

**2018 NORTHERN NEVADA AMENDMENTS TO THE**  
**2018 International Building Code**  
**2018 International Residential Code**  
**2018 International Existing Building Code**  
**2018 International Energy Conservation Code**  
**2018 International Fuel Gas Code**  
**2018 International Mechanical Code**  
**2018 Uniform Mechanical Code**  
**2018 Uniform Plumbing Code**  
**2017 National Electric Code**

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**Participating organizations in the production of this document are:**

|  |                                    |   |
|--|------------------------------------|---|
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## Preface

This document comprises proposed amendments to the following codes as published by the International Code Council, Inc, amended by the Participating Agencies listed above, with the support of the Northern Nevada Chapter of the International Code Council:

2018 Edition of the International Building Code

2018 Edition of the International Existing Building Code

2018 Edition of the International Energy Conservation Code

2018 Edition of the International Fuel Gas Code

2018 Edition of the International Mechanical Code

2018 Edition of the International Residential Code

2017 Edition of the National Electrical Code

2018 Edition of the Uniform Mechanical Code

2018 Edition of the Uniform Plumbing Code

This document is hereafter referenced as the 2018 Northern Nevada Code Amendment and is prepared to be adopted by reference by the local Authority Having Jurisdiction. These provisions are not considered to be or enacted as the code unless the provisions are adopted and codified by the local Authority Having Jurisdiction.

The purpose of the document is to provide a consist area-wide application to the enforcement of the fire and life safety code sections noted in the International Fire Code, while still acknowledging necessary modifications to the nationally recognized fire and life safety document based upon the local needs of the community.

Notes:

- Deleted language in the base code has bee ~~stricken through~~.
- Added language to the code section has been underlined.
- The entire section amended has been shown for context.

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## Amendments to the 2018 Edition of the International Building Code

### Section 202 Definitions

*Amend Section 202 to read as follows:*

**HIGH-RISE BUILDING.** A building with an occupied floor located more than ~~75~~ 55 feet (~~22 860~~ 16 764 mm) above the lowest level of fire department vehicle access.

**International Electrical Code.** The Electrical Code, whether the National Electrical Code or the International Electrical Code, as amended and adopted by the local jurisdiction.

**International Mechanical Code.** The Mechanical Code, whether the Uniform Mechanical Code or the International Mechanical Code as amended and adopted by the local jurisdiction.

**International Plumbing Code.** The Plumbing Code, whether the Uniform Plumbing Code or the International Plumbing Code, as amended and adopted by the local jurisdiction.

**International Fuel Gas Code.** The Fuel Gas Code, whether NFPA 54 or the International Fuel Gas Code, as amended and adopted by the local jurisdiction.

**Surcharge.** A vertical load imposed on the retained soil that may impose a lateral force in addition to the lateral earth pressure of the retained soil. Examples include:

- Sloped retained soil.
- Structure footings supported by the retained soil.
- Adjacent vehicle loads supported by the retained soil.

### Section 305.2 Group E, day care facilities

*Amend Section 305.2 to read as follows:*

**305.2 Group E, day care facilities.** This group includes buildings and structures, or portions thereof occupied by more than ~~five~~ six children older than 2 ½ years of age who receive educational, supervision or *personal care services* for fewer than 24 hours per day.

**305.2.1 Within Places of religious worship.** Rooms and spaces within *places of religious worship* providing such day care during religious functions shall be classified as part of the primary occupancy.

**305.2.2 Five ~~Six~~ or fewer children.** A facility having ~~five~~ six or fewer children receiving such day care shall be classified as part of the primary occupancy.

**305.2.3 Five ~~Six~~ or fewer children in a dwelling unit.** A facility such as the above within a *dwelling unit* and having ~~five~~ six or fewer children receiving such day care shall be classified as a Group R-3 occupancy or shall comply with the *International Residential Code*

## Section 308.2 Institutional Group I-1

*Amend Section 308.2 to read as follows:*

**308.2 Institutional Group I-1.** Institutional Group I-1 occupancy shall include buildings, structures or portions thereof for more than 16 persons, excluding staff, who reside on a 24-hour basis in a supervised environment and receive custodial care. Buildings of Group I-1 shall be classified as one of the occupancy conditions specified in Section 308.2.1 or 308.2.2. This group shall include, but not be limited to, the following.

Alcohol and drug centers

Assisted living facilities

Congregate care facilities

*Group homes*

Halfway houses

Residential board and care facilities

Social rehabilitation facilities

**308.2.1 Condition 1.** This occupancy condition shall include buildings in which all persons receiving custodial care who, without any assistance, are capable of responding to an emergency situation to complete building evacuation.

**308.2.2 Condition 2.** This occupancy condition shall include buildings in which there are any persons receiving custodial care who require limited verbal or physical assistance while responding to an emergency situation to complete building evacuation.

**308.2.3 Six to 16 persons receiving custodial care.** A facility housing not fewer than six and not more than 16 persons receiving custodial care shall be classified as Group R-4.

**308.2.4 Five or fewer persons receiving custodial care.** A facility with five or fewer persons receiving custodial care shall be classified as Group R-3 or shall comply with the *International Residential Code* provided an *automatic sprinkler system* is installed in accordance with Section 903.3.1.3 or Section P2904 of the *International Residential Code*.

**308.2.5 Board of Health.** All portions of a care facility which houses patients or residents which is classified by the State Board of Health as 'Category 2,' and which has an occupant load of more than 10 residents, is classified as an 'I-1' occupancy classification.

## Section 308.5 Institutional Group I-4, day care facilities

*Amend Section 308.5 to read as follows:*

**308.5 Institutional Group I-4, day care facilities.** Institutional Group I-4 occupancy shall include buildings and structures occupied by more than five six persons of any age who receive *custodial care* for fewer than 24 hours per day by persons other than parents or guardians, relatives by blood, marriage or adoption, and in a place other than the home of the person cared for. This group shall include, but not be limited to, the following:

Adult day care

Child day care

**308.5.1 Classification as Group E.** A child day care facility that provides care for more than five six but not more than 100 children 2 ½ years or less of age, where the rooms in which the children are cared for are located on a *level of exit discharge* serving such rooms and each of these child care rooms has an *exit* door directly to the exterior, shall be classified as Group E.

**308.5.2 Within a place of religious worship.** Rooms and spaces within *places of religious worship* providing such care during religious functions shall be classified as part of the primary occupancy.

**308.5.3 Five Six or fewer persons receiving care.** A facility having five six or fewer persons receiving *custodial care* shall be classified as part of the primary occupancy.

**308.5.4 Five Six or fewer persons receiving care in a dwelling unit.** A facility such as the above within a *dwelling unit* and having five six or fewer persons receiving *custodial care* shall be classified as a Group R-3 occupancy or shall comply with the *International Residential Code*.

## Section 310.2 Residential Group R-1

*Amend Section 310.2 to read as follows:*

**310.2 Residential Group R-1.** Residential Group R-1 occupancies containing *sleeping units* where the occupants are primarily *transient* in nature, including:

*Boarding houses (transient)* with more than 10 occupants

Brothels

*Congregate living facilities (transient)* with more than 10 occupants

Hotels (*transient*)

Motels (*transient*)

## Group 311.2 Moderate-hazard storage, Group S-1

*Amend Section 311.2 to read as follows:*

**311.2 Moderate-hazard storage, Group S-1.** Storage Group S-1 occupancies are buildings occupied for storage uses that are not classified as Group S-2, including, but not limited to, storage of the following:

Aerosol products, Levels 2 and 3

Aircraft hangar (storage and repair)

Bags: cloth, burlap and paper

Bamboos and rattan

Baskets

Belting: canvas and leather

Books and paper in rolls or packs

Boots and shoes

Buttons, including cloth covered, pearl or bone

Cardboard and cardboard boxes

Clothing, woolen wearing apparel

Cordage

Dry boat storage (indoor)

Furniture

Furs

Glues, mucilage, pastes and size

Grains

Horns and combs, other than celluloid

Leather

Linoleum

Lumber

Motor vehicle repair garages complying with the maximum allowable quantities of hazardous materials listed in Table 307.1(1) (see Section 406.8)

Photo engravings

Resilient flooring

Self-service storage facility (mini-storage)

Silks

Soaps

Sugar

Tires, bulk storage of  
Tobacco, cigars, cigarettes and snuff  
Upholstery and mattresses  
Wax candles

### **Section 403.5.4 Smokeproof enclosures**

*Amend Section 403.5.4 to read as follows:*

**403.5.4 Smokeproof enclosures.** Every required *interior exit stairway* serving floors more than ~~75~~ 55 feet (~~22-860~~ 16 764 mm) above the lowest level of fire department vehicle access shall be a *smokeproof enclosure* in accordance with Sections 909.20 and 1023.11

### **Section 906 Portable Fire Extinguishers**

*Amend to Section 906 to read as follows:*

Refer to the 2018 Editions of the International Fire Code and the 2018 Northern Nevada Fire Amendments.

### **Section 910.2 Where required**

*Amend Section 910.2 to read as follows:*

**910.2 Where required.** Smoke and heat vents or a mechanical smoke removal system shall be installed as required by Sections 910.2.1 and 910.2.2.

#### **Exceptions:**

1. Frozen food warehouses used solely for storage of Class I and II commodities where protected by an *approved automatic sprinkler system*.
2. ~~Smoke and heat removal shall not be required in areas of buildings equipped with early suppression fast-response (ESFR) sprinklers.~~ Automatic smoke and heat vents are not required within areas of buildings equipped with early suppression fast-response (ESFR) sprinklers unless the area of Group F-1 or S-1 occupancy protected with the ESFR sprinklers has an exit access travel distance of more than 250 feet (76 200mm).
3. Smoke and heat removal shall not be required in areas of buildings equipped with control mode special application sprinklers with a response time index of 50 (m x S)<sup>1/2</sup> or less that are listed to control a fire in stored commodities with 12 or fewer sprinklers.

### **1010.1.10 Panic and fire exit hardware**

*Amend Section 1010.1.10 to read:*

**1010.1.10 Panic and fire exit hardware.** Swinging doors serving a Group H occupancy and swinging doors serving rooms or spaces with an occupant load of 50 or more in a Group A or E occupancy shall not be provided with a latch or lock other than panic hardware or fire exit hardware.

**Exceptions:**

1. A main exit of a Group A occupancy shall be permitted to have locking devices in accordance with Section 1010.1.9.4, Item 2.
2. Doors provided with panic hardware or fire exit hardware and serving a Group A or E occupancy shall be permitted to be electrically locked in accordance with Section 1010.1.9.9 or 1010.1.9.10.

Electrical rooms with equipment rated ~~1,200~~ 800 amperes or more and over 6 feet (1829 mm) wide, and that contain overcurrent devices, switching devices or control devices with exit or exit access doors, shall be equipped with panic hardware or fire exit hardware. The doors shall swing in the direction of egress travel.

### **Section 1209.4 Baby Changing Tables**

*Amend Section 1209 by adding Section 1209.4 as follows:*

**1209.4 Baby Changing Tables.** Diaper changing tables are required to be installed in both male, female and other restrooms, in permanent buildings that contain public restrooms as defined in chapter 29 of the 2018 IBC. Changing tables are required when any of the following occur: new buildings, tenant improvements, new restrooms, alteration of existing restrooms, new additions, change of uses that require updating existing restrooms with additions to those facilities. Shall meet the guidelines of 603.5, 309 and 902 of ANSI/ICC A117.1-2009.

**Exceptions:** A building or facility that does not have public restrooms or has been issued a permit or license which restricts the admission of children on the basis of age, shall be exempt from this requirement.

### **Section 1503.6 Snow shedding and impact areas**

*Amend Section 1503 by adding Section 1503.6 as follows:*

**1503.6 Snow shedding and impact areas.** Snow shedding onto adjacent properties is prohibited. Snow shed impact areas shall be designed to contain shedding snow from structures and prevent snow from encroaching onto adjacent properties when ground snow loads exceed 154 p<sub>g</sub> when located in Washoe County or Carson City, or exceeds 69 p<sub>g</sub> when located in Storey County. The roof and eaves of all structures shall be designed so that snow shed impact areas will not occur in or on required exits, parking areas, driveways, LPG storage tanks, walkways, and public areas.



**Exception:** The snow shed impact area may be reduced provided an engineered snow restraint system, designed in accordance with this code, is incorporated into the roof design and the roof drainage system.

## **Section 1608.2 Ground snow loads**

*Amend Section 1608.2 to read as follows:*

1608.2 GROUND SNOW LOADS. THE GROUND SNOW LOADS TO BE USED IN DETERMINING THE DESIGN SNOW LOADS FOR ROOFS SHALL BE DETERMINED IN ACCORDANCE WITH TABLE 1608.2.1 ASCE 7 OR FIGURE 1608.2 FOR THE CONTIGUOUS UNITED STATES AND TABLE 1608.2 FOR ALASKA. SITE-SPECIFIC CASE STUDIES SHALL BE MADE IN AREAS DESIGNATED "CS" IN FIGURE 1608.2. GROUND SNOW LOADS FOR SITES AT ELEVATIONS ABOVE THE LIMITS INDICATED IN FIGURE 1608.2 AND FOR ALL SITES WITHIN THE CS AREAS SHALL BE APPROVED. GROUND SNOW LOAD DETERMINATION FOR SUCH SITES SHALL BE BASED ON AN EXTREME VALUE STATISTICAL ANALYSIS OF DATA AVAILABLE IN THE VICINITY OF THE SITE USING A VALUE WITH A 2-PERCENT ANNUAL PROBABILITY OF BEING EXCEEDED (50-YEAR MEAN RECURRENCE INTERVAL). SNOW LOADS ARE ZERO FOR HAWAII, EXCEPT IN MOUNTAINOUS REGIONS AS APPROVED BY THE BUILDING OFFICIAL. THE SNOW LOADS FOR ELEVATIONS ABOVE 4500 FEET SHALL BE TAKEN FROM TABLE 1608.2.1.

**Table 1608.2.1 GROUND SNOW LOADS  $P_g$ , FOR NORTHERN NEVADA LOCATIONS**

Add Table 1608.2.1 to read as follows:

**TABLE 1608.2.1  
GROUND SNOW LOADS  $P_g$ , FOR NORTHERN NEVADA LOCATIONS**

| <b>Elevation<br/>In Feet</b> | <b>West of U.S. Hwy<br/>395 Sierra Slope<br/>Carson,<br/>Douglas,<br/>Washoe Counties,<br/>Reno<br/><math>P_g</math> (Pounds Per<br/>Square Foot)</b> | <b>East of U.S.<br/>Hwy 395<br/>Carson,<br/>Douglas,<br/>Washoe<br/>Counties, Reno<br/>&amp; Sparks<br/><math>P_g</math> (Pounds Per<br/>Square Foot)</b> | <b>Lyon County<br/><br/><math>P_g</math> (Pounds Per<br/>Square Foot)</b> | <b>Storey County<br/><br/><math>P_s</math> (Pounds Per<br/>Square Foot)</b> | <b>All Nevada<br/>Counties, Lake<br/>Tahoe Basin<br/><br/><math>P_g</math> (Pounds Per<br/>Square Foot)</b> |
|------------------------------|---|---|---|---|---|
| 4500                         | 30  | 30  | 10  | 10  |   |
| 5000                         | 30  | 30  | 30  | 10  |   |
| 5100                         | 41  | 31  | 31  | 10  |   |
| 5200                         | 52  | 33  | 31  | 10  |   |
| 5300                         | 64  | 34  | 34  | 10  |   |
| 5400                         | 75  | 35  | 35  | 10  |   |
| 5500                         | 86  | 37  | 37  | 50  |   |
| 6000                         | 142   | 43  | 43  | 70  | 220   |
| 6500                         | 171   | 43  | 43  | 90  | 235   |
| 7000                         | 200   | 57  | 57  | 90  | 250   |
| 7500                         | 215   | 57  | 57  | 90  | 265   |
| 8000                         | 229   | 86  | 86  | 90  | 280   |
| 8500                         | 243   | 86  | 86  | 90  | 295   |
| 9000                         | 271   | 114   | 114   | 114   | 330   |
| 9500                         | 300   | 142   | 142   | 120   | 390   |
| 10000                        | 357   | 142   | 142   | 142   | 420   |

**Section 1609.1.1 Determination of wind loads**

*Amend Section 1609.1.1 to read as follows:*

**1609.1.1 Determination of wind loads.** Wind loads on every building or structure shall be determined in accordance with Chapter 26 to 30 of ASCE 7. The type of opening protection required, the basic design wind speed,  $V$ , and the exposure category for a site is permitted to be determined in accordance with section 1609 or ASCE 7. The wind speed in the City of Reno, the City of Sparks, Douglas, Pershing and Washoe Counties shall be per the Special Wind Region Table 1609.3.2 Wind shall be assumed to come from any horizontal direction and wind pressures shall be assumed to act normal to the surface considered.

