

The section titled "Administration", comprising sections ADM 1.1 through ADM 1.13, is deleted in its entirety by the NJUCC.

Administration

ADM 1.1 TITLE

The regulations contained in the following chapters and sections shall be known as the "National Standard Plumbing Code" and may be cited as such, and hereinafter referred to as "this Code".

ADM 1.2 SCOPE

The provisions of this Code shall apply to every installation, including the erection, installation, alteration, relocation, repair, replacement, addition to, use or maintenance of the plumbing system as defined within this Code.

ADM 1.3 PURPOSE

This Code establishes the minimum requirements and standards pertaining to the design, installation, use and maintenance of plumbing systems as defined within this Code.

ADM 1.4 APPLICABILITY

1.4.1 Addition or Repair

Additions, alterations or repairs in compliance to this Code may be made to any existing plumbing system without requiring the existing installation to comply with all the requirements of this Code. Additions, alterations or repairs shall not cause an existing system to become unsafe, insanitary or overloaded.

1.4.2 Existing Plumbing Installation

Plumbing systems that were lawfully installed prior to the adoption of this Code may continue their use, maintenance or repairs, provided the maintenance or repair is in accordance with the original design, location, and no hazard has been created to life, health or property by such plumbing system.

1.4.3 Existing Use

The lawful use of any plumbing installation, appliances, fixtures, fittings and appurtenances may have their use continued, provided no hazards to life, health or property have been created by their continued use.

1.4.4 Maintenance and Repairs

The maintenance of all plumbing systems, materials, appurtenances, devices or safeguards, both existing and new, shall be maintained in a safe and proper condition. The owner, or his designated agent, shall be responsible for the maintenance of the plumbing system. Minor repairs to or replacement of any existing systems are permitted, provided they are made in the same manner and arrangement as the original installation and are approved.

1.4.5 Change of Building Use

The plumbing systems of any building or structure that is proposed for a change in use or occupancy shall comply to all the requirements of this Code for the new use or occupancy.

Definitions

1.1 GENERAL

For the purpose of this Code, the following terms shall have the meaning indicated in this chapter. No attempt is made to define ordinary words that are used in accordance with their established dictionary meaning, except where it is necessary to define their meaning as used in this Code to avoid misunderstanding.

1.2 DEFINITION OF TERMS

Accessible and Readily Accessible:

Accessible: access thereto without damaging building surfaces, but that first may require the removal of an access panel, door or similar obstructions with the use of tools. *See Figure 1.2.1*

Readily accessible: access without requiring the use of tools for removing or moving any panel, door or similar obstruction. *See Figure 1.2.1*

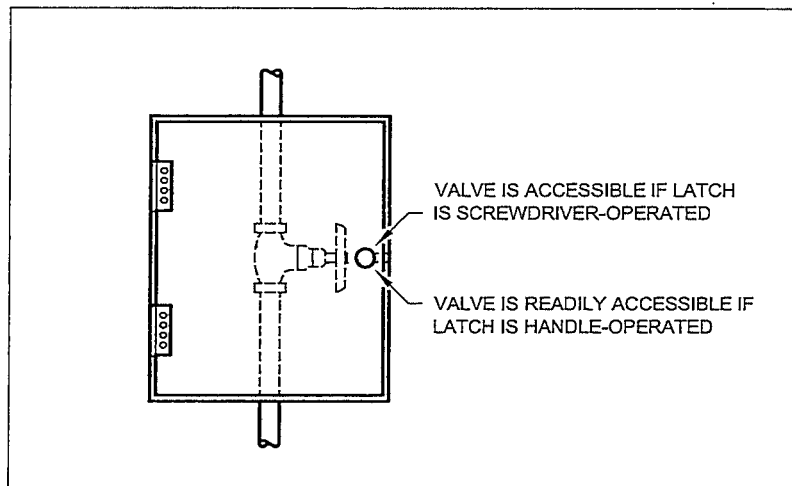


Figure 1.2.1
AN EXAMPLE OF ACCESSIBLE AND READILY ACCESSIBLE

Acid Waste: See "Special Wastes"

~~**Adopting Agency:** The agency, board or authority having the duty and power to establish codes and regulations that directly and indirectly affect the plumbing work to be performed in a jurisdiction as administered and enforced by an Authority Having Jurisdiction~~

Air Break (drainage system): A piping arrangement in which a drain from a fixture, appliance, or device discharges into a receptor at a point below the flood level rim and above the trap seal of the receptor. *See Figure and Section 9.1.3*

Approved: Accepted or acceptable under an applicable standard stated or cited in this code, or accepted as suitable for the proposed use under procedures and powers of the Authority having Jurisdiction as defined in Section 3.12 N.J.A.C. 5:23-3.7. See Sections 3.1.1, 3.1.2, 3.1.3, and 3.12

Area Drain: A receptor designed to collect surface or storm water from an open area. See Figures 1.2.6 and 13.1.6

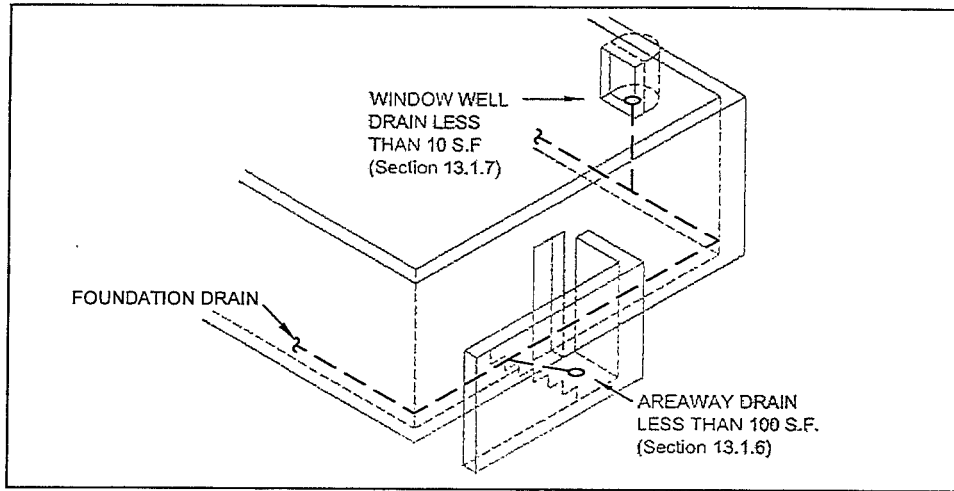


Figure 1.2.6
AREA DRAINS IN WINDOW WELLS AND STAIR WELLS

Aspirator: A fitting or device supplied with water or other fluid under positive pressure that passes through an integral orifice or "constriction" causing a vacuum. See Figure 1.2.7 and Section 14.13

Comment: Backflow prevention is required where the fluid supply is potable water.

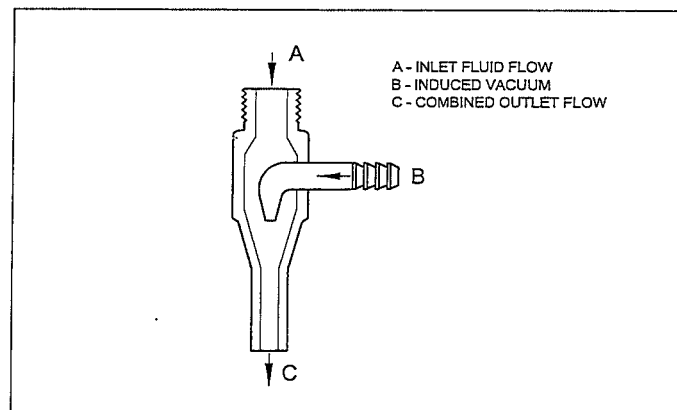


Figure 1.2.7
AN ASPIRATOR FITTING

Authority having Jurisdiction: An administrative authority. The individual official, board, department or agency established and authorized by a state, county, city or other political subdivision created by law to administer and enforce the provisions of codes and regulations that directly and indirectly affect the plumbing work to be performed in a jurisdiction as adopted and amended by an adopting agency. Unless otherwise defined herein, or unless the context clearly indicates otherwise, the term "authority having jurisdiction" for purposes of the plumbing subcode, shall mean the "plumbing subcode official".

Automatic Compensating Valve: A temperature control valve for individual shower and tub/shower combinations designed to minimize thermal shock and reduce the risk of scalding. They are installed at the point of use where the user has access to adjust the water flow and discharge temperature. The valves include Type P (pressure balancing), Type T (thermostatic), and Type T/P (combination), and comply with ASME A112.1016/ASSE 1016/CSA B125.16.

Automatic Flushing Device: A device that automatically flushes a fixture after each use without the need for manual activation.

Auxiliary Floor Drain: A floor drain that does not receive the discharge from any indirect waste pipe or other predictable drainage flows. Auxiliary floor drains have no DFU loading.

Back Pressure Backflow: Backflow into potable water piping from a source having a higher pressure than in the potable water piping. *See Figure 1.2.8*

Back Siphonage Backflow: Backflow into potable water piping caused by a vacuum or partial vacuum in the potable water piping. *See Figure 1.2.9*

Backflow Preventer: A device or assembly that prevents backflow into potable water piping caused by back pressure, back siphonage, or both.

Branch Drain: A branch of drain piping, including horizontal fixture branches, horizontal branch drains, horizontal battery-vented drains, and branches of the building drain.

Branch Interval: A distance along a vertical sanitary drain stack corresponding, in general, to a story height, but in no case less than 8 feet within which the horizontal branches from one floor or story of a building are connected to the stack. *See Figure 1.2.14*

Branch intervals are used to determine the potential drainage load on stacks for the purpose of sizing the stacks and providing pressure relief.

