



**SOUTHERN NEVADA PROPOSED AMENDMENTS  
TO THE  
2024 INTERNATIONAL BUILDING CODE  
STRUCTURAL COMMITTEE**

**International Building Code Committee**  
Revised January 23, 2025

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SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 1

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: 202

PROPONENT: CLARK COUNTY

**PROPOSAL:** Modify Section 202 to clarify the scope of structural observations; they encompass the superstructure, substructure, and foundation soils.

**REVISE AS FOLLOWS:** Revise **Section 202 Definitions**, as follows:

**[BS] STRUCTURAL AND/OR GEOTECHNICAL OBSERVATION.** The visual observation of the structural system 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.

**JUSTIFICATION:** This modification clarifies the scope of structural observations. It is possible for the as published text to be interpreted as only being applicable to the superstructure. The superstructure and geotechnical design assumptions each have a significance which is not directly expressed on the construction documents. The addition of foundation elements and soils will provide for a complete structural system to be part of the observation plan. Therefore, a complete observation plan will be the composite plans developed by the geotechnical and structural design teams.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|

**COST IMPACT:** Costs are expected to increase due to the geotechnical component. See also a related amendment to this same code section which specifies structural observation as being independent of the seismic design category resulting in additional structures subject to observation by design professionals.

**COMMITTEE ACTION:**

|              |              |           |           |          |            |       |  |          |
|--------------|--------------|-----------|-----------|----------|------------|-------|--|----------|
| Boulder City | Clark County | Henderson | Las Vegas | Mesquite | Nye County | North |  | Industry |
|--------------|--------------|-----------|-----------|----------|------------|-------|--|----------|

|       |   |   |   |      |      |           |                    |   |   |   |
|-------|---|---|---|------|------|-----------|--------------------|---|---|---|
|       |   |   |   |      |      | Las Vegas | CC School District | 1 | 2 | 3 |
| Y (P) | Y | Y | Y | Y(P) | Y(P) | Y         | Y(P)               | Y | Y | Y |

**RESULT: Pass 11-0**

Table 1607.1

SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 2

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: Table 1607.1

PROPONENT: CLARK COUNTY

**PROPOSAL:** Clarify intent of live load table and modify required live load for habitable attics and sleeping areas.

**REVISE AS FOLLOWS:** Change live load for sleeping areas to 40 psf, reduced the live load for patio covers to 10 psf, and added footnote “d” for item #27 in Table 1607.1, as follows:

*(Remainder of Table and footnotes remain unchanged)*

**TABLE 1607.1-MINIMUM UNIFORMLY DISTRIBUTED LOADS, L<sub>o</sub>, 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 <sup>d</sup>               |                  |                 |
|                  |             | Habitable attics and sleeping areas               | <del>30</del> 40 <sup>d</sup> |                  |                 |
|                  |             | <u>Patio Covers, Canopies, including marquees</u> | <del>20</del> 10              |                  |                 |
|                  |             | All other areas                                   | 40                            |                  |                 |
|                  |             | Hotels and multifamily dwellings:                 |                               |                  |                 |
|                  |             | Private rooms and corridors serving them          | 40                            |                  |                 |
|                  |             | Public rooms                                      | 100 <sup>a</sup>              |                  |                 |
|                  |             | 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

**JUSTIFICATION:** This section is carried forward from the 2018 IBC amendments. (Footnote d, previously footnote p.) There has been confusion over whether attic spaces must meet the concentrated load requirement for accessible ceilings (Item 30 of the table) in addition to the uniform requirements for Item 27 of the table. Patio Covers was added to the list with the LL reduced to 10psf for consistency with Appendix I.

Alan Carr, PE, SE, and ICC Staff Secretary to the IBC Structural Committee, wrote an article (in Structural Engineer magazine, Sept. 2004) about the changes that were first introduced in the 2004 Supplement to the IBC. That article illustrates how the new requirements for loads in attic spaces should be applied.

**(Sleeping areas)** All other habitable areas of the residential occupancy require 40 psf minimum uniformly distributed live load.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|

**COST IMPACT:** There is no cost impact associated with footnote p. There is no cost increase associated with increasing the habitable attics and sleeping areas live load from 30psf to 40psf. A potential cost savings associated with the reduced live load will not be realized. The 40psf live load has been in use in the valley since adoption of the 2000 IBC as amended.

**COMMITTEE ACTION:**

| Boulder City | Clark County | Henderson | Las Vegas | Mesquite | Nye County | North Las Vegas | CC School District | Industry |   |   |
|--------------|--------------|-----------|-----------|----------|------------|-----------------|--------------------|----------|---|---|
|              |              |           |           |          |            |                 |                    | 1        | 2 | 3 |
| Y (P)        | Y            | Y         | Y         | Y(P)     | Y(P)       | Y               | Y(P)               | Y        | Y | Y |

**RESULT: Pass 11-0**

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SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 55

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: IBC 1607.22, UMC 508.4, UMC 510.3.3.3

PROPONENT: CITY OF LAS VEGAS AND STEVE SCHILLER

**PROPOSAL:** To coordinate hood assembly design requirements as found in the UMC with the IBC and ASCE 7-22.

**REVISE AS FOLLOWS:** Add section 1607.22 to clarify the structural demands of UMC sections 508.4 and 510.3.3.3, as follows:

**1607.22 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.

**1607.22.1 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.

**1607.22.2 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.

**JUSTIFICATION:** The UMC has identified a valid design concern relating to the application of live loads to the supports of hoods and grease ducts that require regular maintenance to provide for safety when a maintenance worker uses the hood or duct assembly as a work platform. However, design loads and requirements for mechanical components are set forth in ASCE 7. This provision is intended to reconcile a perceived conflict between UMC and IBC requirements and place it in the code where most engineers would expect to locate the design requirements.



ASCE 7-22 Section 13.6, and by reference section 13.4, sets forth the basic requirements for attachment and seismic design criteria. ASCE 7-22 Section 4.4 provides direction on the application of a concentrated live load and refers to table 4.3-1 for the magnitude of the concentrated loads. The most analogous "Use" in table 4.3-1 appears to be "Catwalks for Maintenance and Service Access" which, requires a Concentrated Live Load of 300 pounds (service level). The 300 pound load is reasonable for this application. The 800 pound load from UMC would represent an ultimate load of a 300 pound person and 200 pounds of tools and equipment combined with a load factor of 1.6 which, seems excessive.

Where alternate access has been provided for the hoods, the 300 pound concentrated load is redundant and unnecessary.

Local practice is to brace hoods laterally, where they are adjacent to a wall, using the wall. So long as the wall has adequate strength to resist the lateral loads, it should be permissible to use the wall to provide resistance to lateral loads.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|

**COST IMPACT:** Generally negligible. Potential marginal reductions in cost of anchorage.

**COMMITTEE ACTION:**

| Boulder City | Clark County | Henderson | Las Vegas | Mesquite | Nye County | North Las Vegas | CC School District | Industry |   |   |
|--------------|--------------|-----------|-----------|----------|------------|-----------------|--------------------|----------|---|---|
|              |              |           |           |          |            |                 |                    | 1        | 2 | 3 |
| Y (P)        | Y            | Y         | Y         | Y(P)     | Y(P)       | Y               | Y(P)               | Y        | Y | Y |

**RESULT: Pass 11-0**

SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 3

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: 1609.1.1

PROPONENT: CLARK COUNTY

PROPOSAL: Provide limited modification to wind loading requirements for some fences.

REVISE AS FOLLOWS: Add a new exception #8 to Subsection 1609.1.1 Determination of wind loads, as follows:

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<sub>f</sub> factor equal to 1.40 and the resultant applied at the geometric center of the wall.

(The statement below the exceptions remains unchanged)

JUSTIFICATION: This section is carried forward from the 2018 IBC amendments. The purpose is to not require load increases for freestanding walls less than 10' tall. These load increases are not justified for local conditions.

ASCE 7-22 Figure 29.3-1 is used for walls and signs and contains provisions that greatly increase the wind loads at the ends of walls. Wall failure rate in the Las Vegas area is very low. The failures which have occurred have been primarily in the mid-section of walls and attributed to poor construction. Empirically, there is no basis for increasing the wind loads at the ends of walls. As proposed above, the amendment will yield loads that are slightly higher than those of the previous codes.

This argument is not unique to the Las Vegas area. Phoenix, Arizona has adopted a similar amendment that reverts to the loads obtained from the previous code (ASCE 7-16 Figure 29.3.1).

SNBO CRITERIA: Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|

COST IMPACT: This will reduce the cost of construction design, materials, and labor.

COMMITTEE ACTION:

| Boulder City | Clark County | Henderson | Las Vegas | Mesquite | Nye County | North Las Vegas | CC School District | Industry |   |   |
|--------------|--------------|-----------|-----------|----------|------------|-----------------|--------------------|----------|---|---|
|              |              |           |           |          |            |                 |                    | 1        | 2 | 3 |
| Y (P)        | Y            | Y         | Y         | Y(P)     | Y(P)       | Y               | Y(P)               | Y        | Y | Y |

**RESULT: Pass 11-0**

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 SOUTHERN NEVADA CODE AMENDMENT FORM – 2024
 

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AMENDMENT NO.: 4COMMITTEE: STRUCTURAL/GEOTECHNICALCODE SECTION: 1610.1PROPONENT: CLARK COUNTY

**PROPOSAL:** Revise Section 1610.1 and add Subsection 1610.1.1 to better address the conditions in Southern Nevada.

**REVISE AS FOLLOWS:** Revise Section 1610.1 and add Subsection 1610.1.1, as follows:

**1610.1 Lateral pressures.** *Structures* below grade shall be designed to resist lateral soil *loads* from adjacent soil. ~~Soil loads specified in Table 1610.1 shall be used as the minimum design lateral soil loads unless determined otherwise by a geotechnical investigation in accordance with Section 1803. 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.

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

For yielding walls:  $\frac{3}{8} (k_H) (\text{backfill soil unit weight}) (H)^2$  (Equation 16-23a)

For nonyielding walls:  $(k_H) (\text{backfill soil unit weight}) (H)^2$  (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).

**JUSTIFICATION:** Table 1610.1 is not adequate for determining the soil lateral load when a geotechnical report is not required. An owner/builder or contractor should not make the determination of the soil classification. The proposed default design pressures are on the conservative side of what is typically found within the valley.

The assumption that the at-rest pressure shall always be used to design a restrained retaining wall is overly simplistic and may not be appropriate depending on the construction method used and the soil conditions. The geotechnical engineer should be allowed to specify the appropriate pressure to be used in the design of the retaining wall based on the site investigation.

The Seismic load due to lateral earth pressure is specified to clarify the retaining wall earthquake loading necessary to determine the factor of safety required in section 1807.2.3. Section 1807.2.2 refers to section 1610 for the design lateral soil loads.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|

**COST IMPACT:** There will be no cost impact when compared to the previous code cycle.

**COMMITTEE ACTION:**

| Boulder City | Clark County | Henderson | Las Vegas | Mesquite | Nye County | North Las Vegas | CC School District | Industry |   |   |
|--------------|--------------|-----------|-----------|----------|------------|-----------------|--------------------|----------|---|---|
|              |              |           |           |          |            |                 |                    | 1        | 2 | 3 |
| Y (P)        | Y            | N         | Y         | N(P)     | Y(P)       | Y               | Y(P)               | N        | N | N |

**RESULT: Pass 6-5**

SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 5

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: 1612.3

PROPONENT: CLARK COUNTY

PROPOSAL: Clarify design requirements for determination of flood hazard areas.