**Exceptions:**

1. Subject to limitations of section 1609.1.1.1, the provisions of ICC 600 shall be permitted for applicable Group R-2 and R-3 buildings.
2. Subject to the limitations of Section 1609.1.1.1, residential structures using the provisions of AWC WFCM.
3. Subject to the limitations of Section 1609.1.1.1 residential structures using the provisions of AISI S230.
4. Designs using NAAMM FP 1001.
5. Designs using TIA-222 for antenna-supporting structures and antennas, provided that the horizontal extent of Topographic Category 2 escarpments in Section 2.6.6.2 of TIA-222 shall be 16 times the height of the escarpment.
6. Wind tunnel tests in accordance with ASCE 49 and Sections 31.4 and 31.5 of ASCE 7.

The wind speeds in Figures 1609.3(1) through 1609.3(8) are basic design wind speeds,  $V$ , and shall be converted in accordance with Section 1609.3.1 to allowable stress design wind speeds,  $V_{asd}$ , when the provisions of the standards referenced in Exceptions 4 and 5 are used. The wind speed in the City of Reno, the City of Sparks, Douglas, Pershing and Washoe Counties shall be per the Special Wind Region Table 1609.3.2

**Section 1609.1.1.1 Applicability**

*Amend Section 1609.1.1.1 to read as follows:*

**1609.1.1.1 Applicability.** The provisions of ICC 600 are applicable only to buildings located within Exposure B or C as defined in section 1609.4. The wind speed in the Carson City, City of Reno, the City of Sparks, Douglas, Pershing and Washoe Counties shall be per the Special Wind Region Table 1609.3.2. The provisions of ICC 600, AWC WFCM and AISI S230 shall not apply to buildings sited on the upper half of an isolated hill, ridge, or escarpment meeting all of the following conditions:

1. The hill, ridge or escarpment is 60 feet (18288 mm) or higher if located in Exposure B or 30 feet (9144 mm) or higher if located in Exposure C.
2. The maximum average slope of the hill exceeds 10 percent.
3. The hill, ridge or escarpment is unobstructed upwind by other such topographic features for a distance from the high point of 50 times the height of the hill or 2 miles (3.22 km), whichever is greater.

**Section 1609.3 Basic design wind speed**

Amend Section 1609.3 to read as follows:

**1609.3 Basic design wind speed.** The basic design wind speed,  $V$ , in mph, for the determination of the wind loads shall be determined by figures 1609.3(1) through (8). The basic design wind speed,  $V$ , for use in the design of Risk Category II buildings and structures shall be obtained from Figures 1609.3(1) and 1609.3(5). The basic design wind speed,  $V$ , for use in the design of Risk Category III buildings and structures shall be obtained from Figures 1609.3(2) and 1609.3(6). The basic design wind speed,  $V$ , for use in the design of Risk Category IV buildings and structures shall be obtained from Figures 1609.3(3) and 1609.3(7). The basic design wind speed,  $V$ , for use in the design of Risk Category I buildings and structures shall be obtained from Figures 1609.3(4) and 1609.3(8). No altitude density reduction shall be taken.

The basic design wind speed,  $V$ , for the special wind regions indicated near mountainous terrain and near gorges shall be in accordance with local jurisdiction requirements. The basic design wind speeds,  $V$ , determined by the local jurisdiction shall be in accordance with Chapter 26 of ASCE 7. Utilizing Special wind region Table 1609.3.2.

#### **TABLE 1609.2 SPECIAL WIND REGION DEFINED: MINIMUM BASIC WIND SPEEDS**

Add Table 1609.3.2 to read as follows:

##### **TABLE 1609.3.2**

##### **SPECIAL WIND REGION DEFINED:**

##### **MINIMUM BASIC WIND SPEEDS**

For Carson City, City of Reno, City of Sparks, Douglas, Lyon, Pershing, Storey and Washoe Counties the design wind speed values shall be:

| Risk Category | Ultimate Wind Speed<br>$V_{ult}$ (mph) | $V_{asd}$ Wind Speed<br>3-sec gust (mph) |
|---------------|--|--|
| I             | 110                                    | 85                                       |
| II & 2018 IRC | 120                                    | 93                                       |
| III           | 130                                    | 101                                      |
| IV            | 135                                    | 104                                      |

Table notes:

a) Air density corrections to design wind pressures are prohibited. The conversions from  $V_{ult}$  to  $V_{asd}$  are based on Table 1609.3.1

#### **Section 1704.2 Special inspections and tests**

Amend Section 1704.2 to read as follows:

**1704.2 Special inspections and tests.** Where application is made to the *building official* for construction as specified in Section 105, the owner or the owner's authorized agent, other than the contractor, shall employ one or more *approved agencies* to provide *special inspections* and tests during construction on the types of work specified in Section 1705 and identify the *approved agencies* to the *building official*. These *special inspections* and test are in addition to the inspections by the *building official* that are identified in Section 110.

**Exceptions:**

1. *Special inspections* and tests are not required for construction of a minor nature or as warranted by conditions in the jurisdiction as *approved* by the *building official*.
2. Unless otherwise required by the *building official*, *special inspections* and test are not required for Group R-3 occupancies as applicable in section 101.2 and Group U occupancies that are accessory to a residential occupancy including, but not limited to, those listed in Section 312.1.
3. *Special inspections* and test are not required for portions of structures designed and constructed in accordance with the cold-formed steel light-frame construction provisions of Section 2211.1.2 or the conventional light-frame constructions provisions of Section 2308.
4. The contractor is permitted to employ the *approved agencies* where the contractor is also the owner.

**Section 1803.2 Investigations required**

*Amend Section 1803.2 to read as follows:*

**1803.2 Investigations required.** Geotechnical investigations shall be conducted in accordance with Sections 1803.3 through 1803.5.

**Exception:** The *building official* shall be permitted to waive the requirement for need not require a geotechnical investigation where satisfactory data from adjacent areas is provided by a licensed design professional available that demonstrates an investigation is not necessary for any of the conditions in Sections 1803.5.1 through 1803.5.6 and Sections 1803.5.10 and 1803.5.11.

**Section 1803.6 Reporting**

*Amend Section 1803.6 to read as follows:*

**1803.6 Reporting.** Where geotechnical investigations are required, a written report of the investigations shall be submitted to the building official by the permit applicant at the time of permit application. This geotechnical report shall include, but need not be limited to, the following information:

1. A plot showing the location of the soil investigations
2. A complete record of the soil boring and penetration test logs and soil samples.
3. A record of the soil profile.
4. Elevation of the water table, if encountered.
5. Recommendations for foundation type and design criteria, including but not limited to: bearing capacity of natural or compacted soil; provisions to mitigate the effects of

- expansive soils; mitigation of the effects of liquefaction, differential settlement, and varying soil strength; and the effects of adjacent loads
6. Expected total and differential settlement.
  7. Deep foundation information in accordance with Section 1803.5.5.
  8. Special design and construction provisions for foundations of structures founded on expansive soils, as necessary.
  9. Compacted fill material properties and testing in accordance with Section 1803.5.8.
  10. Controlled low-strength material properties and testing in accordance with Section 1803.5.9.
  11. Where required by 1803.5.11, investigation of liquefaction hazards shall be performed in accordance with "Guidelines for Evaluating Liquefaction Hazards in Nevada;" investigation of hazards associated with surface displacement due to faulting or seismically induced lateral spreading or lateral flow shall be performed in accordance with "Guidelines for Evaluating Potential Surface Fault Rupture/Land Subsidence Hazards in Nevada."

### **Section 1807 2.1.1 Rockery retaining walls**

*Amend Section 1807.2 adding Section 1807.2.1.1 as follows:*

#### **1807.2.1.1 Rockery retaining walls.**

Rockery retaining walls or rockery soil stabilization walls shall not be subject to surcharges, such as building foundations, adjacent retaining structures, slopes or vehicle surcharge. Rockery walls over four feet in height shall be engineered and shall have special inspection. The special inspection shall verify all of the specified items listed below. Wall height is determined from the bottom of the footing to the adjacent grade at the top of the wall. Structures adjacent to rockery wall shall be set back a minimum distance equal to the height of the wall. As described above, drainage shall be provided behind all engineered rockery walls. A global stability analysis shall be performed for all rockery walls that are terraced. No single tier shall exceed 8 feet in height. The Engineer shall specify on the construction documents:

- \_\_\_\_\_ 1. Type and quality of rock.
- \_\_\_\_\_ 2. Unit weight, if design exceeds 155 pcf.
- \_\_\_\_\_ 3. Rock size in approximate diameter.
- \_\_\_\_\_ 4. Rock placement.
- \_\_\_\_\_ 5. Voids greater than 3" shall be filled.
- \_\_\_\_\_ 6. Drainage swale and system.
- \_\_\_\_\_ 7. Embedment.
- \_\_\_\_\_ 8. Wall face slope (batter 6v:1H recommended).

9. Mechanically stabilized earth, if specified.

A Global Stability Analysis shall include the following:

1. Shall be stamped by a licensed geotechnical engineer.
2. Shall include a seismic evaluation representative of the location.
3. All results of the analysis shall be included in the report.

### **1808.6.1 Foundations**

*Amend Section 1808.6.1 to read as follows:*

**1808.6.1 Foundations.** Foundations placed on or within the active zone of expansive soils shall be designed to resist differential volume changes and to prevent structural damage to the supported structure. Deflection and racking of the supported structure shall be limited to that which will not interfere with the usability and serviceability of the structure.

Foundation placed below where volume change occur or below expansive soil shall comply with the following provisions:

1. Foundations extending into or penetrating expansive soils shall be designed to prevent uplift of the supported structure.
2. Foundations penetrating expansive soils shall be designed to resist forces exerted on the foundation due to soil volume changes or shall be isolated from the expansive soil.

Post-tensioned slabs shall not be utilized in place of frost depth footing design unless super structure deflection and differential movement calculations are provided. The deflection calculations would need to show that the maximum combined frost and expansive soil heaving, as localized at slab edges, with resultant non-uniformly distributed deflections, as well as whole slab deflections would not result in super structure racking or excessive truss, roof or wall frame movement.

### **Section 1809.5 Frost protection**

*Amend Section 1809.5(1) to read as follows:*

**1809.5 Frost protection.** Except where otherwise protected from frost, foundations and other permanent supports of buildings and structures shall be protected from frost by one or more of the following methods:

1. Extending below the frost line of the locality. Refer to 2018 Northern Nevada Amendments Appendix Table R201.2(1) for requirements of local Authorities Having Jurisdiction.
2. Constructing in accordance with ASCE 32.
3. Erecting on solid rock.

**Exception:** Free-standing buildings meeting all of the following conditions shall not be required to be protected:

1. Assigned to Risk Category I.
2. Area of 600 square feet (56 m<sup>2</sup>) or less for light-frame construction or 400 square feet (37 m<sup>2</sup>) or less for other than light-frame construction.
3. Eave height of 10 feet (3048 mm) or less.

Shallow foundations shall not bear on frozen soil unless such frozen condition is of a permanent character.

### **Section 2901.1 Scope**

*Amend Section 2901.5 to read as follows:*

**2901.1 Scope.** The provisions of this chapter and the ~~International Plumbing Code~~ Uniform Plumbing Code shall govern the design, construction, erection and installation of plumbing components, appliances, equipment and systems used in *buildings* and structures covered by this code. Toilet and bathing rooms shall be constructed in accordance with Section 1209. ~~Private sewage disposal systems shall conform to the International Private Sewage Disposal Code.~~ The *International Fire Code*, the *International Property Maintenance Code* and the *International Plumbing Code* shall govern the use and maintenance of plumbing components, appliances, equipment and systems. The *International Existing Building code* and the *International Plumbing Code* shall govern the *alteration, repair, relocation, replacement and addition* of plumbing components, *appliances, equipment* and systems.

### **Section 2902.1 Minimum number of fixtures**

*Amend Section 2902.1 to read as follows:*

**2902.1 Minimum number of fixtures.** Plumbing fixtures shall be provided in the minimum number as shown in Table 2902.1 based on the actual use of the building or space. Uses not shown in Table 2902.1 shall be considered individually by the code official. The number of occupants shall be determined by this code. Suitable toilet facilities shall be provided and maintained in a sanitary condition for the use of workers during construction.



**TABLE 2902.1 MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES**

Amend Table 2902.1 to read as follows:

**MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES a**

| No. | CLASS                  | OCCUPANCY   | DESCRIPTION  | WATER CLOSETS <sup>h</sup><br>(URINALS SEE SECTION 419.2 OF THE INTERNATIONAL PLUMBING CODE) |        | LAVATORIES  |        | BATHTUBS/<br>SHOWERS                                      | DRINKING FOUNTAINS e,f<br>(SEE SECTION 411 OF THE INTERNATIONAL PLUMBING CODE) | OTHER          |
|-----|------------------------|-------------|--|--|--------|---|--------|---|--|----------------|
|     |                        |             |  | MALE   | FEMALE | MALE  | FEMALE |   |  |                |
| 1   | Business               | B           | Buildings for the transaction of business, professional services, other services involving merchandise, office buildings, banks, light industrial and similar uses | 1 per 25 for the first 50 and 1 per 50 for the remainder exceeding 50                        |        | 1 per 40 for the first 80 and 1 per 80 for the remainder exceeding 80 |        | —   | 1 per 100  | 1 service sink |
| 2   | Educational            | E           | Educational facilities   | 1 per 50   |        | 1 per 50  |        | —   | 1 per 100  | 1 service sink |
| 3   | Factory and industrial | F-1 and F-2 | Structures in which occupants are engaged in work fabricating, assembly or processing of products or materials   | 1 per 100  |        | 1 per 100   |        | See Section 411 of the <i>International Plumbing Code</i> | 1 per 400  | 1 service sink |
| 4   | Institutional          | I-1         | Residential care   | 1 per 10   |        | 1 per 10  |        | 1 per 8   | 1 per 100  | 1 service sink |
|     |                        | I-2         | Hospitals, ambulatory nursing home patients <sup>b</sup>   | 1 per room <sup>c</sup>  |        | 1 per room <sup>c</sup>   |        | 1 per 15  | 1 per 100  | 1 service sink |
|     |                        |             | Employees, other than residential care <sup>b</sup>  | 1 per 25   |        | 1 per 35  |        | —   | 1 per 100  | —              |

|   |             |  |                     |                     |                     |             |   |
|---|-------------|--|---------------------|---------------------|---------------------|-------------|---|
|   |             | Visitors, other than residential care  | 1 per 75            | 1 per 100           | —                   | 1 per 500   | —   |
|   |             | I-3 Prisons <sup>b</sup>   | 1 per cell          | 1 per cell          | 1 per 15            | 1 per 100   | 1 service sink  |
|   |             | I-3 Reformatories, detention centers and correctional centers <sup>b</sup>         | 1 per 15            | 1 per 15            | 1 per 15            | 1 per 100   | 1 service sink  |
|   |             | Employees <sup>b</sup>   | 1 per 25            | 1 per 35            | —                   | 1 per 100   | 1 service sink  |
|   |             | I-4 Adult day care and child care  | 1 per 15            | 1 per 15            | —                   | 1 per 100   | 1 service sink  |
| 5 | Mercantile  | M Retail stores, service stations, shops, salesrooms, markets and shopping centers | 1 per 500           | 1 per 750           | —                   | 1 per 1,000 | 1 service sink  |
|   |             |  |                     |                     |                     |             |   |
| 6 | Residential | R-1 Hotels, motels, boarding houses (transient)                                    | 1 per sleeping unit | 1 per sleeping unit | 1 per sleeping unit | —           | 1 service sink  |
|   |             | R-2 Dormitories, fraternities, sororities and boarding house (not transient)       | 1 per 10            | 1 per 10            | 1 per 8             | 1 per 100   | 1 service sink  |
|   |             | R-2 Apartment house  | 1 per dwelling unit | 1 per dwelling unit | 1 per dwelling unit | —           | 1 kitchen sink per dwelling unit; 1 automatic clothes washer connection per 20 dwelling units |
| 7 | Residential | R-3 One- and two-family dwellings  | 1 per dwelling unit | 1 per 10            | 1 per dwelling unit | —           | 1 kitchen sink per dwelling unit; 1 automatic clothes washer connection per 20 dwelling units |
|   |             | R-3 Congregate living facilities with 16 or fewer persons                          | 1 per 10            | 1 per 10            | 1 per 8             | 1 per 100   | 1 service sink  |

|   |         |            |  |           |           |   |             |                |
|---|---------|------------|--|-----------|-----------|---|-------------|----------------|
|   |         | R-4        | Residential care/assisted living facilities  | 1 per 10  | 1 per 10  | 1 per 8   | 1 per 100   | 1 service sink |
| 8 | Storage | S-1<br>S-2 | Structures for the storage of goods, warehouses, storehouses and freight depots, low and moderate hazard | 1 per 100 | 1 per 100 | See Section 411 of the <i>International Plumbing Code</i> | 1 per 1,000 | 1 service sink |

- a. The fixtures shown are based on one fixture being the minimum required for the number of persons indicated or any fraction of the number of persons indicated. The number of occupants shall be determined by this code.
- b. Toilet facilities for employees shall be separate from facilities for inmates or patients.
- c. A single-occupant toilet room with one water closet and one lavatory serving not more than two adjacent patient rooms shall be permitted where such room is provided with direct access from each patient room and with provisions for privacy.
- d. The occupant load for seasonal outdoor seating and entertainment areas shall be included when determining the minimum number of facilities required.
- e. The minimum number of required drinking fountains shall comply with Table 2902.1 and Chapter 11.
- f. Drinking fountains are not required for an occupant load of ~~15~~ 30 or fewer.
- g. For business and mercantile occupancies with an occupant load of ~~15~~ 30 or fewer, service sinks shall not be required.
- h. In each bathroom or toilet room, urinals shall not be substituted for more than 67 percent of the required water closets in assembly and educational occupancies. Urinals shall not be substituted for more than 50 percent of the required water closets in all other occupancies.

