



**Indirect and Local Waste Piping, and Wastewater Treatment and
Holding Devices**

4 CE Hours

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Indirect and Local Waste Piping

Purpose of this course

The provisions of this course set forth the requirements for the installation of indirect waste piping and local waste piping.

Indirect waste piping and local waste piping draining the fixtures, appliances and devices having a public health concern, including but not limited to those listed in Table 382.33-1, shall be considered as plumbing and shall comply with the provisions of this section.

The provisions of this course set forth the requirements for design and installation of plumbing wastewater treatment and holding devices, appurtenances and systems, including but not limited to interceptors, catch basins, decontamination tanks and dilution and neutralizing basins.

Materials

Indirect waste piping more than 30" in length and all local waste piping shall be of approved materials in accordance with ch. SPS 384.

Size

Except as provided in pars. (a) and (b), indirect waste piping more than 30" in length and all local waste piping shall be sized in accordance with s. SPS 382.30.

a. Indirect or local waste piping not exceeding 20 feet in length for refrigerated food display cases may not be less than one inch in diameter.

b. Indirect waste piping, attached to an appliance, appurtenance or equipment through which pressurized waste is discharged, shall be sized in accordance with specifications of the manufacturer of the appliance, appurtenance or equipment.

Table 382.33-1

Types of Fixtures, Appliances and Devices of a Public Health Concern

Refrigerated food storage rooms and compartments
Refrigerated food display cases
Ice compartments Vending machines Steam tables and kettles Food preparation sinks Potato peelers
Egg boilers
Boiler blowoff basin outlet drains Coffee makers and urns
Food processing equipment Baptismal founts
Clothes washers and extractors Dishwashers
Stills Sterilizers
Bar and soda fountains
Boiler blowoff basin outlet drains

Exam Questions:

1. The provisions of this course set forth the requirements for the installation of _____ waste piping and _____ waste piping.
 - a. Direct, local
 - b. Indirect, local
 - c. Direct, remote
 - d. Indirect, remote
2. Indirect waste piping and local waste piping draining the fixtures, appliances and devices having a _____ concern, shall be considered as plumbing and shall comply with the provisions of this section.
 - a. Sustainability
 - b. Financial
 - c. Public health
 - d. Environmental
3. Which of the following is an example of plumbing wastewater treatment and holding devices, appurtenances, or systems:
 - a. Interceptors and catch basins
 - b. Decontamination tanks
 - c. Dilution and neutralizing basins
 - d. All of the above
4. Indirect waste piping more than ___ inches in length and all local waste piping shall be of approved materials in accordance with ch. SPS 384.
 - a. 12
 - b. 24
 - c. 28
 - d. 30
5. Indirect or local waste piping not exceeding ___ feet in length for refrigerated food display cases may not be less than one inch in diameter.
 - a. 5
 - b. 10
 - c. 15
 - d. 20
6. Indirect waste piping, attached to an appliance, appurtenance or equipment through which _____ waste is discharged, shall be sized in accordance with specifications of the manufacturer of the appliance, appurtenance or equipment.
 - a. Pressurized
 - b. Toxic
 - c. Disproportionate
 - d. Superfluous
7. According to Table 382.33–1, which of the following is a public health concern?
 - a. Egg boilers
 - b. Bar and soda fountains
 - c. Dishwashers
 - d. All of the above

Indirect waste piping and local waste piping shall be so installed as to permit access for flushing and cleaning.

Traps

a. Indirect waste piping. 1. Gravity flow indirect waste piping more than 30” in length shall be provided with a trap in accordance with s. SPS 382.32 (4), except indirect waste piping draining a sterilizer shall not be trapped.

2. All indirect waste piping draining a refrigerated food storage room, compartment or display case shall be provided with a trap in accordance with s. SPS 382.32 (4).

b. Local waste piping. Local waste piping handling sanitary wastes and more than 30” in length shall be provided with a trap in accordance with s. SPS 382.32 (4).

Maximum Length

Indirect waste piping and local waste piping handling sanitary wastes shall not exceed 30 feet in length horizontally nor 15 feet in length vertically.

Air-gaps and Air-breaks

All indirect waste piping and all local waste piping shall discharge by means of an air-gap or air-break into a receptor.

a. Air-gap installation. The installation of an air gap shall conform to any of the following requirements:

1. The distance of an air gap shall comply with one of the following:

a. The distance of an air gap serving indirect waste piping one inch or less in diameter and a receptor shall be at least twice the diameter of the indirect waste piping.

b. The distance of an air gap between indirect waste piping larger than one inch in diameter and a receptor shall not be less than 2 inches.

2. The installation of all air-gap fittings shall comply with ASME A112.1.3.

3. The installation of a residential dishwashing machine manufactured air gap shall comply with ASSE 1021.

b. Air-break installation. The air-break between indirect waste piping or local waste piping and the receptor shall be accomplished by extending the indirect waste piping or local waste piping below the flood level rim of the receptor and terminating at an elevation above the trap outlet.

Exam Questions:

8. Indirect waste piping and local waste piping shall be so installed as to permit access for

flushing and:

- a. Examining
 - b. Cleaning
 - c. Removing
 - d. Inspecting
9. True or false? Indirect waste piping draining a sterilizer should not be trapped.
- a. True
 - b. False
10. All indirect waste piping draining a _____ food storage room, compartment or display case shall be provided with a trap in accordance with s. SPS 382.32 (4).
- a. Large
 - b. Heated
 - c. Refrigerated
 - d. Ventilated
11. Local waste piping handling sanitary wastes and more than ____ inches in length shall be provided with a trap in accordance with s. SPS 382.32 (4).
- a. 15
 - b. 20
 - c. 25
 - d. 30
12. Indirect waste piping and local waste piping handling sanitary wastes shall not exceed ____ feet in length horizontally nor ____ feet in length vertically.
- a. 15, 30
 - b. 30, 15
 - c. 45, 60
 - d. 60, 90
13. All indirect waste piping and all local waste piping shall discharge by means of an air-gap or air-break into a:
- a. Receptor
 - b. Floor drain
 - c. Trap
 - d. Vent stack
14. The distance of an air gap serving indirect waste piping one inch or less in diameter and a receptor shall be at least _____ the diameter of the indirect waste piping.
- a. Half
 - b. Twice
 - c. Thrice
 - d. None of the above
15. The distance of an air gap between indirect waste piping larger than one inch in diameter and a receptor shall not be less than ____ inches.
- a. 2
 - b. 3
 - c. 4
 - d. 5
16. The installation of all air-gap fittings shall comply with ASME:
- a. A122.2.1

- b. A231.2.3
 - c. A112.1.3
 - d. A123.1.2
17. The installation of a residential dishwashing machine manufactured _____ shall comply with ASSE 1021.
- a. Receptor
 - b. Floor drain
 - c. Trap
 - d. Air gap
18. The air-break between indirect waste piping or local waste piping and the receptor shall be accomplished by _____ the indirect waste piping or local waste piping below the flood level rim of the receptor and terminating at an elevation above the trap outlet.
- a. Removing
 - b. Maneuvering
 - c. Extending
 - d. Shortening

Receptors

A receptor receiving the discharge from indirect waste piping or local waste piping shall be of a shape and capacity as to prevent splashing or flooding. Receptors shall be installed in accordance with this subsection and shall be accessible.

a. Waste sinks and standpipes. A waste sink or a standpipe serving as a receptor shall have its rim at least one inch above the floor.

b. Floor sinks. A floor sink serving as a receptor shall be equipped with a removable metal basket over which the indirect waste piping or local waste piping is to discharge, or the floor sink shall be equipped with a dome strainer. Indirect waste piping or local waste piping shall not discharge through a traffic grate, but shall terminate over an ungrated portion of the floor sink.

c. Local waste piping. Local waste piping may not receive discharge from another local waste pipe.

d. Other receptors. A plumbing fixture may not be used as a receptor for indirect or local waste piping, except as provided in subds. 1. to 7.