REVISE AS FOLLOWS: 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, “~~INSERT NAME OF JURISDICTION~~,” dated ~~INSERT DATE OF ISSUANCE~~, 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.

**JUSTIFICATION:** FEMA map updates are going electronic. The FIRM panels will be updated as the LOMRs are approved. They will still have updates. Current FIRM mapping is from November 2011.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |   |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |
|---|---|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|--|
| A | X | B |  | C |  | D |  | E |  | F |  | G |  | H |  | I |  | J |  |
|---|---|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|--|

**COST IMPACT:** None.

**COMMITTEE ACTION:**

| Boulder City | Clark County | Henderson | Las Vegas | Mesquite | Nye County | North Las Vegas | CC School District | Industry |   |   |
|--------------|--------------|-----------|-----------|----------|------------|-----------------|--------------------|----------|---|---|
|              |              |           |           |          |            |                 |                    | 1        | 2 | 3 |
| Y (P)        | Y            | Y         | Y         | Y(P)     | Y(P)       | Y               | Y(P)               | Y        | Y | Y |

**RESULT: Pass 11-0**

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 SOUTHERN NEVADA CODE AMENDMENT FORM – 2024
 

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AMENDMENT NO.: 6-ACOMMITTEE: STRUCTURAL/GEOTECHNICALCODE SECTION: 1613.1PROPONENT: CITY OF LAS VEGAS & STEVE SCHILLER

PROPOSAL: Delete exception number 1.

REVISE AS FOLLOWS: Delete Exception #1 to Section 1613.1 and add #6 &amp; #7:

**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. Detached one- and two-family dwellings, assigned to Seismic Design Category A, B or C.~~
- ~~2.~~ 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.
- ~~3.~~ 2. Agricultural storage *structures* intended only for incidental human occupancy.
- ~~4.~~ 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.
- ~~5.~~ 4. References within ASCE 7 to Chapter 14 shall not apply, except as specifically required herein.
- ~~6.~~ 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.

**JUSTIFICATION:** This item is carried forward from the 2018 IBC amendments with the addition of exceptions 6 and 7.

Exception 1: This exception would allow some single-family residences in Southern Nevada to be designed without considering the potential effects of earthquakes. Nevada is considered a seismically active state and earthquake forces should be considered in the design.

Exception 6: In the condition described, the core walls will be significantly stiffer than the stairs and will preclude the stair stringers from acting as unintended braces. The requirement for providing slip connections at the stairs in these cases adds additional cost for no meaningful increase in life safety.

Exception 7: This exception captures the language in the commentary to ASCE 7-22 for this section. Examples in the commentary include stairs and ramps comprising monolithic concrete construction, light frame wood and cold form metal stair systems in multifamily residential construction, and integrally constructed masonry stairs.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |   |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |
|---|--|---|---|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|--|
| A |  | B | X | C |  | D |  | E |  | F |  | G |  | H |  | I |  | J |  |
|---|--|---|---|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|--|

**COST IMPACT:** Local practice has included seismic design and detailing for these structures making this effectively a “no cost change” proposal.

**COMMITTEE ACTION:**

| Boulder City | Clark County | Henderson | Las Vegas | Mesquite | Nye County | North Las Vegas | CC School District | Industry |   |   |
|--------------|--------------|-----------|-----------|----------|------------|-----------------|--------------------|----------|---|---|
|              |              |           |           |          |            |                 |                    | 1        | 2 | 3 |
| Y (P)        | Y            | Y         | Y         | Y(P)     | Y(P)       | Y               | Y(P)               | Y        | - | Y |

**RESULT: Pass 10-0**



SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 7-A

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: 1613.2

PROPONENT: MIKE MCGETTIGAN

PROPOSAL: Revise Section 1613.2 to address site class determination.

REVISE AS FOLLOWS: 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<sup>2</sup>) 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.

**JUSTIFICATION:** The code language is vague when defining the terms of soil and rock. This additional sentence differentiates between soil and rock in terms of shear wave velocity. This is consistent with the NEHRP provisions. The amendment ties the definition of rock and soil to the soil shear wave velocities called out in the code.

The code is silent on the number of explorations (evaluations) required to properly classify a site. This code amendment will provide uniformity across the valley for determining the site class. This code amendment is based on an agreement reached between Clark County and the local chapter of the ACEC (American Council of Engineering Companies) for the 2000-2012 IBC.

The CCSWVPM provides a simplified method of determining Site Class and is particularly beneficial for projects that are otherwise exempt from providing a geotechnical investigation. Where a Geotechnical Investigation is required, the Geotechnical Design Professional may choose to utilize the Site Class value identified in the CCSWVPM map. The use of the CCSWVPM is not mandatory and in some cases where significant site alteration has occurred (i.e. cuts or fills greater than 10 feet in depth, or cut/fill slopes greater than 10 feet in height) additional testing may be necessary and justified.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|

**COST IMPACT:** Allowing the use of the CCSWVPM map reduces costs.

**COMMITTEE ACTION:**

| Boulder City | Clark County | Henderson | Las Vegas | Mesquite | Nye County | North Las Vegas | CC School District | Industry |   |   |
|--------------|--------------|-----------|-----------|----------|------------|-----------------|--------------------|----------|---|---|
|              |              |           |           |          |            |                 |                    | 1        | 2 | 3 |
| Y (P)        | Y            | Y         | Y         | Y(P)     | Y(P)       | Y               | Y(P)               | Y        | Y | Y |

**RESULT: Pass 11-0**

1613.7

SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 52

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: 1613.7

PROPONENT: STEVE SCHILLER

PROPOSAL: To include a new subsection 1613.7 regarding raised deck systems.

REVISE AS FOLLOWS: Add subsection 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.

JUSTIFICATION: This amendment is intended to provide guidance for a common situation on which the code is otherwise silent. The approach is generally consistent with local installations and City of Los Angeles Research Reports for these systems.

SNBO CRITERIA: Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F | X | G |  | H |  | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|---|--|---|--|

COST IMPACT: Cost impact is minimal as Chapter 15 requires the system to be fully enclosed with a non-combustible system.

COMMITTEE ACTION:

| Boulder City | Clark County | Henderson | Las Vegas | Mesquite | Nye County | North Las Vegas | CC School District | Industry |   |   |
|--------------|--------------|-----------|-----------|----------|------------|-----------------|--------------------|----------|---|---|
|              |              |           |           |          |            |                 |                    | 1        | 2 | 3 |
| Y (P)        | Y            | Y         | Y         | Y(P)     | Y(P)       | Y               | Y(P)               | Y        | Y | Y |

RESULT: Pass 11-0

SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 9

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: 1704.2

PROPONENT: CLARK COUNTY

**PROPOSAL:** Clarify exemption requirements for special inspection based upon local practice.

**REVISE AS FOLLOWS:** Exceptions 1, 3 and 4 of subsection 1704.2 Special Inspections and tests are to remain unchanged. Exception 2 is to read as follows:

**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 occupancies that are accessory to a residential occupancy structures including, but not limited to, those listed in Section 312.1.

**JUSTIFICATION:** This section is carried forward from the 2018 IBC amendments. It allows the building official discretion in the application of special inspection requirements for residential construction. Jurisdiction inspectors have been required to inspect the shear walls and other details needed to resist lateral forces in detached 1 & 2 family dwellings. This amendment retains past code language allowing the building inspector to use good judgment for special inspection of detached 1 & 2 family dwellings.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|

**COST IMPACT:** There is a potential cost savings from this amendment. When the Building Official waives the special inspection on a project the costs are reduced.

**COMMITTEE ACTION:**

|              |              |           |           |          |            |       |  |          |
|--------------|--------------|-----------|-----------|----------|------------|-------|--|----------|
| Boulder City | Clark County | Henderson | Las Vegas | Mesquite | Nye County | North |  | Industry |
|--------------|--------------|-----------|-----------|----------|------------|-------|--|----------|

|       |   |   |   |      |      |           |                    |   |   |   |
|-------|---|---|---|------|------|-----------|--------------------|---|---|---|
|       |   |   |   |      |      | Las Vegas | CC School District | 1 | 2 | 3 |
| Y (P) | Y | Y | Y | Y(P) | Y(P) | Y         | Y(P)               | N | N | N |

**RESULT: Pass 8-3**

1704.2.4

SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 10-B

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: 1704.2.4

PROPONENT: CLARK COUNTY

PROPOSAL: Clarify reporting requirements for special inspection activity.

REVISE AS FOLLOWS: Revise Subsection 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 prior to the completion of that phase of the work. A final report documenting required special inspections and tests, and correction of any discrepancies noted in the inspections or tests, shall be submitted at a point in time agreed upon prior to the start of work by the owner or the owner's authorized agent to the building official prior to the final inspection.*

**JUSTIFICATION:** This section is carried forward from the 2018 IBC amendments with added verbiage for clarification. This amendment retains the current state of practice in Southern Nevada. It should be noted that Special Inspectors will be required to keep records of those inspections necessary for them to perform by agreement with the jurisdictions and as required by the registered design professional as specified in a quality assurance plan, if such a plan exists. Discrepancies, if not resolved prior to completion of a phase of work shall be documented and brought to the attention of the Building Official and the registered design professional. Written and/or email communication establishes a permanent record which is much less disputable in the future. Preferably, this would be communicated in the form of an NCR (Non-Compliance Report).

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|

**COST IMPACT:** None anticipated.

**COMMITTEE ACTION:**

| Boulder City | Clark County | Henderson | Las Vegas | Mesquite | Nye County | North Las Vegas | CC School District | Industry |   |   |
|--------------|--------------|-----------|-----------|----------|------------|-----------------|--------------------|----------|---|---|
|              |              |           |           |          |            |                 |                    | 1        | 2 | 3 |
| Y (P)        | Y            | Y         | Y         | Y(P)     | Y(P)       | Y               | Y(P)               | Y        | Y | Y |

**RESULT: Pass 11-0**

SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 11

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: 1705.3

PROPONENT: CLARK COUNTY

PROPOSAL: Clarify requirements for special inspection of concrete.

REVISE AS FOLLOWS: Revise the **Exceptions** in subsection **1705.3 Concrete Construction** as follows:

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

- ~~1.~~ Isolated spread concrete footings of *buildings three stories or less above grade plane* that are fully supported on earth or rock.
- ~~1.-2.~~ 1.2. 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:
  - ~~2.1.~~ The footings support walls of *light frame* construction.
  - ~~1.1-2.2.~~ The footings are designed in accordance with Table 1809.7.
  - ~~1.2-2.3~~ 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.-3.~~ *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).
- ~~4.~~ Concrete foundation walls constructed in accordance with Table 1807.1.6.2.
- ~~3. 5.~~ Concrete patios, driveways and sidewalks, on grade.

**JUSTIFICATION:** This item is carried forward from the 2018 IBC amendments with no proposed changes. The original exception #1 allowed foundations for buildings less than three stories to be exempt from special inspections (most casinos would be exempt) and is a significant lessening of the special inspection requirement already existing. Isolated footings are added to exception #2 and the light frame building are removed as done in 2000. These buildings can, and usually do, comply with either 1.1 or 1.2. Prescriptive concrete foundation walls were deleted from the exception as they are in the previous code cycle.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|



**COST IMPACT:** There will be increased costs associated with having fewer exemptions to concrete special inspection requirements.

