

AGENDA
UBC COMMISSION
STRUCTURAL ADVISORY COMMITTEE

April 3, 2025 3:00 pm

This agenda is subject to change up to 24 hours prior to the meeting.

Anchor Location

Room 475
Heber M Wells Building
160 E 300 S
Salt Lake City, UT

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1. Roll call
2. Approve the minutes from the March 6, 2025, meeting
3. Review IBC Section 3103
4. Review proposed amendments for 2024 IEBC
IEBC Section 503.1, IEBC Section 503.5, IEBC Section 906.2, IEBC Section 906.3,
IEBC Section 1006.3
5. Proposal from SEAU Code Committee on the snow load amendment

Next Scheduled Meeting: May1, 2025

Please call Sharon at 530-6163 or email ssmalley@utah.gov if you do not plan on attending this meeting.



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MINUTES

UTAH
UNIFORM BUILDING CODE COMMISSION
STRUCTURAL ADVISORY COMMITTEE
MEETING

March 6, 2025 3:00

CONVENED: 3:04

ADJOURNED 4:26

STAFF:

Steve Duncombe, Bureau Manager
Sharon Smalley, Board Secretary

COMMITTEE MEMBERS:

Tim Strickland
Patrick Tomasino
John Saunders (absent)
Brent Maxfield

Josh Blazzard, Commission Liaison
Oliver Burt
Tyler Wright

VISITORS:

MINUTES

A motion was made by Tim Strickland to approve the minutes from the February 6, 2025, meeting as modified. The motion was seconded by Patrick Tomasino and passed unanimously.

COMPLETE THE REVIEW OF 2024
IEBC ALONG WITH CURRENT
AMENDMENTS

Oliver Burt gave his review of Chapters 3 and 4. He noted that the changes were organizational, or the modification were for clarification. He noted that there should be no cost increase associated with these changes. There are two current amendments for Chapter 3 and a motion was made by Oliver Burt to keep these amendments. The motion was seconded by Brent Maxfield and passed unanimously.

Patrick Tomasino gave his review of Chapters 5 and 6. He pointed out the sections that have had changes. He noted that language has been added and that this was for clarification. Brent Maxfield brought up a concern about the current amendment for Section 503.6. During the discussion, it was also decided that the amendments for 706.3.1 and 906.6 also needed to be modified. In the amendments for Sections 503.6 and 906.6, the last sentence will be deleted and replaced with, "Reduced seismic criteria of IEBC Section 304.3.2

is permitted.” In the current amendment for Section 906.6, section number 303 will be changed to 304.3.2. A motion was made by Brent Maxfield to accept the proposed changes for the three amendments. The motion was seconded by Oliver Burt and passed unanimously.

Brent Maxfield gave his review of Chapters 10 through 12. He brought up a concern he has with the reference to BSE-1E as used in Sections 503.5, 503.11, 906.2 and 906.3 where it refers to “position retention nonstructural performance”. He is recommending that the reference to BSE-1E be changed to BSE-1N. Following the discussion about the appropriate seismic performance level, a proposal will be drafted by Brent Maxfield for review at next month’s meeting.

In his review of the two current amendments for Chapter 10, he is recommending a change to the current amendment for Section 1006.3(a). He is proposing that the amendment be changed by adding a clause to the existing language, rather than revising the entire amendment. He will submit a proposal for review at the next meeting for the change to this current amendment. He felt that the amendment for Section 1011.7.2 needs to be reviewed by a different committee.

He noted that there were no major changes in Chapter 12.

REVIEW CHAPTER 31 OF THE IBC

This committee was asked to review the structural portion of Chapter 31 for Temporary Structures, Section 3103. This will be reviewed at the next meeting.

Tyler Wright shared the SEAU Code Committee’s response to the questions that this committee had in connection with the Snow Load amendment. They will make a presentation at the next meeting.