1. The indirect waste piping of a portable dishwasher or water treatment device serving one or 2 outlets may discharge into a kitchen sink of a dwelling unit or to a branch tail piece serving a kitchen sink.

2. The indirect waste piping of an automatic clothes washer or water treatment device may discharge into a laundry tray.

3. The indirect or local waste piping serving a cross connection control device or assembly, water treatment device, air conditioner, humidifier or furnace condensate may discharge into a branch tailpiece serving a laundry tray.

4. The local waste piping serving a water heater temperature and pressure relief valve, water treatment device, cross connection control device or assembly, humidifier, sterilizer, or a furnace or air conditioner may discharge into the riser of a floor drain when installed in accordance with sub. (7) (b).

5. The indirect or local waste piping serving a water heater temperature and pressure relief valve, water treatment device, cross connection control device or assembly, or a furnace or air conditioner may discharge to a floor served by a floor drain so as not to create a health or safety hazard.

6. The indirect or local waste piping serving a water heater temperature and pressure relief valve or water treatment device may discharge through the cover of a clear water sump so as not to adversely affect floats by means of a fixed air gap installed in accordance with subs. (7) (a) 2. and (8).

7. The indirect waste piping serving a dental mold grinder may discharge into the riser or a trap serving a laboratory sink that is provided with a plaster trap and is installed within 3 feet of the mold grinder.

Exam Questions:

19. A _____ receiving the discharge from indirect waste piping or local waste piping shall be of a shape and capacity as to prevent splashing or flooding.
 - a. Fixture drain
 - b. Standpipe
 - c. Receptor
 - d. Waste stack
20. A waste sink or a standpipe serving as a receptor shall have its rim at least ____ inch(es) above the floor.
 - a. 1
 - b. 1 ½
 - c. 2
 - d. 2 ½
21. True or false? Indirect waste piping or local waste piping shall discharge through a traffic grate, rather than shall terminate over an ungrated portion of the floor sink.
 - a. True
 - b. False
22. Local waste piping may not receive discharge from:
 - a. Standpipe
 - b. Waste stack
 - c. Another local waste pipe
 - d. None of the above
23. The indirect waste piping of an automatic clothes washer or water treatment device may discharge into a:
 - a. Trap
 - b. Condensate pump

- c. Outside faucet
- d. Laundry tray

Indirect Waste Piping Required

A. Boilers, pressure tanks and relief valves. Boilers, pressure tanks, relief valves and similar equipment discharging to a drain system shall be by means of an air-gap.

1. Steam pipes shall not connect or discharge to any part of a plumbing system.

2. a. Except as provided in subd. 2. b., wastewater more than 160°F in temperature shall be discharged by means of indirect waste to the plumbing system.

b. Steam condensate blow down shall be cooled to 160°F in temperature prior to discharging to a plumbing system.

B. Clear water. When discharging to a plumbing system, all clear water shall discharge by means of an air-gap

C. Clothes washers. 1. 'Residential types.' Residential-type clothes washers shall discharge into the sanitary drain system by means of an air-break.

a. A standpipe receptor may not extend more than 36 inches nor less than 18 inches above the centerline of the trap outlet.

b. A standpipe receptor shall terminate at least 26 inches but not more than 48 inches above the floor on which the clothes washer is located.

2. 'Self-service laundries.' Pumped-discharge automatic clothes washing equipment in laundrettes, laundromats and self-service laundry establishments shall have the wastes discharge to a drain system by means of standpipes. The standpipes shall be installed in accordance with subd. 1.

a. The maximum number of washers which may be connected to a trap shall be in accordance with Table 382.33-2.

b. Washer wastes shall not be discharged to gutters, troughs, local waste piping, indirect waste manifold or other similar connections.

3. 'Commercial.' Gravity discharge-type clothes washing equipment shall discharge by means of an air-break or by other approved methods into a floor receptor, trench or trough.

a. The receptor shall be sized to hold one full simultaneous discharge load from every machine draining into the receptor.

b. The size of the receptor drain shall be determined by the manufacturer's discharge flow rate and the frequency of discharge.

c. All wastes from the washers shall flow through a Commercial laundry interceptor as specified in s. SPS 382.34.

Table 382.33-2 Washer Connections

Trap Diameter	Maximum Number of Washers
2 inches	1 machine
3 inches	3 machines
4 inches	4 machines

D. Dishwashing machines. All dishwashing machines shall discharge to the sanitary drain system.

1. 'Residential type.' The indirect waste piping from a residential-type dishwashing machine shall not exceed a developed length of 10 feet. The indirect waste piping from a residential-type dishwashing machine shall be installed in accordance with one of the following methods:

a. Where an air-gap or air-break is located below the counter-top, the indirect waste piping from the dishwashing machine shall discharge to a standpipe. The standpipe shall be at least 1 ½ inches in diameter and shall extend at least 15 inches above the trap weir.

b. Where an air-gap or air-break is located above the counter-top, the indirect waste piping from the dishwashing machine shall discharge to local waste piping. The local waste piping shall connect to the kitchen sink branch tailpiece above the trap inlet, the standpipe or to the dishwashing machine connection of a food waste grinder. When the local waste piping discharges to a standpipe, the standpipe shall be at least 1 ½ inches in diameter and shall extend at least 15 inches above the trap weir. Where a hose is used for local waste piping, the developed length shall not exceed 18 inches.

2. 'Commercial'. Commercial dishwashing machines shall discharge into a sanitary drain system by means of an air-gap or air-break into a trapped and vented receptor. The indirect waste piping may not be more than 30 inches in length.

E. Drips and drain outlets. Appliances, devices and apparatus not defined as plumbing fixtures which have drip or drain outlets, which discharge to the plumbing system, shall discharge into an approved receptor by means of an approved air-gap or air-break.

F. Elevator drains. 1. All drains serving elevator pits shall discharge to the storm drain system as specified in s. SPS 382.36 (4).

2. Drains serving elevator pits shall not connect directly with the storm drain system by means of gravity flow piping.

3. A sump may not be located in an elevator machine room.

4. A drain serving an elevator pit that discharges to a sump shall have a submerged inlet constructed to maintain a minimum 6" trap seal.

5. A sump located in an elevator pit may only receive storm or clear water waste from the elevator pit or the elevator machine room, or both.

G. Food handling establishments. Plumbing fixtures, devices and appurtenances installed in food handling establishments engaged in the storage, preparation, selling, serving or processing of food shall be installed in accordance with this paragraph.

1. 'Bar and soda fountain sinks.' Where a bar or soda fountain sink is so located that the trap for the sink cannot be vented as specified in s. SPS 382.31, the sink drain shall discharge to the sanitary drain system through indirect waste piping.

a. Where the indirect waste piping is not trapped, the wastes shall be discharged by means of an air-gap.

b. Where the indirect waste piping is trapped, the wastes shall be discharged by means of an air-gap or air-break.

2. 'Beer taps, coffee makers, glass fillers and soda dispensers.' The drip pan from a beer tap, coffee maker, glass filler, soda dispenser or similar equipment shall discharge to the sanitary drain system through indirect waste piping by means of an air-break or air-gap.

3. 'Novelty boxes, ice compartments and ice cream dipper wells.' Novelty boxes, ice compartments and ice cream dipper wells shall discharge to the sanitary drain system through indirect waste piping by means of an air-gap.

a. The indirect waste piping shall not exceed 30" in length.

b. The indirect waste piping draining a novelty box or ice compartment may not discharge or connect to the indirect waste piping or local waste piping of any other fixture, appliance or device other than a novelty box or ice compartment.

4. 'Refrigerated food storage rooms, compartments and display cases.' Drains serving refrigerated food storage rooms, compartments or display cases shall discharge to the sanitary drain system through indirect waste piping. The indirect waste piping shall drain by gravity to a receptor by means of an air-gap or air-break. Where an air-break is installed, the flood level rim of the receptor shall be at least 2" below the top of the fixture strainer or drain opening in the refrigerated room, compartment or display case.