**COMMITTEE ACTION:**

| Boulder City | Clark County | Henderson | Las Vegas | Mesquite    | Nye County  | North Las Vegas | CC School District | Industry |          |          |
|--------------|--------------|-----------|-----------|-------------|-------------|-----------------|--------------------|----------|----------|----------|
|              |              |           |           |             |             |                 |                    | 1        | 2        | 3        |
| <b>Y (P)</b> | <b>Y</b>     | <b>Y</b>  | <b>Y</b>  | <b>Y(P)</b> | <b>Y(P)</b> | <b>Y</b>        | <b>Y(P)</b>        | <b>Y</b> | <b>Y</b> | <b>Y</b> |

**RESULT: Pass 11-0**

1705.4

SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 12-B

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: 1705.4

PROPONENT: CLARK COUNTY & KENT BARBER

PROPOSAL: Clarify reporting requirements for special inspection of masonry.

REVISE AS FOLLOWS: Revise the exceptions in 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.

**Exception:** *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.

**JUSTIFICATION:** This section is carried forward from the 2018 IBC amendments. Strength Design is added to allow Engineers another approach in the design or walls. The maximum masonry strength f'm is increased to 2,000 psi to be more consistent with current industry standards and masonry availability.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|

**COST IMPACT:** The cost of fence and retaining wall construction will decrease by eliminating the need for special inspection on most walls.

**COMMITTEE ACTION:**

| Boulder City | Clark County | Henderson | Las Vegas | Mesquite    | Nye County  | North Las Vegas | CC School District | Industry |          |          |
|--------------|--------------|-----------|-----------|-------------|-------------|-----------------|--------------------|----------|----------|----------|
|              |              |           |           |             |             |                 |                    | 1        | 2        | 3        |
| <b>N (P)</b> | <b>Y</b>     | <b>Y</b>  | <b>N</b>  | <b>Y(P)</b> | <b>Y(P)</b> | <b>Y</b>        | <b>Y(P)</b>        | <b>Y</b> | <b>Y</b> | <b>Y</b> |

**RESULT: Pass 9-2**

1705.6

SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 14

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: 1705.6

PROPONENT: CLARK COUNTY

**PROPOSAL:** Clarify compaction requirements for soils when a geotechnical report is not required.

**REVISE AS FOLLOWS:** Revise the exception in **Section 1705.6 Soils**, as follows:

**Exception:** Where Section 1803 does not require reporting of materials and procedures for fill placement, ~~the special inspector shall verify that~~ the in-place dry density of the compacted fill ~~is shall not be~~ less than 90 percent of the maximum dry density at optimum moisture content determined in accordance with ASTM D1557.

**JUSTIFICATION:** If a project requires a geotechnical report, then the special inspector should verify compliance to that report regardless of the fill depth. If the project is exempt from a geotechnical report, than there will not be a special inspector onsite. A similar exception was also deleted from the 2000-2018 IBC during the amendment process.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F | X | G |  | H |  | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|---|--|---|--|

**COST IMPACT:** None anticipated.

**COMMITTEE ACTION:**

| Boulder City | Clark County | Henderson | Las Vegas | Mesquite | Nye County | North Las Vegas | CC School District | Industry |   |   |
|--------------|--------------|-----------|-----------|----------|------------|-----------------|--------------------|----------|---|---|
|              |              |           |           |          |            |                 |                    | 1        | 2 | 3 |
| Y (P)        | Y            | Y         | Y         | Y(P)     | Y(P)       | Y               | Y(P)               | Y        | Y | Y |

**RESULT: Pass 11-0**

Table 1705.6

SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 16

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: Table 1705.6

PROPONENT: CLARK COUNTY

PROPOSAL: Clarify special inspection requirements for soils.

REVISE AS FOLLOWS: 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 <i>shallow foundations</i> 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 <u>and other grading activities requiring special inspection.</u>  | X                             | X                           |
| <u>a. All soils not meeting the requirements of category b.</u>   | ---                           | X                           |
| <u>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</u> | X                             | ---                         |

|  |     |   |
|--|-----|---|
| <u>cut slope, or an existing fill slope steeper than 5:1.</u>  |     |   |
| 5. Prior to placement of compacted fill, observe subgrade and verify that site has been prepared properly. | --- | X |

**JUSTIFICATION:** The current table requires continuous special inspection for all fill placements. This is not realistic or needed. The revised table defines which sites would require continuous special inspection and which sites could have periodic special inspection.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F | X | G |  | H |  | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|---|--|---|--|

**COST IMPACT:** This represents a cost savings due to not requiring continuous special inspection of some grading activities that are deemed to be appropriately covered by periodic special inspection.

**COMMITTEE ACTION:**

| Boulder City | Clark County | Henderson | Las Vegas | Mesquite | Nye County | North Las Vegas | CC School District | Industry |   |   |
|--------------|--------------|-----------|-----------|----------|------------|-----------------|--------------------|----------|---|---|
|              |              |           |           |          |            |                 |                    | 1        | 2 | 3 |
| Y (P)        | Y            | Y         | Y         | Y(P)     | Y(P)       | Y               | Y(P)               | Y        | Y | Y |

**RESULT: Pass 11-0**

1705.6.1

SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 15

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: 1705.6.1

PROPOSER: CLARK COUNTY

**PROPOSAL:** Clarify the need for testing of backfill soils when walls are designed for seismic earth pressures.

**REVISE AS FOLLOWS:** Add a new subsection **1705.6.1 Soil Backfill Testing**, 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.

**JUSTIFICATION:** This amendment is similar to the 2018 IBC amendment. The soil backfill is part of the earth retaining system and the design parameters are based upon earth pressures which are calculated from specified soil backfill parameters dependent upon soil type and compaction. Variations in wall backfill that do not comply with design assumptions may place unintended loads upon the earth retaining system.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|

**COST IMPACT:** There will be an increase in cost associated with the additional testing and observation that will be required during placement and compaction of backfill.

**COMMITTEE ACTION:**

| Boulder City | Clark County | Henderson | Las Vegas | Mesquite | Nye County | North Las Vegas | CC School District | Industry |   |   |
|--------------|--------------|-----------|-----------|----------|------------|-----------------|--------------------|----------|---|---|
|              |              |           |           |          |            |                 |                    | 1        | 2 | 3 |
| Y (P)        | Y            | Y         | Y         | Y(P)     | Y(P)       | Y               | Y(P)               | Y        | Y | Y |

**RESULT: Pass 11-0**

1705.17

SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 17-C

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: 1705.17

PROPONENT: CLARK COUNTY & CITY OF LV

**PROPOSAL:** Revise Section 1705.17 to require special inspections on both drainable and non-drainable systems.

**REVISE AS FOLLOWS:** Revise **Section 1705.17**, as follows:

**Exceptions:**

1. *Special inspections* shall not be required for EIFS applications installed ~~over a water-resistive barrier with a means of draining moisture to the exterior 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.

**JUSTIFICATION:** This section is carried forward from the 2018 IBC amendments with a minor modification. The second exception addresses a major concern regarding water intrusion lawsuits on the East Coast and Northwestern corner of the US, where improperly installed EIFS systems have created major litigation. This exception suggests that by installing a drainable system that the risk of improper installation or litigation is lessened, which is not true in our region since water intrusion is rarely a concern. Instead, an improperly installed drainable system can be more litigious than its non-drainable alternative, specifically due to the added layers of subbase and substrate materials and connections. When the drainable water-resistant layer is added with tracking for the flow of accumulated water, a discontinuity is added to the system and a failure plane, if not properly prepared and treated, is created. The first exception creates a standardized work of a minor nature exception.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|

**COST IMPACT:** This is a carryover. This amendment will be a cost savings for developers, contractors, and owner/builders, by excepting the special inspection on single family residences.

**COMMITTEE ACTION:**



| Boulder City | Clark County | Henderson | Las Vegas | Mesquite | Nye County | North Las Vegas | CC School District | Industry |   |   |
|--------------|--------------|-----------|-----------|----------|------------|-----------------|--------------------|----------|---|---|
|              |              |           |           |          |            |                 |                    | 1        | 2 | 3 |
| Y (P)        | Y            | Y         | Y         | Y(P)     | Y(P)       | Y               | Y(P)               | Y        | Y | Y |

**RESULT: Pass 11-0**

1705.21

SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 18

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: 1705.21

PROPONENT: CLARK COUNTY

**PROPOSAL:** Add a new section to address the unique nature of ATS systems commonly found locally.

**REVISE AS FOLLOWS:** Add a 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.

**JUSTIFICATION:** This section is carried forward from the 2018 IBC amendments. Southern Nevada has many ATS systems. This section specifies when special inspection is required. This is a much better way of outlining the special inspection requirements for ATS systems rather than trying to reference 1705.1.1 special cases for all ATS systems. This section also requires annual renewals.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|

**COST IMPACT:** None anticipated. This defines the current standard of practice for dealing with ATS projects. If not defined in the building code, these requirements and their associated costs would still be found elsewhere.

**COMMITTEE ACTION:**

| Boulder City | Clark County | Henderson | Las Vegas | Mesquite | Nye County | North Las Vegas | CC School District | Industry |   |   |
|--------------|--------------|-----------|-----------|----------|------------|-----------------|--------------------|----------|---|---|
|              |              |           |           |          |            |                 |                    | 1        | 2 | 3 |
| Y (P)        | Y            | Y         | Y         | Y(P)     | Y(P)       | Y               | Y(P)               | Y        | Y | Y |

**RESULT: Pass 11-0**

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SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 19-A

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: 1803.2

PROPONENT: CLARK COUNTY

**PROPOSAL:** Clarify requirements for projects that are either exempt from or require a geotechnical investigation.

**REVISE AS FOLLOWS:** 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.

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

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

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

1. Single story structures, additions, or remodels with a footprint less than 600 square feet (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<sup>2</sup>) for the vertical foundation pressure, 100 psf/ft (15.7 kN/m<sup>2</sup>/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.

**JUSTIFICATION:** This section is carried forward from the 2018 IBC amendments. This modification provides clear, easy to follow guidelines for when a geotechnical report is required which is similar to the 2000-2012 IBC amendments. Item 3 was revised to increase the exempted height from 4 feet to 6 feet. This corresponds to amendment section 1705.6.1. Item 4 was revised to exempt all mobile homes and trailers used as single-family dwellings. Item 8 was added to exempt commonly submitted minor residential structures that may exceed 600 sf. For the number of years, if not decades, the City of Las Vegas did not require geotechnical investigation for the State of Nevada approved single story modular buildings that are classified as One-Family Dwellings (Residential Group R-3 occupancy) and this would be continuation of that practice.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|

**COST IMPACT:** There is a cost savings foreseen. These changes will result in a fewer minor residential structures being required to have geotechnical reports.

**COMMITTEE ACTION:**

| Boulder City | Clark County | Henderson | Las Vegas | Mesquite | Nye County | North Las Vegas | CC School District | Industry |   |   |
|--------------|--------------|-----------|-----------|----------|------------|-----------------|--------------------|----------|---|---|
|              |              |           |           |          |            |                 |                    | 1        | 2 | 3 |
| Y (P)        | Y            | Y         | Y         | Y(P)     | Y(P)       | Y               | Y(P)               | Y        | Y | Y |

**RESULT: Pass 11-0**

1803.3.2

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SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 20-A

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: 1803.3.2

PROPONENT: CLARK COUNTY

**PROPOSAL:** Clearly define local requirements for geotechnical investigations.

**REVISE AS FOLLOWS:** Add a new subsection **1803.3.2 Minimum Exploration Requirements**, 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.

