

Chapter H 62

DESIGN, CONSTRUCTION, INSTALLATION,
SUPERVISION AND INSPECTION OF PLUMBING

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H 62.01 Basic plumbing principles. (1) The basic principles of this code are enunciated as basic goals in environmental sanitation and safety worthy of accomplishment through properly designed, acceptably installed, and adequately maintained plumbing systems. Some of the details of plumbing construction must vary, but the basic sanitary and safety principles are the same. The results necessary to obtain the desired protection for the health of the people are the same everywhere. As unforeseen situations arise which are not specifically covered in the body of this code, the following principles shall serve to define the intent.

(2) Plumbing in all buildings, public and private, intended for human occupation or occupancy, shall at all times be installed in such manner so as to protect the health, safety and welfare of the public or occupants.

(3) Every building intended for human habitation or occupancy shall be provided with a supply of potable water; such supply shall not be cross connected with an unsafe water supply or with a waste pipe nor be subjected to any hazards of backflow or back-siphonage. When the premises abut on a street in which there is a public watermain, there shall be an individual connection to the public system.

(4) Buildings in which water closets and other plumbing fixtures, devices and appurtenances exist or are to be installed shall be provided with a supply of water adequate in volume and pressure by means of proper pipe sizing to insure that efficient use of the fixture is possible at all times.

(5) Devices for heating water and storing it in pressure vessels or tanks shall be so designed and installed as to prevent dangers of explosion or overheating.

(6) Every building intended for human habitation or occupancy on premises abutting on a street in which there is a public sewer shall have an individual connection with the public sewer.

(7) Each family dwelling unit provided with a drainage system shall have at least one water closet, one wash basin, one kitchen sink and one bathtub or shower to meet the basic requirements of sanitation and personal hygiene. All other structures for human occupancy or use shall be equipped with sufficient sanitary facilities as prescribed in this chapter or other applicable Wis. Adm. Code chapters and in no case no less than one water closet and one wash basin shall be provided.

(8) The entire building drainage system shall be so designed, constructed, and maintained as to conduct the waste water or sewage quickly from the fixture to the place of disposal, with velocities which will prevent clogging, fouling and the depositing of solids and shall have adequate cleanouts so arranged that the pipes may be readily cleaned.

(9) The drainage pipes should be so designed and constructed as to be proof for a reasonable life of the building against leakage of water or sewer drain air and offensive odors due to defective materials, imperfect connections, corrosion, settlements or vibrations of the ground or building, temperatures changes, freezing or other causes.

(10) The drainage system shall be so designed that there will be an adequate circulation of air in all pipes, no danger of siphonage, aspiration or forcing of trap seals under conditions of ordinary use.

(11) All rooms in which water closets, urinals or similar fixtures are installed shall have adequate lighting and have proper ventilation to the outer air.

(12) Hot water shall be supplied to all plumbing fixtures which normally need or require hot water for their proper use and function.

(13) Plumbing fixtures shall be made of durable, smooth, nonabsorbent and corrosion resistant material and shall be free from concealed fouling surfaces.

(14) If water closets or other plumbing fixtures exist in buildings where there is no sewer within a reasonable distance, suitable provision shall be made for disposing of the building sewage by some method of sewage treatment or disposal satisfactory to the department and local health authority having jurisdiction.

(15) Plumbing systems shall be maintained in a sanitary condition.

(16) Proper protection shall be provided to prevent contamination of food, water, sterile goods and similar materials by backflow of sewage.

(17) Plumbing shall be designed and adjusted to use the minimum quantity of water consistent with proper performance and cleaning.

(18) Fixtures, devices, appliances and appurtenances shall be supplied with water sufficient in volume and at pressures adequate to enable them to function satisfactorily and without undue noise under all normal conditions of use.

(19) All plumbing fixtures shall be so installed as to provide adequate spacing and shall be reasonably accessible for their intended use and for cleaning.

(20) Sewage or other wastes shall not discharge into water surface or sub-surface soil unless it has first been subjected to some acceptable form of treatment.

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H 62.02 Plumbing definitions. For the purpose of this code, the following terms shall have the meaning indicated in this section. No attempt is made to define ordinary words which are used in accordance with their established dictionary meaning except where it is necessary to define their meaning as used in this code to avoid misunderstanding.

Note: For definitions of master plumber, journeyman, restricted plumbers, apprentices and registered learners refer to Ch. 145.

(1) **PLUMBING** in this code shall be defined as set forth in s. 145.01 (a), (b), (c), (d) and (e), Stats.

(2) **AIR-BREAK (DRAINAGE SYSTEM)**. A piping arrangement in which a drain from a fixture, appliance, appurtenance or device discharges indirectly into another fixture, receptacle, or interceptor at a point below the flood level rim.

(3) **AIR-GAP (DRAINAGE SYSTEM)**. The unobstructed vertical distance through free atmosphere between the terminus of the waste pipe and the flood level rim of the fixture, sight waste or other receptacle into which it discharges.

(4) **AIR-GAP (WATER SUPPLY SYSTEM)**. The unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet supplying water to a tank, vat, plumbing fixture or other device and the flood level rim of the receptacle.

(5) **ALIGNMENT**. Installed in a straight line, either horizontal, vertical or at a given angle.

(6) **APPLIANCES AND APPURTENANCES**. Includes any item or type of equipment not otherwise specifically defined, which is connected directly or indirectly with any portion of the plumbing system.

(7) **APPROVED**. Approved or accepted by the state department of health and social services, division of health.

(8) **AREA DRAIN**. A receptacle designed to collect surface or storm waters from an open area.

(9) **ASPIRATOR**. A fitting or device supplied with water or other fluid under positive pressure which passes through an integral orifice or "constriction" causing a vacuum.

(10) **AUTOPSY TABLE**. A fixture or table used for post-mortem examination.

(11) **BACKFLOW**. The reversal of flow liquids in a piping system.

(12) **BACKFLOW PREVENTER (REDUCED PRESSURE ZONE TYPE)**. An assembly of differential valves and check valves including an automatically opened spillage port to the atmosphere.

(13) **BACK-SIPHONAGE.** The formation of a negative pressure or vacuum which may occur in a water supply pipe causing the backflow of contaminated or polluted liquids to intermix with the potable water.

(14) **BACKWATER VALVE.** A device designed to prevent the reverse flow of storm water or sewage into the drainage system or branches thereof.

(15) **BASEMENT.** The lowest floor line elevation below grade which can be drained to the building sewer by gravity. All other stories below such elevation shall be considered sub-basement levels.

(16) **BATTERY OF FIXTURES.** Any group of 2 or more similar use adjacent fixtures installed so to discharge into the same common horizontal soil or waste pipe.

(17) **BEDPAN STEAMER.** A fixture used for scalding bedpans or urinals by direct application of steam.

(18) **BEDPAN WASHER.** A fixture designed to wash bedpans and to flush the contents into the soil drainage system. It may also provide for sterilizing.

(19) **BEDPAN WASHER (HOSE).** A device supplied with hot and cold water and located adjacent to a receptacle for cleansing bedpans.

(20) **BELL (OR HUB).** That portion of a pipe which for a short distance is sufficiently enlarged to receive the end of another pipe of the same diameter for the purpose of making a joint.

(21) **BOILER BLOW-OFF BASIN.** A vessel designed to receive the discharge from a boiler blow-off outlet and to cool the discharge to a temperature which permits its safe entry into the drainage system.

(22) **BRANCH.** Any part of a piping system other than a main or stack.

(23) **BUILDING.** A structure having walls and a roof erected or set upon an individual foundation or slab-constructed base designed or used for the housing, shelter, enclosure or support of persons, animals or property of any kind. For purposes of this code, each structure abutting another structure which does not have an approved ingress-egress doorway through the basement foundation walls, or structures with separate exterior or exterior abutting walls, or public use structures separated by an unpierced firewall, shall be considered as a separate or individual building.

(24) **BUILDING (PRIVATE RESIDENCE).** A one family building or dwelling. See dwelling unit.

(25) **BUILDING (PUBLIC).** Means and includes any structure, including exterior parts of such building, such as a porch, exterior platform or steps providing means of ingress or egress, used in whole or in part as a place or resort, assemblage, lodging, trade, traffic, occupancy or use by the public, or by 3 or more tenants.

(26) **BUILDING DRAIN.** See sewers and drains.

(27) **BURR.** Roughness or metal protruding from the walls of a pipe usually as the result of cutting the pipe.

(28) **BY-PASS.** An installation of control valves and piping so installed as to temporarily isolate or by-pass a specific fixture, appliance, equipment or area of piping.

(29) **CATCH BASIN.** See interceptor.

(30) **CESSPOOL.** A covered excavation in the ground which receives sewage or other organic wastes from a drainage system, and so designed as to retain the organic matter and solids, permitting the liquids to seep into the soil cavities. **PROHIBITED IN WISCONSIN.**

(31) **CISTERN.** A covered tank in which rainwater from roof drains is stored for household use or other purposes.

(32) **CLEANOUT.** A metallic plug or cover joined by means of a screw thread to an opening in a pipe, which can be removed for the purpose of cleaning or examining the interior of the pipe.

(33) **CLEAR WATER WASTES.** Cooling water and condensate drainage from refrigeration compressors and air-conditioning equipment, waste water drainage used for equipment chilling purposes, liquids having no impurities or where impurities have been reduced below a minimum concentration considered harmful and cooled condensate from steam heating systems or other equipment.

(34) **CODE.** These regulations, subsequent amendments thereto, or any emergency rule or regulation adopted governing the installation of plumbing, drainage and water supply or distribution system on private property.

(35) **COMBINATION FIXTURE.** A fixture combining one sink and laundry tray or a 2 or 3 compartment laundry tray in one unit.

(36) **CONDUCTORS.** The system of roof leaders, downspouts and pertinent piping located inside or outside of building, conveying storm or rainwater from the roofs of buildings or area to the storm drain, storm sewer, catch basin, rainwater cistern or ground surface.

(37) **CONTINUOUS WASTE.** A drain from 2 compartments of a single fixture connected to a single trap.