At the next meeting the committee will review the proposals from Brent Maxfield, review Section 3103 of the IBC, and listen to a report from SEAU on the snow load amendment and any changes that

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Structural Advisory Committee
March 6, 2025

they are recommending that might need to be made.

The meeting adjourned at 4:32.

Note: These minutes are not intended to be a verbatim transcript but are intended to record the significant features of the business conducted in this meeting. Discussed items are not necessarily shown in the chronological order they occurred.

Proposed NEW Statewide Amendments to 2024 International Existing Building Code

Title 15A, Chapter 3, Part 8, Section 801 (15A-3-801). Add the following amendments to the current state amendments and put them in numerical order within the current State Amendments with the corresponding section and renumber the remaining amendments.

(x) In IEBC, Section 503.5, the following is added after the words, “BSE-1E earthquake hazard level” in the last sentence: **“and using an objective of Life Safety Nonstructural Performance with the BSE-2E earthquake hazard level.”** The resulting sentence shall read: “Supports and attachments for nonstructural components serving any portion of the building with a use included in *Risk Category IV* shall comply with Section 1613 of the *International Building Code* or shall comply with ASCE 41 using an objective of Position Retention nonstructural performance with the BSE-1E earthquake hazard level, **and using an objective of Life Safety Nonstructural Performance with the BSE-2E earthquake hazard level.**”

(x) In IEBC, Section 503.11, the following is added after the words, “BSE-1E earthquake hazard level” in the last sentence: **“and using an objective of Life Safety Nonstructural Performance with the BSE-2E earthquake hazard level.”** The resulting sentence shall read: “Where the building is assigned to Seismic Design Category D or F, supports and attachments for nonstructural components required to serve any portion of the building with a use included in Risk Category IV shall comply with Section 1613 of the International Building Code or shall comply with ASCE 41 using an objective of Position Retention nonstructural performance with the BSE-1E earthquake hazard level, **and using an objective of Life Safety Nonstructural Performance with the BSE-2E earthquake hazard level.**”

(x) In IEBC, Section 906.2, the following is added after the words, “BSE-1E earthquake hazard level” in the last sentence: **“and using an objective of Life Safety Nonstructural Performance with the BSE-2E earthquake hazard level.”** The resulting sentence shall read: “Where the building is assigned to Seismic Design Category D or F, supports and attachments for nonstructural components required to serve any portion of the building with a use included in Risk Category IV shall comply with Section 1613 of the International Building Code or shall comply with ASCE 41 using an objective of Position Retention nonstructural performance with the BSE-1E earthquake hazard level, **and using an objective of Life Safety Nonstructural Performance with the BSE-2E earthquake hazard level.**”

(x) In IEBC, Section 906.3, the following is added after the words, “BSE-1E earthquake hazard level” in the last sentence: **“and using an objective of Life Safety Nonstructural Performance with the BSE-2E earthquake hazard level.”** The resulting sentence shall read: “Supports and attachments for nonstructural components serving any portion of the building with a use included in Risk Category IV shall comply with Section 1613 of the International Building Code or shall comply with ASCE 41 using an objective of Position Retention nonstructural performance with the BSE-1E earthquake hazard level, **and using an objective of Life Safety Nonstructural Performance with the BSE-2E earthquake hazard level.**”

Discussion:

The addition of the second criteria is consistent with the dual criteria used elsewhere in the IEBC and ASCE 41, which looks at a higher performance objective at the lower BSE-1E or

BSE-1N hazard level, and a lower performance objective at the higher BSE-2E or BSE-2N hazard level. This second criteria must be added because the BSE-1E earthquake hazard level is based on a 20% probability of exceedance in 50-years, and is extremely low and thus does not provide adequate protection for a Risk Category IV hospital, fire station, etc. The added second criteria better protects these Risk Category IV buildings to about 75% of the criteria for new buildings.