5. 'Enclosed food processing equipment.' Coffee urns, egg boilers, potato peelers, steam kettles, steam tables, vending machines and similar types of enclosed food processing equipment shall be discharged to the sanitary drain system through indirect waste piping by means of an air-gap.

6. 'Food preparation.' Open culinary sink compartments for thawing or washing food shall discharge to the sanitary drain system through an independent connection by means of an air-gap. The fixture drain upstream of the air-gap shall not exceed a length of 30".

H. Sterilizers. Appliances, devices or apparatus, such as stills, sterilizers and similar equipment requiring waste connections and used for sterile materials, shall discharge through indirect waste piping to the sanitary drain system by means of an air-gap.

I. Cross connection control devices or assemblies. Where a receptor is provided, the vent port discharge from cross connection control devices or assemblies shall discharge to the receptor by means of an air-gap.

J. Vacuum systems—central units. Central vacuum units shall discharge by means of an air-gap or air break.

K. Swimming pools. 1. The backwash and drain wastewater from a swimming pool, wading pool or whirlpool shall discharge in accordance with Table 382.38-1.

2. The discharge from deck drains serving indoor pools shall be directed to the sanitary sewer via an air-gap.

3. The discharge from deck drains serving outdoor pools shall be directed to the storm sewer by way of an air-gap or to grade.

4. The requirements for sewer connections as specified in ch. SPS 390 applies to all public swimming pools.

Exam Questions:

24. Boilers, pressure tanks, relief valves and similar equipment discharging to a drain system shall be by means of a(n):
- Air break
 - Air-gap
 - Vent pipe
 - Soil pipe
25. True or false? Steam pipes shall not connect or discharge to any part of a plumbing system.
- True
 - False
26. Except as provided in subd. 2. b., wastewater more than ___°F in temperature shall be discharged by means of indirect waste to the plumbing system.
- 130
 - 140
 - 150
 - 160
27. A standpipe receptor may not extend more than ___ inches nor less than ___ inches above the centerline of the trap outlet.
- 16, 12
 - 24, 32
 - 36, 18
 - 48, 20

28. A standpipe receptor shall terminate at least ___ inches but not more than ___ inches above the floor on which the clothes washer is located.
- 24, 36
 - 26, 48
 - 28, 40
 - 30, 42
29. Washer wastes shall not be discharged to which of the following:
- Gutters
 - Troughs
 - Local waste piping
 - All of the above
30. Gravity discharge-type clothes washing equipment shall discharge by means of an air-break or by other approved methods into which of the following:
- A trench
 - A gutter
 - Indirect waste piping
 - All of the above
31. The receptor shall be sized to hold ___ full simultaneous discharge load(s) from every machine draining into the receptor.
- 1
 - 2
 - 3
 - 4
32. According to Table 382.33-2, if the trap diameter is 3 inches, the maximum number of washers is:
- 1 machine
 - 2 machines
 - 3 machines
 - 4 machines
33. According Table 382.33-2, if the maximum number of washers is 4 machines, the trap diameter must be ___ inches.
- 2
 - 3
 - 4
 - 5
34. All dishwashing machines shall discharge to:
- A sanitary drain system
 - A Trough
 - Local waste piping
 - None of the above
35. The indirect waste piping from a residential-type dishwashing machine shall not exceed a developed length of ___ feet.
- 6
 - 8
 - 9
 - 10

36. Where an air-gap or air-break is located below the countertop, the indirect waste piping from the dishwashing machine shall discharge to a:
- Vent stack
 - Standpipe
 - Floor drain
 - Trench
37. The standpipe shall be at least ___ inches in diameter and shall extend at least 15 inches above the trap weir.
- 1 ½
 - 2
 - 2 ½
 - 3
38. Where an air-gap or air-break is located above the countertop, the indirect waste piping from the dishwashing machine shall discharge to:
- Vent piping
 - Soil piping
 - Indirect waste piping
 - Local waste piping
39. When the local waste piping discharges to a standpipe, the standpipe shall be at least 1 ½ inches in diameter and shall extend at least ___ inches above the trap weir.
- 15
 - 16
 - 18
 - 20
40. Where a hose is used for local waste piping, the developed length shall not exceed ___ inches.
- 14
 - 15
 - 16
 - 18
41. Commercial dishwashing machines shall discharge into a sanitary drain system by means of an air-gap or air-break into a trapped and:
- Vented pipe
 - Stacked vent
 - Vented receptor
 - Branched vent
42. The indirect waste piping may not be more than ___ inches in length.
- 24
 - 26
 - 28
 - 30
43. True or false? Appliances, devices and apparatus not defined as plumbing fixtures which have drip or drain outlets, can discharge into an approved receptor by means of an approved air-gap or air-break.
- True
 - False

44. True or false? Drains serving elevator pits should connect directly with the storm drain system by means of gravity flow piping.
- True
 - False
45. A _____ may not be located in an elevator machine room.
- Horizontal drain pipe
 - Waste stack
 - Sump
 - Wet vent
46. A drain serving an elevator pit that discharges to a sump shall have a submerged inlet constructed to maintain a minimum ____ inches trap seal.
- 3
 - 4
 - 5
 - 6
47. Where a bar or soda fountain sink is so located that the trap for the sink cannot be vented as specified in s. SPS 382.31, the sink drain shall discharge to the sanitary drain system through:
- Indirect waste piping
 - Local waste piping
 - Vent piping
 - Stack piping
48. Where the indirect waste piping is not trapped, the wastes shall be discharged by means of an:
- Air break
 - Air-gap
 - Vent stack
 - Receptor
49. True or false? The indirect waste piping draining a novelty box or ice compartment may not discharge or connect to the indirect waste piping or local waste piping of any other fixture, appliance or device other than a novelty box or ice compartment.
- True
 - False
50. Drains serving refrigerated food storage rooms, compartments or display cases shall discharge to the sanitary drain system through:
- Indirect waste piping
 - Local waste piping
 - Vent piping
 - Stack piping
51. Where an air-break is installed, the flood level rim of the receptor shall be at least ___ inch(es) below the top of the fixture strainer or drain opening in the refrigerated room, compartment or display case.
- $\frac{1}{2}$
 - 1
 - 1 $\frac{1}{2}$
 - 2

52. Which of the following should be discharged to the sanitary drain system through indirect waste piping by means of an air-gap:
- Coffee urns
 - Egg boilers
 - Vending machines
 - All of the above
53. The fixture drain upstream of the air-gap shall not exceed a length of ____ inches.
- 30
 - 35
 - 36
 - 40
54. True or false? Appliances, devices or apparatus, such as stills, sterilizers and similar equipment requiring waste connections and used for sterile materials, shall discharge through indirect waste piping to the sanitary drain system by means of an air-gap or air break.
- True
 - False

Water Treatment Devices

- The waste discharge of a water treatment device to the drain system shall be protected in accordance with s. SPS 382.41 with respect to cross connection control.
- The indirect waste piping or tubing from a water treatment device shall be of a material conforming to one or more of the standards listed in Tables 384.30-8 or 384.30-11.

Wastewater Treatment and Holding Devices.

Materials

All piping, devices and appliances for waste- water treatment and holding devices, appurtenances and systems shall be of approved materials in accordance with ch. SPS 384.

General

Any deleterious waste material which is discharged into a plumbing system shall be directed to a wastewater treatment or holding device. The wastewater treatment or holding device shall be capable of separating, diluting or neutralizing the deleterious waste material to a degree that the wastewater is no longer deleterious. Wastewater treatment or holding devices that retain any waste materials shall be designed and installed to facilitate periodic removal or treatment, or both.

