



**SOUTHERN NEVADA  
AMENDMENTS**

**TO THE**

**2018 INTERNATIONAL BUILDING CODE**

## **PREFACE**

This document was developed by the Southern Nevada Building Officials' International Building Code – General committee and presents recommended amendments to the 2018 International Building Code as published by the International Code Council

Participation in the 2018 IBC Committee was open to all interested parties. However, voting on amendment proposals was limited to one vote each for six of Southern Nevada municipalities (Clark County, Henderson, Las Vegas, North Las Vegas, Boulder City, and Mesquite), the Clark County School District, and three industry representatives. All committee proceedings were conducted in accordance with Robert's Rules of Order.

The recommended amendments contained herein are not code unless adopted and codified by governmental jurisdictions. These amendments are not intended to prevent the use of any material or method of construction not specifically prescribed herein, provided any alternates have been approved and their use authorized by the Building Official. This document may be copied and used in whole or in part without permission or approval from the organizations listed on the cover page.

## Chapter 1 – Administrative

*Delete Sections 103 through 116 in their entirety*

### Section 202 Definitions

*Amend Section 202 to add or amend the following definitions to read as follows:*

**BABY CHANGING TABLE.** A table or other device that is safe and sanitary for changing the diaper of a child age 3 or under.

**BUILDING PAD.** The soil, cut or fill site, outlined by the area of the footprint of the building plus a minimum of 5 additional feet (1529 mm) to the exterior. This includes any type of foundation system for the structure.

**CABANA.** A structure used for temporary shelter, comfort and privacy of occupants located on, or in close proximity to, a building. Cabanas shall not be used for retail sales, bar service, food preparation, storage, or overnight sleeping.

**CABANA GROUP.** A group of individual cabanas that are not separated from each other as required by Section 3114. The total area of the cabana group shall be used to determine code requirements for all cabanas contained within the cabana group.

**CERTIFY.** Use of the word “certify” or “certification” constitutes an expression of professional opinion regarding those facts or findings which are the subject of the certification.

**ELECTRIC VEHICLE CHARGING STATION.** One or more dedicated parking spaces that are provided to accommodate charging of electric motor vehicles.

**FAULT.** A fracture or zone of fracturing in geologic materials (soil or rock) along which there has been displacement of the sides relative to one another parallel to the fracture.

**FAULT, HOLOCENE ACTIVE.** A fault with recognized activity within Holocene time (within the past 11,000 years).

**FAULT, QUATERNARY ACTIVE.** A fault with recognized activity within Quaternary time (within the past 1.6 million years).

**FAULT INACTIVE.** A fault without recognized activity within Quaternary time (within the past 1.6 million years).

**FINAL GRADING REPORT.** A grading report stamped and signed by a *registered design professional* certifying that the building pad was constructed in conformance with the recommendations set forth in the geotechnical report. This report contains explicit information and data that verifies compliance with the geotechnical report of record including any approved supplements or addendums.

**[F] FIRE CODE OFFICIAL.** The fire chief or other designated authority charged with the administration and enforcement of the *International Fire Code*, or a duly authorized representative.

**GRADING.** An excavation, inclusive of clearing and grubbing of vegetation, or fill or combination thereof.

**GEOTECHNICAL REPORT (SOILS REPORT).** Data and engineering recommendations resulting from site exploration which evaluates the soil conditions and general site characteristics and suitability of the site for the proposed construction. A *registered design professional* shall prepare and seal the report.

**INTERNATIONAL ENERGY CONSERVATION CODE.** The Energy Conservation Code as amended and adopted by the local jurisdiction.

**INTERNATIONAL EXISTING BUILDING CODE.** The Existing Building Code as amended and adopted by the local jurisdiction.

**INTERNATIONAL FIRE CODE.** The Fire Code as amended and adopted by the local jurisdiction.

**INTERNATIONAL FUEL GAS CODE.** The Fuel Gas Code as amended and adopted by the local jurisdiction.

**INTERNATIONAL MECHANICAL CODE.** The Mechanical Code as amended and adopted by the local jurisdiction.

**INTERNATIONAL PLUMBING CODE.** The Plumbing Code as amended and adopted by the local jurisdiction.

**INTERNATIONAL PRIVATE SEWAGE DISPOSAL CODE.** The Private Sewage Disposal Code as amended and adopted by the local jurisdiction.

**INTERNATIONAL PROPERTY MAINTENANCE CODE.** The Property Maintenance Code as amended and adopted by the local jurisdiction.

**INTERNATIONAL RESIDENTIAL CODE.** The Residential Code as amended and adopted by the local jurisdiction.

**INTERNATIONAL WILDLAND-URBAN INTERFACE CODE.** The Wildland-Urban Interface Code as amended and adopted by the local jurisdiction

**PAD CERTIFICATION REPORT.** An interim grading report stamped and signed by a *registered design professional* certifying that the building pad currently is in conformance with the recommendations set forth in the geotechnical report of record.

**PAD RECERTIFICATION REPORT.** A report stamped and signed by a *registered design professional* certifying that the building pad currently is in conformance with the recommendations set forth in the geotechnical report of record. This report contains explicit information and data that verifies compliance to the geotechnical report of record including any approved supplements or addendums.

**REFUSAL.** Refusal while advancing an exploration is recognized as defined by ASTM D 1586.

**SHADE STRUCTURE.** A structure with not less than 50 percent of its perimeter wall area unenclosed, has no interior partitions, and provides solar or weather protection for uses accessory to a building of any occupancy. *Shade structures* shall not apply to

*cabanas*, canopies, roof structures over vehicle drive-through lanes (porte-cocheres), parking facilities, playground structures, or industrial uses.

**SHADE STRUCTURE GROUP.** A group of individual shade structures that are not separated from each other by a minimum distance of 10 feet (3048 mm), as measured from the nearest horizontal projection. The total area of the *shade structure group* shall be used to determine code requirements for all *shade structures* within the *shade structure group*.

**SPECIAL GEOTECHNICAL CONSIDERATION AREA.** A portion of Clark County where additional geotechnical investigation requirements may apply. These areas are identified on the most recent edition of the “Clark County Soil Guidelines Reference Map(s)” as published by Clark County.

**STRUCTURAL/GEOTECHNICAL OBSERVATION.** The visual observation of the structural system encompassing the structure, foundation elements and the bearing or supporting soils of the foundation elements by a *registered design professional* for general conformance to the *approved construction documents*. Structural observation does not include or waive the responsibility for the inspection required by Section 110,

### Section 305.2.3

*Amend Section 305.2.3 to read as follows:*

**305.2.3 Six or fewer children in a dwelling unit.** A facility such as the above within a *dwelling unit* and having 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 308.5

*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 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 six but no more than 100 children 2½ 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.

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

**308.5.4 Six or fewer persons receiving care in a dwelling unit.** A facility such as the above within a *dwelling unit* and having 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 310.3

Amend Section 310.3 to read as follows:

**310.3 Residential Group R-2.** Residential Group R-2 occupancies containing *sleeping units* or more than two *dwelling units* where the occupants are primarily permanent in nature, including:

- Apartment houses
- Condominiums (nontransient)
- Congregate living facilities* (nontransient) with more than 16 occupants
  - Boarding houses* (nontransient)
- Convents
- Dormitories*
- Fraternities and sororities
- Monasteries
- Hotels (nontransient)
- Live/work units*
- Motels (nontransient)
- Vacation timeshare properties

### Section 310.4

Amend Section 310.4 to read as follows:

**310.4 Residential Group R-3.** Residential Group R-3 occupancies where the occupants are primarily permanent in nature and not classified as Group R-1, R-2, R-4 or I, including:

- Buildings that do not contain more than two *dwelling units*
- Care facilities that provide accommodations for six or fewer persons receiving care
- Congregate living facilities* (nontransient) with 16 or fewer occupants
  - Boarding houses* (nontransient)
- Convents
- Dormitories*
- Fraternities and sororities
- Monasteries
- Congregate living facilities* (transient) with 10 or fewer occupants
  - Boarding houses* (transient)
- Lodging houses* (transient) with five or fewer *guest rooms* and 10 or fewer occupants

**310.4.1 Care facilities within a dwelling.** Care facilities for six or fewer persons receiving care that are within a single-family dwelling are permitted to comply with the *International Residential Code* provided an *automatic sprinkler system* is installed in accordance with Section 903.3.1.3 or with Section P2904 of the *International Residential Code*.

### Section 403.3

Amend Section 403.3 to read as follows:

**[F] 403.3 Automatic sprinkler system.** Buildings and structures shall be equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 and a secondary water supply where required by Section 403.3.3.

**Exception:** An *automatic sprinkler system* shall not be required in *parking garages* in accordance with Section 406.5.

## Section 407.4.7

*Amend Section 407.4.7 by adding subsections that read as follows:*

**403.4.7.1 Design requirements.** Smoke removal systems shall be capable of manual activation and shall be designed in accordance with Sections 403.4.7.1.1 through 403.4.7.1.4.

**403.4.7.1.1 Fans.** Fans shall be selected for stable performance based on normal temperature. Calculations and manufacturer's fan curves shall be part of the documentation procedures. Fans shall be supported and restrained by noncombustible devices in accordance with the requirements of Chapter 16.

**403.4.7.1.1.1 Fan belts.** Belt-driven fans shall have 1.5 times the number of belts required for the design duty, with the minimum number of belts being two.

**403.4.7.1.1.2 Fan motors.** Motors driving fans shall not be operated beyond their nameplate horsepower (kilowatts), as determined from measurement of actual current draw, and shall have a minimum service factor of 1.15.

**403.4.7.1.2 Ducts.** Ducts shall be constructed and supported in accordance with the *International Mechanical Code*. Exhaust ducts shall be leak tested to 1.5 times the maximum design pressure in accordance with nationally accepted practices. Measured leakage shall not exceed 5 percent of design flow. Results of such testing shall be a part of the special inspections report in accordance with Section 403.4.7.3.3.

**Exception:** Leakage testing shall not be required where the exhaust ducts are contained completely within the smoke removal zone they serve.

**403.4.7.1.3 Power.** The smoke removal system shall be supplied with two sources of power. Primary power shall be from the normal building power systems. Secondary power shall be from an *approved* standby source complying with Chapter 27 of this code.

**Exception:** Secondary power for the smoke removal system is not required where normal power can be automatically restored from the *fire command center* following a normal power shunt.

**403.4.7.1.3.1 Standby power source enclosure.** The standby power source and its transfer switches shall be in a room separate from the normal power transformers and switch gears and ventilated directly to and from the exterior. The room shall be enclosed with not less than 1-hour *fire barriers* constructed in accordance with Section 707 or *horizontal assemblies* constructed in accordance with Section 711, or both.

**403.4.7.1.3.2 Power sources and power surges.** Elements of the smoke removal system relying on volatile memories shall be supplied with

uninterruptable power sources of sufficient duration to span a 15-minute primary power interruption. Elements of the smoke removal system susceptible to power surges shall be suitably protected by conditioners, suppressors or other *approved* means.

**403.4.7.1.3.3 Secondary power supply.** The secondary power supply shall be sized to accommodate the electrical requirements of the two largest adjacent smoke removal zones simultaneously.

**403.4.7.1.4 Status indicators and controls.** Status indicators and controls for the smoke removal system shall be provided on a graphic control panel in the *fire command center*. The graphic control panel shall be designed in accordance with the *International Fire Code* and shall provide status of smoke removal fans and controls for the smoke removal systems. The control panel for the smoke removal system shall be permitted to operate through the building HVAC management system or the fire alarm system. The control panel for the smoke removal system shall not be required to be listed as smoke control equipment.

**403.4.7.2 Control diagrams.** The *construction documents* shall provide sufficient information and detail to adequately describe the elements of the design necessary for the proper implementation of the smoke removal systems. The construction documents shall include smoke removal system control diagrams that show all devices in the system and identify their location and function. The smoke removal system drawings shall be permitted to be combined with smoke control system drawings, where applicable. Approved copies of the smoke removal system control diagrams shall be maintained current and kept on file with the Authority Having Jurisdiction and in the *fire command center* in an *approved* format and manner.

**403.4.7.3 Special inspections for smoke removal.** Smoke removal systems shall be tested by a *special inspector*.

**Exception:** *Special inspections* shall not be required where smoke removal is achieved by natural ventilation in accordance with Section 403.4.7, Item 1.

**403.4.7.3.1 Scope of testing.** *Special inspections* shall be conducted in accordance with the following:

1. During erection of ductwork and prior to concealment for the purposes of leakage testing and recording device location.
2. Prior to occupancy and after sufficient completion for the purposes of exhaust air change rate measurements and control verification.

**403.4.7.3.2 Qualifications.** *Special inspection* agencies for smoke removal shall have expertise in fire protection engineering, mechanical engineering and certification as air balancers.

**403.4.7.3.3 Reports.** A complete report of testing shall be prepared by the *special inspector* or *special inspection* agency. The report shall include identification of all devices by manufacturer, nameplate data, design values, measured values and identification tag or *mark*. The report shall be reviewed by the responsible *registered design professional* and, when satisfied that the design intent has been achieved, the responsible *registered design professional* shall seal, sign and date the report with a statement as follows:

"I have reviewed this report and by personal knowledge and on-site observation



certify that the smoke removal system is in substantial compliance with the design intent, and to the best of my understanding complies with the requirements of the code.”

**403.4.7.3.3.1 Report filing.** A copy of the final report shall be filed with the Authority Having Jurisdiction and an identical copy shall be maintained in the *fire command center*.

### Section 403.5.3

*Amend Section 403.5.3 to read as follows:*

**403.5.3 Stairway door operation.** *Stairway* doors other than the *exit discharge* doors shall be permitted to be locked from *stairway* side. *Stairway* doors that are locked from the *stairway* side shall be unlocked simultaneously without unlatching upon any of the following: a signal from the *fire command center*; activation of a fire alarm signal in an area served by the *stairway*; or failure of the power supply.

**Exception:** Upon approval of the *building official*, *stairway* doors opening directly into privately owned residential units or leased tenant spaces are permitted to unlock without unlatching only upon signal from the *fire command center*.

### Section 403.6.1

*Amend Section 403.6.1 to read as follows:*

**403.6.1 Fire service access elevator.** In buildings with an occupied floor more than 120 feet (36 576 mm) above the lowest level of fire department vehicle access, not fewer than two fire service access elevators, or all elevators, whichever is less, shall be provided in accordance with Section 3007. Each fire service access elevator shall have a capacity of not less than 3500 pounds (1588 kg) and shall comply with Section 3002.4.

**Exception:** Where a building is provided with multiple ambulance stretcher sized elevator cars in accordance with Section 3002.4 and the table below, fire service access elevators shall not be required.

**Table 403.6.1  
Ambulance Stretcher Sized Elevator Cars**

Highest floor level served above lowest level of fire department access in feet (meters)	Number of elevator cars sized to accommodate an ambulance stretcher <sup>a</sup> .
120-599 (36.6m-182.6m)	3
600-899 (182.9m-274.0m)	4
900 and greater (274.3m)	5

<sup>a</sup>. A fire service access elevator installed in accordance with Section 403.6.1 shall be permitted to substitute for one of these elevators.

### Section 404.3

Amend Section 404.3, deleting exceptions 1 and 2, to read as follows:

**[F] 404.3 Automatic sprinkler protection.** An *approved automatic sprinkler system* shall be installed throughout the entire building.

### Section 404.6

Amend Section 404.6 to read as follows:

**404.6 Enclosure of atriums.** *Atrium* spaces shall be separated from adjacent spaces by a 1-hour *fire barrier* constructed in accordance with Section 707 or a *horizontal assembly* constructed in accordance with Section 711, or both.

#### Exceptions:

1. A *fire barrier* is not required where a glass wall forming a smoke partition is provided. The glass wall shall comply with all of the following:

1.1 A separately zoned system of automatic sprinklers is provided along both sides of the separation wall and doors, or on the room side only if there is not a walkway on the *atrium* side. The sprinklers shall be located between 4 inches and 12 inches (102 mm and 305 mm) away from the glass and at intervals along the glass not greater than 6 feet (1829 mm). The sprinkler system shall be designed so that the entire surface of the glass is wet upon activation of the sprinkler system without obstruction;

1.2 The glass wall shall be installed in a frame in a manner that the framing system deflects without breaking (loading) the glass before the sprinkler system operates; and

1.3 *Unchanged*

*(Exceptions 2 -4 unchanged)*

### Section 406.3.3

Amend Section 406.3.3 to read as follows:

**406.3.3 Carports.** Carports shall be open on not fewer than two sides. Carports open on fewer than two sides shall be considered a garage and shall comply with the requirements for private garages.

**406.3.3.1 Carport separation.** Separations shall comply with the following:

1. A separation is not required between a Group R-3 and U carport, provided that the carport is entirely open on two or more sides and there are not enclosed areas above.
3. When a Group B, F, M, R, or S occupancy structure and a noncombustible carport are located on the same property with a minimum separation of ten feet (3048 mm) between the structure and the carport, as measured from the roof edges, exterior wall and opening protection are not required for either structure.

## Section 410.2.4

*Amend Section 410.2.4 to read as follows:*

**410.2.4 Proscenium wall.** Where the *stage* height is greater than 50 feet (15 240 mm), all portions of the *stage* shall be completely separated from the seating area by a *proscenium wall* with not less than a 2-hour *fire-resistance rating* extending continuously from the foundation to the roof.

**Exception:** Where a *stage* is located in a building of Type I construction, the *proscenium wall* is permitted to extend continuously from a minimum 2-hour *fire-resistance-rated* floor slab of the space containing the *stage* to the roof or a minimum 2-hour *fire-resistance-rated* floor deck above. This exception shall not apply to buildings of Type IB construction in which the minimum *fire-resistance ratings* of the building elements in Table 601 have been reduced in accordance with Section 403.2.1.1.

## Section 410.2.5

*Amend Section 410.2.5 to read as follows:*

**410.2.5 Proscenium Curtain.** When provided, a fire curtain shall be activated by manual emergency operation, fusible link, rate-of-rise heat detection installed in accordance with Section 907.3 operating at a rate of temperature rise of 15 to 20°F per minute (8 to 11°C per minute), or signal of water flow from any *automatic sprinkler system* covering the *stage* as required by Section 410.6.

## Section 410.6

*Amend Section 410.6 to read as follows:*

**[F] 410.6 Automatic sprinkler system.** *Stages* shall be equipped with an *automatic sprinkler system* in accordance with Section 903.3.1.1. Sprinklers shall be installed under the roof and gridiron and under all catwalks and galleries over the *stage*. Sprinklers shall be installed in dressing rooms, performer lounges, shops and storerooms accessory to such *stages*.

### **Exceptions:**

1. Sprinklers are not required for *stages* 1,000 square feet (93 m<sup>2</sup>) or less in area and 50 feet (15 240 mm) or less in height where curtains, scenery or other combustible hangings are not retractable vertically. Combustible hangings shall be limited to a single main curtain, borders, legs and a single backdrop.
2. Sprinklers are not required within portable orchestra enclosures on *stages*.

## Section 412.3.6

*Amend Section 412.3.6 by deleting the exception, to read as follows:*

**[F] 412.3.6 Fire suppression.** Aircraft hangars shall be provided with a fire suppression system designed in accordance with NFPA 409, based upon the classification for the hangar given in Table 412.3.6.

## Section 420.11

*Amend Section 420.11 to read as follows:*

**420.11 Visual access.** The primary entrance door of individual units in motels, hotels, apartment houses, condominiums, and vacation timeshare properties shall contain a means to allow the occupant to visually identify a visitor without opening the unit entry door.

## Section 503.1.4

*Amend Section 503.4 to read as follows:*

**503.1.4 Occupied roofs.** A roof level or portion thereof shall be permitted to be used as an occupied roof provided the occupancy of the roof is an occupancy that is permitted by Table 504.4 for the story immediately below the roof. The area of the occupied roofs shall not be included in the building area as regulated by Section 506.

**Exceptions:**

1. The occupancy located on an occupied roof shall not be limited to the occupancies allowed on the story immediately below the roof where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 and occupant notification in accordance with Section 907.5 is provided in the area of the occupied roof.

## Section 504.4

*Amend Section 504.4 to read as follows:*

**504.4 Number of Stories.** The maximum number of stories of a building shall not exceed the limits specified in Table 504.4.

**Exception:** In occupancies other than Groups E, F, H, and I, where a building of Type II, III-A, or V-A construction is equipped throughout with an approved *automatic sprinkler system* in accordance with Section 903.3.1.1 and complies with the high-rise provisions in accordance with Section 403, the values specified in Table 504.4 for maximum allowable number of stories above grade plane is increased by one.

## Section 507.3

*Delete Section 507.3:*

*(507.3 intentionally left blank)*

## Section 507.4

*Amend Section 507.4 to read as follows:*

**507.4 Sprinklered, one story.** The area of a Group A-4 building not more than one *story above grade plane* of other than Type V construction, or the area of a Group B, F, M or S building no more than one *story above grade plane* of any construction type, shall not be limited where the building is provided with an *automatic sprinkler system*

throughout in accordance with Section 903.3.1.1 and is surrounded and adjoined by *public ways* or *yards* not less than 60 feet (18 288 mm) in width.

**Exceptions:**

Buildings and structures of Type I and II construction for rack storage facilities that do not have access by the public shall not be limited in height, provided that such buildings conform to the requirements of Sections 507.4 and 903.3.1.1 and Chapter 32 of the *International Fire Code*.

**Section 507.14**

*Add new Section 507.14 to read as follows:*

**507.14 Noncombustible carports.** Noncombustible carports may be of unlimited area when they are open on all sides, not over twelve feet (3658 mm) in height, and located a minimum of 5 feet (1524 mm) from any property line or assumed property line, measured from the roof edge.

