Chapter 6

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, sand, solids, 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. See Figure 6.1.1

NOTE: DRUM TRAP SOLIDS INTERCEPTORS ARE LIMITED TO LAVATORIES AND SINKS AND MUST COMPLY WITH THE REQUIREMENTS OF SECTION 5.3.7.

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
c. Grease interceptors shall be provided to receive the waste discharges from fixtures in food handling areas that introduce grease into the sanitary drainage system. Fixtures include, but are not limited to pot washing sinks, utensil soak sinks, pre-rinse sinks at dishwashers, wok range stations, drains from washdown ventilation hoods, can washing drains, mop sinks, floor drains and floor sinks in areas around grease producing fixtures, and similar fixtures.

d. Water closets, urinals, and other fixtures that discharge human waste shall not discharge through a grease interceptor.

e. Non-grease drainage from handwashing sinks, lavatories, food preparation sinks, ice machines, ice bins, and similar fixtures shall be permitted to discharge through a grease interceptor along with grease producing fixtures.

f. Ice machines, ice bins, food preparation sinks, and other food containing equipment shall drain indirectly through an air gap.

### 6.2.1.1 Hydro-Mechanical Grease Interceptors

a. Hydro-mechanical interceptors shall comply with the performance, testing, and installation requirements of ASME A112.14.3 or PDI Standard G101 and Section 6.2.

b. These interceptors shall be sized according to Section 6.2.10.

c. A calibrated, non-adjustable flow control device shall be provided on the inlet side of each interceptor to prevent the waste flow (gpm) from exceeding the rated flow capacity of the interceptor. The flow control device shall be vented in accordance with Section 6.2.4.

### 6.2.1.2 Grease Removal (or Recovery) Devices (GRD)

a. Hydro-mechanical interceptors that are capable of automatically removing free-floating grease, fats, and oils from their waste discharge without intervention of the user except for maintenance shall comply with ASME A112.14.4 and Section 6.2.

b. These interceptors shall be sized according to Section 6.2.10.

c. A calibrated, non-adjustable flow control device shall be provided on the inlet side of each interceptor to prevent the waste flow (gpm) from exceeding the rated flow capacity of the interceptor. The flow control device shall be vented in accordance with Section 6.2.4.

### 6.2.1.3 Gravity Grease Interceptors

a. Outdoor underground gravity grease interceptors serving commercial kitchens shall be sized and designed by a registered design professional who is licensed to practice in the particular jurisdiction.

b. Gravity grease interceptors shall comply with the requirements of Section 6.2.10.b or the Adopting Agency, including materials of construction, arrangement, retention time, storage factor for floatable FOG and settled solids, and minimum size.

c. Where drain piping and a gravity grease interceptor are provided for the future installation of a commercial kitchen, the design plans shall indicate the maximum permitted future drainage load in either gallons per minute (excluding diversity) or drainage fixture units (DFU).

d. Prefabricated gravity grease interceptors shall comply with IAPMO/ANSI Z1001.

### 6.2.1.4 FOG (Fats, Oils, and Greases) Disposal Systems

a. FOG disposal systems shall be designed to:

1. remove FOG from the effluent,
2. retain the separated FOG,
3. internally dispose of the retained FOG by means of mass and volume reduction by thermal, chemical, electrical, biological or other approved processes.

b. FOG disposal systems shall comply with ASME A112.14.6 and be installed according to the manufacturer's instructions.
6.2.2 Compliance for Hydro-Mechanical Grease Interceptors
   a. Hydro-mechanical grease interceptors shall comply with ASME A112.14.3 and Section 6.2.1.1, and be installed in accordance with the recommendations of PDI Standard G101 and the manufacturer’s instructions. They shall have a grease retention capacity not less than two pounds for each gpm of rated flow.
   b. Grease interceptors that include automatic grease removal or recovery (GRD) shall comply with ASME A112.14.4 and Section 6.2.1.2.

6.2.3 Fixture Traps
   a. Fixtures that discharge into a hydro-mechanical or GRD grease interceptor shall be trapped and vented between the fixture and the interceptor.
   EXCEPTION: A hydro-mechanical or GRD grease interceptor with the required flow control device shall be permitted to serve as a trap for an individual fixture if the developed length of the drain between the fixture and the interceptor does not exceed four feet horizontally and 30 inches vertically.
   b. Where one or more fixtures discharge into a hydro-mechanical or GRD grease interceptor, the required vented flow control device shall be installed in the drain line between the fixture(s) and the interceptor.

See Figures 6.2-A and 6.2-B

6.2.4 Fixture Venting
   a. Trapped fixtures draining to grease interceptors shall be vented in accordance with the manufacturer’s instructions and the applicable provisions of Chapter 12, including combination waste and vent venting.
   b. Where a grease interceptor is permitted to serve as the trap for a single fixture that does not have a trap, the air intake for the flow control device between the fixture and the grease interceptor shall be vented by a return bend that is open to the space at least 6 inches above the flood level rim of the fixture being served.
   c. When the fixture connected to the grease interceptor has a separate vented trap, the air intake on the flow control device shall be connected to the vent piping system.