Cost impact: The criteria of Life Safty nonstructural Performance with the BSE-2E earthquake hazard level is appoximately 75% of the criteria for new buildings, or for exisiting buildings strengthened to the BSE-1N earthquake hazard level. This is consistent with the Reduced seismic criteria from IEBC 304.3.2. So the cost impact is less than is required for new buildings.

Proposed change to Statewide Amendments to 2024 International Existing Building Code

Title 15A, Chapter 3, Part 8, Section 801 (15A-3-801) Item (10)(a)

- ~~Section 1006.3 Seismic loads shall be permitted for design purposes.~~
- (10) (a) Section 1006.3 is deleted and replaced with the following:
"1006.3 Seismic loads. Where a change of occupancy results in a building being assigned to a higher risk category, or when a change of occupancy results in a design occupant load increase of 100% or more, the building shall satisfy the requirements of Section 1613 of the International Building Code using full seismic forces."
(b) In Section 1006.3, exceptions 1 through 4 remain unchanged.
(c) In Section 1006.3, add a new exception 5 as follows:
"5. Where the design occupant load increase is less than 25 occupants and the occupancy category does not change."
(11) In Section 1011.7.3, exception 2 is deleted.

The change deletes the current State Amendment (10) and inserts the pertinent part of the current State Amendment into Section 1006.3.

- (a) ~~Section 1006.3 is deleted and replaced with the following:~~
) ~~"1006.3 Seismic loads. Where a change of occupancy results in a building being assigned to a higher risk category, or when a change of occupancy results in a design occupant load increase of 100% or more, the building shall satisfy the requirements of Section 1613 of the International Building Code using full seismic forces."~~ In Section 1006.3 Seismic Loads, following the words, "higher risk category," in the first sentence, add the following:
"or when a change of occupancy results in a design occupant load increase of 100% or more," . The resulting sentence shall read: "Where a change of occupancy results in a building being assigned to a higher risk category, or when a change of occupancy results in a design occupant load increase of 100% or more, or where the change is from a Group S or Group U occupancy to any occupancy other than Group S or Group U, the lateral force-resisting system of the building shall comply with Section 304.3.1 for the new risk category.

Discussion: This change keeps the intend of the current State Amendment, but it is simpler to add this change to the 2024 IEBC than to rewrite the current State Amendment.

15A-3-107 Amendments to Chapter 16 of IBC.

(1) In IBC, Table 1604.5, Risk Category III, in the sentence that begins "Group I-2 Condition 1," a new footnote c is added as follows: "c. Type II Assisted Living Facilities that are I-2 Condition 1 occupancy classifications in accordance with Section 308 shall be Risk Category II in this table."

(Note: I-2 are no longer Risk III in the 2024 IBC except condition 2 which is Risk Category IV, so there is no need for an amendment to I-2 Condition 1.)

(2) In IBC, Section 1605.1, Exception 2 is deleted and replaced with the following:

"2. Where the allowable stress design load combinations of ASCE 7 Section 2.4 are used, flat roof snow loads of ~~30~~ 45 pounds per square foot (~~4.44~~ 2.15 kN/m²) or less and roof live loads of ~~30~~ 45 pounds per square foot (~~4.44~~ 2.15 kN/m²) or less need not be combined with seismic loads. Where flat roof snow loads exceed ~~30~~ 45 pounds per square foot (~~4.44~~ 2.15 kN/m²), the snow loads may be reduced in accordance with the following in load combinations including both snow and seismic loads. S as calculated below, shall be combined with seismic loads.

~~$S = (0.20 + 0.025(A-5))$~~ $S = (0.15 + 0.016(A-5))$ Proof, where S shall be greater than or equal to ~~0.20~~ 0.15 Proof.

Where: S = Weight of snow to be used in combination with seismic loads.

A = Elevation above sea level at the location of the structure (ft/1,000)

Proof = Design roof snow loads, Pf or Ps, psf

For the purpose of this section, snow load shall be assumed uniform on the horizontal projection without including the effects of drift or sliding. The ~~Importance Factor, I,~~ Risk Category used in calculating Pf may be considered ~~1.0~~ II."