A. Treatment for reuse. 1. Except as limited in subd. 2., gray- water, storm water, clear water, blackwater and other wastewaters as approved by the department may be reused in conformance with s. SPS 382.70.

2. Except as provided in subd. 3., wastewater discharged from water closets or urinals shall not be reused for drinking water.

3. All treatment works permitted by the department of natural resources, or a POWTS which includes an in situ soil dispersal or treatment component may treat wastewater discharged from water closets or urinals for reuse.

B. Deleterious waste materials. For the purpose of this sub-section, deleterious waste materials include any waste material, other than that from dwelling units, which may:

1. Congeal, coagulate or accumulate in drains and sewers, thereby, creating stoppages or retarding the discharge flow;

2. Retard or interfere with municipal sewage treatment processes;

3. Pass through a treatment process and pollute the water-course receiving the treatment effluent;

4. Create explosive, flammable, noxious, toxic or other hazardous mixtures of materials; or

5. Damage, destroy or deteriorate sewers or piping materials or structures.

C. Private systems. The special or industrial wastes from any plumbing system shall be treated, held or dispersed in compliance with the rules of the state agency having jurisdiction. The treatment, holding or dispersal system shall be installed so as not to endanger any water supply which is or may be used or which may create a nuisance, unsanitary conditions or water pollution.

D. Velocity control. Interceptors, catch basins and other similar devices shall be designed, sized and installed so that flow rates shall be developed and maintained in a manner that solid and floating materials of a harmful, hazardous or deleterious nature will be collected in the interceptor for disposal.

E. Maintenance. All devices installed for the purpose of intercepting, separating, collecting, holding or treating harmful, hazardous or deleterious materials in liquid or liquid-borne wastes shall be operated and cleaned of intercepted or collected materials or of any residual from treatment at such intervals which may be required to prevent their passage through the interceptor.

F. Service reassembly. Any fixed orifice, vent or trap of an interceptor, catch basin or other similar device shall remain intact and shall not be removed or tampered with except for cleaning purposes. After service, all parts of the interceptor, collector or treatment device, such as baffles, weirs, orifice plates, channels, vents, traps, tops, and fastening bolts or screws shall be replaced in proper working position.

G. Location. 1. Wastewater holding devices, interceptors, catch basins and other similar devices shall be accessible for service, maintenance, repair and inspection.

a. No wastewater holding device, interceptor, catch basin or similar device may be surrounded or covered as to render it inaccessible for service or inspection.

b. No wastewater holding device, interceptor, catch basin or similar device may have its top located more than 6 feet above the surrounding floor.

c. Enough space shall be provided to enable the removal of any interior parts of the wastewater holding device, interceptor, catch basin or similar device.

d. At least 18 inches of clear space shall be provided above the top of the wastewater holding device, interceptor, catch basin or similar device.

2. An exterior wastewater holding device, interceptor, catch basin or similar device shall not be located within 5 feet of a building or any portion of a building or swimming pool; 10 feet of water service; 2 feet of a lot line and 10 feet of a clear water cistern.

3. An exterior wastewater holding device, interceptor, catch basin, or similar device shall not be located within 10 feet of the high water mark of a lake, stream, pond or flowage.

H. Disposition of retained materials. Deleterious waste materials retained by a wastewater holding device, interceptor, catch basin or similar device shall not be introduced into any drain, sewer or natural body of water without approval of the state agency having jurisdiction.

Exam Questions:

55. Except as limited in subd. 2., which of the following may be reused in conformance with s. SPS 382.70:

- a. Gray water
- b. Storm water
- c. Black water
- d. All of the above

56. True or false? Except as provided in subd. 3., wastewater discharged from water closets or urinals shall not be reused for drinking water.

- a. True
- b. False

57. No wastewater holding device, interceptor, catch basin or similar device may have its top located more than ___ feet above the surrounding floor.

- a. 3
- b. 4
- c. 5
- d. 6

58. At least ___ inches of clear space shall be provided above the top of the wastewater holding device, interceptor, catch basin or similar device.

- a. 18
- b. 20

- c. 22
 - d. 24
59. An exterior wastewater holding device, interceptor, catch basin or similar device shall not be located within ___ feet of a building or any portion of a building or swimming pool or ___ feet of water service.
- a. 2, 5
 - b. 5, 10
 - c. 10, 15
 - d. 15, 20
60. An exterior wastewater holding device, interceptor, catch basin or similar device shall not be located within ___ feet of a lot line and ___ feet of a clear water cistern.
- a. 2, 10
 - b. 5, 15
 - c. 10, 15
 - d. 15, 25
61. An exterior wastewater holding device, interceptor, catch basin, or similar device shall not be located within ___ feet of the high water mark of a lake, stream, pond or flowage.
- a. 2
 - b. 5
 - c. 6
 - d. 10

Garage Floor Area Wastewater

A. Garages for public buildings and facilities. 1. Where a drain will be installed to receive the wastewater from floor areas of public buildings and facilities on which self-propelled land, air or water vehicles can be driven, the wastewater shall discharge using one of the following methods:

- a. In areas where vehicles will be serviced, the wastewater shall discharge through a garage catch basin or oil interceptor connected to a municipal sewer or holding tank approved to receive industrial wastewater.
- b. In areas where vehicles will be driven or stored, the wastewater shall discharge through a floor drain equipped with a solid bottom sediment bucket, garage catch basin or oil interceptor.

2. Garage catch basins design shall conform to all of the following:

- a. The holding area of the catch basin shall be watertight.
- b. The catch basin shall have a minimum inside diameter of 36".
- c. The minimum depth of the basin shall be 24" measured from the lowest portion of the trap on the outlet of the basin.

d. The outlet of the basin shall be at least 4" in diameter and trapped with a water seal of at least 6" and constructed on the interior or exterior of the basin. Where an external trap is provided, the trap shall be within 36" of the basin.

e. Except as provided in subd. 5., the water line in the basin shall be at least 2" below all horizontal drains discharging into the basin. Where an external trap is provided, the measurement point on the horizontal drain shall be upstream of the trap.

f. The basin shall be provided with a cover at least 23 inches square or 23 inches in diameter.

g. Gravity drains from fixtures serving garage floor areas located on different floors from the basin may discharge into the basin if the drain stack carrying the wastewater is located at a distance equal to at least 20 times the inside diameter of the horizontal piping upstream of the basin.

h. Catch basins with solid covers shall be vented in accordance with sub. (8) (c).

3. Drains with traps may connect to the garage catch basin under all of the following conditions:

a. The trap shall be a minimum of 3" in diameter.

b. Except as provided in subd. 3. c., the developed length from all trap outlets to the basin shall not exceed the distance as specified in Table 382.31-1.

c. Where the maximum distance exceeds that as specified in Table 382.31-1, the trap shall be vented in accordance with s. SPS 382.31 (3) and the connection to the basin shall form a 6-inch trap seal. The trap seal may be constructed on either the interior or exterior of the basin, but within 36" of the basin.

4. Drains without traps may discharge into a garage catch basin under all of the following conditions:

a. The fixture drain shall have a minimum 4-inch inside diameter.

b. The fixture drain shall be piped with a 6-inch water seal constructed either on the interior or exterior of the basin.

c. An exterior trap shall be constructed within 36" of the basin.

d. The developed length of the fixture drain shall not exceed the distance equal to 24 times the diameter of the fixture drain.

e. Fixture drains shall individually discharge into a garage catch basin.

5. Pressurized drains from garage floor areas discharging to a garage catch basin shall conform to all of the following conditions:

a. The pressurized drain piping shall terminate inside the basin with a 6-inch submerged inlet. The termination shall be at least 12" above the floor of the basin.

b. The pressurized equipment, devices and piping shall be designed and installed to produce a maximum velocity of 2 feet per second at the point of connection to the basin.

B. Garages for one- and 2-family dwellings. 1. Floor drains serving garages for one- and 2-family dwellings shall be provided with a solid bottom sediment basket.