**Section 703.4**

*Add an exception to read as follows:*

**Exception:** A *fire barrier, fire partition or smoke barrier* may use non-rated glass and automatic sprinklers to achieve up to a 1-hour fire-resistance rating when all of the following are provided:

1. Automatic sprinklers are provided along both sides of the glazing and/or doors, or on the room side only if there is not a walkway on one side. The sprinklers shall be located between 4 inches and 12 inches (102 mm and 305 mm) away from the glass and at intervals along the glass not greater than 6 feet (1829 mm). The sprinkler system shall be designed so that the entire surface of the glass is wet upon activation of the sprinklers system without obstruction;
  - 1.1. The glass wall shall be installed in a gasketed frame in a manner that the framing system deflects without breaking (loading) the glass before the sprinkler system operates; and
  - 1.2. Where glass doors are provided in the glass wall, they shall be either *self-closing* or automatic-closing; and
  - 1.3. The sprinklers used to protect the glass wall and/or doors along the *fire barrier, fire partition or smoke barrier* are served by systems separate from the sprinklers protecting the room or space. The system shall be dedicated to those sprinklers used to protect the *fire barrier*.
  - 1.4. The *fire partition or smoke barrier* does not exceed a 1-hour fire-resistance rating.
  - 1.5. Where used as a *fire barrier*, the *fire barrier* shall be limited to those separating mixed occupancies not exceeding a 1-hour fire resistance rating.

**Section 705.3**

*Add new exception to Section 705.3 to read as follows:*

**Exceptions:**

1. (*Remains unchanged*)
2. (*Remains unchanged*)

3. At the discretion of the *Building Official*, multiple lots within a commercial subdivision established in accordance with the Nevada Revised Statutes, may be considered a single lot where approved reciprocal agreements are in place to maintain the building and associated building service equipment.

## Section 709.4

*Revise Section 709.4 to read as follows:*

**709.4 Continuity.** *Smoke barriers* shall form an effective membrane continuous from outside wall to outside wall and from the top of the foundation or floor/ceiling assembly below to the underside of the floor or roof sheathing, deck or slab above, including continuity through concealed spaces, such as those found above suspended ceilings, and interstitial structural and mechanical spaces. The supporting construction shall be protected to afford the required *fire-resistance rating* of the wall or floor supported in buildings of other than Type IIB, IIIB or VB construction. *Smoke barrier walls used to separate smoke compartments* shall comply with Sections 709.4.1. *Smoke-barrier walls used to enclose areas of refuge in accordance with Section 1009.6.4 or to enclose elevator lobbies in accordance with Section 405.4.3, 3007.6.2, or 3009.6.2* shall comply with Section 709.4.2. *Smoke barrier walls used to form smoke control boundaries in accordance with Section 909.5* shall comply with Section 709.4.3.

*(Exception and subsections to remain unchanged)*

*Add new Section 709.4.3 to read as follows:*

**709.4.3 Smoke barrier walls form smoke control boundaries.** *Smoke barrier walls used to form smoke control boundaries in accordance with Section 909.5* are not required to extend from outside wall to outside wall.

## Section 712.1.3

*Revise Section 712.1.3 to read as follows:*

**712.1.3 Escalator openings.** Where a building is equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1, vertical openings for escalators shall be permitted in accordance with Section 712.1.3.1, 712.1.3.2, or 712.1.3.3

**712.1.3.1 Opening size.** Protection by a draft curtain and closely spaced sprinklers in accordance with NFPA 13 shall be permitted where the area of the vertical opening between stories does not exceed twice the horizontal projected area of the escalator. In other than Groups B and M, this application is limited to openings that do not connect more than four stories.

**712.1.3.2 Automatic shutters.** Protection of the vertical opening by approved shutters at every penetrated floor shall be permitted in accordance with this section. The shutters shall be of noncombustible construction and have a *fire-resistance rating* of not less than 1.5 hours. The shutter shall be so constructed as to close immediately upon the actuation of a smoke detector installed in accordance with Section 907.3 and shall

completely shut off the well opening. Escalators shall cease operation when the shutter begins to close. The shutter shall operate at a speed of not more than 30 feet per minute (152.4 mm/s) and shall be equipped with a sensitive leading edge to arrest its progress where in contact with any obstacle, and to continue its progress on release therefrom.

**712.1.3.3 Two-story openings.** In other than Group I-2 or I-3 occupancies, vertical openings between two stories may contain an escalator. Such interconnected stories shall be separated from vertical openings and air transfer openings serving other floors by construction conforming to Section 713 for *shaft enclosures*.

### **Section 716.2.6.1 Door Closing**

*Revise Section 712.6.1 to read as follows:*

**716.2.6.1 Door closing.** *Fire doors in fire walls* shall be latching and automatic-closing in accordance with this section. *Fire doors in other than fire walls* shall be latching and self- or automatic-closing in accordance with this section.

#### **Exceptions:**

1. *Fire doors* located in common walls separating *sleeping units* in Group R-1 and between dwelling units of transient nature in Group R-2 shall be permitted without automatic- or *self-closing* devices.
2. The elevator car doors and the associated hoistway enclosure doors at the floor level designated for recall in accordance with Section 3003.2 shall be permitted to remain open during Phase I emergency recall operation.

### **Section 718.5**

*Amend Section 718.5 to read as follows:*

**718.5 Combustible materials in concealed spaces in Type I or II construction.** Combustible materials shall not be permitted in concealed spaces of buildings of Type I or II construction.

#### **Exceptions:**

1. Combustible materials in accordance with Section 603.
2. Combustible materials exposed within plenums complying with the *Uniform Mechanical Code*.
3. Class A *interior finish* materials classified in accordance with Section 803 where the concealed space is protected with fire sprinklers as required by the Fire Code when fire sprinklers are required in the building by another section in this code.
4. Combustible piping within partitions or shaft enclosures installed in accordance with the provisions of this code.

5. Combustible piping within concealed ceiling spaces installed in accordance with the *Uniform Mechanical Code* and the *Uniform Plumbing Code*.
6. Combustible insulation and covering on pipe and tubing, installed in concealed spaces other than plenums, complying with Section 720.7.

### **Section 803.10.1**

*Revise 803.10.1 to read as follow:*

*Add a new Section 803.10.1 as follows:*

**803.10.1 Site-fabricated stretch ceiling systems.** Where used as a dropped ceiling, the following shall apply:

1. In Types I and II construction, frames shall be of non-combustible materials.
2. Where automatic sprinkler protection in accordance with Section 903.3.1.1 or 903.3.1.2 is required beneath the panel, core materials shall be of non-combustible materials.

### **Section 803.15.2**

*Revise Section 803.15.2 to read as follows:*

**803.15.2 Set-out construction.** Where walls and ceilings are required to be of fire-resistance-rated or noncombustible construction and walls are set out or ceilings are dropped distances greater than specified in Section 803.15.1, noncombustible materials, in accordance with Section 703.5, shall be used.

#### **Exceptions:**

1. Where *interior finish* materials are protected on both sides by an *automatic sprinkler system* in accordance with Section 903.3.1.1
2. Where *interior finish* materials are attached to noncombustible backing or furring strips installed as specified in Section 803.15.1.1.
3. Where concealed spaces constructed from materials are filled with non-combustible insulation, or Class A *mineral fiber* insulation.

*(The remainder of the section remains unchanged)*

### **Section 806.1**

*Revise Section 806.1 item #4 to read as follows:*

#### **[F] 806.1 General.**

4. The permissible amount of noncombustible decorative materials, including decorative vegetation, shall not be limited.



## Section 902

Revise Section 902 to read as follows:

**Section 902.1 Pump and riser room size.** Where provided, fire pump rooms shall be designed with adequate space for all equipment necessary for the installation, as defined by the manufacturer, with sufficient working space around the stationary equipment. Clearances around equipment to elements of permanent construction, including other installed equipment and appliances, shall be sufficient to allow inspection, service, repair or replacement without removing such elements of permanent construction or disabling the function of a required fire-resistance-rated assembly. Fire pump rooms shall be provided with doors and unobstructed passageways large enough to allow removal of the largest piece of equipment.

**902.1.1 Access.** Fire pumps and controllers shall be provided with ready access. Where located in a pump room, the door shall be permitted to be locked provided that the key is available at all times.

**902.1.2 Marking on access doors.** Access doors for fire pump rooms shall be labeled "Fire Pump Room" or "Fire Pump House" with an approved sign. The lettering shall be in contrasting color to the background. Letters shall have a minimum height of 2 inches (51 mm) with a minimum stroke of 3/8 inch (10 mm).

**902.1.4 3 Lighting.** Permanently installed artificial illumination shall be provided in fire pump rooms.

**902.2 Automatic sprinkler system riser rooms.** A dedicated *automatic sprinkler system* riser room shall be required for each fire sprinkler system riser.

### Exceptions:

1. Where approved by the *fire code official*, where systems are controlled by wall-mounted Post Indicator Valves (PIV), and where exterior access is provided to the monitoring panel that is located in a conditioned room, an *automatic sprinkler system* riser room is not required.
2. When approved, where a single system serves the building and the system is controlled by a PIV, a riser room is not required.
3. In multi-story facilities, floor control risers are permitted to be located on each floor level in an exit stair enclosure.
4. Systems designed in accordance with NFPA 13D do not require an automatic sprinkler system riser room.
5. Systems designed in accordance with NFPA 13R shall have an *automatic sprinkler system* riser room/closet that is large enough to facilitate access to all the necessary fire sprinkler and fire alarm valves and devices. This area shall be accessible from the outside with either a door or an access panel large enough to allow for testing and maintenance of system. The area shall also maintain a minimum temperature of 40° F and a maximum temperature of 100° F.

**902.2.1 Contents.** The primary *automatic sprinkler system* riser room shall contain the fire riser into the building. The fire riser shall contain at a minimum, a flow switch, a check valve, and a control valve.

**Exception:** Where there is a single system in the building and an exterior Post Indicator Valve (PIV) is provided, then the control valve is not required in the *automatic sprinkler system* riser room.

**902.2.2 Exterior Access Door.** *Automatic sprinkler system* riser rooms shall have an exterior access door with a minimum width of 36 inches (914 mm) and a minimum height of 80 inches (2032 mm)

**Exception:** For high-rise, terminal, and covered mall buildings, secondary fire risers may be contained in *automatic sprinkler system* riser rooms that are located in dedicated rooms as *approved* by the *fire code official* in areas without direct access from the exterior.

**902.2.3 Protection.** *Automatic sprinkler system* riser rooms shall be separated from the rest of the building by 1-hour *fire partitions*.

**902.2.4 Size.** The riser room shall have a minimum area of 16 square feet (1.49 m<sup>2</sup>), with a minimum dimension of 4 feet, for the first sprinkler riser, plus an additional 9 square feet for each additional riser contained.

**902.2.5 Clearances for a fire alarm control unit.** Where a fire alarm control unit is located in the *automatic sprinkler system* riser room, the unit shall be located so that there is a minimum clearance in accordance with the electrical code.

**902.2.6 Auxiliary control valves.** *Automatic sprinkler system* riser rooms are not required for auxiliary control valves.

**902.2.7 Signage.** Weatherproof signage shall be provided on the exterior access door. Signage shall state "Fire Sprinkler Riser Room" in a contrasting color. Letters shall have a minimum height of 2 inches with a minimum stroke of 3/8 inch.

**902.3 Environment.** *Automatic sprinkler system* riser rooms and fire pump rooms shall be maintained at a temperature of not less than 40° F and a maximum temperature of 100° F. Heating and cooling units shall be permanently installed.

**Exceptions:**

1. Where the fire sprinkler riser room or fire pump room does not contain a Fire Alarm/Monitoring Panel or spare sprinklers heads, or when these devices are rated for higher ambient temperatures the room shall not be required to be conditioned for maximum temperature.

2. Heating and/or conditioning is not required if calculations are prepared and sealed by a design professional, on a case-by case address specific basis, proving that the temperature within the riser room does not fall or rise below the temperature range of 40° F to 100° F. To maintain 40° F, the temperature analysis must use a starting temperature of 50° F and use an outside temperature of 0° F for a period of 8 hours. To maintain 100° F, the temperature analysis must use a starting temperature of 90° F and use an outside temperature of 120° F for a period of 8 hours.

3. Where the fire sprinkler riser room or fire pump room contains equipment that has a higher manufacturer's temperature rating acceptable to the *fire code official*.

### Section 903.1.1

*Delete Section 903.1.1*

### Section 903.3.1.1.1

*Revise Section 903.3.1.1.1 to read as follows:*

**903.3.1.1.1 Exempt locations.** Automatic sprinklers shall not be required in the following rooms or areas where such rooms or areas are protected with an *approved* automatic fire detection system in accordance with Section 907.2 that will respond to visible or invisible particles of combustion. Sprinklers shall not be omitted from any room merely because it is damp, or fire-resistance rated construction, or contains electrical equipment.

1. Any room where the application of water, or flame and water, constitutes a serious life or fire hazard.
2. Any room or space where sprinklers are considered undesirable because of the nature of the contents, when *approved* by the *fire code official*.
3. Fire service access elevator machine rooms and machinery spaces.
4. Machine rooms, machinery spaces, control rooms and control spaces associated with occupant evacuation elevators designed in accordance with Section 3008.

### Section 903.3.1.2

*Revise Section 903.3.1.2 to read as follows:*

**903.3.1.2 NFPA 13R sprinkler systems.** *Automatic sprinkler systems* in Group R Occupancies up to and including two stories in height in buildings not exceeding 60 feet (18 288 mm) in height above grade plane shall be permitted to be installed throughout in accordance with NFPA 13R.

The number of stories in Group R occupancies constructed in accordance with Section 510.2 and 510.4 shall be measured from the horizontal assembly creating separate buildings.

### Section 903.2

*Revise Section 903.2 to read as follows:*

**903.2 Where required.** *Approved automatic sprinkler systems* in new buildings and structures shall be provided throughout all buildings and structures, regardless of occupancy type and including buildings and structures in accordance with the *International Residential Code*, which meet one of the following requirements, and additionally in the locations described in Sections 903.2.1 through 903.2.12:

1. For buildings constructed in accordance with the *International Building Code*, approved automatic sprinklers systems are required where the building area exceeds 5,000 square feet (464 m<sup>2</sup>).
2. For buildings constructed in accordance with the *International Residential Code*, approved *automatic sprinkler systems* are required where the living space exceeds 5,000 square feet (464 m<sup>2</sup>).
3. For any buildings, not otherwise requiring fire sprinklers, where the available fire flow does not meet the fire flow requirements of the *International Fire Code*, approved *automatic sprinkler systems* shall be provided as required by the *fire code official*.

**Exceptions:**

1. *Open parking garages* with no other occupancy above the *open parking garage* structure and with fire apparatus lanes immediately adjacent to two open sides of the garage equaling a minimum of 40% of the garage perimeter are not required to be protected with automatic sprinklers.
2. Automatic sprinklers shall not be required in buildings or structures used exclusively for agricultural, livestock, or equestrian activities, with or without spectators, where structures may cover the use, including the spectator area, provided the use is not enclosed with any walls along any portion of the perimeter of the structures, except for rooms containing code-required building service components, and provided that the minimum clear height along the entire perimeter of the structure is 7 feet 6 inches (2286 mm).
3. Buildings, structures, or service equipment and installations directly used in utility generation or distribution which are installed on properly recorded easements belonging to water, gas, power, telephone, or other utility companies that are preemptively regulated by the Nevada Public Service Committee, a State of Nevada charter, or other public franchise. This exception does not apply to non-exempted buildings or structures containing occupiable spaces such as offices, meeting rooms, service counters, public restrooms, or other normally occupied spaces.
4. Playground shade structures, fuel dispensing canopies, and carports open to a minimum clear height of 10 feet on all sides around the entire perimeter, with non-combustible structural support and frame, with either non-combustible material, or fabric complying with NFPA 701 providing shade, located a minimum of 10 feet from the nearest building, property line or shade structure, and less than 10,000 square feet in projected area, do not require fire sprinklers.
5. For new construction expanding existing unsprinklered Group R-3 buildings or one- and two-family *dwellings* built in accordance with the *International Residential Code*, sprinklers are not required to be retrofitted into the building where the building is provided with fire flow in accordance with Appendix B and the newly added living space does not exceed 5,000 square feet.

If any fire area in a building or structure is provided with fire sprinklers, whether required or not, all fire areas in the building or structure shall be provided with fire sprinklers:

**Exceptions:**

1. Where a building is subdivided into separate buildings, each having a total building area of less than 5,000 sq ft (464 m<sup>2</sup>), by *fire walls* with no openings constructed in accordance with the *International Building Code*.
2. Special hazard areas that required sprinklers for certain uses, such as medical gas rooms, may be fire sprinklered without requiring additional fire sprinklers throughout the building, when approved by the *fire code official*.

### Section 903.2.3

Revise Section 903.2.3 to read as follows:

**903.2.3 Group E.** An *automatic sprinkler system* shall be provided for Group E occupancies where one of the following conditions exists:

1. Throughout all Group E *fire areas* greater than 5,000 square feet in area.
2. The Group E *fire area* is located on a floor other than a level of *exit discharge* serving such occupancies.

**Exception:** In buildings where every classroom has not fewer than one exterior exit door at ground level, an *automatic sprinkler system* is not required in any area below the lowest level of *exit discharge* serving that area

3. The Group E *fire area* has an occupant load of 300 or more.
4. Daycare facilities where there is occupancy from 12:00 AM - 6:00 AM and care for 7 or more children.

### Section 903.2.11.5

Revise Section 903.2.11.5 to read as follows:

**903.2.11.5 Commercial cooking operations.** An *automatic sprinkler system* shall be installed in a commercial kitchen exhaust hood and duct system where an *automatic sprinkler system* is used to comply with Section 904, and for the entire length of duct when the duct length exceeds 75 feet.

### Section 903.4

Revise Section 903.4 to read as follows:

**903.4 Sprinkler system supervision and alarms.** Valves controlling the water supply for *automatic sprinkler systems*, pumps, tanks, water levels and temperatures, critical air pressures and waterflow switches on all sprinkler systems shall be electrically supervised by a *listed* fire alarm control unit.

**Exceptions:**

1. *Automatic sprinklers systems* protecting one- and two-family *dwellings*.
2. Limited area sprinkler systems in accordance with Section 903.3.8.
3. *Automatic sprinklers systems* installed in accordance with NFPA 13R where a common supply main is used to supply both domestic water and the *automatic sprinkler system*, and a separate shutoff valve for the *automatic sprinkler system* is not provided.
4. Jockey pump control valves that are sealed or locked in the open position.
5. Control valves to paint spray booths or dip tanks that are sealed or locked in the open position.
6. Valves controlling the fuel supply to fire pump engines that are sealed or locked in the open position.
7. Trim valves to pressure switches in dry, preaction and deluge sprinkler systems that are sealed or locked in the open position.

## Section 903.4.1

Revise Section 903.4.1 to read as follows:

**903.4.1 Monitoring.** Alarm, supervisory, and trouble signals shall be distinctly different and shall be automatically transmitted to an *approved* supervising station or, when approved by the *fire code official*, shall sound an audible signal at a *constantly attended location*.

### Exceptions:

1. Underground key or hub are not required to be monitored.
2. Backflow prevention devices located at the municipal water supply connection are not required to be monitored when either locked in the open position, or are located within an underground vault or an approved insulated enclosure.

Multi-story facilities shall provide zone annunciation on a floor-by-floor basis. In occupancies provided with a supervised sprinkler system, the following three distinctly different signals shall be transmitted to an approved supervising station:

1. Water Flow Alarm
2. Supervisory
3. System Trouble

The supervising station shall only retransmit Water Flow Alarm signals to the Fire Department.

## Section 903.4.2

Revise Section 903.4.2 to read as follows:

**903.4.2 Audible and Visual Notification appliances.** *Approved* audible and visual notification appliances shall be connected to each *automatic sprinkler system*. Such sprinkler waterflow alarm notification appliances shall be activated by water flow equivalent to the flow of a single sprinkler of the smallest orifice size installed in the system. Exterior audible and visual notification appliances shall be provided on the exterior of the building above the wall-mounted Fire Department Connection. One interior audible and visual notification appliance shall be provided near the main entrance or in a normally occupied location. In multiple-tenant facilities, one interior audible and visual notification appliance shall be provided near the main entrance or in a normally occupied location for each tenant space. Where a fire alarm system is installed, actuation of the *automatic sprinkler system* shall actuate the building fire alarm system.

## Section 903.4.3

Revise Section 903.4.3 to read as follows:

**903.4.3 Floor control valves.** Approved supervised indicating control valves shall be provided at the point of connection to the riser on each floor in multi-story facilities.

## Section 904.2

Revise Section 904.2 to read as follows:

**904.2 Where permitted.** Automatic fire-extinguishing systems shall be approved by the *fire code official*.

## Section 905.3

Revise Section 905.3 to read as follows:

**905.3 Required installations.** Standpipe systems shall be installed where required by Sections 905.3.1 through 905.3.8. Standpipe systems are allowed to be combined with automatic sprinkler systems.

**Exception:** Standpipe systems are not required in Group R-3 occupancies.

The standpipe design shall be *approved* by the *fire code official*. Standpipes in buildings with fire pumps shall be automatic. Standpipes in buildings not subject to freezing shall be wet. Standpipes in areas subject to freezing shall be permitted to be manual dry when equipped with both KNOX locking caps and/or KNOX plugs for fire department connections (FDC) and hose valves that are acceptable to the *fire chief*.

### Section 905.3.1

Revise Section 905.3.1 to read as follows:

**905.3.1 Height.** Approved Class I, II, III standpipe systems shall be installed throughout buildings where any of the following conditions exist:

1. Four or more stories are above or below grade plane
2. The floor level of the highest story is located more than 30 feet (9144 mm) above the lowest level of the fire department vehicle access.
3. The floor level of the lowest story is located more than 30 feet (9144 mm) below the highest level of the fire department vehicle access.

In determining the lowest level of fire department vehicle access, it shall not be required to consider:

1. Recessed loading docks for four vehicles or less, and
2. Conditions where topography makes access from the fire department vehicle to the building impractical or impossible.

