

# NORTHERN NEVADA 2009 CODE AMENDMENT JUSTIFICATION FORM

## State proposed amendment

Include the entire text of the code section to be amended. ~~Strike out~~ portions amended or deleted. Underline added text.

### SECTION 202 GENERAL DEFINITIONS

**VAPOR RETARDER CLASS.** A measure of a material or assembly's ability to limit the amount of moisture that passes through that material or assembly. Vapor retarder class shall be defined using the desiccant method of ASTM E 96 as follows:

**Class I:** 0.1 perm or less.

**Class II:** 0.1 < perm \_ 1.0 perm.

**Class III:** 1.0 < perm \_ 10 perm.

## Supporting statement

Indicate if this amendment is:

- Omission                      \_\_\_ Local environment condition  
 Compatibility                 \_\_\_ Area standard practice

Section 402.2.9 in the 09 IECC references a Class I vapor retarder as defined by the IBC. This is a new definition that does not exist in the 06 IBC. Adding the definition to the 09 IECC and eliminating the reference to the IBC in section 402.2.9 of the IECC allows the 06 IBC to remain unchanged. See the companion amendment for IECC section 402.2.9.

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## State proposed amendment

Include the entire text of the code section to be amended. ~~Strike-out~~ portions amended or deleted. Underline added text.

**503.2.7 Duct and plenum insulation and sealing.** All supply and return air ducts and plenums shall be insulated with a minimum of R-5 insulation when located in unconditioned spaces and a minimum of R-8 insulation when located outside the building. When located within a building envelope assembly, the duct or plenum shall be separated from the building exterior or unconditioned or exempt spaces by a minimum of R-8 insulation.

### Exceptions:

1. When located within equipment.
2. When the design temperature difference between the interior and exterior of the duct or plenum does not exceed 15°F (8°C).

All ducts, air handlers and filter boxes shall be sealed. ~~Joints and seams shall comply with Section 603.9 of the International Mechanical Code.~~ 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, liquid sealants or tapes. Closure systems used to seal ductwork *listed* and *labeled* in accordance with UL 181A shall be marked "181A-P" for pressure-sensitive tape, "181 A-M" for mastic or "181 A-H" for heat-sensitive tape. Closure systems used to seal flexible air ducts and flexible air connectors shall comply with UL 181B and shall be marked "181B-FX" for pressure-sensitive tape or "181B-M" for mastic. Duct connection 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." Closure systems used to seal metal ductwork shall be

installed in accordance with the manufacturer's installation instructions. Unlisted duct tape is not permitted as a sealant on any metal ducts.

**Exception:** Continuously welded and locking-type longitudinal joints and seams in ducts operating at static pressures less than 2 inches of water column (500 Pa) pressure classification shall not require additional closure systems.

### **Supporting statement**

Indicate if this amendment is:

Omission

Local environment condition

Compatibility

Area standard practice

Duct sealing has been removed in the 09 IECC commercial requirements and has been referenced to the 09 IMC. Adding the section from the 09 IMC to the 09 IECC details the requirements and makes them available to installers without amending the existing 06 UMC.

### **Documentation**

Provide statistics, studies or supporting documents.

See 06 IRC M1601.3.1 vs. 09 IRC M1601.4.1.

**Cost analysis**

State if amendment will increase or decrease building costs. Industry member should supply approximate cost (increase or decrease) of amendment.

No increase.

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### **State proposed amendment**

Include the entire text of the code section to be amended. ~~Strike out~~ portions amended or deleted. Underline added text.

**503.2.5.1 Demand controlled ventilation.** Demand control ventilation (DCV) is required for spaces larger than 500 ft<sup>2</sup> (50m<sup>2</sup>) and with an average occupant load of 40 people per 1000 ft<sup>2</sup> (93 m<sup>2</sup>) of floor area (as established in ~~Table 403.3~~ of the *International Mechanical Code*) and served by systems with one or more of the following:

1. An air-side economizer;
2. Automatic modulating control of the outdoor air damper; or
3. A design outdoor airflow greater than 3,000 cfm (1400 L/s).

#### **Exceptions:**

1. Systems with energy recovery complying with Section 503.2.6.
2. Multiple-zone systems without direct digital control of individual zones communicating with a central control panel.
3. System with a design outdoor airflow less than 1,200 cfm (600 L/s).
4. Spaces where the supply airflow rate minus any makeup or outgoing transfer air requirement is less than 1,200 cfm (600 L/s).

## Supporting statement

Indicate if this amendment is:

Omission

Local environment condition

Compatibility

Area standard practice

Removing the specific table reference in the 09 IMC allows the use of the ventilation table in the 06 UMC (by Mechanical Code reference in the Northern Nevada Amendments) which has identical requirements.

## Documentation

Provide statistics, studies or supporting documents.

See 09 IMC Table 403.3 and 06 UMC Table 4-1.

## Cost analysis

State if amendment will increase or decrease building costs. Industry member should supply approximate cost (increase or decrease) of amendment.

No increase.

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**State proposed amendment**

Include the entire text of the code section to be amended. ~~Strike out~~ portions amended or deleted. Underline added text.

**403.2.2 Sealing (Mandatory).** All ducts, air handlers, filter boxes and building cavities used as ducts shall be sealed. Joints and seams shall comply with Section 403.2.2.1 ~~M1601.4.1~~ of the International Residential Code.