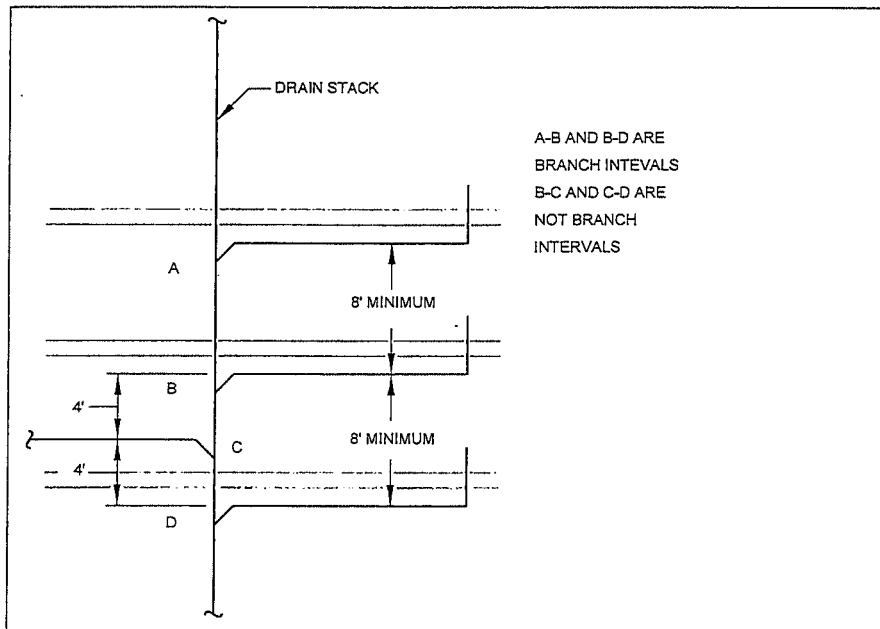


Figure 1.2.14
BRANCH INTERVALS

Branch Vent: See "Vent, Branch"

Building Classification: The arrangement for the designation of buildings according to occupancy based on the applicable building code subcode at N.J.A.C. 5:23-3.14.

Comment: The building classifications in Table 7.21.1 for the minimum number of required plumbing fixtures include assembly (A), business (B), education (E), factory (F), institutional (I), mercantile (M), residential (R), and storage (S).

Building Drain, Combined: A building drain that conveys both sewage and storm water. *See Figure 1.2.15*

Health Hazard: In backflow prevention, an actual or potential threat of contamination of the potable water supply to the plumbing system of a physical or toxic nature that would be a danger to health. Health hazards include any contamination that could cause death, illness, or spread of disease.

Horizontal Battery-Vented Drain: A horizontal drain that connects battery-vented fixtures to a drain stack, the building drain, or a branch of the building drain.

Horizontal Branch Drain: Horizontal drain piping, with or without offsets, that receives the discharge from two or more fixture drains and conveys the drainage to the building drain or a branch of the building drain. Horizontal branch drains do not connect to drain stacks.

Horizontal Fixture Branch: Horizontal drain piping, with or without offsets, that receives the discharge from two or more fixture drains and conveys the drainage to a vertical drain stack with the reduced allowable DFU loading for the branch as indicated in Table 11.5.1B.

Comment: The reduced DFU loading for the branch is to prevent the branch flow from impacting the flow in the stack, causing turbulence in the stack and restricted flow in the branch.

Horizontal Pipe: Any pipe or fitting that makes an angle of less than 45° with the horizontal. *See Figure 1.2.37*

Comment: The sizing of offsets in drain stacks varies depending on whether the offset is horizontal or vertical. See Section 11.6.

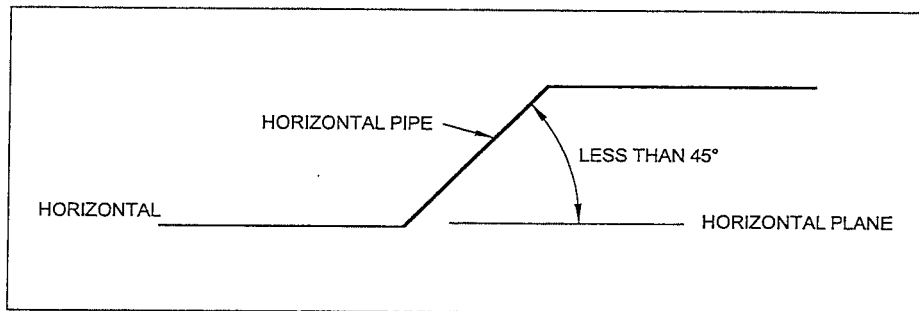


Figure 1.2.37
THE DEFINITION OF “HORIZONTAL PIPE”

Hot Water: Potable water that is heated for domestic use including bathing, washing, dishwashing, clothes washing, cleaning, and maintenance. *Hot water is potable water at a temperature of not less than 120 degrees F and not more than 140 degrees F.*

IDR: An abbreviation for the “dimension ratio” of ID controlled plastic pipe that is based on the ratio of the inside diameter of the pipe divided by its minimum wall thickness. Lower IDR ratings of the same pipe design and material have higher pressure ratings.

Comment: IDR equals SIDR for the same pipe material composition (designation code) with the same inside diameter and minimum wall thickness. The terms are used interchangeably depending on the pipe manufacturer or standards organization. Pipes of the same material composition with the same IDR and SIDR have the same pressure ratings regardless of pipe size.

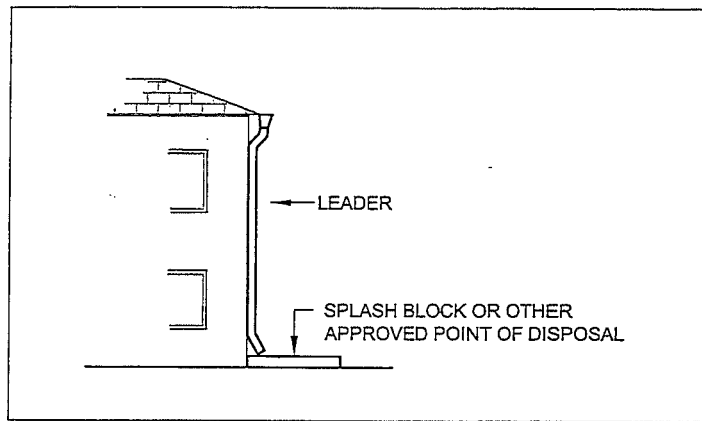


Figure 1.2.42
A STORMWATER LEADER

Loop Vent: See “Vent, Loop”

Macerating Toilet System: A system that collects drainage from a single water closet, lavatory and/or bathtub located in the same room. It consists of a receiving container, a grinder pump, and associated level controls. The system pumps shredded or macerated sewage up to a point of discharge.

May: The word “may” is a permissive term.

Medical Gas System: The complete system used to convey medical gases for direct application from central supply systems (bulk tanks, manifolds and medical air compressors) through piping networks with pressure and operating controls, alarm warning systems, etc., and extending to station outlet valves at use points.

Medical Vacuum Systems: A system consisting of central-vacuum-producing equipment with pressure and operating controls, shut-off valves, alarm warning systems, gauges and a network of piping extending to and terminating with suitable station inlets to locations where suction may be required.

Multiple Dwelling: A building containing two or more dwelling units.

Non-Health Hazard: In backflow prevention, an actual or potential threat to the physical properties or potability of the water supply to the plumbing system, but which would not constitute a health or system hazard.

Non-Potable Water: Water not safe for drinking, personal or culinary use.

Nominal Size: (Pipe or Tube): The industry-recognized size of a plumbing pipe or tube that is not necessarily an actual dimension. It indicates the size of the pipe or tube as indicated in its material standard listed in Table 3.1.3.

~~**Nuisance:** Public nuisance at common law or in equity jurisprudence; whatever is dangerous to human life or detrimental to health; whatever building, structure, or premises is not sufficiently ventilated, sewerred, drained, cleaned, or lighted in reference to its intended or actual use; and whatever renders the air, human food, drink or water supply unwholesome.~~

Offset: A combination of elbows or bends that brings one section of the pipe out of line but into a line parallel with the other section. *See Figure 1.2.44 - Parts A and B for single offsets*

Sump: A tank or pit that receives only liquid wastes, located below the elevation of a gravity discharge, that is emptied by pumping.

Sump, Drainage (sewage): A liquid and air-tight tank that receives sewage and/or liquid waste, located below the elevation of a gravity drainage system, that is emptied by pumping. *See Figure 1.2.54*

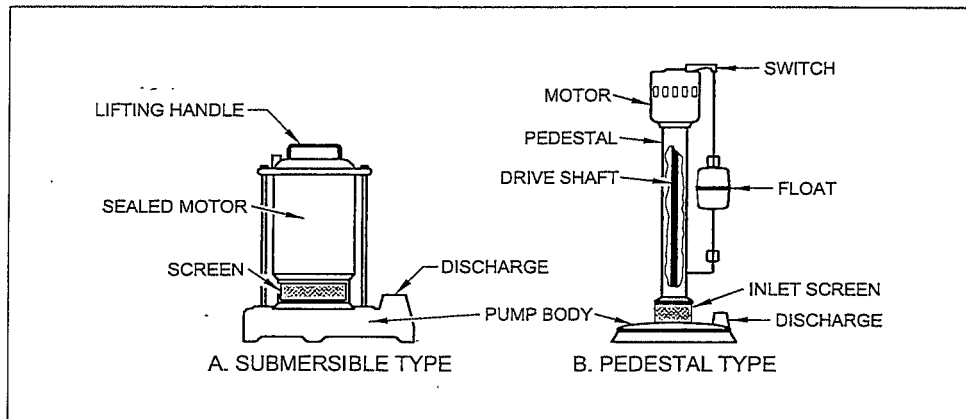


Figure 1.2.60
DIFFERENT TYPES OF SUMP PUMPS

Tempered Water: A mixture of hot and cold water to reach a desired temperature for its intended use, typically of 95°F – 105°F.