### Section 3102.7 Engineering design

*Amend Section 3102.7 to read as follows:*

**3102.7 Engineering design.** The structure shall be designed and constructed to sustain dead loads; loads due to tension or inflation; live loads including wind, snow, flood and seismic loads and in accordance with Chapter 16.

**Exception:** Membrane structures intended to be in place for 30 days or less may be engineered to risk category I loads provided the installation and use are per the manufacturer’s recommendations.

### Section I105.2 Footings

*Amend Section I105.2 to read as follows:*

**1105.2 Footings.** ~~In areas with a frost depth of zero, a~~ An unenclosed patio cover that projects 14 feet or less from the main structure shall be permitted to be supported on a concrete slab on grade without footing, provided that the slab conforms to the provisions of Chapter 19 of this code and is not less than 3½ inches (89 mm) thick, and the columns do not support loads in excess of 750 pounds (3.36 kN) per column.

## Amendments to the 2018 Edition of the International Existing Building Code

### Section 301.6 Baby changing tables

*Amend Section 301 by adding Section 301.6 to read as follows:*

**301.6 Baby Changing Tables.** Diaper changing tables are required to be installed in both male, female and other restrooms, in permanent buildings that contain public restrooms as defined in chapter 29 of the 2018 IBC. Changing tables are required when any of the following occur: new buildings, tenant improvements, new restrooms, alteration of existing restrooms, new additions, change of uses that require updating existing restrooms with additions to those facilities. Shall meet the guidelines of 603.5, 309 and 902 of ANSI/ICC A117.1-2009.

**Exceptions:** A building or facility that does not have public restrooms or has been issued a permit or license which restricts the admission of children on the basis of age, shall be exempt from this requirement.

### Section 902.1 High-rise buildings

*Amend Section 902.1 to read as follows:*

**902.1 High-rise buildings.** Any building having occupied floors more than ~~75~~ 55 feet (~~22 860~~ 16 764 mm) above the lowest level of fire department vehicle access shall comply with the requirements of Sections 902.1.1 and 902.1.2.

## Amendments to the 2018 Edition of the International Energy Conservation Code

### COMMERCIAL PROVISIONS

#### Section C102.1.1 Above code program

*Amend Section C102.1.1 to read as follows:*

**C102.1.1 Above code programs.** The code official or other authority having jurisdiction shall be permitted to deem a national, state or local energy efficiency program to exceed the energy efficiency required by this code. Programs seeking approval must submit all requested supporting documentation, including program guidelines, protocols, calculations and program simulation performance software, if applicable, to the NNICC and/or jurisdiction for review for use as acceptable software. Buildings approved in writing by such an energy efficiency shall be considered to be in compliance with this code. The requirements identified as “mandatory” in Chapter 4 shall be met.

## Section C201.3 Terms defined in other codes

*Amend Section C201.3 to read as follows:*

**C201.3 Terms defined in other codes.** Terms that are defined in this code but are defined in the International Building Code, International Fire Code, International Fuel Gas Code, International Mechanical Code, Uniform Mechanical Code, International Plumbing Code, Uniform Plumbing Code, or the International Residential Code shall have the meanings ascribed to them in those codes.

## Section C202 General Definitions

*Amend Section C202 by adding the following definitions to read as follows:*

### C202 General Definitions

**CASINO.** A structure that houses a business with a Non-Restricted Gaming License from the Nevada Gaming Commission and State Gaming Control Board. It includes the gaming area(s) as well as the adjacent area(s) within the building envelope.

**CASINO GAMING AREA.** The space within a *casino* wherein gaming is conducted. The gaming area shall also include accessory uses within the same room(s) as, or substantially open to the gaming floor(s). Such areas shall include, but not be limited to lobbies, balconies, public circulation areas, assembly areas, restaurants, bars, lounges, food courts, retail spaces, mezzanines, convention pre-function areas, cashiers' cages, players' clubs, customer support, conservatories and promenades that share the same atmosphere, spillover lighting and theme lighting with the adjacent gaming floor area.

For accessory areas situated on the perimeter of the gaming floor to be considered substantially open, the walls(s) or partitions(s) separating an accessory space from the gaming area must be a minimum of 50% open, as measured from the interior side of the accessory space, with no doors, windows and other obstructions, other than roll up security grills, installed within the opening.

## Section C402.5.3 Rooms containing fuel-burning appliances

*Amend Section C402.5.3 to read as follows:*

**C402.5.3 Rooms containing fuel-burning appliances.** In Climate Zones 3 through 8, where combustion air is supplied through openings in an exterior wall to a room or space containing a space-conditioning fuel-burning appliance, one of the following shall apply:

1. The room or space containing the appliance shall be located outside of the building thermal envelope.
2. The room or space containing the appliance shall be enclosed and isolated from conditioned spaces inside of the building thermal envelope. Such rooms shall comply with all of the following:

- 2.1. The walls, floors and ceilings that separate the enclosed room or space from conditioned spaces shall be insulated to be not less than equivalent to the insulation requirement of below-grade walls as specified in Table C402.1.3 or C402.1.4.
- 2.2. The walls, floors and ceilings that separate the enclosed room or space from conditioned spaces shall be sealed in accordance with Section C402.5.1.1.
- 2.3. The doors into the enclosed room or space shall be fully gasketed.
- 2.4. Water lines and ducts in the enclosed room or space shall be insulated in accordance with Section 403.
- 2.5. Where an air duct supplying combustion air to the enclosed room or space passes through conditioned space, the duct shall be insulated to an R-value not less than R-8.

**Exception:** Fireplaces and stoves complying with Sections 901 through 905 of the International Mechanical Code, Section 911, 912, 913 of the Uniform Mechanical Code, and Section 2111.14 of the International Building Code.

### **Section 402.5.9 Air curtains**

*Amend Section 402.5 by adding 402.5.9 to read as follows:*

**C402.5.9 Air curtains.** Where doorway, passageway or pass-thru openings in the building thermal envelope area intended to be normally opened to the exterior environment, an approved air curtain tested in accordance with ANSI/AMCA 220 shall be used to separate conditioned air from the exterior.

### **Section 403.2.2 Ventilation (Mandatory)**

*Amend Section C403.2.2 Ventilation (Mandatory) to read as follows:*

**C403.2.2 Ventilation (Mandatory).** Ventilation, either natural or mechanical, shall be provided in accordance with Chapter 4 of the *International Mechanical Code* and *Uniform Mechanical Code*. Where mechanical ventilation is provided, the system shall provide the capability to reduce the outdoor air supply to the minimum required by Chapter 4 of the *International Mechanical Code* and *Uniform Mechanical Code*.

### **Section C403.6.1 Variable air volume and multiple-zone systems**

*Amend Section C403.6.1 to read as follows:*

**C403.6.1 Variable air volume and multiple-zone systems.** Supply air systems serving multiple zones shall be variable air volume (VAV) systems that have zone controls configured to reduce the volume of air that is reheated, re-cooled or mixed in each zone to one of the following:

1. Twenty percent of the zone design peak supply for systems with DDC and 30 percent for other systems.

2. Systems with DDC where all of the following apply:
3. The outdoor airflow rate required to meet the minimum ventilation requirements of Chapter 4 of the International Mechanical Code and Uniform Mechanical Code.
4. Any higher rate that can be demonstrated to reduce overall system annual energy use by offsetting reheat/re-cool energy losses through reduction in outdoor air intake for the system as approved by the code official.
5. The airflow rate required to comply with applicable codes or accreditation standards such as pressure relationships or minimum air change rates.

**Exception:** The following individual zones or entire air distribution systems are exempted are from the requirement for VAV control:

1. Zones or supply air systems where not less than 75 percent of the energy for reheating or for providing warm air in mixing systems is provided from a site-recovered, including condenser heat, or site-solar energy source.
2. Systems that prevent reheating, re-cooling, mixing or simultaneous supply of air that has been previously cooled, either mechanically or through the use of economizer systems, and air that has been previously mechanically heated.

### **Section C403.6.6 Multiple-zone VAV system ventilation optimization control**

*Amend Section C403.6.6 to read as follows:*

**C403.6.6 Multiple-zone VAV system ventilation optimization control.** Multiple-zone VAV systems with direct digital control of individual zone boxes reporting to a central control panel shall have automatic controls configured to reduce outdoor air intake flow below design rates in response to changes in system *ventilation* efficiency ( $E_v$ ) as defined by the *International Mechanical Code* and *Uniform Mechanical Code*.

**Exception:**

1. VAV systems with zonal transfer fans that recirculate air from other zones without directly mixing it with outdoor air, dual-duct dual-fan VAV systems, and VAV systems with fan-powered terminal units.
2. Systems where total design exhaust airflow is more than 70 percent of the total design outdoor air intake flow requirements.

### **Section 403.7.1 Demand control ventilation (Mandatory)**

*Amend Section C403.7.1 to read as follows:*

**403.7.1 Demand control ventilation (Mandatory).** Demand control ventilation (DCV) shall be provided for spaces larger than 500 square feet (46.5m<sup>2</sup>) and with an average occupant load of 25 people or greater per 1,000 square feet (93m<sup>2</sup>) of floor area, as established in Table 403.3.1.1 of the *International*

*Mechanical Code and Table 402.1 Uniform Mechanical Code*, and served by systems with one or more of the following:

1. An air-sided economizer.
2. Automatic modulating control of the outdoor air damper.
3. A design outdoor airflow greater than 3,000 cfm (1416 L/s).

**Exceptions:**

1. Systems with energy recovery complying with Section C403.7.4.
2. Multiple-zone systems without direct digital control of individual zones communicating with a central control panel.
3. Systems with a design outdoor airflow less than 1,200 cfm (566 L/s).
4. Spaces where the supply airflow rate minus any makeup or outgoing transfer air requirements is less than 1,200 cfm (566 L/s).
5. Ventilation provided only for process loads.

**Section C403.7.2 Enclosed parking garage ventilation controls (Mandatory)**

*Amend Section C403.7.2 to read as follows:*

**C403.7.2 Enclosed parking garage ventilation controls (Mandatory).** Enclosed parking garages used for sorting or handling automobiles operating under their own power shall employ contamination-sensing devices and automatic controls configured to stage fans or modulate fan average airflow rates to 50 percent or less of design capacity, or intermittently operate fans less than 20 percent of the occupied time or as required to maintain acceptable contaminant levels in accordance with *International Mechanical Code and Uniform Mechanical Code* provisions. Failure of contamination-sensing devices shall cause the exhaust fans to operate continuously at design airflow.

**Exceptions:**

1. Garages with a total exhaust capacity less than 22,500 cfm (10 620 L/s) with ventilation systems that do not utilize heating or mechanical cooling.
2. Garages that have a garage area to ventilation system motor nameplate power ratio that exceeds 1125 cfm/hp (710 L/kW) and do not utilize heating or mechanical cooling.

**Section C403.7.4 Energy recovery ventilation systems (Mandatory)**

*Amend Section C403.7.4 to read as follows*

**C403.7.4 Energy recovery ventilation systems (Mandatory).** Where the supply airflow rate of a fan system exceeds the values specified in Tables C403.7.4(1) and C403.7.4(2), the system shall include an energy recovery system. The energy recovery system shall be configured to provide a change in the enthalpy of the outdoor air supply of not less than 50 percent of the difference between the outdoor air and return air enthalpies, at design conditions. Where an air economizer is required, the energy



recovery system shall include a bypass or controls that permit operation of the economizer as required by Section C403.5.

**Exception:** An energy recovery ventilation system shall not be required in any of the following conditions:

1. Where energy recovery systems are prohibited by the *International Mechanical Code* and *Uniform Mechanical Code*.
2. Laboratory fume hood systems that include not fewer than one of the following features:
  - 2.1. Variable-air-volume hood exhaust and room supply systems configured to reduce exhaust and makeup air volume to 50 percent or less of design value.
  - 2.2. Direct makeup (auxiliary) air supply equal to or greater than 75 percent of the exhaust rate, heated not warmer than 2°F (1.1°C) below room setpoint, with no humidification added, and no simultaneous heating and cooling used for dehumidification control.
3. Systems serving spaces that are heated to less than 60°F (15.5 °C) and that are not cooled.
4. Where more than 60 percent of the outdoor heating energy is provided from site-recovered or site-solar energy.
5. Heating energy recovery in Climate Zones 1 and 2.
6. Cooling energy recovery in Climate Zones 3C, 4C, 5B, 5C, 6B, 7, and \*.
7. Systems requiring dehumidification that employ energy recovery in series with the cooling coil.
8. Where the largest source of air exhausted at a single location at the building exterior is less than 75 percent of the design outdoor air flow rate.
9. Systems expected to operate less than 20 hours per week at an outdoor percentage covered by Table C403.7.4(1).
10. Systems exhausting toxic, flammable, paint or corrosive fumes or ducts.
11. Commercial kitchen hoods used for collecting and removing grease vapors and smoke.

### **Section C403.7.7 Shutoff dampers (Mandatory)**

*Amend Section C403.7.7 to read as follows:*

**C403.7.7 Shutoff dampers (Mandatory).** Outdoor air intake and exhaust openings and stairway and shafts vents shall be provided with Class I motorized dampers. The dampers shall have an air leakage rate not greater than 4 cfm/ft<sup>2</sup>

(20.3 L/s \* m<sup>2</sup>) of damper surface area at 1.0inch water gauge (249 Pa) and shall be labeled by an approved agency when tested in accordance with AMCA 500D for such purpose.

Outdoor air intake and exhaust dampers shall be installed in automatic controls configured to close when the systems or spaces served are not in use or during unoccupied period warm-up and setback operation, unless the systems served require outdoor or exhaust air in accordance with the *International Mechanical Code* and *Uniform Mechanical Code*, or the dampers are opened to provide intentional economizer cooling.

Stairway and shaft vent dampers shall be installed with automatic controls configured to open upon the activation of any fire alarm initiating device of the building's fire alarm system or the interruption of power to the damper.

**Exception:** Nonmotorized gravity dampers shall be an alternative to motorized dampers for exhaust and relief openings as follows:

1. In buildings less than three stories in height above grade plane.
2. In buildings of any height located in Climate Zones 1, 2 or 3.
3. Where the design exhaust capacity is not greater than 300 cfm (142 L/s).

Nonmotorized gravity dampers shall have an air leakage rate not greater than 20 cfm/ft<sup>2</sup> (101 L/s\*m<sup>2</sup>) where not less than 24 inches (610 mm) in either dimension and 40 cfm/ft<sup>2</sup> (203.2 L/s\*m<sup>2</sup>) where less than 24 inches (610 mm) in either dimension. The rate of air leakage shall be determined at 1.0 inch water gauge (249 Pa) when tested in accordance with AMCA 500D for such purpose. The dampers shall be labeled by an approved agency.