(3) In IBC, Section 1605.1 a new exception ~~4-5~~ is added as follows:

"4. ASCE 7-~~1622~~ Section 2.3.6 Equation 6 shall be modified to $1.2D + Ev + Eh + L + f_2S$ and $1.2D + Ev + Emh + L + f_2S$ with ~~$f_2 = (0.20 + 0.025(A-5))$~~ $f_2 = (0.15 + 0.016(A-5))$ where the roof snow load exceeds ~~30~~ 45 pounds per square foot (~~4.44~~ 2.16 kN/m²). Where A = Elevation above sea level at the location of the structure (ft/1000). $f_2 = 0$ for roof snow loads of ~~30~~ 45 pounds per square foot (~~4.44~~ 2.16 kN/m²) or less."

(4) IBC, Section 1608.1, is deleted and replaced with the following:

~~"1608.1 General. Except as modified in Sections 1608.1.1 and 1608.1.2, design snow loads shall be determined in accordance with Chapter 7 of ASCE 7, but the design roof load shall not be less than that determined by Section 1607. Where the minimum live load, in accordance with Section 1607, is greater than the design roof snow load, the live load shall be used for design, but it may not be reduced to a load lower than the design roof snow load. Drifting need not be considered for design roof snow loads, less than 20 psf."~~ (Note: if this amendment is kept the roof snow load would change from 20 psf to 32 psf. This would mean that Salt Lake City and other valleys would no longer design for snow drift. The snow drift

equations in ASCE 7-22 have been changed in a way that will generally reduce snow drift loads as well)

(5) A new IBC, Section 1608.1.1, is added as follows:-

~~"1608.1.1 Ice dams and icicles along eaves. Section 7.4.5 of Chapter 7 of ASCE 7 referenced in IBC Section 1608.1 is deleted and replaced with the following: 7.4.5 Ice Dams and Icicles Along Eaves. Where ground snow loads exceed 75 psf, eaves shall be capable of sustaining a uniformly distributed load of 2pf on all overhanging portions. No other loads except dead loads shall be present on the roof when this uniformly distributed load is applied. All building exits under down-slope eaves shall be protected from sliding snow and ice."~~

(Note: The SEAU codes committee thinks amendment (5) should be removed. Snow loads are going down so eave snow loads will be easier to meet. If kept, references and load values need to be updated per ASCE 7-22)

(6) A new IBC, Section 1608.1.2 is added as follows:

"1608.1.2 Drifts on adjacent structures. Section 7.7.2 of ASCE 7 referenced in IBC, Section 1608.1, is deleted and replaced with the following: 7.7.2 Adjacent structures. At lower adjacent structures, the requirements of Section 7.7.1 shall be used to calculate windward and leeward drifts. The resulting drift is permitted to be truncated."

(7) A new IBC, Section 1608.2.1 is added as follows:-

~~"1608.2.1 Utah ground snow loads. Section 7.2 of ASCE 7 referenced in IBC, Section 1608.1 is modified as follows: (a) In paragraph 1, 7.2-8 is deleted and replaced with 7.2-9. (b) On Figure 7.2-1, remove CS and other ground snow load values in the state of Utah. Add red shaded region for the state of Utah with the following note: See note for Utah. (c) (a) The following is added to the Note on Figure 7.2.1: See Table 7.2-9 for Utah. (d) Add Table 7.2-9 as follows:-~~

TABLE 7.2-9			
GROUND SNOW LOADS FOR SELECTED LOCATIONS IN UTAH			
City/Town	County	Ground-Snow-Load (lb/ft²)	Elevation (ft)
Beaver	Beaver	35	5886
Brigham City	Box Elder	42	4423
Castle Dale	Emery	32	5669
Coalville	Summit	57	5581
Duchesne	Duchesne	39	5508
Farmingto n	Davis	35	4318
Fillmore	Millard	30	5138
Heber City	Wasatch	60	5604

