481—60.11 (135C) Mechanical requirements. In new construction, prior to completion of the contract and final acceptance of the facility, the architect or engineer shall obtain from the contractor certification that all mechanical systems have been tested, balanced, and that the installation and performance of such systems shall conform to the requirements of the plans and specifications. Upon completion of the contract, the owner shall be furnished with a complete set of manufacturer's operating, maintenance, and preventive instructions and parts list with numbers and descriptions for each piece of equipment. The owner shall also be provided with instruction in the operational use of systems and equipment as required. (III)

60.11(1) Steam and hot water heating and domestic water heating systems shall comply with the following:

a. Boilers shall be installed to comply with the division of labor services rules promulgated under Iowa Code chapter 89 and 875—Chapters 90 to 96, Iowa Administrative Code, and shall be inspected annually. (III)

b. Boiler feed pumps, condensate return pumps, fuel oil pumps, and hot water circulating pumps shall be connected and installed to provide standby service when any pump breaks down. (III) (Exception 4)

c. Supply and return mains and risers of cooling, heating, and steam systems shall be valved to isolate the various sections of each system. Each piece of equipment shall be valved at the supply and return ends. (III) (Exception 3)

60.11(2) Thermal and acoustical insulation.

a. Insulation shall be provided for the following, within the building: (Exception 4)

(1) Steam supply and condensate return piping; (III)

(2) Piping above 125° Fahrenheit, which is exposed to contact by residents; (II, III)

(3) Chilled water, refrigerant and other process piping and equipment operating with fluid temperatures below ambient dewpoint; (III)

(4) Water supply and roof drainage piping on which condensation may occur; (III)

(5) Boilers, smoke-breaching and stacks; (III)

(6) Hot water piping above 180° Fahrenheit, and all hot water boilers, heaters, and piping; (III)

(7) Other piping, ducts, and equipment as necessary to maintain the efficiency of the system. (III)

b. Insulation, including finishes and adhesives on the interior surface of ducts, pipes and equipment, shall have a flame-spread rating of 25 or less and a smoke develop rating of 50 or less, as determined by an independent testing laboratory in accordance with HFPA 255. (III) (Exception 4)

c. Insulation on cold surfaces shall include an exterior vapor barrier. (III)

60.11(3) Air conditioning, heating and ventilating system. (All provisions in 60.11(3)*"b"* to 60.11(3)*"s"* are subject to Exception 4).

a. The heating system shall be capable of maintaining a temperature of 78° Fahrenheit in all occupied areas at a winter design temperature of 10° Fahrenheit.

b. The cooling system shall be designed to maintain all living spaces within the comfort zone. The comfort zone is defined in the ANSI/ASHRAE Standard 55-1981 or the 1985 ASHRAE Fundamentals Handbook. (III)

c. All air supply and air exhaust systems shall be mechanically operated and ducted from a central system to and from each room. All fans serving exhaust systems shall be located at the discharge end of the system. The ventilation rates shown in Table 2 shall be considered as minimum acceptable rates, and shall not be construed as precluding the use of higher ventilation rates. (III)

d. The bottoms of ventilation openings shall be not less than 3 inches above the floor of any room. (III)

e. All central systems designed to heat and cool the building with recirculation of air shall be equipped with a minimum 2-inch deep, 8- to 11-pleat per foot, Class 2 Underwriters' Laboratories, self-extinguishing, nonwoven, cotton, downstream, or final filter with a minimum efficiency of 25 to 30 percent and average arrestance of 90 percent, tested in accordance with ASHRAE Standard 52-76. This

does not preclude the additional use of a prefilter upstream of the air handling equipment to extend the service life of the downstream, or final filter. (III) (Exception 6)

f. Any alternate ventilation system designed to attain an equivalent degree of odor control and purity of air to resident areas shall be considered for approval under conditions in 481—Chapters 57 and 63, rules 57.2(135C) and 63.2(135C). (III)

g. Rooms containing fuel-fired heating units shall be provided with sufficient outdoor air to maintain combustion rates of equipment and reasonable temperatures in the room and adjoining areas. (III)

h. Appropriate ventilation shall be provided in food storerooms to maintain temperature and humidity for the type of food being stored. (III)