2. a. Except as permitted in subd. 2. b., catch basins serving garages for one- and 2-family dwellings shall be designed and installed in accordance with par. (a) 2.

b. The minimum inside diameter of catch basins serving garages for one- and 2-family dwellings shall be 18 inches.

C. Grates for garage catch basins, floor drains and trenches. A garage catch basin, floor drain and trench drain shall be provided with an approved, removable cast iron or steel grate of a thickness and strength for the anticipated loads. The grate shall have an available inlet area equal to at least the outlet drain for the catch basin, floor drain or trench drain.

Exam Questions:

62. Garage catch basins design shall have a minimum inside diameter of ___ inches.

- a. 36
- b. 38
- c. 46
- d. 48

63. The outlet of a garage catch basin shall be at least ___ inches in diameter and trapped with a water seal of at least ___ inches and constructed on the interior or exterior of the basin.

- a. 2, 4
- b. 4, 6
- c. 6, 8
- d. 8, 10

64. Except as provided in subd. 5., the water line in the garage catch basin shall be at least ___ inches below all horizontal drains discharging into the basin.

- a. 2
- b. 3
- c. 4
- d. 5

65. Gravity drains from fixtures serving garage floor areas located on different floors from the basin may discharge into the basin if the drain stack carrying the wastewater is located at a distance equal to at least ___ times the inside diameter of the horizontal piping upstream of the basin.

- a. 5
- b. 10
- c. 20
- d. 50

66. True or false? Drains with traps may connect to the garage catch basin if the trap has a minimum of 2-inch diameter.
- True
 - False
67. The trap seal may be constructed on either the interior or exterior of the basin, but within ___ inches of the basin.
- 36
 - 38
 - 46
 - 48
68. The minimum inside diameter of catch basins serving garages for one- and two-family dwellings is ___ inches.
- 18
 - 20
 - 22
 - 24

Grease and Oil Treatment

A. All plumbing installations for occupancies, other than dwelling units, where grease, fats, oils or similar waste products of cooking or food are introduced into the drain system shall be provided with grease and oil treatment in accordance with this subsection.

B. General. 1. 'Public sewers.' All new, altered or remodeled plumbing systems which discharge to public sewers shall be provided with one or more grease interceptors.

a. Where one or more exterior grease interceptors are provided all, and only, kitchen wastes shall be discharged to an exterior interceptor.

b. Except as required in subd. 1. c. or d., where one or more interior grease interceptors are provided the wastes from a food waste grinder, a sanitizing compartment of a sink or a rinse compartment of a sink, may bypass the interceptor or interceptors.

c. The wash compartment of a scullery sink shall discharge through a grease interceptor.

d. The pre-wash compartment not discharging through a garbage disposal shall discharge through a grease interceptor.

2. 'Private onsite wastewater treatment systems.' All new, altered or remodeled plumbing systems which discharge to private onsite wastewater treatment systems shall be provided with exterior grease interceptors.

a. Except as provided in subd. 2. b., only kitchen and food wastes shall be discharged to an exterior grease interceptor.

b. For remodeling, when it is not practicable to separate kitchen and toilet wastes, combined kitchen wastes and toilet wastes may be discharged directly to a private onsite

wastewater treatment component tank or tanks which conform to par. (c). The required capacity of a grease interceptor shall be added to the required septic tank capacity as specified in ch. SPS 383.

c. For holding tank installations, the combined kitchen and toilet wastes may discharge directly to a holding tank where the location accepting the pumpage from the tank provides written acceptance of the combined waste to the department.

3. 'Existing installations.' The department may require the installation of any treatment device deemed necessary by the department for existing plumbing installations where the water- way of a drain system, sewer system or private onsite wastewater treatment system is reduced or filled due to grease.

C. Exterior grease interceptors. Exterior grease interceptors shall receive the entire waste discharge from kitchens or food processing areas. All exterior interceptors shall be designed and constructed in accordance with this paragraph, so as to constitute an individual structure.

1. 'Design.' a. The liquid depth of the interceptor shall not be less than 42" nor more than an average of 72".

b. A rectangular interceptor tank shall have a minimum width of 36" and a minimum length of 72". The longest dimension of the tank shall be parallel to the direction of waste flow.

c. A horizontal-cylindrical interceptor tank shall have a minimum inside diameter of 52" and a minimum length of 72". The longest dimension of the tank shall be parallel to the direction of waste flow.

d. Vertical-cylindrical interceptor tanks shall have a minimum inside diameter of 72".

e. Each prefabricated interceptor tank shall be clearly marked to indicate liquid capacity and the name and address or registered trademark of the manufacturer. The markings shall be impressed into or embossed onto the outside wall of the tank immediately above the outlet opening. Each site-constructed concrete tank shall be clearly marked at the outlet opening to indicate the liquid capacity. The marking shall be impressed into or embossed onto the outside wall of the tank immediately above the outlet opening.

f. The inlet and outlet openings of interceptor tanks or tank compartments shall be provided with, open-end sanitary tee fittings or baffles, so designed and constructed as to distribute the flow and retain the grease in the tank or tank compartments. The sanitary tee fittings or baffles shall extend at least 6" above the liquid level. At least 2" of clear space shall be provided above the top of the sanitary tee fittings or baffles. The sanitary tee fitting or baffle at the inlet opening shall extend below the liquid level of the tank a distance equal to $\frac{1}{3}$ of the total liquid depth. The sanitary tee fitting or baffle at the outlet opening shall extend below the liquid level of the tank a distance equal to $\frac{2}{3}$ of the total liquid depth. The waterline in the interceptor shall be at least 2" below the horizontal drain discharging to the interceptor.

g. Each compartment of an interceptor tank shall be provided with at least one manhole opening located over either the inlet or outlet opening. Additional manhole openings shall be provided such that no interior compartment wall of a tank is more than 4 feet from the edge of the manhole opening. The distance between manhole openings serving the same compartment shall not exceed 8 feet. Manhole openings shall be not less than 23" in the least dimension. Manholes shall terminate at or above ground surface and be of approved materials. Steel tanks shall have a minimum 2" collar for the manhole extensions permanently welded to the tank. The manhole extension on fiberglass tanks shall be of the same material as the tank and an integral part of the tank. The collar shall have a minimum height of 2".

h. Manhole risers for interceptor tanks shall be provided with a substantial, fitted, watertight cover of concrete, steel, cast iron or other approved material. Manhole covers shall terminate at or above grade and shall have an approved locking device.

i. A minimum 4 X 6 inch permanent label shall be affixed to the manhole cover, identifying the interceptor tank with the words GREASE INTERCEPTOR. Where the tank acts as the septic tank and grease interceptor the label shall identify it as such. The wording used on the warning label shall be approved by the department, as part of the materials approval for the tank under ch. SPS 384.

j. An inlet or outlet opening which does not have a manhole opening as specified in subd. 1. g. shall be provided with an air-tight inspection opening located over the inlet or outlet. The inspection opening shall be at least 4" in diameter. The inspection opening shall terminate at or above grade.

2. 'Capacity and sizing.' The minimum liquid capacity of a grease interceptor shall be determined in accordance with the provisions of this subdivision, except no grease interceptor may have a capacity of less than 1000 gallons if the interceptor is to discharge to a private onsite wastewater treatment system or less than 750 gallons if the interceptor is to discharge to a municipal sewer system and treatment facility.

a. The minimum capacity of a grease interceptor serving a restaurant with seating shall be equal to C,

$$\text{where } C = S \times H \times A$$

where, S = Number of seats, with each drive-in car service space counting as 3 seats and each drive-up service window counting as 60 seats.

H = Hours per day that meals are served, at least 6 hours but not more than 12 hours.

A = Appliance factor:

0.75 for a kitchen with no dishwashing machine and no food waste grinder.

1.0 for a kitchen with either a dishwashing machine or a food waste grinder.