### Section 905.3.3

Revise Section 905.3.3 to read as follows:

**905.3.3 Covered and open mall buildings.** Covered mall and open buildings shall be equipped throughout with a standpipe system where required by Section 905.3.1. Mall buildings not required to be equipped with a standpipe system by Section 905.3.1 shall be equipped with Class I hose connections connected to the *automatic sprinkler system* sized to deliver water at 250 gallons per minute (946.4 L/min) at the most hydraulically remote hose connection while concurrently supplying the *automatic sprinkler system* demand. The standpipe system shall be designed not to exceed a 50 pounds per square inch (psi) (345 kPa) residual pressure loss with a flow of 250 gallons per minute (946.4 L/min) from the fire department connection to the hydraulically most remote hose connection. Hose connections shall be provided at each of the following locations:

1. Within the mall at the entrance to each *exit passageway* or corridor.
2. At each floor-level landing within *interior exit stairways* opening directly on the mall.
3. At exterior public entrances to the mall of a covered mall building.
4. At public entrances at the perimeter line of an open mall building.
5. At other locations as necessary so that the distance to reach all portions of a tenant space does not exceed 100 feet (30 480 mm) of hose and 30-foot (9144 mm) of stream from a hose connection. The length of hose shall be measured along normal walking routes, and the stream shall not be expected to penetrate walls or windows.

### Section 905.3.9

Revise Section 905.3.9 to read as follows:

**905.3.9 Building area.** When required by the *fire code official*, buildings in excess of 10,000 square feet (929 m<sup>2</sup>) in area per level shall be equipped with a Class I standpipe system where any portion of the building's interior area is more than 200 feet (60,960 mm) measured vertically and horizontally from the nearest point of fire department apparatus access.

### Section 905.4

Revise Section 905.4 to read as follows:

**905.4 Location of Class I standpipe hose connections.** Class I standpipe hose connection shall be provided in all of the following locations:

1. In every required *interior exit stairway*, a hose connection shall be provided for each *story* above and below *grade plane*. Hose connections shall be located at the main floor landing unless otherwise approved by the *fire code official*.



**Exception:** A single hose connection shall be permitted to be installed in the open corridor or open breezeway between open stairs that are not greater than 75 feet (22 860 mm) apart.

2. On each side of the wall adjacent to the exit opening of a *horizontal exit*.

**Exception:** Where floor areas adjacent to a *horizontal exit* are reachable from an interior exit stairway hose connection by a 30-foot (9144 mm) hose stream from a nozzle attached to 100 feet (30 480 mm) of hose, a hose connection shall not be required at the *horizontal exit*.

3. In every exit passageway, at the entrance from the *exit passageway* to other areas of a building.

**Exception:** Where floor areas adjacent to an *exit passageway* are reachable from an *interior exit stairway* hose connection by a 30-foot (9144 mm) hose stream from a nozzle attached to 100 feet (30 480 mm) of hose, a hose connection shall not be required at the entrance from the *exit passageway* to other areas of the building.

4. In covered mall buildings, adjacent to each exterior public entrance to the mall and adjacent to each entrance from an *exit passageway* or *exit corridor* to the mall. In open mall buildings, adjacent to each public entrance to the mall at the perimeter line and adjacent to each entrance from an *exit passageway* or *exit corridor* to the mall.
5. Where the roof has a slope less than four units vertical in 12 units horizontal (33.3-percent slope), a hose connection located to serve the roof or at the highest landing of an *interior exit stairway* with access to the roof provided in accordance with Section 1011.12.
6. Throughout the entire building so that all portions of each floor level are provided with hose valve coverage utilizing 100 feet (30 480 mm) of hose and 30-foot (9144 mm) stream from any hose connection located on that floor or intermediate landing. The length of hose shall be measured along normal walking routes, and the stream shall not be expected to penetrate walls or windows

#### **Section 905.4.1**

*Revise Section 905.4.1 to read as follows:*

**905.4.1 Protection.** Risers and laterals of Class I standpipe systems not located within an *interior exit stairway* or pressurized enclosure shall be protected by a degree of fire resistance equal to that required for vertical enclosures in the building in which they are located.

**Exception:** In buildings constructed of Type I or Type II construction or in buildings equipped throughout with an approved *automatic sprinkler system*, standpipe laterals and vertical risers that are not located within an *interior exit stairway* are not required to be enclosed within fire-resistance-rated construction.

## Section 905.9

*Revise Section 905.9 to read as follows:*

**905.9 Valve supervision.** Valves controlling water supplies shall be supervised in the open position so that a change in the normal position of the valve will generate a supervisory signal at the supervising station required by Section 903.4. Where a fire alarm system is provided, a signal shall also be transmitted to the control unit.

**Exceptions:** Valves to underground key or hub do not require supervision.

## Section 906

*Amend Section 906.2 as follows and delete Section 906.2 – 906.10.*

**[F] 906.1 General** Portable fire extinguishers are regulated by the *International Fire Code*.

*Remainder of Section 906, including 906.1, 906.2, 906.3, 906.4, 906.5, 906.6, 906.7, 906.8, 906.9 and 906.10 are deleted.*

## Section 907.1.4

*Revise Section 907.1.4 to read as follows:*

**907.1.4 Signage.** A “FIRE ALARM CONTROL PANEL” sign shall be provided in minimum 2” letters with a minimum ½” stroke. The color of the letters shall be contrasting with respect to the background. The sign shall be provided on the door leading to the fire alarm control panel(s), unless otherwise approved by the *fire code official*.

## Section 907.2

*Revise Section 907.2 to read as follows:*

**907.2 Where required-new buildings and structures.** An *approved* fire alarm system installed in accordance with the provisions of this code and NFPA 72 shall be provided in new buildings and structures in accordance with Sections 907.2.1 through 907.2.23 and provide occupant notification in accordance with Section 907.5, unless other requirements are provided by another section of this code.

In separated mixed-use occupancy buildings the fire alarm/detection system shall be limited to the *fire area* that requires the system. In non-separated mixed-use occupancy buildings containing an occupancy with a fire alarm/detection system the system is required to be extended throughout the building or *fire area*.

A fire alarm system shall be installed throughout all buildings three or more stories in height.

**Exception:** Group R-3 occupancies and single-family dwellings built under the IRC.

Not fewer than one manual fire alarm box shall be provided in an *approved* location to initiate a fire alarm signal for fire alarm systems employing automatic fire detectors or waterflow detection devices. Where other sections of this code allow elimination of fire alarm boxes to sprinklers, a single fire alarm box shall be installed.

**Exceptions:** The manual fire alarm box shall not be installed for fire alarm systems dedicated to elevator recall control and supervisory service- and fire sprinkler monitoring systems.

### **Section 907.2.7.1**

*Delete Section 907.2.7.1*

### **Section 907.2.8.2**

*Revise Section 907.2.8.2 to read as follows:*

**907.2.8.2 Automatic smoke detection system.** An automatic smoke detection system that activates the occupant notification system in accordance with Section 907.5 shall be installed throughout all interior *corridors* serving *sleeping units*. For the purposes of this section, interior means a conditioned space.

**Exception:** An automatic smoke detection system is not required in buildings that do not have interior *corridors* serving *sleeping units* and where each *sleeping unit* has a *means of egress* doors opening directly to an *exit* or to an exterior *exit access* that leads directly to an *exit*.

### **Section 907.2.8.3**

*Revise Section 907.2.8.3*

**907.2.8.3 Smoke alarms and smoke detectors.** Single- and multiple-station smoke alarms or smoke detectors shall be installed in accordance with Section 907.2.10.

**907.2.8.3.1 Smoke detectors.** Smoke detectors shall operate in accordance with 907.2.10.7.

### **Section 907.2.8.4**

*Add section 907.2.8.4 to read as follows:*

**907.2.8.4 Smoke detection in sleeping areas.** Smoke alarms or smoke detectors provided in sleeping areas within R-1 occupancies that are required to have a fire alarm system in accordance with this code shall be able of producing the 520 Hz low frequency audible alarm signal complying with the sleeping area requirements of NFPA 72.

## Section 907.2.9.1

Revise Section 907.2.9.1 to read as follows:

**907.2.9.1 Manual fire alarm system.** A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group R-2 occupancies where any of the following conditions apply:

1. Any *dwelling unit* or *sleeping unit* is located three or more stories above the lowest *level of exit discharge*;
2. Any *dwelling unit* or *sleeping unit* is located more than one story below the highest *level of exit discharge* of *exits* serving the *dwelling unit* or *sleeping unit*; or
3. The building contains 15 or more *dwelling units* or *sleeping units*.

### Exceptions:

1. A fire alarm system is not required in buildings not more than two *stories* in height where all *dwelling units* or *sleeping units* and contiguous attic and crawl spaces are separated from each other and public or common areas by at least 1-hour *fire partitions* and each *dwelling unit* or *sleeping unit* has an *exit* directly to a *public way*, *exit court* or *yard*.
2. Manual fire alarm boxes are not required where the building is equipped throughout with an *automatic sprinkler system* installed in accordance with Section 903.3.1.1 or 903.3.1.2 and the occupant notification appliances will automatically activate throughout the notification zones upon a sprinkler water flow.
  - 2.1 At least one manual fire alarm box is installed at an *approved* location.
3. A fire alarm system is not required in buildings that do not have interior *corridors* serving *dwelling units* and are protected by an approved *automatic sprinkler system* installed in accordance with Section 903.3.1.1 or 903.3.1.2, provided that *dwelling units* either have a means or egress door opening directly to an exterior *exit access* that leads directly to exits or are served by open-ended *corridors* designed in accordance with Section 1027.6, Exception 3.

## Section 907.2.9.1.1

Revise Section 907.2.9.1.1 to read as follows:

**907.2.9.1.1 Automatic smoke detection system.** When a fire alarm system is required, an automatic smoke detection system that activates the occupant notification system in accordance with Section 907.5 shall be installed throughout all interior *corridors* serving *dwelling units*. For the purposes of this section, interior means a conditioned space.

**Exception:** An automatic smoke detection system is not required in buildings that do not have interior corridors serving *dwelling units* and where each *dwelling unit* has a means of egress doors opening directly to an exit or to an exterior *exit access* that leads directly to an *exit*.

## Section 907.2.9

Revise Section 907.2.9 to read as follows:

**907.2.9.2 Smoke alarms and smoke detectors.** Single- and multiple-station smoke alarms or smoke detectors shall be installed in accordance with Section 907.2.10.

**907.2.9.2.1 Smoke detectors.** Smoke detectors shall operate in accordance with 907.2.10.7.

**907.2.9.3 Smoke detection in sleeping areas.** Smoke alarms or smoke detectors provided in sleeping areas within R-2 occupancies that are required to have a fire alarm system in accordance with this code shall be able of producing the 520 Hz low frequency audible alarm signal complying with the sleeping area requirements in NFPA 72.

**907.2.9.4 Group R-2 college and university buildings.** An automatic smoke detection system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group R-2 occupancies operated by a college or university for student or staff housing in all of the following locations:

1. Common spaces outside of *dwelling units* and *sleeping units*.
2. Laundry rooms, mechanical equipment rooms and storage rooms.
3. All interior corridors serving *sleeping units* or *dwelling units*.

**Exception:** An automatic smoke detection system is not required in buildings that do not have interior *corridors* serving *sleeping units* or *dwelling units* and where each *sleeping unit* or *dwelling unit* either has a *means of egress* door opening directly to an exterior *exit access* that leads directly to an *exit* or a *means of egress* door opening directly to an *exit*.

Required smoke alarms in *dwelling units* and *sleeping units* in Group R-2 occupancies operated by a college or university for student or staff housing shall be interconnected with the fire alarm system in accordance with NFPA 72.

## Section 907.2.12

Revise Section 907.2.12 to read as follows:

**907.2.12 High-rise buildings.** High-rise buildings shall be provided with an automatic smoke detection system in accordance with Section 907.2.12.1, a fire department communication system in accordance with Section 907.2.12.2 and an emergency voice/alarm communication system in accordance with Section 907.5.2.2.

### Exceptions:

1. Airport traffic control towers in accordance with Sections 412 and 907.2.21.
2. *Open parking garages* in accordance with Section 406.5
3. Low-hazard special occupancies in accordance with Section 503.1.1

### Section 907.2.12.1.3

Add Section 907.2.12.1.3 to read as follows:

**907.2.12.1.3 System smoke detection with sounder bases.** In a new structure classified as a *high-rise building* with residential occupancies, in lieu of installing stand-alone smoke alarms, system-type analog addressable smoke detectors with sounder-bases shall be installed in all locations required by Section 907.2.11. Activation of said devices shall send a supervisory alarm signal to the building fire alarm control panel. The smoke detector sounder shall only sound within the individual *dwelling unit*, suite of rooms, or similar area and shall not actuate the building fire alarm system, unless otherwise permitted by the *fire code official*.

### Section 907.2.12.2

Revise Section 907.2.12.2 to read as follows:

**907.2.12.2 Fire department communication system.** Where a wired communication system is provided in addition to an emergency responder radio coverage system in accordance with Section 510 of the *International Fire Code*, the wired fire department communication system shall be designed and installed in accordance with NFPA 72 using warden stations and shall operate between a *fire command center* complying with Section 911, elevators, elevator lobbies, emergency and standby power rooms, fire pump rooms, *areas of refuge* and inside *interior exit stairways* and other locations as required by the *fire code official*. The fire department communication device shall be provided at each floor level within the *interior exit stairway*.

### Section 907.2.12.3

Revise Section 907.2.12.3

**907.2.12.3 Multi-channel voice evacuation.** Voice evacuation systems for high-rise buildings shall be multi-channel systems.

### Section 907.2.24

Add Section 907.2.24

**907.2.24 Child-care smoke detectors.** System smoke detectors shall be installed within sleeping areas of day cares.

**Exception:** Single-station smoke alarms may be permitted in facilities not otherwise required to be provided with a fire alarm system.

### Section 907.5.2.1.1

Revise Section 907.5.2.1.1 to read as follows:

**907.5.2.1.1 Average sound pressure.** The audible alarm notification appliances shall provide a sound pressure level of 15 decibels (15 dBA) above the average ambient sound level or 5 dBA above the maximum sound level having a duration of at least 60 seconds, whichever is greater, in every occupiable space within the building. The minimum sound pressure levels shall be: 90 dBA in mechanical equipment rooms; and 80 dBA in other occupancies. Audible notification appliances shall be installed in each occupiable space.

Exceptions:

1. Laundry rooms, walk-in closets, storage rooms and walk-in coolers/freezers equal to or less than 100 square feet (9.29 m<sup>2</sup>) in floor area.
2. In lieu of showing an audible notification appliance within a specific occupiable space on the plans, calculations may be provided showing that the alarm signals from the adjacent audible appliances will achieve a minimum of 80 decibels inside and throughout that space, where doors or other barriers between the space and the adjacent audibility device(s) are closed. Sound pressure levels shall be measured during system acceptance testing to verify the calculated space achieves a minimum of 80 dBA.
3. In sleeping areas required to be protected with low-frequency alarms, the 80 dBA minimum sound pressure provision is not required where a listed fire alarm device is not available to simultaneously achieve both the low-frequency signal and the 80 dBA minimum sound pressure.

### Section 907.5.2.3.1

Revise Section 907.5.2.3.1 to read as follows:

**907.5.2.3.1 Public use areas and common use areas.** Visible alarm notification appliances shall be provided in *public use areas* and *common use areas*.

1. Electrical and mechanical rooms that are not normally occupied or less than 400 square feet.
2. Janitor closets.
3. Storage rooms less than 400 square feet.
4. Exit enclosures .
5. Individual work areas or offices and private toilets serving individual work areas or offices.
6. Individual inmate sleeping areas and patient sleeping rooms.

### Section 907.6.4.1

Revise Section 907.6.4.1 to read as follows:

**907.6.4.1 Alarm Annunciator and Fire Alarm Control Unit.** Alarm annunciators and fire alarm control units shall comply with all of the following:

1. If a building has a main entrance/foyer and has more than one *story*, a read-only remote annunciator shall be provided inside the building at the main entrance/foyer.

**Exceptions:**

1. High-rise buildings provided with a *fire command center*.
2. Alternate location as approved by the *fire code official*.

2. If a building has a fire riser room with an exterior door, the fire alarm control unit shall be provided within the fire riser room.

**Exceptions:**

1. High-rise buildings provided with a *fire command center*.
2. Alternate location as approved by the *fire code official*.

3. The location of an operated initiating device shall be displayed by alphanumeric display at the annunciator.
4. The alphanumeric display shall state the device type, the floor level (if applicable), the device address and a descriptive location for the operated device(s).
5. The visible annunciation of the location of operated initiating devices shall not be canceled by the means used to deactivate alarm notification appliances.

## Section 907.6.6

Revise Section 907.6.6 to read as follows:

**907.6.6 Monitoring.** Fire alarm systems required by this chapter or by the *International Fire Code* shall be monitored by an *approved* supervising station in accordance with NFPA 72 and as *approved* by the *fire code official*. Home care facilities that are licensed by the State of Nevada are also required to be monitored per this section. Proprietary Supervising Station Systems (also called self-monitoring systems), when allowed by the *fire code official*, shall be in accordance with the IFC and NFPA 72.

**Exception:** Monitoring by a supervising station is not permitted unless specifically approved by the *fire code official* for:

1. Single- and multiple station smoke alarms required by Section 907.2.10.
2. *Automatic sprinkler systems* in one- and two-family dwellings.
3. Monitoring systems utilizing point-by-point monitoring.

In occupancies provided with a fire alarm system, the following four distinctly different alarm signals shall be transmitted to an approved supervising station:

1. Water Flow Alarm, if provided with a fire sprinkler system.
2. Fire Alarm.
3. System Trouble.
4. Supervisory, when applicable.

For new and existing facilities, the supervising station shall only retransmit Water Flow Alarm signals to the Fire Department.



**Exception:** The supervising station shall also retransmit fire alarm signals for government buildings, (all facilities owned, leased and/or operated by any City, County, State, or Federal government agency) schools (including daycares, preschools, public and private schools etc.) and hospitals (including nursing homes, convalescent homes, adult care facilities, group homes, extended care facilities, etc.).

### Section 909.5.3

*Amend Section 909.5.3 to read as follows:*

**909.5.3 Opening protection.** Openings in *smoke barriers* shall be protected by automatic-closing devices actuated by the required controls for the mechanical smoke control system. Door openings shall be protected by *fire door assemblies* complying with Section 716.

#### **Exceptions:**

1. *Unchanged.*
2. *Unchanged.*
3. *Unchanged.*
4. *Unchanged.*
5. *Unchanged.*
6. *Unchanged.*
7. Door openings in *smoke barriers* shall be permitted to be protected by *self-closing* fire doors in the following locations:
  - 7.1 *Guest rooms.*
  - 7.2 *Individual dwelling units*
  - 7.3 *Mechanical rooms.*
  - 7.4 *Elevator machine rooms.*
  - 7.5 *Electrical rooms used exclusively for that purpose.*
  - 7.6 *Doors typically maintained in a closed position as approved by the Building Official.*

### Section 909.16

*Revise Section 909.16 to read as follows and delete 909.16.1 through 909.16.3:*

**[F] 909.16 Fire-fighter's smoke control panel.** The fire-fighter's smoke control panels are regulated by the *International Fire Code*.

*Remainder of Section 909.16, including 909.16.1, 909.16.2 and 909.16.3 are to be deleted.*

### Section 909.17

*Revise 909.17 to read as follows:*

**909.17 System response time.** Smoke-control system activation shall be initiated immediately after receipt of an appropriate automatic or manual activation command. Smoke control systems shall activate individual components (such as *dampers* and fans)

in the sequence necessary to prevent physical damage to the fans, *dampers*, ducts and other equipment. For purposes of smoke control, the fire-fighter's smoke control panel response time shall be the same for automatic or manual smoke control action initiated from any other building control point. The total response time, including that necessary for detection, shut-down of operating equipment and smoke control system startup, shall allow for full operational mode to be achieved before the conditions in the space exceed the design smoke condition. Upon receipt of an alarm condition at the fire alarm control panel, fans, *dampers* and automatic doors shall have achieved their proper operating state and final status shall be indicated at the smoke control panel within 90 seconds. Verification shall be reported in the required final report.

### **Section 909.18.8.3**

*Revise 909.18.8.3 to read as follows:*

**909.18.8.3 Reports.** A complete report of testing shall be prepared by the *approved* agency. The report shall include identification of all devices by manufacturer, nameplate data, design values, measured values and identification tag or *mark*. The report shall be reviewed by the responsible *registered design professional* and, when satisfied that the design intent has been achieved, the responsible *registered design professional* shall seal, sign and date the report with a statement as follows:

"I have reviewed this report and by personal knowledge and on-site observation certify that the applicable smoke control system(s) are in substantial compliance with the design intent, and to the best of my understanding complies with requirements of the code."

**909.18.8.3.1 Report filing.** A copy of the final report shall be filed with the responsible code official and an identical copy shall be maintained in an *approved* location at the building.

### **Section 909.18.10**

*Add a new Section 909.18.10 to read as follows:*

**909.18.10 Alternative testing method.** When required by the Code Official, theatrical smoke or other approved tracer gases shall be used during final acceptance testing to visually verify air movement.

### **Section 909.20**

*Revise 909.20 to read as follows:*

**909.20 Smokeproof enclosures.** Where required by Section 1023.11, a smokeproof enclosure shall be constructed in accordance with this section. A smokeproof enclosure shall consist of an *interior exit stairway* or *ramp* that is enclosed in accordance with the applicable provisions of Section 1023 and an open exterior balcony or pressurized stair and vestibule meeting the requirements of this section. Where access to the roof is required by the *International Fire Code*, such access shall be from the smokeproof enclosure where a smokeproof enclosure is required.

(909.20.1 through 909.20.3.3 remain w/o modification)

Delete Sections 909.20.4 through 909.20.4.4 and replace as follows;

**909.20.4 Pressurized stair and vestibule alternative.** The provisions of Sections 909.20.4.1 through 909.20.4.3 shall apply to smokeproof enclosures using a pressurized stair and pressurized entrance vestibule.

**909.20.4.1 Vestibule doors.** The door assembly from the building into the vestibule shall be a *fire door assembly* complying with Section 716.2.2.1. The door assembly from the vestibule to the *stairway* shall not have less than a 20-minute *fire protection rating* and meet the requirements for a smoke door assembly in accordance with Section 716.2.2.1. The door shall be installed in accordance with NFPA 105.

**909.20.4.2 Pressure difference.** The *stair* enclosure shall be pressurized to a minimum of 0.05 inch of water gage (12.44 Pa) positive pressure relative to the vestibule with all stairway doors closed under the maximum anticipated stack pressures. The vestibule with doors closed shall have a minimum of 0.05 inch of water gage (12.44 Pa) positive pressure relative to the fire floor. The pressure difference across doors shall not exceed 30 lbs (133-N) maximum force to begin opening the door.