(38) **CROSS-CONNECTION.** Any physical connection or arrangement between two otherwise separate piping system, one of which contains potable water and the other either water of unknown or questionable safety, or steam, gas or chemical, whereby there may be a flow from one system to the other, the direction of flow depending on the pressure differential between the two systems. See backflow and back-siphonage.

(39) **DEAD END.** That part of a drainage system which terminates upstream from the base of a vertical soil or waste stack or which is without a free circulation of air.

(40) **DEPARTMENT.** Department of health and social services.

(41) **DEVELOPED LENGTH.** The length of a pipe line measured along the center line of the pipe and fittings.

(42) **DIP TUBE.** A pipe which conveys the cold water supply to the lower portion of an automatic water heater or water storage tank when the inlet opening is in the top portion of the tank.

(43) **DOMESTIC WASTES.** The water-carried wastes derived from ordinary living processes. See sewage.

(44) **DRAINAGE SYSTEM.** A drainage system includes the piping within public or private premises, which conveys sewage, rainwater or other liquid wastes to a legal point of disposal, but does not include the mains of a public sewerage system or private or public sewage treatment plant.

(45) **DURHAM SYSTEM.** A term used to describe soil or waste systems where all piping is threaded pipe, tubing or other such rigid construction, using recessed drainage fittings, to correspond to the types of piping.

(46) **DWELLING UNIT.** One or more rooms with provisions for living, sanitary and sleeping facilities arranged for the use of one or more individuals of the same family.

(47) **EJECTORS.** A device operated either electrically or by a mechanical means so constructed as to elevate liquid wastes and sewage from a lower level to a point of discharge into a public or private sewer or other final means of disposal.

(48) **FERRULE.** A metallic sleeve used to connect dissimilar plumbing materials.

(49) **FIRE PROTECTION SYSTEM.** A system of pipes and appurtenances used exclusively to supply water for extinguishing fires except the water service pipe as stipulated in s. 145.01 (1) (c), Stats.

(50) **FIXTURE.** A receptacle, appliance, device or equipment with or without a connection to the water supply system intended to receive or discharge water, liquids or water-carried wastes directly or indirectly into a drainage system.

(51) **FIXTURE UNIT.** A design factor so chosen that the load producing values can be expressed as multiples of that factor.

(52) **FIXTURE UNIT (DRAINAGE D.F.U.)** A measure of the probable discharge into the drainage system by various types of plumbing fixtures. The drainage fixture unit value for a particular fixture depends on its volume rate of discharge, on the duration of a single drainage operation and on the average time between successive operations.

(53) **FIXTURE UNIT (WATER SUPPLY S.F.U.)** A measure of the probable hydraulic demand on the water supply by various types of plumbing fixtures. The supply-unit value for a particular fixture depends on its volume rate of supply, the time duration of a single supply operation and the average time between successive operations.

(54) **FIXTURE UNIT FLOW RATE.** The total discharge flow in gallons per minute of a single fixture divided by 7.5 provides the flow rate of a particular fixture as a unit of flow. Fixtures are rated as multiples of this unit of flow.

(55) **FLOOD-LEVEL RIM.** The flood-level rim is the top edge of the receptacle from which water overflows.

(56) **GARAGE (PUBLIC).** A building or part of a building which accommodates or houses self-propelled land, air or water vehicles for 3 or more persons not of the same family.

(57) **GARAGE (PRIVATE)**. A building used for the storage of vehicles or other purposes by a private family and which is not available for public use.

(58) **GRADIENT**. The fall or slope of a line of pipe in reference to a horizontal plane. In drainage systems it is usually expressed as the fall in a fraction of an inch per foot length of pipe.

(59) **HORIZONTAL PIPE**. Any pipe or fitting which makes an angle of less than 45° to the horizontal.

(60) **HOT WATER**. Water at a temperature of 120° F. or more.

(61) **INDIRECT WASTE PIPE**. A waste pipe which does not connect directly to the drainage system, but conveys liquid wastes by discharging into the drainage system through an air-break, air-gap, into a trap, fixture, receptacle or interceptor.

(62) **INDUSTRIAL WASTES**. The liquid wastes resulting from the processes employed in industrial establishments which are free from fecal matter.

(63) **INTERCEPTOR**. A device designed and installed so as to retain deleterious, hazardous or undesirable matter from normal wastes while permitting normal sewage or liquid wastes to discharge into the drainage system by gravity.

(64) **GREASE BASIN (EXTERIOR)**. A watertight tank installed underground for the collection and retention of grease from cooking or food processing and which is accessible for periodic removal of the contents.

(65) **GREASE INTERCEPTOR**. A receptacle designed to intercept and retain grease or fatty substances contained in kitchen and other food wastes.

(66) **GRIT & SAND INTERCEPTOR**. A receptacle designed to intercept and retain sand, grit, earth and other similar solids.

(67) **OIL INTERCEPTOR**. A unit designed to intercept and retain oil, lubricating grease or other like materials.

(68) **MANHOLE**. An opening constructed to a sewer or any portion of a plumbing system of sufficient size to permit a man to gain access thereto.

(69) **MAY**. May implies neither compulsion nor recommendations, only permission.

(70) **MOBILE HOME**. A mobile home is a transportable structure mounted on a chassis and designed to be used with or without a permanent foundation as a dwelling unit. The phrase "without a permanent foundation" indicates that the support system is constructed with the intent that the mobile home thereon will be moved from time to time at the convenience of the owner. See ss. 218.12 and 348.07 (2), Stats.

(a) *Mobile home park sewerage system*. All structures and piping by which sewage is collected, conveyed and disposed of.

(b) *Mobile home building sewer.* That part of the plumbing system designed to serve one mobile home site from the mobile home drain connector to its connection with the mobile home park main or private disposal system.

(c) *Mobile home drain connector.* The terminal of all soil or waste piping of a mobile home to which the final waste connection is made to the building sewer.

(d) *Mobile home park water main.* That part of the water distribution system which extends from the street main or private supply to the mobile home water service.

(e) *Mobile home water service.* That part of the water service piping extended from the park water main, or private system, to one mobile home site.

(71) **NON-POTABLE WATER.** Water not safe for human consumption, hygiene or culinary use.

(72) **NUISANCE.** A "nuisance" under this section is referred to as any source of filth or probable cause of sickness pursuant to the provisions of s. 146.14 Stats.

(73) **PIPE DIAMETERS.** When used in this code, shall mean the inside cross sectional dimension.

(74) **PLACE OF EMPLOYMENT.** Every place, whether indoors or out, or underground, and the premises appurtenant thereto, where either temporary or permanently any industry, trade or business is carried on, or where any process or operation, directly or indirectly related to any industry, trade or business is carried on and where any person is directly or indirectly employed by another for gain or profit, but shall not include any place where persons are employed in private or domestic service or agricultural pursuits which do not involve the use of mechanical power.

(75) **PLUMBING SYSTEM.** The plumbing system includes all water supply, water services and water distribution piping, plumbing fixtures and traps; soil, waste, and vent pipes; building drains, building sewers and private domestic sewage disposal systems including their respective connections, equipment, devices, appliances and appurtenances within the property line of the premises; and water-treating or water-using equipment in connection with the water and drainage systems and the installation thereof.

(76) **POTABLE WATER.** Potable water is water which is satisfactory for human consumption, hygiene and culinary use and meets the requirements of the state administrative authority having jurisdiction.

(77) **PRIVY.** A structure used by the public for the deposition of human body wastes.

(78) **PRIVY VAULT.** A watertight pit receptacle beneath a privy which receives human body wastes.

(79) **PROCESS PIPING.** Process piping is piping separated from the water distribution and/or drainage system by approved methods or means and used exclusively for refining, manufacturing, industrial or shipping purposes of every character and description.

(80) **RADIUS.** Radius is the distance from a center line or point to an axis of rotation.

(81) **RECEPTOR.** A fixture or device which receives the discharge from indirect wastes pipes.

(82) **REPAIRS & STOPPAGES.** Consists of making minor repairs to faucets, valves, pipes, appliances and removing of stoppages in building drains and sewers or waste pipes.

(83) **ROUGHING-IN.** The installation of all soil, waste, vent, water supply piping and supports pertinent thereto within a building to which fixtures, appliances and equipment are to be connected.

(84) **SAFING.** A pan or other collector placed beneath a pipe or fixture to prevent leakage from escaping to the floor, ceiling or walls.

(85) **SANITARY SEWER.** A sanitary sewer is a pipe which carries sewage and excludes storm, surface and ground waters.

(86) **SEWAGE.** The water carried wastes (organic) created in and to be conducted away from residences, industrial establishments and public buildings. See domestic wastes.

(87) **SEWERAGE SYSTEM (PUBLIC).** All structures, conduits and pipe lines by which sewage is collected and disposed of, except plumbing inside and in connection with buildings and properties served, and service pipes from building to street main. See ch. 144, Stats.

(88) **SEWAGE SYSTEM (PRIVATE).** (a) A system comprised of a septic tank and effluent absorption area designed for the purpose of processing sewage wherever public sewer facilities are not available.

1. **Annular space.** The area between the seepage pit chamber wall exterior and the unexcavated earth wall.

2. **Bedrock.** Any solid exposed rock or overlaid by unconsolidated material.

3. **Detailed soil map.** A map prepared by a state or federal agency showing soil series, type and phases at a scale of not more than 2,000 feet to the inch.

4. **Distribution pipe.** A conduit of perforated clay tile, bituminous fiber, concrete, cement asbestos or plastic.

5. **Effluent.** Liquid flowing from a septic or treatment tank.

6. **Flood plain.** That portion of the land flooded by the highest known flood water elevation or that portion of the land that would be flooded by the regional flood elevation established by a state or federal agency.

7. **High ground water.** The upper limit of the portion of soil or underlying material that is saturated with water. (In some instances an upper or perched water table may be separated from a lower one by an impervious zone.)

8. **High water level.** The highest known flood water elevation of any lake, stream, pond or flowage or the regional flood elevation established by a state or federal agency.

9. Holding tank. An approved watertight receptacle for the retention of sewage.

10. Legal description. An accurate Metes and Bounds description or a lot and block number in a recorded subdivision or recorded assessor's plat or a public land survey description to the nearest 40 acres.

