

**Minutes**  
**Mechanical Board of Appeals and Examiners**  
**Building Services Conference Room**  
**June 13, 2012, 12 noon**

**Members Present**

Jack Zimmer, Greg Bertsch and Mark Lamb

**Members Absent**

Ryan Van Der Bill, Mark Weber

**Guests Present**

Ron Bell

**Approval of Minutes of Last Meeting**

A motion was made by Mr. Bertsch and a second was made by Mr. Lamb to approve the minutes of May 9, 2012. Yeses, 3. Noes, 0.

**New Business**

1. The Mr. Denny presented the board with the proposed changes to the 2012 IRC Mechanical and Fuel Gas sections. The changes are as follows:

- **R303.3 Bathrooms.** Bathrooms, water closet compartments and other similar rooms shall be provided with aggregate glazing area in windows of not less than 3 square feet (0.3 m<sup>2</sup>), one-half of which must be operable.

**Exception:** The glazed areas shall not be required where artificial light and a local exhaust system are provided. The minimum local exhaust rates shall be determined in accordance with Section M1507. Exhaust air from the space shall be exhausted directly to the outdoors.

***Mechanical board recommendation: Require exhaust fans in all bathroom and toilet rooms as per table M1507.4.***

- **R303.4 Mechanical ventilation.** Where the air infiltration rate of a dwelling unit is less than 5 air changes per hour when tested with a blower door at a pressure of 0.2 inch wc (50 Pa) in accordance with Section N1102.4.1.2, the dwelling unit shall be provided with whole-house mechanical ventilation in accordance with Section M1507.3.

***Mechanical board recommendation: Tabled until further information can be brought to the board from the Home Builders Association.***

- **R303.5 Opening Location.** Outdoor intake and exhaust openings shall be located in accordance with Sections R303.5.1 and R303.5.2.  
**R303.5.1 Intake Openings.** Mechanical and gravity outdoor air intake openings shall be located a minimum of 10 feet (3048 mm) from any hazardous or noxious contaminant, such as vents, chimneys, plumbing vents,

streets, alleys, parking lots and loading docks, except as otherwise specified in this code. Where a source of contaminant is located within 10 feet (3048 mm) of an intake opening, such opening shall be located a minimum of 3 feet (914 mm) below the contaminant source.

***Mechanical board recommendation: Require the 10' clearance on new construction only, existing houses and equipment replacements would decrease the requirement to 3' clearances.***

- **N1103.2.2.1 (R403.2.2.1) Sealed air handler.** Air handlers shall have a manufacturer's designation for an air leakage of no more than 2 percent of the design air flow rate when tested in accordance with ASHRAE 193.

***Mechanical board recommendation: Delete this section from the code.***

- **N1103.2.3 (R403.2.3) Building cavities (Mandatory).** Building framing cavities shall not be used as ducts or plenums.

***Mechanical board recommendation: To allow the use of stud spaces and floor joists only to be utilized as a return air duct or plenum. The use of chases or other areas of construction will not be accepted.***

## SECTION M1305 APPLIANCE ACCESS

- **M1305.1 Appliance access for inspection service, repair and replacement.** *Appliances* shall be accessible for inspection, service, repair and replacement without removing permanent construction, other *appliances*, or any other piping or ducts not connected to the *appliance* being inspected, serviced, repaired or replaced. A level working space at least 30 inches deep and 30 inches wide (762 mm by 762 mm) shall be provided in front of the control side to service an *appliance*. Installation of room heaters shall be permitted with at least an 18-inch (457 mm) working space. A platform shall not be required for room heaters.

***Mechanical board recommendation: Interpretation change: Require the level working space at least 30 inches deep and 30 inches wide to include exterior equipment on new construction only. This will continue to include all new indoor equipment installed as in the past. The board also wanted to discuss this matter at the next meeting.***

- **M1411.5 Insulation of refrigerant piping.** Piping and fittings for refrigerant vapor (suction) lines shall be insulated with insulation having a thermal resistivity of at least R-4 and having external surface permeance not exceeding 0.05 perm [2.87 ng/(s · m<sup>2</sup> · Pa)] when tested in accordance with ASTM E 96.

***Mechanical board recommendation: Require R-2 insulation on the vapor line as the current ordinance requires.***

- **M1411.6 Locking access port caps.** Refrigerant circuit access ports located outdoors shall be fitted with locking-type tamper-resistant caps or shall be otherwise secured to prevent unauthorized access.

