PROPOSED RULE/CODE CHANGE REQUEST

Michigan Department of Licensing and Regulatory Affairs
Bureau of Construction Codes/Administrative Section

Point of Contact:

Attn: Amanda Johnson Cell: (517) 582-5519
Attn: Katherine Place Cell: (517) 388-3613
Attn: Tony Williamson Cell: (517) 388-3536

Submission Options:

PO Box 30254, Lansing, MI 48909
Fax (517) 241-0130
Email: LARA-BCC-Rules@michigan.gov

ACTION:

DATE:			
NAME:	REPRESENTING:		
ADDRESS:	CITY:	STATE:	ZIP:
PHONE:	FAX:	EMAIL:	

RULE/CODE SECTIONS/TABLES/FIGURES PROPOSED FOR REVISION (Note: If the proposal is for a new section, indicate "new")

PROPOSED LANGUAGE: Show proposed text in accordance with the following format: ~~Strikeout~~/**Bold & underline proposed added text**

REASON: Thoroughly explain the need and reason for the proposed change to include the following:

-Identify the problem.
-Explain the rational for the proposed change.
-Describe the environmental impact.
-Is the proposed change comparable to federal rules or national or regional standards in similarly situated states, based upon geographic location, topography, natural resources, commonalities, or economic similarities? If the proposed change exceeds standards in those states, explain why and specify costs and benefits.
-Identify individuals and groups affected by the proposed change and the impact on these groups.
-Are there any reasonable alternatives to the proposed change? If so, please provide those alternatives.
-What is the fiscal impact for the proposed change? Provide a cost/benefit analysis.
-Estimate the actual statewide compliance costs of the proposed rule.
-What are the primary and direct benefits of the rule?
-Estimate any cost increases or reductions to businesses, individuals, groups, or governmental units as a result of the rule.

As well as any other information appropriate to assist with a clear understanding of the issue. During the rulemaking process, the need and reasoning of all proposed rule changes should be identified. By including a detailed explanation, the general public will gain a better understanding on all aspects of the proposal. Providing an explanation on the need and rationale for the proposal is optional; however, MCL 24.245 requires the department to provide proper justification for each proposal. Without this important information, the department may not be able to document appropriate justification and merit for a proposal. For further information, please refer to the Administrative Procedures Act of 1969.

☐ **Back Up/Graphic Material Included**

Backup material for Phil Forner's proposed change

2021 International Mechanical Code – 603.9

PROPOSED LANGUAGE: Show proposed text in accordance with the following format: ~~Strikeout~~/**Bold** & underline proposed added text.

603.9 Joints, seams and connections.

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. 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, liquid sealants or tapes. Tapes and mastics used to seal fibrous glass ductwork shall be listed and labeled in accordance with UL 181A and shall be marked "181 A-P" for pressure-sensitive tape, "181 A-M" for mastic or "181 A-H" for heat-sensitive tape. Tapes and mastics used to seal metallic and 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 B-M" 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 "181 B-C." Closure systems used to seal all ductwork shall be installed in accordance with the manufacturer's instructions.

Exception:

1. For ducts having a static pressure classification of less than 2 inches of water column (500 Pa), additional closure systems shall not be required for continuously welded joints and seams and locking-type joints and seams. This exception shall not apply to snaplock and button-lock type joints and seams located outside of conditioned spaces.

2. **For ducts installed in a one-family dwelling having a static pressure classification of less than 2 inches of water column (500 Pa) and located entirely within the conditioned space, additional closure systems or sealing of joints, seams, or connections, shall not be required.**

Mechanical Resolution

September 7, 2018

Allendale Heating Company, Inc.
11672 60th Avenue – P.O. Box 296
Allendale, Michigan 49401

RE: Duct Sealing

To whom it may concern,

Mr. Irvin Polk issued a 2015 Michigan Residential Code Errors and Conflicts letter to clarify code issues in the 2015 code. In this letter, it addresses the conflict in the code between N1103.2.3 and M1601.1.1 regarding the use of building framing cavities for plenums. Mr. Polk utilized and applied the definition of "cost effective" in MCL 125.1502 a(p), and MCL 125.1504(3)(f) and (g) to conclude that using building framing cavities for plenums was indeed allowed based on 2015 Michigan Residential Code R102.1. In reviewing and researching this letter, Mr. Polk and I draw the same conclusion in regards to plenums and "cost effective."

