Comm 82.41 Cross connection control. (1) SCOPE. The provisions of this section set forth the requirements for the protection of potable water within water supply systems when and where there is the possibility of contamination due to cross connections or backflow conditions.

Note: The Department of Natural Resources governs the operation and design of community water systems and under s. NR 811.09 requires the supplier of water to develop and implement a comprehensive cross connection control program.

(2) MATERIALS. (a) All devices, assemblies and mechanisms intended to protect water supplies relative to cross connection or backflow shall be of a type recognized and approved in accordance with ch. Comm 84 and as described in sub. (4).

(b) All methods including barometric loops and air gaps intended to protect water supplies relative to cross connection or backflow shall be constructed of materials suitable for water supply systems in accordance with ch. Comm 84.

(3) GENERAL REQUIREMENTS. Water supply systems and the connection of each plumbing fixture, piece of equipment, appliance or nonpotable water piping system shall be designed, installed and maintained in such a manner to prevent the contamination of water supplies by means of cross connections.

(a) *Types of cross connection control.* 1. Water supply systems shall be protected against contamination due to cross connections or backflow conditions by one of the methods or devices specified in Table 82.41–1 depending upon the situation or Table 82.41–2 depending upon the specific application or use, and the limitations specified in sub. (4).

2. For the situations described in par. (b) 3., cross connection control shall be provided as part of the fixture fitting outlet or in the water supply piping for the fixture fitting outlet.

Table 82.41–1

ACCEPTABLE CROSS CONNECTION CONTROL METHODS OR ASSEMBLIES FOR SPECIFIC APPLICATIONS

Methods or Assemblies of Cross Connection Control (Standard)	Situations and Conditions							
	Backpressure				Backsiphonage			
	Low Hazard		High Hazard		Low Hazard		High Hazard	
	Continuous Pressure	Noncontinuous Pressure	Continuous Pressure	Noncontinuous Pressure	Continuous Pressure	Noncontinuous Pressure	Continuous Pressure	Noncontinuous Pressure
Air–gap Fittings for use with Plumbing Fixtures, Appliances, and Appurtenances (ASME A112.1.3)					X	X	X	X
Air Gaps (ASME A112.1.2)	X	X	X	X	X	X	X	X
Atmospheric Type Vacuum Breaker (CAN/CSA B64.1.1)						X		X
Back Siphonage Vacuum Breaker (ASSE 1056)					X	X	X	X
Backflow Preventers with Intermediate Atmospheric Vent (ASSE 1012)	X	X			X	X		
Barometric Loops					X	X	X	X
Dual Check Valve Type with Atmospheric Port Backflow Preventer (CAN/CSA B64.3)	X	X			X	X		
Hose Connection Backflow Preventers (ASSE 1052)	X[a]	X	X[a]	X	X[a]	X	X[a]	X
Hose Connection Type Vacuum Breakers (CAN/CSA B64.2.1 and B64.2.2)	X[a]	X	X[a]	X	X[a]	X	X[a]	X
Hose Connection Vacuum Breakers (ASSE 1011)	X[a]	X	X[a]	X	X[a]	X	X[a]	X
Pipe Applied Atmospheric Type Vacuum Breakers (ASSE 1001)						X		X
Pressure Type Vacuum Breaker (CAN/CSA B64.1.2)					X	X	X	X
Pressure Vacuum Breaker Assembly (ASSE 1020)					X	X	X	X

Table 82.41–1 (Continued)

ACCEPTABLE CROSS CONNECTION CONTROL METHODS OR ASSEMBLIES FOR SPECIFIC APPLICATIONS

Methods or Assemblies of Cross Connection Control (Standard)	Situations and Conditions							
	Backpressure				Backsiphonage			
	Low Hazard		High Hazard		Low Hazard		High Hazard	
	Continuous Pressure	Noncontinuous Pressure	Continuous Pressure	Noncontinuous Pressure	Continuous Pressure	Noncontinuous Pressure	Continuous Pressure	Noncontinuous Pressure
Reduced Pressure Principle Backflow Preventers And Reduced Pressure Fire Protection Principle Backflow Preventers (ASSE 1013)	X	X	X	X	X	X	X	X
Reduced Pressure Principle Type Backflow Preventer (CAN/CSA B64.4)	X	X	X	X	X	X	X	X

[a] See limitation listed under s. Comm 82.41 (4) (c) 1. a.