**909.20.4.3 Dampered relief opening.** A controlled relief vent capable of discharging a minimum of 2,500 cfm (1180 L/s) of air at the design pressure difference shall be located in the upper portion of the pressurized exit enclosure.

### Section 909.20.5.1

Add a new Section 909.20.5.1 to read as follows:

**909.20.5.1 Dampered relief opening.** A controlled relief vent capable of discharging a minimum of 2,500 cfm (1180 L/s) of air at the design pressure difference shall be located in the upper portion of the pressurized stair enclosure.

### Section 911.1

Revise Section 911 to read as follows:

**911.1 General.** Where required by other sections of this code and in buildings classified as high-rise buildings by this code, a fire command center for fire department operations shall be provided and shall comply with Sections 911.1.1 through 911.1.6. When required, a Secondary Response Point shall comply with Section 911.2.

#### Section 911.1.3

Revise Section 911.1.3 to read as follows:

**911.1.3 Size.** The *fire command center* shall be not less than 0.015 percent of the total building area of the facility served or 200 square feet (19 m<sup>2</sup>) in area, whichever is

greater, with a minimum dimension of 0.7 times the square root of the room area or 10 feet (3048 mm), whichever is greater.

## Section 911.2

*Add Section 911.2 to read as follows*

**911.2 Secondary Response Point.** A Secondary Response Point (SRP) shall comply with Section 911.2.1 through 911.2.3.

**911.2.1 Where required.** When required by the *fire code official*, an SRP shall be provided in buildings/facilities that are required to be served by a *Fire Command Center*.

**911.2.2 Components required.** The SRP shall have the following components:

1. A fire alarm LCD annunciator that provides a means to scroll through the list of devices that are activated and to acknowledge each alarm. The fire alarm annunciator shall not have the capability of silencing or resetting the building fire alarm system.
2. A microphone capable of providing all-call voice messaging over all notification appliance circuits of the alarm communication system.
3. A pull station capable of evacuating the entire building.
4. An elevator panel that allows the manual transfer of standby power to each elevator cab for all elevators located within the building.

**Exception:** Where an elevator panel allowing manual transfer of standby power for all elevators is provided at the *Fire Command Center*, an elevator panel is not required at the SRP.

**911.2.3 Location.** The SRP shall be located as follows, subject to the approval of the *fire code official*:

1. The SRP shall be located on the floor designated for primary elevator recall.
2. The exterior entrance leading to the SRP shall be adjacent to the fire department vehicle access lane.
3. The SRP shall be located in an area inaccessible to the public.
4. The SRP shall be located within a travel distance of 200 feet from the building entry.
5. The entrance to the SRP shall be separated from the *Fire Command Center* a minimum distance equal to 25% of the building perimeter, or a minimum of 250 feet, as measured along the building perimeter.

## Section 913.1.1

*Add subsection 913.1.1 to read as follows:*

**913.1.1 Redundant pumps in high-rise structures.** Where pumps are used in structures with an occupied floor or occupied roof greater than 250 feet (76 m) in height above the lowest level of fire department access, a redundant fire pump shall be provided for each required fire pump.

**Section 913.1.2**

Add new Subsection 913.1.2 to read as follows:

**913.1.2 Redundant pumps in multiple structures.** Where a fire pump is used for booster pressure supply to multiple structures, a redundant fire pump shall be provided for each required fire pump.

**Section 913.2.3**

Add Section 913.2.3 to read as follows:

**913.2.3 Drains.** Floor drains having a minimum diameter of 3 inches shall be provided in the fire pump room.

**Section 1006.2.1**

Amend Section 1006.2.1 to read as follows:

**TABLE 1006.2.1  
SPACES WITH ONE EXIT OR EXIT ACCESS DOORWAY**

OCC.	MAX. OCC. LOAD OF SPACE	WITHOUT SPRINKLER SYSTEM (feet)		WITH SPRINKLER SYSTEM (feet)
		Occupant Load		
		≤ 30	>30	
R-1	20 40	NP	NP	125 <sup>a</sup> 75 <sup>a</sup>

(All other portions of the Table and all Footnotes remain unchanged)

**Section 1010.1.8**

Amend Section 1010.1.8 to read as follows:

**1010.1.8 Door arrangement.** Space between two doors in a series shall be 48 inches (1219 mm) minimum plus the width of a door swinging into the space. Doors in a series shall swing either in the same direction or away from the space between the doors.

**Exceptions:**

1. The minimum distance between horizontal sliding power-operated doors in a series shall be 48 inches (1219 mm).
2. Storm and screen doors serving individual *dwelling units* in Groups R-2 and R-3 need not be spaced 48 inches (1219 mm) from the other door.
3. Doors within individual *dwelling units* in Groups R-2 and R-3 other than within *Type A* dwelling units.

4. The space between doors serving access vestibules of smokeproof enclosures shall be permitted to be in accordance with Section 909.20.1.

### Section 1010.1.9.12

Amend Section 1010.1.9.12 to read as follows:

**1010.1.9.12 Stairway doors.** Interior *stairway means of egress* doors shall be openable from both sides without the use of a key or special knowledge or effort.

**Exceptions:**

1. *Unchanged*
2. *Unchanged*
3. *Stairway* exit doors are permitted to be locked from the side opposite the egress side, provided they are openable from the egress side, unlocked simultaneously without unlatching upon a signal from the *fire command center*, if present, or a signal by emergency personnel from a location inside the building.
4. *Unchanged*
5. *Unchanged*
6. Upon approval of the *building official*, *stairway* doors opening directly into *sleeping units*, *dwelling units* or tenant spaces are permitted to be locked from the side opposite the egress side, provided they are openable from the egress side. The doors are permitted to unlock without unlatching only upon signal from the *fire command center*, if present, or a signal by emergency personnel from an *approved* location inside the building.

### Section 1017.2.3

Add Section 1017.2.3 to read as follows:

**1017.2.3 Corridor increases.** The travel distances specified in Table 1017.2 may be increased up to an additional 100 feet (30 480 mm) provided that the last portion of *exit access* leading to the *exit* occurs within a minimum one-hour *fire-resistance rated corridor*. The length of such *corridor* shall not be less than the amount of increase taken, in feet (mm).

### Section 1023.4

Amend Section 1023.4 to read as follows:

**1023.4 Openings.** *Interior exit stairway* and *ramp* opening protectives shall be in accordance with the requirements of Section 716.

Openings in *interior exit stairways* and *ramps* other than unprotected exterior openings shall be limited to those necessary for *exit access* to the enclosure from normally occupied spaces and for egress from the enclosure.

Elevators shall not open into *interior exit stairways* and *ramps*.

**Exception:** *Interior exit stairways* are permitted to be provided a buffer vestibule between the floor and the *interior exit stairway* for areas considered normally non-occupied spaces. The buffer vestibule is required to be constructed in accordance

with Section 909.20.1 and provided with automatic-closing opening protection in accordance with Section 716. The buffer vestibule is in addition to any vestibules required by Section 909.20. Smoke detection shall be provided within the buffer vestibule. Where a building fire alarm system is provided, the buffer vestibule smoke detector(s) shall be connected to the building fire alarm system.

## Section 1024.5

*Amend Section 1024.5 to read as follows:*

**1024.5 Openings.** *Exit passageway* opening protectives shall be in accordance with the requirements of Section 716.

Except as permitted in Section 402.8.7, openings in *exit passageways* other than unprotected exterior openings shall be limited to those necessary for *exit access* to the *exit passageway* from normally occupied spaces and for egress from the *exit passageway*.

Where the *interior exit stairway* or *ramp* is extended to an *exit discharge* or a *public way* by and *exit passageway*, the *exit passageway* shall comply with Section 1023.3.1.

Elevators shall not open into *interior exit passageway*.

**Exception:** *Exit passageways* are permitted to be provided with a buffer vestibule between the floor and the *exit passageway* for areas considered normally non-occupied spaces. The buffer vestibule is required to be constructed in accordance with Section 909.20.1 and provided with automatic-closing opening protection in accordance with Section 716. The buffer vestibule is in addition to any vestibules required by Section 909.20. Smoke detection shall be provided within the buffer vestibule. Where a building fire alarm system is provided, the buffer vestibule smoke detector(s) shall be connected to the building fire alarm system.

## Section 1029.6.2.3

*Amend Section 1029.6.2.3 to read as follows:*

**1029.6.2.3 Automatic sprinklers.** Enclosed areas with walls and ceilings in buildings or structures containing *smoke-protected assembly seating* shall be protected with an *approved automatic sprinkler system* in accordance with Section 903.3.1.1.

**Exceptions:** Outdoor seating facilities where seating and the *means of egress* in the seating area are essentially open to the outside.

## Section 1109.16

*Add new section 1109.16 to read as follows:*

**1109.16 General.** Where *Electric Vehicle Charging Stations* are provided, all charging stations shall be provided in accordance with this section and applicable portions of ICC A117.1.

**1109.16.1 Existing facilities.** Where *Electric Vehicle Charging Stations* are either added or altered within a facility having existing *Electric Vehicle Charging Stations*, the requirements this section shall apply only to the newly installed or altered *Electric Vehicle Charging Stations*.

**1109.16.2 Minimum number.** Where *Electric Vehicle Charging Stations* are provided for public use, the minimum number of accessible *Electric Vehicle Charging Stations* shall be provided in accordance with Table 1109.16.2. Where new *Electric Vehicle Charging Stations* are installed in facilities with existing *Electric Vehicle Charging Stations*, the total number provided in Table 1109.16.2 shall include both existing and new *Electric Vehicle Charging Stations*. Where an *Electric Vehicle Charging Station* charger can simultaneously charge more than one vehicle, the number of *Electric Vehicle Charging Station* chargers provided shall be considered equivalent to the number of electric vehicles that can be simultaneously charged.

Parking spaces serving *Electric Vehicle Charging Stations* per this section shall not account for any of the *accessible* parking spaces (as required by Section 1106) on the site unless specifically provided with *accessible* identification signage per Section 1109.16.6.

**Exception:**

1. *Electric Vehicle Charging Stations* not available to the general public and intended for use by a designated vehicle or driver shall not be required to comply with this section. Examples include, but are not limited to, charging stations serving public or private fleet vehicles, assigned to an employee, or serving private residences.

**Table 1109.16.2 Electric Vehicle Charging Stations for Public Use**

<b>Number of EV Charging Stations Provided</b>	<b>Minimum Number of Adaptable EV Charging Stations Required</b>
1 to 25	1
26 to 50	2
51 to 75	3
76 to 100	4
Over 101	4, plus 1 for each 300 over 100

**1109.16.3 Vehicle space size.** Parking spaces serving adaptable *Electric Vehicle Charging Stations* shall be sized the same as an *accessible* parking space including both the parking space and the *accessible* aisle serving it.

**1109.16.3.1 Van Space.** A minimum of one (1) parking space serving an adaptable *Electric Vehicle Charging Station* shall be sized the same as a van-accessible parking space including both the parking space and the *accessible* aisle serving it.

**1109.16.4 Operable Parts and Related Equipment.** Pay terminals, operable parts, graphic displays and other related features shall be *accessible*.



**1109.16.5 Accessible routes.** Accessible routes shall be provided to serve *Electric Vehicle Charging Stations* in accordance with Sections 1109.16.5.1 and 1109.16.5.2.

**1109.16.5.1 Building or facility.** Adaptable *Electric Vehicle Charging Stations* that serve a building or facility on the same site shall be located along an *accessible route* providing access to an *accessible* building entrance. Where Adaptable *Electric Vehicle Charging Stations* do not serve a building or facility on the same site, they shall be located along an accessible route providing access to the *public way*.

**1109.16.5.2 Charging stations.** Adaptable *Electric Vehicle Charging Stations* shall be provided with an *accessible route* between the accessible aisle serving it and all related operable parts and other equipment. When a vehicle is being charged, the *accessible route* shall not be obstructed by the cable between the vehicle and the charging station.

**1109.16.6 Accessible identification signs.** Adaptable *Electric Vehicle Charging Stations* shall be identified by the International Symbol of Accessibility.

**Exception:**

1. Where a total of ten or fewer *Electric Vehicle Charging Stations* are provided, accessible identification signage is not required.

**Section 1210**

*Add Section 1210 to read as follows:*

**SECTION 1210  
BABY CHANGING TABLES**

**1210.1 General.** Where newly constructed buildings or facilities contain restrooms that are provided for public use, a minimum of one (1) *baby changing table* shall be provided to comply with all of the following:

1. Located within a public restroom or other area as approved by the *Building Official*.
2. Continuously available to both male and female occupants.
3. Applicable provisions of ICC A117.1.

**Exception:** *Baby changing tables* are not required in facilities that have been issued a permit or license which restricts the admission of children on the basis of age.

## Section 1406

Revise Section 1406 to read as follows:

### **METAL COMPOSITE MATERIALS (MCM)**

**1406.1 General.** The provisions of this section shall govern the materials, construction and quality of metal composite materials (MCM) for use as *exterior wall coverings* in addition to other applicable requirements of Chapters 14 and 16.

**1406.2 Foam plastic insulation.** MCM systems containing foam plastic insulation shall also comply with the requirements of Section 2603.

**1406.3 Labeling.** MCM shall be labeled in accordance with Section 1703.5.

**1406.4 Exterior wall finish.** MCM used as *exterior wall finish* or as elements of balconies and similar projections and bay and oriel windows to provide cladding or weather resistance shall comply with Sections 1406.6 through 1406.14.

**1406.5 Architectural trim and embellishments.** MCM used as architectural *trim* or embellishments shall comply with Sections 1406.9 through 1406.14.

**1406.6 Structural design.** MCM systems shall be designed and constructed to resist wind loads as required by Chapter 16 for components and cladding.

**1406.7 Approval.** Results of *approved* tests or an engineering analysis shall be submitted to the *building official* to verify compliance with the requirements of Chapter 16 for wind loads.

**1406.8 Weather resistance.** MCM systems shall comply with Section 1402 and shall be designed and constructed to resist wind and rain in accordance with this section and the manufacturer's installation instructions.

**1406.9 Durability.** MCM systems shall be constructed of *approved* materials that maintain the performance characteristics required in Section 1406 for the duration of use.

**1406.10 Fire-resistance rating.** Where MCM systems are used on exterior walls required to have a *fire-resistance rating* in accordance with Section 704, evidence shall be submitted to the *building official* that the required *fire-resistance rating* is maintained.

**Exception:** MCM systems not containing foam plastic insulation, which are installed on the outer surface of a fire-resistance-rated *exterior wall* in a manner such that the attachments do not penetrate through the entire *exterior wall* assembly, shall not be required to comply with this section.

**1406.11 Surface-burning characteristics.** Unless otherwise specified shall have a *flame spread index* of 75 or less and a smoke-developed index of 450 or less when tested in the maximum thickness intended for use in accordance with ASTM E 84 or UL 723.

**1406.12 Type V construction.** MCM shall be permitted to be installed on buildings of Type V construction not exceeding 40 feet in height.

**Exception:** MCM on exterior walls of Type V Buildings are exempt from the height restrictions when meeting the requirements of 1406.13.4.

**1406.13 Type I, II, III and IV construction.** Where installed on buildings of Type I, II, III and IV construction, MCM systems shall comply with Sections 1406.13.1 through 1406.13.4, or Section 1406.14.

**1406.13.1 Surface-burning characteristics.** *Metal composite materials* shall have a *flame spread index* of not more than 25 and a smoke-developed index of not more than 450 when tested in the maximum thickness intended for use in accordance with ASTM E 84 or UL 723.

**1406.13.2 Thermal barriers.** MCM shall be separated from the interior of a building by an approved thermal barrier consisting of ½ -inch (12.7 mm) gypsum wallboard or a material that is tested in accordance with and meets the acceptance criteria of both the Temperature Transmission Fire Test and the Integrity Fire Test of NFPA 275.

**1406.13.3 Thermal barrier not required.** The thermal barrier specified for MCM in Section 1406.13.2 is not required where:

1. The MCM system is specifically approved based on tests conducted in accordance with NFPA 286 and with the acceptance criteria of Section 803.1.1.1, UL 1040 or UL 1715. Such testing shall be performed with the MCM in the maximum thickness intended for use. The MCM system shall include seams, joints and other typical details used in the installation and shall be tested in the manner intended for use.
2. The MCM is used as elements of balconies and similar projections, architectural *trim* or embellishments.

**1406.13.4 Full-scale tests.** The MCM system shall be tested in accordance with, and comply with, the acceptance criteria of NFPA 285. Such testing shall be performed on the MCM system with the MCM in the maximum thickness intended for use.

**1406.14 Alternate conditions.** MCM and MCM systems shall not be required to comply with Section-1406.13.4 provided such systems comply with Section 1406.14.1

**1406.14.1 Installations up to 40 feet in height.** MCM shall not be installed more than 40 feet (12 190 mm) in height above grade where installed in accordance with Sections 1406.14.1.1 through 1406.14.1.4

**1406.14.1.1 Self-ignition temperature.** MCM shall have a self-ignition temperature of 650°F (343°C) or greater when tested in accordance with ASTM D 1929.

**1406.14.1.2 Combustibility Classification.** MCM shall qualify as a Class CC1 material with a burning extent of 1 inch (25 mm) or less when tested at a nominal thickness of 0.060 inch (1.5 mm) or in the thickness intended for use in accordance with ASTM D 635.

**1406.14.1.3 Fire separation distance of 5 feet or less.** Where the *fire separation distance* is 5 feet (1524 mm) or less, the area of MCM shall not exceed 10 percent of the *exterior wall* surface.

**1406.14.1.4 Fire separation distance greater than 5 feet.** Where the *fire separation distance* is greater than 5 feet (1524 mm), the area of *exterior wall surface coverage* using MCM shall not be limited.

(Options 1 and 2 in Sections 1406.11.3 and 1406.11.4 are deleted in total.)

**Table 1607.1**

Revise Table 1607.1 and add footnote p, to read as follows:

(Remainder of Table and footnotes remain unchanged)

OCCUPANCY OR USE	UNIFORM (psf)	CONCENTRATED (lbs)
25 Residential		
One- and two- family dwellings		
Uninhabitable attics without storage	10	
Uninhabitable attics with storage <sup>i,j,k,p</sup>	20	
Habitable attics and sleeping areas <sup>k,p</sup>	40	----
All other areas	40	
Hotels and multiple-family dwellings		
Private rooms and corridors serving them	40	
Public rooms <sup>m</sup> and corridors serving them	100	

<sup>p</sup>. Attics, designed per uniform loads described for uninhabitable attics, are not required to be designed for the additional concentrated load of Item 28

**Section 1609.1.1**

Add a new exception #7 to Subsection 1609.1.1, to read as follows:

**Exceptions:**

(Exception 1 -6 remain unchanged)

7. Solid and freestanding walls up to and including 10'-0" above the highest adjacent grade and designed using the provisions of ASCE 7 section 29.3.1 need only consider CASE A of Figure 29.3-1 with a  $C_f$  factor equal to 1.40 and the resultant applied at the geometric center of the wall.

**Section 1610**

Revise Section 1610 to read as follows:

**1610.1 General.** Foundation walls and retaining walls shall be designed to resist lateral soil loads. When a geotechnical investigation report is not required by the *building official* the design active pressure shall be 45 psf/ft and the at-rest pressure shall be 60 psf/ft. Foundation walls and other walls in which horizontal movement is restricted at the top shall be designed for at-rest pressure, unless specified otherwise in a geotechnical investigation report approved by the *building official*. Retaining walls free to move and rotate at the top shall be permitted to be designed for active pressure. Design lateral pressure from surcharge loads shall be added to the lateral earth pressure load. Design lateral pressure shall be increased if soils at the site are expansive. Foundation walls shall be designed to support the weight of the full hydrostatic pressure of undrained

backfill unless a drainage system is installed in accordance with Sections 1805.4.2 and 1805.4.3.

**Exception:** Foundation walls extending not more than 8 feet (2438 mm) below grade and laterally supported at the top by flexible diaphragms shall be permitted to be designed for active pressure.

**1610.1.1 Seismic load due to lateral earth pressure.** All basement, foundation, and retaining walls shall be designed to resist the seismic load due to the lateral earth pressure based on the following equations, as required by section 1807.2.2.

For yielding walls:  $\frac{3}{8} (k_H) (\text{backfill soil unit weight}) (H)^2$  (Equation 16-35a)

For nonyielding walls:  $(k_H) (\text{backfill soil unit weight}) (H)^2$  (Equation 16-35b)

Where  $k_H$  (peak ground acceleration) =  $S_{DS} / 2.5$

H = the height of the backfill behind the wall

These equations represent the dynamic (seismic) lateral thrust. The point of application of the resultant dynamic thrust is taken at a height of 0.6H above the base of the wall. This is represented as an inverted trapezoidal pressure distribution. These equations apply to level backfill and walls that retain no more than 15 feet.

## Section 1612.2.2

Revise Section 1612.2.2. to read as follows:

**1613.2.2 Site class definitions.** Based on the site soil properties, the site shall be classified as *Site Class* A, B, C, D, E, or F in accordance with Chapter 20 of ASCE 7.

Where the soil properties are not known in sufficient detail to determine the site class, *Site Class* D, subjected to the requirements of Section 1613.2.3, shall be used unless the *building official* or geotechnical data determines *Site Class* E or F soils are present at the site.

Where site investigations that are performed in accordance with Chapter 20 of ASCE 7 reveal rock conditions consistent with *Site Class* B, but site-specific velocity measurements are not made, the site coefficients  $F_a$  and  $F_v$  shall be taken at unity (1.0).

ASCE 7 states that *Site Classes* A and B, shall not be assigned to a site if there is more than 10 feet (3.1 m) of soil between the rock surface and the bottom of the spread footing or mat foundation. This provision shall be required when the average soil shear wave velocity,  $v_s$ , within 10 feet of the foundation bottoms is less than 2,500 fps.

