

GG295-14

1003.2.2

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Revise as follows:

1003.2.2 Heating, ventilating and air-conditioning. Heating, ventilating and air-conditioning systems and equipment shall be in accordance with the following:

1. Time clock and automatic time switch controls that can turn systems off and on according to building occupancy requirements shall be provided and connected to the following HVAC equipment: chillers and other space-cooling equipment, chilled water pumps, boilers and other space-heating devices, hot water pumps, heat exchanger circulation pumps, supply fans, return fans, and exhaust fans. Where occupant override is provided, it shall be designed with a timer to automatically revert to time clock and automatic time switch controls in not longer than 12 hours.

Exception: A time clock or automatic time switch controls shall not be required for spaces where any of the following conditions exist:

1. A time clock is not required by Section C403.2.4.3 of the *International Energy Conservation Code*.
2. There is 24-hour occupancy materials with special atmospheric requirements dependent on 24-hour space conditioning.
3. A majority of the areas of the building served by the system are under setback thermostat control.
4. Manufacturer's specifications stipulate that the system must not be shut off.
2. Functional outside air economizers shall be provided on all cooling systems of more than $4\frac{1}{2}$ tons total cooling capability, 54,000 Btu/h, or more than 1800 cfm ($9.144 \text{ m}^3/\text{s} @ \text{m}^2$) air flow, provided manufacturer's guidelines are available for adding the economizer to the existing system.

Exception: An outside air economizer shall not be required for buildings or special uses where 100 percent outside air for ventilation is required or where any of the following conditions exist:

1. Section C403.3.1 of the *International Energy Conservation Code* would not require an economizer.
2. The existing system has a water-based economizer.
3. The existing system does not have an outside air intake.
4. Special economizer operations such as, but not limited to, carefully controlled humidity would require more energy use than is conserved.
5. There is insufficient space to install necessary equipment.
6. Installation of an economizer would require major modifications to the building's life safety system.
7. The existing system is a multi-zone system where the same intake air is used at the same time for either heating or cooling in different parts of the building.
3. HVAC piping and ducts, including those located above suspended ceilings, shall comply with Sections 606.3 and 606.4.

Exception: Additional insulation shall not be required for piping where any of the following conditions exist:

1. Additional insulation shall not be required for piping where any of the following conditions exist:
 - 1.1. It is located within HVAC equipment;
 - 1.2. It is located within conditioned space that conveys fluids between 60°F (15.6°C) and 105°F (40.6°C);
 - 1.3. Piping that is already insulated and the insulation is in good condition; or
2. Where HVAC ducts and piping are installed in a building cavity or interstitial framing space of insufficient width to accommodate the duct or pipe and the insulation required by Section 606.3 and Table 606.4, the insulation thickness shall be permitted to have the maximum thickness that the wall can accommodate, but shall not be less than ½ inch (12.7 mm) thick.
4. Where central heat is intended to be replaced with individual electric space heaters, the application for the electrical permit shall include² documentation demonstrating that the new electric heaters will not consume more energy than the existing nonelectric heaters.
5. Boiler systems shall have been cleaned and tuned within one year prior to the alteration. Boilers shall be equipped with an outdoor air lock-out thermostat or a temperature reset control.
6. Chillers shall be equipped with an outdoor air lockout thermostat and chilled water reset control.
7. A maximum 5-year phase out plan shall be provided for buildings with existing systems that use CFC-based refrigerants.
8. Where mechanical and electrical systems and equipment are joined with microprocessors that communicate with each other or to a computer, a properly integrated building automation system shall be installed to optimize energy, operations, and indoor comfort. The building automation system shall:
 - 8.1. Allow the owner to set up schedules of operation for the equipment and provide equipment optimal start with adaptive learning;
 - 8.2. Provide trim and respond capabilities based on zone demand;
 - 8.3. Offer the ability to monitor energy usage, including the ability to meter electric, gas, water, steam, hot water, chilled water, and fuel oil services;
 - 8.4. Offer economizing based on enthalpy calculation and/or CO₂ set point control;
 - 8.5. Offer load shedding when power companies are at peak demand and need; and
 - 8.6. Offer the ability to send alarms to alert building owner, manager, or operator when problems occur due to system failures.
9. Where chimney flues serving heating appliances or decorative appliances are uncapped, a stainless steel or aluminum chimney cover shall be installed to keep damaging rain, leaves, twigs, debris, birds and animals out of the flue.

Reason: As chimney sweeps servicing chimney flues we have long noticed the impact that the lack of a chimney cover has on chimney flues venting heating and decorative wood and gas-burning appliances. Without a proper chimney cover installed rain, birds, nests, twigs, animals, and debris can enter a chimney and can cause expensive damage and dangerous blockages that restrict the flow of flue gasses. Rain washes out mortar joints, allowing toxic heated flue gasses to escape the flue and enter the home. Bird nests and twigs are fire hazards. Debris and dead animals and birds can clog chimneys, causing toxic Carbon Monoxide to back up. Chimney sweeps from all over the country report these same issues. If a chimney cover were required on all chimney flues, it would save thousands of dollars in repairs, and help prevent dangerous blockages. The photos attached show washed out mortar joints in vitreous clay tile flue liners.

The NFPA 211 Standard for Chimneys, Vents, and Solid Fuel Burning Appliances Section 4.6.4.2 states "Where part of a listed chimney termination system, spark arresters shall be constructed and installed in accordance with the listing." The chimney liner and chimney manufacturers obviously know the impact an exposed chimney has and require a cover with their product.

The NFPA 211 Standard also mentions Caps and Spark Arrestors for Chimneys and vents in section 4.6.1, 4.6.2, 4.6.3 and 4.6.4 regarding deign, rain cap height, screening, and spark arrestors. However, there is no requirement that a cap must be installed (this will be proposed soon). It is clear that the NFPA has been considering the effects of chimney covers.

Bibliography:

Chimney Safety Institute of America www.csia.org
 Midwest Chimney Safety Council www.mcsc-net.org

Cost Impact: Will increase the cost of construction. The cost impact would be less than \$200 for each flue in most cases. For chimneys with multiple flues a custom-made chimney cover may be necessary at a cost of \$300 - \$2,000 depending on the size of the chimney and number of flues covered.

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