Code Review
2018 Changes to International Codes

IBC - STRUCTURAL - STRUCTURAL TAC

FLORIDA BUILDING COMMISSION
"Stronger Codes Through Science and Consensus"

Florida dbpr
Building Codes and Standards

2018 International Building Code – Structural

Structural TAC

IBC-Structural Code Change No.	IBC-Structural Section	Change Summary b/t 2015 IBC-S and 2018 IBC-S	Change Summary b/t 2017 IBC-S and 2018 IBC-S	Staff comments
S1-16	1401.1, 1501.1	Revises to clarify the scoping of chapters and references needing correction from a previous code change. The code change was further modified by the Committee. The modification does away with the proposed change to the scope of Chapter 15, retaining only the current wording. **Cost Impact:** Will not increase the cost of construction. This code change **merely clarifies the scoping of chapters** and references needing correction from a previous code change and does not change any provision of the code affecting cost.	Same as change between 2015 IBC-B and 2018 IBC-B	

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b. ☐ c. ☐ d. ☐ e. ☐ f. ☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b. ☐ c. ☐ d. ☐ e. ☐ f. ☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

IBC-Structural Code Change No.	IBC-Structural Section	Change Summary b/t 2015 IBC-S and 2018 IBC-S	Change Summary b/t 2017 IBC-S and 2018 IBC-S	Staff comments
S7-16	1510.1.1, 1510.2.1,1510.2.2, 1510.2.3	Revised to reorganize the provisions for penthouses. **Cost Impact:** Will not increase the cost of construction.	Same as change between 2015 IBC-B and 2018 IBC-B	

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

TAC Action Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Commission Action Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b.☐ c. ☐ d.☐ e.☐ f.☐ Others (Explain):		TAC	Cmsn.
		☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S40-16	1507.9.6, 1807.1.4, 2303.1.9	Revised to clarify and update the existing text without any impact on the required specifications for materials used. **Cost Impact:** Will not increase the cost of construction. These changes merely **clarify and update** the existing text without any impact on the required specifications for materials used	Same as change between 2015 IBC-B and 2018 IBC-B	

TAC Action Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Commission Action Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b.☐ c. ☐ d.☐ e.☐ f.☐ Others (Explain):		TAC	Cmsn.
		☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

G22-15	304.2, 308.2, 310.2, 402.2, 406.2, 410.2, 411.2, 412.2, 423.2, 502.1, 702.1, 802.1, 902.1, 1002.1, 1102.1, 1202.1, 1402.1, 1502.1, 1602, 1602.1, 1609.2, 1612.2, 1613.2, 1615.2, 1702.1, 1802.1, 2102.1, 2202.1,	Deletes definition "AMBULATORY CATR FACILITY." Modifies Section 1602.1. There are changes to the following Definition sections of 304.2, 308.2, 310.2, 402.2, 406.2, 410.2, 411.2, 412.2, 415.2, 421.2, 423.2, 502.1, 702.1, 722.1.1, 802.1, 902.1, 1002.1, 1102.1, 1202.1, 1402.1, 1502.1, 1602, 1602.1, 1609.2,1612.2, 1613.2, 1615.2, 1702.1, 1802.1, 2102.1, 2302.1, 2402.1, 2502.1, 2602.1, 3102.2, 3105.2, 3110.2. The intent of this proposal is to remove the definition list sections scattered about the code and the lists of defined terms included within each such section. In general when new terms are added to Chapter 2, they rarely find themselves being added to one of these lists. Terms can be removed	Same as change between 2015 IBC-B and 2018 IBC-B	

	2302.1, 2402.1, 2502.1, 2602.1, 3102.2, 3105.2, 3110.2, 404.1.1, 408.1.1, 722.1.1, [F] 307.2, [F] 415.2, [F] 421.2	from Chapter 2, but don't always get removed from these lists. This proposal simply amends the sections to remove the lists and send the code users directly to Chapter 2. **Cost Impact:** Will not increase the cost of construction. The proposal is **purely editorial in nature** and will have no impact on actual construction.		

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO:☐ a. ☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

G180-15	406.7.2, TABLE 601, 603.1, 705.2.3, 803.3, 803.13.3, 1406.3, [BG] 1510.2.5, [BG] 1510.3, 3105.3, D102.2.8, IFC 803.1	Modifies text of Section 406.7.2 “Canopies”, 603.1 “Allowable materials”, 705.2.3 “Combustible projections”, 803.3 “Heavy timber exemption”, 803.13.3 “Heavy timber construction”, 1406.3 “Balconies and similar projections”, [BG] 1510.2.5 “Type of construction”, [BG] 1510.3 “Tanks”, 3105.3 “Design and construction”, D102.2.8 “Permanent canopies”, IFC Section 803.1 “General”. Modifies TABLE 601 (601) “FIRE-RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS (HOURS)” This change is a reorganization of two sections and is not intended to change the intent of the code. This code change is part 2 of a proposal to reorganize Type IV Section 602.4 and heavy timber section 2304.11. This part of the change includes references found throughout the IBC to either: Type IV construction, Section 602.4, Section 2304.11, or "heavy timber". This change should follow directly after the 602.4 change and the reason for the change is included in that reason statement. **Cost Impact:** Will not increase the cost of construction.		

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

TAC Action **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**		**Commission Action** **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**		**TAC** / **Cmsn.** ☐ **No Action Needed** ☐ ☐ ☐ **Overlapping provisions** ☐ ☐
FS49-15	713.8.2 (New)	Adds new exception to Section 713.8.1 "Prohibited penetrations". The purpose of Section 713.8 and 713.8.1 is to limit through penetrations into a shaft enclosure; however, membrane penetrations should be permitted on the outside of the shaft enclosure. As currently written, an electrical box is not permitted on the outside of the shaft enclosure. This section needs to clarify the intent of Section 713.8. **Cost Impact:** Will not increase the cost of construction. The code change proposal will not increase the cost of construction since it will allow membrane penetrations in shaft enclosures without the need for additional construction/material on the outside of the shaft enclosure. Also, it increases net area for the building.		
TAC Action **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**		**Commission Action** **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**		**TAC** / **Cmsn.** ☐ **No Action Needed** ☐ ☐ ☐ **Overlapping provisions** ☐ ☐
S53-16	1602.1	Modifies text of Section 1602.1 "NOTATIONS". This change proposes to coordinate the Notation in Chapter 16 of the IBC with the 2016 edition of the referenced loading standard "Minimum Design Loads and Associated Criteria for Buildings and Other Structures (ASCE/SEI 7-16)".	Same as change between 2015 IBC-B and 2018 IBC-B	

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

		Cost Impact: Will not increase the cost of construction. The proposed changes will not increase the cost of construction. **This proposal coordinates the IBC with the referenced loading standard ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures. ASCE 7 will be updated from the 2010 edition to the 2016** edition as an Administrative Update to the 2018 I-Codes. As of the submission date of this code change proposal, the ASCE 7 Standards Committee has completed the committee balloting on technical changes. The document designated ASCE 7-16 Minimum Design Loads and Associated Criteria for Buildings and Other Structures is expected to be completed, published and available for purchase prior to the ICC Public Comment Hearings for Group B in October of 2016.		

TAC Action **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**	**Commission Action** **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**	**TAC**	**Cmsn.**
	☐ **No Action Needed**	☐	☐
	☐ **Overlapping provisions**	☐	☐

S55-16	1607.14.2	Adds new Section 1607.14.2 “Fire walls”. This code change clarifies the minimum lateral loading that fire walls are required to resist to meet the structural stability requirements of section 706.2 where the structure on either side of the wall has collapsed and can no longer provide support. **This is the same lateral load that is required for fire walls designed per NFPA 221 as allowed by 706.2.** This code change was further modified by the Committee. The modification removes all portions of the original proposal except for new section 1607.14.2 where a clarification is made to indicate the load is an allowable stress design load. **Cost Impact:** Will not increase the cost of construction. The cost of construction will not increase by **clarifying the lateral**	Same as change between 2015 IBC-B and 2018 IBC-B	

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

		load on firewalls, since it is already standard practice to use this loading per NFPA 221. This **clarification** will decrease the cost of design, as it provides structural engineers a clearer understanding of code intent.		

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S56-16	1602.1, 1603.1, 1603.1.4, 1609.1.1, 1609.1.1.1, 1609.1.2.2, 1609.2, 1609.3, 1609.3(3) (New), 1609.3(5) (New), 1609.3(6) (New), 1609.3(7) (New), 1609.3(8) (New), 1609.3.1, 202, 2308.2.4, 2404.1, 2404.2, 2404.3.1, 2404.3.3, 2404.3.5, 2405.5.2	Revise text of 1602.1 "Definitions", 1603.1 "General", 1603.1.4 "Wind design data", 1609.1.1 "Determination of wind loads", 1609.1.1.1 "Applicability", 1609.1.2.2 "Application of ASTM E 1996", 1609.3 "Basic design wind speed", 1609.3.1 "Wind speed conversion". Modifies text of Table 1609.3.1 "WIND SPEED CONVERSIONS". Modifies text of Section 1609.2 Definitions "BASIC WIND SPEED, Vult", "ALLOWABLE STRESS WIND SPEED, Vasd", "WIND-BORNE DEBRIS REGION", "[BS] WIND SPEED, Vult", [BS] WIND SPEED, Vasd", 2308.2.4 "Ultimate Basic wind speed", SECTION 2404 "WIND, SNOW, SEISMIC AND DEAD LOADS ON GLASS", "2404.2 Sloped glass", "2404.3.1 Vertical wired glass", "2404.3.3 Vertical patterned glass", "2404.3.5 Vertical sandblasted glass", Section 2405.5.2 Skylights rated for separate performance grades for positive and negative design pressure." Modifies text of Figure R1609.3(1)(1) "ULTIMATE BASIC DESIGN WIND SPEEDS, vultV , FOR RISK CATEGORY II BUILDINGS AND OTHER STRUCTURES", FIGURE 1609.3 1609.3(2) (2) "ULTIMATE BASIC DESIGN WIND SPEEDS, vult , FOR RISK CATEGORY III AND IV BUILDINGS AND OTHER STRUCTURES", FIGURE 1609.3(3) "BASIC DESIGN WIND SPEEDS, V, FOR RISK CATEGORY IV BUILDINGS AND OTHER STRUCTURES", FIGURE 1609.3(5) "BASIC	This change is not similar to that of the FBC. The FBC provides for Florida specific changes to this section	Overlapping provision to be considered during step 2 of the code change process **Section 1609.1.1** **Section 1609.1.2.2** **Figure 1609.3(1)** **Figure 1609.3(2)** **Figure 1609.3(3)**

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

		DESIGN WIND SPEEDS, V, FOR RISK CATEGORY II BUILDINGS AND OTHER STRUCTURES IN HAWAII", FIGURE 1609.3(6) "BASIC DESIGN WIND SPEEDS, V, FOR RISK CATEGORY III BUILDINGS AND OTHER STRUCTURES IN HAWAII", FIGURE 1609.3(7) "BASIC DESIGN WIND SPEEDS, V, FOR RISK CATEGORY IV BUILDINGS AND OTHER STRUCTURES IN HAWAII", FIGURE 1609.3(8) "BASIC DESIGN WIND SPEEDS, V, FOR RISK CATEGORY I BUILDINGS AND OTHER STRUCTURES IN HAWAII". This proposal is a **coordination proposal to bring the 2018 IBC up to date with the provision of the 2016 edition of ASCE 7** Minimum Design Loads and Associated Criteria for Buildings and Other Structures (ASCE 7-16). The changes proposed in all sections harmonizes terminology between the code and the loading standard. In all instances the word "ultimate" is changed to "basic" and the subscript "ult" is removed from the variable "V". Similarly, the word "nominal" is changed to "allowable stress" in all placed to be consistent with the terminology used in the loading standard. The increase in distance in 1609.1.1.1 Applicability to 2 miles from 1 mile is also to **correct the discrepancy between the code and ASCE 7. The design wind speed maps have been updated to reflect the maps adopted into ASCE 7-16**. Currently there are eight new maps for main wind force and component and cladding design in the ASCE 7-16 standard along with four new serviceability map. The code change was further modified by the Committee. The modification picks up additional coordination with IBC wind requirements that were not in the original proposal. **Cost Impact:** Will not increase the cost of construction. The proposed map changes will decrease the cost of construction in the majority of the United States. The basic design wind speeds have been lowered at most locations on the new		

		maps based on the latest data available, thus reducing the overall cost of construction. Along the hurricane coastline from Virginia to Texas, the wind speeds remain nearly unchanged from the current maps and thus the cost of construction will not change. **There may be a very small increase in Category IV structures** in some parts of the country, due to the new mean recurrence interval for Risk Category IV, which has now been separated from Risk Category III. The basic wind speeds for all four Risk Category maps decrease very significantly west of the Continental Divide. For example, in much of coastal California wind speeds decrease by as much as 16%, 15%, and 11% from the previous maps for Risk Category II, III, and IV structures, respectively. Wind speeds in the Northern Great Plains states are similar to previous maps, and wind speeds in hurricane prone regions from Virginia to Texas remain nearly unchanged. In the rest of the continental United States south and east of the Great Plains, wind speeds decrease as much as 12%, 8%, and 4% for Risk Category II, III, and IV buildings respectively. For a comparatively small number of buildings, the design wind speeds for Risk Category IV increase slightly as a result of the split of Risk Category III and IV into separate maps with different mean recurrence intervals. The wind speeds for Risk Category IV buildings increase on the order of 5% in hurricane-prone regions from Virginia to Texas. The wind speeds for Risk Category IV buildings increase about 2% in much of Nebraska and the Dakotas and to a lesser extent in the adjacent states. This proposal coordinates the IBC with the referenced loading standard ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures. ASCE 7 will be updated from the 2010 edition to the 2016 edition as an Administrative Update to the 2018 I-Codes.		

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b. ☐ c. ☐ d. ☐ e. ☐ f. ☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b. ☐ c. ☐ d. ☐ e. ☐ f. ☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S57-16	1603.1, 1603.1.3, 1603.1.9 (New)	Modifies text of 1603.1 “General”, 1603.1.3 “Roof snow load data.” Adds new Section 1603.1.9 “Roof rain load data”. This change proposes to coordinate the IBC with the 2016 edition of the referenced loading standard ASCE 7Minimum Design Loads and associated Criteria for Buildings and Other Structures (ASCE 7-16). In particular, the snow loads variables should be lower case and the required slope factor should also be included in the required roof snow loads data. Also, rain load data should be included on the list of design loads required on construction documents. The code change was further modified by the Committee. The modification only requires that the rain intensity be indicated. **Cost Impact:** Will not increase the cost of construction. The proposed changes will not increase the cost of construction. **This proposal coordinates the IBC with the referenced loading standard ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures. ASCE 7** will be updated from the 2010 edition to the 2016 edition as an Administrative Update to the 2018 I-Codes. As of the submission date of this code change proposal, the ASCE 7 Standards Committee has completed the committee balloting on technical changes. The document designated ASCE 7-16 Minimum Design Loads and Associated Criteria for Buildings and Other Structures is expected to be completed, published, and available for purchase prior to the ICC Public Comment Hearings for Group B in October of 2016. Any person interested in obtaining a public comment copy of ASCE 7-16 may do so by contacting James Neckel at ASCE (jneckel "at" asce.org).	Same as change between 2015 IBC-B and 2018 IBC-B	

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

TAC Action Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):		**Commission Action** Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b.☐ c. ☐ d.☐ e.☐ f.☐ Others (Explain):	☐ No Action Needed — TAC ☐ Cmsn. ☐ ☐ Overlapping provisions — TAC ☐ Cmsn. ☐	
S58-16	1603.1	Modifies text of Section 1603.1 "General". The revised code section is a list of information to be placed on the construction documents for use with the conventional light-frame construction provisions of Section 2308. The estimated dead loads are necessary to use the span Tables in Section 2308. The estimated dead loads specified on the construction documents can also be confirmed by the plans examiner. **Cost Impact:** Will not increase the cost of construction. The proposal will **add an additional item to an otherwise required list of information** on the construction documents and will not impact the cost of construction.	Same as change between 2015 IBC-B and 2018 IBC-B	
TAC Action Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):		**Commission Action** Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b.☐ c. ☐ d.☐ e.☐ f.☐ Others (Explain):	☐ No Action Needed — TAC ☐ Cmsn. ☐ ☐ Overlapping provisions — TAC ☐ Cmsn. ☐	
S62-16	1603.1.8	Modifies text of Section 1603.1.8 "Special loads". This proposal clarifies the communication of the designs direct to the builders and installers and allows the installer to provide feedback if the special load element exceeds the loads or requires a different location than was designed. This code change was further modified by the Committee to make this information required in the construction documents, rather than specifically on the drawings. The code change was	Same as change between 2015 IBC-B and 2018 IBC-B	

		further modified by the Committee. The modification makes this information required in the construction documents, rather than specifically on the drawings. **Cost Impact:** Will not increase the cost of construction. Most current practice currently follows this intent, even though it is not clearly stated in the code. The cost of construction will not increase by specifying the loads and locations, and it may speed up permitting and construction by ensuring the designer provides the information to the authority having jurisdiction and the contractor.		

TAC Action
Accommodate Florida Specific Need:
YES (Select Criteria) ☐ NO: ☐
a.☐ b.☐ c.☐ d.☐ e.☐ f.☐
Others (Explain):

Commission Action
Accommodate Florida Specific Need:
YES (Select Criteria) ☐ NO: ☐
a. ☐ b.☐ c.☐ d.☐ e.☐ f.☐
Others (Explain):

	TAC	Cmsn.
☐ No Action Needed	☐	☐
☐ Overlapping provisions	☐	☐

S63-16	1604.1, 1604.3, 1604.4, 1604.8.2, 1604.9	1604.1 “General”, 1604.3 “Serviceability”, 1604.4 “Analysis”, 1604.8.2 “Structural walls”, 1604.10 “Wind and seismic detailing”. Modifies Table 1604.3 “DEFLECTION LIMITS”. Deletes Section 1604.9 “Counteracting structural actions”. This proposed changes to Section 1604 **will harmonize the provision in the code with the 2016 edition of the referenced loading standard ASCE 7 Minimum Design Loads and Associated Criteria** for Buildings and Other Structures (ASCE 7-16). This code change was further modified by the Committee. The modification to Section 1604.4 retains current wording that the committee believes is important. **Cost Impact:** Will not increase the cost of construction. The proposed changes will not impact the cost of construction. This proposal coordinates the IBC with the referenced loading	This change is not similar to that of the FBC. The FBC provides for Florida specific changes to this section	Overlapping provision to be considered during step 2 of the code change process **Table 1604.3**

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

		standard ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures. ASCE 7 will be updated from the 2010 edition to the 2016 edition as an Administrative Update to the 2018 I-Codes.		

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO:☐ a. ☐ b.☐ c. ☐ d.☐ e.☐ f. ☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S64-16	1604.3	Modifies text of Table 1604.3 "DEFLECTION LIMITS". This proposal provides an appropriate option for determining the wind load for checking deflections by allowing use of the ten year mean return interval wind speed. This code change was further modified by the Committee. The code change was further modified by the Committee. The modification retains a portion of the current wording which was preferred. **Cost Impact:** Will not increase the cost of construction. There will be no impact on construction costs with this proposal as this proposal does not change the deflection limit, only clarifies the use of the proper wind criteria.	This change is not similar to that of the FBC. The FBC provides for Florida specific changes to this section	Overlapping provision to be considered during step 2 of the code change process

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO:☐ a. ☐ b.☐ c. ☐ d.☐ e.☐ f. ☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S65-16	1604.3	Modifies text of Table 1604.3 "DEFLECTION LIMITS". Redefines *l*. of table 1604.3. This code change adds an appropriate nomenclature definition to the deflection limits table.	This change is not similar to that of the FBC. The FBC provides for Florida specific	Overlapping provision to be considered during step 2 of the code change process

		Cost Impact: Will not increase the cost of construction. This addition is **editorial** only, thus this change will not increase the cost of construction.	changes to this section	

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b. ☐ c. ☐ d. ☐ e. ☐ f. ☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b. ☐ c. ☐ d. ☐ e. ☐ f. ☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S66-16	1604.3	Modifies text of Table 1604.3 “DEFLECTION LIMITS”. This proposal makes the deflection limits easier to apply to steel members. **Cost Impact:** Will not increase the cost of construction. This is **clarification** only, and will have no cost impact	This change is not similar to that of the FBC. The FBC provides for Florida specific changes to this section	Overlapping provision to be considered during step 2 of the code change process

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b. ☐ c. ☐ d. ☐ e. ☐ f. ☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b. ☐ c. ☐ d. ☐ e. ☐ f. ☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S67-16	1604.3	Modifies text of Table “DEFLECTION LIMITS”, This proposal updates the long term deflection estimation tools for wood products. **Cost Impact:** Will not increase the cost of construction. This **change correlates structural provisions with a new product** in the applicable standard and will not increase the cost of construction.	This change is not similar to that of the FBC. The FBC provides for Florida specific changes to this section	Overlapping provision to be considered during step 2 of the code change process

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b. ☐ c. ☐ d. ☐ e. ☐ f. ☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S69-16	1604.3, 1604.3.7 (New)	Modifies text of Table 1604.3 “DEFLECTION LIMITS”. Adds new Section 1604.3.7 “Framing Supporting Glass”. This proposal replaces reference to Section 2403 for deflection limits on framing supporting glass with reference to a new section in Chapter 16. This proposal establishes the appropriate deflection limit for exterior wall framing members that are supporting glass. It is based upon criteria given in AAMA TIR-11 “Maximum Allowable Deflection of Framing Systems for Building Cladding Components at Design Wind Loads”. This code change was further modified by the Committee. The modification corrects the proposed deflection limit for longer spans. Some concern was stated with Section 2403 using length of the glass edge while this requirement is tied to the length of member, so some confusion could result. **Cost Impact:** **Will increase the cost of construction.** The criteria given is well established within the fenestration industry. There is no cost impact for designers and contractors who are currently following "good practice" with regards to curtain wall framing systems. For designers and contractors who are not following good practice there may be additional cost associated with the vertical framing members that are supporting glass. This is a relatively small portion of the overall cost of an exterior curtain wall system	This change is not similar to that of the FBC. The FBC provides for Florida specific changes to this section	Overlapping provision to be considered during step 2 of the code change process

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b.☐ c. ☐ d.☐ e.☐ f. ☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S70-16	1604.3.3, 2203.2, 2207.1, 2207.1.1	Modifies text of Section 1604.3.3 "Steel", 2203.2 "Protection", 2207.1 "General", **2207.1.1 "Seismic design"**. Add new standard "100-15, Standard Specification for K-Series, LH-Series, and DLH-Series Open Web Steel Joists and for Joist Girders". Deletes references to "JG—10, Standard Specification for Joist Girders, K—10", "Standard Specification for Open Web Steel Joists", "K-series, LH/DLH—10, Standard Specification for Longspan Steel Joists, LH-series and Deep Longspan Steel Joists, DLH-series." This proposal adopts the newly completed 2015 edition (44th Edition) of the combined SJI-100, Standard Specification for K-Series, LH-Series, and DLH-Series Open Web Steel Joists and for Joist Girders, in the applicable code sections **Cost Impact: Will increase the cost of construction**. This code change proposal adopts the latest industry standard for steel joists. At this time, it is difficult to anticipate how cost of construction will be fully impacted, other than to note that some of the additional costs will be offset by new efficiencies in the design and installation of steel joists.	Same as change between 2015 IBC-B and 2018 IBC-B	**No action needed for s.2207.1.1 – Seismic design.**

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b. ☐ c. ☐ d. ☐ e. ☐ f. ☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b. ☐ c. ☐ d. ☐ e. ☐ f. ☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S72-16	604.5, 1615 (New), 1615.1 (New), 1615.2 (New), 202 (New)	Adds new definitions "TSUNAMI DESIGN GEODATABASE.", "TSUNAMI DESIGN ZONE", Modifies text of Section 1604.5 " Risk category". Adds new Section 1615 "Tsunami Loads". Many coastal areas in the western United States are subject to potentially destructive tsunamis. The American Society of Civil Engineers (ASCE) have supported a 5-year effort to address these needs and develop provisions for ASCE 7 that have incorporated the last 10 years of advances in tsunami engineering research since the 2004 Indian Ocean earthquake and tsunami. Chapter 6 Tsunami Loads and Effects is a new chapter in ASCE 7. Proposal only affects Risk Categories III & IV and it is not applicable to existing structures. **Cost Impact: Will increase the cost of construction.** This proposal may increase the cost of construction depending on the tsunami inundation depth at the structure. Cost studies have shown this increase to be very small, given that the Risk Category III and IV structures in these five western states will already be designed for high seismic loads and ductile detailing. There may be some enhanced tsunami design necessary for vertical load carrying elements of minimal dimensions and capacity. As with other flooding effects, foundations must resist scour**. This proposal adds the pointer in the IBC to refer to the tsunami load provisions in the referenced loading standard ASCE 7. ASCE 7-16** Minimum Design Loads and Associated Criteria for Buildings and Other Structures will be updated from the 2010 edition to the 2016 edition as an Administrative Update to the 2018 I-Codes. As of the submission date of this code	Same as change between 2015 IBC-B and 2018 IBC-B	

		change proposal, the ASCE 7 Standard Committee has completed the committee balloting on the technical changes. The document designated ASCE 7-16 Minimum Design Loads and Associated Criteria for Buildings and Other Structures is expected to be completed, published, and available for purchase prior to the ICC Public Comment hearings for Group B in October 2016. Any person interested in obtaining a public comment copy of ASCE 7-16 may do so by contacting James Neckel at ASCE.		

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO:☐ a. ☐ b.☐ c. ☐ d.☐ e.☐ f. ☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S75-16	1604.5	Modifies text of Table 1604.5 “RISK CATEGORY OF BUILDINGS AND OTHER STRUCTURES”. This code change clarifies the level of risk that pertains to various Group I-2 facilities. **Cost Impact:** Will not increase the cost of construction. No increase in cost as this is a **clarification only**, based on the ICC Interpretations Committee IBC Interpretation 113-12.	This change is not similar to that of the FBC. The FBC provides for Florida specific changes to this section	Overlapping provision to be considered during step 2 of the code change process

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO:☐ a. ☐ b.☐ c. ☐ d.☐ e.☐ f. ☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S76-16	1604.5.1	Modifies text of Section 1604.5.”1 Multiple occupancies”. This proposal adds an exception to risk categories for buildings	Same as change between 2015	

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

		that also have a storm shelter. Unless the shelter is designated as an emergency shelter. **Cost Impact:** Will not increase the cost of construction. No increase in cost as **this is a clarification only**, based on the ICC Interpretations Committee IBC Interpretation 113-12.	IBC-B and 2018 IBC-B	

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b. ☐ c. ☐ d. ☐ e. ☐ f. ☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b. ☐ c. ☐ d. ☐ e. ☐ f. ☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S77-16	1605.1, 1605.2.1, 1605.3.2	Modifies text of Section 1605.1 "General", 1605.2.1 "Other loads", 1605.3.2 "Alternative basic load combinations". This code change updates IBC provisions to coordinate with the latest edition of the referenced standard, ASCE 7, which was updated in ADM94-16. **Cost Impact:** Will not increase the cost of construction. The proposed changes will not impact the cost of construction. This proposal **coordinates the IBC with the referenced loading standard ASCE 7** Minimum Design Loads and Associated Criteria for Buildings and Other Structures. ASCE 7 will be updated from the 2010 edition to the 2016 edition as an Administrative Update to the 2018 I-Codes.	Same as change between 2015 IBC-B and 2018 IBC-B	

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b. ☐ c. ☐ d. ☐ e. ☐ f. ☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b. ☐ c. ☐ d. ☐ e. ☐ f. ☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S85-16	1605.1, 1605.2.1, 1605.3.2	Modifies text of table "1607.1 MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS, L0 , AND MINIMUM	Same as change between 2015	

		CONCENTRATED LIVE LOADS". Proposed modifications to Table 1607.1 modify the live loads on decks to 1.5 times the live load for the area served, but not required to exceed 100 psf. **Cost Impact:** **Will increase the cost of construction.** The proposed changes will impact the cost of construction. This proposal **coordinates the IBC with the referenced loading standard ASCE 7** Minimum Design Loads and Associated Criteria for Buildings and Other Structures. ASCE 7 will be updated from the 2010 edition to the 2016 edition as an Administrative Update to the 2018 I-Codes.	IBC-B and 2018 IBC-B	

TAC Action **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**	**Commission Action** **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**		**TAC**	**Cmsn.**
		☐ **No Action Needed**	☐	☐
		☐ **Overlapping provisions**	☐	☐

S87-16	1605.1, 1605.2.1, 1605.3.2	Modifies text of table 1607.1 "MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS, L0, AND MINIMUM CONCENTRATED LIVE LOADS". This proposal clarifies which live loads are not permitted to be reduced, and more clearly **align the IBC with ASCE 7.** **Cost Impact:** Will not increase the cost of construction. This is a **clarification** that does not result in an increase of design loads or cost of construction.	Same as change between 2015 IBC-B and 2018 IBC-B	

TAC Action **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**	**Commission Action** **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**		**TAC**	**Cmsn.**
		☐ **No Action Needed**	☐	☐
		☐ **Overlapping provisions**	☐	☐

S88-16	1607.4, 1607.9.3, 1607.9.4	Modifies text of Section 1607.4 "Concentrated live loads", 1607.9.3 "Elements supporting hoists for façade access equipment". This proposed changes to Section 1607 will harmonize the provision in the code with the 2016 edition of the referenced loading standard ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures (ASCE 7-16). This code change was further modified by the Committee. The modification further updates the proposal for consistency with ASCE 7 due to public comments. **Cost Impact:** Will not increase the cost of construction. The proposed changes will not impact the cost of construction. This **proposal coordinates the IBC with the referenced loading standard ASCE 7 Minimum Design Loads** and Associated Criteria for Buildings and Other Structures. ASCE 7 will be updated from the 2010 edition to the 2016 edition as an Administrative Update to the 2018 I-Codes.	Same as change between 2015 IBC-B and 2018 IBC-B	

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f. ☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b.☐ c. ☐ d.☐ e.☐ f. ☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S89-16	1607.8, 1607.8.3	Modifies text of Section 1607.8 "Loads on handrails, guards, grab bars, and seats", 1607.9 "Vehicle barriers". This proposal is intended to be a clarification. The current language only brings up benches in dressing rooms. 2009 A117.1 require accessible benches in dressing rooms, locker rooms and steam rooms and saunas. The loads of 250 lbs. should be applied to grab bars and shower seats wherever they are provided. The load of 250 pounds should not be required for all benches in any dressing room, but should be required for accessible benches in all three locations.	Same as change between 2015 IBC-B and 2018 IBC-B	

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

		Cost Impact: Will not increase the cost of construction. Need cost impact and substantiation. As this is intended as a **clarification**, there will be no increase in construction cost.		

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b. ☐ c. ☐ d. ☐ e. ☐ f. ☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S93-16	1607.12.3.1	Modifies text of Section 1607.12.3.1 "Vegetative and landscaped roofs". This proposed changes to Section 1607 will **harmonize the provision in the code with the 2016 edition of the referenced loading standard ASCE 7 Minimum** Design Loads and Associated Criteria for Buildings and Other Structures (ASCE 7-16). **Cost Impact:** Will not increase the cost of construction. The proposed changes will likely impact the design and construction of these systems because this proposal seeks to reference the recognized loading standard ASCE 7, which now includes loading provisions for this use type. Whether costs increase or decrease or otherwise may impact design costs are undetermined because the current ASTM reference may or may not be similar to the acceptable ASCE 7 loading methodology, which is consistent with all other provisions in ASCE 7. This proposal coordinates the IBC with the referenced loading standard ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures. ASCE 7 will be updated from the 2010 edition to the 2016 edition as an Administrative Update to the 2018 I-Codes.	Same as change between 2015 IBC-B and 2018 IBC-B	

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

TAC Action Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Commission Action Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b.☐ c. ☐ d.☐ e.☐ f.☐ Others (Explain):		TAC	Cmsn.
		☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐
S95-16	1607.12.5.1	Modifies text of Section 1607.12.5.1 "Roof live load". This code change improves the current wording of roof live loads at photovoltaic panels. **The modification incorporates some additional wording from the referenced standard, ASCE 7**, that is preferred. This code change was further modified by the Committee. The modification incorporates some additional wording from the referenced standard, ASCE 7, that is preferred. **Cost Impact:** Will not increase the cost of construction. These are **editorial changes** only.	Same as change between 2015 IBC-B and 2018 IBC-B	
TAC Action Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Commission Action Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b.☐ c. ☐ d.☐ e.☐ f.☐ Others (Explain):		TAC	Cmsn.
		☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐
S98-16	1607.12.5.2.1 (New)	Adds new Section 1607.12.5.2.1 "Photovoltaic panels installed on open grid roof structures". This proposal adds roof load requirements for photovoltaic panels that are taken from the **latest edition of the referenced standard, ASCE 7**, which was updated in ADM94-16. This was further modified by the Committee. The modification corrects a mistaken section reference. **Cost Impact:** Will not increase the cost of construction. The proposed changes may or may not impact the cost of	Same as change between 2015 IBC-B and 2018 IBC-B	

		construction. This proposal standardizes this evolving industry where requirements did not previously exist so that the loading and design requirements are consistent. This proposal coordinates the IBC with the referenced loading standard ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures. ASCE 7 will be updated from the 2010 edition to the 2016 edition as an Administrative Update to the 2018 I-Codes.		

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b. ☐ c. ☐ d. ☐ e. ☐ f. ☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b. ☐ c. ☐ d. ☐ e. ☐ f. ☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S104-16	1604.11 (New), 1609.1.1	Modifies text of Section 1609.1.1 “Determination of wind loads”. This code change adds a reference to ICC 500 for determination of loads on storm shelters. The code change was further modified by the Committee. The modification moves the reference and clarifies that all loads on storm shelter may be determined using the referenced standard. **Cost Impact:** Will not increase the cost of construction. The cost of construction will not increase by **clarifying** storm shelter wind loads in Chapter 16, since wind loads for storm shelters are already required to be determined in accordance with ICC 500 by section 423.	This change is not similar to that of the FBC. The FBC provides for Florida specific changes to this section	Overlapping provision to be considered during step 2 of the code change process

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b. ☐ c. ☐ d. ☐ e. ☐ f. ☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b. ☐ c. ☐ d. ☐ e. ☐ f. ☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S108-16	1609.6, 1609.6.1,	Deletes Section 1609.6 “Alternate all-heights”. Removal of	Same as change	

	1609.6.1.1, 1609.6.2, 1609.6.3, 1609.6.4, 1609.6.4.1, 1609.6.4.2, 1609.6.4.3, 1609.6.4.4, 1609.6.4.4.1	the Alternate all-heights method will ensure that all buildings and structures in the United States are designed with consistent levels of safety and serviceability for wind loading. **Cost Impact:** Will not increase the cost of construction. The proposed changes will not impact the cost of construction. **This proposal is a re-organization of the pointers** in the IBC to refer to the wind provisions in the referenced loading **standard ASCE 7. ASCE 7 Minimum Design** Loads and Associated Criteria for Buildings and Other Structures will be updated fro the 2010 edition to the 2016 edition as an Administrative Update to the 2018 I-Codes.	between 2015 IBC-B and 2018 IBC-B	

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b. ☐ c. ☐ d. ☐ e. ☐ f. ☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b. ☐ c. ☐ d. ☐ e. ☐ f. ☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S109-16	1609.6.2	Modifies text of table 1609.6.2 “NET PRESSURE COEFFICIENTS”. Full scale testing and wind tunnel testing has shown that for low-rise buildings the roof pressures coefficients have been non-conservative for the past editions of the code. The values in ASCE 7-16 have been corrected and thus the values in Table 1609.6.2 need to be adjusted to match the ASCE 7-16 values **Cost Impact: Will increase the cost of construction.** Initial roof construction and roofing costs will increase but overall repair costs following major wind events will be decreased. The layout of this portion of the table has been formatted to match the remaining portions of the table from the 2015 IBC. This formatting leads to very conservative design values being utilized as compared to the **ASCE 7-16 figures for the various wind zones specified in ASCE 7-16.**	Same as change between 2015 IBC-B and 2018 IBC-B	

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

TAC Action **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**		**Commission Action** **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**		**TAC** / **Cmsn.** ☐ **No Action Needed** ☐ ☐ ☐ **Overlapping provisions** ☐ ☐
S114-16	1613.1, 1613.3.2, 1613.3.3, 1613.4, 1613.4.1, 1613.5, 1613.5.1, 1613.6	Modifies text of Section 1613.1 "Scope", 1613.3.2 "Site class definitions", 1613.3.3 "Site coefficients and adjusted maximum considered earthquake spectral response acceleration parameters". TABLE 1613.3.3 (2) "VALUES OF SITE COEFFICIENT". Deletes Sections 1613.4 "Alternatives to ASCE 7", 1613.4.1 "Additional seismic force-resisting systems for seismically isolated structures", 1613.5 "Amendments to ASCE 7", 1613.6 "Ballasted photovoltaic panel systems", 1613.5.1 "Transfer of anchorage forces into diaphragm". This code change updates the IBC seismic load provisions for consistency with the latest edition of the referenced standard, ASCE 7, which was updated in ADM94-16. Modification by committee retains the prior exclusion of Chapter 14 in ASCE 7 and also retains the IBC requirements for ballasted photovoltaic panel **Cost Impact:** Will not increase the cost of construction.	Same as change between 2015 IBC-B and 2018 IBC-B	**No action needed** **Seismic provisions**
TAC Action **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**		**Commission Action** **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**		**TAC** / **Cmsn.** ☐ **No Action Needed** ☐ ☐ ☐ **Overlapping provisions** ☐ ☐
S119-16	1613.3.1	Modifies text of Figures FIGURE 1613.3.1(1)-1 (1) "RISK-	Same as change	**No action needed**

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

		TARGETED MAXIMUM CONSIDERED EARTHQUAKE (MCER) GROUND MOTION RESPONSE ACCELERATIONS FOR THE CONTERMINOUS UNITED STATES OF 0.2-SECOND SPECTRAL RESPONSE ACCELERATION (5% OF CRITICAL DAMPING)", Figure 1613.3.1(1)-2 (1) " RISK-TARGETED MAXIMUM CONSIDERED EARTHQUAKE (MCE R) GROUND MOTION RESPONSE ACCELERATIONS FOR THE CONTERMINOUS UNITED STATES OF 0.2-SECOND SPECTRAL RESPONSE ACCELERATION (5% OF CRITICAL DAMPING)", Figure 1613.3.1(2)-1 (2) "RISK-TARGETED MAXIMUM CONSIDERED EARTHQUAKE (MCER) GROUND MOTION RESPONSE ACCELERATIONS FOR THE CONTERMINOUS UNITED STATES OF 1-SECOND SPECTRAL RESPONSE ACCELERATION (5% OF CRITICAL DAMPING), Figure 1613.3.1(2)-222 (2) "RISK-TARGETED MAXIMUM CONSIDERED EARTHQUAKE (MCE R) GROUND MOTION RESPONSE ACCELERATIONS FOR THE CONTERMINOUS UNITED STATES OF 1-SECOND SPECTRAL RESPONSE ACCELERATION (5% OF CRITICAL DAMPING)", FIGURE 1613.3.1 (3) "RISK-TARGETED MAXIMUM CONSIDERED EARTHQUAKE (MCER) GROUND MOTION RESPONSE ACCELERATIONS FOR HAWAII OF 0.2- AND 1-SECOND SPECTRAL RESPONSE ACCELERATION (5% OF CRITICAL DAMPING), Figure 1613.3.1 (4) "RISK-TARGETED MAXIMUM CONSIDERED EARTHQUAKE (MCER) GROUND MOTION RESPONSE ACCELERATIONS FOR ALASKA OF 0.2-SECOND SPECTRAL RESPONSE ACCELERATION (5% OF CRITICAL DAMPING)", Figure 1613.3.1 (6) "RISK-TARGETED MAXIMUM CONSIDERED EARTHQUAKE (MCER) GROUND MOTION RESPONSE ACCELERATIONS FOR PUERTO RICO AND THE UNITED STATES VIRGIN ISLANDSOF 0.2- AND 1-SECOND SPECTRAL RESPONSE ACCELERATION (5% OF CRITICAL DAMPING)", Figure 1613.3.1 (7) "RISK-	between 2015 IBC-B and 2018 IBC-B	**Seismic provisions**

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

		TARGETED MAXIMUM CONSIDERED EARTHQUAKE (MCER) GROUND MOTION RESPONSE ACCELERATIONS FOR GUAM AND THE NORTHERN MARIANA ISLANDS OF 0.2- AND 1-SECOND SPECTRAL RESPONSE ACCELERATION (5% OF CRITICAL DAMPING)", FIGURE 1613.3.1(8) (8) "RISK-TARGETED MAXIMUM CONSIDERED EARTHQUAKE (MCER) GROUND MOTION RESPONSE ACCELERATIONS FOR AMERICAN SAMOA OF 0.2- AND 1-SECOND SPECTRAL RESPONSE ACCELERATION (5% OF CRITICAL DAMPING)". This code change updates the IBC earthquake ground mortion maps to provide consistency with the latest edition of the referenced standard, ASCE 7, which was update in ADM94-16. Modification by committee corrects the map titles by deleting "site class B". **Cost Impact: Will increase the cost of construction**. Use of the proposed maps can result in modest increases OR decreases in overall construction cost depending on the geographic location. Because the cost of structural systems is generally a small portion of the overall construction cost, the overall impact, whether increase or decrease, is thought to be quite modest.		

TAC Action **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**	**Commission Action** **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**		**TAC**	**Cmsn.**
		☐ **No Action Needed**	☐	☐
		☐ **Overlapping provisions**	☐	☐

S124-16	1613.6	Modifies text of Section 1613.6 "Ballasted photovoltaic panel systems". This proposal will add an option for "other approved analysis" methods for systems in Section 1613.6.	Same as change between 2015 IBC-B and 2018 IBC-B	**No action needed** **Seismic provisions**

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

		Cost Impact: Will not increase the cost of construction. This proposal will allow more flexibility in choosing a method of analysis for justifying ballasted, unattached rooftop PV systems. Engineering cost will be the same or less. Cost of construction will be the same or less.		

TAC Action **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**	**Commission Action** **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**		**TAC**	**Cmsn.**
		☐ **No Action Needed**	☐	☐
		☐ **Overlapping provisions**	☐	☐

S126-16	1615.1	Modifies text of Section 1615.1 "General". This proposed change corrects the section to be consistent with the intent and clarifies the provisions for High-rise buildings. Originally one could mistakenly interpret that all of section 1615.1 applies to all High-rise buildings that are assigned to Risk Category III or IV. **Cost Impact:** Will not increase the cost of construction. The cost of construction will not increase by clarifying the provisions of 1615.1, and the **clarification** could decrease cost due to misinterpretation.	Same as change between 2015 IBC-B and 2018 IBC-B	

TAC Action **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**	**Commission Action** **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**		**TAC**	**Cmsn.**
		☐ **No Action Needed**	☐	☐
		☐ **Overlapping provisions**	☐	☐

S131-15	1704.2.5, 1704.2.5.1, 1704.5	Modifies text of Section 1704.2.5 "Special inspection of fabricated items", 1704.2.5.1 "Fabricator approval", 1704.5 "Submittals to the building official". The primary purpose of this proposal is to streamline and focus the provisions for	Same as change between 2015 IBC-B and 2018 IBC-B	**No action needed** **These sections are reserved under the FBC**

		fabricator approval. **Cost Impact:** Will not increase the cost of construction.		

TAC Action **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**	**Commission Action** **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**		
		TAC	**Cmsn.**
	☐ **No Action Needed**	☐	☐
	☐ **Overlapping provisions**	☐	☐

S133-16	1704.6, 1704.6.1, 1704.6.1 (New), 1704.6.2	Modifies text of Section 1704.6 "Structural observations", 1704.6.2 "Structural observations for seismic resistance", 1704.6.3 "Structural observations for wind resistance". Adds new Section 1704.6.1 "Structural observations for structures". Currently the code requires structural observation only in the limited situations of tall buildings or higher risk category structures located in high seismic and wind areas. It is the opinion of the National Council of Structural Engineers Associations that structural observation should be required for all large, or important, buildings anywhere in the country. Modifications by committee to remove structural observation thresholds that are based on occupant load and the building height. **Cost Impact:** Will not increase the cost of construction. The code change proposal will not increase the cost of construction. The may be a small increase to design fees if engineers request fee to cover this added service. However, it is generally held by many structural engineers that requirements stipulated by the building code will viewed as within the normal scope of services therefore it is not anticipated that there will be a general	Same as change between 2015 IBC-B and 2018 IBC-B	**No action needed** **These sections are reserved under the FBC**

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

		increase in engineering fees resulting from this proposal.		

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S135-16	1705.2	Modifies text of Section 1705.2 "Steel construction". Because of the adoption of comprehensive quality assurance requirements for steel construction, through reference to AISC 360 Chapter N for example, this exception needs to be tightened considerably. The proposed modification focuses the exception on a full "project" rather than on individual "structural steel elements" **Cost Impact: Will increase the cost of construction**. This may increase the cost of construction where the exception was improperly implemented previously. However, it is really intended to be editorial in nature.	Same as change between 2015 IBC-B and 2018 IBC-B	**No action needed** **These sections are reserved under the FBC**

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S145-16	1705.11.1	Modifies text of Section 1705.11.1 "Structural wood". This proposal is meant to clarify when special inspection is required for shearwalls. Proposal feels the intent of this section is to require special inspection of any nail spacing at 4" o.c. or less without regard to whether the nails are staggered or not. Change will make sure it is interpreted that way.	Same as change between 2015 IBC-B and 2018 IBC-B	**No action needed** **These sections are reserved under the FBC**

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

		Cost Impact: Will not increase the cost of construction.		

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b.☐ c. ☐ d.☐ e.☐ f.☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S146-16	1705.12.1.1, 1705.12.1.2, 1705.13.1.1, 1705.13.1.2	Modifies text of Section 1705.12.1.1 “Seismic force-resisting systems”, 1705.12.1.2 “Structural steel elements”, 1705.13.1.1 “Seismic force-resisting systems”, 1705.13.1.2 “Structural steel elements”. This proposal provides a clarification in the exceptions in these sections on special inspection and nondestructive testing for structural steel seismic force-resisting systems and for structural steel elements in other types of seismic force-resisting systems. **Cost Impact:** Will not increase the cost of construction.	Same as change between 2015 IBC-B and 2018 IBC-B	**No action needed** **These sections are reserved under the FBC**

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b.☐ c. ☐ d.☐ e.☐ f.☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S147-16	1705.12.6	Modifies text of Section 1705.12.6 “Plumbing, mechanical and electrical components”. This proposal provides periodic special inspection to verify that adequate clearance is provided between sprinkler drops and sprigs and adjacent structural and nonstructural components. Experience in recent earthquakes has shown that pounding between sprinkler piping drops and sprigs and adjacent nonstructural components such as pipes and ducts has resulted in pipe	Same as change between 2015 IBC-B and 2018 IBC-B	**No action needed** **These sections are reserved under the FBC**

		connection failures and accidental activation, which resulted in flooding and potentially compromising the operability of the system should fire following earthquake occur. **Cost Impact:** Will increase the cost of construction. This change might have a very minor impact on the cost of installation of electrical, mechanical and plumbing installations and their inspection.		

TAC Action **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**	**Commission Action** **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**		**TAC**	**Cmsn.**
		☐ **No Action Needed**	☐	☐
		☐ **Overlapping provisions**	☐	☐

S149-16	1708.1, 1708.2, 1708.3, 1708.3.1, 1708.3.2	Modifies text of Section 1708.1 “General”, 1708.2 “In-situ load tests”, 1708.2.1 “Load test procedure specified”, 1708.2.2 “Load test procedure not specified”. Deletes section 1708.2 “Test standards”. This is an editorial change of the in-situ load tests. This code change was further modified by public comment. This public comment strikes the replacement in response to the Committee's concerns. The rest of the proposal cleans up various conflicts and unclear requirements in Section 1708. **Cost Impact:** Will not increase the cost of construction. As an editorial change, this proposal is intended to **clarify and make the load test requirements more concise**. It should have no measurable impact on the cost of construction.	Same as change between 2015 IBC-B and 2018 IBC-B	

TAC Action **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**		**Commission Action** **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**		**TAC** / **Cmsn.** ☐ **No Action Needed** ☐ ☐ ☐ **Overlapping provisions** ☐ ☐
S150-16	1709.5	Modifies text of Section 1709.5 "Exterior window and door assemblies". This proposed amendment expressly states that the use of 0.6 multiplier is allowed and will alleviate the confusion that currently exists benefiting all – code officials, manufacturers and builders. This code change was further modified by the Committee. The modifications are **editorial** corrections that further clarify that allowable stress wind loads are permitted. **Cost Impact:** Will not increase the cost of construction. This proposal is a **clarification** and not substantive. There are no new requirements	This change is not similar to that of the FBC. The FBC provides for Florida specific changes to this section	Overlapping provision to be considered during step 2 of the code change process
TAC Action **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**		**Commission Action** **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**		**TAC** / **Cmsn.** ☐ **No Action Needed** ☐ ☐ ☐ **Overlapping provisions** ☐ ☐
S166-16	1803.5.12, 1809.13, 1810.3.11.2, 1810.3.12, 1810.3.6.1, 1810.3.9.4	Modifies text of Section 1803.5.12 "Seismic Design Categories D through F", 1809.13 "Footing seismic ties", 1810.3.6.1 "Seismic Design Categories C through F", 1810.3.9.4 "Seismic reinforcement", 1810.3.11.2 "Seismic Design Categories D through F", 1810.3.12 "Grade beams". This code change updates the Chapter 18 provisions for consistency with the latest edition of the standard, ASCE 7, which was updated in ADM94-16.	Same as change between 2015 IBC-B and 2018 IBC-B	**No action needed** **Seismic provisions**

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

		Cost Impact: Will not increase the cost of construction. The proposed changes will not impact the cost of construction. This proposal is a re-organization of the pointers in the IBC to refer to the referenced loading standard ASCE 7. ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures will be updated from the 2010 edition to the 2016 edition as an Administrative Update to the 2018 I-Codes. As of the submission date of this code change proposal, the ASCE 7 Standards Committee has completed the committee balloting on the technical changes. The document designated ASCE 7-16 Minimum Design Loads and Associated Criteria for Buildings and Other Structures is expected to be competed, published, and available for purchase prior to the ICC Public Comment Hearings for Group B in October of 2016. Any person interested in obtaining a public comment copy of ASCE 7-16 may do so by contacting James Neckel at ASCE (jneckel "at" asce.org).		

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b.☐ c. ☐ d.☐ e.☐ f. ☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S167-16	1804.1	Modifies text of Section 1804.1 “Excavation near foundations”. This proposal make it clear that excavations must not reduce vertical support as well as lateral support. **Cost Impact:** Will not increase the cost of construction. The current code language **needs clarification to acknowledge** the cross slope for accessibility in terms of site grading. Changing the language to acknowledge this will not affect the construction cost.	Same as change between 2015 IBC-B and 2018 IBC-B	

TAC Action Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b. ☐ c. ☐ d. ☐ e. ☐ f. ☐ Others (Explain):	**Commission Action** Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b. ☐ c. ☐ d. ☐ e. ☐ f. ☐ Others (Explain):		**TAC**	**Cmsn.**
		☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S174-16	1804.4	Modifies text of Section 1804.4 "Site grading". This code change provides clarification on the question of site grading requirement versus maximum slopes permitted for accessibility. The code change was modified by the Committee. The modification place the new text in an exception, which is more appropriate. **Cost Impact:** Will not increase the cost of construction. The current code language needs **clarification to acknowledge the cross slope** for accessibility in terms of site grading. Changing the language to acknowledge this will not affect the construction cost.	Same as change between 2015 IBC-B and 2018 IBC-B	

TAC Action Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b. ☐ c. ☐ d. ☐ e. ☐ f. ☐ Others (Explain):	**Commission Action** Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b. ☐ c. ☐ d. ☐ e. ☐ f. ☐ Others (Explain):		**TAC**	**Cmsn.**
		☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S186-16	1807.2.2	Modifies text of Section 1807.2.2 "Design lateral soil loads". This code change appropriately adds the requirement for the design to comply with lateral loads that are identified in the geotechnical report into the section on retaining wall design. The code change was further modified by the Committee. The modification provides coordination with the requirements of 1803.5.12. **Cost Impact:** Will not increase the cost of construction.	Same as change between 2015 IBC-B and 2018 IBC-B	**No action needed** **Seismic provisions**

		The code change reflects current practice.		

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S205-16	1802.1, 1810.3.11, 202 (New)	Adds new definition to Section 1802.1 "COMBINED PILE RAFT". Modifies text of Section 1810.3.11 "Pile caps". This proposal will clarify combined pile rafts which is a type of system that is widely used. **Cost Impact:** Will not increase the cost of construction. The code change proposal to add a definition will not change the cost of construction since that is simply **an addition of a definition**. The code change proposal to exempt combined pile rafts will not increase the cost of construction and in favorable conditions (when combined pile rafts are feasible) will decrease the cost of construction.	Same as change between 2015 IBC-B and 2018 IBC-B	

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S213-16	1810.3.3.1.4	Modifies text of Section 1810.3.3.1.4 "Allowable shaft resistance". This code change the substitutes recognized industry terminology, generalizing statements for all soil conditions. **Cost Impact:** Will not increase the cost of construction. The code change will not increase the cost of construction as	Same as change between 2015 IBC-B and 2018 IBC-B	

		it is just an improvement in wording.		

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b.☐ c. ☐ d.☐ e.☐ f. ☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S215-16	1810.3.3.1.6	Modifies text of Section 1810.3.3.1.6 “Allowable uplift load of grouped deep foundation elements”. This is a clarification to replace "capacity" with "load" since a safety factor is implied by "allowable" or "working", and "capacity" is by definition an "ultimate". It is the maximum "load" that is being "allowed". The word "working" is confusing and further is redundant since "allowable" is always present. **Cost Impact:** Will not increase the cost of construction. The code change will not increase the cost of construction since it is just a **wording change for clarity.**	Same as change between 2015 IBC-B and 2018 IBC-B	

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b.☐ c. ☐ d.☐ e.☐ f. ☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S221-16	1810.3.5.2.1	Modifies text of Section 1810.3.5.2.1 “Cased”. The section title is changed for consistency with the title and definition of main section 1810.3.5.2 to which this subsection belongs. **Cost Impact:** Will not increase the cost of construction. The code change proposal will not increase the cost of construction since it merely is a **change to make it consistent with its parent section.**	Same as change between 2015 IBC-B and 2018 IBC-B	

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

TAC Action **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.**☐ **b.**☐ **c.**☐ **d.**☐ **e.**☐ **f.** ☐ **Others (Explain):**		**Commission Action** **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.**☐ **c.**☐ **d.**☐ **e.**☐ **f.** ☐ **Others (Explain):**		**TAC** / **Cmsn.** ☐ **No Action Needed** ☐ ☐ ☐ **Overlapping provisions** ☐ ☐
S222-16	1810.3.5.2.1	Modifies text of Section 1810.3.5.2.2 "Uncased". This code change coordinates the text of this section with that of Section 1810.3.5.2 and also removes an unenforceable term. **Cost Impact:** Will not increase the cost of construction. The code change proposal will not increase the cost of construction since it is a change to **make it consistent with its parent section,** and a change in terminology.	Same as change between 2015 IBC-B and 2018 IBC-B	
TAC Action **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.**☐ **b.**☐ **c.**☐ **d.**☐ **e.**☐ **f.** ☐ **Others (Explain):**		**Commission Action** **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.**☐ **c.**☐ **d.**☐ **e.**☐ **f.** ☐ **Others (Explain):**		**TAC** / **Cmsn.** ☐ **No Action Needed** ☐ ☐ ☐ **Overlapping provisions** ☐ ☐
S223-16	1810.3.5.2.3	Modifies text of Section 1810.3.5.2.3 "Micropiles". This proposal will allow commonly available nominal 12 inch diameter pipe to be used in place of the current cap at 12 inches. **Cost Impact:** Will not increase the cost of construction. This code **change proposal is simply in terminology** and will not increase the cost of construction.	Same as change between 2015 IBC-B and 2018 IBC-B	

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b.☐ c. ☐ d.☐ e.☐ f. ☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S227-16	1810.3.8.3.2, 1810.3.8.3.3, 1810.3.8.3.4 (New)	Modifies text of Section 1810.3.8.3.2 “Seismic reinforcement in Seismic Design Category C”. 1810.3.8.3.3 “Seismic Reinforcement in Seismic Design Categories D through F”. Adds new Section “1810.3.8.3.4 Axial load limit in Seismic Design Categories C through F”. This proposal provides more rational and accurate limits of reinforcement for precast prestressed piles. **Cost Impact:** **Will increase the cost of construction.** As the comparisons of current and proposed provisions in the supporting documentation show, the cost of precast concrete piles with confinement reinforcement in the form of spirals is likely to go up modestly in many situations, because of the increased confinement requirements proposed	Same as change between 2015 IBC-B and 2018 IBC-B	**No action needed** **Seismic provisions**

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b.☐ c. ☐ d.☐ e.☐ f. ☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S233-16	1810.4.1.5	Modifies text of Section 1810.4.1.5 “Defective timber piles”. Change to address that if any substantial sudden change in rate of penetration cannot be correlated to soil strata, the pile shall be removed for inspection or rejected **Cost Impact:** Will not increase the cost of construction. The code change proposal will not increase the cost of	Same as change between 2015 IBC-B and 2018 IBC-B	

		construction because it **does not change current practice.**		

TAC Action
Accommodate Florida Specific Need:
YES (Select Criteria) ☐ NO: ☐
a.☐ b.☐ c.☐ d.☐ e.☐ f.☐
Others (Explain):

Commission Action
Accommodate Florida Specific Need:
YES (Select Criteria) ☐ NO: ☐
a. ☐ b. ☐ c. ☐ d. ☐ e. ☐ f. ☐
Others (Explain):

	TAC	Cmsn.
☐ No Action Needed	☐	☐
☐ Overlapping provisions	☐	☐

S237-16	1810.4.4	Modifies text of Section 1810.4.4 "Preexcavation". Pile types in addition to driven piles should also meet this requirement of 1810.4.4. **Cost Impact:** Will not increase the cost of construction. The code change proposal will not increase the cost of construction since this is already common practice	Same as change between 2015 IBC-B and 2018 IBC-B	

TAC Action
Accommodate Florida Specific Need:
YES (Select Criteria) ☐ NO: ☐
a.☐ b.☐ c.☐ d.☐ e.☐ f.☐
Others (Explain):

Commission Action
Accommodate Florida Specific Need:
YES (Select Criteria) ☐ NO: ☐
a. ☐ b. ☐ c. ☐ d. ☐ e. ☐ f. ☐
Others (Explain):

	TAC	Cmsn.
☐ No Action Needed	☐	☐
☐ Overlapping provisions	☐	☐

S242-16	1613.1, 1901.2	Modifies text of Section 1613.1 "Scope", 1901.2 "Plain and reinforced concrete". This proposal updates IBC provisions for coordination with the latest edition of the referenced standard**, ASCE 7,** which was updated in ADM94-16. Modification per committee reinstates the exclusion of Chapter 14 in ASCE 7. **Cost Impact: Will increase the cost of construction.** The cost of precast concrete diaphragms will go up - not so much because of this proposal, but because the higher design force level for precast concrete diaphragms in Section 12.10.3 of ACE 7-16, which is mandated to be used with the proposed	Same as change between 2015 IBC-B and 2018 IBC-B	**No action needed** **Seismic provisions**

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

		design procedure. The required use of high-deformability connectors with the Reduced Design Option may also contribute to an increase in cost. Finally, the required use of moderate-deformability connectors with the Basic Design Option may result in modest cost increases.		

TAC Action **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.**☐ **b.**☐ **c.**☐ **d.**☐ **e.**☐**f.** ☐ **Others (Explain):**	**Commission Action** **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:**☐ **a.** ☐**b.**☐ **c.**☐ **d.**☐ **e.**☐**f.** ☐ **Others (Explain):**	**TAC**	**Cmsn.**
	☐ **No Action Needed**	☐	☐
	☐ **Overlapping provisions**	☐	☐

S243-16, Part I	202	Deletes Definition “AUTOCLAVED AERATED CONCRETE (AAC)”. Removes reference standard ASTM C1386. The definition is not needed and is incorrect. ASTM C1386 was withdrawn n by ASTM in 2013, and AAC is now manufactured to different ASTM standards (ASTM C1691 for AAC masonry and ASTM C1693 for AAC in general). In addition, IBC Section 202 already contains a definition for AAC Masonry, which is both more appropriate and correct. **Cost Impact:** Will not increase the cost of construction. Revision of this section does not impact the cost of construction. The definition is not needed, and the referenced standard has been withdrawn. The change merely eliminates this error in the IBC	Same as change between 2015 IBC-B and 2018 IBC-B	

TAC Action **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.**☐ **b.**☐ **c.**☐ **d.**☐ **e.**☐**f.** ☐ **Others (Explain):**	**Commission Action** **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:**☐ **a.** ☐**b.**☐ **c.**☐ **d.**☐ **e.**☐**f.** ☐ **Others (Explain):**	**TAC**	**Cmsn.**
	☐ **No Action Needed**	☐	☐
	☐ **Overlapping provisions**	☐	☐

S244-16	2101.2, 2103.1,	Modifies text of Section 2101.2 “Design methods”, 2104.1	Same as change	

	2104.1	"Masonry construction". Revises Section 2103.1 "Masonry units". Adds new Standards TMS 404-16 – "Standard for the Design of Architectural Cast Stone", TMS 504-16 – "Standard for the Fabrication of Architectural Cast Stone", TMS 604-16 – " Standard for the Installation of Architectural Cast Stone". The vast majority of design, fabrication, and installation guidance for Architectural cast stone systems has historically stemmed from industry-generated best practices; a gap now filled with the creation of these three new standards. **Cost Impact:** Will not increase the cost of construction. The **addition of these new standards** simply provides consensus-based guidance for the design, fabrication, and installation of cast stone consistent with existing industry guidelines.	between 2015 IBC-B and 2018 IBC-B	

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b. ☐ c. ☐ d. ☐ e. ☐ f. ☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b. ☐ c. ☐ d. ☐ e. ☐ f. ☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S245-16, Part I	2103.1	Modifies text of Section 2103.1 "Masonry units". Adds new standard ASTM C1670-16 "Standard Specification for Adhered Manufactured Stone Masonry Veneer Units". While commonly used as a cladding material, adhered manufactured stone masonry has historically not had a national, consensus-based specification governing the minimum properties for these products. Adopts standard for minimum requirements for this material. **Cost Impact:** Will not increase the cost of construction. Adoption of this **standard establishes minimum physical requirements** for manufactured stone veneer units consistent with existing industry practices.	Same as change between 2015 IBC-B and 2018 IBC-B	

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO:☐ a. ☐ b.☐ c. ☐ d.☐ e.☐ f. ☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S247-16	2107.2.1	Modifies text of Section 2107.2.1 “Lap splices”. This proposal reconciles the maximum lap splice length for allowable stress design with that of strength design. **Cost Impact:** Will not increase the cost of construction. This code change will result in **a reduction of construction costs.**	Same as change between 2015 IBC-B and 2018 IBC-B	

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO:☐ a. ☐ b.☐ c. ☐ d.☐ e.☐ f. ☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S248-16	2107.4	Deletes section 2107.4 TMS 402/ACI 530/ASCE 5, Section 8.3.6, “maximum bar size” This code change removes a requirement that is now covered in the latest edition of the referenced standard for masonry design. **Cost Impact:** Will not increase the cost of construction. No technical change. **Removes requirements now covered under the reference standard.**	Same as change between 2015 IBC-B and 2018 IBC-B	

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

TAC Action Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Commission Action Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):		TAC	Cmsn.
		☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S249-16	2109, 2109.1, 2109.1.1, 2109.2, 2109.2.1, 2109.2.2, 2109.3, 2109.3.1, 2109.3.1.1, 2109.3.1.2, 2109.3.1.2.1, 2109.3.1.2.2, 2109.3.1.2.3, 2109.3.1.2.4, 2109.3.1.3, 2109.3.1.4, 2109.3.2, 2109.3.2.1, 2109.3.2.2, 2109.3.3, 2109.3.3.1, 2109.3.4, 2109.3.4.1, 2109.3.4.2, 2109.3.4.2.1, 2109.3.4.2.2, 2109.3.4.3, 2109.3.4.4, 2109.3.4.5, 2109.3.4.5.1, 2109.3.4.5.2, 2109.3.4.6, 2109.3.4.7,	Modifies text of Section 2109 "EMPIRICAL DESIGN OF ADOBE MASONRY". Modifies text of 2109.1.1 "Limitations". Revises Section to 2114 "Dry-Stack Masonry". Renumbers 2114.1, 2114.2, 2114.3, 2114.4. Revises Table to 2114.4 "GROSS CROSS-SECTIONAL AREA ALLOWABLE STRESS FOR DRY-STACK MASONRY". Revises Section 2114.5 "Construction". **This code change removes the empirical design of masonry provisions which can still be found in an appendix chapter of TMS 402**. Modification by committee retains the provision for adobe masonry construction. The code change was further modified by the Committee. The modification retains the provision for adobe masonry construction. **Cost Impact:** Will not increase the cost of construction. While some many argue that not having a simple-to-use empirical method for designing masonry structures would increase the cost of construction, a counter argument could claim that engineered masonry structures yield more economical designs.	Same as change between 2015 IBC-B and 2018 IBC-B	

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

	2109.3.4.7.1, 2109.3.4.7.2, 2109.3.4.8, 2109.3.4.9, 2114 (New), 2114.1 (New), 2114.2 (New), 2114.3 (New), 2114.4 (New), 2114.5 (New)			

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S251-16	2109.3.4.2.1	Modifies text of Section 2109.3.4.2.1 “General”. Through experience and testing, it has been demonstrated that earthen wall systems perform best structurally and are most durable when they are constructed of homogenous materials, both within the brick units themselves, as well as between the brick units and binding mortar. The code should be amended to allow mortars of characteristics and components as similar to those of the adobe brick as possible. **Cost Impact:** Will not increase the cost of construction. This code change will not increase the cost of construction. Designers and contractors will still have the **option** of selecting fasters etting, portland cement mortars.	Same as change between 2015 IBC-B and 2018 IBC-B	

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S252-16	2203.1, 2203.2, 2210.2, 2211.1, 2211.1.1 (New), 2211.1.1.1 (New), 2211.1.1.2 (New), 2211.2, 2211.2 (New), 2211.3, 2211.3.1, 2211.3.2, 2211.3.3, 2211.3.4, 2211.4, 2211.5, 2211.6, 2211.7	Modifies text of Section 2203.1 “Identification”, 2203.2 “Protection”, 2210.2 “Seismic requirements for cold-formed steel structures”, 2211.1 “Structural framing”. Adds new Sections 2211.1.1 “Seismic requirements for cold-formed steel structural systems”, 2211.1.1.1 “Seismic Design Categories B and C”, 2211.1.1.2 “Seismic Design Categories D through F. 2211.2 Nonstructural Members”. Deletes Section 2211.2 “Header design”, 2211.3.2 “Deferred submittals”, 2211.4 “Structural wall stud design”, 2211.5 “Floor and roof system design”, 2211.6 “Lateral design”, Renumbers existing sections to 2211.1.2, 2211.1.3, 2211.1.3.1, 2211.1.3.2, 2211.1.3.3. Deletes Standards AISI S200-12, AISI S210-07(2012), AISI S211—07/S1-12(2012), AISI S212—07(2012), AISI S213—07/S1-09 (2012). Adds new standards AISI S202, “Code of Standard Practice for Cold-Formed Steel Structural Framing, 2015”, AISI S240, “North American Standard for Cold-Formed Steel Structural Framing, 2015”, AISI S400-15/S1-16, “North American Standard for Seismic Design of Cold-Formed Steel Structural Systems, 2015, with Supplement 1, Dated 2016”. This proposal is one in a series adopting the latest generation of AISI standards for cold-formed steel. This particular proposal focuses on Chapter 22 by incorporating references to three new cold-formed steel standards -- AISI S240, AISI S400, and AISI S202. All three standards are published and available for a free download at: www.aisistandards.org.	Same as change between 2015 IBC-B and 2018 IBC-B	

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

		Cost Impact: **Will increase the cost of construction.** This code change proposal **adopts the latest industry standards for cold-formed steel.** At this time, it is difficult to anticipate how cost of construction will be fully impacted, other than to note that some of the additional costs will be offset by new efficiencies in the design and installation of cold-formed steel.		

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO:☐ a. ☐ b.☐ c. ☐ d.☐ e.☐ f. ☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S253-16	2208.2	Deletes Section 2208.2 "Seismic requirements for steel cable". This proposal is a coordination proposal to bring the 2018 IBC up to date with the provisions of the 2016 edition of ASCE 19 Structural Applications for Steel Cables in Buildings. The proposal removes the exceptions to ASCE 19 for seismic requirements for steel cables. The exceptions are no longer applicable because the load combinations in ASCE 19 have been harmonized with the load combinations in ASCE 7 Minimum Design Loads for Buildings and Other Structures as of the 2010 edition of that standard. **Cost Impact:** Will not increase the cost of construction. The proposed changes will not impact the cost of construction. This proposal coordinates the IBC with the referenced standard ASCE 19 Structural Applications for **Steel Cables in Buildings. ASCE 19 will be updated from the 2010 edition to the 2016 edition** as an Administrative Update to the 2018 I-Codes. As of the submission date of this code change proposal, the ASCE 19 Standards Committee has completed the committee balloting on the technical changes and the standard is expected to be open for public comment in February of 2016. The document	Same as change between 2015 IBC-B and 2018 IBC-B	

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

		designated ASCE 19-16StructuralApplications for Steel Cables in Buildings is expected to be completed, published, and available for purchase prior to the ICC Public Comment Hearings in October 2016. Any person interested in obtaining a public comment copy of ASCE 19-16 may do so by contacting James Neckel at ASCE (jneckel "at" asce.org).		

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b.☐ c. ☐ d.☐ e.☐ f. ☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S255-16	2209.2	Adds new Section 2209.2 "Cantilevered steel storage racks". Adds Standard RMI/ANSI MH 16.3-2016. "Specification for the Design, Testing, and Utilization of Industrial Steel Cantilevered Storage Racks". This proposal adds a referenced standard on storage rack systems that are currently installed in many buildings. Many jurisdictions review and permit these installations and this will be useful in plan review so it belongs in the code. The code change was further modified by the Committee. The modification makes an adjustment to the referenced section of **ASCE 7**. **Cost Impact:** Will not increase the cost of construction. There will be no cost impact. There will be no increase in the cost of construction and installation of this manufactured product. Cantilevered Storage Racks have been manufactured and successfully utilized in large-scale warehouses and distribution centers for many years. Having a new Standard developed and introduced to the industry at this time is intended to identify, clarify, and memorialize the essential differences in the behaviors of such structural systems and the important considerations and requirements in their detailed design, installation, and utilization. This	Same as change between 2015 IBC-B and 2018 IBC-B	

		product will continue to be designed and produced primarilly by the same manufacturers who have been producing cantilevered storage racks, along with the more common pallet racks, for many years.		

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO:☐ a. ☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S258-16	2303.1.7, [BS] 1404.3, [BS] 1404.3.1, [BS] 1404.3.2	Modifies text of Section [BS] 1404.3 “Wood”, BS] 1404.3.1 “Basic hardboard”, [BS] 1404.3.2 “Hardboard siding”, 2303.1.7 “Hardboard”. This proposal references various CPA standards in a consistent manner and also clarifies that hardboard siding must conform to the requirements of A135.6 in 2303.1.7 in a consistent manner with reference to hardboard siding in 1404.3.2. **Cost Impact:** Will not increase the cost of construction. This proposal **clarifies** the code and does not place any additional costs on the user.	Same as change between 2015 IBC-B and 2018 IBC-B	

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO:☐ a. ☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S262-16	2303.2.2	Modifies text of Section 2303.2.2 “Other means during manufacture”. This code change adds a necessary clarification to the use of surface treatments for wood. The code change was further modified by the Committee. The modification makes the use of such materials possible as an	Same as change between 2015 IBC-B and 2018 IBC-B	

		alternate method. **Cost Impact:** Will not increase the cost of construction. Material now recognized is pressure impregnated or the furnish (chips, strands, and flakes) is treated during the manufacturing process. There is no change in those requirements.		

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f. ☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO:☐ a. ☐ b.☐ c.☐ d.☐ e.☐ f. ☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S265-16	2303.2.4	Modifies text of Section 2303.2.4 “Labeling.” here are products coming into the marketplace that have obscured the labels required by Section 2303.1.1 and 2303.1.5. This change clarifies that FRTW must have two labels: one for the grading of the wood the other for the treatment. There are also manufacturers making the claim for a lift of lumber or wood structural panel. The change clarifies each piece must be labeled with both marks. **Cost Impact:** Will not increase the cost of construction. Manufacturer's treating in accordance with the code requirement for pressure treatment or other means during manufacturer already mark each piece. The proposal clarifies, for others, what is already being done.	Same as change between 2015 IBC-B and 2018 IBC-B	

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

TAC Action **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**	**Commission Action** **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**		**TAC**	**Cmsn.**
		☐ **No Action Needed**	☐	☐
		☐ **Overlapping provisions**	☐	☐
S266-16	2303.4.1.1	Modifies text of Section 2303.4.1.1 "Truss design drawings". Under section 2303.4.1 wood trusses are permitted to be joined by nails, glue, bolts timber connectors, metal connector plates or other approved devices. Change in language of section to reflect this. **Cost Impact:** Will not increase the cost of construction. The proposal it to **clarify the requirements** of the truss design drawings. No technical requirements are proposed for the design of trusses.	Same as change between 2015 IBC-B and 2018 IBC-B	
TAC Action **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**	**Commission Action** **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**		**TAC**	**Cmsn.**
		☐ **No Action Needed**	☐	☐
		☐ **Overlapping provisions**	☐	☐
S270-16	2303.6	Modifies text of Section 2303.6 "Nails and staples". Proposal to add test methodology for achieving minimum strength requirement for staples. The code change was further modified by the Committee. The modification removes the last sentence which appears to require a building official to approve the testing procedure on all projects. **Cost Impact: Will increase the cost of construction.** For nails there should be not be any cost implication, the proposal is only adding the test methodology for achieving the already	Same as change between 2015 IBC-B and 2018 IBC-B	

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

		code prescribed strength requirement. For staples manufactured in conformance to the ISANTA ESR-1539 there will be no cost impact. If staples are manufactured to a lesser standard then there may be a slight cost increase. However it should be pointed out that for any fasteners not meeting ESR-1539 would not be meeting the intention of the IBC structural provisions.		

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b.☐ c. ☐ d.☐ e.☐ f.☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S271-16	2304.8	Modifies text of table 2304.8 (5) “ALLOWABLE LOAD (PSF) FOR WOOD STRUCTURAL PANEL ROOF SHEATHING CONTINUOUS OVER TWO OR MORE SPANS AND STRENGTH AXIS PARALLEL TO SUPPORTS”, Table 2304.8 (4) “ALLOWABLE SPAN FOR WOOD STRUCTURAL PANEL COMBINATION SUBFLOOR-UNDERLAYMENT (SINGLE FLOOR)”, Table 2304.8 (3) “ALLOWABLE SPANS AND LOADS FOR WOOD STRUCTURAL PANEL SHEATHING AND SINGLE-FLOOR GRADES CONTINUOUS OVER TWO OR MORE SPANS WITH STRENGTH AXIS PERPENDICULAR TO SUPPORTS”, Table 2304.8 (1) “ALLOWABLE SPANS FOR LUMBER FLOOR AND ROOF SHEATHING”. The purpose of this code change is to remove the redundant language contained within the footnotes. **Cost Impact:** Will not increase the cost of construction. This proposal is intended to **clarify** the code and does not contain any new requirements nor is it removing any requirements for construction.	Same as change between 2015 IBC-B and 2018 IBC-B	

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

TAC Action **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**		**Commission Action** **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**			**TAC** / **Cmsn.** ☐ **No Action Needed** ☐ ☐ ☐ **Overlapping provisions** ☐ ☐
S272-16	2304.10.1	Modifies text of table 2304.10.1 "FASTENING SCHEDULE". This change brings consistency with the IRC for minimum nail size for roof sheathing attachment which is an 8d common nail. This change also **adds a new standardized Roof Sheathing Ring Shank (RSRS) nail for roof sheathing applications.** **Cost Impact:** Will not increase the cost of construction. Although there are technical changes, existing alternatives for attachment remain unchanged and a new ring shank nail option is added; therefore, there is no cost increase	Same as change between 2015 IBC-B and 2018 IBC-B		
TAC Action **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**		**Commission Action** **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**			**TAC** / **Cmsn.** ☐ **No Action Needed** ☐ ☐ ☐ **Overlapping provisions** ☐ ☐
S273-16	2304.10.1	Modifies text of table 2304.10.1 "FASTENING SCHEDULE". The correct length of the 10d common nail is 3" not 3-1/2". 10d common is correctly shown as 3" long elsewhere in the table. The equivalent number of 16d box nails to the common nail reference is 4. This change makes the specified nailing consistent with IRC Table R602.3(1). **Cost Impact:** Will not increase the cost of construction. Nail sizes are editorially fixed, redundancy removed, and with	Same as change between 2015 IBC-B and 2018 IBC-B		

		size consistent with recognized sizes in IRC, therefore increased costs are not anticipated.		

TAC Action
Accommodate Florida Specific Need:
YES (Select Criteria) ☐ NO: ☐
a.☐ b.☐ c.☐ d.☐ e.☐ f.☐
Others (Explain):

Commission Action
Accommodate Florida Specific Need:
YES (Select Criteria) ☐ NO: ☐
a. ☐ b. ☐ c. ☐ d. ☐ e. ☐ f. ☐
Others (Explain):

	TAC	Cmsn.
☐ No Action Needed	☐	☐
☐ Overlapping provisions	☐	☐

S274-16	2304.10.5	Modifies text of Section 2304.10.5 “Fasteners and connectors in contact with preservative-treated and fire-retardant-treated Wood”. This proposal is intended to bring over the approved language from the IRC into the IBC so that the two documents contain the same requirements for the permissible type of stainless steel fastener used in treated wood. **Cost Impact: Will increase the cost of construction.** The majority of driven stainless steel fasteners are already manufactured from 300 series stainless steel. If a manufacturer were supplying the lesser performing (and lower cost) stainless steel types then there would be a cost increase in going to the 300 series stainless steel. The increase in performance would justify the additional cost. However, the use of stainless steel fasteners is not required, and where stainless steel is not used no increase would be incurred.	Same as change between 2015 IBC-B and 2018 IBC-B	

TAC Action
Accommodate Florida Specific Need:
YES (Select Criteria) ☐ NO: ☐
a.☐ b.☐ c.☐ d.☐ e.☐ f.☐
Others (Explain):

Commission Action
Accommodate Florida Specific Need:
YES (Select Criteria) ☐ NO: ☐
a. ☐ b. ☐ c. ☐ d. ☐ e. ☐ f. ☐
Others (Explain):

	TAC	Cmsn.
☐ No Action Needed	☐	☐
☐ Overlapping provisions	☐	☐

S275-16, Part I	2304.10.5.1,	Modifies text of Section 2304.10.5.1 “Fasteners and	Same as change	

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

	2304.10.5.3	connectors for preservative-treated wood", 2304.10.5.3 "Fasteners for fire-retardant-treated wood used in exterior applications or wet or damp locations". The intention of this proposal is to better integrate staples into the code so that the provisions for small diameter fasteners (nail and timber rivets) also are explicitly extended to staples where applicable. The second part of this proposal is to specifically limit staples to stainless steel where exposed to high corrosion environments. **Cost Impact:** **Will increase the cost of construction.** Currently when staples are used in treated wood the only known available option is to use stainless steel staples. In this case there would be no cost increase in construction. For use in treated wood if staples are not presently stainless then there would be a slight cost increase, however we do not feel that these staples would be code conforming. In this case any increase in performance would justify the additional cost.	between 2015 IBC-B and 2018 IBC-B	

TAC Action
Accommodate Florida Specific Need:
YES (Select Criteria) ☐ NO: ☐
a.☐ b.☐ c.☐ d.☐ e.☐ f.☐
Others (Explain):

Commission Action
Accommodate Florida Specific Need:
YES (Select Criteria) ☐ NO: ☐
a. ☐ b.☐ c.☐ d.☐ e.☐ f.☐
Others (Explain):

	TAC	Cmsn.
☐ No Action Needed	☐	☐
☐ Overlapping provisions	☐	☐

S276-16	2304.11	Modifies text of Section 2304.11 "Heavy timber construction". The intent of this change is to help the user be aware of Section 2304.9 applicable to heavy timber for the detailing and fastening of lumber decking. **Cost Impact:** Will not increase the cost of construction. Currently when staples are used in treated wood the only known available option is to use stainless steel staples. In this case there would be no cost increase in construction.	Same as change between 2015 IBC-B and 2018 IBC-B	

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

		For use in treated wood if staples are not presently stainless then there would be a slight cost increase, however we do not feel that these staples would be code conforming. In this case any increase in performance would justify the additional cost		

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S278-16	2304.12.2.2	Modifies text of Section 2304.12.2.2 "Posts or columns". The purpose of this code change is to return the text of this section to be more closer to the text that existed in the 2000-2012 IBC, without creating a conflict with Section 2304.12.2.3. This code change was further modified by the Committee. The modification reformats the exception as a list so that will be easier to understand. **Cost Impact:** Will not increase the cost of construction. No cost impact. **Possible cost savings.** This proposal may allow the use of non-treated or non-naturally durable wood where it is protected from moisture by a covering above to prevent moisture or water accumulation and is supported by a 1" pedestal. The option remains to use durable or treated wood and not use the base with 1" pedestal.	Same as change between 2015 IBC-B and 2018 IBC-B	

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

S279-16	2304.12.2.5	Modifies text of Section 2304.12.2.5 "Supporting members for permeable floors and roofs". This code proposal creates a requirement for impervious moisture barrier systems protecting the structure, supporting a floor, to provide a mechanism for the water to drain out. The code change was further modified by public comment to at least makes it clear to designers of the need to consider and provide positive drainage of water that infiltrates the moisture permeable floor topping. **Cost Impact:** **Will increase the cost of construction**. Drainage elements between the permeable floor slab and impervious barrier are commonly called for and installed by many practitioners and will not change the cost of construction in those cases. However in cases where no method to provide positive drainage is currently provided, this proposal will increase the cost of construction.	Same as change between 2015 IBC-B and 2018 IBC-B	

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b. ☐ c. ☐ d. ☐ e. ☐ f. ☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S280-16	2304.8.1, 2304.8.2	Modifies text of Section 2304.8.1 "Structural floor sheathing", 2304.8.2 "Structural roof sheathing". This code change makes the code provisions clearer by removing redundant language and coordinating wording with other code sections. **Cost Impact:** Will not increase the cost of construction. This proposal is intended to **clarify the code** and does not contain any new requirements nor is it removing any requirements for construction	Same as change between 2015 IBC-B and 2018 IBC-B	

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

TAC Action Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	**Commission Action** Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b.☐ c. ☐ d.☐ e.☐ f. ☐ Others (Explain):		TAC / Cmsn.
		☐ No Action Needed	☐ / ☐
		☐ Overlapping provisions	☐ / ☐

S281-16	2304.9.3.2, 2304.9.3.2 (New)	Modifies text of Section 2304.9.3.2 “Nailing”. Adds new table 2304.9.3.2 “FASTENING SCHEDULE FOR MECHANICALLY LAMINATED DECKING USING LAMINATIONS OF 2-INCH NOMINAL THICKNESS”. This proposal adds alternative fastener schedules for construction of mechanically laminated decking, providing specific guidance for use of mechanically-driven nails which are typically used in construction. **Cost Impact:** Will not increase the cost of construction. This change does not add additional requirements. **It provides equivalent alternative options** for construction of mechanically laminated decking.	Same as change between 2015 IBC-B and 2018 IBC-B	

TAC Action Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	**Commission Action** Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b.☐ c. ☐ d.☐ e.☐ f. ☐ Others (Explain):		TAC / Cmsn.
		☐ No Action Needed	☐ / ☐
		☐ Overlapping provisions	☐ / ☐

S282-16	2305.2	Modifies text of Section 2305.2 “Diaphragm deflection”. This code change updates the diaphragm deflection formula by incorporating revisions made in the AWC SDPWS. **Cost Impact:** Will not increase the cost of construction. The proposed change will not impact the cost of construction. The change is **editorial** and no technical changes are considered.	Same as change between 2015 IBC-B and 2018 IBC-B	

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

TAC Action Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):		**Commission Action** Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b.☐ c. ☐ d.☐ e.☐ f. ☐ Others (Explain):			**TAC** / **Cmsn.** ☐ No Action Needed ☐ ☐ ☐ Overlapping provisions ☐ ☐
S283-16	2305.2	Modifies text of table 2305.2 (2) "VALUES OF Gt FOR USE IN CALCULATING DEFLECTION OF WOOD STRUCTURAL PANEL SHEAR WALLS AND DIAPHRAGMS". The proposal will remove some confusion in the table and footnote regarding the difference between the number of layers of plywood and the number of ply's. The category "other" is removed and replaced with the term "structural sheathing. **Cost Impact:** Will not increase the cost of construction. The proposed change will not impact the cost of construction. The change is **editorial** and no technical changes are considered.	Same as change between 2015 IBC-B and 2018 IBC-B		
TAC Action Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):		**Commission Action** Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b.☐ c. ☐ d.☐ e.☐ f. ☐ Others (Explain):			**TAC** / **Cmsn.** ☐ No Action Needed ☐ ☐ ☐ Overlapping provisions ☐ ☐
S284-16	2305.3	Modifies text of Section 2305.3 "Shear wall deflection". The intent of this proposal is to bring parity between the language of SDPWS and the IBC. The proposal provides updates for shear wall deflection. **Cost Impact:** Will not increase the cost of construction. The proposed change will not impact the cost of construction. The change is **editorial** and no technical changes are considered.	Same as change between 2015 IBC-B and 2018 IBC-B		

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO:☐ a. ☐ b.☐ c. ☐ d.☐ e.☐ f. ☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S285-16	2306.3	Modifies text of table 2306.3 (1) "ALLOWABLE SHEAR VALUES (POUNDS PER FOOT) FOR WOOD STRUCTURAL PANEL SHEAR WALLS UTILIZING STAPLES WITH FRAMING OF DOUGLAS FIR-LARCH OR SOUTHERN PINEa FOR WIND OR SEISMIC LOADING". The proposal will change the heading of "Staple Size" to "Staple Length and Gage" to reflect that the column in the table also contains the required length of the staple. **Cost Impact:** Will not increase the cost of construction. The proposed change will not change the staple requirements for shear wall, and consequentially there should be no change in the cost of construction.	Same as change between 2015 IBC-B and 2018 IBC-B	

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO:☐ a. ☐ b.☐ c. ☐ d.☐ e.☐ f. ☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S286-16	2306.3	Modifies text of table 2306.3 (2) "ALLOWABLE SHEAR VALUES (plf) FOR WIND OR SEISMIC LOADING ON SHEAR WALLS OF FIBERBOARD SHEATHING BOARD CONSTRUCTION UTILIZING STAPLES FOR TYPE V CONSTRUCTION ONLY". This code change simplifies the shear wall table by eliminating a note and incorporating the	Same as change between 2015 IBC-B and 2018 IBC-B	

		staple length into the appropriate table entries. **Cost Impact:** Will not increase the cost of construction. This proposal does not increase the cost of construction as it merely **correlates and clarifies** various requirements from standards.		

