SOUTHERN NEVADA AMENDMENTS
TO THE
2024 INTERNATIONAL BUILDING CODE

(CLARK COUNTY AMENDED)

Preface

This document was developed by three Southern Nevada Building Officials' (SNBO) International Building Code (IBC) committees (IBC General; IBC Fire and Life Safety and IBC Structural Committee). This document presents amendments to the 2024 IBC as published by the International Code Council (ICC).

Participation in these three committees (IBC General; IBC Fire and Life Safety and IBC Structural Committee) was open to all interested parties. However, voting on amendment proposals was limited to one vote each for seven Southern Nevada municipalities (Clark County, Henderson, Las Vegas, North Las Vegas, Boulder City, Pahrump, 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.

ADOPTION BY CLARK COUNTY

Adopted by action of the Clark County Commission on July 15, 2025 for correlation with the 2024 International Building Code. This document and the 2024 International Building Code shall be effective on January 11, 2026.

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Section 101.2.1

Revise Section 101.2.1 as follows:

[A] 101.2.1 Appendices. The following appendices, either in their entirety or as modified, are specifically adopted: Appendix C, Appendix E, Appendix H, Appendix I, Appendix J and Appendix P. New appendices Appendix Q, Appendix R and Appendix S are also adopted and inserted herein.

Sections 103-116

Delete Sections 103 through 116 in their entirety as follows:

Sections 103 through 116 are deleted in their entirety. Please refer to the Building Administrative Code (BAC), as adopted by each respective local Authority Having Jurisdiction, for requirements related to administration and enforcement of these provisions.

Section 202

Add, redefine, or revise various definitions within Section 202 Definitions, as follows:

BABY CHANGING TABLE. A fold-up or fixed type diaper changing table or surface that is safe and sanitary for changing the diaper of a child aged three (3) or younger.

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 3115. The total area of the cabana group shall be used to determine code requirements for all cabanas contained within the cabana group.

[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.

[BG] HIGH-RISE BUILDING. A *building* with an occupied floor or occupiable roof located more than 55 feet (16 764 mm) above the lowest level of fire department vehicle access.

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.

MAIN EXIT. Exit required at main entrance of assembly building, room or space with an occupant load exceeding 300, where essentially all non-employees enter in the same approximate location for entry to the assembly use, such as where payment/ticketing is required for entry, or where seating is accompanied by host/staff, or where entry access is monitored by staff, or where the predominance of public entry is through a main entrance by building design.

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*.

[BS] STRUCTURAL AND/OR GEOTECHNICAL OBSERVATION. The visual observation by a *registered design professional* of the structural system encompassing the structure, foundation elements, and the bearing or supporting soils of the foundation elements for general conformance to the approved *construction documents.* Structural and/or Geotechnical Observation does not include or waive the responsibility for the inspections required by Section 1705 or other sections of this Code.

VENTILATION WELL: A vertical open area used to provide natural ventilation with an unobstructed opening to sky at the top. The well is bound on three sides by walls with the fourth side having openings to the structure requiring natural ventilation.

Sections 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.

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

308.5.3 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 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*
- Emergency services living quarters
- Fraternities and sororities
- Monasteries

Hotels (nontransient) with more than five *guest rooms*
Live/work units
Motels (nontransient) with more than five *guest rooms*
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*
- Emergency services living quarters
- Fraternities and sororities
- Monasteries

Congregate living facilities (*transient*) with 10 or fewer occupants
- *Boarding houses* (*transient*)

Lodging houses with five or fewer *guest rooms*
Hotels (nontransient) with five or fewer *guest rooms*
Motels (nontransient) with five or fewer *guest rooms*

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 of this code or Section P2904 of the *International Residential Code*.

Section 311.1.1

Remove Section 311.1.1 without replacement, as follows:

311.1.1 Reserved

Section 402.7.6

Add new Section 402.7.6 as follows:

402.7.6 Fire command center. For covered mall buildings exceeding 50,000 square feet (4645 m²), a *fire command center* complying with Section 911 shall be provided in a location *approved* by the *fire code official*.

Section 403.3

Revise Section 403.3 to delete the exception 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.

Section 403.4.7

Revise Section 403.4.7 as follows:

403.4.7 Smoke removal. To facilitate smoke removal in post-salvage and overhaul operations, *buildings* and *structures* shall be equipped with natural or mechanical *ventilation* for removal of products of combustion in accordance with one of the following:

1. Easily identifiable, manually openable windows or panels shall be distributed around the perimeter of each floor at not more than 50-foot (15,420 mm) intervals. The area of operable windows or panels shall be not less than 40 square feet (3.7 m^2) per 50 linear feet (15 240 mm) of perimeter.

   Exceptions:

   1. In Group R-1 occupancies, each dwelling unit, sleeping units or suite having an exterior wall shall be permitted to be provided with 2 square feet (0.19 m^2) of venting area specified in item 1.
   2. Manually operable windows or panels are not required in Group R-1 and R-2 residential units provided the residential units comply with the passive requirements of Section 909 and all corridors between the residential units and the exit enclosures serving the residential units comply with Section 403.4.7, Item 3.

2. Mechanical air-handling equipment providing one exhaust air change every 15-minutes for the area involved. Return and exhaust air shall be moved directly to the outside without recirculation to other portions of the *building*. Mechanical makeup fresh air shall be provided through one or more of the following methods:

   1. Mechanical supply air through an approved HVAC system linked directly to the exterior.
   2. Utilization of stair pressurization fans, capable of providing the required makeup air per zone. If implemented, verbiage shall be provided on the fire smoke removal panel to indicate which doors are required to be opened to provide the mechanical makeup air manually.
   3. A dedicated fresh air supply for smoke removal.
   4. A method approved by the *authority having jurisdiction*.

3. A smoke control system that provides a minimum of one exhaust air change every 15 minutes is provided for the area involved upon manual activation of the smoke removal feature at the smoke control graphics panel. The volume of air shall be calculated based upon the volume of the space between the floor and the floor or roof structure above. The exhaust air quantity shall be as measured at the exhaust fan. Mechanical makeup fresh air shall be provided through one or more of the following methods:

   1. Mechanical supply air through an approved HVAC system linked directly to the exterior.
   2. Utilization of stair pressurization fans, capable of providing the required makeup air per zone. If implemented, verbiage shall be provided on the fire smoke removal panel to indicate which doors are required to be opened to provide the mechanical makeup air manually.
   3. A dedicated fresh air supply for smoke removal.
   4. A method approved by the *authority having jurisdiction*.

4. Any other *approved* design that will produce equivalent results.

Sections 403.4.7.1, 403.4.7.2, and 403.4.7.3

Add new Sections 403.4.7.1 through 403.4.7.3 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 and 403.4.7.1.2.

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.

403.4.7.1.2 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 prior to occupancy and after sufficient completion for the purposes of exhaust/supply 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

Add a new Exception to Section 403.5.3 as follows:

403.5.3 Stairway door operation. *Stairway* doors other than the *exit discharge* doors shall be permitted to be locked from the *stairway* side. *Stairway* doors that are locked from the *stairway* side shall be capable of being unlocked without unlatching where any of the following conditions occur:

1. Individually or simultaneously upon a signal from the *fire command center*.
2. Simultaneously upon activation of a *fire alarm signal* in an area served by the *stairway*.
3. Upon failure of the power supply to the lock or locking system.

Exception: S*tairway* doors opening directly into privately owned residential units or leased tenant spaces are permitted to unlock without unlatching only upon a signal from the *fire command center*.

Section 403.5.4

Revise Section 403.5.4 as follows:

403.5.4 Smokeproof enclosures. Every required *interior exit stairway* serving floors or occupiable roofs more than 55 feet (16 764 mm) above the lowest level of fire department vehicle access shall be a *smokeproof enclosure* in accordance with Section 909.20 and 1023.12.

Section 403.6.1 & Table 403.6.1

Add a new Exception & Table to Section 403.6.1, 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, no 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 in the quantities prescribed in Table 403.6.1, 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 [a.]
120-599 (36.6m-182.6m)	3
600-899 (182.9m-274.0m)	4
900 and greater (274.3m)	5

[a.] A fire service access elevator installed in accordance with Section 403.6.1 shall be permitted to substitute for a maximum of one ambulance stretcher-sized elevator car.

Section 404.3

Delete Exceptions from Section 404.3 as follows:

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

Section 404.6

Revise Exceptions 1.1 & 1.2 of Section 404.6, 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 limits the passage of smoke and allows the framing system to deflect without breaking (loading) the glass before the sprinkler system operates; and

   1.3 *Unchanged*

(Exceptions 2 through 7 unchanged)

Section 406.3.3.1

Revise Section 406.3.3.1 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 to be a garage and shall comply with the requirements for *private garages*.

406.3.3.1 Carport Separation. Separations shall comply with one of 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 or occupiable areas above.

2. Where a non-combustible carport and Group B, F, M, R or S occupancy building occur on the same parcel, a minimum separation of 10 feet measured from the roof edges is provided between the carport and building, exterior wall and opening protections are not required for either structure.

Section 406.5.2.2

Add new Section 406.5.2.2 as follows:

406.5.2.2 Openings Above Grade. When *ventilation wells* are used to satisfy natural ventilation requirements for *open parking garages*, the width of the *ventilation well* opening to sky shall be one and one-half times (1.5x) the height of the adjacent *structure* to the bottom of the lowest required opening. The minimum required width of the *ventilation well* shall be maintained for not less than the length of the required opening(s). The width of the ventilation well is not required to exceed 30 feet (9.144 m). The building shall be provided with a horizontal air intake opening at the bottom not less than 160 square feet (14.9 m^2) and leading to the exterior of the building surrounding the *open parking garage*.

Exception: The *ventilation well* opening width shall not be restricted if any of the following are met or provided:

1. Supplemental mechanical ventilation meeting the requirements of IBC Section 406.6.2 is provided for the *open parking garage*.

2. An engineering analysis proving equivalent natural ventilation requirements are met.

Section 410.2.5.1

Add new Section 410.2.5.1 to read as follows:

410.2.5.1 Activation. 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 20ºF per minute (8 to 11ºC per minute), or signal of water flow from any *automatic sprinkler system* covering the *stage* as required by Section 410.6.

Section 410.6

Revise Section 410.6 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 m²) or less in area and 50 feet (15240 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*.

3. Sprinklers are not required under catwalks and galleries where they are permitted to be omitted in accordance with Section 903.3.1.1

Section 412.3.6

Amend Section 412.3.6 by deleting the Exception as follows:

[F] 412.3.6 Fire suppression. Aircraft hangers shall be provided with a fire suppression system designed in accordance with NFPA 409, based on the classification for the hanger given in Table 412.3.6.

Section 420.12

Add a new Section 420.12 as follows:

420.12 Visual access. The primary entry door of a dwelling or sleeping unit in Group R-1 and R-2 occupancies shall be provided with a means for visually identifying a visitor without opening the unit entry door. Peepholes, where used, shall provide a minimum 180-degree range of view.

Section 504.4

Add an Exception to Section 504.4 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: Where buildings having Groups A, B, M, R or S occupancies of Type II, III-A, or V-A construction, that do not otherwise qualify as a high-rise building in accordance with Section 403, are made to comply 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 505.2

Revise Section 505.2 as follows:

505.2 Mezzanines. A *mezzanine* or *mezzanines* in compliance with Section 505.2 shall be considered a portion of the *story* below. Such *mezzanines* shall not contribute to either the *building area* or number of *stories* as regulated by Section 503.1. The area of the *mezzanine* shall be included in determining the *fire area*. The clear height above and below the *mezzanine* floor construction shall be not less than 7 feet 6 inches (2286mm).

Exception: The clear height above and below the mezzanine shall not be less than 7 feet for any occupant loads or common paths of travel equal to or less than those shown in Table 1006.2.1.

Section 507.3

Delete Section 507.3 in its entirety as follows:

507.3 Intentionally left blank.

Section 507.4

Amend Section 507.4 by deleting Exception 2 as follows:

507.4 Sprinklered, one-story buildings. 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 288mm) in width.

Exception: *Buildings* and *structures* of Type I or 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 Section 507.4 and 903.3.1.1 and Chapter 32 of the *International Fire Code.*

Section 507.14

Add new Section 507.14 as follows:

507.14 Noncombustible carports. A noncombustible carport may be of unlimited area when it is open on all sides, there are not enclosed or occupiable areas above, and it is located a minimum of 5 feet (1,524 mm) from any property line or assumed property line, measured from the roof edge.