11. Mottled soil. A soil that is marked with spots or blotches of contrasting color which is usually caused by saturation for some period during a normal year.

12. Percolation test. A method of testing absorption qualities of the soils.

13. Reservoir. A watertight receptacle basin or vault constructed above ground surface or underground for the storage of water intended for domestic use.

14. Seepage pit. An underground receptacle so constructed as to permit disposal of effluent or clear wastes by soil absorption through its walls.

15. Seepage bed. An excavated area similar to a seepage trench but larger than 3 feet in width and containing more than one distribution line.

16. Seepage trench. An area excavated 3 feet or less in width which contains a bedding of aggregate and a single distribution line.

17. Septic tank. A watertight tank which receives sewage.

18. Soil boring. A method of augering, boring or excavating through the ground surface to obtain samples of various stratum of earth to determine the characteristics and absorptive qualities of the soil, bedrock and ground water elevations.

19. Vent cap. An appurtenance of approved type used for covering the vent terminal of an effluent disposal system so as to avoid closure by mischief or debris and still permit circulation of air within the system.

20. Washed grade hard rock (aggregate). Washed graded hard rock is aggregate that has been washed with water under pressure over a screen during or after grading to permit fine material to be washed through the screen and has a hardness value of 3 or greater on the Moh's Scale of Hardness. Aggregate that can scratch a copper penny without leaving any residual rock material on the coin would have a hardness of 3 or more on the Moh's Scale of Hardness.

(89) SEWERS & DRAINS. (a) *Sanitary*. 1. Building sewer. That part of the plumbing system beginning at the immediate outside foundation or proposed foundation wall to its connection with the main of a public sewer, private sewer, private sewage disposal system or other point of disposal.

2. Building drain. The lowest horizontal piping of a drainage system which receives the discharge of soil, waste and other drainage pipes inside any building and conveys same to the building sewer by gravity flow. See Wis. Adm. Code section H 62.08 (2) (c), sketch.

3. Building drain branch. That part of any drainage system which extends laterally at a slight grade, with or without horizontal change of

direction from the building drain or subdrain. In this definition, horizontally means an angle less than 45 degrees with a horizontal plane and a rise not to exceed the inside diameter of the branch. See Wis. Adm. Code section H 62.08 (2) (c), sketch.

4. Building subdrain. The horizontal portion of a drainage system within a building which cannot flow by gravity to the building drain.

(b) *Storm*. 1. Building sewer. That part of the storm water system which receives the discharge from building storm drains and subdrains, parking lots, yard fountains and other permissive sources, and conveys such waters to a public storm water system, private storm water system or other approved point of disposal.

2. Building drain. The lowest horizontal piping which receives storm waters or other permissive water from roofs, area ways, court yards, canopies, enclosed parking ramps and other sources inside any building or structure and conveys same to the building storm sewer by gravity flow.

3. Building subdrain. Same as sanitary subdrain.

(90) SEWER. (a) *Private*. A privately owned building sewer serving a single building.

(b) *Private interceptor main sewer*. A privately owned building sewer not directly controlled by public authority. Privately owned means single ownership by an individual, firm or corporation, and approved by local authority and the department.

(91) SEWER (PUBLIC). A publicly owned sewer.

(92) SUBSOIL DRAIN. That part of a drainage system which conveys the ground or seepage water from the footings of walls or below the basement floor under buildings to the storm sewer or other point of disposal.

(93) SHALL. The word "shall" when used in this code is a mandatory requirement.

(94) SHOULD. "Should" is not mandatory but expresses the recommendation of the department.

(95) SIPHONAGE. A suction created by the flow of liquids in pipes.

(96) SLIP-JOINT. A connection in which one pipe slips into another, the joint of which is made tight with a compression type fitting.

(97) SPECIAL WASTES. Wastes which require special treatment before entry into the normal plumbing system.

(98) SPECIAL WASTE PIPE. Piping which conveys special wastes.

(99) SPIGOT. The end of a pipe which fits into a bell or hub.

(100) STACKS & BRANCHES. (a) *Stacks*. 1. Soil stack. Any pipe extending vertically which conveys the discharge of water closets, bedpan washers or like fixtures with or without other fixtures to a horizontal branch, building drain or building subdrain.

2. Waste stack. Any pipe extending vertically which receives only liquid wastes free from fecal matter and conveys same to a horizontal branch, the building drain or building subdrain.

(b) *Branches*. 1. *Branch*. A horizontal drain pipe extending from a soil or waste stack to which vertical sections or extensions may be connected which receive the discharge from one or more fixture drains.

2. *Branch interval*. A distance along a soil or waste stack corresponding in general to a story height but in no case less than 8 feet within which the horizontal branches from one story of a building are connected to the stack.

(101) **STERILIZERS**. (a) *Boiling type*. A non-pressure type device used for boiling instruments, utensils, and/or other equipment for disinfection purposes.

(b) *Pressure instrument washer-sterilizer*. A pressure vessel fixture designed to both wash and sterilize instruments during the operating cycle of the unit.

(c) *Pressure (autoclave)*. A pressure vessel designed to use steam under pressure for sterilizing. Also called an autoclave.

(d) *Water*. A device used for sterilizing water and storing sterile water.

(102) **STILL**. A device used in distilling liquids.

(103) **SUMP**. A tank or pit which receives sewage or liquid wastes located below the normal grade of the gravity system and which must be emptied by mechanical means.

(104) **SUMP PUMP**. A mechanical device other than an ejector for removing liquid waste from a sump.

(105) **SUPPORTS**. Supports, hangers, anchors and other devices for supporting and securing pipes, or fixtures to walls, ceilings, floors or structural members of a building.

(106) **SWIMMING POOL**. Any structure, basin, chamber or tank containing an artificial body of water for swimming, diving or recreational bathing having a depth of 2 feet or more at any point.

(107) **TERMINAL**. That part of a drainage or vent piping system which projects above the roof of the building or at the end of the building effluent disposal system.

(108) **TRAP**. A fitting or device so designed and constructed as to provide, when properly vented, a liquid seal which will prevent the back passage of sewer air without materially affecting the flow of sewage or waste through it.

(a) *Trap crown*. Where the trap connects to or becomes a part of the horizontal arm of the trap which is integral with the trap.

(b) *Trap seal*. Trap seal is indicated by the height of the water column measured between the overflow and the dip separating the inlet and outlet arms of the trap.

(109) **TURF SPRINKLER UNIT**. A system of piping, appurtenances and devices so installed as to distribute water for lawn or other similar irrigation purposes without plumbing fixtures or means of use for human consumption.

(110) **VACUUM BREAKER.** An atmospheric device, pipe installed and designed to protect a water supply against back-siphonage by entry of air to relieve vacuums in the water distribution system. (A vacuum breaker is not designed to protect the water supply under conditions of backflow or back-pressures.)

(111) **VENT PIPE.** Any pipe provided to ventilate a plumbing system.

(a) *Back vent.* A pipe that connects to a soil or waste pipe to vent a single fixture trap and connects to the vent system above the fixture served with no part of it below the fixture trap.

(b) *Branch vent.* That part of the vent piping which extends horizontally with or without lateral or vertical extensions and to which other vent pipes connect.

(c) *Circuit vent.* A vent pipe which serves 2 or more fixture traps which discharge to a nearly horizontal soil or waste branch and extends from the downstream side of the furthestmost upstream fixture trap to the main soil or waste vent or main vent so that a circuit is formed.

(d) *Continuous vent.* A vertical vent pipe that is a continuation of the vertical waste pipe to which it connects.

(e) *Loop vent.* Similar to a back vent except that part of it extends below the trap it serves before reconnecting to the vent piping system.

(f) *Main soil or waste vent.* That part of the stack above the highest installed fixture opening or branch connection. (Commonly referred to as a stack vent.)

(g) *Main vent.* A vent pipe connected to the base of a soil or waste stack below the lowest fixture branch extending vertically with or without change of direction and which serves as a terminal for other vent pipe connections and terminates through the roof or connects with the main soil or waste pipe at a point 2 feet or more above the highest soil or waste opening, but in no case less than 38 inches above the highest floor on which soil or waste openings are installed.

(h) *Relief vent.* The vent pipe connected to a soil or waste pipe close to the stack in a manner to equalize minus and plus pressures in the stack.

(i) *Stack venting.* A method of venting a fixture or group of fixtures through the soil or waste stack.

(j) *Sterilizer vent.* A separate pipe or stack connected indirectly to the building drainage system at the lowest terminal, which receives the vapors from non-pressure sterilizers or the exhaust vapors from pressure sterilizers and conducts the vapors directly to the outer air. (Commonly referred to as vapor, steam, atmospheric or exhaust vent.)

(k) *Unit vent.* One which denotes an installation so arranged that one pipe will serve traps from 2 identical fixtures at the same point when connected to a vertical soil or waste pipe.

(l) *Wet vent.* That portion of a vent pipe which receives the discharge from wastes other than water closets, kitchen fixtures or other sources containing like sewage of fecal matter.

(m) *Yoke vent*. A pipe connecting upward from a soil or waste stack into a main vent pipe in a manner to equalize pressures within the stacks.

(112) **WATER HEATERS AND RELATED ITEMS.** (a) *Water heater*. A closed vessel in which water is heated by the combustion of fuels, electricity or any other source and withdrawn for use external to the system at pressures not exceeding 160 p.s.i.g. and shall include the apparatus by which heat is generated and all controls and devices necessary to prevent water temperatures from exceeding 210° F.

(b) *Hot water storage tank*. A hot water storage tank is a tank used to store water that is heated indirectly by a circulating water heater or by steam or hot water circulating through coils or by other heat exchange methods internal or external to the tank.

(c) *Hot water supply boiler*. A boiler completely filled with water that furnishes hot water to be used externally to itself at pressures not exceeding 160 p.s.i.g. or at temperatures not exceeding 250° F.

(113) **WATER CONDITIONER.** An appliance, appurtenance or device used for the purpose of ion exchange, demineralizing water or other methods of water treatment.