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S287-16	2308.2.3	Modifies text of Section 2308.2.3 “Allowable loads”. This proposal makes it clear that a concrete slab on grade can be used in conjunction with conventional light-frame construction and that the 40 psf live load limit for floors would not apply. The code change was further modified by the Committee. The modification places a practical limit of 125 psf for the slab on grade live load. **Cost Impact:** Will not increase the cost of construction. This proposal will not increase the cost of construction as it simply allows a higher live load to be used where a concrete slab on grade is used at the ground floor level.	Same as change between 2015 IBC-B and 2018 IBC-B	

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S288-16	2308.4.1.1, 2308.4.1.1(2)	Deletes table 2308.4.1.1 (2) “HEADER AND GIRDER SPANS, FOR INTERIOR BEARING WALLS”. Replaces with	Same as change between 2015	

	(New)	Table 2308.4.1.1(2) "HEADER AND GIRDER SPANS FOR INTERIOR BEARING WALLS". The update of Table 2308.4.1.1(2) Header and Girder Spans for Interior Bearing Walls is proposed. Updated spans address use of Southern Pine No. 2 in lieu of Southern Pine No. 1. Footnote "e" is added to clarify that header spans are based on laterally braced assumption such as when the header is raised. For dropped headers consisting of 2x8, 2x10, or 2x12 size framing and not laterally braced, a factor of 0.7 can be applied to determine the spans or alternatively the header or girder can be designed to include any adjustment for potential buckling. Laterally braced (raised) and not laterally braced (dropped) header conditions and building widths for which header spans are tabulated represent the same conditions used to develop header span tables in the Wood Frame Construction Manual (WFCM **Cost Impact:** **Will increase the cost of construction**. Increased cost may be associated with reduced spans that result from the not laterally braced condition and application of footnote e. Due to smaller building width column (12'), permissible use of Southern Pine No. 2, and the laterally braced assumption for tabulated spans, there are also cases where this change will not increase the cost of construction and may reduce cost of construction.	IBC-B and 2018 IBC-B	

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S289-16	2308.4.1.1,	Deletes table 2308.4.1.1 (1) "HEADER AND GIRDER SPANS	Same as change	

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

	2308.4.1.1(1) (New)	FOR EXTERIOR BEARING WALLS". And replaces with Table TABLE 2308.4.1.1(1) "HEADER AND GIRDER SPANS FOR EXTERIOR BEARING WALLS". The update of Table 2308.4.1.1(1) Header and Girder Spans for Exterior Bearing Walls is proposed. Updated spans address use of Southern Pine No. 2 in lieu of Southern Pine No. 1. Footnote "f" is added to clarify that header spans are based on laterally braced assumption such as when the header is raised. For dropped headers consisting of 2x8, 2x10, or 2x12 sizes that are not laterally braced, a factor of 0.7 can be applied to determine the spans or alternatively the header or girder can be designed to include any adjustment for potential buckling. Laterally braced (raised) and not laterally braced (dropped) header conditions and building widths for which header spans are tabulated represent the same condtions used to develop header span tables in the Wood Frame Construction Manual (WFCM). **Cost Impact: Will increase the cost of construction.** Increased cost may be associated with reduced spans that result from the not laterally braced condition and application of footnote f. Due to smaller building width column (12'), permissible use of Southern Pine No. 2, and the laterally braced assumption for tabulated spans, there are also cases where this change will not increase the cost of construction and may reduce cost of construction.	between 2015 IBC-B and 2018 IBC-B	

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b.☐ c. ☐ d.☐ e.☐ f. ☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

S291-16	2308.3.1, 2308.3.1.2 (New), 2308.3.2	Modifies text of Section 2308.3.1 “Foundation plates or sills”, 2308.3.1.1 “Braced wall line sill plate anchorage in Seismic Design Categories, Category D”. Adds new section 2308.3.1.2 “Braced wall line sill plate anchorage in Seismic Design Category E”. This code change clears up inconsistencies in the anchor bolt requirements by reorganizing and rewriting the requirements for Seismic Design Categories D and E. **Cost Impact:** Will not increase the cost of construction.	Same as change between 2015 IBC-B and 2018 IBC-B	**No action needed** **Seismic provisions**

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b.☐ c. ☐ d.☐ e.☐ f. ☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S292-16	2308.5.5.1, 2308.5.5.1(1) (New), 2308.5.5.1(2) (New)	Modifies text of Section 2308.5.5.1 “Openings in exterior bearing walls”. Adds Figure 2308.5.5.1(1) “Single Member Header in Exterior Bearing Wall” and Figure 2308.5.5.1(2) “Alternative Single Member Header Without Cripple”. This proposal adds prescriptive framing and connection requirements for single member (single ply) headers consistent with the IRC. Additionally, provisions of 2308.5.5.1 are revised to coordinate with tabulated header sizes consisting of 2, 3, or 4 member headers. **Cost Impact:** Will not increase the cost of construction. This change adds a more efficient single member header option in some cases and will not raise the cost of construction.	Same as change between 2015 IBC-B and 2018 IBC-B	

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

TAC Action **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**			**Commission Action** **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**		**TAC**	**Cmsn.**
				☐ **No Action Needed**	☐	☐
				☐ **Overlapping provisions**	☐	☐
S294-16	IBC: 1406.3, 1410.1, 2407.1;.	Modifies text of Section 2407.1 “Materials”, 1406.3 “Balconies and similar projections”, 1410.1 “Plastic composite decking”, This proposal changes the term "guardrail" to "guard" in several code sections. "Guard" is defined in the IBC and should be used consistently throughout the codes. **Cost Impact:** Will not increase the cost of construction. This proposal will have no effect on the cost of construction. It changes the term "guardrail" to "guard" in several code sections.	Same as change between 2015 IBC-B and 2018 IBC-B			
TAC Action **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**			**Commission Action** **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**		**TAC**	**Cmsn.**
				☐ **No Action Needed**	☐	☐
				☐ **Overlapping provisions**	☐	☐
S295-16	IBC: 1406.3, 1410.1, 2407.1;	Modifies text of Section 2407.1.1 “Loads”, 2407.1.2 “Structural glass baluster panels”. This proposal will clarify code requirements for glass panels that are used as a structural component in a guard. **Cost Impact:** Will not increase the cost of construction. This change creates consistency with the IRC for glass guards only and allows for more safety and flexibility in design. There should be no increase in the cost.	Same as change between 2015 IBC-B and 2018 IBC-B			

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

TAC Action **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**	**Commission Action** **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**		**TAC**	**Cmsn.**
		☐ **No Action Needed**	☐	☐
		☐ **Overlapping provisions**	☐	☐

S296-16	2407.1.1	Modifies text of Section 2407.1.1 "Loads". The purpose of this proposal is to return the code language to **well-recognized terms, and eliminate terms that have no meaning** to the engineers that will be performing the designs of these panels and supports. The code change was further modified by public comment. This public comment corrects the original proposal, and clarifies to which elements in a glass guard system the safety factor of 4 is to be applied. **Cost Impact:** Will not increase the cost of construction. This is an editorial change to **clarify** the code. It does not change any requirements of the code, and therefore, has no cost impact.	Same as change between 2015 IBC-B and 2018 IBC-B	

TAC Action **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**	**Commission Action** **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**		**TAC**	**Cmsn.**
		☐ **No Action Needed**	☐	☐
		☐ **Overlapping provisions**	☐	☐

S297-16	2407.1.2	Modifies text of Section 2407.1.2 "Support". Adds new standard ASTM 2353-14 "Standard Test Methods for Performance of Glazing in Permanent Railing Systems, Guards and Balustrades". Currently, the Code exempts glass balusters from having a top rail, but only if approved by the building official. This proposal deletes the requirement that these assemblies be approved by the building official, but adds the requirement	Same as change between 2015 IBC-B and 2018 IBC-B	

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

		that they be tested to ASTM E2353-14 **Cost Impact: Will increase the cost of construction.** The additional testing to ASTM E2353-14 may increase the cost of construction, but will be mitigated by eliminating the case by case approval of the building code official that is now required.		

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO:☐ a. ☐ b.☐ c. ☐ d.☐ e.☐ f. ☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S298-16	2506.2	Modifies text of table 2506.2 "GYPSUM BOARD AND GYPSUM PANEL PRODUCTS MATERIALS AND ACCESSORIES". Adds new Standard ASTM C 1766-13 "Standard Specification for Factory-Laminated Gypsum Panel Products". This proposal provides another option for gypsum panel product along with a reference to the material standard that contains QC requirements **Cost Impact:** Will not increase the cost of construction. The **proposal adds in a product standard** that extends performance requirements for factory-laminated products to meet the current intent of the code.	Same as change between 2015 IBC-B and 2018 IBC-B	

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):	Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO:☐ a. ☐ b.☐ c. ☐ d.☐ e.☐ f. ☐ Others (Explain):	☐ No Action Needed	☐	☐
		☐ Overlapping provisions	☐	☐

S299-16	2506.2, 2507.2	Modifies text of table 2506.2 "GYPSUM BOARD AND	Same as change	

		GYPSUM PANEL PRODUCTS MATERIALS AND ACCESSORIES", Table 2507.2 "LATH, PLASTERING MATERIALS AND ACCESSORIES". Adds new standard AISI S240, "North American Standard for Cold-Formed Steel Structural Framing, 2015", Modifies text of AISI S220-15, "North American Standard for Cold-Formed Steel Framing - Nonstructural Members,2015" . Deletes standard AISI S200—12, "North American Standard for Cold-Formed Steel Framing-General Provisions, 2012, 2203.1, 2203.2, 2211.1, Table 2603.12.1,Table 2603.12.2". This code change updates and substitutes the latest AISI material standards for light-gage steel framing applications for gypsum panel products. **Cost Impact:** **Will increase the cost of construction**. This code change proposal **adopts the latest industry standards for cold-formed steel**. At this time, it is difficult to anticipate how cost of construction will be fully impacted, other than to note that some of the additional costs will be offset by new efficiencies in the design and installation of cold-formed steel.	between 2015 IBC-B and 2018 IBC-B	

TAC Action
Accommodate Florida Specific Need:
YES (Select Criteria) ☐ NO: ☐
a. ☐ b. ☐ c. ☐ d. ☐ e. ☐ f. ☐
Others (Explain):

Commission Action
Accommodate Florida Specific Need:
YES (Select Criteria) ☐ NO: ☐
a. ☐ b. ☐ c. ☐ d. ☐ e. ☐ f. ☐
Others (Explain):

	TAC	Cmsn.
☐ No Action Needed	☐	☐
☐ Overlapping provisions	☐	☐

S300-16, Part I	2506.2, 2508.4 (New).	Modifies text of Section 2506.2 "GYPSUM BOARD AND GYPSUM PANEL PRODUCTS MATERIALS AND ACCESSORIES". Adds new Section 2508.4 "Adhesives". Adds new standard "ASTM D 6464-03a(2009)e1 "Standard Specification for Expandable Foam Adhesives for Fastening Gypsum Wallboard to Wood Framing". This proposal adds ASTM D6464 to Table 2506.2, and adds a mandatory statement outlining the requirements for adhesives used to	Same as change between 2015 IBC-B and 2018 IBC-B	

		attach gypsum board products. The new referenced standard applies to expandable foam adhesives, which are currently accepted for use by product evaluation reports. Proposal adds a requirement calling for approved fastening methods for gypsum products used in ceiling assemblies, which is consistent with the fastening requirements for gypsum products used in ceiling assemblies under the IRC. **Cost Impact:** Will not increase the cost of construction. The proposal increases **product selection options**, but contains no mandatory requirements.		

TAC Action **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**	**Commission Action** **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**		**TAC**	**Cmsn.**
		☐ **No Action Needed**	☐	☐
		☐ **Overlapping provisions**	☐	☐

S302-16	2510.6	Modifies text of Section 2510.6 “Water-resistive barriers”. This proposal adds an option to address inward moisture drive issues in various climate zones. It also provides the universal solution of providing a vented air space. The code change was further modified by the Committee. The modification corrects the reference standard number. With the modification this is a good code change that add a new standard for expandable foam adhesive. **Cost Impact:** Will not increase the cost of construction. The proposal provides limitations that may affect some product choices (or cladding detailing) under specified conditions of use, but options remain available for all WRB types and many are unaffected	Same as change between 2015 IBC-B and 2018 IBC-B	

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

TAC Action **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**		**Commission Action** **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**		**TAC** / **Cmsn.** ☐ **No Action Needed** ☐ ☐ ☐ **Overlapping provisions** ☐ ☐
S307-16	G103.6	Modifies text of Section G103.6 “Watercourse alteration”. This code change simplifies the language, putting the IBC more in alignment with the National Flood Insurance Program. **Cost Impact:** Will not increase the cost of construction. There is no cost impact to construction because this proposal is administrative.	Same as change between 2015 IBC-B and 2018 IBC-B	**No action needed.** **Appendix G – Marked Reserved under the FBC**
TAC Action **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**		**Commission Action** **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**		**TAC** / **Cmsn.** ☐ **No Action Needed** ☐ ☐ ☐ **Overlapping provisions** ☐ ☐
S309-16	G103.8	Modifies text of Section G103.8 “Records”. This proposal coordinates the IBC provisions on document retention with the current requirements of the National Flood Insurance Program. **Cost Impact:** Will not increase the cost of construction. NFIP communities are already required to maintain these documents.	Same as change between 2015 IBC-B and 2018 IBC-B	**No action needed.** **Appendix G – Marked Reserved under the FBC**

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

TAC Action Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):			**Commission Action** Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):		TAC	Cmsn.
				☐ No Action Needed	☐	☐
				☐ Overlapping provisions	☐	☐
S310-16	G601.2, G601.3.	Modifies text of Section G601.2 “Temporary placement”, G601.3 “Permanent placement”. This proposal is editorial for internal consistency. The NFIP regulations for placement of recreational vehicles in flood hazard areas [44 Code of Federal Regulations 60.3(c)(14)] sets out the same two conditions as alternatives connected by "or" as shown in G601.3 **Cost Impact:** Will not increase the cost of construction.	Same as change between 2015 IBC-B and 2018 IBC-B			
TAC Action Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):			**Commission Action** Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a. ☐ b.☐ c.☐ d.☐ e.☐ f.☐ Others (Explain):		TAC	Cmsn.
				☐ No Action Needed	☐	☐
				☐ Overlapping provisions	☐	☐
S311-16	H106.1.1	Modifies text of Section H106.1.1 “Internally illuminated signs”. This proposal makes a simple clarification of light transmitting plastics used in signs. **Cost Impact:** Will not increase the cost of construction. This is **simple clarification.**	Same as change between 2015 IBC-B and 2018 IBC-B	**Appendix H**		

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

TAC Action **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**	**Commission Action** **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**		**TAC**	**Cmsn.**
		☐ **No Action Needed**	☐	☐
		☐ **Overlapping provisions**	☐	☐

S312-16	H106.1.1	Modifies text of Section H107.1 "Use of combustibles", H107.1.1 "Plastic materials", H107.1.3 "Area limitation", H107.1.4 "Plastic appurtenances". Clarification - These sections address light transmitting plastics that comply with Section 2606 and the fire properties of Class CC2 in section 2606.4. No other section of the code discusses approved plastics. **Cost Impact:** Will not increase the cost of construction. **Simple clarification**	Same as change between 2015 IBC-B and 2018 IBC-B	**Appendix H**

TAC Action **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**	**Commission Action** **Accommodate Florida Specific Need:** **YES (Select Criteria)** ☐ **NO:** ☐ **a.** ☐ **b.** ☐ **c.** ☐ **d.** ☐ **e.** ☐ **f.** ☐ **Others (Explain):**		**TAC**	**Cmsn.**
		☐ **No Action Needed**	☐	☐
		☐ **Overlapping provisions**	☐	☐

S315-16	M101, M101.1, M101.2, M101.3, M101.4	Modifies text of Appendix M, Section M101 "REFUGE STRUCTURES FOR VERTICAL EVACUATION FROM TSUNAMIGENERATED FLOOD HAZARD", M101.3 "Establishment of tsunami design zone", M101.4 "Planning of tsunami vertical evacuation refuge structures within the tsunami design zone". Modifies definition "TSUNAMI DESIGN ZONE MAP". Deletes definition "TSUNAMI HAZARD ZONE". This code change revises the tsunami appendix chapter to coordinate with the tsunami design provisions approved in S72-16.	Same as change between 2015 IBC-B and 2018 IBC-B	**Appendix M**

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

		Cost Impact: Will not increase the cost of construction. Appendix M has not been adopted into the state or county codes of any of the five western states subject to significant tsunami hazard: Alaska, Washington, Oregon, California, and Hawaii.		

TAC Action	Commission Action		TAC	Cmsn.
Accommodate Florida Specific Need: YES (Select Criteria) ☐ NO: ☐ a.☐ b.☐ c.☐ d.☐ e.☐ f.☐ **Others (Explain):**	**Accommodate Florida Specific Need:** YES (Select Criteria) ☐ NO: ☐ a. ☐ b.☐ c.☐ d.☐ e.☐ f.☐ **Others (Explain):**	☐ **No Action Needed**	☐	☐
		☐ **Overlapping provisions**	☐	☐

Rule 61G20-2.002 2. Technical amendments needed to accommodate the specific needs of this state include but are not limited to amendments to the Florida Building Code that provide for the following: a. Establish minimum life safety construction requirements to protect buildings and their occupants from fire, wind, flood, and storm surge using the latest technical research and engineering standards for buildings and materials products. b. Provide for flood protection provisions that are consistent with the latest flood protection requirements of the National Flood Insurance Program. c. Maintain eligibility for federal funding and discounts from the National Flood Insurance Program, the Federal Emergency Management Agency, and the United States Department of Housing and Urban Development. d. Provide for energy efficiency standards for buildings that meet or exceed the national energy standards as mandated by Title III of the Energy Conservation and Protection Act. e. Maintain coordination with the Florida Fire Prevention Code. f. Provide for the latest industry standards and design

Back

Code Change No: FS49-15

Original Proposal

Section(s): 713.8.2 (New)

Proponent: Matthew Davy, representing Arup (matt.davy@arup.com)

713.8 Penetrations. Penetrations in a shaft enclosure shall be protected in accordance with Section 714 as required for *fire barriers*. Structural elements, such as beams or joists, where protected in accordance with Section 714 shall be permitted to penetrate a shaft enclosure.

713.8.1 Prohibited penetrations. Penetrations other than those necessary for the purpose of the shaft shall not be permitted in shaft enclosures.

Add new text as follows:

<u>**713.8.2** **Membrane penetrations.** Membrane penetrations shall be permitted on the outside of shaft enclosures. Such penetrations shall be protected in accordance with Section 714.3.2.</u>

Reason: The purpose of Section 713.8 and 713.8.1 is to limit through penetrations into a shaft enclosure; however, membrane penetrations should be permitted on the outside of the shaft enclosure. As currently written, an electrical box is not permitted on the outside of the shaft enclosure. This section needs to clarify the intent of Section 713.8.

Cost Impact: Will not increase the cost of construction
The code change proposal will not increase the cost of construction since it will allow membrane penetrations in shaft enclosures without the need for additional construction/material on the outside of the shaft enclosure. Also, it increases net area for the building.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: The committee felt this was a good change based on the fact that these membrane penetrations were already allowed in exit passageways and shafts.

Assembly Action: **None**

Public Comments

Public Comment 1:

Maureen Traxler, representing Seattle Dept of Planning & Development (maureen.traxler@seattle.gov) requests Approve as Modified by this Public Comment.

Modify as follows:

713.8.1 Prohibited penetrations. Penetrations other than those necessary for the purpose of the shaft shall not be permitted in shaft enclosures.

> <u>**Exception:** Membrane penetrations shall be permitted on the outside of shaft enclosures. Such penetrations shall be protected in accordance with Section 714.3.2.</u>

~~**713.8.2 Membrane penetrations.** Membrane penetrations shall be permitted on the outside of shaft enclosures. Such penetrations shall be protected in accordance with Section 714.3.2.~~

Commenter's Reason: This is an editorial comment that does not change the meaning of the original proposal. The proposed new Section 713.8.2 functions as an exception to the prohibition on penetrations in existing Section 713.8.1.

Final Hearing Results

FS49-15	**AMPC1**

Back

Code Change No: G180-15

Original Proposal

Section: 406.7.2, TABLE 601, 603.1, 705.2.3, 803.3, 803.13.3, 1406.3, [BG] 1510.2.5, [BG] 1510.3, 3105.3, D102.2.8, 803.1

Proponent: Dennis Richardson, American Wood Council, representing American Wood Council (drichardson@awc.org)

Revise as follows:

406.7.2 Canopies. Canopies under which fuels are dispensed shall have a clear, unobstructed height of not less than 13 feet 6 inches (4115 mm) to the lowest projecting element in the vehicle drive-through area. Canopies and their supports over pumps shall be of noncombustible materials, *fire-retardant-treated wood* complying with Chapter 23, ~~wood of Type IV sizes~~ heavy timber complying with Section 2304.11 or of construction providing 1-hour *fire resistance*. Combustible materials used in or on a *canopy* shall comply with one of the following:

1. Shielded from the pumps by a noncombustible element of the *canopy*, or ~~wood of Type IV sizes~~ heavy timber complying with Section 2304.11;
2. Plastics covered by aluminum facing having a thickness of not less than 0.010 inch (0.30 mm) or corrosion-resistant steel having a base metal thickness of not less than 0.016 inch (0.41 mm). The plastic shall have a *flame spread index* of 25 or less and a smoke developed index of 450 or less when tested in the form intended for use in accordance with ASTM E 84 or UL 723 and a self-ignition temperature of 650°F (343°C) or greater when tested in accordance with ASTM D 1929; or
3. Panels constructed of light-transmitting plastic materials shall be permitted to be installed in *canopies* erected over motor vehicle fuel-dispensing station fuel dispensers, provided the panels are located not less than 10 feet (3048 mm) from any building on the same *lot* and face *yards* or streets not less than 40 feet (12 192 mm) in width on the other sides. The aggregate areas of plastics shall be not greater than 1,000 square feet (93 m^2). The maximum area of any individual panel shall be not greater than 100 square feet (9.3 m^2).

TABLE 601 (601)
FIRE-RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS (HOURS)

BUILDING ELEMENT	TYPE I		TYPE II		TYPE III		TYPE IV	TYPE V	
	A	B	A	B	A	B	HT	A	B
Primary structural frame[f] (see Section 202)	3[a]	2[a]	1	0	1	0	HT	1	0
Bearing walls Exterior[e, f] Interior	 3 3[a]	 2 2[a]	 1 1	 0 0	 2 1	 2 0	 2 1/HT	 1 1	 0 0
Nonbearing walls and partitions Exterior	See Table 602								
Nonbearing walls and partitions Interior[d]	0	0	0	0	0	0	See Section ~~602.4.6~~2304.11.2	0	0
Floor construction and associated secondary members (see Section 202)	2	2	1	0	1	0	HT	1	0
Roof construction and associated secondary members (see Section 202)	1 1/2[b]	1[b,c]	1[b,c]	0[c]	1[b,c]	0	HT	1[b,c]	0

For SI: 1 foot = 304.8 mm.

a. Roof supports: Fire-resistance ratings of primary structural frame and bearing walls are permitted to be reduced by 1 hour where supporting a roof only.
b. Except in Group F-1, H, M and S-1 occupancies, fire protection of structural members shall not be required, including protection of roof framing and decking where every part of the roof construction is 20 feet or more above any floor immediately below. Fire-retardant-treated wood members shall be allowed to be used for such unprotected members.
c. In all occupancies, heavy timber complying with Section 2304.11 shall be allowed where a 1-hour or less fire-resistance rating is required.
d. Not less than the fire-resistance rating required by other sections of this code.
e. Not less than the fire-resistance rating based on fire separation distance (see Table 602).
f. Not less than the fire-resistance rating as referenced in Section 704.10.

603.1 Allowable materials. Combustible materials shall be permitted in buildings of Type I or II construction in the following applications and in accordance with Sections 603.1.1 through 603.1.3:

1. *Fire-retardant-treated wood* shall be permitted in:

   1.1 Nonbearing partitions where the required *fire-resistance rating* is 2 hours or less.
   1.2 Nonbearing *exterior walls* where fire-resistance-rated construction is not required.
   1.3 Roof construction, including girders, trusses, framing and decking.

   Exception: In buildings of Type IA construction exceeding two *stories above grade plane*, *fire-retardant-treated wood* is not permitted in roof construction where the vertical distance from the upper floor to the roof is less than 20 feet (6096 mm).

2. Thermal and acoustical insulation, other than foam plastics, having a *flame spread index* of not more than 25.

   Exceptions:

   1 Insulation placed between two layers of noncombustible materials without an intervening airspace shall be allowed to have a *flame spread index* of not more than 100.
   2 Insulation installed between a finished floor and solid decking without intervening airspace shall be allowed to have a *flame spread index* of not more than 200.

3. Foam plastics in accordance with Chapter 26.
4. Roof coverings that have an A, B or C classification.
5. *Interior floor finish* and floor covering materials installed in accordance with Section 804.
6. Millwork such as doors, door frames, window sashes and frames.
7. *Interior wall and ceiling finishes* installed in accordance with Sections 801 and 803.
8. *Trim* installed in accordance with Section 806.
9. Where not installed greater than 15 feet (4572 mm) above grade, show windows, nailing or furring strips and wooden bulkheads below show windows, including their frames, aprons and show cases.
10. Finish flooring installed in accordance with Section 805.
11. Partitions dividing portions of stores, offices or similar places occupied by one tenant only and that do not establish a *corridor* serving an *occupant load* of 30 or more shall be permitted to be constructed of *fire-retardant-treated wood*, 1-hour fire-resistance-rated construction or of wood panels or similar light construction up to 6 feet (1829 mm) in height.
12. Stages and platforms constructed in accordance with Sections 410.3 and 410.4, respectively.
13. Combustible *exterior wallcoverings*, balconies and similar projections and bay or oriel windows in accordance with Chapter 14.
14. Blocking such as for handrails, millwork, cabinets and window and door frames.
15. Light-transmitting plastics as permitted by Chapter 26.
16. Mastics and caulking materials applied to provide flexible seals between components of *exterior wall* construction.

17. Exterior plastic veneer installed in accordance with Section 2605.2.
18. Nailing or furring strips as permitted by Section 803.11.
19. Heavy timber as permitted by Note c to Table 601 and Sections ~~602.4.7~~602.4.3 and 1406.3.
20. Aggregates, component materials and admixtures as permitted by Section 703.2.2.
21. Sprayed fire-resistant materials and intumescent and mastic fire-resistant coatings, determined on the basis of *fire resistance* tests in accordance with Section 703.2 and installed in accordance with Sections 1705.14 and 1705.15, respectively.
22. Materials used to protect penetrations in fire-resistance-rated assemblies in accordance with Section 714.
23. Materials used to protect joints in fire-resistance-rated assemblies in accordance with Section 715.
24. Materials allowed in the concealed spaces of buildings of Types I and II construction in accordance with Section 718.5.
25. Materials exposed within plenums complying with Section 602 of the *International Mechanical Code*.
26. Wall construction of freezers and coolers of less than 1,000 square feet (92.9 m^2), in size, lined on both sides with noncombustible materials and the building is protected throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1.

705.2.3 Combustible projections. Combustible projections extending to within 5 feet (1524 mm) of the line used to determine the *fire separation distance* shall be of not less than 1-hour fire-resistance-rated construction, ~~Type IV~~ heavy timber construction complying with Section 2304.11, fire-retardant-treated wood or as required by Section 1406.3.

Exception: Type VB construction shall be allowed for combustible projections in Group R-3 and U occupancies with a fire separation distance greater than or equal to 5 feet (1524 mm).

803.3 Heavy timber exemption. Exposed portions of building elements complying with the requirements for buildings of ~~Type IV~~ heavy timber construction in Section 602.4 or Section 2304.11 shall not be subject to *interior finish* requirements.

803.13.3 Heavy timber construction. Wall and ceiling finishes of all classes as permitted in this chapter that are installed directly against the wood decking or planking of ~~Type IV~~ heavy timber construction in Sections 602.4.2 or 2304.11 or to wood furring strips applied directly to the wood decking or planking shall be fireblocked as specified in Section 803.13.1.1.

1406.3 Balconies and similar projections. Balconies and similar projections of combustible construction other than fire-retardant-treated wood shall be fire-resistance rated where required by Table 601 for floor construction or shall be of ~~Type IV~~ heavy timber construction in accordance with Section ~~602.4~~ 2304.11. The aggregate length of the projections shall not exceed 50 percent of the building's perimeter on each floor.

Exceptions:

1. On buildings of Type I and II construction, three stories or less above *grade plane*, *fire-retardant-treated wood* shall be permitted for balconies, porches, decks and exterior stairways not used as required exits.
2. Untreated wood is permitted for pickets and rails or similar guardrail devices that are limited to 42 inches (1067 mm) in height.
3. Balconies and similar projections on buildings of Type III, IV and V construction shall be permitted to be of Type V construction, and shall not be required to have a *fire-resistance rating* where sprinkler protection is extended to these areas.
4. Where sprinkler protection is extended to the balcony areas, the aggregate length of the balcony on each floor shall not be limited.

[BG] 1510.2.5 Type of construction. Penthouses shall be constructed with walls, floors and roofs as required for the type of construction of the building on which such penthouses are built.

Exceptions:

1. On buildings of Type I construction, the exterior walls and roofs of penthouses with a *fire separation distance* greater than 5 feet (1524 mm) and less than 20 feet (6096 mm) shall be permitted to have not less than a 1-hour fire-resistance rating. The exterior walls and roofs of penthouses with a fire separation distance of 20 feet (6096 mm) or greater shall not be required to have a fire-resistance rating.
2. On buildings of Type I construction two stories or less in height above grade plane or of Type II construction, the exterior walls and roofs of penthouses with a *fire separation distance* greater than 5 feet (1524 mm) and less than 20 feet (6096 mm) shall be permitted to have not less than a 1-hour fire-resistance rating or a lesser fire-resistance rating as required by Table 602 and be constructed of fire-retardant-treated wood. The exterior walls and roofs of penthouses with a *fire separation distance* of 20 feet (6096 mm) or greater shall be permitted to be constructed of fire-retardant-treated wood and shall not be required to have a fire-resistance rating. Interior framing and walls shall be permitted to be constructed of fire-retardant-treated wood.
3. On buildings of Type III, IV or V construction, the exterior walls of penthouses with a fire separation distance greater than 5 feet (1524 mm) and less than 20 feet (6096 mm) shall be permitted to have not less than a 1-hour fire-resistance rating or a lesser fire-resistance rating as required by Table 602. On buildings of Type III, IV or VA construction, the exterior walls of penthouses with a fire separation distance of 20 feet (6096 mm) or greater shall be permitted to be of ~~Type IV~~ heavy timber construction complying with Sections 602.4 and 2304.11 or noncombustible construction or fire-retardant-treated wood and shall not be required to have a fire-resistance rating.

[BG] 1510.3 Tanks. Tanks having a capacity of more than 500 gallons (1893 L) located on the roof deck of a building shall be supported on masonry, reinforced concrete, steel or ~~Type IV~~ heavy timber construction complying with Section 2304.11 provided that, where such supports are located in the building above the lowest *story*, the support shall be fire-resistance rated as required for Type IA construction.

3105.3 Design and construction. *Awnings* and *canopies* shall be designed and constructed to withstand wind or other lateral loads and live loads as required by Chapter 16 with due allowance for shape, open construction and similar features that relieve the pressures or loads. Structural members shall be protected to prevent deterioration. *Awnings* shall have frames of noncombustible material, *fire-retardant-treated wood*, ~~wood of Type IV size~~ heavy timber complying with Section 2304.11, or 1-hour construction with combustible or noncombustible covers and shall be either fixed, retractable, folding or collapsible
.

D102.2.8 Permanent canopies. Permanent canopies are permitted to extend over adjacent open spaces provided all of the following are met:

1. The canopy and its supports shall be of noncombustible material, *fire-retardant-treated wood*, ~~Type IV construction~~ heavy timber complying with Section 2304.11 or of 1-hour fire-resistance-rated construction.

   Exception: Any textile covering for the canopy shall be flame resistant as determined by tests conducted in accordance with NFPA 701 after both accelerated water leaching and accelerated weathering.

2. Any canopy covering, other than textiles, shall have a *flame spread index* not greater than 25 when tested in accordance with ASTM E 84 or UL 723 in the form intended for use.
3. The canopy shall have at least one long side open.
4. The maximum horizontal width of the canopy shall not exceed 15 feet (4572 mm).

5. The *fire resistance* of *exterior walls* shall not be reduced.

2015 International Fire Code

Revise as follows:

803.1 General. The provisions of this section shall limit the allowable fire performance and smoke development of interior wall and ceiling finishes and interior wall and ceiling trim in existing buildings based on location and occupancy classification. Interior wall and ceiling finishes shall be classified in accordance with Section 803 of the *International Building Code*. Such materials shall be grouped in accordance with ASTM E 84, as indicated in Section 803.1.1, or in accordance with NFPA 286, as indicated in Section 803.1.2.

Exceptions:

1. Materials having a thickness less than 0.036 inch (0.9 mm) applied directly to the surface of walls and ceilings.
2. Exposed portions of structural members complying with the requirements of ~~buildings of Type IV construction~~ heavy timber in accordance with the *International Building Code* shall not be subject to interior finish requirements.

Reason: This code change is part 2 of a proposal to reorganize Type IV Section 602.4 and heavy timber section 2304.11. This part of the change includes references found throughout the IBC to either: Type IV construction, Section 602.4, Section 2304.11, or "heavy timber". This change should follow directly after the 602.4 change and the reason for the change is included in that reason statement.

The references found in this part are generally changed to Type IV or Section 602.4 when the section of the code is referring to the type of construction associated with a structure. The references are generally changed to "heavy timber complying with Section 2304.11" when the code is referring to a heavy timber element found in a building of another type of construction. This change is a reorganization of two sections and is not intended to change the intent of the code.

Cost Impact: Will not increase the cost of construction
Since this is a reorganization of existing requirements, not the creation of new requirements, this code change will not increase the cost of construction.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This is a companion piece to G179-15. G179 reorganizes the heavy timber provisions. This change provides corrections to the various new section numbers resulting from G179-15.

Assembly Action **None**

Final Hearing Results

G180-15 **AS**

Back

Code Change No: G22-16

Original Proposal

Section: IBC: 202; IEBC: 202

Proponent: Gwenyth Searer, Wiss, Janney, Elstner Associates, Inc.

THIS CODE CHANGE WILL BE HEARD BY THE IBC STRUCTURAL COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THIS COMMITTEE.

Revise as follows:

[BS] SUBSTANTIAL STRUCTURAL DAMAGE. A condition where one or both of the following apply:

1. The vertical elements of the lateral ~~force-resisting~~ force resisting system have suffered damage such that the lateral loadcarrying capacity of any *story* in any horizontal direction has been reduced by more than 33 percent from its predamage condition.
2. The capacity of any vertical component carrying gravity load, or any group of such components, that ~~supports~~ has a tributary area more than 30 percent of the total area of the structure's floors and roofs has been reduced more than 20 percent from its predamage condition and the remaining capacity of such affected elements, with respect to all dead and *live loads*, is less than 75 percent of that required by this code for new buildings of similar structure, purpose and location.

2015 International Existing Building Code

Revise as follows:

[BS] SUBSTANTIAL STRUCTURAL DAMAGE. A condition where one or both of the following apply:

1. The vertical elements of the lateral forceresisting system have suffered damage such that the lateral load-carrying capacity of any story in any horizontal direction has been reduced by more than 33 percent from its predamage condition.
2. The capacity of any vertical component carrying gravity load, or any group of such components, that ~~supports~~ has a tributary area more than 30 percent of the total area of the structure's floors and roofs has been reduced more than 20 percent from its predamage condition and the remaining capacity of such affected elements, with respect to all dead and live loads, is less than 75 percent of that required by this code for new buildings of similar structure, purpose and location.

Reason: There has been some debate among engineers regarding the meaning of the word "supports". Some argue that since the term "tributary area" is not used, the word "supports" can be interpreted as requiring postulation of a collapse mechanism (e.g., in a square structure with four columns, one at each corner, if you hypothetically removed a single column and half the structure would collapse, then that column "supports" half of the structure. Or if in the same structure, if you removed a single column and the entire structure would collapse, then that column "supports" 100 percent of the structure). Similarly, another interpretation is that if a load is placed somewhere on a structure, and any portion of the load is resisted by the element in question in any amount, then that element "supports" the area where the load was applied. Both these interpretations can result in the columns and walls at any given level of a structure supporting far more than 100 percent of the building.

Neither interpretation is the intent of the trigger, which was only ever intended to incorporate the concept of tributary area. Addition of the term "tributary area" will clarify the intent using a commonly understood technical term.

Cost Impact: Will not increase the cost of construction
This is a clarification / editorial change. As such, this proposal has no implications on the cost of construction.

Staff note: There is a published errata to the definition of 'substantial structural damage' in the IEBC. That errata is reflected in this proposal.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: The proposal clarifies the definition of "substantial structural damage" by replacing "supports" with "tributary area". This corrects a problem by substituting terminology that engineers have little trouble applying.

Assembly Action **None**

Final Action Results

G22-16	**AS**

Back

Code Change No: S1-16

Original Proposal

Section: 1401.1, 1501.1

Proponent: Dennis Richardson, American Wood Council, representing American Wood Council (drichardson@awc.org)

Revise as follows:

1401.1 Scope. The provisions of this chapter shall establish the minimum requirements for exterior walls; *exterior wall* coverings; *exterior wall* openings; exterior windows and doors; and architectural *trim*.~~;~~ ~~balconies and similar projections; and bay and oriel windows.~~

1501.1 Scope. The provisions of this chapter shall govern the design, materials, construction and quality of roof assemblies, ~~and~~ rooftop structures, and balconies where the structural framing is protected by an impervious moisture barrier.

Reason: Provisions regarding ventilation for balconies that are protected by an impervious barrier yet are located outside of the building envelope are being added to Chapter 15 (new Section 1503.7) under a seperate proposal. Since a balcony outside of the building envelope that has weather protection and supports loads most closely resembles a roof (see definition of roof assembly in IBC Section 202), it is felt chapter 15 is the most appropriate place for this provision. This code change revises the scoping statement of Chapter 15 to reflect this and also corrects the scoping statement in Chapter 14 Section 1401 that was not modified when Group A code change FS15-15 removed Balconies, similar projections and Bay and oriel windows from Chapter 14.

Cost Impact: Will not increase the cost of construction
This code change merely clarifies the scoping of chapters and references needing correction from a previous code change and does not change any provision of the code affecting cost.

Report of Committee Action Hearings

Committee Action: **Approved as Modified**

Modify as follows:

1501.1 Scope. The provisions of this chapter shall govern the design, materials, construction and quality of roof assemblies, and rooftop structures~~, and balconies where the structural framing is protected by an impervious moisture barrier~~.

Committee Reason: Since all balcony provisions were previously moved from Chapter 14 to Chapter 7, the revision to the scope of Chapter 14 is a good catch. The modification does away with the proposed change to the scope of Chapter 15, retaining only the current wording.

Assembly Action **None**

Final Action Results

S1-16	**AM**

Back

Code Change No: S7-16

Original Proposal

Section(s): 2304.12.2.6 (New)

Proponent: Dennis Richardson, American Wood Council, representing American Wood Council (drichardson@awc.org)

Add new text as follows:

<u>**1503.7** **Ventilation required beneath balcony or elevated walking surfaces.** Enclosed framing in exterior balconies and elevated walking surfaces that are exposed to rain, snow, or drainage from irrigation, where the structural framing is protected by an impervious moisture barrier, shall be provided with openings that provide a net free cross ventilation area not less than 1/150 of the area of each separate space. Where framing supports such surfaces over 30 inches (762 mm) above grade, the ventilation openings shall be designed to allow inspection of framing material.</u>

Reason: This change clarifies the intent of the code when a balcony or elevated walking surface serves as a weather resistant barrier and the joist spaces below are enclosed, cross ventilation is required as for enclosed rafter spaces of roofs. When the ventilation is provided for elevated walking surfaces, the ventilation openings must be designed to accommodate routine inspection of the framing material for decay or corrosion.

Cost Impact: Will increase the cost of construction
Some vent openings may need to be modified to accommodate inspection of framing material. Many vent covers that are easily removable and re-installed with hand tools already comply with the intent of this requirement.

Report of Committee Action Hearings

Committee Action: **Disapproved**

Committee Reason: The committee understands there is a problem that needs to be addressed, but believes the proposed requirement should only apply to wood and possibly light-gage steel. The fire-rating issues need to be correlated, probably in one big change, so that they allow these openings if they are small so that the inspections can be made and ventilation can be provided. As written this would be creating a conflict in the code. The committee would like to see more specificity on the inspection portals, giving some guidance to building officials. There is a concern that this is not the right location for this provision since most people would not think of walking surfaces as part of roofing. In addition it is not completely clear whether the problem that is being addressed is code-related versus something that was a construction defect.

Assembly Action: **None**

Public Comments

Public Comment 1:

Dennis Richardson, representing American Wood Council (drichardson@awc.org) requests Approve as Modified by this Public Comment.

Modify as follows:

~~**1503.7**~~ <u>**2304.12.2.6**</u> **Ventilation required beneath balcony or elevated walking surfaces.** Enclosed framing in exterior balconies and elevated walking surfaces that are exposed to rain, snow, or drainage from irrigation~~, where the structural framing is protected by an impervious moisture barrier,~~ shall be provided with openings that provide a net free cross ventilation area not less than 1/150 of the area of each separate space. ~~Where framing supports such surfaces over 30 inches (762 mm) above grade, the ventilation openings shall be designed to allow inspection of framing material.~~

Commenter's Reason: Section 1203.3 of the IBC is generally applied by many to require ventilation in the instance where wood supports a balcony and is enclosed. A key word is enclosed. Whenever the wood framing supporting such structures is enclosed it is more difficult for water in the assembly to dry out regardless of the source of the water (even if remaining from rain during the construction period). Even though section 1203.3 is generally applied by many, there is no specific reference to this application. It is critical to provide ventilation to these areas when enclosed and the wood supports an elevated balcony exposed to the weather. The committee suggested this change needed to be located where it is clear it applies to wood hence the change to chapter 23. The committee also suggested this needs to be correlated with fire-rating issues and this code change proposal could create an inconsistency. That is incorrect as Section 1406.3 of the 2015 IBC makes it clear how fire-rating issues can be resolved with the current code by extending sprinkler protection to these areas (1406.3 will be relocated in the 2018 IBC):

Section 1406.3, Exception 3: "Balconies and similar projections on buildings of Type III, IV and V construction shall be permitted to be of Type V construction, and shall not be required to have a fire resistance rating where sprinkler protection is extended to these areas."

Finally the original code change went a step further to introduce the concept of providing ventilation openings that allow the inspection for decay. This is a concept that has been introduced and is being tested by one jurisdiction where there was a balcony failure. The concept is valid but still being perfected so it has been removed from this proposal and may need to be addressed with a future code change when it is ready for prime time.

Information on this and other code change proposals by American Wood Council may be found at the following web address: www.woodcode.org .

Final Action Results

S7-16	AMPC1

Back

Code Change No: S40-16

Original Proposal

Section: 1507.9.6, 1807.1.4, 2303.1.9

Proponent: Colin McCown, representing American Wood Protection Association

Revise as follows:

TABLE 1507.9.6
WOOD SHAKE MATERIAL REQUIREMENTS

MATERIAL	MINIMUM GRADES	APPLICABLE GRADING RULES
Wood shakes of naturally durable wood	1	CSSB
Taper sawn shakes of naturally durable wood	1 or 2	CSSB
Preservative-treated shakes and shingles of naturally durable wood	1	CSSB
Fire-retardant-treated shakes and shingles of naturally durable wood	1	CSSB
Preservative-treated taper sawn shakes of Southern pine treated in accordance with AWPA U1 (Commodity Specification A, Special Requirement 4.6 ~~Use Category 3B and Section 5.6~~)	1 or 2	TFS

CSSB = Cedar Shake and Shingle Bureau.
TFS = Forest Products Laboratory of the Texas Forest Services.

1807.1.4 Permanent wood foundation systems. Permanent wood foundation systems shall be designed and installed in accordance with AWC PWF. Lumber and plywood shall be preservative treated in accordance with AWPA U1 (Commodity Specification A, ~~Use Category 4B and Section 5.2~~ Special Requirement 4.2) and shall be identified in accordance with Section 2303.1.9.1.

2303.1.9 Preservative-treated wood. Lumber, timber, plywood, piles and poles supporting permanent structures required by Section 2304.12 to be preservative treated shall conform to ~~the requirements of the applicable~~ AWPA ~~Standard~~ U1 and M4 ~~for the species, product, preservative and end use. Preservatives shall be listed in Section 4 of AWPA U1~~. Lumber and plywood used in permanent wood foundation systems shall conform to Chapter 18.

Reason: The existing text was outdated, requiring clarification and updates to current AWPA section numbering.

Cost Impact: Will not increase the cost of construction
These changes merely clarify and update the existing text without any impact on the required specifications for materials used.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: Agreement with proponent's reason which indicates that the proposal is making needed updates to outdated AWPA section references.

Assembly Action **None**

Final Action Results

S40-16	**AS**

Back

Code Change No: S53-16

Original Proposal

Section: 1602.1

Proponent: Jennifer Goupil, American Society of Civil Engineers, representing SELF (jgoupil@asce.org)

Revise as follows:

1602.1 NOTATIONS.
D = Dead load.
Di = Weight of ice in accordance with Chapter 10 of ASCE 7.
E = Combined effect of horizontal and vertical earthquake induced forces as defined in Section ~~12.4.2~~ 2.3.6 of ASCE 7.
F = Load due to fluids with well-defined pressures and maximum heights.
Fa = Flood load in accordance with Chapter 5 of ASCE 7.
H = Load due to lateral earth pressures, ground water pressure or pressure of bulk materials.
L = Roof live load greater than 20 psf (0.96 kN/m 2) and floor live load.
Lr = Roof live load of 20 psf (0.96 kN/m 2) or less.
R = Rain load.
S = Snow load.
T = ~~Self-straining~~ Cummulative effect of self-straining load forces and effects.
Vasd = Nominal design wind speed (3-second gust), miles per hour (mph) (km/hr) where applicable.
Vult= Ultimate design wind speeds (3-second gust), miles per hour (mph) (km/hr) determined from Figure 1609.3(1), 1609.3(2), 1609.3(3) or ASCE 7.
W = Load due to wind pressure.
Wi = Wind-on-ice in accordance with Chapter 10 of ASCE 7.

Reason: This change proposes to coordinate the Notation in Chapter 16 of the IBC with the 2016 edition of the referenced loading standard *Minimum Design Loads and Associated Criteria for Buildings and Other Structures (ASCE/SEI 7-16).*

Cost Impact: Will not increase the cost of construction
The proposed changes will not increase the cost of construction. This proposal coordinates the IBC with the referenced loading standard *ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures*. ASCE 7 will be updated from the 2010 edition to the 2016 edition as an Administrative Update to the 2018 I-Codes.

As of the submission date of this code change proposal, the ASCE 7 Standards Committee has completed the committee balloting on technical changes. The document designated *ASCE 7-16 Minimum Design Loads and Associated Criteria for Buildings and Other Structures* is expected to be completed, published and available for purchase prior to the ICC Public Comment Hearings for Group B in October of 2016. Any person interested in obtaining a public comment copy of ASCE 7-16 may do so by contacting James Neckel at ASCE (jneckel "at" asce.org).

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This proposal coordinates IBC notation listed in Chapter 16 with the latest edition of the referenced load standard, ASCE 7, updated in ADM94-16.

Assembly Action **None**

Final Action Results

S53-16	**AS**

Back

Code Change No: S55-16

Original Proposal

Section: 1607.14.2 (New)

Proponent: Edwin Huston, representing National Council of Structural Engineers' Associations (NCSEA) (huston@smithhustoninc.com)

Revise as follows:

1602.1 Definitions. The following terms are defined in Chapter 2:
<u>L_f = Fire wall horizontal live load.</u>

1605.2 Load combinations using strength design or load and resistance factor design. Where strength design or load and resistance factor design is used, buildings and other structures, and portions thereof, shall be designed to resist the most critical effects resulting from the following combinations of factored loads:

1.4(D + F)	**(Equation 16-1)**
1.2(D + F) + 1.6(L + H) + 0.5(Lr or S orR)	**(Equation 16-2)**
1.2(D + F) + 1.6(Lr or S or R) + 1.6 H + (f1L or 0.5 W)	**(Equation 16-3)**
1.2(D + F) + 1.0 W + f1L + 1.6 H + 0.5(Lr or S or R)	**(Equation 16-4)**
1.2(D + F) + 1.0 E + f1L + 1.6 H + f2S	**(Equation 16-5)**
0.9 D + 1.0 W + 1.6 H	**(Equation 16-6)**
0.9(D + F) + 1.0 E + 1.6 H	**(Equation 16-7)**
<u>0.9 D + 1.6 Lf + 1.6 H</u>	**<u>(Equation 16-8)</u>**

where:

f1 = 1 for places of public assembly live loads in excess of 100 pounds per square foot (4.79 kN/m 2), and parking garages; and 0.5 for other live loads.
f2 = 0.7 for roof configurations (such as saw tooth) that do not shed snow off the structure, and 0.2 for other roof configurations.

Exceptions:

1. Where other factored load combinations are specifically required by other provisions of this code, such combinations shall take precedence.
2. Where the effect of *H* resists the primary variable load effect, a load factor of 0.9 shall be included with *H* where *H* is permanent and *H* shall be set to zero for all other conditions.

1605.3 Load combinations using allowable stress design.

1605.3.1 Basic load combinations. Where *allowable stress design* (working stress design), as permitted by this code, is used, structures and portions thereof shall resist the most critical effects resulting from the following combinations of loads:

D + F	**(Equation 16-8)**
D + H + F + L	**(Equation 16-9)**
D + H + F + (Lr or S or R)	**(Equation 16-10)**
D + H + F + 0.75(L) + 0.75(Lr or S or R)	**(Equation 16-11)**

D + H + F + (0.6 W or 0.7 E) **(Equation 16-12)**
D + H + F + 0.75(0.6 W) + 0.75 L + 0.75(Lr or S or R) **(Equation 16-13)**
D + H + F + 0.75 (0.7 E) + 0.75 L + 0.75 S **(Equation 16-14)**
0.6 D + 0.6 W + H **(Equation 16-15)**
0.6(D + F) + 0.7 E + H **(Equation 16-16)**
0.6D + Lf + H **(Equation 16-18)**

Exceptions:

1. Crane hook loads need not be combined with roof live load or with more than three-fourths of the snow load or one-half of the wind load.
2. Flat roof snow loads of 30 psf (1.44 kN/m^2) or less and roof live loads of 30 psf (1.44 kN/m^2) or less need not be combined with seismic loads. Where flat roof snow loads exceed 30 psf (1.44 kN/m^2), 20 percent shall be combined with seismic loads.
3. Where the effect of *H* resists the primary variable load effect, a load factor of 0.6 shall be included with *H* where *H* is permanent and *H* shall be set to zero for all other conditions.
4. In Equation 16-15, the wind load, *W*, is permitted to be reduced in accordance with Exception 2 of Section 2.4.1 of ASCE 7.
5. In Equation 16-16, 0.6 *D* is permitted to be increased to 0.9 *D* for the design of special reinforced masonry shear walls complying with Chapter 21.

Add new text as follows:

1607.14.2 Fire walls. In order to meet the structural stability requirements of section 706.2 where the structure on either side of the wall has collapsed, fire walls and their supports shall be designed to withstand a minimum horizontal load, *Lf*, of 5 psf (0.240 kN/m^2).

Reason: This code change clarifies the minimum lateral loading that fire walls are required to resist to meet the structural stability requirements of section 706.2 where the structure on either side of the wall has collapsed and can no longer provide support. This is the same lateral load that is required for fire walls designed per NFPA 221 as allowed by 706.2. Currently, however, there is no horizontal fire wall load criteria for those who are not using the "deemed to comply" NFPA option.

A new definition L_f and additional load combinations are added to clarify how to combine horizontal fire loads with other loads. Unlike other live loads, it is important that horizontal loads for cantilevered fire walls be combined with the reduced dead loads of equations 16-9 and 16-20. Like the other load combinations, these combinations need to be maintained in IBC and not referenced to another standard.

Cost Impact: Will not increase the cost of construction
The cost of construction will not increase by clarifying the lateral load on firewalls, since it is already standard practice to use this loading per NFPA 221.
This clarification will decrease the cost of design, as it provides structural engineers a clearer understanding of code intent.

Report of Committee Action Hearings

Committee Action: **Approved as Modified**

Modify as follows:

~~**1602.1 Definitions.** The following terms are defined in Chapter 2:~~
~~L_f = Fire wall horizontal live load.~~

1.4(D + F) **(Equation 16-1)**
1.2(D + F) + 1.6(L + H) + 0.5(L_r or S or R) **(Equation 16-2)**
1.2(D + F) + 1.6(L_r or S or R) + 1.6 H + (f_1L or 0.5 W) **(Equation 16-3)**
1.2(D + F) + 1.0 W + f_1L + 1.6 H + 0.5(L_r or S or R) **(Equation 16-4)**
1.2(D + F) + 1.0 E + f_1L + 1.6 H + f_2S **(Equation 16-5)**
0.9 D + 1.0 W + 1.6 H **(Equation 16-6)**
0.9 (D + F) + 1.0 E + 1.6 H **(Equation 16-7)**
~~0.9 D + 1.6 L_f + 1.6 H~~ ~~**(Equation 16-8)**~~

where:

f_1 = 1 for places of public assembly live loads in excess of 100 pounds per square foot (4.79 kN/m^2), and parking garages; and 0.5 for other live loads.
f_2 = 0.7 for roof configurations (such as saw tooth) that do not shed snow off the structure, and 0.2 for other roof configurations.

1605.2 Load combinations using strength design or load and resistance factor design. Where strength design or load and resistance factor design is used, buildings and other structures, and portions thereof, shall be designed to resist the most critical effects resulting from the following combinations of factored loads:

Exceptions:

1. Where other factored load combinations are specifically required by other provisions of this code, such combinations shall take precedence.
2. Where the effect of *H* resists the primary variable load effect, a load factor of 0.9 shall be included with *H* where *H* is permanent and *H* shall be set to zero for all other conditions.

1605.3.1 Basic load combinations. Where *allowable stress design* (working stress design), as permitted by this code, is used, structures and portions thereof shall resist the most critical effects resulting from the following combinations of loads:

D + F	**(Equation 16-8)**
D + H + F + L	**(Equation 16-9)**
D + H + F + (Lr or S or R)	**(Equation 16-10)**
D + H + F + 0.75(L) + 0.75(Lr or S or R)	**(Equation 16-11)**
D + H + F + (0.6 W or 0.7 E)	**(Equation 16-12)**
D + H + F + 0.75(0.6 W) + 0.75 L + 0.75(Lr or S or R)	**(Equation 16-13)**
D + H + F + 0.75 (0.7 E) + 0.75 L + 0.75 S	**(Equation 16-14)**
0.6 D + 0.6 W + H	**(Equation 16-15)**
0.6(D + F) + 0.7 E + H	**(Equation 16-16)**
~~0.6D + Lf + H~~	~~**(Equation 16-18)**~~

Exceptions:

1. Crane hook loads need not be combined with roof live load or with more than three-fourths of the snow load or one-half of the wind load.
2. Flat roof snow loads of 30 psf (1.44 kN/m^2) or less and roof live loads of 30 psf (1.44 kN/m^2) or less need not be combined with seismic loads. Where flat roof snow loads exceed 30 psf (1.44 kN/m^2), 20 percent shall be combined with seismic loads.
3. Where the effect of *H* resists the primary variable load effect, a load factor of 0.6 shall be included with *H* where *H* is permanent and *H* shall be set to zero for all other conditions.
4. In Equation 16-15, the wind load, *W*, is permitted to be reduced in accordance with Exception 2 of Section 2.4.1 of ASCE 7.
5. In Equation 16-16, 0.6 *D* is permitted to be increased to 0.9 *D* for the design of special reinforced masonry shear walls complying with Chapter 21.

1607.14.2 Fire walls. In order to meet the structural stability requirements of section 706.2 where the structure on either side of the wall has collapsed, fire walls and their supports shall be designed to withstand a minimum horizontal allowable stress load~~, L_f,~~ of 5 psf (0.240 kN/m^2).

Committee Reason: This proposal will give designers and plan checkers guidance on how to comply with requirements for fire walls. The modification removes all portions of the original proposal except for new section 1607.14.2 where a clarification is made to indicate the load is an allowable stress design load.

Assembly Action None

Final Action Results

S55-16 AM

Back

Code Change No: S88-16

Original Proposal

Section(s): 1607.4, 1607.9.3, 1607.9.4

Proponent: Jennifer Goupil, AMERICAN SOCIETY OF CIVIL ENGINEERS, representing SELF (jgoupil@asce.org)

Revise as follows:

1607.4 Concentrated live loads. Floors, roofs, and other similar surfaces shall be designed to support the uniformly distributed live loads prescribed in Section 1607.3 or the concentrated live loads, given in Table 1607.1, whichever produces the greater *load effects*. Unless otherwise specified, the indicated concentration shall be assumed to be uniformly distributed over an area of $2^1/_2$ feet by $2^1/_2$ feet (762 mm by 762 mm) and shall be located so as to produce the maximum *load effects* in the structural members.

1607.9.3 Elements supporting hoists for façade access equipment. In addition to any other applicable live loads, structural elements that support hoists for façade access equipment shall be designed for a live load consisting of the larger of the rated load of the hoist times 2.5 ~~and~~ or the stall load of the hoist, whichever is larger.

Reason: This proposed changes to Section 1607 will harmonize the provision in the code with the 2016 edition of the referenced loading standard *ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures* (ASCE 7-16).

Section 1607.4 Concentrated live loads - Proposed addition specifically includes roofs to the requirements for concentrated live loads. This proposed change will align the requirements of the code with the standard ASCE 7.

Section 1607.9.3 Elements supporting hoists for facade access equipment - Proposed revisions clarifies that the larger of the two loads is required, not both.

Cost Impact: Will not increase the cost of construction
The proposed changes will not impact the cost of construction. This proposal coordinates the IBC with the referenced loading standard *ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures*. ASCE 7 will be updated from the 2010 edition to the 2016 edition as an Administrative Update to the 2018 I-Codes.

As of the submission date of this code change proposal, the ASCE 7 Standards Committee has completed the committee balloting on technical changes. The document is designated *ASCE 7-16 Minimum Design Loads and Associated Criteria for Buildings and Other Structures* is expected to be completed, published, and available for purchase prior to the ICC Public Comment Hearings for Group B in October of 2016. Any person interested in obtaining a public comment copy of ASCE 7-16 may do so by contacting James Neckel at ASCE (jneckel "at" asce.org).

Report of Committee Action Hearings

Committee Action: **Approved as Modified**

Modify as follows:

1607.9.3 Elements supporting hoists for façade access and building maintenance equipment. In addition to any other applicable live loads, structural elements that support hoists for façade access and building maintenance equipment shall be designed for a live load ~~consisting~~ of ~~the larger of~~ 2.5 times the rated load of the hoist ~~times 2.5~~ or the stall load of the hoist, whichever is larger.

Committee Reason: Coordination wth the latest edition of the referenced standard, ASCE 7 which was updated in ADM94-16. The modification further updates the proposal for consistency with ASCE 7 due to public comments.

Assembly Action: **None**

Public Comments

Public Comment 1:

Gwenyth Searer, representing self requests Approve as Modified by this Public Comment.

Modify as follows:

1607.9.4 ~~Lifeline~~ Fall arrest and lifeline anchorages ~~for façade access equipment~~. In addition to any other applicable live loads, fall arrest and lifeline anchorages and structural elements that support ~~lifeline~~ these anchorages shall be designed for a live load of at least 3,100 pounds (13.8 kN) for each attached lifeline, in every direction that a fall arrest load may be applied.

Commenter's Reason: During the public comment period of ASCE 7-2016, a commenter suggested editorial changes to the language regarding personal fall arrest anchorages. The Committee accepted the proposed changes, but only after the deadline for submission of code change proposals.

This public comment matches the changes made by ASCE 7.

The original wording of the section reads:

"**1607.9.4 Lifeline anchorages for facade access equipment.** In addition to any other applicable live loads, lifeline anchorages and structural elements that support lifeline anchorages shall be designed for a live load of at least 3,100 pounds (13.8kN) for each attached lifeline in every direction that a fall arrest load may be applied."

If this public comment is accepted, the section will be revised to read:

"**1607.9.4 Fall arrest and lifeline anchorages.** In addition to any other applicable live loads, fall arrest and lifeline anchorages and structural elements that support these anchorages shall be designed for a live load of at least 3,100 pounds (13.8kN) for each attached lifeline in every direction that a fall arrest load may be applied."

This public comment will bring the language into compliance with the language approved for ASCE 7-16 and matches the changes made to 1607.9.3 in S88-16, which was approved As Modified by the ICC Structural Committee.

Final Action Results

S88-16	**AMPC1**

Back

Code Change No: S56-16

Original Proposal

Section: 1602.1, 1603.1, 1603.1.4, 1609.1.1, 1609.1.1.1, 1609.1.2.2, 1609.2, 1609.3, 1609.3(3) (New), 1609.3(5) (New), 1609.3(6) (New), 1609.3(7) (New), 1609.3(8) (New), 1609.3.1, 202, 2308.2.4, 2404.1, 2404.2, 2404.3.1, 2404.3.3, 2404.3.5, 2405.5.2

Proponent: Jennifer Goupil, AMERICAN SOCIETY OF CIVIL ENGINEERS, representing SELF (jgoupil@asce.org)

Revise as follows:

1602.1 Definitions. The following terms are defined in Chapter 2:

NOTATIONS.

D	=	Dead load.
D_i	=	Weight of ice in accordance with Chapter 10 of ASCE 7.
E	=	Combined effect of horizontal and vertical earthquake induced forces as defined in Section 12.4.2 of ASCE 7.
F	=	Load due to fluids with well-defined pressures and maximum heights.
F_a	=	Flood load in accordance with Chapter 5 of ASCE 7.
H	=	Load due to lateral earth pressures, ground water pressure or pressure of bulk materials.
L	=	Roof live load greater than 20 psf (0.96 kN/m ^{2}) and floor live load.
L_r	=	Roof live load of 20 psf (0.96 kN/m ^{2}) or less.
R	=	Rain load.
S	=	Snow load.
T	=	Self-straining load.
V_{asd}	=	~~Nominal~~ Allowable stress design wind speed ~~(3-second gust)~~, miles per hour (mph) (km/hr) where applicable.
V~~ult~~	=	~~Ultimate~~ Basic design wind speeds ~~(3-second gust)~~, miles per hour (mph) (km/hr) determined from Figure 1609.3(1)~~, 1609.3(2), 1609.3(3~~ to 1609.3(8) or ASCE 7.

W	=	Load due to wind pressure.
W_i	=	Wind-on-ice in accordance with Chapter 10 of ASCE 7.

1603.1 General. *Construction documents* shall show the size, section and relative locations of structural members with floor levels, column centers and offsets dimensioned. The design loads and other information pertinent to the structural design required by Sections 1603.1.1 through 1603.1.8 shall be indicated on the *construction documents*.

Exception: *Construction documents* for buildings constructed in accordance with the *conventional light-frame construction* provisions of Section 2308 shall indicate the following structural design information:

1. Floor and roof live loads.
2. Ground snow load, P_g.
3. ~~Ultimate~~ Basic design wind speed, $V_{\cancel{ult}}$, ~~(3-second gust),~~ miles per hour (mph) (km/hr) and ~~nominal~~ allowable stress design wind speed, V_{asd}, as determined in accordance with Section 1609.3.1 and wind exposure.
4. *Seismic design category* and *site class*.
5. Flood design data, if located in *flood hazard areas* established in Section 1612.3.
6. Design load-bearing values of soils.

1603.1.4 Wind design data. The following information related to wind loads shall be shown, regardless of whether wind loads govern the design of the lateral force-resisting system of the structure:

1. ~~Ultimate~~ Basic design wind speed, $V_{\cancel{ult}}$, ~~(3-second gust),~~ miles per hour (km/hr) and ~~nominal~~ allowable stress design wind speed, V_{asd}, as determined in accordance with Section 1609.3.1.
2. *Risk category*.
3. Wind exposure. Applicable wind direction if more than one wind exposure is utilized.
4. Applicable internal pressure coefficient.
5. Design wind pressures to be used for exterior component and cladding materials not specifically designed by the *registered design professional* responsible for the design of the structure, psf (kN/m^2).

1609.1.1 Determination of wind loads. Wind loads on every building or structure shall be determined in accordance with Chapters 26 to 30 of ASCE 7 or provisions of the alternate all-heights method in Section 1609.6. The type of opening protection required, the ~~ultimate~~basic design wind speed, $V_{\cancel{ult}}$, and the exposure category for a site is permitted to be determined in accordance with Section 1609 or ASCE 7. Wind shall be assumed to come from any horizontal direction and wind pressures shall be assumed to act normal to the surface considered.

Exceptions:

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

The wind speeds in Figures 1609.3(1)~~, 1609.3(2) and 1609.3(3~~ thorough 1609.3(8) are ~~ultimate~~ basic design wind speeds, $V_{\cancel{ult}}$, and shall be converted in accordance with Section 1609.3.1 to ~~nominal~~ allowable stress design wind speeds, V_{asd}, when the provisions of the standards referenced in Exceptions 4 and 5 are used.

1609.1.1.1 Applicability. The provisions of ICC 600 are applicable only to buildings located within Exposure B or C as defined in Section 1609.4. The provisions of ICC 600, AWC WFCM and AISI S230 shall not apply to buildings sited on the upper half of an isolated hill, ridge or escarpment meeting the following conditions:

1. The hill, ridge or escarpment is 60 feet (18 288 mm) or higher if located in Exposure B or 30 feet (9144 mm) or higher if located in Exposure C;
2. The maximum average slope of the hill exceeds 10 percent; and
3. The hill, ridge or escarpment is unobstructed upwind by other such topographic features for a distance from the high point of 50 times the height of the hill or~~ 1 mile~~ 2 miles (~~1.61~~3.22 km), whichever is greater.

1609.1.2.2 Application of ASTM E 1996. The text of Section 6.2.2 of ASTM E 1996 shall be substituted as follows:

6.2.2 Unless otherwise specified, select the wind zone based on the ~~strength~~ basic design wind speed, $V_{\cancel{ult}}$~~,~~ as follows:
6.2.2.1 *Wind Zone 1*—130 mph ≤ ~~ultimate~~ basic design wind speed, $V_{\cancel{ult}}$< 140 mph.
6.2.2.2 *Wind Zone 2*—140 mph ≤ ~~ultimate~~ basic design wind speed, $V_{\cancel{ult}}$< 150 mph at greater than one mile (1.6 km) from the coastline. The coastline shall be measured from the mean high water mark.
6.2.2.3 *Wind Zone 3*—150 mph (58 m/s) ≤ ~~ultimate~~ basic design wind speed, $V_{\cancel{ult}}$≤ 160 mph (63 m/s), or 140 mph (54 m/s) ≤ ~~ultimate~~ basic design wind speed, $V_{\cancel{ult}}$ ≤ 160 mph (63 m/s) and within one mile (1.6 km) of the coastline. The coastline shall be measured from the mean high water mark.
6.2.2.4 *Wind Zone 4*— ~~ultimate~~ basic design wind speed, $V_{\cancel{ult}}$ >160 mph (63 m/s).

1609.2 Definitions. For the purposes of Section 1609 and as used elsewhere in this code, the following terms are defined in Chapter 2.

HURRICANE-PRONE REGIONS.
WIND-BORNE DEBRIS REGION.
BASIC WIND SPEED, $V_{\cancel{ult}}$.
ALLOWABLE STRESS WIND SPEED, V_{asd}.

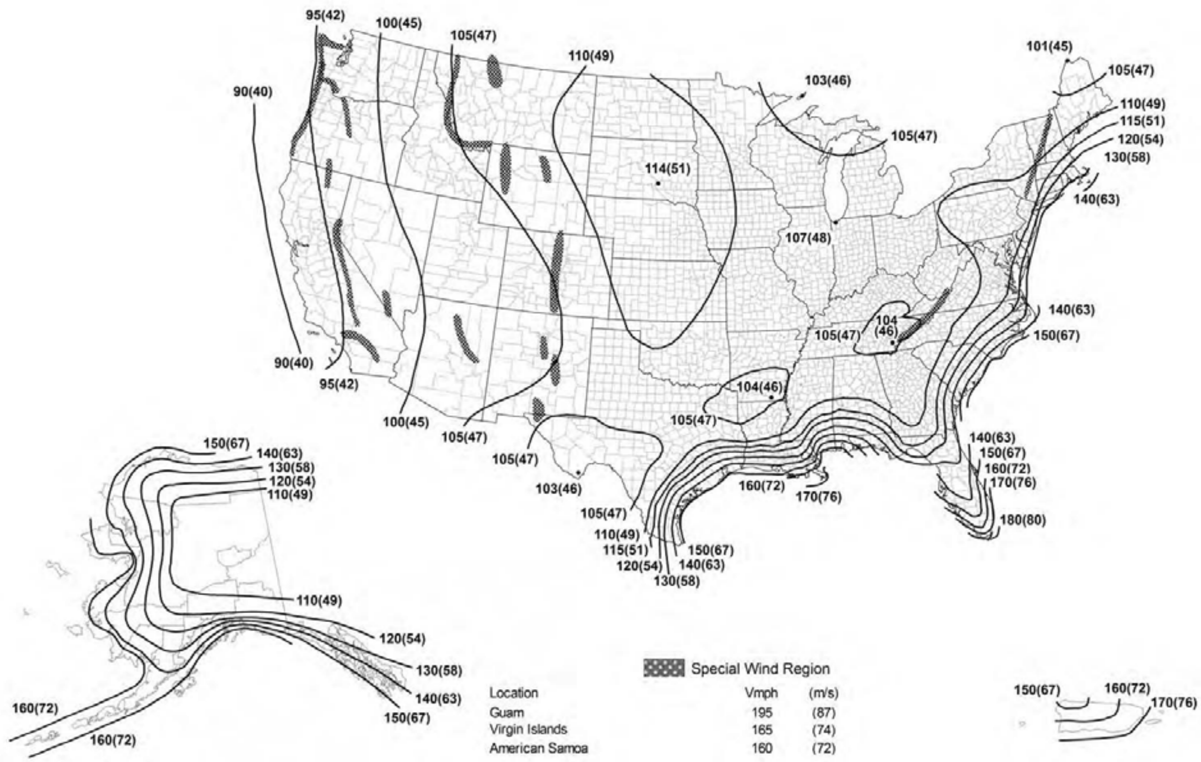
1609.3 ~~Ultimate~~ Basic design wind speed. The ~~ultimate~~ basic design wind speed, $V_{\cancel{ult}}$, in mph, for the determination of the wind loads shall be determined by Figures 1609.3(1)~~, 1609.3(2) and 1609.3(3~~ through (8). The ~~ultimate~~ basic design wind speed, $V_{\cancel{ult}}$, for use in the design of Risk Category II buildings and structures shall be obtained from Figure 1609.3(1) and (5). The ~~ultimate~~ basic design wind speed, $V_{\cancel{ult}}$, for use in the design of Risk Category III buildings and structures shall be obtained from Figure 1609.3(2) and (6). The basic design wind speed, *V*, for use in the design of Risk Category IV buildings and structures shall be obtained from Figure ~~1609.3(2~~1609.3(3) and (7). The ~~ultimate~~ basic design wind speed, $V_{\cancel{ult}}$, for use in the design of Risk Category I buildings and structures shall be obtained from Figure ~~1609.3(3~~1609.3(4) and (8). The ~~ultimate~~ basic design wind speed, $V_{\cancel{ult}}$, for the special wind regions indicated near mountainous terrain and near gorges shall be in accordance with local jurisdiction requirements. The ~~ultimate~~ basic design wind speeds, $V_{\cancel{ult}}$, determined by the local jurisdiction shall be in accordance with~~ Section 26.5.1~~ Chapter 26 of ASCE 7.

In nonhurricane-prone regions, when the ~~ultimate~~ basic design wind speed, $V_{\cancel{ult}}$, is estimated from regional climatic data, the ~~ultimate~~ basic design wind speed, $V_{\cancel{ult}}$, shall be determined in accordance with~~ Section 26.5.3~~ Chapter 26 of ASCE 7.

Delete and substitute as follows:

FIGURE ~~1609.3~~ 1609.3(1) (1)
~~ULTIMATE~~ BASIC DESIGN WIND SPEEDS, ~~Vult~~V , FOR RISK CATEGORY II BUILDINGS AND OTHER STRUCTURES

(Existing code figure not shown for clarity)



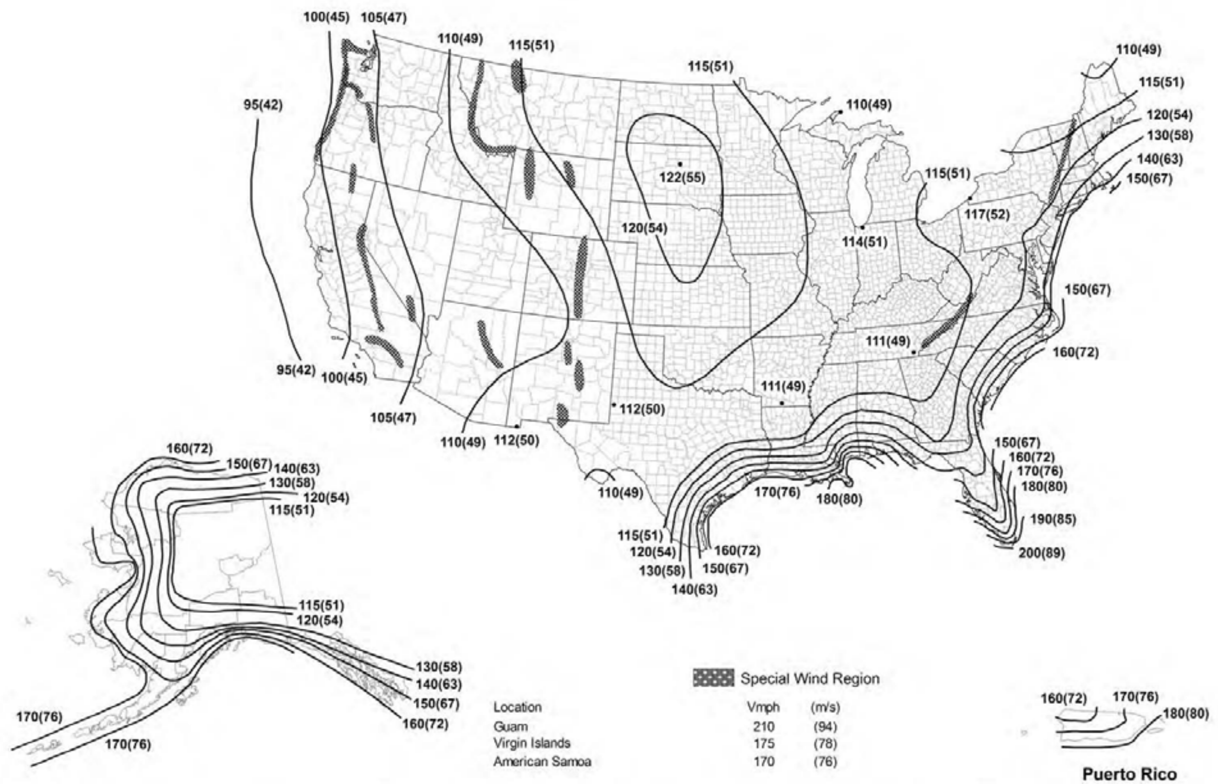
Notes:

1. **Values are nominal design 3-second gust wind speeds in miles per hour (m/s) at 33 ft (10m) above ground for Exposure C category.**
2. **Linear interpolation is permitted between contours. Point values are provided to aid with interpolation.**
3. **Islands, coastal areas, and land boundaries outside the last contour shall use the last wind speed contour.**
4. **Mountainous terrain, gorges, ocean promontories, and special wind regions shall be examined for unusual wind conditions.**
5. **Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (Annual Exceedance Probability = 0.00143, MRI = 700 Years).**
6. **Location-specific basic wind speeds shall be permitted to be determined using www.atcouncil.org/windspeed**

Revise as follows:

FIGURE ~~1609.3~~ 1609.3(2) (2)
~~ULTIMATE~~ BASIC DESIGN WIND SPEEDS, V~~ult~~ , FOR RISK CATEGORY III ~~AND IV~~ BUILDINGS AND OTHER STRUCTURES

(Existing code figure not shown for clarity)

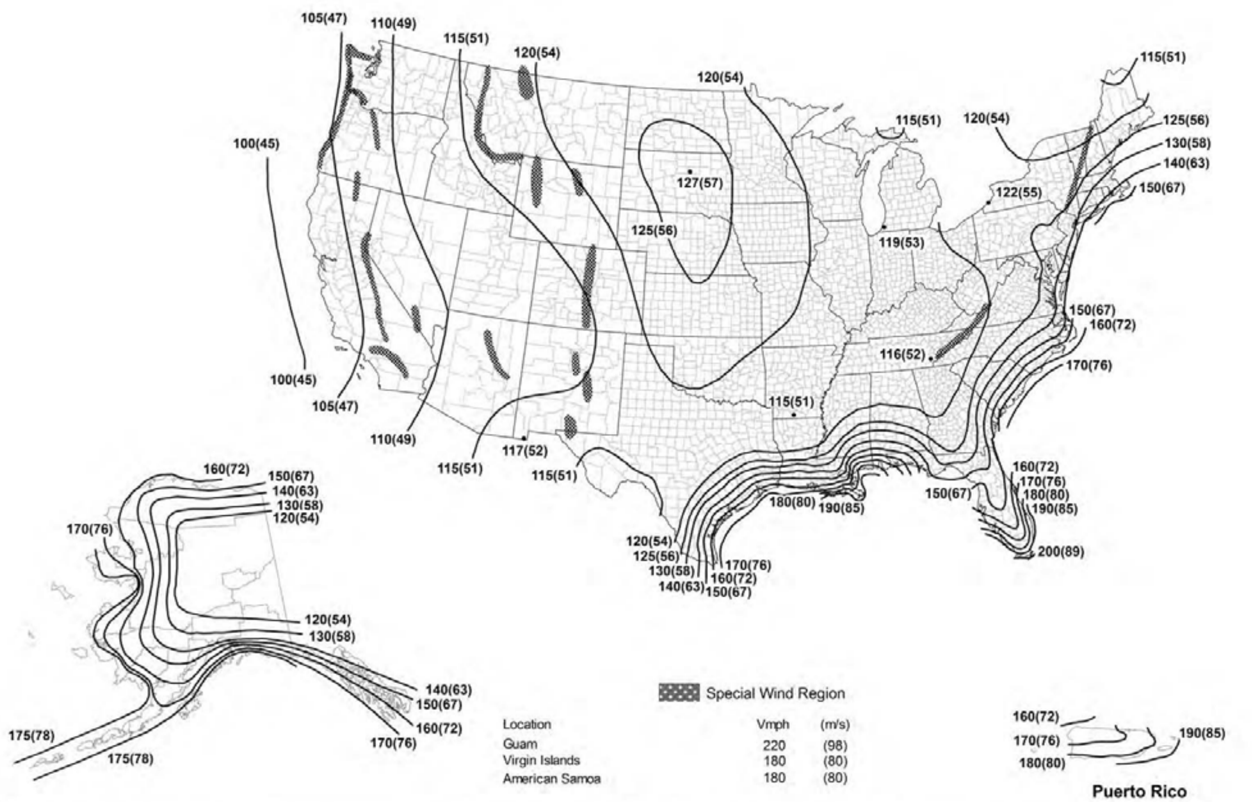


Notes:

1. Values are nominal design 3-second gust wind speeds in miles per hour (m/s) at 33 ft (10m) above ground for Exposure C category.
2. Linear interpolation is permitted between contours. Point values are provided to aid with interpolation.
3. Islands, coastal areas, and land boundaries outside the last contour shall use the last wind speed contour.
4. Mountainous terrain, gorges, ocean promontories, and special wind regions shall be examined for unusual wind conditions.
5. Wind speeds correspond to approximately a 3% probability of exceedance in 50 years (Annual Exceedance Probability = 0.000588, MRI = 1700 Years).
6. Location-specific basic wind speeds shall be permitted to be determined using www.atcouncil.org/windspeed

Add new text as follows:

FIGURE 1609.3(3)
BASIC DESIGN WIND SPEEDS, V, FOR RISK CATEGORY IV BUILDINGS AND OTHER STRUCTURES



Location	Vmph	(m/s)
Guam	220	(98)
Virgin Islands	180	(80)
American Samoa	180	(80)

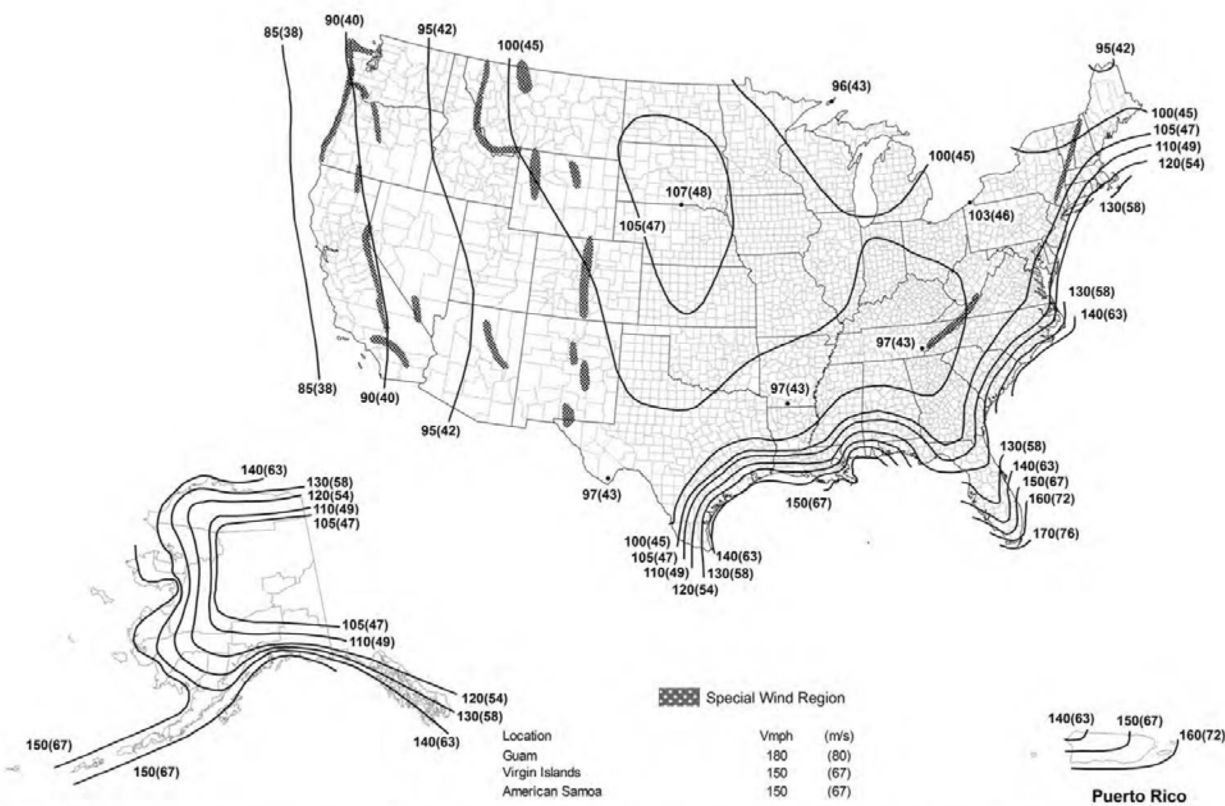
Notes:

1. Values are nominal design 3-second gust wind speeds in miles per hour (m/s) at 33 ft (10m) above ground for Exposure C category.
2. Linear interpolation is permitted between contours. Point values are provided to aid with interpolation.
3. Islands, coastal areas, and land boundaries outside the last contour shall use the last wind speed contour.
4. Mountainous terrain, gorges, ocean promontories, and special wind regions shall be examined for unusual wind conditions.
5. Wind speeds correspond to approximately a 1.6% probability of exceedance in 50 years (Annual Exceedance Probability = 0.00033, MRI = 3000 Years).
6. Location-specific basic wind speeds shall be permitted to be determined using www.atcouncil.org/windspeed

Delete and substitute as follows:

FIGURE ~~1609.3~~1609.3(4) (3)
~~ULTIMATE~~BASIC DESIGN WIND SPEEDS, ~~V_{ult}~~V , FOR RISK CATEGORY I BUILDINGS AND OTHER STRUCTURES

(Existing code figure not shown for clarity)

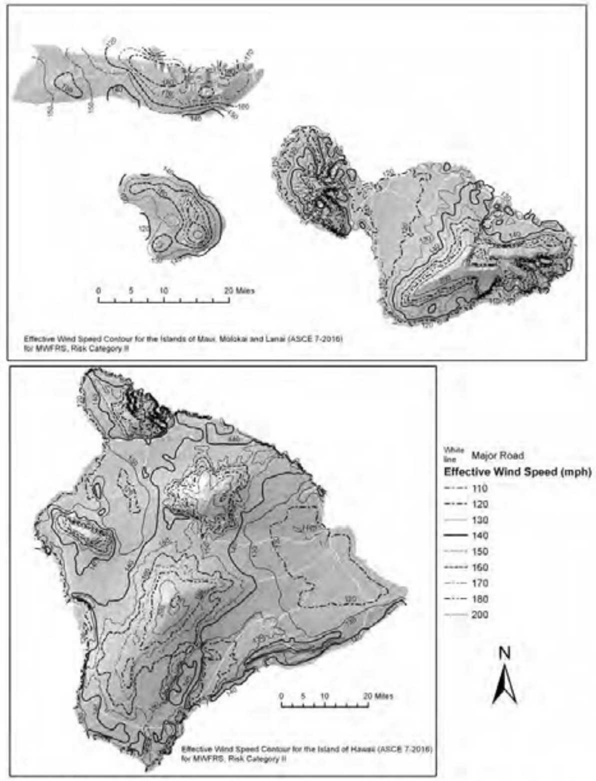


Location	Vmph	(m/s)
Guam	180	(80)
Virgin Islands	150	(67)
American Samoa	150	(67)

Notes:
1. Values are nominal design 3-second gust wind speeds in miles per hour (m/s) at 33 ft (10m) above ground for Exposure C category.
2. Linear interpolation is permitted between contours. Point values are provided to aid with interpolation.
3. Islands, coastal areas, and land boundaries outside the last contour shall use the last wind speed contour.
4. Mountainous terrain, gorges, ocean promontories, and special wind regions shall be examined for unusual wind conditions.
5. Wind speeds correspond to approximately a 15% probability of exceedance in 50 years (Annual Exceedance Probability = 0.00333, MRI = 300 Years).
6. Location-specific basic wind speeds shall be permitted to be determined using www.atcouncil.org/windspeed

Add new text as follows:

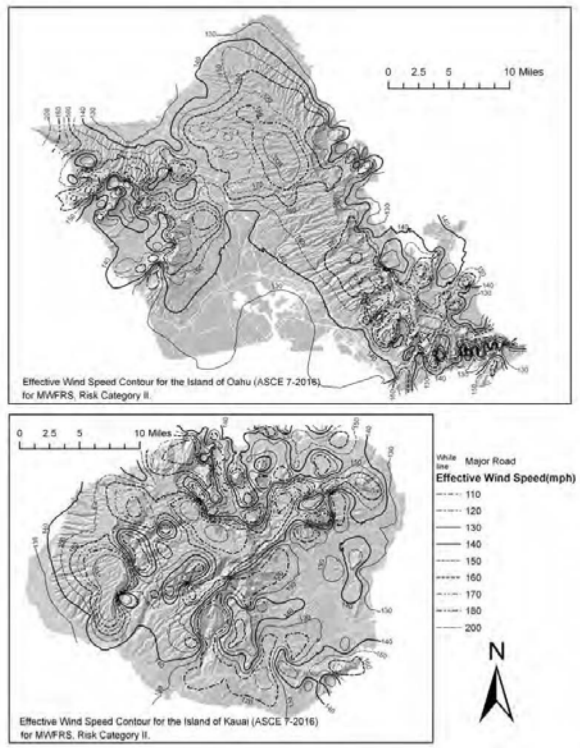
<u>FIGURE 1609.3(5)</u>
<u>BASIC DESIGN WIND SPEEDS, V, FOR RISK CATEGORY II BUILDINGS AND OTHER STRUCTURES IN HAWAII</u>



Basic Wind Speeds for Risk Category II Buildings and Other Structures (Hawaii).

Notes:
1. Values are nominal design 3-second gust wind speeds in miles per hour at 33 ft (10m) above ground for Exposure C category.
2. Linear interpolation between contours is permitted.
3. Islands and coastal areas outside the last contour shall use the last wind speed contour of the coastal area.
4. It is permitted to use the standard values of K_{zt} of 1.0 and K_d as given in Table 26.6-1
5. Ocean promontories and local escarpments shall be examined for unusual wind conditions.
6. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (Annual Exceedance Probability = 0.00143, MRI = 700 Years).

FIGURE 1609.3(5)
CONTINUED

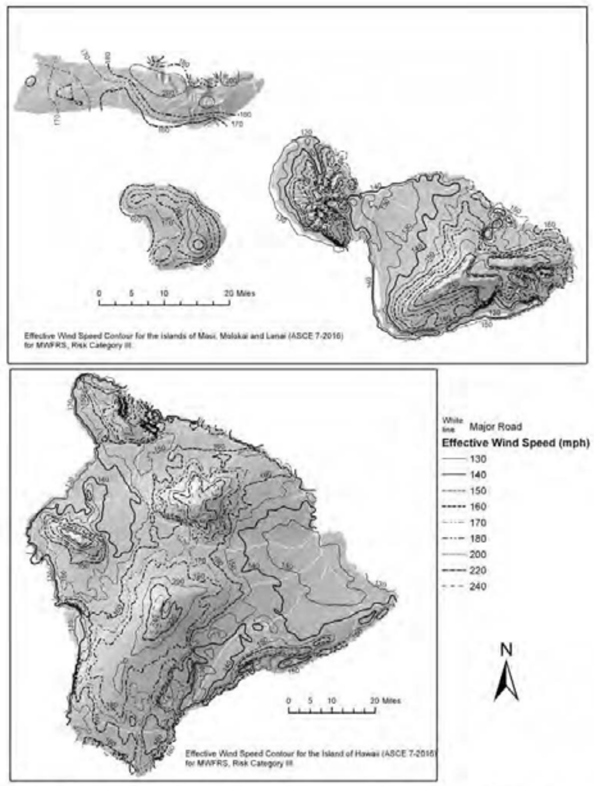


(continued) Basic Wind Speeds for Risk Category II Buildings and Other Structures (Hawaii).