Section 705.3

Add a new Exception #3 to Section 705.3 as follows:

705.3 Buildings on the same lot. For the purposes of determining the required wall and opening protection, projections and *roof-covering* requirements, *buildings* on the same *lot* shall be assumed to have an imaginary line between them.

Where a new *building* is to be erected on the same *lot* as an *existing building*, the location of the assumed imaginary line with relation to the *existing building* shall be such that the *exterior wall* and opening protection of the *existing building* meet the criteria as set forth in Sections 705.5 and 705.9.

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 711.4

Add new Section 711.4 as follows:

711.4 Roof Openings and Skylights. *Skylights* and other roof openings in a fire-resistance-rated roof deck or slab are permitted to be unprotected, provided that the structural integrity of the fire-resistance-rated roof assembly is maintained. Roof openings and *skylights* in *occupiable roofs* or roof assemblies required to be fire-resistance rated in accordance with Section 705.9.6 and shall comply with the opening protectives of Section 712. The supporting construction shall be protected to afford the required fire-resistance rating of the *horizontal assembly* supported.

Section 711.5

Add new Section 711.5 as follows:

711.5 Roof Penetrations. Penetrations through a fire-resistance-rated roof deck or slab are permitted to be unprotected, provided that the structural integrity of the fire-resistance-rated roof assembly is maintained. Through penetrations and joints in occupied roofs or roof assemblies required to be fire-resistance rated in accordance with Section 705.9.5 shall comply with Section 712.

Section 712.1.3

Revise Section 712.1.3 and add new Section 712.1.3.3 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. (No change).

712.1.3.2 Automatic shutters. (No change).

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 required shaft enclosures.

Section 712.1.15

Delete Section 712.1.15 as follows:

712.1.15 Reserved.

Section 714.5.2

Revise Section 714.5.2 as follows:

714.5.2 Membrane penetrations. Penetrations of membranes that are part of a *horizontal assembly* shall comply with Section 714.5.1.1 or 714.5.1.2. Where floor/ceiling assemblies are required to have a *fire-resistance rating*, recessed fixtures shall be installed such that the required *fire resistance* will not be reduced.

Exceptions:

1. (Remains unchanged)
2. (Remains unchanged)
3. (Remains unchanged)
4. (Remains unchanged)
5. (Remains unchanged)
6. (Remains unchanged)
7. The ceiling membrane of a maximum 2-hour fire-resistance-rated *horizontal assembly* is permitted to be interrupted with the double 2x wood top plate of a wall assembly that is sheathed with *Type X gypsum wallboard*, provided that all penetrating items through the double top plates are protected in accordance with Section 714.5.1.1 or 714.5.1.2 and the ceiling membrane is tight to the top plates.

8. The ceiling membrane of a maximum 1-hour fire-resistance-rated *horizontal assembly* is permitted to be interrupted with a single 2x wood top plate or a combination of a single 2x wood top plate and a single 1x wood top plate of a wall assembly that is sheathed with *Type X gypsum wallboard*, provided that all penetrating items through the top plate are protected in accordance with Section 714.5.1.1 or 714.5.1.2 and the ceiling membrane is tight to the top plates.

9. Ceiling *membrane penetrations* by *listed* luminaires (light fixtures) or by luminaires protected with *listed* materials, which have been tested for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing.

Section 716.2.6.1

Revise Section 716.2.6.1 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. (Remains unchanged)

2. (Remains unchanged)

3. (Remains unchanged)

Section 717.5.2

Revise Exception #3 to Section 717.5.2 as follows:

717.5.2 Fire barriers. Ducts and air transfer openings of *fire barriers* shall be protected with *listed fire dampers* installed in accordance with their listing. Ducts and air transfer openings shall not penetrate enclosures for *interior exit stairways* and *ramps* and *exit passageways*, except as permitted by Sections 1023.5 and 1024.6, respectively.

Exceptions: *Fire dampers* are not required at penetrations of *fire barriers* where any of the following apply:

1. (Remains unchanged)

2. (Remains unchanged)

3. Such walls are penetrated by fully ducted HVAC systems, have a required *fire-resistance rating* of 1 hour or less, are in areas of other than Group H and are in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 or 903.3.1.2. For the purposes of this exception, a fully ducted HVAC system shall be a duct system for conveying supply, return or exhaust air as part of the structure's HVAC system. Such a duct system shall be constructed of sheet steel not less than No. 26 gage thickness and shall be continuous from the air-handling appliance or equipment to the air outlet and inlet

terminals. The duct shall not have openings within 6 feet (1.8288 m) of the fire-resistant-rated assembly. Nonmetal flexible air connectors shall be permitted in the following locations:

3.1. At the duct connection to the air handling unit or equipment located within the mechanical room in accordance with Section 603.9 of the *International Mechanical Code.*

3.2. From an overhead metal duct to a ceiling diffuser within the same room in accordance with Section 603.4 of the *International Mechanical Code* where the connection point to the metal duct is not within 6 feet (1.8288 m) of the fire rated assembly.

Section 717.5.4

Revise Exception #4 to Section 717.5.4 as follows:

717.5.4 Fire partitions. Ducts and air transfer openings that penetrate *fire partitions* shall be protected with *listed fire dampers* installed in accordance with their listing.

Exceptions: In occupancies other than Group H, *fire dampers* are not required where any of the following apply:

1. (Remains unchanged)

2. (Remains unchanged)

3. (Remains unchanged)

4. Such walls are penetrated by ducted HVAC systems, have a required *fire-resistance rating* of 1 hour or less and are in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 or 903.3.1.2. For the purposes of this exception, a ducted HVAC system shall be a duct system for conveying supply, return or exhaust air as part of the structure's HVAC system. Such a duct system shall be constructed of sheet steel not less than No. 26 gage thickness and shall be continuous from the air-handling appliance or equipment to the air outlet and inlet terminals. The duct shall not have openings within 6'-0" of the fire-resistant-rated assembly. Nonmetal flexible air connectors shall be permitted in the following locations:

4.1. At the duct connection to the air handling unit or equipment located within the mechanical room in accordance with Section 603.9 of the *Uniform Mechanical Code.*

4.2. From an overhead metal duct to a ceiling diffuser within the same room in accordance with Section 603.4 of the *Uniform Mechanical Code* where the connection point to the metal duct is not within 6'-0" of the fire rated assembly.

Section 718.5

Amend Exception #3 to 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. (Remains unchanged)
2. (Remains unchanged)
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. (Remains unchanged)
5. (Remains unchanged)
6. (Remains unchanged)

Section 803.10.1

Add new Section 803.10.1 to read as follows:

803.10.1 Ceilings. 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 703.3, 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 combustible 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 as follows:

[F] 806.1 General. The following requirements shall apply to all occupancies.

1. (Remains unchanged)
2. (Remains unchanged)
3. (Remains unchanged)
4. The permissible amount of noncombustible decorative materials shall not be limited.

Section 902

Revise Section 902 as follows:

902.1 Pump and riser room size. Where provided, fire pump rooms and *automatic sprinkler system* riser rooms shall be designed with adequate space (see NFPA 20 for fire pump clearances and NFPA 70 for working space clearances) 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 and *automatic sprinkler system* riser rooms shall be provided with exterior access doors and unobstructed passageways large enough to allow removal of the largest piece of equipment *with a minimum width of 36 inches (914 mm) and a minimum height of 80 inches (2032 mm)*.

1. Fire sprinkler riser rooms shall have a minimum area of 16 square feet (1.49 m^2), with a minimum dimension of 4 feet (1.22 m) for the first sprinkler riser plus an additional 9 square feet (0.84 m^2) for each additional riser contained, unless otherwise approved by the *fire code official*.

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.

902.1.1 Access. Automatic sprinkler system risers, fire pumps and controllers shall be provided with *ready access*. Where located in a fire pump room or *automatic sprinkler system* riser 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 *automatic sprinkler system* riser rooms and fire pump rooms shall be labeled with an *approved* weatherproof sign. Signage shall state: “Fire Sprinkler Riser Room” and “Fire Pump Room” or “Fire Pump House”. 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).

902.1.3 Environment. *Automatic sprinkler system* riser rooms and fire pump rooms shall be maintained at a temperature of not less than 40°F (4°C) and a maximum temperature of 100ºF (37.8°C). 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 below 40º F (4°C) or rise above 100º F (37.8°C). To maintain 40º F (4°C), the temperature analysis must use a starting temperature of 50º F (10°C) and use an outside temperature of 0º F (-17.8°C) for a period of 8 hours. To maintain 100º F (37.8°C), the temperature analysis must use a starting temperature of 90º F (32.2°C) and use an outside temperature of 120º F (48.9°C) 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*.

902.1.4 Lighting. Permanently installed artificial illumination shall be provided in the *automatic sprinkler system* riser rooms and fire pump rooms. Lighting shall be provided with emergency power. Emergency power shall be capable of maintaining lighting level for a minimum of 2 hours.

902.1.5 Protection. Fire pump rooms and *automatic sprinkler system* riser rooms shall be separated from the rest of the building by 1-hour fire partitions.

902.1.6 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 Section 903.3.1.3 (NFPA 13D) do not require an automatic sprinkler system riser room.

5. Systems designed in accordance with Section 903.3.1.2 (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 comply with section 901.4.7.3.

6. Fire pump rooms complying with Section 901.4.7.

7. When approved rooms containing auxiliary control valves.

902.1.7 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, main drain, & pressure gauges.

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.

Section 903.1.1

Delete Section 903.1.1 (Alternative protection) in its entirety

Section 903.2

Revise Section 903.2 as follows:

[F] 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 sprinkler systems* are required where the *building* area is 5,000 square feet (464 m^2) or greater.

2. For *buildings* constructed in accordance with the *International Residential Code*, *approved automatic sprinkler systems* are required.

3. For any *buildings* not otherwise requiring fire sprinklers, where the available fire flow does not meet the fire flow requirements of this code, *approved automatic sprinkler systems* shall be provided as required by the *fire code official*.

4. For any *buildings* not otherwise requiring fire sprinklers, where they do not meet the fire access requirements in Section 503, *approved automatic sprinkler systems* shall be provided as required by the *fire code official*.

Exceptions:

1. 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).

2. 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 noncombustible material or fabric complying with NFPA 701 providing shade, located a minimum of 10 feet (3048 mm) from the nearest *building*, property line or shade structure, and less than 10,000 square feet (929 m^2) in projected area, do not require fire sprinklers.

3. 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 (464.5 m^2).

4. Unless otherwise required per Section 903.2.10, open parking garages in accordance with Section 406.5, 48,000 square feet (4,459.35 m^2) or less 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.

5. *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 having fire areas not exceeding the fire area thresholds listed in the published, unamended *International Building Code* or *International Fire Code* adopted by the jurisdiction. This exception does not apply to non-exempted *buildings* or *structures* containing occupiable spaces such as offices, meeting rooms, service counters, public restrooms, laboratories, warehouses or other normally occupied spaces.

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 square feet (464 m^2) by fire walls with no openings constructed in accordance with Section 706 of 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 as follows:

[F] 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 (464m²) 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 to 6:00 AM and care for 7 or more children.

Section 903.2.9

Add a new Exception #6 to Section 903.2.9 as follows:

[F] 903.2.9. **Group S-1**. An *automatic sprinkler system* shall be provided throughout all *buildings* containing a Group S-1 occupancy where one of the following conditions exists:

1. (Remains unchanged)

2. (Remains unchanged)

3. (Remains unchanged)

4. (Remains unchanged)

5. (Remains unchanged)

6. Group S-1 *fire area* used for *self-service storage facility* where the *fire area* is 2,500 square feet (279 m^2) or greater.

Section 903.2.11.5

Revise Section 903.2.11.5 as follows:

[F] 903.2.11.5 Commercial cooking operations. An *automatic sprinkler system* shall be installed in a commercial kitchen exhaust hood and duct systems 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 (22.86 m).

Section 903.3.1.1.1

Revise Section 903.3.1.1.1 as follows:

[F] 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 a room merely because it is damp, or fire-resistance-rated construction, or contains electrical equipment.

1. A room or space where sprinklers constitute a serious life or fire hazard because of the nature of the contents, where *approved* by the *fire code official*.

2. Fire service access elevator machine rooms and machinery spaces.

3. 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 Exception #1 to Section 903.3.1.2 as follows:

[F] 903.3.1.2 NFPA 13R sprinkler systems. *Automatic sprinkler systems* in Group R occupancies shall be permitted to be installed throughout in accordance with NFPA 13R where the Group R occupancy meets all of the following conditions:

1. Two *stories* or fewer above *grade plane*.

2. (Remains unchanged)

3. (Remains unchanged)

The number of *stories* of Group R occupancies constructed in accordance with Sections 510.2 and 510.4. shall be measured from *grade plane*.