1.25 for a kitchen with both a dishwashing machine and a food waste grinder.

b. The minimum capacity of a grease interceptor serving a dining hall, hospital, nursing home, school kitchen, church kitchen or a kitchen for carryout or delivery service shall be equal to C, where:

$$C = \frac{M \times G \times H}{2 \times P}$$

where, M = Meals served per day.

G = 3 gallons per meal served.

H = Hours per day that meals are served, at least 6 hours but not more than 12 hours.

P = Meal periods per day; 1, 2 or 3.

c. The minimum capacity of a grease interceptor as determined in subd. 2. a. or b. may be halved for establishments with all paper service, but may not be less than 1000 gallons if the interceptor is to discharge to a private sewage system or less than 750 gallons if the interceptor is to discharge to a municipal sewer system and treatment facility.

3. 'Installation.' a. Grease interceptor tanks may not be located within 5 feet of a building or any portion of the building or swimming pool; 10 feet of a water service; 2 feet of a lot line; 10 feet of a cistern or 10 feet of a reservoir or high water mark of a lake, stream, pond or flowage.

b. Where a grease interceptor tank is installed in groundwater, the tank shall be adequately anchored.

c. Grease interceptor tanks shall be installed on a bedding of at least 3" in depth. The bedding material shall be sand, gravel, granite, limerock or other noncorrosive materials of a size that all will pass through a 3/4" sieve.

d. The backfill material for steel and fiberglass grease interceptor tanks shall be as specified in subd. 3. c. for bedding and shall be tamped into place. The backfill material for concrete grease interceptor tanks shall be soil material, of a size that will pass through a 4 inch screen and shall be tamped into place.

e. All joints on concrete risers and manhole covers for a grease interceptor shall be tongue and groove or shiplap type and sealed watertight using neat cement, mortar or bituminous compound. All joints on steel risers for a grease interceptor shall be welded or flanged and bolted and be watertight. All steel manhole extensions from a grease interceptor shall be bituminous coated inside and outside. All methods of attaching fiberglass risers for a grease interceptor shall be watertight and approved by the department.

D. Interior grease interceptors. 1. 'Flow rating.' An interior grease interceptor shall be capable of accommodating a flow of at least 15 gallons per minute, but not less than the manufacturer's specifications.

2. 'Flow rate related to connected capacity.' Three-fourths of the total holding capacity in gallons of all fixtures and devices discharging to an interior grease interceptor, shall not exceed the value of the maximum flow rate which the interceptor can accommodate.

3. 'Grease holding capacity as related to flow rate.' The grease holding capacity in pounds shall not be less than double the value of the maximum flow rate which the interceptor can accommodate.

4. 'Flow controls.' Where required by the manufacturer, devices which control the rate of flow through an interior grease intercept shall be installed.

a. The flow control devices shall be accessible for inspection, service and cleaning.

b. Flow controls shall be installed in the drain branch leading to each fixture and shall be so rated that the combined flow from all combinations of discharge will not develop either sufficient static or velocity head so the established flow rate of the interceptor can be exceeded.

5. 'Flow control vents.' Orifice type flow controls for an interior grease interceptor shall be vented in accordance with s. SPS 382.31.

6. 'Prohibited locations and types.' No water-cooled grease interceptor may be installed. No grease interceptor may be located where the surrounding temperatures, under operating conditions, are less than 40° F.

7. A maximum of 12 inches of horizontal inlet pipe may be submerged.

E. Prohibited treatment. The introduction of grease or fat emulsifiers into a grease interceptor shall be prohibited.

Exam Questions:

Grease and Oil Treatment

69. The pre-wash compartment discharging through a garbage disposal shall discharge through a grease interceptor.

- a. True
- b. False

70. The liquid depth of the interceptor shall not be less than ___ inches nor more than an average of ___ inches.

- a. 24, 32
- b. 36, 48
- c. 42, 72
- d. 54, 68

71. A rectangular interceptor tank shall have a minimum width of ___ inches and a minimum length of ___ inches.

- a. 22, 42
- b. 36, 72

- c. 48, 56
 - d. 52, 60
72. For a rectangular interceptor tank, the longest dimension of the tank shall be _____ to the direction of waste flow.
- a. Perpendicular
 - b. Vertical
 - c. Horizontal
 - d. Parallel
73. A horizontal-cylindrical interceptor tank shall have a minimum inside diameter of ____ inches and a minimum length of ____ inches.
- a. 52, 72
 - b. 54, 76
 - c. 56, 80
 - d. 58, 84
74. Vertical-cylindrical interceptor tanks shall have a minimum inside diameter of ____ inches.
- a. 72
 - b. 76
 - c. 80
 - d. 82
75. Each prefabricated interceptor tank shall be clearly marked to indicate liquid capacity and the name and address or registered trademark of the manufacturer, and these markings shall be impressed into or embossed onto the outside wall of the tank _____ above the outlet opening.
- a. 1 inch
 - b. 6 inches
 - c. 1 foot
 - d. Immediately
76. The sanitary tee fittings or baffles shall extend at least ____ inches above the liquid level.
- a. 6
 - b. 8
 - c. 10
 - d. 12
77. At least ____ inches of clear space shall be provided above the top of the sanitary tee fittings or baffles.
- a. 2
 - b. 3
 - c. 4
 - d. 5
78. The sanitary tee fitting or baffle at the inlet opening shall extend below the liquid level of the tank a distance equal to ____ of the total liquid depth.
- a. $\frac{1}{4}$
 - b. $\frac{1}{2}$
 - c. $\frac{1}{3}$
 - d. $\frac{3}{4}$
79. The sanitary tee fitting or baffle at the outlet opening shall extend below the liquid level

of the tank a distance equal to ____ of the total liquid depth.

- a. $\frac{1}{4}$
 - b. $\frac{1}{2}$
 - c. $\frac{2}{3}$
 - d. $\frac{3}{4}$
80. Additional manhole openings shall be provided such that no interior compartment wall of a tank is more than ____ feet from the edge of the manhole opening.
- a. 2
 - b. $2\frac{1}{2}$
 - c. 3
 - d. 4
81. The distance between manhole openings serving the same compartment shall not exceed ____ feet.
- a. 5
 - b. 6
 - c. 7
 - d. 8
82. Manhole openings shall be not less than ____ inches in the least dimension.
- a. 23
 - b. 24
 - c. 25
 - d. 26
83. Steel tanks shall have a minimum ____ inches collar for the manhole extensions permanently welded to the tank.
- a. 2
 - b. 3
 - c. 4
 - d. 5
84. True or false? The manhole extension on fiberglass tanks shall be of different material as the tank and an integral part of the tank.
- a. True
 - b. False
85. Manhole risers for interceptor tanks shall be provided with ____.
- a. Substantial, fitted, watertight cover of concrete
 - b. Cast iron
 - c. Steel
 - d. All of the above
86. The manhole inspection opening shall be at least ____ in diameter.
- a. 2"
 - b. 4"
 - c. 6"
 - d. It doesn't matter
87. When installing exterior grease interceptors, grease interceptor tanks may not be located within ____ feet of a water supply.
- a. 10 feet
 - b. 2 feet

- c. 5 feet
 - d. 1 foot
88. Grease interceptor tanks shall be installed on a bedding of at least ____ in depth.
- a. 4"
 - b. 3/4"
 - c. 3"
 - d. 5"
89. An interior grease interceptor shall be capable of accommodating a flow of at least ____ gallons per minute, but not less than the manufacturer's specifications.
- a. 13
 - b. 14
 - c. 15
 - d. 16
90. The grease holding capacity in pounds shall not be ____ the value of the maximum flow rate which the interceptor can accommodate.
- a. Less than double
 - b. More than double
 - c. Less than half
 - d. None of the above
91. True or False? Where required by the manufacturer, devices which control the rate of flow through an interior grease intercept shall be installed.
- a. True
 - b. False
92. The flow control devices shall be accessible for ____.
- a. Inspection and cleaning
 - b. Inspection, service and cleaning
 - c. Installation, service, and cleaning
 - d. Installation, cleaning, and inspection
93. Orifice type flow controls for an interior grease interceptor shall be vented in accordance with s. SPS ____.
- a. 383
 - b. 381.31
 - c. 384
 - d. 382.31
94. True or False? The introduction of grease or fat emulsifiers into a grease interceptor shall be allowed.
- a. True
 - b. False

Automatic Car Washes

The wastes of floor drains and drain inlets of automatic car washes shall discharge through an approved car wash interceptor.