Thermostatic Compensating Valve: An automatic compensating valve that senses its outlet water temperature and compensates for fluctuations to stabilize its adjusted outlet water temperature. See "Automatic Compensating Valve".

Thermostatic/Pressure Balancing Combination Compensating Valve: An automatic compensating valve that senses its outlet water temperature and its incoming hot and cold water pressures and compensates for fluctuations to stabilize its adjusted outlet water temperature. See "Automatic Compensating Valve".

Toilet Facility: A room or combination of interconnected spaces in other than a dwelling that contains one or more water closets and associated lavatories, with signage to identify its intended use.

Trap: A fitting or device that provides a liquid seal to prevent the emission of sewer gasses without materially affecting the flow of sewage or waste water through it. *See Figure 1.2.62 and Sections 5.1, 5.2, and 5.3*

2.4.3 Obstruction to Flow

- a. No fitting, connection, device, or method of installation that obstructs or retards the flow of water, wastes, sewage, or air in the drainage or venting systems in an amount greater than the normal frictional resistance to flow, shall be used unless it is indicated as acceptable in this Code.
- b. 4x3 closet bends and 4x3 closet flanges shall not be considered as obstructions to flow.

Comment #1: This Section does not prohibit double hub fittings for sanitary drain pipe installations since they create no more restriction to flow that would be encountered with a hubless coupling or similar fitting.

Comment #2: Failure to ream or deburr drainage piping constitutes an obstruction to flow.

2.4.4 Prohibited Joints

Cement mortar joints are prohibited.

EXCEPTION: When used for repairs and/or when used for connections to existing lines constructed with such joints.

~~2.5 HEALTH AND SAFETY~~

~~Where a health or safety hazard is found to exist on a premise, the owner or his agent shall be required to make such corrections as may be necessary to abate such nuisance, and bring the plumbing installation within the provisions of this Code.~~

2.6 TRENCHING, BEDDING, TUNNELING AND BACKFILLING

2.6.1 Trenching and Bedding

- a. Trenching and excavation for the installation of underground piping shall be performed in compliance with occupational safety and health requirements. Trenches shall be of sufficient width to permit proper installation of the pipe. Where shoring is required, additional allowance shall be made in the width of the trench to provide adequate clearance.
- b. A firm, stable, uniform bedding shall be provided under the pipe for continuous support. Bell holes shall be provided for joints in bell and spigot pipe and for other joints requiring such clearance. Blocking shall not be used to support the pipe.
- c. The trench bottom may provide the required bedding when adequate soil conditions exist and when excavated to the proper depth and grade. Where trenches are excavated to depths below the bottom of the pipe, bedding shall be added beneath the pipe as required. Such bedding shall be of clean sand, gravel, or similar select material that is compacted sufficiently to provide the support required under 2.6.1.b.
- d. Where rock is encountered in trenching, it shall be removed to a depth of not less than 6 inches below the bottom of the pipe and bedding shall be added as required under 2.6.1.c. The pipe shall not rest on rock at any point, including joints.

Required under Section 2.6.1.c. *See Figures 2.6.1-A and 2.6.1-B. Also Section 2.6.2, 2.6.3, and 2.6.4*

2.6.2 Side-fill

The haunch areas adjacent to the pipe between the bottom of the pipe and its horizontal centerline shall be filled with a clean coarse-grain material such as sand, gravel, or soil. Such side-fill shall be placed by hand, extending to the sides of the trench, and be compacted to provide lateral support for the pipe. *See Figures 2.6.1-A and 2.6.1-B*

2.9 PROTECTION OF PIPES

2.9.1 From Breakage

Pipes passing under or through foundation walls shall be protected from breakage.

2.9.2 From Corrosion

Pipe subject to corrosion by passing through or under corrosive fill, such as, but not limited to, cinders, concrete, or other corrosive material, shall be protected against external corrosion by protective coating, wrapping, or other means that will resist such corrosion.

Comment #1: Soil samples should be taken to assure that the soil will not corrode the pipe. Wrappings and coatings reduce contact corrosion, but cathodic protection may be required where stray electric currents exist.

Comment #2: Job site debris should not be allowed in the backfill for piping trenches. Material such as metal cans, metal studs, and gypsum board may chemically react with some types of pipe.

2.9.3 From Weakened Structure

Any structural member weakened or impaired by cutting, notching, or otherwise, shall be reinforced, repaired, or replaced, so as to be left in a safe structural condition in accordance with the requirements of the applicable building ~~code~~ *subcode*.

2.9.4 From Nails, Screws, and Other Fasteners

a. Plastic and copper piping run through framing members (wood or metal) to within one inch of the edge of the framing shall be protected by steel nail plates not thinner than 16 gauge. Where such piping penetrates top plates or sole plates of the framing, the nail plate shall extend at least two inches below top plates and two inches above sole plates.

b. Where plastic and copper piping runs through metal framing members, it shall be protected from abrasion caused by expansion and contraction of the piping or movement of the framing.

2.10 EXCLUSION OF MATERIALS DETRIMENTAL TO THE SEWAGE SYSTEM

2.10.1 General

No material shall be deposited into a building drainage system or sewer that would or could either obstruct, damage, or overload such system; that could interfere with the normal operation of sewage treatment processes; or that could be hazardous to people or property. This provision shall not prohibit the installation of special waste systems when approved by the Authority Having Jurisdiction.

2.10.2 Industrial Wastes

Waste products from manufacturing or industrial operations shall not be introduced into the public sewer system until it has been determined by the Authority Having Jurisdiction that the introduction thereof will not cause damage to the public sewer system or interfere with the functioning of the sewage treatment plant.

Comment: Where industrial wastes will be created, the facility should provide the following information to the Authority Having Jurisdiction for the sewerage system: (1) the quantity of water and waste material that will be discharged into the sewer system, (2) the industrial processes that create the waste, (3) the composition and concentration of the chemicals in the waste, (4) the water supply demand for the facility, and (5) the intended design of the pre-treatment or neutralizing system for the wastes prior to its discharge into the sewer system.

2.11 MATERIALS EXPOSED WITHIN PLENUMS

All piping materials exposed within plenums shall comply with the provisions of other applicable ~~Codes~~ ~~subcodes~~.

2.12 SLEEVES FOR PIPING

a. All piping passing through concrete walls, floors, slabs, and masonry walls shall be provided with sleeves for protection.

EXCEPTION: Sleeves shall not be required for pipes passing through drilled or bored holes. Such holes shall provide 1/2 inch minimum clearance around the pipe and any thermal insulation.

b. Sleeves shall be sized so there is a minimum of 1/2-inch clearance around the pipe and/or insulation.

c. Piping through concrete or masonry walls shall not be subject to any load from building construction.

d. The annular space between sleeves and pipes shall be filled or tightly caulked with coal tar, asphaltum compound, lead, or other material found equally effective and approved as such by the Authority Having Jurisdiction.

e. All penetrations of construction required to have a fire resistance rating shall be protected in accordance with the applicable building ~~regulations~~ ~~subcode~~.

See Figure 2.12

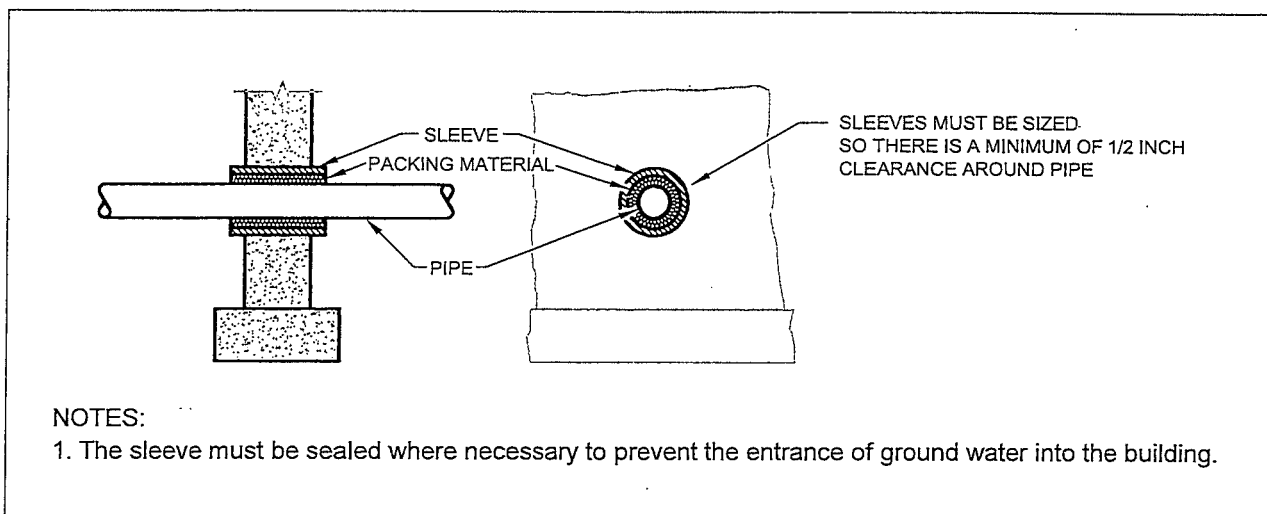


Figure 2.12
A PIPE SLEEVE THROUGH A FOUNDATION WALL

2.13 OPENINGS FOR PIPING

a. Openings for plumbing piping shall be sealed as required to maintain the integrity of the wall, floor, ceiling, or roof that has been penetrated.

b. Collars or escutcheon plates shall be provided to cover the openings around pipes where the piping penetrates walls, floors, or ceilings in finished areas that are exposed to view.

