

## Minutes

### Mechanical Board of Appeals and Examiners

Building Services Conference Room, May 13, 2015, 12 noon

#### Members Present

Ryan Van Der Bill, Mark Lamb, Mark Weber, Mark Schmidtbauer, and Roger Nikolas

#### Members Absent

#### Guests Present

Matt Peterson, Jill Madsen, Mark Schempp

#### Approval of Minutes of Last Meeting

A motion was made by Mr. Schmidtbauer and a second was made by Mr. Weber to approve the minutes of April 8, 2015. Yeses, 5. Noes, 0. Mr. Van Der Bill requested that the board revisit IMC section 602.1 regarding return air plenums and fire areas At the June meeting.

#### Unfinished Business

1. The Board discussed problems associated with current wording in the IRC and IMC regarding whole house ventilation in the IRC and dwelling unit ventilation in the IMC. Input concerning utility costs was also given by Matt Peterson and Jill Madsen of the Sioux Falls Multi-family Housing Association. Mr. Klarenbeek presented the board with two possible local amendments to the 2015 International Residential and Mechanical Codes. The proposed amendments are as follows:

M1507.3 proposed option 1:

**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 as providing supply ventilation.~~ **The whole house ventilation system shall be a balanced ventilation system that is +/-10 percent of the system's design capacity. Outdoor air shall be delivered to each habitable space by a forced air circulation system, separate duct system, or individual inlets. Outdoor air supplied directly to habitable spaces shall be tempered to a minimum of 40° F. When outdoor air is supplied to a forced air system, the mixed air temperature shall not be less than allowed by the heating equipment manufacturer's installation instructions and the system's blower shall be in operation whenever the whole house ventilation system is in operation. Fans used as part of the whole house ventilation system shall be certified by the equipment manufacturer to be capable of continuous operation at the maximum fan-rated CFM. Surface mounted fans shall have a maximum sound rating of 1.0 sone. Fans used as whole house ventilation fans shall be clearly marked at rough-in inspection as whole house ventilation. Gravity or motorized dampers shall be provided at all exhaust and mechanical intake locations.**

**Exception:** Listed HRV/ERV systems that provide a balanced system at all outdoor temperatures shall be installed in accordance with the manufacturer’s installation instructions. The distance between the exhaust and inlet termination of an individual system shall be allowed to be in accordance with the equipment manufacturer’s instructions.

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

**M1507.3.2.1 Non-HRV/ERV system controls.** Controls for non-HRV/ERV systems shall be located in the mechanical room within 10’ of the air handler for the forced air system. If there is no forced air system, the controls shall be located adjacent to the electric service panel. The controls shall have a label indicating it is for a whole-house ventilation system designed to provide minimum levels of outside fresh air for good health.

M1507.3 proposed option 2:

**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 as providing supply ventilation.~~ Outdoor air supplied directly to habitable spaces shall be tempered to a minimum of 40° F. When outdoor air is supplied to a forced air system, the mixed air temperature shall not be less that allowed by the heating equipment manufacturer’s installation instructions and the system’s blower shall be in operation whenever the whole house ventilation system is in operation. Passive outdoor air shall be allowed to be delivered to the lowest level only if such outdoor air communicates through permanent openings with exhaust located in the uppermost level. A passive outdoor air intake shall be sized in accordance with table 1507.3.3(3), shall have a motorized damper interlocked with the whole house exhaust fan and shall not be required to be tempered. Fans used as part of the whole house ventilation system shall serve no other purpose and shall be certified by the equipment manufacturer to be capable of continuous operation at the maximum fan-rated CFM. Surface mounted fans shall have a maximum sound rating of 1.0 sone. Fans used as whole house ventilation fans shall be clearly marked at rough-in inspection as whole house ventilation. Gravity or motorized dampers shall be provided at all exhaust and mechanical intake locations.

**Exception:** Listed HRV/ERV systems that provide a balanced system at all outdoor temperatures shall be installed in accordance with the manufacturer’s installation instructions. The distance between the exhaust and inlet termination of an individual system shall be allowed to be in accordance with the equipment manufacturer’s instructions.

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**Table M1507.3.3(3) PASSIVE MAKEUP AIR DUCT SIZE**

Passive duct size	Exhaust fan CFM
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4"	35
5"	50
6"	80
7"	110
8"	130
9"	165

Mr. Van Der Bill took notes of changes and adjustments to option 2 and will present the finished draft to the Board at the next meeting. The proposed changes to IRC section M1507 would also be added to IMC chapter 4 for Group R-2, R-3, and R-4 occupancies.

- Mr. Klarenbeek presented a proposal to modify the new ventilation duct length table referenced in IRC section M1506.2.

**M1506.2 Duct length.** The length of exhaust and supply ducts used with ventilating equipment shall not exceed the lengths determined in accordance with Table M1506.2.

**Exception:** Duct length shall not be limited where the duct system complies with the manufacturer’s design criteria or where the flow rate of the installed ventilating equipment is verified by the installer or approved third party using a flow hood, flow grid or other airflow measuring device.

**TABLE M1506.2  
DUCT LENGTH**

DUCT TYPE Fan airflow rating (CFM @ 0.25 inch wc <sup>a</sup> )	FLEX DUCT								SMOOTH-WALL DUCT							
	50	80	100	125	150	200	250	300	50	80	100	125	150	200	250	300
Diameter <sup>b</sup> (inches)	Maximum length <sup>c, d, e</sup> (feet)															
3	X	X	X	X	X	X	X	X	5	X	X	X	X	X	X	X
4	56	4	X	X	X	X	X	X	114	31	10	X	X	X	X	X
5	NL	81	42	16	2	X	X	X	NL	152	91	51	28	4	X	X
6	NL	NL	158	91	55	18	1	X	NL	NL	NL	168	112	53	25	9
7	NL	NL	NL	NL	161	78	40	19	NL	NL	NL	NL	NL	148	88	54
8 and above	NL	NL	NL	NL	NL	189	111	69	NL	NL	NL	NL	NL	NL	198	133

For SI: 1 foot = 304.8 mm.

a. Fan airflow rating shall be in accordance with ANSI/AMCA 210-ANSI/ASHRAE 51.

b. For noncircular ducts, calculate the diameter as four times the cross-sectional area divided by the perimeter.

c. This table assumes that elbows are not used. Fifteen feet of allowable duct length shall be deducted for each elbow installed in the duct run.

d. NL = no limit on duct length of this size.

e. X = not allowed. Any length of duct of this size with assumed turns and fittings will exceed the rated pressure drop.

Modified table proposed by M. Klarenbeek:

**TABLE M1506.2**

**DUCT SIZE**

Fan Airflow Rating (CFM)	0-80	81-125	126-200	201-300	Over 300
Minimum duct diameter (inches)	4	5	6	7	8

***Mechanical Board recommendation: Make no changes to the original table in the IRC. Modify the local amendment to M1601.2 limiting flex duct length to 14' to allow lengths shown in table M1506.2 for ventilation duct only. 14' length limit for flex duct will still apply to supply and return ducts for forced air systems, and will remain in place for all applications including ventilation duct in the IMC.***

### **Adjournment**

A motion was made by Mr. Lamb and a second was made by Mr. Weber to adjourn the meeting at 1:55 p.m. Yeses, 5. Noes, 0.

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

Gary Klarenbeek

Secretary