Duct tightness shall be verified by either of the following:

1. Postconstruction test: Leakage to outdoors shall be less than or equal to 8 cfm (226.5 L/min) per 100 ft<sup>2</sup> (9.29 m<sup>2</sup>) of *conditioned floor area* or a total leakage less than or equal to 12 cfm (12 L/min) per 100 ft<sup>2</sup> (9.29 m<sup>2</sup>) of *conditioned floor area* when tested at a pressure differential of 0.1 inches w.g. (25 Pa) across the entire system, including the manufacturer's air handler enclosure. All register boots shall be taped or otherwise sealed during the test.

2. Rough-in test: Total leakage shall be less than or equal to 6 cfm (169.9 L/min) per 100 ft<sup>2</sup> (9.29 m<sup>2</sup>) of *conditioned floor area* when tested at a pressure differential of 0.1 inches w.g. (25 Pa) across the roughed in system, including the manufacturer's air handler enclosure. All register boots shall be taped or otherwise sealed during the test. If the air handler is not installed at the time of the test, total leakage shall be less than or equal to 4 cfm (113.3 L/min) per 100 ft<sup>2</sup> (9.29 m<sup>2</sup>) of *conditioned floor area*.

**Exceptions:** Duct tightness test is not required if the air handler and all ducts are located within *conditioned space*.

**Supporting statement**

Indicate if this amendment is:

Omission

Local environment condition

Compatibility

Area standard practice

Duct sealing in the 06 IRC does not contain all of the language that has been incorporated into the 09 IRC. Adding the modified section from the 09 IRC to the 09 IECC details the new requirements, which are mostly newly added exceptions, and makes them available to installers without amending the existing 06 IRC.

See companion amendment 403.2.2.1.

### **Documentation**

Provide statistics, studies or supporting documents.

See 06 IRC M1601.3.1 vs. 09 IRC M1601.4.1.

### **Cost analysis**

State if amendment will increase or decrease building costs. Industry member should supply approximate cost (increase or decrease) of amendment.

No increase.



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## State proposed amendment

Include the entire text of the code section to be amended. ~~Strike out~~ portions amended or deleted. Underline added text.

**403.2.2.1 Joints and seams.** Joints of duct systems shall be made substantially airtight by means of tapes, mastics, liquid sealants, gasketing or other approved closure systems. Closure systems used with rigid fibrous glass ducts shall comply with UL181A and shall be marked 181A-P for pressure-sensitive tape, 181A-M for mastic or 181A-H for heat-sensitive tape. Closure systems used with flexible air ducts and flexible air connectors shall comply with UL 181B and shall be marked 181B-FX for pressure-sensitive tape or 181B-M for mastic. Duct connections to flanges of air distribution system equipment or sheet metal fittings shall be 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 metal ducts shall have a contact lap of at least 1 1/2 inches (38 mm) and shall be mechanically fastened by means of at least 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 installation instructions. Joints between plastic ducts and plastic fittings shall be made in accordance with the manufacturer's installation instructions.

### **Exceptions:**

1. Spray polyurethane foam shall be permitted to be applied without additional joint seals.
2. Where a duct connection is made that is partially inaccessible, three screws or rivets shall be equally spaced on the exposed portion of the joint so as to prevent a hinge effect.
3. Continuously welded and locking type longitudinal joints and seams in ducts operating at static pressures less than 2 inches of water column (500 Pa) pressure classification shall not require additional closure systems.

## Supporting statement

Indicate if this amendment is:

Omission

Local environment condition

Compatibility

Area standard practice

Duct sealing in the 06 IRC does not contain all of the language that has been incorporated into the 09 IRC. Adding the modified section from the 09 IRC to the 09 IECC details the new requirements, which are mostly newly added exceptions, and makes them available to installers without amending the existing 06 IRC.

See companion amendment 403.2.2.

## Documentation

Provide statistics, studies or supporting documents.

See 06 IRC M1601.3.1 vs. 09 IRC M1601.4.1.

## Cost analysis

State if amendment will increase or decrease building costs. Industry member should supply approximate cost (increase or decrease) of amendment.

No increase.

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Include the entire text of the code section to be amended. ~~Strike out~~ portions amended or deleted. Underline added text.

**402.2.9 Crawl space walls.** As an alternative to insulating floors over crawl spaces, crawl space walls shall be permitted to be insulated when the crawl space is not vented to the outside. Crawl space wall insulation shall be permanently fastened to the wall and extend downward from the floor to the finished grade level and then vertically and/or horizontally for at least an additional 24 inches (610 mm). Exposed earth in unvented crawl space foundations shall be covered with a continuous Class I vapor retarder ~~in accordance with the International Building Code~~. All joints of the vapor retarder shall overlap by 6 inches (153 mm) and be sealed or taped. The edges of the vapor retarder shall extend at least 6 inches (153 mm) up the stem wall and shall be attached to the stem wall.

**Supporting statement**

Indicate if this amendment is:

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> Omission      | <input type="checkbox"/> Local environment condition |
| <input checked="" type="checkbox"/> Compatibility | <input type="checkbox"/> Area standard practice      |

The 2006 IBC does not have a definition of a Class I vapor retarder. The companion amendment, section 202, adds that definition to the 09 IECC.

**Documentation**

Provide statistics, studies or supporting documents.

See chapter 2 (definitions) of the 06 IBC.

**Cost analysis**

State if amendment will increase or decrease building costs. Industry member should supply approximate cost (increase or decrease) of amendment.

No increase.

**Documentation**

Provide statistics, studies or supporting documents.

See chapter 2 (definitions) of the 06 IBC.

**Cost analysis**

State if amendment will increase or decrease building costs. Industry member should supply approximate cost (increase or decrease) of amendment.

No increase.