(114) **WATER SUPPLY (PRIVATE).** Private water supply means one or more sources of groundwater, including facilities for conveyance thereof, such as wells, springs and pumps, on one property, other than those serving a municipality or a group of 10 or more premises of mixed ownership.

(115) **WATER SERVICE.** A pipe extended from the water main or private pumping system or other supply source with or without lateral extensions to the building, structure or other system to be served.

(116) **WATER DISTRIBUTION SYSTEM.** (a) Piping which conveys water from the service to the plumbing fixtures, appliances, appurtenances, equipment, devices or other systems served including fittings and control valves.

1. Water distribution main. The principal water distribution pipe to which risers, branch mains or branches are connected.

2. Water distribution riser. A water distribution pipe which extends vertically one full story or more to convey water to mains, branch mains, branches or a group (s) of fixtures.

3. Water distribution branch main. A water distribution pipe to convey water to a riser, a pipe serving two or more branches with or without other branch mains.

4. Water distribution branch. Any part of the water distribution piping system other than a main, riser or branch main to within 18 inches or less of one or more fixtures.

5. Fixture supply connections. That part of the piping system within 18 inches or less from the fixture supply branch to the fixture.

(117) **WIPED JOINT.** The fusion of metal with solder, smoothly finished with a wiping cloth and having a thickness of at least one-fourth inch at the point where the pipes are joined.

(118) **WORKMANSHIP.** Work of such character that will fully secure the results sought in all the sections of this code as intended for the safety, welfare and health protection of all individuals.

(119) **YARD DRAIN.** The horizontal piping and its branches which convey the surface drainage from areas, courts or yards outside the walls of a building to the storm water sewer.

(120) **MISCELLANEOUS.** Standards or Specifications Abbreviations.

- A.G.A. ----- American Gas Association, Inc.
420 Lexington Ave., New York, New York 10017
- A.N.S.I. ----- American National Standards Institute, Inc.
1430 Broadway, New York, New York 10018
- A.S.M.E. ----- American Society of Mechanical Engineers
29 W. 39th St., New York, New York 10018
- A.S.S.E. ----- American Society of Sanitary Engineering
960 Illuminating Building, Cleveland, Ohio 44113
- A.S.T.M. ----- American Society for Testing and Material
1916 Race St., Philadelphia, Pa. 19103
- A.W.W.A. ----- American Water Works Association
2 Park Avenue, New York, New York 10016
- C.S. ----- Commercial Standards, Supt. of Documents
Governmental Printing Office, Washington, D.C.
20401
- F.S. ----- Federal Specifications
General Services Administration, Regional Office 3,
Washington, D.C. 20407
- M.S.S. ----- Manufacturers Standardization Society
of the Value and Fittings Industry
420 Lexington Ave., New York, New York 10017
- N.S.F. ----- National Sanitation Foundation
Testing Laboratory, Inc., P.O. Box 1468,
Ann Arbor, Michigan 48106
- U.L. ----- Underwriters' Laboratories, Inc.
207 E. Ohio Street, Chicago, Illinois 60611
- W.C.F. ----- Water Conditioning Foundation
1201 Waukegan Road, Glenview, Illinois 60025

History: 1-2-56; am. (8), (42) (b) and (c); (46) and (49), Register, February, 1957, No. 14, eff. 3-1-57; r. and recr. Register, October, 1970, No. 178, eff. 11-1-70; cr. (119), Register, October, 1971, No. 190, eff. 11-1-71; r. and recr. (70); (79) through (118) are renum. to be (80) through (119); (119) is renum. to be (79); am. (89) (a) 2. and 3. as renum., r. and recr. (90) as renum. Register, November, 1972, No. 203, eff. 12-1-72; r. and recr. (88) (a) 4, Register, July, 1976, No. 247, eff. 8-1-76; renum. (88) (a) 11. to 18. to be 12. to 19., cr. 11. and 20., renum. (113) to (119) to be (114) to (120), recr. (116), renum. (112) to be (113) and am., cr. (112), Register, January, 1979, No. 277, eff. 2-1-79.

Table 34

Inside diameter, inches	Weight lbs. per foot	Wall thickness inches
$\frac{1}{8}$ -----	2	-----
$\frac{1}{4}$ -----	2	-----
$\frac{3}{8}$ -----	3	-----
$\frac{1}{2}$ -----	$3\frac{1}{2}$.231
1-----	$4\frac{1}{4}$.246
$1\frac{1}{4}$ -----	$7\frac{3}{4}$.320
$1\frac{1}{2}$ -----	$11\frac{1}{4}$.386
2-----	$19\frac{1}{2}$.604

Sheet lead for safing pans shall weigh not less than 4 pounds per square foot. Sheet lead for flashings and roof terminals shall weigh not less than 3 pounds per square foot.

9. Solder bushings shall be red brass with minimum weights as follows:

Pipe size inches	Minimum weight each
$1\frac{1}{4}$ -----	6 oz.
$1\frac{1}{2}$ -----	8 oz.
2-----	14 oz.
$2\frac{1}{2}$ -----	1 lb. 6 oz.
3-----	2 lb. 0 oz.
4-----	3 lb. 8 oz.

10. Sheet copper for the following uses: a. General use including safe pans—minimum 12 ounces per square foot.

b. Flashings for vent terminals—minimum 8 ounces per square foot.

11. Galvanized sheet iron or steel for vent terminal flashings shall not be lighter than number 28 Brown and Sharpe gauge.

Note: Copies of standards promulgated by the following technical societies, referred to above are on file in the offices of secretary of state, health and social services and revisor of statutes and may be obtained for personal use from the following addresses:

American National Standards Institute, Inc.
1430 Broadway, New York, New York 10018

American Society for Testing and Material
1916 Race St., Philadelphia, Pa. 19103

American Water Works Association
2 Park Avenue, New York, New York 10016

Cast Iron Soil Pipe Institute
2029 K Street, NW
Washington, D. C. 20006

National Sanitation Foundation
Testing Laboratory, Inc.
P.O. Box 1468
Ann Arbor, Michigan 48106

American Society of Sanitary Engineering
960 Illuminating Building
Cleveland, Ohio 44113

History: 1-2-56; r. and recr. Register, November, 1972, No. 203, eff. 12-1-72; cr. (2) (a) 16, 17 and 18, Register, July, 1976, No. 247, eff. 8-1-76, am. (2) (a) 17, Register, July, 1977, No. 259, eff. 8-1-77.

H 62.20 Private domestic sewage treatment and disposal systems.
(1) APPROVALS AND LIMITATIONS. (a) Allowable use. Septic tank and

effluent absorption systems or other treatment tank and effluent disposal systems as may be approved by the department may be constructed when no public sewerage system is available to the property to be served or likely to become available within a reasonable time. All domestic wastes shall enter the septic or treatment tank unless otherwise specifically exempted by the department or this chapter. The private domestic sewage treatment and disposal system of each building shall be entirely separate from and independent of that of any other building. Mobile home parks, campgrounds, sanitary districts, school districts, resorts and so forth with limited area or other limitations may with departmental approval use a common system.

(b) *Public sewer connection.* When public sewers approved by the department of natural resources become available to the premise served, the private domestic sewage treatment and disposal system shall be discontinued within that period of time required by local order but not to exceed one year. The building sewer shall be disconnected from the private system and be connected to the public sewer. All abandoned treatment tanks and seepage pits shall have the contents pumped and disposed of in accordance with NR 113, Wis. Adm. Code, the tank or entire top shall be removed and the remaining portion of the tank or excavation shall be immediately filled with suitable fill material.

(c) *Plans and specifications.* 1. One- and two-family residences. Unless required elsewhere in this chapter, the submission of plans and specifications and departmental approval of initial, modified, additional or replacement construction of private domestic sewage treatment and disposal systems serving one- and two-family residences is not required. All applicable approvals and permits required by local government shall be obtained prior to the commencing of construction. The local authority may require plans and specifications prior to issuing permits or approval.

2. Public buildings — departmental approval. Complete plans and specifications shall be submitted in accord with section H 62.20 (1) (c) 4. and 6. and section H 62.25 and written approval received before commencing work on the initial installation of a private domestic sewage treatment and disposal system or for the addition to, modification or replacement of the system, if the system serves or will serve any public building. The owner shall submit a copy of the approved plans to the local authority. Included as public buildings but not limited by enumeration are:

- a. Theaters and assembly halls
- b. Schools and other places of instruction
- c. Apartment buildings, hotels and places of detention
- d. Factories, office and mercantile buildings
- e. Mobile home parks, campgrounds and camping resorts
- f. Parks

3. Public buildings — local approval. The approval by the county or other local governmental agency having authority shall not eliminate the need for approval by the department for the installation of private

domestic sewage treatment and disposal systems serving public buildings. Departmental approval shall not eliminate the need for obtaining all required local permits and approvals.

4. Public buildings — submission of plans and specifications. All plans and specifications shall be submitted in triplicate and shall include the following:

a. Detailed plot plan dimensioned or drawn to scale showing the lot size; the location of all septic tanks, holding tanks or other treatment tanks, building sewers-sanitary and storm, wells, water mains or water service, streams and lakes, dosing chambers, distribution boxes, effluent disposal systems, dual disposal systems, and disposal replacement areas; and the location of the public building served by such systems. Adjoining properties shall be checked to determine if limiting distances are a factor. All distances and dimensions required in section H 62.20 (1) (d) 2 shall be shown on this detailed plot plan.

b. Legal description of the property on which the system is to be installed.

c. A permanent elevation reference point.

d. Soil boring and percolation test data. Soil test data shall relate to the undisturbed and finished grade elevations and permanent elevation reference point or bench mark. See section H 62.20 (2) (b).

e. Ground slope with 2-foot contours for the finished grade elevation of the entire area of the soil absorption system and the area on all sides for a distance of 25 feet.

f. Complete data relative to the maximum expected use and occupancy of the building to be served.

Note: All anticipated future growth plans should be considered.

g. Complete specifications of pumps and controls including a statement on volume of dosing and plans of dosing chambers and piping, including relative elevations of related units when dosing or dual system facilities are required or provided.

