuel-fired (gas or oil) water heater in a food establishment shall have a minimum storage capacity of thirty (30) gallons; an electric water heater shall have a minimum storage capacity of forty (40) gallons. Storage capacities larger than the minimum shall be required, based on the type of equipment and number of fixtures consuming hot water.
- 4.16 **Grease Trap**
- 4.16.1 **Sizing.** The grease trap must be sized in accordance with PDI standard G101.
- 4.16.2 **Grease trap connection.** Connection to a properly sized grease trap is REQUIRED for all fixtures that discharge grease-laden waste, e.g. warewashing sinks, food prep sinks, pre-wash sinks for warewashers, woks, and other cooking equipment.
- 4.16.3 **Sizing procedures.** Follow these procedures for sizing a grease trap to a specific fixture:
- 4.16.3.1 Determine the liquid volume of the fixture in cubic inches (cu in) draining to the grease trap.
 - 4.16.3.2 Determine the liquid capacity of the fixture in gallons (gal).
 - 4.16.3.3 Determine the actual drainage load (75% of fixture capacity).
 - 4.16.3.4 Determine the unit flow rate minimum for drainage period of 2 minutes.
 - 4.16.3.5 Determine the unit liquid holding capacity minimum (40% of fixture capacity).
 - 4.16.3.6 Select a unit corresponding to minimum unit flow rate and liquid holding capacity.

Table 4.16.3a
EXAMPLE OF SIZING FOR GREASE TRAP SELECTION

Select a grease trap for a three compartment warewashing sink with bowl dimensions of 18" W x 24" L x 12" D

1. Volume = (18in x 24in x 12in) x 3 cmpts = (5,184 cu in) x 3 = 15,552 cubic inches
2. Capacity = Volume (cu in) / 231 (cu in/gal) = 15,552 / 231 = 67.3 gallons
3. Drainage load = 67.3 gal x 0.75 = 50.4, or approx. 50 gallons
4. Unit flow rate minimum = 50 gallons / 2 minutes = 25 gallons per minute (gpm)
Unit liquid holding capacity minimum = 67.3 x 0.40 = 26.9 gallons
5. Select a grease trap with a minimum flow rate equal to or greater than **25 gpm**
The selected trap also must have a minimum liquid holding capacity of 26.9 gal.

Table 4.16.3b
GREASE TRAP SIZING FOR TYPICAL SINK INSTALLATIONS

Bold column at far right applies PDI G101 formula to calculate minimum required grease trap flow rate in gallons per minute (gpm).

Width (in)	Length (in)	Dept h (in)	Volume (cuin) W x L x D = Vc	Volume (gal) Vc / 231 = Vg	No of cmpts #C	Total vol (gal) Vg x #C = Vtg	Working vol (75%) Vtg x 0.75 = Vw	Min Flow Rate (gpm) Vw / 2min = MFR
16.0	19.0	10.5	3192	13.8	1	13.8	10	5
					2	27.6	21	10
					3	41.5	31	16
16.0	19.0	13.5	4104	17.8	1	17.8	13	7
					2	35.5	27	13
					3	53.3	40	20
16.0	20.0	14.0	4480	19.4	1	19.4	15	7
					2	38.8	29	15
					3	58.2	44	22
18.0	20.0	14.0	5040	21.8	1	21.8	16	8
					2	43.6	33	16
					3	65.5	49	25
18.0	24.0	12.0	5184	22.4	1	22.4	17	8
					2	44.9	34	17
					3	67.3	50	25
20.0	20.0	16.0	6400	27.7	1	27.7	21	10
					2	55.4	42	21
					3	83.1	62	31
22.0	24.0	16.0	8448	36.6	1	36.6	27	14
					2	73.1	55	27
					3	109.7	82	41
24.0	24.0	16.0	9216	39.9	1	39.9	30	15
					2	79.8	60	30
					3	119.7	90	45"