### **Section C403.11.1 Duct and plenum insulation and sealing (Mandatory)**

*Amend Section C403.11.1 to read as follows:*

**C403.11.1 Duct and plenum insulation and sealing (Mandatory).** Supply and return air ducts and plenums shall be insulated with not less than R-6 insulation where located in unconditioned spaces and where located outside of the building with not less than R-8 insulation in Climate Zones 1 through 4 and not less than R-12 insulation in Climate Zones 5 through 8. Where located within a building envelope assembly, the duct or plenum shall be separated from the building exterior or unconditioned or exempt spaces by not less than R-8 insulation in Climate Zones 1 through 4 and not less than R-12 insulation in Climate Zones 5 through 8

#### **Exceptions:**

1. Where located within equipment.
2. Where the design temperature difference between the interior and exterior of the duct or plenum is not greater than 15°F (8°C).

Ducts, air handlers and filter boxes shall be sealed. Joints and seams shall comply with Section 603.9 of the *International Mechanical Code* and Section 603.10, 603.11 of the *Uniform Mechanical Code*.

### **Section C403.11.2.1 Low-pressure duct systems (Mandatory)**

*Amend Section C403.11.2.1 to read as follows:*

**C403.11.2.1 Low-pressure duct systems (Mandatory).** Longitudinal and transverse joints, seams and connections of supply and return ducts operating at a static pressure less than or equal to 2 inches water gauge (w.g.) (498 Pa) shall be securely fastened and sealed with welds, gaskets, mastics, (adhesives), mastic-plus-embedded-fabric systems or tapes installed in accordance with the manufacturer's instructions. Pressure classifications specific to the duct system shall be clearly indicated on the construction documents in accordance with the *International Mechanical Code* and *Uniform Mechanical Code*.

**Exception:** Locking-type longitudinal joints and seams, other than the snap-lock and button-lock types, need not be sealed as specified in this section.

### **Section C403.11.2.2 Medium-pressure duct systems (Mandatory)**

*Amend Section C403.11.2.2 to read as follows:*

**C403.11.2.2 Medium-pressure duct systems (Mandatory).** Ducts and plenums designed to operate at a static pressure greater than 2 inches water gauge (w.g.) (498 Pa) but less than 3 inches w.g. (747 Pa) shall be insulated and sealed in accordance with Section C403.11.1. Pressure classifications specific to the duct system shall be clearly indicated on the construction documents in accordance with the *International Mechanical Code* and *Uniform Mechanical Code*.

### **Section C406.6 Dedicated outdoor air systems**

*Amend Section C406.6 to read as follows:*

**C406.6 Dedicated outdoor air system.** Buildings containing equipment or systems regulated by Section C403.3.4, C403.4.3, C403.4.4, C403.4.5, C403.6, C403.8.4, C403.8.5, C403.8.5.1, C403.9.1, C403.9.2, C403.9.3, C403.9.4 shall be equipped with an independent ventilation system designed to provide not less than the minimum 100-percent outdoor air to each individual occupied space, as specified by the *International Mechanical Code* and *Uniform Mechanical Code*.

### **Section C501.4 Compliance**

*Amend Section C501.4 to read as follows:*

**C501.4 Compliance.** *Alterations, repairs, additions* and changes of occupancy to, or relocation of, existing *buildings* and structures shall comply with the provisions for *alterations, repairs, additions* and changes of occupancy or relocation, respectively, in this code and in the *International Building Code, International Existing Building Code, International Fire Code, International Fuel Gas Code, International Mechanical Code, Uniform Mechanical Code, International Plumbing Code, Uniform Plumbing Code, International Property Maintenance Code, International Private Sewage Disposal Code* and NFPA 70.

## **Chapter 6 Referencing Standards**

*Amend Chapter 6 by adding the following to read as follows:*

### **AMCA**

**205-12: Energy Efficiency Classification for Fans** C403.8.3

**220-08(R2012): laboratory Methods for Testing Air Curtain Units for Aerodynamic Performance Rating**  
C402.5.6 C402.5.7

## 500D-12: Laboratory Methods for Testing Dampers for Rating C403.7.7

### IAPMO

**UMC-18: Uniform Mechanical Code** C201.3, C403.2.2, C403.6, C406.6.6, C403.7.1, C403.7.2, C403.7.4, C403.7.5, C403.7.7, C403.11.1, C403.11.2.1, C403.11.2.2, C406.6, C501.4

**UPC-18: Uniform Plumbing Code** C201.3, C501.4

### ICC

**IBC-18: International Building Code** C201.3, C303.1.1, C303.2, C402.5.3, C402.5.4, C501.4,

**IFC-18: International Fire Code** C201.3, C501.4

**IFGC-18: International Fuel Gas Code** C201.3, C501.4

## RESIDENTIAL PROVISIONS

### Section R102.1.1 Above code programs

*Amend R102.1.1 to read as follows:*

**R102.1.1 Above code programs.** The *code official* or other authority having jurisdiction shall be permitted to deem a national, state or local energy efficiency program to exceed the energy efficiency required by this code. Programs seeking approval must submit all requested supporting documentation, including program guidelines, protocols, calculations and program simulation performance software, if applicable, to the NNICC and/or jurisdictions for review for use as acceptable software. Buildings *approved* in writing by such an energy efficiency program shall be considered in compliance with this code. The requirements identified as “mandatory” in Chapter 4 shall be met.

### Section R401.3 Certificate (Mandatory)

*Amend Section R401.3 to read as follows:*

**R401.3 Certificate (Mandatory).** ~~A permanent~~ The Builder shall provide a final certificate to the owner. a certificate shall be completed by the builder or other *approved* party and posted on a wall in the space where the furnace is located, a utility room or an *approved* location inside the *building*. Where located on an electrical panel, the certificate shall not cover or obstruct the visibility of the circuit directory label, service disconnect label or other required labels. The certificate shall indicate the predominant R-values of insulation installed in or on ceilings, roofs, walls, foundation components such as slabs, *basement walls*, crawl space walls and floors and ducts outside *conditioned spaces*; U-factors of fenestration and the ~~solar heat gain coefficient (SHGC) of fenestration,~~ and the results from any required duct system and *building* envelope air leakage testing performed on the *building*. Where there is more than one value for each component, the certificate shall indicate the value covering the largest area. The certificate shall indicate the types and efficiencies of heating, cooling and service water

heating equipment. ~~Where a gas-fired unvented room heater, electric furnace or baseboard electric heater is installed in the residence, the certificate shall indicate “gas-fired unvented room heater, electric furnace” or “baseboard electric heater,” as appropriate. An efficiency shall not be indicated for gas-fired unvented room heaters, electric furnaces and electric baseboard heaters.~~

### Section R402.4.1.2 Testing

*Amend Section R402.4.1.2 to read as follows:*

**R402.4.1.2 Testing.** The building or dwelling unit shall be tested and verified as having an air leakage rate of not exceeding 5 air changes per hour, ~~in Climate Zones 1 and 2, and 3 air changes per hour in Climate Zones 3 through 8.~~ Testing shall be conducted with a blower door at a pressure of 0.2 inches w.g. (50 Pascal’s). Where required by the *Code Official*, testing shall be conducted by an *approved* third party. A written report of the results of the test shall be signed by the party conducting the test and provided to the *Code Official*. Testing shall be performed at any time after creation of all penetrations of the *building thermal envelope*.

During testing:

1. Exterior windows and doors, fireplace and stove doors shall be closed, but not sealed, beyond the intended weather-stripping or other infiltration control measures;
2. Dampers including exhaust, intake, makeup air, backdraft and flue dampers shall be closed, but not sealed beyond intended infiltration control measures;
3. Interior doors, if installed at the time of test, shall be open;
4. Exterior doors for continuous ventilation systems and heat recovery ventilators shall be closed and sealed;
5. Heating and cooling systems, if installed at the time of testing, shall be fully open.
6. Supply and return registers, where installed at the time of the test, shall be fully open.

### Section R403.3.4 Duct leakage (prescriptive)

*Amend section R403.3.2 to read as follows:*

**R403.3.4 Duct Leakage (prescriptive).** The total leakage of the ducts, where measured in accordance with Section R403.3.4, shall be as follows:

1. Rough-in test: The total leakage shall be less than or equal to 4 cubic feet per minute (113.3 L/min) per 100 square feet (9.29 m<sup>2</sup>) of conditional floor area where the air handler is installed at the time of the test. Where the air handler is not installed at the time of the test, the total leakage shall be less than or equal to 3 cubic feet per minute (85 L/min) per 100 square feet (9.29 m<sup>2</sup>) of conditioned floor area.
2. Postconstruction test: Total leakage shall be less than or equal to ~~4 cubic feet per minute (113.3 L/min)~~ 5 cubic feet per minute (cfm) (141.6 L/min) or total leakage to outside shall be less than or equal to 3.5 cfm (99.1 L/min) 100 square feet (9.29 m<sup>2</sup>) of conditioned floor area.

## Section R403.6 Mechanical ventilation (Mandatory)

*Amend Section R403.6 to read as follows:*

**R403.6 Mechanical ventilation (Mandatory).** The building shall be provided with ventilation that complies with the requirements of the *International Residential Code* or *International Mechanical Code*, as applicable, or with other *approved* means of ventilation. The mechanical system shall have a readily accessible on-off control switch allowing control of the mechanical system. Utilization of outside air temperature sensors, carbon dioxide sensors, humidity sensors or similar intermittent controls to activate the outside air mechanical equipment is permitted. Outdoor air intakes and exhausts shall have automatic or gravity dampers that close when the ventilation system is not operating.

## Amendments to the 2018 Edition of the International Fuel Gas Code

### Section 301.1.2 LP-Gas Installations

*Add new subsection 301.1.2 to section 301.1:*

**301.1.2 LP-Gas Installations.** Whenever there is a conflict between this code and NFPA 54 and NFPA 58 as adopted by the Nevada LP-Gas Board for LP-Gas installations, the adopted codes of the Nevada LP-Gas Board shall govern.

### Section 301.16 Snow Hazard

*Add new section 301.16 to 301:*

**301.16 Snow hazard.** Protection of utilities shall be per requirements of the local utility.

### Section 406.4.1 Test Pressure

*Amend section 406.4.1 to read as follows:*

**406.4.1 Test pressure.** The test pressure to be used shall be no less than 1-1/2 times the proposed maximum working pressure, but not less than ~~3~~ 25 psig (20 172.4 kPa gauge), irrespective of design pressure. Where the test pressure exceeds 125 psig (862 kPa gauge), the test pressure shall not exceed a value that produces a hoop stress in the *pipng* greater than 50 percent of the specified minimum yield strength of the pipe. This test shall be made before any fixtures, appliances or shut-off valves have been attached and before being concealed.

### Section 406.4.2 Test Duration

*Amend section 406.4.2 to read as follows:*

**406.4.2 Test duration.** Test duration shall be not less than 30 minutes, 1/2 hour for each 500 cubic feet (14 m<sup>3</sup>) of pipe volume or fraction thereof ~~When testing a system having a volume less than 10 cubic feet (0.28 m<sup>3</sup>) or a system in a single family dwelling, the test duration shall be not less than 10 minutes.~~ The duration of the test shall not be required to exceed 24 hours.

## Section 406.6.2 Before Turning Gas On

*Amend Section 406.6.2 to read as follows and add new subsections 405.6.2.1 thru 405.6.2.3:*

**406.6.2 Before turning gas on.** During the process of turning gas on into a system of new gas pipng or into a system or portion of a gas system that has been restored after an interruption of service, the entire system shall be inspected to determine that there are no open fittings or ends and that all valves at unused outlets are closed and plugged or capped. In the City of Fernley, City of Reno, City of Sparks, Storey County and Washoe County, a manometer test shall be made after all valves, unions, connectors and piping to the appliances are complete. A pressure test shall be made with the use of a manometer gauge measuring inches of water column. With all valves including gas cock and gas control valves in the open position, a pressure of at least eleven (11) to fifteen (15) inches of water column shall be measured for at least fifteen (15) minutes, with no perceptible drop in pressure.

**405.6.2.1 For medium pressure gas systems:** Where the appliance is rated for seven (7) to eleven (11) inches of water column, a manometer test of eleven (11) to fifteen (15) inches of water column will be conducted between the pressure regulating valve and the appliance and shall be measured for at least fifteen (15) minutes with no perceptible drop in pressure.

**406.2.2 For appliances or equipment requiring pounds of gas pressure:** A pressure test using a pressure gauge measuring in one tenth (1/10) increments shall be conducted on the gas train of that appliance or equipment. The pressure shall be equal to the appliance's normal operating pressure for a period of thirty (30) minutes with no perceptible drop in pressure.

**406.2.3 Manometer testing.** Manometer testing shall be performed by a person holding a valid Washoe County manometer tester card for which the number is to be provided at the time of request for inspection. A visual manometer test to be witnessed by the authority having jurisdiction may be allowed by the Building Official. A manometer test does not need to be reported when the serving gas utility performs a manometer or clock test prior to providing service.

## Amendments to the 2018 Edition of the International Mechanical Code

### Section 401.2 Ventilation Required

*Amend Section 401.2 to read as follows:*

**401.2 Ventilation required.** Every occupied space shall be ventilated by natural means in accordance with Section 402 or by mechanical means in accordance with Section 403. ~~Where the air infiltration rate in a dwelling unit is less than 5 air changes per hour when tested with a blower door at a pressure of 0.2-inch water column (50 Pa) in accordance with Section 402.4.1.2 of the *International Energy Conservation Code*, the dwelling unit shall be ventilated by mechanical means in accordance with Section 403.~~

## Section 505.4 Makeup Air Required

Amend Section 505.2 to read as follows:

**505.4 Makeup air required.** Exhaust hood systems capable of exhausting in excess of ~~400~~ 600 cfm (~~0.19~~ 0.28 m<sup>3</sup>/s) shall be provided with *makeup air* at a rate approximately equal to the *exhaust air* rate. Such *makeup air* systems shall be equipped with a means of closure and shall be automatically controlled to start and operate simultaneously with the exhaust system.

## Section 508.1.3 Evaporative Cooling Systems Used as Makeup Air

Add new subsection 508.1.3 to 508.1:

**508.1 Makeup air.** *Makeup air* shall be supplied during the operation of commercial kitchen exhaust systems that are provided for *commercial cooking appliances*. The amount of *makeup air* supplied to the building from all sources shall be approximately equal to the amount of *exhaust air* for all exhaust systems for the building. The *makeup air* shall not reduce the effectiveness of the exhaust system. *Makeup air* shall be provided by gravity or mechanical means or both. Mechanical *makeup air* systems shall be automatically controlled to start and operate simultaneously with the exhaust system. *Makeup air* intake opening locations shall comply with Section 401.4.

**508.1.1 Makeup air temperature.** The temperature differential between *makeup air* and the air in the conditioned space shall not exceed 10°F (6°C) except where the added heating and cooling loads of the *makeup air* do not exceed the capacity of the HVAC system.

**508.1.2 Air balance.** Design plans for a facility with a commercial kitchen ventilation system shall include a schedule or diagram indicating the design outdoor air balance. The design outdoor air balance shall indicate all exhaust and replacement air for the facility, plus the net exfiltration if applicable. The total replacement air airflow rate shall equal the total exhaust airflow rate plus the net exfiltration.

**508.1.3 Evaporative Cooling Systems Used as Makeup Air.** Evaporative coolers shall not be used for make-up air units on commercial kitchen hoods and kitchen ventilation systems.

**Exception:** Evaporative cooling systems that are a listed assembly with tempered air for kitchen make-up air systems.

## Section 603.2 Duct Sizing

Amend Section 603.2 to read as follows:

**603.2 Duct sizing.** Ducts installed within a single *dwelling unit* shall be sized in accordance with ACCA Manual D S based on building loads calculated in accordance with ACCA Manual J or other approved heating and cooling calculations methodologies or other *approved* methods. Ducts installed within all other buildings shall be sized in accordance with the ASHRAE *Handbook of Fundamentals* or other equivalent computation procedure.



# Amendments to the 2018 Edition of the International Residential Code

## R202 Definitions

Amend **Section R202** adding the following definitions, to read as:

### Section R202 Definitions.

**International Electrical Code.** The Electrical Code, whether the National Electrical Code or the International Electrical Code, as amended and adopted by the local jurisdiction.

**International Mechanical Code.** The Mechanical Code, whether the Uniform Mechanical Code or the International Mechanical Code as amended and adopted by the local jurisdiction.

**International Plumbing Code.** The Plumbing Code, whether the Uniform Plumbing Code or the International Plumbing Code, as amended and adopted by the local jurisdiction.