Notes:

1. Values are nominal design 3-second gust wind speeds in miles per hour at 33 ft (10m) above ground for Exposure C category.
2. Linear interpolation between contours is permitted.
3. Islands and coastal areas outside the last contour shall use the last wind speed contour of the coastal area.
4. It is permitted to use the standard values of K_{zt} of 1.0 and K_d as given in Table 26.6-1
5. Ocean promontories and local escarpments shall be examined for unusual wind conditions.
6. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (Annual Exceedance Probability = 0.00143, MRI = 700 Years).

FIGURE 1609.3(6)
BASIC DESIGN WIND SPEEDS, V, FOR RISK CATEGORY III BUILDINGS AND OTHER STRUCTURES IN HAWAII

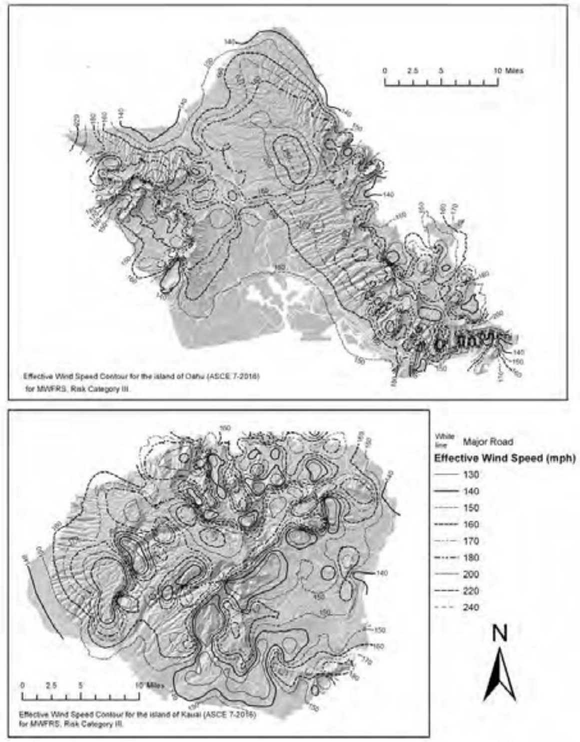


Basic Wind Speeds for Risk Category III Buildings and Other Structures (Hawaii).

Notes:

1. Values are nominal design 3-second gust wind speeds in miles per hour at 33 ft (10m) above ground for Exposure C category.
2. Linear interpolation between contours is permitted.
3. Islands and coastal areas outside the last contour shall use the last wind speed contour of the coastal area.
4. It is permitted to use the standard values of K_{zt} of 1.0 and K_d as given in Table 26.6-1
5. Ocean promontories and local escarpments shall be examined for unusual wind conditions.
6. Wind speeds correspond to approximately a 3% probability of exceedance in 50 years (Annual Exceedance Probability = 0.000588, MRI = 1700 Years).).

<u>FIGURE 1609.3(6)</u>
<u>CONTINUED</u>

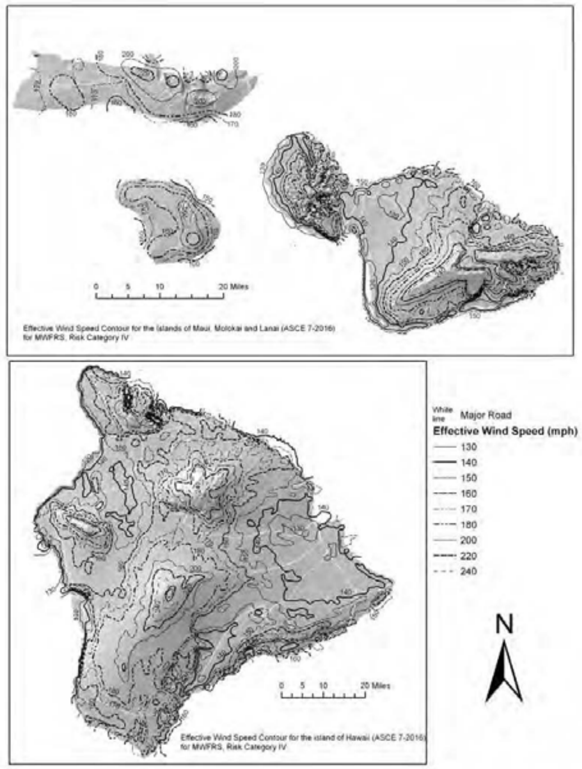


(continued) Basic Wind Speeds for Risk Category III Buildings and Other Structures (Hawaii).

Notes:

1. Values are nominal design 3-second gust wind speeds in miles per hour at 33 ft (10m) above ground for Exposure C category.
2. Linear interpolation between contours is permitted.
3. Islands and coastal areas outside the last contour shall use the last wind speed contour of the coastal area.
4. It is permitted to use the standard values of K_{zt} of 1.0 and K_d as given in Table 26.6-1
5. Ocean promontories and local escarpments shall be examined for unusual wind conditions.
6. Wind speeds correspond to approximately a 3% probability of exceedance in 50 years (Annual Exceedance Probability = 0.000588, MRI = 1700 Years).).

FIGURE 1609.3(7)
BASIC DESIGN WIND SPEEDS, V, FOR RISK CATEGORY IV BUILDINGS AND OTHER STRUCTURES IN HAWAII

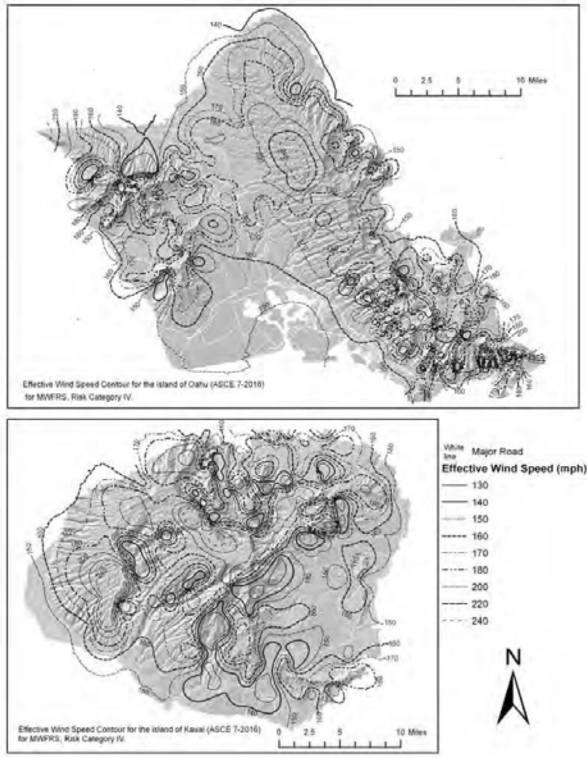


Basic Wind Speeds for Risk Category IV Buildings and Other Structures (Hawaii).

Notes:

1. Values are nominal design 3-second gust wind speeds in miles per hour at 33 ft (10m) above ground for Exposure C category.
2. Linear interpolation between contours is permitted.
3. Islands and coastal areas outside the last contour shall use the last wind speed contour of the coastal area.
4. It is permitted to use the standard values of K_{zt} of 1.0 and K_d as given in Table 26.6-1
5. Ocean promontories and local escarpments shall be examined for unusual wind conditions.
6. Wind speeds correspond to approximately a 1.7% probability of exceedance in 50 years (Annual Exceedance Probability = 0.000333, MRI = 3000 Years).).

FIGURE 1609.3(7)
CONTINUED

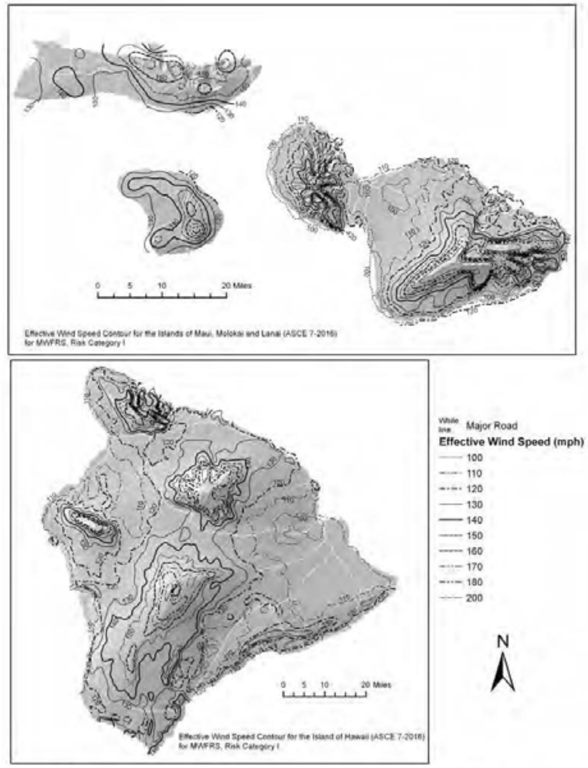


(continued) Basic Wind Speeds for Risk Category IV Buildings and Other Structures (Hawaii).

Notes:

1. Values are nominal design 3-second gust wind speeds in miles per hour at 33 ft (10m) above ground for Exposure C category.
2. Linear interpolation between contours is permitted.
3. Islands and coastal areas outside the last contour shall use the last wind speed contour of the coastal area.
4. It is permitted to use the standard values of K_{zt} of 1.0 and K_d as given in Table 26.6-1
5. Ocean promontories and local escarpments shall be examined for unusual wind conditions.
6. Wind speeds correspond to approximately a 1.7% probability of exceedance in 50 years (Annual Exceedance Probability = 0.000333, MRI = 3000 Years).).

FIGURE 1609.3(8)
BASIC DESIGN WIND SPEEDS, V, FOR RISK CATEGORY I BUILDINGS AND OTHER STRUCTURES IN HAWAII

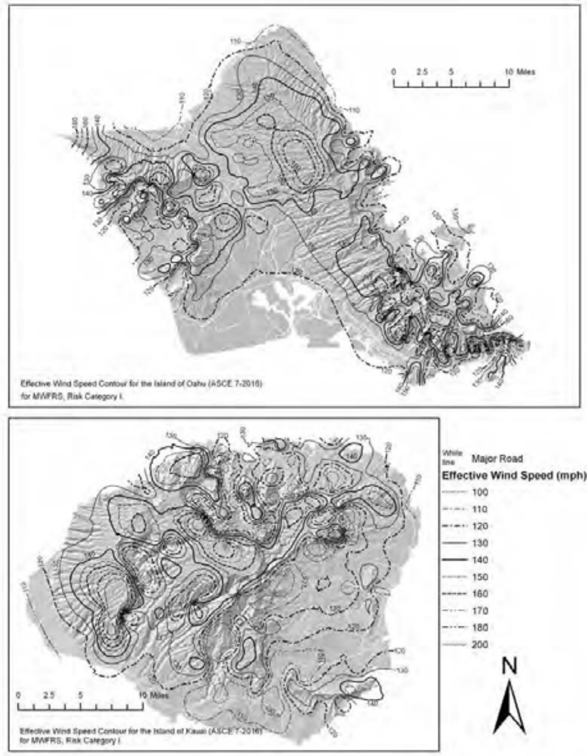


Basic Wind Speeds for Risk Category I Buildings and Other Structures (Hawaii).

Notes:

1. Values are nominal design 3-second gust wind speeds in miles per hour at 33 ft (10m) above ground for Exposure C category.
2. Linear interpolation between contours is permitted.
3. Islands and coastal areas outside the last contour shall use the last wind speed contour of the coastal area.
4. It is permitted to use the standard values of K_{zt} of 1.0 and K_d as given in Table 26.6-1
5. Ocean promontories and local escarpments shall be examined for unusual wind conditions.
6. Wind speeds correspond to approximately a 15% probability of exceedance in 50 years (Annual Exceedance Probability = 0.00333, MRI = 300 Years).

FIGURE <u>1609.3(8)</u>
<u>CONTINUED</u>



(c o n t i n u e d) Basic Wind Speeds for Risk Category I Buildings and Other Structures (Hawaii).

Notes:

1. Values are nominal design 3-second gust wind speeds in miles per hour at 33 ft (10m) above ground for Exposure C category.
2. Linear interpolation between contours is permitted.
3. Islands and coastal areas outside the last contour shall use the last wind speed contour of the coastal area.
4. It is permitted to use the standard values of K_{zt} of 1.0 and K_d as given in Table 26.6-1
5. Ocean promontories and local escarpments shall be examined for unusual wind conditions.
6. Wind speeds correspond to approximately a 15% probability of exceedance in 50 years (Annual Exceedance Probability = 0.00333, MRI = 300 Years).

Revise as follows:

1609.3.1 Wind speed conversion. When required, the ~~ultimate~~ basic design wind speeds of Figures 1609.3(1)~~, 1609.3(2) and 1609.3(3~~ through (8) shall be converted to ~~nominal~~ allowable stress design wind speeds, V_{asd}, using Table 1609.3.1 or Equation 16-33.

$$L = L_o\left(0.25 + \frac{15}{\sqrt{K_{LL}A_T}}\right)$$

(Equation 16-33)

where:

V_{asd}	=	~~Nominal~~ Allowable stress design wind speed applicable to methods specified in Exceptions 4 and 5 of Section 1609.1.1.
V~~ult~~	=	~~Ultimate~~ Basic design wind speeds determined from Figures 1609.3(1)~~, 1609.3(2) or 1609.3(3~~ through (8).

TABLE 1609.3.1
WIND SPEED CONVERSIONS[a, b, c]

V~~ULT~~	100	110	120	130	140	150
V_{asd}	78	85	93	101	108	116

For SI: 1 mile per hour = 0.44 m/s.

a. Linear interpolation is permitted.

b. V_{asd} = ~~nominal~~ allowable stress design wind speed applicable to methods specified in Exceptions 1 through 5 of Section 1609.1.1.

c. V~~ult~~ = ~~ultimate~~ basic design wind speeds determined from Figure 1609.3(1)~~, 1609.3(2) or 1609.3(3~~ through (8).

Reason: This proposal is a coordination proposal to bring the 2018 IBC up to date with the provision of the 2016 edition of *ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures* (ASCE 7-16).

The changes proposed in all sections harmonizes terminology between the code and the loading standard. In all instances the word "ultimate" is changed to "basic" and the subscript "ult" is removed from the variable "V". Similarly, the word "nominal" is changed to "allowable stress" in all placed to be consistent with the terminology used in the loading standard.

The increase in distance in 1609.1.1.1 Applicability to 2 miles from 1 mile is also to correct the discrepancy between the code and ASCE 7.

The design wind speed maps have been updated to reflect the maps adopted into ASCE 7-16. During the development of the ASCE 7-16 standard the ASCE 7 Wind Load Subcommittee made substantial revision to the wind speed maps contained within the standard, and the number of maps went from three to eight. These revisions include the development of separate maps for Risk Categories III and IV structures; reconstruction of the special wind regions within the maps, correcting known deficiencies in the wind speed contours; and modification of the basic wind speed based on updated climatic and weather data. New hurricane contours in the northeastern states were developed based on updated hurricane models and the locations of the contours along the hurricane coast line were adjusted to reflect new research into the decay rate of hurricanes over land. New maps for the State of Hawaii were developed to eliminate it as a "special wind region" and to provide guidance on the wind patterns for the state that occur because of the unique topography there. Currently there are eight new maps for main wind force and component and cladding design in the ASCE 7-16 standard along with four new serviceability maps.

Cost Impact: Will not increase the cost of construction

The proposed map changes will decrease the cost of construction in the majority of the United States. The basic design wind speeds have been lowered at most locations on the new maps based on the latest data available, thus reducing the overall cost of construction. Along the hurricane coastline from Virginia to Texas, the wind speeds remain nearly unchanged from the current maps and thus the cost of construction will not change. There may be a very small increase in Category IV structures in some parts of the country, due to the new mean recurrence interval for Risk Category IV, which has now been separated from Risk Category III.

The basic wind speeds for all four Risk Category maps decrease very significantly west of the Continental Divide. For example, in much of coastal California wind speeds decrease by as much as 16%, 15%, and 11% from the previous maps for Risk Category II, III, and IV structures, respectively. Wind speeds in the Northern Great Plains states are similar to previous maps, and wind speeds in hurricane prone regions from Virginia to Texas remain nearly unchanged. In the rest of the continental United States south and east of the Great Plains, wind speeds decrease as much as 12%, 8%, and 4% for Risk Category II, III, and IV buildings respectively. For a comparatively small number of buildings, the design wind speeds for Risk Category IV increase slightly as a result of the split of Risk Category III and IV into separate maps with different mean recurrence intervals. The wind speeds for Risk Category IV buildings increase on the order of 5% in hurricane-prone regions from Virginia to Texas. The wind speeds for Risk Category IV buildings increase about 2% in much of Nebraska and the Dakotas and to a lesser extent in the adjacent states. This proposal coordinates the IBC with the referenced loading standard *ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures*. ASCE 7 will be updated from the 2010 edition to the 2016 edition as an Administrative Update to the 2018 I-Codes.

As of the submission date of this code change proposal, the ASCE 7 Standards Committee has completed the committee balloting on the technical changes. The document designated *ASCE 7-16 Minimum Design Loads and Associated Criteria for Buildings and Other Structures* is expected to be completed, published, and available for purchase prior to the ICC Public Comment Hearings for Group B in October of 2016. Any person interested in obtaining a public comment copy of ASCE 7-16 may do so by contacting James Neckel at ASCE (jneckel "at" asce.org).

Report of Committee Action Hearings

Committee Action: **Approved as Modified**

Modify as follows:

[BS] WIND-BORNE DEBRIS REGION. *Areas within hurricane-prone regions located:*

1. Within 1 mile (1.61 km) of the coastal mean high water line where the ~~ultimate~~ basic design wind speed, *V* ~~ult~~, is 130 mph (58 m/s) or greater; or
2. In areas where the ~~ultimate~~ basic design wind speed is 140 mph (63.6 m/s) or greater.

For Risk Category II buildings and structures and Risk Category III buildings and structures, except health care facilities, the wind-borne debris region shall be based on Figure 1609.3.(1). For Risk Category IV buildings and structures and Risk Category III health care facilities, the windborne debris region shall be based on Figure 1609.3(2).

[BS] WIND SPEED, V~~ult~~. ~~Ultimate~~ Basic design wind speeds.

[BS] WIND SPEED, V_{asd}. ~~Nominal~~ Allowable stress design wind speeds.

SECTION 2308
CONVENTIONAL LIGHT-FRAME CONSTRUCTION

2308.2.4 ~~Ultimate~~ *Basic wind speed.* *V~~ult~~ shall not exceed 130 miles per hour (57 m/s) (3-second gust).*

Exceptions:

1. *V*~~ult~~ shall not exceed 140 mph (61.6 m/s) (3-second gust) for buildings in Exposure Category B that are not located in a *hurricane-prone region*.
2. Where *V*~~ult~~ exceeds 130 mph (3-second gust), the provisions of either AWC WFCM or ICC 600 are permitted to be used.

CHAPTER 24
GLASS AND GLAZING

SECTION 2404
WIND, SNOW, SEISMIC AND DEAD LOADS ON GLASS

2404.1 Vertical glass. Glass sloped 15 degrees (0.26 rad) or less from vertical in windows, curtain and window walls, doors and other exterior applications shall be designed to resist the wind loads due to ~~ultimate~~ *basic design wind speed, V*~~ult~~, in *S*ection 1609 for components and cladding. Glass in glazed curtain walls, glazed storefronts and glazed partitions shall meet the seismic requirements of ASCE 7, Section 13.5.9. The load resistance of glass under uniform load shall be determined in accordance with ASTM E 1300.

The design of vertical glazing shall be based on Equation 24-1.

$0.6\ F_{gw} \leq F_{ga}$	**(Equation 24-1)**

where:

F_{gw}	=	Wind load on the glass due to ~~ultimate~~ <u>basic</u> design wind speed, *V*~~ult~~ , computed in accordance with Section 1609.
F_{ga}	=	Short duration load on the glass as determined in accordance with ASTM E 1300.

2404.2 Sloped glass. Glass sloped more than 15 degrees (0.26 rad) from vertical in skylights, sunrooms, sloped roofs and other exterior applications shall be designed to resist the most critical combinations of loads determined by Equations 24-2, 24-3 and 24-4.

$F_g = 0.6\ W_o - D$	**(Equation 24-2)**
$F_g = 0.6\ W_i + D + 0.5\ S$	**(Equation 24-3)**
$F_g = 0.3\ W_i + D + S$	**(Equation 24-4)**

where:

D	=	Glass dead load psf (kN/m ^{2}).
		For glass sloped 30 degrees (0.52 rad) or less from horizontal,
	=	13 t_g (For SI: 0.0245 t_g).
		For glass sloped more than 30 degrees (0.52 rad) from horizontal,
	=	13 t_g cos (For SI: 0.0245 t_g cos).
F_g	=	Total load, psf (kN/m ^{2}) on glass.
S	=	Snow load, psf (kN/m ^{2}) as determined in Section 1608.
t_g	=	Total glass thickness, inches (mm) of glass panes and plies.
W_i	=	Inward wind force, psf (kN/m ^{2}) due to ~~ultimate~~<u>basic</u> design wind speed, *V*~~ult~~ , as calculated in Section 1609.
W_o	=	Outward wind force, psf (kN/m ^{2}) due to ~~ultimate~~<u>basic</u> design wind speed, *V*~~ult~~ , as calculated in Section 1609.
	=	Angle of slope from horizontal.
<u>=</u>	<u>Angle of slope from horizontal.</u>	

Exception: The performance grade rating of unit skylights and tubular daylighting devices shall be determined in accordance with Section 2405.5.

The design of sloped glazing shall be based on Equation 24-5.

$F_g \leq F_{ga}$	**(Equation 24-5)**

where:

F_g	=	Total load on the glass as determined by Equations 24-2, 24-3 and 24-4.
F_{ga}	=	Short duration load resistance of the glass as determined in accordance with ASTM E 1300 for Equations 24-2 and 24-3; or the long duration load resistance of the glass as determined in accordance with ASTM E 1300 for Equation 24-4.

2404.3 Wired, patterned and sandblasted glass.

2404.3.1 Vertical wired glass. Wired glass sloped 15 degrees (0.26 rad) or less from vertical in windows, curtain and window walls, doors and other exterior applications shall be designed to resist the wind loads in Section 1609 for components and cladding according to the following equation:

$0.6\ F_{gw} < 0.5\ F_{ge}$	**(Equation 24-6)**

where:

F_{gw}	=	Wind load on the glass due to ~~ultimate~~ basic design wind speed, *V*~~ult~~ , computed in accordance with Section 1609.
F_{ge}	=	Nonfactored load from ASTM E 1300 using a thickness designation for monolithic glass that is not greater than the thickness of wired glass.

2404.3.3 Vertical patterned glass. Patterned glass sloped 15 degrees (0.26 rad) or less from vertical in windows, curtain and window walls, doors and other exterior applications shall be designed to resist the wind loads in Section 1609 for components and cladding according to Equation 24-9.

$F_{gw} < 1.0\ F_{ge}$	**(Equation 24-9)**

where:

F_{gw}	=	Wind load on the glass due to ~~ultimate~~ basic design wind speed, *V*~~ult~~ , computed in accordance with Section 1609.
F_{ge}	=	Nonfactored load in accordance with ASTM E 1300. The value for patterned glass shall be based on the thinnest part of the glass. Interpolation between nonfactored load charts in ASTM E 1300 shall be permitted.

2404.3.5 Vertical sandblasted glass. Sandblasted glass sloped 15 degrees (0.26 rad) or less from vertical in windows, curtain and window walls, doors, and other exterior applications shall be designed to resist the wind loads in Section 1609 for components and cladding according to Equation 24-12.

$0.6\ F_{gw} < 0.5\ F_{ge}$	**(Equation 24-12)**

where:

F_g	=	Wind load on the glass due to ~~ultimate~~ basic design wind speed, V~~ult~~ , computed in accordance with Section 1609.
F_{ge}	=	Nonfactored load in accordance with ASTM E 1300. The value for sandblasted glass is for moderate levels of sandblasting.

SECTION 2405
SLOPED GLAZING AND SKYLIGHTS

2405.5.2 Skylights rated for separate performance grades for positive and negative design pressure. The design of skylights rated for performance grade for both positive and negative design pressures shall be based on Equations 24-14 and 24-15.

$F_{gi} \leq PG_{Po}$	**(Equation 24-14)**
$F_{go} \leq PG_{Ne}$	**(Equation 24-15)**

where:

PG_{Pos}	=	Performance grade rating of the skylight under positive design pressure;
PG_{Neg}	=	Performance grade rating of the skylight under negative design pressure; and

F_{gi} and F_{go} are determined in accordance with the following:
For $0.6W_o \geq D$,

where:

W_o	=	Outward wind force, psf (kN/m ^{2}) due to ~~ultimate~~ basic design wind speed, V~~ult~~ , as calculated in Section 1609.
D	=	The dead weight of the glazing, psf (kN/m ^{2}) as determined in Section 2404.2 for glass, or by the weight of the plastic, psf (kN/m ^{2}) for plastic glazing.
F_{gi}	=	Maximum load on the skylight determined from Equations 24-3 and 24-4 in Section 2404.2.
F_{go}	=	Maximum load on the skylight determined from Equation 24-2.

For $0.6 W_o < D$,

where:

W_o	=	The outward wind force, psf (kN/m ^{2}) due to ~~ultimate~~ basic design wind speed, V~~ult~~ . as calculated in Section 1609.
D	=	The dead weight of the glazing, psf (kN/m ^{2}) as determined in Section 2404.2 for glass, or by the weight of the plastic for plastic glazing.
F_{gi}	=	Maximum load on the skylight determined from Equations 24-2 through 24-4 in Section 2404.2.
F_{go}	=	0.

Committee Reason: This proposal updates the IBC wind load provisions for coordination with the latest edition of the referenced standard, ASCE 7 which was updated in ADM94-16. These terminology updates are very important to capture in the IBC. The modification picks up additional coordination with IBC wind requirements that were not in the original proposal.

Assembly Action **None**

Final Action Results

S56-16	**AM**

Back

Code Change No: S57-16

Original Proposal

Section: 1603.1, 1603.1.3, 1603.1.9 (New)

Proponent: Jennifer Goupil, AMERICAN SOCIETY OF CIVIL ENGINEERS, representing SELF (jgoupil@asce.org)

Revise as follows:

1603.1 General. *Construction documents* shall show the size, section and relative locations of structural members with floor levels, column centers and offsets dimensioned. The design loads and other information pertinent to the structural design required by Sections 1603.1.1 through ~~1603.1.8~~ <u>1603.1.9</u> shall be indicated on the *construction documents*.

> **Exception:** *Construction documents* for buildings constructed in accordance with the *conventional light-frame construction* provisions of Section 2308 shall indicate the following structural design information:
>
> 1. Floor and roof live loads.
> 2. Ground snow load, ~~P~~<u>p</u>$_g$.
> 3. Ultimate design wind speed, V_{ult}, (3-second gust), miles per hour (mph) (km/hr) and nominal design wind speed, V_{asd}, as determined in accordance with Section 1609.3.1 and wind exposure.
> 4. *Seismic design category* and *site class.*
> 5. Flood design data, if located in *flood hazard areas* established in Section 1612.3.
> 6. Design load-bearing values of soils.
> 7. <u>Rain load data.</u>

1603.1.3 Roof snow load data. The ground snow load, ~~P~~<u>p</u>$_g$, shall be indicated. In areas where the ground snow load, ~~P~~<u>p</u>$_g$, exceeds 10 pounds per square foot (psf) (0.479 kN/m^2), the following additional information shall also be provided, regardless of whether snow loads govern the design of the roof:

1. Flat-roof snow load, ~~P~~<u>p</u>$_f$.
2. Snow exposure factor, C_e.
3. Snow load importance factor, I_s.
4. Thermal factor, C_t.
5. <u>Slope factor(s), C_s</u>
6. Drift surcharge load(s), ~~P~~<u>p</u>$_d$, where the sum of ~~P~~<u>p</u>$_d$ and ~~P~~<u>p</u>$_f$ exceeds 20 psf (0.96 kN/m^2).
7. Width of snow drift(s), *w*.

Add new text as follows:

<u>**1603.1.9 Roof rain load data.** The following roof rain load parameters shall be shown regardless of whether the rain loads govern the design:</u>

1. <u>Rain Load, *R* (psf) (kN/m2)</u>
2. <u>Rain Intensity, *i* (in/hr) (cm/hr)</u>

Reason: This change proposes to coordinate the IBC with the 2016 edition of the referenced loading standard *ASCE 7Minimum Design Loads and associated Criteria for Buildings and Other Structures* (ASCE 7-16). In particular, the snow loads variables should be lower case and the required slope factor should also be included in the required roof snow loads data. Also, rain load data should be included on the list of design loads required on construction documents.

Cost Impact: Will not increase the cost of construction
The proposed changes will not increase the cost of construction. This proposal coordinates the IBC with the referenced loading standard *ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures*. ASCE 7 will be updated from the 2010 edition to the 2016 edition as an Administrative Update to the 2018 I-Codes.

As of the submission date of this code change proposal, the ASCE 7 Standards Committee has completed the committee balloting on technical changes. The document designated *ASCE 7-16 Minimum Design Loads and Associated Criteria for Buildings and Other Structures* is expected to be completed, published, and available for purchase prior to the ICC Public Comment Hearings for Group B in October of 2016. Any person interested in obtaining a public comment copy of ASCE 7-16 may do so by contacting James Neckel at ASCE (jneckel "at" asce.org).

Report of Committee Action Hearings

Committee Action: **Approved as Modified**

Modify as follows:

1603.1.9 Roof rain load data. The following roof rain load parameters shall be shown regardless of whether the rain loads govern the design:

1. Rain Load, ~~R (psf) (kN/m2)~~
2. Rain Intensity, *i* (in/hr) (cm/hr)

Committee Reason: In addition to coordinating notations with the referenced standard, ASCE 7, this code change adds rain load data to the information required on construction documents. The modification only requires that the rain intensity be indicated.

Assembly Action **None**

Final Action Results

S57-16	**AM**

Back

Code Change No: S58-16

Original Proposal

Section: 1603.1

Proponent: Gerald Gunny, City of Henderson Department of Building and Fire Safety, representing Southern Nevada Chapter International Code Council

Revise as follows:

1603.1 General. *Construction documents* shall show the size, section and relative locations of structural members with floor levels, column centers and offsets dimensioned. The design loads and other information pertinent to the structural design required by Sections 1603.1.1 through 1603.1.8 shall be indicated on the *construction documents*.

> **Exception:** *Construction documents* for buildings constructed in accordance with the *conventional light-frame construction* provisions of Section 2308 shall indicate the following structural design information:
>
> 1. Floor and roof dead and live loads.
> 2. Ground snow load, P_g.
> 3. Ultimate design wind speed, V_{ult}, (3-second gust), miles per hour (mph) (km/hr) and nominal design wind speed, V_{asd}, as determined in accordance with Section 1609.3.1 and wind exposure.
> 4. *Seismic design category* and *site class.*
> 5. Flood design data, if located in *flood hazard areas* established in Section 1612.3.
> 6. Design load-bearing values of soils.

Reason: The revised code section is a list of information to be placed on the construction documents for use with the conventional light-frame construction provisions of Section 2308. The estimated dead loads are necessary to use the span Tables in Section 2308. The estimated dead loads specified on the construction documents can also be confirmed by the plans examiner.

Cost Impact: Will not increase the cost of construction
The proposal will add an additional item to an otherwise required list of information on the construction documents and will not impact the cost of construction.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: The committee concurs that in order to use the tables for conventional light-frame construction provisions, the dead load is needed. This should be indicated on the construction documents for the building official to review.

Assembly Action **None**

Final Action Results

S58-16	**AS**

Back

Code Change No: S62-16

Original Proposal

Section: 1603.1.8

Proponent: Edwin Huston, representing National Council of Structural Engineers' Associations (NCSEA) (huston@smithhustoninc.com)

Revise as follows:

1603.1.8 Special loads. Special loads that are applicable to the design of the building, structure or portions thereof, including but not limited to the loads of machinery or equipment, which are of greater magnitude than the loads defined in the specified floor and roof loads shall be ~~indicated along with~~ specified in the ~~specified section of this code that addresses the special loading condition.~~ construction drawings by their descriptions and locations

Reason: Machinery, equipment, planters, art structures and other elements impose loads that commonly exceed the capacity of the specified floor area loads. Structural engineers design these elements in specific locations with specific loads. This statement clarifies the communication of the designs direct to the builders and installers and allows the installer to provide feedback if the special load element exceeds the loads or requires a different location than was designed.

Cost Impact: Will not increase the cost of construction
Most current practice currently follows this intent, even though it is not clearly stated in the code. The cost of construction will not increase by specifying the loads and locations, and it may speed up permitting and construction by ensuring the designer provides the information to the authority having jurisdiction and the contractor.

Report of Committee Action Hearings

Committee Action: **Approved as Modified**

Modify as follows:

1603.1.8 Special loads. Special loads that are applicable to the design of the building, structure or portions thereof, including but not limited to the loads of machinery or equipment, which are of greater magnitude than the loads defined in the specified floor and roof loads shall be specified ~~in the construction drawings~~ by their descriptions and locations

Committee Reason: The committee agrees that including equipment loading, etc. in the construction documents is desirable. The modification makes this information required in the construction documents, rather than specifically on the drawings.

Assembly Action **None**

Final Action Results

S62-16	AM

Back

Code Change No: S63-16

Original Proposal

Section: 1604.1, 1604.3, 1604.4, 1604.8.2, 1604.9

Proponent: Jennifer Goupil, AMERICAN SOCIETY OF CIVIL ENGINEERS, representing SELF (jgoupil@asce.org)

Revise as follows:

1604.1 General. Building, structures and parts thereof shall be designed and constructed in accordance with strength design, *load and resistance factor design*, *allowable stress design*, empirical design or conventional construction methods, as permitted by the applicable material chapters and referenced standards.

1604.3 Serviceability. Structural systems and members thereof shall be designed to have adequate stiffness to limit deflections ~~and lateral drift~~ as indicated in Table 1604.3. ~~See Section 12.12.1 of ASCE 7 for drift~~ Drift limits applicable to earthquake loading shall be in accordance with ASCE 7 Chapters 12,13,15 or 16, as applicable.

TABLE 1604.3
DEFLECTION LIMITS[a,b,c,h,i]

CONSTRUCTION	*L or L_r*	*S or W* [f]	*D + L* [d,g]
Roof members: [e]			
Supporting plaster or stucco ceiling	*l*/360	*l*/360	*l*/240
Supporting nonplaster ceiling	*l*/240	*l*/240	*l*/180
Not supporting ceiling	*l*/180	*l*/180	*l*/120
Floor members	*l*/360	—	*l*/240
Exterior walls:			
With plaster or stucco finishes	—	*l*/360	—
With other brittle finishes	—	*l*/240	—
With flexible finishes	—	*l*/120	—
Interior partitions: [b]			
With plaster or stucco finishes	*l*/360	—	—
With other brittle finishes	*l*/240	—	—
With flexible finishes	*l*/120	—	—
Farm buildings	—	—	*l*/180
Greenhouses	—	—	*l*/120

For SI: 1 foot = 304.8 mm.

a. For structural roofing and siding made of formed metal sheets, the total load deflection shall not exceed l /60. For secondary roof structural members supporting formed metal roofing, the live load deflection shall not exceed l /150. For secondary wall members supporting formed metal siding, the design wind load deflection shall not exceed l /90. For roofs, this exception only applies when the metal sheets have no roof covering.

b. Flexible, folding and portable partitions are not governed by the provisions of this section. The deflection criterion for interior partitions is based on the horizontal load defined in Section 1607.14.

c. See Section 2403 for glass supports.

d. The deflection limit for the D+L load combination only applies to the deflection due to the creep component of long-term dead load deflection plus the short-term live load deflection. For wood structural members that are dry at time of installation and used under dry conditions in accordance with the ANSI/AWC NDS, the creep component of the long-term deflection shall be permitted to be estimated as the immediate dead load deflection resulting from 0.5 D . For wood structural members at all other moisture conditions, the creep component of the long-term deflection is permitted to be estimated as the immediate dead load deflection resulting from D . The value of 0.5 D shall not be used in combination with ANSI/AWC NDS provisions for long-term loading.

e. The above deflections do not ensure against ponding. Roofs that do not have sufficient slope or camber to ensure adequate drainage shall be investigated for ponding. ~~See Section 1611 for rain and ponding requirements and Section 1503.4 for roof drainage requirements~~ Chapter 8 of ASCE 7.

f. The wind load is permitted to be taken as 0.42 times the "component and cladding" loads for the purpose of determining deflection limits herein. Where members support glass in accordance with Section 2403 using the deflection limit therein, the wind load shall be no less than 0.6 times the "component and cladding" loads for the purpose of determining deflection.

g. For steel structural members, the dead load shall be taken as zero.

h. For aluminum structural members or aluminum panels used in skylights and sloped glazing framing, roofs or walls of sunroom additions or patio covers not supporting edge of glass or aluminum sandwich panels, the total load deflection shall not exceed l /60. For continuous aluminum structural members supporting edge of glass, the total load deflection shall not exceed l /175 for each glass lite or l /60 for the entire length of the member, whichever is more stringent. For aluminum sandwich panels used in roofs or walls of sunroom additions or patio covers, the total load deflection shall not exceed 1 /120.

i. For cantilever members, l shall be taken as twice the length of the cantilever.

1604.4 Analysis. *Load effects* on structural members and their connections shall be determined by methods of structural analysis that take into account equilibrium, general stability, geometric compatibility and both short- and long-term material properties.

Members that tend to accumulate residual deformations under repeated service loads shall have included in their analysis the effects of added ~~eccentricities~~ deformations expected to occur during their service life.

Any system or method of construction to be used shall be based on a rational analysis in accordance with well-established principles of mechanics. Such analysis shall result in a system that provides a complete load path capable of transferring loads from their point of origin to the load-resisting elements.

The total lateral force shall be distributed to the various vertical elements of the lateral force-resisting system in proportion to their rigidities, considering the rigidity of the horizontal bracing system or diaphragm. Rigid elements assumed not to be a part of the lateral force-resisting system are permitted to be incorporated into buildings provided their effect on the action of the system is considered and provided for in the design. A diaphragm is rigid for the purpose of distribution of story shear and torsional moment when the lateral deformation of the diaphragm is less than or equal to two times the average story drift. Where required by ASCE 7, provisions shall be made for the increased forces induced on resisting elements of the structural system resulting from torsion due to eccentricity between the center of application of the lateral forces and the center of rigidity of the lateral force-resisting system.

~~Every structure shall be designed to resist the overturning effects caused by the lateral~~ forces specified in this chapter. ~~See Section 1609 for wind loads~~ Where sliding is used to isolate the elements, ~~Section 1610 for lateral soil loads and Section 1613 for earthquake loads~~ the effects of friction between sliding elements shall be included as a force.

1604.8.2 Structural walls. Walls that provide vertical load-bearing resistance or lateral shear resistance for a portion of the structure shall be anchored to the roof and to all floors and members that provide lateral support for the wall or that are supported by the wall. The connections shall be capable of resisting the horizontal forces specified in Section ~~1.4.5~~ 1.4.4 of ASCE 7 for walls of structures assigned to *Seismic Design Category* A and to Section 12.11 of ASCE 7 for walls of structures assigned to all other *seismic design categories*. Required anchors in masonry walls of hollow units or cavity walls shall be embedded in a reinforced grouted structural element of the wall. See Sections 1609 for wind design requirements and 1613 for earthquake design requirements.

Delete without substitution:

~~**1604.9 Counteracting structural actions.** Structural members, systems, components and cladding shall be designed to resist forces due to earthquakes and wind, with consideration of overturning, sliding and uplift. Continuous load paths shall be provided for transmitting these forces to the foundation. Where sliding is used to isolate the elements, the effects of friction between sliding elements shall be included as a force.~~

Revise as follows:

1604.10 Wind and seismic detailing. Lateral force-resisting systems shall meet seismic detailing requirements and limitations prescribed in this code and ASCE 7 Chapters 11, ~~excluding Chapter 14~~ 12, 13, 15, 17, and ~~Appendix 11A~~ 18 as applicable, even when wind *load effects* are greater than seismic *load effects*.

Reason: This proposed changes to Section 1604 will harmonize the provision in the code with the 2016 edition of the referenced loading standard *ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures* (ASCE 7-16). Specific reasons provided for the following section proposals:

1604.3 Serviceability - This modification clarifies where to find the limit deflections, in Table 1604.3, as well as provides a more accurate pointer to ASCE 7 Chapters 12,13, 15, and 16 for drift limits applicable to earthquake loadings.

1604.4 Analysis - These modifications eliminate the partial list of forces to be included since it is incomplete. Rather than add provisions to include an exhaustive list, by removing this pointer to only a few of the required sections, to code will remove the ambiguity and liability of the partial list of required sections necessary to consider for overturning effects. Also, the requirement for sliding elements to be considered as a force is moved here from Section 1604.9, which is proposed to be deleted.

1604.8.2 Structural Walls - This modification updates the section reference to ASCE 7 Chapter 1. There are no technical changes, just an update to the correct location.

1604.9 Counteracting structural action - The proposal includes deleting this section because the list of loading considerations is not complete. Rather than try to create an exhaustive list, or keep partial list, removing this section removed the ambiguity and liability of a required list of forced necessary to consider in structural engineering design. Additionally, the requirements for provisions of continuous load paths and the consideration of frictional forces is already covered in ASCE 7 in a more complete manner.

1604.10 Wind and seismic detailing - This modification reflects the current provisions within ASCE 7-16. Appendix 11A was removed from the standard and instead of excluding any particular chapters, this proposed change calls out the primary ASCE 7 Chapter that charge specific parts of the design process. These chapters, in turn reference all other ASCE 7 Sections, other ASCE 7 Chapters, and other standards for all necessary requirements.

Cost Impact: Will not increase the cost of construction
The proposed changes will not impact the cost of construction. This proposal coordinates the IBC with the referenced loading standard *ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures*. ASCE 7 will be updated from the 2010 edition to the 2016 edition as an Administrative Update to the 2018 I-Codes.

As of the submission date of this code change proposal, the ASCE 7 Standards Committee has completed the committee balloting on technical changes. The document is designated *ASCE 7-16 Minimum Design Loads and Associated Criteria for Buildings and Other Structures* is expected to be completed, published, and available for purchase prior to the ICC Public Comment Hearings for Group B in October of 2016. Any person interested in obtaining a public comment copy of ASCE 7-16 may do so by contacting James Neckel at ASCE (jneckel "at" asce.org).

Report of Committee Action Hearings

Committee Action: Approved as Modified

Modify as follows:

TABLE 1604.3
DEFLECTION LIMITS[a,b,c,h,i]

CONSTRUCTION	*L or L_r*	*S or W*[f]	*D + (L or L_r)*[d,g]
Roof members:[e]			
Supporting plaster or stucco ceiling	l/360	l/360	l/240
Supporting nonplaster ceiling	l/240	l/240	l/180
Not supporting ceiling	l/180	l/180	l/120

CONSTRUCTION	***L or L_r***	***S or W*** [f]	***D + (L or L_r)*** [d,g]
Floor members	l/360	—	l/240
Exterior walls:			
With plaster or stucco finishes	—	l/360	—
With other brittle finishes	—	l/240	—
With flexible finishes	—	l/120	—
Interior partitions: [b]			
With plaster or stucco finishes	l/360	—	—
With other brittle finishes	l/240	—	—
With flexible finishes	l/120	—	—
Farm buildings	—	—	l/180
Greenhouses	—	—	l/120

For SI: 1 foot = 304.8 mm.

a. For structural roofing and siding made of formed metal sheets, the total load deflection shall not exceed l /60. For secondary roof structural members supporting formed metal roofing, the live load deflection shall not exceed l /150. For secondary wall members supporting formed metal siding, the design wind load deflection shall not exceed l /90. For roofs, this exception only applies when the metal sheets have no roof covering.

b. Flexible, folding and portable partitions are not governed by the provisions of this section. The deflection criterion for interior partitions is based on the horizontal load defined in Section 1607.14.

c. See Section 2403 for glass supports.

d. The deflection limit for the D+(L or L_r) load combination only applies to the deflection due to the creep component of long-term dead load deflection plus the short-term live load deflection. For wood structural members that are dry at time of installation and used under dry conditions in accordance with the ANSI/AWC NDS, the creep component of the long-term deflection shall be permitted to be estimated as the immediate dead load deflection resulting from 0.5 D . For wood structural members at all other moisture conditions, the creep component of the long-term deflection is permitted to be estimated as the immediate dead load deflection resulting from D . The value of 0.5 D shall not be used in combination with ANSI/AWC NDS provisions for long-term loading.

e. The above deflections do not ensure against ponding. Roofs that do not have sufficient slope or camber to ensure adequate drainage shall be investigated for ponding. See Chapter 8 of ASCE 7.

f. The wind load is permitted to be taken as 0.42 times the "component and cladding" loads for the purpose of determining deflection limits herein. Where members support glass in accordance with Section 2403 using the deflection limit therein, the wind load shall be no less than 0.6 times the "component and cladding" loads for the purpose of determining deflection.

g. For steel structural members, the dead load shall be taken as zero.

h. For aluminum structural members or aluminum panels used in skylights and sloped glazing framing, roofs or walls of sunroom additions or patio covers not supporting edge of glass or aluminum sandwich panels, the total load deflection shall not exceed l /60. For continuous aluminum structural members supporting edge of glass, the total load deflection shall not exceed l /175 for each glass lite or l /60 for the entire length of the member, whichever is more stringent. For aluminum sandwich panels used in roofs or walls of sunroom additions or patio covers, the total load deflection shall not exceed 1 /120.

i. For cantilever members, l shall be taken as twice the length of the cantilever.

1604.4 Analysis. *Load effects* on structural members and their connections shall be determined by methods of structural analysis that take into account equilibrium, general stability, geometric compatibility and both short- and long-term material properties.

Members that tend to accumulate residual deformations under repeated service loads shall have included in their analysis the effects of added deformations expected to occur during their service life.

Any system or method of construction to be used shall be based on a rational analysis in accordance with well-established principles of mechanics. Such analysis shall result in a system that provides a complete load path capable of transferring loads from their point of origin to the load-resisting elements.

The total lateral force shall be distributed to the various vertical elements of the lateral force-resisting system in proportion to their rigidities, considering the rigidity of the horizontal bracing system or diaphragm. Rigid elements assumed not to be a part of the lateral force-resisting system are permitted to be incorporated into buildings provided their effect on the action of the system is considered and provided for in the design. A diaphragm is rigid for the purpose of distribution of story shear and torsional moment when the lateral deformation of the diaphragm is less than or equal to two times the average story drift. Where required by ASCE 7, provisions shall be made for the increased forces induced on resisting elements of the structural system resulting from torsion due to eccentricity between the center of application of the lateral forces and the center of rigidity of the lateral force-resisting system.

Every structure shall be designed to resist the ~~overturning~~ effects caused by the forces specified in this chapter, including overturning, uplift, and sliding.
Where sliding is used to isolate the elements, the effects of friction between sliding elements shall be included as a force.

1604.10 Wind and seismic detailing. Lateral force-resisting systems shall meet seismic detailing requirements and limitations prescribed in this code and ASCE 7 Chapters 11, 12, 13, 15, 17, and 18 as applicable, even when wind *load effects* are greater than seismic *load effects*.

Exception: References within ASCE 7 to Chapter 14 shall not apply, except as specifically required herein.

Committee Reason: This proposal coordinates IBC provision with the latest edition of the referenced standard, ASCE 7 which was updated in ADM94-16. The modification to Table 1604.3 makes a nomenclature correction. The modification to Section 1604.4 retains current wording that the committee believes is important.

Assembly Action **None**

Final Action Results

S63-16 **AM**

Back

Code Change No: S64-16

Original Proposal

Section: 1604.3

Proponent: Don Scott, representing National Council of Structural Engineering Associations (dscott@pcs-structural.com)

Revise as follows:

TABLE 1604.3
DEFLECTION LIMITS[a,b,c,h,i]

CONSTRUCTION	*L*	*S or W* [f]	*D + L* [d,g]
Roof members: [e]			
Supporting plaster or stucco ceiling	*l*/360	*l*/360	*l*/240
Supporting nonplaster ceiling	*l*/240	*l*/240	*l*/180
Not supporting ceiling	*l*/180	*l*/180	*l*/120
Floor members	*l*/360	—	*l*/240
Exterior walls:			
With plaster or stucco finishes	—	*l*/360	—
With other brittle finishes	—	*l*/240	—
With flexible finishes	—	*l*/120	—
Interior partitions: [b]			
With plaster or stucco finishes	*l*/360	—	—
With other brittle finishes	*l*/240	—	—
With flexible finishes	*l*/120	—	—
Farm buildings	—	—	*l*/180
Greenhouses	—	—	*l*/120

For SI: 1 foot = 304.8 mm.

a. For structural roofing and siding made of formed metal sheets, the total load deflection shall not exceed l /60. For secondary roof structural members supporting formed metal roofing, the live load deflection shall not exceed l /150. For secondary wall members supporting formed metal siding, the design wind load deflection shall not exceed l /90. For roofs, this exception only applies when the metal sheets have no roof covering.

b. Flexible, folding and portable partitions are not governed by the provisions of this section. The deflection criterion for interior partitions is based on the horizontal load defined in Section 1607.14.

c. See Section 2403 for glass supports.

d. The deflection limit for the D+L load combination only applies to the deflection due to the creep component of long-term dead load deflection plus the short-term live load deflection. For wood structural members that are dry at time of installation and used under dry conditions in accordance with the ANSI/AWC NDS, the creep component of the long-term deflection shall be permitted to be estimated as the immediate dead load deflection resulting from 0.5 D . For wood structural members at all other moisture conditions, the creep component of the long-term deflection is permitted to be estimated as the immediate dead load deflection resulting from D . The value of 0.5 D shall not be used in combination with ANSI/AWC NDS provisions for long-term loading.

e. The above deflections do not ensure against ponding. Roofs that do not have sufficient slope or camber to ensure adequate drainage shall be investigated for ponding. See Section 1611 for rain and ponding requirements and Section 1503.4 for roof drainage requirements.

f. The wind load ~~is~~ shall be permitted to be ~~taken~~ approximated as 0.42 times the "component and cladding" loads or directly calculated using the 10 year MRI wind speed for the purpose of determining deflection limits herein. Where members support glass in accordance with Section 2403 using the deflection limit therein, the wind load shall be no less than 0.6 times the "component and cladding" loads for the purpose of determining deflection.

g. For steel structural members, the dead load shall be taken as zero.

h. For aluminum structural members or aluminum panels used in skylights and sloped glazing framing, roofs or walls of sunroom additions or patio covers not supporting edge of glass or aluminum sandwich panels, the total load deflection shall not exceed l

/60. For continuous aluminum structural members supporting edge of glass, the total load deflection shall not exceed l /175 for each glass lite or l /60 for the entire length of the member, whichever is more stringent. For aluminum sandwich panels used in roofs or walls of sunroom additions or patio covers, the total load deflection shall not exceed 1 /120.

i. For cantilever members, l shall be taken as twice the length of the cantilever.

Reason: Deflection limits are serviceability limits, and common practice is to use a 10 year MRI wind speed when computing service wind load. Prior to the incorporation of ASCE 7-10 into 2012 IBC, footnote f permitted a 0.7 reduction factor to be applied to the wind load that is an approximate conversion of a 50 year to a 10 year MRI wind load. This was similar to the wind load importance factors prior to ASCE 7-10 that converted the wind load based on a 50 year MRI to a 100 year MRI wind for Rick Category III and IV structures (I = 1.15) or converted the 50 year MRI to a 25 year MRI wind load for Risk Category I structures (I = 0.87). This 0.7 approximate conversion from 50 year to 10 year MRI wind was modified by a factor of 0.6 and became 0.42 when ASCE 7-10 was introduced into 2012 IBC that incorporated importance and load factors into the wind speed map. This conversion is actually only valid for Risk Category II structures and would be slightly conservative for Risk Category III and IV structures. Using the 10 year MRI wind speed map would be more accurate for these structures. Using the 10 year MRI wind speed map is also more accurate than the approximate conversion that is technically different for hurricane and non-hurricane regions.

This proposed revision clarifies the intent of footnote f and points the user to where a more accurate assessment of the 10 year service load can be determined. It also will draw attention to the other wind speed maps in the ASCE 7 Appendix C Commentary if a design professional wants to consider specifying a service wind load other than 10 year MRI, such as a 25 year MRI.

Cost Impact: Will not increase the cost of construction
There will be no impact on construction costs with this proposal as this proposal does not change the deflection limit, only clarifies the use of the proper wind criteria.

Report of Committee Action Hearings

Committee Action: **Approved as Modified**

Modify as follows:

f. The wind load shall be permitted to be ~~approximated~~ taken as 0.42 times the "component and cladding" loads or directly calculated using the 10 year mean return interval wind speed for the purpose of determining deflection limits herein. Where members support glass in accordance with Section 2403 using the deflection limit therein, the wind load shall be no less than 0.6 times the "component and cladding" loads for the purpose of determining deflection.

Committee Reason: This proposal provides an appropriate option for determining the wind load for checking deflections by allowing use of the ten year mean return interval wind speed. The modification retains a portion of the current wording which was preferred.

Assembly Action **None**

Final Action Results

S64-16	**AM**

Back

Code Change No: S65-16

Original Proposal

Section: 1604.3

Proponent: Scott Douglas, representing Douglas Engineering (sdouglasscott@gmail.com)

Revise as follows:

TABLE 1604.3
DEFLECTION LIMITS[a,b,c,h,i]

(Portions of table not shown remain unchanged)

For SI: 1 foot = 304.8 mm.

a. For structural roofing and siding made of formed metal sheets, the total load deflection shall not exceed l /60. For secondary roof structural members supporting formed metal roofing, the live load deflection shall not exceed l /150. For secondary wall members supporting formed metal siding, the design wind load deflection shall not exceed l /90. For roofs, this exception only applies when the metal sheets have no roof covering.

b. Flexible, folding and portable partitions are not governed by the provisions of this section. The deflection criterion for interior partitions is based on the horizontal load defined in Section 1607.14.

c. See Section 2403 for glass supports.

d. The deflection limit for the D+L load combination only applies to the deflection due to the creep component of long-term dead load deflection plus the short-term live load deflection. For wood structural members that are dry at time of installation and used under dry conditions in accordance with the ANSI/AWC NDS, the creep component of the long-term deflection shall be permitted to be estimated as the immediate dead load deflection resulting from 0.5 D . For wood structural members at all other moisture conditions, the creep component of the long-term deflection is permitted to be estimated as the immediate dead load deflection resulting from D . The value of 0.5 D shall not be used in combination with ANSI/AWC NDS provisions for long-term loading.

e. The above deflections do not ensure against ponding. Roofs that do not have sufficient slope or camber to ensure adequate drainage shall be investigated for ponding. See Section 1611 for rain and ponding requirements and Section 1503.4 for roof drainage requirements.

f. The wind load is permitted to be taken as 0.42 times the "component and cladding" loads for the purpose of determining deflection limits herein. Where members support glass in accordance with Section 2403 using the deflection limit therein, the wind load shall be no less than 0.6 times the "component and cladding" loads for the purpose of determining deflection.

g. For steel structural members, the dead load shall be taken as zero.

h. For aluminum structural members or aluminum panels used in skylights and sloped glazing framing, roofs or walls of sunroom additions or patio covers not supporting edge of glass or aluminum sandwich panels, the total load deflection shall not exceed l /60. For continuous aluminum structural members supporting edge of glass, the total load deflection shall not exceed l /175 for each glass lite or l /60 for the entire length of the member, whichever is more stringent. For aluminum sandwich panels used in roofs or walls of sunroom additions or patio covers, the total load deflection shall not exceed 1 /120.

<u>i. *l* = Length of the member between supports. For cantilever members, l shall be taken as twice the length of the cantilever.</u>

Reason: "*l*" needs to be defined. It could also be defined in Section 1602.

Cost Impact: Will not increase the cost of construction
This addition is editorial only, thus this change will not increase the cost of construction.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This code change adds an appropriate nomenclature definition to the deflection limits table.

Assembly Action **None**

Final Action Results

S65-16	**AS**

Back

Code Change No: S66-16

Original Proposal

Section: 1604.3

Proponent: Edwin Huston, representing National Council of Structural Engineers' Associations (NCSEA) (huston@smithhustoninc.com)

Revise as follows:

TABLE 1604.3
DEFLECTION LIMITS[a,b,c,h,i]

(Portions of table not shown remain unchanged)

For SI: 1 foot = 304.8 mm.

a. For structural roofing and siding made of formed metal sheets, the total load deflection shall not exceed l /60. For secondary roof structural members supporting formed metal roofing, the live load deflection shall not exceed l /150. For secondary wall members supporting formed metal siding, the design wind load deflection shall not exceed l /90. For roofs, this exception only applies when the metal sheets have no roof covering.
b. Flexible, folding and portable partitions are not governed by the provisions of this section. The deflection criterion for interior partitions is based on the horizontal load defined in Section 1607.14.
c. See Section 2403 for glass supports.
d. The deflection limit for the D+L load combination only applies to the deflection due to the creep component of long-term dead load deflection plus the short-term live load deflection. For wood structural members that are dry at time of installation and used under dry conditions in accordance with the ANSI/AWC NDS, the creep component of the long-term deflection shall be permitted to be estimated as the immediate dead load deflection resulting from 0.5 D . For wood structural members at all other moisture conditions, the creep component of the long-term deflection is permitted to be estimated as the immediate dead load deflection resulting from D . The value of 0.5 D shall not be used in combination with ANSI/AWC NDS provisions for long-term loading.
e. The above deflections do not ensure against ponding. Roofs that do not have sufficient slope or camber to ensure adequate drainage shall be investigated for ponding. See Section 1611 for rain and ponding requirements and Section 1503.4 for roof drainage requirements.
f. The wind load is permitted to be taken as 0.42 times the "component and cladding" loads for the purpose of determining deflection limits herein. Where members support glass in accordance with Section 2403 using the deflection limit therein, the wind load shall be no less than 0.6 times the "component and cladding" loads for the purpose of determining deflection.
g. For steel structural members, the <u>deflection due to the creep component of long-term</u> dead load <u>deflection</u> shall <u>be permitted to</u> be taken as zero.
h. For aluminum structural members or aluminum panels used in skylights and sloped glazing framing, roofs or walls of sunroom additions or patio covers not supporting edge of glass or aluminum sandwich panels, the total load deflection shall not exceed l /60. For continuous aluminum structural members supporting edge of glass, the total load deflection shall not exceed l /175 for each glass lite or l /60 for the entire length of the member, whichever is more stringent. For aluminum sandwich panels used in roofs or walls of sunroom additions or patio covers, the total load deflection shall not exceed 1 /120.
i. For cantilever members, l shall be taken as twice the length of the cantilever.

Reason: Note **d** in Table 1604.3 says that the D+L column " only applies to the deflection due to the creep component of long-term dead load deflection plus the short-term live load deflection". Note **d** also provides the guidance necessary for concrete and wood systems to get the proper assessment of creep due to long-term dead load deflections.

According to AISC, Note **g** was added in a later code cycle than note **d** and attempted to add the corresponding guidance for steel systems. It has caused some confusion because it does not explicitly say it is addressing creep in steel, which is nonexistent. The following text in commentary could be considered: "Steel structural members do not have long-term dead load deflections because there is no creep in steel. Therefore, the check of this deflection limit is based only upon the short-term deflections due to the live load."

Cost Impact: Will not increase the cost of construction
This is clarification only, and will have no cost impact

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This proposal makes the deflection limits easier to apply to steel members, thus eliminating questions.

Assembly Action **None**

Final Action Results

S66-16	AS

Back

Code Change No: S67-16

Original Proposal

Section: 1604.3

Proponent: Dennis Richardson, American Wood Council, representing American Wood Council (drichardson@awc.org)

Revise as follows:

TABLE 1604.3
DEFLECTION LIMITS[a,b,c,h,i]

(Portions of table not shown remain unchanged)

For SI: 1 foot = 304.8 mm.

a. For structural roofing and siding made of formed metal sheets, the total load deflection shall not exceed l /60. For secondary roof structural members supporting formed metal roofing, the live load deflection shall not exceed l /150. For secondary wall members supporting formed metal siding, the design wind load deflection shall not exceed l /90. For roofs, this exception only applies when the metal sheets have no roof covering.

b. Flexible, folding and portable partitions are not governed by the provisions of this section. The deflection criterion for interior partitions is based on the horizontal load defined in Section 1607.14.

c. See Section 2403 for glass supports.

d. The deflection limit for the D+L load combination only applies to the deflection due to the creep component of long-term dead load deflection plus the short-term live load deflection. For ~~wood~~ lumber, structural glued laminated timber, prefabricated wood I-joists, and structural composite lumber members that are dry at time of installation and used under dry conditions in accordance with the ANSI/AWC NDS, the creep component of the long-term deflection shall be permitted to be estimated as the immediate dead load deflection resulting from 0.5 D. For ~~wood structural~~ lumber and glued laminated timber members installed or used at all other moisture conditions or cross laminated timber and wood structural panels that are dry at time of installation and used under dry conditions in accordance with the ANSI/AWC NDS, the creep component of the long-term deflection is permitted to be estimated as the immediate dead load deflection resulting from D . The value of 0.5 D shall not be used in combination with ANSI/AWC NDS provisions for long-term loading.

e. The above deflections do not ensure against ponding. Roofs that do not have sufficient slope or camber to ensure adequate drainage shall be investigated for ponding. See Section 1611 for rain and ponding requirements and Section 1503.4 for roof drainage requirements.

f. The wind load is permitted to be taken as 0.42 times the "component and cladding" loads for the purpose of determining deflection limits herein. Where members support glass in accordance with Section 2403 using the deflection limit therein, the wind load shall be no less than 0.6 times the "component and cladding" loads for the purpose of determining deflection.

g. For steel structural members, the dead load shall be taken as zero.

h. For aluminum structural members or aluminum panels used in skylights and sloped glazing framing, roofs or walls of sunroom additions or patio covers not supporting edge of glass or aluminum sandwich panels, the total load deflection shall not exceed l /60. For continuous aluminum structural members supporting edge of glass, the total load deflection shall not exceed l /175 for each glass lite or l /60 for the entire length of the member, whichever is more stringent. For aluminum sandwich panels used in roofs or walls of sunroom additions or patio covers, the total load deflection shall not exceed 1 /120.

i. For cantilever members, l shall be taken as twice the length of the cantilever.

Reason: Revisions are proposed to recognize different creep behavior of specific wood products in accordance with the NDS. Specifically, creep deformation of seasoned lumber, structural glued laminated timber, prefabricated wood I-joists, and structural composite lumber members that are installed and used in dry conditions can be approximated by calculation of immediate deflection resulting from the use of 0.5D. For seasoned lumber and structural glued laminated timber that are installed and used in wet conditions and unseasoned lumber used in any conditions, creep deformation is larger and can be approximated by the immediate deflection resulting from the use of 1.0D. For cross-laminated timber and wood structural panels used in dry conditions, creep deformation can be approximated by the immediate deflection resulting from the use of 1.0D. The 0.5D and 1.0D approach in footnote d are associated and consistent with with NDS 3.5.2 creep factors of 1.5 and 2.0. The NDS creep factors represent the combined deformation resulting from the immediate deformation under dead load plus long-term creep deformation.

Cost Impact: Will not increase the cost of construction
This change correlates structural provisions with a new product in the applicable standard and will not increase the cost of construction.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This proposal updates the long term deflection estimation tools for wood products.

Assembly Action **None**

Final Action Results

S67-16	**AS**

Back

Code Change No: S69-16

Original Proposal

Section: 1604.3, 1604.3.7 (New)

Proponent: Julie Ruth, representing American Architectural Manufacturers Association (julruth@aol.com)

Revise as follows:

TABLE 1604.3
DEFLECTION LIMITS[a,b,c,h,i]

(Portions of table not shown remain unchanged)

For SI: 1 foot = 304.8 mm.

a. For structural roofing and siding made of formed metal sheets, the total load deflection shall not exceed l /60. For secondary roof structural members supporting formed metal roofing, the live load deflection shall not exceed l /150. For secondary wall members supporting formed metal siding, the design wind load deflection shall not exceed l /90. For roofs, this exception only applies when the metal sheets have no roof covering.
b. Flexible, folding and portable partitions are not governed by the provisions of this section. The deflection criterion for interior partitions is based on the horizontal load defined in Section 1607.14.
c. See Section 2403 for glass supports.
d. The deflection limit for the D+L load combination only applies to the deflection due to the creep component of long-term dead load deflection plus the short-term live load deflection. For wood structural members that are dry at time of installation and used under dry conditions in accordance with the ANSI/AWC NDS, the creep component of the long-term deflection shall be permitted to be estimated as the immediate dead load deflection resulting from 0.5 D . For wood structural members at all other moisture conditions, the creep component of the long-term deflection is permitted to be estimated as the immediate dead load deflection resulting from D . The value of 0.5 D shall not be used in combination with ANSI/AWC NDS provisions for long-term loading.
e. The above deflections do not ensure against ponding. Roofs that do not have sufficient slope or camber to ensure adequate drainage shall be investigated for ponding. See Section 1611 for rain and ponding requirements and Section 1503.4 for roof drainage requirements.
f. The wind load is permitted to be taken as 0.42 times the "component and cladding" loads for the purpose of determining deflection limits ~~herein~~ <u>in Table 1604.3</u>. Where <u>framing</u> members support ~~glass in accordance with Section 2403 using~~ the deflection limit therein~~, the wind load shall be no less than 0.6 times the "component and cladding" loads for the purpose of determining deflection~~ <u>not exceed that specified in Section 1604.3.7</u>.
g. For steel structural members, the dead load shall be taken as zero.
h. For aluminum structural members or aluminum panels used in skylights and sloped glazing framing, roofs or walls of sunroom additions or patio covers not supporting edge of glass or aluminum sandwich panels, the total load deflection shall not exceed l /60. For continuous aluminum structural members supporting edge of glass, the total load deflection shall not exceed l /175 for each glass lite or l /60 for the entire length of the member, whichever is more stringent. For aluminum sandwich panels used in roofs or walls of sunroom additions or patio covers, the total load deflection shall not exceed 1 /120.
i. For cantilever members, l shall be taken as twice the length of the cantilever.

Add new text as follows:

<u>**1604.3.7** **Framing Supporting Glass** The deflection of framing members supporting glass subjected to 0.6 times the "component and cladding" wind loads shall not exceed the following:</u>

1. <u>1/175 of the length of span of the framing member, for framing members having a length not more than 13 foot 6 inches, or</u>
2. <u>1/175 of the length of span of the framing member + 1/4 inch, for framing members having a length greater than 13 foot 6 inches.</u>

Reason: This proposal replaces reference to Section 2403 for deflection limits on framing supporting glass with reference to a new section in Chapter 16.

Although the deflection limit given in Section 2403 is appropriate for glass design, and is similar to that given in the proposed new section, it does not address the deflection of the framing member over the entire length of its span. The later is a serviceability concern, which should more appropriately be addressed in Section 1504.

This proposal establishes the appropriate deflection limit for exterior wall framing members that are supporting glass. It is based upon criteria given in AAMA TIR-11 Maximum Allowable Deflection of Framing Systems for Building Cladding Components at Design Wind Loads. This criterion has been used successfully by the fenestration industry for decades.
The attached paper discusses the need for this criteria is further detail.
https://cdpaccess.com/proposal/fileupload/get/1173

Cost Impact: Will increase the cost of construction
The criteria given is well established within the fenestration industry. There is no cost impact for designers and contractors who are currently following "good practice" with regards to curtainwall framing systems. For designers and contractors who are not following good practice there may be additional cost associated with the vertical framing members that are supporting glass. This is a relatively small portion of the overall cost of an exterior curtainwall system.

Report of Committee Action Hearings

Committee Action: **Approved as Modified**

Modify as follows:

1604.3.7 Framing Supporting Glass The deflection of framing members supporting glass subjected to 0.6 times the "component and cladding" wind loads shall not exceed the following:

1. 1/175 of the length of span of the framing member, for framing members having a length not more than 13 foot 6 inches, or
2. 1/~~175~~ 240 of the length of span of the framing member + 1/4 inch, for framing members having a length greater than 13 foot 6 inches

Committee Reason: This code change clarifies the allowable deflection of framing members supporting the glass on the basis of the framing member spans. It also fixes serviceability issues with respect to deflection limits, using more appropriate wind loads. The modification corrects the proposed deflection limit for longer spans. Some concern was stated with Section 2403 using length of the glass edge while this requirement is tied to the length of member, so some confusion could result.

Assembly Action **None**

Final Action Results

S69-16 **AM**

Back

Code Change No: S70-16

Original Proposal

Section: 1604.3.3, 2203.2, 2207.1, 2207.1.1

Proponent: Bonnie Manley, AISI, representing Steel Joist Institute (bmanley@steel.org)

Revise as follows:

1604.3.3 Steel. The deflection of steel structural members shall not exceed that permitted by AISC 360, AISI S100, ASCE 8, SJI CJ~~, SJI JG, SJI K~~ or SJI ~~LH/DLH~~ 100, as applicable.

2203.2 Protection. Painting of *structural steel elements* shall be in accordance with AISC 360. Painting of open-web steel joists and joist girders shall be in accordance with SJI CJ~~, SJI JG, SJI K~~ and SJI ~~LH/DLH~~ 100. Individual structural members and assembled panels of cold-formed steel construction shall be protected against corrosion in accordance with the requirements contained in AISI S100. Protection of cold-formed steel light-frame construction shall be in accordance with AISI S200 or AISI S220, as applicable.

2207.1 General. The design, manufacture and use of open-web steel joists and joist girders shall be in accordance with ~~one of the following Steel Joist Institute (~~either SJI~~) specifications:~~

1. SJI CJ
2. SJI K
3. SJI LH/DLH
4. SJI JG

CJ or SJI 100, as applicable.

2207.1.1 Seismic design. Where required, the seismic design of buildings shall be in accordance with the additional provisions of Section 2205.2 or ~~2211.6~~ 2211.1.

Reference standards type: This contains both new and updated standards
Add new standard(s) as follows:

100-15, *Standard Specification for K-Series, LH-Series, and DLH-Series Open Web Steel Joists and for Joist Girders, 2015*, 1604.3.3, 2203.2, 2207.1

Delete the following existing references:

~~JG—10, Standard Specification for Joist Girders,~~
~~K—10 , Standard Specification for Open Web Steel Joists, K-series,~~
~~LH/DLH—10, Standard Specification for Longspan Steel Joists, LH-series and Deep Longspan Steel Joists, DLH-series,~~

Reason: This proposal adopts the newly completed 2015 edition (44th Edition) of the combined SJI-100, *Standard Specification for K-Series, LH-Series, and DLH-Series Open Web Steel Joists and for Joist Girders*, in the applicable code sections. Its publication represents a significant change in the presentation of the SJI Specifications. Previously, there were three separate specifications (all found in the 43rd Edition), covering K-Series, LH/DLH-Series, and Joist Girders, each one an independent ANSI standard. The newly combined ANSI standard represents a major simplification for the specifying professional.
In addition to this overall change, below is a summary of substantive, noteworthy changes found in the new SJI 100:

- For concentrated loads, the 100 pound allowance is now included in the specification, provided that certain conditions are met. For known concentrated load locations, a new requirement is that the joist must be designed such that it does not required field applied web members.
- The reduction factor, Q, for crimped-end angle web members is now applicable to all crimped-end angles intersecting at the first bottom chord panel point.
- For built-up web members comprised of two interconnected shapes, a modified slenderness ratio has been introduced.
- Changes have been made to the k factors for web and chord slenderness. The k factor has been reduced for out-of-plane slenderness of top and bottom chords, and the k factors for K-Series now match those of LH/DLH-Series joists.
- The K-Series (including KCS) bending exemption for interior panels of less than 24 inches has been removed.
- Joist Girder redundant web members in modified Warren web configuration that support direct loads have an additional design axial load of ½ of 1 % of the top chord axial force.
- Existing criteria for uncrimped single angle web members, which had previously only been published internally in the SJI Design Guides, are now included in the specification.
- The criteria for joint eccentricity have been merged to create criteria based upon the number of web components, but independent of the joist series.
- Criteria for bearing seat and bearing plate width, which had previously been only in the SJI Code of Standard Practice, has been added to the specification.
- The criteria for bearing seat depth, to achieve the end reaction farther over the support, has been redone for greater clarity.
- The existing "Minkoff" equation for determination of Erection bridging requirements has now been added to the specification.
- The bridging criteria is unchanged, but the previously separate K and LH tables have now been merged.
- Connection welds have been added to applicable bridging tables.
- The previous specification had almost no mention of seismic loads, so guidance has been added in Section 104.13.
- Welding during product assembly: This update brings SJI welding into compliance with AWS D1.1 and/or D1.3 with a modified acceptance criteria as permitted by AWS D1.1 Clause 6.8.

Cost Impact: Will increase the cost of construction
This code change proposal adopts the latest industry standard for steel joists. At this time, it is difficult to anticipate how cost of construction will be fully impacted, other than to note that some of the additional costs will be offset by new efficiencies in the design and installation of steel joists.

Analysis: A review of the standard(s) proposed for inclusion in the code, SJI 100, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 1, 2016.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: Agreement with the proponent's reason, which indicates the proposed new SJI referenced standard is a consolidation of three currently adopted standards and it represents a major simplification for specifiers.

Assembly Action **None**

Final Action Results

S70-16	**AS**

Back

Code Change No: S72-16

Original Proposal

Section: 604.5, 1615 (New), 1615.1 (New), 1615.2 (New), 202 (New)

Proponent: Ronald Hamburger, SIMPSON GUMPERTZ & HEGER, representing SELF; and JENNIFER GOUPIL, AMERICAN SOCIETY OF CIVIL ENGINEERS, representing SELF (rohamburger@sgh.com); Jennifer Goupil (jgoupil@asce.org)

Add new definition as follows:

<u>**TSUNAMI DESIGN GEODATABASE.** The ASCE database (version 2016-1.0) of Tsunami Design Zone maps and associated design data for the states of Alaska, California, Hawaii, Oregon, and Washington.</u>

<u>**TSUNAMI DESIGN ZONE.** An area identified on the Tsunami Design Zone map between the shoreline and the inundation limit, within which certain structures designated in Chapter 16 are designed for or protected from inundation.</u>

Revise as follows:

1604.5 Risk category. Each building and structure shall be assigned a risk category in accordance with Table 1604.5. Where a referenced standard specifies an occupancy category, the risk category shall not be taken as lower than the occupancy category specified therein. Where a referenced standard specifies that the assignment of a risk category be in accordance with ASCE 7, Table 1.5-1, Table 1604.5 shall be used in lieu of ASCE 7, Table 1.5-1.

> <u>**Exception:** The assignment of buildings and structures to Tsunami Risk Categories III and IV is permitted to be assigned in accordance with Section 6.4 of ASCE 7.</u>

Add new text as follows:

<u>**SECTION 1615**</u>
<u>**TSUNAMI LOADS**</u>

<u>**1615.1 General.** The design and construction of Risk Category III and IV buildings and structures located in the Tsunami Design Zones defined in the Tsunami Design Geodatabase shall be in accordance with Chapter 6 of ASCE 7, except as modified by this code.</u>

<u>**1615.2 Definitions.** The following terms are defined in Chapter 2:</u>

<u>**TSUNAMI DESIGN GEODATABASE.**</u>
<u>**TSUNAMI DESIGN ZONE.**</u>

Reason: Many coastal areas in the western United States are subject to potentially destructive tsunamis. There are many coastal communities in Alaska, Washington, Oregon, California, and Hawaii where there is a need for tsunami-resistant design of critical infrastructure and essential facilities that provide vital services necessary for post-disaster response and recovery, and enable the continued functioning of the community. The public safety risk has been only partially mitigated through warning and preparedness of evacuation; there are many areas in these five states where complete evacuation prior to tsunami arrival cannot be ensured. Accordingly, some communities also have a need for a standard for designated tsunami vertical evacuation refuge structures as an alternative to high ground.

The American Society of Civil Engineers (ASCE) have supported a 5-year effort to address these needs and develop provisions for ASCE 7 that have incorporated the last 10 years of advances in tsunami engineering research since the 2004 Indian Ocean earthquake and tsunami. Chapter 6 Tsunami Loads and Effects is a new chapter in ASCE 7. It is important to realize that the scope of this proposal is limited to Tsunami Risk Category III and IV structures, and it has an exception so that the local jurisdiction can evaluate the physical and demographic context of the tsunami-inundated zone in assigning these categories to the facilities they deem to be vital to public health, safety, and welfare. There would be no mandatory requirements for Risk Category I and II buildings and structures.

ASCE is publishing a new tsunami design guide with worked examples to assist structural engineers applying these new provisions.

Bibliography:

Chock, G., Robertson, I., Kriebel, D., Francis, M., and Nistor, I. (2013). *Tohoku, Japan, earthquake and tsunami of 2011:Performance of structures under tsunami loads,* ASCE, Reston, VA.

Chock, G. (2015). "The ASCE 7 Tsunami Loads and Effects Design Standard for the United States," Chapter 21, *Handbook of coastal disaster mitigation for engineers and planners,* Elsevier Science and Technology Books.

Robertson, I. N. (2016). *Tsunami Loads and Effects: Guide to the Tsunami Design Provisions of ASCE 7-16,* ASCE, Reston, VA.(in publication)

Chock, G., Yu, G., Thio, H.K., and Lynett, P.J. (2016). *Target Structural Reliability Analysis for Tsunami Hydrodynamic Loads of the ASCE 7 Standard*, Journal of Structural Engineering, ASCE, Reston, VA. (in publication)

Cost Impact: Will increase the cost of construction

This proposal may increase the cost of construction depending on the tsunami inundation depth at the structure. Cost studies have shown this increase to be very small, given that the Risk Category III and IV structures in these five western states will already be designed for high seismic loads and ductile detailing. There may be some enhanced tsunami design necessary for vertical load carrying elements of minimal dimensions and capacity. As with other flooding effects, foundations must resist scour.

This proposal adds the pointer in the IBC to refer to the tsunami load provisions in the referenced loading standard ASCE 7. *ASCE 7-16 Minimum Design Loads and Associated Criteria for Buildings and Other Structures* will be updated from the 2010 edition to the 2016 edition as an Administrative Update to the 2018 I-Codes.

As of the submission date of this code change proposal, the ASCE 7 Standard Committee has completed the committee balloting on the technical changes. The document designated *ASCE 7-16 Minimum Design Loads and Associated Criteria for Buildings and Other Structures* is expected to be completed, published, and available for purchase prior to the ICC Public Comment hearings for Group B in October 2016. Any person interested in obtaining a public comment copy of ASCE 7-16 may do so by contacting James Neckel at ASCE.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This proposal to address tsunami loads is desperately needed. It only affects Risk Categories III & IV and it is not applicable to existing structures.

Assembly Action **None**

Final Action Results

S72-16	**AS**

Back

Code Change No: S75-16

Report of Committee Action Hearings

Section: 1604.5

Proponent: John Williams, CBO, representing Adhoc Healthcare Committee (AHC@iccsafe.org); Carl Baldassarra, P.E., FSFPE, representing Code Technology Committee (CTC@iccsafe.org)

Revise as follows:

TABLE 1604.5
RISK CATEGORY OF BUILDINGS AND OTHER STRUCTURES

RISK CATEGORY	NATURE OF OCCUPANCY
I	Buildings and other structures that represent a low hazard to human life in the event of failure, including but not limited to:
	• Agricultural facilities.
	• Certain temporary facilities.
	• Minor storage facilities.
II	Buildings and other structures except those listed in Risk Categories I, III and IV.
III	Buildings and other structures that represent a substantial hazard to human life in the event of failure, including but not limited to:
	• Buildings and other structures whose primary occupancy is public assembly with an occupant load greater than 300.
	• Buildings and other structures containing Group E occupancies with an occupant load greater than 250.
	• Buildings and other structures containing educational occupancies for students above the 12th grade with an occupant load greater than 500.
	• Group I-2, Condition 1 occupancies with ~~an occupant load of~~ 50 or more ~~resident~~ care recipients ~~but not having surgery or emergency treatment facilities.~~
	Group I-2, Condition 2 occupancies but not having emergency surgery or emergency treatment facilities.
	• Group I-3 occupancies.
	• Any other occupancy with an occupant load greater than 5,000.[a]
	• Power-generating stations, water treatment facilities for potable water, wastewater treatment facilities and other public utility facilities not included in Risk Category IV.
	• Buildings and other structures not included in Risk Category IV containing quantities of toxic or explosive materials that:
	Exceed maximum allowable quantities per control area as given in Table 307.1(1) or 307.1(2) or per outdoor control area in accordance with the *International Fire Code*; and
	Are sufficient to pose a threat to the public if released.[b]
IV	Buildings and other structures designated as essential facilities, including but not limited to:
	• Group I-2, Condition 2 occupancies having emergency surgery or emergency treatment facilities.
	Ambulatory care facilities having emergency surgery or emergency treatment facilities.
	• Fire, rescue, ambulance and police stations and emergency vehicle garages.
	• Designated earthquake, hurricane or other emergency shelters.
	• Designated emergency preparedness, communications and operations centers and other facilities

	required for emergency response.
	• Power-generating stations and other public utility facilities required as emergency backup facilities for Risk Category IV structures.
	• Buildings and other structures containing quantities of highly toxic materials that:
	Exceed maximum allowable quantities per control area as given in Table 307.1(2) or per outdoor control area in accordance with the *International Fire Code;* and
	Are sufficient to pose a threat to the public if released.[b]
	• Aviation control towers, air traffic control centers and emergency aircraft hangars.
	• Buildings and other structures having critical national defense functions.
	• Water storage facilities and pump structures required to maintain water pressure for fire suppression.

a. For purposes of occupant load calculation, occupancies required by Table 1004.1.2 to use gross floor area calculations shall be permitted to use net floor areas to determine the total occupant load.

b. Where approved by the building official, the classification of buildings and other structures as Risk Category III or IV based on their quantities of toxic, highly toxic or explosive materials is permitted to be reduced to Risk Category II, provided it can be demonstrated by a hazard assessment in accordance with Section 1.5.3 of ASCE 7 that a release of the toxic, highly toxic or explosive materials is not sufficient to pose a threat to the public.

Reason: Since Group I-2 has been split into two conditions in the 2015 I-Codes we are offering this clarification for which facilities this was intended to apply. Ambulatory care facilities or Group I-2 that only offer elective surgery should not be Category IV facilities. Category IV should be focused those occupancies that provide for emergency surgery and treatment of patients.

This is a joint proposal submitted by the ICC Ad Hoc Committee on Healthcare (AHC) and the ICC Code Technology Committee (CTC). The AHC was established by the ICC Board to evaluate and assess contemporary code issues relating to hospitals and ambulatory healthcare facilities. This is a joint effort between ICC and the American Society for Healthcare Engineering (ASHE), a subsidiary of the American Hospital Association, to eliminate duplication and conflicts in healthcare regulation. In 2014 and 2015 the ICC Ad Hoc Committee has held 4 open meetings and numerous Work Group meetings and conference calls for the current code development cycle which included members of the committees as well as any interested party to discuss and debate the proposed changes. Information on the AHC, including: meeting agendas; minutes; reports; resource documents; presentations; and all other materials developed in conjunction with the AHC effort can be downloaded from the AHC website at: AHC. The two remaining CTC Areas of Study are Care Facilities and Elevator Lobbies/WTC Elevator issues. This proposal falls under the Care Facilities Area of Study. In 2014 and 2015 ICC CTC Committee has held 4 open meetings and numerous Work Group meetings and conference calls for the current code development cycle which included members of the committees as well as any interested party to discuss and debate the proposed changes. Information on the CTC, including: the sunset plan; meeting agendas; minutes; reports; resource documents; presentations; and all other materials developed in conjunction with the CTC effort can be downloaded from the CTC website CTC.

Cost Impact: Will not increase the cost of construction
This code change does not affect the actual requirements, rather it update the language to reflect current terminology and occupancy classes.

Public Hearing Results

Committee Action: **Approved as Submitted**

Committee Reason: This code change clarifies the level of risk that pertains to various Group I-2 facilities.

Assembly Action **None**

Final Action Results

S75-16	**AS**

Back

Code Change No: S76-16

Original Proposal

Section: 1604.5.1

Proponent: Edward Kulik, representing Building Code Action Committee (bcac@iccsafe.org); Andrew Herseth, representing Federal Emergency Management Agency (andrew.herseth@fema.dhs.gov)

Revise as follows:

1604.5.1 Multiple occupancies. Where a building or structure is occupied by two or more occupancies not included in the same *risk category*, it shall be assigned the classification of the highest *risk category* corresponding to the various occupancies. Where buildings or structures have two or more portions that are structurally separated, each portion shall be separately classified. Where a separated portion of a building or structure provides required access to, required egress from or shares life safety components with another portion having a higher *risk category*, both portions shall be assigned to the higher *risk category*.

> **Exception:** Where a *storm shelter* designed and constructed in accordance with ICC 500 is provided in a building, structure or portion thereof normally occupied for other purposes, the *risk category* for the normal occupancy of the building shall apply unless the *storm shelter* is a designated emergency shelter in accordance with Table 1604.5.

Reason: This code change proposal is intended to clarify the code, consistent with an ICC Committee Interpretation, IBC Interpretation 113-12, issued on January 25, 2013.

Risk categories are assigned to buildings to account for consequences and risks to human life (building occupants) in the event of a building failure. The intent is to assign higher risk categories, and hence higher design criteria, to buildings or structures that, if they experience a failure, would inhibit the availability of essential community services necessary to cope with an emergency situation and therefore have grave consequences to either the building occupants or the population around the building or structure that relies upon the provided services (such as a power station).

Community storm shelters are defined in the IBC and by the ICC-500 Standard for the Design and Construction of Storm Shelters (ICC 500) as shelters that either serve a non-residential use (i.e. not serving dwelling units) or serve dwelling units and provide a capacity exceeding 16 persons. This standard confirms that the area(s) of a building that have been constructed to the ICC 500 criteria have been specifically designed and constructed to provide life-safety protection for people seeking refuge from a high wind event.

ICC 500 compliant storm shelters are designed and constructed to account for extreme wind loads, have specific requirements for structural stability, vertical and horizontal load transfer, and egress that meet or exceed the basic requirements of the building code for property protection. Even if the storm shelter is not structurally separated from the host building, ICC 500 details the strength requirements for the members of the host building that connect to the storm shelter. Issues related to protection of occupants due to building collapse or failure have been considered by the ICC 500 and do not need to be addressed for the other portions of the facility.

ICC 500, Section 104.1: Rooms or spaces within other uses states: Where storm shelters are designated areas normally occupied for other purposes, the requirements of the applicable construction codes for the occupancy of the building shall apply unless otherwise stated in this standard.

Further, the storm shelter is a self-contained and defined space within the building that does not rely upon other portions of the building to provide life-safety protection from high winds, floods, or structural collapse. Hardening the other portions of the building that are outside the storm shelter or increasing the risk category for portions of the building that may be used to egress the space is not necessitated. The statements in Section 1604.5.1 regarding egress are to be applied when a building or portion thereof is being used to provide long-term, post-disaster response capabilities that would have considerable consequences to the community outside the occupied building and does not apply to ICC 500 compliant storm shelters.

The intent of the storm shelter is to provide short term, life safety in the event of a severe storm when the host building cannot.

This protection provided by ICC 500 compliant storm shelters allows a building owner to provide a storm shelter in one portion of the structure as opposed to requiring the structure to meet the Risk Category IV provisions.

The ICC Building Code Action Committee (BCAC) is a co-proponent of this proposal. BCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. In 2014 and 2015 the BCAC has held 5 open meetings. In addition, there were numerous Working Group meetings and conference calls for the current code development cycle, which included members of the committee as well as any interested party to discuss and debate the proposed changes. Related documentation and reports are posted on the BCAC website at: BCAC

Cost Impact: Will not increase the cost of construction
No increase in cost as this is a clarification only, based on the ICC Interpretations Committee IBC Interpretation 113-12.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: The committee agrees with adding the exception, since it does not want to see an entire building classifies as Risk Category IV just to put in a storm shelter,

Assembly Action **None**

Final Action Results

S76-16	**AS**

Back

Code Change No: S77-16

Original Proposal

Section: 1605.1, 1605.2.1, 1605.3.2

Proponent: Jennifer Goupil, AMERICAN SOCIETY OF CIVIL ENGINEERS, representing SELF (jgoupil@asce.org)

Revise as follows:

1605.1 General. Buildings and other structures and portions thereof shall be designed to resist:

1. The load combinations specified in Section 1605.2, 1605.3.1 or 1605.3.2;
2. The load combinations specified in Chapters 18 through 23; and
3. The seismic load effects including overstrength factor in accordance with Section ~~12.4.3~~ 2.3.6 and 2.4.5 of ASCE 7 where required by ~~Section 12.2.5.2~~ Chapter 12, ~~12.3.3.3 or 12.10.2.1~~ 13, and 15 of ASCE 7. With the simplified procedure of ASCE 7 Section 12.14, the seismic load effects including overstrength factor in accordance with Section 12.14.3.2 and Chapter 2 of ASCE 7 shall be used.

Applicable loads shall be considered, including both earthquake and wind, in accordance with the specified load combinations. Each load combination shall also be investigated with one or more of the variable loads set to zero.