Section 903.4

Revise Section 903.4 as follows:

[A] 903.4 Sprinkler system supervision and alarms. *Automatic sprinkler system* supervision and alarms shall comply with Sections 903.4.1 through 903.4.3. Unless otherwise approved, systems meeting the requirements of this section shall not be used for any other purpose.

Section 903.4.1

Revise Sections 903.4.1 as follows:

[F] 903.4.1 Electronic supervision. Valves controlling the water supply for *automatic sprinkler systems*, pumps, tanks, water levels and temperatures, critical air pressures and waterflow switches on all *automatic sprinkler systems* shall be electrically supervised in accordance with NFPA 72 by a *listed* fire alarm control unit.

Exceptions:

1. (Remains unchanged)

2. (Remains unchanged)

3. (Remains unchanged)

4. (Remains unchanged)

5. Control valves to paint spray booths or dip tanks that are sealed or locked in the open position.

6. (Remains unchanged)

7. (Remains unchanged)

8. (Remains unchanged)

9. Backflow prevention devices located at the municipal water supply connection are not required to be electrically supervised when either locked in the open position, located within an underground vault, or located within an approved insulated enclosure.

Section 903.4.2

Revise Section 903.4.2 and add new Sections 903.4.2.1 through 903.4.2.3 as follows:

[F] 903.4.2 Monitoring. Systems providing electronic supervision required by Section 903.4.1 shall be monitored by an approved supervising station in accordance with NFPA 72 and as *approved* by the *fire code official*.

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

1. *Automatic sprinkler systems* protecting one- and two-family *dwellings*.
2. Monitoring systems utilizing point-by-point monitoring.

In occupancies provided with a supervised sprinkler system, the following three distinctly different signals shall be transmitted to an *approved* supervising station:

1. Waterflow Alarm
2. Supervisory
3. System Trouble

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

903.4.2.1 Transmission of signals. Transmission of signals to a supervising station shall be in accordance with NFPA 72.

903.4.2.2 MIY monitoring. Direct transmission of signals associated with monitor it yourself (MIY) transmitters to a public safety answering point (PSAP) shall not be permitted unless *approved* by the *fire code official*.

903.4.2.3 Termination of monitoring service. Prior to termination of monitoring service, notice shall be provided in accordance with Section 110.3.

Section 903.4.3

Revise Section 903.4.3 as follows:

903.4.3 Alarms. *Approved* audible and visual sprinkler waterflow alarm devices shall be connected to each *automatic sprinkler system*. Exterior sprinkler waterflow alarm devices shall be provided on the exterior of the building above the wall-mounted Fire Department Connection. One interior sprinkler waterflow alarm device shall be provided near the main entrance or in a normally occupied location. In multiple-tenant facilities, one interior sprinkler waterflow alarm device shall be provided near the main entrance or in a normally occupied location for each tenant space. Such sprinkler waterflow alarm devices shall be activated by waterflow equivalent to the flow of a single sprinkler of the smallest orifice size installed in the system. Where exterior sprinkler waterflow alarm devices are provided above wall-mounted Fire Department Connections, the exterior device shall activate only upon waterflow from systems hydraulically connected to the associated Fire Department Connection. Where a *fire alarm system* is provided, exterior sprinkler waterflow alarm devices shall be powered by a fire alarm control unit and actuation of the *automatic sprinkler system* shall actuate the building *fire alarm system*.

Exception: *Automatic sprinkler systems* protecting one- and two-family *dwellings*.

Section 903.6

Add new Section 903.6 as follows:

[F] 903.6 Where Required in Existing Buildings and Structures. *Automatic sprinkler systems* in accordance with Section 903 and designed per the Fire Code shall be provided in non-sprinklered existing structures at the locations described in the *International Existing Building Code* (IEBC) Section 310 Amended.

Section 904.2

Revise Section 904.2 as follows:

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

Section 905.3.1

Revise Section 905.3.1 as follows:

[F] 905.3.1 Height. Approved Class I 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.

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

1. Recessed loading docks for four vehicles or less.
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 as follows:

[F] 905.3.3 Covered and open mall buildings. Covered mall and *open mall 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 905.3.8

Add new Section 905.3.8 as follows:

[F] 905.3.8 Building area. When required by the *fire code official*, *buildings* in excess of 10,000 square feet (929 m²) 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 as follows:

[F] 905.4 Location of Class I standpipe hose connections. Class I standpipe hose connections shall be provided in all of the following locations:

1. In every required interior exit stairway or *exterior 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* or *exterior 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* or *exterior 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 shall be 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 as follows:

[F] 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 in accordance with the Building Code 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 and add new Sections 905.9.1 and 905.9.1.1 as follows:

[F] 905.9 Valve Supervision. Valves controlling water supplies shall be electrically supervised in the open position in accordance with Sections 903.4.1 and 903.4.2. Where a *fire alarm system* is provided, a signal shall be transmitted to the control unit.

Exception: Valves to underground key or hub valves in roadway boxes do not require supervision.

[F] 905.9.1 In *buildings* not provided with an *automatic sprinkler system* or a *fire alarm system*, valves controlling water supplies shall be supervised in accordance with Section 905.9 where an *automatic sprinkler system* or a *fire alarm system* is provided in an adjacent building on the same *lot*.

[F] 905.9.1.1 Where Sections 905.9 and 905.9.1 do not require electronic supervision of valves, valves shall be locked in the normal position and inspected as provided in this code.

Section 906

Revise Section 906 as follows:

SECTION 906 - PORTABLE FIRE EXTINGUISHERS

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

(The remainder of Section 906.1 and Sections 906.2 through 906.10 are deleted.)

Section 907.1.4

Add new Section 907.1.4 as follows:

[F] 907.1.4 Signage. A “FIRE ALARM CONTROL PANEL”, “FACP”, or “FIRE ALARM CONTROL UNIT”, “FACU” 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:

[F] 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 f*ire 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.

Exception: 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 907.2.7.1.1

Delete Section 907.2.7.1.1 (Occupant notification) in its entirety.

Section 907.2.8.2

Revise Section 907.2.8.2 as follows:

[F] 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 907.2.9.1

Revise Section 907.2.9.1, as follows:

[F] 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*.

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* shall be 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

Add new Section 907.2.9.1.1as follows:

[F] 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 907.2.13

Revise Section 907.2.13 as follows:

[F] 907.2.13 High-rise buildings. *High-rise buildings* shall be provided with an *automatic smoke detection* system in accordance with Section 907.2.13.1, a fire department communication system in accordance with Section 907.2.13.2 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 907.2.22.

2. *Open parking garages* in accordance with Section 406.5.

3. Low-hazard special occupancies in accordance with Section 503.1.1.

Section 907.2.13.1.3

Add new Section 907.2.13.1.3 as follows:

[F] 907.2.13.1.3 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 907.2.13.2

Revise Section 907.2.13.2 as follows:

[F] 907.2.13.2 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 508, 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 907.2.13.3

Revise Section 907.2.13.3 as follows:

[F] 907.2.13.3 Multi-channel voice evacuation. Voice evacuation systems for high-rise buildings shall be multi-channel systems.

Section 907.2.24

Add new Section 907.2.24 as follows:

[F] 907.2.24 Child-care smoke detectors. System *smoke detectors* shall be installed within sleeping and napping 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 as follows:

[F] 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^2) in floor area. Sound pressure levels shall be measured during system acceptance testing to verify the calculated space achieves a minimum of 80 dBA.

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 as follows:

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

Exceptions:

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.
7. Where *employee work areas* have audible alarm coverage, the notification appliance circuits serving the *employee work areas* shall be initially designed with not less than 20-percent spare capacity to account for the potential of adding visible notification appliances in the future to accommodate hearing-impaired employee(s).

Section 907.6.4.1

Revise Section 907.6.4.1 as follows:

[F] 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 as follows:

[F] 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 *International Fire Code* and NFPA 72 as *approved* by the *fire code official*.

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 907.2.11.

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 907.9

Add new section 907.9 as follows:

[F] 907.9 Where required - existing buildings and structures. Fire alarms in accordance with Section 907 and designed per the Fire Code shall be provided in existing structures at the locations described in the *International Existing Building Code* (IEBC) Section 311 Amended.

Section 909.5.3

Amend Section 909.5.2 to read as follows:

[F] 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. (Remains unchanged)
2. (Remains unchanged)
3. (Remains unchanged)
4. (Remains unchanged)
5. (Remains unchanged)
6. (Remains unchanged)
7. Door openings in *smoke barriers* shall be permitted to be protected by *self-closing* fire doors in the following locations:
   7.1 *Guestrooms*.
   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

Replace Section 909.16 and its subsections as follows:

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

Section 909.18.8.3

Revise Section 909.18.8.3 as follows:

[F] 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."

Section 909.18.8.3.1

Revise Section 909.18.8.3.1 as follows:

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 911.2

Add new Section 911.2 as follows:

[F] 911.2 Secondary Response Point. A Secondary Response Point (SRP) shall be provided in accordance with this section.

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 new Section 913.1.1 as follows:

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

Section 913.1.2

Add new Section 913.1.2 as follows:

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

Exception: Where a single building is constructed above a podium building in accordance with Section 510.2, a redundant fire pump configuration is not required.

Section 913.1.3

Add new Section 913.1.3 as follows:

[F] 913.1.3: Emergency power for redundant pumps. Where redundant pumps are required, electric driven fire pump drivers shall be provided with emergency power.

Exception: Where an alternatively powered redundant pump is utilized, i.e. electric primary and diesel, or other non-electric, secondary pump driver is provided, emergency power is not required for electric, primary, fire pump driver.

Section 913.2.3

Add new Section 913.2.3 as follows:

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

Table 1006.2.1

Modify Table 1006.2.1, as follows

TABLE 1006.2.1 – SPACES WITH ONE EXIT OR EXIT ACCESS DOORWAY				
OCC.	MAX. OCC. LOAD OF SPACE	MAXIMUM COMMON PATH OF EGRESS TRAVEL DISTANCE (feet)		
		WITHOUT AUTOMATIC SPRINKLER SYSTEM (feet)		WITH AUTOMATIC SPRINKLER SYSTEM (feet)
		OL ≤ 30	OL >30	
R-1	20	NP	NP	125[a]

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

Section 1010.1.7

Add new Exception #4 to Section 1010.1.7 as follows:

1010.1.7 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. Unchanged
2. Unchanged
3. Unchanged
4. The space between doors serving access vestibules of *smokeproof enclosures* shall be permitted to be in accordance with Section 909.20.1.

Section 1010.2.6

Revise Section 101.2.6 as follows:

1010.2.6 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. (Remains unchanged)

2. (Remains unchanged)

3. *Stairway exit* doors shall not be locked from the side opposite the egress side, unless they are openable from the egress side and capable of being unlocked simultaneously without unlatching by any of the following methods:

    3.1. Shall be capable of being unlocked individually or simultaneously upon a signal from the *fire command center*, where present
    3.2. Shall be capable of being unlocked individually or simultaneously upon a signal by emergency personnel from *approved* locations inside the building.
    3.3. Shall unlock simultaneously upon activation of a *fire alarm signal* when a fire alarm system is present in an area served by the stairway.
    3.4. Shall unlock upon failure of the power supply to the electric lock or the locking system.
    3.5. Shall unlock upon a fire sprinkler waterflow alarm.

4. (Remains unchanged)

5. (Remains 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 1013.67

Revise Section 1013.6 as follows:

1013.6 Externally illuminated exit signs. Externally illuminated exit signs shall comply with Sections 1013.6.1 through 1013.6.3.

1013.6.1 Exit sign illumination. The face of an exit sign illuminated from an external source shall have an intensity of not less than 5 footcandles (54 lux).

1013.6.2 Power source. Exit signs shall be illuminated at all times. To ensure continued illumination for a duration of not less than 90 minutes in case of primary power loss, the sign illumination means shall be connected to an emergency power system provided from storage batteries, unit equipment or an on-site generator. The installation of the *emergency power system* shall be in accordance with Chapter 27. Group I-2, Condition 2 exit sign illumination shall not be provided by unit equipment batteries only.

Exception: *Approved* exit sign illumination types that provide continuous illumination independent of external power sources for a duration of not less than 90 minutes, in case of primary power loss, are not required to be connected to an emergency electrical system.

Section 1013.7

Add new Section 1013.7 as follows:

1013.7 Graphics. Every exit sign and directional exit sign shall have plainly legible letters not less than 6 inches (152 mm) high with the principal strokes of the letters not less than ¾ inch (19.1 mm) wide. The word "EXIT" shall have letters having a width not less than 2 inches (51 mm) wide, except the letter "I," and the minimum spacing between letters shall be not less than $^{3}/_{8}$ inch (9.5 mm). Signs larger than the minimum established in this section shall have letter widths, strokes and spacing in proportion to their height.