**International Fuel Gas Code.** The Fuel Gas Code, whether NFPA 54 or the International Fuel Gas Code, as amended and adopted by the local jurisdiction.

**Surcharge.** A vertical load imposed on the retained soil that may impose a lateral force in addition to the lateral earth pressure of the retained soil. Examples include:

- Sloped retained soil.
- Structure footings supported by the retained soil.
- Adjacent vehicle loads supported by the retained soil.

## Table R301.2 (1) Climatic and Geographic Design Criteria

Amend Table R301.2 (1) to read as follows:

| TABLE R301.2(1)<br>CLIMATIC AND GEOGRAPHIC DESIGN CRITERIA |                             |                                     |                                     |                                       |  |                         |                                  |                      |                                       |  |                               |                                       |                                     |
|--|-----------------------------|-------------------------------------|-------------------------------------|---------------------------------------|--|-------------------------|----------------------------------|----------------------|---------------------------------------|--|-------------------------------|---------------------------------------|-------------------------------------|
| GROUND<br>SNOW<br>LOAD <sup>a</sup>                        | WIND DESIGN                 |                                     |                                     |                                       | SEISMIC<br>DESIGN<br>CATEGORY <sup>f</sup> | SUBJECT TO DAMAGE FROM  |                                  |                      | WINTER<br>DESIGN<br>TEMP <sup>g</sup> | ICE BARRIER<br>UNDERLAYMENT<br>REQUIRED <sup>h</sup> | FLOOD<br>HAZARDS <sup>i</sup> | AIR<br>FREEZING<br>INDEX <sup>j</sup> | MEAN<br>ANNUAL<br>TEMP <sup>k</sup> |
|  | Speed <sup>d</sup><br>(mph) | Topographic<br>effects <sup>e</sup> | Special wind<br>region <sup>f</sup> | Windborne<br>debris zone <sup>g</sup> |  | Weathering <sup>g</sup> | Frost line<br>depth <sup>h</sup> | Termite <sup>i</sup> |                                       |  |                               |                                       |                                     |
| SEE IBC<br>TABLE<br>1608.2.1                               | SEE<br>APPENDIX             | NO                                  | YES                                 | NO                                    | SEE<br>APPENDIX                            | SEVERE                  | SEE<br>APPENDIX                  | MODERATE<br>TO HEAVY | SEE<br>APPENDIX                       | SEE<br>APPENDIX                                      | SEE<br>APPENDIX               | SEE<br>APPENDIX                       | SEE<br>APPENDIX                     |

### MANUAL J DESIGN CRITERIA

For SI: 1 pound per square foot = 0.0479 kPa, 1 mile per hour = 0.447 m/s

- Where weathering requires a higher strength concrete or grade of masonry than necessary to satisfy the structural requirements of this code, the frost line depth strength required for weathering shall govern. The weathering column shall be filled in with the weathering index, “negligible”, “moderate” or “severe” for concrete as determined from Figure R301.2(4). The grade of masonry units shall be determined from ASTM C 34, C 55, C 62, C 73, C 90, C 129, C 145, C 216 or C 652.
- Where the frost line depth requires deeper footings than indicated in Figure R403.1(1), the frost line depth strength required for weathering

shall govern. The jurisdiction shall fill in the frost line depth column with the minimum depth of footing below finish grade.

- c. The jurisdiction shall fill in this part of the table to indicate the need for protection depending on whether there has been a history of local subterranean termite damage.
- d. The jurisdiction shall fill in this part of the table with the wind speed from the basic wind speed map [Figure R301.2(5)A]. Wind exposure category shall be determined on a site-specific basis in accordance with Section R301.2.1.4.
- e. The outdoor design dry-bulb temperature shall be selected from the columns of 97 1/2-percent values for winter from Appendix D of the *International Plumbing Code*. Deviations from the Appendix D temperatures shall be permitted to reflect local climates or local weather experience as determined by the building official. [Also see Figure R301.2(1).]
- f. The jurisdiction shall fill in this part of the table with the seismic design category determined from Section R301.2.2.1.
- g. The jurisdiction shall fill in this part of the table with (a) the date of the jurisdiction's entry into the National Flood Insurance Program (date of adoption of the first code or ordinance for management of flood hazard areas), (b) the date(s) of the Flood Insurance Study and (c) the panel numbers and dates of all currently effective FIRMs and FBFMs or other flood hazard map adopted by the authority having jurisdiction, as amended.
- h. In accordance with Sections R905.1.2, R905.4.3.1, R905.5.3.1, R905.6.3.1, R905.7.3.1 and R905.8.3.1, where there has been a history of local damage from the effects of ice damming, the jurisdiction shall fill in this part of the table with "YES." Otherwise, the jurisdiction shall fill in this part of the table with "NO."
- i. The jurisdiction shall fill in this part of the table with the 100-year return period air freezing index (BF-days) from Figure R403.3(2) or from the 100-year (99 percent) value on the National Climatic Data Center data table "Air Freezing Index-USA Method (Base 32°F)."
- j. The jurisdiction shall fill in this part of the table with the mean annual temperature from the National Climatic Data Center data table "Air Freezing Index-USA Method (Base 32°F)".
- k. In accordance with Section R301.2.1.5, where there is local historical data documenting structural damage to buildings due to topographic wind speed-up effects, the jurisdiction shall fill in this part of the table with "YES." Otherwise, the jurisdiction shall indicate "NO" in this part of the table.
- l. In accordance with Figure R301.2(5)A, where there is local historical data documenting unusual wind conditions, the jurisdiction shall fill in this part of the table with "YES" and identify any special requirements. Otherwise, the jurisdiction shall indicate "NO" in this part of the table.
- m. In accordance with Section R301.2.1.2 the jurisdiction shall indicate the wind-borne debris wind zone(s). Otherwise, the jurisdiction shall indicate "NO" in this part of the table.
- ~~n. The jurisdiction shall fill in these sections of the table to establish the design criteria using Table 1a or 1b from ACCA Manual J or established criteria determined by the Jurisdiction.~~
- o. The jurisdiction shall fill in this section using the Ground Snow Loads in Figure R301.2(6).

### **R313.1 Townhouse automatic fire sprinkler systems**

Amend Section **R313.1** to read as follows:

**R313.1 Townhouse automatic fire sprinkler systems.** An automatic residential fire sprinkler system shall be installed in *townhouses*.

**Exceptions:**

1. An automatic residential fire sprinkler system shall not be required when *additions* or *alterations* are made to existing *townhouses* that do not have an automatic residential fire sprinkler system installed.
2. An automatic residential fire sprinkler system shall not be required in *townhouses* less than 5,000 sq. ft. of living space unless the AHJ has amended the International Fire Code to include provisions pertaining to townhouses in accordance with NRS 278.586.

**R313.2 One- and two-family dwellings automatic fire sprinkler systems**

*Amend Section R313.2 to read as follows:*

**R313.2 One- and two-family dwellings automatic fire sprinkler systems.** An automatic residential fire sprinkler system shall be installed in one- and two-family dwellings.

**Exceptions:**

1. An automatic residential fire sprinkler system shall not be required when *additions* or *alterations* are made to existing building that do not have an automatic residential fire sprinkler system installed.
2. An automatic residential fire sprinkler system shall not be required in one- and two-family *dwellings* less than 5,000 sq. ft. of living space unless the AHJ has amended the International Fire Code to include provisions pertaining to one- and two- family dwellings in accordance with NRS 278.586.

**N1102.4.1.2 (R402.4.1.2) Testing**

*Amend Section N1102.4.1.2 (R402.4.1.2) to read as follows:*

**N1102.4.1.2 (R402.4.1.2) Testing.** The *building* or dwelling unit shall be tested and verified as having an air leakage rate of not exceeding 5 air changes per hour ~~in *Climate Zones* 1 and 2, and 3 air changes per hour in *Climate Zones* 3 through 8.~~ Testing shall be conducted with a blower door at a pressure of 0.2 inches w.g. (50 Pascals). Where required by the *Code Official*, testing shall be conducted by an *approved* third party. A written report of the results of the test shall be signed by the party conducting the test and provided to the *Code Official*.

Testing shall be performed at any time after the creation of all penetrations of the *building thermal envelope*.

During testing:

1. Exterior windows and doors, fireplace and stove doors shall be closed, but not sealed, beyond the intended weather-stripping or other infiltration control measures.

2. Dampers including exhaust, intake, makeup air, backdraft and flue dampers shall be closed, but not sealed beyond intended infiltration control measures.
3. Interior doors, where installed at the time of the test, shall be open.
4. Exterior or interior terminations for continuous ventilation systems shall be sealed.
5. Heating and cooling systems, where installed at the time of the test, shall be turned off.

### **M1503.6 Makeup air required**

*Amend Section M1503.6 to read as follows:*

**M1503.6 Makeup air required.** Exhaust hood systems capable of exhaust in excess of ~~400~~ 600 cubic feet per minute (~~0.19~~ 0.28 m<sup>3</sup>/s) shall be provided with makeup air at a rate approximately equal to the exhaust air rate. Such makeup air systems shall be equipped with a means of closure and shall be automatically controlled to start and operate simultaneously with the exhaust system.

**Exception:** Makeup air is not required for exhaust systems installed for the exclusive purpose of space cooling and intended to be operated only when windows or other air inlets are open.

### **G2404.1.1 (301.1.2) LP-Gas installations**

*Add Section G2404.1.1(301.1.2) to Section G2404.1 (303.1) Scope, to read as follows:*

**G2404.1 (301.1) Scope.** This section shall govern the approval and installation of all equipment and appliances that comprise parts of the installations regulated by this code in accordance with Section G2401.

**G2404.1.1 (301.1.2) LP-Gas Installations.** Whenever there is a conflict between this code and NFPA 54 and NFPA 58 as adopted by the Nevada LP-Gas Board for LP-Gas installations, the adopted codes of the Nevada LP-Gas Board shall govern.

### **G2404.12 (301.17) Snow hazard**

*Add Section 2404.12 (301.17) to Section G2404 (301) General, to read as:*

**G2404.12 (301.17) Snow hazard.** On any new gas installation or reconnecting the gas service of an existing installation, gas meters above 5,800 feet in elevation in Carson City, Storey County and Washoe County must be protected from falling, sliding and accumulating of snow, unless the gas meter is installed in a protected location such as under an engineered deck, roof or shed. Engineered decks, roofs, or sheds shall be enclosed on all sides when used to protect gas meters on the snow shedding sides of a structure as approved by the gas utility.

#### **G2417.4.1 (406.4.1) Test pressure**

*Amend Section G2417.4.1 (406.4.1) to read:*

**G2417.4.1 (406.4.1) Test pressure.** The test pressure to be used shall be no less than 1-1/2 times the proposed maximum working pressure, but not less than ~~3~~ 25 psig (~~20~~ 172.4 kPa gauge), irrespective of design pressure. Where the test pressure exceeds 125 psig (862 kPa gauge), the test pressure shall not exceed a value that produces a hoop stress in the *pipng* greater than 50 percent of the specified minimum yield strength of the pipe. This test shall be made before any fixtures, appliances or shut-off valves have been attached and before being concealed.

#### **G2417.4.2 (406.4.2) Test duration**

*Amend Section G2417.2 (406.4.2) to read:*

**G2417.4.2 (406.4.2 Test duration).** Test duration shall be not less than ~~10 minutes~~ 30 minutes.

#### **G2417.6.2 (406.6.2) Before turning gas on**

*Amend Section G2417.6.2 (406.6.2) to read:*

**G2417.6.2 (406.6.2) Before turning gas on.** During the process of turning gas on into a system of new gas *pipng* or into a system or portion of a gas system that has been restored after an interruption of service, the entire system shall be inspected to determine that there are no open fittings or ends and that all valves at unused outlets are closed and plugged or capped. In the City of Fernley, City of Reno, City of Sparks, Storey County and Washoe County, a manometer test shall be made after all valves, unions, connectors and piping to the appliances are complete. A pressure test shall be made with the use of a manometer gauge measuring inches of water column. With all valves including gas cock and gas control valves in the open position, a pressure of at least eleven (11) to fifteen (15) inches of water column shall be measured for at least fifteen (15) minutes, with no perceptible drop in pressure.

#### **G2417.6.2.1 (406.6.2.1) For medium pressure gas systems**

*Add Section G2417.6.2.1 (406.6.2.1) to Section G2417.6.2 (406.6.2) Before turning gas on, to read as:*

**G2417.6.2.1 (406.6.2.1) For medium pressure gas systems:** Where the appliance is rated for seven (7) to eleven (11) inches of water column, a manometer test of eleven (11) to fifteen (15) inches of water column will be conducted between the pressure regulating valve and the appliance and shall be measured for at least fifteen (15) minutes with no perceptible drop in pressure.

**G2417.6.2.2 (406.2.2) For appliances or equipment requiring pounds of gas pressure.**

*Add Section G2417.6.2.2 (406.6.2.2) to Section G2416.6.2 (406.6.2) Before turning gas on, to read:*

**G2417.6.2.2 (406.2.2) For appliances or equipment requiring pounds of gas pressure:** A pressure test using a pressure gauge measuring in one tenth (1/10) increments shall be conducted on the gas train of that appliance or equipment. The pressure shall be equal to the appliance's normal operating pressure for a period of thirty (30) minutes with no perceptible drop in pressure.

**G2417.6.2.3 (406.2.3) Manometer testing**

*Add Section G2417.6.2.3 (406.2.3) to Section G2416.6.2 (406.6.2) Before turning gas on, to read:*

**G2417.6.2.3 (406.2.3) Manometer testing.** Manometer testing shall be performed by a person holding a valid Washoe County manometer tester card for which the number is to be provided at the time of request for inspection. A visual manometer test to be witnessed by the authority having jurisdiction may be allowed by the Building Official. A manometer test does not need to be reported when the serving gas utility performs a manometer or clock test prior to providing service.

**P2503.5.1 Rough plumbing**

*Amend Section P2503.5.1 to read:*

**P2503.5.1 Rough plumbing.** DWV systems shall be tested on completion of the rough piping installation by water ~~or for piping systems other than plastic,~~ by air with no evidence of leakage. Either test shall be applied to the drainage system in its entirety or in sections after rough piping has been installed, as follows:

1. Water test. Each section shall be filled with water to a point not less than 10 feet (1524 mm) above the highest fitting connection in that section, or to the highest point in the completed system. Water shall be held in the section under test for a period of 15 minutes. The system shall prove leak free by visual inspection.
2. Air test. The portion under test shall be maintained at a gauge pressure of 5 pounds per square inch (psi) (34 kPa) or 10 inches of mercury column (34 kPa). This pressure shall be held without introduction of additional air for a period of 15 minutes.

**P2603.5.1 Sewer depth**

*Amend Section P2603.5.1 to read:*

**P2603.5.1 Sewer depth.** *Building sewers* that connect to private sewage disposal systems shall be a not less than **twelve (12)** inches (305 mm) below finished *grade* at the point of septic tank connection. *Building sewers* shall be not less than **twelve (12)** inches (305 mm) below *grade*.

### **P3002.2.2 Building sewer**

*Add Section P3002.2.2 to Section P3002.2 Building sewer, to read:*

**P3002.2.2 Building sewer.** In no event shall building sewer be less than four (4) inches in diameter.

### **E3601.6.2 Service disconnect location**

*Amend Section E3601.6.2 to read as:*

**E3601.6.2 Service disconnect location.** The service disconnecting means shall be installed at a readily accessible location either outside of a building or structure inside nearest the point of entrance of the service conductors. ~~Service disconnecting means shall not be installed in bathrooms. Each occupant shall have access to the disconnect serving the dwelling unit in which they reside. The disconnecting means may be located independent of the building or structure served, in direct line of sight, but not to exceed thirty (30) feet.~~

**Exception:** The service disconnecting means may be installed within a building when an external remote shunt trip switch is provided. All shunt trip switches shall be located at seven feet (7') above finish grade at a location approved by the fire department. All shunt trip switches shall be located within twelve inches (12") equilateral triangle, red in color.

### **E3705.6.1 Edison fuses**

*Add Section E3705.6.1 to Section E3705.6 Fuses and fixed trip circuit breakers, to read:*

**E3705.6.1 Edison Fuses.** Plug fuses of the Edison-based shall be used only for replacement in existing installations where there is no evidence of overfusing or tampering. In any existing building where alterations or additions are made to any of the premises wiring, all fuse holders shall be made to comply with the requirements for a Type S fuse holder through the installation of a tamper proof (rejection type) base.