Table 82.41–2

ACCEPTABLE CROSS CONNECTION CONTROL METHODS OR ASSEMBLIES FOR SPECIFIC APPLICATIONS

Methods or Assemblies of Cross Connection Control (Standard)	Types of Application or Use
Backflow Preventer for Carbonated Beverage Machines (ASSE 1022)	Beverage dispensers
Chemical Dispensing Systems (ASSE 1055)	Chemical dispensing systems
Double Check Backflow Prevention Assemblies (ASSE 1015)	Automatic fire sprinkler systems and standpipe systems Water–based fire protection system
Double Check Detector Assembly Backflow Preventer (ASSE 1048)	Automatic fire sprinkler systems and standpipe systems Water–based fire protection system
Double Check Detector Valve Type Backflow Preventer (CAN/CSA B64.5)	Automatic fire sprinkler systems and standpipe systems Water–based fire protection system
Hand Held Showers (ASSE 1014)	Hand held shower assemblies
Laboratory Faucet Backflow Preventer (ASSE 1035)	Laboratory faucets
Laboratory Faucet Type Vacuum Breakers (CAN/CSA B64.7)	Laboratory faucets
Laboratory Faucet Vacuum Breakers (ASSE 1035)	Laboratory faucets
Pressurized Flushing Devices (Flushometers) For Plumbing Fixtures (ASSE 1037)	Flushometer plumbing fixtures
Reduced Pressure Detector Fire Prevention Backflow Prevention Assemblies (ASSE 1047)	Automatic fire sprinkler systems
Trap Seal Primer Valves, Water Supply Fed (ASSE 1018)	Traps for drain systems
Vacuum Breaker Tees [s. Comm 82.41 (5) (j)]	Water treatment devices
Wall Hydrants, Frost Proof Automatic Draining Anti–Backflow Type (ASSE 1019), types A or B	Hose threaded outlet connections
Water Closet Flush Tank Ball Cocks (ASSE 1002)	Gravity water closet flush tanks

(b) *Classifications.* For the purposes of this section:

1. The designation of a high hazard or low hazard situation shall be determined on the basis of how a toxic or nontoxic solution is intended or recommended by the manufacturer of the solution to interface with the potable water supply system.

2. a. A continuous pressure situation shall be considered to exist when a pressure greater than atmospheric within the water supply system exists for more than 12 continuous hours.

b. A noncontinuous pressure situation shall be considered to exist if the conditions in subd. 2. a. do not occur.

3. A high hazard cross connection situation shall be considered to exist for a connection of the water supply system to:

a. Any part of the drain system; and

b. Any other piping system conveying water from nonpotable sources, including but not limited to lakes, rivers, streams or creeks.

4. Except as provided in subd. 5., a high hazard cross connection situation shall be considered to exist at:

a. A water supply hose bibb, faucet, wall hydrant, sill cock or other outlet which terminates with hose threads allowing a hose to be attached;

b. A water supply faucet, wall hydrant or other outlet which terminates with a serrated nipple allowing a hose to be attached; and

c. A water supply faucet, hydrant or outlet serving a sink used for building maintenance in a public building.

d. A chemical pot−feeder or automatic chemical feeder is installed to serve a boiler, cooling tower or chilled water system.

5. A cross connection shall not be considered to exist at the hose threaded outlet installed for the sole purpose of:

a. Draining a water supply system or any portion thereof;

b. Obtaining water quality samples of the water supply system or any portion thereof; or

c. Connecting individual residential automatic clothes washers.

6. a. A high hazard situation shall be considered to exist for the connection of 2 water supply systems one supplied by a public water supply and the other system supplied by a private well.

Note: The interconnection of a public water supply system and another source of water is addressed in s. NR 811.09 and must be approved by the Department of Natural Resources.

b. Except as provided in subd. 7., a low hazard situation shall be considered to exist for the connection of a piping system, including but not limited to automatic fire sprinkler systems, standpipe systems, and processing purposes, which provides potable water for nonrequired potable water uses.

Note: Cross connection control devices used in conjunction with automatic fire sprinkler systems are to be listed by an acceptable testing agency for such an application under the standards governing the design and installation of automatic fire sprinkler systems.

7. A cross connection situation shall not be considered to exist when a multipurpose piping system serves a one− or 2− family dwelling provided the sprinkler system is constructed of materials and joints suitable for water distribution systems as specified in ss. Comm 84.30 (4) (e) and 84.40, respectively.

(c) *Containment.* 1. For sewerage treatment facilities which are required to conform with ch. NR 110, in addition to the cross connection control required for each potable water usage or water outlet, a reduced pressure principle backflow preventer shall be installed:

a. In the water service to each building or structure within the complex;

b. In the private water main upstream of all water services serving the facility; or

c. In the water distribution system upstream of all water outlets and in the process piping network upstream of all points of use, if both a water distribution system and a process network is contained within the same building or structure.

2. For marinas, wharves and docks where potable water outlets are provided to serve boats or ships, in addition to the cross connection control required for each potable water outlet or usage, a reduced pressure principle backflow preventer shall be installed in the water supply system to limit backflow into the water supply source.