**JUSTIFICATION:** This section is carried forward from the 2018 IBC amendments with minor adjustments.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|

**COST IMPACT:** None anticipated.

**COMMITTEE ACTION:**

| Boulder City | Clark County | Henderson | Las Vegas | Mesquite | Nye County | North Las Vegas | CC School District | Industry |   |   |
|--------------|--------------|-----------|-----------|----------|------------|-----------------|--------------------|----------|---|---|
|              |              |           |           |          |            |                 |                    | 1        | 2 | 3 |
| Y (P)        | Y            | Y         | Y         | Y(P)     | Y(P)       | Y               | Y(P)               | Y        | Y | Y |

**RESULT: Pass 11-0**

### 1803.5.3

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## SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 21

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: 1803.5.3

PROPONENT: CLARK COUNTY

**PROPOSAL:** Clarify requirements for addressing the presence of expansive soil.

**REVISE AS FOLLOWS:** Revise Subsection 1803.5.3, and add two (2) new Subsections, 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 ~~four of the following~~ 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 60° 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.

**JUSTIFICATION:** This section is carried forward from the 2018 IBC amendments. The 60 psf swell test is commonly used locally as the means for determining the expansion level of the soil. This amendment allows the current standard of practice to continue.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|

**COST IMPACT:** There is a theoretical cost increase by implementing these provisions although this methodology represents the local standard of practice since the 1997 UBC.

**COMMITTEE ACTION:**

| Boulder City | Clark County | Henderson | Las Vegas | Mesquite | Nye County | North Las Vegas | CC School District | Industry |   |   |
|--------------|--------------|-----------|-----------|----------|------------|-----------------|--------------------|----------|---|---|
|              |              |           |           |          |            |                 |                    | 1        | 2 | 3 |
| Y (P)        | Y            | Y         | Y         | Y(P)     | Y(P)       | Y               | Y(P)               | Y        | Y | Y |

**RESULT: Pass 11-0**



1803.5.8

SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 22

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: 1803.5.8

PROPOSER: CLARK COUNTY

PROPOSAL: Clarify requirements for placement of fill.

REVISE AS FOLLOWS: Add new items #8 and #9 to subsection **1803.5.8 Compacted fill material**, as follows:

*(Items 1-7 remain unchanged)*

8. Flooding or jetting shall not be used to compact fill material that will support footings or foundation systems.

9. Placement procedure for oversized fill material. No rock or similar irreducible material with a maximum dimension greater than 12 inches shall be buried or placed in fills within five feet, measured vertically, from the bottom of the footing or lowest finished floor elevation, whichever is lower, within the building pad. Oversized fill material shall be placed so as to assure the filling of all voids with well-graded soil. Specific placement and inspection criteria shall be stated in the geotechnical investigation. Continuous special inspection will be required during placement of any oversized fill material.

**JUSTIFICATION:** This section is carried forward from the 2018 IBC amendments. The new items 8 and 9 are proposed because the 2024 IBC is silent on the use of flooding or jetting as a method of compacting structural fill and on the placement of oversized fill material.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|

**COST IMPACT:** None anticipated.

**COMMITTEE ACTION:**

| Boulder City | Clark County | Henderson | Las Vegas | Mesquite | Nye County | North Las Vegas | CC School District | Industry |   |   |
|--------------|--------------|-----------|-----------|----------|------------|-----------------|--------------------|----------|---|---|
|              |              |           |           |          |            |                 |                    | 1        | 2 | 3 |
| Y (P)        | Y            | Y         | Y         | Y(P)     | Y(P)       | Y               | Y(P)               | Y        | Y | Y |

**RESULT: Pass 11-0**

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**SOUTHERN NEVADA CODE AMENDMENT FORM – 2024**AMENDMENT NO.: 23-CCOMMITTEE: STRUCTURAL/GEOTECHNICALCODE SECTION: 1803.6PROPONENT: CLARK COUNTY

PROPOSAL: Clarify requirements for Geotechnical Investigation Reports.

**REVISE AS FOLLOWS:** Revise **Section 1803.6** and rearrange order of information, as follows (Note: Renumbered/reordered numbers are not shown with text strikeouts to improve readability):

**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 soil 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. Elevation of 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 inspection* required per Table 1705.6. The specified level of *special inspection* cannot be less than that required by Table 1705.6.
21. Procedures for mitigation for geological hazards.
22. Trenching or other special procedures for determining fault and fissure(s) locations. The potential for differential movement across a fault and 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.

**JUSTIFICATION:** This section is carried forward from the 2018 IBC amendments. It provides specific minimum requirements for a geotechnical report. Item 5 was split into items 5 and 6 to clarify when backup data is required. Clarification on what is required in an update letter was provided in item 28. Clarification in item 28 is necessary as update letters have been requested in the middle of permit application, which is not the intention of the sunseting of Geotechnical Reports. Finally, 'recent' is not code language; a specific timeframe of the site visit is necessary to avoid 'interpretations.' Editing was necessary in item 13 as the secondary items are not necessary in every report, yet this code section as currently written does require unnecessary items.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|

**COST IMPACT:** None anticipated as these changes effectively represent the standard of local practice since the 1997 UBC.

**COMMITTEE ACTION:**

| Boulder City | Clark County | Henderson | Las Vegas | Mesquite | Nye County | North Las Vegas | CC School District | Industry |   |   |
|--------------|--------------|-----------|-----------|----------|------------|-----------------|--------------------|----------|---|---|
|              |              |           |           |          |            |                 |                    | 1        | 2 | 3 |
| Y (P)        | Y            | Y         | Y         | Y(P)     | Y(P)       | Y               | Y(P)               | Y        | Y | Y |

**RESULT: Pass 11-0**

## SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 24-ACOMMITTEE: STRUCTURAL/GEOTECHNICALCODE SECTION: 1804.4PROPONENT: MIKE MCGETTIGAN

PROPOSAL: Clarify site grading requirements adjacent to foundations.

REVISE AS FOLLOWS: 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-not less than 2 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-not less than 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, climatic or soil conditions warrant, the slope of the ground away from the *building* foundation is shall be 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.

**JUSTIFICATION:** The current language in the code is vague. There is no clear definition of what climatic or soil conditions would warrant reducing the required slope away from the foundation. Las Vegas has an arid climate which would justify a reduction in the slope of the swale to 1%. This slope reduction reduces the capacity of the swale by approximately 40%, but due to the arid climate the swale will still be adequate to carry the anticipated flows. The 1% swale slope also matches what is required by the Regional Flood Control manual. The National Weather Service records for the years 1989 thru 2005 indicate that the mean annual rainfall is only 4.80 inches with a standard deviation of 2.20 inches (assuming a normal distribution). National Weather Service statistics also show that Las Vegas has on average 28.5 days per year with measurable

rainfall (0.01 inches/day based on the years 1971 -2000). The entire Las Vegas valley has the same climatic conditions, but the soil conditions are variable. The revised exception provides a more clear definition of what soil conditions can permit a slope reduction away from the foundation of the building. This section is carried forward from the 2018 IBC amendments. Truck loading dock grades are inconsistently applied across the jurisdictions. This change would significantly reduce construction costs on most sites and specifically smaller or odd shaped lots.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|

**COST IMPACT:** None anticipated.

**COMMITTEE ACTION:**

| Boulder City | Clark County | Henderson | Las Vegas | Mesquite | Nye County | North Las Vegas | CC School District | Industry |   |   |
|--------------|--------------|-----------|-----------|----------|------------|-----------------|--------------------|----------|---|---|
|              |              |           |           |          |            |                 |                    | 1        | 2 | 3 |
| Y (P)        | Y            | Y         | Y         | Y(P)     | Y(P)       | Y               | Y(P)               | Y        | Y | Y |

**RESULT: Pass 11-0**

1804.4.1

SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 25

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: 1804.4.1

PROPONENT: CLARK COUNTY

PROPOSAL: Clarify criteria for low collapsible and low soluble soils.

REVISE AS FOLLOWS: Add a new subsection 1804.4.1 and a 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**

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

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.

**JUSTIFICATION:** Section 1804.4 reduces the drainage requirements for low expansive, low collapsible, and low soluble soils. This provides guidance on the classification of “low” collapsible and soluble soil conditions to ensure consistency of application of the code. This section is carried forward from the 2018 IBC amendments.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|

**COST IMPACT:** None anticipated.



**COMMITTEE ACTION:**

| Boulder<br>City | Clark<br>County | Henderson | Las<br>Vegas | Mesquite    | Nye<br>County | North<br>Las<br>Vegas | CC<br>School<br>District | Industry |          |          |
|-----------------|-----------------|-----------|--------------|-------------|---------------|-----------------------|--------------------------|----------|----------|----------|
|                 |                 |           |              |             |               |                       |                          | 1        | 2        | 3        |
| <b>Y (P)</b>    | <b>Y</b>        | <b>Y</b>  | <b>Y</b>     | <b>Y(P)</b> | <b>Y(P)</b>   | <b>Y</b>              | <b>Y(P)</b>              | <b>Y</b> | <b>Y</b> | <b>Y</b> |

**RESULT: Pass 11-0**

1804.6

SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 26-A

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: 1804.6

PROPONENT: CLARK COUNTY

PROPOSAL: Clarify intent of compacted fill material requirements.

REVISE AS FOLLOWS: Revise the exception in Section **1804.6 Compacted fill material**, as follows:

**Exception:** ~~When a geotechnical investigation is not required by the *building official*, Compacted fill material 12 inches (305 mm) in depth or less need not comply with an *approved report*, provided that the in-place dry density is within the building pad shall not be less than 90 percent of the maximum dry density at optimum moisture content determined in accordance with ASTM D1557. The compaction shall be verified by *special inspection* in accordance with Section 1705.6.~~

**JUSTIFICATION:** This section is carried forward from the 2018 IBC amendments. The exception was amended because the approved geotechnical report should specify all compaction requirements. The amended exception is for when the building official exempts a geotechnical report. If no geotechnical report is required, then no special inspection of the grading should be required.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|

**COST IMPACT:** None anticipated.

**COMMITTEE ACTION:**

| Boulder City | Clark County | Henderson | Las Vegas | Mesquite | Nye County | North Las Vegas | CC School District | Industry |   |   |
|--------------|--------------|-----------|-----------|----------|------------|-----------------|--------------------|----------|---|---|
|              |              |           |           |          |            |                 |                    | 1        | 2 | 3 |
| Y (P)        | Y            | Y         | Y         | Y(P)     | Y(P)       | Y               | Y(P)               | Y        | Y | Y |

**RESULT: Pass 11-0**

1805.2.1

SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 27

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: 1805.2.1

PROPONENT: CLARK COUNTY

PROPOSAL: Clarify dampproofing requirements beneath floors.

REVISE AS FOLLOWS: 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 ~~6-mil (0.006 inch; 0.152 mm)~~ 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.

**JUSTIFICATION:** This section is carried forward from the 2018 IBC amendments and matches American Concrete Institute recommendations 302.2R-36 section 9.3.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|

**COST IMPACT:** Slight increase due to the increased thickness and specification of the more durable material.

**COMMITTEE ACTION:**

| Boulder City | Clark County | Henderson | Las Vegas | Mesquite | Nye County | North Las Vegas | CC School District | Industry |   |   |
|--------------|--------------|-----------|-----------|----------|------------|-----------------|--------------------|----------|---|---|
|              |              |           |           |          |            |                 |                    | 1        | 2 | 3 |
| Y (P)        | Y            | Y         | Y         | Y(P)     | Y(P)       | Y               | Y(P)               | Y        | Y | Y |

**RESULT: Pass 11-0**

1807.2.3

SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 28

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: 1807.2.3

PROPONENT: CITY OF HENDERSON

PROPOSAL: Clarify wind loads and factor of safety requirements in retaining wall design.

REVISE AS FOLLOWS: Revise subsection 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.