Where the load combinations with overstrength factor in Section ~~12.4.3.2~~ 2.3.6 and 2.4.5 of ASCE 7 apply, they shall be used as follows:

1. The basic combinations for strength design with overstrength factor in lieu of Equations 16-5 and 16-7 in Section 1605.2.
2. The basic combinations for *allowable stress design* with overstrength factor in lieu of Equations 16-12, 16-14 and 16-16 in Section 1605.3.1.
3. The basic combinations for *allowable stress design* with overstrength factor in lieu of Equations 16-21 and 16-22 in Section 1605.3.2.

1605.2.1 Other loads. Where flood loads, F_a, are to be considered in the design, the load combinations of Section ~~2.3.3~~ 2.3.2 of ASCE 7 shall be used. Where self-straining loads, *T*, are considered in design, their structural effects in combination with other loads shall be determined in accordance with Section ~~2.3.5~~ 2.3.4 of ASCE 7. Where an ice-sensitive structure is subjected to loads due to atmospheric icing, the load combinations of Section ~~2.3.4~~ 2.3.3 of ASCE 7 shall be considered.

1605.3.2 Alternative basic load combinations. In lieu of the basic load combinations specified in Section 1605.3.1, structures and portions thereof shall be permitted to be designed for the most critical effects resulting from the following combinations. When using these alternative ~~basic~~allowable stress load combinations that include wind or seismic loads, allowable stresses are permitted to be increased or load combinations reduced where permitted by the material chapter of this code or the referenced standards. For load combinations that include the counteracting effects of dead and wind loads, only two-thirds of the minimum dead load likely to be in place during a design wind event shall be used. When using allowable stresses that have been increased or load combinations that have been reduced as permitted by the material chapter of this code or the referenced standards, where wind loads are calculated in accordance with Chapters 26 through 31 of ASCE 7, the coefficient (ω) in the following equations shall be taken as 1.3. For other wind loads, (ω) shall be taken as 1. When allowable stresses have not been increased or load combinations have not been reduced as permitted by the material chapter of this code or the referenced standards, (ω) shall be taken as 1. When using these alternative load combinations to evaluate sliding, overturning and soil bearing at the soil-structure interface, the reduction of foundation overturning from Section 12.13.4 in ASCE 7 shall not be used. When using these alternative basic load combinations for proportioning foundations for loadings, which include seismic loads, the vertical seismic *load effect*, E_v, in Equation 12.4-4 of ASCE 7 is permitted to be taken equal to zero.

$D + L + (Lr \text{ or } S \text{ or } R)$ (Equation 16-17)
$D + L + 0.6\,\omega W$ (Equation 16-18)
$D + L + 0.6\,\omega W + S/2$ (Equation 16-19)
$D + L + S + 0.6\,\omega W/2$ (Equation 16-20)
$D + L + S + E/1.4$ (Equation 16-21)
$0.9D + E/1.4$ (Equation 16-22)

Exceptions:

1. Crane hook loads need not be combined with roof live loads or with more than three-fourths of the snow load or one-half of the wind load.
2. Flat roof snow loads of 30 psf (1.44 kN/m^2) or less and roof live loads of 30 psf (1.44 kN/m^2) or less need not be combined with seismic loads. Where flat roof snow loads exceed 30 psf (1.44 kN/m^2), 20 percent shall be combined with seismic loads.

Reason: This proposal is a coordination proposal to bring the 2018 IBC up to date with the provisions fo the 2016 edition of *ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures* (ASCE 7-16). In the 2016 edition of the standard, the seismic load combinations were relocated to Chapter 2 Load Combinations, therefore providing all applicable load combinations in one chapter.

Section 1605 transcribes the ASCE 7 Load Combinations to the IBC, and it is important to note that this proposal does not result in any substantive technical changes as all Load Combinations presently used by structural engineers remain consistent with previous requirements of the standard and the code. This proposal only coordinates the location and intent of the load combinations.

Cost Impact: Will not increase the cost of construction
The proposed changes will not impact the cost of construction. This proposal coordinates the IBC with the referenced loading standard *ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures*. ASCE 7 will be updated from the 2010 edition to the 2016 edition as an Administrative Update to the 2018 I-Codes.
As of the submission date of this code change proposal, the ASCE 7 Standards Committee has completed the committee balloting on technical changes. The document is designated *ASCE 7-16 Minimum Design Loads and Associated Criteria for Buildings and Other Structures* is expected to be completed, published, and available for purchase prior to the ICC Public Comment Hearings for Group B in October of 2016. Any person interested in obtaining a public comment copy of ASCE 7-16 may do so by contacting James Neckel at ASCE (jneckel "at" asce.org).

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This code change updates IBC provisions to coordinate with the latest edition of the referenced standard, ASCE 7, which was updated in ADM94-16.

Assembly Action **None**

Final Action Results

S77-16	**AS**

Back

Code Change No: S85-16

Original Proposal

Section: 1605.1, 1605.2.1, 1605.3.2

Proponent: Jennifer Goupil, AMERICAN SOCIETY OF CIVIL ENGINEERS, representing SELF (jgoupil@asce.org)

Revise as follows:

TABLE 1607.1
MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS, L_o, AND MINIMUM CONCENTRATED LIVE LOADS[g]

OCCUPANCY OR USE	UNIFORM (psf)	CONCENTRATED (pounds)
1. Apartments (see residential)	—	—
2. Access floor systems		
Office use	50	2000
Computer use	100	2000
3. Armories and drill rooms	150[m]	—
4. Assembly areas		—
Fixed seats (fastened to floor)	60[m]	
Follow spot, projections and control rooms	50	
Lobbies	100[m]	
Movable seats	100[m]	
Stage floors	150[m]	
Platforms (assembly)	100[m]	
Other assembly areas	100[m]	
5. Balconies and decks[h]	1.5 times the live load for the area served. Not required to exceed 100 psf.~~Same as occupancy served~~	—
6. Catwalks	40	300
7. Cornices	60	—
8. Corridors	100 Same as occupancy served except as indicated	—
First floor		
Other floors		
9. Dining rooms and restaurants	100[m]	—
10. Dwellings (see residential)	—	—
11. Elevator machine room and control room grating (on area of 2 inches by 2 inches)	—	300
12. Finish light floor plate construction (on area of 1 inch by 1 inch)	—	200
13. Fire escapes	100	—
On single-family dwellings only	40	
14. Garages (passenger vehicles only)	40[m]	Note a
Trucks and buses	See Section 1607.7	

15. Handrails, guards and grab bars	See Section 1607.8	
16. Helipads	See Section 1607.6	
17. Hospitals		
Corridors above first floor	80	1,000
Operating rooms, laboratories	60	1,000
Patient rooms	40	1,000
18. Hotels (see residential)	—	—
19. Libraries		
Corridors above first floor	80	1,000
Reading rooms	60	1,000
Stack rooms	150[b, m]	1,000
20. Manufacturing		
Heavy	250[m]	3,000
Light	125[m]	2,000
21. Marquees, except one-and two-family dwellings	75	—
22. Office buildings		
Corridors above first floor	80	2,000
File and computer rooms shall be designed for heavier loads based on anticipated occupancy	—	—
Lobbies and first-floor corridors	100	2,000
Offices	50	2,000

For SI: 1 inch = 25.4 mm, 1 square inch = 645.16 mm2,
1 square foot = 0.0929 m2,
1 pound per square foot = 0.0479 kN/m2, 1 pound = 0.004448 kN,
1 pound per cubic foot = 16 kg/m3.

a. Floors in garages or portions of buildings used for the storage of motor vehicles shall be designed for the uniformly distributed live loads of this Table or the following concentrated loads: (1) for garages restricted to passenger vehicles accommodating not more than nine passengers, 3,000 pounds acting on an area of 41 /2 inches by 41 /2 inches; (2) for mechanical parking structures without slab or deck that are used for storing passenger vehicles only, 2,250 pounds per wheel.
b. The loading applies to stack room floors that support nonmobile, double-faced library book stacks, subject to the following limitations:
   1. The nominal book stack unit height shall not exceed 90 inches;
   2. The nominal shelf depth shall not exceed 12 inches for each face; and
   3. Parallel rows of double-faced book stacks shall be separated by aisles not less than 36 inches wide.
c. Design in accordance with ICC 300.
d. Other uniform loads in accordance with an approved method containing provisions for truck loadings shall be considered where appropriate.
e. The concentrated wheel load shall be applied on an area of 4.5 inches by 4.5 inches.
f. The minimum concentrated load on stair treads shall be applied on an area of 2 inches by 2 inches. This load need not be assumed to act concurrently with the uniform load.
g. Where snow loads occur that are in excess of the design conditions, the structure shall be designed to support the loads due to the increased loads caused by drift buildup or a greater snow design determined by the building official (see Section 1608).
h. See Section 1604.8.3 for decks attached to exterior walls.
i. Uninhabitable attics without storage are those where the maximum clear height between the joists and rafters is less than 42 inches, or where there are not two or more adjacent trusses with web configurations capable of accommodating an assumed rectangle 42 inches in height by 24 inches in width, or greater, within the plane of the trusses. This live load need not be assumed to act concurrently with any other live load requirements.
j. Uninhabitable attics with storage are those where the maximum clear height between the joists and rafters is 42 inches or greater, or where there are two or more adjacent trusses with web configurations capable of accommodating an assumed rectangle 42 inches in height by 24 inches in width, or greater, within the plane of the trusses.
   The live load need only be applied to those portions of the joists or truss bottom chords where both of the following conditions are met:
   i. The attic area is accessible from an opening not less than 20 inches in width by 30 inches in length that is located where the clear height in the attic is a minimum of 30 inches; and
   ii. The slopes of the joists or truss bottom chords are no greater than two units vertical in 12 units horizontal.
   The remaining portions of the joists or truss bottom chords shall be designed for a uniformly distributed concurrent live load of not less than 10 pounds per square foot.
k. Attic spaces served by stairways other than the pull-down type shall be designed to support the minimum live load specified for habitable attics and sleeping rooms.

l. Areas of occupiable roofs, other than roof gardens and assembly areas, shall be designed for appropriate loads as approved by the building official. Unoccupied landscaped areas of roofs shall be designed in accordance with Section 1607.12.3.
m. Live load reduction is not permitted unless specific exceptions of Section 1607.10 apply.

Reason: This proposed changes to Section 1607 will harmonize the provision in the code with the 2016 edition of the referenced loading standard *ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures* (ASCE 7-16).

Table 1607.1 - Proposed modifications to Table 1607.1 modify the live loads on decks to 1.5 times the live load for the area served, but not required to exceed 100 psf. This proposed change will align the requirements of the code with the standard ASCE 7, which has included this provision in the 2010 edition. Given that balconies and decks can be places of assembly, it is reasonable that the required live load is not to exceed the specified the uniform load required for Assembly Areas.

Cost Impact: Will increase the cost of construction
The proposed changes will impact the cost of construction. This proposal coordinates the IBC with the referenced loading standard *ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures*. ASCE 7 will be updated from the 2010 edition to the 2016 edition as an Administrative Update to the 2018 I-Codes.

s of the submission date of this code change proposal, the ASCE 7 Standards Committee has completed the committee balloting on technical changes. The document is designated *ASCE 7-16 Minimum Design Loads and Associated Criteria for Buildings and Other Structures* is expected to be completed, published, and available for purchase prior to the ICC Public Comment Hearings for Group B in October of 2016. Any person interested in obtaining a public comment copy of ASCE 7-16 may do so by contacting James Neckel at ASCE (jneckel "at" asce. org).

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This code change provides a necessary update to the live load table in order to coordinate with the latest edition of ASCE 7 which was updated in ADM94-16. The committee does not believe that IRC coordination is needed.

Assembly Action **None**

Final Action Results

S85-16 **AS**

Back

Code Change No: S87-16

Original Proposal

Section: 1605.1, 1605.2.1, 1605.3.2

Proponent: Jennifer Goupil, AMERICAN SOCIETY OF CIVIL ENGINEERS, representing SELF (jgoupil@asce.org)

Revise as follows:

TABLE 1607.1
MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS, L_o, AND MINIMUM CONCENTRATED LIVE LOADS[g]

OCCUPANCY OR USE	UNIFORM (psf)	CONCENTRATED (pounds)
1. Apartments (see residential)	—	—
2. Access floor systems		
Office use	50	2000
Computer use	100	2000
3. Armories and drill rooms	150[~~m~~n]	—
4. Assembly areas		—
Fixed seats (fastened to floor)	60[m]	
Follow spot, projections and control rooms	50	
Lobbies	100[m]	
Movable seats	100[m]	
Stage floors	150[~~m~~n]	
Platforms (assembly)	100[m]	
Other assembly areas	100[m]	
5. Balconies and decks[h]	Same as occupancy served	—
6. Catwalks	40	300
7. Cornices	60	—
8. Corridors	100 Same as occupancy served except as indicated	—
First floor		
Other floors		
9. Dining rooms and restaurants	100[m]	—
10. Dwellings (see residential)	—	—
11. Elevator machine room and control room grating (on area of 2 inches by 2 inches)	—	300
12. Finish light floor plate construction (on area of 1 inch by 1 inch)	—	200
13. Fire escapes	100	—
On single-family dwellings only	40	
14. Garages (passenger vehicles only)	40[~~m~~o]	Note a
Trucks and buses	See Section 1607.7	
15. Handrails, guards and grab bars	See Section 1607.8	

16. Helipads	See Section 1607.6	
17. Hospitals		
Corridors above first floor	80	1,000
Operating rooms, laboratories	60	1,000
Patient rooms	40	1,000
18. Hotels (see residential)	—	—
19. Libraries		
Corridors above first floor	80	1,000
Reading rooms	60	1,000
Stack rooms	150[b, ~~m~~n]	1,000
20. Manufacturing		
Heavy	250[~~m~~n]	3,000
Light	125[~~m~~n]	2,000
21. Marquees, except one-and two-family dwellings	75	—
22. Office buildings		
Corridors above first floor	80	2,000
File and computer rooms shall be designed for heavier loads based on anticipated occupancy	—	—
Lobbies and first-floor corridors	100	2,000
Offices	50	2,000
23. Penal institutions		—
Cell blocks	40	
Corridors	100	
24. Recreational uses:		—
Bowling alleys, poolrooms and similar uses	75 [m]	
Dance halls and ballrooms	100 [m]	
Gymnasiums	100 [m]	
Ice skating rink	250 [~~m~~n]	
Reviewing stands, grandstands and bleachers	100 [c, m]	
Roller skating rink	100 [m]	
Stadiums and arenas with fixed seats (fastened to floor)	60 [c, m]	
25. Residential		—
One- and two-family dwellings		
Uninhabitable attics without storage [i]	10	
Uninhabitable attics with storage [i, j, k]	20	
Habitable attics and sleeping areas [k]	30	
Canopies, including marquees	20	
All other areas	40	
Hotels and multifamily dwellings		
Private rooms and corridors serving them	40	
Public rooms [m] and corridors serving them	100	
26. Roofs		
All roof surfaces subject to main- tenance workers		300
Awnings and canopies:		
Fabric construction supported by a skeleton structure	5[m] ~~Nonreducible~~	

All other construction, except one-and two-family dwellings	20	
Ordinary flat, pitched, and curved roofs (that are not occupiable)	20	
Primary roof members exposed to a work floor		
Single panel point of lower chord of roof trusses or any point along primary structural members supporting roofs over manufacturing, storage warehouses, and repair garages		2,000
All other primary roof members		300
Occupiable roofs:		
Roof gardens	100	
Assembly areas	100 [m]	
All other similar areas	Note 1	Note 1
27. Schools		
Classrooms	40	1,000
Corridors above first floor	80	1,000
First-floor corridors	100	1,000
28. Scuttles, skylight ribs and accessible ceilings	—	200
29. Sidewalks, vehicular driveways and yards, subject to trucking	250 [d, ~~m~~n]	8,000 [e]
30. Stairs and exits		
One- and two-family dwellings	40	300[f]
All other	100	300[f]
31. Storage warehouses (shall be designed for heavier loads if required for anticipated storage)		—
Heavy	250[~~m~~n]	
Light	125[~~m~~n]	
32. Stores		
Retail		
First floor	100	1,000
Upper floors	75	1,000
Wholesale, all floors	125[~~m~~n]	1,000
33. Vehicle barriers	See Section 1607.8.3	
34. Walkways and elevated platforms (other than exitways)	60	—
35. Yards and terraces, pedestrians	100[m]	—

For SI: 1 inch = 25.4 mm, 1 square inch = 645.16 mm 2 ,
1 square foot = 0.0929 m 2 ,
1 pound per square foot = 0.0479 kN/m 2 , 1 pound = 0.004448 kN,
1 pound per cubic foot = 16 kg/m 3 .

a. Floors in garages or portions of buildings used for the storage of motor vehicles shall be designed for the uniformly distributed live loads of this Table or the following concentrated loads: (1) for garages restricted to passenger vehicles accommodating not more than nine passengers, 3,000 pounds acting on an area of 4 1 / 2 inches by 4 1 / 2 inches; (2) for mechanical parking structures without slab or deck that are used for storing passenger vehicles only, 2,250 pounds per wheel.

b. The loading applies to stack room floors that support nonmobile, double-faced library book stacks, subject to the following limitations:
   1. The nominal book stack unit height shall not exceed 90 inches;
   2. The nominal shelf depth shall not exceed 12 inches for each face; and
   3. Parallel rows of double-faced book stacks shall be separated by aisles not less than 36 inches wide.

c. Design in accordance with ICC 300.

d. Other uniform loads in accordance with an approved method containing provisions for truck loadings shall be considered where appropriate.

e. The concentrated wheel load shall be applied on an area of 4.5 inches by 4.5 inches.
f. The minimum concentrated load on stair treads shall be applied on an area of 2 inches by 2 inches. This load need not be assumed to act concurrently with the uniform load.
g. Where snow loads occur that are in excess of the design conditions, the structure shall be designed to support the loads due to the increased loads caused by drift buildup or a greater snow design determined by the building official (see Section 1608).
h. See Section 1604.8.3 for decks attached to exterior walls.
i. Uninhabitable attics without storage are those where the maximum clear height between the joists and rafters is less than 42 inches, or where there are not two or more adjacent trusses with web configurations capable of accommodating an assumed rectangle 42 inches in height by 24 inches in width, or greater, within the plane of the trusses. This live load need not be assumed to act concurrently with any other live load requirements.
j. Uninhabitable attics with storage are those where the maximum clear height between the joists and rafters is 42 inches or greater, or where there are two or more adjacent trusses with web configurations capable of accommodating an assumed rectangle 42 inches in height by 24 inches in width, or greater, within the plane of the trusses.
The live load need only be applied to those portions of the joists or truss bottom chords where both of the following conditions are met:
    i. The attic area is accessible from an opening not less than 20 inches in width by 30 inches in length that is located where the clear height in the attic is a minimum of 30 inches; and
    ii. The slopes of the joists or truss bottom chords are no greater than two units vertical in 12 units horizontal.
    The remaining portions of the joists or truss bottom chords shall be designed for a uniformly distributed concurrent live load of not less than 10 pounds per square foot.
k. Attic spaces served by stairways other than the pull-down type shall be designed to support the minimum live load specified for habitable attics and sleeping rooms.
l. Areas of occupiable roofs, other than roof gardens and assembly areas, shall be designed for appropriate loads as approved by the building official. Unoccupied landscaped areas of roofs shall be designed in accordance with Section 1607.12.3.
~~m. Live load reduction is not permitted unless specific exceptions of Section 1607.10 apply.~~
<u>m. Live load reduction is not permitted.</u>
<u>n. Live load reduction is only permitted in accordance with Section 1607.10.1.2 or Item 1 of Section 1607.10.2.</u>
<u>o. Live load reduction is only permitted in accordance with Section 1607.10.1.3 or Item 2 of Section 1607.10.2.</u>

Reason: This proposal clarifies which live loads are not permitted to be reduced, and more clearly align the IBC with ASCE 7. The current footnote m in Table 1607.1 restricts the use of the live load reduction equations in Sections 1607.10.1 (basic) and 1607.10.2 (alternate), "unless specific exceptions of Section 1607.10 apply." This clause causes confusion for both engineers and building officials:

- Section 1607.10.1 states, "Except for uniform live loads at roofs, **all other** minimum uniformly distributed live loads...are permitted to be reduced.... [emphasis mine]"
- Item 3 of Section 1607.10.2 reads, "**For live loads not exceeding 100 psf**...the design live load for any structural member supporting 150 square feet...or more is permitted to be reduced.... [emphasis mine]"

Does the text in either section constitute a "specific exception" that permits all the live loads with footnote m to be reduced? We have had discussions with building officials and engineers in our association who have maintained that it does. However, in comparing Table 1607.10 with ASCE 7-10 Table 4-1, along with the corresponding texts in IBC Section 1607.10 and ASCE 7 Section 4.7, we believe this to be in error for the following reasons:

- If one believes the live load reduction equations can be used in all instances where footnote m appears, there is no longer any restriction on live load reductions, and footnote m is meaningless.
- Because its text is structured differently from the IBC, it is clear in ASCE 7-10 that the live load reduction for heavy live loads (> 100 psf) and passenger vehicle garages are allowed to be reduced only for members supporting two or more floors. Assembly loads are clearly not allowed to be reduced in ASCE 7-10. (See ASCE 7-10, Sections 4.7.3, 4.7.4, and 4.7.5.)
- Footnote m was introduced into the 2012 IBC via code change proposal S60-09/10, and the proponent's clear intent was to align the 2012 IBC with ASCE 7-10. Allowing an expansion of the application of live load reduction would cause a misalignment between the two documents.

In order to clear up the confusion, this proposal introduces two new footnotes to the table, and modifies footnote m.

In reading through Section 1607.10.1 regarding the basic live load reduction, the only "specific exceptions" appear to be those in 1607.10.1.2 (heavy live loads) and 1607.10.1.3 (passenger vehicle garages). Items 1 and 2 of the alternate live load reduction (1607.10.2) cover the same territory. These clearly correspond to Sections 4.7.3 and 4.7.4 in ASCE 7-10. It is therefore clear that there are no exceptions for the rest of the items to which footnote m is applied, including all assembly spaces (corresponding to Section 4.7.5 in ASCE 7-10).

The new footnote n takes care of heavy live loads--it starts by prohibiting live load reductions, but refers the user to the specifc sections that allow the reduction. New footnote o does the same for passenger vehicle garage loading. Footnote m is then modified so as to completely prohibit any live load reduction for the remaining items covered by the old footnote. This incidentally allows footnote m to be substituted for the "nonreducible" note in the line in the table for fabric awnings/canopies in Item 26 of Table 1607.1.

We believe this makes restrictions on the application of live load reductions much clearer for the users of the IBC.

Cost Impact: Will not increase the cost of construction
This is a clarification that does not result in an increase of design loads or cost of construction.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: The proposed changes to the live load table are editorial revisions that clarify when and where the live load reductions apply. They also will clarify which live loads can't be reduced and better align the IBC with requirements in ASCE 7.

Assembly Action **None**

Final Action Results

S87-16	**AS**

Code Change No: S88-16

Original Proposal

Section(s): 1607.4, 1607.9.3, 1607.9.4

Proponent: Jennifer Goupil, AMERICAN SOCIETY OF CIVIL ENGINEERS, representing SELF (jgoupil@asce.org)

Revise as follows:

1607.4 Concentrated live loads. Floors, roofs, and other similar surfaces shall be designed to support the uniformly distributed live loads prescribed in Section 1607.3 or the concentrated live loads, given in Table 1607.1, whichever produces the greater *load effects*. Unless otherwise specified, the indicated concentration shall be assumed to be uniformly distributed over an area of $2^1/_2$ feet by $2^1/_2$ feet (762 mm by 762 mm) and shall be located so as to produce the maximum *load effects* in the structural members.

1607.9.3 Elements supporting hoists for façade access equipment. In addition to any other applicable live loads, structural elements that support hoists for façade access equipment shall be designed for a live load consisting of the larger of the rated load of the hoist times 2.5 ~~and~~ or the stall load of the hoist, whichever is larger.

Reason: This proposed changes to Section 1607 will harmonize the provision in the code with the 2016 edition of the referenced loading standard *ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures* (ASCE 7-16).

Section 1607.4 Concentrated live loads - Proposed addition specifically includes roofs to the requirements for concentrated live loads. This proposed change will align the requirements of the code with the standard ASCE 7.

Section 1607.9.3 Elements supporting hoists for facade access equipment - Proposed revisions clarifies that the larger of the two loads is required, not both.

Cost Impact: Will not increase the cost of construction
The proposed changes will not impact the cost of construction. This proposal coordinates the IBC with the referenced loading standard *ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures*. ASCE 7 will be updated from the 2010 edition to the 2016 edition as an Administrative Update to the 2018 I-Codes.

As of the submission date of this code change proposal, the ASCE 7 Standards Committee has completed the committee balloting on technical changes. The document is designated *ASCE 7-16 Minimum Design Loads and Associated Criteria for Buildings and Other Structures* is expected to be completed, published, and available for purchase prior to the ICC Public Comment Hearings for Group B in October of 2016. Any person interested in obtaining a public comment copy of ASCE 7-16 may do so by contacting James Neckel at ASCE (jneckel "at" asce.org).

Report of Committee Action Hearings

Committee Action: **Approved as Modified**

Modify as follows:

1607.9.3 Elements supporting hoists for façade access and building maintenance equipment. In addition to any other applicable live loads, structural elements that support hoists for façade access and building maintenance equipment shall be designed for a live load ~~consisting~~ of ~~the larger of~~ 2.5 times the rated load of the hoist ~~times 2.5~~ or the stall load of the hoist, whichever is larger.

Committee Reason: Coordination wth the latest edition of the referenced standard, ASCE 7 which was updated in ADM94-16. The modification further updates the proposal for consistency with ASCE 7 due to public comments.

Assembly Action: **None**

Public Comments

Public Comment 1:

Gwenyth Searer, representing self requests Approve as Modified by this Public Comment.

Modify as follows:

1607.9.4 ~~Lifeline~~ Fall arrest and lifeline anchorages ~~for façade access equipment~~. In addition to any other applicable live loads, fall arrest and lifeline anchorages and structural elements that support ~~lifeline~~ these anchorages shall be designed for a live load of at least 3,100 pounds (13.8 kN) for each attached lifeline, in every direction that a fall arrest load may be applied.

Commenter's Reason: During the public comment period of ASCE 7-2016, a commenter suggested editorial changes to the language regarding personal fall arrest anchorages. The Committee accepted the proposed changes, but only after the deadline for submission of code change proposals.

This public comment matches the changes made by ASCE 7.

The original wording of the section reads:

"**1607.9.4 Lifeline anchorages for facade access equipment.** In addition to any other applicable live loads, lifeline anchorages and structural elements that support lifeline anchorages shall be designed for a live load of at least 3,100 pounds (13.8kN) for each attached lifeline in every direction that a fall arrest load may be applied."

If this public comment is accepted, the section will be revised to read:

"**1607.9.4 Fall arrest and lifeline anchorages.** In addition to any other applicable live loads, fall arrest and lifeline anchorages and structural elements that support these anchorages shall be designed for a live load of at least 3,100 pounds (13.8kN) for each attached lifeline in every direction that a fall arrest load may be applied."

This public comment will bring the language into compliance with the language approved for ASCE 7-16 and matches the changes made to 1607.9.3 in S88-16, which was approved As Modified by the ICC Structural Committee.

Final Action Results

S88-16	**AMPC1**

Back

Code Change No: S89-16

Original Proposal

Section: 1607.8, 1607.8.3

Proponent: Edward Kulik, representing Building Code Action Committee (bcac@iccsafe.org)

Revise as follows:

1607.8 Loads on handrails, guards, grab bars, and seats ~~and vehicle barriers~~. Handrails~~, *guards*, grab bars, accessible seats, accessible benches~~ and ~~vehicle barriers~~ guards, shall be designed and constructed for the structural loading conditions set forth in ~~this section~~ Section 1607.8.1. Grab bars, shower seats, and accessible benches shall be designed and constructed for structural loading conditions set forth in Section 1607.8.2.

~~**1607.8.3**~~ **1607.9 Vehicle barriers.** *No change to text.*

Reason: This proposal is intended to be a clarification. The current language only brings up benches in dressing rooms. 2009 A117.1 require accessible benches in dressing rooms, locker rooms and steam rooms and saunas. The loads of 250 lbs. should be applied to grab bars and shower seats wherever they are provided. The load of 250 pounds should not be required for all benches in any dressing room, but should be required for accessible benches in all three locations.

The suggested language in 1607.8.2 is because the rooms are scoped in Chapter 11, but the benches themselves are specified in ICC A117.1. The need to be so specific is that if the requirement was just for bench seats, it could be misinterpreted to be applicable to any bench seating, accessible or not, fixed or loose. The current language follows the grouping of ASCE 7 which also includes fixed ladders.

Existing load requirements for vehicle barriers have been moved to be a separate section for clarity. These loads are related to impact on these barriers from vehicles as opposed to loads from an individual grasping a handrail or using a bench.

This proposal is submitted by the ICC Building Code Action Committee (BCAC). BCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. In 2014 and 2015 the BCAC has held 5 open meetings. In addition, there were numerous Working Group meetings and conference calls for the current code development cycle, which included members of the committee as well as any interested party to discuss and debate the proposed changes. Related documentation and reports are posted on the BCAC website at: BCAC

Cost Impact: Will not increase the cost of construction
Need cost impact and substantiation.
As this is intended as a clarification, there will be no increase in construction cost.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: The committee agreed that this editorial revision will clarity the loading requirements applicable to handrails, guards, grab bars, etc.

Assembly Action **None**

Final Action Results

S89-16	AS

Back

Code Change No: S93-16

Original Proposal

Section: 1607.12.3.1

Proponent: Jennifer Goupil, AMERICAN SOCIETY OF CIVIL ENGINEERS, representing SELF (jgoupil@asce.org)

Revise as follows:

1607.12.3.1 Vegetative and landscaped roofs. The weight of all landscaping materials shall be considered as dead load and shall be computed on the basis of saturation of the soil as determined in accordance with ~~ASTM E 2397~~Section 3.1.4 of ASCE 7. The uniform design live load in unoccupied landscaped areas on roofs shall be 20 psf (0.958 kN/m^2). The uniform design live load for occupied landscaped areas on roofs shall be determined in accordance with Table 1607.1.

Reason: This proposed changes to Section 1607 will harmonize the provision in the code with the 2016 edition of the referenced loading standard *ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures* (ASCE 7-16).
Section 1607.12.3.1 Vegetative and landscaped roofs - This modifies the pointer to Chapter 3 of ASCE 7 from ASTM E2397. ASCE 7 is the referenced loading standard and contains provisions for these types of use areas; the 2016 edition of ASCE 7 includes loads associated with landscaped and vegetative roofs maintained by irrigation and subject to rainfall. The provisions clarify which components are considered dead load versus rain load for vegetative roof areas, and clearly outlines the minimum live loads in Table 4-1 of ASCE 7, which now includes a section for occupiable areas of roofs.

Cost Impact: Will not increase the cost of construction
The proposed changes will likely impact the design and construction of these systems because this proposal seeks to reference the recognized loading standard ASCE 7, which now includes loading provisions for this use type. Whether costs increase or decrease or otherwise may impact design costs are undetermined because the current ASTM reference may or may not be similar to the acceptable ASCE 7 loading methodology, which is consistent with all other provisions in ASCE 7. This proposal coordinates the IBC with the referenced loading standard *ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures*. ASCE 7 will be updated from the 2010 edition to the 2016 edition as an Administrative Update to the 2018 I-Codes.

As of the submission date of this code change proposal, the ASCE 7 Standards Committee has completed the committee balloting on technical changes. The document is designated *ASCE 7-16 Minimum Design Loads and Associated Criteria for Buildings and Other Structures* is expected to be completed, published, and available for purchase prior to the ICC Public Comment Hearings for Group B in October of 2016. Any person interested in obtaining a public comment copy of ASCE 7-16 may do so by contacting James Neckel at ASCE (jneckel "at" asce.org).

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This proposal provides a direct reference to the ASCE 7 load provision for landscaped and vegetative roofs. As the reason indicates this will clarify which components are considered dead load versus rain load for vegetative roof areas,

Assembly Action **None**

Final Action Results

S93-16	**AS**

Back

Code Change No: S95-16

Original Proposal

Section(s): 1607.12.5.1

Proponent: Joseph Cain, SunEdison, representing Solar Energy Industries Association (SEIA) (joecainpe@aol.com)

Revise as follows:

1607.12.5.1 Roof live load. Roof ~~surfaces~~ assemblies and supporting structures to be covered by solar photovoltaic panels or modules shall be designed for the roof live load, L_r, ~~assuming that~~ for the ~~photovoltaic panels or modules~~ load case where *photovoltaic panel systems* are not present. The roof ~~photovoltaic~~ live load ~~in~~ need not be applied to roof areas covered by ~~solar photovoltaic panels or modules shall be in addition to the panel loading unless the area covered by each solar photovoltaic panel or module is inaccessible. Areas~~ *photovoltaic panels* where the clear ~~space~~ vertical height between the underside of the panels and the rooftop is ~~not more than~~ 24 inches (610 mm) ~~shall be considered inaccessible~~ or less. Roof ~~surfaces~~ assemblies and supporting structures not covered by photovoltaic panels shall be designed for the roof live load.

Reason: This proposal includes only editorial changes to clarify the existing requirements. Language is revised to clarify that roof assemblies and supporting structures are designed, not "roof surfaces are designed." Language is revised to clarify that the live load threshold criteria is related to clear vertical height between the underside of the photovoltaic panels and the roof surface, rather than a determination of "accessible" or "inaccessible." The term *accessible* is a defined term in the International Building Code. The definition of *accessible* is: "A site, building, facility or portion thereof that complies with Chapter 11." It is inappropriate to use this defined term for the live load threshold. Clear vertical height is much more descriptive and clear.

Cost Impact: Will not increase the cost of construction
The proposal will not change the cost of construction because there is no change to technical requirements. These are editorial changes only.

Report of Committee Action Hearings

Committee Action: **Approved as Modified**

Modify as follows:

1607.12.5.1 Roof live load. Roof ~~assemblies and supporting~~ structures ~~to be covered by solar~~ that support photovoltaic ~~panels or modules~~ panel systems shall be designed ~~for~~ to resist each of the following conditions:

1. The uniform and concentrated roof live ~~load, Lr, for~~ loads with the ~~load case where photovoltaic panel systems are not present~~ photovoltaic panel system dead loads.

   Exception: The roof live load need not be applied to ~~roof areas~~ the area covered by ~~photovoltaic panels~~ photovoltaic panels where the clear ~~vertical height~~ space between ~~the underside of~~ the panels and the ~~rooftop~~ roof surface is 24 ~~inches~~ in. (610 mm) or less. ~~Roof assemblies~~

2. The uniform and ~~supporting structures not covered by photovoltaic panels shall be designed for the~~ concentrated roof live ~~load~~ loads without the photovoltaic panel system present.

Committee Reason: This code change improves the current wording of roof live loads at photovolaic panels. The modification incorporates some additional wording from the referenced standard, ASCE 7, that is preferred.

Assembly Action: **None**

Public Comments

Public Comment 1:

Jonathan Siu, representing Washington Association of Building Officials Technical Code Development Committee (Jon.Siu@seattle.gov) requests Approve as Modified by this Public Comment.

Modify as follows:

1607.12.5.1 Roof live load. Roof structures that support photovoltaic panel systems shall be designed to resist each of the following conditions:

1. ~~The~~ All applicable uniform and concentrated roof ~~live~~ loads with the *photovoltaic panel system* dead loads.

   Exception: ~~The roof~~ Roof live ~~load~~ loads need not be applied to the area covered by *photovoltaic panels* where the clear space between the panels and the roof surface is 24 in. (610 mm) or less.

2. ~~The~~ All applicable uniform and concentrated roof ~~live~~ loads without the photovoltaic panel system present.

Commenter's Reason: This public comment further clarifies the design load requirements for roof structures supporting PV panel systems. The supporting structure needs to be designed for more than just the panel dead loads and roof live load. Snow, rain (which can lead to ponding), wind, and seismic loads also need to be accounted for. Mentioning only roof live loads can be misleading. Even though Section 1607 is titled Live Loads, there is precedence to point to other types of loading in Section 1607.12.4, which refers to snow and wind loads for awning and canopy design.

Final Action Results

S95-16	**AMPC1**

Back

Code Change No: S98-16

Original Proposal

Section: 1607.12.5.2.1 (New)

Proponent: Jennifer Goupil, AMERICAN SOCIETY OF CIVIL ENGINEERS, representing SELF (jgoupil@asce.org)

Add new text as follows:

<u>1607.12.5.2.1</u> <u>Photovoltaic panels installed on open grid roof structures</u> <u>Structures with open grid framing and no roof deck or sheathing supporting photovoltaic panel systems shall be designed to support the uniform and concentrated roof live loads specified in Section 1607.12.3.1, except that the uniform roof live load shall be permitted to be reduced to 12 psf (0.57kN/m2).</u>

Reason: This proposed changes to Section 1607 will harmonize the provision in the code with the 2016 edition of the referenced loading standard *ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures* (ASCE 7-16).
Section 1607.12.5.2.1 Photovoltaic panels installed on open grid roof structures. Awareness of building sustainability in recent years has led to unprecedented growth rate in design and implementation of rooftop solar photovoltaic (PV) systems. Engineers have made various assumptions relating to the vertical support of rooftop solar PV systems particularly at existing structures where reserve vertical capacity is often limited. Among the many assumptions made is whether full or partial roof live loads must be used or whether no live loads need to be considered at areas covered by new PV systems. This issue has been studied by a Live Load Task Group under the directive of the Structural Engineers Association of California (SEAOC) Solar PV System Subcommittee. Recommendation leading to a proposal that has been finalized and accepted into ASCE 7.In the ASCE 7-16 Main Committee ballot, new provisions on Rooftop Solar Arrays based primarily on SEAOC PV-2-2012 document received overwhelming approval action. This proposal on live load requirements will complement the new provision for solar PV system wind load design. Together the live load and wind provisions will help solidify ASCE 7 as the single source design loading information for both the design professionals as well as the industry related to solar photovoltaic system.

Reference:
Blaney, Colin and LaPlante, Ron (2013), "Recommended Design Live Loads for Rooftop Solar Arrays," SEAOC Convention Proceedings, 2013, pp. 264 – 278.

Cost Impact: Will not increase the cost of construction
The proposed changes may or may not impact the cost of construction. This proposal standardizes this evolving industry where requirements did not previously exist so that the loading and design requirements are consistent. This proposal coordinates the IBC with the referenced loading standard *ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures*. ASCE 7 will be updated from the 2010 edition to the 2016 edition as an Administrative Update to the 2018 I-Codes. As of the submission date of this code change proposal, the ASCE 7 Standards Committee has completed the committee balloting on technical changes. The document is designated *ASCE 7-16 Minimum Design Loads and Associated Criteria for Buildings and Other Structures* is expected to be completed, published, and available for purchase prior to the ICC Public Comment Hearings for Group B in October of 2016. Any person interested in obtaining a public comment copy of ASCE 7-16 may do so by contacting James Neckel at ASCE (jneckel "at" asce.org).

Report of Committee Action Hearings

Committee Action: **Approved as Modified**

Modify as follows:

1607.12.5.2.1 Photovoltaic panels installed on open grid roof structures Structures with open grid framing and no roof deck or sheathing supporting photovoltaic panel systems shall be designed to support the uniform and concentrated roof live loads specified in Section ~~1607.12.3.1~~ <u>1607.12.5.1</u>, except that the uniform roof live load shall be permitted to be reduced to 12 psf (0.57kN/m^2).

Committee Reason: This proposal adds roof load requirements for photovoltaic panels that are taken from the latest edition of the referenced standard, ASCE 7, which was updated in ADM94-16. The modification corrects a mistaken section reference.

Assembly Action **None**

Final Action Results

S98-16	**AM**

Back

Code Change No: S104-16

Original Proposal

Section: 1604.11 (New), 1609.1.1

Proponent: Don Scott, representing National Council of Structural Engineering Associations (dscott@pcs-structural.com)

Revise as follows:

1609.1.1 Determination of wind loads. Wind loads on every building or structure shall be determined in accordance with Chapters 26 to 30 of ASCE 7 or provisions of the alternate all-heights method in Section 1609.6. The type of opening protection required, the ultimate design wind speed, V_{ult}, and the exposure category for a site is permitted to be determined in accordance with Section 1609 or ASCE 7. Wind shall be assumed to come from any horizontal direction and wind pressures shall be assumed to act normal to the surface considered.

Exceptions:

1. Subject to the limitations of Section 1609.1.1.1, the provisions of ICC 600 shall be permitted for applicable Group R-2 and R-3 buildings.
2. Subject to the limitations of Section 1609.1.1.1, residential structures using the provisions of AWC WFCM.
3. Subject to the limitations of Section 1609.1.1.1, residential structures using the provisions of AISI S230.
4. Designs using NAAMM FP 1001.
5. Designs using TIA-222 for antenna-supporting structures and antennas, provided the horizontal extent of Topographic Category 2 escarpments in Section 2.6.6.2 of TIA-222 shall be 16 times the height of the escarpment.
6. Wind tunnel tests in accordance with ASCE 49 and Sections 31.4 and 31.5 of ASCE 7.
7. <u>Wind loads on storm shelters shall be determined in accordance with ICC 500.</u>

The wind speeds in Figures 1609.3(1), 1609.3(2) and 1609.3(3) are ultimate design wind speeds, V_{ult}, and shall be converted in accordance with Section 1609.3.1 to nominal design wind speeds, V_{asd}, when the provisions of the standards referenced in Exceptions 4 and 5 are used.

Reason: Section 423 Storm Shelters, which includes wind load criteria for storm shelters by reference to ICC 500, was first included in IBC 2009. Section 1609.1 is the IBC section that defines wind loads for buildings and structures, but it does not currently include specific criteria for storm shelters. Table 1604.5 includes hurricane and other emergency shelters in risk category IV. Since Chapter does not include any other requirements for storm shelter wind loads, it could be misinterpreted that risk category IV wind speeds are appropriate for storm shelters. Risk category IV wind speeds are based on a mean recurrence interval (MRI) of 3000 years, while ICC-500 wind speeds are based on a MRI of 10,000 years for hurricane shelters and a MRI of approximately 20,000 to 1,000,000 for tornados. This code change clarifies that ICC 500 wind loads are required for storm shelters.

Cost Impact: Will not increase the cost of construction
The cost of construction will not increase by clarifying storm shelter wind loads in Chapter 16, since wind loads for storm shelters are already required to be determined in accordance with ICC 500 by section 423.

Report of Committee Action Hearings

Committee Action: Approved as Modified

Modify as follows:

1604.11 Loads on storm shelters Loads and load combinations on storm shelters shall be determined in accordance with ICC 500.

1609.1.1 Determination of wind loads. Wind loads on every building or structure shall be determined in accordance with Chapters 26 to 30 of ASCE 7 or provisions of the alternate all-heights method in Section 1609.6. The type of opening protection required, the ultimate design wind speed, V_{ult}, and the exposure category for a site is permitted to be determined in accordance with Section 1609 or ASCE 7. Wind shall be assumed to come from any horizontal direction and wind pressures shall be assumed to act normal to the surface considered.

Exceptions:

1. Subject to the limitations of Section 1609.1.1.1, the provisions of ICC 600 shall be permitted for applicable Group R-2 and R-3 buildings.
2. Subject to the limitations of Section 1609.1.1.1, residential structures using the provisions of AWC WFCM.
3. Subject to the limitations of Section 1609.1.1.1, residential structures using the provisions of AISI S230.
4. Designs using NAAMM FP 1001.
5. Designs using TIA-222 for antenna-supporting structures and antennas, provided the horizontal extent of
6. Topographic Category 2 escarpments in Section 2.6.6.2 of TIA-222 shall be 16 times the height of the escarpment.
7. Wind tunnel tests in accordance with ASCE 49 and Sections 31.4 and 31.5 of ASCE 7.
8. ~~Wind loads on storm shelters shall be determined in accordance with ICC 500.~~

The wind speeds in Figures 1609.3(1), 1609.3(2) and 1609.3(3) are ultimate design wind speeds, V_{ult}, and shall be converted in accordance with Section 1609.3.1 to nominal design wind speeds, V_{asd}, when the provisions of the standards referenced in Exceptions 4 and 5 are used.

Committee Reason: This code change adds a reference to ICC 500 for determination of loads on storm shelters, The modification moves the reference and clarifies that all loads on storm shelter may be determined using the referenced standard.

Assembly Action None

Final Action Results

S104-16 AM

Back

Code Change No: S108-16

Original Proposal

Section: 1609.6, 1609.6.1, 1609.6.1.1, 1609.6.2, 1609.6.3, 1609.6.4, 1609.6.4.1, 1609.6.4.2, 1609.6.4.3, 1609.6.4.4, 1609.6.4.4.1

Proponent: Ronald Hamburger, SIMPSON GUMPERTZ & HEGER, representing SELF (rohamburger@sgh.com)

Delete without substitution:

~~**1609.6 Alternate all-heights method.** The alternate wind design provisions in this section are simplifications of the ASCE 7 Directional Procedure.~~

~~**1609.6.1 Scope.** As an alternative to ASCE 7 Chapters 27 and 30, the following provisions are permitted to be used to determine the wind effects on regularly shaped buildings, or other structures that are regularly shaped, that meet all of the following conditions:~~

1. ~~The building or other structure is less than or equal to 75 feet (22 860 mm) in height with a height-to-least-width ratio of 4 or less, or the building or other structure has a fundamental frequency greater than or equal to 1 hertz.~~
2. ~~The building or other structure is not sensitive to dynamic effects.~~
3. ~~The building or other structure is not located on a site for which channeling effects or buffeting in the wake of upwind obstructions warrant special consideration.~~
4. ~~The building shall meet the requirements of a simple diaphragm building as defined in ASCE 7 Section 26.2, where wind loads are only transmitted to the main windforce-resisting system (MWFRS) at the diaphragms.~~
5. ~~For open buildings, multispan gable roofs, stepped roofs, sawtooth roofs, domed roofs, roofs with slopes greater than 45 degrees (0.79 rad), solid free-standing walls and solid signs, and rooftop equipment, apply ASCE 7 provisions.~~

~~**1609.6.1.1 Modifications.** The following modifications shall be made to certain subsections in ASCE 7: in Section 1609.6.2, symbols and notations that are specific to this section are used in conjunction with the symbols and notations in ASCE 7 Section 26.3.~~

~~**1609.6.2 Symbols and notations.** Coefficients and variables used in the alternative all-heights method equations are as follows:~~

~~Cnet = Net-pressure coefficient based on Kd [(G) (Cp) - (GCpi)], in accordance with Table 1609.6.2.~~
~~G = Gust effect factor for rigid structures in accordance with ASCE 7 Section 26.9.1.~~
~~Kd = Wind directionality factor in accordance with ASCE 7 Table 26-6.~~
~~Pnet = Design wind pressure to be used in determination of wind loads on buildings or other structures or their components and cladding, in psf (kN/m2).~~

~~**1609.6.3 Design equations.** When using the alternative all-heights method, the MWFRS, and components and cladding of every structure shall be designed to resist the effects of wind pressures on the building envelope in accordance with Equation 16-35.~~

~~Pnet = 0.00256V2KzCnetKzt (Equation 16-35)~~

~~Design wind forces for the MWFRS shall be not less than 16 psf (0.77 kN/m²) multiplied by the area of the structure projected on a plane normal to the assumed wind direction (see ASCE 7 Section 27.4.7 for criteria). Design net wind pressure for components and cladding shall be not less than 16 psf (0.77 kN/m²) acting in either direction normal to the surface.~~

~~**1609.6.4 Design procedure.** The MWFRS and the components and cladding of every building or other structure shall be designed for the pressures calculated using Equation 16-35.~~

~~**1609.6.4.1 Main windforce-resisting systems.** The MWFRS shall be investigated for the torsional effects identified in ASCE 7 Figure 27.4-8.~~

~~**1609.6.4.2 Determination of K_z and K_{zt}.** Velocity pressure exposure coefficient, K_z, shall be determined in accordance with ASCE 7 Section 27.3.1 and the topographic factor, K_{zt}, shall be determined in accordance with ASCE 7 Section 26.8.~~

1. ~~For the windward side of a structure, K_{zt} and K_z shall be based on height z.~~
2. ~~For leeward and sidewalls, and for windward and leeward roofs, K_{zt} and K_z shall be based on mean roof height h.~~

~~**1609.6.4.3 Determination of net pressure coefficients, C_{net}.** For the design of the MWFRS and for components and cladding, the sum of the internal and external net pressure shall be based on the net pressure coefficient, C_{net}.~~

1. ~~The pressure coefficient, C_{net}, for walls and roofs shall be determined from Table 1609.6.2.~~
2. ~~Where C_{net} has more than one value, the more severe wind load condition shall be used for design.~~

~~**1609.6.4.4 Application of wind pressures.** When using the alternative all-heights method, wind pressures shall be applied simultaneously on, and in a direction normal to, all building envelope wall and roof surfaces.~~

~~**1609.6.4.4.1 Components and cladding.** Wind pressure for each component or cladding element is applied as follows using C_{net} values based on the effective wind area, A, contained within the zones in areas of discontinuity of width and/or length "a," "2a" or "4a" at: corners of roofs and walls; edge strips for ridges, rakes and eaves; or field areas on walls or roofs as indicated in figures in tables in ASCE 7 as referenced in Table 1609.6.2 in accordance with the following:~~

1. ~~Calculated pressures at local discontinuities acting over specific edge strips or corner boundary areas.~~
2. ~~Include "field" (Zone 1, 2 or 4, as applicable) pressures applied to areas beyond the boundaries of the areas of discontinuity.~~
3. ~~Where applicable, the calculated pressures at discontinuities (Zone 2 or 3) shall be combined with design pressures that apply specifically on rakes or eave overhangs.~~

~~**TABLE 1609.6.2**~~
~~**NET PRESSURE COEFFICIENTS, C_{net}**~~[a, b]

Reason: Since 2006, the IBC has permitted determination of wind loads using either the procedures contained in ASCE 7 or a series of simplified procedures known as the "Alternate all-heights method" contained in Section 1609.6 of the IBC. The "Alternate all-heights method" was originally developed by the Western States Structural Engineering Associations, a consortium of the Structural Engineers Associations (SEAs) of California, Washington and a few other states. The Western States SEAs developed this procedure because those members felt that the procedures contained within ASCE 7 were excessively complex and difficult to apply to the design of buildings. These engineers wanted simplified procedures, similar to those which had formerly appeared in the legacy Uniform Building Code. It is worth noting that the two other legacy codes essentially transcribed the ASCE 7provisiosn and that engineers in the eastern United States did not have problems suing the ASCE 7 provisions.

In the time since the Alternate all-heights method was developed, wind engineering has advanced substantially and the pressure coefficients specified by the ASCE 7 procedures have been revised several times because research showed that the older coefficients were unconservative. As a result, the Alternate all-heights method contained in the code no longer provides similar levels of structural performance as the procedures contained in ASCE 7. The Western States Structural Engineers

Associations that originally developed the alternative method have not updated it to keep pace with ASCE 7, and instead, have largely participated in the development of the wind provisions within the ASCE 7 Standard.

Further, in 2010 in response to western engineers' concerns that the procedures embodied in ASCE 7 were excessively complex, the ASCE 7 Standard adopted an alternative simplified procedure similar to the Alternate all-heights method. Recent surveys of engineering practice by the National Council of Structural Engineers Associations Wind Loads Committee has determined that most engineers do not use the Alternate all-heights method, and instead use one of the several methods available in ASCE 7.

Removal of the Alternate all-heights method will ensure that all buildings and structures in the United States are designed with consistent levels of safety and serviceability for wind loading.

Cost Impact: Will not increase the cost of construction
The proposed changes will not impact the cost of construction. This proposal is a re-organization of the pointers in the IBC to refer to the wind provisions in the referenced loading standard ASCE 7. *ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures* will be updated fro the 2010 edition to the 2016 edition as an Administrative Update to the 2018 I-Codes.

As of the submission date of this code change proposal, the ASCE 7 Standards Committee has completed the committee balloting on the technical changes. The document designated *ASCE 7-16 Minimum Design Loads and Associated Criteria for Buildings and Other Structures* is expected to be completed, published, and available for purchase prior ot the ICC Public Comment Hearings for Group B in October 2016. Any person interested in obtaining a public comment copy of ASCE 7-16 may do so by contacting JamesNeckel at ASCE (jneckel "at" asce.org).

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: Agreement with proponent's reason which indicates the Alternate all heights method in the IBC has not kept pace with the wind updates in the ASCE 7 referenced standard and therefore it does not provide the same level of protection.

Assembly Action **None**

Final Action Results

S108-16	**AS**

Back

Code Change No: S109-16

Original Proposal

Section: 1609.6.2

Proponent: Don Scott, representing National Council of Structural Engineering Associations (dscott@pcs-structural.com)

Revise as follows:

TABLE 1609.6.2
NET PRESSURE COEFFICIENTS, C_{net}[a, b]

STRUCTURE OR PART THEREOF	DESCRIPTION		C_{net} FACTOR			
1. Main windforce- resisting frames and systems			Enclosed		Partially enclosed	
	Walls:		+ Internal pressure	- Internal pressure	+ Internal pressure	- Internal pressure
	Windward wall		0.43	0.73	0.11	1.05
	Leeward wall		-0.51	-0.21	-0.83	0.11
	Sidewall		-0.66	-0.35	-0.97	-0.04
	Parapet wall	Windward	1.28		1.28	
		Leeward	-0.85		-0.85	
	Roofs:		Enclosed		Partially enclosed	
	Wind perpendicular to ridge		+ Internal pressure	- Internal pressure	+ Internal pressure	- Internal pressure
	Leeward roof or flat roof		-0.66	-0.35	-0.97	-0.04
	Windward roof slopes:					
	Slope	Condition 1	-1.09	-0.79	-1.41	-0.47
		Condition 2	-0.28	0.02	-0.60	0.34
	Slope = 4:12 (18°)	Condition 1	-0.73	-0.42	-1.04	-0.11
		Condition 2	-0.05	0.25	-0.37	0.57
	Slope = 5:12 (23°)	Condition 1	-0.58	-0.28	-0.90	0.04
		Condition 2	0.03	0.34	-0.29	0.65
	Slope = 6:12 (27°)	Condition 1	-0.47	-0.16	-0.78	0.15
		Condition 2	0.06	0.37	-0.25	0.68
	Slope = 7:12 (30°)	Condition 1	-0.37	-0.06	-0.68	0.25

		Condition 2	0.07	0.37	-0.25	0.69
	Slope = 9:12 (37°)	Condition 1	-0.27	0.04	-0.58	0.35
		Condition 2	0.14	0.44	-0.18	0.76
	Slope = 12:12 (45°)		0.14	0.44	-0.18	0.76
	Wind parallel to ridge and flat roofs		-1.09	-0.79	-1.41	-0.47
	Nonbuilding Structures: Chimneys, Tanks and Similar Structures:					
				h/D		
				1	7	25
	Square (Wind normal to face)			0.99	1.07	1.53
	Square (Wind on diagonal)			0.77	0.84	1.15
	Hexagonal or octagonal			0.81	0.97	1.13
	Round			0.65	0.81	0.97
	Open signs and lattice frameworks			Ratio of solid to gross area		
					0.1 to 0.29	0.3 to 0.7
	Flat			1.45	1.30	1.16
	Round			0.87	0.94	1.08

STRUCTURE OR PART THEREOF	DESCRIPTION		C_{net} FACTOR	
2. Components and cladding not in areas of discontinuity—roofs and overhangs	Roof elements and slopes		Enclosed	Partially enclosed
	Gable of hipped configurations (Zone 1)			
	Flat			
	Positive	10 square feet or less	~~0.58~~0.75	~~0.89~~1.06
		100 square feet or more	0.41	0.72
	Negative	10 square feet or less	~~-1.00~~-1.85	~~-1.32~~-2.17
		100 square feet or more	~~-0.92~~-1.68	~~-1.23~~-2.00
	Overhang: Flat			
	Negative	10 square feet or less	~~-1.45~~-2.28	
		100 square feet or more	~~-1.36~~-1.77	
		500 square feet or more	~~-0.94~~-1.68	
	6:12 (27°)			
	Positive	10 square feet or less	0.92	1.23
		100 square feet or more	~~0.83~~0.58	~~1.15~~0.89

	Negative	10 square feet or less	~~-1.00~~-1.68	~~-1.32~~-2.00
		100 square feet or more	-0.83	-1.15
	Monosloped configurations (Zone 1)		Enclosed	Partially enclosed
	Flat			
	Positive	10 square feet or less	0.49	0.81
		100 square feet or more	0.41	0.72
	Negative	10 square feet or less	-1.26	-1.57
		100 square feet or more	-1.09	-1.40
	Tall flat-topped roofs *h* > 60 feet		Enclosed	Partially enclosed
	Flat			
	Negative	10 square feet or less	-1.34	-1.66
		500 square feet or more	-0.92	-1.23
3. Components and cladding in areas of discontinuity—roofs and overhangs (continued)	Gable or hipped configurations at ridges, eaves and rakes (Zone 2)			
	Flat			
	Positive	10 square feet or less	~~0.58~~0.75	~~0.89~~1.06
		100 square feet or more	0.41	0.72
	Negative	10 square feet or less	~~-1.68~~-2.28	~~-2.00~~-2.59
		100 square feet or more	~~-1.17~~-1.30	~~-1.49~~-1.62
	Overhang for Slope Flat			
	Negative	10 square feet or less	~~-1.87~~-3.13	
		100 square feet or more	~~-1.87~~-2.11	
	6:12 (27°)		Enclosed	Partially enclosed
	Positive	10 square feet or less	0.92	1.23
		100 square feet or more	~~0.83~~0.58	~~1.15~~0.89
	Negative	10 square feet or less	~~-1.17~~-2.49	~~-1.49~~-2.76
		100 square feet or more	-1.00	-1.32
	Overhang for 6:12 (27°)			
	Negative	10 square feet or less	~~-1.70~~-3.13	
		500 square feet or more	~~-1.53~~-1.68	

STRUCTURE OR PART THEREOF	DESCRIPTION	C_{net} FACTOR	
3. Components and cladding in areas of discontinuity—roofs	Roof elements and slopes	Enclosed	Partially enclosed
	Monosloped configurations at ridges, eaves and rakes (Zone 2)		
	Flat		

and overhangs	Positive	10 square feet or less	0.49	0.81
		100 square feet or more	0.41	0.72
	Negative	10 square feet or less	-1.51	-1.83
		100 square feet or more	-1.43	-1.74
	Tall flat topped roofs *h* > 60 feet		Enclosed	Partially enclosed
	Flat			
	Negative	10 square feet or less	-2.11	-2.42
		500 square feet or more	-1.51	-1.83
	Gable or hipped configurations at corners (Zone 3) ~~See ASCE 7 Figure 30.4-2B Zone 3~~			
	Flat		Enclosed	Partially enclosed
	Positive	10 square feet or less	~~0.58~~0.75	~~0.89~~1.06
		100 square feet or more	0.41	0.72
	Negative	10 square feet or less	~~-2.53~~-3.21	~~-2.85~~-3.53
		100 square feet or more	~~-1.85~~-1.62	~~-2.17~~-2.00
	Overhang for Slope Flat			
	Negative	10 square feet or less	~~-3.15~~-4.15	
		100 square feet or more	~~-2.13~~-2.28	
	6:12 (27°)			
	Positive	10 square feet or less	0.92	1.23
		100 square feet or more	~~0.83~~0.58	~~1.15~~0.89
	Negative	10 square feet or less	~~-1.17~~-3.21	~~-1.49~~-3.53
		100 square feet or more	-1.00	-1.32
	Overhang for 6:12 (27°)		Enclosed	Partially enclosed
	Negative	10 square feet or less	~~-1.70~~-3.89	
		100 square feet or more	~~-1.53~~-1.68	
	Monosloped Configurations at corners (Zone 3) ~~See ASCE 7 Figure 30.4-5B Zone 3~~			
	Flat			

	Positive	10 square feet or less	0.49	0.81
		100 square feet or more	0.41	0.72
	Negative	10 square feet or less	-2.62	-2.93
		100 square feet or more	-1.85	-2.17
	Tall flat topped roofs h > 60 feet		Enclosed	Partially enclosed
	Flat			
	Negative	10 square feet or less	-2.87	-3.19
		500 square feet or more	-2.11	-2.42
4. Components and cladding not in areas of discontinuity—walls and parapets (continued)	Wall Elements: $h \leq 60$ feet (Zone 4) ASCE 7 Figure 30.4-1		Enclosed	Partially enclosed
	Positive	10 square feet or less	1.00	1.32
		500 square feet or more	0.75	1.06
	Negative	10 square feet or less	-1.09	-1.40
		500 square feet or more	-0.83	-1.15
	Wall Elements: h > 60 feet (Zone 4) See ASCE 7 Figure 30.6-1 Zone 4			
	Positive	20 square feet or less	0.92	1.23
		500 square feet or more	0.66	0.98

STRUCTURE OR PART THEREOF	DESCRIPTION		C_{net} FACTOR	
4. Components and cladding not in areas of discontinuity—walls and parapets	Negative	20 square feet or less	-0.92	-1.23
		500 square feet or more	-0.75	-1.06
	Parapet Walls			
	Positive		2.87	3.19
	Negative		-1.68	-2.00
5. Components and cladding in areas of discontinuity—walls and parapets	Wall elements: $h \leq 60$ feet (Zone 5) ASCE 7 Figure 30.4-1		**Enclosed**	**Partially enclosed**
	Positive	10 square feet or less	1.00	1.32
		500 square feet or more	0.75	1.06
	Negative	10 square feet or less	-1.34	-1.66
		500 square feet or more	-0.83	-1.15
	Wall elements: h > 60 feet (Zone 5) See ASCE 7 Figure 30.6-			

	1 Zone 4			
	Positive	20 square feet or less	0.92	1.23
		500 square feet or more	0.66	0.98
	Negative	20 square feet or less	-1.68	-2.00
		500 square feet or more	-1.00	-1.32
	Parapet walls			
	Positive		3.64	3.95
	Negative		-2.45	-2.76

For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929m2, 1 degree = 0.0175 rad.

a. Linear interpolation between values in the table is permitted.

b. Some C net values have been grouped together. Less conservative results may be obtained by applying ASCE 7 provisions.

Reason: Full scale testing and wind tunnel testing has shown that for low-rise buildings the roof pressures coefficients have been non-conservative for the past editions of the code. The values in ASCE 7-16 have been corrected and thus the values in Table 1609.6.2 need to be adjusted to match the ASCE 7-16 values.

Cost Impact: Will increase the cost of construction
Initial roof construction and roofing costs will increase but overall repair costs following major wind events will be decreased. The layout of this portion of the table has been formatted to match the remaining portions of the table from the 2015 IBC. This formatting leads to very conservative design values being utilized as compared to the ASCE 7-16 figures for the various wind zones specified in ASCE 7-16.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This proposal updates the IBC alternative all heights provisions for coordination with the latest edition of the referenced standard, ASCE 7, which was updated in ADM84-16

Assembly Action **None**

Final Action Results

S109-16 **AS**

Back

Code Change No: S114-16

Original Proposal

Section: 1613.1, 1613.3.2, 1613.3.3, 1613.4, 1613.4.1, 1613.5, 1613.5.1, 1613.6

Proponent: Jennifer Goupil, AMERICAN SOCIETY OF CIVIL ENGINEERS, representing SELF (jgoupil@asce.org)

Revise as follows:

1613.1 Scope. Every structure, and portion thereof, including nonstructural components that are permanently attached to structures and their supports and attachments, shall be designed and constructed to resist the effects of earthquake motions in accordance with ASCE 7~~, excluding~~ Chapter ~~14~~ 11, 12, 13, 15, 17, and ~~Appendix 11A~~ 18, 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, or located where the mapped short-period spectral response acceleration, S_S, is less than 0.4 g.
2. 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. Agricultural storage structures intended only for incidental human occupancy.
4. 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.

1613.3.2 Site class definitions. Based on the site soil properties, the site shall be classified as *Site Class* A, B, C, D, E or F in accordance with Chapter 20 of ASCE 7.

Where the soil properties are not known in sufficient detail to determine the site class, Site Class D, subjected to the requirements of Section 1613.3.3, shall be used unless the ~~building official~~ *building official* or geotechnical data determines that Site Class E or F soils are present at the site.

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

1613.3.3 Site coefficients and adjusted maximum considered earthquake spectral response acceleration parameters. The maximum considered earthquake spectral response acceleration for short periods, S_{MS}, and at 1-second period, S_{M1}, adjusted for *site class* effects shall be determined by Equations 16-37 and 16-38, respectively:

$S_{MS} = F_a S_s$ **(Equation 16-37)**

$S_{M1} = F_v S_1$ **(Equation 16-38)**

but *S*MS shall not be taken less than *S*M1 except when determining Seismic Design Category in accordance with Section 1613.3.5.

where:

*F*a	=	Site coefficient defined in Table 1613.3.3(1).
*F*v	=	Site coefficient defined in Table 1613.3.3(2).
*S*S	=	The mapped spectral accelerations for short periods as determined in Section 1613.3.1.
*S*1	=	The mapped spectral accelerations for a 1-second period as determined in Section 1613.3.1.

Where Site Class D is selected as the default site class per Section 1613.3.2, the value of *F*a shall not be less than 1.2. Where the simplified design procedure of ASCE 7 Section 12.14 is used, the value of *F*a shall be determined in accordance with ASCE 7 Section 12.14.8.1, and the values of *F*v , *S*MS, and *S*M1 need not be determined.

F~~a~~	=	Site coefficient defined in Table 1613.3.3(1).
F~~v~~	=	Site coefficient defined in Table 1613.3.3(2).
S~~S~~	=	The mapped spectral accelerations for short periods as determined in Section 1613.3.1.
S~~1~~	=	The mapped spectral accelerations for a 1-second period as determined in Section 1613.3.1.

-

TABLE 1613.3.3 (2)
VALUES OF SITE COEFFICIENT F_V[a]

SITE CLASS	MAPPED RISK TARGETED MAXIMUM CONSIDERED EARTHQUAKE (MCE_R) SPECTRAL RESPONSE ACCELERATION PARAMETER AT 1-SECOND PERIOD					
	$S_1 \le 0.1$	$S_1 = 0.2$	$S_1 = 0.3$	$S_1 = 0.4$	S_1 ~~>=~~= 0.5	S_1>=0.6
A	0.8	0.8	0.8	0.8	0.8	0.8
B	0.8 ~~1.0~~	0.8~~1.0~~	0.8~~1.0~~	0.8~~1.0~~	0.8 ~~1.0~~	0.8
C	1.5 ~~1.7~~	1.5~~1.6~~	1.5	1.5~~1.4~~	1.5 ~~1.3~~	1.4
D	2.4	2.2[c] ~~2.0~~	2.0[c]~~1.8~~	1.9[c]~~1.6~~	1.8[c] ~~1.5~~	1.7[c]
E	4.2 ~~3.5~~	3.3[c] ~~3.2~~	2.8c	2.4[c]	2.2[c] ~~2.4~~	2.0[c]
F	Note b	Note b	Note b	Note b	Note b	Note b

a. Use straight-line interpolation for intermediate values of mapped spectral response acceleration at 1-second period, S_1 .

b. Values shall be determined in accordance with Section 11.4.7 of ASCE 7.
c. See requirements for site-specific ground motions in Section 11.4.7 of ASCE 7.

TABLE 1613.3.3 (1)
VALUES OF SITE COEFFICIENT F_a [a]

SITE CLASS	MAPPED RISK-TARGETED MACIMUM CONSIDERED EARTHQUAKE (MCE_R) SPECTRAL RESPONSE ACCELERATION PARAMETER AT SHORT PERIOD					
	S_s ≤ 0.25	S_s = 0.50	S_s = 0.75	S_s = 1.00	S_s≥ = 1.25	S_s ≥ *1.5*
A	0.8	0.8	0.8	0.8	0.8	0.8
B	0.9 ~~1.0~~	0.9 ~~1.0~~	0.9 ~~1.0~~	0.9 ~~1.0~~	0.9 ~~1.0~~	0.9
C	1.3 ~~1.2~~	1.3 ~~1.2~~	1.2 ~~1.1~~	1.2 ~~1.0~~	1.2 ~~1.0~~	1.2
D	1.6	1.4	1.2	1.1	1.0	1.0
E	2.4 ~~2.5~~	1.7	1.3 ~~1.2~~	Note b ~~0.9~~	Note b ~~0.9~~	Note b
F	Note b	Note b	Note b	Note b	Note b	Note b

a. Use straight-line interpolation for intermediate values of mapped spectral response acceleration at short period, S_s .

b. Values shall be determined in accordance with Section 11.4.7 of ASCE 7.

Delete without substitution:

~~**1613.4 Alternatives to ASCE 7.** The provisions of Section 1613.4 shall be permitted as alternatives to the relevant provisions of ASCE 7.~~

~~**1613.4.1 Additional seismic force-resisting systems for seismically isolated structures.** Add the following exception to the end of Section 17.5.4.2 of ASCE 7:~~

> ~~**Exception:** For isolated structures designed in accordance with this standard, the structural system limitations including structural height limits, in Table 12.2-1 for ordinary steel concentrically braced frames (OCBFs) as defined in Chapter 11 and ordinary moment frames (OMFs) as defined in Chapter 11 are permitted to be taken as 160 feet (48 768 mm) for structures assigned to Seismic Design Category D, E or F, provided that the following conditions are satisfied:~~
>
> 1. ~~The value of RI as defined in Chapter 17 is taken as 1.~~
> 2. ~~For OMFs and OCBFs, design is in accordance with AISC 341.~~

~~**1613.5 Amendments to ASCE 7.** The provisions of Section 1613.5 shall be permitted as an amendment to the relevant provisions of ASCE 7.~~

~~**1613.5.1 Transfer of anchorage forces into diaphragm.** Modify ASCE 7 Section 12.11.2.2.1 as follows: 12.11.2.2.1 Transfer of anchorage forces into diaphragm. Diaphragms shall be provided with continuous ties or struts between diaphragm chords to distribute these anchorage forces into the diaphragms. Diaphragm connections shall be positive, mechanical or welded. Added chords are permitted to be used to form subdiaphragms to transmit the anchorage forces to the main continuous cross-ties. The maximum length-to-width ratio of a wood, wood structural panel or untopped steel deck sheathed structural subdiaphragm that serves as part of the continuous tie system shall be 2.5 to 1. Connections and anchorages capable of resisting the prescribed forces shall be provided between the diaphragm and the attached components. Connections shall extend into the diaphragm a sufficient distance to develop the force transferred into the diaphragm.~~

~~**1613.6 Ballasted photovoltaic panel systems.** Ballasted, roof-mounted photovoltaic panel systems need not be rigidly attached to the roof or supporting structure. Ballasted non-penetrating systems shall be designed and installed only on roofs with slopes not more than one unit vertical in 12 units horizontal. Ballasted nonpenetrating systems shall be designed to resist sliding and uplift resulting from lateral and vertical forces as required by Section 1605, using a coefficient of friction determined by acceptable engineering principles. In structures assigned to Seismic Design Category C, D, E or F, ballasted nonpenetrating systems shall be designed to accommodate seismic displacement determined~~

~~by nonlinear response-history analysis or shake-table testing, using input motions consistent with ASCE 7 lateral and vertical seismic forces for nonstructural components on roofs.~~

Reason: This proposal is a coordination proposal to bring the 2018 IBC up to date with the provisions of the 2016 edition of *ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures* (ASCE 7-16).

Section 1613.1 Scope - These proposed changes reflect the current provisions within ASCE 7-16, Appendix 11A was removed and instead of excluding any particular chapters, this proposed change call out the primary ASCE 7 chapters that charge specific parts of the design process. These chapters, in turn, reference other ASCE 7 Sections, other ASCE 7 Chapters,m and other standards for portions of the requirements. All needed provisions of ASCE 7 are incorporated, including ground motions.

Section 1613.3.3.3 Site coefficient and adjusted maximum consider earthquake spectral response acceleration parameters - The site coefficients contained in the IBC date back to studies performed in the early 1990. These site coefficients were inherently tied to the attenuation relationships that we used by USGS to develop the MCE spectral acceleration maps used by the code in that era. The USGS maps contained in the 2010 edition of the ASCE 7 as well as IBC 2012 and th 2015 based on an updated set of attenuation relationships known as the NGA equations. The old site class coefficients are not appropriate for use with ground motions derived using the NGA equations. Note that a separate proposal has been submitted by the Building Seismic Safety Council's (BSSC) Code Resource Support Committee (CRSC) to update the maps, based on those contained in the 2014 National Hazard Reduction Program (NEHRP) Provision and also ASCE 7-16. These updated maps also based on the NGA equations.

The BSSC Provisions Update Committee (PUC) performed extensive stud of the appropriate site class coefficients to use with the NGA-derived ground motions and adopted the values introduced into Tables 1613.3.3(1) and 1613.3.3(2) in this proposal into the 2014 NEHRP Provisions. ASCE 7-16 subsequently adopted these updated values. This proposal brings the IBC into uniformity with the NEHRP Provisions and ASCE 7 and deletes the incorrect coefficients that are contained in IBC 2012 and 2015.

Section 1613.3.4 Design spectral response acceleration parameters - In developing the updated site class coefficients contained in the updated Tables 1613.3.3(1) and 1613.3.3(2), BSSC discovered that the standard spectral shape derived using the S_{DS} and S_{D1} parameters is unconservative for the design of long period buildings (T > 1 second) located on Site Class D or softer sites, when the seismic hazard is dominated by large magnitude earthquakes. this proposal adopts language developed by the BSSC PUC for the 2014 NEHRP Provisions and adopted by ASCE 7-16 that requires the use of site-specific spectra to represent ground motions for such buildings.

Section 1613.4 Alternatives to ASCE 7 - The proposed changes deletes the provisions in IBC because this material is now included in the 2016 edition of ASCE 7.

Section 1613.5 Amendments to ASCE 7 - The proposed changes deletes the provisions in the IBC because this material is now included in the 2016 edition of ASCE 7.

Cost Impact: Will not increase the cost of construction
The proposed changes will not impact the cost of construction. This proposal coordinates the IBC with the referenced loading standard *ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures*. ASCE 7 will be updated from the 2010 edition to the 2016 edition as an Administrative Update to the 2018 I-Codes.

As of the submission date of this code change proposal, the ASCE 7 Standards Committee has completed the committee balloting on the technical changes. The document designated *ASCE 7-16 Minimum Design Loads and Associated Criteria for Buildings and Other Structures* is expected to be completed, published, and available for purchase prior to the ICC Public Comment Hearings for Group B in October of 2016. Any person interested in obtaining a public comment copy of ASCE 7-16 may do so by contacting James Neckel at ASCE (jneckel "at" asce.org).

Report of Committee Action Hearings

Committee Action: **Approved as Modified**

Modify as follows:

1613.1 Scope. Every structure, and portion thereof, including nonstructural components that are permanently attached to structures and their supports and attachments, shall be designed and constructed to resist the effects of earthquake motions in accordance with ASCE 7 Chapter 11, 12, 13, 15, 17, and 18, 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, or located where the mapped short-period spectral response acceleration, S_s, is less than 0.4 g.

2. 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. Agricultural storage structures intended only for incidental human occupancy.
4. 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. References within ASCE 7 to Chapter 14 shall not apply, except as specifically required herin.

1613.6 Ballasted photovoltaic panel systems. Ballasted, roof-mounted *photovoltaic panel systems* need not be rigidly attached to the roof or supporting structure. Ballasted non-penetrating systems shall be designed and installed only on roofs with slopes not more than one unit vertical in 12 units horizontal. Ballasted nonpenetrating systems shall be designed to resist sliding and uplift resulting from lateral and vertical forces as required by Section 1605, using a coefficient of friction determined by acceptable engineering principles. In structures assigned to *Seismic Design Category* C, D, E or F, ballasted nonpenetrating systems shall be designed to accommodate seismic displacement determined by nonlinear response-history analysis or shake-table testing, using input motions consistent with ASCE 7 lateral and vertical seismic forces for nonstructural components on roofs.

Committee Reason: This code change updates the IBC seismic load provisions for consistency with the latest edition of the referenced standard, ASCE 7, which was updated in ADM94-16. The modification retains the prior exclusion of Chapter 14 in ASCE 7 and also retains the IBC requirements for ballasted photovoltaic panel since no evidence was given indicating that they are incorrect.

Assembly Action **None**

Final Action Results

S114-16	**AM**

Back

Code Change No: S119-16

Original Proposal

Section: 1613.3.1

Proponent: Kelly Cobeen, Wiss Janney Elstner Associates, Inc., representing Federal Emergency Management Agency and National Institute of Building Sciences Building Seismic Safety Council's Code Resource Support Committee (kcobeen@wje.com)

Revise as follows:

FIGURE ~~1613.3.1~~ 1613.3.1(1)-1 (1)
RISK-TARGETED MAXIMUM CONSIDERED EARTHQUAKE (MCE_R) GROUND MOTION RESPONSE ACCELERATIONS FOR THE CONTERMINOUS UNITED STATES OF 0.2-SECOND SPECTRAL RESPONSE ACCELERATION (5% OF CRITICAL DAMPING), SITE CLASS B

(Existing code change figure not shown for clarity)

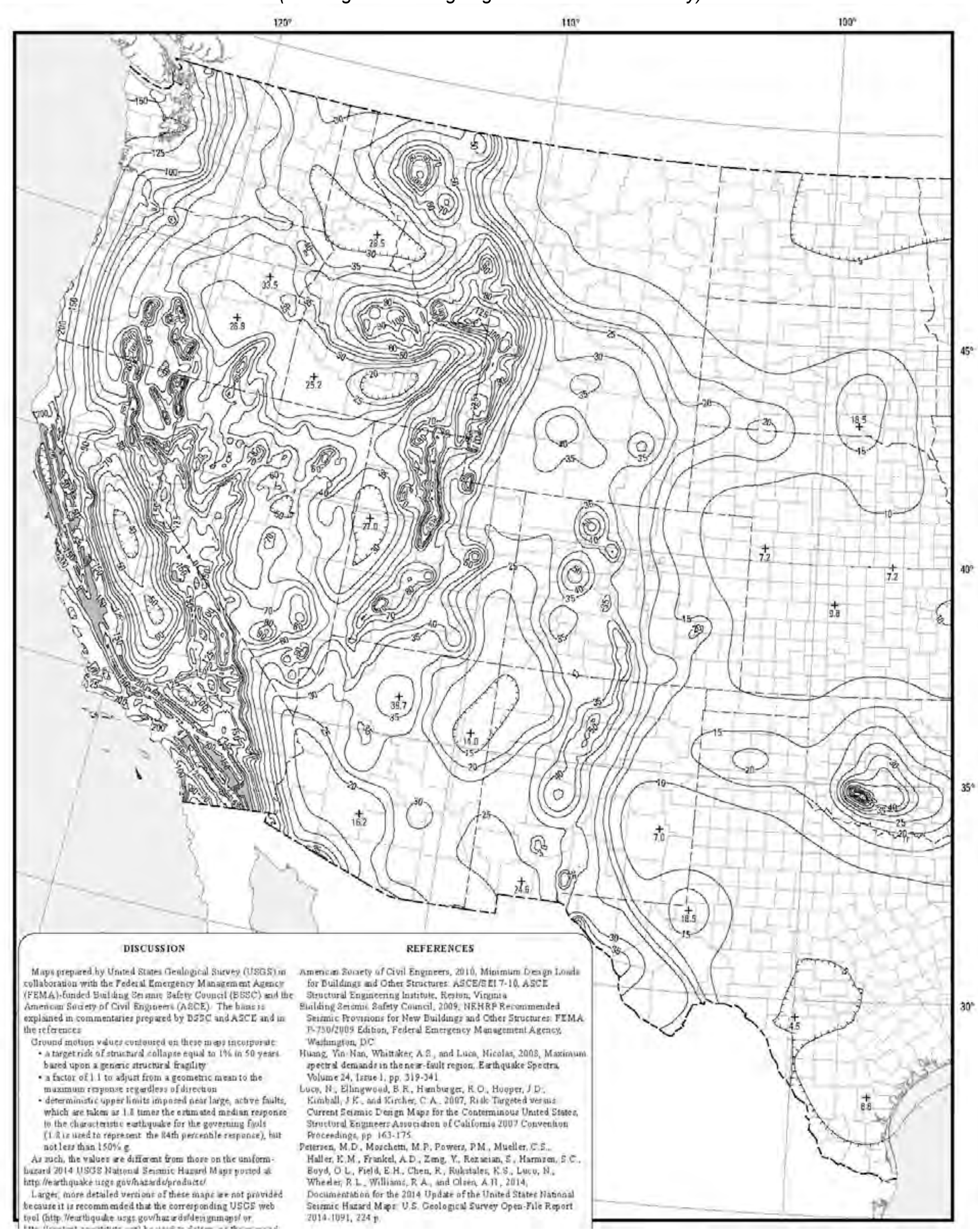


FIGURE ~~1613.3.1~~ 1613.3.1(1)-2 (1)
RISK-TARGETED MAXIMUM CONSIDERED EARTHQUAKE (MCE_R) GROUND MOTION RESPONSE ACCELERATIONS FOR THE CONTERMINOUS UNITED STATES OF 0.2-SECOND SPECTRAL RESPONSE ACCELERATION (5% OF CRITICAL DAMPING), SITE CLASS B

(Existing code change figure not shown for clarity)

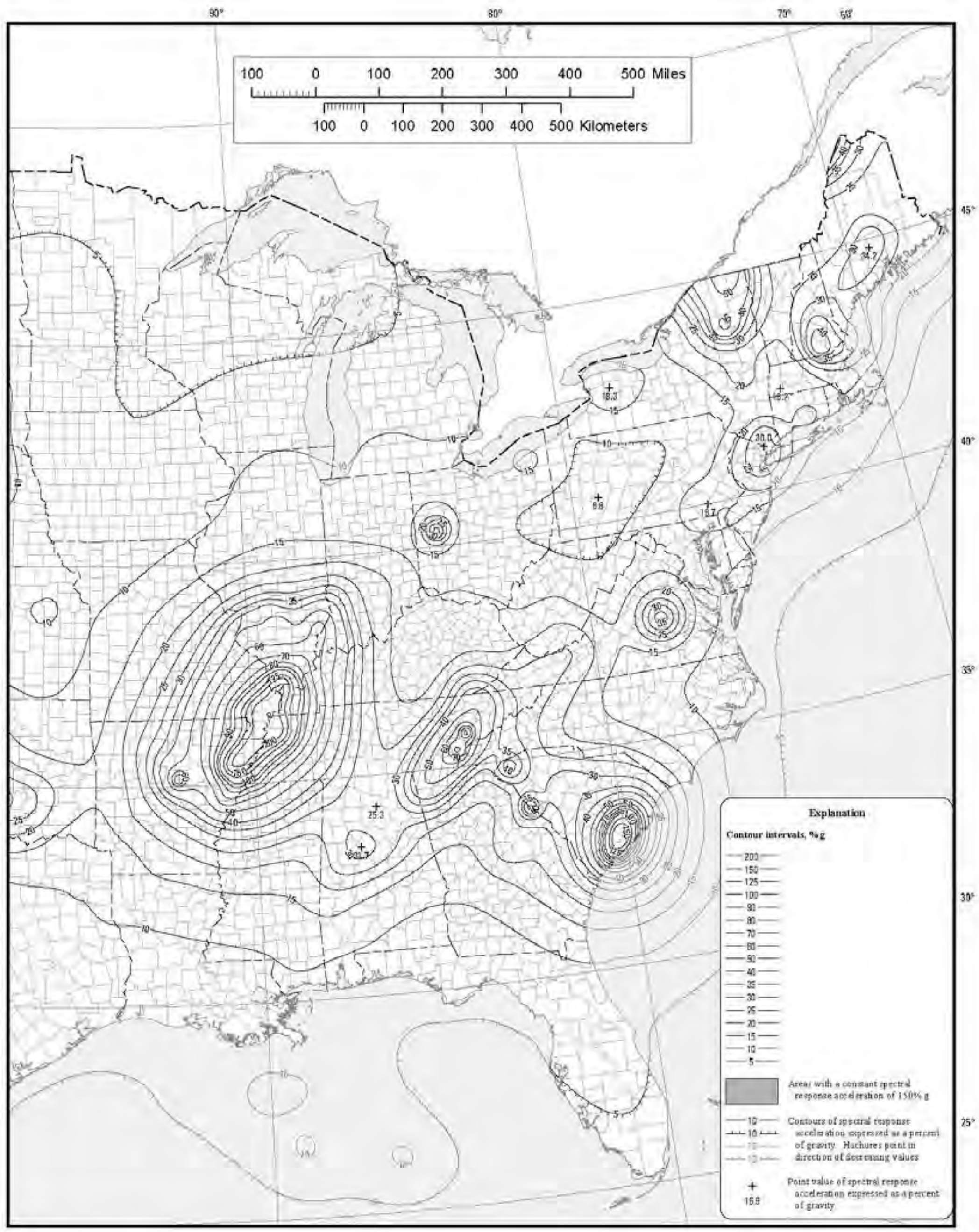


Figure 1613.3.1(1)-continued Risk-Targeted Maximum Considered Earthquake (MCE_R) Ground Motion Response Accelerations for the Conterminous United States of 0.2-Second Spectral Response Acceleration (5% of Critical Damping), Site Class B

FIGURE ~~1613.3.1~~1613.3.1(2)-1 (2)
RISK-TARGETED MAXIMUM CONSIDERED EARTHQUAKE (MCE_R) GROUND MOTION RESPONSE ACCELERATIONS FOR THE CONTERMINOUS UNITED STATES OF 1-SECOND SPECTRAL RESPONSE ACCELERATION (5% OF CRITICAL DAMPING), SITE CLASS B

(Existing code change figure not shown for clarity)

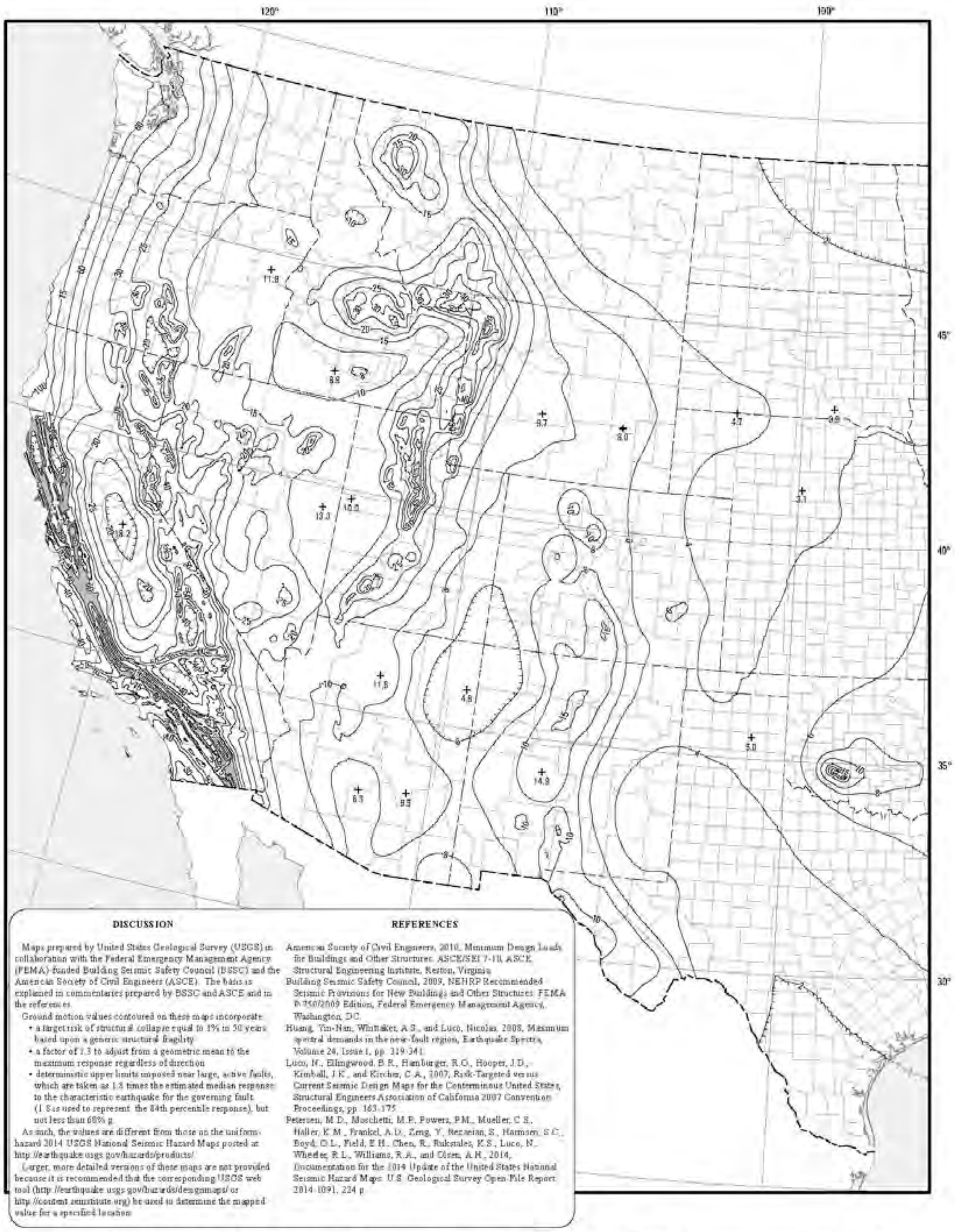


Figure 1613.3.1(2) Risk-Targeted Maximum Considered Earthquake (MCE_R) Ground Motion Response Accelerations for the Conterminous United States of 1-Second Spectral Response Acceleration (5% of Critical Damping), Site Class B *(continued)*

FIGURE ~~1613.3.1~~1613.3.1(2)-22 (2)
RISK-TARGETED MAXIMUM CONSIDERED EARTHQUAKE (MCE_R) GROUND MOTION RESPONSE ACCELERATIONS FOR THE CONTERMINOUS UNITED STATES OF 1-SECOND SPECTRAL RESPONSE ACCELERATION (5% OF CRITICAL DAMPING), SITE CLASS B

(Existing code change figure not shown for clarity)

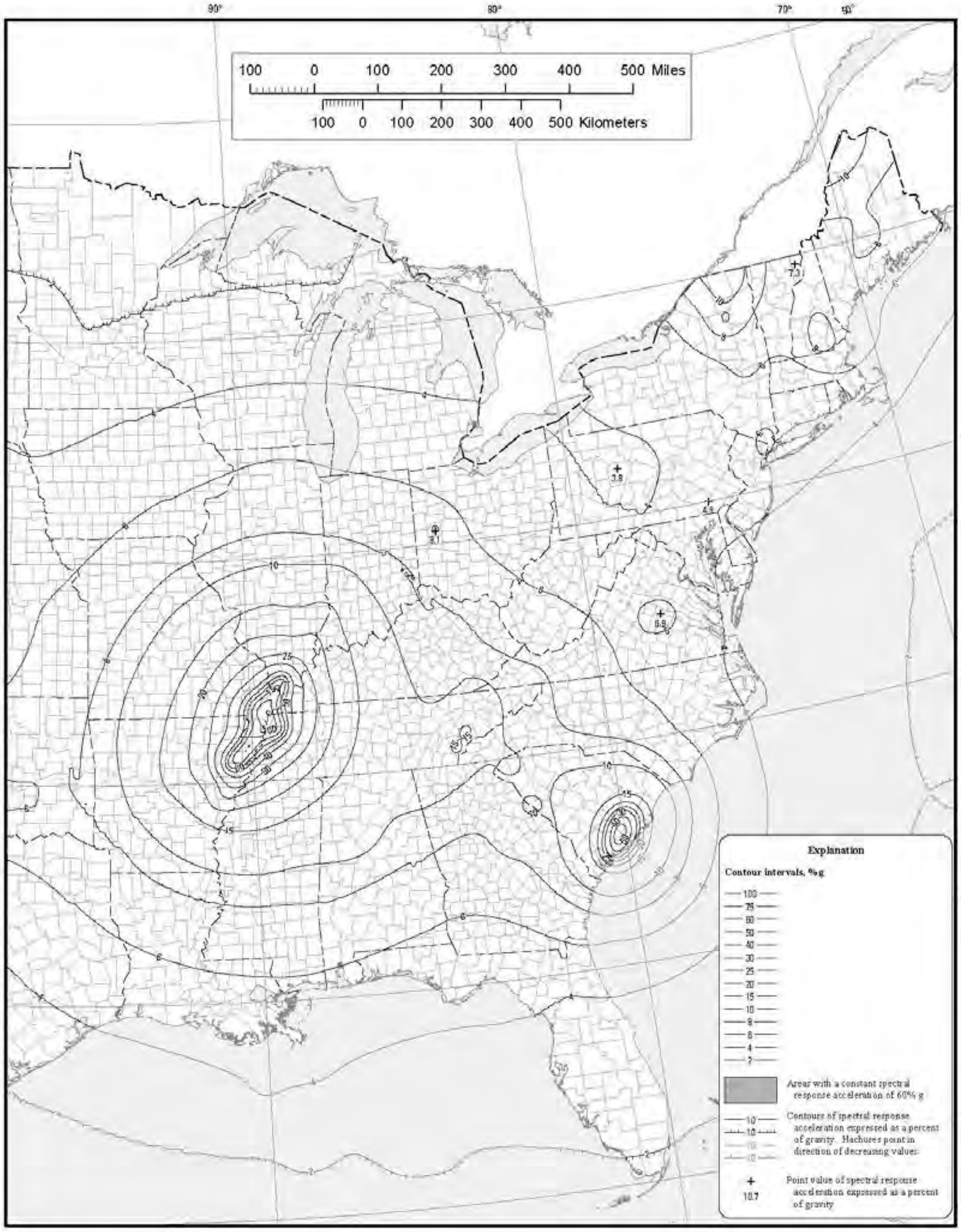


Figure 1613.3.1(2)-continued Risk-Targeted Maximum Considered Earthquake (MCE_R) Ground Motion Response Accelerations for the Conterminous United States of 1-Second Spectral Response Acceleration (5% of Critical Damping), Site Class B

FIGURE ~~1613.3.1~~1613.3.1(8) (8)
RISK-TARGETED MAXIMUM CONSIDERED EARTHQUAKE (MCE_R) GROUND MOTION RESPONSE ACCELERATIONS FOR AMERICAN SAMOA OF 0.2- AND 1-SECOND SPECTRAL RESPONSE ACCELERATION (5% OF CRITICAL DAMPING), SITE CLASS B

(Existing code change figure not shown for clarity)

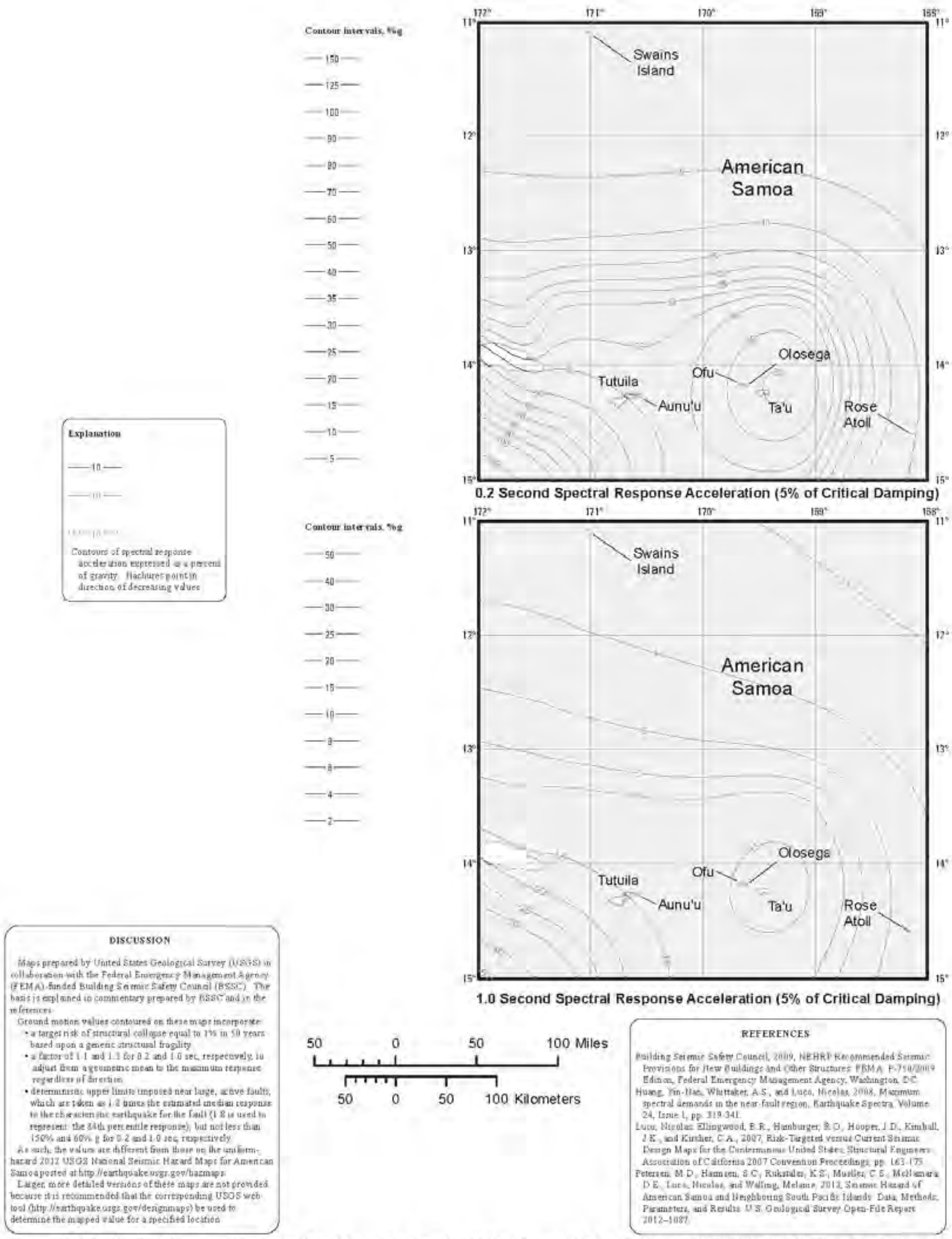


Figure 1613.3.1(8) Risk-Targeted Maximum Considered Earthquake (MCE_R) Ground Motion Response Accelerations for American Samoa of 0.2- and 1-Second Spectral Response Acceleration (5% of Critical Damping), Site Class B

Reason: This proposal incorporates the most recent seismic design maps prepared by the U.S. Geological Survey (USGS) in collaboration with the Federal Emergency Management Agency (FEMA) and the Building Seismic Safety Council (BSSC). The proposed maps are consistent with those incorporated into the NEHRP Provisions (FEMA P-1050-1, 2015) and ASCE 7-16. The proposed maps incorporate significant new information on earthquake faults and ground motion attenuation, and are more consistent with the site-specific ground motion procedures of ASCE 7-16 Chapter 21. Technical reasons behind the changes are documented in FEMA P-1050-1, Section C22. Further documentation is provided in Luco et al. (2015) and companion papers in a special issue of *Earthquake Spectra* (2015).