The word "EXIT" shall be in high contrast with the background and shall be clearly discernible when the means of exit sign illumination is or is not energized. If a chevron directional indicator is provided as part of the exit sign, the construction shall be such that the direction of the chevron directional indicator cannot be readily changed.

Section 1016.2

Revise Section 1016.2 as follows:

1016.2 Egress through intervening spaces. Egress through intervening spaces shall comply with this section.

1. (Remains unchanged)

2. In other than Group H occupancies, egress from a room or space is allowed to pass through adjoining or intervening rooms or areas provided that such adjoining rooms or areas and the area served are accessory to one or the other, are the same or lesser hazard occupancy group, and provide a discernible path of egress travel to an exit.

3. (Remains unchanged)

4. (Remains unchanged)

5. (Remains unchanged)

6. (Remains unchanged)

Section 1017.2.4

Add new Section 1017.2.4 as follows:

1017.2.4 Fire-Resistance rated corridor increases. In buildings of Type I, IIA, IIIA and VA construction, *exit access* travel distances specified in Table 1017.2 shall be increased up to an additional 100 feet (30 480 mm) provided that the last portion of the *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.

Section 1023.4

Revise Section 1023.4 to include a new Exception 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 required 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 with a buffer vestibule between the floor and the *interior exit stairway* for areas considered normally as non-occupied spaces. The buffer vestibule is required to be constructed in accordance with Section 909.20 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 1027.2

Revise Section 1027.2 as follows:

1027.2 Use in a means of egress. *Exterior exit stairways* shall not be used as an element of a required *means of egress* for Group I-2 occupancies. For occupancies in other than Group I-2, *exterior exit stairways* and *ramps* shall not be used as an element of a required *means of egress* where the highest walking surface of the *exterior exit stairway* exceeds 65-feet above the lowest finished grade below the stairway.

Section 1027.5

Revise Section 1027.5 as follows:

1027.5 Location. *Exterior exit stairways* and *ramps* shall be separated by a minimum *distance* of 10 feet (3048 mm) measured at right angles from the exterior edge of the *stairway* or *ramps*, including landings, to:

1. Adjacent *lot lines* or to the centerline of a street, alley or public way.

2. Other portions of the *building* and other buildings on the same lot.

For the purposes of this section, other portions of the *building* shall be treated as separate *buildings*.

Exceptions:

1. *Exterior exit stairways* and *ramps* serving individual *dwelling units* of Group R-3 shall be separated by a minimum *distance* of 5 feet (1525 mm).

2. Where the adjacent building exterior walls and openings are protected in accordance with Section 705 based on fire separation distance.

Section 1030.2

Revise Section 1030.2 as follows:

1030.2 Assembly main exit. A *building*, room or space used for assembly purposes that has an *occupant load* greater than 300 shall be provided with a *main exit*. The *main exit* shall be of sufficient capacity to accommodate not less than one-half of the *occupant load*, but such capacity shall be not less than the total required capacity of all *means of egress* leading to the *exit*. Where the *building* is classified as a Group A occupancy, the *main exit* shall front on not less than one street or an unoccupied space of not less than 10 ft (3.048 m) in width that adjoins a street or *public way*. In a *building*, room or space used for assembly purposes where there is not a well-defined *main exit* or where multiple *main exits* are provided, *exits* shall be permitted to be distributed around the perimeter of the *building* provided that the total capacity of egress is not less than 100 percent of the required capacity.

Section 1030.6.2.3

Revise Section 1030.6.2.3 to delete the Exceptions as follows:

1030.6.2.3 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.

Section 1030.6.3.1

Revise Section 1030.6.3.1 as follows:

1030.6.3.1 Automatic sprinklers. Enclosed areas with walls and ceilings in *buildings* or *structures* containing *open-air assembly seating* shall be protected with an *approved automatic sprinkler system* in accordance with Section 903.3.1.1.

Exception: Open-air assembly seating *facilities* where seating and the *means of egress* in the seating area are essentially open to the outside.

Sections 1102.1

Amend IBC Section 1102.1 by adding new sub-sections (1102.1.1 through 1102.1.5) as follows:

1102.1 Design. *Buildings* and *facilities* shall be designed and constructed to be *accessible* in accordance with this code and ICC A117.1, except those portions of ICC A117.1 as amended by Sections 1102.1.1 through 1102.1.5.

1102.1.1 Amend 2009 ICC A117.1 Section 604.10.3 as follows:

Doors. Doors for ambulatory accessible toilet compartments shall comply with Sections 404.2.2, 404.2.3.2, 404.2.4 and 404.2.9. The door shall be self-closing with a balanced door or spring hinges. Door hardware shall comply with Section 404.2.6. In addition, a door pull complying with Section 404.2.6 shall be placed on both sides

of the door near the latch. Compartment doors shall not swing into the required minimum area of the compartment. Hinge and latch side of the doors are permitted to be oriented so that the door opens in the direction of the approach.

Exceptions:

1. Outside of the ambulatory accessible toilet compartment, the door is not required to comply with Section 404.2.3.2 where the approach is to the latch side of the compartment door, clearance between the door side of the compartment and any obstruction is 42-inches (1065 mm) minimum.

2. Within the ambulatory accessible toilet compartment, maneuvering clearances at the door shall not be required to comply with Section 404.2.3.2.

1102.1.2 Amend 2009 ICC A117.1 Section 904.3 as follows:

Sales and Service Counters and Windows. Sales and service counters and windows shall comply with Section 904.3.1 or 904.3.2. Where counters are provided, the accessible portion of the countertop shall extend the same depth as the public portion of the sales and service countertop provided for standing customers and the surface shall be free of obstructions not related to the processing of transactions. Additionally, at service counters or service windows, any vertical barrier between service personnel and customers shall be at a height of 43 inches (1090 mm) maximum above the floor.

Exception: Transparent glazing shall be permitted above the 43 inches (1090 mm) maximum height.

1102.1.3 Amend 2009 ICC A117.1 Section 1003.9 as follows:

Exceptions:

(*Note: Exceptions #1 and #3 through #8 to remain unchanged*)

2. In a kitchen, where two or more receptacle outlets are provided above a length of countertop that is uninterrupted by a sink, appliance, or change in countertop height, only one receptacle outlet shall be required to comply with this section.

9. In a kitchen, where a clear floor space for a parallel approach cannot be located at a countertop in a corner between appliances, receptacle outlets over the countertop shall not be required to comply with this section provided that the countertop area does not exceed 9 square feet (0.835 m^2) maximum.

1102.1.4 Amend 2009 ICC A117.1 Section 1004.9 as follows:

Exceptions:

(*Note: Exceptions #1 and #3 through #10 to remain unchanged*)

2. In a kitchen, where two or more receptacle outlets are provided above a length of countertop that is uninterrupted by a sink or appliance, only one receptacle outlet shall be required to comply with this section.

11. In a kitchen, where a clear floor space for a parallel approach cannot be located at a countertop in a corner between appliances, receptacle outlets over the countertop shall not be required to comply with this section provided that the countertop area does not exceed 9 square feet (0.835 m^2) maximum.

1102.1.5 Amend 2009 ICC A117.1 Section 1004.11.3.1.3.3 as follows:

Exception: A shower compartment with dimensions of 30-inches minimum in depth and 44-inches minimum in width shall be permitted.

Section 1107.2

Revise Section 1107.2 as follows:

1107.2 Electrical vehicle charging stations. *Electrical vehicle charging stations* shall comply with Sections 1107.2.1 through 1107.2.4.

Exceptions:

1. *Electrical vehicle charging stations* provided to serve Group R-3 and R-4 occupancies are not required to comply with this section.

2. Electric vehicle charging stations used exclusively by buses, trucks, other delivery vehicles, law enforcement vehicles and motor pools are not required to comply with this section.

1107.2.1 Number of accessible vehicle spaces. Not less than 5 percent of vehicle spaces on the *site* served by electrical vehicle charging systems, but not fewer than one for each type of electric vehicle charging system, shall be accessible. Where new electric vehicle charging stations are installed in facilities with existing electric vehicle charging stations, the total number of accessible spaces provided 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 stations provided shall be considered equivalent to the number of electric vehicles that can be simultaneously charged.

Spaces serving *Electric Vehicle Charging Stations* per this section shall not account for any of the *accessible* parking spaces, required by Section 1106, on the site unless specifically provided with *accessible* identification signage with the International Symbol of Accessibility and meet all of the requirements for an accessible parking space in addition to the requirements of this section. To be used as a required accessible parking space, the space cannot be restricted to electric vehicles only.

1107.2.2 Vehicle space size. Accessible vehicle charging spaces shall be 132 inches (3350 mm) minimum in width, 240 inches (6096 mm) minimum in length, and 98 inches (2489 mm) minimum in height with an adjoining access aisle complying with Section 1107.2.3.

1107.2.2.1 Vehicle charging space marking. The vehicle charging spaces shall be marked to define the width and length. Where vehicle charging spaces are marked with lines, the width measurements of vehicle charging spaces and adjacent access aisles shall be made from the centerline of the markings.

Exceptions:

1. Where parking spaces or access aisles are not adjacent to another vehicle charging space or access aisle, measurements shall be permitted to include the full width of the line defining the vehicle charging space or access aisle.

2. Vehicle charging space in pull-through electric vehicle charging stations are not required to comply with this section.

1107.2.3 Access aisle. The vehicle charging spaces shall have an adjacent access aisle complying with Section 1107.2.3.1 through 1107.2.3.3. Access aisles shall adjoin an accessible route. Two vehicle charging spaces shall be permitted to share a common access aisle. Access aisles shall not overlap with the vehicular way. The vehicle charging spaces shall be permitted to have access aisles placed on either side of the vehicle charging space.

1107.2.3.1 Width. Access aisles serving the vehicle charging spaces shall be 60 inches (1525 mm) minimum in width.

1107.2.3.2 Length. Access aisles shall extend the full length of the vehicle charging spaces they serve.

1107.2.3.3 Marking. Access aisles shall be marked so as to discourage parking in them. Where access aisles are marked with lines, the width measurements of access aisles and adjacent vehicle charging spaces shall be made from the centerline of the markings.

Exceptions:

1. Where access aisles or vehicle charging spaces are not adjacent to another access aisle or vehicle charging space, measurements shall be permitted to include the full width of the line defining the access aisle or vehicle charging space.

2. Vehicle charging space in pull-through EV charging stations are not required to comply with this section.

1107.2.4 Accessible routes. Accessible routes shall be provided to serve *electric vehicle charging stations* in accordance with Sections 1107.2.4.1 and 1107.2.4.2.

1107.2.4.1 Building or facility. Accessible *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 *accessible 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*.

1107.2.4.2 Charging stations. *Accessible 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.

Section 1110.4.5

Add new Section 1110.4.5 as follows:

1110.4.5 General Design and Installation. Adult changing stations shall comply with Sections 1110.4.5.1 through 1110.4.5.6 and the applicable code sections of either the 2009 or 2017 ICC/A117.1 standards, as applicable.

1110.4.5.1 Installation location. Where provided, adult changing stations shall be permanently installed in accordance with the locations specified in Section 1110.4.5.1.1, 1110.4.5.1.2 or 1110.4.5.1.3.

1110.4.5.1.1 Single-user or family or assisted-use toilet or bathing room. Where adult changing stations are provided in a toilet room with only one water closet and one lavatory, or in a family or assisted-use toilet or bathing room, the room shall be provided with all of the following components:

1. A dispenser for soap complying with ICC/A117.1 Section 308.
2. A hand towel dispenser or hand dryer complying with ICC/A117.1 Table 603.6.
3. A coat hook located near the changing surface.
4. A waste receptacle.
5. Signage indicating “Adult Changing Station” provided at the entrance to the room and complying with the visual character requirements in ICC/A117.1 Section 703.2.
6. Signage indicating the weight capacity and instructions for operation of the changing station within the room.

1110.4.5.1.2 Multiuser toilet or bathing room. Where adult changing stations are provided in a multi-user toilet or bathing room, the adult changing station shall be located within a compartment that includes all of the following components:

1. Privacy provided by walls, curtains or partitions enclosing the compartment.
2. A turning space complying with ICC/A117.1 Section 304.
3. A lavatory complying with ICC/A117.1 Section 606.
4. A dispenser for soap complying with ICC/A117.1 Section 308.
5. A hand towel dispenser or hand dryer complying with ICC/A117.1 Table 603.6.
6. A coat hook located near the changing surface.
7. A waste receptacle.
8. Signage indicating “Adult Changing Station” provided at the entrance to the room and complying with the visual character requirements in ICC/A117.1 Section 703.2.
9. Signage indicating the weight capacity and instructions for operation of the changing station within the compartment.