2.14 USED MATERIAL OR EQUIPMENT

Used plumbing material or equipment that does not conform to the standards and regulations set forth in this Code shall not be installed in any plumbing system.

2.15 CONDEMNED EQUIPMENT

Any plumbing equipment condemned by the Authority Having Jurisdiction because of wear, damage, defects or sanitary hazards, shall not be used for plumbing purposes.

2.16 FREEZING OR OVERHEATING

- a. The plumbing system shall be protected from freezing or overheating. The following conditions shall be met:
 1. Exterior water piping shall be installed below recorded frost lines. Minimum earth cover above the top of the pipe shall be 42 inches. *Combination domestic/fire water service piping shall be installed such that the minimum earth cover is 42 inches or the top of the pipe is 12 inches below the frost depth of the locality, whichever is greater. Limited area sprinkler systems installed in accordance with Section 903.3.8 of the building subcode, shall be installed such that the minimum earth cover is 42 inches.*
 2. Minimum earth cover above the top of the exterior building drains and building sewers that connect to public sewage systems shall be 24 inches. Minimum earth cover above the top of the exterior building drains and building sewers that connect to individual sewage disposal systems shall be 6 inches.
 3. In systems that are used seasonally, water piping shall have provisions to be drained.
 4. Piping shall be installed so that the contents will not be heated due to close proximity to any heat source or from direct solar radiation.
 5. In areas with seasonal freezing outdoor temperatures, all drain piping and water piping installed in exterior walls, attics, and other areas exposed to outdoor temperatures shall be protected from freezing. In heated spaces, the piping shall be installed on the heated side of the building insulation. See *Figure 2.16*

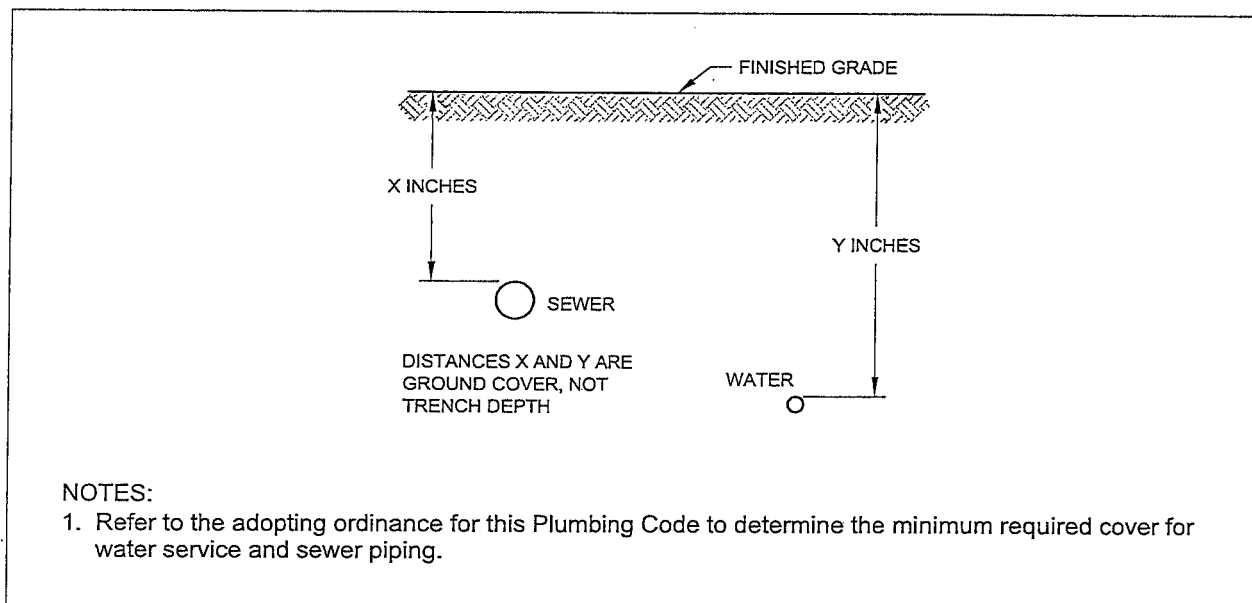


Figure 2.16
DEPTH OF COVER FOR WATER SERVICE AND SEWER PIPING

2.19 CONNECTION TO WATER AND SEWER SYSTEMS

2.19.1 Availability of Public Water and Sewer

The water distribution and drawing systems of any building in which plumbing fixtures are installed shall be connected to a public water supply and sewer system respectively if the public water supply and/or public sewer is within _____ feet of the property line on the premises, or other reasonable distance as determined by the Authority having Jurisdiction. See *Figure 2.19.1*

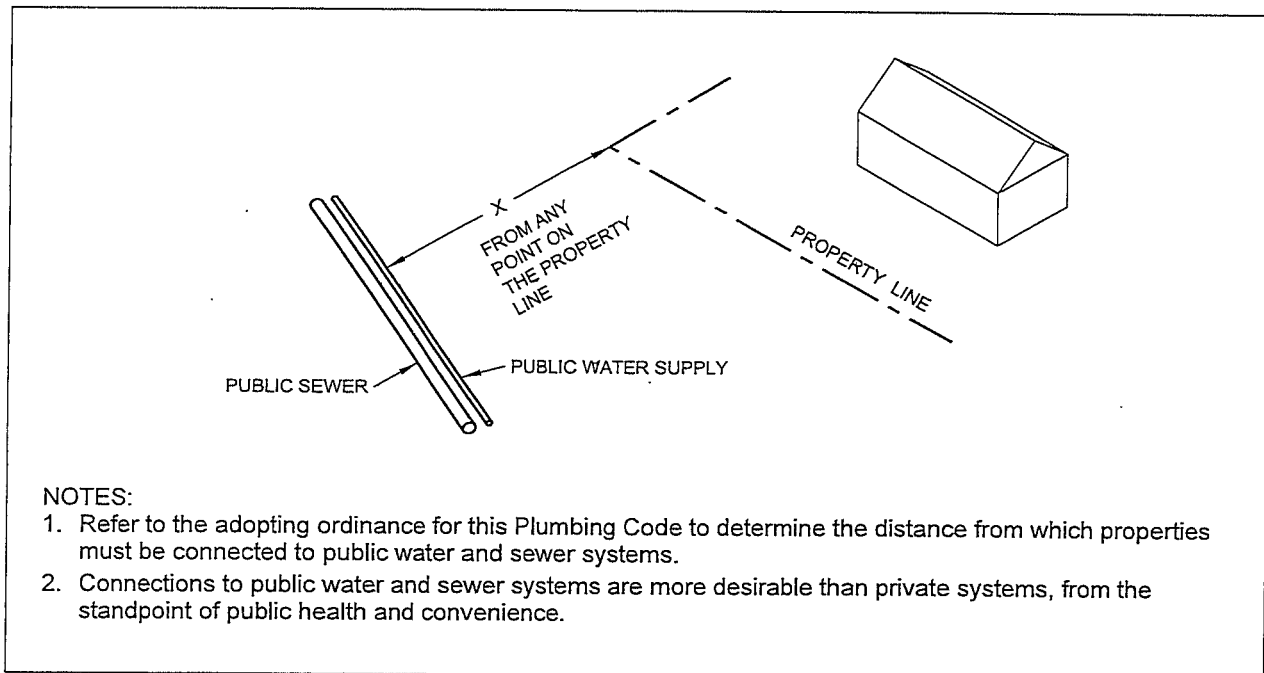


Figure 2.19.1

REQUIRED CONNECTION OF PROPERTIES TO PUBLIC WATER AND SEWER SYSTEMS

2.19.2 Private Systems

Where either a public water supply or sewer system, or both, are not available, a private individual water supply or individual sewage system, or both, shall be provided, and the water distribution system and drainage system shall be connected thereto. Such private systems shall meet the standards for installation and use established by the Health Department or other agency having jurisdiction the *NJ Department of Environmental Protection*. See Chapters 16 and 17.) See *Figure 2.19.1*. Also the definition of "Private Sewage Disposal System" and "Private Water Supply".

Comment: Plumbing in buildings connected to private water or sewage systems must comply with all applicable requirements of this Code or the Authority Having Jurisdiction.

2.19.3 Common systems

- a. Common water services shall be permitted to serve attached single-family dwellings in groups of three or more where the common water service is located within property subject to an association easement or on common property and there is a homeowners' association or other owner entity responsible for maintenance and upkeep.
- b. Common building sewers shall be permitted to serve attached single-family dwellings in groups of three or more where the common sewer is located within property subject to an association easement or on common property and there is a homeowners' association or other owner entity responsible for maintenance and upkeep.

2.20 REQUIREMENTS FOR WASHROOMS, TOILET ROOMS & BATHROOMS

2.20.1 Light and Ventilation

Light and ventilation shall be provided as required by other applicable codes.

2.20.2 Location of Piping and Fixtures

Piping, fixtures, or equipment shall not be located in such a manner as to interfere with the normal operation of windows, doors, or other exit openings.