Junction	Piute	27	6030
Kanab	Kane	25	4964
Lea	Wayne	37	7060
Logan	Cache	43	4534
Manila	Daggett	26	6368
Manti	Sanpete	37	5620
Moab	Grand	43	4029
Monticello	San Juan	26	7064
Morgan	Morgan	37	5062
Nephi	Juab	24	5134
Ogden	Weber	37	4334
Panguitch	Garfield	44	6630
Parowan	Iron	32	6007
Price	Carbon	31	5558
Provo	Utah	31	4544
Randolph	Rich	50	6286
Richfield	Sevier	27	5338
St. George	Washington	24	2585
Salt Lake City	Salt Lake	28	4239
Teele	Teele	35	5029
Vernal	Uintah	39	5384

Note: To convert lb/ft² to kN/m², multiply by 0.0479. To convert feet to meters, multiply by 0.3048. 1. Statutory requirements of the Authority Having Jurisdiction are not included in this state ground snow load table. 2. For locations where there is substantial change in altitude over the city/town, the load applies at and below the cited elevation, with a tolerance of 100 ft (30 m). 3. For other locations in Utah, see Bean, B., Maguire, M., Sun, Y. (2018), "The Utah Snow Load Study," Utah State University Civil and Environmental Engineering Faculty Publications, Paper 3589, <http://utahsnowload.usu.edu/>, for ground snow load values."

(Note: If this section is kept, the snow values need to be updated for each location for each Risk Category. The current snow load study table above uses 21psf (ASD) as a minimum. The SAC/UBCC will need to determine if a minimum snow load should be added here. Otherwise minimums specified in ASCE 7-22 7.3.3 would apply)

(8) A new IBC, Section 1613.1.1, is added as follows: "1613.1.1 Effective Seismic Weight. In ASCE 7 12.7.2 and 12.14.8.1 as referenced in Section 1613.1, Definition of W, Item 4 is deleted and replaced with the following: 4. Where flat roof snow load, P_f , exceeds ~~30~~ 45 psf (~~1.44~~ 2.16 kN/m²), the snow load included in the effective seismic weight shall be calculated, in accordance with the following equation: ~~$W_s = (0.20 + 0.025(A-5))P_f$~~ $W_s = (0.15 + 0.016(A-5))P_f$ $\geq 0.15 P_f$. WHERE:

W_s = Weight of snow to be included as effective seismic weight

A = Elevation above sea level at the location of the structure (ft./1,000)

Pf = Design flat roof snow load, psf.

For the purposes of this section, snow load shall be assumed uniform on the horizontal projection without including the effects of drift or sliding. The ~~Importance Factor, Is, Risk Category~~ used in calculating Pf may be considered ~~4.0 II~~ for use in the formula for Ws."

(9) A new IBC, Section 1613.1.2, is added as follows: "1613.1.2 Equivalent Lateral Force (ELF) Procedure. In ASCE 7 section 12.8.1.1 the first paragraph is deleted and replaced with the following:

Where the design spectral acceleration parameter Sa determined in accordance with either Section 11.4.5.1 or Chapter 21 is available, Method 1 shall be used to determine the seismic response coefficient, Cs. Where Exception 2 of Section 11.4.5 applies, Method 1 shall not be used. The lower bound for the seismic response coefficient, Cs, provided in Eq. 12.8-6 or 12.8-7 shall be applicable for both Method 1 and Method 2."

The SEAU codes committee recommends adding this section because Method 2 inadvertently uses 10% lower forces than Method 1 due to the definition of Sds being 90% of the peak Sa. We discussed this with a member of the ASCE 7 seismic committee that writes the code and were told that ASCE 7-22 should have stated what this amendment is proposing, Method 2 should not be used for the reason stated, and that ASCE 7-28 will be changing this to eliminate Method 2.