1110.4.5.1.3 Room or space other than a toilet room or bathing room. Where adult changing stations are provided in a room or space other than a toilet or bathing room and including, but not limited to, nurses’ work areas, therapist work areas, or special education classrooms, the adult changing station shall be located within a compartment or room that includes all of the following components:

1. Privacy provided by walls, curtains or partitions.
2. A turning space complying with ICC/A117.1 Section 304.
3. A lavatory complying with ICC/A117.1 Section 606 or an alcohol-based hand sanitizer dispenser.

4. Where a lavatory is provided in the compartment or room, provide a dispenser for soap.
5. Where a lavatory is provided in the compartment or room, provide a hand towel dispenser or hand dryer complying with ICC/A117.1 Table 603.6.
6. A waste receptacle.
7. Signage indicating the weight capacity and instructions for operation of the changing station within the room.

1110.4.5.2 Room configurations. An adult changing station and its supporting structure shall not obstruct the required clear floor spaces and maneuvering clearances at elements, fixtures, doors, or wheelchair turning spaces.

1110.4.5.3 Changing surface. A changing surface shall be provided and shall comply with Section 1110.4.5.3.

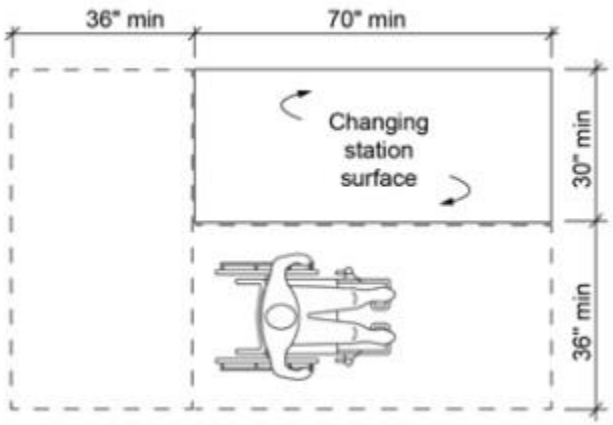

FIGURE 1110.4.5.3
SIZE AND MANEUVERING CLEARANCES AT THE ADULT CHANGING SURFACE

1110.4.5.3.1 Size. The changing surface shall be 70 inches (1778 mm) minimum in length and 30 inches (762 mm) minimum in width.

1110.4.5.3.2 Capacity. Materials, fastening mounting devices and support structure shall support a user weight of not less than 400 pounds (182 kg).

1110.4.5.4 Height adjustability. The changing surface height shall be adjustable at variable heights from 17 inches (432mm) minimum to 38 inches (965mm) maximum above the floor as measured to the top of the changing surface.

Exception: Where the adult changing station is not required by the administrative authority, a fixed height changing surface shall be permitted and shall be mounted with the top of the changing surface 19 inches (483mm) minimum and 23 inches (584 mm) maximum above the floor.

1110.4.5.5 Maneuvering clearances. Maneuvering clearances at the adult changing surface complying with Sections 1110.4.5.5.1 and 1110.4.5.5.2 shall be provided. Such maneuvering clearances shall be measured where the adult changing surface is in the operational position.

1110.4.5.5.1 Side maneuvering clearance. A side maneuvering clearance 36 inches (914 mm) minimum in depth shall be provided at the adult changing surface along the open long side of the changing surface.

Exception: In the raised position, the side rail shall be permitted to overlap the side clearance.

1110.4.5.5.2 End maneuvering clearance. An end maneuvering clearance 36 inches minimum in width shall be provided along the depth of one end of the changing surface. The depth of the end maneuvering clearance shall extend the depth of the changing surface and the side maneuvering clearance.

Exceptions:

1. An end maneuvering clearance 24 inches (610 mm) minimum in width shall be permitted where a clear floor space complying with ICC/A117.1 Section 305.3 is provided within the room beyond the maneuvering clearances for the changing surface.

2. Where installed in locations specified in Section 1110.4.5.1.3, end maneuvering clearances complying with Section 1110.4.5.5.2 are not required.

1110.4.5.6 Side rail. Where side rails are provided at the changing surface they shall comply with Sections 1110.4.5.6.1 and 1110.4.5.6.2.

1110.4.5.6.1 Size and location. Side rails shall be a minimum of $^{2}/_{3}$ of the length of the changing surface and shall be centered +/- 3 inch (75 mm) along the long open sides of the changing surface.

1110.4.5.6.2 Rail positioning. Side rails shall be capable of being raised and lowered. The side rail shall be fixed in place when in the raised position. The top of the side rail shall extend 5 inches (127mm) minimum above the top of the changing surface.

Section 1110.18

Add new Exceptions 4 through 8 to Section 1110.18 as follows:

1110.18 Controls, operating mechanism and hardware. Controls, operating mechanisms and hardware intended for operation by the occupant, including switches that control lighting and ventilation and electrical convenience outlets, in accessible spaces, along *accessible routes* or as parts of accessible elements shall be accessible.

Exceptions:

1. Operable parts that are intended for use only by service or maintenance personnel shall not be required to be accessible.

2. Access doors or gates in barrier walls and fences protecting pools, spas and hot tubs shall be permitted to comply with Section 1010.2.3.

3. Operable parts exempted in accordance with ICC A117.1 are not required to be accessible.

4. Electrical or communication receptacles serving a dedicated use shall not be required to be accessible.

5. Where two or more outlets are provided in a kitchen above a length of countertop that is uninterrupted by a sink or appliance, one outlet shall not be required to be accessible.

6. Floor electrical receptacles shall not be required to be accessible.

7. HVAC diffusers shall not be required to be accessible.

8. Except for light switches, where redundant controls are provided for a single element, one control in each space shall not be required to be accessible.

Section 1112.1

Amend Section 1112.1 to include new Item #11 as follows:

1112.1 Signs. Required accessible elements shall be identified by the International Symbol of Accessibility at the following locations.

1. (Remains unchanged)

2. (Remains unchanged)

3. (Remains unchanged)

4. (Remains unchanged)

5. (Remains unchanged)

6. (Remains unchanged)

7. (Remains unchanged)

8. (Remains unchanged)

9. (Remains unchanged)

10. (Remains unchanged)

11. Accessible electric vehicle charging station signs shall include “Accessible EV Charging - Use Last”. Signs shall be 60 inches (1525 mm) minimum above the floor of the vehicle charging space, measured to the bottom of the sign.

Section 1210.4

Add new Section 1210.4 as follows:

1210.4 Baby changing table. 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 for Diaper Changing Tables.

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.

Table 1607.1

Revise Table 1607.1 as follows:

(Remainder of Table and footnotes remain unchanged)

TABLE 1607.1-MINIMUM UNIFORMLY DISTRIBUTED LOADS, L_o, AND MINIMUM CONCENTRATED LIVE LOADS

OCCUPANCY OR USE			UNIFORM (psf)	CONCENTRATED (pounds)	ALSO SEE SECTION
27	Residential	One- and two-family dwellings:		----	Section 1607.21
		Unhabitable attics without storage	10		
		Uninhabitable attics with storage	20[d]		
		Habitable attics and sleeping areas	40[d]		
		Patio Covers, Canopies, including marquees	10		
		All other areas	40		
		Hotels and multifamily dwellings:			
		Private rooms and corridors serving them	40		
		Public rooms	100[a]		
		Corridors serving public rooms	100		

d. Attics, designed per uniform loads described for uninhabitable attics, are not required to be designed for the additional concentrated load of Item 30.

Section 1607.23

Add new Section 1607.23 as follows:

1607.23 Kitchen exhaust hoods and horizontal grease duct systems. Supports for kitchen exhaust hoods and horizontal grease duct systems 24 inches and wider shall be designed to resist vertical and lateral loads as required by this code and a 300-pound (136.1 kg) concentrated live load. This provision replaces the concentrated load requirement set forth in UMC sections 508.4 and 510.3.3.3. To the extent the provisions of the UMC are inconsistent with this provision, this provision shall apply.

1607.23.1 Kitchen hoods. Hoods shall be secured in place by non-combustible supports. The building structure, anchors, and supports shall be capable of supporting the operating weight of the hood assembly, the concentrated live load, and lateral demands of the hood assembly calculated in accordance with ASCE 7-22 utilizing load combinations set forth in ASCE 7-22. Where maintenance access has been provided independently of the hood, the concentrated live load need not be applied. Lateral demands may be resisted by attaching the hood assembly to a non-combustible wall assembly with adequate capacity to resist those demands.

1607.23.2 Horizontal grease duct systems. Horizontal grease duct systems 24 inches (610 mm) and larger in any cross-sectional dimension shall be secured in place by non-combustible supports designed to resist the operating weight of the ductwork assembly, the concentrated live load, and lateral demands of the ductwork assembly calculated in accordance with ASCE 7-22 utilizing load combinations set forth in ASCE 7-22. Where maintenance access has been provided independently of the hood, the concentrated live load need not be applied.

Section 1609.1.1

Add a new Exception #8 to Subsection 1609.1.1 as follows:

1609.1.1 Determination of wind loads. Wind *loads* on every *building* or *structure* shall be determined in accordance with Chapters 26 to 30 of ASCE 7. The type of opening protection required, the basic wind speed, *V*, and the exposure category for a *site* is permitted to be determined in accordance with Section 1609 or ASCE 7. Wind shall be assumed to come from any horizontal direction and wind pressures shall be assumed to act normal to the surface considered.

Exceptions:

(Exceptions 1-7 remain unchanged)

8. 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.

(The statement below the exceptions remains unchanged)

Section 1610.1

Revise Section 1610.1 as follows:

1610.1 Lateral pressures. *Structures* below grade shall be designed to resist lateral soil *loads* from adjacent soil. 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, for level backfill. Foundation walls and other walls in which horizontal movement is restricted at the top (nonyielding) shall be designed for at-rest pressure, unless specified otherwise in a geotechnical investigation report approved by the *building official*. Walls that are free to move and rotate at the top (yielding), such as retaining walls, shall be permitted to be designed for active pressure.

Where applicable, lateral pressure from fixed or moving surcharge *loads* shall be added to the lateral soil *load.* Lateral pressure shall be increased if expansive soils are present at the *site.* 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.

Section 1610.1.1

Add new Section 1610.1.1 as follows:

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: $3/8\ (k_H)$ (backfill soil unit weight) $(H)^2$ (Equation 16-23a)
For nonyielding walls: (k_H) (backfill soil unit weight) $(H)^2$ (Equation 16-23b)

Where k_H, peak ground acceleration = S_{DS} / 2.5
H= the height of the backfill behind the wall in feet

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 (4572 mm).

Section 1612.3

Revise Section 1612.3 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

Revise Section 1613.1 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 Chapters 11, 12, 13, 15, 17 and 18 of ASCE 7, as applicable. 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.

5. *Temporary structures* complying with Section 3103.6.1.4.

6. Stairs that are contained within a Concrete or CMU Core that is part of the lateral force resisting system for a building need not comply with ASCE 7-22 Section 13.5.10. A Core is comprised of three or four interconnected walls to create a "C", "U", or rectangular shaped lateral force resisting element.

7. ASCE 7-22 Section 13.5.10 shall not apply to egress stair systems and ramps that are integral with the building system including the following: stairs and ramps comprising monolithic concrete construction, light frame wood and cold-formed metal stair systems.

Section 1613.2

Revise Section 1613.2 as follows:

1613.2 Determination of seismic design category. *Structures* shall be assigned to a *seismic design category* based on one of the following methods unless the authority having *jurisdiction* or geotechnical data determines the *Site Class* DE, E or F soils are present at the site:

1. Based on the structure *risk category* using Figures 1613.2(1) through 1613.2(7).
2. Determined in accordance with ASCE 7. *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 (Intermediate Geotechnical Material) and the bottom of the spread footings or mat foundation. This provision shall be required when the average soil shear wave velocity, v_s, within 10 feet (3.1 m) of the foundation bottoms is less than 3,000 fps (914.4 mps).

   When *site class* is determined in accordance with Chapter 20 ASCE 7, the frequency of evaluation shall be one per 40 acres (161874 m^2) or any portion thereof. A *site class* exploration within 1,000 feet (304.8 m) 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 10-foot (3.1 m) intervals for the entire 100-foot (30.48 m) 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 10-foot (3.1 m) interval provided the test interval does not exceed 10 feet (3.1 m).