A. Design. Except as provided in subds. 1. and 2. and par. (b), car wash interceptors shall be constructed and installed in accordance with sub. (4) (a) 2.

1. The interceptor's outlet shall be submerged to form a trap with a water seal of at least 15".

2. The bottom of the trap's water seal shall be at least 30" above the bottom of the interceptor.

B. Capacity. The minimum liquid capacity of the interceptor shall be based on the maximum flow rate of water through the interceptor in gallons per minute.

1. Between the waterline and the bottom of the trap seal of the outlet, the interceptor shall have a capacity value equal to at least 5 times the maximum flow rate.

2. Below the bottom of the trap seal of the outlet, the interceptor shall have a capacity value equal to at least 15 times the maximum flow rate.

C. Hand-held car washing wands. The wastes of floor drains and drain inlets serving 2 or more hand-held car washing wands shall discharge through an approved car wash interceptor. The wastes of one hand-held car washing wand may discharge to a garage catch basin.

Commercial Laundries

Wastes from gravity dump-type clothes washing equipment shall be discharged through an approved laundry interceptor in accordance with this subsection.

A. Screening apparatus. A laundry interceptor shall be equipped with a wire basket or other device which will prevent the passage of solids, 1/2" or larger in diameter, string, buttons and other detrimental materials into the drain system.

B. Trench type interceptors. A floor receptor, trench or trough as specified in s. SPS 382.33 (9) (c) 3., may serve as a laundry interceptor, if no oils or quantities of sand are discharged into it.

C. In-line interceptor. 1. In-line interceptors shall have a minimum inside diameter or horizontal dimension of 24".

2. An in-line interceptor shall be provided with an air-tight cover.

3. An in-line interceptor shall be provided with a vent.

a. The vent shall extend from above the flow line to a vent terminal in accordance with s. SPS 382.31 (16) or shall be connected to the venting system serving the sanitary drain system.

b. The diameter of the vent shall be at least one-half of the diameter of the interceptor's outlet, but not less than 2".

4. The outlet for an in-line interceptor shall be at least 4" in diameter. The outlet shall be submerged to form a trap with a water seal of at least 12". The bottom of the trap's water seal shall be at least 12" above the bottom of the interceptor.

5. The waterline in an in-line interceptor shall be at least 2" below the bottom of the inlet opening for the interceptor.

Exam Questions:

95. The wastes of floor drains and drain inlets of automatic car washes shall discharge through a(n) ___ car wash interceptor.
- Unapproved
 - Approved
 - Partially Approved
 - Any
96. The bottom of the trap's water seal shall be at least ____ above the bottom of the interceptor.
- 15"
 - 20"
 - 25"
 - 30"
97. The wastes of one hand-held car washing wand may discharge to a ____.
- Drain
 - Watering Can
 - Garage catch basin
 - Lawn
98. A laundry interceptor ___ with a wire basket or other device which will prevent the passage of solids, 1/2" or larger in diameter, string, buttons and other detrimental materials into the drain system.
- Shall not be equipped
 - Sometimes shall be equipped
 - Shall be recommended
 - Shall be equipped
99. The diameter of the vent shall be at least ___ of the diameter of the interceptor's outlet, but not less than 2".
- One-fourth
 - One- third
 - One- half
 - Three- fourths
100. The waterline in an in-line interceptor shall be at least ___ below the bottom of the inlet opening for the interceptor.
- 1"
 - 2"
 - 3"
 - 4"

Oil and Flammable Liquids.

Oily and flammable waste- water that discharges to a building sewer shall be intercepted or treated by a means acceptable to the department.

A. Site-constructed interceptors. Site-constructed interceptors shall be designed in accordance with the requirements in sub. (4) (a) 2.

B. Prefabricated oil interceptors and separators. Prefabricated oil interceptors and separators shall be manufactured with adequate capacity for the anticipated load.

C. Venting. Oil and flammable interceptors and separators shall be so designed to prevent the accumulation of explosive gases.

1. A covered interceptor or separator shall be provided with an individual vent of at least 3 inches in diameter. The vent shall extend from the top of the interceptor or separator or as high as possible, from the side of the interceptor or separator to a point at least 12 feet above grade.

2. The drain pipe to the interceptor or separator shall be provided with a fresh air inlet connected within 2 feet of the inlet of the interceptor or separator. The fresh air inlet shall terminate at least one foot above grade, but not less than 6 feet below the terminating elevation of the vent serving the interceptor or separator. The fresh air inlet shall be at least 3 inches in diameter.

Bottling Establishments.

Wastes containing glass of bottling establishments shall be discharged through an interceptor.

Dairy Product Processing Plant

Dairy wastes from dairy product processing plants shall be discharged through an interceptor.

Meat Processing Plants and Slaughterhouses

The wastes from meat processing areas, slaughtering rooms and meat dressing rooms shall be discharged through an approved interceptor to prevent the discharge of feathers, entrails, blood and other materials.

SAND INTERCEPTORS

Sand interceptors and other similar interceptors for heavy solids shall be so designed and located as to be accessible for cleaning. The outlet for the interceptor shall be submerged to form a trap with a water seal of at least 12".

PLASTER AND HEAVY SOLIDS TRAP TYPE INTERCEPTORS

Plaster sinks shall be provided with plaster and heavy solids trap type interceptors.

a. The interceptor shall be installed as the fixture trap.

b. The drain piping between the sink and the interceptor shall not exceed a length of 36".

CHEMICAL WASTE PIPING SYSTEMS

All chemical wastes having a pH level of less than 5.5 or more than 10.0 shall discharge to a holding tank for proper disposal or to a drain system in accordance with this subsection.

A. Chemical dilution and neutralizing basins. 1. All chemical wastes discharging into a drain system shall be diluted, neutralized or treated to a pH level of 5.5 to 10.0 by passing through an approved dilution or neutralizing basin before discharging to a building sewer.

2. Dilution and neutralizing basins shall have the minimum retention capacities in accordance with one of the following requirements:

a. The minimum retention capacity shall be as specified in Table 382.34.

b. The minimum retention capacity shall be as per the manufacturer's specifications.

c. The minimum retention capacity for a quantity exceeding 150 sinks or for special uses or installations shall be approved by the department.

3. Where a sufficient supply of diluting water cannot be provided to a dilution or neutralizing basin, the basin shall be filled with marble or limestone chips of not less than one inch nor more than 3" in diameter to the level of the basin's outlet.

4. Either the inlet or outlet of a dilution or neutralizing basin shall be submerged to form a trap with a water seal of at least 4".

Table 382.34

Minimum Capacities for Dilution and Neutralizing Basins

Maximum Number of Sinks	Minimum Retention Capacity in Gallons
1	5
4	15
8	30
16	55
25	100
40	150
60	200
75	250
100	350
150	500

B. Vents. Vents for chemical waste systems shall be sized and installed in accordance with all of the following:

1. Dilution and neutralizing basins with submerged inlets shall have a sanitary vent connected to the basin and a chemical waste vent connected to the inlet pipe. The pitch and

the developed length of the drain between the submerged basin inlet and the chemical waste vent shall be in accordance with Table 382.31-1.

2. Dilution and neutralizing basins with submerged outlets shall have a chemical waste vent connected to the basin and a sanitary vent connected to the outlet pipe. The pitch and the developed length of the drain between the submerged basin outlet and the sanitary vent shall be in accordance with Table 382.31-1.