See Figures 6.2-A and 6.2-B

NOTES:
1. Flow control devices are necessary to prevent the waste flow from exceeding the design flow rating of the grease interceptor.
2. When the fixtures connected to the grease interceptor have traps, the air intake on the flow control device must be connected to the fixture vent piping system.
3. Air intake through the flow control device aerates the grease-laden waste, which is essential to the separation process.

Figure 6.2-A
A GREASE INTERCEPTOR SERVING A TRAPPED AND VENTED FIXTURE
6.2.5 Food Waste Grinders

a. Where food waste grinders discharge through a hydro-mechanical or GRD grease interceptor, a solids separator shall be installed either in the drain line from the food waste grinder or upstream of the grease interceptor to prevent food waste particles from entering the grease interceptor.

b. Solids separators shall not be required where food waste grinders discharge to a gravity grease interceptor.

See Figure 6.2.5

6.2.5 Food Waste Disposers

a. Where food waste disposers discharge through a hydro-mechanical or GRD grease interceptor, a solids separator shall be installed either in the drain line from the food waste disposer or upstream of the grease interceptor to prevent food waste particles from entering the grease interceptor.

b. Solids separators shall not be required where food waste disposers discharge to a gravity grease interceptor.

See Figure 6.2.5
6.2.6 Commercial Dishwashers
   a. Commercial dishwashers shall be permitted to discharge through a grease interceptor.
   b. Where the discharge rate of a commercial dishwasher in gallons per minute is converted to drainage
      fixture units (DFU), each 7.5 GPM of discharge shall be equated to one (1) DFU, with the total rounded up to
      the next whole DFU.

6.2.7 Location
   Hydro-mechanical and GRD interceptors may be installed within buildings if permitted by the Authority
   Having Jurisdiction. Where gravity grease interceptors or holding tanks are remote from the fixtures served,
   the drain piping between the fixtures and the interceptor or holding tank shall be as direct as possible and
   shall include provisions for periodic cleaning.

6.2.8 Prohibited Interceptors
   The installation of water-cooled grease interceptors is prohibited.

6.2.9 Chemicals - Where Prohibited
   a. The use of enzymes, emulsifiers, or similar chemicals in hydro-mechanical grease interceptors, GRD
      grease interceptors, and gravity interceptors is prohibited.
   b. Sinks or sink compartments used for sanitizing pots or other ware shall not be drained through a grease
      interceptor.

6.2.10 Interceptor Sizing
   a. Where hydro-mechanical interceptors and grease removal devices (GRD) serve one or more individual
      fixtures, they shall be sized for the total drainage flow rate from the fixtures served in accordance with PDI
      G101, Table 6.2.10, or the manufacturer’s instructions. All compartments of multi-compartment sinks shall
      be considered to drain simultaneously, except that sanitizing compartments shall not be drained through a
      grease interceptor.
   b. Gravity interceptors for commercial kitchens shall be sized based on the inlet pipe flowing half-full
      according to Appendix K, a 30-minute retention time, and an additional 25% storage factor for floatable
      FOG and settled solids, or as required by the Adopting Agency.

| Table 6.2.10 |
| FIXTURE DRAINAGE FLOW RATES FOR SIZING HYDRO-MECHANICAL AND GRD GREASE INTERCEPTORS |
| FIXTURE | FLOW |
| 1-1/4” Sink Drain Outlet (each) | 7.5 GPM |
| 1-1/2” Sink Drain Outlet (each) | 15 GPM |
| 2” Sink Drain Outlet (each) | 22.5 GPM |
| Floor Drain without Indirect Waste | 0 GPM |
| Floor Drain or Floor Sink with Indirect Waste | (1) |
| Commercial Dishwasher | (2) |

NOTES FOR TABLE 6.2.10
(1) The GPM drain load shall be the total indirect waste flow in GPM.
(2) The GPM drain load for a commercial dishwasher shall be not less than the manufacturer’s peak rate of drain flow with a
full tank.
6.2.11 Individual Dwelling Units
Grease interceptors shall not be required in individual dwelling units or any private living quarters.

6.2.12 Combination Systems
A combination of hydro-mechanical and exterior gravity grease interceptors shall be allowed in order to meet separation needs of the Adopting Agency when space or existing physical constraints of existing buildings necessitates such installations.