***Mechanical board recommendation: Want to check on cost of the locking access caps and how many different tools will be required to open such caps. One board member brought up a liability concern if the locking caps are not approved. The board will discuss this matter at the next meeting.***

## **SECTION M1502 CLOTHES DRYER EXHAUST**

- **M1502.4.2 Duct installation.** Exhaust ducts shall be supported at intervals not to exceed 12 feet (3658 mm) and shall be secured in place. The insert end of the duct shall extend into the adjoining duct or fitting in the direction of airflow. Exhaust duct joints shall be sealed in accordance with Section M1601.4.1 and shall be mechanically fastened. Ducts shall not be joined with screws or similar fasteners that protrude more than 1/8 inch (3.2 mm) into the inside of the duct.

***Mechanical board recommendation: Leave the current requirement of the 2009 code requiring the piping to be secured in place 4' on centers and not allow the use of fasteners.***

## **SECTION M1503 RANGE HOODS**

- **M1503.1 General.** Range hoods shall discharge to the outdoors through a single-wall duct. The duct serving the hood shall have a smooth interior surface, shall be air tight, shall be equipped with a back-draft damper, and shall be independent of all other exhaust systems. Ducts serving range hoods shall not terminate in an attic or crawl space or areas inside the building.

***Mechanical board recommendation: Make no changes to this section.***

## **SECTION M1506 EXHAUST DUCTS AND EXHAUST OPENINGS**

- **M1506.1 Ducts.** Where exhaust duct construction is not specified in this chapter, construction shall comply with Chapter 16. M1506.2 Exhaust openings. Air exhaust openings shall terminate not less than 3 feet (914 mm) from property lines; 3 feet (914 mm) from operable and non-operable openings into the building and 10 feet (3048 mm) from mechanical air intakes except where the opening is located 3 feet (914 mm) above the air intake. Openings shall comply with Sections R303.5.2 and R303.6.

***Mechanical board recommendation: Remove the non-operable openings requirements of this section.***

## **SECTION M1507 MECHANICAL VENTILATION**

- **M1507.1 General.** Where local exhaust or whole-house mechanical ventilation is provided, the equipment shall be designed in accordance with this section.

**M1507.3 Whole-house mechanical ventilation system.** Whole-house mechanical ventilation systems shall be designed in accordance with Sections M1507.3.1 through M1507.3.3.

**M1507.3.1 System design.** The whole-house ventilation system shall consist of one or more supply or exhaust fans, or a combination of such, and associated ducts and controls. Local exhaust or supply fans are permitted to serve as such a system. Outdoor air ducts connected to the return side of an air handler shall be considered to provide supply ventilation.

**M1507.3.2 System controls.** The whole-house mechanical ventilation system shall be provided with controls that enable manual override.

**M1507.3.3 Mechanical ventilation rate.** The wholehouse mechanical ventilation system shall provide outdoor air at a continuous rate of not less than that determined in accordance with Table M1507.3.3(1).

**Exception:** The whole-house mechanical ventilation system is permitted to operate intermittently where the system has controls that enable operation for not less than 25-percent of each 4-hour segment and the ventilation rate prescribed in Table M1507.3.3 (1) is multiplied by the factor determined in accordance with Table M1507.3.3 (2).

**M1507.4 Local exhaust rates.** *Local exhaust* systems shall be designed to have the capacity to exhaust the minimum air flow rate determined in accordance with Table M1507.4.

**TABLE M1507.4  
MINIMUM REQUIRED LOCAL EXHAUST RATES FOR  
ONE- AND TWO-FAMILY DWELLINGS**

AREA TO BE EXHAUSTED	EXHAUST RATES
Kitchens	100 cfm intermittent or 25 cfm continuous
Bathrooms-Toilet Rooms	Mechanical exhaust capacity of 50 cfm intermittent or 20 cfm continuous

For SI: 1 cubic foot per minute = 0.0004719 m<sup>3</sup>/s.

**TABLE M1507.3.3(1)  
CONTINUOUS WHOLE-HOUSE MECHANICAL VENTILATION SYSTEM AIRFLOW RATE REQUIREMENTS**

DWELLING UNIT FLOOR AREA (square feet)	NUMBER OF BEDROOMS				
	0 – 1	2 – 3	4 – 5	6 – 7	> 7
	Airflow in CFM				
< 1,500	30	45	60	75	90
1,501 – 3,000	45	60	75	90	105
3,001 – 4,500	60	75	90	105	120
4,501 – 6,000	75	90	105	120	135
6,001 – 7,500	90	105	120	135	150
> 7,500	105	120	135	150	165

For SI: 1 square foot = 0.0929 m<sup>2</sup>, 1 cubic foot per minute = 0.0004719 m<sup>3</sup>/s.