3. The installation of a cross connection control device in the water supply system for a building or structure shall not alleviate the requirement to provide cross connection control for the connection of each plumbing fixture, piece of equipment, appliance or other piping system.

(d) *Prohibitions.* The use of a toxic solution as a heat transfer fluid in single−wall heat exchanger for potable water is prohibited.

(e) *Existing automatic fire sprinkler systems.* An alteration, modification or addition to an existing automatic fire sprinkler shall necessitate conformance with this section, if the:

1. Existing water supply line to the existing sprinkler system is increased in diameter; or

2. Existing device or method which had been previously recognized to address cross connection concerns is to be removed or replaced.

(4) LIMITATIONS. (a) Cross connection control devices shall be limited in use in accordance with the respective standard, unless otherwise specifically permitted under this subsection.

(b) 1. Except for a deck−mounted device, a pipe applied atmospheric vacuum breaker shall be installed such that the bottom of the device or the critical level mark on the device is at least 6″ above all of the following:

a. The flood level rim of the receptor serving the water supply port.

b. The highest point downstream from the device where backpressure would be created.

c. The highest point of an injection or aspiration port.

2. A deck−mounted pipe applied atmospheric type vacuum breaker shall be installed such that the bottom of the device or the critical level mark on the device is at least one inch above all of the following:

a. The flood level rim of the receptor serving the water supply port.

b. The highest point downstream from the device where backpressure would be created.

c. The highest point of an injection or aspiration port.

(c) 1. a. The use of a hose connection backflow preventer and a hose connection vacuum breaker in a continuous pressure situation shall be limited to campgrounds and marinas.

b. The use of a hose connection backflow preventer and a hose connection vacuum breaker shall be limited to the discharge side of a control valve such as a faucet or hose bibb.

2. A hose connection backflow preventer and a hose connection vacuum breaker may not be employed in backpressure situations of more than 10 feet of water column.

(d) A backflow preventer with intermediate atmospheric vent:

1. May not be employed in backpressure situations of more than 150 psig; and

2. May not serve boilers having a maximum steam pressure setting greater than 15 psig or a maximum water pressure setting greater than 30 psig.

(e) 1. A reduced pressure principle backflow preventer and a reduced pressure detector backflow preventer may not be subjected to a backpressure greater than twice the rated working pressure of the device.

2. A reduced pressure principle backflow preventer and a reduced pressure detector backflow preventer which serve a water−based fire protection system may have a test outlet located between the number 2 check valve and the number 2 listed indicating control valve.

3. A reduced pressure principle backflow preventer and a reduced pressure detector backflow preventer which are 2″ or smaller in size and which serve a water−based fire protection system are not required to have a test cock on the number one listed indicating control valve.

(f) A hand−held shower may not be employed in backpressure situations of more than 2 feet of water column.

(g) 1. A double check backflow prevention assembly and a double check detector assembly backflow preventer may not be subjected to a backpressure greater than twice the rated working pressure of the device.

2. A double check backflow prevention assembly and a double check detector assembly backflow preventer which serve a water−based fire protection system may have a test outlet located between the number 2 check valve and the number 2 listed indicating control valve.

3. A double check backflow prevention assembly and a double check detector assembly backflow preventer which are 2″ or smaller in size and which serve a water−based fire protection system are not required to have a test cock on the number one listed indicating control valve.

(h) A water supply fed trap seal primer valve shall be installed such that the bottom of the device or the critical level as marked on the device is at least 12″ above:

1. The connection to the trap; and

2. The highest point downstream from the device where backpressure would be created.

(i) A vacuum breaker wall hydrant, freeze resistant automatic draining type, may not be employed in backpressure situations of more than 10 feet of water column.

(k) 1. A pressure type vacuum breaker assembly shall be installed such that the bottom of the device or the critical level mark on the device is at least 12″ above all of the following:

a. The flood level rim of the receptor serving the water supply port.

b. The highest point downstream from the device where backpressure would be created.

c. The highest point of an injection or aspiration port.

2. A pressure vacuum breaker assembly shall be located only outside.

(L) A laboratory faucet backflow preventer may not be employed in backpressure situations of more than 6 feet of water column.

(m) The cross connection control device to serve a hose bibb or hydrant that penetrates an exterior wall of a heated structure may not prevent a hose bibb or hydrant from being freeze resistant automatic draining as required under s. Comm 82.40 (8) (a).

(n) A back siphonage vacuum breaker shall be installed so that the bottom of the device or the critical level mark on the device is at least 12″ above all of the following:

1. The flood level rim of the receptor serving the water supply port.

2. The highest point downstream from the device where back pressure would be created.

3. The highest point of an injection or aspiration port.

(5) INSTALLATION. (a) An air−gap for cross connection control shall conform to ASME A112.1.2 or ASME A112.1.3.