Bibliography: [NEHRP Recommended Seismic Provisions for New Buildings and Other Structures] [FEMA P-1050-1] [Building Seismic Safety Council] [2015] [483-495]
[https://www.fema.gov/media-library/assets/documents/107646]
[Earthquake Spectra] [Updates to Building-Code Maps for the 2015 NEHRP Recommended Seismic Provisions] [Luco, N, Bachman, R.e., Crouse, C.B., Harris, J.R., Hooper, J.D., Kircher, C.A., Caldwell, P.J., and Rukstales, K.S.] [2015] [Volume 31, pages S245-S271]

Cost Impact: Will increase the cost of construction
Use of the proposed maps can result in modest increases OR decreases in overall construction cost depending on the grographic location. Because the cost of structural systems is generally a small portion of the overall construction cost, the overall impact, whether increase or decrease, is thought to be quite modest.

Analysis: Coordinated code change proposal for the IRC is RB17-16.

Report of Committee Action Hearings

Committee Action: **Approved as Modified**

Modify as follows:

FIGURE 1613.3.1(1)-1 (1)
RISK-TARGETED MAXIMUM CONSIDERED EARTHQUAKE (MCE_R) GROUND MOTION RESPONSE ACCELERATIONS FOR THE CONTERMINOUS UNITED STATES OF 0.2-SECOND SPECTRAL RESPONSE ACCELERATION (5% OF CRITICAL DAMPING)~~, SITE CLASS B~~

FIGURE 1613.3.1(1)-2 (1)
RISK-TARGETED MAXIMUM CONSIDERED EARTHQUAKE (MCE_R) GROUND MOTION RESPONSE ACCELERATIONS FOR THE CONTERMINOUS UNITED STATES OF 0.2-SECOND SPECTRAL RESPONSE ACCELERATION (5% OF CRITICAL DAMPING)~~, SITE CLASS B~~

FIGURE 1613.3.1(2)-1 (2)
RISK-TARGETED MAXIMUM CONSIDERED EARTHQUAKE (MCE_R) GROUND MOTION RESPONSE ACCELERATIONS FOR THE CONTERMINOUS UNITED STATES OF 1-SECOND SPECTRAL RESPONSE ACCELERATION (5% OF CRITICAL DAMPING)~~, SITE CLASS B~~

FIGURE 1613.3.1(2)-~~22~~2 (2)
RISK-TARGETED MAXIMUM CONSIDERED EARTHQUAKE (MCE_R) GROUND MOTION RESPONSE ACCELERATIONS FOR THE CONTERMINOUS UNITED STATES OF 1-SECOND SPECTRAL RESPONSE ACCELERATION (5% OF CRITICAL DAMPING)~~, SITE CLASS B~~

FIGURE 1613.3.1 (3)
RISK-TARGETED MAXIMUM CONSIDERED EARTHQUAKE (MCE_R) GROUND MOTION RESPONSE ACCELERATIONS FOR HAWAII OF 0.2- AND 1-SECOND SPECTRAL RESPONSE ACCELERATION (5% OF CRITICAL DAMPING)~~, SITE CLASS B~~

FIGURE 1613.3.1 (4)
RISK-TARGETED MAXIMUM CONSIDERED EARTHQUAKE (MCE_R) GROUND MOTION RESPONSE ACCELERATIONS FOR ALASKA OF 0.2-SECOND SPECTRAL RESPONSE ACCELERATION (5% OF CRITICAL DAMPING)~~, SITE CLASS B~~

FIGURE 1613.3.1 (6)
RISK-TARGETED MAXIMUM CONSIDERED EARTHQUAKE (MCE_R) GROUND MOTION RESPONSE ACCELERATIONS FOR PUERTO RICO AND THE UNITED STATES VIRGIN ISLANDSOF 0.2- AND 1-SECOND SPECTRAL RESPONSE ACCELERATION (5% OF CRITICAL DAMPING)~~, SITE CLASS B~~

FIGURE 1613.3.1 (7)
RISK-TARGETED MAXIMUM CONSIDERED EARTHQUAKE (MCE_R) GROUND MOTION RESPONSE ACCELERATIONS

FOR GUAM AND THE NORTHERN MARIANA ISLANDS OF 0.2- AND 1-SECOND SPECTRAL RESPONSE ACCELERATION (5% OF CRITICAL DAMPING)~~, SITE CLASS B~~

FIGURE 1613.3.1(8) (8)
RISK-TARGETED MAXIMUM CONSIDERED EARTHQUAKE (MCE_R) GROUND MOTION RESPONSE ACCELERATIONS FOR AMERICAN SAMOA OF 0.2- AND 1-SECOND SPECTRAL RESPONSE ACCELERATION (5% OF CRITICAL DAMPING)~~, SITE CLASS B~~

Committee Reason: This code change updates the IBC earthquake ground mortion maps to provide consistency with the latest edition of the referenced standard, ASCE 7, which was update in ADM94-16. The modification corrects the map titles by deleting "site class B".

Assembly Action **None**

Final Action Results

S119-16	**AM**

Back

Code Change No: S124-16

Original Proposal

Section: 1613.6

Proponent: Joseph Cain, SunEdison, representing Solar Energy Industries Association (SEIA) (joecainpe@aol.com)

Revise as follows:

1613.6 Ballasted photovoltaic panel systems. Ballasted, roof-mounted *photovoltaic panel systems* need not be rigidly attached to the roof or supporting structure. Ballasted non-penetrating systems shall be designed and installed only on roofs with slopes not more than one unit vertical in 12 units horizontal. Ballasted nonpenetrating systems shall be designed to resist sliding and uplift resulting from lateral and vertical forces as required by Section 1605, using a coefficient of friction determined by acceptable engineering principles. In structures assigned to *Seismic Design Category* C, D, E or F, ballasted nonpenetrating systems shall be designed to accommodate seismic displacement determined by ~~nonlinear response-history~~ *approved* analysis or shake-table testing, using input motions consistent with ASCE 7 lateral and vertical seismic forces for nonstructural components on roofs.

Reason: When preparing structural analysis to justify a ballasted, nonpenetrating photovoltaic panel system, nonlinear response-history analysis is just one option. For example, the method developed by the Structural Engineers Association of California is a simplified displacement method. This method is incorporated in the draft of ASCE 7-16, which is under development. The revision to allow approved analysis is consistent with the 2013 California Building Code, as approved by the California Building Standards Commission.

Bibliography: California Building Code, Part 2, CBSC, 2013, Page #47
http://codes.iccsafe.org/app/book/content/PDF/2013/2013%20California/13Building/PDFs/Chapter%2016%20-%20Structural%20Design.pdf

Cost Impact: Will not increase the cost of construction
This proposal will allow more flexibility in choosing a method of analysis for justifying ballasted, unattached rooftop PV systems. Engineering cost will be the same or less. Cost of construction will be the same or less.

Report of Committee Action Hearings

Committee Action: **Approved as Modified**

Modify as follows:

1613.6 Ballasted photovoltaic panel systems. Ballasted, roof-mounted *photovoltaic panel systems* need not be rigidly attached to the roof or supporting structure. Ballasted non-penetrating systems shall be designed and installed only on roofs with slopes not more than one unit vertical in 12 units horizontal. Ballasted nonpenetrating systems shall be designed to resist sliding and uplift resulting from lateral and vertical forces as required by Section 1605, using a coefficient of friction determined by acceptable engineering principles. In structures assigned to *Seismic Design Category* C, D, E or F, ballasted nonpenetrating systems shall be designed to accommodate seismic displacement determined by nonlinear response-history or other *approved* analysis, or shake-table testing, using input motions consistent with ASCE 7 lateral and vertical seismic forces for nonstructural components on roofs.

Committee Reason: This proposal will add an option for "other approved analysis" methods. The modification retains the specific reference to "nonlinear response history" analysis.

Assembly Action **None**

Final Action Results

S124-16	**AM**

Back

Code Change No: S126-16

Original Proposal

Section: 1615.1

Proponent: Edwin Huston, representing National Council of Structural Engineers' Associations (NCSEA) (huston@smithhustoninc.com)

Revise as follows:

1615.1 General. *High-rise buildings* that are assigned to *Risk Category* III or IV shall comply with the requirements of ~~this section. Frame~~ Section 1615.3 if they are frame structures ~~shall comply with the requirements of~~, or Section ~~1615.3. Bearing~~1615.4 if they are bearing wall structures ~~shall comply with the requirements of Section 1615.4~~.

Reason: As currently written, one could mistakenly interpret that all of section 1615.1 applies to all *High-rise buildings* that are assigned to *Risk Category* III or IV. That is incorrect. Only section 1615.3 or 1615.4 apply based on the type of structure for such buildings. In addition, as currently written, one could mistakenly interpret that Section 1615.3 applies to all frame structures and that Section 1615.4 applies to all bearing wall structures. That also is incorrect, and when these provisions were added into the IBC, the requirements of 1615.3 were to apply to frame structures that were *High-rise buildings* and that were assigned to *Risk Category* III or IV. Likewise the requirements of 1615.4 were to apply to bearing wall structures that were *High-rise buildings* and that were assigned to *Risk Category* III or IV. This proposed change corrects the section to be consistent with the intent and clarifies the provisions. A designer or owner still has the option to apply these provisions to other buildings in other risk categories, but it would not be required.

Cost Impact: Will not increase the cost of construction
The cost of construction will not increase by clarifying the provisions of 1615.1, and the clarification could decrease cost due to misinterpretation.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: Agreement with the proponent's reason, indicating that this editorial change clarifies the applicability of these provisions to bearing wall structures and frame structures.

Assembly Action **None**

Final Action Results

S126-16 **AS**

Back

Code Change No: S131-16

Original Proposal

Section: 1704.2.5, 1704.2.5.1, 1704.5

Proponent: Bonnie Manley, AISI, representing American Institute of Steel Construction (bmanley@steel.org)

Revise as follows:

1704.2.5 Special inspection of fabricated items. Where fabrication of structural, load-bearing or lateral load-resisting members or assemblies is being conducted on the premises of a fabricator's shop, *special inspections* of the *fabricated items* shall be performed during fabrication, except where the fabricator has been approved by the *building official* to perform work without *special inspections* in accordance with 1704.2.5.1.

Exceptions~~:~~

1. ~~Special inspections during fabrication are not required where the fabricator maintains approved detailed fabrication and quality control procedures that provide a basis for control of the workmanship and the fabricator's ability to conform to approved construction documents and this code. Approval shall be based upon review of fabrication and quality control procedures and periodic inspection of fabrication practices by the building official.~~
2. ~~Special inspections are not required where the fabricator is registered and approved in accordance with Section 1704.2.5.1.~~

1704.2.5.1 Fabricator approval. *Special inspections* during fabrication are not required where the work is done on the premises of a fabricator ~~registered and~~ approved to perform such work without *special inspection*. Approval shall be based upon review of the fabricator's written ~~procedural~~ fabrication procedures and quality control manuals that provide a basis for control of materials and workmanship, with periodic auditing of fabrication and quality control practices by an *approved agency* or by the ~~approved agency~~ *building official*. At completion of fabrication, the *approved* fabricator shall submit a *certificate of compliance* to the owner or the owner's authorized agent for submittal to the *building official* as specified in Section 1704.5 stating that the work was performed in accordance with the *approved construction documents*.

1704.5 Submittals to the building official. In addition to the submittal of reports of *special inspections* and tests in accordance with Section 1704.2.4, reports and certificates shall be submitted by the owner or the owner's authorized agent to the *building official* for each of the following:

1. *Certificates of compliance* for the fabrication of structural, load-bearing or lateral load-resisting members or assemblies on the premises of ~~a registered and~~ an *approved fabricator* in accordance with Section 1704.2.5.1.
2. *Certificates of compliance* for the seismic qualification of nonstructural components, supports and attachments in accordance with Section 1705.13.2.
3. *Certificates of compliance* for *designated seismic systems* in accordance with Section 1705.13.3.
4. Reports of preconstruction tests for shotcrete in accordance with Section 1908.5.
5. *Certificates of compliance* for open web steel joists and joist girders in accordance with Section 2207.5.

6. Reports of material properties verifying compliance with the requirements of AWS D1.4 for weldability as specified in Section 26.6.4 of ACI 318 for reinforcing bars in concrete complying with a standard other than ASTM A 706 that are to be welded; and
7. Reports of mill tests in accordance with Section 20.2.2.5 of ACI 318 for reinforcing bars complying with ASTM A 615 and used to resist earthquake-induced flexural or axial forces in the special moment frames, special structural walls or coupling beams connecting special structural walls of *seismic force-resisting systems* in *structures* assigned to *Seismic Design Category* B, C, D, E or F.

Reason: The primary purpose of this proposal is to streamline and focus the provisions for fabricator approval. Section 1704.2.5, Exception 1 and Section 1704.2.5.1 provide almost identical paths for obtaining fabricator approval, with only slight differences in presentation. Trying to discern the subtle differences can often prove frustrating to the user. So, the proposed modification consolidates Section 1704.2.5 Exception 1 with 1704.2.5.1. Now extraneous, Section 1704.2.5 Exception 2 is recommended for deletion.

Additional modifications to the section include deleting the term "registered" from the applicable sections. It is not a defined term in the IBC for fabricators, so its true intent is open to interpretation. The proposal also adds a reference to material control, which typically refers to the general oversight of the materials by the fabricator and involves procedures for storage, release and movement of materials throughout the fabrication processes. Finally, the proposal adds requirements for periodic auditing of quality control practices in addition to the auditing of fabrication practices. It seems reasonable to add auditing of the quality control practices, since initial approval is based upon review of both the written fabrication procedures and quality control manuals.

Cost Impact: Will not increase the cost of construction
This modification is primarily editorial and is not intended to have a significant impact on current costs.

Report of Committee Action Hearings

Committee Action: **Approved as Modified**

Modify as follows:

1704.2.5 Special inspection of fabricated items. Where fabrication of structural, load-bearing or lateral load-resisting members or assemblies is being conducted on the premises of a fabricator's shop, *special inspections* of the *fabricated items* shall be performed during fabrication, except where the fabricator has been approved ~~by the *building official*~~ to perform work without *special inspections* in accordance with 1704.2.5.1

Committee Reason: Agreement with the proponent's reason which indicates that this is an editorial proposal that simplifies the fabricator approval requirements. The modification removes unnecessary wording.

Assembly Action **None**

Final Action Results

S131-16 **AM**

Back

Code Change No: S133-16

Original Proposal

Section: 1704.6, 1704.6.1, 1704.6.1 (New), 1704.6.2

Proponent: Gregory Robinson, representing National Council of Structural Engineers Associations (grobinson@lbyd.com)

Revise as follows:

1704.6 Structural observations. Where required by the provisions of Section 1704.6.1, 1704.6.2 or ~~1704.6.2~~ 1704.6.3, the owner or the owner's authorized agent shall employ a *registered design professional* to perform structural observations. Structural observation does not include or waive the responsibility for the inspections in Section 110 or the *special inspections* in Section 1705 or other sections of this code.

Prior to the commencement of observations, the structural observer shall submit to the *building official* a written statement identifying the frequency and extent of structural observations.

At the conclusion of the work included in the permit, the structural observer shall submit to the *building official* a written statement that the site visits have been made and identify any reported deficiencies that, to the best of the structural observer's knowledge, have not been resolved.

Add new text as follows:

1704.6.1 Structural observations for structures. Structural observations shall be provided for those structures where one or more of the following conditions exist:

1. The structure is classified as *Risk Category IV.*
2. The structure is a *high-rise building*.
3. The structure has an occupant load of more than 1000.
4. When so designated by the *registered design professional* responsible for the structural design.
5. When such observation is specifically required by the *building official*.

Revise as follows:

~~1704.6.1~~ 1704.6.2 Structural observations for seismic resistance. Structural observations shall be provided for those structures assigned to *Seismic Design Category* D, E or F where one or more of the following conditions exist:

1. The structure is classified as *Risk Category* III or IV.
2. The height of the structure is greater than 75 feet (22 860 mm) above the base as defined in ASCE 7.
3. The structure is assigned to *Seismic Design Category* E, is classified as *Risk Category* I or II, and is greater than two ~~stories above~~ stories above the *grade plane*.
4. ~~When so designated by the *registered design professional* responsible for the structural design.~~
5. ~~When such observation is specifically required by the *building official*.~~

~~1704.6.2~~ 1704.6.3 Structural observations for wind ~~requirements~~ resistance. ~~Structural observations shall be provided for those structures sited where~~ *Structural observations shall be provided for those* *structures sited where* $V_{\text{~~asd~~ult}}$ ~~as determined in accordance with Section 1609.3.1 exceeds 110 mph~~is 130mph (~~49~~58 m/sec) or greater, where one or more of the following conditions exist:

1. The structure is classified as *Risk Category* III or IV.
2. ~~The *building height* is greater than 75 feet (22 860 mm).~~
3. ~~When so designated by the *registered design professional* responsible for the structural design.~~
4. ~~When such observation is specifically required by the *building official*.~~
2. The height of the structure is greater than 75 feet (22 860 mm) above the *grade plane*.

Reason: Currently the code requires structural observation only in the limited situations of tall buildings or higher risk category structures located in high seismic and wind areas. It is the opinion of the National Council of Structural Engineers Associations that structural observation should be required for all large, or important, buildings anywhere in the country. It is well established that the quality of construction is increased when the engineer who designed the structure can verify that key construction conditions are in conformance with the design intent. Structural observation is meant to augment the detailed inspection provided by the special inspectors. It should be required wherever the consequence of structural failure is greater by virtue of complexity, size, occupancy, or risk.

Currently, a 7 story office building in San Francisco would require structural observation but a 60 story highrise or a 40000 seat stadium in New York would not. This proposal is intended to increase public safety by requiring that all similar structures are afforded the benefit of structural observation, not just the ones at risk of earthquakes or hurricanes. Therefore, Section 1704.6.1 is added for large or high risk buildings anywhere in the US.

In addition, the last word of the Wind section is changed to "resistance" to match the Seismic Section. Also in the Wind section, "building height" is changed to "height of structure" to match the Seismic section and to allow it to apply to all structures, not just buildings the same as the Seismic section.

In the Wind section, the wind speed trigger is changed to 130 MPH to match the current factored level of wind forces.

Cost Impact: Will not increase the cost of construction
The code change proposal will not increase the cost of construction. The may be a small increase to design fees if engineers request fee to cover this added service. However, it is generally held by many structural engineers that requirements stipulated by the building code will viewed as within the normal scope of services therefore it is not anticipated that there will be a general increase in engineering fees resulting from this proposal.

Report of Committee Action Hearings

Committee Action: **Approved as Modified**

Modify as follows:

1704.6.1 Structural observations for structures. Structural observations shall be provided for those structures where one or more of the following conditions exist:

1. The structure is classified as *Risk Category IV.*
2. The structure is a *high-rise building*.
3. ~~The structure has an occupant load of more than 1000.~~
4. When so designated by the *registered design professional* responsible for the structural design.
5. When such observation is specifically required by the *building official*.

1704.6.2 Structural observations for seismic resistance. Structural observations shall be provided for those structures assigned to *Seismic Design Category* D, E or F where one or more of the following conditions exist:

1. The structure is classified as *Risk Category* III or IV.
2. ~~The height of the structure is greater than 75 feet (22 860 mm) above the base as defined in ASCE 7.~~
3. The structure is assigned to *Seismic Design Category* E, is classified as *Risk Category* I or II, and is greater than two stories above the *grade plane*.

1704.6.3 Structural observations for wind resistance. *Structural observations shall be provided for those structures sited where* V_{ult} is 130mph (58 m/sec) or greater, where one or more of the following conditions exist:

1. The structure is classified as *Risk Category* III or IV.
2. ~~The height of the structure is greater than 75 feet (22 860 mm) above the grade plane.~~

Committee Reason: The committee believes structural observation is important to design and construction and it is good for the design engineer to see and inspect the actual construction. These requirements should not create enforcement issues, but costs will be impacted. The modifications remove structural observation thresholds that are based on occupant load and the building height.

Assembly Action **None**

Final Action Results

S133-16	**AM**

Back

Code Change No: S135-16

Original Proposal

Section: 1705.2

Proponent: Bonnie Manley, AISI, representing American Institute of Steel Construction (bmanley@steel.org)

Revise as follows:

1705.2 Steel construction. The *special inspections* and nondestructive testing of steel construction in buildings, structures, and portions thereof shall be in accordance with this section.

> **Exception:** *Special inspections* of the steel fabrication process shall not be required where the ~~fabricator~~ fabrication process for the entire building or structure does not ~~perform~~ include any welding, thermal cutting or heating operation of any kind ~~as part of the fabrication process~~. In such cases, the fabricator shall be required to submit a detailed procedure for material control that demonstrates the fabricator's ability to maintain suitable records and procedures such that, at any time during the fabrication process, the material specification and grade for the main stress-carrying elements are capable of being determined. Mill test reports shall be identifiable to the main stress-carrying elements when required by the *approved construction documents*.

Reason: Because of the adoption of comprehensive quality assurance requirements for steel construction, through reference to AISC 360 Chapter N for example, this exception needs to be tightened considerably. The proposed modification focuses the exception on a full "project" rather than on individual "structural steel elements" . For entire projects that do not require any thermal cutting (such as beam copes), heat cambering, or welding (essentially no base plates), but need just plain material or simple bolted construction, this exception continues to waive special inspection and submittal of certificates of compliance. This exception, as now amended, would have limited use for very simple, small projects.

Cost Impact: Will increase the cost of construction
This may increase the cost of construction where the exception was improperly implemented previously. However, it is really intended to be editorial in nature.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: Agreement with the proponent's reason which indicates this is a needed tightening of the exception to focus on the entire project rather than individual steel elements.

Assembly Action **None**

Final Action Results

S135-16	**AS**

Back

Code Change No: S145-16

Original Proposal

Section: 1705.11.1

Proponent: Randy Shackelford (rshackelford@strongtie.com)

Revise as follows:

1705.11.1 Structural wood. *Continuous special inspection* is required during field gluing operations of elements of the main windforce-resisting system. *Periodic special inspection* is required for nailing, bolting, anchoring and other fastening of elements of the main windforce-resisting system, including wood shear walls, wood diaphragms, drag struts, braces and hold-downs.

> **Exception:** *Special inspections* are not required for wood shear walls, shear panels and diaphragms, including nailing, bolting, anchoring and other fastening to other elements of the main windforce-resisting system, where the fastener spacing of the sheathing is more than 4 inches (102 mm) on center <u>and fasteners are installed in a single row</u>.

Reason: This proposal is meant to clarify when special inspection is required for shearwalls. It is possible that the designer may specify two rows of nails at 6" o.c. in an effort to circumvent the special inspection process.

In addition, there are types of wood-framed shearwals that are designed to resist both shear and wind uplift, that use nails in multiple rows. Special inspection of shearwalls that resist both shear and uplift from wind are particularly important because this single system is being used as the main wind-force resisting system in both primary directions.

I believe the intent of this section is to require special inspection of any nail spacing at 4" o.c. or less without regard to whether the nails are staggered or not, but this change will make sure it is interpreted that way.

Bibliography: These standards have requirements for nails in multiple rows for shearwalls resisting both shear and wind uplift:
Special Design Provisions for Wood Construction (ANSI/AWC SDPWS-2015), American Wood Council, 2015, Page 39, Section 4.4.

www.awc.org

Wood Frame Construction Manual (ANSI/AWC WFCM-2015), American Wood Council, 2015, Page 130, Figure 3.2f
www.awc.org

Cost Impact: Will increase the cost of construction
It is possible that this proposal could increase the cost of construction if a designer were specifying fasteners in two rows at 6" o.c. in an effort to avoid special inspection. The additional cost would be the cost of special inspection, but this cost would be incurred only if no other triggers for special inspection were met.

This additional cost is justified by the fact that this system is acting as both the lateral force resisting system and the uplift force resisting system.

But I believe the intent of this section is to require the special inspection using the nail spacing regardless of staggering in rows. In this case, there would be no increase in construction.

Cost Impact: Will not increase the cost of construction
The code change proposal will not increase the cost of construction. The may be a small increase to design fees if engineers request fee to cover this added service. However, it is generally held by many structural engineers that requirements stipulated by the building code will viewed as within the normal scope of services therefore it is not anticipated that there will be a general increase in engineering fees resulting from this proposal.

Report of Committee Action Hearings

Committee Action: **Approved as Modified**

Modify as follows:

1705.11.1 Structural wood. *Continuous special inspection* is required during field gluing operations of elements of the main windforce-resisting system. *Periodic special inspection* is required for nailing, bolting, anchoring and other fastening of elements of the main windforce-resisting system, including wood shear walls, wood diaphragms, drag struts, braces and hold-downs.

> **~~Exception~~:** *Special inspections* are not required for wood shear walls, shear panels and diaphragms, including nailing, bolting, anchoring and other fastening to other elements of the main windforce-resisting system, where the specified fastener spacing ~~of the sheathing~~ at panel edges is more than 4 inches (102 mm) on center ~~and fasteners are installed in a single row~~.

Committee Reason: By clarifying the exception, this code change helps determine where special inspection of the mainwindforce-resisting system is required. The modification substitutes more suitable wording to accomplish the intent of the code change.

Assembly Action **None**

Final Action Results

S145-16	**AM**

Back

Code Change No: S146-16

Original Proposal

Section(s): 1705.12.1.1, 1705.12.1.2, 1705.13.1.1, 1705.13.1.2

Proponent: Bonnie Manley, AISI, representing American Institute of Steel Construction (bmanley@steel.org)

Revise as follows:

1705.12.1.1 Seismic force-resisting systems. *Special inspections* of structural steel ~~in the~~ seismic force-resisting systems ~~of~~ in buildings and structures assigned to *Seismic Design Category* B, C, D, E or F shall be performed in accordance with the quality assurance requirements of AISC 341.

> ~~**Exception:** Special inspections are not required in the seismic force-resisting systems of buildings and structures assigned to Seismic Design Category B or C that are not specifically detailed for seismic resistance, with a response modification coefficient, R, of 3 or less, excluding cantilever column systems.~~

> **Exceptions:**
>
> 1. In buildings and structures assigned to *Seismic Design Category* B or C, *special inspections* are not required for structural steel seismic force-resisting systems where the response modification coefficient, R, designated for "Steel systems not specifically detailed for seismic resistance, excluding cantilever column systems" in ASCE 7, Table 12.2-1 has been used for design and detailing.
> 2. In buildings and structures assigned to *Seismic Design Category* D, E, or F, *special inspections* are not required for structural steel seismic force-resisting systems where design and detailing in accordance with AISC 360 is permitted by ASCE 7, Table 15.4-1.

1705.12.1.2 Structural steel elements. *Special inspections* of *structural steel elements* in the seismic force-resisting systems of buildings and structures assigned to *Seismic Design Category* B, C, D, E or F other than those covered in Section 1705.12.1.1, including struts, collectors, chords and foundation elements, shall be performed in accordance with the quality assurance requirements of AISC 341.

> **Exception**~~: Special inspections of structural steel elements are not required in the seismic force-resisting systems of buildings and structures assigned to Seismic Design Category B or C with a response modification coefficient, R, of 3 or less.~~

> **Exceptions:**
>
> 1. In buildings and structures assigned to *Seismic Design Category* B or C, *special inspections* of *structural steel elements* are not required for seismic force-resisting systems with a response modification coefficient, R, of 3 or less.
> 2. In buildings and structures assigned to *Seismic Design Category* D, E, or F, *special inspections* are not required for seismic force-resisting systems where design and detailing other than AISC 341 is permitted by ASCE 7, Table 15.4-1. *Special inspection* shall be in accordance with the applicable reference standard listed in ASCE 7, Table 15.4-1.

1705.13.1.1 Seismic force-resisting systems. Nondestructive testing of structural steel ~~in the~~ seismic force-resisting systems ~~of~~ in buildings and structures assigned to *Seismic Design Category* B, C, D, E or F shall be performed in accordance with the quality assurance requirements of AISC 341.

> ~~**Exception:** Nondestructive testing is not required in the seismic force-resisting systems of buildings and structures assigned to Seismic Design Category B or C that are not specifically detailed for seismic resistance, with a response modification coefficient, R, of 3 or less, excluding cantilever column systems.~~

Exceptions:

1. In buildings and structures assigned to *Seismic Design Category* B or C, nondestructive testing is not required for structural steel seismic force-resisting systems where the response modification coefficient, R, designated for "Steel systems not specifically detailed for seismic resistance, excluding cantilever column systems" in ASCE 7, Table 12.2-1 has been used for design and detailing.
2. In buildings and structures assigned to *Seismic Design Category* D, E, or F, nondestructive testing is not required for structural steel seismic force-resisting systems where design and detailing in accordance with AISC 360 is permitted by ASCE 7, Table 15.4-1.

1705.13.1.2 Structural steel elements. Nondestructive testing of ~~structural steel elements~~ *structural steel elements* in the seismic force-resisting systems of buildings and structures assigned to *Seismic Design Category* B, C, D, E or F other than those covered in Section 1705.13.1.1, including struts, collectors, chords and foundation elements, shall be performed in accordance with the quality assurance requirements of AISC 341.

> **Exception**~~: Nondestructive testing of structural steel elements is not required in the seismic force-resisting systems of buildings and structures assigned to Seismic Design Category B or C with a response modification coefficient, R, of 3 or less.~~

Exceptions:

1. In buildings and structures assigned to *Seismic Design Category* B or C, nondestructive testing of *structural steel elements* is not required for seismic force-resisting systems with a response modification coefficient, R, of 3 or less.
2. In buildings and structures assigned to *Seismic Design Category* D, E, or F, nondestructive testing of *structural steel elements* is not required for seismic force-resisting systems where where design and detailing other than AISC 341 is permitted by ASCE 7, Table 15.4-1.Nondestructive testing of *structural steel elements* shall be in accordance with the applicable reference standard listed in ASCE 7, Table 15.4-1.

Reason: This proposal provides a needed clarification in the exceptions in these sections on special inspection and nondestructive testing for structural steel seismic force-resisting systems and for structural steel elements in other types of seismic force-resisting systems.

In buildings and structures assigned to SDC D, E or F, IBC Section 2205.2.1.2 recognizes a few structural steel seismic force-resisting systems in ASCE 7, Table 15.4-1 where detailing in accordance with AISC 360 is permitted in lieu of AISC 341. For these particular systems, it would be almost impossible to conduct special inspections and nondestructive testing in accordance with AISC 341 when they have not been detailed in accordance with AISC 341. The new second exception in Sections 1705.12.1.1 and 1705.13.1.1 recognizes this by permitting special inspection and nondestructive testing in accordance with AISC 360. Modifications to the first exception in both sections are simply editorially fixes of the existing exception so that it matches Section 2205.2.1.

In buildings and structures assigned to SDC D, E or F, IBC Section 2205.2.2 recognizes structural steel elements in seismic force-resisting systems in ASCE 7, Table 15.4-1 where detailing in accordance with AISC 341 is not required. For these particular systems, it would be almost impossible to conduct special inspections and nondestructive testing in accordance with AISC 341 when they have not been detailed in accordance with AISC 341. The new second exception in Sections 1705.12.1.2 and 1705.13.1.2 recognizes this by permitting special inspection and nondestructive testing in accordance with the applicable standard. Modifications to the first exception in both sections are simply editorially fixes of the existing exception so that it matches Section 2205.2.2.

Cost Impact: Will not increase the cost of construction
This proposal is intended to be a clarification of the provisions. No increase in the cost of construction is anticipated.

Report of Committee Action Hearings

Committee Action: Approved as Modified

Modify as follows:

1705.12.1.2 Structural steel elements. *Special inspections* of *structural steel elements* in the seismic force-resisting systems of buildings and structures assigned to *Seismic Design Category* B, C, D, E or F other than those covered in Section 1705.12.1.1, including struts, collectors, chords and foundation elements, shall be performed in accordance with the quality assurance requirements of AISC 341.

Exceptions:

1. In buildings and structures assigned to *Seismic Design Category* B or C, *special inspections* of *structural steel elements* are not required for seismic force-resisting systems with a response modification coefficient, R, of 3 or less.
2. In buildings and structures assigned to *Seismic Design Category* D, E, or F, *special inspections* of *structural steel elements* are not required for seismic force-resisting systems where design and detailing other than AISC 341 is permitted by ASCE 7, Table 15.4-1. *Special inspection* shall be in accordance with the applicable reference standard listed in ASCE 7, Table 15.4-1.

1705.13.1.2 Structural steel elements. Nondestructive testing of *structural steel elements* in the seismic force-resisting systems of buildings and structures assigned to *Seismic Design Category* B, C, D, E or F other than those covered in Section 1705.13.1.1, including struts, collectors, chords and foundation elements, shall be performed in accordance with the quality assurance requirements of AISC 341.

Exceptions:

1. In buildings and structures assigned to *Seismic Design Category* B or C, nondestructive testing of *structural steel elements* is not required for seismic force-resisting systems with a response modification coefficient, R, of 3 or less.
2. In buildings and structures assigned to *Seismic Design Category* D, E, or F, nondestructive testing of *structural steel elements* is not required for seismic force-resisting systems~~ where~~ where design and detailing other than AISC 341 is permitted by ASCE 7, Table 15.4-1.Nondestructive testing of *structural steel elements* shall be in accordance with the applicable reference standard listed in ASCE 7, Table 15.4-1.

Committee Reason: This proposal clarifies the special inspection of steel elements that resist seismic forces. The modification makes editorial corrections to the proposed wording.

Assembly Action: None

Public Comments

Public Comment 1:

Bonnie Manley, AISI, representing American Institute of Steel Construction (bmanley@steel.org) requests Approve as Modified by this Public Comment.

Further modify as follows:

1705.12.1.1 Seismic force-resisting systems. *Special inspections* of structural steel seismic force-resisting systems in buildings and structures assigned to *Seismic Design Category* B, C, D, E or F shall be performed in accordance with the quality assurance requirements of AISC 341.

Exceptions:

1. In buildings and structures assigned to *Seismic Design Category* B or C, *special inspections* are not required for structural steel seismic force-resisting systems where the response modification coefficient, R, designated for "Steel systems not specifically detailed for seismic resistance, excluding cantilever column systems" in ASCE 7, Table 12.2-1 has been used for design and detailing.
2. In ~~buildings and~~ structures assigned to *Seismic Design Category* D, E, or F, *special inspections* are not required for structural steel seismic force-resisting systems where design and detailing in accordance with AISC 360 is permitted by ASCE 7, Table 15.4-1.

1705.12.1.2 Structural steel elements. *Special inspections* of *structural steel elements* in the seismic force-resisting systems of buildings and structures assigned to *Seismic Design Category* B, C, D, E or F other than those covered in Section 1705.12.1.1, including struts, collectors, chords and foundation elements, shall be performed in accordance with the quality assurance requirements of AISC 341.

Exceptions:

1. In buildings and structures assigned to *Seismic Design Category* B or C, *special inspections* of *structural steel elements* are not required for seismic force-resisting systems with a response modification coefficient, R, of 3 or less.
2. In ~~buildings and~~ structures assigned to *Seismic Design Category* D, E, or F, *special inspection~~s~~* of *structural steel elements* are not required for seismic force-resisting systems where design and detailing other than AISC 341 is permitted by ASCE 7, Table 15.4-1. *Special inspection* shall be in accordance with the applicable reference standard listed in ASCE 7, Table 15.4-1.

1705.13.1.1 Seismic force-resisting systems. Nondestructive testing of structural steel seismic force-resisting systems in buildings and structures assigned to *Seismic Design Category* B, C, D, E or F shall be performed in accordance with the quality assurance requirements of AISC 341.

Exceptions:

1. In buildings and structures assigned to *Seismic Design Category* B or C, nondestructive testing is not required for structural steel seismic force-resisting systems where the response modification coefficient, R, designated for "Steel systems not specifically detailed for seismic resistance, excluding cantilever column systems" in ASCE 7, Table 12.2-1 has been used for design and detailing.
2. In ~~buildings and~~ structures assigned to *Seismic Design Category* D, E, or F, nondestructive testing is not required for structural steel seismic force-resisting systems where design and detailing in accordance with AISC 360 is permitted by ASCE 7, Table 15.4-1.

1705.13.1.2 Structural steel elements. Nondestructive testing of *structural steel elements* in the seismic force-resisting systems of buildings and structures assigned to *Seismic Design Category* B, C, D, E or F other than those covered in Section 1705.13.1.1, including struts, collectors, chords and foundation elements, shall be performed in accordance with the quality assurance requirements of AISC 341.

Exceptions:

1. In buildings and structures assigned to *Seismic Design Category* B or C, nondestructive testing of *structural steel elements* is not required for seismic force-resisting systems with a response modification coefficient, R, of 3 or less.
2. In ~~buildings and~~ structures assigned to *Seismic Design Category* D, E, or F, nondestructive testing of *structural steel elements* is not required for seismic force-resisting systems where design and detailing other than AISC 341 is permitted by ASCE 7, Table 15.4-1.Nondestructive testing of *structural steel elements* shall be in accordance with the applicable reference standard listed in ASCE 7, Table 15.4-1.

Commenter's Reason: These editorial modifications clean up the charging language to ASCE 7, Section 15.4, which governs nonbuilding structures. Use of the term "building" in these exceptions could prove to be confusing and is therefore recommended for deletion.

Final Action Results

S146-16 **AMPC1**

Back

Code Change No: S147-16

Original Proposal

Section: 1705.12.6

Proponent: John Gillengerten (johng5155@live.com); Henry Green, John D. Gillengerten, representing National Institute of Building Sciences Building Seismic Safety Council Code Resource Support Committee

Revise as follows:

1705.12.6 Plumbing, mechanical and electrical components~~.~~ *Periodic special inspection* of plumbing, mechanical and electrical components shall be required for the following:

1. Anchorage of electrical equipment for emergency and standby power systems in structures assigned to *Seismic Design Category* C, D, E or F.
2. Anchorage of other electrical equipment in structures assigned to *Seismic Design Category* E or F.
3. Installation and anchorage of piping systems designed to carry hazardous materials and their associated mechanical units in structures assigned to *Seismic Design Category* C, D, E or F.
4. Installation and anchorage of ductwork designed to carry hazardous materials in structures assigned to *Seismic Design Category* C, D, E or F.
5. Installation and anchorage of vibration isolation systems in structures assigned to *Seismic Design Category* C, D, E or F where the *approved construction documents* require a nominal clearance of $^1/_4$ inch (6.4 mm) or less between the equipment support frame and restraint.
6. <u>Installation of mechanical and electrical equipment including duct work, piping systems and their structural supports where automatic fire sprinkler systems are installed in structures assigned to Seismic Design Category C, D E or F to verify either of the following:</u>
   <u>6.1 Minimum clearances have been provided as required by Section 13.2.3 ASCE/SEI 7; or</u>
   <u>6.2 That a nominal clearance of at least 3 inches (76 mm) has been be provided between fire protection sprinkler system drops and sprigs and structural members not used collectively or independently to support the sprinklers, or from equipment attached to the building structure, or from other systems' piping.</u>

<u>Where flexible sprinkler hose fittings are used, special inspection of minimum clearances is not required.</u>

Reason: Experience in recent earthquakes has shown that pounding between sprinkler piping drops and sprigs and adjacent nonstructural components such as pipes and ducts has resulted in pipe connection failures and accidental activation, which resulted in flooding and potentially compromising the operability of the system should fire following earthquake occur. ASCE/SEI 7-16 identifies fire protection sprinkler systems as components that are required to function for life-safety purposes after an earthquake, classifying them as a Designated Seismic System. Section 13.2.3 ASCE/SEI 7-16 requires that interaction between Designated Seismic Systems and adjacent components be avoided. The intent is described in Section C13.2.3 of the ASCE/SEI 7-16 commentary, which states in part:

… It is the intent of the standard that the seismic displacements considered include both relative displacement between multiple points of support (addressed in Section 13.3.2) and, for mechanical and electrical components, displacement within the component assemblies. Impact of components must be avoided, unless the components are fabricated of ductile materials that have been shown to be capable of accommodating the expected impact loads. …

It further cites specific examples using fire protection sprinkler systems to illustrate the types of interactions to be avoided.

... Consequential damage may occur because of displacement of components and systems between support points. For example, in older suspended ceiling installations, excessive lateral displacement of a ceiling system may fracture sprinkler heads that project through the ceiling. A similar situation may arise if sprinkler heads projecting from a small-diameter branch line pass through a rigid ceiling system. Although the branch line may be properly restrained, it may still displace sufficiently between lateral support points to affect other components or systems. ...

Maintaining adequate clearances is critical to good seismic performance of fire protection sprinkler systems, and Section 13.2.3 ASCE/SEI 7-16 requires that interaction between Designated Seismic Systems and adjacent components be avoided.

This proposal provides periodic special inspection to verify that adequate clearance is provided between sprinkler drops and sprigs and adjacent structural and nonstructural components. In some cases, an evaluation of the required clearance to avoid interaction is not provided by the registered design professionals. In such cases, a nominal 3 inch clearance from adjacent items is permitted, which is the same as the NFPA 13 clearance requirement from structural members to pounding. Due to their inherent flexibility, clearance between listed flexible sprinkler hose fittings and other components, equipment, or structural members is not required.

Cost Impact: Will increase the cost of construction
This change might have a very minor impact on the cost of installation of electrical, mechanical and plumbing installations and their inspection.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This code change will require special inspection for elements that are problems and are capable of taking out a building for many months if they fail.

Assembly Action **None**

Final Action Results

S147-16	**AS**

Back

Code Change No: S149-16

Original Proposal

Section(s): 1708.1, 1708.2, 1708.3, 1708.3.1, 1708.3.2

Proponent: Gwenyth Searer, Wiss, Janney, Elstner Associates, Inc., representing self

Revise as follows:

1708.1 General. Whenever there is a reasonable doubt as to the stability or load-bearing capacity of a completed building, structure or portion thereof for the expected loads, an engineering assessment shall be required. The engineering assessment shall involve either a structural analysis or an in-situ load test, or both. The structural analysis shall be based on actual material properties and other as-built conditions that affect stability or load-bearing capacity, and shall be conducted in accordance with the applicable design standard. ~~If the structural assessment determines that the load-bearing capacity is less than that required by the code,~~ The in-situ load tests shall be conducted in accordance with Section 1708.2. If the building, structure or portion thereof is found to have inadequate stability or load-bearing capacity for the expected loads, modifications to ensure structural adequacy or the removal of the inadequate construction shall be required.

~~1708.3~~ 1708.2 In-situ load tests. In-situ load tests shall be conducted in accordance with Section ~~1708.3.1~~ 1708.2.1 or ~~1708.3.2~~ 1708.2.2 and shall be supervised by a *registered design professional*. The test shall simulate the applicable loading conditions specified in Chapter 16 as necessary to address the concerns regarding structural stability of the building, structure or portion thereof.

Delete without substitution:

~~**1708.2 Test standards.** Structural components and assemblies shall be tested in accordance with the appropriate referenced standards. In the absence of a standard that contains an applicable load test procedure, the test procedure shall be developed by a *registered design professional* and *approved*. The test procedure shall simulate loads and conditions of application that the completed structure or portion thereof will be subjected to in normal use.~~

Revise as follows:

~~1708.3.1~~ 1708.2.1 Load test procedure specified. Where a referenced material standard contains an applicable load test procedure and acceptance criteria, the test procedure and acceptance criteria in the standard shall apply. In the absence of specific load factors or acceptance criteria, the load factors and acceptance criteria in Section ~~1708.3.2~~ 1708.2.2 shall apply.

~~1708.3.2~~ 1708.2.2 Load test procedure not specified. In the absence of applicable load test procedures contained within a material standard referenced by this code or acceptance criteria for a specific material or method of construction, such *existing structure* shall be subjected to ~~a~~ an *approved* test procedure developed by a *registered design professional* that simulates applicable loading and deformation conditions. For components that are not a part of the seismic force-resisting system, at a minimum the test load shall be equal to the specified factored design loads. For materials such as wood that have strengths that are dependent on load duration, the test load shall be adjusted to account for the difference in load duration of the test compared to the expected duration of the design loads being considered. For statically loaded components, the test load shall be left in place for a period of 24 hours. For components that carry dynamic loads (e.g., machine supports or fall arrest anchors), the load shall be left in place for a period consistent with the component's actual function. The structure shall be considered to have successfully met the test requirements where the following criteria are satisfied:

1. Under the design load, the deflection shall not exceed the limitations specified in Section 1604.3.
2. Within 24 hours after removal of the test load, the structure shall have recovered not less than 75 percent of the maximum deflection.
3. During and immediately after the test, the structure shall ~~not show evidence of failure~~ <u>remain stable</u>.

Reason: This is an editorial tune-up of the in-situ load tests.

The first change deletes a superfluous phrase.

The second change (deletion of 1708.2) is intended to eliminate a duplicative provision. The requirements in 1708.2 are covered in much greater depth and with better specificity in 1708.3, 1708.3.1, and 1708.3.2. In addition, the reference in Section 1708.2 to "in normal use" is unclear. Section 1708.3 is much more specific with respect to what loads must be simulated (i.e., those in Chapter 16).

The third change (addition of the word "material" in two locations) is intended to clarify that while loads come from Chapter 16, the load test procedure must come from the relevant material standard (e.g., AISC or ACI).

The fourth change (deletion of "not show evidence of failure") is needed because the requirement is not clear. The term "failure" is not defined, and can be interpreted a number of ways. In some cases, for example, even minor cracking of concrete has been considered "failure" by misinformed parties. The modified acceptance criteria would require: that the deflection under the design load not exceed the limits of 1604.3, that the structure recovers at least 75 percent of the maximum deflection after removal of load, and that the structure remains stable.

This last requirement is more clear than requiring a structure "not show evidence of failure".

Cost Impact: Will not increase the cost of construction
As an editorial change, this proposal is intended to clarify and make the load test requirements more concise. It should have no measurable impact on the cost of construction.

Report of Committee Action Hearings

Committee Action: **Disapproved**

Committee Reason: This code change was disapproved because the wording proposed in item 3 of Section 1708.2.2 is unclear.

Assembly Action: **None**

Public Comments

Public Comment 1:

Bonnie Manley, AISI, representing American Institute of Steel Construction (bmanley@steel.org) requests Approve as Modified by this Public Comment.

Modify as follows:

1708.2.2 Load test procedure not specified. In the absence of applicable load test procedures contained within a material standard referenced by this code or acceptance criteria for a specific material or method of construction, such *existing structure* shall be subjected to an *approved* test procedure developed by a *registered design professional* that simulates applicable loading and deformation conditions. For components that are not a part of the seismic force-resisting system, at a minimum the test load shall be equal to the specified factored design loads. For materials such as wood that have strengths that are dependent on load duration, the test load shall be adjusted to account for the difference in load duration of the test compared to the expected duration of the design loads being considered. For statically loaded components, the test load shall be left in place for a period of 24 hours. For components that carry dynamic loads (e.g., machine supports or fall arrest anchors), the load shall be left in place for a period consistent with the component's actual function. The structure shall be considered to have successfully met the test requirements where the following criteria are satisfied:

1. Under the design load, the deflection shall not exceed the limitations specified in Section 1604.3.
Within 24 hours after removal of the test load, the structure shall have recovered not less than 75 2.percent of the maximum deflection.
2. During and immediately after the test, the structure shall ~~remain stable~~ <u>not show evidence of failure</u>.

Commenter's Reason: The original code change proposal was an editorial clean-up of the in-situ load test requirements in Section 1708 of the IBC.

The ICC Structural Committee liked the proposal but took exception to the proposed replacement of the words "not show evidence of failure" with "remain stable" in Item 3 of Section 1708.2.2. This is documented in the Committee Report for S149-16 Reason for Disapproval: "This code change was disapproved because the wording proposed in Item 3 of Section 1708.2.2 is unclear".

This public comment strikes the replacement in response to the Committee's concerns. The rest of the proposal cleans up various conflicts and unclear requirements in Section 1708. If this public comment is accepted, the rest of the proposal will be adopted, but the wording in Item 3 of Section 1708.2.2 will remain unchanged.

Final Action Results

S149-16	AMPC1

Back

Code Change No: S150-16

Original Proposal

Section: 1709.5

Proponent: Jeff Inks, representing Window & Door Manufacturers Association (jinks@wdma.com)

Revise as follows:

1709.5 Exterior window and door assemblies. The design pressure rating of exterior windows and doors in buildings shall be determined in accordance with Section 1709.5.1 or 1709.5.2. For ~~the purposes of this section~~ exterior windows and doors tested in accordance with Sections 1709.5.1 or 1709.5.2, ~~the~~ required design ~~pressure shall~~ wind pressures determined from ASCE 7 are permitted to be ~~determined using the allowable stress design load combinations of Section 1605.3~~multiplied by 0.6.

> **Exception:** Structural wind load design pressures for window units smaller than the size tested in accordance with Section 1709.5.1 or 1709.5.2 shall be permitted to be higher than the design value of the tested unit provided such higher pressures are determined by accepted engineering analysis. All components of the small unit shall be the same as the tested unit. Where such calculated design pressures are used, they shall be validated by an additional test of the window unit having the highest allowable design pressure.

Reason: This proposal is intended to clarify that the use of the 0.6 conversion multiplier is allowed with respect to the determination of design wind pressures in accordance with ASCE 7 and testing of the respective assemblies in accordance with Sections 1709.5.1 and 1709.5.2 accordingly. While that is what the existing provision allows, as currently written, that is not entirely clear and has led to confusion regarding wind load requirements. This proposed amendment expressly states that the use of 0.6 multiplier is allowed and will alleviate the confusion that currently exists benefiting all – code officials, manufacturers and builders.

Cost Impact: Will not increase the cost of construction
This proposal is a clarification and not substantive. There are no new requirements.

Report of Committee Action Hearings

Committee Action: **Approved as Modified**

Modify as follows:

1709.5 Exterior window and door assemblies. The design pressure rating of exterior windows and doors in buildings shall be determined in accordance with Section 1709.5.1 or 1709.5.2. For exterior windows and doors tested in accordance with Sections 1709.5.1 or 1709.5.2, required design wind pressures determined from ASCE 7 ~~are~~ shall be permitted to be ~~multiplied~~ converted to allowable stress design by multiplying by 0.6.

> **Exception:** Structural wind load design pressures for window units smaller than the size tested in accordance with Section 1709.5.1 or 1709.5.2 shall be permitted to be higher than the design value of the tested unit provided such higher pressures are determined by accepted engineering analysis. All components of the small unit shall be the same as the tested unit. Where such calculated design pressures are used, they shall be validated by an additional test of the window unit having the highest allowable design pressure.

Committee Reason: This proposal clarifies that you can use allowable stress design wind pressures and that will be helpful to the industry. The modifications are editorial corrections that further clarify that allowable stress wind loads are permitted.

Assembly Action **None**

Final Action Results

S150-16	**AM**

Back

Code Change No: S166-16

Original Proposal

Section: 1803.5.12, 1809.13, 1810.3.11.2, 1810.3.12, 1810.3.6.1, 1810.3.9.4

Proponent: Jennifer Goupil, AMERICAN SOCIETY OF CIVIL ENGINEERS, representing SELF (jgoupil@asce.org)

Revise as follows:

1803.5.12 Seismic Design Categories D through F. For structures assigned to *Seismic Design Category* D, E or F, the geotechnical investigation required by Section 1803.5.11 shall also include all of the following as applicable:

1. The determination of dynamic seismic lateral earth pressures on foundation walls and retaining walls supporting more than 6 feet (1.83 m) of backfill height due to design earthquake ground motions.
2. The potential for liquefaction and soil strength loss evaluated for site peak ground acceleration, earthquake magnitude and source characteristics consistent with the maximum considered earthquake ground motions. Peak ground acceleration shall be determined based on one of the following:
   2.1 A site-specific study in accordance with ~~Section 21.5~~Chapter 21 of ASCE 7.
   2.2 In accordance with Section 11.8.3 of ASCE 7.
3. An assessment of potential consequences of liquefaction and soil strength loss including, but not limited to, the following:
   3.1 Estimation of total and differential settlement.
   3.2 Lateral soil movement.
   3.3 Lateral soil loads on foundations.
   3.4 Reduction in foundation soil-bearing capacity and lateral soil reaction.
   3.5 Soil downdrag and reduction in axial and lateral soil reaction for pile foundations.
   3.6 Increases in soil lateral pressures on retaining walls.
   3.7 Flotation of buried structures.
4. Discussion of mitigation measures such as, but not limited to, the following:
   4.1 Selection of appropriate foundation type and depths.
   4.2 Selection of appropriate structural systems to accommodate anticipated displacements and forces.
   4.3 Ground stabilization.
   4.4 Any combination of these measures and how they shall be considered in the design of the structure.

1809.13 Footing seismic ties. Where a structure is assigned to *Seismic Design Category* D, E or F, individual spread footings founded on soil defined in ~~Section 1613.3.2~~ Chapter 20 of ASCE 7 as *Site Class* E or F shall be interconnected by ties. Unless it is demonstrated that equivalent restraint is provided by reinforced concrete beams within slabs on grade or reinforced concrete slabs on grade, ties shall be capable of carrying, in tension or compression, a force equal to the lesser of the product of the larger footing design gravity load times the seismic coefficient, S_{DS}, divided by 10 and 25 percent of the smaller footing design gravity load.

1810.3.6.1 Seismic Design Categories C through F. For structures assigned to *Seismic Design Category* C, D, E or F splices of deep foundation elements shall develop the lesser of the following:

1. The nominal strength of the deep foundation element.
2. The axial and shear forces and moments from the seismic load effects including overstrength factor in accordance with Section ~~12.4.3~~ 2.3.6 or ~~12.14.3.2~~ 2.4.5 of ASCE 7.

1810.3.9.4 Seismic reinforcement. Where a structure is assigned to *Seismic Design Category* C, reinforcement shall be provided in accordance with Section 1810.3.9.4.1. Where a structure is assigned to *Seismic Design Category* D, E or F, reinforcement shall be provided in accordance with Section 1810.3.9.4.2.

Exceptions:

1. Isolated deep foundation elements supporting posts of Group R-3 and U occupancies not exceeding two stories of light-frame construction shall be permitted to be reinforced as required by rational analysis but with not less than one No. 4 bar, without ties or spirals, where detailed so the element is not subject to lateral loads and the soil provides adequate lateral support in accordance with Section 1810.2.1.
2. Isolated deep foundation elements supporting posts and bracing from decks and patios appurtenant to Group R-3 and U occupancies not exceeding two stories of light-frame construction shall be permitted to be reinforced as required by rational analysis but with not less than one No. 4 bar, without ties or spirals, where the lateral load, *E*, to the top of the element does not exceed 200 pounds (890 N) and the soil provides adequate lateral support in accordance with Section 1810.2.1.
3. Deep foundation elements supporting the concrete foundation wall of Group R-3 and U occupancies not exceeding two stories of light-frame construction shall be permitted to be reinforced as required by rational analysis but with not less than two No. 4 bars, without ties or spirals, where the design cracking moment determined in accordance with Section 1810.3.9.1 exceeds the required moment strength determined using the load combinations with overstrength factor in Section ~~12.4.3.2~~ 2.3.6 or ~~12.14.3.2~~ 2.4.5 of ASCE 7 and the soil provides adequate lateral support in accordance with Section 1810.2.1.
4. Closed ties or spirals where required by Section 1810.3.9.4.2 shall be permitted to be limited to the top 3 feet (914 mm) of deep foundation elements 10 feet (3048 mm) or less in depth supporting Group R-3 and U occupancies of *Seismic Design Category* D, not exceeding two stories of light-frame construction.

1810.3.11.2 Seismic Design Categories D through F. For structures assigned to *Seismic Design Category* D, E or F, deep foundation element resistance to uplift forces or rotational restraint shall be provided by anchorage into the pile cap, designed considering the combined effect of axial forces due to uplift and bending moments due to fixity to the pile cap. Anchorage shall develop a minimum of 25 percent of the strength of the element in tension. Anchorage into the pile cap shall comply with the following:

1. In the case of uplift, the anchorage shall be capable of developing the least of the following:
   1.1 The nominal tensile strength of the longitudinal reinforcement in a concrete element.
   1.2 The nominal tensile strength of a steel element.
   1.3 The frictional force developed between the element and the soil multiplied by 1.3.

   Exception: The anchorage is permitted to be designed to resist the axial tension force resulting from the seismic load effects including overstrength factor in accordance with Section ~~12.4.3~~ 2.3.6 or ~~12.14.3.2~~ 2.4.5 of ASCE 7.

2. In the case of rotational restraint, the anchorage shall be designed to resist the axial and shear forces, and moments resulting from the seismic load effects including overstrength factor in accordance with Section ~~12.4.3~~ 2.3.6 or ~~12.14.3.2~~ 2.4.5 of ASCE 7 or the anchorage shall be capable of developing the full axial, bending and shear nominal strength of the element.

Where the vertical lateral force-resisting elements are columns, the pile cap flexural strengths shall exceed the column flexural strength. The connection between batter piles and pile caps shall be designed to resist the nominal strength of the pile acting as a short column. Batter piles and their connection shall be designed to resist forces and moments that result from the application of seismic load effects including overstrength factor in accordance with Section ~~12.4.3~~ 2.3.6 or ~~12.14.3.2~~ 2.4.5 of ASCE 7.

1810.3.12 Grade beams. For structures assigned to *Seismic Design Category* D, E or F, grade beams shall comply with the provisions in Section 18.13.3 of ACI 318 for grade beams, except where they are designed to resist the seismic load effects including overstrength factor in accordance with Section ~~12.4.3~~ 2.3.6 or ~~12.14.3.2~~ 2.4.5 of ASCE 7.

Reason: This proposal is a coordination proposal to bring the 2018 IBC up to date with the provision of the 2016 edition of ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures (ASCE 7-16).

Section 1803.5.12 - This proposal corrects a reference to the ASCE 7 Standard. ASCE 7 Chapter 21 includes several different procedures for performing site specific seismic hazard studies. In order to properly permit all of these procedures, reference to Chapter 21 in its entirety is necessary.

Section 1810.3.6.1, 1810.3.9.3, 1810.3.11.2, 1810.3.12 - ASCE 7-16 moved all of the Load Combinations including seismic from Chapter 12 to Chapter 2. This proposal is necessary to correct the reference ot Load Combinations including over-strength seismic loads to the appropriate location in ASCE 7. [NOTE: The Exception for Section 1810.3.11.2 is not new. When revising the ASCE 7 Section number to 2.3.6, the entire Exception was underlined by the cdpAccesss system. The only change is to the ASCE 7 Section number.]

Cost Impact: Will not increase the cost of construction
The proposed changes will not impact the cost of construction. This proposal is a re-organization of the pointers in the IBC to refer to the referenced loading standard ASCE 7. *ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures* will be updated from the 2010 edition to the 2016 edition as an Administrative Update to the 2018 I-Codes.

As of the submission date of this code change proposal, the ASCE 7 Standards Committee has completed the committee balloting on the technical changes. The document designated *ASCE 7-16 Minimum Design Loads and Associated Criteria for Buildings and Other Structures* is expected to be competed, published, and available for purchase prior to the ICC Public Comment Hearings for Group B in October of 2016. Any person interested in obtaining a public comment copy of ASCE 7-16 may do so by contacting James Neckel at ASCE (jneckel "at" asce.org).

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This code change updates the Chapter 18 provisions for consistency with the latest edition of the standard, ASCE 7, which was updated in ADM94-16.

Assembly Action **None**

Final Action Results

S166-16	**AS**

Back

Code Change No: S167-16

Original Proposal

Section: 1804.1

Proponent: Edwin Huston, representing National Council of Structural Engineers' Associations (NCSEA) (huston@smithhustoninc.com)

Revise as follows:

1804.1 Excavation near foundations. Excavation for any purpose shall not reduce vertical or lateral support ~~from~~ for any foundation or adjacent foundation without first underpinning or protecting the foundation against detrimental lateral or vertical movement, or both.

Reason: Support of soil below foundations is required in all directions. The code notes that lateral support must be maintained, but if vertical support is reduced, the adjacent foundation will not have the required bearing.

Cost Impact: Will not increase the cost of construction
Most current practice currently follows this method, even though it is not clearly stated in the code. The cost of construction will not increase by specifying that vertical support must be maintained.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This proposal make it clear that excavations must not reduce vertical support as well as lateral support.

Assembly Action **None**

Final Action Results

S167-16	**AS**

Back

Code Change No: S174-16

Original Proposal

Section: 1804.4

Proponent: Eirene Knott, BRR Architecture, representing BRR Architecture (eirene.oliphant@brrarch.com)

Revise 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 2 percent where located within 10 feet (3048 mm) of the building foundation. Impervious surfaces within 10 feet (3048 mm) of the building foundation shall be sloped a minimum of 2 percent away from the building<u>, except as otherwise permitted in Section 1010.1.5, 1012.3 or 1012.6.1</u>.

> **Exception:** Where climatic or soil conditions warrant, the slope of the ground away from the building foundation shall be permitted to be reduced to not less than one unit vertical in 48 units horizontal (2-percent slope).

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

Reason: While the intent of this section is to require slope away from the building to allow for proper water drainage, it does not account for walking surfaces, door landings or ramp landings adjacent to a building to have a maximum cross slope of two percent. This leaves no room for error for construction purposes to provide not only drainage at a minimum of two percent but also the cross slope of no more than two percent. Designers often choose a cross slope of less than two percent in these areas, which according to this section, would not be compliant for site grading.

Cost Impact: Will not increase the cost of construction
The current code language needs clarification to acknowledge the cross slope for accessibility in terms of site grading. Changing the language to acknowledge this will not affect the construction cost.

Report of Committee Action Hearings

Committee Action: **Approved as Modified**

Modify 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 2 percent where located within 10 feet (3048 mm) of the building foundation. Impervious surfaces within 10 feet (3048 mm) of the building foundation shall be sloped a minimum of 2 percent away from the building~~, except as otherwise permitted in Section 1010.1.5, 1012.3 or 1012.6.1.~~

~~Exception~~ <u>Exceptions</u>:

<u>1.</u> Where climatic or soil conditions warrant, the slope of the ground away from the building foundation shall be permitted to be reduced to not less than one unit vertical in 48 units horizontal (2-percent slope).

2. Impervious surfaces shall be permitted to be less than a slope of 2 percent where the surface is a door landing or ramp required to comply with Section 1010.1.5, 1012.3 or 1012.6.1

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

Committee Reason: This code change provides clarification on the question of site grading requirement versus maximum slopes permitted for accessibility. The modification place the new text in an exception, which is more appropriate.

Assembly Action **None**

Final Action Results

S174-16	**AM**

Back

Code Change No: S186-16

Original Proposal

Section: 1807.2.2

Proponent: Scott DiFiore, representing GeoCoalition (sjdifiore@sgh.com); Lori Simpson, P.E.,G.E., representing GeoCoalition

Revise as follows:

1807.2.2 Design lateral soil loads. Retaining walls shall be designed for the lateral soil loads set forth in Section 1610. <u>For structures assigned to Seismic Design Category D, E, or F, the design shall incorporate the seismic lateral earth pressure in accordance with the approved geotechnical report.</u>

Reason: Retaining wall design must consider seismic loads in locations where the risk of seismic activity is high.
Click here to view the members of the GeoCoalition who developed this proposal.

Cost Impact: Will not increase the cost of construction
The code change reflects current practice.

Report of Committee Action Hearings

Committee Action: **Approved as Modified**

Modify as follows:

1807.2.2 Design lateral soil loads. Retaining walls shall be designed for the lateral soil loads set forth in Section 1610. For structures assigned to Seismic Design Category D, E, or F, the design <u>of retaining walls supporting more than 6 feet (1.83 m) of backfill height</u> shall <u>also</u> incorporate the <u>additional</u> seismic lateral earth pressure in accordance with the ~~approved~~ geotechnical ~~report~~ <u>investigation when required in Section 1803.2</u>.

Committee Reason: This code change appropriately adds the requirement for the design to comply with lateral loads that are identified in the geotechnical report into the section on retaining wall design. The modification provides coordination with the requirements of 1803.5.12.

Assembly Action **None**

Final Action Results

S186-16	**AM**

Back

Code Change No: S205-16

Original Proposal

Section: 1802.1, 1810.3.11, 202 (New)

Proponent: Dale Biggers, P.E., representing GeoCoalition (dbiggers@bohbros.com); Lori Simpson, P.E.,G.E., representing GeoCoalition; Daniel Stevenson, P.E., representing GeoCoalition; E. Anna Sellountou, PhD,PE, representing GeoCoalition

Add new definition as follows:

<u>**COMBINED PILE RAFT.** A geotechnical composite construction that combines the bearing effect of both foundation elements, raft and piles, by taking into account interactions between the foundation elements and the subsoil.</u>

Revise as follows:

1802.1 Definitions. The following words and terms are defined in Chapter 2:

<u>**COMBINED PILE RAFT**</u>
DEEP FOUNDATION.
DRILLED SHAFT.
Socketed drilled shaft.
HELICAL PILE.
MICROPILE.
SHALLOW FOUNDATION.

1810.3.11 Pile caps. Pile caps shall be of reinforced concrete, and shall include all elements to which vertical deep foundation elements are connected, including grade beams and mats. The soil immediately below the pile cap shall not be considered as carrying any vertical load<u>, with the exception of a combined pile-raft</u>. The tops of vertical deep foundation elements shall be embedded not less than 3 inches (76 mm) into pile caps and the caps shall extend at least 4 inches (102 mm) beyond the edges of the elements. The tops of elements shall be cut or chipped back to sound material before capping.

Reason: There is no existing definition for this type of deep foundation. This proposed code addition is to identify another commonly-used type of deep foundation along with drilled shafts, helical piles, and micropiles. This term is added to the definitions because the term "combined pile-raft" is a proposed change in Section 1810.3.11.

Combined pile-rafts are increasingly common and can lower the foundation costs by relying partially on the soil under the raft. The following definition is from the ISSMGE guideline for "Combined Pile Raft Foundations".

"The Combined Pile Raft Foundation is a geotechnical composite construction that combines the bearing effect of both foundation elements raft and piles by taking into account interactions between the foundation elements and the subsoil."

Click here to view the members of the GeoCoalition who developed this proposal

Cost Impact: Will not increase the cost of construction
The code change proposal to add a definition will not change the cost of construction since that is simply an addition of a definition. The code change proposal to exempt combined pile rafts will not increase the cost of construction and in favorable conditions (when combined pile rafts are feasible) will decrease the cost of construction.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This proposal will clarify combined pile rafts which is a type of system that is widely used. Doing so will reduce ambiguity in terms of its application.

Assembly Action **None**

Final Action Results

S205-16	**AS**

Back

Code Change No: S213-16

Original Proposal

Section: 1810.3.3.1.4

Proponent: Lori Simpson, P.E.,G.E., representing GeoCoalition; E. Anna Sellountou, PhD,PE, representing GeoCoalition; Dale Biggers, P.E., representing GeoCoalition (dbiggers@bohbros.com); Daniel Stevenson, P.E., representing GeoCoalition

Revise as follows:

1810.3.3.1.4 Allowable ~~frictional~~ shaft resistance. The assumed ~~frictional~~ shaft resistance developed by any uncased cast-in-place deep foundation element shall not exceed one-sixth of the bearing value of the soil material at minimum depth as set forth in Table 1806.2, up to a maximum of 500 psf (24 kPa), unless a greater value is allowed by the *building official* on the basis of a geotechnical investigation as specified in Section 1803 or a greater value is substantiated by a load test in accordance with Section 1810.3.3.1.2. ~~Frictional~~ Shaft resistance and ~~bearing~~ end-bearing resistance shall not be assumed to act simultaneously unless determined by a geotechnical investigation in accordance with Section 1803.

Reason: Change in wording to the most commonly used terms of "shaft" rather than "frictional" resistance and "end-bearing" rather than "bearing" resistance.

Click here to view the members of the GeoCoalition who developed this proposal

Cost Impact: Will not increase the cost of construction
The code change will not increase the cost of construction as it is just an improvement in wording.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This code change the substitutes recognized industry terminology, generalizing statements for all soil conditions.

Assembly Action **None**

Final Action Results

S213-16	**AS**

Back

Code Change No: S215-16

Original Proposal

Section: 1810.3.3.1.6

Proponent: Lori Simpson, P.E.,G.E., representing GeoCoalition; Dale Biggers, P.E., representing GeoCoalition (dbiggers@bohbros.com); Daniel Stevenson, P.E., representing GeoCoalition; E. Anna Sellountou, PhD,PE, representing GeoCoalition

Revise as follows:

1810.3.3.1.6 ~~Uplift capacity~~ Allowable uplift load of grouped deep foundation elements. For grouped deep foundation elements subjected to uplift, the allowable ~~working~~ uplift load for the group shall be calculated by a generally accepted method of analysis. Where the deep foundation elements in the group are placed at a center-to-center spacing less than three times the least horizontal dimension of the largest single element, the allowable ~~working~~ uplift load for the group is permitted to be calculated as the lesser of:

1. The proposed individual allowable ~~working~~ uplift load times the number of elements in the group.
2. Two-thirds of the effective weight of the group and the soil contained within a block defined by the perimeter of the group and the length of the element, plus two-thirds of the ultimate shear resistance along the soil block.

Reason:

- This is a clarification to replace "capacity" with "load" since a safety factor is implied by "allowable" or "working", and "capacity" is by definition an "ultimate". It is the maximum "load" that is being "allowed".
- The word "working" is confusing and further is redundant since "allowable" is always present.

Click here to view the members of the GeoCoalition who developed this proposal

Cost Impact: Will not increase the cost of construction
The code change will not increase the cost of construction since it is just a wording change for clarity.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: The committee agreed that removing the term "working" is a good clarification and these changes will reduce confusion.

Assembly Action **None**

Final Action Results

S215-16	**AS**

Back

Code Change No: S221-16

Original Proposal

Section: 1810.3.5.2.1

Proponent: Daniel Stevenson, P.E., representing GeoCoalition; Lori Simpson, P.E.,G.E., representing GeoCoalition; Dale Biggers, P.E., representing GeoCoalition (dbiggers@bohbros.com); E. Anna Sellountou, PhD,PE, representing GeoCoalition

Revise as follows:

1810.3.5.2.1 Cased. Cast-in-place or grouted-in-place deep foundation elements with a permanent casing shall have a nominal outside diameter of not less than 8 inches (203 mm).

Reason: The section title is changed for consistency with the title and definition of main section 1810.3.5.2 to which this subsection belongs.

Click here to view the members of the GeoCoalition who developed this proposal

Cost Impact: Will not increase the cost of construction
The code change proposal will not increase the cost of construction since it merely is a change to make it consistent with its parent section.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This code change coordinates the text of this section with Section 1810.3.5.2.1.

Assembly Action **None**

Final Action Results

S221-16	**AS**

Back

Code Change No: S222-16

Original Proposal

Section: 1810.3.5.2.1

Proponent: Daniel Stevenson, P.E., representing GeoCoalition; Lori Simpson, P.E.,G.E., representing GeoCoalition; Dale Biggers, P.E., representing GeoCoalition (dbiggers@bohbros.com); E. Anna Sellountou, PhD,PE, representing GeoCoalition

Revise as follows:

1810.3.5.2.2 Uncased. Cast-in-place or grouted-in-place deep foundation elements without a permanent casing shall have a specified diameter of not less than 12 inches (305 mm). The element length shall not exceed 30 times the ~~average~~ specified diameter.

> **Exception:** The length of the element is permitted to exceed 30 times the specified diameter, provided the design and installation of the deep foundations are under the direct supervision of a *registered design professional* knowledgeable in the field of soil mechanics and deep foundations. The *registered design professional* shall submit a report to the *building official* stating that the elements were installed in compliance with the *approved construction documents*.

Reason: The wording is changed for consistency with the title and definition of main section 1810.3.5.2 to which this subsection belongs.

The word "average" would require a physical measurement that is not possible, so it has been replaced with "specified" (this word is also added to the Exception condition for clarity).

Click here to view the members of the GeoCoalition who developed this proposal

Cost Impact: Will not increase the cost of construction
The code change proposal will not increase the cost of construction since it is a change to make it consistent with its parent section, and a change in terminology.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This code change coordinates the text of this section with that of Section 1810.3.5.2 and also removes an unenforceable term.

Assembly Action **None**

Final Action Results

S222-16	AS

Back

Code Change No: S223-16

Original Proposal

Section: 1810.3.5.2.3

Proponent: Daniel Stevenson, P.E., representing GeoCoalition; Lori Simpson, P.E.,G.E., representing GeoCoalition; Dale Biggers, P.E., representing GeoCoalition (dbiggers@bohbros.com); E. Anna Sellountou, PhD,PE, representing GeoCoalition

Revise as follows:

1810.3.5.2.3 Micropiles. Micropiles shall have ~~an outside~~ a nominal diameter of 12 inches (nominal 305 mm) or less. The minimum diameter set forth elsewhere in Section 1810.3.5 shall not apply to micropiles.

Reason: This proposed change is intended to clarify the Code relative to the upper-end of conventionally available diameters of pipe used for micropiles and correct terminology.

Steel micropile flush-joint pipe is available within the industry as prime or mill secondary material and generally conforming to ASTM A252 or API 5CT. In accordance with these standards, the true outside diameter for 12-inch-diameter pipe is 12-3/4 inches. Within standard terminology for describing pipe, this would be considered a "12-inch nominal diameter" size.
Click here to view the members of the GeoCoalition who developed this proposal

Cost Impact: Will not increase the cost of construction
This code change proposal is simply in terminology and will not increase the cost of construction.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This proposal will allow commonly available nominal 12 inch diameter pipe to be used in place of the current cap at 12 inches.

Assembly Action **None**

Final Action Results

S223-16	**AS**

Back

Code Change No: S227-16

Original Proposal

Section: 1810.3.8.3.2, 1810.3.8.3.3, 1810.3.8.3.4 (New)

Proponent: Satyendra Ghosh, representing Precast/Prestressed Concrete Institute (skghoshinc@gmail.com)

Revise as follows:

1810.3.8.3.2 Seismic reinforcement in Seismic Design Category C. For structures assigned to *Seismic Design Category* C, precast prestressed piles shall have transverse reinforcement in accordance with this section. The volumetric ratio of spiral reinforcement shall not be less than the amount required by the following formula for the upper 20 feet (6096 mm) of the pile.

$\cancel{\rho}\underline{\rho s = 0.04}\cancel{s}\underline{(f'c/ fyh)}\cancel{= 0.12}\underline{[2.8}\cancel{f}\underline{\ +\ }\cancel{'}\underline{2.34}\cancel{c}\underline{P/}\cancel{/}\underline{(}\cancel{fyh}\underline{f'cAg))]}$ **(Equation 18-5)**

where:

f'_c	=	Specified compressive strength of concrete, psi (MPa).
f_{yh}	=	Yield strength of spiral reinforcement ≤ 85,000 psi (586 MPa).
$\underline{P}$	<u>=</u>	<u>Axial load on pile, pounds (kN), as determined from Equations 16-5 and 16-7.</u>
<u>A g</u>	<u>=</u>	<u>Pile cross-sectional area, square inches (mm^2).</u>
ρ_s	=	Spiral reinforcement index ~~(~~<u>or volumetric ratio (</u>vol. spiral/vol. core).

At least one-half the volumetric ratio required by Equation 18-5 shall be provided below the upper 20 feet (6096 mm) of the pile.

<u>**Exception:** The minimum spiral required by Equation 18-5 shall not apply in cases where the design includes full consideration of load combinations specified in ASCE/SEI 7 Section 12.4.3.2 and the applicable overstrength factor, Ω0. In such cases, minimum spiral shall be as specified in 1810.3.8.1.</u>

1810.3.8.3.3 Seismic reinforcement in Seismic Design Categories D through F. For structures assigned to *Seismic Design Category* D, E or F, precast prestressed piles shall have transverse reinforcement in accordance with the following:

1. Requirements in ACI 318, Chapter 18, need not apply, unless specifically referenced.
2. Where the total pile length in the soil is 35 feet (10 668 mm) or less, the lateral transverse reinforcement in the ductile region shall occur through the length of the pile. Where the pile length exceeds 35 feet (10 668 mm), the ductile pile region shall be taken as the greater of 35 feet (10 668 mm) or the distance from the underside of the pile cap to the point of zero curvature plus three times the least pile dimension.

3. In the ductile region, the center-to-center spacing of the spirals or hoop reinforcement shall not exceed one-fifth of the least pile dimension, six times the diameter of the longitudinal strand or 8 inches (203 mm), whichever is smallest.
4. Circular spiral reinforcement shall be spliced by lapping one full turn and bending the end of each spiral to a 90-degree hook or by use of a mechanical or welded splice complying with Section 25.5.7 of ACI 318.
5. Where the transverse reinforcement consists of circular spirals, the volumetric ratio of spiral transverse reinforcement in the ductile region shall comply with the following:

ρ_s ~~= 0.25~~0.06(f'_c/ f_{yh})~~(A_g/A_{ch} - 1.0)~~[~~0.5~~ 2.8 ~~+ 1.4~~ 2.34P/($f'_c A_g$)] **~~(Equation 18-6)~~**

but ~~not less than~~

~~ρ_s= 0.12(f'_c/ f_{yh})[0.5 + 1.4P/($f'_c A_g$)]~~ ~~3~~ ~~0.12f'_c/f_{yh}~~ **~~(Equation 18-7)~~**

~~and~~ need not exceed:

ρ_s=0.021 **(Equation ~~18-8~~ 18.7)**

~~where:~~

A_g	=	Pile cross-sectional area, square inches (mm^2).
~~A_{ch}~~	~~=~~	~~Core area defined by spiral outside diameter, square inches (mm^2).~~
f'_c	=	Specified compressive strength of concrete, psi (MPa).
f_{yh}	=	Yield strength of spiral reinforcement ≤ 85,000 psi (586 MPa).
P	=	Axial load on pile, pounds (kN), as determined from Equations 16-5 and 16-7.
ρ_s	=	Volumetric ratio (vol. spiral/vol. core).

This required amount of spiral reinforcement is permitted to be obtained by providing an inner and

Exception: The minimum spiral required by Equation 18-6 shall not apply in cases where the design includes full consideration of load combinations specified in ASCE/SEI 7 Section 12.4.3.2 and the applicable overstrength factor, Ω_0. In such cases, minimum spiral shall be as specified in 1810.3.8.1.

6. Where transverse reinforcement consists of rectangular hoops and cross ties, the total cross-sectional area of lateral transverse reinforcement in the ductile region with spacing, *s*, and perpendicular dimension, h_c, shall conform to:

$A_{sh} = 0.3s\,h_c\,(f'_c / f_{yh})(A_g / A_{ch} - 1.0)[0.5 + 1.4P/(f'_c A_g)]$ **(Equation ~~18-9~~ 18-8)**

but not less than:

$A_{sh} = 0.12s\,h_c\,(f'_c / f_{yh})[0.5 + 1.4P/(f'_c A_g)]$ **(Equation ~~18-10~~ 18-9)**

1. where:

f_{yh}	=	yield strength of transverse reinforcement ≤ 70,000 psi (483 MPa).
h_c	=	Cross-sectional dimension of pile core measured center to center of hoop reinforcement, inch (mm).

s	=	Spacing of transverse reinforcement measured along length of pile, inch (mm).
A_{sh}	=	Cross-sectional area of tranverse reinforcement, square inches (mm ^{2}).
f'_c	=	Specified compressive strength of concrete, psi (MPa).

The hoops and cross ties shall be equivalent to deformed bars not less than No. 3 in size. Rectangular hoop ends shall terminate at a corner with seismic hooks.

Outside of the length of the pile requiring transverse confinement reinforcing, the spiral or hoop reinforcing with a volumetric ratio not less than one-half of that required for transverse confinement reinforcing shall be provided.