Using this same logic, duct sealing ductwork located in a conditioned space would also not meet the definition of "cost effective" under MCL 125.1502 a(p), and MCL 125.1504(3)(f) and (g) for the very same reasons that the 2015 Michigan Residential Code Error and Conflict determined using building framing cavities for plenums does not meet the definition of "cost effective". Both of these topics are essentially used in the same conversation when discussing building energy efficiency of the HVAC duct system and its' impact on building performance.

Building energy efficiency losses occur when conditioned air is transferred to the environment outside of the building thermal envelope. This occurs via conduction, convection, and radiation through the building structure materials and assemblies. The ways to reduce these losses are by using higher R value building materials, better building fenestration, and decreasing the amount of uncontrolled air leakage into (infiltration) or out of (exfiltration) a building through cracks and seams.

When ductwork is located in a conditioned space, any duct leakage from the unsealed ductwork enters an already conditioned space within the building thermal envelope. Therefore, no energy loss occurs directly related to the sealed and/or unsealed ductwork from a conditioned space to an unconditioned space. Any energy loss would occur from the uncontrolled air leakage through the building envelope and not by an unsealed duct in a conditioned space. There are discussions about how an unsealed duct in a floor/ceiling assembly will positively pressurize the cavity and leak through the exterior cracks. But whether the air pressurizes the cavity or a bedroom (register location), the positive air will find its' way to the crack. Therefore, the real solution to saving energy costs is to seal the crack not necessarily sealing the duct.

1321 17 Mile Road • Cedar Springs, MI 49319 • Phone 616.439.3311 • Fax 616.439.3315

Sealing ductwork in an **Un**conditioned space is essential as any duct leakage is lost directly outside the thermal envelope. This is the very reason why code requires duct pressurization testing for ductwork located outside the building thermal envelope (unconditioned space) but does not require the duct pressurization testing for ductwork located inside (conditioned space) the thermal envelope. Blower door testing of the building thermal envelope is required by code no matter where the ductwork is located. This further implies that the code is more concerned with building infiltration, in regards to building efficiency, than to ductwork losses to a conditioned space.

Sealing ductwork in a conditioned space provides better comfort for the homeowner, not energy efficiency nor economic benefits. Duct sealing for comfort helps assure that the necessary airflow is provided to a specific space inside the building thermal envelope. However, when discussing building energy efficiency and economic benefits, a homeowner is better to spend money on reducing building leaks, better insulation, better windows, better doors, as these are the areas where building energy efficiency is lost at the building envelope. Not duct sealing ductwork in a conditioned space.

As stated in the beginning, duct sealing ductwork located in a conditioned space does not meet the definition of "cost effective" under MCL 125.1502 a(p), and MCL 125.1504(3)(f) and (g) for the very same reasons that the 2015 Michigan Residential Code Error and Conflict determined using building framing cavities for plenums does not meet the definition of "cost effective".

Please feel free to call with any questions that you may have.

Respectfully,

Mechanical Resolution

Aaron J. Sedine, P.E.
Mechanical Engineer
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2015 Michigan Residential Code Errors and Conflicts

The following are errors and conflicts that have been identified at this point. The Bureau of Construction Codes has reviewed these issues. The Director of Department of Licensing and Regulatory Affairs has delegated the authority to make, and has approved, the following interpretations which are advisory.