2.21 PIPING MEASUREMENTS

Except where otherwise specified in this Code, all measurements shall be made to the center lines of the pipes.

2.22 WATER CLOSET CONNECTIONS

- a. Three-inch bends may be used on water closets or similar connections provided a 4-inch by 3-inch flange is installed to receive the closet fixture horn.
- b. Four-inch by three-inch closet bends shall be permitted.

See Figure 2.22

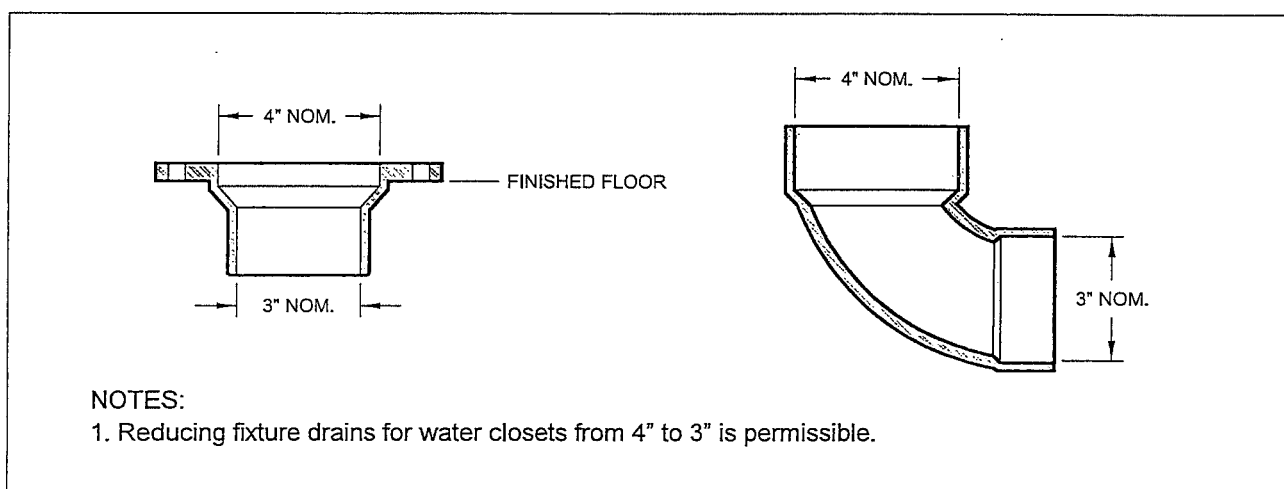


Figure 2.22
WATER CLOSET DRAIN CONNECTIONS

2.23.1 DRAIN PIPING

- a. In the installation of drain piping, dead ends shall not be permitted.
EXCEPTION: Piping to make cleanouts accessible.

See Figure 5.4.5 - B

- b. Rough-ins for future fixtures shall not be considered dead ends.
- c. If an existing fixture, appliance, or equipment is removed, any open ends in the drain piping shall be capped or plugged watertight.

2.23.2 Vent Piping

In the installation, removal, or disconnecting of any vent piping, any open ends shall be capped or plugged watertight. Dead ends that are not self-draining shall not be permitted.

~~2.24 TOILET FACILITIES FOR CONSTRUCTION WORKERS~~

~~Suitable toilet facilities shall be provided and maintained in a sanitary condition for the use by workers during construction. Non sewer type toilet facilities for construction workers shall conform to ANSI Z4.3.~~

2.26 REQUIREMENTS FOR ELEVATORS

2.26.1 General

- a. The plumbing requirements for elevator shafts, pits, and equipment rooms shall be in accordance with the applicable elevator code.
- ~~b. Piping shall not be installed in elevator machine rooms that is prohibited by the applicable elevator code.~~
- c. Foundation drains and other sources of ground water shall not be connected to elevator pits
- d. Where elevators have ~~Phase II firefighting override~~ *firefighter emergency operation*, drainage shall be provided for their elevator pit.

2.26.2 Where Elevator Pit Drainage is Provided

- a. Drainage from elevator pit drains or pumps shall discharge to an approved location. Such drainage shall not be connected to storm drain piping.
- b. ~~Where the drainage discharge is outdoors~~ The location shall be approved by the Authority Having Jurisdiction and be marked "ELEVATOR PIT DISCHARGE".
- ~~c. An outdoor discharge from elevator pit drains or pumps shall extend from the pit to an indirect waste receptor or be connected to a gravity drain piping indirectly through an air gap or air break. The point of discharge shall be marked "ELEVATOR PIT DISCHARGE".~~
- d. The controls for sump pumps serving hydraulic elevators shall include automatic oil sensing with pump cutoff. ~~or there shall be oil separation for pump operation.~~
- e. Sump pits for drains or pumps shall have a removable or operable grate-type cover that is secured and level with the elevator pit floor.
- f. The discharge piping from the elevator sump pumps shall include a check valve and a manual quarter-turn shutoff valve with visual indication of its full open and full closed positions from within the elevator pit.
- g. Where elevators have ~~Phase II firefighting override~~ *firefighter emergency operation*, the design flow capacity of the required drains or pumps shall be not less than 3000 gph (50 gpm) per elevator. ~~Pumps for hydraulic elevators shall have oil separation for pump operation.~~

2.27 IDENTIFICATION OF SYSTEM PIPING

- a. Where plumbing system piping is identified, the labeling shall comply with the applicable requirements of ASME A13.1 or its equivalent.
- b. Piping for non-potable water used for typical potable water applications shall be identified in accordance with Section 10.21.

2.28 NFPA 13D MULTIPURPOSE RESIDENTIAL FIRE SPRINKLER SYSTEMS

Where approved by the Authority Having Jurisdiction, NFPA 13D multipurpose residential fire sprinkler systems that provide both domestic cold water distribution and fire sprinkler protection for one- and two-family dwellings with a combination piping system shall comply with Section 10.20.

2.29 RADON GAS SYSTEMS

Radon systems and their components shall be designed to comply with the laws, ordinances, codes, and regulations of relevant jurisdictional authorities, including applicable mechanical, electrical, building, plumbing, energy, and fire prevention codes.

2.30 SWIMMING POOLS, WADING POOLS, SPAS, AND HOT TUBS

- a. The water supply shall be protected from backflow by a fixed air gap above the overflow level of the pool, spa, or hot tub, or by an approved backflow preventer. Where the water supply connection is below the overflow level, an ASSE 1013 reduced pressure principle backflow preventer shall be provided.
- b. The drainage from swimming pools and wading pools shall be indirect through an air gap in accordance with Section 9.1.11.

Materials

3.1 MATERIALS

3.1.1 ~~Minimum~~ Standards

The standards cited in this chapter shall control all materials, systems, and equipment used in the construction, installation, alteration, repair, or replacement of plumbing or drainage systems or parts thereof. EXCEPTIONS:

- (1) The Authority Having Jurisdiction shall allow the extension, addition, or relocation of existing water, drain, and vent piping with materials of like grade and quality as permitted in ~~Section 3-12-2 N.J.A.C. 5:23-3.7.~~
- (2) Materials not covered by the standards cited in this chapter may be used with the approval of the Authority Having Jurisdiction as permitted in ~~Section 3-12-2 N.J.A.C. 5:23-3.7.~~

3.1.2 General Requirements

a. Materials, fixtures, or equipment used in the installation, repair or alteration of any plumbing system shall conform ~~at least~~ to the standards listed in this chapter, except as otherwise approved by the Authority Having Jurisdiction under the authority contained in ~~Section 3-12-2 N.J.A.C. 5:23-3.7.~~

b. Materials installed in plumbing systems shall be handled and installed as to avoid damage so that the quality of the material will not be impaired.

c. No defective or damaged materials, equipment or apparatus shall be installed or maintained. (See Sections 2.14 and 2.15)

d. All materials used shall be installed in strict accordance with the standards under which the materials are accepted and approved, including the appendices of the standards, and in strict accordance with the manufacturer's instructions. Where the provisions of material standards or manufacturer's instructions conflict with the requirements of this Code, this Code shall prevail.

e. Marking of cast iron soil pipe and fittings: Each length of cast iron soil pipe and fittings used in the plumbing system shall be marked by the manufacturer's name or registered trademark to enable the end user to readily identify the manufacturer. The marking shall be done during the time of manufacture. Field marking shall not be permitted.

f. Certification of cast iron soil pipe and fittings: Where cast iron soil pipe and fittings are being installed, the Authority Having Jurisdiction shall be furnished, when requested, certification by the manufacturer of compliance to the product standards. Resellers of cast iron soil pipe and fittings manufactured by others and using third party certifications or inspections to support proof of compliance to the product standard shall, in addition to the manufacturer's certification, provide, when requested, copies of the third party reports to the Authority Having Jurisdiction.

3.1.3 Standards Applicable to Plumbing Materials

A material shall be considered approved if it is listed or certified by a recognized certification body as complying with one or more of the standards cited in Table 3.1.3, and in the case of plastic pipe, fittings and solvent cement also NSF 14. Materials not listed in Table 3.1.3 shall be used only as provided for in ~~Section 3-12-2 N.J.A.C. 5:23-3.7~~ or as permitted elsewhere in this code.

3.3.7 Interceptors, Separators, Grease Recovery Devices

Interceptors, separators, and grease recovery devices shall meet the requirements of Chapter 6.