Reason:

1) Replacement of Eq. (18-5): Recent research (Fanous et al., 2010; Sritharan et al., 2016) considered the relationship among curvature ductility demand on prestressed piles and overall system ductility demand in the context of all soil profiles identified in ASCE/SEI 7-10, and concluded that the equation presented above would result in curvature ductility capacities exceeding 12, which has been established as a minimum limit needed for areas of moderate seismicity. In the lower portion of the element, the required reinforcement is reduced by one-half.
2) New exception in Section 1810.3.8.3.2: The exception statement is similar to other overstrength statements in this code and referenced load and material standards. It recognizes that the volumetric ratio of spiral reinforcement required need not be increased, beyond that required for driving and handling stresses, when the pile foundation system is designed for load combinations including overstrength. The minimum spiral reinforcement required per Section 1810.3.8.1 for driving and handling stresses is the minimum spiral reinforcement required for Seismic Design Categories A and B. In summary, when design includes the effect of overstrength, the increased axial forces, shear forces, and bending moments in the piling provide a large factor of safety against nonlinear pile behavior.
3) Replacement of Eq. (18-6): Findings from post-earthquake foundation evaluations as discussed in the literature, and concern over the accuracy of soil-structure interaction models under seismic loading, including the effects of liquefaction, has led to stringent code provisions that require significant pile ductility in the top 35 ft of the pile. Recent research (Fanous et al., 2010; Sritharan et al., 2016) considered the relationship among curvature ductility demand on prestressed piles and overall system ductility demand in the context of all soil profiles identified in ASCE/SEI 7-10, and concluded that the replacement equation proposed for Equation (18-6) will result in curvature ductility capacities exceeding 18 (based on average curvature ductility capacity minus one standard deviation), which has been established as a minimum limit needed for areas of high seismicity. The replacement for Equation (18-6) provides a volumetric steel ratio that is 50 percent higher than that required for SDC C. As a comparison, the highest codified ductility demand for buildings is in the New Zealand Standard (NZS 3101, 2006) which requires designs to be based on a curvature ductility capacity of 20. Similarly, ATC-32 (1996) sets the curvature ductility capacity target for vertical compression members at 13 with the expectation that 50 percent more capacity is available (i.e., maximum available curvature ductility is 19.5).

When the pile is designed for load combinations, including overstrength, the volumetric ratio of spiral reinforcement need not be increased beyond that required for driving and handling stresses.

This proposal is based on a prescriptive design philosophy that requires spiral confinement in accordance with maximum expected pile curvature ductility demands resulting from the design earthquake. Fanous et al. (2010), Sritharan et al. (2016) determined that the spiral ratio required could be expressed as a function of curvature ductility capacity of the prestressed pile as follows:

$$\rho_s = 0.06(f'_c/f_{yh})(\mu_\varphi/18)[2.8 + 1.25P/(0.53f'_cA_g)]$$

where μ_φ is the ductility capacity of the prestressed pile.

4) Deletion of Eq. (18-7): This equation is not part of the recommendation in Fanous et al. (2010), Sritharan et al. (2016).
5) New exception in Section 1810.3.8.3.3 Item 5: The exception statement is similar to other overstrength statements in this code and referenced load and material standards. It recognizes that the volumetric ratio of spiral reinforcement required should not be increased, beyond that required for driving and handling stresses, when the pile foundation system is designed for load combinations including overstrength. The minimum spiral reinforcement required per Section 1810.3.8.1 for driving and handling stresses is the minimum spiral reinforcement required for Seismic Design Categories A and B. In summary, when the design includes the effect of overstrength, the increased axial forces, shear forces, and moments in the piling provide a large factor of safety against nonlinear pile behavior.

The above changes are currently being balloted by ACI 318 Subcommittee F. They are expected to be approved by ACI 318F and the full ACI 318 committee. These will then be part of ACI 318-19 and also the 2021 IBC, when that code adopts ACI 318-19. This proposal is being submitted because the proponent believes that the changes are ready to be implemented in the 2018 IBC, without waiting unnecessarily for the 2021 IBC.

Direct comparisons of the spiral required by the provisions of the 2015 IBC and the proposed modified requirements are provided in the supporting documentation accompanying this proposal. ISU (Iowa State University) report in the supporting documentation refers to Fanous et al. (2010). The pile sizes and shapes (24" and 16" Octagonal, 16" and 14" Square) are those included in Fanous et al. (2010). In the vast majority of cases the proposed sprial quantity exceeds the current IBC requirement.

Bibliography: ATC (Applied Technology Council). 1996. *Improved Seismic Design Criteria for California Bridges: Provisional Recommendations*. Redwood City, CA: ATC.

Fanous, A., S. Sritharan, M. Suleiman, J. Huang, and K. Arulmoli. 2010. "Minimum Spiral Reinforcement Requirements and Lateral Displacement Limits for Prestressed Concrete Piles in High Seismic Regions." Final report to PCI. ISU-ERI-Ames Report ERIERI-10321, Department of Civil, Construction, and Environmental Engineering, Iowa State University, Ames, Iowa.

Sritharan, S., A. M. Cox, J. Huang, M. Suleiman, and K. Arulmoli. 2016. "Minimum Confinement Reinforcement for Prestressed Concrete Piles and a Rational Seismic Design Framework." *PCI Journal*,Precast/Prestressed Concrete Institute, Chicago, IL. V. 61, No. 1 (January–February), pp. 51-70. http://www.pci.org/pci_archives.aspx

Standards New Zealand. 2006. *Concrete Structures Standard: Part 1—The Design of Concrete Structures*. NZS 3101. Wellington, New Zealand.

Standards New Zealand. 2006. *Part 2—Commentary on the Design of Concrete Structures*. NZS 3101. Wellington, New Zealand.

Cost Impact: Will increase the cost of construction
As the comparisons of current and proposed provisions in the supporting documentation show, the cost of precast concrete piles with confinement reinforcement in the form of spirals is likely to go up modestly in many situations, because of the increased confinement requirements proposed.

Report of Committee Action Hearings

Committee Action: **Approved as Modified**

Modify as follows:

1810.3.8.3.4 Axial load limit in Seismic Design Categories C through F For structures assigned to Seismic Design Category C, D, E, or F, the maximum factored axial load on precast prestressed piles subjected to a combination of seismic lateral force and axial load shall not exceed the following values:

(a) $0.2f_c'A_g$ for square piles
(b) $0.4f_c'A_g$ for circular or octagonal piles

Committee Reason: This proposal provides more rational and accurate limits of reinforcement for precast prestressed piles. The modification correctly limits the axial loads on these elements.

Assembly Action **None**

Final Action Results

S227-16 **AM**

Back

Code Change No: S233-16

Original Proposal

Section: 1810.4.1.5

Proponent: E. Anna Sellountou, PhD,PE, representing GeoCoalition; Lori Simpson, P.E.,G.E., representing GeoCoalition; Dale Biggers, P.E., Boh Bros. Constructuion Co.,L.L.C., representing GeoCoalition (dbiggers@bohbros.com); Daniel Stevenson, P.E., representing GeoCoalition

Revise as follows:

1810.4.1.5 Defective timber piles. Any substantial sudden ~~increase~~ change in rate of penetration of a timber pile shall be investigated for possible damage. If the sudden ~~increase~~ change in rate of penetration cannot be correlated to soil strata, the pile shall be removed for inspection or rejected.

Reason: Either sudden increases or decreases in the rate of penetration of a pile may signal pile damage.

Click here to view the members of the GeoCoalition who developed this proposal

Cost Impact: Will not increase the cost of construction
The code change proposal will not increase the cost of construction because it does not change current practice.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: The committee agreed that any change in the rate of penetration shold be investigated. The investigation does not automatically require you to pull the pile. The key thing is that it is tied to correlation - only if you can't correlate it, do you pull the pile.

Assembly Action **None**

Final Action Results

S233-16	**AS**

Back

Code Change No: S237-16

Original Proposal

Section: 1810.4.4

Proponent: E. Anna Sellountou, PhD,PE, representing GeoCoalition; Lori Simpson, P.E.,G.E., representing GeoCoalition; Dale Biggers, P.E., Boh Bros. Construction Co.,L.L.C., representing GeoCoalition (dbiggers@bohbros.com); Daniel Stevenson, P.E., representing GeoCoalition

Revise as follows:

1810.4.4 Preexcavation. The use of jetting, augering or other methods of preexcavation shall be subject to the approval of the *building official*. Where permitted, preexcavation shall be carried out in the same manner as used for deep foundation elements subject to load tests and in such a manner that will not impair the carrying capacity of the elements already in place or damage adjacent structures. Element tips shall be ~~driven~~ advanced below the preexcavated depth until the required resistance or penetration is obtained.

Reason: Pile types in addition to driven piles should also meet this requirement, e.g. piles that are screwed in, pushed in, or vibrated in.

Click here to view the members of the GeoCoalition who developed this proposal

Cost Impact: Will not increase the cost of construction
The code change proposal will not increase the cost of construction since this is already common practice

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: The proposed change appropriately makes the requirement applicable to more situations.

Assembly Action **None**

Final Action Results

S237-16	**AS**

Back

Code Change No: S242-16

Original Proposal

Section: 1613.1, 1901.2

Proponent: Satyendra Ghosh, S. K. Ghosh Associates Inc., representing Federal Emergency Management Agency - National Institute of Building Sciences Building Seismic Safety Council and Jennifer Goupil, American Society of Civil Engineers, representing the American Society of Civil Engineers (skghoshinc@gmail.com)

Revise as follows:

1613.1 Scope. Every structure, and portion thereof, including nonstructural components that are permanently attached to structures and their supports and attachments, shall be designed and constructed to resist the effects of earthquake motions in accordance with ASCE 7, ~~excluding Chapter 14~~ <u>Chapters 11, 12, 13, 15, 17</u> and ~~Appendix 11A~~ <u>18, as applicable</u>. 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, or located where the mapped short-period spectral response acceleration, S_S, is less than 0.4 g.
2. 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. Agricultural storage structures intended only for incidental human occupancy.
4. 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.

1901.2 Plain and reinforced concrete. Structural concrete shall be designed and constructed in accordance with the requirements of this chapter and ACI 318 as amended in Section 1905 of this code. Except for the provisions of Sections 1904 and 1907, the design and construction of slabs on grade shall not be governed by this chapter unless they transmit vertical loads or lateral forces from other parts of the structure to the soil. <u>Precast concrete diaphragms in buildings assigned to *Seismic Design Category* C, D, E, or F shall be designed in accordance with the requirements of ASCE 7 Section 14.2.4.</u>

Reason: Seismic design of diaphragms is addressed in Sections 12.10.1 and 12.10.2 of ASCE 7-16. These sections are essentially the same as Sections 12.10.1 and 12.10.2 of ASCE 7-10. Based on significant work done by Issue Team 6 on Diaphragms of the Building Seismic Safety Council (BSSC) Provisions Update Committee (PUC), an alternative seismic design force level for diaphragms has been included in new Section 12.10.3 of ASCE 7-16. The alternative design force level is mandated for precast concrete diaphragms in buildings assigned to Seismic Design Category (SDC) C and above. It is permitted for other precast concrete diaphragms, cast-in-place concrete diaphragms, and wood diaphragms.

At the same time, new precast diaphragm design provisions have been included in new Section 14.2.4 of ASCE 7-16, which goes hand-in-hand with the alternative diaphragm design force level in Section 12.10.3 of ASCE 7-16. The Section 14.2.4 requirements are based on multi-year, multi-million-dollar research, known as DSDM (Diaphragm Seismic Design Methodology) research, sponsored by the National Science Foundation (NSF), the Precast/Prestressed Concrete Institute (PCI), and the Pankow Foundation.

An integral part of the precast diaphragm design procedure of ASCE 7-16 Section 14.2.4 is a connector qualification methodology that was also developed in the course of DSDM research. ASCE 7-16 Section 12.10.3 will automatically be part of the 2018 IBC, presuming it adopts ASCE 7-16; however, Section 14.2.4 will not be, because 2015 IBC Section 1613 excludes Section 14.2 from the adoption of ASCE 7. This code change is meant to take care of this problem and make ASCE 7-16 Section 14.2.4 a part of the 2018 IBC.

Appendix 11A is no longer part of ASCE 7-16. Instead of excluding any particular chapter(s), this proposed change calls out the primary ASCE 7 chapters that charge specific parts of the design process. These chapters, in turn, reference other ASCE 7 sections, other ASCE 7 chapters and other standards for portions of the requirements. All needed parts of ASCE 7 are therefore incorporated, including the ground motions.

Cost Impact: Will increase the cost of construction
The cost of precast concrete diaphragms will go up - not so much because of this proposal, but because the higher design force level for precast concrete diaphragms in Section 12.10.3 of ACE 7-16, which is mandated to be used with the proposed design procedure. The required use of high-deformability connectors with the Reduced Design Option may also contribute to an increase in cost. Finally, the required use of moderate-deformability connectors with the Basic Design Option may result in modest cost increases.

Report of Committee Action Hearings

Committee Action: Approved as Modified

Modify as follows:

1613.1 Scope. Every structure, and portion thereof, including nonstructural components that are permanently attached to structures and their supports and attachments, shall be designed and constructed to resist the effects of earthquake motions in accordance with ASCE 7, Chapters 11, 12, 13, 15, 17 and 18, 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, or located where the mapped short-period spectral response acceleration, S_S, is less than 0.4 g.
2. 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. Agricultural storage structures intended only for incidental human occupancy.
4. 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. Reference in ASCE 7 to Chapter 14 shall not apply, except as specifically required herein.

Committee Reason: This proposal updates IBC provisions for coordination with the latest edition of the referenced standard, ASCE 7, which was updated in ADM94-16. The modification reinstates the exclusion of Chapter 14 in ASCE 7.

Assembly Action None

Final Action Results

S242-16	**AM**

Back

Code Change No: S243-16 Part I

Original Proposal

Section: IBC: 202

Proponent: Phillip Samblanet, representing The Masonry Society

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IBC-STRUCTURAL CODE COMMITTEE. PART II WILL BE HEARD BY THE IRC-BUILDING CODE COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Delete without substitution:

~~**AUTOCLAVED AERATED CONCRETE (AAC).** AUTOCLAVED AERATED CONCRETE (AAC). Low density cementitious product of calcium silicate hydrates, whose material specifications are defined in ASTM C1386.~~

Reference standards type: This is an update to reference standard(s) already in the ICC Code Books
Add new standard(s) as follows:

~~ASTM C1386~~

Reason: The definition is not needed and is incorrect. ASTM C1386 was withdrawn n by ASTM in 2013, and AAC is now manufactured to different ASTM standards (ASTM C1691 for AAC masonry and ASTM C1693 for AAC in general). In addition, IBC Section 202 already contains a definition for AAC Masonry, which is both more appropriate and correct. While this definition could apply AAC as used in conjunction with Chapter 19, that Chapter does not address AAC. Deleting the definition of Autoclaved Aerated Concrete thus removes the reference to an ASTM standard no longer used, and it cleans up the IBC as a whole.
Part II updates references to it in the IRC. .

Cost Impact: Will not increase the cost of construction
Revision of this section does not impact the cost of construction. The definition is not needed, and the referenced standard has been withdrawn. The change merely eliminates this error in the IBC

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This code change removes an unnecessary definition which also included a referenced standard that has been withdrawn.

Assembly Action **None**

Final Action Results

S243-16 Part I	**AS**

Code Change No: S243-16 Part II

Original Proposal

Section: IRC: R606.2.3

Proponent: Phillip Samblanet, representing The Masonry Society

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IBC-STRUCTURAL CODE COMMITTEE. PART II WILL BE HEARD BY THE IRC-BUILDING CODE COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Revise as follows:

R606.2.3 AAC masonry. AAC masonry units shall conform to ASTM C1691 and ASTM ~~C 1386~~ C1693 for the strength class specified.

Reference standards type: This contains both new and updated standards
Add new standard(s) as follows:

~~ASTM C1386~~
ASTM C1691- 11 Standard Specification for Unreinforced Autoclaved Aerated Concrete (AAC) Masonry Units
ASTM C1693-11 Standard Specification for Autoclaved Aerated Concrete (AAC)

Reason: The definition is not needed and is incorrect. ASTM C1386 was withdrawn n by ASTM in 2013, and AAC is now manufactured to different ASTM standards (ASTM C1691 for AAC masonry and ASTM C1693 for AAC in general). In addition, IBC Section 202 already contains a definition for AAC Masonry, which is both more appropriate and correct. While this definition could apply AAC as used in conjunction with Chapter 19, that Chapter does not address AAC. Deleting the definition of Autoclaved Aerated Concrete thus removes the reference to an ASTM standard no longer used, and it cleans up the IBC as a whole.
Part II updates references to it in the IRC. .

Cost Impact: Will not increase the cost of construction
Revision of this section does not impact the cost of construction. The definition is not needed, and the referenced standard has been withdrawn. The change merely eliminates this error in the IBC

Analysis: A review of the standard(s) proposed for inclusion in the code, ASTM C1691 & ASTM C1693, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 1, 2016.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This proposal updates the standard for autoclaved aerated concrete by deleting a withdrawn standard and adding two new standards for this product.

Assembly Action **None**

Final Action Results

S243-16 Part II **AS**

Back

Code Change No: S244-16

Original Proposal

Section: 2101.2, 2103.1, 2104.1

Proponent: Jason Thompson, Masonry Alliance for Codes and Standards (MACS), representing Masonry Alliance for Codes and Standards (jthompson@ncma.org); Phillip Samblanet, The Masonry Society, representing The Masonry Society

Revise as follows:

2101.2 Design methods. Masonry shall comply with the provisions of TMS 402/ACI 530/ASCE 5<u>, TMS 403,</u> or TMS ~~403~~ <u>404</u> as well as applicable requirements of this chapter.

<u>2103.1 Masonry units.</u> Concrete masonry units, clay or shale masonry units, stone masonry units, glass unit masonry and AAC masonry units shall comply with Article 2.3 of TMS 602/ACI 503.1/ASCE 6. Architectural cast stone shall conform to ASTM C 1364<u> and TMS 504</u>.

> **Exception:** Structural clay tile for nonstructural use in fireproofing of structural members and in wall furring shall not be required to meet the compressive strength specifications. The fire-resistance rating shall be determined in accordance with ASTM E 119 or UL 263 and shall comply with the requirements of Table 602.

2104.1 Masonry construction. Masonry construction shall comply with the requirements of Sections 2104.1.1 and 2104.1.2 and with <u>the requirements of either</u> TMS 602/ACI 530.1/ASCE 6<u> or TMS 604</u>.

Reference standards type: This reference standard is new to the ICC Code Books
Add new standard(s) as follows:

<u>TMS 404-16 – Standard for the Design of Architectural Cast Stone</u>
<u>TMS 504-16 – Standard for the Fabrication of Architectural Cast Stone</u>
<u>TMS 604-16 – Standard for the Installation of Architectural Cast Stone</u>

Reason: Architectural cast stone is a non-structural masonry system typically used as architectural accents such as balusters, quoins, sills, etc. While Chapter 21 requires architectural cast stone to comply with the material requirements of ASTM C1364 and Chapter 14 includes minimum criteria for the use of architectural cast stone as a cladding system, the vast majority of design, fabrication, and installation guidance for these systems has historically stemmed from industry-generated best practices; a gap now filled with the creation of these three new standards.

Topics covered collectively under these three new standards include:

1) Minimum requirements for reinforcement, ties, and anchors used with cast stone along with the associated corrosion protection requirements for these materials.
2) Additional requirements for cast stone materials not covered within ASTM C1364.
3) Tolerance requirements for individual cast stone elements as well as finished assemblies.
4) Information to be included in shop drawings and submittal packages.
5) Ancillary materials used during the installation of cast stone including mortar, grout, and jointing materials.
6) Minimum quality assurance requirements including testing frequency, sample panels, and inspection.
7) Installation criteria for both wet-setting (laying cast stone elements in mortar) as well as dry-setting (where cast stone units are shimmed and caulked).

Cost Impact: Will not increase the cost of construction
The addition of these new standards simply provides consensus-based guidance for the design, fabrication, and installation of cast stone consistent with existing industry guidelines.

Analysis: A review of the standard(s) proposed for inclusion in the code, TMS 404, TMS 504 & TMS 604, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 1, 2016.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: Agreement with the proponent's reason which indicates that adding these referenced standards for architectural cast stone fills the information gap on the design, fabrication and installation of this nonstructural masonry system.

Assembly Action **None**

Final Action Results

S244-16	**AS**

Back

Code Change No: S245-16 Part I

Original Proposal

Section(s): IBC: 2103.1

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IBC STRUCTURAL COMMITTEE. PART II WILL BE HEARD BY THE IRC-BUILDING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Jason Thompson, Masonry Alliance for Codes and Standards (MACS), representing Masonry Alliance for Codes and Standards (jthompson@ncma.org)

Revise as follows:

2103.1 Masonry units. Concrete masonry units, clay or shale masonry units, stone masonry units, glass unit masonry and AAC masonry units shall comply with Article 2.3 of TMS 602/ACI 503.1/ASCE 6. Architectural cast stone shall conform to ASTM C 1364. Adhered manufactured stone masonry veneer units shall conform to ASTM C1670.

> **Exception:** Structural clay tile for nonstructural use in fireproofing of structural members and in wall furring shall not be required to meet the compressive strength specifications. The fire-resistance rating shall be determined in accordance with ASTM E 119 or UL 263 and shall comply with the requirements of Table 602.

Reference standards type: This reference standard is new to the ICC Code Books
Add new standard(s) as follows:

ASTM C1670-16 Standard Specification for Adhered Manufactured Stone Masonry Veneer Units

Reason: While commonly used as a cladding material, adhered manufactured stone masonry has historically not had a national, consensus-based specification governing the minimum properties for these products; which in turn has been a source of performance issues in the field. Topics covered by ASTM C1670 include:

1) Minimum requirements for constituent materials.
2) Sampling and testing criteria.
3) Minimum compressive strength, maximum absorption, minimum freeze-thaw durability, minimum bond strength, and maximum drying shrinkage requirements.

Cost Impact: Will not increase the cost of construction
Adoption of this standard establishes minimum physical requirements for manufactured stone veneer units consistent with existing industry practices.

Analysis: A review of the standard(s) proposed for inclusion in the code, ASTM C1670, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 1, 2016.

Report of Committee Action Hearings

Committee Action: **As Submitted**

Committee Reason: Agreement with the proponent's reason which indicates that adding the proposed referenced standard for adhered manufactured stone masonry veneer establishes minimum physical requirements for this material.

Assembly Action: **None**

Public Comments

Public Comment 1:

Jason Thompson, Masonry Alliance for Codes and Standards, representing Masonry Alliance for Codes and Standards (jthompson@ncma.org) requests Approve as Modified by this Public Comment.

Modify as follows:

2103.1 Masonry units. Concrete masonry units, clay or shale masonry units, stone masonry units, glass unit masonry and AAC masonry units shall comply with Article 2.3 of TMS 602/ACI 503.1/ASCE 6. Architectural cast stone shall conform to ASTM C 1364. Adhered manufactured stone masonry veneer units shall conform to ASTM C1670.

> **Exception:** Structural clay tile for nonstructural use in fireproofing of structural members and in wall furring shall not be required to meet the compressive strength specifications. The fire-resistance rating shall be determined in accordance with ASTM E 119 or UL 263 and shall comply with the requirements of Table 602.

Reference standards type: This reference standard is new to the ICC Code Books
Add new standard(s) as follows:

ASTM ~~c1670-15~~ C1670-16 Standard Specification for Adhered Manufactured Stone Masonry Veneer Units

Commenter's Reason: Since the Committee hearings in April, a new version of ASTM C1670 has been published by ASTM. This modification simply captures the very latest information by updating the reference standard to the 2016 edition.

Analysis: The proposed modification to this code change proposal includes update of the year edition of standard ASTM C1670 from -15 to -16. CP28, Section 3.6.3.1 and newly referenced standard "shall be completed and readily available prior to the Public Comment Hearing based on the cycle of code development which includes the code change proposal." Therefore, the proponent is required to provide information verifying that the standard ASTM C1670-16 is completed and readily available at the time of the public comment hearings.

Final Action Results

S245-16 Part I	**AMPC1**

Code Change No: S245-16 Part II

Original Proposal

Section(s): IBC: 2103.1

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IBC STRUCTURAL COMMITTEE. PART II WILL BE HEARD BY THE IRC-BUILDING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Jason Thompson, Masonry Alliance for Codes and Standards (MACS), representing Masonry Alliance for Codes and Standards (jthompson@ncma.org)

Add new text as follows:

R606.2.6 Adhered manufactured stone masonry veneer units. Adhered manufactured stone masonry veneer units shall conform to ASTM C1670.

Reference standards type: This reference standard is new to the ICC Code Books
Add new standard(s) as follows:

ASTM C1670-16 Standard Specification for Adhered Manufactured Stone Masonry Veneer Units

Reason: While commonly used as a cladding material, adhered manufactured stone masonry has historically not had a national, consensus-based specification governing the minimum properties for these products; which in turn has been a source of performance issues in the field. Topics covered by ASTM C1670 include:

1) Minimum requirements for constituent materials.
2) Sampling and testing criteria.
3) Minimum compressive strength, maximum absorption, minimum freeze-thaw durability, minimum bond strength, and maximum drying shrinkage requirements.

Cost Impact: Will not increase the cost of construction
Adoption of this standard establishes minimum physical requirements for manufactured stone veneer units consistent with existing industry practices.

Analysis: A review of the standard(s) proposed for inclusion in the code, ASTM C1670, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 1, 2016.

Report of Committee Action Hearings

Committee Action: **AS Submitted**

Committee Reason: This proposal adds a new section for adhered manufactured stone masonry veneer and brings the current standard for design and installation of the product into the IRC.

Assembly Action: **None**

Public Comments

Public Comment 1:

Jason Thompson, representing Masonry Alliance for Codes and Standards (jthompson@ncma.org) requests Approve as Modified by this Public Comment.

Modify as follows:

R606.2.6 Adhered manufactured stone masonry veneer units. Adhered manufactured stone masonry veneer units shall conform to ASTM C1670.

Reference standards type: This reference standard is new to the ICC Code Books
Add new standard(s) as follows:

ASTM ~~C1670-15~~ C1670-16 Standard Specification for Adhered Manufactured Stone Masonry Veneer Units

Commenter's Reason: Since the Committee hearings in April, a new version of ASTM C1670 has been published by ASTM. This modification simply captures the very latest information by updating the reference standard to the 2016 edition.

Analysis: The proposed modification to this code change proposal includes update of the year edition of standard ASTM E2925 from -14 to -16. CP28, Section 3.6.3.1 and newly referenced standard "shall be completed and readily available prior to the Public Comment Hearing based on the cycle of code development which includes the code change proposal." Therefore, the proponent is required to provide information verifying that the standard ASTM E2925-16 is completed and readily available at the time of the public comment hearings.

Final Action Results

S245-16 Part II	**AMPC1**

back

Code Change No: S247-16

Original Proposal

Section: 2107.2.1

Proponent: Edwin Huston, representing National Council of Structural Engineers' Associations (NCSEA) (huston@smithhustoninc.com)

Revise as follows:

2107.2.1 Lap splices. The minimum length of lap splices for reinforcing bars in tension or compression, l_d, shall be

ld = 0.002 $d_b f_s$ **(Equation 21-1)**
For SI: l_d = 0.29dbfs
but not less than 12 inches (305 mm). In no case shall the length of the lapped splice be less than 40 bar diameters.

where:

d_b = Diameter of reinforcement, inches (mm).
f_s = Computed stress in reinforcement due to design loads, psi (MPa).

In regions of moment where the design tensile stresses in the reinforcement are greater than 80 percent of the allowable steel tension stress, F_s, the lap length of splices shall be increased not less than 50 percent of the minimum required length, but need not be greater than 72d_b. Other equivalent means of stress transfer to accomplish the same 50 percent increase shall be permitted. Where epoxy coated bars are used, lap length shall be increased by 50 percent.

Reason: In the TMS 402-11 standard, the allowable stress, Fs of Grade 60 Reinforcement was increased from 24,000 psi to 32,000 psi. Lap splices are calculated as a basis of this allowable stress. Equation 21-1 previously calculated a lap splice of 48 bar diameters for a Grade 50 bar. The 1.5 increase led to a maximum lap splice length of 72 bar diameters. The TMS 402-11 increase in allowable stress had the unintended consequence of increasing the 48 bar diameter length to 64 bar diameters. The 1.5 increase yields a 96 bar diameter lap length. That this was an unintended consequence can be seen by comparing Section 2107.2.1 to 2108.2, the strength design lap splice provision, which maintained the 72 bar diameter limit. There is no rational reason to have a longer lap splice in Allowable Stress Design than in Strength Design. This code change proposal reestablishes parity and harmonizes the code between these two design methods for lap splice lengths.

Cost Impact: Will not increase the cost of construction
This code change will result in a reduction of construction costs.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This proposal reconciles the maximum lap splice length for allowable stress design with that of strength design.

Assembly Action **None**

Final Action Results

S247-16 **AS**

Back

Code Change No: S248-16

Original Proposal

Section: 2107.4

Proponent: Jason Thompson, Masonry Alliance for Codes and Standards (MACS), representing Masonry Alliance for Codes and Standards (jthompson@ncma.org); Phillip Samblanet, representing The Masonry Society (psamblanet@masonrysociety.org)

Delete without substitution:

~~**2107.4 TMS 402/ACI 530/ASCE 5, Section 8.3.6, maximum bar size.** Add the following to Chapter 8: 8.3.6 – Maximum bar size. The bar diameter shall not exceed one-eighth of the nominal wall thickness and shall not exceed one-quarter of the least dimension of the cell, course or collar joint in which it is placed.~~

Reason: Background – TMS 402 contains two alternatives for the design of conventional masonry systems: allowable stress design (Chapter 8 of the reference standard) and strength design (Chapter 9 of the reference standard). In previous versions of TMS 402 limits on the maximum bar size were included for the strength design provisions consistent with the requirements of Section 2107.4, but were absent for the corresponding allowable stress design provisions; hence the modification language of Section 2107.4. Recently the reference standard has been revised to include maximum bar size limits consistent with that of Section 2107.4 that is applied to both the allowable stress and strength design provisions of the reference standard (Section 6.1.2.2) making this modification redundant and unnecessary.

Cost Impact: Will not increase the cost of construction
No technical change. Removes requirements now covered under the reference standard.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This code change removes a requirement that is now covered in the latest edition of the referenced standard for masonry design.

Assembly Action **None**

Final Action Results

S248-16	AS

Back

Code Change No: S249-16

Original Proposal

Section: 2109, 2109.1, 2109.1.1, 2109.2, 2109.2.1, 2109.2.2, 2109.3, 2109.3.1, 2109.3.1.1, 2109.3.1.2, 2109.3.1.2.1, 2109.3.1.2.2, 2109.3.1.2.3, 2109.3.1.2.4, 2109.3.1.3, 2109.3.1.4, 2109.3.2, 2109.3.2.1, 2109.3.2.2, 2109.3.3, 2109.3.3.1, 2109.3.4, 2109.3.4.1, 2109.3.4.2, 2109.3.4.2.1, 2109.3.4.2.2, 2109.3.4.3, 2109.3.4.4, 2109.3.4.5, 2109.3.4.5.1, 2109.3.4.5.2, 2109.3.4.6, 2109.3.4.7, 2109.3.4.7.1, 2109.3.4.7.2, 2109.3.4.8, 2109.3.4.9, 2114 (New), 2114.1 (New), 2114.2 (New), 2114.3 (New), 2114.4 (New), 2114.5 (New)

Proponent: Jason Thompson, Masonry Alliance for Codes and Standards (MACS), representing Masonry Alliance for Codes and Standards (jthompson@ncma.org)

Delete without substitution:

~~SECTION 2109~~
~~EMPIRICAL DESIGN OF MASONRY~~

~~**2109.1 General.** Empirically designed masonry shall conform to the requirements of Appendix A of TMS 402/ACI 530/ASCE 5, except where otherwise noted in this section.~~

~~**2109.1.1 Limitations.** The use of empirical design of masonry shall be limited as noted in Section A.1.2 of TMS 402/ACI 530/ASCE 5. The use of dry-stacked, surface-bonded masonry shall be prohibited inRisk Category IV structures. In buildings that exceed one or more of the limitations of Section A.1.2 of TMS 402/ACI 530/ASCE 5, masonry shall be designed in accordance with the engineered design provisions of Section 2101.2 or the foundation wall provisions of Section 1807.1.5.~~

~~Section A.1.2.2 of TMS 402/ACI 530/ASCE 5 shall be modified as follows:~~

~~**A.1.2.2** – Wind. Empirical requirements shall not apply to the design or construction of masonry for buildings, parts of buildings, or other structures to be located in areas where Vasd as determined in accordance with Section 1609.3.1 of the International Building Code exceeds 110 mph.~~

~~**2109.2 Surface-bonded walls.** Dry-stacked, surface-bonded concrete masonry walls shall comply with the requirements of Appendix A of TMS 402/ACI 530/ASCE 5, except where otherwise noted in this section.~~

~~**2109.2.1 Strength.** Dry-stacked, surface-bonded concrete masonry walls shall be of adequate strength and proportions to support all superimposed loads without exceeding the allowable stresses listed in Table 2109.2.1. Allowable stresses not specified in Table 2109.2.1 shall comply with the requirements of TMS 402/ACI 530/ASCE 5.~~

~~TABLE 2109.2.1~~
~~ALLOWABLE STRESS GROSS CROSS-SECTIONAL AREA FOR DRY-STACKED, SURFACE-BONDED CONCRETE MASONRY WALLS~~

~~For SI: 1 pound per square inch = 0.006895 MPa.~~

~~**2109.2.2 Construction.** Construction of dry-stacked, surface-bonded masonry walls, including stacking and leveling of units, mixing and application of mortar and curing and protection shall comply with ASTM C 946.~~

~~**2109.3 Adobe construction.** Adobe construction shall comply with this section and shall be subject to the requirements of this code for Type V construction, Appendix A of TMS 402/ACI 530/ASCE 5, and this section.~~

~~**2109.3.1 Unstabilized adobe.** Unstabilized adobe shall comply with Sections 2109.3.1.1 through 2109.3.1.4.~~

~~**2109.3.1.1 Compressive strength.** Adobe units shall have an average compressive strength of 300 psi (2068 kPa) when tested in accordance with ASTM C 67. Five samples shall be tested and no individual unit is permitted to have a compressive strength of less than 250 psi (1724 kPa).~~

~~**2109.3.1.2 Modulus of rupture.** Adobe units shall have an average modulus of rupture of 50 psi (345 kPa) when tested in accordance with the following procedure. Five samples shall be tested and no individual unit shall have a modulus of rupture of less than 35 psi (241 kPa).~~

~~**2109.3.1.2.1 Support conditions.** A cured unit shall be simply supported by 2-inch-diameter (51 mm) cylindrical supports located 2 inches (51 mm) in from each end and extending the full width of the unit.~~

~~**2109.3.1.2.2 Loading conditions.** A 2-inch-diameter (51 mm) cylinder shall be placed at midspan parallel to the supports.~~

~~**2109.3.1.2.3 Testing procedure.** A vertical load shall be applied to the cylinder at the rate of 500 pounds per minute (37 N/s) until failure occurs.~~

~~**2109.3.1.2.4 Modulus of rupture determination.** The modulus of rupture shall be determined by the equation:~~

~~f r = 3 PLs /2 Sw (St2)~~ ~~**(Equation 21-2)**~~

~~where, for the purposes of this section only:~~

~~Sw~~	=	~~Width of the test specimen measured parallel to the loading cylinder, inches (mm).~~
~~fr~~	=	~~Modulus of rupture, psi (MPa).~~
~~Ls~~	=	~~Distance between supports, inches (mm).~~
~~St~~	=	~~Thickness of the test specimen measured parallel to the direction of load, inches (mm).~~
~~P~~	=	~~The applied load at failure, pounds (N).~~

~~**2109.3.1.3 Moisture content requirements.** Adobe units shall have a moisture content not exceeding 4 percent by weight.~~

~~**2109.3.1.4 Shrinkage cracks.** Adobe units shall not contain more than three shrinkage cracks and any single shrinkage crack shall not exceed 3 inches (76 mm) in length or 1/ 8 inch (3.2 mm) in width.~~

~~**2109.3.2 Stabilized adobe.** Stabilized adobe shall comply with Section 2109.3.1 for unstabilized adobe in addition to Sections 2109.3.2.1 and 2109.3.2.2.~~
~~**2109.3.2.1 Soil requirements.** Soil used for stabilized adobe units shall be chemically compatible with the stabilizing material.~~

~~**2109.3.2.2 Absorption requirements.** A 4-inch (102 mm) cube, cut from a stabilized adobe unit dried to a constant weight in a ventilated oven at 212°F to 239°F (100°C to 115°C), shall not absorb more than 21/ 2 percent moisture by weight when placed upon a constantly water-saturated, porous surface for seven days. A minimum of five specimens shall be tested and each specimen shall be cut from a separate unit.~~

~~**2109.3.3 Allowable stress.** The allowable compressive stress based on gross cross-sectional area of adobe shall not exceed 30 psi (207 kPa).~~

~~**2109.3.3.1 Bolts.** Bolt values shall not exceed those set forth in Table 2109.3.3.1.~~

~~**TABLE 2109.3.3.1**~~
~~**ALLOWABLE SHEAR ON BOLTS IN ADOBE MASONRY**~~

~~For SI: 1 inch = 25.4 mm, 1 pound = 4.448 N.~~

~~**2109.3.4 Detailed requirements.** Adobe construction shall comply with Sections 2109.3.4.1 through 2109.3.4.9.~~

~~**2109.3.4.1 Number of stories.** Adobe construction shall be limited to buildings not exceeding one story, except that two-story construction is allowed when designed by a registered design professional.~~

~~**2109.3.4.2 Mortar.** Mortar for adobe construction shall comply with Sections 2109.3.4.2.1 and 2109.3.4.2.2.~~

~~**2109.3.4.2.1 General.** Mortar for stabilized adobe units shall comply with this chapter or adobe soil. Adobe soil used as mortar shall comply with material requirements for stabilized adobe. Mortar for unstabilized adobe shall be Portland cement mortar.~~

~~**2109.3.4.2.2 Mortar joints.** Adobe units shall be laid with full head and bed joints and in full running bond.~~

~~**2109.3.4.3 Parapet walls.** Parapet walls constructed of adobe units shall be waterproofed.~~

~~**2109.3.4.4 Wall thickness.** The minimum thickness of exterior walls in one-story buildings shall be 10 inches (254 mm). The walls shall be laterally supported at intervals not exceeding 24 feet (7315 mm). The minimum thickness of interior load-bearing walls shall be 8 inches (203 mm). In no case shall the unsupported height of any wall constructed of adobe units exceed 10 times the thickness of such wall.~~

~~**2109.3.4.5 Foundations.** Foundations for adobe construction shall be in accordance with Sections 2109.3.4.5.1 and 2109.3.4.5.2.~~

~~**2109.3.4.5.1 Foundation support.** Walls and partitions constructed of adobe units shall be supported by foundations or footings that extend not less than 6 inches (152 mm) above adjacent ground surfaces and are constructed of solid masonry (excluding adobe) or concrete. Footings and foundations shall comply with Chapter 18.~~

~~**2109.3.4.5.2 Lower course requirements.** Stabilized adobe units shall be used in adobe walls for the first 4 inches (102 mm) above the finished first-floor elevation.~~

~~**2109.3.4.6 Isolated piers or columns.** Adobe units shall not be used for isolated piers or columns in a load-bearing capacity. Walls less than 24 inches (610 mm) in length shall be considered isolated piers or columns.~~
~~**2109.3.4.7 Tie beams.** Exterior walls and interior load-bearing walls constructed of adobe units shall have a continuous tie beam at the level of the floor or roof bearing and meeting the following requirements.~~

~~**2109.3.4.7.1 Concrete tie beams.** Concrete tie beams shall be a minimum depth of 6 inches (152 mm) and a minimum width of 10 inches (254 mm). Concrete tie beams shall be continuously reinforced with a minimum of two No. 4 reinforcing bars. The specified compressive strength of concrete shall be at least 2,500 psi (17.2 MPa).~~

~~**2109.3.4.7.2 Wood tie beams.** Wood tie beams shall be solid or built up of lumber having a minimum nominal thickness of 1 inch (25 mm), and shall have a minimum depth of 6 inches (152 mm) and a minimum width of 10 inches (254 mm). Joints in wood tie beams shall be spliced a minimum of 6 inches (152 mm). No splices shall be allowed within 12 inches (305 mm) of an opening. Wood used in tie beams shall be approved naturally decay-resistant or preservative-treated wood.~~

~~**2109.3.4.8 Exterior finish.** Exterior walls constructed of unstabilized adobe units shall have their exterior surface covered with a minimum of two coats of Portland cement plaster having a minimum thickness of 3/ 4 inch (19.1 mm) and conforming to ASTM C 926. Lathing shall comply with ASTM C 1063. Fasteners shall be spaced at 16 inches (406 mm) on center maximum. Exposed wood surfaces shall be treated with an approved wood preservative or other protective coating prior to lath application.~~

~~**2109.3.4.9 Lintels.** Lintels shall be considered structural members and shall be designed in accordance with the applicable provisions of Chapter 16.~~

Add new text as follows:

SECTION 2109
DRY-STACK MASONRY

2109.1 General. The design of dry-stack masonry structures shall comply with the requirements of Chapters 1 through 8 of TMS 402 except as modified by Sections 2109.2 through 2109.5.

2109.2 Limitations. Dry-stack masonry shall be prohibited in Risk Category IV structures.

2109.3 Materials. Concrete masonry units complying with ASTM C90 shall be used.

2109.4 Strength. Dry-stack masonry shall be of adequate strength and proportions to suport all superimposed loads without exceeding the allowable stresses listed in Table 2109.4. Allowable stresses not specified in Table 2109.1.1 shall comply with the requirements of Chapter 8 of TMS 402.

TABLE 2109.4
GROSS CROSS-SECTIONAL AREA ALLOWABLE STRESS FOR DRY-STACK MASONRY

DESCRIPTION	MAXIMUM ALLOWABLE STRESS (psi)
Compression	45
Flexural tension	
Horizontal Span	30
Vertical Span	18
Shear	10

For SI: 1 pound per square inch = 0.006895 MPa.

2109.5 Construction. Construction of dry-stack masonry shall comply with ASTM C946.

Reason: Section 2109 of the IBC currently addresses the design and construction of: empirically designed conventional masonry; dry-stack masonry, and adobe masonry construction. This change effectively removes the provisions for empirical design and adobe construction while retaining the existing dry-stack provisions. Adobe construction, while still used in some niche markets, is almost exclusively limited to single family construction and as such is proposed to be removed from the IBC. (A separate code change proposal addresses incorporating the adobe design and construction requirements into the IRC.)

Codified empirical design provisions for masonry have existed in the US for nearly a century. This cookbook methodology of laying out and proportioning masonry elements is largely based on lessons learned through field performance rather than any analytical or research-based approach to design. As such, some have begun to question the practicality as well as safety of this design methodology. Given these concerns as well as the restrictions placed on empirical design (low wind and seismic) limiting its use geographically combined with the design community gravitating away from this method, the general consensus is that it is time to sunset empirical design.

Currently the reference standard TMS 402 still contains an Appendix A covering empirically designed masonry. The Committee's intent is to remove empirical design, but did not want to do so until the requirements for adobe and dry-stack construction were appropriately resolved in the IBC.

The provisions for dry-stack construction proposed here, while reformatted and cleaned up, are technically consistent with the existing IBC requirements for dry-stack construction. Minor differences include:

1) The term 'dry-stacked' is replaced with 'dry-stack'; as this is consistent with existing industry terminology.
2) The existing IBC language simply requires that 'concrete masonry units' be used for dry-stack construction. An explicit reference to ASTM C90 for loadbearing concrete masonry units is added in this proposal to avoid any ambiguity.
3) The existing IBC provisions requires that the 'allowable stresses' of TMS 402 be used for stresses not specified in Table 2109.4. The reference to 'allowable stresses' is replaced with a direct reference to Chapter 8 of TMS 402 (allowable stress design of masonry).

Cost Impact: Will not increase the cost of construction
While some many argue that not having a simple-to-use empirical method for designing masonry structures would increase the cost of construction, a counter argument could claim that engineered masonry structures yield more economical designs.

Report of Committee Action Hearings

Committee Action: **Approved as Modified**

Modify as follows:

SECTION 2109
EMPIRICAL DESIGN OF <u>ADOBE</u> MASONRY

2109.1 General. Empirically designed <u>adobe</u> masonry shall conform to the requirements of Appendix A of TMS 402/ACI 530/ASCE 5, except where otherwise noted in this section.

2109.1.1 Limitations. The use of empirical design of adobe masonry shall be limited as noted in Section A.1.2 of TMS 402/ACI 530/ASCE 5.~~The use of dry-stacked, surface-bonded masonry shall be prohibited in Risk Category IV structures.~~ In buildings that exceed one or more of the limitations of Section A.1.2 of TMS 402/ACI 530/ASCE 5, masonry shall be designed in accordance with the engineered design provisions of Section 2101.2 or the foundation wall provisions of Section 1807.1.5.

Section A.1.2.2 of TMS 402/ACI 530/ASCE 5 shall be modified as follows:

A.1.2.2 – *Wind*. Empirical requirements shall not apply to the design or construction of masonry for buildings, parts of buildings, or other structures to be located in areas where V_{asd} as determined in accordance with Section 1609.3.1 of the *International Building Code* exceeds 110 mph.

2109.3 Adobe construction. *No change to original text.*

2109.3.1 Unstabilized adobe. *No change to original text.*

2109.3.1.1 Compressive strength. *No change to original text.*

2109.3.1.2 Modulus of rupture. *No change to original text.*

2109.3.1.2.1 Support conditions. *No change to original text.*

2109.3.1.2.2 Loading conditions. *No change to original text.*

2109.3.1.2.3 Testing procedure. *No change to original text.*

2109.3.1.2.4 Modulus of rupture determination. *No change to original text.*

2109.3.1.3 Moisture content requirements. *No change to original text.*

2109.3.1.4 Shrinkage cracks. *No change to original text.*

2109.3.2 Stabilized adobe. *No change to original text.*
2109.3.2.1 Soil requirements. *No change to original text.*

2109.3.2.2 Absorption requirements. *No change to original text.*

2109.3.3 Allowable stress. *No change to original text.*

2109.3.3.1 Bolts. *No change to original text.*

TABLE 2109.3.3.1
ALLOWABLE SHEAR ON BOLTS IN ADOBE MASONRY

No change to original text.

2109.3.4 Detailed requirements. *No change to original text.*

2109.3.4.1 Number of stories. *No change to original text.*

2109.3.4.2 Mortar. *No change to original text.*

2109.3.4.2.1 General. *No change to original text.*

2109.3.4.2.2 Mortar joints. *No change to original text.*

2109.3.4.3 Parapet walls. *No change to original text.*

2109.3.4.4 Wall thickness. *No change to original text.*

2109.3.4.5 Foundations. *No change to original text.*

2109.3.4.5.1 Foundation support. *No change to original text.*

2109.3.4.5.2 Lower course requirements. *No change to original text.*

2109.3.4.6 Isolated piers or columns. *No change to original text.*

2109.3.4.7 Tie beams. *No change to original text.*

2109.3.4.7.1 Concrete tie beams. *No change to original text.*

2109.3.4.7.2 Wood tie beams. *No change to original text.*

2109.3.4.8 Exterior finish. *No change to original text.*

2109.3.4.9 Lintels. *No change to original text.*

SECTION ~~2109~~ 2114
DRY-STACK MASONRY

~~2109.1~~ 2114.1 General. *No change to text.*

~~2109.2~~ 2114.2 Limitations. *No change to text.*

~~2109.3~~ 2114.3 Materials. *No change to text.*

~~2109.4~~ 2114.4 Strength. Dry-stack masonry shall be of adequate strength and proportions to support all superimposed loads without exceeding the allowable stresses listed in Table ~~2109.4~~ 2114.4 . Allowable stresses not specified in Table ~~2109.1.1~~ 2114.4 shall comply with the requirements of Chapter 8 of TMS 402.

TABLE ~~2109.4~~ 2114.4
GROSS CROSS-SECTIONAL AREA ALLOWABLE STRESS FOR DRY-STACK MASONRY

~~For SI: 1 pound per square inch = 0.006895 MPa.~~

~~2109.5~~ 2114.5 Construction. *No change to text.*

Committee Reason: This code change removes the empirical design of masonry provisions which can still be found in an appendix chapter of TMS 402. The modification retains the provision for adobe masonry construction.

Assembly Action **None**

Final Action Results

S249-16	AM

Back

Code Change No: S251-16

Original Proposal

Section: 2109.3.4.2.1

Proponent: Karl Loescher, Loescher Meachem Architects, representing The Earthbuilders' Guild (bloescher@lmarchitectsinc.com)

Revise as follows:

2109.3.4.2.1 General. Mortar for ~~stabilized~~ adobe units shall ~~comply~~ be in accordance with ~~this chapter~~ Section 2103.9, or be comprised of adobe soil of the same composition and stabilization as the adobe brick units. ~~Adobe~~ Unstabilized adobe soil ~~used as~~ mortar ~~shall comply~~ is permitted in conjunction with ~~material requirements for stabilized adobe. Mortar for~~ unstabilized adobe ~~shall be Portland cement mortar~~ brick units.

Reason:
Overview:
Through experience and testing, it has been demonstrated that earthen wall systems perform best structurally and are most durable when they are constructed of homogenous materials, both within the brick units themselves, as well as between the brick units and binding mortar.

Traditionally, adobe brick wall construction used mortars comprised of the same earthen constituents as the bricks themselves.

As the slow set of earthen mortars determines the pace of adobe construction, with the availability of cement mortars, adobe masons began using lime and portland cement to increase production. This innovation became integrated into model code language for unstabilized adobe bricks. However, not only is there no positive evidence to support the requirement, but research has shown that the use of portland cement mortars as prescribed in the code yields walls that are less cohesive, and more prone to degradation than mortars made of adobe soil, whether stabilized or unstabilized. The code should be amended to allow mortars of characteristics and components as similar to those of the adobe brick as possible.

Accepted Best Practices:
Although the use of Portland cement mortars is currently prescribed by code for unstabilized adobes, accepted best practices do not encourage their use. For example, ASTM E2392/E2392M "Standard Guide for Design of Earthen Wall Building Systems" advises the following:

7.1.5 Mortars should be as nearly as possible the same material as the masonry in terms of strength, stiffness, and vapor permeability. Unstabilized earthen mortars should not be used on the exterior of cement-stabilized or stone masonry, and cement-based mortars should not be used with unstabilized earthen masonry. In all cases, mortar joints should be kept as thin as practicable; the thinner the mortar joints, the stronger the wall.

The same advice is echoed in the National Park Service's Preservation of Historic Adobe Buildings brief, this time with respect to building durability, with the implication that the use of mortars incompatible with the adobe brick units can cause structural deterioration of the wall:

"In repairing loose and deteriorated adobe mortar, care should also be taken to match the original material, color, and texture. Most important, never replace adobe mud mortar with lime mortar or portland cement mortar. It is a common error to assume that mortar hardness or strength is a measure of its suitability in adobe repair or reconstruction. Mortars composed of portland cement or lime do not have the same thermal expansion rate as adobe brick. With the continual thermal expansion and contraction of adobe bricks, portland cement or lime mortars will cause the bricks—the weaker material—to crack, crumble, and eventually disintegrate."
Earth Masonry: Design & Construction Guidelines further makes the case against the use of Portland Cement mortars:
"Traditional clay mortars… illustrate the fundamental rule that the mortar should have strength and movement characteristics that are compatible with the masonry unit… Cementitious mortars are never appropriate for earth masonry, as their dramatically greater stiffness stresses the mortar-brick bonds through differential thermal and moisture movements." (Morton, 54)

Structural Considerations:
Structural testing on compressed earth blocks confirms this guidance, suggesting "little benefit to be gained from using comparatively high strength mortars with most pressed earth blocks" (Morgan, 7), cement mortars were "ineffective" at increasing the strength of adobe/mortar sandwiches (Islam & Iwashita, 286), and that when used with cement stabilized compressed earth block units "composite mortars such as cement-lime mortar and cement-soil mortars have better tensile bond strength as compared to cement mortar" (Reddy & Gupta, 42).

The greater strength offered by Portland Cement mortars (acknowledged in the code as Type N, S, and M) has no documented benefit when used in conjunction with comparatively weak masonry units such as adobe brick and compressed earth block.

Durability Considerations:

Outside of the laboratory, it should be further understood that adobe bricks have been shown to be most durable when laid with mortars that have similar qualities (Garrison & Ruffner, 40), (Guillaud et al, 24). In addition to having similar strength between mortar and brick unit (which is discussed above), other material characteristics where dissimilarity has proven negative consequences on wall durability include permeability/porosity, density, resistance to erosion, and coefficient of expansion. This similarity of property would be guaranteed if the code were revised as proposed.

Conclusion:
Modifying the model language to allow the use of adobe mortars comprised of the same materials as the bricks themselves will have no negative impact on life safety, but will allow builders and designers to increase the structural performance and durability of adobe buildings.

Bibliography:

Preservation Brief 5: Preservation of Historic Adobe Buildings. U.S. Department of the Interior National Park Service Heritage Preservation Services, 1978. http://www.nps.gov/tps/how-to-preserve/briefs/5-adobe-buildings.htm
E2392/E2392M Standard Guide for Design of Earthen Wall Building Systems. ASTM International, 2010: p. 6.
Garrison, James, and Ruffner, Elizabeth. *Practical & Technical Aspects of Adobe Conservation*. Heritage Foundation of Arizona. Tuscon, 1983. p. 40.
Guillaud, H., Joffrey, T, and Odul, P. *Compressed Earth Blocks: Manual of Design and Construction.* Deutsches Zentrum für Entwicklungstechnologien. Eschborn, 1995.
Islam, Mohammad Shariful, and Iwashita, Kazuyoshi. *"Seismic Strengthening of Adobe Structures Using Low-Cost Materials"*. Terra 2008 : Proceedings of the 10th International Conference on the Study and Conservation of Earthen Architectural Heritage, Bamako, Mali, February 1–5, 2008. Getty Conservation Trust, Los Angeles, 2011: p. 286.
Morgan, P. *"Bond Characteristics of Earth Block Masonry."* Journal of Materials in Civil Engineering 11.3 :p. 7
Morton, Tom. *Earth Masonry Design and Construction Guidelines.* IHS BRE Press, Bracknell, 2008.
Venkatarama Reddy, B. V., and Ajay Gupta. *"Tensile Bond Strength of Soil-Cement Block Masonry Couplets Using Cement-Soil Mortars."* Journal of Materials in Civil Engineering 18.1 (2006): 42.

Cost Impact: Will not increase the cost of construction
This code change will not increase the cost of construction. Designers and contractors will still have the option of selecting faster-setting, portland cement mortars.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Modify as follows:

2109.3.4.2.1 General. Mortar for adobe units shall be in accordance with Section ~~2103.9~~ 2103.2.1, or be comprised of adobe soil of the same composition and stabilization as the adobe brick units. Unstabilized adobe soil mortar is permitted in conjunction with unstabilized adobe brick units.

Committee Reason: This code change addresses an issue with adobe construction. The modification corrects a section reference.

Assembly Action **None**

Final Action Results

S251-16	**AS**

Back

Code Change No: S252-16

Original Proposal

Section(s): 2203.1, 2203.2, 2210.2, 2211.1, 2211.1.1 (New), 2211.1.1.1 (New), 2211.1.1.2 (New), 2211.2, 2211.2 (New), 2211.3, 2211.3.1, 2211.3.2, 2211.3.3, 2211.3.4, 2211.4, 2211.5, 2211.6, 2211.7

Proponent: Bonnie Manley, AISI , representing American Iron and Steel Institute (bmanley@steel.org)

Revise as follows:

2203.1 Identification. Identification of *structural steel elements* shall be in accordance with AISC 360. Identification of cold-formed steel members shall be in accordance with AISI S100. Identification of cold-formed steel light-frame construction shall also comply with the requirements contained in AISI ~~S200~~ S240 or AISI S220, as applicable. Other steel furnished for structural load-carrying purposes shall be properly identified for conformity to the ordered grade in accordance with the specified ASTM standard or other specification and the provisions of this chapter. Steel that is not readily identifiable as to grade from marking and test records shall be tested to determine conformity to such standards.

2203.2 Protection. Painting of *structural steel elements* shall be in accordance with AISC 360. Painting of open-web steel joists and joist girders shall be in accordance with SJI CJ, SJI JG, SJI K and SJI LH/DLH. Individual structural members and assembled panels of cold-formed steel construction shall be protected against corrosion in accordance with the requirements contained in AISI S100. Protection of cold-formed steel light-frame construction shall be in accordance with AISI ~~S200~~ S240 or AISI S220, as applicable.

2210.2 Seismic requirements for cold-formed steel structures. Where a response modification coefficient, *R*, in accordance with ASCE 7, Table 12.2-1, is used for the design of cold-formed steel structures, the structures shall be designed and detailed in accordance with the requirements of AISI S100, ASCE 8, or, for cold-formed steel special-bolted moment frames, AISI ~~S110~~ S400.

2211.1 ~~General~~ Structural framing. ~~The~~ For cold-formed steel light-frame construction, the design and installation of the following structural framing systems, including their members and ~~nonstructural members utilized in cold-formed steel light-frame construction where the specified minimum base steel thickness is not greater than 0.1180 inches (2.997 mm)~~ connections, shall be in accordance with AISI ~~S200~~ S240, and Sections ~~2211.2~~2211.1.1 through ~~2211.7, or AISI S220~~ 2211.1.3, as applicable~~.~~:

1. Floor and roof systems,
2. Structural walls,
3. Shear walls, strap braced walls and diaphragms to resist in-plane lateral loads, and
4. Trusses.

Add new text as follows:

2211.1.1 Seismic requirements for cold-formed steel structural systems. The design of cold-formed steel light frame construction to resist seismic forces shall be in accordance with the provisions of Section 2211.1.1.1 or 2211.1.1.2, as applicable.

2211.1.1.1 Seismic Design Categories B and C. Where a response modification coefficient, R, in accordance with ASCE 7, Table 12.2-1 is used for the design of cold-formed steel light frame construction assigned to *Seismic Design Category* B or C, the seismic force-resisting system shall be designed and detailed in accordance with the requirements of AISI S400.

Exception: The response modification coefficient, R, designated for "Steel systems not specifically detailed for seismic resistance, excluding cantilever column systems" in ASCE 7 Table 12.2-1 shall be permitted for systems designed and detailed in accordance with AISI S240 and need not be designed and detailed in accordance with AISI S400.

2211.1.1.2 Seismic Design Categories D through F. In cold-formed steel light frame construction assigned to *Seismic Design Category* D, E, or F, the seismic force-resisting system shall be designed and detailed in accordance with AISI S400.

Revise as follows:

~~2211.7~~ 2211.1.2 Prescriptive framing. *No change to text.*

~~2211.3~~ 2211.1.3 Truss design. Cold-formed steel trusses shall ~~be designed in accordance~~ comply with ~~AISI S214,~~the additional provisions of Sections ~~2211.3.1~~2211.1.3.1 through ~~2211.3.4 and accepted engineering practice~~ 2211.1.3.3.

~~2211.3.1~~ 2211.1.3.1 Truss design drawings. The truss design drawings shall conform to the requirements of Section ~~B2.3~~ I1 of AISI ~~S214~~ S202 and shall be provided with the shipment of trusses delivered to the job site. The truss design drawings shall include the details of permanent individual truss member restraint/bracing in accordance with Section ~~B6(a) or B 6(c)~~ I1.6 of AISI ~~S214~~ S202 where these methods are utilized to provide restraint/bracing.

~~2211.3.3~~ 2211.1.3.2 Trusses spanning 60 feet or greater. *No change to text.*

~~2211.3.4~~ 2211.1.3.3 Truss quality assurance. Trusses not part of a manufacturing process that provides requirements for quality control done under the supervision of a third-party quality control agency in accordance with AISI S240 Chapter D, shall be ~~manufactured~~ fabricated in compliance with Sections 1704.2.5 and 1705.2, as applicable.

Delete without substitution:

~~**2211.2 Header design.** Headers, including box and back-to-back headers, and double and single L-headers shall be designed in accordance with AISI S212 or AISI S100.~~

Add new text as follows:

2211.2 Nonstructural Members. For cold-formed steel light frame construction, the design and installation of nonstructural members and connections shall be in accordance with AISI S220.

Delete without substitution:

~~**2211.3.2 Deferred submittals.** AISI S214 Section B4.2 shall be deleted.~~

~~**2211.4 Structural wall stud design.** Structural wall studs shall be designed in accordance with either AISI S211 or AISI S100.~~

~~**2211.5 Floor and roof system design.** Framing for floor and roof systems in buildings shall be designed in accordance with either AISI S210 or AISI S100.~~

~~**2211.6 Lateral design.** Light-frame shear walls, diagonal strap bracing that is part of a structural wall and diaphragms used to resist wind, seismic and other in-plane lateral loads shall be designed in accordance with AISI S213.~~

Reference standards type: This contains both new and updated standards
Add new standard(s) as follows:

~~AISI S200—12, *North American Standard for Cold-Formed Steel Framing-General Provisions*, 2012, 2203.1, 2203.2, 2211.1, Table 2603.12.1,Table 2603.12.2~~
~~AISI S210—07(2012), *North American Standard for Cold-Formed Steel Framing-Floor and Roof System Design*, 2007 (Reaffirmed 2012), 2211.5~~
~~AISI S211—07/S1-12(2012), *North American Standard for Cold-Formed Steel Framing-Wall Stud Design*, 2007 including Supplement 1, dated 2012 (Reaffirmed 2012), 2211.4~~
~~AISI S212—07(2012), *North American Standard for Cold-Formed Steel Framing-Header Design*, 2007, (Reaffirmed 2012), 2211.2~~
~~AISI S213—07/S1-09 (2012) *North American Standard for Cold-Formed Steel Framing-Lateral Design*, 2007, with Supplement 1, dated 2009, (Reaffirmed 2012), 2211.6~~
~~AISI S214—12, *North American Standard for Cold-formed Steel Framing-Truss Design*, 2012, 2211.3, 2211.3.1, 2211.3.2~~

AISI S202, *Code of Standard Practice for Cold-Formed Steel Structural Framing*, 2015
AISI S240, *North American Standard for Cold-Formed Steel Structural Framing*, 2015
AISI S400, *North American Standard for Seismic Design of Cold-Formed Steel Structural Systems*, 2015

Reason: This proposal is one in a series adopting the latest generation of AISI standards for cold-formed steel. This particular proposal focuses on Chapter 22 by incorporating references to three new cold-formed steel standards -- AISI S240, AISI S400, and AISI S202. All three standards are published and available for a free download at: www.aisistandards.org.

AISI S240, *North American Standard for Cold-Formed Steel Structural Framing*, addresses requirements for construction with cold-formed steel structural framing that are common to prescriptive and engineered light frame construction. This comprehensive standard was formed by merging the following AISI standards:

- AISI S200, *North American Standard for Cold-Formed Steel Framing-General Provisions*
- AISI S210, *North American Standard for Cold-Formed Steel Framing–Floor and Roof System Design*
- AISI S211, *North American Standard for Cold-Formed Steel Framing–Wall Stud Design*
- AISI S212, *North American Standard for Cold-Formed Steel Framing–Header Design*
- AISI S213, *North American Standard for Cold-Formed Steel Framing– Lateral Design*
- AISI S214, *North American Standard for Cold-Formed Steel Framing–Truss Design*

Consequently, AISI S240 supersedes all previous editions of the above mentioned individual AISI standards. Additionally, the standard builds upon this foundation by adding the first comprehensive chapter on quality control and quality assurance for cold-formed steel light frame construction.

AISI S400, *North American Standard for Seismic Design of Cold-Formed Steel Structural Systems*, addresses the design and construction of cold-formed steel structural members and connections used in the seismic force-resisting systems in buildings and other structures. This first edition primarily represents a merging of the requirements from AISI S110, *Standard for Seismic Design of Cold- Formed Steel Structural Systems – Special Bolted Moment Frame*, 2007 with Supplement No. 1-09, and the seismic portions of AISI S213, *North American Standard for Cold-Formed Steel Framing – Lateral Design*, 2007 with Supplement No. 1-09. The layout and many of the seismic design requirements are drawn from ANSI/AISC 341-10, *Seismic Provisions for Structural Steel Buildings*, which is developed by the American Institute of Steel Construction (AISC). AISI S400 supersedes AISI S110 and the seismic design provisions of AISI S213 and is intended to be applied in conjunction with both AISI S100 and AISI S240, as applicable.
AISI S202, *Code of Standard Practice for Cold-formed Steel Structural Framing,* is intended to service as a state-of-the-art mandatory document for establishing contractual relationships between various parties in a construction project where cold-formed steel structural materials, components and assemblies are used. While it is not specifically intended to be a direct reference in the building code, portions of AISI S202 are recommended for adoption in this proposal to establish the minimum requirements for cold-formed steel truss design drawings.
Modifications specific to Chapter 22 include the following:

- Section 2203: Requirements on identification and protection of cold-formed steel framing are now located in AISI S240.
- Section 2210.2: Requirements for the cold-formed steel special-bolted moment frame are now located in AISI S400.
- Section 2211: Requirements for cold-formed steel light-frame construction are now split into two major subsections – structural provisions are located in Section 2211.1 and nonstructural provisions are located in Section 2211.2.
- Section 2211.1: Reference to AISI S240 is made for the general design of cold-formed steel structural framing systems.
- Section 2211.1.1: Reference to AISI S400 is made for the design of cold-formed steel seismic force-resisting systems. Since the relationship between AISI S240 and AISI S400 is similar to that between AISC 360 and AISC 341, the charging language in IBC Section 2211.1.1 has been modified to parallel the language in Section 2205.2 for structural steel. It

adopts AISI S400 and exempts seismic force-resisting systems only where the seismic design category is B or C and the seismic response modification coefficient, R, equals 3. This is done to recognize that ASCE 7, Table 12.2-1, Line H exempts steel systems from seismic detailing requirements as long as they are designed in accordance with AISI S240.

- Section 2211.1.2: No substantive changes are proposed for prescriptive framing.
- Section 2211.1.3: Requirements for cold-formed steel trusses are updated and streamlined to reflect changes in AISI S240. Additionally, in the process of merging the old AISI S214 into the new AISI S240, requirements for truss design drawings were relocated to AISI S202. Consequently, a direct pointer was added to Section 2211.1.3.1.

Cost Impact: Will increase the cost of construction
This code change proposal adopts the latest industry standards for cold-formed steel. At this time, it is difficult to anticipate how cost of construction will be fully impacted, other than to note that some of the additional costs will be offset by new efficiencies in the design and installation of cold-formed steel.

Analysis: A review of the standard(s) proposed for inclusion in the code, AISI S202, AISI S240 & AISI S400 with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 1, 2016.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This proposal adds the latest versions of AISI cold-formed steel referenced standards. In addition it updates these provisions for consistency with the latest edition of ASCE 7.

Assembly Action: **None**

Public Comments

Public Comment 1:

Bonnie Manley, AISI, representing American Iron and Steel Institute (bmanley@steel.org) requests Approve as Modified by this Public Comment.

Modify as follows:

2211.1 Structural framing. For cold-formed steel light-frame construction, the design and installation of the following structural framing systems, including their members and connections, shall be in accordance with AISI S240, and Sections 2211.1.1 through 2211.1.3, as applicable:

1. Floor and roof systems,
2. Structural walls,
3. Shear walls, strap braced walls and diaphragms to resist in-plane lateral loads, and
4. Trusses.

Reference standards type: This reference standard is new to the ICC Code Books
Add new standard(s) as follows:

AISI S202, *Code of Standard Practice for Cold-Formed Steel Structural Framing*, 2015
AISI S240, *North American Standard for Cold-Formed Steel Structural Framing*, 2015
AISI ~~S400-15~~ S400-15/S1-16, *North American Standard for Seismic Design of Cold-Formed Steel Structural Systems*, 2015, with Supplement 1, dated 2016

Commenter's Reason: The AISI Committee on Framing Standards recently completed Supplement 1-16 to AISI S400-15. It addresses a public comment received on the standard from California's Division of the State Architect (DSA). This supplement revises the expected strength factors for cold-formed steel light-frame shear walls sheathed with wood structural panels, steel sheet sheathing, gypsum board, and fiberboard panel sheathing. The supplement is published and available for a free download at: www.aisistandards.org.

Analysis: The proposed modification to this code change proposal includes update of the year edition of standard AISI S400-15 to AISI S400-15/S1-16. CP28, Section 3.6.3.1 and newly referenced standard "shall be completed and readily available prior to the Public Comment Hearing based on the cycle of code development which includes the code change proposal." Therefore, the proponent has, as required, provided information verifying that the standard AISI S400-15/S1-16 is completed and readily available at the time of the public comment hearings.

Final Action Results

S252-16	AMPC1

Back

Code Change No: S253-16

Original Proposal

Section: 2208.2

Proponent: Jennifer Goupil, representing SELF (jgoupil@asce.org)

Delete without substitution:

~~**2208.2 Seismic requirements for steel cable.** The design strength of steel cables shall be determined by the provisions of ASCE 19 except as modified by these provisions.~~

1. ~~A load factor of 1.1 shall be applied to the prestress force included in T_3 and T_4 as defined in Section 3.12.~~
2. ~~In Section 3.2.1, Item (c) shall be replaced with "1.5 T_3," and Item (d) shall be replaced with "1.5 T_4."~~

Reason: This proposal is a coordination proposal to bring the 2018 IBC up to date with the provisions of the 2016 edition of *ASCE 19 Structural Applications for Steel Cables in Buildings*. The proposal removes the exceptions to ASCE 19 for seismic requirements for steel cables. The exceptions are no longer applicable because the load combinations in ASCE 19 have been harmonized with the load combinations in *ASCE 7 Minimum Design Loads for Buildings and Other Structures* as of the 2010 edition of that standard. The load combinations and safety factors in ASCE 19 have been updated for the past two cycles of the standard, yet this outdated exception remained in the code erroneously.

Cost Impact: Will not increase the cost of construction
The proposed changes will not impact the cost of construction. This proposal coordinates the IBC with the referenced standard *ASCE 19 Structural Applications for Steel Cables in Buildings*. ASCE 19 will be updated from the 2010 edition tot he 2016 edition as an Administrative Update to the 2018 I-Codes.

As of the submission date of this code change proposal, the ASCE 19 Standards Committee has completed the committee balloting on the technical changes and the standard is expected to be open for public comment in February of 2016. The document designated *ASCE 19-16StructuralApplications for Steel Cables in Buildings* is expected to be completed, published, and available for purchase prior to the ICC Public Comment Hearings in October 2016. Any person interested in obtaining a public comment copy of ASCE 19-16 may do so by contacting James Neckel at ASCE (jneckel "at" asce.org).

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This proposal removes an obsolete requirement for steel cable from the code.

Assembly Action **None**

Final Action Results

S253-16	**AS**

Back

Code Change No: S255-16

Original Proposal

Section: 2209.2 (New)

Proponent: Victor Azzi, representing Rack Manufacturers Institute (victorazzi@comcast.net)

Add new text as follows:

2209.2 Cantilevered steel storage racks. The design, testing, and utilization of cantilevered storage racks made of cold-formed or hot-rolled steel structural members shall be in accordance with RMI/ANSI MH 16,3. Where required by ASCE 7, the seismic design of cantilevered steel storage racks shall be in accordance with Section 15.5.3.3 of ASCE 7.

Reference standards type: This reference standard is new to the ICC Code Books
Add new standard(s) as follows:

RMI/ANSI MH 16.3-2016. Specification for the Design, Testing, and Utilization of Industrial Steel Cantilevered Storage Racks.

Reason: This proposal is intended to coordinate the definition of cantilevered storage racks with the 2015 IBC definition of steel storage racks as well as the ASCE 7 Standard, and to include the new Cantilevered Storage Rack standard, RMI/ANSI MH 16.3, in both the ASCE 7 and the IBC by reference. Having a separate standard for cantilevered storage racks will help clarify, for the designers and users of industrial steel storage racks, the characteristics and essential differences and requirements in the design, construction, use, and behavior of cantilevered storage racks as distinguished from the more conventional systems commonly known as "pallet rack" or "selective rack."

Cost Impact: Will not increase the cost of construction
There will be no cost impact. There will be no increase in the cost of construction and installation of this manufactured product. Cantilevered Storage Racks have been manufactured and successfully utilized in large-scale warehouses and distribution centers for many years. Having a new Standard developed and introduced to the industry at this time is intended to identify, clarify, and memorialize the essential differences in the behaviors of such structural systems and the important considerations and requirements in their detailed design, installation, and utilization. This product will continue to be designed and produced primarily by the same manufacturers who have been producing cantilevered storage racks, along with the more common pallet racks, for many years.

Analysis: A review of the standard(s) proposed for inclusion in the code, RMI/ANSI MH 16.3, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 1, 2016.

Report of Committee Action Hearings

Committee Action: **Approved as Modified**

Modify as follows:

2209.2 Cantilevered steel storage racks. The design, testing, and utilization of cantilevered storage racks made of cold-formed or hot-rolled steel structural members shall be in accordance with RMI/ANSI MH 16,3. Where required by ASCE 7, the seismic design of cantilevered steel storage racks shall be in accordance with Section 15.5.3 of ASCE 7.

Committee Reason: This proposal adds a referenced standard on storage rack systems that are currently installed in many buildings. Many jurisdictions review and permit these installations and this will be useful in plan review so it belongs in the code. The racks need to be designed and secured - failures would be a life safety concern. These nonbuilding structures are covered in Chapter 15 of ASCE 7 and this is no different than what is done for nonstructural components. Some permissive language exists in the proposed standard, but it is relatively insignificant and the benefits outweigh any downside. A suggestion was put fort to consider revising the scope of reference to the standard in a public comment by deleting "utilization". The modification makes an adjustment to the referenced section of ASCE 7.

Assembly Action **None**

Final Action Results

S255-16	**AM**

Back

Code Change No: **S258-16**

Original Proposal

Section: 2303.1.7, [BS] 1404.3, [BS] 1404.3.1, [BS] 1404.3.2

Proponent: David Tyree, representing American Wood Council (dtyree@awc.org)

Revise as follows:

[BS] 1404.3 Wood. *Exterior walls* of wood construction shall be designed and constructed in accordance with Chapter 23.

[BS] 1404.3.1 Basic hardboard. Basic hardboard shall conform to the requirements of ~~AHA~~ ANSI A135.4.

[BS] 1404.3.2 Hardboard siding. Hardboard siding shall conform to the requirements of ~~AHA~~ ANSI A135.6 and, where used structurally, shall be so identified by the *label* of an *approved* agency.

2303.1.7 Hardboard. Hardboard siding shall conform to the requirements of ANSI A135.6 and, where used structurally shall be identified by the label of an *approved* agency. ~~conforming to CPA/ANSI A135.6.~~ Hardboard underlayment shall meet the strength requirements of $^{7}/_{32}$-inch (5.6 mm) or $^{1}/_{4}$-inch (6.4 mm) service class hardboard planed or sanded on one side to a uniform thickness of not less than 0.200 inch (5.1 mm). Prefinished hardboard paneling shall meet the requirements of ~~CPA/~~ANSI A135.5. Other basic hardboard products shall meet the requirements of ~~CPA/~~ANSI A135.4. Hardboard products shall be installed in accordance with manufacturer's recommendations.

Reason: This proposal references various CPA standards in a consistent manner and also clarifies that hardboard siding must conform to the requirements of A135.6 in 2303.1.7 in a consistent manner with reference to hardboard siding in 1404.3.2.

Cost Impact: Will not increase the cost of construction
This proposal clarifies the code and does not place any additional costs on the user.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This proposal makes the references to standards consistent and is primarily editorial.

Assembly Action **None**

Final Action Results

S258-16	**AS**

Back

Code Change No: S262-16

Original Proposal

Section: 2303.2.2

Proponent: Joseph Holland (jholland@frtw.com)

Revise as follows:

2303.2.2 Other means during manufacture. For wood products ~~produced~~ impregnated with chemicals by other means during manufacture, the treatment shall be an integral part of the manufacturing process of the wood product. The treatment shall provide permanent protection to all surfaces of the wood product. The use of paints, coating, stains or other surface treatment shall not be permitted.

Reason: This section is subject to misinterpretation. The phrase "other means during manufacture" is often quoted as "other means" leaving it open to nonconforming material such as paints, stains and other surface treatments. These surface treatments are not permanent. They are subject to abrasion, degradation from exposure to rain during installation, and flaking or peeling due to the difference in the expansion coefficient of the two materials. When used as roof sheathing the material can be subjected to temperature swings of 100 degrees F or more and during winter months exposure to substantial moisture can be expected.
All of the testing (full scale, large scale and small scale) done on fire-retardant-treated wood in order to be recognized in the code was done on pressure impregnated lumber and plywood.

Cost Impact: Will not increase the cost of construction
Material now recognized is pressure impregnated or the furnish (chips, strands, and flakes) is treated during the manufacturing process. There is no change in those requirements.

Report of Committee Action Hearings

Committee Action: **Approved as Modified**

Modify as follows:

2303.2.2 Other means during manufacture. For wood products impregnated with chemicals by other means during manufacture, the treatment shall be an integral part of the manufacturing process of the wood product. The treatment shall provide permanent protection to all surfaces of the wood product. The use of paints, coatings, stains or other surface ~~treatment shall~~ treatments are not ~~be permitted~~ an approved method of protection as required in this section.

Committee Reason: This code change adds a necessary clarification to the use of surface treatments for wood. The modification makes the use of such materials possible as an alternate method.

Assembly Action **None**

Final Action Results

S262-16	**AM**

Back

Code Change No: S265-16

Original Proposal

Section: 2303.2.4

Proponent: Joseph Holland, representing Hoover Treated Wood Products (jholland@frtw.com)

Revise as follows:

2303.2.4 Labeling. ~~Fire-retardant-treated~~ <u>In addition to the labels required in Section 2303.1.1 for sawn lumber and Section 2303.1.5 for wood structural panels each piece of fire-retardant-treated</u> lumber and wood structural panels shall be labeled. The *label* shall contain the following items:

1. The identification *mark* of an *approved agency* in accordance with Section 1703.5.
2. Identification of the treating manufacturer.
3. The name of the fire-retardant treatment.
4. The species of wood treated.
5. Flame spread and smoke-developed index.
6. Method of drying after treatment.
7. Conformance with appropriate standards in accordance with Sections 2303.2.5 through 2303.2.8.
8. For *fire-retardant-treated wood* exposed to weather, damp or wet locations, include the words "No increase in the *listed* classification when subjected to the Standard Rain Test" (ASTM D 2898).

Reason: There are products coming into the marketplace that have obscured the labels required by Section 2303.1.1 and 2303.1.5. This change clarifies that FRTW must have two labels: one for the grading of the wood the other for the treatment. There are also manufacturers making the claim for a lift of lumber or wood structural panel. The change clarifies each piece must be labeled with both marks.

Cost Impact: Will not increase the cost of construction
Manufacturer's treating in accordance with the code requirement for pressure treatment or other means during manufacturer already mark each piece. The proposal clarifies, for others, what is already being done.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This proposal provides a clarification of the labeling of fire-retardant-treated wood that aides verification in the field.

Assembly Action **None**

Final Action Results

S265-16	**AS**

Back

Code Change No: S266-16

Original Proposal

Section: 2303.4.1.1

Proponent: Stephen Kerr, representing Self (skerr@jwa-se.com)

Revise as follows:

2303.4.1.1 Truss design drawings. The written, graphic and pictorial depiction of each individual truss shall be provided to the *building official* for approval prior to installation. Truss design drawings shall also be provided with the shipment of trusses delivered to the job site. Truss design drawings shall include, at a minimum, the information specified below:

1. Slope or depth, span and spacing;
2. Location of all joints and support locations;
3. Number of plies if greater than one;
4. Required bearing widths;
5. Design loads as applicable, including;
   5.1 Top chord live load;
   5.2 Top chord dead load;
   5.3 Bottom chord live load;
   5.4 Bottom chord dead load;
   5.5 Additional loads and locations; and
   5.6 Environmental design criteria and loads (wind, rain, snow, seismic, etc.).
6. Other lateral loads, including drag strut loads;
7. Adjustments to wood member and metal connector plate design value for conditions of use;
8. Maximum reaction force and direction, including maximum uplift reaction forces where applicable;
9. ~~Metal-connector-plate~~ Joint connection type~~,~~ and description such as size and thickness or gage, and the dimensioned location of each ~~metal~~ joint connector ~~plate~~ except where symmetrically located relative to the joint interface;
10. Size, species and grade for each wood member;
11. Truss-to-truss connections and truss field assembly requirements;
12. Calculated span-to-deflection ratio and maximum vertical and horizontal deflection for live and total load as applicable;
13. Maximum axial tension and compression forces in the truss members;
14. Required permanent individual truss member restraint location and the method and details of restraint/bracing to be used in accordance with Section 2303.4.1.2.

Reason: Under section 2303.4.1 wood trusses are permitted to be joined by nails, glue, bolts timber connectors, metal connector plates or other approved devices. As currently written IBC 2304.1.1 item 9 is limited to metal-connector plates, and would not require other jointing methods to specify the joint details. While the vast majority of wood trusses may be metal-plate type other options are permitted and the joint connections should be specified as part of the truss design drawings. For reference, the proposed language is taken from IRC R202.10.1 item 7. This will not only clarify the joint detail requirements for non metal-connector plate trusses but also harmonize the IBC and IRC codes.

Cost Impact: Will not increase the cost of construction
The proposal it to clarify the requirements of the truss design drawings. No technical requirements are proposed for the design of trusses.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This code change enhances IBC coordination with the IRC by providing more generic description of truss connections rather than limiting it to metal plate connectors,

Assembly Action **None**

Final Action Results

S266-16	**AS**

Back

Code Change No: S270-16

Original Proposal

Section: 2303.6

Proponent: Edwin Huston, representing National Council of Structural Engineers' Associations (NCSEA) (huston@smithhustoninc.com)

Revise as follows:

2303.6 Nails and staples. Nails and staples shall conform to requirements of ASTM F 1667, including Supplement 1. Nails used for framing and sheathing connections shall have minimum average bending yield strengths as follows: 80 kips per square inch (ksi) (551 MPa) for shank diameters larger than 0.177 inch (4.50 mm) but not larger than 0.254 inch (6.45 mm), 90 ksi (620 MPa) for shank diameters larger than 0.142 inch (3.61 mm) but not larger than 0.177 inch (4.50 mm) and 100 ksi (689 MPa) for shank diameters of at least 0.099 inch (2.51 mm) but not larger than 0.142 inch (3.61 mm). Staples used for framing and sheathing connections shall have minimum average bending moment as follows: 3.6 in.-lbs (0.41 N-m) for No. 16 gage staples, 4.0 in.-lbs (0.45 N-m) for No. 15 gage staples, and 4.3 in.-lbs (0.49 N-m) for No. 14 gage staples. The test procedure for staples shall be approved by the building official.

Reason: The referenced ASTM F1667 contains requirements for nail and staple sizes, however it only addresses bending yield strength requirements for nails in the supplementary requirements. ASTM F1667 section S1 is a set of supplementary requirements, not enforceable as a mandatory unless specifically referenced. For structural use nails the American Wood Council's National Design Specification (AWC NDS), the referenced standard for wood construction, does not contain any mandatory language enforcing nail strength requirements. As it currently stands AWC NDS requirements for fastener yield strengths are contained Table I1 which is non-mandatory and as such is not enforceable. This is why section 2303.6 contains the requirements for bending yield strength values for nails, however 2303.6 does not contain any testing methods for determining the average bending yield strength. To determine the yield strength ASTM F1667 Supplement S1 section S1.3 requires the procedure of ASTM F 1575 as the test method for determining the yield strength. If the supplement is not enforced then the test requirements of ASTM F 1575 are not enforced then there are no IBC requirements for testing nail strength.

In the past for structural applications when staples were used, one would rely on the Alternative Materials provisions of IBC section 104.11 and reference the International Staple, Nail and Tool (ISANTA) ICC Evaluation Services Report ESR-1539 for Power-Driven Staples and Nails. With the past several code cycles, staples have become fully integrated into the building code, and are recognized directly in the IBC as an option to nails for structural applications. Consequentially, for staples the Alternative Material procedure is no longer needed and it is possible that a staple manufacturer could produce code staples which are outside of the provisions of ESR-1539 but still acceptable by the IBC requirements.

Section 2303.6 contains strength requirements for nails only, the IBC lacks any similar strength requirements for staples. In addition, the referenced standards for wood fasteners - both AWC NDS and ASTM F 1667 Supplement S1 do not include staples. This proposal will add language for bending moment requirements for staples. The average bending moment values for staples are taken from the values currently found in ISANTA ICC ESR report 1539. Unfortunately since AWC NDS and ASTM do not contain any testing methods for evaluating staples, the testing methodology is left to the discretion of the building official. The only known source of staple performance testing is found in ICC Evaluation Services AC201. AC201 uses ASTM F1575 nail testing as the basis for the testing procedure and modifies testing as needed for the unique conditions of staples. Until the ASTM standards are updated to include test methods for staples the testing methods of AC201, as approved by the building official, is the logical approach to include staple test methods.

Cost Impact: Will increase the cost of construction
For nails there should be not be any cost implication, the proposal is only adding the test methodology for achieving the already code prescribed strength requirement.

For staples manufactured in conformance to the ISANTA ESR-1539 there will be no cost impact. If staples are manufactured to a lesser standard then there may be a slight cost increase. However it should be pointed out that for any fasteners not meeting ESR-1539 would not be meeting the intention of the IBC structural provisions.

Report of Committee Action Hearings

Committee Action: **Approved as Modified**

Modify as follows:

2303.6 Nails and staples. Nails and staples shall conform to requirements of ASTM F 1667, including Supplement 1. Nails used for framing and sheathing connections shall have minimum average bending yield strengths as follows: 80 kips per square inch (ksi) (551 MPa) for shank diameters larger than 0.177 inch (4.50 mm) but not larger than 0.254 inch (6.45 mm), 90 ksi (620 MPa) for shank diameters larger than 0.142 inch (3.61 mm) but not larger than 0.177 inch (4.50 mm) and 100 ksi (689 MPa) for shank diameters of at least 0.099 inch (2.51 mm) but not larger than 0.142 inch (3.61 mm). Staples used for framing and sheathing connections shall have minimum average bending moment as follows: 3.6 in.-lbs (0.41 N-m) for No. 16 gage staples, 4.0 in.-lbs (0.45 N-m) for No. 15 gage staples, and 4.3 in.-lbs (0.49 N-m) for No. 14 gage staples. ~~The test procedure for staples shall be approved by the building official.~~

Committee Reason: The committee believes that the minimum staple strength should be defined in the code. The modification removes the last sentence which appears to require a building official to approve the testing procedure on all projects.

Assembly Action **None**

Final Action Results

S270-16	**AM**

Back

Code Change No: S271-16

Original Proposal

Section: 2304.8

Proponent: Edwin Huston, representing National Council of Structural Engineers' Associations (NCSEA) (huston@smithhustoninc.com)

Revise as follows:

TABLE 2304.8 (5)
ALLOWABLE LOAD (PSF) FOR WOOD STRUCTURAL PANEL ROOF SHEATHING CONTINUOUS OVER TWO OR MORE SPANS AND STRENGTH AXIS PARALLEL TO SUPPORTS (Plywood Structural Panels Are Five-Ply, Five-Layer Unless Otherwise Noted)[a~~, b~~]

PANEL GRADE	THICKNESS (inch)	MAXIMUM SPAN (inches)	LOAD AT MAXIMUM SPAN (psf)	
			Live	Total
Structural I sheathing	7/16	24	20	30
	15/32	24	35[~~c~~b]	45[~~c~~b]
	1/2	24	40[~~c~~b]	50[~~c~~b]
	19/32 , 5/8	24	70	80
	23/32 , 3/4	24	90	100
Sheathing, other grades	7/16	16	40	50

PANEL GRADE	THICKNESS (inch)	MAXIMUM SPAN (inches)	LOAD AT MAXIMUM SPAN (psf)	
			Live	Total
covered in DOC PS 1 or DOC PS 2	15/32	24	20	25
	1/2	24	25	30
	19/32	24	40[~~c~~b]	50[~~c~~b]
	5/8	24	45[~~c~~b]	55[~~c~~b]
	23/32 , 3/4	24	60[~~c~~b]	65[~~c~~b]

For SI: 1 inch = 25.4 mm, 1 pound per square foot = 0.0479 kN/m 2 .

~~a. Roof sheathing complying with this table shall be deemed to meet the design criteria of Section 2304.8.~~

~~b~~a. Uniform load deflection limitations 1 / 180 of span under live load plus dead load, 1 / 240 under live load only. Edges shall be blocked with lumber or other approved type of edge supports.

~~c~~b. For composite and four-ply plywood structural panel, load shall be reduced by 15 pounds per square foot.

TABLE 2304.8 (4)
ALLOWABLE SPAN FOR WOOD STRUCTURAL PANEL COMBINATION SUBFLOOR-UNDERLAYMENT (SINGLE FLOOR)[~~a, b~~] (Panels Continuous Over Two or More Spans and Strength Axis Perpendicular to Supports)

IDENTIFICATION	MAXIMUM SPACING OF JOISTS (inches)				
	16	20	24	32	48
Species group[~~c~~b]	Thickness (inches)				
1	1/2	5/8	3/4	—	—
2, 3	5/8	3/4	7/8	—	—
4	3/4	7/8	1	—	—
Single floor span rating[~~d~~c]	16 o.c.	20 o.c.	24 o.c.	32 o.c.	48 o.c.