**JUSTIFICATION:** This section is carried forward from the 2018 IBC amendments. The intent of this proposed code change is to address the safety factor used for wind loads to retaining walls. This applies to retaining walls that may include a freestanding wall, fence or other light structure atop and supported by a retaining wall subject to wind loads. As reference, Chapter 16 of the IBC requires earthquake and wind loads to be determined in accordance with ASCE 7 which are strength-level loads. This section as currently written appears to have an anomaly by not including how wind loads are to be considered or it considers ASCE 7 strength-level wind loads as 'other nominal loads' in which case it is in error. The section requires a 0.7 reduction factor be applied to seismic loads to convert the ASCE 7 generated strength-level earthquake loads to service-level earthquake loads. Likewise, the proposed 0.6 reduction factor is to convert the strength-level wind loads of ASCE 7 to service-level. The term 'NOMINAL LOADS' is defined in Chapter 2 as 'The magnitudes of the loads specified in Chapter 16 (dead, live, soil, wind, snow, rain, flood and earthquake)'. Note the term 'nominal' is confusing to engineers regarding if the load is 'service' however, again, it is defined in Chapter 2 and is used consistent in this proposed amendment with how 'nominal' earthquake loads is used in the original code section. The 1.1 minimum factor of safety for wind loads is consistent with the long-standing practice of considering earthquake and wind loads interchangeably as short-term loads from a geotechnical point of view.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|

**COST IMPACT:** None anticipated.

**COMMITTEE ACTION:**

| Boulder<br>City | Clark<br>County | Henderson | Las<br>Vegas | Mesquite    | Nye<br>County | North<br>Las<br>Vegas | CC<br>School<br>District | Industry |          |          |
|-----------------|-----------------|-----------|--------------|-------------|---------------|-----------------------|--------------------------|----------|----------|----------|
|                 |                 |           |              |             |               |                       |                          | 1        | 2        | 3        |
| <b>Y (P)</b>    | <b>Y</b>        | <b>Y</b>  | <b>Y</b>     | <b>Y(P)</b> | <b>Y(P)</b>   | <b>Y</b>              | <b>Y(P)</b>              | <b>Y</b> | <b>Y</b> | <b>Y</b> |

**RESULT: Pass 11-0**

1807.2.6

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SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 29-B

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: 1807.2.6

PROPONENT: MIKE MCGETTIGAN

**PROPOSAL:** Add new language to identify threshold where large or complex retaining walls require slope stability analysis.

**REVISE AS FOLLOWS:** Add a new subsection 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.

**JUSTIFICATION:** This section is carried forward from the 2018 IBC amendments. This section was added to match the requirements of the SNBO Rockery Wall Construction Standard. It is felt that tall retaining walls and stacked systems require a slope stability analysis to ensure public safety. The minimum factor of safety for seismic was added for this code cycle. The peak ground acceleration should comply with the requirements of ASCE 7 for geotechnical evaluations.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|

**COST IMPACT:** A cost impact is foreseen. The slope stability analysis will add cost. However, there are very few walls greater than ten feet.

**COMMITTEE ACTION:**

| Boulder<br>City | Clark<br>County | Henderson | Las<br>Vegas | Mesquite    | Nye<br>County | North<br>Las<br>Vegas | CC<br>School<br>District | Industry |          |          |
|-----------------|-----------------|-----------|--------------|-------------|---------------|-----------------------|--------------------------|----------|----------|----------|
|                 |                 |           |              |             |               |                       |                          | 1        | 2        | 3        |
| <b>Y (P)</b>    | <b>Y</b>        | <b>Y</b>  | <b>Y</b>     | <b>Y(P)</b> | <b>Y(P)</b>   | <b>Y</b>              | <b>Y(P)</b>              | <b>Y</b> | <b>Y</b> | <b>Y</b> |

**RESULT: Pass 11-0**

1808.6.1.1

SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 30

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: 1808.6.1.1

PROPONENT: CLARK COUNTY

PROPOSAL: Clarify design requirements for foundations on expansive soil.

REVISE AS FOLLOWS: Add a new Subsection 1808.6.1.1 and a 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<sup>1</sup>**

| <u>Expansion</u>    | <u>Percent Swell under 60 psf Surcharge</u> | <u>Minimum Thickened Edge or Foundation Depth (inches)</u> |
|---------------------|---|--|
| <u>Low</u>          | <u>&gt; 0 to &lt;4</u>                      | <u>12</u>  |
| <u>Moderate</u>     | <u>≥ 4 to &lt; 8</u>                        | <u>15</u>  |
| <u>High</u>         | <u>≥ 8 to &lt; 12</u>                       | <u>18</u>  |
| <u>Critical 12</u>  | <u>≥ 12 to &lt; 16</u>                      | <u>24</u>  |
| <u>Critical 16</u>  | <u>≥ 16 to &lt; 20</u>                      | <u>30</u>  |
| <u>Critical 20+</u> | <u>20 or greater</u>                        | <u>36</u>  |

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.

**JUSTIFICATION:** This section is carried forward from the 2018 IBC amendments. This table relates the expansion level based on the 60 psf swell test to the minimum foundation depth. The model code is silent on increased foundation depth when the expansion level increases. This amendment provides a clear minimum standard for engineers to follow.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|

**COST IMPACT:** A minor cost impact is foreseen.



**COMMITTEE ACTION:**

| Boulder<br>City | Clark<br>County | Henderson | Las<br>Vegas | Mesquite    | Nye<br>County | North<br>Las<br>Vegas | CC<br>School<br>District | Industry |          |          |
|-----------------|-----------------|-----------|--------------|-------------|---------------|-----------------------|--------------------------|----------|----------|----------|
|                 |                 |           |              |             |               |                       |                          | 1        | 2        | 3        |
| <b>Y (P)</b>    | <b>Y</b>        | <b>Y</b>  | <b>Y</b>     | <b>Y(P)</b> | <b>Y(P)</b>   | <b>Y</b>              | <b>Y(P)</b>              | <b>Y</b> | <b>Y</b> | <b>Y</b> |

**RESULT: Pass 11-0**

1808.6.2

SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 31-A

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: 1808.6.2

PROPONENT: CLARK COUNTY

**PROPOSAL:** Clarify design requirements for slab on ground post-tensioned foundations on expansive soil.

**REVISE AS FOLLOWS:** Revise subsection 1808.6.2 and add a new Table 1808.6.2, as follows:

**1808.6.2 Slab-on-ground foundations.** Moments, shears and deflections for use in structural design of designing 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**

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

**Notes:**

1. This chart is intended to address expansive soil. The presence of collapsible soil or other geologic conditions may require different design criteria.
2. Foundations shall be designed to meet design criteria of PTI DC 10.5. Both edge lift and center lift conditions need to be evaluated.

3. Edge moisture variation distance (Em) shall be a minimum of 2.5 feet for edge lift and 4.75 feet for center lift.
4. CΔ for prefabricated roof truss clear spans shall be 360 for center lift and 800 for edge lift.
5. Typical systems using stiffener beams may be equated to a flat slab of equivalent stiffness. Stiffening beams in ribbed foundations shall be as required by PTI DC 10.5. Conventionally reinforced designs may also be used.
6. Modulus of elasticity of the soil (Es) shall be taken as 1000 psi unless tests indicate otherwise.
7. All concrete in the foundation system must be a minimum of 2500 psi and shall comply with ACI 318-19 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.

**JUSTIFICATION:** This section is carried forward from the 2018 IBC amendments. This amendment was originally approved based on the North Las Vegas Ordinance that addresses local soil conditions in the valley and post-tensioned slabs on grade. PTI DC 10.5 requires the geotechnical engineer to calculate the Ym and Em based on soil parameters and test data. This table replaces calculated method with the proven method used in Southern Nevada. The PTI design process is generally driven by engineers in Texas, where methods of construction are different than in Southern Nevada. For example, the slabs are designed to withstand conditions where the soils have not been over-excavated and improved as they are in Southern Nevada. The current design methodology has been in place since early 1998 throughout the valley with no known problems relating to design.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|

**COST IMPACT:** A minor cost impact is foreseen.

**COMMITTEE ACTION:**

| Boulder City | Clark County | Henderson | Las Vegas | Mesquite | Nye County | North Las Vegas | CC School District | Industry |   |   |
|--------------|--------------|-----------|-----------|----------|------------|-----------------|--------------------|----------|---|---|
|              |              |           |           |          |            |                 |                    | 1        | 2 | 3 |
| Y (P)        | Y            | Y         | Y         | Y(P)     | Y(P)       | Y               | Y(P)               | Y        | Y | Y |

**RESULT: Pass 11-0**

1808.8.1

SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 48

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: 1808.8.1

PROPONENT: CITY OF HENDERSON

**PROPOSAL:** Revise code to require sulfate exposure considerations for minimum concrete and grout strength in foundations.

**REVISE AS FOLLOWS:** 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.

**JUSTIFICATION:** Southern Nevada soils can have high levels of sulfate exposure (water-soluble sulfate in soil) and local conditions warrant compliance with site specific geotechnical report and ACI 318 for durability considerations or otherwise assume severe sulfate exposure. For projects with negligible sulfate exposure, minimum concrete and grout strength for foundations reverts to base code.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|

**COST IMPACT:** None anticipated. Note this would be consistent with the currently adopted amendment section 1803.2 as further justification.

**COMMITTEE ACTION:**

| Boulder City | Clark County | Henderson | Las Vegas | Mesquite | Nye County | North Las Vegas | CC School District | Industry |   |   |
|--------------|--------------|-----------|-----------|----------|------------|-----------------|--------------------|----------|---|---|
|              |              |           |           |          |            |                 |                    | 1        | 2 | 3 |
| Y (P)        | Y            | Y         | Y         | Y(P)     | Y(P)       | Y               | Y(P)               | Y        | Y | Y |

**RESULT: Pass 11-0**

SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 32-A

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: 1808.8.7

PROPONENT: MIKE MCGETTIGAN

**PROPOSAL:** Insert a new section 1808.8.7 to address use of slabs on ground to resist structural loads.

**REVISE AS FOLLOWS:** 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.

**JUSTIFICATION:** This item is carried forward from the 2018 IBC amendments. Non-structural slabs on ground are typically exempt from structural design and special inspection requirements in the code. The pad certification report ensures the subgrade preparation was inspected and approved by the QAA. It seems reasonable to utilize these slabs to support minor loading from attachment of architectural, electrical, mechanical and plumbing components provided that the allowable capacity can be demonstrated through calculations. Item 3 allows the use of elastic beam theory to check the existing slab.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|

**COST IMPACT:** There may be some additional costs as the design of non-structural component anchorage to non-structural slabs on ground will be impacted by this change.

**COMMITTEE ACTION:**

| Boulder City | Clark County | Henderson | Las Vegas | Mesquite | Nye County | North Las Vegas | CC School District | Industry |   |   |
|--------------|--------------|-----------|-----------|----------|------------|-----------------|--------------------|----------|---|---|
|              |              |           |           |          |            |                 |                    | 1        | 2 | 3 |
| Y (P)        | Y            | Y         | Y         | Y(P)     | Y(P)       | Y               | Y(P)               | Y        | Y | Y |

**RESULT: Pass 11-0**

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SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 33-D

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: 1808.10

PROPONENT: Mike McGettigan (with WKH mods)

PROPOSAL: Add a new section to address ground faulting.

REVISE AS FOLLOWS: 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.