When *site class* is determined in accordance with Chapter 20 ASCE 7, the frequency of evaluation shall be one per 40 acres or any portion thereof. A *site class* exploration within 1,000 feet of the proposed site may be included in the total number of required explorations, but at least one exploration must be located within the site boundaries. Locations of *site class* explorations shall be determined by the *registered design professional*, but should be adequately spaced to classify the entire site. Additional *site class* explorations may be required by the *building official* if soil conditions are variable across the site. Where methods other than soil shear wave velocity testing are utilized, one test,  $N_i$  or  $s_{ui}$ , must be performed at ten foot intervals for the entire 100-foot exploration. Each distinctly different soil layer must also be tested. The same test used

for a distinct soil layer may also be used for the ten foot interval provided the test interval does not exceed ten feet.

Where the site-specific site response analyses are required to obtain site ground motions in accordance with the ASCE/SEI 7-16 Section 11.4.7 and Chapter 21, the Site Class may be alternately determined from the Clark County Shear Wave Velocity Profile Map or the City of Henderson Seismic Site Class Map as follows: for projects that are exempt from the requirement for a Geotechnical Investigation per Section 1803.2 the Site Class can be determined directly from the referenced maps; for projects that are required to provide a Geotechnical Investigation per Section 1803.2, the Geotechnical Design Professional may determine site class directly from the referenced maps subject to the following limitations:

1. The potential for site class E or F shall be evaluated and documented in the Geotechnical Investigation Report.
2. Mapped values shall not be used where there will be more than 10 feet of fill below the bottom of foundations.
3. Mapped values shall not be used where a Site-Specific Ground Motion Analysis is performed in accordance with ASCE-7 Chapter 21.
4. Mapped values shall not be used for *high rise* structures or for Risk Category IV structures.

### Section 1612.3

*Revise Section 1612.3 to read as follows:*

**1612.3 Establishment of flood hazard areas.** To establish *flood hazard areas*, the applicable governing authority shall adopt a flood hazard map and supporting data. The flood hazard map shall include, at a minimum, areas of special flood hazard as identified by the Federal Emergency Management Agency in an engineering report entitled "The Flood Insurance Study for Clark County, Nevada and Incorporated Areas," most current edition, as amended or revised with the accompanying Flood Insurance Rate Map (FIRM) and Flood Boundary and Floodway Map (FBFM) and related supporting data along with any revisions thereto. The adopted flood hazard map and supporting data are hereby adopted by reference and declared to be part of this section.

### Section 1613.1

*Delete Exception #1 to Section 1613.1, to read as follows:*

**1613.1. Scope.** Every structure, and portion thereof, including nonstructural components that are permanently attached to structures and their supports and attachments, shall be designed and constructed to resist the effects of earthquake motions in accordance with ASCE 7, excluding Chapter 14 and Appendix 11A. The seismic design category for a structure is permitted to be determined in accordance with Section 1613 or ASCE 7.

#### **Exceptions:**

1. The seismic force-resisting system of wood-frame buildings that conform to the provisions of Section 2308 are not required to be analyzed as specified in this section.
2. Agricultural storage structures intended only for incidental human occupancy.

3. Structures that require special consideration of their response characteristics and environment that are not addressed by this code or ASCE 7 and for which other regulations provide seismic criteria, such as vehicular bridges, electrical transmission towers, hydraulic structures, buried utility lines and their appurtenances and nuclear reactors.
4. References within ASCE 7 to Chapter 14 shall not apply, except as specifically required herein.

## Section 1704.2

Revise Exception #2 to read as follows:

### Exceptions:

1. (unchanged)
2. Unless otherwise required by the *building official*, special inspections are not required for detached 1 & 2 family dwellings and their Group U accessory structures, including, but not limited to, those listed in Section 312.1”

## Section 1704.2.4

Revise Section 1704.2.4 to read as follows:

**1704.2.4 Report requirement.** *Approved agencies* shall keep records of required special inspections and tests. The *approved agency* shall submit reports of special inspections and tests to the *building official* and to the *registered design professional in responsible charge*. Reports shall indicate that work inspected or tested was or was not completed in conformance to *approved construction documents*. Discrepancies shall be brought to the immediate attention of the contractor for correction. If they are not corrected, the discrepancies shall be brought to the attention of the *building official* and to the registered *design professional in responsible charge* in writing prior to the completion of that phase of the work. A final report documenting required *special inspections* and tests, and correction of any discrepancies noted in the inspections or tests shall be submitted to the *building official* prior to the final inspection.

## Section 1705.3

Revise Section 1705.3 to read as follows:

**1705.3 Concrete construction.** *Special inspections* and tests of concrete construction shall be performed in accordance with this section and Table 1705.3.

**Exception:** *Special inspections* and tests shall not be required for:

1. Isolated spread and/or continuous concrete footings supporting walls of buildings three stories or less above *grade plane* that are fully supported on earth or rock where:
  - 1.1 The footings are designed in accordance with Table 1809.7; or
  - 1.2 The structural design of the footing is based on a specified compressive strength,  $f'c$ , no more than 2,500 pounds per square inch (psi) (17.2 MPa), regardless of the compressive strength specified in the *approved construction documents* or used in the footing construction.

- 2 Nonstructural concrete slabs supported directly on the ground, including prestressed slabs on grade, where the effective prestress in the concrete is less than 150 pounds per square inch (1.03 MPa).
3. Concrete patios, driveways and sidewalks, on grade.

## Section 1705.4

*Revise Section 1705.4 to read as follows:*

**1705.4 Masonry construction.** *Special inspections* and tests of masonry construction shall be performed in accordance with the quality assurance program requirements of TMS 402 and TMS 602.

**Exception:** *Special inspections* and tests shall not be required for:

1. Empirically designed masonry, glass unit masonry or masonry veneer designed by Section 2109, 2110, or Chapter 14, respectively, when they are part of structures classified as *Risk Category* I, II, or III.
2. Masonry foundation walls constructed in accordance with Table 1807.1.6.3(1), 1807.1.6.3(2), 1807.1.6.3(3) or 1807.1.6.3(4).
3. Masonry fireplaces, masonry heaters or masonry chimneys installed or constructed in accordance with Section 2111, 2112, or 2113, respectively.
4. Masonry fences less than or equal to 8'-0" in height, retaining walls less than or equal to 6'-0" in height or a combined masonry fence and retaining wall less than or equal to 14'-0" in overall height and the fence portion less than or equal to 8'-0" in height provided that the walls are designed in accordance with Chapter 2 of TMS 402-16 with allowable stresses for masonry reduced by one-half and  $f'm$  does not exceed 1500 psi. Wall heights shall be measured from the top of footing to the top of wall.

## Section 1705.5

*Revise the Exception in Section 1705.5 to read as follows:*

**Exception:** Where Section 1803 does not require reporting of materials and procedures for fill placement, the in-place dry density of the compacted fill shall not be less than 90% of the maximum dry density at optimum moisture content determined in accordance with ASTM D 1557.



**Table 1705.6**

Revise Table 1705.6 to read as follows:

**Table 1705.6  
REQUIRED SPECIAL INSPECTIONS AND TESTS OF SOILS**

TYPE	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION
1. Verify materials below shallow foundations are adequate to achieve the design bearing capacity.	—	X
2. Verify excavations are extended to proper depth and have reached proper material.	—	X
3. Perform classification and testing of compacted fill materials.	—	X
4. Verify use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill and other grading activities requiring special inspection.	—	X
a. All soils not meeting the requirements of category b.	—	X
b. Moderately, highly or critically expansive soils, hydrocollapsible soils, soluble soils, and/or soils requiring chemical or mechanical (geosynthetics) stabilization are encountered. Construction or stabilization of cut or fill slopes exceeding 5 feet in height, or any site requiring that fill be placed on a natural slope, an existing cut slope, or an existing fill slope steeper than 5:1.	X	—
5. Prior to placement of compacted fill, observe subgrade and verify that site has been prepared properly.	—	X

**Section 1705.6.1**

Add new Section 1705.6.1 to read as follows:

**1705.6.1 Soil Backfill Testing.** *Special inspection* of wall backfill shall be required for all basement and foundation walls directly supporting structures; this shall apply to the full depth of backfilled soil. *Special inspection* of wall backfill shall be required for site retaining walls when the retained soil height exceeds 6 feet or for portions of walls that receive surcharge loads from adjacent walls or other structures regardless of retained soil height.

## Section 1705.16

Revise Section 1705.16 to read as follows:

**1705.16 Exterior insulation and finish systems (EIFS).** *Special inspections* shall be required for all EIFS applications.

**Exception:**

*Special inspections* shall not be required for EIFS applications installed over masonry or concrete walls.

## Section 1705.19

Revise Section 1705.16 to read as follows:

**1705.19 Amusement and transportation systems special cases.** When testing or verification is required by the manufacturer or specified by the *building official*, the testing and verification shall occur during the initial installation, operational testing and annual renewal of the certificate of operation.

## Section 1803.2

Revise 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.

Geotechnical investigations shall be prepared by a *registered design professional*. Recommendations included in the report and approved by the *building official* shall be incorporated in the construction documents. Geotechnical investigations shall be required for all projects that require new foundations.

**Exception:** At the option of the *building official*, the following projects may be exempted from having a geotechnical investigation.

1. Single story structures, additions, or remodels with a footprint less than 600 square feet.
2. Fences.
3. Site retaining walls less than or equal to 6 feet in retained height.
4. Mobile homes, trailers, and State of Nevada approved single story modular buildings that are classified as One-Family Dwellings (Residential Group R-3 occupancy).
5. Modular Buildings that do not have concrete or masonry foundations.
6. Carports.
7. Signs, light poles, and communication towers less than 40 feet in height.
8. Decks, shade structures, and patio covers accessory to a one or two family dwelling.

All projects exempt from a geotechnical report shall assume a maximum presumptive load bearing value of 1,000 psf for the vertical foundation pressure, 100 psf/ft for the lateral bearing pressure, 0.25 for the coefficient of friction for lateral sliding resistance, and an Exposure Class S2 (severe sulfate exposure level). These specified values for

vertical foundation pressure and lateral bearing pressure may be increased by one-third where used with the alternate basic load combinations of Section 1605.3.2 that include wind or earthquake loads.

### Section 1803.3.2

*Revise Section 1803.3.2 to read as follows:*

**1803.3.2 Minimum Exploration Requirements.** The minimum exploration requirements are as follows:

The minimum depth of an exploration shall be fifteen feet. Exploration depth shall be increased as necessary to evaluate the suitability of the material within the foundation's depth of influence as determined by the *registered design professional*. The explorations can be terminated should refusal be encountered. However, at least three-fourths of the required explorations shall be to the minimum depth. The geotechnical report shall clearly state the refusal criteria. When information regarding the proposed structure and the final grades is made available, the *registered design professional* shall determine if the explorations originally documented in the geotechnical report meet the depth requirements.

The minimum number of explorations performed shall be as follows:

1. For areas less than or equal to one acre, a minimum of two explorations.
2. For areas greater than one acre, but less than five acres, a minimum of one exploration for the first acre and one for each additional two acres, or portion thereof.
3. For areas greater than five acres, but less than twenty acres, a minimum of three explorations plus one additional exploration for each three acres or fraction thereof above five.
4. For areas greater than twenty acres, a minimum of eight explorations plus one additional exploration for each five acres or fraction thereof above twenty.

**Exceptions:**

1. A minimum of one exploration is required for single story structures with a footprint less than 2000 square feet whose locations are known and only that area of the site is to be developed. This provision is limited to detached structures classified as Group U occupancy or building additions of any occupancy. The exploration shall be performed within the proposed footprint.
2. A minimum of one exploration is required for signs, light poles and communication towers whose locations are known and only that area of the site is to be developed. The exploration shall be performed within 50 feet of the proposed foundation for the structure.

### Section 1803.5.3

*Revise Section 1803.5.3 to read as follows:*

**1803.5.3 Expansive soil.** In areas likely to have expansive soil, the *building official* shall require soil tests to determine where such soils do exist.

Soils meeting all provisions of 1 through 4 shall be considered expansive, except that tests to show compliance with Items 1, 2, and 3 shall not be required if the test

prescribed in Item 4 or 5 is conducted. For all soils determined to be expansive by items 1 through 4, item 5 shall also be required to determine the expansion classification level.

1. Plasticity index (PI) of 15 or greater, determined in accordance with ASTM D 4318.
2. More than 10 percent of the soil particles pass a No. 200 sieve (75  $\mu\text{m}$ ), determined in accordance with ASTM D 422.
3. More than 10 percent of the soil particles are less than 5 micrometers in size, determined in accordance with ASTM D 422.
4. Expansion index greater than 20, determined in accordance with ASTM D 4829.
5. Soils may be determined to be expansive or non-expansive by the preceding methods or the standard 60 psf swell test.

**1803.5.3.1 Expansion classification level.** Expansive soils shall be classified in accordance with amended Table 1808.6.1.1. When soils are determined to be expansive special design consideration are required. In the event that expansive soil properties vary with depth the variation shall be included in the engineering analysis of the expansive soil's effect on the structure. The foundation design and special inspection for grading/foundations shall be based upon results obtained from the standard 60 pound swell test. Refer to Section 1808.6 for additional requirements.

**1803.5.3.2 Standard 60 pound swell test.** The swell test samples shall be remolded to the in-place density required for the particular soil type as called for in the geotechnical investigation. The test samples shall be one inch thick and laterally confined by placing them in a consolidometer retaining ring constructed in accordance with ASTM D 2435. The swell test sample shall be oven dried at 60° C, and the sample shall be dried a minimum of eight (8) hours. The test samples shall be inundated with water and kept in a saturated moisture condition until measurable swelling or vertical movement ceases. The swell test shall use a 60 pounds per square foot surcharge load. The balance of the swell test will be per ASTM D 2435. Swell test results shall be interpreted using Table 1808.6.1.1.

## **Section 1803.5.8**

*Add items #8 and#9 to Section 1803.5.8 to read as follows:*

*(Items 1-7 remain unchanged.)*

8. Flooding or jetting shall not be used to compact fill material that will support footings or foundation systems.
9. Placement procedure for oversized fill material. No rock or similar irreducible material with a maximum dimension greater than 12 inches shall be buried or placed in fills within five feet, measured vertically, from the bottom of the footing or lowest finished floor elevation, whichever is lower, within the building pad. Oversized fill material shall be placed so as to assure the filling of all voids with well-graded soil. Specific placement and inspection criteria shall be stated in the geotechnical investigation. Continuous special inspection will be required during placement of any oversized fill material.

## Section 1803.6

Revise Section 1803.6 to read as follows:

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

1. A plot showing the location of the test borings, excavations, and/or investigations. The plot shall be dimensioned and shall show the approximate location of all existing and proposed structures.
2. A complete record of the soil boring and penetration test logs and soil samples.
3. A record of the soil profile.
4. Depth to the water table, if encountered.
5. Soil classification by the Unified Soil Classification System (ASTM D 2487). As an alternative, classification may be performed on a visual-manual basis (ASTM D 2488) in the field by an individual with: a degree in civil engineering, engineering geology, geologic engineering, or geology; or a Civil or Geological Engineer licensed in the State of Nevada.
6. Backup data shall be included for at least one sample for every two (2) excavations and/or borings distributed among the prominent horizons in the soil profile. The backup data shall include a particle size distribution analysis, Atterberg limits and chemical tests for soil sulfates and soil chlorides.
7. Anticipated structural loads and type of proposed structure.
8. Provide grading requirements for onsite and import soils (where applicable). Design recommendations for foundations, grading and earth retaining structures shall specifically address the suitability of onsite soils for use as fill material and the potential negative impacts of the following adverse soil conditions including, but not limited to: collapsible soils, expansive soils (swell), soluble soils, corrosive soils (including sulfates and chlorides), chemical heave, and uncontrolled fill. The report shall include supporting test data and where any of these conditions are identified on-site, mitigating measures shall be provided based upon the identified conditions. The requirements for imported fill shall specifically address all of the above adverse conditions as well.
9. Anticipated approximate cut and fill depths.
10. Compacted fill material properties and testing in accordance with Section 1803.5.8.
11. Controlled low-strength material properties and testing in accordance with Section 1803.5.9.
12. Caliche and cemented soils considerations, if encountered. Recommendations for the removal of caliche and cemented soils and/or the preparation and grading for foundations on caliche and cemented soils.
13. 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.
14. Where expansive soils are identified, classify the expansion level of the soil and specify the minimum embedment depth per Table 1808.6.1.1. When a post-tensioned slab-on-ground is recommended the geotechnical report must specify the all soil parameters as required by Section 1808.6.2.
15. Special design and construction provisions for foundations of structures founded on expansive soils, as necessary.
16. Expected total and differential settlement. Provide all test data and supporting calculations when the allowable foundation bearing pressure exceeds 4,000 psf.
17. Deep foundation information in accordance with Section 1803.5.5.

18. All lateral earth pressures and seismic forces shall be reported in psf/ft and distributions expressed in graphical form. All resulting forces must have a recommendation on wall placement location. Call out the mapped spectral response accelerations,  $S_s$  and  $S_1$ , and spectral response coefficients,  $S_{DS}$  and  $S_{D1}$  assumed to calculate the distribution.
19. *Site class* per Section 1613.2.2, including all test data and supporting calculations.
20. Specify the soils category, and the level of *special inspection* required per Table 1705.6. The specified level of special inspection cannot be less than that required by Table 1705.6.
21. Procedures for mitigation for geological hazards.
22. Trenching or other special procedures for determining fault and fissure(s) locations. The potential for differential movement across a fault and fissuring should be evaluated.
23. Where required by 1803.5.11, investigation of liquefaction hazards shall be performed in accordance with Appendix O "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 Appendix P "Guidelines for Evaluating Potential Surface Fault Rupture/Land Subsidence Hazards in Nevada."
24. Erosion control requirements, as applicable.
25. Geotechnical design considerations for drainage structures, as applicable.
26. Address, if applicable, the possible impacts on adjoining properties and mitigating measures to be undertaken.
27. At the option of the *building official*, a statement that the grading plans and foundation plans have been reviewed and are consistent with the stated geotechnical design criteria.
28. All geotechnical reports must be current within the last 12 months. Any report older than 12 months must be accompanied by a wet sealed update letter addressing the current scope of work and the current site conditions based on a recent site visit. All updates to a geotechnical report must include the following three statements:
  - a. The update letter must state that the site has been visited and the geotechnical report has been reviewed.
  - b. The update letter must state that the new geotechnical engineer of record (if applicable) is in agreement with all of the recommendations in the geotechnical report, with any revisions to the recommendations clearly noted.
  - c. The update letter must state that the engineer sealing the update letter is now the geotechnical engineer of record for the project.
29. At the option of the *building official*, a completed copy of a geotechnical report checklist shall be included with every submittal.

#### **Section 1804.4**

*Revise Section 1804.4 to read as follows:*

**1804.4 Site Grading.** The ground immediately adjacent to the foundation shall be sloped away from the building at a slope of not less than one unit vertical in 20 units horizontal (5-percent slope) for a minimum distance of 10 feet (3048 mm) measured perpendicular to the face of the wall. If physical obstructions or lot lines prohibit 10 feet (3048mm) of horizontal distance, a 5-percent slope shall be provided to an *approved* alternative method of diverting water away from the foundation. Swales used for this purpose shall be sloped a minimum of 1 percent along the flow line where located within 10 feet (3048mm) of the building foundation. Impervious surfaces within 10 feet

(3048mm) of the building foundation shall be sloped a minimum of 2 percent away from the building.

**Exceptions:**

1. Where low expansive, low collapsible, low soluble soil conditions occur or where an exterior asphalt or concrete surface abuts a building, the slope of the ground away from the building foundation is permitted to be reduced to not less than one unit vertical in 48 units horizontal (2-percent slope).
2. Impervious surfaces shall be permitted to be sloped less than 2 percent where the surface is a door landing or ramp that is required to comply with Section 1010.1.5, 1012.3 or 1012.6.1.

The procedure used to establish the final ground level adjacent to the foundation shall account for additional settlement of the backfill.

**Section 1804.4.1**

*Add new Section 1804.4.1 to read as follows:*

**1804.4.1 Low collapsible and low soluble soil.** Soils, after grading, shall be classified as low collapsible and low soluble in accordance with the table below. Soils shall be classified as low expansive in accordance with amended Table 1808.6.1.1.

**Table 1804.4.1**

<b>Soil Condition</b>	<b>Criteria</b>	<b>Applicable Test Method</b>
Low Collapsible	0 to < 3%	ASTM D 2435
Low Soluble	0 to < 2%	AWWA Standard Method 2540 (C)

If, after the grading is completed, the anticipated total settlement (collapse, consolidation, and/or compression) exceeds 1 inch, then the soil cannot be classified as low collapsible.

**Section 1804.6**

*Revise the Exception in Section 1804.6 to read as follows:*

**Exception:** When a geotechnical investigation is not required by the *building official* the in-place dry density within the building pad shall not be less than 90 percent of the maximum dry density at near optimum moisture content determined in accordance with ASTM D 1557.

**Section 1805.2.1**

*Revise in Section 1805.2.1 to read as follows:*

**1805.2.1 Floors.** Dampproofing materials for floors shall be installed between the floor and the base course required by Section 1805.4.1, except where a separate floor is provided above a concrete slab.

Where installed beneath the slab, dampproofing shall consist of not less than 10-mil (.010 inch; 0.254 mm) polyethylene conforming to ASTM E 1745 Class A requirements with joints lapped not less than 6 inches (152 mm) or other approved methods or materials. Where permitted to be installed on top of the slab, dampproofing shall consist of mopped-on bitumen, not less than 4-mil (.004 inch; 0.012 mm) polyethylene, or other *approved* methods or materials. Joints in the membrane shall be lapped and sealed in accordance with the manufacturer's installation instructions.

**Section 1807.2.3**

*Revise in Section 1807.2.3 to read as follows:*

**1807.2.3 Safety factor.** Retaining walls shall be designed to resist the lateral action of soil to produce sliding and overturning with a minimum safety factor of 1.5 in each case. The load combinations of Section 1605 shall not apply to this requirement. Instead, design shall be based on 0.7 times nominal earthquake loads, 0.6 nominal wind loads, 1.0 times other *nominal loads*, and investigation with one or more of the variable loads set to zero. The safety factor against lateral sliding shall be taken as the available soil resistance at the base of the retaining wall foundation divided by the net lateral force applied to the retaining wall.