6.3 OIL/WATER SEPARATORS

6.3.1 Where Required and Approved Point of Discharge
   a. Liquid waste containing grease, oil, solvents, or flammable liquids shall not be directly discharged into any sanitary sewer, storm sewer, or other point of disposal. Such contaminants shall be removed by an appropriate separator.
   b. Sand interceptors and oil separators shall be provided wherever floors, pits or surface areas subject to accumulation of grease or oil from service or repair operations are drained or washed into a drainage system. Such locations include, but are not limited to, car or truck washing facilities, engine cleaning facilities, and similar operations. The drainage or effluent from the interceptors and separators in such locations shall be connected to the sanitary sewer.
   c. Drains shall not be required in service or repair garages that employ dry absorbent cleaning methods; however, if any drains are located in such areas, they shall discharge to the sanitary sewer through a sand interceptor and oil interceptor.
   d. Drains shall not be required in parking garages unless the garage, or portions thereof, has provisions for either washing vehicles or rinsing the floor. Where such cleaning facilities are provided, the area subject to waste drainage shall be provided with one or more floor drains, complete with sand interceptor and oil interceptor, and the effluent from the oil separator shall be connected to the sanitary sewer. Any storm water shall be drained separately and directly to the storm sewer.
   e. Where parking garages without provisions for vehicle washing or floor rinsing require storm water drainage, drains shall be permitted to connect to the storm sewer without a sand interceptor and oil separator. Such drainage, including rainwater, melting snow and ice, or rainwater runoff from vehicles, shall not be connected to the sanitary sewer.
   f. Where oil separators include a waste holding tank, it shall not be used to store or contain any other waste oil (e.g., motor oil) or hazardous fluid.

6.3.2 Design of Oil Separators
   a. Where oil separators are required in garages and service stations, they shall have a minimum volume of six cubic feet for the first 100 square feet of area drained, plus one cubic foot for each additional 100 square feet of area drained. Oil separators in other applications shall be sized according to the manufacturers rated flow.
   b. Field-fabricated oil separators shall have a depth of not less than two feet below the invert of the discharge outlet. The outlet opening shall have a water seal depth of not less than 18 inches.
   c. Manufactured oil separators shall be sized according to gallons per minute of rated flow. They shall include a flow control device and adjustable oil draw-off.
   d. Oil separators shall have a 3-inch minimum discharge line and a 2-inch minimum vent to atmosphere. The discharge line shall have a full-size cleanout extended to grade or otherwise be accessible.
   e. The oil draw-off or overflow piping from oil separators shall be connected to an approved waste oil tank that is installed and permitted according to the environmental requirements of the Authority Having Jurisdiction. The waste oil from the separator shall flow by gravity or may be pumped to a higher elevation by an automatic pump. Pumps shall be adequately sized, explosion-proof, and accessible. Waste oil tanks shall have a 2-inch minimum pump-out connection and a 1-1/2 inch minimum vent to atmosphere.
f. Where oil separators are subject to backflow from a sewer or other point of disposal, their discharge line shall include a backwater valve, installed in accordance with Section 5.5.

g. Where oil separators are installed in parking garages and other areas where the waste flow will include sand, dirt or similar solids, a sand interceptor shall be provided upstream from the oil separator. Sand interceptors shall comply with Section 6.4.

h. Oil interceptors, waste oil tanks, oil pump-out connections, backwater valves and atmospheric vent piping shall be permanently identified by suitable labels or markings.

6.3.3 Vapor Venting

The atmospheric vents from oil separators and their waste holding tanks shall be separate from other plumbing system vents and shall be extended to an approved location at least 12 feet above grade or the surrounding area.

6.3.4 Combination Oil Separator and Sand Separator

A combination oil separator and sand separator meeting the functional requirements of Sections 6.3 and 6.4 shall be permitted to be installed.

6.4 SAND INTERCEPTORS

6.4.1 Where Required

a. A sand interceptor shall be installed upstream from an oil separator if required in Section 6.3.2.g.

b. A sand interceptor shall be provided downstream from any drain whose discharge may contain sand, sediment, or similar matter on a continuing basis that would tend to settle and obstruct the piping in the drainage system. Multiple floor drains shall be permitted to discharge through one sand interceptor.

6.4.2 Construction and Size

a. Sand interceptors shall be constructed of concrete, brick, fabricated coated steel, or other watertight material, and shall be internally baffled to provide an inlet section for the accumulation of sediment and a separate outlet section.

b. The outlet pipe of a sand interceptor shall be the same size as the drain served.

EXCEPTION: If serving an oil separator, the outlet from the sand interceptor shall be the same size as the inlet to the oil separator.

c. The inlet baffle shall have two top skimming openings, each the same size as the outlet pipe and at the same invert as the outlet opening. The openings in the baffle shall be offset to prevent straight-line flow through the interceptor from any of its inlets to its outlet.

d. The inlet to the interceptor shall be at the same elevation as, or higher than, the outlet. The bottom of the inlet section shall be at least 24 inches below the invert of the outlet pipe.

e. The bottom of the inlet section shall be at least two feet wide and two feet long for flow rates up to 20 gallons per minute. The bottom of the inlet section shall be increased by one square foot for each 5 gpm of flow or fraction thereof over 20 gpm. The bottom of the outlet section shall be not less than 50% of the area of the bottom of the inlet section.

f. A solid removable cover shall cover the outlet section. An open grating suitable for the traffic in the area in which it is located shall cover the inlet section. Covers shall be set flush with the finished floor.

6.4.3 Water Seal

When a sand interceptor is used separately without also discharging through an oil separator, its outlet pipe shall be turned down inside the separator below the water level to provide a six-inch minimum water seal. A cleanout shall be provided for the outlet line.
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.

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.