### **E3901.2.2 Wall space**

*Section E3901.2.2 is amended to read:*

**E3901.2.2 Wall Space.**

- (1) Any space 2 ft. (610mm) or more in width, including space measured around corners, and that is unbroken along the floor line by doorways and similar opening, fireplaces, and fixed cabinets that do not have countertops or similar work surfaces.
- (2) The space occupied by fixed panels in exterior walls, excluding sliding panels.
- (3) The space created by fixed room dividers such as railings and freestanding bar-type counters.

**Exception No. 1:** *The space behind operable doors.*

**Exception No. 2:** *Vestibules, hallways, and similar areas less than 5 ft wide in bedrooms.*

### **E3902.2 Garage and accessory building receptacles**

*Amend Section E3902.2 to read:*

**Section E3902.2 Garage and accessory building receptacles.** 125-volt, single-phase, 15 or 20 ampere receptacles installed in garages and grade-level portions of unfinished accessory buildings used for storage or work areas shall have ground-fault circuit-interrupter protections for personnel. [210.8(A)(2)]

**Exception:** Single receptacle for a fixed in place heating appliance only (example: fuel-fired FAU, heat pump or water heater) when located within an attached garage.

### **E3902.17 Arc-fault circuit-interrupter protection for branch circuit extensions or modifications**

*Section E3902.17 is deleted:*

~~**E3902.17 Arc-fault circuit interrupter protection for branch circuit extensions or modifications.** Where branch-circuit wiring is modified, replaced or extended in any of the areas specified in Section E3902.12, the branch circuit shall be protected by one of the following:~~

- ~~1. A combination-type AFCI located at the origin of the branch circuit.~~
- ~~2. An outlet branch-circuit type AFCI located at the first receptacle out of the existing branch circuit.~~

~~**Exception:** AFCI protection shall not be required where the extension of the existing conductors is not more than 6 feet (1.8 m) in length and does not include any additional outlets or devices. [201.12(B) Exception]~~

### **AH105.2 Footings**

*Amend Section AH105.2 to read:*

**AH105.2 Footings.** In areas with a frost depth of zero as specified in Table R301.2(1), For patio covers supported on a concrete slab-on-grade without footings, the slab shall conform to the provisions of



Section R506, shall be not less than 3.5 inches (89 mm) thick and the columns shall not support live or dead loads in excess of 750 pounds (3.34 kN) per column.

## Amendments to the 2017 Edition of the National Electrical Code

### 210.52(A)(2) Wall Spacing

Amend Section 210.52(A)(2) of Section **210.52(A) General Provisions** to read as follows:

**210.52(A)(2) Wall Spacing.** As used in this section, a wall space shall include any of the following:

- (1) Any space 600 mm (2 ft) or more in width (including space measured around corners) and unbroken along the floor line by doorways and similar openings, fireplaces, and fixed cabinets that do not have countertops or similar work surfaces.
- (2) The space occupied by fixed panels in walls, excluding sliding panels.
- (3) The space afforded by fixed room dividers, such as free-standing bar-type counters or railings.

*Exception No. 1: The space behind operable doors.*

*Exception No. 2: Vestibules, hallways, and similar areas less than 5 ft wide in bedrooms.*

### 225.32 Locations

Amend Section 225.32 to read as follows:

**225.32 Location.** The disconnecting means shall be installed ~~either inside or attached to the~~ outside of the building or structure served or where the conductors pass through the building or structure. The disconnecting means shall be at a readily accessible location nearest the point of entrance of the conductors. For the purposes of this section, the requirements in 203.6 shall be utilized.

*Exception 1: For installations under single management, where documented safe switching procedures are established and maintained for disconnection, and where the installation is monitored by qualified individuals, the disconnecting means shall be permitted to be located elsewhere on the premises.*

*Exception 2: For buildings or other structures qualifying under the provisions of Article 685, the disconnecting means shall be permitted to be located elsewhere on the premises.*

*Exception 3: For towers or poles used as lighting standards, the disconnecting means shall be permitted to be located elsewhere on the premises.*

*Exception 4: For poles or similar structures used only for support of signs installed in accordance with Article 600, the disconnecting means shall be permitted to be located elsewhere on the premises.*

*Exception No. 5: The disconnecting means shall be located independent of the building or structure served, in direct line of sight, but not to exceed thirty feet (30').*

*Exception No. 6: The service disconnecting means may be installed within a building when an external remote shunt switch is provided. All shunt trip switches shall be located at seven feet (7') above finish grade at a location approved by the fire department. All shunt trip switches shall be located within a twelve inch (12") equilateral triangle, red in color.*

### **230.70(A)(1) Readily Accessible Location**

*Amend Section 230.70(A)(1) of Section **230.70 General** to read as follows:*

**230.70 (A)(1) Readily Accessible Location.** The service disconnecting means shall be installed at a readily accessible location either outside of a building or structure ~~or inside~~ nearest the point of entrance of the service conductors. The disconnecting means may be located independent of the building or structure served, in direct line of sight, but not to exceed thirty feet (30').

*Exception: The service disconnecting means may be installed within a building when an external remote shunt switch is provided. All shunt trip switches shall be located at seven feet (7') above finish grade at a location approved by the fire department. All shunt trip switches shall be located within a twelve inch (12") equilateral triangle, red in color.*

### **240.51(B) Replacement Only**

*Amend Section 240.51(B) of Section **240.51 Edison-Base Fuses** to read:*

**240.51(B) Replacement Only.** Plug fuses of the Edison-base type shall be used only for replacements in existing installations where there is no evidence of overfusing or tampering. In any existing building where alterations or additions are made to any of the premises wiring, all fuse holders shall comply with Article 240.54.

### **250.118(4) Types of Equipment Grounding Conductors**

*Amend Section 250.118(4) of Section 250.118 Types of Equipment Grounding Conductors to read as follows:*

#### **250.118 Types of Equipment Grounding Conductors**

**(4)** Electrical metallic tubing with the exception of where the metallic raceway is subject to either damage or likely to be disturbed in the future under normal operating conditions, this determination shall be made by the Authority Having Jurisdiction.

FPN: An example of “subject to damage” is a surface installed conduit running along a traffic path. An example of “likely to be disturbed” is a surface installed conduit running across a rooftop, where future re-roofing operations will require the conduit to shifted, damaged, removed or relocated.

## **250.120 Equipment Grounding Conductor Installation**

*Amend Section 250.120 to read as follows:*

**250.120 Equipment Grounding Conductor Installation.** An equipment grounding conductor shall be installed in accordance with 250.120(A), (B), and (C). All raceways installed on roofs shall contain an equipment grounding conductor sized per Table 250.122 installed with the circuit conductors.

*Exception: Low voltage, communication and similar type systems unless required elsewhere in the Code.*

## **314.17(C) Nonmetallic Boxes and Conduit Bodies**

*Amend Section 314.17(C) of Section **314.17 Conductors entering Boxes, Conduit Bodies, or Fittings** to read as follows:*

**314.17(C) Nonmetallic Boxes and Conduit Bodies.** Nonmetallic boxes and conduit bodies shall be suitable for the lowest temperature-rated conductor entering the box. Where nonmetallic boxes and conduit bodies are used with messenger-supported wiring, open wiring on insulators, or concealed knob-and-tube wiring, the conductors shall enter the box through individual holes. Where flexible tubing is used to enclose the conductors, the tubing shall extend from the last insulating support to not less than 6 mm (1/4 in.) inside the box and beyond any cable clamp. Where non-metallic sheathed cable or multiconductor Type UF cable is used, the sheath shall extend not less than 6 mm (1/4 in.) inside the box and beyond any cable clamp. In all instances, all permitted wiring methods shall be secured to the boxes.

*Exception: where non-metallic sheathed cable or multiconductor Type UF cable is used with single-gang boxes ~~not larger than a nominal size 57 mm x 100 mm (2 ¼ in. x 4 in.)~~ mounted in walls or ceilings, and where the cable is fastened within 200 mm (8 in.) of the box measured along the sheath and where the sheath extends through a cable knockout not less than 6 mm (1/4 in.), securing the cable to the box shall not be required. Multiple cable entries shall be permitted in a single cable knockout opening.*

## **358.12 Uses Not Permitted**

*Amend Section 358.12 to read as follows:*

**358.12 Uses Not Permitted.** EMT shall not be used under the following conditions:

- (1) Where subject to severe physical damage.
- (2) For the support of luminaires or other equipment except conduit bodies no larger than the largest trade size of the tubing.
- (3) In direct contact with earth.

### **700.10(D) Fire Protection**

*Amend Section 700.10(D) of Section 700.10 Wiring, Emergency System to read as follows:*

**700.10(D) Fire Protection.** Emergency systems shall meet the additional requirements in (D)(1) through (D)(3) in the following occupancies:

- (1) Assembly occupancies for not less than 1000 persons
- (2) Buildings above ~~23 m (75 ft)~~ 55 ft in height
- (3) Health care occupancies where persons are not capable of self-preservation.
- (4) Educational occupancies with more than 300 occupants

### **700.12 General Requirements**

*Amend Section 700.12 to read as follows:*

**700.12 General Requirements.** Current supply shall be such that, in the event of failure of the normal supply to, or within, the building or group of buildings concerned, emergency lighting, emergency power, or both shall be available within the time required for the application but not to exceed 10 seconds. The supply system for emergency purposes, in addition to the normal services to the building and meeting the general requirements of this section, shall be one or more of the types of systems described in 700.12(A) through (E). Unit equipment in accordance with 700.12(F) shall satisfy the applicable requirements of this article.

In selecting an emergency source of power, consideration shall be given to the occupancy and the type of service to be rendered, whether of minimum duration, as for evacuation of a theater, or longer duration, as for supplying emergency power and lighting due to an indefinite period of current failure from trouble either inside or outside the building.

Equipment shall be designed and located so as to minimize the hazards that might cause complete failure due to flooding, fires, icing, and vandalism.

Equipment for sources of power as described in 700.12(A) through (E) shall be installed either in spaces fully protected by approved automatic fire suppression systems (sprinklers, carbon dioxide systems, and so forth) or in spaces with a ~~1-hour~~ 2-hour fire rating where located within the following:

- (1) Assembly occupancies for more than 1000 persons.
- (2) Buildings above ~~23 m (75 ft)~~ 55 feet in height with any of the following occupancy classes- assembly, educational, residential, detention and correctional, business, and mercantile
- (3) Health care occupancies where persons are not capable of self-preservation
- (4) Educational occupancies with more than 300 occupants

## Amendments to the 2018 Edition of the Uniform Mechanical Code

### Section 304.3 Access to Appliances on Roofs

*Amend Section 304.3 to read as follows:*

**Section 304.3 Access to Appliances on Roofs.** Appliances located on roofs or other elevated locations above 30 inches shall be accessible. [NFPA 54:9.4.3.11]

**304.3.1 Access.** Buildings exceeding 15 feet (4572 mm) in height shall have an inside means of access to the roof unless other means acceptable to the Authority Having Jurisdiction are used [NFPA 54:9.4.3.2]

**3-4.3.1.1 Access Type.** The inside means of access shall be a permanent, or foldable inside stairway or ladder, terminating in an enclosure, scuttle, or trap door. such scuttles or trap doors shall be not less than 22 inches by 24 inches (559 mm by 610 mm) in size, shall open easily and safely under all conditions, especially snow; and shall be constructed so as to permit access from the roof side unless deliberately locked on the inside.

Not less than 610 feet (1829.3048 mm) of clearance shall be between the access opening and the edge of the roof or similar hazard or rigidly fixed rails or guards not less than 42 inches (1067 mm) in height shall be provided on structures are utilized in lieu of guards or rails, they shall be not less than 42 inches (1067 mm) in height. [NFPA 54:9.4.3.1]

### Section 403.7.2 Enclosed Parking Garages

*Amend Section 403.7.2 to read as follows:*

**403.7.2 Enclosed Parking Garages.** Mechanical ventilation systems for enclosed parking garages shall operate continuously.

**Exceptions:** ~~(1) Mechanical ventilation systems shall be permitted to operate intermittently where the system is designed to operate automatically upon detection of vehicle operation or the presence of occupants by approved automatic detection devices.~~ Mechanical ventilation systems for enclosed parking garages shall be permitted to operate intermittently where the system is designed to operate automatically upon detection of vehicle operation or presence of occupants by approved automatic detection devices.

~~(2) Approved automatic carbon monoxide sensing devices shall be permitted to be employed to modulate the ventilation system to not exceed a maximum average concentration of carbon monoxide of 50 parts per million during an eight-hour period, with a concentration of not more than 200 parts per million for a period not exceeding one hour. Automatic carbon monoxide sensing devices installed to modulated parking garage ventilation systems shall be approved in accordance with Section 301.2.~~  
Automatic carbon monoxide sensing devices shall be permitted to be employed to modulate the ventilation system to maintain a maximum average concentration of carbon monoxide of 50 parts per million during an eight-hour period, with a concentration of not more than 200 parts per million for a period not exceeding one hour. Automatic carbon monoxide sensing devices installed to modulated parking garages ventilation systems shall be approved.

### **Section 504.4.2.1 Length Limitation**

*Amend Section 504.4.2.1 to read as follows:*

**504.4.2.1 Length Limitation.** Unless otherwise permitted or required by the dryer manufacturer's instructions and approved by the Authority Having Jurisdiction, domestic dryer moisture exhaust ducts shall not exceed a total combined horizontal and vertical length of 14 feet (4267 mm), including two 90-degree (1.57 rad) elbows. ~~A length of 2 feet (610 mm) shall be deducted for each 90-degree (1.57 rad) elbow in excess of two.~~ Two (2) feet (610 mm) shall be deducted for each 90-degree (1.57 rad) elbow in excess of two. The maximum length of a clothes dryer exhaust duct shall not exceed 35 feet (10 668 mm) from the dryer location to the wall or roof termination. The maximum length of the duct shall be reduced 2.5 (762 mm) for each 45-degree (0.8 rad) bend and 5 feet (1524 mm) for each 90-degree (1.6 rad) bend. The maximum length of the exhaust duct does not include the transition duct.

#### **Exceptions:**

1. Where the make and model of the clothes dryer to be installed is known and the manufacture's installation instructions for the clothes dryer are provided to the Authority Having Jurisdiction, the maximum length of the exhaust duct, including any transition duct, shall be permitted to be in accordance with the dryer manufacture's installation instructions.
2. Where large-radius 45-degree (0.8 rad) and 90-degree (1.6 rad) bends are installed, determination of the equivalent length of clothes dryer exhaust duct for each bend by engineering calculation in accordance with ASHRAE Fundamentals Handbook shall be permitted.

### **Section 505.10 Makeup Air**

*Amend Section 505.10 to read as follows:*

**505.10 Makeup Air.** Makeup air shall be provided to replenish air exhausted by the ventilator system. Exhaust hood systems capable of exhausting in excess of 600 cfm (0.28 m<sup>3</sup>/s) shall be provided with makeup air at a rate approximately equal to the exhaust air rate. Such makeup air systems shall be equipped with a means of closure and shall be automatically controlled to start and operate

simultaneously with the exhaust system. Makeup air intakes shall be located so as to avoid recirculation of contaminated air within enclosures.

### **Section 508.3.5.4 Evaporative Cooling Systems Used as Make Up Air Systems**

*Add Section 508.3.5.4 to read as follows:*

#### **508.3.5.4.1 Evaporative Cooling Systems.**

**508.3.5.4.1 Evaporative Cooling Systems.** Evaporative cooling systems will comply with this chapter. Evaporative coolers shall not be used for makeup air units on commercial kitchen hoods and kitchen ventilation systems.

**Exception:** Evaporative cooling systems that are part of a listed heating air system for kitchen make up air systems. The temperature differential between the makeup air and the air in the conditioned space shall not exceed 10°F (6°C) except where the added heating and cooling load of makeup air do not exceed the capacity of the HVAC system.

### **Section 511.2.2.2 Capture and Containment Test**

*Amend Section 511.2.2.2 to read as follows:*

**Section 511.2.2.2 Capture and Containment Test.** The permit holder shall verify the capture and containment performance of the Type I hoods. A field test shall be conducted with the all appliances under the hood at operating temperatures, with the outdoor air providing makeup air for all the hoods operating and with the source of recirculated air providing conditioning for the space in which the hood operating in located at design airflows, and with all sources of replacement air operating at design airflows for the restaurant. Capture and containment shall be verified by observing smoke or steam produced by actual or simulated cooking operation or by simulating cooking using devices such as smoke candles or smoke puffers. Smoke bombs shall not be used [ASHRAE 154:4.8.2-4.7.2]

**Exception:** Capture and containment test not required if hood is UL and NFPA listed and manufacturers data lists the individual equipment below hood.