Note: See Appendix for further explanatory material.

(b) Cross connection control methods, devices and assemblies shall be installed in accordance with the manufacturer's written installation specifications and this chapter. The methods, devices and assemblies shall be accessible for inspection, testing, maintenance and replacement.

Note: See s. Comm 84.30 (5) (c).

(c) Cross connection control devices shall be protected from freezing.

(d) 1. A cross connection control device may not be located in uninhabitable spaces susceptible to flooding.

2. A cross connection control device which has one or more vent ports may not be located in a pit, vault or depression which is below the adjacent grade or floor level, even if the pit, vault or depression is provided with a drain at the bottom of the pit.

(e) 1. Vent ports of cross connection control devices shall be positioned:

a. Away from areas where toxic gases and fumes may accumulate;

b. Downward or protected to protect the ports from falling debris; and

c. So as to drain dry.

2. Cross connection control devices shall be so located that any vent ports of the devices shall be provided with an air gap in accordance with par. (a).

3. a. If a reduced pressure principle backflow preventer or a reduced pressure detector backflow preventer is located within a building, a drain or receptor shall be provided to receive the discharge from the vent ports of the device. If a floor drain is to receive the discharge from the vent ports of a reduced pressure principle backflow preventer or a reduced pressure detector backflow preventer, the flow or pathway of the discharge may not create a nuisance.

b. Where drain piping is provided for the discharge from a vent port, an air gap in accordance with par. (a) shall be provided between the vent port and the drain piping.

c. Where a receptor is provided for the discharge from a vent port, an air gap in accordance with par. (a) shall be provided between the vent port and the receptor.

(f) The installation of a reduced pressure principle backflow preventer, a reduced pressure detector backflow preventer, a double check backflow prevention assembly, a double check detector assembly backflow preventer, a pressure vacuum breaker assembly and a back siphonage backflow vacuum breaker shall conform to the following limitations:

1. The minimum distance between the floor, surface or platform which is to provide access and the lowest point of the assembly may not be less than 12″.

2. The maximum distance between the floor, surface or platform which is to provide access and the lowest point of the assembly may not be more than 7 feet.

3. The minimum distance between a ceiling or other obstruction and the highest point of the assembly may not be less than 18″.

4. The minimum distance between a wall or other obstruction and the back and ends of the assembly may not be less than 4″.

5. The minimum distance between a wall or other obstruction and the front of the assembly may not be less than 24″.

Note: See Appendix for further explanatory material.

(g) The discharge outlet of local waste piping serving a cross connection control device shall be visible and not be located within a concealed space.

(h) No control valve may be placed downstream from a pipe applied atmospheric type vacuum breaker or a laboratory faucet backflow preventer.

(i) A barometric loop to provide cross connection control for backsiphonage shall be formed by creating a loop in the potable water supply piping upstream to the source of cross connection.

1. The loop shall extend at least 35 feet above:

a. The highest point downstream from the loop where backpressure would be created; and

b. The point of discharge.

2. No outlets for potable water use shall be installed downstream of the peak of the loop.

(j) Vacuum breaker tees shall be assembled such that:

1. The bottom of the horizontal portion of the tee is installed at least one inch above the flood level rim of the receptor;

2. The inside diameter of the tee is equal to or greater than the inside diameter of the drain piping from the water treatment device;

3. The tee is installed in such a position that the discharge will not create a nuisance;

4. The piping upstream of the tee is of a type suitable for water distribution in accordance with s. Comm 84.30 (4) (e).

5. The vent portion of the tee is equal to or greater than the inside diameter of the drain piping from the water treatment device; and

6. The vent port of the tee is:

a. Positioned away from areas where toxic gases and fumes may accumulate; and

b. Constructed to protect the port from falling debris.

(k) A chemical dispensing system shall be connected to the water distribution system in either of the following manners:

1. The fixture supply shall be individually connected to the water distribution system.

2. The fixture supply shall be installed with a pressure bleeding device. The pressure bleeding device shall create a visually free flow of water through the atmosphere from the faucet connection into the fixture drain.

(6) MAINTENANCE AND TESTING. (a) All cross connection control devices shall be maintained and tested in accordance with s. Comm 82.21 (3).