i. Outdoor ventilation air intakes shall be located as far away as practicable, but not less than 25 feet from the exhaust outlets of any ventilating systems, combustion equipment stacks or noxious fumes. The bottom of outdoor intakes serving central air systems shall be located as high as practical, but not less than 6 feet above grade level, or, if installed through the roof, 3 feet above roof opening. (III)

j. The ventilation system shall be designed and balanced to provide the general pressure relationship to adjacent areas shown in the Pressure Relationship and Ventilation Table 2. Through-the-wall air conditioning units will not be used to calculate make up air. (III) (Exception 4)

k. Corridors, attics, or crawl spaces shall not be used as a plenum to supply air to or exhaust air from any rooms. (III)

l. The air system for resident rooms between smoke stop partitions shall be operated with common switches. (III)

m. Actuation of the fire alarm system shall shut down the air distribution system. (III)

n. Air handling duct systems shall meet the requirements of NFPA Standard 90A and 90B. Supply and return registers shall not be at the same level and shall be designed to inhibit stratification. (III)

o. Fire and smoke dampers shall be constructed, located and installed in accordance with the requirements of NFPA Standards 90A, 90B, and 101. (III)

p. Range and dishwasher exhaust hood in food preparation centers shall have a minimum exhaust rate of 60 cubic feet per minute, per square feet of hood face area. Face area is defined for this purpose as the open area from the exposed perimeter of the hood to the average perimeter of the cooking surfaces. All hoods over cooking ranges shall be equipped with grease filters, a fire extinguishing system, and heat actuated fan controls. Cleanout openings shall be provided every 20 feet in horizontal exhaust duct systems serving hoods. Tempered air shall be supplied to balance the exhausted air. Special hood designs shall be evaluated. (III) (Exceptions 1 and 4)

q. Mechanical ventilation over cooking equipment and dishwashing equipment shall be properly designed to take hot air out and not bring cold air down on hot food or dishes. (III)

r. Filter beds shall be located upstream of the air conditioning equipment, unless a prefilter is employed. In this case the prefilter shall be upstream of the equipment and the main filter bed may be located further downstream. Filter frames shall be durable and carefully dimensioned and shall provide an airtight fit within enclosing ductwork. All joints between filter segments and the enclosing ductwork shall be gasketed or sealed to provide a positive seal against air leakage. (III)

s. All under-the-slab perimeter ductwork shall be encased in lightweight or insulating concrete and sloped to a plenum low point. (III)

t. Laundry rooms shall be supplied with sufficient tempered outside air to balance the amounts exhausted and for combustion. (III)

u. The amounts of air and pressure relationship as set forth in Table 2 shall be provided. (III)

v. Condensate piping from cooling coils should be a minimum of 3/4 inch IPS and provided with cleanouts every 10 feet. (III)

w. Attics or crawl spaces shall not be used to house heating or cooling equipment.

x. All such areas must be accessible through a swinging door.

Table No. 2

PRESSURE RELATIONSHIPS AND VENTILATION OF CERTAIN AREAS OF RESIDENTIAL CARE FACILITIES

Area Designation	Minimum Total Air Changes Per Hour Supplied to Room	All Air Exhausted Directly to Outdoors	Room Pressure in Relation To Adjacent Space
Resident Room	2	Optional	Equal
Resident Area Corridor	2	Optional	Equal
Lounge and Designated Smoking Area	6	Optional	Negative
Soiled Workroom or Soiled Holding	10	Yes	Negative
Toilet Room	10	Yes	Negative
Bathroom	10	Yes	Negative
Janitor's Closet	10	Yes	Negative
Food Preparation Center	10	Yes	Equal
Dishwashing Room	10	Yes	Negative
Laundry, General	10	Yes	Equal
Soiled Linen Sorting and Storage	10	Yes	Negative

60.11(4) Plumbing and other piping systems.

a. Every facility shall have a complete interior plumbing system. (III)

b. All plumbing and other piping systems shall be installed in accordance with the requirements of the Iowa state plumbing code and applicable provisions of local ordinances. (III) (Exception 3)

c. All water supply systems pipes below grade or in concrete slabs shall be type K, soft copper. No joints will be allowed below the slab.