### **Section 604.1 General**

*Amend Section 604.1 to read as follows:*

**604.1 General.** Air ducts conveying air at temperatures exceeding 140°F (60°C) shall be insulated to maintain an insulation surface temperature of not more than 140°F (60°C). Factory-made air ducts and insulations intended for installation on the exterior of ducts shall be legibly printed with the name of the manufacturer, the thermal resistance (R) value at installed thickness, flame-spread index and smoke-developed index of the composite material. Internal duct liners and insulation shall be installed in accordance with SMACNA HVAC Duct Construction Standards—Metal and Flexible. Supply air ducts, return air ducts, and plenum of a heating or cooling system shall be insulated to achieve the minimum thermal (R) value in accordance with the 2009 International Energy Conservation Code Section 403.2.1 for residential and 503.2.7 for commercial.

**Exceptions:**

- (1) Factory-installed plenums, casings, or ductwork furnished as a part of HVAC equipment tested and rated in accordance with approved energy efficiency standards.
- (2) Ducts or plenums located in conditioned spaces where heat gain or heat loss will not increase energy use.
- (3) For runouts less than 10 feet (3048 mm) in length to air terminals or air outlets, the rated R value of insulation need not exceed R-3.5 ~~(R-0.6)~~.
- (4) Backs of air outlets and outlet plenums exposed to unconditioned or indirectly conditioned spaces with face areas exceeding 5 square feet (0.5 m<sup>2</sup>) need not exceed R-2; those 5 square feet (0.5 m<sup>2</sup>) or smaller need not be insulated.
- (5) Ducts and plenums used exclusively for evaporative cooling systems.

**Section 608.1 Air-Moving Systems and Smoke Detectors**

*Add Section 608.1 to read as follows:*

608.1 Air-Moving Systems and Smoke Detectors. Air-moving systems supplying air in excess of 2000 cubic feet per minute (ft<sup>3</sup> /min) (0.9439 m<sup>3</sup> /s) to enclosed spaces within buildings shall be equipped with an automatic shutoff. Automatic shutoff shall be accomplished by interrupting the power source of the air-moving equipment upon detection of smoke in the main supply return-air duct or plenum upstream of any filters, exhaust air connections, outdoor air connections, or decontamination equipment and appliances ~~air-duct~~ served by such equipment. Duct smoke detectors shall comply with UL 268A and shall be installed in accordance with the manufacturer's installation instructions. Such devices shall be compatible with the operating velocities, pressures, temperatures, and humidities of the system. Where fire-detection or alarm systems are provided for the building, the smoke detectors shall be supervised by such systems in an approved manner.

**Exceptions:**

- (1) Where the space supplied by the air-moving equipment is served by a total coverage smoke-detection system in accordance with the fire code, interconnection to such system shall be permitted to be used to accomplish the required shutoff.
- (2) Automatic shutoff is not required where occupied rooms served by the air-handling equipment have direct exit to the exterior and the travel distance does not exceed 100 feet (30 480 mm).
- (3) Automatic shutoff is not required for Group R, Division 3 and Group U Occupancies.
- (4) Automatic shutoff is not required for approved smoke control systems or where analysis demonstrates shutoff would create a greater hazard, such as shall be permitted to be encountered in air-moving equipment supplying specialized portions of Group H Occupancies. Such equipment shall be required to have smoke detection with remote indication and manual shutoff capability at an approved location.
- (5) Smoke detectors that are factory installed in listed air moving equipment shall be permitted to be used in lieu of smoke detectors installed in the main supply-air duct served by such equipment.



## Section 609.0 Performance Test for Automatic Shutoffs

*Add Section 609.0 to read as follows:*

**609.0 Performance Test for Automatic Shutoffs.** Upon completion and before final approval of the air-moving system, provide with the required smoke detectors, a performance test shall be performed to verify compliance of detector installation to manufacturer's instructions and system compatibility as specified in this chapter. The permittee shall furnish the necessary test equipment and devices required to perform the tests and shall provide the jurisdiction with an accurate, completed, and signed test report. The report shall provide the jurisdiction a form containing equivalent information. At the discretion of the Authority Having Jurisdiction, the performance test may be required to be witnessed by the Authority Having Jurisdiction or performed by an approved third-party testing agency.

## Section 939.0 Sauna Heaters

*Add Section 939.1 to Section 939.0 Sauna Heaters to read as follows:*

### 939.0 Sauna Heaters.

**939.1 General.** Sauna heaters shall be listed and installed in accordance with the manufacturer's installation instructions. Approved guards or barriers shall be installed to prevent accidental contact with the sauna heater. Ventilation shall be provided in accordance with its listing and combustion air for gas-fired sauna heaters shall comply with chapter 7.

## Section 1301.1 Applicability

*Amend Section 1301.1 to read as follows:*

**1301.1 Applicability.** The regulations of this chapter shall govern the installation of fuel gas piping in or in connection with a building, structure or within the property lines of premises up to 5 pounds-force per square inch (psi) (34 kPa) ~~for natural gas and 10 psi (69 kPa) for undiluted propane~~, other than service pipe.

Fuel oil piping systems shall be installed in accordance with NFPA 31. Whenever there is a conflict between this code and NFPA 54 and NFPA 58 as adopted by the Nevada LP-Gas Board for LP-Gas installations, the adopted codes of the Nevada LP-Gas Board shall govern.

## Section 1313.3 Test Pressure

*Amend Section 1313.3 to read as follows:*

**1313.3 Test Pressure.** This inspection shall include an air, CO<sub>2</sub>, or nitrogen pressure test, at which time the gas piping shall stand a pressure of not less than ~~40~~ 25 psi (~~69~~ 172.4 kPa) gauge pressure. Test pressures shall be held for a length of time satisfactory to the Authority Having Jurisdiction but in no case less than ~~45~~ 30 minutes with no perceptible drop in pressure. For welded piping, and for piping carrying gas at pressures in excess of 14 inches water column (3.5 kPa) pressure, the test pressure shall be not less than 60 psi (414 kPa) and shall be continued for a length of time satisfactory to the Authority Having Jurisdiction, but in no case for less than 30 minutes. ~~For CSST carrying gas at pressures in excess of 14 inches water column (3.5 kPa) pressure, the test pressure shall be 30 psi (207 kPa) for 30 minutes.~~ These tests shall be made using air, CO<sub>2</sub>, or nitrogen pressure and shall be made in the presence of the Authority Having Jurisdiction. Necessary apparatus for conducting tests shall be furnished by the permit holder. Test gauges used in conducting test shall be in accordance with Section ~~1303.3.3.1 through~~ Section ~~1303.3.3.4~~ 318.0.

### Section 1313.5.1 Turning Gas On

*Amend Section 1313.5.1 to read as follows:*

**1313.5.1 Turning Gas On.** During the process of turning gas on into a system of new gas piping or portion of a gas system that has been restored after an interruption of service, the entire system shall be inspected to determine that there are no open fittings or ends and that all valves at unused outlets are closed and plugged or capped. [NFPA 54:8.2.2]

**1313.5.1.1 During** the process of turning gas on into a system of new gas piping or into a system or portion of a gas system that has been restored after an interruption of service; in the City of Fernley, City of Reno, City of Sparks, Storey County and Washoe County a manometer test shall be made after all valves, unions, connectors and piping to the appliances are complete. A pressure test shall be made with the use of a manometer gauge measuring inches of water column. With all valves including gas cock and gas control valves in the open position, a pressure of at least eleven (11) to fifteen (15) inches of water column shall be measured for at least fifteen (15) minutes, with no perceptible drop in pressure.

**1313.5.1.2 For medium pressure gas systems:** Where the appliance is rated for seven (7) to eleven (11) inches of water column, a manometer test of eleven (11) to fifteen (15) inches of water column will be conducted between the pressure regulating valve and the appliance and shall be measured for at least fifteen (15) minutes with no perceptible drop in pressure.

**1313.5.1.3 For appliances or equipment requiring pounds of gas pressure:** A pressure test using a pressure gauge measuring in one tenth (1/10) increments shall be conducted on the gas train of that appliance or equipment. The pressure shall be equal to the appliance's normal operating pressure for a period of thirty (30) minutes with no perceptible drop in pressure.

**1313.5.1.4 Manometer testing.** Manometer testing shall be performed by a person holding a valid Washoe County manometer tester card for which the number is to be provided at the time of request for inspection. A visual manometer test to be witnessed by the authority having jurisdiction may be allowed by the Building Official. A manometer test does not need to be reported when the serving gas utility performs a manometer or clock test prior to providing service.

# Amendments to the 2018 Edition of the Uniform Plumbing Code

## Section 216.0 Definition Non-Combustible Material

*Amend Section 216.0 to read as follows:*

**Section 216.0 Definitions. Non-Combustible Material:** Materials that, when tested in accordance with ASTM E136, have at least three of four specimens tested meeting all of the following criteria:

1. The recorded temperature of the surface and interior thermocouples shall not at any time during the test rise more than 54°F (30°C) above the furnace temperature at the beginning of the test.
2. There shall not be flaming from the specimen after the first 30 seconds.
3. If the weight loss of the specimen during testing exceeds 50 percent, the recorded temperature of the surface and interior thermocouples shall not at any time during the test rise above the furnace air temperature at the beginning of the test, and there shall not be flaming of the specimen.

## Section 218.0 Definition Penetration Firestop System

*Delete Section 218.0 as follows:*

**218.0 Definitions: Penetration Firestop System.** ~~A specific assemblage of field-assembled materials, or a factory-made device, which has been tested to a standard test method and, where installed properly on penetrating piping materials, is capable of maintaining the fire-resistance rating of assemblies penetrated.~~

## Section 222.0 Definitions “T” Rating

*Delete Section 222.0 as follows:*

**222.0 Definitions: T Rating.** ~~The time period that the penetration firestop system, including the penetrating item, limits the maximum temperature rise of 325° (163°C) above its initial temperature through the penetration on the non-fire side, where tested in accordance with ASTM E 814 or UL 1479.~~

## Section 312.7 Fire-Resistant Construction

*Amend Section 312.7 to read as follows:*

**312.7 Fire-Resistant Construction.** Piping penetrations of fire-resistance-rated walls, partitions, floors, floor/ceiling assemblies, roof/ceiling assemblies, or shaft enclosures shall be protected in accordance with the requirements of the building code. ~~and Chapter 15, “Firestop Protection.”~~

## Section 422.0 Minimum Number of Required Fixtures

*Delete Section 422.0 to read:*

~~Section 422.0 Minimum Number of Required Fixtures.~~

## Table 422.1 Minimum Plumbing Facilities

Delete Table 422.1 as follows:

**Table 422.1 Minimum Plumbing Facilities**

**Section 609.1 Installation**

Amend Section 609.1 to read as follows:

**609.1 Installation.** Water piping shall be adequately supported in accordance with Table 313.3. Burred ends shall be reamed to the full bore of the pipe or tube. Changes in direction shall be made by the appropriate use of fittings, except that changes in direction in copper or copper alloy tubing shall be permitted to be made with bends, provided that such bends are made with bending equipment that does not deform or create a loss in the cross-sectional area of the tubing. Changes in direction are allowed with flexible pipe and tubing without fittings in accordance with the manufacturer's instructions. Provisions shall be made for expansion in hot-water piping. Piping, equipment, appurtenances, and devices shall be installed in a workmanlike manner in accordance with the provisions and intent of the code. Building supply yard piping shall be not less than ~~12 6~~ inches (305 152mm) below the average local frost depth. The cover shall be not less than 12 inches (305 mm) below finish grade.

**Section 712.1 Media**

Amend Section 712.1 to read as follows:

**712.1 Media.** The piping of the plumbing, drainage and venting systems shall be tested with water or air ~~except that plastic piping shall not be tested with air.~~ The authority Having Jurisdiction shall be permitted to require the removal of cleanouts, etc., to ascertain whether the pressure has reached all parts of the system. After the plumbing fixtures have been set and their traps filled with water, they shall be submitted to a final test.

**Section 717.1 General (Size of Building Sewers)**

Amend Section 717.1 to read as follows:

**717.1 General.** The minimum size of a building sewer shall be determined on the basis of the total number of fixture units drained by such sewer, in accordance with Table 717.1. No building sewer shall be smaller than the building drain: or less than four (4) inches in diameter. For alternate methods of sizing building sewers, see Appendix C.

**Section 723.1 General (Building Sewer Test)**

*Amend Section 723.1 to read as follows:*

**723.1 General.** Building sewers shall be tested by plugging the end of the building sewer at its points of connection with the public sewer or private sewage disposal system and completely filling the building sewer with water from the lowest to highest point thereof, or by approved equivalent low-pressure air test. ~~Plastic DWV piping systems shall not be tested by the air test method.~~ The building sewer shall be watertight.

## **Section 1107.2 Methods of Testing Storm Drainage Systems**

*Amend Section 1107.2 to read as follows:*

**1107.2 Methods of Testing Storm Drainage Systems.** Except for outside leaders and perforated or open-jointed drain tile, the piping of storm drain systems shall be tested upon completion of the rough piping installation by water or air, ~~except that plastic pipe shall not be tested with air,~~ and proved tight. The Authority Having Jurisdiction shall be permitted to require the removal of cleanout plugs to ascertain whether the pressure has reached parts of the system. One of the following test methods shall be used in accordance with Section 1109.2.1 through Section 1109.2.3.

## **Section 1201.1 Installation**

*Amend Section 1201.1 to read as follows:*

**1201.1 Installation.** The regulations of this chapter shall govern the installation of fuel gas piping in or in connection with a building, structure or within the property lines of premises up to 5 pounds-force per square inch (34 kPa) ~~for natural gas and 10 psi (69 kPa) for undiluted propane,~~ other than service pipe. Fuel oil piping systems shall be installed in accordance with NFPA31. Whenever there is a conflict between this code and NFPA 54 and NFPA 58 as adopted by the Nevada LP-Gas Board for LP-Gas installations, the adopted codes of the Nevada LP-Gas Board shall govern.

## **Section 1208.6.1.3 Snow Hazard**

*Add Section 1208.6.1.3 to 1208.6 to read as follows:*

**1208.6.1.3 Snow Hazard:** Protection of utilities shall be per requirements of local utility.

## **Section 1213.3 Test Pressure**

*Amend Section 1213.3 to read as follows:*

**1213.3 Test Pressure.** This inspection shall include an air, CO<sub>2</sub>, or nitrogen pressure test, at which time the gas piping shall stand a pressure of not less than ~~40~~ 25 psi (~~69~~ 172.4 kPa) gauge pressure. Test pressures shall be held for a length of time satisfactory to the Authority Having Jurisdiction, but in no case less than ~~45~~ 30 minutes with no perceptible drop in pressure. For

welded piping, and for piping carrying gas at pressures in excess of 14 inches water column pressure (3.5 kPa), the test pressure shall be not less than 60 psi (414 kPa) and shall be continued for a length of time satisfactory to the Authority Having Jurisdiction, but in no case for less than 30 minutes. These tests shall be made using air, CO<sub>2</sub>, or nitrogen pressure and shall be made in the presence of the Authority Having Jurisdiction. Necessary apparatus for conducting tests shall be furnished by the permit holder. Test gauges used in conducting tests shall be in accordance with Section 318.0.

## Section 1213.5.1 Turning Gas On

*Amend Section 1213.5.1 to read as follows:*

**1213.5.1 Turning Gas On.** During the process of turning gas on into a system of new gas piping or into a system or portion of a gas system that has been restored after an interruption of service, the entire system shall be inspected to determine that there are no open fittings or ends and that the valves at unused outlets are closed and plugged or capped. [NFPA 54:8.2.2]

**1213.5.1.1 During** the process of turning gas on into a system of new gas piping or into a system or portion of a gas system that has been restored after an interruption of service; in the City of Fernley, City of Reno, City of Sparks, Storey County and Washoe County a manometer test shall be made after all valves, unions, connectors and piping to the appliances are complete. A pressure test shall be made with the use of a manometer gauge measuring inches of water column. With all valves including gas cock and gas control valves in the open position, a pressure of at least eleven (11) to fifteen (15) inches of water column shall be measured for at least fifteen (15) minutes, with no perceptible drop in pressure.

**1213.5.1.2 For medium pressure gas systems:** Where the appliance is rated for seven (7) to eleven (11) inches of water column, a manometer test of eleven (11) to fifteen (15) inches of water column will be conducted between the pressure regulating valve and the appliance and shall be measured for at least fifteen (15) minutes with no perceptible drop in pressure.