History: 1−2−56; r. (2) through (7), Register, October, 1971, No. 190, eff. 11−1−71; r. and recr. Register, November, 1972, No. 203, eff. 12−1−72; renum. from H 62.14, Register, July, 1983, No. 331, eff. 8−1−83; renum. from ILHR 82.14 and am. (1) (h) 17., r. (2), Register, February, 1985, No. 350, eff. 3−1−85**;** r. and recr. Register, February, 1994, No. 458, eff. 3−1−94; am. (2) (a), Tables 82.41−1, 2, (4) (c), (e) to (i), (k) to (m), (5) (e) 3. a., (i), cr. (4) (n), r. and recr. (5) (b), (f), r. (5) (h), Register, February, 1997, No. 494, eff. 3−1−97**;** correction in (4) (n) made under s. 13.93 (2m) (b) 1., Stats., Register, February, 2000, No. 530; am. (3) (a) 2., (4) (k) 1. and (5) (a), r. and recr. (4) (b) and (n), and Tables 82.41−1 and 82.41−2, cr. (4) (k) 1. c. and (5) (L), Register, December, 2000, No. 540, eff. 1−1−01**;** CR 02−002: am. (3) (intro.), (5) (a), Tables 82.41−1 and 2, renum. (5) (i) to (L) to be (5) (h) to (k) Register April 2003 No. 568, eff. 5−1−03; **CR 04−035: cr. (3) (b) 4. d., am. Tables 82.41−1 and −2, 82.41 (2), (3) (a) 1. and (b) 7. Register November 2004 No. 587, eff. 12−1−04.**

Subchapter V — Special Plumbing Installations

Comm 82.50 Health care and related facilities.

(1) GENERAL. The provisions of this section shall set forth the requirements for the design, installation and maintenance of devices, fixtures and equipment which are installed in health care and related facilities.

(2) FIXTURES AND EQUIPMENT. (a) *Special fixtures and equipment.* 1. 'Requirements for ice manufacture and storage.' Machines for manufacturing ice or any device for handling or storage of ice shall be located in an area not subject to contamination.

2. 'Sterilizers and washer sanitizers.' a. Sterilizers and washer sanitizers shall discharge by means of indirect waste.

b. The indirect waste piping shall discharge by means of air−gap.

3. 'Aspirators.' Aspirators which require the use of water shall be provided with approved cross connection control.

(b) *Spouts and actions.* The selection of spouts and actions on plumbing fixtures shall comply with this section and Table 82.50−1.

1. 'Spouts'. Lavatories and sinks accessible to patients shall have the water supply spout mounted so that its discharge point is a minimum distance of 5″ above the flood level rim of the fixture.

2. 'Actions.' All fixtures used by medical and nursing staff, and all lavatories used by patients and food handlers shall be equipped with valves that can be operated without the use of hands. Where wrist blade handles are used for this purpose, the handles shall not exceed 4 1/2 ″ in length, except handles on scrub sinks and clinical sinks shall be no less than 6″ long.

(c) *Floor drain prohibition.* 1. Except as provided in subd. 2., floor drains may not be installed in operating or delivery rooms.

2. Floor drains may be installed in cystoscopic rooms. The drain shall contain a non−splash, horizontal−flow flushing bowl beneath the drain plate.

(3) WATER SUPPLY SYSTEMS. (a) *Hospital water supply systems.* Water supply systems serving hospitals shall comply with all of the following:

1. All hospitals shall be provided with at least 2 water services. Whenever more than one water main is available, the connections shall be made to different water mains.

2. Each water service connection shall adequately serve the total building water supply demand as specified in s. Comm 82.40 (7).

Note: The installation of two water services or a private water main may require the installation of a check valve. Refer to ch. NR 811 for more information.

(b) *Hospital, community−based residential facility, inpatient hospice and nursing home water supply systems.* 1. Water supply systems serving a hospital, community−based residential facility, inpatient hospice or nursing home shall comply with all of the following:

a. Except as provided in subd. 1. b., a single control valve may serve an area where 4 or fewer patient care units exist and where each unit contains not more than 2 persons.

b. A water supply serving an intensive care patient care unit shall be individually valved.

2. All water distribution piping shall be insulated in accordance with chs. Comm 61 to 65.

3. Cold water shall be supplied to lavatories or sinks located in patient rooms.

4. A hot water distribution system shall be under constant recirculation to provide continuous hot water at each hot water outlet, except that uncirculated hot water distribution piping may not exceed 25 feet in developed length.

5. Water provided to patient showers, therapeutic equipment and all types of baths shall be installed with control valves which automatically regulate the temperature of the water supply to the fixture fitting outlet within a temperature range of 110°F to 115°F. Such control valves shall automatically reduce flow to 0.5 gpm or less when the water supply to the fitting outlet exceeds 115°F.

Note: See Appendix A−82.50 (3) (b) 5. for sketches showing various design options.

6. Hot water distribution systems shall be installed and maintained to provide bacterial control by one of the following methods:

a. Water stored and circulation initiated at a minimum of 140°F and with a return of a minimum of 124°F.

b. Water chlorinated at 2 mg/L residual.