5. Public buildings — availability of plans. One set of plans bearing the department's stamp of approval shall be maintained at the project site during construction of any private sewage treatment and disposal system serving a public building.

6. Public buildings — revised plans. Approved plans and specifications shall not be revised except with the written approval of the department.

(d) *Local filing requirements.* 1. As-built plan. Every installer of an initial, modified, additional or replacement private domestic sewage treatment and disposal system shall submit a detailed as-built plan of the system to the local authority.

2. Dimension and scale of plan. The as-built plan shall be dimensioned or drawn to scale and shall show the location of the system and the dwelling served by such system. The recommended scale is one inch equals 40 feet, but in any case the scale used shall be sufficient to show clearly all the required dimensions and distances enumerated

below. The following dimensions and distances shall be shown on the plan; the dimensions of the lot or a sufficient portion such that all other required dimensions and distances may be shown; the dimensions of the dwelling to be served by the system; the location of the dwelling and all other buildings on the lot with distances from lot lines to said dwelling and buildings; the location of all septic tank and other treatment tank manholes and the distance and location of each manhole to the dwelling and to any other nearby reference points; the location and dimensions of all septic, holding or other treatment tanks, soil absorption systems and replacement disposal areas; and the location and distances from all buildings, wells, water services, water mains and other underground public utilities, reservoirs, swimming pools or high water marks of any lake, stream, pond or flowage located on the lot or on adjacent properties within 100 feet of the septic tanks, treatment tanks, sewage disposal systems or replacement disposal areas.

3. Plan examination. The local authority shall examine this plan to determine if it adequately shows the required locations, distances and dimensions. If it is determined that the plan meets the requirements of section H 62.20, then he shall accept and file the plan.

4. Acceptance. No private domestic sewage treatment and disposal system shall be used until an as-built plan for the system has been accepted and filed by the local authority.

5. File. The local authority shall establish a filing system which provides a system of retrieval of the as-built plans and may set by ordinances a filing fee. The local authority may require that additional information be included on the plan to aid in filing, indexing or retrieving plans.

(e) *Specific limitations.* 1. Cesspools. Cesspools are prohibited.

2. Industrial wastes. The department of natural resources shall be contacted in regard to the treatment and disposal of all industrial wastes, including such combined with domestic waste.

3. Clear water. The discharge of surface, rain and other clear water into a private domestic sewage disposal system is prohibited.

4. Water softener backwash. Water softener discharge may be directed to the sewage disposal system or to the ground surface if a nuisance is not created.

(2) SOIL TESTS AND SITE REQUIREMENTS. (a) *General.* Soil boring and percolation tests shall be made by a soil tester certified by the department. Test data shall be signed by the certified soil tester on forms furnished by the department.

(b) *Percolation and boring tests.* 1. Number and location. The size and design of each proposed soil absorption system shall be determined from the results of soil percolation tests and soil borings conducted in accordance with this section. At least 3 percolation tests shall be conducted with the holes located uniformly in the location and to the bottom depth of the proposed absorption system. At least 3 soil borings shall be dug to a depth at least 3 feet below the bottom of the proposed system. Percolation tests may not be required where a detailed soil map clearly indicates loamy sand or coarser material.

conditions at the depth of the proposed system and soil permeability is limited to the maximum of the class used for design purposes and the soil condition is confirmed by the soil bore test data. The department reserves the right to require proof of the map findings or soil texture and resultant anticipated percolation rate. The exemption of percolation tests does not eliminate the required bore hole test data. The borings shall be distributed uniformly in the area of the proposed system. If soil pits are constructed they shall be located immediately adjacent to the area.

2. Soil maps. When a parcel of land consists entirely of soils having very severe or severe limitations for on-site liquid waste disposal as determined by use of a detailed soil map and interpretive data, that map and interpretive data may be used as a basis for denial for an on-site waste disposal system. Nevertheless, in all cases the property owner shall be permitted to present evidence consisting of soil percolation test data, bore hole data and topographic survey data to support the contention that a suitable site for an on-site liquid waste disposal system does exist.

(c) *Replacement system area.* On each parcel of land being initially developed sufficient area of suitable soils based on soil tests and separation and site requirements contained in paragraphs (b) and (e) for one replacement system shall exist. Where bore hole test data in the replacement system area are equivalent to that in the proposed system area the percolation test may be eliminated.

(d) *Septic tank location.* No tank shall be located within 5 feet of any building or its appendage, 2 feet of any lot line, 10 feet of any cistern, 25 feet of any well, reservoir, below ground swimming pool or the high water mark of any lake, stream, pond or flowage.

Note: Septic tanks should be located to provide accessibility for pumping and service vehicles.

(e) *Soil absorption site.* 1. Location. The surface grade of all soil absorption disposal systems shall be located at a point lower than the surface grade of any nearby water well or reservoir on the same or adjoining property, except that when this is not possible, the site shall be so located that surface water drainage from the site is not directly toward a well or reservoir and will bypass the well or reservoir site by several feet. The soil absorption system shall be located not less than 5 feet from any lot line; 10 feet from a water service, or an uninhabited slab constructed building; 15 feet from an aboveground swimming pool; 25 feet from any occupied or habitable building or dwelling, building with below grade foundation, public water main, below grade swimming pool or cistern; 50 feet from any water well or reservoir and 50 feet from the high water mark of any lake, stream or other watercourse. Effluent disposal systems in compacted areas such as parking lots and driveways are prohibited. Surface waters shall be diverted away from the soil absorption site.

2. Percolation rate—trench or bed. A subsurface soil absorption system of the trench or bed type shall not be installed where the percolation rate for any one of the 3 tests is slower than 60 minutes for water to fall one inch. The slowest percolation rate shall be used to determine the absorption area.

3. Percolation rate—seepage pit. For a seepage pit, percolation tests shall be made in each stratum penetrated below the inlet pipe. Soil

strata in which the percolation rates are slower than 30 minutes per inch shall not be included in computing the absorption area. The slowest percolation rate shall be used to determine the absorption area.

4. Floodplain. A soil absorption system shall not be installed in a floodway. Soil absorption systems in areas considered floodplains excluding the floodway shall not be installed unless written approval is received from the department. The department shall receive written local government approval for construction in and filling of the floodplain area prior to reviewing plans.

5. Slope. The soil absorption system shall be constructed on that portion of the lot which does not exceed the slope here specified for the class. In addition, the soil absorption system shall be located at least 20 feet from the crown of any slope that is greater than the specified slope in its class.

<i>Class of Slope</i>	<i>Minutes Required for Water to Fall One Inch</i>	<i>Slope</i>
1 -----	Under 3	20%
2 -----	3 to 45	15%
3 -----	45 to 60	10%

6. Filled area. A soil absorption system shall not be installed in a filled area unless written approval is received from the department except if filled prior to certification as a subdivision lot under chapter H 65, Wis. Adm. Code.

7. Groundwater, bedrock or slowly permeable soils. Soil having a percolation rate of 60 minutes per inch or faster shall exist for the depth of the proposed soil absorption system and for at least 3 feet below the proposed bottom of the soil absorption system. There shall be at least 5 feet of soil over bedrock and above the high groundwater level. There shall be a minimum of 3 feet of soil between the bottom of the soil absorption system and high groundwater or bedrock.

(3) PERCOLATION TEST PROCEDURE. (a) *Type of hole.* The hole shall be dug or bored. It shall have vertical sides and have a horizontal dimension of 4 to 12 inches.

(b) *Preparation of hole.* The bottom and sides of the hole shall be carefully scratched with a sharp pointed instrument to expose the natural soil interface. All loose material shall be removed from the hole and the bottom shall be covered with 2 inches of coarse sand or gravel.

(c) *Test procedure, sandy soils.* For tests in sandy soils containing little or no clay, the hole shall be carefully filled with clear water to a minimum depth of 12 inches over the gravel and the time for this amount of water to seep away shall be determined. The procedure shall be repeated and if the water from the second filling of the hole at least 12 inches above the gravel seeps away in 10 minutes or less, the test may proceed immediately as follows: Water shall be added to a point not more than 6 inches above the gravel. Thereupon, from a fixed reference point, water levels shall be measured at 10-minute intervals for a period of one hour. If 6 inches of water seeps away in less than 10 minutes, a shorter interval between measurements shall be used, but in no case shall the water depth exceed 6 inches. The final water level drop shall be used to calculate the percolation rate. Soils not meeting the above requirements shall be tested as in paragraph (d) below.

(d) *Test procedure, other soils.* The hole shall be carefully filled with clear water and a minimum water depth of 12 inches shall be maintained above the gravel for a 4-hour period by refilling whenever necessary or by use of an automatic siphon. Water remaining in the hole after 4 hours shall not be removed. Thereafter the soil shall be allowed to swell not less than 16 hours nor more than 30 hours. Immediately following the soil swelling period, the percolation rate measurements shall be made as follows: Any soil which has sloughed into the hole shall be removed and water shall be adjusted to 6 inches over the gravel. Thereupon, from a fixed reference point, the water level shall be measured at 30-minute intervals for a period of 4 hours unless 2 successive water level drops do not vary by more than 1/16 of an inch. At least 3 water level drops must be observed and recorded. The hole shall be filled with clear water to a point not more than 6 inches above the gravel whenever it becomes nearly empty. Adjustment of the water level shall not be made during the last 3 measurement periods except to the limits of the last measured water level drop. When the first 6 inches of water seeps away in less than 30 minutes, the time interval between measurements shall be 10 minutes and the test run for one hour. The water depth shall not exceed 6 inches at any time during the measurement period. The drop that occurs during the final measurement period shall be used in calculating the percolation rate.

(e) *Verification.* 1. Physical characteristics. Depth to high groundwater and bedrock, ground slope and percolation test results shall be subject to verification. Verification of high groundwater may include, but not be limited to, a morphological study of soil conditions with particular reference to soil color and sequence of horizons.

2. Filling. Where the natural soil condition has been altered by filling or other attempts to improve wet areas, the department may require observation of high groundwater levels under saturated soil conditions.

Note: Detailed soil maps are of value for determining estimated percolation rates and other soil characteristics.