d. Rescinded IAB 10/7/09, effective 11/11/09.

e. Water supply systems. Water supply systems shall meet the following requirements:

(1) All facilities shall have a potable water source from a city water system or a private source which complies with the regulations and is approved by the department of natural resources. (III)

(2) Systems shall be designed to supply water to the fixtures and equipment at a minimum pressure of 15 pounds per square inch during maximum demand periods. (III)

(3) The temperature of the hot water to the resident lavatories, bath, and showers shall range between 110° Fahrenheit and 120° Fahrenheit. (III)

(4) Plumbing fixtures in janitor's rooms and soiled workrooms shall be provided with hot water. (III)

(5) Each water service main, branch main, riser and branch to a group of fixtures shall be valved. Stop valves shall be provided at each fixture. (III) (Exception 4)

(6) Backflow preventers (vacuum breakers) shall be installed on hose bibbs, janitors' sinks, bedpan flushing attachments, hair care sinks, and on all other threaded fixtures to which hoses or tubing can be attached. (III)

(7) Water softeners which supply cold water to the kitchen, drinking fountains, and ice machines shall not add sodium to the water. (III) (Exception 4)

(8) Hot water distribution systems shall be arranged to provide hot water as specified at each hot water outlet at all times. (III) (See Table 3) A circulating pump in a hot water system shall meet these requirements. (Exception 4) A circulating pump is not required in facilities licensed for 15 or fewer beds.

(9) The hot water system shall be designed to supply 110° Fahrenheit to 120° Fahrenheit hot water for bathing for all residents in accordance with their program of care. For facilities licensed for 15 beds or fewer, one bathing unit shall be provided for each five residents. (III) (Exception 4)

Table No. 3
HOT WATER USE
Resident

	Areas	Dietary	Laundry
Gallons per HR. per Bed**	3	2	2
Temperature (degrees F)	110	120*	160***

*Provisions shall be made to provide 180° Fahrenheit rinse water at dishwasher. (III) (May be provided by a separate booster heater.)

**Quantities indicated for design demand of hot water are for general reference minimums and shall not substitute for accepted engineering design procedures using actual number and types of fixtures to be installed. Design shall also be affected by temperatures of cold water used for mixing, length of run and insulation relative to heat loss, etc. As an example, total quantity of hot water needed will be less when temperature available at the outlet is very nearly that of the source tank and the cold water used for tempering is relatively warm.

***Provisions shall be made to provide 160° Fahrenheit hot water at the laundry equipment when needed. (This may be by steam jet or separate booster heater.) However, it is emphasized that this does not imply that all water used would be at this temperature.

Water temperatures required for acceptable laundry results will vary according to type of cycle, time of operation, and formula of soap and bleach as well as type and degree of soil. Lower temperatures may be adequate for most procedures in many facilities but the higher 160° Fahrenheit shall be available when needed for special conditions.

f. Drainage systems. Drainage systems shall meet the following requirements:

(1) Sewage shall be collected and disposed of in a manner approved by the department. Disposal into a municipal system shall be considered as meeting this requirement. (III)

(2) Private sewage systems shall conform to the rules and regulations promulgated by the department of natural resources. (III)

(3) Piping over food preparation centers, food serving facilities, food storage areas, and other critical areas shall be kept to a minimum and shall not be exposed. Special precautions shall be taken to protect these areas from possible leakage or condensation from necessary overhead piping systems. (III) (Exceptions 1 and 4)

(4) Plastic piping may be used in any drain-waste vent system. (III)

(5) Rescinded IAB 2/8/89, effective 3/15/89.

(6) Pipe cleanouts shall not be more than 50 feet apart in horizontal drain line. (III) (Exception 4)

(7) Floor drains with appropriate grates shall be provided for all mechanical equipment rooms, laundries, kitchens, dishwashing areas, shower stalls and one in front of showers or bath units, soiled utility, basement floors and any other areas where water may collect on the floor. (III)

(8) Foundation drains shall be provided in accordance with subrule 60.3(10). (III)
(9) All tub and shower floor surfaces shall be specified or designated as slip-resistant surfaces.

[**ARC 8189B**, IAB 10/7/09, effective 11/11/09]