**Exception:** Where earthquake or wind loads are included, the minimum safety factor for retaining wall sliding and overturning shall be 1.1.

**Section 1807.2.4**

*Revise in Section 1807.2.4 to read as follows:*

**1807.2.4 Slope Stability Analysis.** Retaining walls greater than ten feet in height shall be required to submit a slope stability analysis performed by a *registered design professional*. Multiple terraced (also sometimes referred to as stacked or tiered) retaining walls with a total height of sixteen feet or more shall require a slope stability analysis. Total height shall be measured from the bottom of the foundation to the top of the retaining wall(s) or total slope height. The minimum factor of safety of 1.5 is required for all failure modes under static loading conditions. The minimum factor of safety of 1.1 is required for all failure modes under seismic and wind loading conditions.

**Section 1808.6.1.1**

*Add new Section 1808.6.1.1 to read as follows:*

**1808.6.1.1 Minimum Foundation Depth in Expansive Soils.** The minimum foundation depth requirements when placing foundations in expansive soil shall be per Table 1808.6.1.1.

**Table 1808.6.1.1  
Minimum Thickened Edge or Foundation Depth<sup>1</sup>**

Expansion	Percent Swell under 60 psf Surcharge	Minimum Thickened Edge or Foundation Depth (inches)
Low	> 0 to <4	12



Moderate	≥ 4 to < 8	15
High	≥ 8 to < 12	18
Critical 12	≥ 12 to < 16	24
Critical 16	≥ 16 to < 20	30
Critical 20+	20 or greater	36

Footnote:

1. Thickened edge embedment depth shall be measured from the top of the lowest adjacent final compacted subgrade to the bottom of the footing.

## Section 1808.6.2

Add new Section 1808.6.2 to read as follows:

**1808.6.2 Slab-On-Ground Foundations.** Moments, shears, and deflections for use in structural design of slab-on-ground, mat or raft foundations on expansive soils shall be determined in accordance with *WRI/CRSI Design of Slab-on-Ground Foundations* or *PTI DC 10.5*. Using the moments, shears and deflections determined above, nonprestressed slabs-on-ground, mat or raft foundations on expansive soils shall be designed in accordance with *WRI/CRSI Design of Slab-on-Ground Foundations* and post-tensioned slab-on-ground, mat or raft foundations on expansive soils shall be in accordance with *PTI DC 10.5*. The criteria for determining the expansive nature of soils are given in section 1803.5.3. The minimum design criteria for post-tensioned slabs are defined in Table 1808.6.2. It shall be permitted to analyze and design such slabs by other methods that account for soil-structure interaction, the deformed shape of the soil support, the plate or stiffened plate action of the slab as well as both center lift and edge lift conditions. Such alternate methods shall be rational and the basis for all aspects and parameters of the method shall be available for peer review.

**Table 1808.6.2 Post Tensioned Slab Criteria**

Expansion	Percent Swell under 60 psf Surcharge	Design Values Ym (inches) for PT slabs	
		Edge Lift	Center Lift
Low	> 0 to <4	1/8 to 1/4	-----
Moderate	≥ 4 to < 8	1/4 to 1/2	1/8 to 3/8
High	≥ 8 to < 12	½ to 1	3/8 to 1
Critical 12	≥ 12 to < 16	See Note No. 11	
Critical 16	≥ 16 to < 20	See Note No. 11	
Critical 20+	20 or greater	See Note No. 11	

### Notes:

1. This chart is intended to address expansive soil. The presence of collapsible soil or other geologic conditions may require different design criteria.
2. Foundations shall be designed to meet design criteria of PTI DC 10.5. Both edge lift and center lift conditions need to be evaluated.
3. Edge moisture variation distance (Em) shall be a minimum of 2.5 feet for edge lift and 4.75 feet for center lift.
4. CΔ for prefabricated roof truss clear spans shall be 360 for center lift and 800 for edge lift.
5. Typical systems using stiffener beams may be equated to a flat slab of equivalent stiffness. Stiffening beams in ribbed foundations shall be as required by PTI DC 10.5. Conventionally reinforced designs may also be used.
6. Modulus of elasticity of the soil (Es) shall be taken as 1000 psi unless tests indicate otherwise.

7. All concrete in the foundation system must be a minimum of 2500 psi and shall comply with ACI 318-14 Table 19.3.2.1. Lean concrete shall not be permitted in slabs or beams.
8. The calculated differential deflection of the foundation slab shall not exceed the limitations of PTI DC 10.5 nor 1/2 inch for edge lift.
9. Perimeter loading of slab (P) shall be limited to dead load.
10. Expansion (swell) test shall be performed in accordance with Section 1803.5.3.
11. Specific recommendations from geotechnical engineer required. Design shear value (Ym) shall be a minimum of 1 inch.
12. For soil conditions where a low swell potential is determined, a BRAB Type II may be used if specifically recommended by the geotechnical engineer.

### **Section 1808.8.7**

*Add new Section 1808.8.7 to read as follows:*

**1808.8.7 Use of non-structural slabs on ground to resist bearing loads.** Where bearing loads are proposed to be resisted by non-structural slabs on ground, all of the following conditions shall be satisfied:

1. Structural calculations shall be provided to show the slab can adequately support the proposed load.
2. The maximum allowable subgrade bearing pressure below the slab shall be no greater than 750 psf, with no increases allowed for short duration loads, unless a greater value is justified in a geotechnical investigation report.
3. As an alternate to item 2, calculations utilizing a modulus of subgrade reaction of 20 pci can be assumed in the absence of a site specific geotechnical investigation and can be used along with a factor of safety of 3.

### **Section 1808.10**

*Add new Section 1808.10 to read as follows:*

**1808.10 Minimum Distance to Ground Faulting.** The minimum distances from an occupied structure to ground faulting are as follows:

1. The minimum setback from a Holocene active fault shall be fifty (50) feet.
2. The minimum setback from a Quaternary active fault shall be five (5) feet.
3. No setback shall be imposed when the geotechnical report establishes that no fault or fault zone exists on the project.
4. For single lot single family residences, the fault location may be approximated by the geotechnical engineer through historical research. A setback of at least fifty (50) feet from each side of the historically approximated fault edge shall be established.

If, through exploration, the fault location is defined, historically approximated, or if the geotechnical report imposes a no-build zone, then the fault and the minimum setback shall be clearly shown to scale on the grading plan, plot plan, and final map; no portion of the foundation system shall be constructed within that zone.

## Section 1809.4

*Revise Section 1809.4 to read as follows:*

**1809.4 Depth and width of footings.** The minimum depth of footings below the undisturbed ground surface shall be 12 inches (305 mm), unless a greater minimum depth is required by the *building official*. Where applicable, the requirements of Section 1809.5 shall also be satisfied. All excavations and the depth of any footing must be made below the lowest adjacent compacted subgrade to facilitate full embedment of the footing into the compacted subgrade prior to concrete placement. The minimum width of footings shall be 12 inches (305 mm).

## Section 1907.1

*Revise Section 1907.1 to read as follows:*

**1907.1 General.** The thickness of concrete floor slabs supported directly on the ground shall not be less than 3-1/2 inches (89mm). A 10-mil (.010 inch; 0.254 mm) polyethylene vapor retarder conforming to ASTM E 1745 Class A requirements with joints lapped not less than 6 inches (152 mm) shall be placed between the base course or subgrade and the concrete floor slab, or other *approved* equivalent methods shall be used to retard vapor transmission through the floor slab.

**Exception:** The vapor retarder is not required:

1. For detached structures accessory to occupancies in Group R-3, such as garages, utility buildings or other unheated facilities.
2. For unheated storage rooms having an area of less than 70 square feet (6.5m<sup>2</sup>) and carports attached to occupancies in Group R-3.
3. For buildings of other occupancies where migration of moisture through the slab from below will not be detrimental to the intended occupancy of the building.
4. From driveways, walks, patios and other flatwork which will not be enclosed at a later date.
5. Where *approved* based on local site conditions.

## Section 2304.10

*Revise Section 2304.10 to read as follows:*

**2304.10 Connectors and fasteners.** Connectors and fasteners shall comply with the applicable provisions of sections 2304.10.1 through 2304.10.8.

### Section 2304.10.8

*Add new Section 2304.10.8 to read as follows:*

**2304.10.8 Bottom (sill) plate anchorage.** Where field conditions preclude the placement of the minimum bottom plate anchors, a *registered design professional* may provide a design for the attachment in accordance with accepted engineering practice.

## Section 2308.5.8

Revise Section 2308.5.80 to read as follows:

**2308.5.8 Pipes in walls.** Stud partitions containing plumbing, heating or other pipes shall be so framed and the joists underneath so spaced as to give proper clearance for the piping. Where a partition containing such piping runs parallel to the floor joists, the joists underneath such partitions shall be doubled and spaced to permit the passage of such pipes and shall be bridged. Where plumbing, heating or other pipes are placed in or partly in a partition, necessitating the cutting of the soles or plates, a metal tie not less than 0.058 inch (1.47mm) (16 galvanized gage) and 1 ½ inches (38mm) wide shall be fastened to each plate across and to each side of the opening with not less than six 1 ½" x 0.148" minimum nails.

## Section 2606.7.4

Revise Section 2606.7.4 to read as follows:

**2606.7.4 Fire suppression system.** In buildings that are equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1, plastic light-diffusing systems shall be protected both above and below unless the sprinkler system has been specifically approved for installation only above the light-diffusing system. Areas of light-diffusing systems that are protected in accordance with this section shall be limited to a maximum panel area of 100 square feet with a maximum dimension of 15 feet. Adjacent panels shall be separated by at least 8 feet vertical and 4 feet horizontal.

## Section 2606.7.5

Revise Section 2606.7.5 to read as follows:

**2606.7.5 Electrical luminaires.** Light-transmitting plastic panels and light-diffuser panels that are installed in approved electrical luminaires shall comply with the requirements of Chapter 8 unless the light-transmitting plastic panels conform to the requirements of Section 2606.7.2. The area of approved light-transmitting plastic materials that are used in required *exits* or *corridors* shall not exceed the limitations listed in Sections 2606.7.3 and 2606.7.4 as applicable.

## Section 2607

Revise Section 2607 to read as follows:

**2607.3 Height limitation.** Light-transmitting plastics shall not be installed more than 75 feet (22 860 mm) above *grade plane*, except as allowed by Section 2607.5.

**2607.4 Area limitation and separation.** The maximum area of a single wall panel and minimum vertical and horizontal separation requirements for exterior light-transmitting plastic wall panels shall be as provided for in Table 2607.4. The maximum percentage of wall area of any *story* in light-transmitting plastic wall panels shall not exceed that

indicated in Table 2607.4 or the percentage of unprotected openings permitted by Section 705.8, whichever is smaller.

**Exceptions:**

1. Veneers of approved weather-resistant light-transmitting plastics used as exterior siding in buildings of Type V construction in compliance with Section 1405.
2. The area of light-transmitting plastic wall panels in *exterior walls* of greenhouses shall be exempt from the area limitations of Table 2607.4 but shall be limited as required for unprotected openings in accordance with Section 705.8.

**2607.5 Automatic sprinkler system.** Where the building is equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1, the maximum percentage area of *exterior wall* in any *story* in light-transmitting plastic wall panels and the maximum square footage of a single area given in Table 2607.4 shall be increased 100 percent, but the area of light-transmitting plastic wall panels shall not exceed 50 percent of the wall area in any story, or the area permitted by Section 705.8 for unprotected openings, whichever is smaller.

**Section 2608.2**

*Revise Section 260.2 to read as follows:*

**2608.2 Buildings of other types of construction.** Openings in the *exterior walls* of buildings of types of construction other than Type VB, where not required to be protected by Section 705, shall be permitted to be glazed or equipped with light-transmitting plastic in accordance with Section 2606 and all of the following:

*Item 1 to remain unchanged*

3. Light-transmitting plastics shall not be installed more than 75 feet (22 860 mm) above grade level.

**Section 2611**

*Revise 2611 to read as follows:*

**2611.1 General.** Light-transmitting plastic interior signs shall be limited as specified in Sections 2606 and 2611.2 through 2611.4. LED panel displays shall comply with Section 2611.5.

**Exception:** Light transmitting plastic interior wall signs in *covered and open mall buildings* shall comply with Section 402.6.4.

**2611.2 Maximum area.** The aggregate area of all light-transmitting plastics in each individual sign shall not exceed 24 square feet (2.23 m<sup>2</sup>).

**Exceptions:**

1. Signs are permitted to exceed an aggregate area of 24 square feet of light transmitting plastics, provided the light-transmitting plastic meets all the following:

- a. does not exceed 100 square feet,
  - b. is a minimum CC1 material,
  - c. is installed in a building fully protected by automatic sprinklers in accordance with Section 903.3.1.1, and
  - d. is installed in a sign that is listed and labeled in accordance with nationally recognized standards.
2. Signs exceeding the 100 square foot limitation of Exception 1 are permitted provided the sign meets all the following:
- a. the height does not exceed 10 feet,
  - b. the length does not exceed 60 feet,
  - c. the area does not exceed 500 square feet,
  - d. the light-transmitting plastic is a minimum CC1 material,
  - e. is listed and labeled in accordance with nationally recognized standards,
  - f. the space in which the sign is installed is protected with an automatic sprinkler system of at least Ordinary Hazard Group 2, and
  - g. a Fire Protection Report is provided to substantiate the preceding requirements are met.

**2611.3 Separation.** Signs shall be separated from each other by not less than 4 feet (1219mm) horizontally and 8 feet (2438 mm) vertically.

**2611.4 Encasement.** Backs of wall-mounted signs and non-illuminated portions of all signs regulated by this section shall be fully encased in metal.

**2611.5 LED Display Panels.** Signs or displays utilizing LED display panels shall comply with this section of the code.

- 1. Panels used for LED displays shall be *listed* appliances.
- 2. Panel displays under 100 square feet in aggregate area shall not require any additional protection.
- 3. Panel displays between 100 square feet and 500 square feet in aggregate area shall be located in a space protected by an automatic sprinkler system.
- 4. Panel displays exceeding 500 square feet and below 1,000 square feet in aggregate area shall be protected with a water curtain complying with NFPA 13 across the exposed face of the display or be located in a space protected with an automatic sprinkler system of at least Ordinary Hazard Group 2.
- 5. Panel displays of 1,000 or greater square feet in aggregate area shall be protected by a water curtain complying with NFPA 13 across the exposed face of the display.
- 6. For panel displays exceeding 500 square feet, a Fire Protection Report shall be provided to substantiate the preceding requirements are met.

## Section 2613

*Delete exceptions 1 and 2 of Section 2613.5 and revise Section 2613 to read as follows:*

**2613.1 General.** The provisions of this section shall govern the requirements and uses of fiber-reinforced polymer in and on buildings and structures.

**2613.2 Labeling and identification.** Packages and containers of fiber-reinforced polymer and their components delivered to the job site shall bear the *label* of an *approved agency* showing the manufacturer's name, product listing, product identification and information sufficient to determine that the end use will comply with the code requirements.

**2613.3 Interior finishes.** Fiber-reinforced polymer used as *interior finishes, decorative materials or trim* shall comply with Chapter 8.

**2613.3.1 Foam plastic cores.** Fiber-reinforced polymer used as interior finish and that contain foam plastic cores shall comply with Chapter 8 and Chapter 26.

**2613.4 Light-transmitting materials.** Fiber-reinforced polymer used as light-transmitting materials shall comply with Sections 2606 through 2611 as required for the specific application.

**2613.5 Exterior use.** Fiber-reinforced polymer shall be permitted to be installed on the *exterior walls* of buildings of any type of construction when such polymers meet the requirements of Section 2603.5. Fireblocking shall be installed in accordance with Section 718.

## Section 2902.2

**Table 2902.1**

*Amend Table 2902.1 to read as follows:*

No.	CLASSIFICATION	DESCRIPTION	WATER CLOSETS (URINALS <sup>h</sup> )		LAVATORIES		BATHTUBS/SHOWERS	DRINKING FOUNTAINS <sup>e,g</sup>	OTHER <sup>e</sup>
			MALE	FEMALE	MALE	FEMALE			
1	Assembly	Casino gaming areas	1 per 100 for the first 400 and 1 per 250 for the remainder exceeding 400	1 per 50 for the first 400 and 1 per 150 for the remainder exceeding 400	1 per 250 for the first 750 and 1 per 500 for the remainder exceeding 750	-	-	1 service sink	
2	Business	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 <sup>e</sup>	
5	Institutional	Adult day care	1 per 15		1 per 15	1	1 per 1,000	1 service sink	
		Child day care	1 per 15		1 per 15	-	1 per 1,000	1 service sink	

6	Mercantile	Retail stores, service stations, shops, salesrooms, markets and shopping centers	1 per 500	1 per 750	-	1 per 1,000	1 service sink <sup>e</sup>
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- a. The fixtures 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 care patients.
- c. A single-occupant toilet room with one water closet and one lavatory serving not more than two adjacent patient sleeping units shall be permitted, provided that each patient sleeping unit has direct access to the toilet room and provisions for privacy for the toilet room user are provided.
- d. The occupant load for seasonal outdoor seating and entertainment areas shall be included when determining the minimum number of facilities required.
- e. Drinking fountains and service sinks are not required for an occupant load of 50 or fewer.
- f. The required number and type of plumbing fixtures for outdoor swimming pools shall be in accordance with Section 609 of the *International Swimming Pool and Spa Code*.
- g. Where restaurants provide drinking water in a container free of charge, drinking fountains shall not be required in those restaurants. In other occupancies where drinking fountains are required, water dispensers that provide water to occupants free of charge shall be permitted to be substituted for not more than 50 percent of the required number of drinking fountains.
- 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.

Amend Section 2902.2 to read as follows:

**[P] 2902.2 Separate Facilities.** Where plumbing fixtures are required, separate facilities shall be provided for each sex.

**Exceptions:**

1. Separate facilities shall not be required for *dwelling units* and *sleeping units*.
2. Separate facilities shall not be required in structures or tenant spaces with a total *occupant load*, including both employees and customers, of 30 or fewer.
3. Separate facilities shall not be required in Group M occupancies in which the maximum occupant load is 100 or fewer.
4. Separate facilities shall not be required in Group B occupancies in which the maximum occupant load is 50 or fewer provided a single toilet facility is designed for use by no more than one person at a time.

**Section 3002.4**

Amend Section 3002.4 to read as follows:

**3002.4 Elevator car to accommodate ambulance stretcher.** Where elevators are provided in buildings four or more *stories* above, or four or more *stories* below, *grade plane*, not fewer than one elevator, and no less than the minimum number specified in the exception to Section 403.6.1 when provided in lieu of fire service access elevators, shall be provided for fire department emergency access to all floors. The elevator car shall be of such a size and arrangement to accommodate an ambulance stretch 24 inches by 84 inches (601 mm by 2134 mm) with not less than 5-inch (127 mm) radius corners, in the horizontal, open position and shall be identified by the international symbol for emergency medical services (star of life). The symbol shall not be less than 3 inches (76 mm) in height and shall be placed inside on both sides of the hoistway door frame. Such elevators shall open into a lobby providing sufficient area to accommodate transport of a 24-inch by 84-inch (610 mm by 2134 mm) ambulance stretcher.



### Section 3003.1.3

Amend Section 3003.1.3 to read as follows:

**3003.1.3 Two or more elevators.** Where two or more elevators are controlled by a common operating system, all elevators shall automatically transfer to standby power within 60 seconds after failure of normal power where the standby power source is of sufficient capacity to operate all elevators at the same time. Where the standby power source is not of sufficient capacity to operate all elevators at the same time, all elevators shall transfer to standby power in sequence, return to the designated landing and disconnect from the standby power source. After all elevators have been returned to the designated level, not less than one elevator, and all elevators installed in accordance with the exception to Section 403.6.1, shall remain operable from the standby power source.

### Section 3114

Add new Section 3114 to read as follows:

#### **SECTION 3114** **CABANAS**

**3114.1 General.** This section shall apply to *cabanos* on, or in close proximity to, buildings where the predominant building construction type would not otherwise allow *cabanos* to be constructed as membrane structures in accordance with Section 3102.3. *Cabanos* that are erected for a period of less than 180 days shall comply with the *International Fire Code*.

**3114.2 Design and Construction.** *Cabanos* shall be designed and constructed to withstand wind or other lateral loads and live loads as required by Chapter 16 with due allowance for shape, open construction and similar features that relieve the pressures or loads. Structural members shall be protected to prevent deterioration.

**3114.2.1 Frame.** *Cabanos* shall be constructed of a rigid, noncombustible frame that is permanently mounted to the roof or deck on which it is located.

**3114.2.2 Membrane Covering.** The membrane covering of the *cabana* shall either be noncombustible in accordance with Section 703.5 or be tested by an approved agency and pass Test 2 of NFPA 701.

**3114.2.3 Openness.** Each *cabana* shall be provided with a minimum of one opening to an exterior egress route. Such opening shall provide a minimum unobstructed opening of 5 feet (1524 mm) wide by 7 feet (2134 mm) high.

**3114.2.4 Height.** The highest point of a *cabana* shall not exceed 20 feet (4572 mm).

**3114.2.5 Area.** The area of any single *cabana* or *cabana group* shall not exceed 1,000 square feet (46.45 m<sup>2</sup>).

**Exception:** The area of *cabanos* that are constructed entirely of noncombustible materials shall not exceed 2,000 square feet (92.90 m<sup>2</sup>).

**3114.2.5.1 Subdivision.** Subdivision of a *cabana* is permitted where subdivision of the *cabana* is provided by any material that is tested by an approved agency and passes Test 2 of NFPA 701.

**3114.3 Location.** *Cabanas* shall be located to minimize the hazard to the building, other *cabanas*, and the means of egress.

**3114.3.1 Separation between cabanas.** *Cabanas* shall be separated from all other *cabanas* by a minimum distance of 10 feet (3048 mm), as measured at the nearest horizontal projection. Where *cabanas* do not meet this spacing, the *cabanas* shall be considered a *cabana group*, and the *cabana group* shall meet the requirements set forth herein.