For SI: 1 inch = 25.4 mm, 1 pound per square foot = 0.0479 kN/m 2 .

a. Spans limited to value shown because of possible effects of concentrated loads. Allowable uniform loads based on deflection of 1 / 360 of span is 100 pounds per square foot except allowable total uniform load for 1 1 / 8 -inch wood structural panels over joists spaced 48 inches on center is 65 pounds per square foot. Panel edges shall have approved tongue-and-groove joints or shall be supported with blocking, unless 1 / 4 -inch minimum thickness underlayment or 1 1 / 2 inches of approved cellular or lightweight concrete is placed over the subfloor, or finish floor is 3 / 4 -inch wood strip.

~~b. Floor panels complying with this table shall be deemed to meet the design criteria of Section 2304.8.~~

~~c~~b. Applicable to all grades of sanded exterior-type plywood. See DOC PS 1 for plywood species groups.

~~d~~c. Applicable to Underlayment grade, C-C (Plugged) plywood, and Single Floor grade wood structural panels.

TABLE 2304.8 (3)
ALLOWABLE SPANS AND LOADS FOR WOOD STRUCTURAL PANEL SHEATHING AND SINGLE-FLOOR GRADES CONTINUOUS OVER TWO OR MORE SPANS WITH STRENGTH AXIS PERPENDICULAR TO SUPPORTS[~~a, b~~]

SHEATHING GRADES		ROOF[~~c~~b]				FLOOR[~~d~~c]
Panel span rating roof/ floor span	Panel thickness (inches)	Maximum span (inches)		Load[~~e~~d] (psf)		Maximum span (inches)
		With edge support[~~f~~e]	Without edge support	Total load	Live load	
16/0	3/8	16	16	40	30	0
20/0	3/8	20	20	40	30	0
24/0	3/8 ,7/16 ,1/2	24	20[~~g~~f]	40	30	0
24/16	7/16 , 1/2	24	24	50	40	16
32/16	15/32 ,1/2 ,5/8	32	28	40	30	16[~~h~~g]
40/20	19/32 ,5/8 ,3/4 ,7/8	40	32	40	30	20[g, h, ~~i~~]
48/24	23/32 ,3/4 ,7/8	48	36	45	35	24
54/32	7/8 , 1	54	40	45	35	32
60/32	7/8 , 11/8	60	48	45	35	32
SINGLE FLOOR GRADES		ROOF[~~c~~b]				FLOOR[~~d~~c]
Panel span	Panel thickness	Maximum span (inches)		Load[~~e~~d] (psf)		Maximum

rating	(inches)	With edge support[~~f~~e]	Without edge support	Total load	Live load	span (inches)
16 o.c.	1 /2 ,19 /32 ,5 /8	24	24	50	40	16[~~h~~g]
20 o.c.	19 /32 ,5 /8 ,3 /4	32	32	40	30	20[g, h, ~~i~~]
24 o.c.	23 /32 ,3 /4	48	36	35	25	24
32 o.c.	7 /8 , 1	48	40	50	40	32
48 o.c.	13 /32 , 11 /8	60	48	50	40	48

For SI: 1 inch = 25.4 mm, 1 pound per square foot = 0.0479 kN/m 2 .

a. Applies to panels 24 inches or wider.

~~b. Floor and roof sheathing complying with this table shall be deemed to meet the design criteria of Section 2304.8.~~

~~c~~b. Uniform load deflection limitations 1 / 180 of span under live load plus dead load, 1 / 240 under live load only.

~~d~~c. Panel edges shall have approved tongue-and-groove joints or shall be supported with blocking unless 1 / 4 -inch minimum thickness underlayment or 1 1 / 2 inches of approved cellular or lightweight concrete is placed over the subfloor, or finish floor is 3 / 4 -inch wood strip. Allowable uniform load based on deflection of 1 / 360 of span is 100 pounds per square foot except the span rating of 48 inches on center is based on a total load of 65 pounds per square foot.

~~e~~d. Allowable load at maximum span.

~~f~~e. Tongue-and-groove edges, panel edge clips (one midway between each support, except two equally spaced between supports 48 inches on center), lumber blocking or other. Only lumber blocking shall satisfy blocked diaphragm requirements.

~~g~~f. For 1 / 2 -inch panel, maximum span shall be 24 inches.

~~h~~g. Span is permitted to be 24 inches on center where 3 / 4 -inch wood strip flooring is installed at right angles to joist.

~~i~~h. Span is permitted to be 24 inches on center for floors where 1 1 / 2 inches of cellular or lightweight concrete is applied over the panels.

TABLE 2304.8 (1)
ALLOWABLE SPANS FOR LUMBER FLOOR AND ROOF SHEATHING[~~a, b~~]

SPAN (inches)	MINIMUM NET THICKNESS (inches) OF LUMBER PLACED			
	Perpendicular to supports		Diagonally to supports	
	Surfaced dry[~~c~~a]	Surfaced unseasoned	Surfaced dry[~~c~~a]	Surfaced unseasoned
Floors				
24	3/4	25/32	3/4	25/32
16	5/8	11/16	5/8	11/16
Roofs				
24	5/8	11/16	3/4	25/32

For SI: 1 inch = 25.4 mm.

~~a. Installation details shall conform to Sections 2304.8.1 and 2304.8.2 for floor and roof sheathing, respectively.~~

~~b. Floor or roof sheathing complying with this table shall be deemed to meet the design criteria of Section 2304.8.~~

~~c~~a. Maximum 19-percent moisture content.

Reason: The purpose of this code change is to remove the redundant language contained within the footnotes. Section 2304.8.1 for roof sheathing and Section 2304.8.2 for floor sheathing state that sheathing conforming to the provisions of the Tables "shall be deemed to meet the requirements of this section." Repeating the language in the footnotes is unnecessary and should be deleted for simplicity. Also, in table 2304.8 (1) footnote a is removed because there are no installation details in either Sections 2304.8.1 or 2304.8.2.

Cost Impact: Will not increase the cost of construction
This proposal is intended to clarify the code and does not contain any new requirements nor is it removing any requirements for construction.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: The committee agrees that the table notes are redundant and should be removed.

Assembly Action **None**

Final Action Results

S271-16	**AS**

Back

Code Change No: S272-16

Original Proposal

Section: 2304.10.1

Proponent: Paul Coats, PE CBO, American Wood Council, representing American Wood Council (pcoats@awc.org)

Revise as follows:

TABLE 2304.10.1
FASTENING SCHEDULE

DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER	SPACING AND LOCATION
	Roof	
1. Blocking between ceiling joists, rafters or trusses to top plate or other framing below	3-8d common ($2^1/_2$″ × 0.131″); or 3-10d box (3″ × 0.128″); or 3-3″ × 0.131″ nails; or 3-3″14 gage staples, $^7/_{16}$″ crown	Each end, toenail
Blocking between rafters or truss not at the wall top plate, to rafter or truss	2-8d common ($2^1/_2$″ × 0.131″) 2-3″ × 0.131″ nails 2-3″ 14 gage staples	Each end, toenail
	2-16 d common ($3^1/_2$″ × 0.162″) 3-3″ × 0.131″ nails 3-3″ 14 gage staples	End nail
Flat blocking to truss and web filler	16d common ($3^1/_2$″ × 0.162″) @ 6″ o.c. 3″ × 0.131″ nails @ 6″ o.c. 3″ × 14 gage staples @ 6″ o.c	Face nail
2. Ceiling joists to top plate	3-8d common ($2^1/_2$″ × 0.131″); or 3-10d box (3″ × 0.128″); or 3-3″ × 0.131″ nails; or 3-3″ 14 gage staples, $^7/_{16}$″ crown	Each joist, toenail
3. Ceiling joist not attached to parallel rafter, laps over partitions (no thrust) (see Section 2308.7.3.1, Table 2308.7.3.1)	3-16d common ($3^1/_2$″ × 0.162″); or 4-10d box (3″ × 0.128″); or 4-3″ × 0.131″ nails; or 4-3″ 14 gage staples, $^7/_{16}$″ crown	Face nail
4. Ceiling joist attached to parallel rafter (heel joint) (see Section 2308.7.3.1, Table 2308.7.3.1)	Per Table 2308.7.3.1	Face nail
5. Collar tie to rafter	3-10d common (3″ × 0.148″); or 4-10d box (3″ × 0.128″); or 4-3″ × 0.131″ nails; or 4-3″ 14 gage staples, $^7/_{16}$″ crown	Face nail
6. Rafter or roof truss to top plate (See Section 2308.7.5, Table 2308.7.5)	3-10 common (3″ × 0.148″); or 3-16d box ($3^1/_2$″ × 0.135″); or 4-10d box (3″ × 0.128″); or 4-3″ × 0.131 nails; or 4-3″ 14 gage staples, $^7/_{16}$″ crown	Toenail[c]
7. Roof rafters to ridge valley or hip rafters; or roof rafter to 2-inch	2-16d common ($3^1/_2$″ × 0.162″); or 3-10d box (3″ × 0.128″); or 3-3″ × 0.131″ nails; or 3-3″ 14	End nail

ridge beam	gage staples, 7/16″ crown; or	
	3-10d common (3 1/2″ × 0.148″); or 3-16d box (3 1/2″ × 0.135″); or 4-10d box (3″ × 0.128″); or 4-3″ × 0.131″ nails; or 4-3″ 14 gage staples, 7/16″ crown	Toenail
Wall		
8. Stud to stud (not at braced wall panels)	16d common (3 1/2″ × 0.162″);	24″ o.c. face nail
	10d box (3″ × 0.128″); or 3″ × 0.131″ nails; or 3-3″ 14 gage staples, 7/16″ crown	16″ o.c. face nail
9. Stud to stud and abutting studs at intersecting wall corners (at braced wall panels)	16d common (3 1/2″ × 0.162″); or	16″ o.c. face nail
	16d box (3 1/2″ × 0.135″); or	12″ o.c. face nail
	3″ × 0.131″ nails; or 3-3″ 14 gage staples, 7/16″ crown	12″ o.c. face nail
10. Built-up header (2″ to 2″ header)	16d common (3 1/2″ × 0.162″); or	16″ o.c. each edge, face nail
	16d box (3 1/2″ × 0.135″)	12″ o.c. each edge, face nail
11. Continuous header to stud	4-8d common (2 1/2″ × 0.131″); or 4-10d box (3″ × 0.128″)	Toenail
12. Top plate to top plate	16d common (3 1/2″ × 0.162″); or	16″ o.c. face nail
	10d box (3″ × 0.128″); or 3″ × 0.131″ nails; or 3″ 14 gage staples, 7/16″ crown	12″ o.c. face nail
13. Top plate to top plate, at end joints	8-16d common (3 1/2″ × 0.162″); or 12-10d box (3″ × 0.128″); or 12-3″ × 0.131″ nails; or 12-3″ 14 gage staples, 7/16″ crown	Each side of end joint, face nail (minimum 24" lap splice length each side of end joint)
14. Bottom plate to joist, rim joist, band joist or blocking (not at braced wall panels)	16d common (3 1/2″ × 0.162″); or	16" o.c. face nail
	16d box (3 1/2″ × 0.135″); or 3″ × 0.131″ nails; or 3″ 14 gage staples, 7/16″ crown	12" o.c. face nail
15. Bottom plate to joist, rim joist, band joist or blocking at braced wall panels	2-16d common (3 1/2″ × 0.162″); or 3-16d box (3 1/2″ × 0.135″); or 4-3″ × 0.131″ nails; or 4-3″ 14 gage staples, 7/16″ crown	16" o.c. face nail
16. Stud to top or bottom plate	4-8d common (2 1/2″ × 0.131″); or 4-10d box (3″ × 0.128″); or 4-3″ × 0.131″ nails; or 4-3″ 14 gage staples, 7/16″ crown; or	Toenail
	2-16d common (3 1/2″ × 0.162″); or 3-10d box (3″ × 0.128″); or 3-3″ × 0.131″ nails; or 3-3″ 14 gage staples, 7/16″ crown	End nail
17. Top or bottom plate to stud	2-16d common (3 1/2″ × 0.162″); or 3-10d box (3″ × 0.128″); or 3-3″ × 0.131″ nails; or 3-3″ 14 gage staples, 7/16″ crown	End nail
18. Top plates, laps at corners and intersections	2-16d common (3 1/2″ × 0.162″); or 3-10d box (3″ × 0.128″); or 3-3″ × 0.131″ nails; or 3-3″ 14 gage staples, 7/16″ crown	Face nail
19. 1″ brace to each stud and plate	2-8d common (2 1/2″ × 0.131″); or 2-10d box (3″ × 0.128″); or 2-3″ × 0.131″ nails; or 2-3″ 14 gage staples, 7/16″ crown	Face nail
20. 1″ × 6″ sheathing to each bearing	2-8d common (2 1/2″ × 0.131″); or 2-10d box (3″ × 0.128″)	Face nail
21. 1″ × 8″ and wider sheathing	3-8d common (2 1/2″ × 0.131″); or 3-10d box (3″	Face nail

to each bearing	× 0.128″)		
Floor			
22. Joist to sill, top plate, or girder	3-8d common ($2^{1}/_{2}$″ × 0.131″); or floor 3-10d box (3″ × 0.128″); or 3-3″ × 0.131″ nails; or 3-3″ 14 gage staples, $^{7}/_{16}$″ crown	Toenail	
23. Rim joist, band joist, or blocking to top plate, sill or other framing below	8d common ($2^{1}/_{2}$″ × 0.131″); or 10d box (3″ × 0.128″); or 3″ × 0.131″ nails; or 3″ 14 gage staples, $^{7}/_{16}$″ crown	6" o.c., toenail	
24. 1″ × 6″ subfloor or less to each joist	2-8d common ($2^{1}/_{2}$″ × 0.131″); or 2-10d box (3″ × 0.128″)	Face nail	
25. 2″ subfloor to joist or girder	2-16d common ($3^{1}/_{2}$″ × 0.162″)	Face nail	
26. 2″ planks (plank & beam – floor & roof)	2-16d common ($3^{1}/_{2}$″ × 0.162″)	Each bearing, face nail	
27. Built-up girders and beams, 2″ lumber layers	20d common (4″ × 0.192″)	32" o.c., face nail at top and bottom staggered on opposite sides	
	10d box (3″ × 0.128″); or 3″ × 0.131″ nails; or 3″ 14 gage staples, $^{7}/_{16}$″ crown	24" o.c. face nail at top and bottom staggered on opposite sides	
	And: 2-20d common (4″ × 0.192″); or 3-10d box (3″ × 0.128″); or 3-3″ × 0.131″ nails; or 3-3″ 14 gage staples, $^{7}/_{16}$″ crown	Ends and at each splice, face nail	
28. Ledger strip supporting joists or rafters	3-16d common ($3^{1}/_{2}$″ × 0.162″); or 4-10d box (3″ × 0.128″); or 4-3″ × 0.131″ nails; or 4-3″ 14 gage staples, $^{7}/_{16}$″ crown	Each joist or rafter, face nail	
29. Joist to band joist or rim joist	3-16d common ($3^{1}/_{2}$″ × 0.162″); or 4-10d box (3″ × 0.128″); or 4-3″ × 0.131″ nails; or 4-3″ 14 gage staples, $^{7}/_{16}$″ crown	End nail	
30. Bridging or blocking to joist, rafter or truss	2-8d common ($2^{1}/_{2}$″ × 0.131″); or 2-10d box (3″ × 0.128″); or 2-3″ × 0.131″ nails; or 2-3″ 14 gage staples, $^{7}/_{16}$″ crown	Each end, toenail	
Wood structural panels (WSP), subfloor, roof and interior wall sheathing to framing and particleboard wall sheathing to framing[a]			
		Edges (inches)	**Intermediate supports (inches)**
31. $^{3}/_{8}$″ – $^{1}/_{2}$″	6d common or deformed (2″ × 0.113″) (subfloor and wall)	6	12
	8d ~~box~~ common or deformed ($2^{1}/_{2}$″ × ~~0.113~~ 0.131″) (roof), or RSRS-01 (2-3/8" x 0.113") nail (roof)[d]	6	12
	$2^{3}/_{8}$″ × 0.113″ nail (subfloor and wall)	6	12
	$1^{3}/_{4}$″ 16 gage staple, $^{7}/_{16}$″ crown (subfloor and wall)	4	8
	$2^{3}/_{8}$″ × 0.113″ nail (roof)	4	8
	$1^{3}/_{4}$″ 16 gage staple, $^{7}/_{16}$″ crown (roof)	3	6
32. $^{19}/_{32}$″ – $^{3}/_{4}$″	8d common ($2^{1}/_{2}$″ × 0.131″); or 6d deformed (2″ × 0.113″) (subfloor and wall)	6	12
	8d common or deformed (2-1/2" x 0.131") (roof), or RSRS-01 (2-3/8" x 0.113") nail (roof)[d]	6	12

	$2^3/_8$ ″ × 0.113″ nail; or 2″ 16 gage staple, $^7/_{16}$ ″ crown	4	8
33. $^7/_8$ ″ – $1^1/_4$ ″	10d common (3″ × 0.148″); or 8d deformed ($2^1/_2$ ″ × 0.131″)	6	12
Other exterior wall sheathing			
34. $^1/_2$ ″ fiberboard sheathing[b]	$1^1/_2$ ″ galvanized roofing nail ($^7/_{16}$ ″ head diameter); or $1^1/_4$ ″ 16 gage staple with $^7/_{16}$ ″ or 1″ crown	3	6
35. $^{25}/_{32}$ ″ fiberboard sheathing[b]	$1^3/_4$ ″ galvanized roofing nail ($^7/_{16}$ ″ diameter head); or $1^1/_2$ ″ 16 gage staple with $^7/_{16}$ ″ or 1″ crown	3	6
Wood structural panels, combination subfloor underlayment to framing			
36. $^3/_4$ ″ and less	8d common ($2^1/_2$ ″ × 0.131″); or 6d deformed (2″ × 0.113″)	6	12
37. $^7/_8$ ″ – 1″	8d common ($2^1/_2$ ″ × 0.131″); or 8d deformed ($2^1/_2$ ″ × 0.131″)	6	12
38. $1^1/_8$ ″ – $1^1/_4$ ″	10d common (3″ × 0.148″); or 8d deformed ($2^1/_2$ ″ × 0.131″)	6	12
Panel siding to framing			
39. $^1/_2$ ″ or less	6d corrosion-resistant siding ($1^7/_8$ ″ × 0.106″); or 6d corrosion-resistant casing (2″ × 0.099″)	6	12
40. $^5/_8$ ″	8d corrosion-resistant siding ($2^3/_8$ ″ × 0.128″); or 8d corrosion-resistant casing ($2^1/_2$ ″ × 0.113″)	6	12
Wood structural panels (WSP), subfloor, roof and interior wall sheathing to framing and particleboard wall sheathing to framinga			
		Edges (inches)	**Intermediate supports (inches)**
Interior paneling			
41. $^1/_4$ ″	4d casing ($1^1/_2$ ″ × 0.080″); or 4d finish ($1^1/_2$ ″ × 0.072″)	6	12
42. $^3/_8$ ″	6d casing (2″ × 0.099″); or 6d finish (Panel supports at 24 inches)	6	12

For SI: 1 inch = 25.4 mm.

a. Nails spaced at 6 inches at intermediate supports where spans are 48 inches or more. For nailing of wood structural panel and particleboard diaphragms and shear walls, refer to Section 2305. Nails for wall sheathing are permitted to be common, box or casing.

b. Spacing shall be 6 inches on center on the edges and 12 inches on center at intermediate supports for nonstructural applications. Panel supports at 16 inches (20 inches if strength axis in the long direction of the panel, unless otherwise marked).

c. Where a rafter is fastened to an adjacent parallel ceiling joist in accordance with this schedule and the ceiling joist is fastened to the top plate in accordance with this schedule, the number of toenails in the rafter shall be permitted to be reduced by one nail.

d. RSRS-01 is a Roof Sheathing Ring Shank nail meeting the specifications in ASTM F1667.

Reason: This change brings consistency with the IRC for minimum nail size for roof sheathing attachment which is an 8d common nail (2-1/2" x 0.131"). The deformed nail option (2-1/2" x 0.131") is based on the assumption that the deformed nail, which has non-standard deformations, has at least the same withdrawal capacity and head pull through performance as the 8d common smooth shank nail.

This change also adds a new standardized Roof Sheathing Ring Shank (RSRS) nail for roof sheathing applications. The RSRS nail has been standardized in ASTM F1667 and added in this proposal as equivalent to the 8d common nail to resist uplift of roof sheathing. This standard ring shank nail provides improved withdrawal resistance relative to the 8d common smooth shank nail. A head size of 0.281" diameter is specified for the RSRS-01 nail in ASTM F1667 which is equivalent to the head diameter of the 8d common nail. The slightly larger net area under the head (i.e. area of head minus area of shank) is considered to provide slightly improved head pull through performance.

Cost Impact: Will not increase the cost of construction
Although there are technical changes, existing alternatives for attachment remain unchanged and a new ring shank nail option is added; therefore, there is no cost increase.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: Agreement with the proponent's reason which indicates that this code change provides consistency with the roof sheathing attachments in the IRC. The deformed nail and the roof sheathing ring shank nail provide option that have an equivalent capacity.

Assembly Action **None**

Final Action Results

S272-16	**AS**

Back

Code Change No: S273-16

Original Proposal

Section: 2304.10.1

Proponent: Paul Coats, PE CBO, American Wood Council, representing American Wood Council (pcoats@awc.org)

Revise as follows:

TABLE 2304.10.1
FASTENING SCHEDULE

DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER	SPACING AND LOCATION
Roof		
1. Blocking between ceiling joists, rafters or trusses to top plate or other framing below	3-8d common ($2^1/_2$ ″ × 0.131″); or 3-10d box (3″ × 0.128″); or 3-3″ × 0.131″ nails; or 3-3″14 gage staples, $^7/_{16}$ ″ crown	Each end, toenail
Blocking between rafters or truss not at the wall top plate, to rafter or truss	2-8d common ($2^1/_2$ ″ × 0.131″) 2-3″ × 0.131″ nails 2-3″ 14 gage staples	Each end, toenail
	2-16 d common ($3^1/_2$ ″ × 0.162″) 3-3″ × 0.131″ nails 3-3″ 14 gage staples	End nail
Flat blocking to truss and web filler	16d common ($3^1/_2$ ″ × 0.162″) @ 6″ o.c. 3″ × 0.131″ nails @ 6″ o.c. 3″ × 14 gage staples @ 6″ o.c	Face nail
2. Ceiling joists to top plate	3-8d common ($2^1/_2$ ″ × 0.131″); or 3-10d box (3″ × 0.128″); or 3-3″ × 0.131″ nails; or 3-3″ 14 gage staples, $^7/_{16}$ ″ crown	Each joist, toenail
3. Ceiling joist not attached to parallel rafter, laps over partitions (no thrust) (see Section 2308.7.3.1, Table 2308.7.3.1)	3-16d common ($3^1/_2$ ″ × 0.162″); or 4-10d box (3″ × 0.128″); or 4-3″ × 0.131″ nails; or 4-3″ 14 gage staples, $^7/_{16}$ ″ crown	Face nail
4. Ceiling joist attached to parallel rafter (heel joint) (see Section 2308.7.3.1, Table 2308.7.3.1)	Per Table 2308.7.3.1	Face nail
5. Collar tie to rafter	3-10d common (3″ × 0.148″); or 4-10d box (3″ × 0.128″); or 4-3″ × 0.131″ nails; or 4-3″ 14 gage staples, $^7/_{16}$ ″ crown	Face nail
6. Rafter or roof truss to top plate (See Section 2308.7.5, Table 2308.7.5)	3-10 common (3″ × 0.148″); or 3-16d box ($3^1/_2$ ″ × 0.135″); or 4-10d box (3″ × 0.128″); or 4-3″ × 0.131 nails; or 4-3″ 14 gage staples, $^7/_{16}$ ″ crown	Toenail[c]
7. Roof rafters to ridge valley or hip rafters; or roof rafter to 2-inch ridge beam	2-16d common ($3^1/_2$ ″ × 0.162″); or 3-10d box (3″ × 0.128″); or 3-3″ × 0.131″ nails; or 3-3″ 14 gage staples, $^7/_{16}$ ″	End nail

DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER	SPACING AND LOCATION
	crown; or	
	3-10d common (3~~1/2~~ ″ × 0.148″); or 4-16d box (3 1/2 ″ × 0.135″); or 4-10d box (3″ × 0.128″); or 4-3″ × 0.131″ nails; or 4-3″ 14 gage staples, 7/16 ″ crown	Toenail
	Wall	
8. Stud to stud (not at braced wall panels)	16d common (3 1/2 ″ × 0.162″);	24″ o.c. face nail
	10d box (3″ × 0.128″); or 3″ × 0.131″ nails; or 3-3″ 14 gage staples, 7/16 ″ crown	16″ o.c. face nail
9. Stud to stud and abutting studs at intersecting wall corners (at braced wall panels)	16d common (3 1/2 ″ × 0.162″); or	16″ o.c. face nail
	16d box (3 1/2 ″ × 0.135″); or	12″ o.c. face nail
	3″ × 0.131″ nails; or 3-3″ 14 gage staples, 7/16 ″ crown	12″ o.c. face nail
10. Built-up header (2″ to 2″ header)	16d common (3 1/2 ″ × 0.162″); or	16″ o.c. each edge, face nail
	16d box (3 1/2 ″ × 0.135″)	12″ o.c. each edge, face nail
11. Continuous header to stud	4-8d common (2 1/2 ″ × 0.131″); or 4-10d box (3″ × 0.128″)	Toenail
12. Top plate to top plate	16d common (3 1/2 ″ × 0.162″); or	16″ o.c. face nail
	10d box (3″ × 0.128″); or 3″ × 0.131″ nails; or 3″ 14 gage staples, 7/16 ″ crown	12″ o.c. face nail
13. Top plate to top plate, at end joints	8-16d common (3 1/2 ″ × 0.162″); or 12-10d box (3″ × 0.128″); or 12-3″ × 0.131″ nails; or 12-3″ 14 gage staples, 7/16 ″ crown	Each side of end joint, face nail (minimum 24" lap splice length each side of end joint)
14. Bottom plate to joist, rim joist, band joist or blocking (not at braced wall panels)	16d common (3 1/2 ″ × 0.162″); or	16" o.c. face nail
	16d box (3 1/2 ″ × 0.135″); or 3″ × 0.131″ nails; or 3″ 14 gage staples, 7/16 ″ crown	12" o.c. face nail
15. Bottom plate to joist, rim joist, band joist or blocking at braced wall panels	2-16d common (3 1/2 ″ × 0.162″); or 3-16d box (3 1/2 ″ × 0.135″); or 4-3″ × 0.131″ nails; or 4-3″ 14 gage staples, 7/16 ″ crown	16" o.c. face nail
16. Stud to top or bottom plate	4-8d common (2 1/2 ″ × 0.131″); or 4-10d box (3″ × 0.128″); or 4-3″ × 0.131″ nails; or 4-3″ 14 gage staples, 7/16 ″ crown; or	Toenail
	2-16d common (3 1/2 ″ × 0.162″); or 3-10d box (3″ × 0.128″); or 3-3″ × 0.131″ nails; or 3-3″ 14 gage staples, 7/16 ″ crown	End nail
~~17. Top or bottom plate to stud~~	~~2-16d common (3 1/2 ″ × 0.162″); or 3-10d box (3″ × 0.128″); or 3-3″ × 0.131″ nails; or 3-3″ 14 gage staples, 7/16 ″ crown~~	~~End nail~~
18. Top plates, laps at corners and intersections	2-16d common (3 1/2 ″ × 0.162″); or 3-10d box (3″ × 0.128″); or 3-3″ × 0.131″ nails; or 3-3″ 14 gage staples, 7/16 ″	Face nail

DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER	SPACING AND LOCATION	
	crown		
19. 1″ brace to each stud and plate	2-8d common ($2^{1}/_{2}$″ × 0.131″); or 2-10d box (3″ × 0.128″); or 2-3″ × 0.131″ nails; or 2-3″ 14 gage staples, $^{7}/_{16}$″ crown	Face nail	
20. 1″ × 6″ sheathing to each bearing	2-8d common ($2^{1}/_{2}$″ × 0.131″); or 2-10d box (3″ × 0.128″)	Face nail	
21. 1″ × 8″ and wider sheathing to each bearing	3-8d common ($2^{1}/_{2}$″ × 0.131″); or 3-10d box (3″ × 0.128″)	Face nail	
Floor			
22. Joist to sill, top plate, or girder	3-8d common ($2^{1}/_{2}$″ × 0.131″); or floor 3-10d box (3″ × 0.128″); or 3-3″ × 0.131″ nails; or 3-3″ 14 gage staples, $^{7}/_{16}$″ crown	Toenail	
23. Rim joist, band joist, or blocking to top plate, sill or other framing below	8d common ($2^{1}/_{2}$″ × 0.131″); or 10d box (3″ × 0.128″); or 3″ × 0.131″ nails; or 3″ 14 gage staples, $^{7}/_{16}$″ crown	6" o.c., toenail	
24. 1″ × 6″ subfloor or less to each joist	2-8d common ($2^{1}/_{2}$″ × 0.131″); or 2-10d box (3″ × 0.128″)	Face nail	
25. 2″ subfloor to joist or girder	2-16d common ($3^{1}/_{2}$″ × 0.162″)	Face nail	
26. 2″ planks (plank & beam – floor & roof)	2-16d common ($3^{1}/_{2}$″ × 0.162″)	Each bearing, face nail	
27. Built-up girders and beams, 2″ lumber layers	20d common (4″ × 0.192″)	32" o.c., face nail at top and bottom staggered on opposite sides	
	10d box (3″ × 0.128″); or 3″ × 0.131″ nails; or 3″ 14 gage staples, $^{7}/_{16}$″ crown	24" o.c. face nail at top and bottom staggered on opposite sides	
	And: 2-20d common (4″ × 0.192″); or 3-10d box (3″ × 0.128″); or 3-3″ × 0.131″ nails; or 3-3″ 14 gage staples, $^{7}/_{16}$″ crown	Ends and at each splice, face nail	
28. Ledger strip supporting joists or rafters	3-16d common ($3^{1}/_{2}$″ × 0.162″); or 4-10d box (3″ × 0.128″); or 4-3″ × 0.131″ nails; or 4-3″ 14 gage staples, $^{7}/_{16}$″ crown	Each joist or rafter, face nail	
29. Joist to band joist or rim joist	3-16d common ($3^{1}/_{2}$″ × 0.162″); or 4-10d box (3″ × 0.128″); or 4-3″ × 0.131″ nails; or 4-3″ 14 gage staples, $^{7}/_{16}$″ crown	End nail	
30. Bridging or blocking to joist, rafter or truss	2-8d common ($2^{1}/_{2}$″ × 0.131″); or 2-10d box (3″ × 0.128″); or 2-3″ × 0.131″ nails; or 2-3″ 14 gage staples, $^{7}/_{16}$″ crown	Each end, toenail	
Wood structural panels (WSP), subfloor, roof and interior wall sheathing to framing and particleboard wall sheathing to framinga			
		Edges (inches)	**Intermediate supports (inches)**
31. $^{3}/_{8}$″ – $^{1}/_{2}$″	6d common or deformed (2″ × 0.113″) (subfloor and wall)	6	12
	8d ~~box~~common or deformed ($2^{1}/_{2}$″ × 0.~~113~~ 0.131″) (roof)	6	12
	$2^{3}/_{8}$″ × 0.113″ nail (subfloor and wall)	6	12

	1 3/4″ 16 gage staple, 7/16″ crown (subfloor and wall)	4	8
	2 3/8″ × 0.113″ nail (roof)	4	8
	1 3/4″ 16 gage staple, 7/16″ crown (roof)	3	6
32. 19/32″ – 3/4″	8d common (2 1/2″ × 0.131″)~~;~~ or 6d deformed (2″ × 0.113″) (subfloor and wall)	6	12
	8d common or deformed (2 1/2" × 0.131") (roof)	6	12
	2 3/8″ × 0.113″ nail; or 2″ 16 gage staple, 7/16″ crown	4	8
33. 7/8″ – 1 1/4″	10d common (3″ × 0.148″); or 8d deformed (2 1/2″ × 0.131″)	6	12
Other exterior wall sheathing			
34. 1/2″ fiberboard sheathing[b]	1 1/2″ galvanized roofing nail (7/16″ head diameter); or 1 1/4″ 16 gage staple with 7/16″ or 1″ crown	3	6
35. 25/32″ fiberboard sheathing[b]	1 3/4″ galvanized roofing nail (7/16″ diameter head); or 1 1/2″ 16 gage staple with 7/16″ or 1″ crown	3	6
Wood structural panels, combination subfloor underlayment to framing			
36. 3/4″ and less	8d common (2 1/2″ × 0.131″); or 6d deformed (2″ × 0.113″)	6	12
37. 7/8″ – 1″	8d common (2 1/2″ × 0.131″); or 8d deformed (2 1/2″ × 0.131″)	6	12
38. 1 1/8″ – 1 1/4″	10d common (3″ × 0.148″); or 8d deformed (2 1/2″ × 0.131″)	6	12
Panel siding to framing			
39. 1/2″ or less	6d corrosion-resistant siding (1 7/8″ × 0.106″); or 6d corrosion-resistant casing (2″ × 0.099″)	6	12
40. 5/8″	8d corrosion-resistant siding (2 3/8″ × 0.128″); or 8d corrosion-resistant casing (2 1/2″ × 0.113″)	6	12
Wood structural panels (WSP), subfloor, roof and interior wall sheathing to framing and particleboard wall sheathing to framing[a]			
		Edges (inches)	**Intermediate supports (inches)**
Interior paneling			
41. 1/4″	4d casing (1 1/2″ × 0.080″); or 4d finish (1 1/2″ × 0.072″)	6	12
42. 3/8″	6d casing (2″ × 0.099″); or 6d finish (Panel supports at 24 inches)	6	12

For SI: 1 inch = 25.4 mm.

a. Nails spaced at 6 inches at intermediate supports where spans are 48 inches or more. For nailing of wood structural panel and particleboard diaphragms and shear walls, refer to Section 2305. Nails for wall sheathing are permitted to be common, box or casing.

b. Spacing shall be 6 inches on center on the edges and 12 inches on center at intermediate supports for nonstructural applications. Panel supports at 16 inches (20 inches if strength axis in the long direction of the panel, unless otherwise marked).

c. Where a rafter is fastened to an adjacent parallel ceiling joist in accordance with this schedule and the ceiling joist is fastened to the top plate in accordance with this schedule, the number of toenails in the rafter shall be permitted to be reduced by one nail.

Reason: Item 7. The correct length of the 10d common nail is 3" not 3-1/2". 10d common is correctly shown as 3" long elsewhere in the table. The equivalent number of 16d box nails to the common nail reference is 4. This change makes the specified nailing consistent with IRC Table R602.3(1).

Item 17. Top or bottom plate to stud nailing is redundant with nailing in Item 16. Item 16 includes both toenail and end nail option.
Item 16 end nail option is identical to the end nail option described in item 17.
Item 31. This change brings consistency with the IRC for minimum nail size for roof sheathing attachment which is an 8d common nail (2-1/2" x 0.131"). The 8d common is a smooth shank nail.
Item 32. The deformed nail option (2-1/2" x 0.131") is based on the assumption that the deformed nail has at least the same withdrawal capacity and head pull through performance of the equivalent diameter 8d common smooth shank nail.

Cost Impact: Will not increase the cost of construction
Nail sizes are editorially fixed, redundancy removed, and with size consistent with recognized sizes in IRC, therefore increased costs are not anticipated.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: The proposed changes are needed editorial corrections to table entries.

Assembly Action **None**

Final Action Results

S273-16 **AS**

Back

Code Change No: S274-16

Original Proposal

Section: 2304.10.5

Proponent: Edwin Huston, representing National Council of Structural Engineers' Associations (NCSEA) (huston@smithhustoninc.com)

Revise as follows:

2304.10.5 Fasteners and connectors in contact with preservative-treated and fire-retardant-treated wood. Fasteners, including nuts and washers, and connectors in contact with *preservative-treated* and *fire-retardant-treated wood* shall be in accordance with Sections 2304.10.5.1 through 2304.10.5.4. The coating weights for zinc-coated fasteners shall be in accordance with ASTM A 153. <u>Stainless steel driven fasteners shall be in accordance with the material requirements of ASTM F 1667</u>

Reason: In the last code cycle the requirements for stainless steel complying to the requirements of ASTM F 1667 were included in the IRC (Group B), however the proposal was crafted after the IBC (Group A) cycle had completed. This proposal is intended to bring over the approved language from the IRC into the IBC so that the two documents contain the same requirements for the permissible type of stainless steel fastener used in treated wood.

The following is the reason statement used in the approval of RB176-13:

ASTM F 1667 reads as follows:

6. *Material Requirements*
   - *6.1 Steel wire used in the manufacture of driven fasteners shall be of low carbon, medium-low carbon, or medium-high carbon.*
   - *6.2 Stainless steel wire used in the manufacture of driven fasteners shall be of Types 302, 304, 305, or 316.*

So the intent here is to require fasteners used with treated wood be manufactured from Types 302, 304, 305, or 316 stainless steel.

There has been a lot of work done on fasteners and connectors in contact with treated wood in the last 8-10 years. All of the testing and historical performance of stainless steel were based on the traditional use of 300 series of stainless steel. Tet there are many types of stainless steel, and some are much less corrosion resistant than others. By limiting the types of stainless steel to these specific series, it ensures that the stainless steel fasteners will be corrosion resistant when exposed to treated wood.

There is precedent for this. Section 402.1.1 specifies that for wood foundation s stainless steel fasteners must be "of Type 304 or 316 stainless steel". Section R905.10.4 states "Copper, brass, copper alloy and 300-series stainless steel fasteners shall be used for copper roofs". Further, ASTM F 1667 is already specified for several different types of fasteners in the IRC. The result of this proposal is not to require the exclusive use of 300-series stainless steel fasteners. This section permits hot-dipped, zinc-coated galvanized steel, stainless steel, silicon bronze, or copper fasteners. The existing sentence before the added one is meant to specify a minimum coating weight for the galvanized fasteners so they perform as expected. The new proposed sentence does the same thing for stainless steel fasteners.

Cost Impact: Will increase the cost of construction
The majority of driven stainless steel fasteners are already manufactured from 300 series stainless steel. If a manufacturer were supplying the lesser performing (and lower cost) stainless steel types then there would be a cost increase in going to the 300 series stainless steel. The increase in performance would justify the additional cost. However, the use of stainless steel fasteners is not required, and where stainless steel is not used no increase would be incurred.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This code change adds the appropriate minimum quality standards for stainless steel nails, providing coordination with the IRC.

Assembly Action **None**

Final Action Results

S274-16	AS

Back

Code Change No: S275-16 Part I

Original Proposal

Section: IBC: 2304.10.5.1, 2304.10.5.3

Proponent: Edwin Huston, representing National Council of Structural Engineers' Associations (NCSEA) (huston@smithhustoninc.com)

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IBC STRUCTURAL COMMITTEE. PART II WILL BE HEARD BY THE IRC-BUILDING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Revise as follows:

2304.10.5.1 Fasteners and connectors for preservative-treated wood. Fasteners, including nuts and washers, in contact with *preservative-treated wood* shall be of hot-dipped zinc-coated galvanized steel, stainless steel, silicon bronze or copper. Staples shall be of stainless steel. Fasteners other than nails, staples, timber rivets, wood screws and lag screws shall be permitted to be of mechanically deposited zinc-coated steel with coating weights in accordance with ASTM B 695, Class 55 minimum. Connectors that are used in exterior applications and in contact with *preservative-treated wood* shall have coating types and weights in accordance with the treated wood or connector manufacturer's recommendations. In the absence of manufacturer's recommendations, a minimum of ASTM A 653, Type G185 zinc-coated galvanized steel, or equivalent, shall be used.

Exception: Plain carbon steel fasteners, including nuts and washers, in SBX/DOT and zinc borate *preservative-treated wood* in an interior, dry environment shall be permitted.

2304.10.5.3 Fasteners for fire-retardant-treated wood used in exterior applications or wet or damp locations. Fasteners, including nuts and washers, for *fire-retardant-treated wood* used in exterior applications or wet or damp locations shall be of hot-dipped zinc-coated galvanized steel, stainless steel, silicon bronze or copper. Staples shall be of stainless steel. Fasteners other than nails, staples, timber rivets, wood screws and lag screws shall be permitted to be of mechanically deposited zinc-coated steel with coating weights in accordance with ASTM B 695, Class 55 minimum.

Reason: Over the past several code cycles staples have been included as another type of fastener used in various types of wood-to-wood connections. The intention of this proposal is to better integrate staples into the code so that the provisions for small diameter fasteners (nail and timber rivets) also are explicitly extended to staples where applicable. This repeatedly occurs in the limitations for fasteners in treated wood. The phrase "other than nails and timber rivets" is being rewritten to include staples as well. This occurs in both the IBC and IRC in sections: 2304.10.5.1, 2304.10.5.3. R317.3.1 and R317.3.3.

The second part of this proposal is to specifically limit staples to stainless steel where exposed to high corrosion environments. The thin wire gages used in staple fasteners (16ga – 14ga) are much thinner than those used in nails, and are consequentially more susceptible to corrosion. Also, according to ICC ESR-1539 report for power-drive staples and nails, currently stainless steel staples are the only available option for staples to meet the increased corrosion resistance requirements of sections 2304.10.5.1 and R317.3.1. By specifically specifying staples as requiring stainless steel this avoids confusion and possible misuse of other types of staples in increased corrosion risk applications.

Cost Impact: Will increase the cost of construction
Currently when staples are used in treated wood the only known available option is to use stainless steel staples. In this case there would be no cost increase in construction.

For use in treated wood if staples are not presently stainless then there would be a slight cost increase, however we do not feel that these staples would be code conforming. In this case any increase in performance would justify the additional cost

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This code change adds an option for fasteners in corrosive environments by adding stainless steel staples.

Assembly Action **None**

Final Action Results

S275-16 Part I	**AS**

Code Change No: S275-16 Part II

Original Proposal

Section: R317.3.1, R317.3.3

Proponent: Edwin Huston, representing National Council of Structural Engineers' Associations (NCSEA) (huston@smithhustoninc.com)

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IBC STRUCTURAL COMMITTEE. PART II WILL BE HEARD BY THE IRC-BUILDING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Revise as follows:

R317.3.1 Fasteners for preservative-treated wood. Fasteners, including nuts and washers, for preservative-treated wood shall be of hot-dipped, zinc-coated galvanized steel, stainless steel, silicon bronze or copper<u>. Staples shall be of stainless steel</u>. Coating types and weights for connectors in contact with preservative-treated wood shall be in accordance with the connector manufacturer's recommendations. In the absence of manufacturer's recommendations, a minimum of ASTM A 653 type G185 zinc-coated galvanized steel, or equivalent, shall be used.

Exceptions:

1. one/two ($^1/_2$)-inch-diameter (12.7 mm) or greater steel bolts.
2. Fasteners other than nails<u>, staples,</u> and timber rivets shall be permitted to be of mechanically deposited zinc-coated steel with coating weights in accordance with ASTM B 695, Class 55 minimum.
3. Plain carbon steel fasteners in SBX/DOT and zinc borate preservative-treated wood in an interior, dry environment shall be permitted.

R317.3.3 Fasteners for fire-retardant-treated wood used in exterior applications or wet or damp locations. Fasteners, including nuts and washers, for fire-retardant-treated wood used in exterior applications or wet or damp locations shall be of hot-dipped, zinc-coated galvanized steel, stainless steel, silicon bronze or copper. Fasteners other than nails<u>, staples,</u> and timber rivets shall be permitted to be of mechanically deposited zinc-coated steel with coating weights in accordance with ASTM B 695, Class 55 minimum.

Reason: Over the past several code cycles staples have been included as another type of fastener used in various types of wood-to-wood connections. The intention of this proposal is to better integrate staples into the code so that the provisions for small diameter fasteners (nail and timber rivets) also are explicitly extended to staples where applicable. This repeatedly occurs in the limitations for fasteners in treated wood. The phrase "other than nails and timber rivets" is being rewritten to include staples as well. This occurs in both the IBC and IRC in sections: 2304.10.5.1, 2304.10.5.3. R317.3.1 and R317.3.3.

The second part of this proposal is to specifically limit staples to stainless steel where exposed to high corrosion environments. The thin wire gages used in staple fasteners (16ga – 14ga) are much thinner than those used in nails, and are consequentially more susceptible to corrosion. Also, according to ICC ESR-1539 report for power-drive staples and nails, currently stainless steel staples are the only available option for staples to meet the increased corrosion resistance requirements of sections 2304.10.5.1 and R317.3.1. By specifically specifying staples as requiring stainless steel this avoids confusion and possible misuse of other types of staples in increased corrosion risk applications.

Cost Impact: Will increase the cost of construction
Currently when staples are used in treated wood the only known available option is to use stainless steel staples. In this case there would be no cost increase in construction.

For use in treated wood if staples are not presently stainless then there would be a slight cost increase, however we do not feel that these staples would be code conforming. In this case any increase in performance would justify the additional cost

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This proposal is consistent with other practices used for treated materials.

Assembly Action **None**

Final Action Results

S275-16 Part II	**AS**

Back

Code Change No: S276-16

Original Proposal

Section: 2304.11

Proponent: Dennis Richardson, American Wood Council, representing American Wood Council (drichardson@awc.org)

Revise as follows:

2304.11 Heavy timber construction. Where a structure or portion thereof is required to be of Type IV construction by other provisions of this code, the building elements therein shall comply with the applicable provisions of Sections 2304.11.1 through 2304.11.5. <u>Lumber decking shall also be in accordance with Section 2304.9.</u>

Reason: The intent of this change is to help the user be aware of Section 2304.9 applicable to heavy timber for the detailing and fastening of lumber decking. this section was revised in G 179 of the Group A cycle. There is no intent to modify changes already made to this section in G 179. The intent of this section is to add the words "<u>Lumber decking shall also be in accordance with Section 2304.9</u>." at the end of the final language approved in to 2304.11 in G 179 as a pointer to Section 2304.9.

Cost Impact: Will not increase the cost of construction
This code change correlates existing section to assist users of the code.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This proposal adds a necessary pointer to decking requirements that are part of Heavy Tiber construction.

Assembly Action **None**

Final Action Results

S276-16	**AS**

Back

Code Change No: S278-16

Original Proposal

Section: 2304.12.2.2

Proponent: Randy Shackelford, Simpson Strong-Tie, representing Simpson Strong-Tie (rshackelford@strongtie.com)

Revise as follows:

2304.12.2.2 Posts or columns. Posts or columns supporting permanent structures and supported by a concrete or masonry slab or footing that is in direct contact with the earth shall be of naturally durable or *preservative-treated wood*.

.

> **Exception:** Posts or columns that are ~~not~~ exposed to the weather without adequate protection as specified in Section 2304.12.2.3, or are located in basements or cellars, and are supported by concrete piers or metal pedestals ~~projected~~ projecting at least 1 inch (25 mm) above the slab or deck and 8 inches (203 mm) above exposed earth, and are separated therefrom by an impervious moisture barrier.

Reason: The purpose of this code change is to return the text of this section to be more closer to the text that existed in the 2000-2012 IBC, without creating a conflict with Section 2304.12.2.3.

For the 2015 IBC, the American Wood Council did a major re-write of 2304.12 on Protection against decay and termites. As part of that, they completely changed the meaning of this section by adding the word "not" to the first sentence of the exception. From 2000 to 2102, this exception has read "Posts and columns that are either exposed to the weather or located in basements or cellars, supported by concrete piers or metal pedestals projected at least 1 inch (25 mm) above the slab or deck and 6 inches (152 mm) above exposed earth, and are separated therefrom by an impervious moisture barrier."

2000 and 2003 IBC: Section 2304.11.2.6
2006, 2009, and 2012 IBC: Section 2304.11.2.7.

The AWC code change that was accepted was S268-12. Its only statement about this section was that "The first exception was worded incorrectly and would seem to exempt exposed wood from protection; the proposed wording is a fix." I am not sure you can say definitively that this was worded incorrectly since it was exactly this way in 5 editions of the IBC from 2000 to 2012. Another AWC code change that was disapproved, S271-12, made a similar change, and noted that as written this section conflicts with current **2304.12.2.3, Supporting member for permanent appurtenances**. The only conflict is that section states that naturally durable or preservative-treated wood must be utilized "where such members are exposed to the weather without adequate protection from a roof, eave, overhang, or other covering to prevent moisture or water accumulation on the surface or at joints between members."

This seems to be a reasonable requirement, and describes well what is considered to be "exposed". However, the language in 2304.12.2.2 now simply says "not exposed to the weather", which could easily be interpreted to exempt any outdoor wood member. So this proposal attempts to better define exposed to the weather by referencing the clearer description in 2304.12.2.3.
A second modification changes "projected" to "projecting", which sounds like it better describes the situation. Projected sounds like something you do to a film.

A third modification reinstates the word "therefrom" because it seems to improve the meaning.

Cost Impact: Will not increase the cost of construction
No cost impact. Possible cost savings.
This proposal may allow the use of non-treated or non-naturally durable wood where it is protected from moisture by a covering above to prevent moisture or water accumulation and is supported by a 1" pedestal. The option remains to use durable or treated wood and not use the base with 1" pedestal.

Report of Committee Action Hearings

Committee Action: **Approved as Modified**

Modify as follows:

2304.12.2.2 Posts or columns. Posts or columns supporting permanent structures and supported by a concrete or masonry slab or footing that is in direct contact with the earth shall be of naturally durable or *preservative-treated wood*.

Exception: Posts or columns that meet all of the following:

1. Are not exposed to the weather, or are protected by a roof, eave, overhang, or other covering if exposed to the weather, and

~~**Exception:** Posts or columns that are exposed to the weather without adequate protection as specified in Section 2304.12.2.3, or are located in basements or cellars, and are supported by concrete piers or metal pedestals projecting at least 1 inch (25 mm) above the slab or deck and 8 inches (203 mm) above exposed earth, and are separated therefrom by an impervious moisture barrier.~~

2. Are supported by concrete piers or metal pedestals projecting at least 1 inch (25 mm) above the slab or deck and are separated from the concrete pier by an impervious moisture barrier, and
3. Are located at least 8 inches (203 mm) above exposed earth.

Committee Reason: The rewording of the exception for posts and columns is an improvement that explains when and how to provide protection for posts supported on concrete or masonry. The modification reformats the exception as a list so that will be easier to understand.

Assembly Action **None**

Final Action Results

S278-16	**AM**

Back

Code Change No: S279-16

Original Proposal

Section(s): 2304.12.2.5

Proponent: Dennis Richardson, American Wood Council, representing American Wood Council (drichardson@awc.org)

Revise as follows:

2304.12.2.5 Supporting members for permeable floors and roofs. Wood structural members that support moisture-permeable floors or roofs that are exposed to the weather, such as concrete or masonry slabs, shall be of naturally durable or *preservative-treated wood* unless separated from such floors or roofs by an impervious moisture barrier. The impervious moisture barrier system protecting the structure supporting floors shall include elements providing positive drainage of water that infiltrates the moisture-permeable floor topping.

Reason: A key functional requirement of impervious moisture barrier systems installed under a permeable floor system exposed to water are elements that provide for drainage of any water making it's way through the permeable floor system. Without a properly functioning method to transport this water out, the floor assembly can stay saturated for very long periods of time possibly contributing to premature failure. This code proposal creates a requirement for impervious moisture barrier systems protecting the structure, supporting a floor, to provide a mechanism for the water to drain out.

Cost Impact: Will increase the cost of construction
Drainage elements between the permeable floor slab and impervious barrier are commonly called for and installed by many practitioners and will not change the cost of construction in those cases. However in cases where no method to provide positive drainage is currently provided, this proposal will increase the cost of construction.

Report of Committee Action Hearings

Committee Action: **Disapprove**

Committee Reason: The proposed language on impervious moisture barriers is not clear enough for the building official to enforce. The requirement for "elements providing positive drainage" should be clarified. The committee recognizes that this proposal would address a serious issue that needs to be dealt with and a public comment is encouraged to address the committee's concerns.

Assembly Action: **As Submitted**

Public Comments

Public Comment 1:

Dennis Richardson, representing American Wood Council (drichardson@awc.org) requests Approve as Modified by this Public Comment.

Modify as follows:

2304.12.2.5 Supporting members for permeable floors and roofs. Wood structural members that support moisture-permeable floors or roofs that are exposed to the weather, such as concrete or masonry slabs, shall be of naturally durable or *preservative-treated wood* unless separated from such floors or roofs by an impervious moisture barrier. The impervious moisture barrier system protecting the structure supporting floors shall ~~include elements providing~~ provide positive drainage of water that infiltrates the moisture-permeable floor topping.

Commenter's Reason: This existing code section applies when wood (that is not preservative-treated or naturally durable) supports moisture-permeable floors or roofs exposed to weather such as concrete or masonry slabs.

When such assemblies are a roof, and there is a leak in the impervious barrier, the occupants typically know about it and repairs are made. When the assembly supports a walking surface such as a balcony, there may be no early warning of a leak or decay because any leak may be located over unoccupied areas outside of the structure building envelope so the leak remains undetected.

Balcony structure performance is critical because they may see substantial loading when the balcony is occupied by several persons and balconies can be located several stories above grade. Structural failure of a balcony can result in multiple serious injuries or deaths.

In this code section, the existing requirement calls for separation by an impervious moisture barrier when the supporting wood is not preservative-treated or naturally durable. The term "impervious moisture barrier" is not defined in the code but really describes the required performance of the barrier. One bit of testimony during the Committee Action Hearing was existing language in 2304.12.2.5 may be unclear as it currently exists.

Other code changes affecting balconies were approved at the Committee Action Hearing:

ADM77-16 requires detailing on plans of all elements of the impervious moisture barrier system (including manufacturer's instructions when applicable) if the impervious moisture barrier option is used.

ADM87-16 requires inspection of all elements of the impervious moisture barrier system or special inspection can be utilized at the option of the code official.

S85-16 increased the live load for balconies to be consistent with live load requirements in ASCE-7.

S289-16 was disapproved on a close vote decided by the Chair. In their reason statement the Committee acknowledged this proposal would address a serious issue that needs to be dealt with and a public comment is encouraged to address the committee's concerns.

Early initial approaches to this code change as well as ADM77-16 and ADM87-16 were to include a comprehensive list of the various elements that might make up an impervious moisture barrier system. The proponent of these code changes received substantial feedback not to include a laundry list of possible elements that commonly make up these systems as the elements are not always the same for different systems and configurations. That logic was supported by the committee with the approval of ADM 77-16 and ADM 87-16.

Since the initial Group B code change deadline, an article by Joeseph Lstiburek has been published in the ASHRAE Journal. The unedited version can be found on the author's website at the following link:
http://buildingscience.com/documents/building-science-insights/bsi-093-all-decked-out

Two key concepts covered in this document is the need to provide slope, and when the traffic surface is permeable (like a concrete or masonry surface), then "it is critical that a drainage layer or space is provided immediately above the waterproofing layer." The article gives additional emphasis to the word "critical".

Without slope and a way for the water to get out, the impervious moisture barrier can be subject to constant attack by water that infiltrates the moisture permeable topping slab in a wet environment.

This concept is similar to a weep screed that provides a path for water to get out of the wood wall covered with plaster. Without an effective functioning weep screed there can be substantial water damage leading to the decay of the structural elements. Because the overall code section is performance based, it is not possible to write a cookbook method to address this from a design standpoint. Articles such as the one linked to this reason statement do help the designer with some guidance as do manufacturer's instructions and recommendations. The key point though is just as with a weep screed, there needs to be positive drainage for moisture to get out.

There may be time to fully to address concerns of the existing language found in Section 2304.12.2.5 for the 2021 IBC code cycle. That is outside of the scope of the public comment process. Since existing language will be in place for at least three more years, this public comment at least makes it clear to designers of the need to consider and provide positive drainage of water that infiltrates the moisture permeable floor topping.

As the committee said this is a serious issue in the code that needs to be dealt with.

Information on this and other code change proposals by American Wood Council may be found at the following web address: www.woodcode.org .

Final Action Results

S279-16	**AMPC1**

Back

Code Change No: S280-16

Original Proposal

Section: 2304.8.1, 2304.8.2

Proponent: Edwin Huston, representing National Council of Structural Engineers' Associations (NCSEA) (huston@smithhustoninc.com)

Revise as follows:

2304.8.1 Structural floor sheathing. Structural floor sheathing shall be designed in accordance with the general provisions of this code~~ and the special provisions in this section~~.

Floor sheathing conforming to the provisions of Table 2304.8(1), 2304.8(2), 2304.8(3) or 2304.8(4) shall be deemed to meet the requirements of this section.

2304.8.2 Structural roof sheathing. Structural roof sheathing shall be designed in accordance with the general provisions of this code and the special provisions in this section.

<u>Roof sheathing conforming to the provisions of Table 2304.8(1), 2304.8(2), 2304.8(3) or 2304.8(5) shall be deemed to meet the requirements of this section. Wood structural panel roof sheathing shall be</u> ~~bonded by~~<u>of a type manufactured with</u> exterior glue<u> (Exposure 1 or Exterior)</u>.

Reason: This proposal is two-fold with the attempt to clarify and harmonize the code.

1. To clean-up the code and remove redundant language, the wording "and the special provisions in this section" is being removed from Section 2304.8.1 for structural floor sheathing. There are currently no provisions contained in this section, so the wording is meaningless. Leaving this phrase in this section only creates confusion and thus the wording should be removed.
2. In section 2304.8.2 the reference to exterior glue is changed to reflect the wording contained in section 2304.6.1 for exterior sheathing. As it stands the reference to "bonded by exterior glue" is ambiguous, and can be mistaken to mean the bond classification of the wood structural panel as defined in DOC PS1 or PS2. Identical wording contained in 2304.6.1 is used here to better reflect the intention of the code.

Cost Impact: Will not increase the cost of construction
This proposal is intended to clarify the code and does not contain any new requirements nor is it removing any requirements for construction

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This code change makes the code provisions clearer by removing redundant language and coordinating wording with other code sections.

Assembly Action **None**

Final Action Results

S280-16	**AS**

Back

Code Change No: S281-16

Original Proposal

Section: 2304.9.3.2, 2304.9.3.2 (New)

Proponent: David Tyree, representing American Wood Council (dtyree@awc.org)

Revise as follows:

2304.9.3.2 Nailing. The length of nails connecting laminations shall be not less than two and one-half times the net thickness of each lamination. Where decking supports are 48 inches (1219 mm) on center or less, side nails shall be installed not more than 30 inches (762 mm) on center alternating between top and bottom edges, and staggered one-third of the spacing in adjacent laminations. Where supports are spaced more than 48 inches (1219 mm) on center, side nails shall be installed not more than 18 inches (457 mm) on center alternating between top and bottom edges and staggered one-third of the spacing in adjacent laminations. For mechanically laminated decking constructed with laminations of 2-inch (51 mm) nominal thickness, nailing in accordance with Table 2304.9.3.2 shall be permitted. Two side nails shall be installed at each end of butt-jointed pieces.

Laminations shall be toenailed to supports with 20d or larger common nails. Where the supports are 48 inches (1219 mm) on center or less, alternate laminations shall be toenailed to alternate supports; where supports are spaced more than 48 inches (1219 mm) on center, alternate laminations shall be toenailed to every support. For mechanically laminated decking constructed with laminations of 2-inch (51 mm) nominal thickness, toenailing at supports in accordance with Table 2304.9.3.2 shall be permitted.

Add new text as follows:

TABLE 2304.9.3.2
FASTENING SCHEDULE FOR MECHANICALLY LAMINATED DECKING USING LAMINATIONS OF 2-INCH NOMINAL THICKNESS

MINIMUM NAIL SIZE (Length x Diameter)	MAXIMUM SPACING BETWEEN FACE NAILS [a,b] (inches)		NUMBER OF TOENAILS INTO SUPPORTS [c]
	Decking Supports ≤ 48 inches o.c.	Decking Supports > 48 inches o.c.	
4” x 0.192”	30	18	1
4” x 0.162”	24	14	2
4” x 0.148”	22	13	2
3 1/2” x 0.162”	20	12	2
3 1/2” x 0.148”	19	11	2
3 1/2” x 0.135”	17	10	2
3” x 0.148”	11	7	2
3” x 0.128”	9	5	2
2 3/4” x 0.148”	10	6	2
2 3/4” x 0.131”	9	6	3
2 3/4” x 0.120”	8	5	3

For SI: 1 inch = 25.4 mm

a. Nails shall be driven perpendicular to the lamination face, alternating between top and bottom edges.

b. Where nails penetrate through two laminations and into the third, they shall be staggered one-third of the spacing in adjacent laminations. Otherwise, nails shall be staggered one-half of the spacing in adjacent laminations.

c. Where supports are 48 inches (1219 mm) on center or less, alternate laminations shall be toenailed to alternate supports; where supports are spaced more than 48 inches (1219 mm) on center, alternate laminations shall be toenailed to every support.

Reason: This proposal adds alternative fastener schedules for construction of mechanically laminated decking, providing specific guidance for use of mechanically-driven nails which are typically used in construction. The alternative fastening schedules are based on equivalency to the reference 20d common nail currently required in 2304.9.3.2 for laminations with a 2-inch nominal thickness, and provide equivalent lateral strength, shear stiffness and withdrawal capacity, as calculated in accordance with the AWC NDS.

Cost Impact: Will not increase the cost of construction
This change does not add additional requirements. It provides equivalent alternative options for construction of mechanically laminated decking.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This code change clarifies circumstances surrounding power-driven fasteners when used in lieu of the code-specified nailing and provides an additional option for laminated decking.

Assembly Action **None**

Final Action Results

S281-16 **AS**

Back

Code Change No: S282-16

Original Proposal

Section: 2305.2

Proponent: Stephen Kerr, representing Self (skerr@jwa-se.com)

Revise as follows:

2305.2 Diaphragm deflection. The deflection of wood-frame diaphragms shall be determined in accordance with AWC SDPWS. The deflection (~~?~~Δ_{dia}) of a blocked wood structural panel diaphragm uniformly fastened throughout with staples is permitted to be calculated in accordance with Equation 23-1. If not uniformly fastened, the constant 0.188 (For SI: 1/1627) in the third term shall be modified by an approved method.

$$\cancel{\phi M_n = 3\sqrt{f'_c}S_m}$$ **(Equation 23-1)**

$$\Delta_{dia} = 5vL^3/8EAW + vL/4Gt + 0.188Le_n + \sum(x\Delta_c)/2W$$ **(Equation 23-1)**

For SI: $\Delta_{dia} = \cancel{\frac{0.052vL^3}{EAb} + \frac{vL}{4Gt} + \frac{Le_n}{1627} + \frac{\Sigma(\Delta_c X)}{2b}}$

$$0.052vL^3/EAW + vL/4Gt + Le_n/1627 + \sum(x\Delta_c)/2W$$

where:

A	=	Area of chord cross section, in square inches (mm^2).
~~b~~W	=	Diaphragm width (In the direction of applied force, in feet (mm).
E	=	~~Elastic modulus~~ Modulus of elasticity of diaprhagm chords, in pounds per square inch (N/mm^2).
e_n	=	Staple ~~deformation~~ slip, in inches (mm) [see Table 2305.2(1)].
Gt	=	Panel rigidity through the thickness, in pounds per inch (N/mm) of panel width or depth [see Table 2305.2(2)].
L	=	Diaphragm length (dimension perpendicular to the direction of the applied load), in feet (mm).
v	=	Maximu~~m~~ Induced unit shear ~~due to design loads in the direction under consideration~~, in pounds per linear foot (plf) (N/mm).
Δ_{dia}	=	The calculate~~d~~ Maximum mid-span diaphragm deflection determined by elastic analysis, in inches (mm).
~~$\Sigma(\Delta_c X)$~~	~~=~~	~~Sum of individual chord-splice slip values on both sides of the diaphragm, each multiplied by its distance to the nearest support.~~

x = Distance from chord splice to nearest support, ft. (mm)

Δ_c = Diaprhagm chord splice slip at the induced unit shear, in. (mm)

Reason: Currently for horizontal diaphragms and vertical shear walls staples are not included within the AWC SDPWS referenced standard and are only contained within chapter 23 of the IBC. Section 2305.2 is essentially a modification of the AWC SDPWS requirements for nails modified for staples. Since the inclusion of staples in chapter 23 the SDPWS terminology has been modified and any similar changes have not been included into the IBC. The intent of this proposal is to bring parity between the language of

SDPWS and the IBC. No technical change to the deflection formulas is considered.

Cost Impact: Will not increase the cost of construction
The proposed change will not impact the cost of construction. The change is editorial and no technical changes are considered.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This code change updates the diaphragm deflection formula by incorporating revisions made in the AWC SDPWS.

Assembly Action **None**

Final Action Results

S282-16	**AS**

Back

Code Change No: S283-16

Original Proposal

Section: 2305.2

Proponent: Stephen Kerr, representing Self (skerr@jwa-se.com)

Revise as follows:

TABLE 2305.2 (2)
VALUES OF *Gt* FOR USE IN CALCULATING DEFLECTION OF WOOD STRUCTURAL PANEL SHEAR WALLS AND DIAPHRAGMS

PANEL TYPE	SPAN RATING	VALUES OF *Gt* (lb/in. panel depth or width)							
		Structural Sheathing ~~other~~				Structural I			
		Plywood			OSB	Plywood			OSB
		3- ply ~~plywood~~	4- ply ~~plywood~~	5-ply ~~plywood~~[a]		3- ply ~~plywood~~	4- ply ~~plywood~~	5-ply ~~plywood~~[a]	
Sheathing	24/0	25,000	32,500	37,500	77,500	32,500	42,500	41,500	77,500
	24/16	27,000	35,000	40,500	83,500	35,000	45,500	44,500	83,500
	32/16	27,000	35,000	40,500	83,500	35,000	45,500	44,500	83,500
	40/20	28,500	37,000	43,000	88,500	37,000	48,000	47,500	88,500
	48/24	31,000	40,500	46,500	96,000	40,500	52,500	51,000	96,000
Single Floor	16 o.c.	27,000	35,000	40,500	83,500	35,000	45,500	44,500	83,500
	20 o.c.	28,000	36,500	42,000	87,000	36,500	47,500	46,000	87,000
	24 o.c.	30,000	39,000	45,000	93,000	39,000	50,500	49,500	93,000
	32 o.c.	36,000	47,000	54,000	110,000	47,000	61,000	59,500	110,000
	48 o.c.	50,500	65,500	76,000	155,000	65,500	85,000	83,500	155,000

-		~~Other~~ Structural Sheathing			Structural I		
	Thickness (in.)	A-A, A-C	Marine	All Other Grades	A-A, A-C	Marine	All Other Grades
Sanded Plywood	1/4	24,000	31,000	24,000	31,000	31,000	31,000
	11/32	25,500	33,000	25,500	33,000	33,000	33,000
	3/8	26,000	34,000	26,000	34,000	34,000	34,000
	15/32	38,000	49,500	38,000	49,500	49,500	49,500
	1/2	38,500	50,000	38,500	50,000	50,000	50,000
	19/32	49,000	63,500	49,000	63,500	63,500	63,500
	5/8	49,500	64,500	49,500	64,500	64,500	64,500
	23/32	50,500	65,500	50,500	65,500	65,500	65,500
	3/4	51,000	66,500	51,000	66,500	66,500	66,500
	7/8	52,500	68,500	52,500	68,500	68,500	68,500
	1	73,500	95,500	73,500	95,500	95,500	95,500
	1 1/8	75,000	97,500	75,000	97,500	97,500	97,500

For SI: 1 inch = 25.4 mm, 1 pound/inch = 0.1751 N/mm.

a. 5-ply applies to plywood with five or more layers. For 5-ply plywood with three layers, use values for 4- ply panels.

~~For SI: 1 inch = 25.4 mm, 1 pound/inch = 0.1751 N/mm.~~
~~a. Applies to plywood with five or more layers; for five-ply/three-layer plywood, use values for four ply.~~

Reason: The proposed change is editorial and is intending to clarify the table and bring it more in line with the AWC SDPWS referenced standard. First, the proposal will remove some confusion in the table and footnote regarding the difference between the number of layers of plywood and the number of ply's. The wording for the proposed change is taken from 2008 AWC SDPWS Table C4.2.2A footnote 3. Second, the category "other" is removed and replaced with the term "structural sheathing". This is to recognize that the wood structural panel sheathing used in shear walls are structural panels and in accordance with section 2303.1.5 shall conform to the requirements of either DOC PS1, DOC PS2, or ANSI/APA PRP210.

Cost Impact: Will not increase the cost of construction
The proposed change will not impact the cost of construction. The change is editorial and no technical changes are considered.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This proposal is an editorial change to clarify the application of the table to various wood structural panels. These revisions are in line with changes to the referenced standard.

Assembly Action **None**

Final Action Results

S283-16	**AS**

Back

Code Change No: S284-16

Original Proposal

Section: 2305.3

Proponent: Stephen Kerr, representing Self (skerr@jwa-se.com)

Revise as follows:

2305.3 Shear wall deflection. The deflection of wood-frame shear walls shall be determined in accordance with AWC SDPWS. The deflection (Δ) of a blocked wood structural panel shear wall uniformly fastened throughout with staples is permitted to be calculated in accordance with Equation 23-2.

$$\frac{vh^3}{3EAb}+\frac{vh}{Gt}+\frac{he_n}{407.6}+d_a\frac{h}{b}$$ Δsw = 8vh ^{3} /EAb + vh/Gt + 0.75he $_n$ + d $_a$ h/b **(Equation 23-2)**

For SI: Δsw= $\frac{vh^3}{3EAb}+\frac{vh}{Gt}+\frac{he_n}{407.6}+d_a\frac{h}{b}$ vh ^{3} /3EAb + vh/Gt + he $_{n/407.6}$ + d $_a$ h/b

where:

A	=	Area of ~~boundary element cross section~~ end post cross-section in square inches (mm ^{2}) ~~(vertical member at shear wall boundary)~~.
b	=	~~Wall width~~ Shear wall length, in feet (mm).
$d\Delta_a$	=	~~Vertical~~ Total vertical elongation of ~~overturning~~ wall anchorage system (including fastener slip, device elongation, ~~anchor~~ rod elongation, etc.) at the ~~design~~ induced unit shear ~~load~~ in the shear wall (v).
E	=	~~Elastic modulus~~ Modulus of ~~boundary element (vertical member at shear wall boundary)~~ elasticity of end posts, in pounds per square inch (N/mm ^{2}).
e_n	=	Staple ~~deformation~~ slip, in inches (mm) [see Table 2305.2(1)].
G_t	=	Panel rigidity through the thickness, in pounds per inch (N/mm) of panel width or depth [see Table 2305.2(2)].
h	=	~~Wall~~ Shear wall height, in feet (mm).
v	=	~~Maximum~~ Induced unit shear ~~due to design loads at the top of the wall~~, in pounds per linear foot (N/mm).
Δsw	=	~~The calculated~~ Maximum shear wall deflection determined by elatic analysis, in inches (mm).

Reason: Currently for horizontal diaphragms and vertical shear walls staples are not included within the AWC SDPWS referenced standard and are only contained within chapter 23 of the IBC. Section 2305.2 is essentially a modification of the AWC SDPWS requirements for nails modified for staples. Since the inclusion of staples in chapter 23 the SDPWS terminology has been modified and any similar changes have not been included into the IBC. The intent of this proposal is to bring parity between the language of SDPWS and the IBC. No technical change to the deflection formulas is considered.

Cost Impact: Will not increase the cost of construction
The proposed change will not impact the cost of construction. The change is editorial and no technical changes are considered.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: The proposal provide updates for shear wall deflection - see committee reason for code change S282-16.

Assembly Action **None**

Final Action Results

S284-16	AS

Back

Code Change No: S285-16

Original Proposal

Section: 2306.3

Proponent: Stephen Kerr, representing Self (skerr@jwa-se.com)

Revise as follows:

TABLE 2306.3 (1)
ALLOWABLE SHEAR VALUES (POUNDS PER FOOT) FOR WOOD STRUCTURAL PANEL SHEAR WALLS UTILIZING STAPLES WITH FRAMING OF DOUGLAS FIR-LARCH OR SOUTHERN PINE[a] FOR WIND OR SEISMIC LOADING[b, f, g, i]

PANEL GRADE	MINIMUM NOMINAL PANEL THICKNESS (inch)	MINIMUM FASTENER PENETRATION IN FRAMING (inches)	PANELS APPLIED DIRECT TO FRAMING					PANELS APPLIED OVER 1/2" OR 5/8" GYPSUM SHEATHING				
			Staple <u>length and gage</u> ~~size~~[h]	Fastener spacing at panel edges (inches)				Staple <u>length and gage</u> ~~size~~[h]	Fastener spacing at panel edges (inches)			
				6	4	3	2[d]		6	4	3	2[d]
Structural I sheathing	3/8	1	1 1/2 16 Gage	155	235	315	400	2 16 Gage	155	235	310	400
	7/16			170	260	345	440		155	235	310	400
	15/32			185	280	375	475		155	235	300	400
Sheathing, plywood siding[e] except Group 5 Species, ANSI/APA PRP 210 siding[e]	5/16[c] or 1/4[c]	1	1 1/2 16 Gage	145	220	295	375	2 16 Gage	110	165	220	285
	3/8			140	210	280	360		140	210	280	360
	7/16			155	230	310	395		140	210	280	360
	15/32			170	255	335	430		140	210	280	360
	19/32		1 3/4 16 Gage	185	280	375	475	—	—	—	—	—

For SI: 1 inch = 25.4 mm, 1 pound per foot = 14.5939 N/m.

a. For framing of other species: (1) Find specific gravity for species of lumber in ANSI/AWC NDS. (2) For staples find shear value from table above for Structural I panels (regardless of actual grade) and multiply value by 0.82 for species with specific gravity of 0.42 or greater, or 0.65 for all other species.

b. Panel edges backed with 2-inch nominal or wider framing. Install panels either horizontally or vertically. Space fasteners maximum 6 inches on center along intermediate framing members for 3/8-inch and 7/16-inch panels installed on studs spaced 24 inches on center. For other conditions and panel thickness, space fasteners maximum 12 inches on center on intermediate supports.

c. 3/8-inch panel thickness or siding with a span rating of 16 inches on center is the minimum recommended where applied directly to framing as exterior siding. For grooved panel siding, the nominal panel thickness is the thickness of the panel measured at the point of fastening.

d. Framing at adjoining panel edges shall be 3 inches nominal or wider.

e. Values apply to all-veneer plywood. Thickness at point of fastening on panel edges governs shear values.

f. Where panels are applied on both faces of a wall and fastener spacing is less than 6 inches on center on either side, panel joints shall be offset to fall on different framing members, or framing shall be 3 inches nominal or thicker at adjoining panel edges.

g. In Seismic Design Category D, E or F, where shear design values exceed 350 pounds per linear foot, all framing members receiving edge fastening from abutting panels shall be not less than a single 3-inch nominal member, or two 2-inch nominal members fastened together in accordance with Section 2306.1 to transfer the design shear value between framing members. Wood structural panel joint and sill plate nailing shall be staggered at all panel edges. See AWC SDPWS for sill plate size and anchorage requirements.

h. Staples shall have a minimum crown width of 7/16 inch and shall be installed with their crowns parallel to the long dimension of the framing members.

i. For shear loads of normal or permanent load duration as defined by the ANSI/AWC NDS, the values in the table above shall be multiplied by 0.63 or 0.56, respectively.

Reason: The proposal will change the heading of "Staple Size" to "Staple Length and Gage" to reflect that the column in the table also contains the required length of the staple. This change is consistent with the wording currently found in IBC Table 2306.2(1). In addition, footnote e was added to ANSI APA PRP 210 siding to clarify that the siding shall be all-veneer, similar to the requirements for sheathing classified under DOC PS1 as well.
The intention is to clarify the code.

Cost Impact: Will not increase the cost of construction
The proposed change will not change the staple requirements for shear wall, and consequentially there should be no change in the cost of construction.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This proposal clarifies the table entries for staple size by indicating they provide required the length and gage.

Assembly Action **None**

Final Action Results

S285-16	**AS**

Back

Code Change No: S286-16

Original Proposal

Section: 2306.3

Proponent: Dennis Richardson, American Wood Council, representing American Wood Council (drichardson@awc.org)

Revise as follows:

TABLE 2306.3 (2)
ALLOWABLE SHEAR VALUES (plf) FOR WIND OR SEISMIC LOADING ON SHEAR WALLS OF FIBERBOARD SHEATHING BOARD CONSTRUCTION UTILIZING STAPLES FOR TYPE V CONSTRUCTION ONLY[a, b, c, d, e]

THICKNESS AND GRADE	FASTENER SIZE	ALLOWABLE SHEAR VALUE (pounds per linear foot) STAPLE SPACING AT PANEL EDGES (inches)[a]		
		4	3	2
$^1/_2$ ″ or $^{25}/_{32}$ ″ Structural	~~No.~~ 16 gage galvanized staple, $^7/_{16}$ ″ crown[f] 1-3/4 inch long	150	200	225
	~~No.~~ 16 gage galvanized staple, 1″ crown~~[f]~~ 1-3/4 inch long	220	290	325

For SI: 1 inch = 25.4 mm, 1 pound per foot = 14.5939 N/m.

a. Fiberboard sheathing shall not be used to brace concrete or masonry walls.
b. Panel edges shall be backed with 2-inch or wider framing of Douglas Fir-larch or Southern Pine. For framing of other species: (1) Find specific gravity for species of framing lumber in ANSI/AWC NDS. (2) For staples, multiply the shear value from the table above by 0.82 for species with specific gravity of 0.42 or greater, or 0.65 for all other species.
c. Values shown are for fiberboard sheathing on one side only with long panel dimension either parallel or perpendicular to studs.
d. Fastener shall be spaced 6 inches on center along intermediate framing members.
e. Values are not permitted in Seismic Design Category D, E or F.
~~f. Staple length shall be not less than 1 1 / 2 inches for 25 / 32 -inch sheathing or 1 1 / 4 inches for 1 / 2 -inch sheathing.~~

Reason: A review of the test report referenced at the time staples were added to this table shows that 16 gage staples were used in testing and also that staple length for both sheathing thicknesses was 1-3/4". The 1-3/4" staple length is incorporated directly into the table in lieu of reference to footnote f.

Cost Impact: Will not increase the cost of construction
This proposal does not increase the cost of construction as it merely correlates and clarifies various requirements from standards.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This code change simplifies the shear wall table by eliminating a note and incorporating the staple length into the appropriate table entries.

Assembly Action **None**

Final Action Results

S286-16	**AS**

Back

Code Change No: S287-16

Original Proposal

Section: 2308.2.3

Proponent: Edward Kulik, representing Building Code Action Committee (bcac@iccsafe.org)

Revise as follows:

2308.2.3 Allowable loads. Loads shall be in accordance with Chapter 16 and shall not exceed the following:

1. Average dead loads shall not exceed 15 psf (718 N/m^2) for combined roof and ceiling, exterior walls, floors and partitions.

   Exceptions:

   1. Subject to the limitations of Section 2308.6.10, stone or masonry veneer up to the lesser of 5 inches (127 mm) thick or 50 psf (2395 N/m^2) and installed in accordance with Chapter 14 is permitted to a height of 30 feet (9144 mm) above a noncombustible foundation, with an additional 8 feet (2438 mm) permitted for gable ends.
   2. Concrete or masonry fireplaces, heaters and chimneys shall be permitted in accordance with the provisions of this code.
2. Live loads shall not exceed 40 psf (1916 N/m^2) for floors.

   <u>**Exception:** Live loads for concrete slab-on-ground floors in Risk Category I and II occupancies are not limited.</u>

3. Ground snow loads shall not exceed 50 psf (2395 N/m^2).

Reason: Conventional light-frame construction is often desirable to use for small slab-on-ground commercial structures. The restriction to a 40 pound per square foot live load is currently interpreted to apply to all levels of the structure, even at a ground floor space located on a concrete slab-on-ground. This proposal clarifies that live loads of more than 40 pounds per square foot are permitted at ground floors of Risk Category I and II buildings having a concrete slab-on-ground. This clarification is consistent with the very specific scope identified for the conventional light-frame construction in Section 2320.1 that go back to the 1997 UBC. Concrete slabs-on-ground design will be governed by applicable portions of Chapter 18 and Section 1907.

This proposal is submitted by the ICC Building Code Action Committee (BCAC). BCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. In 2014 and 2015 the BCAC has held 5 open meetings. In addition, there were numerous Working Group meetings and conference calls for the current code development cycle, which included members of the committee as well as any interested party to discuss and debate the proposed changes. Related documentation and reports are posted on the BCAC website at: **BCAC**

Cost Impact: Will not increase the cost of construction
This proposal will not increase the cost of construction as it simply allows a higher live load to be used where a concrete slab on grade is used at the ground floor level.

Report of Committee Action Hearings

Committee Action: **Approved as Modified**

Modify as follows:

2308.2.3 Allowable loads. Loads shall be in accordance with Chapter 16 and shall not exceed the following:

1. Average dead loads shall not exceed 15 psf (718 N/m^2) for combined roof and ceiling, exterior walls, floors and partitions.

   Exceptions:

   1. Subject to the limitations of Section 2308.6.10, stone or masonry veneer up to the lesser of 5 inches (127 mm) thick or 50 psf (2395 N/m^2) and installed in accordance with Chapter 14 is permitted to a height of 30 feet (9144 mm) above a noncombustible foundation, with an additional 8 feet (2438 mm) permitted for gable ends.
   2. Concrete or masonry fireplaces, heaters and chimneys shall be permitted in accordance with the provisions of this code.

2. Live loads shall not exceed 40 psf (1916 N/m^2) for floors.

   Exception: Live loads for concrete slab-on-ground floors in buildings classified as Risk Category I and II ~~are not~~ shall be limited to 125 psf.

3. Ground snow loads shall not exceed 50 psf (2395 N/m^2).

Committee Reason: This proposal makes it clear that a concrete slab on grade can be used in conjunction with conventional light-frame construction and that the 40 psf live load limit for floors would not apply. The modification places a practical limit of 125 psf for the slab on grade live load.

Assembly Action: **None**

Final Action Results

S287-16	**AM**

Back

Code Change No: S288-16

Original Proposal

Section: 2308.4.1.1, 2308.4.1.1(2) (New)

Proponent: David Tyree, representing American Wood Council (dtyree@awc.org)

Revise as follows:

~~2308.4.1.1~~ (2)
~~HEADER AND GIRDER SPANS[a, b] FOR INTERIOR BEARING WALLS (Maximum spans for Douglas Fir-Larch, Hem-Fir, Southern Pine and Spruce-Pine-Fir[b] and required number of jack studs)~~

~~HEADERS AND GIRDERS SUPPORTING~~	~~SIZE~~	~~BUILDING WIDTH[c] (feet)~~					
		~~20~~		~~28~~		~~36~~	
		~~Span~~	~~NJ[d]~~	~~Span~~	~~NJ[d]~~	~~Span~~	~~NJ[d]~~
~~One floor only~~	~~2-2 × 4~~	~~3-1~~	~~1~~	~~2-8~~	~~1~~	~~2-5~~	~~1~~
	~~2-2 × 6~~	~~4-6~~	~~1~~	~~3-11~~	~~1~~	~~3-6~~	~~1~~
	~~2-2 × 8~~	~~5-9~~	~~1~~	~~5-0~~	~~2~~	~~4-5~~	~~2~~
	~~2-2 × 10~~	~~7-0~~	~~2~~	~~6-1~~	~~2~~	~~5-5~~	~~2~~
	~~2-2 × 12~~	~~8-1~~	~~2~~	~~7-0~~	~~2~~	~~6-3~~	~~2~~
	~~3-2 × 8~~	~~7-2~~	~~1~~	~~6-3~~	~~1~~	~~5-7~~	~~2~~
	~~3-2 × 10~~	~~8-9~~	~~1~~	~~7-7~~	~~2~~	~~6-9~~	~~2~~
	~~3-2 × 12~~	~~10-2~~	~~2~~	~~8-10~~	~~2~~	~~7-10~~	~~2~~
	~~4-2 × 8~~	~~9-0~~	~~1~~	~~7-8~~	~~1~~	~~6-9~~	~~1~~
	~~4-2 × 10~~	~~10-1~~	~~1~~	~~8-9~~	~~1~~	~~7-10~~	~~2~~
	~~4-2 × 12~~	~~11-9~~	~~1~~	~~10-2~~	~~2~~	~~9-1~~	~~2~~
~~Two floors~~	~~2-2 × 4~~	~~2-2~~	~~1~~	~~1-10~~	~~1~~	~~1-7~~	~~1~~
	~~2-2 × 6~~	~~3-2~~	~~2~~	~~2-9~~	~~2~~	~~2-5~~	~~2~~
	~~2-2 × 8~~	~~4-1~~	~~2~~	~~3-6~~	~~2~~	~~3-2~~	~~2~~
	~~2-2 × 10~~	~~4-11~~	~~2~~	~~4-3~~	~~2~~	~~3-10~~	~~3~~
	~~2-2 × 12~~	~~5-9~~	~~2~~	~~5-0~~	~~3~~	~~4-5~~	~~3~~
	~~3-2 × 8~~	~~5-1~~	~~2~~	~~4-5~~	~~2~~	~~3-11~~	~~2~~
	~~3-2 × 10~~	~~6-2~~	~~2~~	~~5-4~~	~~2~~	~~4-10~~	~~2~~
	~~3-2 × 12~~	~~7-2~~	~~2~~	~~6-3~~	~~2~~	~~5-7~~	~~3~~
	~~4-2 × 8~~	~~6-1~~	~~1~~	~~5-3~~	~~2~~	~~4-8~~	~~2~~
	~~4-2 × 10~~	~~7-2~~	~~2~~	~~6-2~~	~~2~~	~~5-6~~	~~2~~
	~~4-2 × 12~~	~~8-4~~	~~2~~	~~7-2~~	~~2~~	~~6-5~~	~~2~~

~~For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.~~

~~a. Spans are given in feet and inches.~~

~~b. Spans are based on minimum design properties for No. 2 grade lumber of Douglas Fir-Larch, Hem-Fir and Spruce-Pine Fir. No. 1 or better grade lumber shall be used for Southern Pine.~~

~~c. Building width is measured perpendicular to the ridge. For widths between those shown, spans are permitted to be interpolated.~~

~~d. NJ - Number of jack studs required to support each end. Where the number of required jack studs equals one, the header is permitted to be supported by an approved framing anchor attached to the full-height wall stud and to the header.~~

TABLE 2308.4.1.1(2)
HEADER AND GIRDER SPANS[a,b] FOR INTERIOR BEARING WALLS (Maximum spans for Douglas Fir-Larch, Hem-Fir, Southern Pine, and Spruce-Pine-Fir and required number of jack studs)

HEADERS AND GIRDERS SUPPORTING	SIZE	BUILDING Width[c] (feet)					
		12		24		36	
		Span[e]	NJ[d]	Span[e]	NJ[d]	Span[e]	NJ[d]
One floor only	2-2x4	4 - 1	1	2 - 10	1	2 - 4	1
	2-2x6	6 - 1	1	4 - 4	1	3 - 6	1
	2-2x8	7 - 9	1	5 - 5	1	4 - 5	2
	2-2x10	9 - 2	1	6 - 6	2	5 - 3	2
	2-2x12	10 - 9	1	7 - 7	2	6 - 3	2
	3-2x8	9 - 8	1	6 - 10	1	5 - 7	1
	3-2x10	11 - 5	1	8 - 1	1	6 - 7	2
	3-2x12	13 - 6	1	9 - 6	2	7 - 9	2
	4-2x8	11 - 2	1	7 - 11	1	6 - 5	1
	4-2x10	13 - 3	1	9 - 4	1	7 - 8	1
	4-2x12	15 - 7	1	11 - 0	1	9 - 0	2
Two floors	2-2x4	2 - 7	1	1 - 11	1	1 - 7	1
	2-2x6	3 - 11	1	2 - 11	2	2 - 5	2
	2-2x8	5 - 0	1	3 - 8	2	3 - 1	2
	2-2x10	5 - 11	2	4 - 4	2	3 - 7	2
	2-2x12	6 - 11	2	5 - 2	2	4 - 3	3
	3-2x8	6 - 3	1	4 - 7	2	3 - 10	2
	3-2x10	7 - 5	1	5 - 6	2	4 - 6	2
	3-2x12	8 - 8	2	6 - 5	2	5 - 4	2
	4-2x8	7 - 2	1	5 - 4	1	4 - 5	2
	4-2x10	8 - 6	1	6 - 4	2	5 - 3	2
	4-2x12	10 - 1	1	7 - 5	2	6 - 2	2

For SI: 1 inch = 25.4 mm, 1 pound per square foot = 0.0479 kPa.

a. Spans are given in feet and inches.
b. Spans are based on minimum design properties for No. 2 grade lumber of Douglas Fir-Larch, Hem-Fir, Southern Pine, and Spruce-Pine-Fir.
c. Building width is measured perpendicular to the ridge. For widths between those shown, spans are permitted to be interpolated.
d. NJ - Number of jack studs required to support each end. Where the number of required jack studs equals one, the header is permitted to be supported by an approved framing anchor attached to the full-height wall stud and to the header.
e. Spans are calculated assuming the top of the header or girder is laterally braced by perpendicular framing. Where the top of the header or girder is not laterally braced (e.g. cripple studs bearing on the header), tabulated spans for headers consisting of 2x8, 2x10, or 2x12 sizes shall be multiplied by 0.70 or the header or girder shall be designed.