**TABLE M1507.3.3(2)  
INTERMITTENT WHOLE-HOUSE MECHANICAL VENTILATION RATE FACTORS<sup>a, b</sup>**

RUN-TIME PERCENTAGE IN EACH 4-HOUR SEGMENT	25%	33%	50%	66%	75%	100%
Factor <sup>a</sup>	4	3	2	1.5	1.3	1.0

a. For ventilation system run time values between those given, the factors are permitted to be determined by interpolation.

b. Extrapolation beyond the table is prohibited.

***Mechanical board recommendation: Tabled until further information can be brought to the board from the Home Builders Association.***

## SECTION M1601

### ➤ DUCT CONSTRUCTION

4. Minimum thickness of metal duct material shall be as listed in Table M1601.1.1 (2). Galvanized steel shall conform to ASTM A 653. Metallic ducts shall be fabricated in accordance with SMACNA Duct Construction Standards Metal and Flexible.

***Mechanical board recommendation: Table until next meeting when staff can verify any other requirements in SMACNA that will affect this new code. The board also wants to look at lowering the G-60 requirement.***

- **M1601.4.1 Joints, seams and connections.** All longitudinal and transverse joints, seams and connections in metallic and nonmetallic ducts shall be constructed as specified in SMACNA *HVAC Duct Construction Standards—Metal and Flexible* and NAIMA *Fibrous Glass Duct Construction Standards*. All joints, longitudinal and transverse seams, and connections in ductwork shall be securely fastened and sealed with welds, gaskets, mastics (adhesives), mastic-plus-embedded-fabric systems or tapes. Closure systems used to seal flexible air ducts and flexible air connectors shall comply with UL 181B and shall be marked “181 B-FX” for pressure-sensitive tape or “181 BM” for mastic. Duct connections to flanges of air distribution system equipment shall be sealed and mechanically fastened. Mechanical fasteners for use with flexible nonmetallic air ducts shall comply with UL 181B and shall be marked 181B-C. Crimp joints for round metallic ducts shall have a contact lap of not less than 1 inch (25.4 mm) and shall be mechanically fastened by means of not less than three sheet-metal screws or rivets equally spaced around the joint. Closure systems used to seal metal ductwork shall be installed in accordance with the manufacturer’s instructions. Round metallic ducts shall be mechanically fastened by means of at least three sheet metal

screws or rivets spaced equally around the joint. Unlisted duct tape shall not be permitted as a sealant on any duct.

***Mechanical board recommendation: Require all supply main trunk ducts, supply branch connection to be sealed. Require return all ducts within 10' of an appliance to be sealed. The requirement for sealing ducts outside the thermal envelope will remain the same.***

- **G2411.1.1 (310.1.1) CSST.** Corrugated stainless steel tubing (CSST) gas piping systems shall be bonded to the electrical service grounding electrode system. The bonding jumper shall connect to a metallic pipe or fitting between the *point of delivery* and the first downstream CSST fitting. The bonding jumper shall be not smaller than 6 AWG copper wire or equivalent. Gas piping systems that contain one or more segments of CSST shall be bonded in accordance with this section.

***Mechanical board recommendation: Leave the 2009 IFGC requirement in place. The plumbing code and mechanical codes need to be consistent with the current plumbing code.***

- **G2428.2.9 (504.2.9) Chimney and vent locations.** Tables G2428.2 (1) and G2428.2 (2) shall be used only for chimneys and vents not exposed to the outdoors below the roof line. A Type B vent or listed chimney lining system passing through an unused masonry chimney flue shall not be considered to be exposed to the outdoors. Where vents extend outdoors above the roof more than 5 feet (1524 mm) higher than required by Figure G2427.6.3 and where vents terminate in accordance with Section G2427.6.3, Item 2, the outdoor portion of the vent shall be enclosed as required by this section for vents not considered to be exposed to the outdoors or such venting system shall be engineered. A Type B vent shall not be considered to be exposed to the outdoors where it passes through an unventilated enclosure or chase insulated to a value of not less than R8.

*Mechanical board recommendation: Make no changes to this section.*

## **Adjournment**

A motion was made by Mr. Zimmel and a second was made by Mr. Bertsch to adjourn the meeting at 1:17 p.m. Yeses, 3. Noes, 0.

**\*An audio tape of the meeting will be available at the City of Sioux Falls.**

Mike Denny  
Secretary