

STATE BUILDING CODE INTERPRETATION NO. I-22-03

December 23, 2003

The following is offered in response to your FAX to this office dated December 16, 2003 in which you seek a formal interpretation of the requirements regarding chimneys and vents for oil and gas fired mechanical installations. Your concerns are chiefly what must be done to a variety of existing chimneys when new appliances are installed.

Question 1: Please clarify the requirements for the following four situations:

Situation 1. An existing interior chimney that is not lined.

Response 1: For buildings of Use Group R-4, Section 2101.3 of the 1995 CABO One and Two Family Dwelling Code (CABO) portion of the 1999 State Building Code requires that an existing chimney be inspected prior to connecting a vent connector to a chimney. If it is determined that the chimney is not safe for the intended application, it shall be rebuilt to meet the requirements of Sections 1001 or 1002, or either lined or relined with an approved liner, or replaced with an approved vent or chimney. This applies to both gas and oil fired appliances. If the existing chimney is properly sized for the new appliance and deemed safe, no work is required on the existing chimney (CABO allows new unlined masonry chimneys when the walls are at least 8 inch thickness of solid masonry).

For buildings of other than Use Group R-4, Section 801.17.1 of the 1996 International Mechanical Code (IMC) portion of the 1999 State Building Code requires flue lining systems for use with residential-type and low-heat appliances. If an appliance venting to a chimney were removed and reinstalled, the installer would be responsible for verifying that the chimney conformed to Section 801.17.1. Thus, a liner would have to be installed.

Situation 2. An existing interior chimney that is lined.

Response 2: For all buildings, both CABO at Section 2101.3 and the IMC at Section 801.19 require an existing chimney to be inspected prior to connecting an appliance even though it is presently lined with either a clay tile or a listed chimney lining system. This applies to both gas and oil appliances. If the lining is found to be inadequate, unsafe or improperly sized, action must be taken to repair or replace the lining so that it will pass inspection and function properly for the new appliance.

Situation 3. An existing exterior chimney that is not lined.

Response 3: For buildings other than Use Group R-4, the IMC requires all masonry chimneys, interior or exterior, to be lined. Installation of a new appliance to an existing unlined chimney would require installation of an approved lining system. The chimney and vent capacity tables in Chapter 8 of the IMC apply only to interior chimneys and vents not exposed to the outdoors below the roofline. Where exterior chimneys and unenclosed exterior vents are utilized to vent gas-fired appliances, such chimneys and vents shall be designed, sized and utilized as approved. In view of the fact that the

code gives no information regarding criteria for approval, it would be appropriate for the local building official to require the design to be prepared by a licensed professional engineer. Note that a B-vent installed within an unused masonry chimney is not deemed to be exposed to the outdoors.

For buildings of Use Group R-4, the CABO Code does not specifically address exterior unlined chimneys. General language of Section 2101.3, however, requires that an existing chimney be inspected prior to connecting a vent connector to it. If it is determined that the chimney is unsafe, it shall be rebuilt to meet the requirements of Sections 1001 or 1002, or either lined or relined with an approved liner, or replaced with an approved vent or chimney. Presumably, such inspection would result in a determination that for a new gas appliance, the chimney would require a new lining, unless the manufacturer's installation instructions permitted venting into an unlined, exterior chimney. If the existing unlined chimney had 8 inch thick solid masonry walls in good condition and was properly sized for the new oil fired appliance, the CABO code would allow use of the existing unlined chimney for an oil fired appliance.

Situation 4. An exterior chimney that is lined.

Response 4: For buildings other than Use Group R-4, Section 803.3.16 of the IMC states in part that where exterior chimneys and unenclosed exterior vents are utilized to vent gas-fired appliances, such chimneys and vents shall be designed, sized and utilized as approved. In view of the fact that the code gives no information regarding criteria for approval, it would be appropriate for the local building official to require the design to be prepared by a licensed professional engineer. Note that a B-vent installed within an unused masonry chimney is not deemed to be exposed to the outdoors.

For buildings of Use Group R-4, the CABO Code does not specifically address exterior lined chimneys. General language of Section 2101.3, however, requires that an existing chimney be inspected prior to connecting a vent connector to it. If it is determined that the chimney is unsafe, it shall be rebuilt to meet the requirements of Sections 1001 or 1002, or either lined or relined with an approved liner, or replaced with an approved vent or chimney. Presumably, such inspection would result in a determination that for a gas appliance, the existing chimney would have to be re-sized for the new appliance in accordance with the manufacturer's installation instructions

NFPA 31, which applies to oil-fired appliances in all buildings through the Connecticut Oil Burning Equipment Code, requires a chimney or venting system to be inspected and determined to meet the requirements of NFPA 211 prior to the installation of an oil-burning appliance. There is no prohibition against using a properly sized, lined, exterior masonry chimney to vent an oil-fired appliance.

Question 2: Define what constitutes an acceptable liner.

Answer 2: For buildings of other than Use Group R-4, Section 801.17.1 of the IMC allows the following flue lining systems for use with residential and low-heat appliances: 1) Clay flue lining complying with ASTM C 315 or equivalent, installed in accordance with the building code; 2) Listed chimney lining systems that comply with UL 1777; 3) Other approved materials that will resist, without cracking, softening or corrosion, flue gasses and condensate at temperatures up to 1800 degrees F.

For buildings of Use Group R-4, Section 1001.7 of CABO requires fireclay flue liners not less than 5/8 inch in thickness or other approved materials that will resist, without cracking or softening, temperatures up to 1800 degrees F. Other lining systems must be listed and labeled by an approved testing agency and installed in accordance with the listing and the manufacturer's installation instructions.

Question 3: When there are multiple appliances venting into an existing chimney and one of those appliances is removed, does the chimney have to be re-sized for the remaining appliances?

Answer 3: Yes. Both CABO and the IMC contain requirements for chimneys venting multiple appliances based on the height and size of the chimney and the combined appliance input rating. If the combined appliance input rating changes (either decreased or increased), the chimney must be resized for the new input rating.