**3114.3.2 Separation between cabana groups.** *Cabana groups* shall be separated from all other *cabanas* by a minimum distance of 10 feet (3048 mm), as measured at the nearest horizontal projection.

**3114.3.3 Separation to building.** *Cabanas* shall be a minimum of 10 feet (3048 mm) from any wall or building opening, and shall not be located beneath any horizontal projection of the main building.

**3114.3.4 Obstruction to means of egress.** *Cabanas* shall be located and spaced such that the required means of egress is not obstructed by the *cabanas* for the entire height of the *cabanas*.

**3114.4 Automatic sprinkler system.** *Cabanas* and *cabana groups* shall be protected throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

**Exception:** An automatic sprinkler system shall not be required in *cabanas* or *cabana groups* that do not exceed 120 square feet (11.148 m<sup>2</sup>) in area.

**3114.5 Cooking facilities.** Cooking shall not be permitted within 20 feet (6096 mm) of a *cabana* or inside a *cabana*.

**3114.6 Fuel-fired equipment.** Fuel-fired equipment shall not be permitted within 20 feet (6096 mm) of a *cabana* or inside a *cabana*.

**3114.7 Lighting.** All lighting within or attached to *cabanas* shall be electric. Open flames for any purpose are prohibited within 20 feet (6096 mm) of a *cabana* or inside a *cabana*.

**3114.8 Fire Protection Report.** A Fire Protection Report shall be submitted and shall address the type of construction of the main structure and the *cabana(s)*, the size and location of the *cabana(s)*, use of the *cabana(s)*, fire protection systems for the *cabana(s)*, and the impact of the *cabana(s)* on the means of egress.

## Section 3115

Add new Section 3115 to read as follows:

### SECTION 3115 SHADE STRUCTURES

**3115.1 General.** This section shall apply to *shade structures* on, attached to, or in close proximity to buildings of Type I or Type II construction. Where *shade structures* are constructed as a cabana, membrane structure or separate building, compliance with this section is not required. *Shade structures* that are erected for a period of less than 180 days shall comply with the *International Fire Code*.

**3115.2 Design and Construction.** *Shade structures* shall be designed and constructed to withstand the wind and lateral loads and live loads as required by Chapter 16 with due allowance for shape, open construction and similar features that relieve the pressure of loads. Structural members shall be protected to prevent deterioration.

**3115.2.1 Frames.** Frames shall be non-rated, and noncombustible or wood of Type IV size.

**3115.2.2 Shade Coverings.** Shade coverings shall be of:

1. Noncombustible materials in accordance with Section 703.5; or
2. Wood of Type IV size; or
3. An approved covering that meets the fire propagation performance criteria of NFPA 701.

**3115.2.3 Height.** The height of a *shade structure* shall not exceed that allowed for the predominant building construction type, but shall not exceed 50 feet in height.

**3115.2.4 Area.** The area of *shade structures* shall be limited to the maximum allowable area for the predominant building construction type, including the area of such building, but in no case shall the *shade structure* exceed 10,000 square feet (929 m<sup>2</sup>).

**Exception:** *Shade structures* with combustible construction as outlined under Section 3115.3 shall be limited to no more than 5,000 square feet (464.52 m<sup>2</sup>).

**3115.3 Location.** *Shade structures* shall be allowed to be constructed on or attached to the building or may be free standing separated from the building.

**3115.3.1 Separation between *shade structures*.** *Shade structures* shall be separated from all other shade structures by a minimum distance of 10 feet (3048 mm), as measured at the nearest horizontal projection, regardless of the height of each horizontal projection. Where *shade structures* do not meet this spacing, the *shade structures* shall be considered a *shade structure group*, and the *shade structure group* shall meet the requirements set forth herein.

**3115.3.2 Separation between *shade structure groups*.** *Shade structure groups* shall be separated from all other *shade structure groups* by a minimum distance of 10 feet (3048 mm), as measured at the nearest horizontal projection, regardless of the height of each horizontal projection.

**3115.4 Means of Egress.** Mean of egress shall comply with Chapter 10. Sufficient clearance and aisle widths shall be provided and maintained for means of egress that pass through the shade structure from any building or area.

**3115.5 Automatic Sprinkler Systems.** *Shade structures* and *shade structure groups* shall be protected by an automatic sprinkler system as specified in Chapter 9 for the appropriate hazard class.

**Exceptions:**

1. *Shade structures* attached to buildings not otherwise required to be protected by an automatic sprinkler system and where the *shade structure* does not increase the overall building area beyond 5,000 square feet (464.52 m<sup>2</sup>).
2. Where a slatted, lattice or fixed louvered *shade structure* roof system is not less than 50 percent open to the sky and not provided with a fabric or similar covering.
3. Entirely noncombustible *shade structures* that are located a minimum of 10 feet from any wall, building opening, or adjacent shade structure; that do not exceed 1,000 square feet (92.91 m<sup>2</sup>) in area, and has not less than 100 percent of its perimeter wall area unenclosed.
4. *Shade structures* that are located a minimum of 10 feet from any wall, building opening, or adjacent shade structure; that do not exceed 200 square feet (18.58 m<sup>2</sup>), or 400 square feet (37.16 m<sup>2</sup>) when comprised entirely of noncombustible materials.

**3115.6 Fire Alarm & Detection System.** Fire alarm notification appliances are required within *shade structures* where the predominant building includes an exit that discharges through the *shade structure*, or where the *shade structure* exits through the building. Fire alarm notification appliances are not required where the predominant building and *shade structure* exit independently of one another and where the use of the *shade structure* does not otherwise require notification appliances.

*Shade structures* shall be protected by fire detection systems as specified in Chapter 9 based on the applicable occupancy and use. Detection systems utilized as part of a suppression system shall be addressed in a Fire Protection Report as required by Section 3115.10.

**3115.7 Fuel-Fired Equipment.** Fuel-fired equipment shall not be permitted within 20 feet (6096 mm) of a *shade structure* or under a *shade structure*.

**Exceptions:**

1. Portable chafing dishes that utilize liquid fuel manufactured for its intended use.
2. Gas fired grills that are located a minimum of 10 feet (3048 mm) from the predominant building may be within 20 feet (6096 mm) of, or under entirely noncombustible *shade structures*.
3. Portable gas fired heaters that are located a minimum of 10 feet (3048 mm) from the predominant building may be within 20 feet (6096 mm) of, or under entirely noncombustible *shade structures*.
4. Gas fired fireplaces or fire pits that are located a minimum of 15 feet (3048 mm) from the predominant building may be within 20 feet (6096 mm) of, or under entirely noncombustible *shade structures*.

**3115.8 Lighting.** All lighting within or attached to *shade structures* shall be electric. Open flames for any purpose other than those noted above are prohibited within 20 feet (6096 mm) of a *shade structure* or under a *shade structure*, unless approved by the authority having jurisdiction.

**3115.9 Fire Protection Report.** When required by the Building Official, a fire protection report shall be provided to address the type of construction of the predominant structure and the *shade structure(s)*, the size and location of the *shade structures*, use of the *shade structure(s)*, fire protection systems for the *shade structure(s)*, and the impact of the *shade structure(s)* on the means of egress.

## Appendix G

*Delete Appendix G, in its entirety.*

## Appendix H

*Adopt Appendix H and revise section H107.1.3. Section H107.1.3 Area Limitation. Add an exception to Section H107.1.3 to read as follows:*

**Exception:** The area of plastics may be unlimited on a structurally independent sign provided the exterior walls of adjacent buildings are constructed in accordance with Table 602 and located;

1. A minimum of 10 feet from Type I building(s); and
2. A minimum of 10 feet, measured horizontally, from a building's main entrance.

The separation distance from the sign and an adjacent building shall be a consideration for the rating of the building's exterior walls. For the purposes of this exception, the fire resistance rating of the sign may be taken as 0 hours at any separation distance.

## Appendix J

*Adopt Appendix J and revise as follows:*

**J103.3 Hazards.** Whenever the *building official* determines that any existing excavation or embankment or fill on private property has become a hazard to life and limb, or endangers property, or adversely affects the safety, use or stability of a public way, easement, storm sewer system, or drainage channel, the owner of the property upon which the excavation or fill is located, or other person or agent in control of said property, upon receipt of notice in writing from the building official, shall within the period specified therein repair or eliminate such excavation or embankment to eliminate the hazard and to be in conformance with the requirements of this code.

**J104.1 Submittal requirements.** In addition to the provisions of Section 105.3, the applicant shall state the estimated quantities of excavation and fill. All projects that require grading shall have a grading plan prepared, stamped, and signed by a *registered design professional*.

**Exception:** At the option of the *building official*, if the structure is located outside of a flood hazard area the following projects may be exempted from having a grading plan. Projects exempted from a grading plan must still comply with the grading and drainage requirements in the IBC.

1. Structures, additions, or remodels with a footprint less than 600 square feet.
2. Decks, shade structures, and patio covers accessory to a one or two family dwelling.
3. Mobile homes, trailers, and modular buildings that are not considered real property.
4. Carports.
5. Signs, light poles, and communication towers

**J104.2 Grading plan requirements.** All grading plans shall be prepared, stamped, and signed by a registered design professional. The following items must be included on all grading plan submittals.

1. General vicinity of the proposed site.
2. Property limits and accurate contours of existing ground and details of terrain and area drainage.
3. Limiting dimensions, elevations or finish contours to be achieved by the grading, proposed drainage channels and related construction.
4. Location of any buildings or structures on the property where the work is to be performed and the location of any buildings or structures on land of adjacent owners that are within 100 feet of the property or that may be affected by the proposed grading operations.
5. Recommendations included in the geotechnical report shall be incorporated in the grading plans or specifications as follows:
  - a. Locations and dimensions of all cut and fill slopes,
  - b. Locations of all cross sections presented in the geotechnical report,
  - c. Locations and sizes of all recommended remedial measures such as buttress fills, stability fills, deep foundation systems, reinforced earth, retaining walls, etc.,
  - d. Location and layout of proposed subdrainage system.
6. A statement that the site shall be graded in accordance with the approved geotechnical report. This statement shall include the firm name that prepared the geotechnical report, the report number, and the date of the geotechnical report.
7. Locations of other existing topographic features either natural or man-made such as streets, drainage structures, pavements, walls, mining pits, etc.
8. The cut to fill transition line.
9. Positive drainage away from the foundation per Section 1804.3.
10. Details and cross sections at property lines, fence walls, retaining walls, berms, etc.
11. Elevation datum and benchmarks (NAVD 88).
12. Existing contours at least 100 feet beyond the property lines.

13. Proposed finish contours or spot elevations at the property corners, building pad, and at swale flow lines.
14. Elevations of curbs or centerlines of roads or streets.
15. Earthwork quantities in cubic yards.
16. Finish floor elevations.
17. Details and cross sections of typical fill slopes and cut slopes.
18. Typical details of fill-over-natural slopes and fill-over-cut slopes where fill is to be placed on natural or cut slopes steeper than 5H:1V in accordance with Section J107.
19. Setback dimensions of cut and fill slopes from site boundaries per Section J108.
20. The placement of buildings and structures on and or adjacent to slopes steeper than 3H:1V (33.3% slope) shall be in accordance with Section 1808.7.
21. Provide terracing in accordance with Section J109 for slopes steeper than 3H:1V (33.3% slope).
22. Provide the locations and dimensions of all terrace drains for all slopes steeper than 3H:1V in accordance with Section J109.
23. The standard notes specified in the Las Vegas Valley Construction Site Best Management Practice Guidance Manual (most current edition).
24. Registered design professional original seal (wet seal), signature and date or a Records stamp and signature stating, "*This is a true and exact copy of the original document on file in this office.*"

**J104.3 Geotechnical Report.** A geotechnical report prepared by a *registered design professional* shall be provided. The report shall comply with Section 1803.6.

**J105.1 General.** Inspection of grading operations shall comply with the provisions of this section. The permittee shall be responsible for the work to be performed in accordance with the *approved* plans and specifications and in conformance with the provisions of this code. The permittee shall engage an approved agency, if required by the *building official*.

**J105.1.1 Completion of work and final reports.** Report submittal shall be in compliance with Section 1704.1.2.

**J105.1.2 Final Grading report.** Upon completion of pad grading (or foundation excavation) and prior to a footing or foundation inspection, a Final Grading report shall be provided by an *approved* agency. Grading (or foundation excavation) shall be observed and tested by an *approved* agency. The *approved* agency shall prepare the report, signed by a *registered design professional* certifying that the grading and earthwork are complete and substantially comply with the requirements of the geotechnical report of record including any approved supplements or addenda. At the option of the *building official*, a Pad Certification report submitted in accordance with Section J105.1.3 may be accepted as an interim report prior to a footing or foundation inspection. A Final Grading report will then be required prior to receiving a Final Inspection.

The final grading report shall state that the engineer for grading inspections is certifying that all grading recommendations in the approved geotechnical report (including any approved updates or addenda) have been followed. Noncompliance

reports shall be written when the grading contractor did not follow the recommendations of the approved report or when site conditions did not match those indicated in the approved geotechnical report. The engineer for grading inspections shall not authorize any revisions to the approved geotechnical report without the written consent of the geotechnical engineer of record.

The Final Grading report itself will contain all applicable test data and analysis of the data. Specific project information is also required if there were any changes to the geotechnical report of record or unusual circumstances encountered during grading. The report shall also include the following information:

1. Compaction test results, requirements, locations, depth of backfill at test locations and names of technicians conducting the tests.
2. Moisture Density values and curves that include classifications for all soils used in the grading operation.
3. Description of structure or pad including the proposed use.
4. Grading plan showing approximate locations of tests, dates and depths of over-excavation observations, original contours and finish pad elevations.
5. Swell and solubility test requirements and results. This information shall be provided if required by the geotechnical report of record, elsewhere in the code, or if imported soils were utilized.
6. Type of foundation system applicable to work being certified (i.e. spread footings, strip footings, combination footings, drilled shafts etc.).
7. Import material used, source of import, and tests indicating compliance with the geotechnical report of record recommendations
8. Classification of Sulfate Exposure for foundation soils in relation to ACI 318-14 Section 19.3.2.
9. All daily reports, test data, non-compliance reports, and records of corrections.
10. A statement describing the process of pad grading. Where applicable, this shall include, but not be limited to the minimum depth of over-excavation, blending operations, the use of import soils, nested aggregate, organics encountered, and removal of unsuitable soils.
11. The preceding requirements shall be presented for each pad or structure being certified.

The final grading report shall state that the engineer for grading inspections is certifying that all grading recommendations in the approved geotechnical report (including any approved updates or addenda) have been followed. Noncompliance reports shall be written when the grading contractor did not follow the recommendations of the approved report or when site conditions did not match those indicated in the approved geotechnical report. The engineer for grading inspections shall not authorize any revisions to the approved geotechnical report without the written consent of the geotechnical engineer of record. The Final Grading report remains valid for a maximum of six months after the completion of grading. The six month period begins at the first test date of the final test of the final lift of the structural pad. Once expired, a Pad Recertification report is required.

**J105.1.3 Pad Certification report.** This letter/report is used as an interim document until a Final Grading report is completed (i.e., a Final Grading report for the entire project or a particular phase(s) of a project). The *approved* agency shall prepare this report signed by a *registered design professional* and certifying that the grading and earthwork are complete and substantially comply with the requirements of the geotechnical report of record including any approved supplements or addenda. Specific project information is also required if there were any changes to the geotechnical report of record or unusual circumstances encountered during grading.



This report shall include the following information for each pad or structure:

1. The first test date of the final test of the final lift.
2. Permit number and pad or structure description.
3. Classification of Sulfate Exposure for foundation soils in relation to ACI 318-14 Section 19.3.2.
4. Classification of foundation soil for expansive properties (i.e. non-expansive or results from standard 60 pounds per square foot swell test).
5. The name(s) of the approved special inspector(s) and any technicians that observed grading or foundation improvements.

This report remains valid for no longer than six months after the completion of grading. The six month period begins at the first test date of the final test of the final lift of the structural pad. Upon expiration, a Final Grading report and Pad Recertification report will be required.

**J105.1.4 Pad Recertification report.** This report is required when a Final Grading report or Pad Certification report has expired or if required by the *building official*. The *approved* agency shall prepare this report signed by a *registered design professional* certifying the current suitability of the pad(s). The condition of the pad(s) is discussed, tests performed and their results are presented and discussed, and any additional grading or reworking is discussed. The conclusions are stated and based upon the current condition of the pad(s) compared to completion at original grading and a statement that the current condition of the pad(s) substantially complies with the requirements of the geotechnical report of record including any approved supplements or addenda.

As a minimum, pad moisture data and standard sixty pounds per square foot swell test results, if applicable, are included in this report. The tests shall be conducted on a representative number of pads.

The report remains valid for no longer than six months after the latest test date. Once expired, the pad(s) recertification will require an evaluation by a *registered design professional* to confirm the applicability of current site conditions.

**J105.1.5 Finished Floor Elevation Certificate.** A *registered design professional* shall certify the lowest habitable finished floor elevation to the elevation on the approved plans upon completion of the slab inspection and placement or the placement of the final construction form for the finished floor. All certifications required by this section shall be provided to and accepted by the *building official* prior to performance of any additional inspections. The minimum finished floor elevation shall comply with the approved plans and the allowable tolerance shall be minus (-) 0.0 feet to plus (+) 0.3 feet of the finished floor elevation detailed on the approved plans.

**J105.1.6 Drainage Compliance Report.** Upon completion of final grading, and prior to the final building inspection, a statement of compliance for drainage shall be provided by the *registered design professional in responsible charge* or the developer when approved by the *building official*.

This report shall state that site conditions at the time of final construction provide positive drainage in compliance with the approved drainage plan or the plot and grading plan.

When engineered drainage features, facilities, or structures are required by the approved plans, the *registered design professional in responsible charge* shall verify that installed and constructed elements are in compliance with the approved plans. This includes site detention, lot to lot drainage, and drainage conveyance devices.

**J105.1.7 Notification of Noncompliance.** If in the course of fulfilling their respective duties under this appendix, the *registered design professional* or the *approved agency* finds that the work is not being done in conformance with this appendix or the *approved plans* the discrepancies shall be immediately reported in writing to the contractor, the permittee, and to the *building official*.

**J105.2 Special Inspections.** The *special inspection* requirements of Section 1704 shall apply to work performed under a grading *permit* where required by the *building official*.

## Appendix O

Adopt a new Appendix O to read as follows:

### APPENDIX O EVALUATING LIQUEFACTION HAZARDS

#### SECTION O101 GENERAL

**O101.1 Scope.** This guideline is intended to address the requirements of NRS 278.580 6(b) which mandates governing bodies to amend their building codes to include standards for the investigation of hazards relating to seismic activity including liquefaction.

**O101.2 Design Basis.** When a geotechnical investigation report is required by 1803.2 then this guideline specifies the minimum requirements for evaluation of liquefaction hazards. The liquefaction evaluation must be performed by a *registered design professional*.

#### SECTION O102 DEFINITIONS

**O102.1 Definitions.** The following words and terms shall, for the purposes of this appendix, have the meanings shown herein. Refer to Chapter 2 of this code for general definitions.

**CPT.** Cone Penetration Test (ASTM D3441).

**CSR.** Cyclic stress ratio — a normalized measure of cyclic stress severity, expressed as equivalent uniform cyclic shear stress divided by some measure of initial effective overburden or confining stress.

**CSReq.** The equivalent uniform cyclic stress ratio representative of the dynamic loading imposed by an earthquake.

**CSRliq.** The equivalent uniform cyclic stress ratio required to induce liquefaction within a given number of loading cycles [that number of cycles considered representative of the earthquake under consideration].

**Ground Loss.** Localized ground subsidence.

**Land Subsidence:** The gradual downward settling or sinking of the earth's surface.

**Liquefaction.** Significant loss of soil strength due to pore pressure increase.

**N.** Penetration resistance measured in SPT tests (blows/ft).

**N<sub>1</sub> Normalized SPT N-value (blows/ft).** Corrected for overburden stress effects to the N-value which would occur if the effective overburden stress was 1.0 tons/ft<sup>2</sup>.

**(N<sub>1</sub>)<sub>60</sub> Standardized, normalized SPT-value.** Corrected for both overburden stress effects and equipment and procedural effects (blows/ft).

**q<sub>c</sub>.** Tip resistance measured by CPT probe (force/length<sup>2</sup>).

**q<sub>c,1</sub>.** Normalized CPT tip resistance (force/length<sup>2</sup>); corrected for overburden stress effects to the q<sub>c</sub> value which would occur if the effective overburden stress was 1.0 tons/ft<sup>2</sup>.

**SPT.** Standard Penetration Test (ASTM D1586).

### **SECTION O103 EVALUATION OF LIQUEFACTION POTENTIAL**

**O103.1** Liquefaction shall be evaluated for all projects that require a geotechnical investigation report. Liquefaction potential is associated with three soil conditions that include: presence of low density silts and/or sands; saturation and non-cohesive soil behavior.

**Exception:** Detached accessory structures associated with a single family residence that do not have any habitable space and are classified as group S or U occupancies; examples include carports, patio covers (shade structures), detached garages, storage sheds, agricultural buildings, barns, etc.

**O103.1.1 Screening for Potential Liquefaction Hazards.** Liquefaction potential may be considered low when any of the following conditions are identified:

1. Groundwater conditions have been evaluated to a depth of 50 feet below the ground surface and no saturated soils have been identified within this zone. Groundwater conditions may be evaluated by traditional geotechnical exploration methods or published well data may be referenced. Evaluation of groundwater conditions should take into account seasonal variation in groundwater elevation.
2. Geotechnical exploration logs indicate that there are no soil strata present in the upper 50 feet that consist of low density silts and/or sands which have standardized blow counts (ASTM D1586) less than 15 blows per foot.
3. Geotechnical exploration logs indicate that there are soil strata present in the upper 50 feet that consist of low density silts and/or sands which possess cohesive soil properties that reduce the likelihood of liquefaction. Soils having a plasticity index (PI) greater than 12 are generally expected to behave like clays; however, if the PI is greater than 7 and the in-situ moisture content of the soils is less than 85% of the liquid limit, clay-like behavior may also be expected. Engineering judgment must be applied when using this criteria.