(f) *Soil mottling and monitoring groundwater levels.* 1. A property owner or developer has the option to provide documentation that soil mottling at a particular site is not an indication of seasonally saturated soil conditions or high groundwater levels. If the option to provide documentation is made, water levels observed by monitoring shall apply. Acceptable documentation will result from successful monitoring according to the following procedures:

a. Monitoring shall be done in a near normal spring season. A near normal spring season is when the precipitation received at a local station equals or exceeds the amount historically received in Wisconsin 2 out of 3 years for both the periods September 1st to March 1st and March 1st to June 1st. These amounts are 8.5 inches and 7.6 inches respectively. In addition, where sites are subject to broad regional water tables, such as large areas of sandy soils, the fluctuation over the several year cycle must be considered.

b. Areas which are monitored shall be carefully checked for drainage tile and open ditches which may have altered natural high groundwater levels. When such factors are involved, information on the location, design, ownership and maintenance responsibilities must be provided.

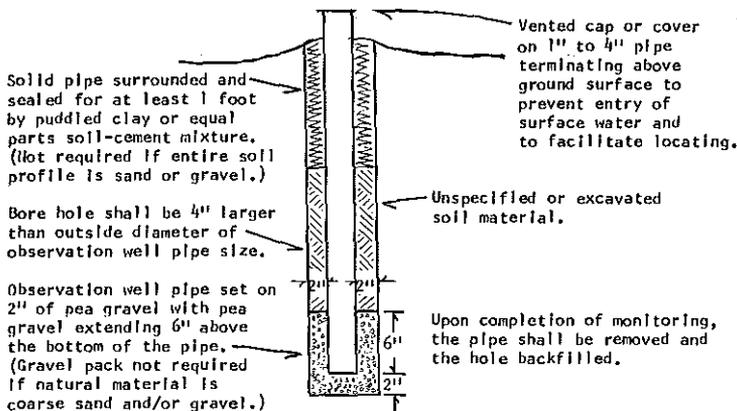
Clear assurance shall be needed to show that the drainage network has an adequate outlet, and can and will be maintained.

c. Monitoring shall be done by a certified soil tester.

d. The certified soil tester shall notify in writing the local sanitary permit issuing authority, or in the absence of such, the department, of intent to monitor. It is expected the local authority or department may field check the monitoring at least once during the time of expected saturated soil conditions.

e. At least 2 locations shall be monitored at a site for a proposed system and replacement. If in the judgement of the local authority or the department, more than 2 monitoring sites are needed, the certified soil tester will be so advised in writing.

f. Observation wells designed as shown in the following sketch shall be constructed for monitoring. In general, they should extend to a depth of at least 6 feet below ground surface and shall be a minimum of 3 feet below the designed system depth. However, with layered mottled soil over permeable unmottled soil, some wells shall terminate within the mottled layer. Site conditions may, in some cases, require monitoring at greater depths. It will be the responsibility of the certified soil tester to determine the depth of the observation wells for each specific site and if in doubt, they shall request the guidance of the local authority or in its absence, the department.



g. Observations shall be made at the following frequency:

1) The first observations shall be made within 2 weeks after the frost is absent and thereafter every 7 days. Observations shall continue until June 1st or until the site is determined to be unacceptable, whichever comes first.

2) If water is observed after the frost is absent, or at any other time, an observation shall be made one week later. If water is present at both observations, monitoring can cease because the site is considered unacceptable.

3) If water is not present at the second observation, monitoring shall continue until June 1st. If any 2 successive observations show the presence of water above the critical depth, the site is unacceptable and the department shall be notified in writing.

4) The occurrence of rainfall (s) of $\frac{1}{2}$ inch intensity or more during the monitoring period may necessitate observations at more frequent intervals.

5) A site which is saturated above the critical depth for more than 7 consecutive days of a near normal spring season is an unacceptable site.

h. Submitting data:

1) When monitoring shows saturated conditions, data giving test locations, soil bore hole or pit descriptions, soil series if available from soil maps, dates observed, depths to observed water and local precipitation data (monthly from September 1st to June 1st and daily during monitoring) shall be submitted in writing, with 2 copies sent to the department and one to the local authority.

2) When monitoring discloses that the site is acceptable, documentation including location and depth of test holes, soil bore hole or pit descriptions; soil series if available from soil maps; dates observed; results of observations, local precipitation data (monthly from September 1st to June 1st and daily during monitoring) and information on artificial drainage shall be submitted in writing with 2 copies to the department and one to the local authority. A request for a variance to install a soil absorption system must be made to the department.

(4) SEPTIC TANKS AND OTHER TREATMENT TANKS. (a) *Design of septic tanks.* 1. Materials. Septic tanks shall be fabricated or constructed of welded steel, monolithic concrete, glass-fiber reinforced polyester or other materials approved by the department. All tanks shall be watertight and fabricated so as to constitute an individual structure.

2. Approval. a. The design of prefabricated septic tanks shall be approved by the department.

b. Plans for site-constructed concrete tanks shall be approved by the department prior to construction.

3. General. a. The liquid depth shall not be less than 3 feet nor more than an average of 6 feet. The total depth shall be at least 8 inches greater than the liquid depth.

b. Rectangular tanks shall have a minimum width of 36 inches and shall be constructed with the longest dimensions parallel to the direction of flow.

c. Cylindrical tanks shall have an inside diameter of not less than 48 inches.

d. Each prefabricated tank shall be clearly marked to show liquid capacity and the name and address or registered trade mark 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 show the liquid capacity. The marking shall be impressed

into or embossed onto the outside wall of the tank immediately above the outlet opening.

e. For septic tank material and construction specifications, see section H 62.19 (2) table 32, Wis. Adm. Code Limitations 16, 17 and 18. For general septic tank design criteria, see section H 62.20 (4) (a) and (b), Wis. Adm. Code.

4. Tank accessories. a. The inlet and outlet openings on all tanks shall contain a "boss" stop or other provision which will prevent the insertion of the sewer piping beyond the inside wall of the tank.

b. The inlet and outlet on all tanks or tank compartments shall be provided with open-end coated iron sanitary tees or baffles made of approved materials, so constructed as to distribute flow and retain scum in the tank or compartments. The tees or baffles shall extend at least 6 inches above and 9 inches below the liquid level, but not to exceed $1/3$ the liquid depth. At least 2 inches of clear space shall be provided over the top of the baffles or tees. The bottom of the outlet opening shall be at least 2 inches lower than the bottom of the inlet.

c. Each single-compartment tank and each unit of a multi-compartment tank shall be provided with at least one manhole opening no less than 24 inches square or 24 inches in diameter. Manholes shall terminate no more than 6 inches below the ground surface, be of the same material as the tank and be provided with a substantial, fitted, water-tight cover of concrete, steel, cast iron or other approved materials. Steel tanks shall have a minimum 2-inch collar for the manhole extensions permanently welded to the tank. The manhole extension on glass-fiber 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 inches.

d. An airtight inspection opening which may be either a manhole or a cast iron pipe at least 4 inches in diameter, shall be provided over the inlet baffle of all treatment tanks. The upper end of the inspection pipe shall terminate at or above ground surface. The manhole shall terminate not more than 6 inches below the ground surface.

(b) *Design of other treatment tanks.* 1. The design of other treatment tanks shall be considered on an individual basis. A complete description of the method of treatment to be performed in the treatment tank plus three complete sets of plans must be submitted to the department for each request for approval of the treatment tank. The installation of the tank shall be commenced only upon receipt of written approval by the department. The capacity, sizing and installation of the tank shall be according to sections H 62.20 (4) (d) and H 62.20 (4) (e) unless the department specifies different sizing or installation requirements in its written approval of the treatment tank. The department may require such treatment tank to be preceded by a conventional septic tank. Credit will be given for the capacity of the septic tank in meeting the required capacity as listed in section H 62.20 (4) (c).

(c) *Capacity and sizing.* 1. Minimum capacity. The capacity of a septic tank or other treatment tank shall be based on the number of persons using the building to be served or upon the volume and type of waste. The minimum liquid capacity shall be 750 gallons except a 500 gallon septic tank may be used to serve a one bedroom residence.

2. Multiple tanks. When the required capacity is to be provided by more than one tank, the minimum capacity of any tank shall be 750 gallons. When 3 or 4 tanks are installed, approval of the design of the system shall be obtained from the department. The installation of more than 4 tanks in series is prohibited. Installation of septic tanks in parallel is prohibited.

3. Sizing of tank. a. The minimum liquid capacity for one- and two-family residences is as follows:

Septic Tank Capacity One- and Two-Family Residences

Number of Bedrooms	Septic Tank
1 -----	500
2 -----	750
3 -----	975
4 -----	1200
5 -----	1425
6 -----	1650
7 -----	1875
8 -----	2100

b. For buildings other than one- and two-family residences the liquid capacity shall be increased above the 750-gallon minimum as established in the following table. For such buildings having kitchen and/or laundry waste, the tank capacity shall be increased to receive the anticipated volume for a 24-hour period from the kitchen and/or laundry. The liquid capacities established in this table do not include employes.