3. Where the site-specific site response analyses are required to obtain site ground motions in accordance with the ASCE/SEI 7 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 of this Code, 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 of this Code, the Geotechnical Design Professional may determine site class directly from the referenced maps subject to the following limitations:

    i. The potential for site class E or F shall be evaluated and documented in the Geotechnical Investigation Report.

    ii. Mapped values shall not be used where there will be more than 10 feet (3.1 m) of fill below the bottom of foundations.

    iii. Mapped values shall not be used where a site-specific ground motion analysis is performed in accordance with ASCE 7 Chapter 21.

    iv. Mapped values shall not be used for *high rise* structures or for Risk Category IV structures.

Where Site Class DE, E or F soils are present, the *seismic design category* shall be determined in accordance with ASCE 7.

Section 1613.7

Add new Section 1613.7 as follows:

1613.7 Raised deck systems. Raised deck systems installed over a roof assembly may be confined by a perimeter structure rather than being attached to the roof structure. The confinement structure, the connections to the base structure, and the base structure shall be designed to resist seismic demands of the raised deck system. Seismic demands may be determined using ASCE 7-22 Section 13.3.1 and the factors from ASCE 7-22 Table 13.5-1 for Access Floors: All other.

Section 1704.2

Clarify exemption requirements for special inspection, as follows:

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

Exceptions:

(Exceptions 1, 3 and 4 remain unchanged)

2. Unless otherwise required by the *building official*, *special inspections* and tests 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 as follows:

1704.2.4 Report requirement. *Approved agencies* shall keep records of *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* at frequencies required by the approved *construction documents* or *building official.* All reports shall describe the nature and extent of inspections and tests, the location where the inspections and tests were performed, and 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 documented and brought to the attention of the *building official* and to the *registered design professional in responsible charge* within 7 calendar days. 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 the Exceptions to Section 1705.3 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.

Exceptions: *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.
    1.2 The structural design of the footing is based on a specified compressive strength, *f 'c,* not 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 psi (1.03 MPa).

3. Concrete patios, driveways and sidewalks, on grade.

Section 1705.4

Add new Exception #4 to Section 1705.4 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.

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

1. Glass unit *masonry or masonry veneer* designed in accordance with Section 2110 or Chapter 14, respectively, where they are part of a *structure* 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 is less than or equal to 8'-0" in height, provided that the walls are designed in accordance with TMS 402-22 Chapter 8 for Allowable Stress Design or Chapter 9 for Strength Design of masonry with a demand to capacity (D/C) ratio of not more than 0.50 and f'm does not exceed 2,000 psi. Wall heights shall be measured from the top of footing to the top of wall.

Section 1705.6

Revise the Exception to Section 1705.6 as follows:

1705.6 Soils. *Special inspections* and tests of existing site soil conditions, fill placement and load-bearing requirements shall be performed in accordance with this section and Table 1705.6. The *approved* geotechnical report and the construction documents prepared by the *registered design professionals* shall be used to determine compliance.

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 percent of the maximum dry density at optimum moisture content determined in accordance with ASTM D1557.

Table 1705.6

Revise Table 1705.6 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. During fill placement, verify use of proper materials and procedures in accordance with the provisions of the approved geotechnical report. Verify 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 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 (4572 mm), or for portions of wall that receive surcharge loads from adjacent walls or other structures regardless of retained soil height.

Section 1705.17

Revise Exception #1 to Section 1705.17 as follows:

1705.17 Exterior insulation and finish systems (EIFS). *Special inspections* shall be required for all EIFS applications.

Exceptions:

1. *Special inspections* shall not be required for EIFS applications installed on structures, buildings, or portions of structures or buildings that are 3 stories in height or less.

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

Section 1705.21

Add new Section 1705.21 as follows:

1705.21 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 the Exceptions in Section 1803.2 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.

Exceptions: 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 (55.74 square meter).

2. Fences.

3. Site retaining walls less than or equal to 6 feet (1.83 m) 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 (12.2 meter) in height.

8. Decks, shade structures, and patio covers accessory to a one- or two-family dwelling.

9. Ground mounted solar 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 (47.88 kN/m^2) for the vertical foundation pressure, 100 psf/ft (15.7 kN/m^2/m) 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 1605.2 that include wind or earthquake loads.

Section 1803.3.2

Add new Section 1803.3.2 as follows:

1803.3.2 Minimum exploration requirements. The minimum depth of an exploration shall be 15 feet (4572 mm). 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 1 acre (0.40 Hectare), a minimum of two explorations.

2. For areas greater than 1 acre (0.40 Hectare), but less than 5 acres (2.02 Hectare), a minimum of one exploration for the first acre (0.40 Hectare) and one for each additional 2 acres (0.81 Hectare), or portion thereof.

3. For areas greater than 5 acres (2.02 Hectare), but less than 20 acres (8.09 Hectare), a minimum of three explorations plus one additional exploration for each 3 acres (1.21 Hectare) or fraction thereof above 5 acres (2.02 Hectare).

4. For areas greater than 20 acres (8.09 Hectare), a minimum of eight explorations plus one additional exploration for each 5 acres (2.02 Hectare) or fraction thereof above 20 acres (8.09 Hectare).

Exceptions:

1. A minimum of one exploration is required for single-story structures with a footprint less than 2000 square feet (185.8 square meters) 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 or if access is limited, within 75 feet (22860 mm) of the proposed foundation.

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 (15240 mm) of the proposed foundation for the structure.

Section 1803.5.3

Revise Section 1803.5.3 and add new Sections 1803.5.3.1 and 1803.5.3.2 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 to be 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 D4318.

2. More than 10 percent of soil particles pass a No.200 sieve (75 µm), determined in accordance with ASTM D6913.

3. More than 10 percent of the soil particles are less than 5 micrometers in size, determined in accordance with ASTM D6913.

4. Expansion index greater than 20, determined in accordance with ASTM D4829.

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 D2435. The swell test sample shall be oven dried at 60º C, and the sample shall be dried at a minimum of eight 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 D2435. Swell test results shall be interpreted using Table 1808.6.1.1.

Section 1803.5.8

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

1803.5.8 Compacted fill material. Where *shallow foundations* will bear on compacted fill material more than 12 inches (305 mm) in depth, a geotechnical investigation shall be conducted and shall include all of the following:

(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 as follows:

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

1. A plot showing the location and approximate surface elevation 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 a Civil/Geological Engineer licensed in the State of Nevada or an individual with a degree in: civil engineering; engineering geology; geologic engineering; or geology.
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 onsite, 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 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, including all test data and supporting calculations.
20. Specify the soils category, and the level of *special inspect*ion 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 fissures should be evaluated.
23. Where required by 1803.5.11, investigation of liquefaction hazards shall be performed in accordance with Appendix R “Evaluating Liquefaction;” 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 S “Evaluating Potential Surface Fault Rupture/Land Subsidence Hazards.”
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 prior to permit submission. 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 site visit within 30 days of the date of the update letter. 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 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 (3048 mm) 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 (3048 mm) of the *building* foundation. Impervious surfaces within 10 feet (3048 mm) 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 1 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 1010.1.4, 1012.3 or 1012.6.1.

3. Truck loading docks may be reduced to not less than one unit vertical in 192 units horizontal (0.5-percent slope).

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 and new Table 1804.4.1 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 Table 1804.4.1. Soils shall be classified as low expansive in accordance with amended Table 1808.6.1.1.

Table 1804.4.1

Soil Condition	Criteria	Applicable Test Method
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 (25.4 mm), then the soil cannot be classified as low collapsible.

Section 1804.6

Revise the Exception to Section 1804.6 as follows:

1804.6 Compacted fill material. Where *shallow foundations* will bear on compacted fill material, the compacted fill material shall comply with the provisions of an *approved* geotechnical report, as set forth in Section 1803.

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 determined in accordance with ASTM D1557.

Section 1805.2.1

Revise subsection 1805.2.1, 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 (0.010 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 (0.004 inch; 0.102 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 Section 1807.2.3 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 times *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 1807.2.6

Add new Section 1807.2.6 as follows:

1807.2.6 Slope stability analysis. Retaining walls greater than 10 feet (3048 mm) 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 10 feet (3048 mm) 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 loading conditions. Site peak ground acceleration, earthquake magnitude, and source characteristics used in the analysis shall be consistent with the maximum considered ground motions.

Section 1808.6.1.1

Add new Section 1808.6.1.1 and new Table 1808.6.1.1 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[1]

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

Revise Section 1808.6.2 and add new Table 1808.6.2 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 slabs-on-ground, mat or raft foundations on expansive soils shall be designed 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 alternative 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. C∆ 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 318-19 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 value (Ym) shall be a minimum of 1 inch.
12. For soil conditions where a low swell potential is determined, a PTI-1 may be used if specifically recommended by the geotechnical engineer.

Section 1808.8.1

Revise Section 1808.8.1 as follows:

1808.8.1 Concrete or grout strength and mix proportioning. Concrete or grout in foundations shall comply with ACI 318 and geotechnical report for durability Exposure Class or otherwise assume an Exposure Class S2. For Exposure Class S0, concrete or grout in foundations shall have a specified compressive strength (*f'c*) not less than the largest applicable value indicated in Table 1808.8.1.

Where concrete or grout is to be pumped, the mix design including slump shall be adjusted to produce a pumpable mixture.

Section 1808.8.7

Insert a new section 1808.8.7 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 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 1,000 psf, with no increases allowed for short duration loads, unless a greater value is justified in a geotechnical investigation report.
3. 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 applied to the nominal load-carry capacity of the slab-on-grade.

Section 1808.10

Add a new Section 1808.10 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 horizontal setback from a Holocene active fault (e.g. surface) shall be fifty (50) feet.

2. The minimum horizontal setback from a Quaternary active fault shall be five (5) feet.

3. When a fault investigation study performed in accordance with Appendix S determines that a Quaternary active fault does not show evidence of expression within fifty (50) feet of the ground surface or the lowest floor/basement level of a structure, then horizontal setback is not required. This provision does not apply to Risk Category 4 structures which shall be set back in accordance with items 1 or 2 above, as applicable.

4. No setback shall be imposed when the geotechnical report establishes that a fault or fault zone does not exist on the project.

5. 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 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 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 1904.1

Revise the Exception to Section 1904.1 as follows:

1904.1 Structural concrete. Structural concrete shall conform to the durability requirements of ACI 318.

Exception: For Group R-2 and R-3 occupancies not more than three *stories above grade plane*, the specified compressive strength, *f'c*, for concrete in foundations, basement walls, foundations walls, and other elements exposed to soils shall comply with the geotechnical report for durability Exposure Class or otherwise assume Exposure Class S2. Exterior walls and other vertical surfaces exposed to the weather shall not be less than 3,000 psi (20.7 MPa).

Section 1904.2.1

Add new Section 1904.2.1 as follows:

1904.2.1 Slab on grade. Slab on grade shall comply with ACI 318 and the geotechnical report for durability Exposure Class or otherwise assume an Exposure Class S2.

Section 1907.4

Revise Section 1907.4 as follows:

1907.4 Vapor retarder. A 10-mil (0.010 inch; 0.254 mm) polyethylene vapor retarder conforming to ASTM E1745 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 or materials shall be used to retard vapor transmission through the floor slab.

Exceptions: A 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 (6.5 m^2) 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. For driveways, walks, patios and other flatwork which will not be enclosed at a later date.

5. Where *approved* based on local site conditions.

Section 2115

Add new Section 2115 as follows:

Section 2115 - FREESTANDING AND RETAINING WALLS

2115 General. Freestanding and retaining walls shall comply with the applicable provisions of Sections 2115.1 through 2115.4.

2115.1 Design. Design of freestanding and retaining walls to be constructed using CMU shall be per Chapter 8 or Chapter 9 of TMS 402-16, ASCE 7-22 Chapter 15 and Chapter 29, and provisions of this code.

2115.2 Retained Soil Conditions. Retaining walls shall either be drained or designed for saturated soil conditions.

2115.3 Reinforcement. All walls shall be reinforced in both the vertical and horizontal direction. Vertical reinforcing shall be as required by calculation but not less than (1) #4, ASTM A615-60, reinforcing bar uniformly spaced at a maximum of 48” on center. Horizontal reinforcing shall be either 9 gage ASTM A951 (70 ksi) joint reinforcing beginning at the top joint of the wall and spaced no more than 16” on center or a grouted bond beam with a minimum of (1) #4, ASTM A615-60, reinforcing bar at the top of the wall and spaced no more than 48” on center. All cells containing reinforcing, and all bond beams shall be grouted.