3.3.8 Pressure Tanks and Vessels

a. Hot water storage tanks shall meet construction requirements of ASME, CSA, or UL as appropriate. (See Table 3.1.3)

b. ASME pressure vessels shall be designed and constructed in accordance with the requirements of the American Society of Mechanical Engineers (ASME), Rules for Construction of Heating Boilers, Section IV Part HLW and/or Rules for Construction of Pressure Vessels, Section VIII. Any pressure vessel that exceeds any of the following shall meet the requirements of ASME and shall be stamped ASME: A heat input rating of 200,000 BTU per hour; or a water temperature of 210 degrees Fahrenheit; or a nominal water capacity of 120 gallons; or any other thresholds of ASME that apply.

c. Storage tanks less in volume than those requirements specified by ASME shall be of durable materials and constructed to withstand 125 p.s.i. with a safety factor of 2.

3.3.9 Roof Drains

Roof drains shall be of cast iron, copper, lead, plastic, or other approved corrosion-resisting materials. *See Section 13.5.1*

3.3.10 Safety Devices for Pressure Tanks

Safety devices shall meet the requirements of the American National Standards Institute, American Society of Mechanical Engineers, or the Underwriters Laboratories. Listing by Underwriters Laboratories, Canadian Standards Association, or National Board of Boiler and Pressure Vessel Inspectors shall constitute evidence of conformance with these standards. Where a device is not listed by any of these organizations, it shall have certification by an approved laboratory as having met these requirements. *See Section 10.16*

~~3.3.11 Tanks~~

~~a. Plans for all septic tanks shall be submitted to the Authority Having Jurisdiction for approval. Such plans shall show all dimensions, reinforcing, structural calculations, and such other pertinent data as may be required.~~

~~b. Septic tanks shall be constructed of sound durable materials, not subject to excessive corrosion or decay and shall be watertight. *See Sections 16.6.5 and 16.6.6*~~

3.3.12 Carriers and Supports

Carriers and supports for plumbing fixtures shall comply with ASME A112.6.1M, ASME A112.6.2, or ASME A112.19.12.

3.4 POTABLE WATER PIPING

3.4.1.1 Materials

Plastic piping materials used for the conveyance of potable water shall comply with NSF 14 and be marked accordingly.

3.4.1.2 Stainless Steel Piping

a. Stainless steel pipe shall comply with ASTM A312, TP316, or TP316L.

b. Stainless steel fittings shall be the press connect or approved joint type.

3.4.2 Water Service Piping

Water service pipe and pipe fittings to the point of entrance into the building through a foundation wall or floor shall be of materials listed in Table 3.4 and shall be water pressure rated not less than 160 psi at 73 deg F. See Table 3.4.2. Water service pipe and pipe fittings shall comply with NSF 61.

3.4.2.1 Combination Domestic/Fire Water Service: Water service piping for combination domestic/fire water services shall be of materials listed in Table 3.4 and shall be water pressure rated not less than 200 psig at 73 degrees F. Joint restraints shall comply with Section 6.3, entitled "Joint Restraint for Fire Mains" per NFPA 13. Exception: Limited area sprinkler systems installed in accordance with Section 903.3.8 of the building subcode, shall be water pressure rated not less than 160 psig at 73 degrees F.

3.12 ALTERNATE MATERIALS AND METHODS

3.12.1 Existing Buildings

- a. Plumbing work performed in existing buildings shall conform to the requirements of this Code, unless the Authority Having Jurisdiction finds that such conformance would result in an undue hardship.
- b. The Authority Having Jurisdiction may grant a variation to the extent necessary to relieve the undue nature of the hardship.
- c. A record, open to the public, shall be kept of each variation granted under this section.

3.12.2 Approval

- a. The Authority Having Jurisdiction may approve the use of any material or method not expressly conforming to the requirements of this Code provided all of the following conditions are met:
 1. The material or method is not expressly prohibited by this Code.
 2. The material or method is determined to be of such design or quality as to appear suitable for the proposed use.
 3. A record of such approval is kept and shall be available to the public.

3.12.3 Tests

When there is insufficient evidence to verify claims for alternate materials, the Authority Having Jurisdiction may require tests of compliance as proof of suitability. Such tests shall be made by an approved testing agency at the expense of the applicant.

3.12.4 Test Procedure

Tests shall be made in accordance with applicable standards; but in the absence of such standards, the Authority Having Jurisdiction shall specify the test procedure.

3.12.5 Repeated Tests

The Authority Having Jurisdiction may require tests to be repeated if, at any time, there is reason to believe that an alternate material no longer conforms to the requirements on which its approval was based.

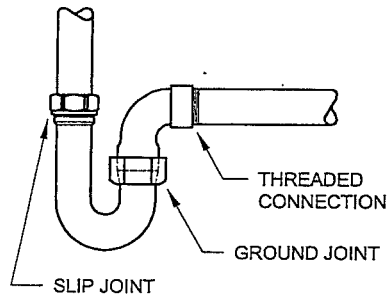
Table 3.1.3 - Part X MISCELLANEOUS MATERIALS

1	FOG disposal systems for fats, oils, greases	ASME A112.14.6
2	Grease interceptors	ASME A112.14.3 PDI G 101
3	Grease interceptors, gravity, pre-fabricated	IAPMO/ANSI Z1001
4	Grease removal devices (GRD)	ASME A112.14.4
5	Macerating toilet systems	ASME A112.3.4 CSA B45.9
6	Pipe hangers and supports	MSS SP-58
7	Waste disposal systems, non-sewered	ANSI Z4.3
8	Water containment membrane, concealed, CPE plastic	ASTM D4068
9	Water containment membrane, concealed, PVC plastic	ASTM D4551

Table 3.1.3 - Part XI INSTALLATION PROCEDURES AND PRACTICES

1	Ductile iron water mains	AWWA C600
2	Electro fusion joining PE and PEX piping	ASTM F1290
3	Heat fusion joining PE piping	ASTM F2620
4	Safe handling of solvent cements, primers, and cleaners	ASTM F402
5	Soldered joints in copper tubing	ASTM B828
6	Solvent cemented joints in PVC piping	ASTM D2855
7	Thermoplastic pipe and corrugated tubing for septic tank leach fields	ASTM F481
8	Underground thermoplastic pressure piping	ASTM D2774
9	Underground thermoplastic drain and sewer piping	ASTM D2321
10	Vitrified clay piping	ASTM C12

11	Entrapment Avoidance for Swimming Pools and Hot Tubs	APSP-7 - 2013
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NOTES:

1. Only the slip joint must be accessible if required by Section 4.2.15.

**Figure 5.3.1 - C
A FIXTURE TRAP WITH THREE DIFFERENT TYPES OF JOINTS**

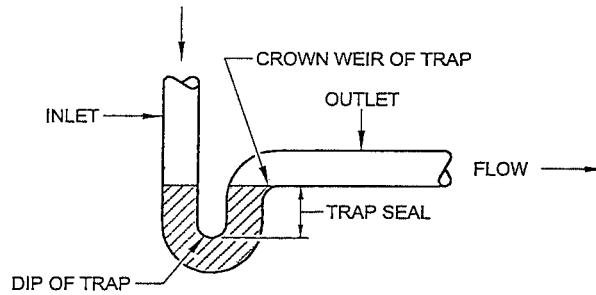
5.3.2 Trap Seals

Each fixture trap shall have a liquid seal of not less than two inches and not more than four inches.

EXCEPTIONS:

- (1) Interceptors in Chapter 6 that provide the required trap seal.
Note: Interceptors in Chapter 6 that provide the required trap seal shall be provided with a separate trap.
- (2) Special conditions such as accessible fixtures, a deeper seal may be required by the Authority Having Jurisdiction *in accordance with N.J.A.C. 5:23-3.3.*

See Figure 5.3.2



NOTES:

1. The minimum trap seal depth of 2" is based on the design criteria for the vent piping. Trap seals deeper than 4" will tend to trap solids and create a breeding ground for bacteria.

**Figure 5.3.2
TRAP SEAL DEPTH**

5.3.3 Trap Setting and Protection

Traps shall be set level with respect to their water seals and, where necessary, shall be protected from freezing. *See Figure 5.3.3*