**JUSTIFICATION:** This is a carryover amendment from the 2018 IBC. It provides the minimum setbacks from a fault line. Similar amendments go back to the 2000 IBC amendments. The code provides no guidance on this topic. The amendment is required to provide the *building official* with clear direction. Holocene faults are considered active. Holocene is the youngest subset of Quaternary. The age of Holocene is approximately 11,700 years ago. The Quaternary period is approximately 2.58 million years ago. LA Public Works only considers Holocene faults for earthquake analysis. California Geological Survey in their Guidelines for Evaluating the Hazard of Surface Fault Rupture state “faults of known historic activity during the last 200 years, as a class, have a greater probability for future activity than faults classified as Holocene age, and a much greater probability of future activity than faults classified as Quaternary age.” Reasonable

technologies now exist (compared to 24 years ago) to help identify the locations of faults. The design community should not be punished for finding a fault that would not be discovered by relatively shallow test pits.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |          |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|----------|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | <b>X</b> | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|----------|---|--|---|--|

**COST IMPACT:** None anticipated.

**COMMITTEE ACTION:**

| Boulder City | Clark County | Henderson | Las Vegas | Mesquite    | Nye County  | North Las Vegas | CC School District | Industry |          |          |
|--------------|--------------|-----------|-----------|-------------|-------------|-----------------|--------------------|----------|----------|----------|
|              |              |           |           |             |             |                 |                    | 1        | 2        | 3        |
| <b>Y (P)</b> | <b>Y</b>     | <b>Y</b>  | <b>Y</b>  | <b>Y(P)</b> | <b>Y(P)</b> | <b>Y</b>        | <b>Y(P)</b>        | <b>Y</b> | <b>Y</b> | <b>Y</b> |

**RESULT: Pass 11-0**



1809.4

SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 34

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: 1809.4

PROPONENT: CITY OF NORTH LAS VEGAS

PROPOSAL: Clarify requirements for establishing required footing embedment.

REVISE AS FOLLOWS: 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).

**JUSTIFICATION:** This section is carried forward from the 2018 IBC amendments. If footings are formed free standing, then the geotechnical report must provide specific recommendations for the compaction of soil around the footing. Proper compaction of the soil around the footing is important to the stability of the foundation. Soils in North Las Vegas are predominantly highly expansive in nature. Most geotechnical engineering reports for projects in the city recommended minimum embedment depth of footing based on highly expansive soils (18 inches) and very seldom they recommend 12 inches.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|

**COST IMPACT:** None anticipated.

**COMMITTEE ACTION:**

| Boulder City | Clark County | Henderson | Las Vegas | Mesquite | Nye County | North Las Vegas | CC School District | Industry |   |   |
|--------------|--------------|-----------|-----------|----------|------------|-----------------|--------------------|----------|---|---|
|              |              |           |           |          |            |                 |                    | 1        | 2 | 3 |
| Y (P)        | Y            | Y         | Y         | Y(P)     | Y(P)       | Y               | Y(P)               | Y        | Y | Y |

**RESULT: Pass 11-0**

---

SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 49-A

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: 1904.1 and 1904.2

PROPONENT: CITY OF HENDERSON

**PROPOSAL:** Revise 1904.1 exception to require durability exposure considerations for elements exposed to soils and add new section to 1904.2 to also require durability exposure considerations.

**REVISE AS FOLLOWS:** Revise **Sections 1904.1** and add subsections to **1904.2** 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).

**1904.2 Nonstructural concrete.**

**1904.2.1** The *registered design professional* shall assign *nonstructural concrete* a freeze-thaw exposure class, as defined in ACI 318, based on the anticipated exposure of *nonstructural concrete*. *Nonstructural concrete* shall have a minimum specified compressive strength,  $f'c$ , of 2,500 psi (17.2 MPa) for Class F0; 3,000 psi (20.7 MPa) for Class F1; and 3,500 psi (24.1 MPa) for Classes F2 and F3. *Nonstructural concrete* shall be air entrained in accordance with ACI 318.

**1904.2.2** Slab on grade shall comply with ACI 318 and the geotechnical report for durability Exposure Class or otherwise assume an Exposure Class S2.

**JUSTIFICATION:** Southern Nevada soils can have high levels of sulfate exposure (water-soluble sulfate in soil) and local conditions warrant compliance with site specific geotechnical report and ACI 318 for durability considerations or otherwise assume severe sulfate exposure.

From the 2021 IBC Code and Commentary Volume 2 Section 1901.2: “The structural concrete provisions of the code comply strictly with the provisions of ACI 318/318R, except for the modifications contained in Section 1905. **Slabs on grade** are another important exception, **Slabs on grade** typically only convey the gravity dead load of the slab and the gravity live load

superimposed on the slab directly on the soil; thus, slabs are not considered to be the “structural concrete” that must comply with the design provisions of ACI 318. **Slabs on grade**, however, must comply with the durability provisions of Section 1904 and the minimum thickness and vapor provisions of Section 1907.”

This amendment requires slabs on grade, when in nonstructural applications, also consider the durability requirements of ACI 318 when specifying concrete strength.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|

**COST IMPACT:** None anticipated. Note this would be consistent with the currently adopted amendment section 1803.2 as further justification.

**COMMITTEE ACTION:**

| Boulder City | Clark County | Henderson | Las Vegas | Mesquite | Nye County | North Las Vegas | CC School District | Industry |   |   |
|--------------|--------------|-----------|-----------|----------|------------|-----------------|--------------------|----------|---|---|
|              |              |           |           |          |            |                 |                    | 1        | 2 | 3 |
| Y (P)        | Y            | Y         | Y         | Y(P)     | Y(P)       | Y               | Y(P)               | Y        | Y | Y |

**RESULT: Pass 11-0**

SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 35

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: 1907.4

PROPONENT: CLARK COUNTY

PROPOSAL: Coordinate requirements for vapor retarder with other sections and IRC.

REVISE AS FOLLOWS: Revise Section 1907.4, as follows:

**1907.4 Vapor retarder.** A ~~6-mil (0.006 inch; 0.15 mm)~~ 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.

**Exception:** 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<sup>2</sup>) and carports attached to occupancies in Group R-3.
3. For *buildings* of other occupancies where migration of moisture through the slab from below will not be detrimental to the intended occupancy of the *building*.
4. For driveways, walks, patios and other flatwork ~~that~~ which will not be enclosed at a later date.
5. Where *approved* based on local site conditions.

**JUSTIFICATION:** This section is carried forward from the 2018 IBC amendments to match a 2009/18 IRC amendment per the geotechnical committee recommendation and the amendment for 2009/18 IBC section 1805.2.1. Matches American Concrete Institute recommendations 302.2R-36 section 9.3.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|

**COST IMPACT:** Slight increase due to the increased thickness and specification of the more durable material.

**COMMITTEE ACTION:**

| Boulder City | Clark County | Henderson | Las Vegas | Mesquite | Nye County | North Las Vegas | CC School District | Industry |   |   |
|--------------|--------------|-----------|-----------|----------|------------|-----------------|--------------------|----------|---|---|
|              |              |           |           |          |            |                 |                    | 1        | 2 | 3 |
| Y (P)        | Y            | Y         | Y         | Y(P)     | Y(P)       | Y               | Y(P)               | Y        | Y | Y |

**RESULT: Pass 11-0**

---

**SOUTHERN NEVADA CODE AMENDMENT FORM – 2024****AMENDMENT NO.:** 56**COMMITTEE:** STRUCTURAL/GEOTECHNICAL**CODE SECTION:** 2115**PROPONENT:** STEVE SCHILLER

**PROPOSAL:** To clarify the design of freestanding and retaining walls not addressed in Appendix Q.

**REVISE AS FOLLOWS:** Add Section 2115 and subsections, as follows:

**Section 2115 - FREESTANDING AND RETAINING WALLS**

**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. A minimum area of reinforcing in each direction of 0.0007 times the gross area of the wall shall be provided. Reinforcing bars shall be uniformly spaced at a maximum of 48" on center in each direction. Alternatively, if joint reinforcing is provided in the horizontal direction, it shall be spaced at a maximum of 16" on center. A bond beam with a minimum of 1 # 4 reinforcing bar shall be provided at the top of all walls. 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.

**JUSTIFICATION:** TMS 402-16 does not include any provisions specifically dealing with freestanding walls and retaining walls. The minimum reinforcing is based on provisions of the 1997 UBC except that the more stringent 0.002 combined reinforcing ratio is not included based on developments over time utilizing the strength design methods for CMU.

These walls are very common in Southern Nevada and given their proximity to roadways and sidewalks, a minimum level of design and reinforcing should be required to protect the public.

Without specific provisions relating to minimum reinforcing and maximum spacing, it is possible that a code compliant wall may not provide adequate public safety especially in a seismic event.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |   |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|---|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F | X | G |  | H | X | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|---|---|--|---|--|

**COST IMPACT:** There will be some additional cost associated with horizontal reinforcing of the walls. All other measures are intended to reflect local practice.

**COMMITTEE ACTION:**

| Boulder City | Clark County | Henderson | Las Vegas | Mesquite | Nye County | North Las Vegas | CC School District | Industry |   |   |
|--------------|--------------|-----------|-----------|----------|------------|-----------------|--------------------|----------|---|---|
|              |              |           |           |          |            |                 |                    | 1        | 2 | 3 |
| Y (P)        | Y            | Y         | Y         | Y(P)     | Y(P)       | Y               | Y(P)               | Y        | Y | Y |

**RESULT: Pass 11-0**

SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 54-A

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: 2215

PROPONENT: CITY OF NORTH LAS VEGAS

**PROPOSAL:** Add a new section to clarify the structural requirements for racks not defined as storage racks.

**REVISE AS FOLLOWS:** Add a 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.

**JUSTIFICATION:** The definition of STEEL STORAGE RACKS in Section 202 gives the impression that racks not defined as 'STORAGE RACKS' do not require engineering. The addition of this section is intended to clarify that all racks may still require a permit with structural analysis as dictated by the local governing jurisdiction.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|

**COST IMPACT:** None anticipated.

**COMMITTEE ACTION:**

| Boulder City | Clark County | Henderson | Las Vegas | Mesquite | Nye County | North Las Vegas | CC School District | Industry |   |   |
|--------------|--------------|-----------|-----------|----------|------------|-----------------|--------------------|----------|---|---|
|              |              |           |           |          |            |                 |                    | 1        | 2 | 3 |
| Y (P)        | Y            | Y         | Y         | Y(P)     | Y(P)       | Y               | Y(P)               | Y        | Y | Y |

**RESULT: Pass 11-0**



SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 36

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: 2304.10 & 2304.10.9

PROPONENT: CLARK COUNTY

PROPOSAL: Create a new section to clarify bottom plate anchorage requirements.

REVISE AS FOLLOWS: Modify Sections 2304.10 & 2304.10.9 as follows:

**2304.10 Connectors and fasteners.** Connectors and fasteners shall comply with the applicable provisions of Sections 2304.10.1 through 2304.10.89.

(Insert a 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.