**1213.5.1.3 For appliances or equipment requiring pounds of gas pressure:** A pressure test using a pressure gauge measuring in one tenth (1/10) increments shall be conducted on the gas train of that appliance or equipment. The pressure shall be equal to the appliance's normal operating pressure for a period of thirty (30) minutes with no perceptible drop in pressure.

**1213.5.1.4 Manometer testing.** Manometer testing shall be performed by a person holding a valid Washoe County manometer tester card for which the number is to be provided at the time of request for inspection. A visual manometer test to be witnessed by the authority having jurisdiction may be allowed by the Building Official. A manometer test does not need to be reported when the serving gas utility performs a manometer or clock test prior to providing service.

## Chapter 14 Firestop Protection

*Delete Chapter 14 as follows:*

### Chapter 14 Firestop Protection

## 2018 Northern Nevada Amendments Appendix

### Appendix Table R301.2(1)

#### Carson City

| Ground Snow Load <sup>o</sup> | Wind Design              |                                  |                                  |                                    | Seismic Design Category <sup>f</sup> | Subject to Damage From  |                               |                     | Winter Design Temp <sup>e</sup> | Ice Barrier Underlay ment Required <sup>h</sup> | Flood Hazards <sup>g</sup>   | Air Freezing Index <sup>i</sup> | Mean Annual Temp <sup>j</sup> |
|-------------------------------|--------------------------|----------------------------------|----------------------------------|------------------------------------|--------------------------------------|-------------------------|-------------------------------|---------------------|---------------------------------|---|------------------------------|---------------------------------|-------------------------------|
|                               | Speed <sup>d</sup> (MPH) | Topographic Effects <sup>k</sup> | Special Wind Region <sup>l</sup> | Windborne Debris Zone <sup>m</sup> |                                      | Weathering <sup>a</sup> | Frost Line Depth <sup>b</sup> | Permit <sup>c</sup> |                                 |   |                              |                                 |                               |
| See IBC Table 1608.2.1        | 120                      | No                               | Yes                              | No                                 | D2                                   | Severe                  | 24"                           | Moderate To Heavy   | 9°F                             | Yes above 5500'                                 | Varies. See Engineering Dept | 444                             | 50.2°F                        |

#### Manual J Design Criteria

#### City of Fernley

| Ground Snow Load <sup>o</sup> | Wind Design              |                                  |                                  |                                    | Seismic Design Category <sup>f</sup> | Subject to Damage From  |                               |                     | Winter Design Temp <sup>e</sup> | Ice Barrier Underlay ment Required <sup>h</sup> | Flood Hazards <sup>g</sup>          | Air Freezing Index <sup>i</sup> | Mean Annual Temp <sup>j</sup> |
|-------------------------------|--------------------------|----------------------------------|----------------------------------|------------------------------------|--------------------------------------|-------------------------|-------------------------------|---------------------|---------------------------------|---|-------------------------------------|---------------------------------|-------------------------------|
|                               | Speed <sup>d</sup> (MPH) | Topographic Effects <sup>k</sup> | Special Wind Region <sup>l</sup> | Windborne Debris Zone <sup>m</sup> |                                      | Weathering <sup>a</sup> | Frost Line Depth <sup>b</sup> | Permit <sup>c</sup> |                                 |   |                                     |                                 |                               |
| See IBC Table 1608.2.1        | 115                      | No                               | No                               | No                                 | D1                                   | Severe                  | 18"                           | Moderate To Heavy   | 11°F                            | No  | (a)06/04/2003<br>(b)11/20/1998 Firm | 594                             | 49.4°F                        |

#### Manual J Design Criteria

#### City of Reno

| Ground | Wind Design | Seismic | Subject to Damage From | Winter | Ice Barrier | Flood | Air | Mean |
|--------|-------------|---------|------------------------|--------|-------------|-------|-----|------|
|--------|-------------|---------|------------------------|--------|-------------|-------|-----|------|

| d Snow Load <sup>o</sup> | Speed <sup>d</sup> (MPH) | Topographic Effects <sup>k</sup> | Special Wind Region <sup>l</sup> | Windborne Debris Zone <sup>m</sup> | Seismic Design Category <sup>f</sup> | Weathering <sup>a</sup> | Frost Line Depth <sup>b</sup> | Termite <sup>c</sup> | Winter Design Temp <sup>e</sup> | Underlay ment Required <sup>h</sup> | Hazards <sup>g</sup> | Freezing Index <sup>i</sup> | Mean Annual Temp <sup>j</sup> |
|--------------------------|--------------------------|----------------------------------|----------------------------------|------------------------------------|--------------------------------------|-------------------------|-------------------------------|----------------------|---------------------------------|-------------------------------------|----------------------|-----------------------------|-------------------------------|
| See IBC Table 1608.2.1   | 120                      | No                               | Yes                              | No                                 | D2                                   | Severe                  | 24"                           | Moderate To Heavy    | 17°F                            | Yes above 5300'                     | See RMC 18.12.1 701  | 594                         | 49.4°F                        |

**Manual J Design Criteria**

**City of Sparks**

| Ground Snow Load <sup>o</sup> | Wind Design              |                                  |                                  |                                    | Seismic Design Category <sup>f</sup> | Subject to Damage From  |                               |                      | Winter Design Temp <sup>e</sup> | Ice Barrier Underlay ment Required <sup>h</sup> | Flood Hazards <sup>g</sup> | Air Freezing Index <sup>i</sup> | Mean Annual Temp <sup>j</sup> |
|-------------------------------|--------------------------|----------------------------------|----------------------------------|------------------------------------|--------------------------------------|-------------------------|-------------------------------|----------------------|---------------------------------|---|----------------------------|---------------------------------|-------------------------------|
|                               | Speed <sup>d</sup> (MPH) | Topographic Effects <sup>k</sup> | Special Wind Region <sup>l</sup> | Windborne Debris Zone <sup>m</sup> |                                      | Weathering <sup>a</sup> | Frost Line Depth <sup>b</sup> | Termite <sup>c</sup> |                                 |   |                            |                                 |                               |
| See IBC Table 1608.2.1        | 120                      | No                               | Yes                              | No                                 | D2                                   | Severe                  | 24"                           | Moderate To Heavy    | 17°F                            | No  | See SMC 15.11              | 594                             | 49.4°F                        |

**Manual J Design Criteria**

**Douglas County**

| Ground Snow Load <sup>o</sup> | Wind Design              |                                  |                                  |                                    | Seismic Design Category <sup>f</sup> | Subject to Damage From  |                               |                      | Winter Design Temp <sup>e</sup> | Ice Barrier Underlay ment Required <sup>h</sup> | Flood Hazards <sup>g</sup>            | Air Freezing Index <sup>i</sup> | Mean Annual Temp <sup>j</sup> |
|-------------------------------|--------------------------|----------------------------------|----------------------------------|------------------------------------|--------------------------------------|-------------------------|-------------------------------|----------------------|---------------------------------|---|---------------------------------------|---------------------------------|-------------------------------|
|                               | Speed <sup>d</sup> (MPH) | Topographic Effects <sup>k</sup> | Special Wind Region <sup>l</sup> | Windborne Debris Zone <sup>m</sup> |                                      | Weathering <sup>a</sup> | Frost Line Depth <sup>b</sup> | Termite <sup>c</sup> |                                 |   |                                       |                                 |                               |
| See IBC Table 1608.2.1        | 120                      | No                               | Yes                              | No                                 | D2                                   | Severe                  | 18" < 600 0' 24" > 600 0'     | Moderate To Heavy    | 4°F                             | Yes above 5300'                                 | Douglas County Title 20 Chapter 20.50 | 647                             | 48.8°F                        |

**Manual J Design Criteria**



### Lyon County

| Ground Snow Load <sup>o</sup> | Wind Design              |                                  |                                  |                                    | Seismic Design Category <sup>f</sup> | Subject to Damage From  |                               |                      | Winter Design Temp <sup>e</sup> | Ice Barrier Underlay ment Required <sup>h</sup> | Flood Hazards <sup>g</sup> | Air Freezing Index <sup>i</sup> | Mean Annual Temp <sup>j</sup> |
|-------------------------------|--------------------------|----------------------------------|----------------------------------|------------------------------------|--------------------------------------|-------------------------|-------------------------------|----------------------|---------------------------------|---|----------------------------|---------------------------------|-------------------------------|
|                               | Speed <sup>d</sup> (MPH) | Topographic Effects <sup>k</sup> | Special Wind Region <sup>l</sup> | Windborne Debris Zone <sup>m</sup> |                                      | Weathering <sup>a</sup> | Frost Line Depth <sup>b</sup> | Termite <sup>c</sup> |                                 |   |                            |                                 |                               |
| See IBC Table 1608.2.1        | 115                      | No                               | No                               | No                                 | D1                                   | Severe                  | 18"                           | Moderate To Heavy    | 11°F                            | No  | Lyon Co. Title 12          | 445                             | 51.2 <sup>o</sup> F           |

### Manual J Design Criteria

### Pershing County

| Ground Snow Load <sup>o</sup> | Wind Design              |                                  |                                  |                                    | Seismic Design Category <sup>f</sup> | Subject to Damage From  |                               |                      | Winter Design Temp <sup>e</sup> | Ice Barrier Underlay ment Required <sup>h</sup> | Flood Hazards <sup>g</sup> | Air Freezing Index <sup>i</sup> | Mean Annual Temp <sup>j</sup> |
|-------------------------------|--------------------------|----------------------------------|----------------------------------|------------------------------------|--------------------------------------|-------------------------|-------------------------------|----------------------|---------------------------------|---|----------------------------|---------------------------------|-------------------------------|
|                               | Speed <sup>d</sup> (MPH) | Topographic Effects <sup>k</sup> | Special Wind Region <sup>l</sup> | Windborne Debris Zone <sup>m</sup> |                                      | Weathering <sup>a</sup> | Frost Line Depth <sup>b</sup> | Termite <sup>c</sup> |                                 |   |                            |                                 |                               |
| See IBC Table 1608.2.1        | See IBC 1609.3.2         |                                  |                                  |                                    | D2                                   | Severe                  | 36"                           | Slight To None       | 10°F                            | Yes above 5300'                                 | June 4, 2003               | 594                             | 49.4 <sup>o</sup> F           |

### Manual J Design Criteria

### Storey County

| Ground Snow Load <sup>o</sup> | Wind Design              |                                  |                                  |                                    | Seismic Design Category <sup>f</sup> | Subject to Damage From  |                               |                      | Winter Design Temp <sup>e</sup> | Ice Barrier Underlay ment Required <sup>h</sup> | Flood Hazards <sup>g</sup> | Air Freezing Index <sup>i</sup> | Mean Annual Temp <sup>j</sup> |
|-------------------------------|--------------------------|----------------------------------|----------------------------------|------------------------------------|--------------------------------------|-------------------------|-------------------------------|----------------------|---------------------------------|---|----------------------------|---------------------------------|-------------------------------|
|                               | Speed <sup>d</sup> (MPH) | Topographic Effects <sup>k</sup> | Special Wind Region <sup>l</sup> | Windborne Debris Zone <sup>m</sup> |                                      | Weathering <sup>a</sup> | Frost Line Depth <sup>b</sup> | Termite <sup>c</sup> |                                 |   |                            |                                 |                               |
| See IBC Table 1608.2.1        | 115                      | No                               | No                               | No                                 | D1                                   | Severe                  | 18"                           | Moderate To Heavy    | 18°F                            | Yes above 5500'                                 | See SCC 15.20              | 594                             | 49.4 <sup>o</sup> F           |

### Manual J Design Criteria

### Washoe County

| Ground Snow Load <sup>o</sup> | Wind Design              |                                  |                                  |                                    | Seismic Design Category <sup>f</sup> | Subject to Damage From  |                               |                      | Winter Design Temp <sup>e</sup> | Ice Barrier Underlay ment Required <sup>h</sup> | Flood Hazards <sup>g</sup> | Air Freezing Index <sup>i</sup> | Mean Annual Temp <sup>j</sup> |
|-------------------------------|--------------------------|----------------------------------|----------------------------------|------------------------------------|--------------------------------------|-------------------------|-------------------------------|----------------------|---------------------------------|---|----------------------------|---------------------------------|-------------------------------|
|                               | Speed <sup>d</sup> (MPH) | Topographic Effects <sup>k</sup> | Special Wind Region <sup>l</sup> | Windborne Debris Zone <sup>m</sup> |                                      | Weathering <sup>a</sup> | Frost Line Depth <sup>b</sup> | Termite <sup>c</sup> |                                 |   |                            |                                 |                               |

|  |     |    |     |    |    |        |     |                   |      |                 |                     |     |        |
|--|-----|----|-----|----|----|--------|-----|-------------------|------|-----------------|---------------------|-----|--------|
|  | 120 | No | Yes | No | D2 | Severe | 24" | Moderate To Heavy | 17°F | Yes above 5300' | See WCC Chapter 110 | 594 | 49.4°F |
|--|-----|----|-----|----|----|--------|-----|-------------------|------|-----------------|---------------------|-----|--------|

**Manual J Design Criteria**

For SI: 1 pound per square foot = 0.0479 kPa, 1 mile per hour = 0.447 m/s

- a. Where weathering requires a higher strength concrete or grade of masonry than necessary to satisfy the structural requirements of this code, the frost line depth strength required for weathering shall govern. The weathering column shall be filled in with the weathering index, “negligible,” “moderate,” or “severe” for concrete as determined from Figure R301.2(4). The grade of masonry unit shall be determined from ASTM C34, C55, C62, C73, C90, C129, C145, C, the urisidc216 or C652.
- b. Where the frostline depth requires deeper footings than indicated in Figure R403.1(1), the frostline depth strength required for weathering shall govern. The jurisdiction shall fill in the frost line depth column with the minimum depth footing below finish grade.
- c. The jurisdiction shall fill in this part of the table to indicate the need for protection depending on whether there has been a history of local subterranean termite damage.
- d. The jurisdiction shall fill in this part of the table with the wind speed from the basic wind speed map [Figure R301.2(5)A]. wind exposure category shall be determined on a site-specific basis in accordance with Section R301.2.1.4.
- e. The outdoor design dry-bulb temperature shall be selected from the columns of 97 1/2 -percent values for winter from Appendix D of the *International Plumbing Code*. Deviations from the Appendix D temperatures shall be permitted to reflect local climates or local weather experience as determined by the building official [Also see Figure R301.2(1).]
- f. The jurisdiction shall fill in this part of the table with the seismic design category determined from Section R301.2.2.1.
- g. The jurisdiction shall fill in this part of the table with (a) the date of the jurisdiction’s entry into the National Flood Insurance Program (date of adoption of the first code or ordinance for management of flood hazard areas), (b) the date(s) of the Flood Insurance Study and (c) the panel numbers and dates of the currently effective FIRMS and FBFMs or other flood hazard amp adopted by the authority having jurisdiction, as amended.
- h. In accordance with Sections R905.1.2, R905.4.3.1, R905.5.3.1, R905.6.3.1, R905.7.3.1, and R905.8.3.1, where there has been a history of local damage from the effects of ice damming, the jurisdiction shall fill in the part of this table with “Yes.” Otherwise, the jurisdiction shall indicate “No.”
- i. The jurisdiction shall fill in this part of the table with the 100-year return period air freezing index (BF-days) from Figure R403.3(2) or from the 100-year (99 percent) value on the National Climatic Data Center data table “Air Freezing Index- USA Method (Base 32°F).”
- j. The jurisdiction shall fill in this part of the table with the mean annual temperature form the National Climatic Data Center data table “Air Freezing Index- USA Method (Base 32°F.)
- k. In accordance with Section R301.2.1.5, where there is local historic data documenting structural damage to buildings due to topographic wind speed-up effects, the jurisdiction shall fill in this part of the table with “yes.” Otherwise, the jurisdiction shall indicate “No” in this part of the table.

- l. In accordance with Figure R301.2.5(A), where there is local historical data documenting unusual wind conditions, the jurisdiction shall fill in this part of the table with “Yes” and identify any specific requirements. Otherwise, the jurisdiction shall indicate “No” in this part of the table.
- m. In accordance with Section R301.2.1.2 the jurisdiction shall indicate the wind-borne debris zone(s). Otherwise, the jurisdiction shall indicate “No” in this part of the table.
- n. ~~The jurisdiction shall fill in these sections of the table to establish the design criteria using Table 1a or 1b from ACCA Manual 3 or established by the jurisdiction.~~
- o. The jurisdiction shall fill in this section of the table using the Ground Snow Loads in Figure R301.2(6).