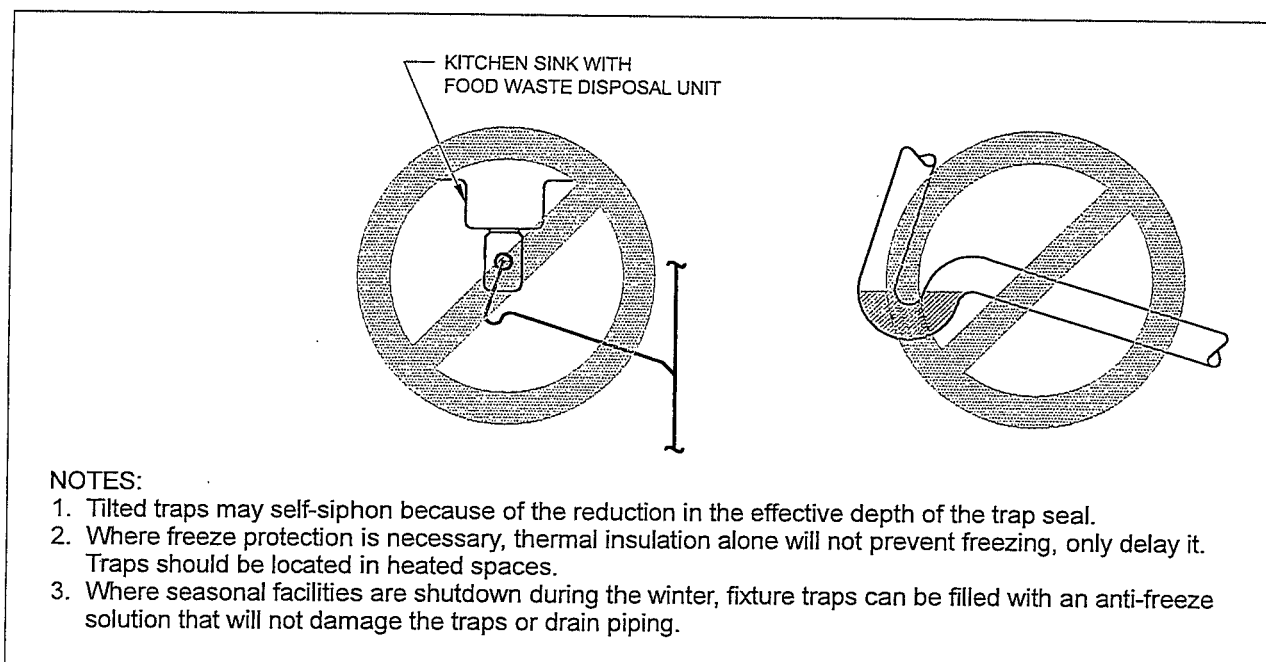


Figure 5.3.3
TRAPS MUST BE LEVEL AND PROTECTED FROM FREEZING

5.3.4 Building Traps

Building traps shall not be installed except where required by the Authority having jurisdiction *in accordance with N.J.A.C. 5:23-3.3*. Each building trap when installed shall be provided with a cleanout and with a relieving vent or fresh air intake on the inlet side of the trap that shall be at least one-half the diameter of the drain to which it connects. Such relieving vent or fresh air intake shall be carried above grade and terminate in a screened outlet located outside the building.

Comment: Building traps are no longer installed in modern plumbing systems. They provide a collection point for solids and other waste that may cause line stoppages. Building traps also prevent the building vent system from venting the building sewer. The Authority Having Jurisdiction may require building traps if the sewer gas in the municipal sewage system is particularly corrosive or aggressive and could damage the drain, waste, and vent piping in the building.

5.3.5 Prohibited Traps

- a. The following types of traps shall be prohibited:
 1. Traps that depend upon moving parts to maintain their seal.
 2. Bell traps.
 3. Crown vented traps.
 4. Separate fixture traps that depend on interior partitions for their seal, except if made from plastic, glass or other corrosion resistant materials.
 5. "S" traps, of uniform internal dimension.
 6. Drum traps, except drum trap solids separators that are permitted in Section 5.3.7.

See Figure 5.3.5

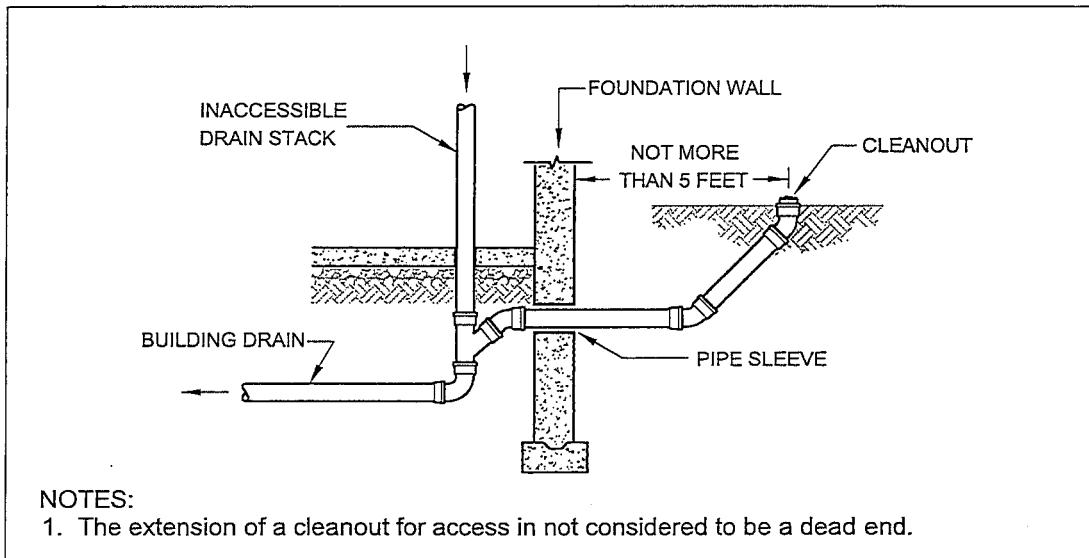


Figure 5.4.5 - B
A CLEANOUT EXTENDED TO OUTSIDE OF THE BUILDING FOR ACCESS

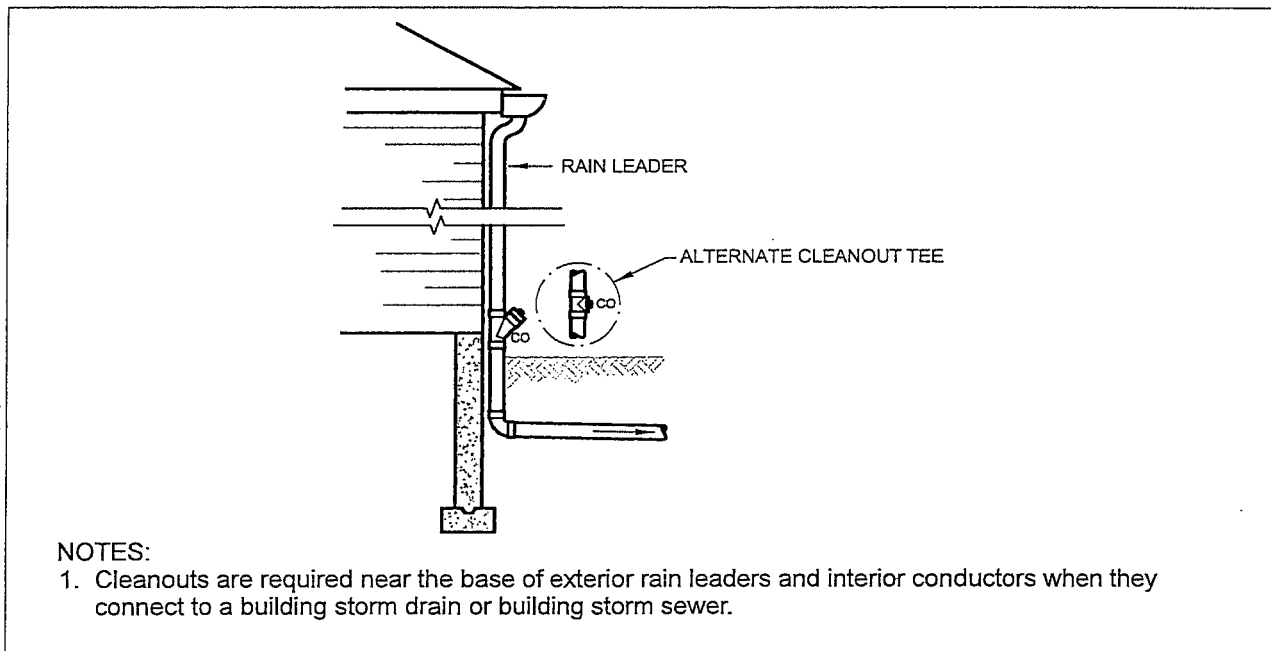
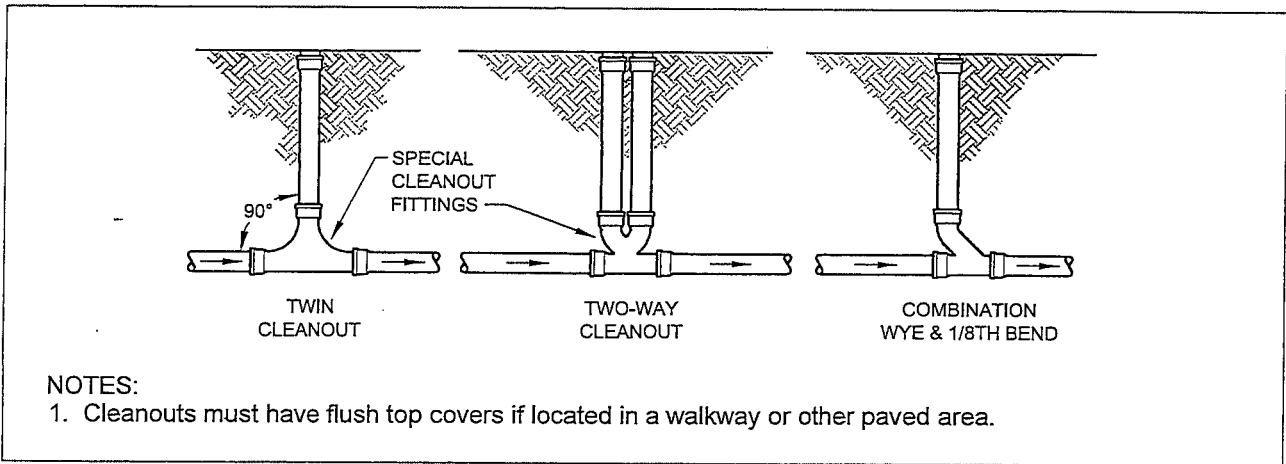


Figure 5.4.5 - C
A CLEANOUT NEAR THE BASE OF A RAIN LEADER

5.4.6 Building Drain and Building Sewer Junctions and the Property Line

a. There shall be a cleanout near the junction of a building drain and building sewer either inside or outside the building wall.

b. Cleanouts shall be placed in the building sanitary sewer and the building storm sewer at the property line and brought to the surface in accordance with the requirements of the Authority Having Jurisdiction. See Figures 5.4.6-A and 5.4.6-B



**Figure 5.4.7
THE FLOW DIRECTION OF CLEANOUTS**

5.4.8 Connections to Cleanouts Prohibited

- a. Cleanout plug openings in other than drainage pattern fittings shall not be used for the installation of new fixtures or floor drains.
- b. If a cleanout fitting or cleanout plug opening is removed from a drainage pattern fitting in order to extend the drain, another cleanout of equal access and capacity shall be provided in the same location.

