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4658.4500 PLUMBING SYSTEMS; NEW CONSTRUCTION.

Subpart 1. **Installation.** All plumbing systems must be installed and tested according to this chapter and chapter 4715, the Minnesota Plumbing Code.

Subp. 2. **Area drainage.** Roofs, basements, tunnels, pits, shafts, areaways, courts, yards, and drives must be properly drained to eliminate intrusion of rain water or groundwater into the building. Floor drains in exterior areaways and similar installations must be provided with a running trap located inside the building to prevent freeze-up in the winter.

Subp. 3. **Pipe insulation.** Sufficient insulation must be provided for all water and steam piping to assure proper functioning of the systems, provide safety against burns, and to prevent undesirable condensation or heat transfer in areas for residents.

Subp. 4. **Hot water supply.** Circulating hot water must be provided in all hot water mains and in risers more than three stories high to assure hot water at the fixtures. The domestic

hot water heating equipment must be installed, operated, and maintained according to chapter 4715, the Minnesota Plumbing Code. The domestic hot water heating equipment must have sufficient capacity and recovery to supply water at minimum temperatures at the point of use as follows:

A. resident bedrooms and service areas, 105 degrees Fahrenheit, with a maximum temperature at the point of use of 115 degrees Fahrenheit;

B. mechanical dishwashing, 180 degrees Fahrenheit;

C. washers in the laundry, 160 degrees Fahrenheit;

and

D. mechanical sanitizing of nursing utensils, 180 degrees Fahrenheit.

If a thermostatically controlled mixing valve is used, it must be of the "fail-safe" type which prevents flow of hot water in case the cold water supply fails. Heaters must be insulated and provided with a thermometer.

Subp. 5. **Dishwashing machine.** The dishwashing machine must be of a commercial type equal to the standards established by NSF International Standard No. 3, and must be of a size that

can accommodate food trays. The water supply line at the machine must be provided with a pressure-reducing valve, pressure gauge, and vacuum breaker. The rinse water flow pressure must be maintained between 15 and 25 pounds per square inch at the machine by the use of a pressure reducing valve. A pressure gauge must be installed immediately after the reducing valve. A recirculation system and pump must be provided if the final rinse water heater is located more than five feet from the dishwasher. The drain must be an indirect waste connection to a trapped floor drain, or it must be a trapped connection to a branch with a floor drain without a backwater valve in the horizontal branch.

Subp. 6. **Floor drains.** Floor drains must not be installed in areas for food storage. Floor drains must not be directly connected to ventilation equipment or air supply plenums.

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4658.4505 PLUMBING; NEW CONSTRUCTION.

Subpart 1. **Institutional fittings.** Institutional fittings must include a mixing faucet, gooseneck spout or other approved spout, wrist-action controls, and an open grid strainer on the waste in the sinks.

The spout must provide a minimum vertical distance of five inches from its discharge point to the rim of the fixture, and a minimum horizontal bowl clearance of seven inches between the discharge point and the inside face of the rim.

The blades on wrist-action controls must not exceed 4-1/2 inches in length, except that handles on clinical sinks must not be less than six inches long.

Subp. 2. **Flushing rim service sinks or clinical sinks.** Flushing rim service sinks or clinical sinks must have an integral trap in which the upper portion of a visible trap seal provides a water surface. A bedpan cleaning device must be included at the clinical sink in soiled utility rooms. If a spray nozzle is included, there must be a way to control the water flow and pressure from the nozzle to minimize aerosolization.

Subp. 3. **Sterilizer vent systems.** All sterilizers requiring vapor vents must be connected with a vapor venting

system extending up through the roof independent of the plumbing fixture vent system. The vertical riser pipe must be provided with a drip line which discharges into the drainage system through an air gap or open waste fixture. The connection between the fixture and the vertical vent riser pipe must be made by means of a horizontal offset. Vent material must be erosion and corrosion resistant.

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4658.4510 HEATING AND COOLING; NEW CONSTRUCTION.

Subpart 1. **Design and installation.** Heating and cooling systems must be capable of maintaining a temperature of 71 degrees Fahrenheit to 81 degrees Fahrenheit in all resident areas. Areas must be zoned according to use and exposure, and must be provided with thermostatic temperature controls. The humidification system must be capable of maintaining a space humidity between 25 percent relative humidity and 50 percent relative humidity.

Subp. 2. **Isolation of major components.** A means of isolating major sections or components in the heating and cooling systems must be provided. Supply and return mains, and risers of space heating and cooling systems must be valved to isolate the various sections of each system. Each piece of equipment must be valved at the supply and return ends. Any pump on which the heating and cooling systems are dependent should be installed in duplicate for standby service in a nursing home.

Subp. 3. **Controls and gauges.** All valves and controls must be placed for convenient access and use, and thermometers and gauges must be mounted for easy observation.

Subp. 4. **Heating and cooling elements.** Heating and cooling elements must be located so as not to interfere with beds in residents' rooms. Tubing and casing of gravity-type heating and cooling convectors must be mounted at least four inches above the floor and be provided with removable sturdy covers in order to facilitate cleaning.

Subp. 5. **Forced flow room units.** Cabinets for forced flow heating or cooling units must be sturdy and must be mounted either continuously along the floor with a tight fit or at least four inches above the floor. Outside air must be filtered. The

interior air grill for recirculation must be located not less than four inches above the floor, on floor mounted units. Fans or blowers must be of a quiet operating type, and the fan or blower housing must not be directly connected to the metal of the unit cabinet. Recirculated air must be passed through the filter. The filter must be replaceable from within the room.