Apartment buildings (per bedroom) -----	200 gals.
Assembly hall (per person - no kitchen) -----	2 "
Bars and cocktail lounges (per patron space) -----	9 "
Beauty salons (per station) -----	140 "
Bowling alley (per alley) -----	125 "
Bowling alley with bar (per alley) -----	225 "
Campgrounds and camping resorts (per camp space) -----	100 "
Campground sanitary dump stations (per camp space) (omit camp spaces with sewer connection) -----	15 "
Camps, day use only - no meals served (per person) -----	15 "
Camps, day and night (per person) -----	40 "
Car wash (automatic) - subject to state approval -----	
Car wash (per car handwash) -----	50 "
Catch basins - garages, service stations, etc. - (per basin floor clean up, etc.) -----	100 "
Catch basins - truck washing (per truck) -----	100 "
Churches - no kitchens (per person) -----	3 "
Churches - with kitchen (per person) -----	7.5 gals.
Condominiums (per bedroom) -----	200 "
Country clubs - subject to state approval -----	
Dance halls (10 sq. ft. per person) -----	3 "
Dining hall - kitchen and toilet waste (per meal served) -----	10 "
Dining hall - kitchen waste only (per meal served) -----	3 "
Dog kennels (per animal enclosure) -----	20 "
Drive-in restaurants - all paper service (per car space) -----	15 "
Drive-in restaurants - all paper service inside seating (per seat) -----	15 "
Drive-in theaters (per car space) -----	5 "
Employees - in all buildings, per employe - total all shifts -----	20 "
Hospitals (per bed space) -----	200 "
Hotels or motels and tourist rooming houses (per room - 2 persons per room) -----	100 "
Medical office buildings, clinics and dental offices -----	
Doctors, nurses, medical staff (per person) -----	75 "
Office personnel (per person) -----	20 "
Patients (per person) -----	10 "
Migrant labor camp, central bathhouse (per employee) -----	30 "

Mobile home parks, homes with bathroom groups (per site) -----	300	"
Nursing and rest homes (per bed space) -----	100	"
Parks, toilet wastes (per person - 75 persons per acre) -----	5	"
Parks, with showers and toilet wastes (per person - 75 persons per acre) ,	10	"
Restaurant - kitchen and toilet wastes (per seating space) -----	30	"
Restaurant (24-hr) - kitchen and toilet wastes (per seating space) -----	60	"
Restaurant - dishwasher and/or food waste disposer (per seat) -----	3	"
Restaurant (24-hr) - dishwasher and/or food waste disposer (per seat) ---	6	"
Retail store - customers (10 sq. ft. per person) -----	1.5	"
Schools (per classroom - 25 pupils per classroom) -----	450	"
Schools with meals served (per classroom - 25 pupils per classroom) -----	600	"
Schools with meals served and showers provided (per classroom) -----	750	"
Self-service laundries (toilet waste only, per machine) -----	50	"
Auto. washer, (apartments, service buildings, etc. - per machine) -----	300	"
Service stations (per car) -----	10	"
Swimming pool bathhouses (per person) -----	10	"

(d) *Installation of septic and other treatment tanks.* 1. Location. Septic and other treatment tanks shall not be installed within the interior foundation walls of a building nor shall a new building or addition to an existing building be constructed or located over, or within 5 feet of a tank.

2. Groundwater. If the tank is installed in groundwater adequate anchoring provisions shall be made.

3. Bedding. A 3-inch thick compacted bedding shall be provided for all septic and other treatment tank installations. The bedding material shall be sand, gravel, granite, limerock or other noncorrosive materials of such size that 100 percent will pass a 1/2-inch screen.

4. Backfill. a. The backfill material for steel and glass fiber tanks shall be as specified for bedding and shall be tamped into place, care being taken to prevent damage to the coating.

b. The backfill for concrete tanks shall be soil material, 100 percent of which shall pass a 4-inch screen and shall be tamped into place.

5. Piping. The inlet and outlet piping between a septic or other treatment tank and points 3 feet beyond the undisturbed ground surrounding the excavation made to install each tank and all piping connecting tanks shall be cast iron pipe or other pipe approved by the department for the specific purpose. The piping 3 feet beyond the undisturbed ground on the outlet side of the septic tank shall comply with the materials specified in section H 62.04 (2), Wis. Adm. Code. The joints between pipe and tank openings shall be made with lead and oakum or other methods approved by the department.

6. Manhole riser joints. a. Concrete. All joints on concrete risers and manhole covers shall be tongue and groove or shiplap type and sealed watertight using neat cement, mortar or bituminous compound.

b. Steel. All joints on steel risers shall be welded or flanged and bolted and be watertight. All steel manhole extensions shall be bituminous coated inside and outside.

c. Glass-fiber. All methods of attaching glass-fiber risers shall be watertight and approved by the department.

(5) SOIL ABSORPTION SYSTEM - INITIAL INSTALLATION. (a) *Disposal of tank effluent.* The effluent from septic tanks and other approved treatment tanks shall be disposed of by soil absorption systems or by such

other manner approved by the department and with the concurrence of the department of natural resources for the specific installation.

(b) *Method of discharge.* For 6-bedroom one- or two-family residences or facilities having a daily effluent application of 1500 gallons or less, flow from the septic or treatment tank to the soil absorption system may be gravity or pressure. For all other systems the tank effluent must be discharged by pumping or by use of an automatic siphon.

Note: The dosing of effluents is recommended for all systems.

(c) *Dosing or pumping chamber - sizing and construction and pumping equipment.* The working capacity of the dosing or pumping chamber shall be sized to permit automatic discharge of the total daily sewage flow with discharge occurring no more than 4 times per 24 hours. Dosing or pumping chamber construction shall meet the same general criteria as specified for septic tanks in relationship to materials and fabrication. Dosing or pumping chambers shall be provided with a minimum 4-inch vent extended at least 12 inches above final grade and terminate with an approved vent cap and be a minimum of 25 feet from a door, window or fresh air intake. The automatic siphons and pumping equipment shall be department approved.

(d) *Sizing - general.* For systems having a daily effluent application of 5000 gallons or less, sizing shall be in accord with subsections H 62.20 (5) (e) and (f) below. For systems receiving effluents in excess of 5000 gallons per day, subsections H 62.20 (5) (e) and (f) below shall apply except that 2 systems of equal size shall be required. Each system shall have a capacity of no less than 75 percent of the required area. A suitable means of alternating waste application shall be provided. The dual system shall be considered as one system.

(e) *Sizing - residential.* The bottom area for seepage trenches or beds or the side wall area for seepage pits required for a soil absorption system serving residential property shall be determined from the following table using soil percolation test data and type of construction:

Percolation Class	Percolation Rate Minutes Required for Water to Fall One Inch	Minimum Absorption Area in Square Feet			
		Public Buildings		Residential Property per bedroom	
		Seepage Trenches or Pits	Seepage Beds	Seepage Trenches or Pits	Seepage Beds
Class 1	0 to 10	110	140	165	205
" 2	10 to 30	165	205	250	315
" 3	30 to 45	200	250	300	375
" 4	45 to 60	220	280	330	415

(f) *Sizing - other.* The required bottom area for seepage trenches or beds or the side wall area for seepage pits for a soil absorption system serving public buildings shall equal the absorption area specified in section H 62.20 (5) (e) for public buildings according to the percolation test results and type of construction multiplied by the applicable unit specified in column 2, multiplied by the applicable factor in column 3 of the following table. The effluent disposal factor established in this table does not include employes.

Column 1	Column 2	Column 3
Building Classification	Units	Factor
Apartment building	1 per bedroom	1.0
Assembly hall - no kitchen	1 per person	0.02
Bar and cocktail lounge	1 per patron space	0.2
Beauty salon	1 per station	2.4
Bowling alley	1 per bowling lane	2.5
Bowling alley with bar	1 per bowling lane	4.5
Camp, day use only	1 per person	0.2
Camp, day and night	1 per person	0.45
Campground and camping resort	1 per camping space	0.9
Campground and sanitary dump station	1 per camping space	0.2
Car wash (automatic)	Subject to state approval	
Car wash (per car handwash)	1 per car	1.0
Catch basin - garages, service stations, etc. (floor cleanup)	1 per basin	2.0
Catch basin - truck wash	1 per truck	5.0
Church - no kitchen	1 per person	0.04
Church - with kitchen	1 per person	0.09
Condominium	1 per bedroom	1.0
Dance hall	1 per person	0.06
Dining hall - kitchen and toilet	1 per meal served	0.3
Dining hall - kitchen only	1 per meal served	0.15
Dog kennel	1 per animal enclosure	0.4
Drive-in restaurant (all paper service)	1 per car space	0.3
Drive-in restaurant (inside seating)	1 per seat	0.3
Drive-in theater	1 per car space	0.1
Employees - in all buildings	1 per person	0.4
Hotel or motel and tourist rooming house	1 per room	0.9
Hospital	1 per bed space	2.0
Medical office buildings, clinics and dental offices		
Doctors, nurses and medical staff	1 per person	0.8
Office personnel	1 per person	0.25
Patients	1 per person	0.15
Migrant labor camp - central bathhouse	1 per employee	0.25
Mobile home park	1 per mobile home site	3.0
Nursing or rest homes	1 per bed space	1.0
Park - toilet waste only	1 per acre	4.0
Park - showers and toilets	1 per acre	3.0
Restaurant - kitchen and toilet	1 per seating space	0.6
Restaurant - (24-hr) kitchen and toilet	1 per seating space	1.2
Restaurant with dishwasher and/or food waste disposer	1 per seating space	0.75
Restaurant - (24-hr) with dishwasher/disposer	1 per seating space	1.5
Retail store	1 per customer	0.03
Self-service laundry - toilet wastes only	1 per machine	1.0
Auto washer (apartments, service bldgs., etc.)	1 per machine	6.0
Service station	1 per car served	0.15
Swimming pool bathhouse	1 per person	0.2
School - no meals, no showers	1 per classroom	5.0
School - meals served or showers	1 per classroom	6.7
School - meals and showers	1 per classroom	8.0

(g) *Installation - seepage trench or bed systems.* 1. A seepage trench or a seepage bed shall have a depth to the top of the distribution pipe of 12 to 42 inches measured from the finished grade.

Note: A shallow seepage trench system is preferred in all cases.

2. The bottom of the seepage trench shall be level with seepage trench excavations from one to 5 feet in width. The absorption area of a seepage trench shall be computed by using the bottom area only. Trench excavations shall be spaced at least 6 feet apart. The distribution header shall be constructed of approved solid wall pipe and the bottom area of the header excavation shall not be computed as absorption area. The individual seepage trenches should preferably not be over 100 feet long. Equal distribution of effluents shall be made to all seepage trenches.

3. Seepage beds shall be level and meet the requirements of a seepage trench except that the excavation is more than 5 feet wide and has more than one distribution pipe line. Distribution piping in a seepage bed shall be uniformly spaced no more than 6 feet and no less than 3 feet apart and no more than 3 feet or less than one foot from the sidewall. The distribution header shall be constructed of approved solid wall pipe.

4. Seepage trenches or beds shall not be excavated when the soil has a plastic consistency at moist or wet conditions.

5. All smeared or compacted surfaces in the seepage trench or bed shall be scarified to the depth of the compaction and the loose material removed.