Note: Additional information may be contained in ASHRAE Guideline 12−2000, Minimizing the Risk of Legionellosis Associated with Building Water Systems. This standard is published by the American Society of Heating, Refrigerating and Air−Conditioning Engineers (ASHRAE); 1791 Tullie Circle, N.E., Atlanta, GA 30329, phone: (800) 5−ASHRAE or (404) 636−8400 ext. 507; fax: (404) 321−5478; e−mail: orders@ashrae.org; or online at www.ashrae.org.

c. Another disinfection system approved by the department.

7. A water distribution system may not be designed, installed and maintained so that the maximum temperature to fixture fitting outlets accessible to patients exceeds 115°F.

Note: See s. Comm 82.40 (5) and ch. HFS 124 for additional requirements for circulation systems.

8. Except as provided in subd. 7., a water distribution system may not be designed, installed and maintained so that the maximum temperature to fixture fitting outlets exceeds 180°F.

TABLE 82.50–1
SPOUTS AND ACTIONS REQUIRED IN HEALTH CARE AND RELATED FACILITIES

Fixture Location	Type of Spout		Type of Action		
	Standard	Gooseneck or provide a 5–inch clearance	Hand	Wrist	Foot, Knee or Electronic Sensor
NURSING DEPARTMENT					
Patient toilet room		X		X	X
Patient toilet room, isolation		X			X
Utility room		X		X	X
Treatment room		X		X	X
Medicine room		X		X	X
Kitchen floor lavatory		X		X	X
Kitchen floor sink	X	X		X	X
Nurses toilet room	X	X	X	X	X
Floor laboratory		X	X	X	X
NURSERY					
Nursery		X		X	X
Exam/treatment room		X		X	X
Infant intensive care unit		X			X
Labor room		X		X	X
SURGICAL					
Scrub room		X [a]			X
Sub–sterile room	X	X		X	X
Clean–up room	X	X		X	X
Frozen sections room		X	X	X	X
Surgical supply room		X		X	X
Work room	X	X		X	X
Cystoscopic room		X [a]		X	X
Fracture room	X	X		X	X
Recovery room		X			X
CENTRAL SUPPLY					
Work room	X	X		X	X
Solutions room	X	X		X	X
Pharmacy		X	X	X	X
Manufacturing		X		X	X
EMERGENCY DEPARTMENT					
Observation bedroom		X		X	X
Utility room		X		X	X
Operating room		X [a]			X
Exam room		X		X	X
DIAGNOSTIC AND TREATMENT					
Occupational therapy room		X		X	X
Hydro–therapy room		X		X	X
Exam/treatment room		X		X	X
Radium treatment/exam room		X		X	X
Toilet room		X		X	X
Dark room		X		X	X
Autopsy room		X [a]			X
Lavatory in autopsy shower room		X	X	X	X
Laboratory		X	X	X	X

TABLE 82.50–1 (Continued)
SPOUTS AND ACTIONS REQUIRED IN HEALTH CARE AND RELATED FACILITIES

Fixture Location	Type of Spout		Type of Action		
	Standard	Gooseneck or provide a 5–inch clearance	Hand	Wrist	Foot, Knee or Electronic Sensor
CLINIC OR OUTPATIENT DEPARTMENT					
Exam/treatment room		X		X	X
Dental operating room		X			X
Dental laboratory		X	X	X	X
Dental recovery room		X		X	X
Surgical room		X [a]			X
Eye exam room		X			X
Ear, nose and throat exam room		X			X
SERVICE DEPARTMENT					
Lavatory in kitchen	X	X		X	X

X = Spout and action meet required type.

[a] Spout includes a spray head.

History: 1–2–56; am. (3) (4) and (5), Register, August, 1961, No. 68, eff. 9–1–61; r. and recr. Register, November, 1972, No. 203, eff. 12–1–72; r. and recr., Register, February, 1979, No. 278, eff. 3–1–79; renum. from H 62.16, Register, July, 1983, No. 331, eff. 8–1–83; renum. from ILHR 82.16 and am. (7) (b), (10) (a) 1. and 2., (b) 2., (f) (intro.) and (h), Register, February, 1985, No. 350, eff. 3–1–85**;** r. (10) (f) and Table 25, Register, February, 1994, No. 458, eff. 3–1–94; correction in (7) (b) made under s. 13.93 (2m) (b) 7., Stats., Register, July, 2000, No. 535; am. (2) and (10) (g) Table 26, r. and recr. (10) (g) and (h), r. (10) (i), Register, December, 2000, No. 540, eff. 1–1–01; CR 02–002: r. and recr. Register April 2003 No. 568, eff. 5–1–03; **CR 04–035: am. Table 82.50–1 and (3) (b) 5. Register November 2004 No. 587, eff. 12–1–04.**

Comm 82.51 Mobile homes and mobile home parks.