3. The vents for a chemical waste basin shall be sized based on the number of drainage fixture units discharging into the basin and installed in accordance with s. SPS 382.31.

SPECIAL WASTEWATER OR MIXED WASTEWATER TREATMENT OR CONTAINMENT DEVICES.

Mixed wastewater treatment and containment devices, decontamination tanks or other special waste- water treatment devices shall discharge to a dispersal or treatment system in accordance with this section or as approved by the department.

A. Installation. 1. Exterior containment devices or treatment systems for mixed wastewater, decontamination tanks and other special wastewater treatment devices shall not be located within 5 feet of a building or any portion of the building or swimming pool; 10 feet of a water service; 2 feet of a lot line; 10 feet of a clear water cistern or 10 feet of the high water mark of a lake, stream, pond or flowage.

2. Exterior containment devices or treatment systems for mixed wastewater, decontamination tanks or other special waste- water treatment devices shall be constructed in accordance with s. SPS 384.25 or as approved by the department.

B. Vents. Vents for mixed wastewater, decontamination tanks and other special wastewater treatment systems shall be sized and installed in accordance with s. SPS 382.31.

C. Alarm system. Containment devices or treatment systems for mixed wastewater, decontamination tanks and other special wastewater treatment devices shall be equipped with an alarm.

D. Sampling provision. Containment devices or treatment systems for mixed wastewater, decontamination tanks and other special wastewater treatment devices shall be equipped to allow the collection of a representative sample.

E. Pump requirements. 1. A discharge line serving a containment tank for servicing purposes shall comply with all of the following:

a. A pipe serving as the discharge line shall be of an acceptable type in accordance with ch. SPS 384.

b. A discharge line shall terminate with a service port consisting of a quick disconnect fitting with a removable plug.

c. The service port of a discharge line shall terminate at least 2 feet above final grade.

d. The service port of a discharge line shall be identified as such with a permanent sign with lettering at least 1/2 inch in height.

e. The service port of a discharge line shall be secured to a permanent support that is capable of withstanding the loads and forces placed on the port.

f. A discharge line shall be at least 3 inches in diameter.

2. Where a lift station is employed for servicing a containment tank, the pump discharge line shall conform with subd. 1., except as provided in subd. 2. a. and b.

a. A discharge line from the lift station shall be at least 2 inches in diameter.

b. The lift station pump shall be activated by means of a keyed-switch at the service port.

F. Sizing. The volume of the mixed wastewater treatment or containment device shall be based on anticipated use.

Exam Questions:

101. Water that discharges to a building sewer shall be intercepted or treated by a means ___ to the department.

- a. Unacceptable
- b. Acceptable
- c. Sometimes acceptable
- d. Any of the above

102. Prefabricated oil interceptors and separators shall be manufactured with adequate capacity for the ___ load.

- a. Anticipated
- b. Actual
- c. Largest
- d. Smallest

103. The vent used for oil and flammable liquids shall extend from the top of the interceptor or separator or as high as possible, from the side of the interceptor or separator to a point at least ___ above grade.

- a. 10 feet
- b. 11 feet
- c. 12 feet
- d. 13 feet

104. Wastes containing glass of bottling establishments shall be discharged through an ___.

- a. Interceptor

- b. Pump
 - c. Controller
 - d. Agitator
105. ___ shall be provided with plaster and heavy solids trap type interceptors.
- a. Chemical waste system piping
 - b. Sand interceptors
 - c. Dirt interceptors
 - d. Plaster sink
106. All chemical wastes discharging into a drain system shall be diluted, neutralized or treated to a pH level of ___ to ___ by passing through an approved dilution or neutralizing basin before discharging to a building sewer.
- a. 1.0 , 3.5
 - b. 5.5 , 10.0
 - c. 5.5 , 8.0
 - d. 3.5 , 10.0
107. The ___ retention capacity of a chemical dilution and neutralizing basin shall be as per the manufacturer's specifications.
- a. Maximum
 - b. Minimum
 - c. Possible
 - d. Any of the above
108. . Either the inlet or outlet of a dilution or neutralizing basin shall be submerged to form a trap with a water seal of at least ___.
- a. 4"
 - b. 5"
 - c. 6"
 - d. 7"
109. According to table 382.34, when the maximum number of sinks is 40, the minimum retention capacity is ___ gallons.
- a. 40
 - b. 60
 - c. 100
 - d. 150
110. According to Table 382.34, when the minimum retention capacity is ___ gallons, the maximum number of sinks is 100.
- a. 200
 - b. 350
 - c. 300
 - d. 400
111. According to Table 382.34, when the maximum number of sinks is 4, the minimum retention capacity must be ___ gallons.
- a. 4
 - b. 5
 - c. 15
 - d. 30
112. According to table 382.34, as the maximum number of sinks ____, so the

- minimum retention capacity ____.
- a. Increases, decreases
 - b. Decreases, increases
 - c. Increases, increases
 - d. Decreases, decreases
113. True or False? Dilution and neutralizing basins with submerged inlets shall not have a sanitary vent connected to the basin and a chemical waste vent connected to the inlet pipe.
- a. True
 - b. False
114. Exterior containment devices or treatment systems for mixed wastewater, decontamination tanks and other special wastewater treatment devices shall not be located within ____ of a building or any portion of the building or swimming pool.
- a. 1 foot
 - b. 2 feet
 - c. 5 feet
 - d. 10 feet
115. Water treatment devices shall be constructed in accordance with s. ____ or as approved by the department.
- a. SPS 384.25
 - b. SPS 382.31
 - c. 384
 - d. 382.33
116. Containment devices or treatment systems for mixed wastewater, decontamination tanks and other special wastewater treatment devices shall be equipped with a(n) ____.
- a. Alarm
 - b. Silent notify
 - c. None of the above
 - d. Any of the above
117. True or False? A discharge line shall terminate with a service port consisting of a quick disconnect fitting with a removable plug.
- a. True
 - b. False
118. The service port of a discharge line shall be identified as such with a permanent sign with lettering at least ____ inch in height.
- a. 1/4
 - b. 1/3
 - c. 1/2
 - d. 3/4
119. A discharge line shall be at least ____ inches in diameter.
- a. 1
 - b. 3
 - c. 5
 - d. 7
120. True or False? The volume of the mixed wastewater treatment or containment

device shall be based on anticipated use.

- a. True
- b. False

ANSWER SHEET – Indirect and Local Waste Piping

First Name: _____ Last Name: _____ Date: _____

Address: _____ City: _____ State: _____ ZIP: _____

License #: _____ Phone: _____ Email: _____

- | | | | | | | | |
|-----|---|-----|---|-----|---|------|---|
| 1. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 28. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 55. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 82. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 2. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 29. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 56. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 83. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 3. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 30. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 57. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 84. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 4. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 31. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 58. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 85. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 5. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 32. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 59. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 86. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 6. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 33. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 60. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 87. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 7. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 34. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 61. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 88. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 8. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 35. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 62. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 89. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 9. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 36. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 63. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 90. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 10. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 37. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 64. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 91. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 11. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 38. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 65. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 92. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 12. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 39. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 66. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 93. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 13. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 40. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 67. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 94. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 14. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 41. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 68. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 95. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 15. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 42. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 69. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 96. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 16. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 43. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 70. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 97. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 17. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 44. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 71. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 98. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 18. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 45. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 72. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 99. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 19. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 46. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 73. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 100. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
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| 24. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 51. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 78. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 105. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
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| 26. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 53. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 80. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 107. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 27. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 54. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 81. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 108. | <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |



109. A B C D

110. A B C D

111. A B C D

112. A B C D

113. A B C D

114. A B C D

115. A B C D

116. A B C D

117. A B C D

118. A B C D

119. A B C D

120. A B C D