6. Distribution piping for gravity systems shall be a minimum of 4-inch I.D. approved perforated cement asbestos, concrete, clay tile, bituminous fiber or plastic. The top of the distribution piping shall be laid 12 to 42 inches below the surface in continuous straight or curved lines at a slope of 2 to 4 inches per 100 feet.

7. Fresh air inlets of cast iron shall be provided and connected to the perforated distribution pipe with an approved fitting or junction box and be placed so as to assure a free flow of air throughout the entire installation. The vent pipes shall be at least 4 inches in diameter and extend at least 12 inches above the final grade and terminate with an approved vent cap. Fresh air inlets shall be located at least 25 feet from any window, door or air intake of any building used for human habitation. A maximum of 4 distribution pipe lines may be served by one common 4-inch vent when interconnected by a common header pipe.

8. A minimum of 12 inches of washed, graded, hard rock or similar aggregate ranging in size from $\frac{3}{4}$ to 2- $\frac{1}{2}$ inches shall be laid into the trench or bed below the distribution pipe elevation and such aggregate shall be evenly distributed a minimum of 2 inches over the top of the distribution pipe. The aggregate shall be covered with untreated building paper or 2 inches of marsh hay or equal. The first 4 to 6 inches of soil backfill shall be hand filled.

9. Where dosing is required the siphon or pump shall discharge a minimum capacity equal to 75% of the combined volume of the distribution piping in the absorption system. See section H 62.20 (5) (d).

(h) A seepage pit shall have a minimum inside diameter of 5 feet and shall consist of a chamber walled-up with material such as a perforated precast concrete ring, concrete block, brick or other material approved by the department which allows effluent to percolate into the surrounding soil. Seepage pits shall be located 6 feet or more apart. The pit bottom shall be left open to the soil. Washed graded hard rock or similar aggregate $\frac{3}{4}$ to 2- $\frac{1}{2}$ inches in size shall be placed into a 6-inch minimum annular space separating the outside wall of the chamber and side-wall excavation. Depth of the annular space shall be measured from the inlet pipe to the bottom of the walled-up chamber. Each seepage pit shall be provided with a 24-inch manhole extending within 6 inches of the ground surface and a 4-inch fresh air inlet which shall meet the requirements of section H 62.20 (5) (g) 7. Excavation and scarifying shall be in accord with section H 62.20 (5) (g) 5. The effective area of a seepage pit shall be the vertical wall area of the walled-up chamber for the depth below the inlet for all strata for which the percolation rates are

less than 30 minutes per inch. Six inches of annular opening outside the vertical wall area may be included for determination of effective area. The following table may be used for determining the effective sidewall area of circular seepage pits:

Effective Absorption Area Seepage Pit *

Inside diameter of walled-up chamber in feet *	Depth of Permeable Strata Below Inlet					
	3	4	5	6	7	8
7-----	75	101	126	151	176	201
8-----	85	113	142	170	198	226
9-----	94	126	157	188	220	251
10-----	104	138	173	208	242	277
12-----	123	163	204	245	286	327

* The 6-inch annular opening credit is included.

(6) SOIL ABSORPTION SYSTEM—REPLACEMENT. (a) *Approval*. The department shall be contacted for approval of replacement systems for all public buildings and all buildings where site conditions do not permit systems in accord with this section.

(b) *Effluent disposal*. Alternates for the disposal of effluents emanating from existing structures may be accomplished by means other than outlined in this section provided written local approval is obtained and submitted along with detailed plans and specifications to the department for review and consideration. Written approval shall be received from the department prior to commencing the improvements or work on these systems.

(7) MAINTENANCE AND SLUDGE DISPOSAL. (a) *Maintenance*. Septic tanks shall be cleaned whenever the sludge and scum occupies 1/3 of the tank volume. All sludge, scum, liquid and any other material removed from a private domestic sewage treatment and disposal system is hereafter referred to as sludge.

(b) *Sludge disposal*. See Wis. Adm. Code chapter NR 113.

(8) CHEMICAL RESTORATION. The chemical restoration of effluent disposal systems shall be approved by the department.

(9) HOLDING TANKS. (a) *Approval*. 1. Holding tanks shall be considered on an individual basis. Three complete sets of plans, as required in section H 62.20 (1) (c) 4., shall be submitted to the department for each request to install a holding tank.

2. Sizing. a. The minimum liquid capacity of a holding tank for one- and two-family residences is as follows:

Number of Bedrooms	Holding Tank
1 -----	1000
2 -----	1500
3 -----	2000
4 -----	2500
5 -----	3000
6 -----	3500
7 -----	4000
8 -----	4500

b. Public buildings shall have a minimum 5-day holding capacity but not less than 1000 gallons. Sizing shall be based in accord with section H 62.20 (4) (c) 3. b.

Note: The 750 gallon minimum referred to in section H 62.20 (4) (c) 3. b. does not apply to holding tanks.

3. Agreement. A signed agreement between local government and owner to guarantee the pumping and transport of the holding tank contents to a disposal site meeting the requirements of Wis. Adm. Code chapter NR 113, provided it becomes necessary to prevent or abate a nuisance as described in sections 146.13 and 146.14, Wis. Stats., or if the owner does not pump and transport in response to orders from local government, shall be submitted to the department for review and approval. The agreement shall be binding on the owners, their heirs and assignees. The installation of the holding tank shall be made in accord with the following criteria.

(b) *Installation.* 1. Materials. The tank shall be constructed of material approved by the department.

2. Location. Tanks shall be located in accord with section H 62.20 (2) (d) except the tanks shall be 20 feet from a building or its appendage.

3. Warning device. A high water warning device shall be installed. This device shall be either an audible or an indoor illuminated alarm. If the latter, it shall be conspicuously mounted.

4. Manhole. Each tank shall be provided with a manhole opening no less than 24 inches square or 24 inches in diameter extending to ground surface. Each manhole cover shall have an effective locking device.

5. Septic tank. If an approved septic tank is installed to serve as a holding tank, the inlet and outlet baffles shall be removed and the outlet sealed.

6. Vent. Each tank shall be provided with a minimum 2-inch fresh air inlet extending 12 inches above final grade terminating with a return bend fitting and a minimum of 25 feet from a door, window or fresh air inlet.

7. Servicing. Holding tanks shall be serviced in accord with chapter 146, Wis. Stats., and Wis. Adm. Code chapters H 62 and NR 113.

8. Before any holding tank is purchased or installed a state septic tank permit shall be obtained in accord with section 144.03, Wis. Stats.

(10) SEVERABILITY. Should any section, paragraph, phrase, sentence, clause or word of this chapter be declared invalid or unconstitutional for any reason, the remainder of this chapter shall not be affected thereby.

(11) INITIAL ADVERSE DETERMINATION. In all cases where property owners and/or developers receive initial adverse determinations and sanitary permits are refused by county, city, village or town officials or the department rejects a conventional private domestic sewage treatment and disposal system because of site limitations, the aggrieved party shall be given the reason, in writing, for rejection and alternate course of actions available to them. The department shall provide to all sanitary

permit issuing agents a list of alternates which may be applied in the event conventional means of waste disposal are not acceptable.

History: 1-2-56; am. (1) (f), Register, June, 1956, No. 6, eff. 7-1-56; am. (2) (a), (2), (b), (2) (c) 2, Register, February, 1957, No. 14, eff. 3-1-57; am. (1) (b), (d) and (e), Register, April, 1962, No. 76, eff. 10-1-62; r. and recr. Register, November, 1969, No. 167, eff. 12-1-69; am. (5) (d) 2. e., Register, October, 1971, No. 190, eff. 11-1-71; r. and recr. (2) (b), Register, November, 1972, No. 203, eff. 12-1-72; r. and recr. Register, July, 1976, No. 247, eff. 8-1-76; am. (2) (e) 7, cr. (3) (f) and (11), Register, January, 1979, No. 277, eff. 2-1-79.

H 62.21 Hangers and supports. (1) **GENERAL.** All piping in a plumbing system shall be installed without undue strains and stresses and provisions shall be made for expansion, contraction and structural settlement and backgrounds where necessary.

(2) **PIPE SUPPORTS.** (a) *Stacks.* All pipes shall be supported so that alignment is retained and the weight of the pipes shall not bear upon a caulked joint, except where the spigot end of one vertical pipe rests in the hub end of the next lower vertical pipe. All vertical stacks extending 3 floors or more in height shall be supported on concrete or masonry piers. All vertical piping shall be provided with an approved support at each floor or approximately every 10 feet.

(b) *Pipe supports—water distribution.* All piping shall be supported to prevent undue strains upon connections or fixtures and shall be so aligned and graded that the entire system or parts thereof can be controlled and drained. The formation of traps and/or sags in water piping shall be avoided where possible. When unavoidable, such sags, traps or inverts shall have provisions for properly draining same.

(3) **HANGERS.** (a) All horizontal piping above the floor shall be supported or anchored by approved wall brackets, copper, iron or steel hangers, concrete or masonry piers set at intervals not to exceed 10 feet. Cast iron pipe shall be supported at the joint and intervals not to exceed 5 feet. Copper tubing shall be supported at approximately 6 feet for piping 1¼ inches inside diameter and less, and at intervals not to exceed 10 feet for piping 1½ inches inside diameter and larger. Lead pipe shall be supported in its entirety. Bracket, hanger and support materials in contact with the pipe or tubing shall be compatible. Plastic DWV piping shall be supported at intervals of not more than 4 feet, at the end of branches and change of direction or elevation. Supports shall allow free movement. Vertical piping shall be maintained in a straight alignment. Support trap arms in excess of 3 feet in length as close as possible to the trap. Closet rings shall be securely fastened with corrosive resistant fasteners to the floor. Closet bends or stubs shall be stabilized against all horizontal or vertical movement. Pipe exposed to damage by sharp surfaces shall be protected with grommets or sleeves of rubber or plastic. Hangers and straps shall not compress, distort, cut or abrade the piping and shall allow free movement of pipe. All horizontal piping exceeding 20 feet in length shall have an approved ABS or PVC expansion joint installed. See following sketch.