5.4.9 Cleanout Size

Cleanout size shall conform with Table 5.4.9.

Table 5.4.9 SIZE OF CLEANOUTS	
Nominal Drain Pipe Size (inches)	Nominal Size of Cleanout (inches)
1-1/4	1-1/4
1-1/2	1-1/2
2	2
3	3
4, 5, 6	4
8 & 10	6
12 & 15	8

NOTES FOR TABLE 5.4.9

- (1) See Section 5.4.10 for sizes 12" or larger for building sewers.
- (2) See Section 5.4.13 for cleanout equivalents.

5.4.10 Manholes for Large Pipes

- a. Manholes shall be provided as cleanouts for building sewers 12" size and larger. Manholes shall be provided at every change of size, alignment, direction, grade, or elevation. The distance between manholes shall not exceed 300 feet.
- b. Manholes may be provided in lieu of cleanouts in underground building sewers, building drains, and branches thereof, 8" size and larger. Such manholes shall comply with the requirements of Section 5.4.10.a.
- c. If manholes are installed indoors, they shall have a bolted, gas-tight cover.
- ~~d. Manhole construction shall comply with the standards of the Authority Having Jurisdiction.~~

See Figure 5.4.10

Liquid Waste Treatment Equipment

6.1 GENERAL

6.1.1 Where Required

Interceptors, separators, neutralizers, dilution tanks, or other means shall be provided where required to prevent liquid wastes containing fats, oils, greases, flammable liquids, sands, acid or alkaline waste, chemicals, or other harmful substances from entering a building drainage system, a public or private sewer, or sewage treatment plant or process. *The determination of necessity shall be made by the plumbing subcode official in accordance with N.J.A.C. 5:23-3.3. See Figure 6.1.1*

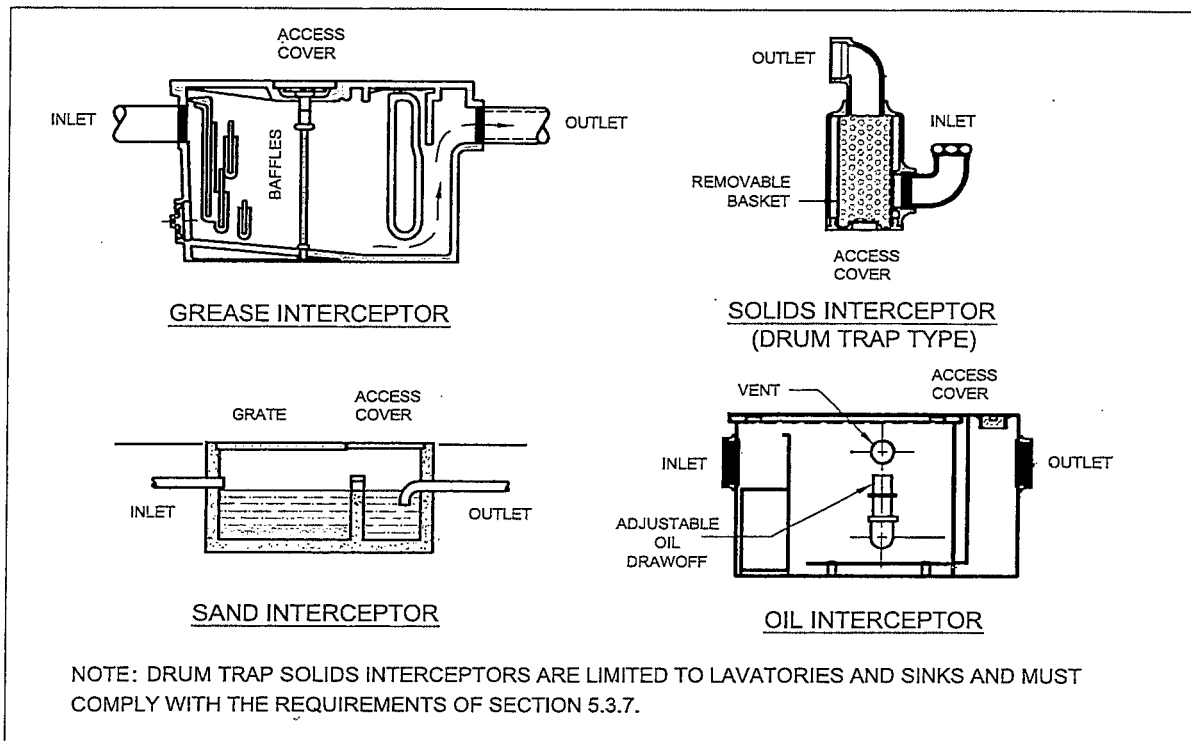


Figure 6.1.1
DIFFERENT TYPES OF INTERCEPTORS

6.1.2 Design

The size and type of liquid waste treatment equipment shall be based on the maximum volume and rate of discharge of the plumbing fixtures and equipment being drained.

6.1.3 Exclusion of Other Liquid Wastes

Only wastes from fixtures and equipment requiring treatment or separation shall be discharged into treatment equipment.

EXCEPTION: Non-grease discharges into grease interceptors that are permitted in Section 6.2.1.e.

6.1.4 Approval

6.1.4.1 General

The type, size, capacity, design, arrangement, construction, and installation of liquid waste treatment devices shall be as required ~~by the Authority Having Jurisdiction.~~

6.1.4.2 Grease Interceptors and Grease Removal (or Recovery) Devices (GRD)

Grease interceptors rated for up to 100 gallons per minute shall be certified according to PDI Standard G101 or ASME A112.14.3. Grease removal (or recovery) devices rated for up to 100 gallons per minute shall be certified according to ASME A112.14.4.

6.1.4.3 Mechanical Equipment

Each installation of a manufactured liquid waste treatment device employing pumps, filters, drums, collection plates, or other mechanical means of operation shall be certified by the manufacturer to provide effluent meeting the environmental requirements of the sewer or other approved point to which it discharges.

6.1.5 Venting

Liquid waste treatment equipment shall be so designed that they will not become air-bound if tight covers are used. Equipment shall be properly vented if loss of its trap seal is possible.

6.1.6 Accessibility

a. Liquid waste treatment equipment shall be so installed that it is accessible for the removal of covers and the performance of necessary cleaning, servicing and maintenance.

b. The need to use ladders or move bulky objects in order to service interceptors and other liquid waste treatment equipment shall constitute a violation of accessibility.

6.1.7 Point of Discharge

Connections to sewers or other points of discharge for the effluent from liquid waste treatment equipment shall be as permitted by the Authority Having Jurisdiction.

6.2 GREASE INTERCEPTORS

6.2.1 General

a. Grease interceptors shall comply with the requirements of the Adopting Agency.

b. Grease interceptors include the following types:

1. Hydro-mechanical interceptors
2. Grease removal (or recovery) devices (GRD)
3. Gravity interceptors
4. FOG (fats, oils, and greases) disposal systems

6.4.4 Alternate Design

Alternate designs for construction of, or baffling in, sand interceptors shall comply with the intent of this Code and Be submitted to the Authority Having Jurisdiction for approval *in accordance with N.J.A.C. 5:23-3.3*.

6.5 SOLIDS INTERCEPTORS

a. Solids interceptors shall be provided where necessary to prevent harmful solid materials from entering the drainage system on a continuing basis. Such harmful materials include, but are not limited to, aquarium gravel, barium, ceramic chips, clay, cotton, denture grindings, dental silver, fish scales, gauze, glass particles, hair, jewels, lint, metal grindings, plaster, plastic grindings, precious metal chips, sediment, small stones, and solid food particles.

b. Solids interceptors shall separate solids by gravity, trapping them in a removable bucket or strainer.

c. Solids interceptors shall be sized according to their drain pipe size or by the required flow rate.

d. Drum trap solids separators shall comply with Section 5.3.7.

6.6 NEUTRALIZING AND DILUTION TANKS

a. Neutralizing or dilution tanks shall be provided where necessary to prevent acidic or alkaline waste from entering the building drainage system. Such waste shall be neutralized or diluted to levels that are safe for the piping in the drainage and sewer systems.

b. Vents for neutralizing or dilution tanks shall be constructed of acid-resistant piping and shall be independent from sanitary system vents.

6.7 SPECIAL APPLICATIONS

6.7.1 Laundries

Commercial laundries shall be equipped with one or more lint interceptors having wire baskets or similar devices, removable for cleaning, that will prevent passage into the drainage system of solids 1/2 inch or larger in size, strings, rags, buttons, lint, and other materials that would be detrimental to the drainage system.

6.7.2 Bottling Establishments

Bottling plants shall discharge their process wastes into a solids separator that will retain broken glass and other solids, before discharging liquid wastes into the drainage system.

6.7.3 Slaughter Houses

Drains in slaughtering rooms and dressing rooms shall be equipped with separators or interceptors, approved by the Authority Having Jurisdiction, that will prevent the discharge into the drainage system of feathers, entrails, and other waste materials that are likely to clog the drainage system.

6.7.4 Barber Shops and Beauty Parlors

Shampoo sinks in barbershops, beauty parlors, and other grooming facilities shall have hair interceptors installed in lieu of regular traps.