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4658.4515 VENTILATION REQUIREMENTS; NEW CONSTRUCTION.

Mechanical supply and exhaust ventilation must be provided for all areas according to part [4658.4520](#). The systems must be designed and balanced to provide the pressure relationships described in part [4658.4520](#). Areas not covered in part [4658.4520](#) must be ventilated according to the Minnesota State Building Code. Areas requiring an equal or positive pressure relationship to adjacent areas according to part [4658.4520](#) must be provided with tempered makeup air. All air-supply and air-exhaust systems must be mechanically operated. Required

exhaust ventilation must not be activated by a light switch.
All fans serving exhaust systems must be located at the discharge end of the system. The ventilation rates shown in part [4658.4520](#) are minimum acceptable rates, and do not preclude the use of higher ventilation rates if the rates do not result in undesirable velocities in resident areas.

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4658.4520 VENTILATION PRESSURE RELATIONSHIPS AND VENTILATION FOR CERTAIN AREAS IN NURSING HOMES; EXISTING AND NEW CONSTRUCTION.

Graphic to go here currently not available
chart here.

Symbols:

Air Pressure Relationships:

+ = Positive;

- = Negative;

0 = Neutral

Air Changes, Supply, Exhaust:

- = Optional

¹Areas with equal or positive pressure relationships to adjacent areas must be provided with tempered make-up air.

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4658.4525 FRESH AIR INTAKES; NEW CONSTRUCTION.

Fresh air intakes for ventilation systems must be located at least 25 feet away from a ventilation exhaust, combustion exhaust, or driveway or parking area. The bottom of fresh air intakes serving central air systems must be located as high as

possible, but at least four feet above grade, or, if installed through the roof, at least two feet above roof level. Air intakes for individual room units must be at least one foot, six inches above outside grade. Any exhaust system or waste chute vent must terminate at least 25 feet away from windows that can be opened.

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4658.4530 HEIGHT OF REGISTERS; NEW CONSTRUCTION.

Wall openings for air supply or return must be located at least four inches above the floor.

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4658.4535 DIETARY AREA; NEW CONSTRUCTION.

Subpart 1. **Food preparation areas.** The minimum ventilation requirements of part [4658.4520](#) for food preparation areas must be provided by either a combination of general ventilation and the range hood, or by general room ventilation. If hood ventilation is needed to meet the minimum air changes per hour, the hood must be operating at all times that the food preparation area is in use.

Subp. 2. **Dishwashing area.** The minimum exhaust requirements of part [4658.4520](#) for the dishwashing area must be provided by either a combination of general ventilation and the exhaust from the mechanical dishwasher or by general ventilation. If dishwasher hood ventilation is needed to meet the minimum air changes per hour, the hood must be operating at all times that the dishwashing area is in use.

Subp. 3. **Exhaust ducts.** All exhaust ducts must be provided with access panels for cleaning.

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4658.4540 LAUNDRY AREA; NEW CONSTRUCTION.

Air in the laundry must be vented away from the finishing and ironing area and toward the extracting and washing area. The general air movement must be from the clean area to the soiled area, and must be of sufficient volume to remove steam, odors, and excessive heat. Dryers must be provided with a lint collector. Horizontal exhaust ducts must exhaust to the outside. The ducts must be provided with access panels for cleaning.

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4658.4545 MECHANICAL ROOMS; NEW CONSTRUCTION.

Mechanical rooms with equipment using liquefied petroleum gas (LPG) or flammable liquid fuels producing vapors heavier

than air must be provided with continuous mechanical outdoor air ventilation that provide a pressure which is equal to or greater than atmospheric, to remove accumulations of gas or vapor at the floor level. A relief or exhaust vent must be located within 12 inches below the ceiling, and a relief or exhaust vent must be located within 12 inches above the floor.

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4658.4550 FILTERS; NEW CONSTRUCTION.

Subpart 1. **Air supply.** All air supplied to the nursing home must be free from harmful particulate matter, any type of combustion products or contaminants, obnoxious odors, or exhausted air from the building or adjoining property.

Subp. 2. **Filters.** All outside air introduced into living and service areas of a nursing home must be filtered. Return air to central ventilation systems must be filtered. All central ventilation or air conditioning systems must be equipped

with a minimum of one filter bed. The filter bed must be located upstream of the air conditioning equipment, unless a prefilter is employed. If a prefilter is employed, the prefilter must be upstream of the equipment and the main filter may be located further downstream. Filter frames must be durable and proportioned to provide an airtight fit with the enclosing ductwork.

Subp. 3. **Filter efficiencies.** Filters installed in all central ventilation or air conditioning systems must have a minimum efficiency of 25 percent. All filter efficiencies must be average atmospheric dust spot efficiencies tested according to the American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc. (ASHRAE) Standard No. [52.1-1992](#).

Subp. 4. **Autoclave room.** If there is a large autoclave in the nursing home, it must be located in a separate room provided with supply and exhaust ventilation. If an autoclave is built into a separate equipment room, the equipment room must be provided with exhaust ventilation.

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**4658.4590 PENALTIES FOR MECHANICAL SYSTEMS; NEW CONSTRUCTION
RULE VIOLATIONS.**

A \$200 penalty shall be assessed on a daily basis for violations of parts [4658.4500](#) to [4658.4550](#).

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