**JUSTIFICATION:** This section is carried forward from the 2018 IBC amendments. This was included in section 2304.9.5.2 Fastenings for wood foundation in the 2009/12 IBC amendments. This change has nothing to do with the attachment of wood foundations. Bottom plate is preferentially referenced in lieu of sill plate to match that same evolution in the IBC and AF&PA references. In residential construction many times there are short length wall framing for door openings, exterior built-up columns and post framing and similar construction where it is impractical to comply with the 2308.3 completely. The exception is provided to explicitly allow a design professional the ability to design appropriate attachment for these conditions. Insertion within the General provisions section 2304 is to clarify that this change applies to both designed and conventional construction.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|

**COST IMPACT:** None anticipated.

**COMMITTEE ACTION:**

| Boulder<br>City | Clark<br>County | Henderson | Las<br>Vegas | Mesquite    | Nye<br>County | North<br>Las<br>Vegas | CC<br>School<br>District | Industry |          |          |
|-----------------|-----------------|-----------|--------------|-------------|---------------|-----------------------|--------------------------|----------|----------|----------|
|                 |                 |           |              |             |               |                       |                          | 1        | 2        | 3        |
| <b>Y (P)</b>    | <b>Y</b>        | <b>Y</b>  | <b>Y</b>     | <b>Y(P)</b> | <b>Y(P)</b>   | <b>Y</b>              | <b>Y(P)</b>              | <b>Y</b> | <b>Y</b> | <b>Y</b> |

**RESULT: Pass 11-0**

SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 37

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: 2308.9.8

PROPONENT: CLARK COUNTY

PROPOSAL: Modify attachment requirements for protection plate attachment.

REVISE AS FOLLOWS: Revise Subsection 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 ~~16d nails.~~ 1 ½" x 0.148" minimum nails.

**JUSTIFICATION:** This section is carried forward from the 2018 IBC amendments. Table 2304.10.2 footnote a. states, "Nails for wall sheathing are permitted to be common, box or casing". If you further review the table all reference to a 16d nail is (3 ½" x 0.135"). When there is a reference to a common nail, it specifically states 16d common (3 ½" x 0.162"). Interpreting current language of section 2304.10 it can logically be deemed that a 16d box (3 ½" x 0.135") is an acceptable nail. The proposed 10d (1 ½" x 0.148") exceeds the diameter of a box nail and exceeds the minimum nail penetration (6 x diameter) (0.88 inches for 0.148" diameter) for straight straps in shear. This recommendation is made based off field observations in the Las Vegas valley. Due to the dry nature of our climate, the installation of 16d common nails into a 1 ½" side member provides a high probability of wood splitting. This splitting of wood can be so great that it renders the structural connection useless.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |          |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|----------|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | <b>X</b> | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|----------|---|--|---|--|

**COST IMPACT:** None anticipated.

**COMMITTEE ACTION:**

| Boulder<br>City | Clark<br>County | Henderson | Las<br>Vegas | Mesquite    | Nye<br>County | North<br>Las<br>Vegas | CC<br>School<br>District | Industry |          |          |
|-----------------|-----------------|-----------|--------------|-------------|---------------|-----------------------|--------------------------|----------|----------|----------|
|                 |                 |           |              |             |               |                       |                          | 1        | 2        | 3        |
| <b>Y (P)</b>    | <b>Y</b>        | <b>Y</b>  | <b>Y</b>     | <b>Y(P)</b> | <b>Y(P)</b>   | <b>Y</b>              | <b>Y(P)</b>              | <b>Y</b> | <b>Y</b> | <b>Y</b> |

**RESULT: Pass 11-0**

J103.3

SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 39-A

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: J103.3

PROPONENT: CLARK COUNTY

PROPOSAL: Add a new section to address hazards.

REVISE AS FOLLOWS: Add a new Section J103.3, 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.

JUSTIFICATION: This section is carried forward from the 2018 IBC amendments. This section allow the Building Official a great deal of latitude in dealing with hazardous existing grading.

SNBO CRITERIA: Check all applicable SNBO Criteria that apply to amendment proposal:

Table with 12 columns labeled A through J. Column H contains an 'X'.

COST IMPACT: None anticipated.

COMMITTEE ACTION:

Table with 8 columns for jurisdictions and 3 columns for Industry. All cells contain 'Y' or 'Y(P)'.

RESULT: Pass 11-0

J104.1

SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 40-A

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: J104.1

PROPONENT: CLARK COUNTY

PROPOSAL: Define grading plan requirements thresholds.

REVISE AS FOLLOWS: Revise Section J104.1, as follows:

**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.

**JUSTIFICATION:** This section is carried forward from the 2018 IBC amendments. The code is silent on when a grading plan is required. This would provide guidance to applicants as to when they would need to submit a grading plan. These exceptions closely mirror the exceptions for geotechnical reports.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|

**COST IMPACT:** None anticipated.

**COMMITTEE ACTION:**

| Boulder<br>City | Clark<br>County | Henderson | Las<br>Vegas | Mesquite    | Nye<br>County | North<br>Las<br>Vegas | CC<br>School<br>District | Industry |          |          |
|-----------------|-----------------|-----------|--------------|-------------|---------------|-----------------------|--------------------------|----------|----------|----------|
|                 |                 |           |              |             |               |                       |                          | 1        | 2        | 3        |
| <b>Y (P)</b>    | <b>Y</b>        | <b>Y</b>  | <b>Y</b>     | <b>Y(P)</b> | <b>Y(P)</b>   | <b>Y</b>              | <b>Y(P)</b>              | <b>Y</b> | <b>Y</b> | <b>Y</b> |

**RESULT: Pass 11-0**

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SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 41

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: J104.2

PROPONENT: CLARK COUNTY

PROPOSAL: Define grading plan requirements.

REVISE AS FOLLOWS: Revise Section J104.2 in its entirety, as follows:

~~**J104.2 Site plan requirements.** In addition to the provisions of Section 107, a *grading* plan shall show the *existing grade* and *finished grade* in contour intervals of sufficient clarity to indicate the nature and extent of the work and show in detail that it complies with the requirements of this code. The plans shall show the *existing grade* on adjoining properties in sufficient detail to identify how *grade changes* will conform to the requirements of this code.~~

**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."

**JUSTIFICATION:** This section is carried forward from the 2018 IBC amendments. This amendment explicitly lays out the requirements for a grading plan.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|

**COST IMPACT:** None anticipated.

**COMMITTEE ACTION:**

| Boulder<br>City | Clark<br>County | Henderson | Las<br>Vegas | Mesquite    | Nye<br>County | North<br>Las<br>Vegas | CC<br>School<br>District | Industry |          |          |
|-----------------|-----------------|-----------|--------------|-------------|---------------|-----------------------|--------------------------|----------|----------|----------|
|                 |                 |           |              |             |               |                       |                          | 1        | 2        | 3        |
| <b>Y (P)</b>    | <b>Y</b>        | <b>Y</b>  | <b>Y</b>     | <b>Y(P)</b> | <b>Y(P)</b>   | <b>Y</b>              | <b>Y(P)</b>              | <b>Y</b> | <b>Y</b> | <b>Y</b> |

**RESULT: Pass 11-0**

SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 42-A

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: J104.3

PROPONENT: CLARK COUNTY

PROPOSAL: Clarify the geotechnical report requirements are covered in Section 1803.6.

REVISE AS FOLLOWS: Revise Section J104.3, as follows:

**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. ~~contain not less than the following:~~

- ~~1. The nature and distribution of existing soils.~~
- ~~2. Conclusions and recommendations for grading procedures.~~
- ~~3. Soil design criteria for any structures or embankments required to accomplish the proposed grading.~~
- ~~4. Where necessary, slope stability studies, and recommendations and conclusions regarding site geology.~~

**Exception:** ~~A geotechnical report is not required where the building official determines that the nature of the work applied for is such that a report is not necessary.~~

**JUSTIFICATION:** This section is carried forward from the 2018 IBC amendments. Section 1803.6 already specifies the minimum requirements for a geotechnical report. The two code sections are conflicting. The exception is being deleted since the requirements for when a geotechnical report is required are specified in Section 1803.2.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|

**COST IMPACT:** None anticipated.

**COMMITTEE ACTION:**

| Boulder<br>City | Clark<br>County | Henderson | Las<br>Vegas | Mesquite    | Nye<br>County | North<br>Las<br>Vegas | CC<br>School<br>District | Industry |          |          |
|-----------------|-----------------|-----------|--------------|-------------|---------------|-----------------------|--------------------------|----------|----------|----------|
|                 |                 |           |              |             |               |                       |                          | 1        | 2        | 3        |
| <b>Y (P)</b>    | <b>Y</b>        | <b>Y</b>  | <b>Y</b>     | <b>Y(P)</b> | <b>Y(P)</b>   | <b>Y</b>              | <b>Y(P)</b>              | <b>Y</b> | <b>Y</b> | <b>Y</b> |

**RESULT: Pass 11-0**

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SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 43-A

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: J105

PROPONENT: FEDERICO MENDEZ

**PROPOSAL:** Revise the special inspections section to local standard of practice.

**REVISE AS FOLLOWS:** Revise Section J105 in its entirety, as follows:

**SECTION J105-INSPECTIONS**

**J105.1 General.** ~~Inspections shall be governed by Section 110. 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 will 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 4705.6 1704 shall apply to work performed under a grading permit where required by the building official.

**JUSTIFICATION:** This section is carried forward from the 2018 IBC amendments. This amendment provides very specific information on the inspection requirements. Language is added to require a table of density testing in Final Grading Reports, level of special inspection for Final Grading Reports and Pad Certifications and site visits for Pad Recertifications per current practice; to clarify requirements from the 2018 IBC amendments.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|

**COST IMPACT:** None anticipated.

**COMMITTEE ACTION:**

| Boulder City | Clark County | Henderson | Las Vegas | Mesquite | Nye County | North Las Vegas | CC School District | Industry |   |   |
|--------------|--------------|-----------|-----------|----------|------------|-----------------|--------------------|----------|---|---|
|              |              |           |           |          |            |                 |                    | 1        | 2 | 3 |
| Y (P)        | Y            | Y         | Y         | Y(P)     | Y(P)       | Y               | Y(P)               | Y        | Y | Y |

**RESULT: Pass 11-0**



**Appendix L & M**

**SOUTHERN NEVADA CODE AMENDMENT FORM – 2024**

**AMENDMENT NO.:** 53

**COMMITTEE:** STRUCTURAL/GEOTECHNICAL

**CODE SECTION:** APPENDIX L AND M

**PROPONENT:** CLARK COUNTY

**PROPOSAL:** To remove unnecessary language.

**REVISE AS FOLLOWS:** Delete Appendix L & M in its entirety.

**JUSTIFICATION:** Appendix L covers Earthquake recording instrumentation and Appendix M covers Tsunami-Generated Flood Hazards. Neither have been approved in previous code cycles; therefore, we are deleting them to maintain the current standard of practice in the valley. Appendix L would add addition costs to the Owners and for Appendix M would not apply because we are not in a Tsunami hazard zone.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|

**COST IMPACT:** None anticipated.

**COMMITTEE ACTION:**

| Boulder City | Clark County | Henderson | Las Vegas | Mesquite | Nye County | North Las Vegas | CC School District | Industry |   |   |
|--------------|--------------|-----------|-----------|----------|------------|-----------------|--------------------|----------|---|---|
|              |              |           |           |          |            |                 |                    | 1        | 2 | 3 |
| Y (P)        | Y            | Y         | Y         | Y(P)     | Y(P)       | Y               | Y(P)               | Y        | Y | Y |

**RESULT: Pass 11-0**

Appendix Q

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SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 44

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: Appendix Q

PROPONENT: CLARK COUNTY

PROPOSAL: Add a new Appendix Q for fences, walls and retaining walls.

REVISE AS FOLLOWS: Adopt a new Appendix Q as follows:

**APPENDIX Q**  
**FENCES, WALLS AND RETAINING WALLS**

**Q101 General**

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

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

**Q102.0 DEFINITIONS**

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

**CUT.** See Excavation.

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

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

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

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

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

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

## **Q103.0 PERMITS**

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

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

**EXCEPTION:** Only one permit is required for multiple fence(s), wall(s) and/or retaining wall(s) constructed along property lines in connection with the development of a subdivision, provided that a legal description of the property is submitted together with a dimensioned plot plan showing the exact location of the fence, wall and/or retaining wall and all other recorded lot and easement lines.