(1) DRAIN SYSTEMS. Except as provided in pars. (a) and (b), the building sewers and private interceptor main sewers serving a mobile home or mobile home park shall comply with s. Comm 82.30.

(a) The minimum slope of the aboveground building sewer shall be 1/8″ per foot.

(b) For mobile homes, the most upstream point of the building sewer shall be determined at the connection with the building drain installed by the mobile home manufacturer prior to delivery.

(c) The above ground building sewer shall be constructed of materials suitable for above ground drain and vent as specified in s. Comm 84.30 (2) (a).

(2) WATER SUPPLY SYSTEMS. (a) Except as provided in pars. (b) and (c), the water services and private water mains for a mobile home or mobile home park shall comply with s. Comm 82.40.

(b) The above ground water service shall be constructed of materials approved for water distribution as specified in s. Comm 84.30 (4) (e).

(c) The curb stop serving an individual mobile home shall terminate outside the perimeter of the mobile home.

(d) For mobile homes, the most downstream point of the water service shall be determined at the connection with the water distribution piping by the mobile home manufacturer prior to delivery.

(3) MOBILE HOME CONNECTIONS. (a) Frost sleeves for plumbing serving a mobile home shall conform to all of the following:

1. Water service and building sewer connections shall be provided with frost sleeves extending to within 6″ of the top of the below ground horizontal building sewer or water service, or to a depth at least 6″ below the predicted depth of frost in accordance with Table 82.30–6.

2. The frost sleeve shall terminate at least 2″ above grade.

3. The sleeve shall be constructed of material approved for building drain or building sewer material as specified in s. Comm 84.30 (2).

(b) Termination of the water service and building sewer shall conform to all of the following:

1. The mobile home water service for connection to the mobile home shall terminate a minimum of 6″ above the surrounding finished grade.

2. The mobile home building sewer for connection to the mobile home shall terminate a minimum of 4″ above the surrounding finished grade and may not terminate higher than the water service.

(c) The mobile home water service and building sewer shall be capped or plugged when not connected to a mobile home.

Note: See Appendix A–82.51 (3) for further explanatory material.

History: Cr. Register, February, 1985, No. 350, eff. 3–1–85; r. and recr. Table, Register, August, 1991, No. 428, eff. 9–1–91**;** am. (2) (d), Register, February, 1994, No. 458, eff. 3–1–94; CR 02–002: r. and recr. Register April 2003 No. 568, eff. 5–1–03.

Subchapter VI — Installation

Comm 82.60 Pipe hangers and supports.

The provisions of this section control the types, materials and installation of anchors, hangers and supports for plumbing piping.

(1) MATERIAL. (a) *Strength.* Hangers, anchors and supports for piping shall be of sufficient strength to support the piping and its contents. Drain piping shall be considered as being full of water. Underground piers for pipe support shall be of concrete, masonry, plastic or pressure treated wood.

(b) *Compatibility.* 1. Hangers and straps shall be of a compatible material that will reduce the potential for galvanic action with the piping.

2. Hangers and straps may not distort, cut or abrade piping.

(2) INSTALLATION. (a) Piping hangers and anchors shall be securely attached to the building's structure at intervals to support the piping and its contents, but not at intervals greater than those specified in Table 82.60. The connection of drain piping to a fixture or appliance shall be considered a point of support.

(b) Hubless pipe installed in the horizontal position shall be supported within 24″ on each side of a joint, unless the joint has an alignment retaining shield.

(c) Hangers shall not be attached to a building's structure by means of wood plugs.

(d) Shower valves and piping from the shower valve to the shower head outlet shall be securely attached to the structure.

Table 82.60
SUPPORT SPACING

Material	Maximum Horizontal Spacing (feet)	Maximum Vertical Spacing (feet)
Acrylonitrile Butadiene Styrene (ABS)	4	10
Brass	10	10
Cast iron	5[a]	15
Copper or Copper–Alloy Pipe	12	10
Copper or Copper–Alloy Tubing:		
≤ 1¼″ diameter[c]	6	10
≥ 1½″ diameter[c]	10	10
Chlorinated Polyvinyl Chloride (CPVC):		
≤ 1″ diameter[c]	3	5[b]
≥ 1¼″ diameter[c]	4	6[b]
Crosslinked Polyethylene (PEX)	2 2/3	4
Ductile Iron	5[a]	15
Galvanized Steel	12	15
Lead	Continuous	4
Polybutylene (PB)	2 ft. 8 in.	4
Polyethylene (PE)	2	4
Polypropylene (PP)	2	4
Polyvinylidene Fluoride (PVDF)	2	4
Polyvinyl Chloride, flexible (PVC)	2	4
Polyvinyl Chloride (PVC)	4	10
Stainless Steel	12	15

[a] The maximum horizontal spacing for supports may be increased to 10 feet when 10–foot lengths of pipe are employed.
[b] Mid–story guide is to be employed.
[c] "≥" means greater than or equal to.
"≤" means less than or equal to.