2115.4 Retaining Walls. All retaining walls in contact with soil shall be solid grouted to the height of the soil. The walls shall be waterproofed in accordance with Section 1805.3 or constructed using materials resistive to water, chemical, and/or sulfate attack.

Section 2215

Add new Section 2215 as follows:

SECTION 2215 - RACKS

2215.1 General. Racks that exceed 8 feet (2,438 mm) in height and are not defined as 'STORAGE RACKS, STEEL' require a structural analysis and a permit issued by the local governing jurisdiction.

Section 2304.10

Revise Section 2304.10 as follows:

2304.10 Connectors and fasteners. Connectors and fasteners shall comply with the applicable provisions of Sections 2304.10.1 through 2304.10.9.

Section 2304.10.9

Add new Section 2304.10.9 as follows:

2304.10.9 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 2308.9.8

Revise Section 2308.9.8 as follows:

2308.9.8 Pipes in walls. Stud partitions containing plumbing, heating or other pipes shall be framed and the joists underneath spaced to provide proper clearance for the piping. Where a partition containing piping runs parallel to the floor joists, the joists underneath such partitions shall be doubled and spaced to permit the passage of 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 (1.47 mm) (16 galvanized gage) and 1 ½ inches (38 mm) in width 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 as follows:

2606.7.4 Automatic sprinkler 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*, or the *light-diffusing system* is *listed* and *labeled* in accordance with UL 723S. Areas of *light-diffusing systems* that are protected in accordance with this section shall ~~not~~ 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 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 2611

Revise Section 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 m2).

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 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 exceeding the aggregate area of Section 2611.2 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 up to 1,000 square feet in aggregate area shall be located in a space protected by an automatic sprinkler system of the same design density as the area they are serving.
3. For panel displays exceeding 1,000 square feet, a Fire Protection Report shall be provided to substantiate the level of protection for the space and LED display.

Table 2902.1

Replace IBC Table 2902.1 in its entirety with the following:

TABLE 2902.1 [P] TABLE 2902.1
MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES[a] (See Sections 2902.1.1 and 2902.2)

No.	CLASSIFICATION	DESCRIPTION	WATER CLOSETS (URINALS [h])		LAVATORIES		BATHTUBS/ SHOWERS		DRINKING FOUNTAINS [e,g]	OTHER [e]
			MALE	FEMALE	MALE	FEMALE				
1	Assembly	Theaters and other buildings for the performing arts and motion pictures[d]	1 per 125	1 per 65	1 per 200		-		1 per 500	1 service sink
		Nightclubs, bars, taverns, dance halls, and buildings for similar purposes[d]	1 per 40	1 per 40	1 per 75		-		1 per 500	1 service sink
		Restaurants, banquet halls, and food courts[d]	1 per 75	1 per 75	1 per 200		-		1 per 500	1 service sink
		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
		Auditoriums without permanent seating, art galleries, exhibition halls, museums, lecture halls, libraries, arcades, and gymnasiums[d]	1 per 125	1 per 65	1 per 200		-		1 per 500	1 service sink
		Passenger terminals and transportation facilities[d]	1 per 500	1 per 500	1 per 750		-		1 per 1,000	1 service sink
		Places of worship and other religious services[d]	1 per 150	1 per 75	1 per 200		-		1 per 1,000	1 service sink
		Coliseums, arenas, skating rinks, pools, and tennis courts for indoor sporting events and activities[f]	1 per 75 for the first 1,500 and 1 per 120 for the remainder exceeding 1,500	1 per 40 for the first 1,520 and 1 per 60 for the remainder	1 per 200		1 per 150	-	1 per 1,000	1 service sink

				exceeding 1,520					
1	Assembly - continued	Stadiums, amusement parks, bleachers and grandstands for outdoor sporting events and activities[f]	1 per 75 for the first 1,500 and 1 per 120 for the remainder exceeding 1,500	1 per 40 for the first 1,520 and 1 per 60 for the remainder exceeding 1,520	1 per 200	1 per 150	-	1 per 1,000	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 ~~e~~
		Ambulatory care facilities and outpatient clinics	1 per 25 for the first 50 and 1 per 50 for the remainder exceeding 50	1 per 25 for the first 50 and 1 per 50 for the remainder exceeding 50	1 per 50	-		1 per 100	1 service sink per floor
3	Educational	Educational Facilities	1 per 50		1 per 50	-		1 per 100	1 service sink
4	Factory and industrial	Structures in which occupants are engaged in work fabricating, assembly or processing of products or materials	1 per 100		1 per 100	-		1 per 400	1 service sink
5	Institutional	Alcohol and drug centers[b] Congregate care facilities[b] Group homes[b] Halfway houses[b] Social rehabilitation facilities[b] Foster care facilities[b]	1 per 10 care recipients		1 per 10 care recipients	1 per 8 care recipients		-	-
		Assisted living and residential board and care facilities with care recipients who receive custodial care	Sleeping units for care facilities[c]	1 per 2 sleeping units		1 per 2 sleeping units	1 per 8 sleeping units		
			Dwelling units for care facilities	1 per dwelling unit		1 per dwelling unit	1 per dwelling unit	-	1 kitchen sink per dwelling unit
			Employee facilities	1 per 60 care recipient units		1 per 60 care recipient units	-	1 per 100	1 service sink per floor
			Visitor facilities	1 per 75 care recipient units		1 per 75 care recipient units	-	-	-
		Nursing homes	Sleeping units for care recipients[c]	1 per 2 care recipients sleeping units		1 per 2 care recipients sleeping units	1 per 8 care recipients sleeping units	-	-
			Employee facilities	1 per 60 care recipient units		1 per 60 care recipient sleeping units	-	1 per 100	1 service sink per floor
			Visitor facilities	1 per 75 care recipient units		1 per 75 care recipient sleeping units	-	-	-
		Hospitals[b]	Sleeping units for care recipients	1 per care recipient sleeping unit		1 per care recipient sleeping unit	1 per 100 care recipient sleeping units		-

			Care recipient treatment areas	1 per 25 care recipient treatment rooms		1 per 50 care recipient treatment rooms	-	1 per 100	-
5	Institutional - continued	Hospitals[b] - continued	Employee facilities	1 per 25 care recipient sleeping units or treatment rooms	1 per 25 care recipient sleeping units or treatment rooms	1 per 50 care recipient sleeping units or treatment rooms	-	1 per 100	1 service sink per floor
			Visitor facilities	1 per 75 care recipient sleeping units or treatment rooms	1 per 75 care recipient sleeping units or treatment rooms	1 per 50 care recipient sleeping units or treatment rooms	-	1 per 500	-
		Prisons[b]		1 per cell		1 per cell	1 per15	1 per 100	1 service sink
		Reformatories, detention centers, and correctional centers[b]	Cells	1 per 15		1 per 15	1 per 15	1 per 100	1 service sink
			Congregate living facilities	1 per 15		1 per 15	1 per 15	1 per 100	-
			Employees	1 per 25		1 per 35	-	1 per 100	1 service sink
		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 ~~e~~
7	Residential	Hotels, motels, boarding houses (transient)		1 per dwelling or sleeping unit		1 per dwelling or sleeping unit	1 per dwelling or sleeping unit	-	1 service sink
		Dormitories, fraternities, sororities, and boarding houses (not transient)		1 per 10		1 per 10	1 per 8	1 per 100	1 service sink
		Apartment house		1 per dwelling unit or sleeping unit		1 per dwelling or sleeping unit	1 per dwelling or sleeping unit	-	1 Kitchen sink per dwelling unit; 1 automatic clothes washer connection per 20 dwelling units
		congregate living facilities with 16 or fewer care recipients receiving custodial care		1 per 10		1 per 10	1 per 8		1 kitchen sink
		one- and two-family dwellings and lodging houses with five or fewer guestrooms		1 per dwelling unit		1 per dwelling unit	1 per dwelling unit	-	1 Kitchen sink per dwelling unit; 1 automatic clothes washer connection per dwelling units

8	Storage	Structures for the storage of goods, warehouses, storehouse and freight depots. Low and - Moderate Hazard.	1 per 100	1 per 100	-	1 per 1,000	1 service sink

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, taverns, or similar food and beverage businesses provide drinking water in a container free of charge, drinking fountains shall not be required in those portions of the building. 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. This substitution shall not reduce the minimum number of drinking fountains required by Section 1110.7.1.
h. In each bathroom or toilet room, urinals shall not be substituted for more than 67 percent of the required water closets in assembly and educational *occupancies*. Urinals shall not be substituted for more than 50 percent of the required water closets in all other *occupancies*.

Section 2902.1.1

Revise Exception 2 of IBC Section 2902.1.1 as follows:

[P] 2902.1.1 Fixture calculations. To determine the *occupant load* of each sex, the total *occupant load* shall be divided in half. To determine the required number of fixtures, the fixture ratio or ratios for each fixture type shall be applied to the *occupant load* of each sex in accordance with Table 2902.1. Fractional numbers resulting from applying the fixture ratios of Table 2902.1 shall be rounded up to the next whole number. For calculations involving multiple occupancies, such fractional numbers for each occupancy shall first be summed and then rounded up to the next whole number.

Exceptions:

1. The total *occupant load* shall not be required to be divided in half where *approved* statistical data indicates a distribution of the sexes of other than 50 percent of each sex.

2. Where multiple-user *facilities* are designed to serve all genders, the minimum fixture count shall be calculated 100 percent, based on total *occupant load*. In such multiple-user *facilities*, the required number of accessible fixtures shall be determined in accordance with IBC Section 1110.

Section 2902.1.2

Revise Section 2902.1.2 as follows:

2902.1.2 Fixtures in single-user toilet facilities and bathing rooms. The plumbing fixtures located in single-user toilet facilities and single-user rooms, including family or assisted-use toilet facilities and bathing rooms, shall contribute toward the total number of required plumbing fixtures for the building or tenant space. The number of fixtures in single-user toilet facilities, single-user bathing rooms and family or assisted-use toilet facilities shall be deducted proportionately from the required gender ratios of Table 2902.1. Single-user toilet facilities and bathing rooms, and family or assisted-use toilet facilities and bathing rooms shall not be identified as being available for use by all persons regardless of the sex, but may be labeled for use by any persons including without limitations "All-Gender Bathroom" or "All-Accessible Bathroom."

The total number of fixtures shall be based on the required number of separate facilities or based on the aggregate of any combination of single-user or separate facilities.

Exceptions:

1. Single-user toilet or bathing rooms directly connected with other associated uses which when combined could be considered multi-user including, but not limited to, locker rooms or dressing rooms.

2. Where separate facilities are required by Section 2902.2, and where one of the toilet or bathing facilities is multi-user and assigned for use by one sex, the other required toilet or bathing facility must also be considered multi-use and assigned for use by the other sex regardless of the number of fixtures or configuration of that facility.

Section 2902.1.2.1

Add new Section 2902.1.2.1 as follows:

2902.1.2.1 Single-user Facility Use. Single-user toilet facilities and single-user rooms, including family or assisted-use toilet facilities and bathing rooms, shall be inclusive and accessible as possible to a person of any gender identity or expression, in accordance with NRS 651, including without limitation by allowing:

1. A parent or guardian of a child to enter the facility with the child;

2. A person with a disability to enter the facility with his or her caregiver; and

3. A person of any gender identity or expression to use the facility as needed

Section 2902.2

Revise Exceptions 2, 3, 4, and 6 of IBC Section 2902.2 as follows:

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

Exceptions:

1. Separate toilet facilities shall not be required for *dwelling units* and *sleeping units*.

2. Separate toilet 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 toilet facilities shall not be required in Group M occupancies in which the maximum *occupant load* is 100 or fewer.

4. Separate toilet 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.

5. Separate toilet facilities shall not be required to be designated by sex where single-user toilet rooms are provided in accordance with Section 2902.1.2.

6. Separate toilet facilities shall not be required where rooms having both water closets and lavatory fixtures are designed for use by all persons regardless of sex and privacy is provided for water closets in accordance with Section 422.6 of the *International Plumbing Code* and for urinals in accordance with Section 422.7 of the *International Plumbing Code*.

Section 2902.4

Revise Section 2902.4 as follows:

2902.4 Signage. Required public toilet facilities shall be provided with signs that indicate whether the facility is to be used by males, by females, or by all persons regardless of sex. Single-user toilet facilities and single-user rooms, including family or assisted-use toilet facilities and bathing rooms shall be provided with signage as required by 2902.1.2. Signs shall be readily visible and located near the entrance to each toilet facility. Signs for accessible toilet facilities shall comply with Section 1112.