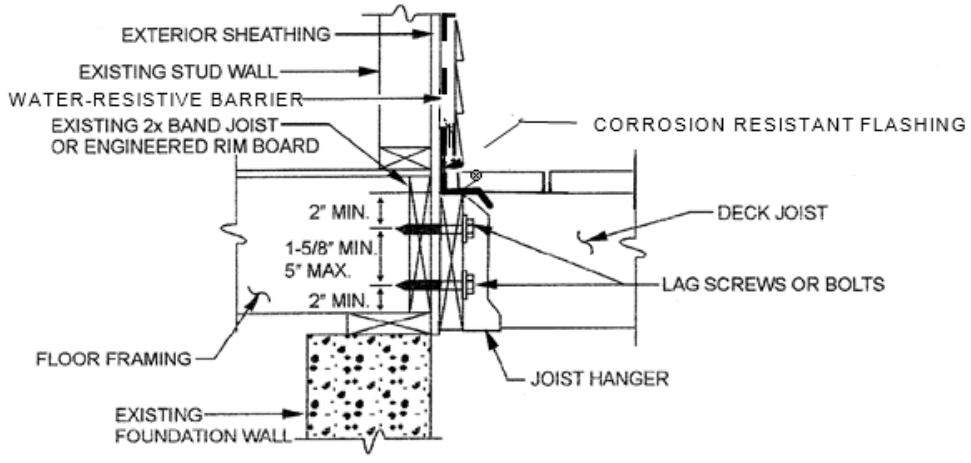
Stair Geometry

In the Michigan Residential Code Section R311.7.4.1 Riser height and Section R311.7.4.2 Tread depth are the correct requirements for stair geometry and they are the promulgated state rules consistent with MCL 125.1513d. These provisions shall replace the provisions in Sections R311.7.5.1 and R311.7.5.2 respectively; however the exceptions in R311.7.5.1 are still valid.

Vapor Retarders

There are 2 sections on vapor retarders in the 2015 Michigan Residential Code, R601.3 and R702.7. It has been determined by the department that section R601.3 is the section that is to be enforced by all enforcing agencies.

Figure R507.2.1(2) was obviously corrupted during the publication of the rules and was not noticed until it was published by the International Code Council. The figure that must be used by all enforcing agencies is now provided.



For SI: 1 inch = 25.4 mm.

FIGURE R507.2.1(2)
PLACEMENT OF LAG SCREWS AND BOLTS IN BAND JOISTS

Carbon Monoxide Detector Location

MRC section R315 does not provide the location of the carbon monoxide detectors. The location of these devices is found in the 1972 PA 230 section 4f, MCL 125.1504f: "A carbon monoxide device shall be located in the vicinity of the bedrooms, which may include 1 device capable of detecting carbon monoxide near all adjacent bedrooms; in areas within the dwelling adjacent to an attached garage; and in areas adjacent to any fuel-burning appliances." They are to be installed in accordance with manufacturer's recommendations and should not be placed within fifteen feet of fuel-burning heating or cooking appliances such as gas stoves, furnaces or fireplaces or in or near very humid areas such as bathrooms.

Duct Construction

The Michigan Residential Code (MRC) Sections N1103.2.3 and M1601.1.1 conflict regarding the use of building framing cavities for plenums. To resolve the conflict we look at the definition of "cost effective" in MCL 125.1502a(p), and MCL 125.1504(3)(f) and (g).

MCL 125.1504a(p) states:
(p) "*Cost-effective", in reference to section 4(3)(f) and (g), means, using the existing energy efficiency standards and requirements as the base of comparison, the economic benefits of the proposed energy efficiency standards and requirements will exceed the economic costs of the requirements of the proposed rules based upon an incremental multiyear analysis that meets all of the following requirements:*

(i) Considers the perspective of a typical first-time home buyer.

(ii) Considers benefits and costs over a 7-year time period.

(iii) Does not assume fuel price increases in excess of the assumed general rate of inflation.

(iv) Ensures that the buyer of a home who would qualify to purchase the home before the addition of the energy efficient standards will still qualify to purchase the same home after the additional cost of the energy-saving construction features."

MCL 125.1504(3)(f) and (g) state:
"(*3) The code shall be designed to effectuate the general purposes of this act and the following objectives and standards:*
(f) To provide standards and requirements for cost-effective energy efficiency that will be effective April 1, 1997.
(g) Upon periodic review, to continue to seek ever-improving, cost-effective energy efficiencies."

The conflict is resolved in favor of M1601.1.1 as MRC Section M1601 is the definitive section on duct construction. This decision is based on MRC Section R102.1 (Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall be applicable.) and that Section N1103.2.3 has not been shown to meet the definition of cost effective.

Combustible Insulation

Section R302.13 is the language that is promulgated by the department and is the language that must be used. Section R302.14 shall treated as if it was deleted which was the intent.

Roof Loading Data Sheet

Figure 802.10.1 under Exposure Factor C the designation should be B C and D to be consistent with the ASCE 7-10 standard. The text for the exposures is correct but when A was deleted to be consistent with standard an auto correct function relabeled the remaining exposures A, B and C. This was not caught before publication. If the text is used for providing the requested information and A, B and C designation replaced with B. C and D respectively the information will be correct.