History: Cr. Register, February, 1985, No. 350, eff. 3–1–85; r. and recr. Register, May, 1988, No. 389, eff. 6–1–88**;** r. and recr. Table 82.60, Register, February, 1994, No. 458, eff. 3–1–94; cr. (2) (d), Register, December, 2000, No. 540, eff. 1–1–01; CR 02–002: am. Table Register April 2003 No. 568, eff. 5–1–03.

Subchapter VII — Plumbing Treatment Standards

Comm 82.70 Plumbing treatment standards. **(1)** PURPOSE. The purpose of this section is to establish plumbing treatment standards for plumbing systems that supply water to outlets based on the intended use.

(2) SCOPE. The provisions of this section apply to plumbing systems that supply water to outlets.

Note: For requirements and specifications for POWTS, refer to ch. Comm 83.
Note: The department of natural resources requires WPDES permits for point source discharges under ch. 283, Stats.

(3) GENERAL REQUIREMENTS. A plumbing system shall supply water that is of a quality that will protect public health and the waters of the state and be suitable for the intended use.

Note: Refer to s. Comm 82.34 for requirements for wastewater reuse.

(4) MINIMUM REQUIREMENTS. (a) Except as provided under par. (b), a plumbing system shall supply a quality of water at the outlet or at the termination of the plumbing system that meets or exceeds the minimum requirements as specified in Table 82.70–1.

(b) For an outlet other than a plumbing fixture, appliance or appurtenance, there may be more stringent requirements assigned by a municipality, governmental unit, state agency or the owner of the plumbing system.

Table 82.70–1
PLUMBING TREATMENT STANDARDS

Intended Use	Plumbing Treatment Standards [f]
1. Drinking, cooking, food processing, preparation and cleaning, pharmaceutical processing, and medical uses	NR 811 and 812 approved sources
2. Personal hygiene, bathing, and showering, clothes washing	NR 811 and 812 approved sources
3. Automatic fire protection systems	As acceptable by local authority
4. Swimming pool makeup water	NR 811 and 812 approved sources
5. Swimming pool fill water	HFS 172 requirements
6. Once through cooling water [b]	pH 6 – 9 [b] ≤ 30 mg/L BOD_5 ≤ 30 mg/L TSS < 200 fecal coliform cfu/100 mL ≥ 1 mg/L and ≤10 mg/L free chlorine residual [b]
7. Subsurface infiltration and irrigation, using reuse as the source [c]	≤ 15 mg/L oil and grease ≤ 30 mg/L BOD_5 ≤ 35 mg/L TSS < 200 fecal coliform cfu/100 mL [d]
8. Subsurface infiltration and irrigation, using stormwater as the source [c]	< 15 mg/L oil and grease < 60 mg/L TSS
9. Surface or spray irrigation using stormwater and clearwater as the source [c]	≤ 10 mg/L BOD_5 ≤ 5 mg/L TSS
10. Surface irrigation except food crops, vehicle washing, toilet and urinal flushing, air conditioning, soil compaction, dust control, washing aggregate and making concrete [a, c, e]	pH 6 – 9 [b] ≤ 10 mg/L BOD_5 ≤ 5 mg/L TSS No detectable fecal coliform cfu/100 mL ≥ 1 mg/L and ≤10mg/L free chlorine residual [b]
11. Uses not specifically listed above	Contact department for standards

[a] Refer to the department of agriculture, trade and consumer protection for commercial use.

[b] Applies only to wastewater treatment devices for reuse systems. Other equivalent disinfection methods may be approved by the department.

[c] These requirements do not apply to the treatment of industrial wastewater or other wastewater discharges that are subject to a WPDES permit issued by the department of natural resources.

[d] A 12–inch minimum separation of medium sand or finer material above high groundwater or bedrock.

[e] Applies to reuse not stormwater use.

[f] For stormwater, the plumbing treatment standards are based on an annual average. Evaluation of research to prove compliance with this table is based on the geometric mean of the data acceptable to the department or an equivalent method.

History: CR 02–002: cr. Register April 2003 No. 568, eff. 5–1–03; **CR 04–035: am. Table 82.70–1 Register November 2004 No. 587, eff. 12–1–04.**