**O103.1.2 Detailed Liquefaction Hazard Analysis.** When liquefaction potential cannot be shown as low per the requirements of O103.1.1, then a detailed liquefaction analysis shall be performed.

**O103.1.2.1 Field Investigation Requirements.** The field investigation shall be based on visual observations of the soil and any necessary tests of soil materials disclosed by borings, test pits or other subsurface exploration methods made in appropriate locations. In addition, surficial deposits shall be evaluated and described along with any exposed earth. The surficial deposits or exposed area shall be defined in terms of environment of deposition and the relationship to existing topography. The investigation shall be conducted by a qualified representative approved by the *registered design professional*. The field investigation shall include the following:

1. Soil Classification by the Unified Soil Classification System (ASTM D2487). Backup data shall be included, for a minimum of one sample, for every two borings or test pits or other subsurface exploratory method distributed among the prominent horizons in the soil profile. This data shall include particle size distribution, Atterberg Limits, unit weight and in-situ moisture content of the sampled soil.
2. Correlation and analysis of soil horizons based on in-situ Standard Penetration Test (STP) data and/or Cone Penetration Test (CPT) data.
3. Flood zones or any know historic areas of liquefaction.
4. Depth to relative groundwater elevation, reported as Below Ground Surface (bgs). The relative groundwater elevation must be based on boring logs, test pits, monitor well data, geophysical investigations or available groundwater maps.
5. Evaluation of the geometry of potentially liquefiable soils. Deposits of liquefiable soils shall require lateral investigation for the determination of hazardous weakened plane areas and areas susceptible to sliding that may pose a risk to lateral spreading.
6. A minimum of 30% of the explorations required by 1803.3.2 or 1 exploration, whichever is greater, shall extend to a depth of 50 feet below the ground surface.

**O103.1.2.2 Analysis Requirements.** To evaluate for a potential liquefaction hazard a probabilistically derived peak ground acceleration with a 10% probability of exceedance in 50 years (i.e. 475-year return period) shall be used when site-specific analyses are performed. However, special considerations must be made for certain structures as defined by the *building official*. The factor of safety for level ground liquefaction resistance has been defined as  $FS = CSReq / CSRliq$ , where  $CSReq$  is the cyclic stress ratio generated by the anticipated earthquake ground motions at the site, and  $CSRliq$  is the cyclic stress ratio required to generate liquefaction. The factor of safety shall comply with Table O103.1.2.2. This factor of safety is based on quality, site-specific penetration resistance, laboratory data and appropriate ground-motion data used in the analyses. However, larger factors of safety may be applicable for differing field conditions and types of construction. If lower factors of safety are calculated for some soil zones, an evaluation of the level (or severity) of the hazard associated with

potential liquefaction of these soils shall be determined.

**TABLE O103.1.2.2  
FACTORS OF SAFETY FOR LIQUEFACTION HAZARD ASSESSMENT**

CONSEQUENCE OF LIQUEFACTION	(N <sub>1</sub> ) <sub>60</sub> CLEAN SAND	FACTOR OF SAFETY	
		RISK CATEGORY I AND II	RISK CATEGORY III AND IV
Settlement	≤ 15	1.1	1.3
	≤ 30	1.0	1.2
Surface Manifestation	≤ 15	1.2	1.4
	≤ 30	1.0	1.2
Lateral Spread	≤ 15	1.3	1.5
	≤ 30	1.0	1.2

**O103.1.2.3 Mitigation of Liquefaction Hazards.** Mitigation method(s) shall provide an acceptable level of protection in both: 1) Translational site instability (sliding, edge failure, lateral spreading, flow failure, etc.) that may potentially affect all or large portions of the site; and 2) Localized hazard(s) at and immediately adjacent to the structures and/or facilities of concern (e.g., bearing failure, settlement, localized lateral movements).

**O104  
REPORTING**

**O104.1 Reporting.** Where an investigation, evaluation and mitigation of liquefaction hazards has been performed/completed, a written report shall be submitted to the *building official*. This report shall include, but not limited to, the following information:

1. If any method other than Standard Penetration Test (SPT; ASTM D1586) and Cone Penetration Test (CPT; ASTM 3441) are used, a description of the equipment and procedural details of the field measurements must be summarized.
2. If SPTs are performed, boring logs must show (unmodified) N-values. If CPTs are conducted, probe logs must show qc-values and plots of sleeve friction.
3. An explanation of the basis of the methods used to convert SPT, CPT or non-standard data to "corrected" and "standardized" values.
4. Tabulation and/or plots of corrected values used for analyses.
5. An explanation of methods used to develop estimates of field loading equivalent uniform cyclic stress ratios (CSReq) used to represent the anticipated field earthquake excitation (cyclic loading).
6. An explanation of the basis for evaluation of the equivalent uniform cyclic stress ratio necessary to cause liquefaction (CSRliq) at the number of equivalent uniform

loading cycles considered representative of the design earthquake.

7. Factors of safety against liquefaction at various depths and/or within various potentially liquefiable soil units.
8. Conclusions regarding the potential for liquefaction and estimated deformation and its potential impact on the proposed project.
9. Proposed mitigation measures that are determined to reduce potential damage caused by liquefaction.
10. Describe the criteria necessary for SPT-based or CPT-based and/or other types of acceptance testing that will be used to demonstrate satisfactory remediation.
11. Confirmation of Site Class in accordance with ASCE 7-16 Chapter 20 to identify if Site Class F conditions exist.

## Appendix P

*Adopt a new Appendix P to read as follows:*

### APPENDIX P INVESTIGATING POTENTIAL SURFACE FAULT RUPTURE & LAND SUBSIDENCE HAZARDS

#### SECTION P101 GENERAL

**P101.1 SCOPE.** The intent of these provisions is to provide the minimum level of effort required when investigating the potential for *surface fault rupture* and *fissuring* in Clark County, Nevada. Additional effort beyond these provisions may be required at certain sites due to their complexity and the nature of the proposed improvements.

#### SECTION P102 DEFINITIONS

**P102.1 DEFINITIONS.** The following words and terms shall, for the purposes of this appendix, have the meanings shown herein. Refer to Chapter 2 of this code for general definitions.

**Differential Land Subsidence.** Subsidence across pre-existing faults.

**Earth Fissure.** Ground cracks or voids found in the near surface of the earth. Earth fissures are believed to have formed in response to tensional or horizontal stresses from regional land subsidence or to ground shaking from earthquakes resulting in ground deformation or both.

**Fault.** A fracture or a zone of fracturing along which there has been displacement of the sides relative to one another parallel to the fracture. Faults will be classified as follows:

1. *Fault, Holocene Active:* A fault that has moved within the last 11,000 years.

2. *Fault, Late Quaternary Active*: A fault that has moved within the last 130,000 years.
3. *Fault, Quaternary Active*: A fault that has moved within the last 1,600,000 years.
4. *Fault, Inactive*: A fault without recognized activity within the past 1,600,000 years.

**Fault Line (Trace).** The line or trace of a fault plane on the ground surface or on a reference plane formed by the intersection of a fault and the earth's surface.

**Fault Scarp.** A steep slope or cliff formed directly by movement along the fault and representing the exposed surface of a fault before modification by erosion and weathering.

**Fault Zone.** A fault expressed as a zone of numerous small fractures or angular rock fragments or fault gouge (finely ground rocks). A fault zone may be up to hundreds of feet wide.

**Geotechnical Investigation.** Report prepared per sections 1803.2 through 1803.6.

**Land Subsidence.** The gradual downward settling or sinking of the earth's surface.

**Lineament.** Linear or curvilinear geomorphic feature interpreted to be of tectonic origin which does not clearly exhibit fault scarp characteristics and cannot be differentiated by age.

**Subsidence-Induced Movement.** Renewed movement of a fault induced by historical land subsidence. Subsidence induced movement may occur on a fault regardless of earthquake activity on the fault.

**Surface Rupture.** A fracture or break in the ground surface resulting from faulting, fissuring, or land subsidence.

## **SECTION P103 WHEN TO PERFORM THE INVESTIGATION**

**P103.1** All *Geotechnical Investigation* reports shall address the requirements of IBC section 1803.5.11 regardless of the specific requirements of this appendix.

An evaluation of sites for potential *surface rupture* or hazards due to *differential subsidence* and *fissuring* as described in this appendix shall be performed when any of the following conditions apply:

1. A *fault* has been previously mapped or otherwise documented to exist within 1,000 feet from the site.
2. When a *fault* has been previously mapped within the limits of the property.
3. When required by the *building official*.

The *registered design professional* performing the evaluation must determine what is appropriate and necessary.

**Exception:** At the option of the *building official*, the following structures may be exempt from the investigation described in this appendix:

1. Dwellings and accessory structures (e.g. casita, patio covers, decks, canopies, etc.) associated with a single lot, single family residence. In this case, the *fault* location may be historically approximated by the *registered design professional* through historical research and shall be shown in the *Geotechnical Investigation* report. A setback of at least fifty (50) feet from each side of the historically approximated *fault* edge shall be established.

## **SECTION P104 DESCRIPTION OF THE EVALUATION**

**P104.1** A *registered design professional* shall perform an evaluation. The evaluation shall include:

1. Research of available information, such as geologic maps, technical publications, historical imagery, etc.
2. A surface evaluation.
3. A subsurface investigation as described in Section P104.1.3 if any Quaternary-age or more recent surface rupture is mapped or otherwise documented to exist within the limits of the property or within 50 feet from the property line as noted in section P104.1.2.2.

The methodology and results of the evaluation must be properly documented in the *Geotechnical Investigation* report (See section P105 for reporting requirements). Some of the evaluation methods described below should be carried out beyond the site being investigated.

P104.1.1 Research. Review of the region's seismic history, based on existing maps and technical literature.

### **P104.1.1.1 Specific to Fault Rupture Hazard.**

- a. Historic earthquakes, epicenter locations, and magnitudes in the vicinity of the site.
- b. Location of *fault traces* that may affect the site, including maps of *faults* and a discussion of the tectonics and other relationships of significance to the proposed construction.
- c. Location and chronology of other earthquake-induced features, such as settlement, landslides and liquefaction.
- d. Review of local groundwater data (water-level fluctuations, groundwater impediments, water quality variations, or anomalies indicating possible *faults*).

### **P104.1.1.2 Specific to Differential Subsidence and Fissure Hazard.**

- a. Identify and locate any *faults*, scarps, and *fissures* in the vicinity of the site.
- b. Review available land level lines of past ground surface movement in the vicinity of the site, including degree of *differential subsidence* across nearby *faults* and proximity of regional *subsidence* bowls.
- c. Review groundwater development in the vicinity including the location of nearby high-capacity wells. Review available well maintenance records of nearby wells for signs of possible *subsidence*-induced damage.



- d. Review of subsurface units from available well driller's logs for nearby water wells and available historic water level data from nearby wells (e.g. the State of Nevada Department of Water Resources through their website provides free access to Nevada hydrology data, including well logs and historic and current water levels).

**P104.1.1.3 Review of Aerial Photographs.** Analysis shall include interpretation of aerial photographs and other remotely sensed images for *fault*-related topography, vegetation, soil contrasts, and lineaments of possible *fault* or *fissure* origin. Where possible, analysis may include low-sun-angle aerial photography and/or aerial reconnaissance.

**P104.1.2 Surface Evaluation.** A *registered design professional* shall inspect the site for indicators that a *fault* exists or may exist onsite. The inspection may extend beyond the limits of the site being evaluated.

**P104.1.2.1 Non-Specific.**

- a. Conduct visual inspections for signs of ground movement (distress) of man-made structures on adjacent developments. Review available geotechnical reports to determine the geotechnical conditions of sites in the area.
- b. Mapping of surface features, including geologic units and structures and topographic features both on and beyond the site.

**P104.1.2.2 Specific to Fault Rupture Hazard.**

- a. If any Quaternary-age or more recent surface rupture is mapped or otherwise documented to exist within the limits of the property or within 50 feet from the property line, the feature(s) shall be further investigated as described in section P104.1.3.

Note: In the event that the subsurface investigation cannot be performed beyond the limits of the property, the *registered design professional* shall perform the subsurface investigation within the limits of the property, as close as practical to the feature of interest, to disprove the possibility of the fault being present onsite.

**P104.1.3 Subsurface investigation.** The subsurface investigation, if required per section P104.1.2.2, shall consist of trenching and other excavating, with appropriate logging and documentation to permit detailed and direct observation of exposed geologic units and features. In cases where the geologic feature of interest is below the practical limit of the excavation (e.g. *fault rupture* has been obscured by deep alluvium, etc.), the *registered design professional* may consider the use of other techniques, such as geophysical surveys, to obtain adequate subsurface information. The following methodologies may be used in a subsurface investigation:

**P104.1.3.1 Non-Specific.**

- a. This includes trenching across potentially active *fault* zones to determine the following: location and recency of movement, width of disturbance, physical condition of *fault* zone materials, type of displacement, geometry of *fault* features, slip rate, and recurrence interval.

- b. Borings or test pits to collect data to evaluate depth and type of materials present, groundwater depth, and to verify fault-plane geometry. Data points should be sufficient in number and adequately spaced to permit correlations and interpretations.
- c. Geophysical surveys conducted to facilitate the evaluation of the types of site materials and their physical properties, ground water conditions, and *fault* displacements. When geophysics is utilized for *fault* mapping, a minimum of two arrays perpendicular to the suspected *fault trace* shall be performed. The geophysical exploration program, including the number of geophones, type of geophones, spacing and other survey parameters, shall be selected by the *registered design professional*.

**P104.1.3.2 Specific to Differential Subsidence and Fissure Hazard.** Detailed trench logging at the site should focus on determining the location and possible causes of fissuring. Compare trenches across *fissures* in areas on the site and in areas where *fissures* are not observed at the surface. Width of the *fissure* zones and the general geometry and depth of *fissures* shall be determined.

## SECTION P105 REPORTING REQUIREMENTS

**P105.1** The following subjects shall be addressed in any investigation of sites for potential surface rupture or hazards due to *differential subsidence* and fissuring. The results of the investigation shall be presented as an appendix to the *Geotechnical Investigation* report.

**P105.2 Report content.** *Geotechnical Investigation* reports shall include the following information.

1. Purpose and scope of investigation.
2. Geologic setting.
3. Site description and conditions, including information on geologic units, aquifer conditions, graded and filled areas, vegetation, existing structures, and other factors that may affect the choice of investigative methods and the interpretation of data.
4. Methods of investigation utilized.
5. Conclusions.
  - a. Location (or absence) of all surface ruptures on or adjacent to the site.
  - b. Type of *faults* and nature of anticipated offset: Direction of relative displacement, and maximum possible displacement.
  - c. Statement of relative risk addressing the probability or relative potential for future surface displacement. This may be stated in semi-quantitative terms such as low, moderate, or high, or in terms of slip rates determined for specific *fault* segments.
  - d. Degree of confidence in, and limitations of, the data and conclusions.
6. Recommendations

- a. The minimum Setbacks shall be per section 1808.10. If the recency of movement cannot be determined, then the fault shall be assumed to be *Holocene* for minimum setback purposes.
- b. The *faults* and minimum setback shall be clearly shown to scale on the grading plan, plot plan and final map; no portion of the foundation system shall be constructed within that zone.
- c. Need for additional studies, or inspection during construction.

**P105.3 References.** The *Geotechnical Investigation* shall list all references used in the investigation.

1. Literature and records cited or reviewed; citations should be complete.
2. Aerial photographs or images interpreted including type, date, scale, source, and index numbers.
3. Other sources of information, including well records, personal communications, and other data sources.

**P105.4 Illustrations.** Illustrations are essential to the understanding of the report and to reduce the length of text. Most of these items would typically be applicable.

1. Location map - identify site locality, significant *faults*, geographic features, regional geology, seismic epicenters, and other pertinent data. A 1:24,000 scale is recommended.
2. Site development map. Show site boundaries, existing and proposed structures, graded areas, streets, exploratory trenches, borings, geophysical traverses, and other data. Recommended scale is 1 inch equals 200 feet (1:2,400) or larger.
3. Geologic map. Shows distribution of geologic units (if more than one), *faults* and other structures, geomorphic features, aerial photo lineaments, and springs, on topographic map at 1:24,000 scale or larger. Can be combined with items 1 or 2.
4. Geologic cross-sections.
5. Logs of exploratory trenches and borings. Show details of observed features and conditions; should not be generalized or diagrammatic. Trench logs should show topography and geologic structure at the same horizontal and vertical scale.
6. Geophysical data and geologic interpretations.
7. Photographs of scarps, surface ruptures, trenches, samples, or other features that enhance understanding of the site conditions.

**P105.5 Appendix.** Supporting data not included above (e.g. water well data).

**P105.6 Authentication.** Signature of the *registered design professional* who conducted the evaluation.

## Appendix Q

Adopt a new Appendix Q to read as follows:

### APPENDIX Q FENCES, WALLS AND RETAINING WALLS

#### Q101 General

**Q101.1 General.** It shall be unlawful for any person, contractor, firm or corporation to erect, install, construct or replace any *fence, wall* or *retaining wall* contrary to the provisions of this code.

**Q101.2 Applicable regulations.** All regulations and requirements of the Building Code and any amendments, deletions and additions thereto shall apply to the erection, installation or construction of any fence, wall and/or retaining wall except that which may be inconsistent with this chapter.

#### Q102.0 DEFINITIONS

**Q102.1 Definitions.** For the purpose of this chapter, certain terms are defined as follows:

**CUT.** See Excavation.

**EXCAVATION.** The removal of earth material by artificial means, also referred to as a cut.

**FENCE.** A structure of temporary or semi-permanent material such as wrought iron, wire, wood, screen, vinyl, plastic, etc... erected for purposes of enclosure, division of property or decoration.

**FILL.** The placement of earth materials by artificial means.

**RETAINING WALL.** Any wall that is used to resist the lateral displacement of earth or any other material with a difference in elevation of the material from one side to the other exceeding 24 inches (610 mm) in height.

**ROCKERY WALL.** A system of stacked rocks constructed to retain soil. See the Southern Nevada Building Officials Rockery Wall Construction Standards.

**WALL.** A structure of stone, brick, masonry, concrete or other similar permanent material, raised to some height and erected for purposes of enclosure, division of property or decoration.

#### Q103.0 PERMITS

**Q103.1 Permits required.** No *fence, wall* or *retaining wall* regulated by this code shall be erected, constructed, enlarged, altered, repaired, moved, improved, removed, converted or demolished unless a permit for each fence, wall or retaining wall is obtained from the *building official*.

**Q103.2 Separate permits required.** A separate *permit* is required for each parcel of land upon which a *fence, wall* or *retaining wall* is to be located.

**EXCEPTION:** Only one *permit* is required for multiple *fence(s), wall(s)* and/or *retaining wall(s)* constructed along property lines in connection with the development of a subdivision, provided that a legal description of the property is submitted

together with a dimensioned plot plan showing the exact location of the *fence, wall* and/or *retaining wall* and all other recorded lot and easement lines.

**Q103.3 Application for a fence, wall or retaining wall permit.** To obtain a *permit*, the applicant shall first file an application on a form furnished by the *jurisdiction* for that purpose. The application shall include the following:

1. The name and address of the owner of the real property upon which the *fence, wall* and/or *retaining wall* is to be located.
2. The type of material to be used for construction of the *fence, wall, and/or retaining wall*.
3. The total length, height and square footage of each *fence, wall* and/or *retaining wall*.
4. The authorized agent to perform construction.
5. A dimensioned drawing that identifies the location of each *fence, wall* and/or *retaining wall* with respect to the property or lot lines, easements, streets, other rights-of-way. Existing construction and drainage features shall be clearly identified on the drawings.
6. The location of all light standards, gas and water meters, and fire hydrants.
7. Other information deemed pertinent by the *building official*.

**Q103.4 Drawings and specifications.** Drawings and specifications required for *retaining walls* shall be prepared by a *registered design professional*. The design shall be in accordance with the applicable chapters of the IBC. *Rockery walls* shall be designed in accordance with the IBC and the Southern Nevada Building Officials Rockery Wall Construction Standards.

Drawings or specifications for *fences* and *walls* need not be submitted unless required by the *building official*. Drawings and specifications shall be submitted for *retaining walls* showing that the *retaining wall* is designed in accordance with this code.

## **Q104.0 GENERAL REQUIREMENTS AND LIMITATIONS**

**Q104.1 General.** General requirements and limitations shall be as follows:

1. No *fence, wall* and/or *retaining wall* shall be placed within a right-of-way unless granted permission by the authority having jurisdiction.
2. The height and location of a *fence, wall* and/or *retaining wall* shall comply with all zoning ordinances and regulations of the authority having jurisdiction.
3. *Fences, walls* and/or *retaining walls* shall be constructed in accordance with published standards of the department or agency having authority of utility easements, when located within a utility easement for any light standard, gas meter, water meter, or fire hydrant.
4. *Special inspection*, if required, shall be in accordance with the IBC. *Rockery walls* shall require *special inspection* in accordance with the IBC and the Southern Nevada Building Officials Rockery Wall Construction Guidelines.

### **Q104.2 Required inspections**

1. All footings shall be inspected to verify location to property line, structures, and compliance to the approved plans and permit. Footings shall be excavated and cast against the earth.
2. Concrete foundations shall not be placed until footings have been inspected and approved by the *building official*.
3. No *wall* and/or *retaining wall* shall be grouted until the reinforcing required has been inspected and approved by the *building official*.
4. No *retaining wall* shall be backfilled until verification of the ~~required~~ dampproofing, when required, and drainage has been inspected and approved by the *building official*.

**Q104.3 Natural drainage.** No *permits* shall be issued for fences, walls and/or retaining walls, which would block any natural flow path.

**Q104.4 Prohibited materials.** *Walls, fences and retaining walls* shall not be constructed of materials which impose a direct safety hazard, such as pointed posts, stakes or pickets, components intended for electrocution, embedded glass, nails, barbed or razor type wire, or other sharp, cutting objects.

**EXCEPTION:** Manufactured barbed, razor wire, or other approved security material may be used when its detailed use, location, and construction requirements are approved by the authority having jurisdiction.

### **Q105.0 IMPLEMENTATION**

**Q105.1 Implementation.** The *building official* is empowered to formulate procedural guidelines to be used in implementing this chapter.