Exception: Signage in accordance with Section 2902.1.2 shall not be required for single-stall restrooms or single-user toilet facilities and bathing rooms, including family or assisted-use toilet and bathing rooms, located in dwelling units and sleeping units.

Section 3003.1.3

Revise Section 3003.1.3 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 3002.4

Amend Section 3002.4 as follows:

3002.4 Elevator car to accommodate ambulance stretcher. Where elevators are provided in buildings four or more stories above, four or more stories below, or to occupied roofs occurring over buildings three or more stories above 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 an area sufficient to accommodate transport of a 24-inch by 84-inch (610 mm by 2134 mm) ambulance stretcher. Where stretcher-sized elevators are provided per the exception to Section 403.6.1, elevators shall open into a lobby sufficient to accommodate transport of a 24-inch by 84-inch (610 mm by 2134 mm) ambulance stretcher.

Section 3006.2

Amend Condition 5 in Section 3006.2 as follows:

3006.2 Elevator hoistway door protection required. Elevator hoistway doors shall be protected in accordance with Section 3006.3 where an elevator hoistway connects more than three *stories*, is required to be enclosed within a *shaft enclosure* in accordance with Section 712.1.1 and any of the following conditions apply:

1. *Unchanged.*
2. *Unchanged.*
3. *Unchanged.*
4. *Unchanged.*
5. The *building* is a high rise and the elevator hoistway is more than 55 feet (16 764 mm) in height. The height of the hoistway shall be measured from the *lowest floor* to the highest floor or *occupiable roof* served by the hoistway.
6. *Unchanged.*

Exceptions 1 through 3 remain unchanged.

Section 3103

Delete Section 3103, Temporary Structures, in its entirety without replacement, as follows:

SECTION 3103 - RESERVED

Section 3115

Add new Section 3115 as follows:

SECTION 3115 - CABANAS

3115.1 General. This section shall apply to *cabanas* on, or in close proximity to, buildings where the predominant building construction type would not otherwise allow *cabanas* to be constructed as membrane structures in accordance with Section 3102.3. *Cabanas* that are erected for a period of less than 180 days shall comply with the *International Fire Code*.

3115.2 Design and construction. *Cabanas* 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.

3115.2.1 Frame. *Cabanas* shall be constructed of a rigid, noncombustible frame that is permanently mounted to the roof or deck on which it is located.

3115.2.2 Membrane covering. The membrane covering of the *cabana* shall either be noncombustible in accordance with Section 703.3 Section or be tested by an approved agency and pass Test 2 of NFPA 701.

3115.2.3 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.

3115.2.4 Height. The highest point of a *cabana* shall not exceed 20 feet (4572 mm).

3115.2.5 Area. The area of any single *cabana* or *cabana group* shall not exceed 1,000 square feet (46.45 m2).

Exception: The area of *cabanas* that are constructed entirely of noncombustible materials shall not exceed 2,000 square feet (92.90 m2).

3115.2.5.1 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.

3115.3 Location. *Cabanas* shall be located to minimize the hazard to the building, other *cabanas*, and the means of egress.

3115.3.1 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.

3115.3.2 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.

3115.3.3 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.

3115.3.4 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*.

3115.4 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 m2) in area.

3115.5 Cooking facilities. Cooking shall not be permitted within 20 feet (6096 mm) of a cabana or inside a *cabana*.

3115.6 Fuel-fired equipment. Fuel-fired equipment shall not be permitted within 20 feet (6096 mm) of a *cabana* or inside a *cabana*.

3115.7 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*.

3115.8 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 3116

Add new Section 3116 as follows:

SECTION 3116 - SHADE STRUCTURES

3116.1 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*.

3116.2 Design and construction. S*hade 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.

3116.2.1 Frames. Frames shall be non-rated, and noncombustible or wood of Type IV size.

3116.2.2 Shade coverings. Shade coverings shall be of:

1. Noncombustible materials in accordance with Section 703.3; or
2. Wood of Type IV size; or

3. An approved covering that meets the fire propagation performance criteria of NFPA 701.

3116.2.3 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.

3116.2.4 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^2).

Exception: *Shade structures* with combustible construction as outlined under Section 3116.3 shall be limited to no more than 5,000 square feet (464.52 m^2).

3116.3 Location. *Shade structures* shall be allowed to be constructed on or attached to the building or may be free standing separated from the building.

3116.3.1 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.

3116.3.2 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.

3116.4 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.

3116.5 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^2).

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^2) 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^2), or 400 square feet (37.16 m^2) when comprised entirely of noncombustible materials.

3116.6 Fire alarm and 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 3116.9.

3116.7 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.*

3116.8 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.

3116.9 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.

Chapter 35

Amend Chapter 35 reference standards ICC A117.1 and NFPA 70-23 as follows:

…

ICC

ICC A117.1 – 09: **Accessible and Usable Buildings and Facilities**

…

NFPA

…

70-23: **National Electric Code**

108.3, 406.2.7, 406.2.9, 412.5.7, 415.11.1.8, Table 509.1, 904.3.1, 907.6.1, 909.12.2, 909.16.3, 910.4.6, 1006.2.2.4, 1204.4.1, 2701.1, 2702.1.3, 3111.3

…

(Note: The list before and after the revision and insertion are unchanged.)

Appendix H

Amend Section H107.1.3 to include a new Exception as follows:

H107.1.3 Area Limitation. If the area of a display surface exceeds 200 square feet (18.6 m^2), the area occupied or covered by plastics complying with the requirements of Section H107.1.1 shall be limited to 200 square feet (18.6 m^2) plus 50 percent of the difference between 200 square feet (18.6 m^2) and the area of display surface. The area of plastic on a display surface shall not in any case exceed 1,100 square feet (102 m^2).

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 specific sections as follows:

J103.3 Hazards. Whenever the *building official* determines that any existing excavation, embankment, fill, or change of grade on private property has become or causes a hazard to life and limb, or endangers property, or adversely affects the safety, use or stability of a property, public way, easement, storm sewer system, or drainage channel, the owner of the property upon which the excavation, embankment, fill, or change of grade 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, embankment, fill, or change of grade 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 (55.74 square meter).
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.
6. Ground mounted solar accessory to a one- or two-family dwelling.

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 1804.4.
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. Finished floor and pad grade 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, signature and date in accordance with NAC 625.610 or a AHJ 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 applicable provisions of Section 1803.6.

J105.1 General. The permittee shall be responsible for the work to be performed in accordance with the building department *approved* plans and geotechnical report of record including any approved supplements or addenda 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 1704.2.4.

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 and submit 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 reports 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 reports without the written consent of the geotechnical engineer of record.

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

1. Compaction test results (summary of density testing table), requirements, locations, depth of backfill at test locations, level of special inspection per Section 1705.6, date of first test performed at pad grade per building pad, and names of the approved special inspector(s) and any technicians that observed grading or foundation improvements.
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. Most current building department approved grading plan showing approximate locations of tests, location, dates and depths of over-excavation observations and 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. Classification of foundation soil for expansive properties (i.e., non-expansive or results from standard 60 pounds per square foot swell test).
6. Type of foundation system applicable to work being certified (i.e., post-tensioned, 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 Section 19.3.1.1.
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, preparation for areas to receive fill, 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 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 Section 19.3.1.1.

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.

6. Level of special inspection performed per Section 1705.6.

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 unless recommendations within the approved geotechnical report are more stringent. 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) based on a site visit from an approved inspector is discussed, any 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 60 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 date of the site visit. 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 *professional land surveyor* 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 L & M

Delete Appendix L & M in their entirety.

Appendix Q

Adopt a new Appendix Q as follows:

APPENDIX Q

FENCES, WALLS AND RETAINING WALLS

SECTION 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.

SECTION 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.

SECTION Q103 - 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,* unless Southern Nevada Building Officials Masonry Retaining Walls standard detail is used. 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, calculations 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.

SECTION Q104 - 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.

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 waterproofing per the approved plans, 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.

SECTION Q105 – IMPLEMENTATION

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

Appendix R

Adopt a new Appendix R as follows:

APPENDIX R

EVALUATING LIQUEFACTION HAZARDS

SECTION R101 - GENERAL

R101.1 Scope. This guideline addresses 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.

R101.2 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 R102 - DEFINITIONS

R102.1 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_1 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^2.

$(N_1)_{60}$. Standardized, normalized SPT-value. Corrected for both overburden stress effects and equipment and procedural effects (blows/ft).

q_c. Tip resistance measured by CPT probe (force/length^2).

$q_{c,1}$. Normalized CPT tip resistance (force/length^2); corrected for overburden stress effects to the q_c value which would occur if the effective overburden stress was 1.0 tons/ft^2.

SPT. Standard Penetration Test (ASTM D1586).

SECTION R103 - EVALUATION OF LIQUEFACTION POTENTIAL

R103.1 General. 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: At the option of the *building official*, the following projects may be exempted from the requirements of this guideline.

1. *Dwellings,* additions and their accessory structures (e.g., casita, etc.) associated with a single lot, single-family residence classified as *Site Class* A, B, C or CD.
2. Accessory structures associated with a single-family residence that do not have any habitable space and are classified as group S or U occupancies regardless of *Site Class*; examples include carports, patio covers (shade structures), garages, storage sheds, agricultural buildings, barns, etc.
3. Remodels associated with a single-family residence regardless of *Site Class* and other remodels classified as *Site Class* A, B, C or CD.
4. Signs, light poles, flag poles and communication towers.
5. Attached additions associated with all other construction provided the addition is not greater in height than the existing structure, not greater than 25% of the building footprint square footage (regardless of the number of stories) of the original structure, not greater than 2,500 square ft in building footprint, and is classified as *Site Class* A, B, C or CD.

R103.1.1 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 low density silts and/or sands 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 and backup testing 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 these criteria.

R103.1.2 Detailed Liquefaction Hazard Analysis. When liquefaction potential cannot be shown as low per the requirements of R103.1.1, then a detailed liquefaction analysis shall be performed.

R103.1.2.1 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.

R103.1.2.2 Analysis Requirements. To evaluate for a potential liquefaction hazard, site peak ground acceleration, earthquake magnitude, and source characteristics shall be consistent with the maximum considered ground motions. 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 = CSRliq / CSReq, 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 R103.1.2.2. 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 R103.1.2.2

FACTORS OF SAFETY FOR LIQUEFACTION HAZARD ASSESSMENT

CONSEQUENCE OF LIQUEFACTION	$(N_1)_{60}$ 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

R103.1.2.3 Additional Requirements for Seismic Design Categories D through F. The geotechnical investigation report for structures assigned to Seismic Design Categories D, E, or F shall address the requirements of ASCE 7 Section 11.8.3.

R103.1.2.4 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). The mitigation for structures assigned to Seismic Design Categories D, E, or F shall comply with the requirements of ASCE 7 Section 12.13.9.

SECTION R104 - REPORTING

R104.1 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.

12. Evaluations compliant to ASCE 7 shall include the estimated horizontal ground displacement, estimated differential settlement over a defined length, L, and the differential settlement threshold for the structure in accordance with ASCE 7 Table 12.13-3.

Appendix S

Insert a new Appendix S as follows:

APPENDIX S

INVESTIGATING POTENTIAL SURFACE FAULT RUPTURE & LAND SUBSIDENCE HAZARDS

SECTION S101 - GENERAL

S101.1 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 S102 - DEFINITIONS

S102.1 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 surface fault that has moved within the last 11,700 years.

2. *Fault, Quaternary Active:* A fault that has moved within the last 1,600,000 years.

3. *Fault, Inactive:* A fault without recognized activity within the past 2,5800,000 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 S103 - WHEN TO PERFORM THE INVESTIGATION

S103.1 When required. 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 S104 - DESCRIPTION OF THE EVALUATION

S104.1 Evaluation requirements. 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 S104.1.3 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 S104.1.2.2.

The methodology and results of the evaluation must be properly documented in the *Geotechnical Investigation* report (See section S105 for reporting requirements). Some of the evaluation methods described below should be carried out beyond the site being investigated.

S104.1.1 Research. Review of the region's seismic history based on existing maps and technical literature.

S104.1.1.1 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*).

S104.1.1.2 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).

S104.1.1.3 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.

S104.1.2 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.

S104.1.2.1 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.

S104.1.2.2 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.

S104.1.3 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:

S104.1.3.1 Non-Specific.

a. This include*s* 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*.

S104.1.3.2 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 S105 - REPORTING REQUIREMENTS

S105.1 General. 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.

S105.2 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.

S105.3 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.

S105.4 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.

S105.5 Appendix. Supporting data not included above (e.g. water well data).

S105.6 Authentication. Signature of the *registered design professional* who conducted the evaluation.