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

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

**Q103.4 Drawings and specifications.** Drawings and specifications required for retaining walls shall be prepared by a registered design professional, 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.

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

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

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

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

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

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

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

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

#### **Q105.0 IMPLEMENTATION**

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

**JUSTIFICATION:** This item is carried forward from the 2018 IBC amendments. This appendix provides the building official guidance on fence permits.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|

**COST IMPACT:** None anticipated.

**COMMITTEE ACTION:**

| Boulder City | Clark County | Henderson | Las Vegas | Mesquite | Nye County | North Las Vegas | CC School District | Industry |   |   |
|--------------|--------------|-----------|-----------|----------|------------|-----------------|--------------------|----------|---|---|
|              |              |           |           |          |            |                 |                    | 1        | 2 | 3 |
| Y (P)        | Y            | Y         | Y         | Y(P)     | Y(P)       | Y               | Y(P)               | Y        | Y | Y |

**RESULT: Pass 11-0**

## Appendix R

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# SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 45-F

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: APPENDIX R

PROPONENT: CLARK COUNTY & MIKE MCGETTIGAN

**PROPOSAL:** Add a new **Appendix R** to incorporate guidelines that address compliance with NRS 278.580 6(b).

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

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

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

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

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

## **SECTION R103** **EVALUATION OF LIQUEFACTION POTENTIAL**

**R103.1** Liquefaction shall be evaluated for all projects that require a geotechnical investigation report. Liquefaction potential is associated with three soil conditions that include: presence of low density silts and/or sands; saturation and non-cohesive soil behavior.

**Exception:** 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  $FS = CS_{Rliq} / CS_{Req}$ , where  $CS_{Req}$  is the cyclic stress ratio generated by the anticipated earthquake ground motions at the site, and  $CS_{Rliq}$  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**

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

**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.

**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.

**JUSTIFICATION:** This section is carried forward from the 2018 IBC amendments. Added language to address compliance with NRS 278.580 6(b) dealing with standards for investigation

of hazards relating to seismic activity including, without limitation, potential surface ruptures and liquefaction.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |          |   |  |   |  |   |  |   |  |   |  |
|---|--|---|--|---|--|---|--|---|----------|---|--|---|--|---|--|---|--|---|--|
| A |  | B |  | C |  | D |  | E | <b>X</b> | F |  | G |  | H |  | I |  | J |  |
|---|--|---|--|---|--|---|--|---|----------|---|--|---|--|---|--|---|--|---|--|

**COST IMPACT:** There is an anticipated but undefined level of additional cost associated with adopting provisions to address compliance with NRS 278.580.

**COMMITTEE ACTION:**

| Boulder City | Clark County | Henderson | Las Vegas | Mesquite    | Nye County  | North Las Vegas | CC School District | Industry |          |          |
|--------------|--------------|-----------|-----------|-------------|-------------|-----------------|--------------------|----------|----------|----------|
|              |              |           |           |             |             |                 |                    | 1        | 2        | 3        |
| <b>Y (P)</b> | <b>Y</b>     | <b>Y</b>  | <b>Y</b>  | <b>Y(P)</b> | <b>Y(P)</b> | <b>Y</b>        | <b>Y(P)</b>        | <b>Y</b> | <b>Y</b> | <b>Y</b> |

**RESULT: Pass 11-0**

Appendix S

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SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 46-B

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: Appendix S

PROPONENT: Clark County & Mike McGettigan

**PROPOSAL:** Add a new **Appendix S** to incorporate guidelines that address compliance with NRS 278.580 6(b).

**REVISE AS FOLLOWS:** 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** 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** *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 includes trenching across potentially active fault zones to determine the following: location and recency of movement, width of disturbance, physical condition of fault zone materials, type of displacement, geometry of fault features, slip rate, and recurrence interval.
- b. Borings or test pits to collect data to evaluate depth and type of materials present, groundwater depth, and to verify fault-plane geometry. Data points should be sufficient in number and adequately spaced to permit correlations and interpretations.
- c. Geophysical surveys conducted to facilitate the evaluation of the types of site materials and their physical properties, ground water conditions, and fault displacements. When

geophysics is utilized for *fault* mapping, a minimum of two arrays perpendicular to the suspected *fault trace* shall be performed. The geophysical exploration program, including the number of geophones, type of geophones, spacing and other survey parameters, shall be selected by the *registered design professional*.

**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** 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.

**JUSTIFICATION:** Added language to address compliance with NRS 278.580 6(b) dealing with standards for investigation of hazards relating to seismic activity including, without limitation, potential surface ruptures and liquefaction.

The International Commission on Stratigraphy (ICS) and the International Union of Geological Sciences “set the beginning of the Quaternary at 2,588,000 years ago, a time when rock strata show extensive evidence of widespread expansion of ice sheets over the northern continents and the beginning of an era of dramatic climatic and oceanographic change.”

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|

**COST IMPACT:** There is an anticipated but undefined level of additional cost associated with adopting provisions to address compliance with NRS 278.580.

**COMMITTEE ACTION:**

| Boulder City | Clark County | Henderson | Las Vegas | Mesquite | Nye County | North Las Vegas | CC School District | Industry |   |   |
|--------------|--------------|-----------|-----------|----------|------------|-----------------|--------------------|----------|---|---|
|              |              |           |           |          |            |                 |                    | 1        | 2 | 3 |
| Y (P)        | Y            | Y         | Y         | Y(P)     | Y(P)       | Y               | Y(P)               | Y        | Y | Y |

**RESULT: Pass 11-0**

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SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 50-A

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: UMC 508.4

PROPONENT: CITY OF LAS VEGAS & STEVE SCHILLER

**PROPOSAL:** To coordinate hood assembly design requirements as found in the UMC with the IBC structural engineering code and referenced codes.

**REVISE AS FOLLOWS:** Revise UMC 2024 subsection 508.4 as follows:

**508.4 Supports.** Hoods shall be secured in place to resist lateral loads calculated in accordance with ASCE 7-22 by noncombustible supports. The structure, anchors, and supports shall be capable of supporting the expected weight of the hood plus 800 pounds (362.9 kg) operating weight of the hood assembly, a 300-pound (136.1 kg) live load, and lateral demands of the hood assembly. Where maintenance access has been provided independently of the hood, the 300-pound (136.1 kg) 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.

**JUSTIFICATION:** The UMC has identified a valid design concern relating to the application of live loads to the supports of hoods that require regular maintenance to provide for safety when a maintenance worker uses the hood as a work platform. However, design loads for mechanical components are typically set forth in ASCE 7. ASCE 7-22 Section 13.6, and by reference section 13.4, sets forth the basic requirements for attachment and seismic design criteria. ASCE 7-22 Section 4.4 provides direction on the application of a concentrated live load and refers to table 4.3-1 for the magnitude of the concentrated loads. The most analogous Use in table 4.3-1 appears to be “Catwalks for Maintenance and Service Access” which, requires a Concentrated Live Load of 300 pounds (service level). The 300 pound load is reasonable for this application. The 800 pound load would represent an ultimate load of a 300 pound person and 200 pounds of tools and equipment combined with a load factor of 1.6 which, seems excessive.

Where alternate access has been provided for the hoods, the 300 pound concentrated load is redundant and unnecessary.

Local practice is to brace hoods laterally, where they are adjacent to a wall, using the wall. So long as the wall has adequate strength to resist the lateral loads, it should be permissible to use the wall to provide resistance to lateral loads.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |   |   |  |   |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|
| A |  | B |  | C |  | D |  | E |  | F |  | G |  | H | X | I |  | J |  |
|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|---|---|--|---|--|

**COST IMPACT:** Generally negligible. Potential marginal reductions in cost of anchorage.

**COMMITTEE ACTION:**

| Boulder City | Clark County | Henderson | Las Vegas | Mesquite | Nye County | North Las Vegas | CC School District | Industry |   |   |
|--------------|--------------|-----------|-----------|----------|------------|-----------------|--------------------|----------|---|---|
|              |              |           |           |          |            |                 |                    | 1        | 2 | 3 |
| Y (P)        | Y            | Y         | Y         | Y(P)     | Y(P)       | Y               | Y(P)               | Y        | Y | Y |

**RESULT: Pass 11-0**

SOUTHERN NEVADA CODE AMENDMENT FORM – 2024

AMENDMENT NO.: 51-A

COMMITTEE: STRUCTURAL/GEOTECHNICAL

CODE SECTION: UMC 510.3.3.3

PROPONENT: CITY OF LAS VEGAS & STEVE SCHILLER

**PROPOSAL:** To coordinate ductwork assembly design requirements as found in the UMC with the IBC structural engineering code and referenced codes.

**REVISE AS FOLLOWS:** Revise UMC 2024 subsection 510.3.3.3 as follows:

**510.3.3.3 Support.** Support systems for horizontal grease duct systems 24 inches (610 mm) and larger in any cross-sectional dimension shall be designed for the operating weight of the ductwork assembly, a 300 pound (136.1 kg) live load, and lateral demands of the ductwork assembly calculated in accordance with ASCE 7-22 plus 800 pounds (362.9 kg) at any point in the duct systems. [NFPA 96:7.4.1.4]. Where maintenance access has been provided independently of the hood, the 300 pound (136.1 kg) live load need not be applied.

**JUSTIFICATION:** The UMC has identified a valid design concern relating to the application of live loads to the supports of grease ducts that require regular maintenance to provide for safety when a maintenance worker uses the duct as a work platform. However, design loads for mechanical components are typically set forth in ASCE 7. ASCE 7-22 Section 13.6, and by reference section 13.4, sets forth the basic requirements for attachment and seismic design criteria. ASCE 7-22 Section 4.4 provides direction on the application of a concentrated live load and refers to table 4.3-1 for the magnitude of the concentrated loads. The most analogous Use in table 4.3-1 appears to be “Catwalks for Maintenance and Service Access” which, requires a Concentrated Live Load of 300 pounds (service level). The 300 pound load is reasonable for this application. The 800 pound load from UMC would represent an ultimate load of a 300 pound person and 200 pounds of tools and equipment or (2) 250 pound workers combined with a load factor of 1.6 which, seems excessive.

The reference to ASCE 7-22 insures that lateral loads are considered in the design of grease duct supports.

Where alternate access has been provided for the ducts, the 300 pound concentrated load is redundant and unnecessary.

**SNBO CRITERIA:** Check all applicable SNBO Criteria that apply to amendment proposal:

|   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|
| A | B | C | D | E | F | G | H | X | I | J |
|---|---|---|---|---|---|---|---|---|---|---|

**COST IMPACT:** Generally negligible. Potential marginal reductions in cost of anchorage.

**COMMITTEE ACTION:**

| Boulder<br>City | Clark<br>County | Henderson | Las<br>Vegas | Mesquite    | Nye<br>County | North<br>Las<br>Vegas | CC<br>School<br>District | Industry |          |          |
|-----------------|-----------------|-----------|--------------|-------------|---------------|-----------------------|--------------------------|----------|----------|----------|
|                 |                 |           |              |             |               |                       |                          | 1        | 2        | 3        |
| <b>Y (P)</b>    | <b>Y</b>        | <b>Y</b>  | <b>Y</b>     | <b>Y(P)</b> | <b>Y(P)</b>   | <b>Y</b>              | <b>Y(P)</b>              | <b>Y</b> | <b>Y</b> | <b>Y</b> |

**RESULT: Pass 11-0**