Reason: The update of Table 2308.4.1.1(2) Header and Girder Spans for Interior Bearing Walls is proposed. Updated spans address use of Southern Pine No. 2 in lieu of Southern Pine No. 1. Footnote "e" is added to clarify that header spans are based on laterally braced assumption such as when the header is raised. For dropped headers consisting of 2x8, 2x10, or 2x12 size framing and not laterally braced, a factor of 0.7 can be applied to determine the spans or alternatively the header or girder can be designed to include any adjustment for potential buckling. Laterally braced (raised) and not laterally braced (dropped) header conditions and building widths for which header spans are tabulated represent the same conditions used to develop header span tables in the Wood Frame Construction Manual (WFCM).

Cost Impact: Will increase the cost of construction
Increased cost may be associated with reduced spans that result from the not laterally braced condition and application of footnote e. Due to smaller building width column (12'), permissible use of Southern Pine No. 2, and the laterally braced assumption for tabulated spans, there are also cases where this change will not increase the cost of construction and may reduce cost of construction.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: Agreement with the proponent's reason which indicates these updates to the header and girder span for interior bearing walls reflect Souther Pine No. 2 design values and provide clearer direction on lateral bracing requirements.

Assembly Action **None**

Final Action Results

S288-16	**AS**

Back

Code Change No: S289-16

Original Proposal

Section: 2308.4.1.1, 2308.4.1.1(1) (New)

Proponent: David Tyree, representing American Wood Council (dtyree@awc.org)

Revise as follows:

~~2308.4.1.1~~ (1)
~~HEADER AND GIRDER SPANS[a, b] FOR EXTERIOR BEARING WALLS (Maximum spans for Douglas Fir-Larch, Hem-Fir, Southern Pine and Spruce-Pine-Fir[b] and required number of jack studs)~~

~~GIRDERS AND HEADERS SUPPORTING~~	~~SIZE~~	~~GROUND SNOW LOAD (psf)[e]~~											
		~~30~~						~~50~~					
		~~Building width[c] (feet)~~											
		~~20~~		~~28~~		~~36~~		~~20~~		~~28~~		~~36~~	
		~~Span~~	~~NJ[d]~~	~~Span~~	~~NJ[d]~~	~~Span~~	~~NJ[d]~~	~~Span~~	~~NJ[d]~~	~~Span~~	~~NJ[d]~~	~~Span~~	~~NJ[d]~~
~~Roof and ceiling~~	~~2-2 × 4~~	~~3-6~~	~~1~~	~~3-2~~	~~1~~	~~2-10~~	~~1~~	~~3-2~~	~~1~~	~~2-9~~	~~1~~	~~2-6~~	~~1~~
	~~2-2 × 6~~	~~5-5~~	~~1~~	~~4-8~~	~~1~~	~~4-2~~	~~1~~	~~4-8~~	~~1~~	~~4-1~~	~~1~~	~~3-8~~	~~2~~
	~~2-2 × 8~~	~~6-10~~	~~1~~	~~5-11~~	~~2~~	~~5-4~~	~~2~~	~~5-11~~	~~2~~	~~5-2~~	~~2~~	~~4-7~~	~~2~~
	~~2-2 × 10~~	~~8-5~~	~~2~~	~~7-3~~	~~2~~	~~6-6~~	~~2~~	~~7-3~~	~~2~~	~~6-3~~	~~2~~	~~5-7~~	~~2~~
	~~2-2 × 12~~	~~9-9~~	~~2~~	~~8-5~~	~~2~~	~~7-6~~	~~2~~	~~8-5~~	~~2~~	~~7-3~~	~~2~~	~~6-6~~	~~2~~
	~~3-2 × 8~~	~~8-4~~	~~1~~	~~7-5~~	~~1~~	~~6-8~~	~~1~~	~~7-5~~	~~1~~	~~6-5~~	~~2~~	~~5-9~~	~~2~~
	~~3-2 × 10~~	~~10-6~~	~~1~~	~~9-1~~	~~2~~	~~8-2~~	~~2~~	~~9-1~~	~~2~~	~~7-10~~	~~2~~	~~7-0~~	~~2~~
	~~3-2 × 12~~	~~12-2~~	~~2~~	~~10-7~~	~~2~~	~~9-5~~	~~2~~	~~10-7~~	~~2~~	~~9-2~~	~~2~~	~~8-2~~	~~2~~
	~~4-2 × 8~~	~~9-2~~	~~1~~	~~8-4~~	~~1~~	~~7-8~~	~~1~~	~~8-4~~	~~1~~	~~7-5~~	~~1~~	~~6-8~~	~~1~~
	~~4-2 × 10~~	~~11-8~~	~~1~~	~~10-6~~	~~1~~	~~9-5~~	~~2~~	~~10-6~~	~~1~~	~~9-1~~	~~2~~	~~8-2~~	~~2~~
	~~4-2 × 12~~	~~14-1~~	~~1~~	~~12-2~~	~~2~~	~~10-11~~	~~2~~	~~12-2~~	~~2~~	~~10-7~~	~~2~~	~~9-5~~	~~2~~
~~Roof, ceiling and one center-bearing floor~~	~~2-2 × 4~~	~~3-1~~	~~1~~	~~2-9~~	~~1~~	~~2-5~~	~~1~~	~~2-9~~	~~1~~	~~2-5~~	~~1~~	~~2-2~~	~~1~~
	~~2-2 × 6~~	~~4-6~~	~~1~~	~~4-0~~	~~1~~	~~3-7~~	~~2~~	~~4-1~~	~~1~~	~~3-7~~	~~2~~	~~3-3~~	~~2~~
	~~2-2 × 8~~	~~5-9~~	~~2~~	~~5-0~~	~~2~~	~~4-6~~	~~2~~	~~5-2~~	~~2~~	~~4-6~~	~~2~~	~~4-1~~	~~2~~
	~~2-2 × 10~~	~~7-0~~	~~2~~	~~6-2~~	~~2~~	~~5-6~~	~~2~~	~~6-4~~	~~2~~	~~5-6~~	~~2~~	~~5-0~~	~~2~~
	~~2-2 × 12~~	~~8-1~~	~~2~~	~~7-1~~	~~2~~	~~6-5~~	~~2~~	~~7-4~~	~~2~~	~~6-5~~	~~2~~	~~5-9~~	~~3~~
	~~3-2 × 8~~	~~7-2~~	~~1~~	~~6-3~~	~~2~~	~~5-8~~	~~2~~	~~6-5~~	~~2~~	~~5-8~~	~~2~~	~~5-1~~	~~2~~
	~~3-2 × 10~~	~~8-9~~	~~2~~	~~7-8~~	~~2~~	~~6-11~~	~~2~~	~~7-11~~	~~2~~	~~6-11~~	~~2~~	~~6-3~~	~~2~~
	~~3-2 × 12~~	~~10-2~~	~~2~~	~~8-11~~	~~2~~	~~8-0~~	~~2~~	~~9-2~~	~~2~~	~~8-0~~	~~2~~	~~7-3~~	~~2~~
	~~4-2 × 8~~	~~8-1~~	~~1~~	~~7-3~~	~~1~~	~~6-7~~	~~1~~	~~7-5~~	~~1~~	~~6-6~~	~~1~~	~~5-11~~	~~2~~
	~~4-2 × 10~~	~~10-1~~	~~1~~	~~8-10~~	~~2~~	~~8-0~~	~~2~~	~~9-1~~	~~2~~	~~8-0~~	~~2~~	~~7-2~~	~~2~~
	~~4-2 × 12~~	~~11-9~~	~~2~~	~~10-3~~	~~2~~	~~9-3~~	~~2~~	~~10-7~~	~~2~~	~~9-3~~	~~2~~	~~8-4~~	~~2~~
~~Roof, ceiling and one clear span floor~~	~~2-2 × 4~~	~~2-8~~	~~1~~	~~2-4~~	~~1~~	~~2-1~~	~~1~~	~~2-7~~	~~1~~	~~2-3~~	~~1~~	~~2-0~~	~~1~~
	~~2-2 × 6~~	~~3-11~~	~~1~~	~~3-5~~	~~2~~	~~3-0~~	~~2~~	~~3-10~~	~~2~~	~~3-4~~	~~2~~	~~3-0~~	~~2~~
	~~2-2 × 8~~	~~5-0~~	~~2~~	~~4-4~~	~~2~~	~~3-10~~	~~2~~	~~4-10~~	~~2~~	~~4-2~~	~~2~~	~~3-9~~	~~2~~

	~~2-2 × 10~~	~~6-1~~	~~2~~	~~5-3~~	~~2~~	~~4-8~~	~~2~~	~~5-11~~	~~2~~	~~5-1~~	~~2~~	~~4-7~~	~~3~~
	~~2-2 × 12~~	~~7-1~~	~~2~~	~~6-1~~	~~3~~	~~5-5~~	~~3~~	~~6-10~~	~~2~~	~~5-11~~	~~3~~	~~5-4~~	~~3~~
	~~3-2 × 8~~	~~6-3~~	~~2~~	~~5-5~~	~~2~~	~~4-10~~	~~2~~	~~6-1~~	~~2~~	~~5-3~~	~~2~~	~~4-8~~	~~2~~
	~~3-2 × 10~~	~~7-7~~	~~2~~	~~6-7~~	~~2~~	~~5-11~~	~~2~~	~~7-5~~	~~2~~	~~6-5~~	~~2~~	~~5-9~~	~~2~~
	~~3-2 × 12~~	~~8-10~~	~~2~~	~~7-8~~	~~2~~	~~6-10~~	~~2~~	~~8-7~~	~~2~~	~~7-5~~	~~2~~	~~6-8~~	~~2~~
	~~4-2 × 8~~	~~7-2~~	~~1~~	~~6-3~~	~~2~~	~~5-7~~	~~2~~	~~7-0~~	~~1~~	~~6-1~~	~~2~~	~~5-5~~	~~2~~
	~~4-2 × 10~~	~~8-9~~	~~2~~	~~7-7~~	~~2~~	~~6-10~~	~~2~~	~~8-7~~	~~2~~	~~7-5~~	~~2~~	~~6-7~~	~~2~~
	~~4-2 × 12~~	~~10-2~~	~~2~~	~~8-10~~	~~2~~	~~7-11~~	~~2~~	~~9-11~~	~~2~~	~~8-7~~	~~2~~	~~7-8~~	~~2~~
~~Roof, ceiling and two center-bearing floors~~	~~2-2 × 4~~	~~2-7~~	~~1~~	~~2-3~~	~~1~~	~~2-0~~	~~1~~	~~2-6~~	~~1~~	~~2-2~~	~~1~~	~~1-11~~	~~1~~
	~~2-2 × 6~~	~~3-9~~	~~2~~	~~3-3~~	~~2~~	~~2-11~~	~~2~~	~~3-8~~	~~2~~	~~3-2~~	~~2~~	~~2-10~~	~~2~~
	~~2-2 × 8~~	~~4-9~~	~~2~~	~~4-2~~	~~2~~	~~3-9~~	~~2~~	~~4-7~~	~~2~~	~~4-0~~	~~2~~	~~3-8~~	~~2~~
	~~2-2 × 10~~	~~5-9~~	~~2~~	~~5-1~~	~~2~~	~~4-7~~	~~3~~	~~5-8~~	~~2~~	~~4-11~~	~~2~~	~~4-5~~	~~3~~
	~~2-2 × 12~~	~~6-8~~	~~2~~	~~5-10~~	~~3~~	~~5-3~~	~~3~~	~~6-6~~	~~2~~	~~5-9~~	~~3~~	~~5-2~~	~~3~~
	~~3-2 × 8~~	~~5-11~~	~~2~~	~~5-2~~	~~2~~	~~4-8~~	~~2~~	~~5-9~~	~~2~~	~~5-1~~	~~2~~	~~4-7~~	~~2~~
	~~3-2 × 10~~	~~7-3~~	~~2~~	~~6-4~~	~~2~~	~~5-8~~	~~2~~	~~7-1~~	~~2~~	~~6-2~~	~~2~~	~~5-7~~	~~2~~
	~~3-2 × 12~~	~~8-5~~	~~2~~	~~7-4~~	~~2~~	~~6-7~~	~~2~~	~~8-2~~	~~2~~	~~7-2~~	~~2~~	~~6-5~~	~~3~~
	~~4-2 × 8~~	~~6-10~~	~~1~~	~~6-0~~	~~2~~	~~5-5~~	~~2~~	~~6-8~~	~~1~~	~~5-10~~	~~2~~	~~5-3~~	~~2~~
	~~4-2 × 10~~	~~8-4~~	~~2~~	~~7-4~~	~~2~~	~~6-7~~	~~2~~	~~8-2~~	~~2~~	~~7-2~~	~~2~~	~~6-5~~	~~2~~
	~~4-2 × 12~~	~~9-8~~	~~2~~	~~8-6~~	~~2~~	~~7-8~~	~~2~~	~~9-5~~	~~2~~	~~8-3~~	~~2~~	~~7-5~~	~~2~~
~~Roof, ceiling, and two clear span floors~~	~~2-2 × 4~~	~~2-1~~	~~1~~	~~1-8~~	~~1~~	~~1-6~~	~~2~~	~~2-0~~	~~1~~	~~1-8~~	~~1~~	~~1-5~~	~~2~~
	~~2-2 × 6~~	~~3-1~~	~~2~~	~~2-8~~	~~2~~	~~2-4~~	~~2~~	~~3-0~~	~~2~~	~~2-7~~	~~2~~	~~2-3~~	~~2~~
	~~2-2 × 8~~	~~3-10~~	~~2~~	~~3-4~~	~~2~~	~~3-0~~	~~3~~	~~3-10~~	~~2~~	~~3-4~~	~~2~~	~~2-11~~	~~3~~
~~Roof, ceiling, and two clear span floors~~	~~2-2 × 10~~	~~4-9~~	~~2~~	~~4-1~~	~~3~~	~~3-8~~	~~3~~	~~4-8~~	~~2~~	~~4-0~~	~~3~~	~~3-7~~	~~3~~
	~~2-2 × 12~~	~~5-6~~	~~3~~	~~4-9~~	~~3~~	~~4-3~~	~~3~~	~~5-5~~	~~3~~	~~4-8~~	~~3~~	~~4-2~~	~~3~~
	~~3-2 × 8~~	~~4-10~~	~~2~~	~~4-2~~	~~2~~	~~3-9~~	~~2~~	~~4-9~~	~~2~~	~~4-1~~	~~2~~	~~3-8~~	~~2~~
	~~3-2 × 10~~	~~5-11~~	~~2~~	~~5-1~~	~~2~~	~~4-7~~	~~3~~	~~5-10~~	~~2~~	~~5-0~~	~~2~~	~~4-6~~	~~3~~
	~~3-2 × 12~~	~~6-10~~	~~2~~	~~5-11~~	~~3~~	~~5-4~~	~~3~~	~~6-9~~	~~2~~	~~5-10~~	~~3~~	~~5-3~~	~~3~~
	~~4-2 × 8~~	~~5-7~~	~~2~~	~~4-10~~	~~2~~	~~4-4~~	~~2~~	~~5-6~~	~~2~~	~~4-9~~	~~2~~	~~4-3~~	~~2~~
	~~4-2 × 10~~	~~6-10~~	~~2~~	~~5-11~~	~~2~~	~~5-3~~	~~2~~	~~6-9~~	~~2~~	~~5-10~~	~~2~~	~~5-2~~	~~2~~
	~~4-2 × 12~~	~~7-11~~	~~2~~	~~6-10~~	~~2~~	~~6-2~~	~~3~~	~~7-9~~	~~2~~	~~6-9~~	~~2~~	~~6-0~~	~~3~~

For SI: 1 inch = 25.4 mm, 1 pound per square foot = 0.0479 kPa.

a. Spans are given in feet and inches.
b. Spans are based on minimum design properties for No. 2 grade lumber of Douglas Fir-Larch, Hem-Fir and Spruce-Pine Fir. No. 1 or better grade lumber shall be used for Southern Pine.
c. Building width is measured perpendicular to the ridge. For widths between those shown, spans are permitted to be interpolated.
d. NJ - Number of jack studs required to support each end. Where the number of required jack studs equals one, the header is permitted to be supported by an approved framing anchor attached to the full-height wall stud and to the header.
e. Use 30 psf ground snow load for cases in which ground snow load is less than 30 psf and the roof live load is equal to or less than 20 psf.

TABLE 2308.4.1.1(1)
HEADER AND GIRDER SPANS[a,b] FOR EXTERIOR BEARING WALLS (Maximum spans for Douglas Fir-Larch, Hem-Fir, Southern Pine, and Spruce-Pine-Fir and required number of jack studs)

GIRDERS AND HEADERS SUPPORTING	SIZE	GROUND SNOW LOAD (psf)[e]																	
		30						50						70					
		Building width[c] (feet)																	
		12		24		36		12		24		36		12		24		36	
		Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]
Roof and ceiling	1-2x6	4 - 0	1	3 - 1	2	2 - 7	2	3 - 5	1	2 - 8	2	2 - 3	2	3 - 0	2	2 - 4	2	2 - 0	2
	1-2x8	5 - 1	2	3 - 11	2	3 - 3	2	4 - 4	2	3 - 4	2	2 - 10	2	3 - 10	2	3 - 0	2	2 - 6	3
	1-2x10	6 - 0	2	4 - 8	2	3 - 11	2	5 - 2	2	4 - 0	2	3 - 4	3	4 - 7	2	3 - 6	3	3 - 0	3
	1-2x12	7 - 1	2	5 - 5	2	4 - 7	3	6 - 1	2	4 - 8	3	3 - 11	3	5 - 5	2	4 - 2	3	3 - 6	3
	2-2x4	4 - 0	1	3 - 1	1	2 - 7	1	3 - 5	1	2 - 7	1	2 - 2	1	3 - 0	1	2 - 4	1	2 - 0	1
	2-2x6	6 - 0	1	4 - 7	1	3 - 10	1	5 - 1	1	3 - 11	1	3 - 3	2	4 - 6	1	3 - 6	2	2 - 11	2
	2-2x8	7 - 7	1	5 - 9	1	4 - 10	2	6 - 5	1	5 - 0	2	4 - 2	2	5 - 9	1	4 - 5	2	3 - 9	2
	2-2x10	9 - 0	1	6 - 10	2	5 - 9	2	7 - 8	2	5 - 11	2	4 - 11	2	6 - 9	2	5 - 3	2	4 - 5	2
	2-2x12	10 - 7	2	8 - 1	2	6 - 10	2	9 - 0	2	6 - 11	2	5 - 10	2	8 - 0	2	6 - 2	2	5 - 2	3
	3-2x8	9 - 5	1	7 - 3	1	6 - 1	1	8 - 1	1	6 - 3	1	5 - 3	2	7 - 2	1	5 - 6	2	4 - 8	2
	3-2x10	11 - 3	1	8 - 7	1	7 - 3	2	9 - 7	1	7 - 4	2	6 - 2	2	8 - 6	1	6 - 7	2	5 - 6	2
	3-2x12	13 - 2	1	10 - 1	2	8 - 6	2	11 - 3	2	8 - 8	2	7 - 4	2	10 - 0	2	7 - 9	2	6 - 6	2
	4-2x8	10 - 11	1	8 - 4	1	7 - 0	1	9 - 4	1	7 - 2	1	6 - 0	1	8 - 3	1	6 - 4	1	5 - 4	2
	4-2x10	12 - 11	1	9 - 11	1	8 - 4	1	11 - 1	1	8 - 6	1	7 - 2	2	9 - 10	1	7 - 7	2	6 - 4	2
	4-2x12	15 - 3	1	11 - 8	1	9 - 10	2	13 - 0	1	10 - 0	2	8 - 5	2	11 - 7	1	8 - 11	2	7 - 6	2
Roof, ceiling and one center-bearing floor	1-2x6	3 - 3	1	2 - 7	2	2 - 2	2	3 - 0	2	2 - 4	2	2 - 0	2	2 - 9	2	2 - 2	2	1 - 10	2
	1-2x8	4 - 1	2	3 - 3	2	2 - 9	2	3 - 9	2	3 - 0	2	2 - 6	3	3 - 6	2	2 - 9	2	2 - 4	3
	1-2x10	4 - 11	2	3 - 10	2	3 - 3	3	4 - 6	2	3 - 6	3	3 - 0	3	4 - 1	2	3 - 3	3	2 - 9	3
	1-2x12	5 - 9	2	4 - 6	3	3 - 10	3	5 - 3	2	4 - 2	3	3 - 6	3	4 - 10	3	3 - 10	3	3 - 3	4
	2-2x4	3 - 3	1	2 - 6	1	2 - 2	1	3 - 0	1	2 - 4	1	2 - 0	1	2 - 8	1	2 - 2	1	1 - 10	1
	2-2x6	4 - 10	1	3 - 9	1	3 - 3	2	4 - 5	1	3 - 6	2	3 - 0	2	4 - 1	1	3 - 3	2	2 - 9	2
	2-2x8	6 - 1	1	4 - 10	2	4 - 1	2	5 - 7	2	4 - 5	2	3 - 9	2	5 - 2	2	4 - 1	2	3 - 6	2

	2-2x10	7 - 3	2	5 - 8	2	4 - 10	2	6 - 8	2	5 - 3	2	4 - 5	2	6 - 1	2	4 - 10	2	4 - 1	2
	2-2x12	8 - 6	2	6 - 8	2	5 - 8	2	7 - 10	2	6 - 2	2	5 - 3	3	7 - 2	2	5 - 8	2	4 - 10	3
	3-2x8	7 - 8	1	6 - 0	1	5 - 1	2	7 - 0	1	5 - 6	2	4 - 8	2	6 - 5	1	5 - 1	2	4 - 4	2
	3-2x10	9 - 1	1	7 - 2	2	6 - 1	2	8 - 4	1	6 - 7	2	5 - 7	2	7 - 8	2	6 - 1	2	5 - 2	2
	3-2x12	10 - 8	2	8 - 5	2	7 - 2	2	9 - 10	2	7 - 8	2	6 - 7	2	9 - 0	2	7 - 1	2	6 - 1	2
	4-2x8	8 - 10	1	6 - 11	1	5 - 11	1	8 - 1	1	6 - 4	1	5 - 5	2	7 - 5	1	5 - 11	1	5 - 0	2
	4-2x10	10 - 6	1	8 - 3	2	7 - 0	2	9 - 8	1	7 - 7	2	6 - 5	2	8 - 10	1	7 - 0	2	6 - 0	2
	4-2x12	12 - 4	1	9 - 8	2	8 - 3	2	11 - 4	2	8 - 11	2	7 - 7	2	10 - 4	2	8 - 3	2	7 - 0	2
Roof, ceiling and one clear span floor	1-2x6	2 - 11	2	2 - 3	2	1 - 11	2	2 - 9	2	2 - 1	2	1 - 9	2	2 - 7	2	2 - 0	2	1 - 8	2
	1-2x8	3 - 9	2	2 - 10	2	2 - 5	3	3 - 6	2	2 - 8	2	2 - 3	3	3 - 3	2	2 - 6	3	2 - 2	3
	1-2x10	4 - 5	2	3 - 5	3	2 - 10	3	4 - 2	2	3 - 2	3	2 - 8	3	3 - 11	2	3 - 0	3	2 - 6	3
	1-2x12	5 - 2	2	4 - 0	3	3 - 4	3	4 - 10	3	3 - 9	3	3 - 2	4	4 - 7	3	3 - 6	3	3 - 0	4
	2-2x4	2 - 11	1	2 - 3	1	1 - 10	1	2 - 9	1	2 - 1	1	1 - 9	1	2 - 7	1	2 - 0	1	1 - 8	1
	2-2x6	4 - 4	1	3 - 4	2	2 - 10	2	4 - 1	1	3 - 2	2	2 - 8	2	3 - 10	1	3 - 0	2	2 - 6	2
	2-2x8	5 - 6	2	4 - 3	2	3 - 7	2	5 - 2	2	4 - 0	2	3 - 4	2	4 - 10	2	3 - 9	2	3 - 2	2
	2-2x10	6 - 7	2	5 - 0	2	4 - 2	2	6 - 1	2	4 - 9	2	4 - 0	2	5 - 9	2	4 - 5	2	3 - 9	3
	2-2x12	7 - 9	2	5 - 11	2	4 - 11	3	7 - 2	2	5 - 7	2	4 - 8	3	6 - 9	2	5 - 3	3	4 - 5	3
	3-2x8	6 - 11	1	5 - 3	2	4 - 5	2	6 - 5	1	5 - 0	2	4 - 2	2	6 - 1	1	4 - 8	2	4 - 0	2
	3-2x10	8 - 3	2	6 - 3	2	5 - 3	2	7 - 8	2	5 - 11	2	5 - 0	2	7 - 3	2	5 - 7	2	4 - 8	2
	3-2x12	9 - 8	2	7 - 5	2	6 - 2	2	9 - 0	2	7 - 0	2	5 - 10	2	8 - 6	2	6 - 7	2	5 - 6	3
	4-2x8	8 - 0	1	6 - 1	1	5 - 1	2	7 - 5	1	5 - 9	2	4 - 10	2	7 - 0	1	5 - 5	2	4 - 7	2
	4-2x10	9 - 6	1	7 - 3	2	6 - 1	2	8 - 10	1	6 - 10	2	5 - 9	2	8 - 4	1	6 - 5	2	5 - 5	2
	4-2x12	11 - 2	2	8 - 6	2	7 - 2	2	10 - 5	2	8 - 0	2	6 - 9	2	9 - 10	2	7 - 7	2	6 - 5	2
Roof, ceiling and two center-bearing floors	1-2x6	2 - 8	2	2 - 1	2	1 - 10	2	2 - 7	2	2 - 0	2	1 - 9	2	2 - 5	2	1 - 11	2	1 - 8	2
	1-2x8	3 - 5	2	2 - 8	2	2 - 4	3	3 - 3	2	2 - 7	2	2 - 2	3	3 - 1	2	2 - 5	3	2 - 1	3
	1-2x10	4 - 0	2	3 - 2	3	2 - 9	3	3 - 10	2	3 - 1	3	2 - 7	3	3 - 8	2	2 - 11	3	2 - 5	3

	1-2x12	4 - 9	3	3 - 9	3	3 - 2	4	4 - 6	3	3 - 7	3	3 - 1	4	4 - 3	3	3 - 5	3	2 - 11	4
	2-2x4	2 - 8	1	2 - 1	1	1 - 9	1	2 - 6	1	2 - 0	1	1 - 8	1	2 - 5	1	1 - 11	1	1 - 7	1
	2-2x6	4 - 0	1	3 - 2	2	2 - 8	2	3 - 9	1	3 - 0	2	2 - 7	2	3 - 7	1	2 - 10	2	2 - 5	2
	2-2x8	5 - 0	2	4 - 0	2	3 - 5	2	4 - 10	2	3 - 10	2	3 - 3	2	4 - 7	2	3 - 7	2	3 - 1	2
	2-2x10	6 - 0	2	4 - 9	2	4 - 0	2	5 - 8	2	4 - 6	2	3 - 10	3	5 - 5	2	4 - 3	2	3 - 8	3
	2-2x12	7 - 0	2	5 - 7	2	4 - 9	3	6 - 8	2	5 - 4	3	4 - 6	3	6 - 4	2	5 - 0	3	4 - 3	3
	3-2x8	6 - 4	1	5 - 0	2	4 - 3	2	6 - 0	1	4 - 9	2	4 - 1	2	5 - 8	2	4 - 6	2	3 - 10	2
	3-2x10	7 - 6	2	5 - 11	2	5 - 1	2	7 - 1	2	5 - 8	2	4 - 10	2	6 - 9	2	5 - 4	2	4 - 7	2
	3-2x12	8 - 10	2	7 - 0	2	5 - 11	2	8 - 5	2	6 - 8	2	5 - 8	3	8 - 0	2	6 - 4	2	5 - 4	3
	4-2x8	7 - 3	1	5 - 9	1	4 - 11	2	6 - 11	1	5 - 6	2	4 - 8	2	6 - 7	1	5 - 2	2	4 - 5	2
	4-2x10	8 - 8	1	6 - 10	2	5 - 10	2	8 - 3	2	6 - 6	2	5 - 7	2	7 - 10	2	6 - 2	2	5 - 3	2
	4-2x12	10 - 2	2	8 - 1	2	6 - 10	2	9 - 8	2	7 - 8	2	6 - 7	2	9 - 2	2	7 - 3	2	6 - 2	2
Roof, ceiling and two clear span floors	1-2x6	2 - 3	2	1 - 9	2	1 - 5	2	2 - 3	2	1 - 9	2	1 - 5	3	2 - 2	2	1 - 8	2	1 - 5	3
	1-2x8	2 - 10	2	2 - 2	3	1 - 10	3	2 - 10	2	2 - 2	3	1 - 10	3	2 - 9	2	2 - 1	3	1 - 10	3
	1-2x10	3 - 4	2	2 - 7	3	2 - 2	3	3 - 4	3	2 - 7	3	2 - 2	4	3 - 3	3	2 - 6	3	2 - 2	4
	1-2x12	4 - 0	3	3 - 0	3	2 - 7	4	4 - 0	3	3 - 0	4	2 - 7	4	3 - 10	3	3 - 0	4	2 - 6	4
	2-2x4	2 - 3	1	1 - 8	1	1 - 4	1	2 - 3	1	1 - 8	1	1 - 4	1	2 - 2	1	1 - 8	1	1 - 4	2
	2-2x6	3 - 4	1	2 - 6	2	2 - 2	2	3 - 4	2	2 - 6	2	2 - 2	2	3 - 3	2	2 - 6	2	2 - 1	2
	2-2x8	4 - 3	2	3 - 3	2	2 - 8	2	4 - 3	2	3 - 3	2	2 - 8	2	4 - 1	2	3 - 2	2	2 - 8	3
	2-2x10	5 - 0	2	3 - 10	2	3 - 2	3	5 - 0	2	3 - 10	2	3 - 2	3	4 - 10	2	3 - 9	3	3 - 2	3
	2-2x12	5 - 11	2	4 - 6	3	3 - 9	3	5 - 11	2	4 - 6	3	3 - 9	3	5 - 8	2	4 - 5	3	3 - 9	3
	3-2x8	5 - 3	1	4 - 0	2	3 - 5	2	5 - 3	2	4 - 0	2	3 - 5	2	5 - 1	2	3 - 11	2	3 - 4	2
	3-2x10	6 - 3	2	4 - 9	2	4 - 0	2	6 - 3	2	4 - 9	2	4 - 0	2	6 - 1	2	4 - 8	2	4 - 0	3
	3-2x12	7 - 5	2	5 - 8	2	4 - 9	3	7 - 5	2	5 - 8	2	4 - 9	3	7 - 2	2	5 - 6	3	4 - 8	3
	4-2x8	6 - 1	1	4 - 8	2	3 - 11	2	6 - 1	1	4 - 8	2	3 - 11	2	5 - 11	1	4 - 7	2	3 - 10	2
	4-2x10	7 - 3	2	5 - 6	2	4 - 8	2	7 - 3	2	5 - 6	2	4 - 8	2	7 - 0	2	5 - 5	2	4 - 7	2

	4-2x12	8 - 6	2	6 - 6	2	5 - 6	2	8 - 6	2	6 - 6	2	5 - 6	2	8 - 3	2	6 - 4	2	5 - 4	3

For SI: 1 inch = 25.4 mm, 1 pound per square foot = 0.0479 kPa.

a. Spans are given in feet and inches.

b. Spans are based on minimum design properties for No. 2 grade lumber of Douglas Fir-Larch, Hem-Fir, Southern Pine, and Spruce-Pine-Fir.

c. Building width is measured perpendicular to the ridge. For widths between those shown, spans are permitted to be interpolated.

d. NJ - Number of jack studs required to support each end. Where the number of required jack studs equals one, the header is permitted to be supported by an approved framing anchor attached to the full-height wall stud and to the header.

e. Use 30 psf ground snow load for cases in which ground snow load is less than 30 psf and the roof live load is equal to or less than 20 psf.

f. Spans are calculated assuming the top of the header or girder is laterally braced by perpendicular framing. Where the top of the header or girder is not laterally braced (e.g. cripple studs bearing on the header), tabulated spans for headers consisting of 2x8, 2x10, or 2x12 sizes shall be multiplied by 0.70 or the header or girder shall be designed.

Reason: The update of Table 2308.4.1.1(1) Header and Girder Spans for Exterior Bearing Walls is proposed. Updated spans address use of Southern Pine No. 2 in lieu of Southern Pine No. 1. Footnote "f" is added to clarify that header spans are based on laterally braced assumption such as when the header is raised. For dropped headers consisting of 2x8, 2x10, or 2x12 sizes that are not laterally braced, a factor of 0.7 can be applied to determine the spans or alternatively the header or girder can be designed to include any adjustment for potential buckling. Laterally braced (raised) and not laterally braced (dropped) header conditions and building widths for which header spans are tabulated represent the same condtions used to develop header span tables in the Wood Frame Construction Manual (WFCM).

Cost Impact: Will increase the cost of construction
Increased cost may be associated with reduced spans that result from the not laterally braced condition and application of footnote f. Due to smaller building width column (12'), permissible use of Southern Pine No. 2, and the laterally braced assumption for tabulated spans, there are also cases where this change will not increase the cost of construction and may reduce cost of construction.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This proposal updates the header and girder span table for exterior walls in a maner similar to S288-16 (also see committee reason).

Assembly Action **None**

Final Action Results

S289-16	**AS**

Back

Code Change No: S291-16

Original Proposal

Section: 2308.3.1, 2308.3.1.2 (New), 2308.3.2

Proponent: Edward Kulik, representing Building Code Action Committee (bcac@iccsafe.org)

Revise as follows:

2308.3.1 Foundation plates or sills. Foundation plates or sills resting on concrete or masonry foundations shall comply with Section 2304.3.1. Foundation plates or sills shall be bolted or anchored to the foundation with not less than $^1/_2$-inch-diameter (12.7 mm) steel bolts or *approved* anchors spaced to provide equivalent anchorage as the steel bolts. Bolts shall be embedded at least 7 inches (178 mm) into concrete or masonry. The bolts shall be located in the middle third of the width of the plate. Bolts shall be spaced not more than 6 feet (1829 mm) on center and there shall be not less than two bolts or anchor straps per piece with one bolt or anchor strap located not more than 12 inches (305 mm) or less than 4 inches (102 mm) from each end of each piece. Bolts in sill plates of braced wall lines in structures over two stories above grade shall be spaced not more than 4 feet (1219 mm) on center. A properly sized nut and washer shall be tightened on each bolt to the plate.

Exceptions~~:~~

1. ~~Along *braced wall lines* in structures assigned to *Seismic Design Category* E, steel bolts with a minimum nominal diameter of $^5/_8$ inch (15.9 mm) or approved anchor straps load-rated in accordance with Section 2304.10.3 and spaced to provide equivalent anchorage shall be used.~~
2. ~~Bolts in *braced wall lines* in structures over two stories above grade shall be spaced not more than 4 feet (1219 mm) on center.~~

~~**2308.3.2**~~ **2308.3.1.1 Braced wall line sill plate anchorage in Seismic Design ~~Categories~~ Category D ~~and E~~.** Sill plates along *braced wall lines* in buildings assigned to *Seismic Design Category* D ~~or E~~ shall be anchored with not less than 1/2 inch diameter (12.7 mm) anchor bolts with steel plate washers between the foundation sill plate and the nut, or approved anchor straps load-rated in accordance with Section 2304.10.3 and spaced to provide equivalent anchorage. ~~Such~~ Plate washers shall be a minimum of 0.229 inch by 3 inches by 3 inches (5.82 mm by 76 mm by 76 mm) in size. The hole in the plate washer is permitted to be diagonally slotted with a width of up to $^3/_{16}$ inch (4.76 mm) larger than the bolt diameter and a slot length not to exceed $1^3/_4$ inches (44 mm), provided a standard cut washer is placed between the plate washer and the nut.

Add new text as follows:

2308.3.1.2 Braced wall line sill plate anchorage in Seismic Design Category E. Sill plates along braced wall lines in buildings assigned to Seismic Design Category E shall be anchored with not less than 5/8 inch diameter (15.9 mm) anchor bolts with steel plate washers between the foundation sill plate and the nut, or approved anchor straps load-rated in accordance with Section 2304.10.3 and spaced to provide equivalent anchorage. Plate washers shall be a minimum of 0.229 inch by 3 inches by 3 inches (5.82 mm by 76 mm by 76 mm) in size. The hole in the plate washer is permitted to be diagonally slotted with a width of up to 3/16-inch (4.76 mm) larger than the bolt diameter and a slot length not to exceed 1-3/4 inches (44 mm), provided a standard cut washer is placed between the plate washer and the nut.

Reason: In the course of reviewing S273-12 during the previous code cycle, the editorial reorganization of Section 2308, two inconsistencies in the foundation anchorage section were identified, however at the time the BCAC did not want to make any changes that could be perceived as technical changes. The primary purpose of this proposal is to bring these changes forward.
The first change relocates Exception #2 under Section 2308.3.1, the 4 foot anchor bolt spacing requirement for three-story structures, into the base provision moves from. This move is in keeping with a general philosophy that exceptions should be relaxations to a base provision, not more stringent. The actual implementation of the bolt spacing requirement is not changed.
The second change creates a new subsection specific to anchorage requirements for Seismic Design Category E. The requirements from the existing paragraph on Seismic Design Category D and E are copied, and the language from Exception #1 under Section 2308.3.1 is moved to the new paragraph. At the same time, the existing seismic section is changed so that it only applies to Seismic Design Category D. Both sections will now appear as subsections of the basic foundation sill anchorage requirements.

In addition, the language successfully added last cycle by proposal RB219-13 to Section R403.1.6 of the IRC is brought over to this corresponding section in the IBC. The intent of this language is to clarify the location of the anchor bolts relative to the middle third of the plate. The requirement insures there is adequate distance from the bolts to the edge of the plate such that the anchor bolts can achieve their anticipated capacity without causing the plate to fail in shear parallel to the grain. It is noted that buildings constructed under the conventional construction provisions of Section 2308 do not rely on the use of high-load shear walls and do not typically use wall plates larger than 2x6. Thus, it is not necessary to locate the bolts such that the edge of the plate washers in high-seismic categories is within 1/2 inch of the sheathed edge(s) nor is it necessary to stagger the bolts in such plates.

This proposal is submitted by the ICC Building Code Action Committee (BCAC). BCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. In 2014 and 2015 the BCAC has held 5 open meetings. In addition, there were numerous Working Group meetings and conference calls for the current code development cycle, which included members of the committee as well as any interested party to discuss and debate the proposed changes. Related documentation and reports are posted on the BCAC website at: **BCAC**

Cost Impact: Will not increase the cost of construction
This proposal will not increase the cost of construction as it is intended to be an editorial reorganization and needed clarification on the anchor bolt placement.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This code change clears up inconsistencies in the anchor bolt requirements by reorganizing and rewriting the requirements for Seismic Design Categories D and E.

Assembly Action **None**

Final Action Results

S291-16	**AS**

Back

Code Change No: S292-16

Original Proposal

Section: 2308.5.5.1, 2308.5.5.1(1) (New), 2308.5.5.1(2) (New)

Proponent: Paul Coats, PE CBO, representing American Wood Council (pcoats@awc.org); Philip Line (pline@awc.org)

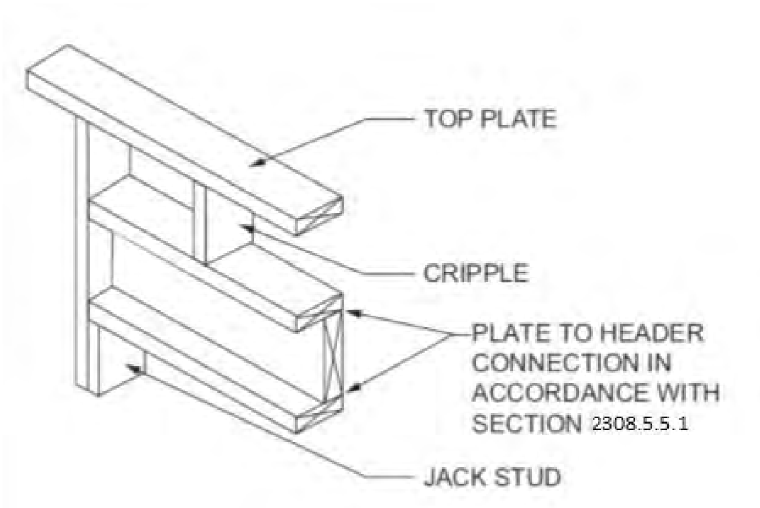
Revise as follows:

2308.5.5.1 Openings in exterior bearing walls. Headers shall be provided over each opening in exterior bearing walls. The size and spans in Table 2308.4.1.1(1) are permitted to be used for one- and two-family *dwellings*. Headers for other buildings shall be designed in accordance with Section 2301.2, Item 1 or 2. Headers ~~shall be~~ of two <u>or more</u> pieces of nominal 2-inch (51 mm) framing lumber set on edge ~~as~~ <u>shall be</u> permitted ~~by~~ <u>in accordance with</u> Table 2308.4.1.1(1) and nailed together in accordance with Table 2304.10.1 or of solid lumber of equivalent size.

<u>Single member headers of nominal 2-inch thickness shall be framed with a single flat 2-inch-nominal (51 mm) member or wall plate not less in width than the wall studs on the top and bottom of the header in accordance with Figures 2308.5.5.1(1) and 2308.5.5.1(2) and face nailed to the top and bottom of the header with 10d box nails (3 inches × 0.128 inches) spaced 12 inches on center.</u>

Wall studs shall support the ends of the header in accordance with Table 2308.4.1.1(1). Each end of a lintel or header shall have a bearing length of not less than 1 1/2 inches (38 mm) for the full width of the lintel.

Add new text as follows:



<u>FIGURE 2308.5.5.1(1)</u>
<u>Single Member Header in Exterior Bearing Wall</u>

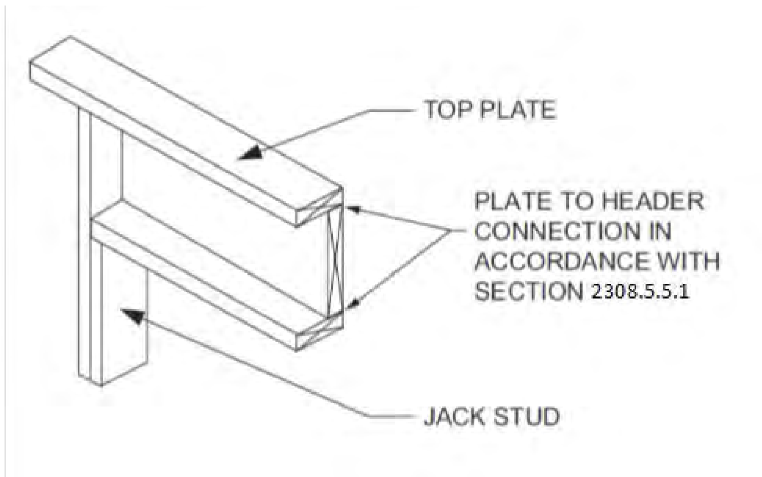


FIGURE 2308.5.5.1(2)
Alternative Single Member Header Without Cripple

Reason: This proposal adds prescriptive framing and connection requirements for single member (single ply) headers consistent with the IRC. Additionally, provisions of 2308.5.5.1 are revised to coordinate with tabulated header sizes consisting of 2, 3, or 4 member headers.

Cost Impact: Will not increase the cost of construction
This change adds a more efficient single member header option in some cases and will not raise the cost of construction.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This proposal adds requirements for headers in exterior bearing walls that coordinate this IBC provision with the IRC.

Assembly Action **None**

Final Action Results

S292-16	**AS**

Back

Code Change No: S294-16

Original Proposal

Section: IBC: 1406.3, 1410.1, 2407.1; IFC: 804.1.

Proponent: Maureen Traxler, City of Seattle Dept of Construction & Inspections, representing City of Seattle Dept of Construction & Inspections (maureen.traxler@seattle.gov)

Revise as follows:

2407.1 Materials. Glass used in a handrail~~, guardrail~~ or~~ a~~ *guard* ~~section~~ shall be laminated glass constructed of fully tempered or heat-strengthened glass and shall comply with Category II or CPSC 16 CFR Part 1201 or Class A of ANSI Z97.1. Glazing in railing in-fill panels shall be of an *approved* safety glazing material that conforms to the provisions of Section 2406.1.1. For all glazing types, the minimum nominal thickness shall be $^1/_4$ inch (6.4 mm).

> **Exception:** Single fully tempered glass complying with Category II of CPSC 16 CFR Part 1201 or Class A of ANSI Z97.1 shall be permitted to be used in handrails and ~~guardrails~~ guards where there is no walking surface beneath them or the walking surface is permanently protected from the risk of falling glass.

1406.3 Balconies and similar projections. Balconies and similar projections of combustible construction other than fire-retardant-treated wood shall be fire-resistance rated where required by Table 601 for floor construction or shall be of Type IV construction in accordance with Section 602.4. The aggregate length of the projections shall not exceed 50 percent of the building's perimeter on each floor.

Exceptions:

1. On buildings of Type I and II construction, three stories or less above *grade plane*, *fire-retardant-treated wood* shall be permitted for balconies, porches, decks and exterior stairways not used as required exits.
2. Untreated wood is permitted for pickets, rails and ~~rails or~~ similar ~~guardrail devices~~ guard components that are limited to 42 inches (1067 mm) in height.
3. Balconies and similar projections on buildings of Type III, IV and V construction shall be permitted to be of Type V construction, and shall not be required to have a *fire-resistance rating* where sprinkler protection is extended to these areas.
4. Where sprinkler protection is extended to the balcony areas, the aggregate length of the balcony on each floor shall not be limited.

1410.1 Plastic composite decking. Exterior deck boards, stair treads, handrails and ~~guardrail systems~~ guards constructed of plastic composites, including plastic lumber, shall comply with Section 2612.

2015 International Fire Code

Revise as follows:

804.1 Interior trim. Material, other than foam plastic, used as interior trim in new and existing buildings shall have minimum Class C flame spread and smoke-developed indices, when tested in accordance with ASTM E 84 or UL 723, as described in Section 803.1.1. Combustible trim, excluding handrails and ~~guardrails~~ guards, shall not exceed 10 percent of the specific wall or ceiling areas to which it is attached.

Reason: This proposal changes the term "guardrail" to "guard" in several code sections. "Guard" is defined in the IBC and should be used consistently throughout the codes. The term is defined as "a building component or a system of building components located at or near the open sides of elevated walking surfaces that minimizes the possibility of a fall from the walking surface to a lower level." This definition is appropriate for each of the code sections addressed in this proposal.

There is one other use of the term "guardrail," in IFC Section 2306.7.9.2.2.2, regarding physical protection for vapor-processing equipment. Because the requirement is not related to fall protection, we determined that "guard" as defined in the IBC is not the appropriate term, and we did not include that section in this proposal.

Cost Impact: Will not increase the cost of construction
This proposal will have no effect on the cost of construction. It changes the term "guardrail" to "guard" in several code sections.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: There is a difference between a guard and guardrail. This proposal clarifies these code provisions by substituting guard which is the code-defined term.

Assembly Action **None**

Final Action Results

S294-16	**AS**

Back

Code Change No: S295-16

Original Proposal

Section: IBC: 1406.3, 1410.1, 2407.1; IFC: 804.1.

Proponent: Maureen Traxler, City of Seattle Dept of Construction & Inspections, representing City of Seattle Dept of Construction & Inspections (maureen.traxler@seattle.gov)

Revise as follows:

2407.1.1 Loads. The panels and their support system shall be designed to withstand the loads specified in Section 1607.8~~. A design~~ using a factor of safety of four ~~shall be used for safety~~.

2407.1.2 ~~Support~~ Structural glass baluster panels. ~~Each handrail~~ Guards with structural glass baluster panels shall be installed with an attached top rail or ~~*guard* section~~ handrail. The top rail or handrail shall be supported by a minimum of three glass ~~balusters~~ baluster panels, or shall be otherwise supported to remain in place should one glass baluster panel fail. ~~Glass balusters shall not be installed without an attached handrail or *guard*.~~

> ~~**Exception:** A top rail shall not be required where the glass balusters are laminated glass with two or more glass plies of equal thickness and the same glass type when *approved* by the *building official*. The panels shall be designed to withstand the loads specified in Section 1607.8.~~
>
> **Exception:** An attached top rail or handrail is not required where the glass baluster panels are laminated glass with two or more glass plies of equal thickness and of the same glass type.

Reason: This proposal will clarify code requirements for glass panels that are used as a structural component in a guard. Imperfections in glass can cause the panel to fail at loads that are well below its nominal resistance value. We believe the intent of the IBC requirements is to have something (a top rail or a handrail at stairs) to provide some additional fall protection for a person leaning on the guard, should a glass panel fail. Having a handrail attached to at least 3 panels also provides some backup support if a panel fails while someone is grabbing the handrail to prevent a fall. However, there is an exception that allows glass-only guards (without an attached top rail or handrail) if the balusters are laminated glass. The laminated glass provides some backup against total panel failure, but note that the entire glass baluster still has to be designed to be able to support the full loads for guards, as specified in Section 2407.1.1, including using a factor of safety of 4.

The change in Section 2407.1.1 is proposed because "factor of safety" is a term that is understood by the engineers who will be doing the design. "Design factor…for safety" has no meaning.

The requirement regarding design loading in the original exception to Section 2407.1.2 has not been carried forward, because the requirement is covered in Section 2407.1.1.

The restriction on use of the exception to "when approved by the building official" has been deleted because there is no guidance or criteria as to when it would or would not be approved.

Cost Impact: Will not increase the cost of construction
This change creates consistency with the IRC for glass guards only and allows for more safety and flexibility in design. There should be no increase in the cost.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This proposal clears up confusion in the currrent language as far as when a top rail is required on a glass-supported guard.

Assembly Action **None**

Final Action Results

S295-16	**AS**

Back

Code Change No: S296-16

Original Proposal

Section(s): 2407.1.1

Proponent: Jonathan Siu, City of Seattle Department of Construction & Inspections, representing Washington Association of Building Officials Technical Code Development Committee (jon.siu@seattle.gov)

Revise as follows:

2407.1.1 Loads. The panels and their support system shall be designed to withstand the loads specified in Section 1607.8~~. A design~~<u>, using a safety</u> factor of four ~~shall be used for safety~~.

Reason: The purpose of this proposal is to return the code language to well-recognized terms, and eliminate terms that have no meaning to the engineers that will be performing the designs of these panels and supports.

In the last cycle, proposal S300-12 was Approved as Submitted at the Final Action Hearings. That proposal substituted the phrase, "design factor...for safety" for "safety factor." The latter is a well-recognized engineering term, whereas the former is not. Unfortunately, there was no opportunity at the FAH to make any changes to the proposal, editorial or otherwise.

This proposal does not change the meat of the code or the intent of S300-12, but is an editorial change that will be more understandable to the engineering community who will be responsible for these designs.

Cost Impact: Will not increase the cost of construction
This is an editorial change to clarify the code. It does not change any requirements of the code, and therefore, has no cost impact.

Report of Committee Action Hearings

Committee Action: **As Submitted**

Committee Reason: approval is consistent with action taken on S295-16.

Assembly Action: **None**

Public Comments

Public Comment 1:

Jonathan Siu, representing City of Seattle Department of Construction and Inspections (Jon.Siu@seattle.gov) requests Approve as Modified by this Public Comment.

Modify as follows:

2407.1.1 Loads. The panels and their support system shall be designed to withstand the loads specified in Section 1607.8~~,~~<u>. Glass guard elements shall be designed</u> using a safety factor of four.

Commenter's Reason: This public comment corrects the original proposal, and clarifies to which elements in a glass guard system the safety factor of 4 is to be applied. The proposed change was intended to be purely editorial. However, as written by the proponent and approved by the Committee, the proposal incorrectly made clear the safety factor was to be applied to the structural elements supporting the glass guard elements.

A safety factor of 4 is necessary for glass elements because it is known there can be an extreme variation in structural properties for glass. Any small defect can cause the glass to fail prematurely--something that is not desirable for an element that is supposed to keep a person from falling. However, it is not necessary to design the non-glass guard elements for same safety factor, since their structural properties are much more predictable. For those non-glass elements, normal safety factors built into their structural design parameters would be adequate. We do not believe it is the intent of the code to penalize other structural elements of guards, just because they are supporting glass. It is to be noted that if the supports for a glass guard system (top rail, connections, etc.) are required to be designed for a safety factor of 4, it will be extremely difficult to comply with the code.

Final Action Results

S296-16	AMPC1

Back

Code Change No: S297-16

Original Proposal

Section: 2407.1.2

Proponent: Tom Zaremba, Roetzel & Andress, representing Glazing Industry Code Commitee (tzaremba@ralaw.com)

Revise as follows:

2407.1.2 Support. Each handrail or *guard* section shall be supported by a minimum of three glass balusters or shall be otherwise supported to remain in place should one baluster panel fail. Glass balusters shall not be installed without an attached handrail or *guard*.

> ~~**Exception:** A top rail shall not be required where the glass balusters are laminated glass with two or more glass plies of equal thickness and the same glass type when *approved* by the *building official*. The panels shall be designed to withstand the loads specified in Section 1607.8.~~
>
> <u>**Exception:** A top rail shall not be required where the glass balusters are laminated glass with two or more glass plies of equal thickness and the same glass type. The panels shall be designed to withstand the loads specified in Section 1607.8 and shall be tested to remain in place as a barrier following impact or glass breakage in accordance with ASTM E2353.</u>

Reference standards type: This reference standard is new to the ICC Code Books
Add new standard(s) as follows:

<u>ASTM 2353-14 Standard Test Methods for Performance of Glazing in Permanent Railing Systems, Guards and Balustrades</u>

Reason: Currently, the Code exempts glass balusters from having a top rail, but only if approved by the building official. This proposal deletes the requirement that these assemblies be approved by the building official, but adds the requirement that they be tested to ASTM E2353-14. ASTM E2353-14 was developed to test the ability of glazing materials in these types of assemblies to remain in place as a barrier after impact or glass breakage. Testing glass baluster systems that have no top rails in accordance with this standard will ensure that they stay in place as a barrier after impact or glass breakage while eliminating the need for the building code official to evaluate them on a case by case basis.

Cost Impact: Will increase the cost of construction
The additional testing to ASTM E2353-14 may increase the cost of construction, but will be mitigated by eliminating the case by case approval of the building code official that is now required.

Analysis: A review of the standard(s) proposed for inclusion in the code, ASTM E2353, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 1, 2016.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This proposal allows use of the exception for top rails without requiring building official on a case-by-case basis, by adding a standard that is appropriate for this use.

Assembly Action **None**

Final Action Results

S297-16	**AS**

Back

Code Change No: S298-16

Original Proposal

Section: 2506.2

Proponent: Tom Zaremba, Roetzel & Andress, representing Glazing Industry Code Committee (tzaremba@ralaw.com)

Revise as follows:

TABLE 2506.2 (2506.2)
GYPSUM BOARD AND GYPSUM PANEL PRODUCTS MATERIALS AND ACCESSORIES

MATERIAL	STANDARD
Accessories for gypsum board	ASTM C1047
Adhesives for fastening gypsum board	ASTM C557
Cold-formed steel studs and track, structural	AISI S200 and ASTM C 955, Section 8
Cold-formed steel studs and track, nonstructural	AISI S220 and ASTM C 645, Section 10
Elastomeric joint sealants	ASTM C 920
Factory-laminated gypsum panel products	ASTM C 1766
Fiber-reinforced gypsum panels	ASTM C 1278
Glass mat gypsum backing panel	ASTM C 1178
Glass mat gypsum panel 5	ASTM C 1658
Glass mat gypsum substrate	ASTM C 1177
Joint reinforcing tape and compound	ASTM C 474; C 475
Nails for gypsum boards	ASTM C 514, F 547, F 1667
Steel screws	ASTM C 954; C 1002
Standard specification for gypsum board	ASTM C 1396
Testing gypsum and gypsum products	ASTM C 22; C 472; C 473

Reference standards type:
Add new standard(s) as follows:

ASTM C 1766-13 Standard Specification for Factory-Laminated Gypsum Panel Products

Reason: ASTM C1766 was developed by ASTM subcommittee C11.01, assigned the responsibility for the development and maintenance of test methods and materials for gypsum products. Standard C 1766 addresses gypsum panel products, laminated in the factory, that are designed for use in sound control (in ceilings, walls, partitions etc.) or for gypsum studs or coreboards. Adding the standard to Table 2506.2 will help ensure that the latest available information and product standards for these panels are appropriately applied.

Cost Impact: Will not increase the cost of construction
The proposal adds in a product standard that extends performance requirements for factory-laminated products to meet the current intent of the code.

Analysis: A review of the standard(s) proposed for inclusion in the code, ASTM C1766, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 1, 2016.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This proposal provides another option for gypsum panel product along with a reference to the material standard that contains QC requirements.

Assembly Action **None**

Final Action Results

S298-16	**AS**

Back

Code Change No: S299-16

Original Proposal

Section: 2506.2, 2507.2

Proponent: Bonnie Manley, AISI, representing American Iron and Steel Institute (bmanley@steel.org)

Revise as follows:

TABLE 2506.2
GYPSUM BOARD AND GYPSUM PANEL PRODUCTS MATERIALS AND ACCESSORIES

MATERIAL	STANDARD
Accessories for gypsum board	ASTM C1047
Adhesives for fastening gypsum board	ASTM C557
Cold-formed steel studs and track, structural	AISI S240~~S200 and ASTM C 955, Section 8~~
Cold-formed steel studs and track, nonstructural	AISI S220~~ and ASTM C 645, Section 10~~
Elastomeric joint sealants	ASTM C 920
Fiber-reinforced gypsum panels	ASTM C 1278
Glass mat gypsum backing panel	ASTM C 1178
Glass mat gypsum panel 5	ASTM C 1658
Glass mat gypsum substrate	ASTM C 1177
Joint reinforcing tape and compound	ASTM C 474; C 475
Nails for gypsum boards	ASTM C 514, F 547, F 1667
Steel screws	ASTM C 954; C 1002
Standard specification for gypsum board	ASTM C 1396
Testing gypsum and gypsum products	ASTM C 22; C 472; C 473

TABLE 2507.2
LATH, PLASTERING MATERIALS AND ACCESSORIES

MATERIAL	STANDARD
Accessories for gypsum veneer base	ASTM C1047
Blended cement	ASTM C595
Exterior plaster bonding compounds	ASTM C932
Cold-formed steel studs and track, structural	AISI S240~~S200 and ASTM C 955, Section 8~~
Cold-formed steel studs and track, nonstructural	AISI S220~~ and ASTM C 645, Section 10~~
Hydraulic cement	ASTM C 1157; C 1600
Gypsum casting and molding plaster	ASTM C 59
Gypsum Keene's cement	ASTM C 61
Gypsum plaster	ASTM C 28
Gypsum veneer plaster	ASTM C 587
Interior bonding compounds, gypsum	ASTM C 631
Lime plasters	ASTM C 5; C 206
Masonry cement	ASTM C 91
Metal lath	ASTM C 847
Plaster aggregates	ASTM C 35; C 897

MATERIAL	STANDARD
Sand Perlite Vermiculite	ASTM C 35 ASTM C 35
Plastic cement	ASTM C 1328
Portland cement	ASTM C 150
Steel screws	ASTM C 1002; C 954
Welded wire lath	ASTM C 933
Woven wire plaster base	ASTM C 1032

Reference standards type: This contains both new and updated standards
Add new standard(s) as follows:

~~AISI S200—12, *North American Standard for Cold-Formed Steel Framing-General Provisions*, 2012, 2203.1, 2203.2, 2211.1, Table 2603.12.1,Table 2603.12.2~~

<u>AISI S240, *North American Standard for Cold-Formed Steel Structural Framing*, 2015</u>

AISI S220-~~11~~<u>15</u>, *North American Standard for Cold-Formed Steel Framing -- Nonstructural Members*, 2015

Reason: This proposal is one in a series adopting the latest generation of AISI standards for cold-formed steel. This particular proposal focuses on Chapter 25 by incorporating a reference to the new cold-formed steel structural framing standard – AISI S240. Additionally, it amends existing language to reflect updates made to the existing cold-formed steel nonstructural framing standard – AISI S220. The update to AISI S220 is being handled through the administrative update process. Both standards are published and available for a free download at: www.aisistandards.org.

The new standard, **AISI S240**, *North American Standard for Cold-Formed Steel Structural Framing*, addresses requirements for construction with cold-formed steel structural framing that are common to prescriptive and engineered light frame construction. This comprehensive standard was formed by merging the following AISI standards:

- AISI S200, *North American Standard for Cold-Formed Steel Framing-General Provisions*
- AISI S210, *North American Standard for Cold-Formed Steel Framing–Floor and Roof System Design*
- AISI S211, *North American Standard for Cold-Formed Steel Framing–Wall Stud Design*
- AISI S212, *North American Standard for Cold-Formed Steel Framing–Header Design*
- AISI S213, *North American Standard for Cold-Formed Steel Framing– Lateral Design*
- AISI S214, *North American Standard for Cold-Formed Steel Framing–Truss Design*

Consequently, AISI S240 supersedes all previous editions of the above mentioned individual AISI standards. The updated 2015 edition of **AISI S220**, *North American Standard for Cold-Formed Steel Framing—Nonstructural Members*, continues to address requirements for construction with nonstructural members made from cold-formed steel. This standard provides an integrated treatment of Allowable Strength Design (ASD), and Load and Resistance Factor Design (LRFD). This is accomplished by including the appropriate resistance factors (φ) for use with LRFD, and the appropriate factors of safety (Ω) for use with ASD. The following major revisions were made in the 2015 edition:

- Performance requirements for screw penetration were added in Section A6.6.
- Referenced documents in Section A7 were updated.
- Errata in Section B1(b) was fixed; i.e., "using βo = 1.6" was added.
- Testing requirements were expanded in Section F1 to reference the new AISI S916 Test Standard, when required to determine the strength and stiffness of composite nonstructural interior partition wall assemblies.
- Testing requirements were added in Section F2 to reference the new AISI S915 Test Standard, when required to determine the strength and deformation behavior of bridging connectors.
- Testing requirements for screw penetration were added in Section F3, and the test method was added in Appendix 1.

Both Table 2506.2 and Table 2507.2 previously referenced AISI S200 for cold-formed steel structural framing. This reference is updated to AISI S240. Additionally, the screw penetration test, which was previously referenced from ASTM C955 Section 8 for the "cold-formed steel studs and track, structural" entry, is recommended for deletion in both tables. Upon review, the AISI Committee on Framing Standards, which is responsible for developing the provisions of AISI S240, determined that the test procedure was not really applicable to structural members.

Additionally, in both Table 2506.2 and Table 2507.2, the screw penetration test, which was previously referenced from ASTM C645 Section 10 for the "cold-formed steel studs and track, nonstructural" entry, has been incorporated into the 2015 edition of AISI S220 and is, therefore, recommended for deletion in both tables.

Cost Impact: Will increase the cost of construction
This code change proposal adopts the latest industry standards for cold-formed steel. At this time, it is difficult to anticipate how cost of construction will be fully impacted, other than to note that some of the additional costs will be offset by new efficiencies in the design and installation of cold-formed steel.

Analysis: A review of the standard(s) proposed for inclusion in the code, AISI S240, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 1, 2016.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This code change updates and substitutes the latest AISI material standards for light-gage steel framing applications for gypsum panel products.

Assembly Action **None**

Final Action Results

S299-16 **AS**

Back

Code Change No: S300-16 Part I

Original Proposal

Section: IBC: 2506.2, 2508.4 (New).

Proponent: Mike Fischer, representing The Center for the Polyurethanes Industry of the American Chemistry Council (mfischer@kellencompany.com)

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IBC STRUCTURAL COMMITTEE. PART II WILL BE HEARD BY THE IRC-BUILDING & ENERGY COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Revise as follows:

TABLE 2506.2
GYPSUM BOARD AND GYPSUM PANEL PRODUCTS MATERIALS AND ACCESSORIES

MATERIAL	STANDARD
Accessories for gypsum board	ASTM C1047
Adhesives for fastening gypsum board	ASTM C557
Expandable foam adhesives for fastening gypsum wallboard	ASTM D6464
Cold-formed steel studs and track, structural	AISI S200 and ASTM C 955, Section 8
Cold-formed steel studs and track, nonstructural	AISI S220 and ASTM C 645, Section 10
Elastomeric joint sealants	ASTM C 920
Fiber-reinforced gypsum panels	ASTM C 1278
Glass mat gypsum backing panel	ASTM C 1178
Glass mat gypsum panel 5	ASTM C 1658
Glass mat gypsum substrate	ASTM C 1177
Joint reinforcing tape and compound	ASTM C 474; C 475
Nails for gypsum boards	ASTM C 514, F 547, F 1667
Steel screws	ASTM C 954; C 1002
Standard specification for gypsum board	ASTM C 1396
Testing gypsum and gypsum products	ASTM C 22; C 472; C 473

Add new text as follows:

2508.4 Adhesives Gypsum board and gypsum panel products secured to framing with adhesives in ceiling assemblies shall be attached using an *approved* fastening schedule. Expandable foam adhesives for fastening gypsum wallboard shall conform to ASTM D6464. All other adhesives for the installation of gypsum wallboard shall conform to ASTM C557.

Reference standards type: This reference standard is new to the ICC Code Books
Add new standard(s) as follows:

ASTM D 6464-03a(2009)e1 Standard Specification for Expandable Foam Adhesives for Fastening Gypsum Wallboard to Wood Framing

Reason: This proposal adds ASTM D6464 to Table 2506.2, and adds a mandatory statement outlining the requirements for adhesives used to attach gypsum board products. The new referenced standard applies to expandable foam adhesives, which are currently accepted for use by product evaluation reports. Adding the mandatory scoping provision makes it clear that there will be two separate adhesive standards referenced, and that they apply to different types of products. More importantly, the proposal adds a requirement calling for approved fastening methods for gypsum products used in ceiling assemblies, which is consistent with the fastening requirements for gypsum products used in ceiling assemblies under the IRC.

Cost Impact: Will not increase the cost of construction
The proposal increases product selection options, but contains no mandatory requirements.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: The committee agrees with adding the reference standard for adhesives used with gysum panel products. There is some concern with the requirement for an approved fastening schedule and whether there is enough guidance to the building official as to what it is he is looking for.

Assembly Action **None**

Final Action Results

S300-16 Part I	**AS**

Code Change No: S300-16 Part II

Original Proposal

Section: IRC: R702.3.1, R702.3.1.1 (New)

Proponent: Mike Fischer, representing The Center for the Polyurethanes Industry of the American Chemistry Council (mfischer@kellencompany.com)

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IBC STRUCTURAL COMMITTEE. PART II WILL BE HEARD BY THE IRC-BUILDING & ENERGY COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Revise as follows:

R702.3.1 Materials. Gypsum board and gypsum panel product materials and accessories shall conform to ASTM C 22, C 475, C 514, C 1002, C 1047, C 1177, C 1178, C 1278, C 1396 or C 1658 and shall be installed in accordance with the provisions of this section.~~ Adhesives for the installation of gypsum board and gypsum panel products shall conform to ASTM C 557.~~

Add new text as follows:

<u>**R702.3.1.1** **Adhesives** Adhesives for the installation of gypsum board and gypsum panel products shall conform to ASTM C 557. All other adhesives for the installation of gypsum board and gypsum panel products shall conform to ASTM C557. Supports and fasteners used to attach gypsum board and gypsum panel products shall comply with Table R702.3.5 or other approved method.</u>

Reference standards type: This reference standard is new to the ICC Code Books
Add new standard(s) as follows:

<u>ASTM D 6464-03a(2009)e1 Standard Specification for Expandable Foam Adhesives for Fastening Gypsum Wallboard to Wood Framing</u>

Reason: This proposal adds a new referenced standard, ASTM D 6464, which applies to expandable foam adhesives used with gypsum products. The code today refers only to ASTM C 557 for adhesives used with gypsum board, but not all adhesives are included in the scope of ASTM C 557. The new referenced standard applies only to expandable foam adhesives, which are currently qualified for use by product evaluation reports. Adding the mandatory scoping provision makes it clear that there will be two separate adhesive standards referenced, and that they apply to different types of products, and adds a mandatory statement outlining the requirements for adhesives used to attach gypsum board products.

Additionally, the proposal adds a pointer to Table R702.3.5 or requires approved fastening methods for gypsum products using adhesives. Table R702.3.5 includes important provisions for attachment methods with and without adhesives; the pointer calls attention to the need to consider proper fastening.

Cost Impact: Will not increase the cost of construction
The proposal increases product selection options, but contains no mandatory requirements.

Report of Committee Action Hearings

Committee Action: **Approved as Modified**

Modify as follows:

R702.3.1.1 Adhesives ~~Adhesives~~ <u>Expandable foam adhesives</u> for the installation of gypsum board and gypsum panel products shall conform to ASTM C ~~557~~<u>6464</u>. All other adhesives for the installation of gypsum board and gypsum panel products shall conform to ASTM C557. Supports and fasteners used to attach gypsum board and gypsum panel products shall comply with Table R702.3.5 or other approved method.

Committee Reason: The committee approved this proposal based on the proponents published reason statement. The modification corrects the reference standard number. With the modification this is a good code change that add a new standard for expandable foam adhesive.

Assembly Action: **None**

Final Action Results

S300-16 Part II	**AM**

Back

Code Change No: S302-16

Original Proposal

Section: 2510.6

Proponent: Jay Crandell, representing Foam Sheathing Committee of the American Chemistry Council (jcrandell@aresconsulting.biz)

Revise as follows:

2510.6 Water-resistive barriers. *Water-resistive barriers* shall be installed as required in Section 1404.2 and, where applied over wood-based sheathing, shall include a water-resistive vapor-permeable barrier with a performance at least equivalent to two layers of *water-resistive barrier* complying with ASTM E 2556, Type I. The individual layers shall be installed independently such that each layer provides a separate continuous plane and any flashing (installed in accordance with Section 1405.4) intended to drain to the *water-resistive barrier* is directed between the layers.

Exceptions: ~~**Exception:**~~

1. Where the *water-resistive barrier* that is applied over wood-based sheathing has a water resistance equal to or greater than that of a *water-resistive barrier* complying with ASTM E 2556, Type II and is separated from the stucco by an intervening, substantially nonwater-absorbing layer or drainage space.
2. Where the *water-resistive barrier* is applied over vapor permeable or wood-based sheathing in Climate Zones 1A, 2A, 3A, 4A, 5A, and 4C in accordance with Chapter 3 of the *International Energy Conservation Code*, the *water-resistive barrier* shall have a water vapor permeance of not more than 10 perms in accordance with ASTM E96 (Method A) to minimize inward moisture movement. Alternatively, a ventilated air space shall be provided between the stucco and *water-resistive barrier*.

Reason: In many climates, having a vapor permeable WRB that is too vapor permeable (i.e., > 10 perms) can result in significant solar-driven inward moisture movement into and through the exterior sheathing and farther into the wall assembly (e.g., to the interior vapor retarder or interior finishes), causing significantly increased risk of moisture damage and mold. This concern is particularly relevant to Section 2510.6 which deals with conventional stucco -- a moisture storage ("reservoir") cladding. Consequently, a new exception is provided to address this problem and is based on consistent findings and recommendations from several studies including Derome (2010), Wilkinson, et al. (2007), BSC (2005), and Lepage and Lstiburek (2013). Key findings and recommendations from these studies also are summarized in ABTG (2015). It is also important to note that this proposal does NOT eliminate the use of WRB materials of greater than 10 perms in the stated conditions because an alternative allows for use of a ventilated air space to avoid the 10 perm limitation.

Bibliography:

ABTG (2015). "Assessment of Water Vapor Control Methods for Modern Insulated Light-Frame Wall Assemblies", Research Report No. ABTG-1410-03, Applied Building Technology Group, LLC, http://www.appliedbuildingtech.com/rr/1410-03
BSC (2005). Healthy and Affordable Housing: Practical Recommendations for Building, Renovating and Maintaining Housing. Prepared for the U.S. Department of Housing and Urban Development and Building America Program of the U.S. Department of Energy, Building Science Corporation, www.buildingscience.com
Derome, D. (2010). The nature, significance and control of solar-driven water vapor diffusion in wall systems -- synthesis of Research Project RP-1235, ASHRAE Transactions, January 2010. www.ashrae.org
Lepage, R. and Lstiburek, J. (2013). Moisture Durability ith Vapor-Permeable Insulating Sheathing, U.S. DOE, Building Technologies Office, www.osti.gov/bridge
Wilkinson, J. Ueno, K., DeRose, D., Straube, J.F. and Fugler, D. (2007). Understanding Vapour Permeance and Condensation in Wall Assemblies, *11th Canadian Conference on Building Science and Technology*, Banff, Alberta

Cost Impact: Will not increase the cost of construction
The proposal provides limitations that may affect some product choices (or cladding detailing) under specified conditions of use, but options remain available for all WRB types and many are unaffected.

Report of Committee Action Hearings

Committee Action: **Approved as Modified**

Modify as follows:

2510.6 Water-resistive barriers. *Water-resistive barriers* shall be installed as required in Section 1404.2 and, where applied over wood-based sheathing, shall include a water-resistive vapor-permeable barrier with a performance at least equivalent to two layers of *water-resistive barrier* complying with ASTM E 2556, Type I. The individual layers shall be installed independently such that each layer provides a separate continuous plane and any flashing (installed in accordance with Section 1405.4) intended to drain to the *water-resistive barrier* is directed between the layers.

Exceptions:

1. Where the *water-resistive barrier* that is applied over wood-based sheathing has a water resistance equal to or greater than that of a *water-resistive barrier* complying with ASTM E 2556, Type II and is separated from the stucco by an intervening, substantially nonwater-absorbing layer or drainage space.
2. Where the *water-resistive barrier* is applied over~~ vapor permeable or~~ wood-based sheathing in Climate Zones 1A, 2A, or 3A~~, 4A, 5A, and 4C in accordance with Chapter 3 of the International Energy Conservation Code, the water-resistive barrier shall have a water vapor permeance of not more than 10 perms in accordance with ASTM E96 (Method A) to minimize inward moisture movement. Alternatively~~, a ventilated air space shall be provided between the stucco and *water-resistive barrier*.

Committee Reason: This proposal adds an option to address inward moisture drive issues in various climate zones. It also provides the universal solution of providing a vented air space. The modification eliminates an arbitrary limit on vapor permeance and limits the climate zones where it applies.

Assembly Action: **None**

Final Action Results

S302-16	AM

Back

Code Change No: S307-16

Original Proposal

Section: G103.6

Proponent: Gregory Wilson, representing Federal Emergency Management Agency (gregory.wilson2@fema.dhs.gov); Rebecca Quinn, representing Federal Emergency Management Agency (rcquinn@earthlink.net)

Revise as follows:

G103.6 Watercourse alteration. Prior to issuing a *permit* for any alteration or relocation of any watercourse, the *building official* shall require the applicant to provide notification of the proposal to the appropriate authorities of all ~~affected~~ adjacent government jurisdictions, as well as appropriate state agencies. A copy of the notification shall be maintained in the permit records and submitted to FEMA.

Reason: The National Flood Insurance Program regulations specify that communities notify adjacent communities when a proposal to alter or relocate a watercourse is received. When a local jurisdiction uses IBC Appendix G, the current phrasing in Section G103.6 requires judgment to determine whether an adjacent jurisdiction is or is not affected by a proposed watercourse alteration. Only with engineering analyses is it feasible to determine whether adjacent communities are affected. Instead, this proposal requires notification of all adjacent communities.

Cost Impact: Will not increase the cost of construction
There is no cost impact to construction because this proposal is administrative.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This code change simplifies the language, putting the IBC more in alignment with the National Flood Insurance Program.

Assembly Action **None**

Final Action Results

S307-16 **AS**

Back

Code Change No: S309-16

Original Proposal

Section: G103.8

Proponent: Gregory Wilson (gregory.wilson2@fema.dhs.gov); Rebecca Quinn, representing Federal Emergency Management Agency (rcquinn@earthlink.net)

Revise as follows:

G103.8 Records. The *building official* shall maintain a permanent record of all *permits* issued in *flood hazard areas*, including supporting certifications and documentation required by this appendix and copies of inspection reports, design certifications and ~~certifications~~ documentation of elevations required in Section 1612 of the I*nternational Building Code* and Section R322 of the I*nternational Residential Code*.

Reason: Communities that participate in the National Flood Insurance Program agree to obtain and maintain certain certifications and documentation in their permanent records and make them available for inspection. Required certifications and documentation for buildings and structures are identified in the IBC and IRC. When a community uses IBC Appendix G, Appendix G also identifies documentation to support permit decisions that should be maintained, including floodway encroachment analyses and analyses of the flood-carrying capacity of altered or relocated watercourses.

Cost Impact: Will not increase the cost of construction
NFIP communities are already required to maintain these documents.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This proposal coordinates the IBC provisions on document retention with the current requirments of the National Flood Insurance Program.

Assembly Action **None**

Final Action Results

S309-16	**AS**

Back

Code Change No: S310-16

Original Proposal

Section: G601.2, G601.3.

Proponent: Gregory Wilson, Federal Emergency Management Agency (gregory.wilson2@fema.dhs.gov); Rebecca Quinn, RCQuinn Consulting, Inc. (rcquinn@earthlink.net)

Revise as follows:

G601.2 Temporary placement. Recreational vehicles in *flood hazard areas* shall be fully licensed and ready for highway use, ~~and~~ or shall be placed on a site for less than 180 consecutive days.

G601.3 Permanent placement. Recreational vehicles that are not fully licensed and ready for highway use, or that are to be placed on a site for more than 180 consecutive days, shall meet the requirements of Section G501 for manufactured homes.

Reason: This proposal is editorial for internal consistency. The NFIP regulations for placement of recreational vehicles in flood hazard areas [44 Code of Federal Regulations 60.3(c)(14)] sets out the same two conditions as alternatives connected by "or" as shown in G601.3.

Cost Impact: Will not increase the cost of construction
Editorial for internal consistency.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This code change clears up a minor inconsistency between the IBC and the National Flood Insurance Program.

Assembly Action **None**

Final Action Results

S310-16	**AS**

Back

Code Change No: S311-16

Original Proposal

Section: H106.1.1

Proponent: Marcelo Hirschler, representing GBH International (gbhint@aol.com)

Revise as follows:

H106.1.1 Internally illuminated signs. Except as provided for in Sections 402.16 and 2611, where internally illuminated signs have facings of wood or approved light transmitting plastic, the area of such facing section shall be not more than 120 square feet (11.16 m^2) and the wiring for electric lighting shall be entirely enclosed in the sign cabinet with a clearance of not less than 2 inches (51 mm) from the facing material. The dimensional limitation of 120 square feet (11.16 m^2) shall not apply to sign facing sections made from flame-resistant-coated fabric (ordinarily known as "flexible sign face plastic") that weighs less than 20 ounces per square yard (678 g/m^2) and that, when tested in accordance with NFPA 701, meets the fire propagation performance requirements of both Test 1 and Test 2 or that, when tested in accordance with an approved test method, exhibits an average burn time of 2 seconds or less and a burning extent of 5.9 inches (150 mm) or less for 10 specimens.

Reason: This is simple clarification. Signs will be made of wood and light transmitting plastics, approved by meeting the requirements of section 2606 (including the fire safety requirements of section 2606.4). This proposal ties in with the change to the definition of "plastic, approved" to "light transmitting plastic, approved".

Cost Impact: Will not increase the cost of construction
This is simple clarification.

Report of Committee Action Hearings

Committee Action: **Approved as Modified**

Modify as follows:

H106.1.1 Internally illuminated signs. Except as provided for in ~~Sections 402.16 and~~ Section 2611, where internally illuminated signs have facings of wood or of approved ~~light transmitting~~ plastic complying with the requirements of Section 2606.4, the area of such facing section shall be not more than 120 square feet (11.16 m^2) and the wiring for electric lighting shall be entirely enclosed in the sign cabinet with a clearance of not less than 2 inches (51 mm) from the facing material. The dimensional limitation of 120 square feet (11.16 m^2) shall not apply to sign facing sections made from flame-resistant-coated fabric (ordinarily known as "flexible sign face plastic") that weighs less than 20 ounces per square yard (678 g/m^2) and that, when tested in accordance with NFPA 701, meets the fire propagation performance requirements of both Test 1 and Test 2 or that, when tested in accordance with an approved test method, exhibits an average burn time of 2 seconds or less and a burning extent of 5.9 inches (150 mm) or less for 10 specimens.

Committee Reason: This proposal makes a simple clarification of light transmitting plastics used in signs. The modification prevents confusion by adding a cross reference to the appropriate section of the code.

Assembly Action: **None**

Final Action Results

S311-16	**AM**

Back

Code Change No: S312-16

Original Proposal

Section: H106.1.1

Proponent: Marcelo Hirschler, representing GBH International (gbhint@aol.com)

Revise as follows:

H107.1 Use of combustibles. Wood, approved light-transmitting plastic or plastic veneer panels as provided for in Chapter 26, or other materials of combustible characteristics similar to wood, used for moldings, cappings, nailing blocks, letters and latticing, shall comply with Section H109.1 and shall not be used for other ornamental features of signs, unless approved.

H107.1.1 Plastic materials. Notwithstanding any other provisions of this code, light transmitting plastic materials that burn at a rate no faster than 2.5 inches per minute (64 mm/s) when tested in accordance with ASTM D 635 shall be deemed approved light transmitting plastics and can be used as the display surface material and for the letters, decorations and facings on signs and outdoor display structures.

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

H107.1.4 Plastic appurtenances. Letters and decorations mounted on an approved light transmitting plastic facing or display surface can be made of approved light transmitting plastics.

Reason: Clarification - These sections address light transmitting plastics that comply with Section 2606 and the fire properties of Class CC2 in section 2606.4. No other section of the code discusses approved plastics.

Cost Impact: Will not increase the cost of construction
Simple clarification

Report of Committee Action Hearings

Committee Action: **Approved as Modified**

Modify as follows:

H107.1 Use of combustibles. Wood, ~~approved light-transmitting plastic~~ plastics complying with the requirements of Section H107.1.1, or plastic veneer panels as provided for in Chapter 26, or other materials of combustible characteristics similar to wood, used for moldings, cappings, nailing blocks, letters and latticing, shall comply with Section H109.1 and shall not be used for other ornamental features of signs, unless approved.

H107.1.1 Plastic materials. Notwithstanding any other provisions of this code, ~~light transmitting plastic materials~~ plastics that burn at a rate no faster than 2.5 inches per minute (64 mm/s) when tested in accordance with ASTM D 635 shall be ~~deemed~~ approved ~~light transmitting plastics and can be used~~ for use as the display surface material and for the letters, decorations and facings on signs and outdoor display structures.

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

H107.1.4 Plastic appurtenances. Letters and decorations mounted on ~~an approved light transmitting~~ a plastic facing or display surface can be made of ~~approved light transmitting~~ plastics complying with Section H107.1.1.
Committee Reason: Approval is consistent with the committee's action on S312-16. The modification clarifies these provisions by adding an appropriate section reference.

Assembly Action: **None**

Final Action Results

S312-16	**AM**

Back

Code Change No: S315-16

Original Proposal

Section: M101, M101.1, M101.2, M101.3, M101.4

Proponent: Mike Mahoney, Federal Emergency Management Agency, representing SELF (mike.mahoney@fema.dhs.gov)

Revise as follows:

APPENDIX M
TSUNAMI-GENERATED FLOOD HAZARD

SECTION M101 REFUGE STRUCTURES FOR VERTICAL EVACUATION FROM TSUNAMI-GENERATED FLOOD HAZARD

~~**M101.1 General.**~~ The purpose of this appendix is to provide tsunami ~~regulatory~~ vertical evacuation planning criteria for those coastal communities that have a tsunami hazard ~~and have elected to develop and adopt~~ as shown in a ~~map of their tsunami hazard inundation zone~~ Tsunami Design Zone Map.

M101.2 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.

Delete without substitution:

~~**TSUNAMI HAZARD ZONE.** The area vulnerable to being flooded or inundated by a design event tsunami as identified on a community's Tsunami Hazard Zone Map.~~

Revise as follows:

TSUNAMI ~~HAZARD~~ DESIGN ZONE MAP. ~~A map adopted by the community~~ that designates the extent of inundation by a ~~design event tsunami. This map shall be based on the tsunami inundation map that is developed and provided to a community~~ Maximum Considered Tsunami, as defined by ~~either the applicable state agency or the National Atmospheric and Oceanic Administration (NOAA) under the National Tsunami Hazard Mitigation Program, but shall be permitted to utilize a different probability or hazard level~~ Chapter 6 of ASCE 7.

M101.3 Establishment of tsunami ~~hazard~~ design zone. Where applicable, ~~if a community has adopted a~~ the Tsunami ~~Hazard~~ Design Zone Map~~, that map~~ shall ~~be used to establish a community's tsunami hazard zone~~ meet or exceed the inundation limit given by the ASCE 7 Tsunami Design Geodatabase.

M101.4 ~~Construction~~ Planning of tsunami vertical evacuation refuge structures within the tsunami ~~hazard~~ design zone. ~~Construction of structures designated Risk Categories III and IV as specified under Section 1604.5 shall be prohibited~~ Tsunami Vertical Evacuation Refuge Structures located within a tsunami hazard design zone shall be planned, sited, and developed in general accordance with the planning criteria of the FEMA P646 guidelines.

~~**Exceptions:**~~

~~1. A vertical evacuation tsunami refuge shall be permitted to be located in a tsunami hazard zone provided it is constructed in accordance with FEMA P646.~~

2. ~~Community critical facilities shall be permitted to be located within the tsunami hazard zone when such a location is necessary to fulfill their function, providing suitable structural and emergency evacuation measures have been incorporated.~~

Exception: These criteria shall not be considered mandatory for evaluation of existing buildings for evacuation planning purposes.

Reason: The amendments to Appendix M are necessary because the analysis and structural design aspects of FEMA P-646 (2012), *Guidelines for Design of Structures for Vertical Evacuation from Tsunamis*, have been superseded by ASCE 7-2016, *Minimum Design Loads and Associated Criteria for Buildings and Other Structures*. ASCE 7-16 now has a Chapter 6 on tsunami loads and effects, which also includes a set of tsunami design zone maps. As an accredited consensus- based standard, ASCE 7-16 incorporates more recent knowledge that takes precedence over the older FEMA guidelines. In particular, the FEMA guidelines for determining inundation depth, flow speed, and waterborne debris impact forces were found to lack reliability. The proposal updates Appendix M to make it refer to the tsunami evacuation and site planning criteria of P-646-12 and not to its tsunami hazard mapping and structural design guidelines, thereby removing conflicts that would otherwise occur between the two documents. The title of Appendix M is revised because the original title was overly broad; FEMA P646 only concerns tsunami refuge structures.

Cost Impact: Will not increase the cost of construction
Appendix M has not been adopted into the state or county codes of any of the five western states subject to significant tsunami hazard: Alaska, Washington, Oregon, California, and Hawaii.

Report of Committee Action Hearings

Committee Action: **Approved as Submitted**

Committee Reason: This code change revises the tsunami appendix chapter to coordinate with the tsnami design provisions approved in S72-16.

Assembly Action **None**

Final Action Results

S315-16	**AS**

S56-16 Back

1609.1.1 Determination of wind loads.
Wind loads on every building or structure shall be determined in accordance with Chapters 26 to 30 of ASCE 7 or provisions of the alternate all-heights method in Section 1609.6. ~~The type of opening protection required, the ultimate design wind speed, V_{ult}, and the exposure category for a site is permitted to be determined in accordance with Section 1609 or ASCE 7.~~ Wind shall be assumed to come from any horizontal direction and wind pressures shall be assumed to act normal to the surface considered.

Exceptions: (no change)

Exceptions:

1 - 4 No change

5. Designs using TIA-222 for antenna-supporting structures and antennas, provided the horizontal extent of Topographic Category 2 escarpments in Section 2.6.6.2 of TIA-222 shall be 16 times the height of the escarpment. Design using this standard shall be permitted for communication tower and steel antenna support structures.

6. No change.

7. Wind loads for screen enclosures shall be determined in accordance with Section 2002.4.

8. Exposed mechanical equipment or appliances fastened to a roof or installed on the ground in compliance with the code using rated stands, platforms, curbs, slabs, walls, or other means are deemed to comply with the wind resistance requirements of the 2007 Florida Building Code, as amended. Further support or enclosure of such mechanical equipment or appliances is not required by a state or local official having authority to enforce the Florida Building Code

1609.1.2.2. Application of ASTM E 1996. The text of Section 6.2.2 of ASTM E 1996 shall be substituted as follows:

6.2.2 Unless otherwise specified, select the wind zone based on the strength design wind speed, *Vult*, as follows:

6.2.2.1 *Wind Zone 1*—130 mph ≤ ultimate design wind speed, *Vult* < 140 mph.

6.2.2.2 *Wind Zone 2*—140 mph ≤ ultimate design wind speed, *Vult* < 150 mph at greater than one mile (1.6 km) from the coastline. The coastline shall be measured from the mean high water mark.

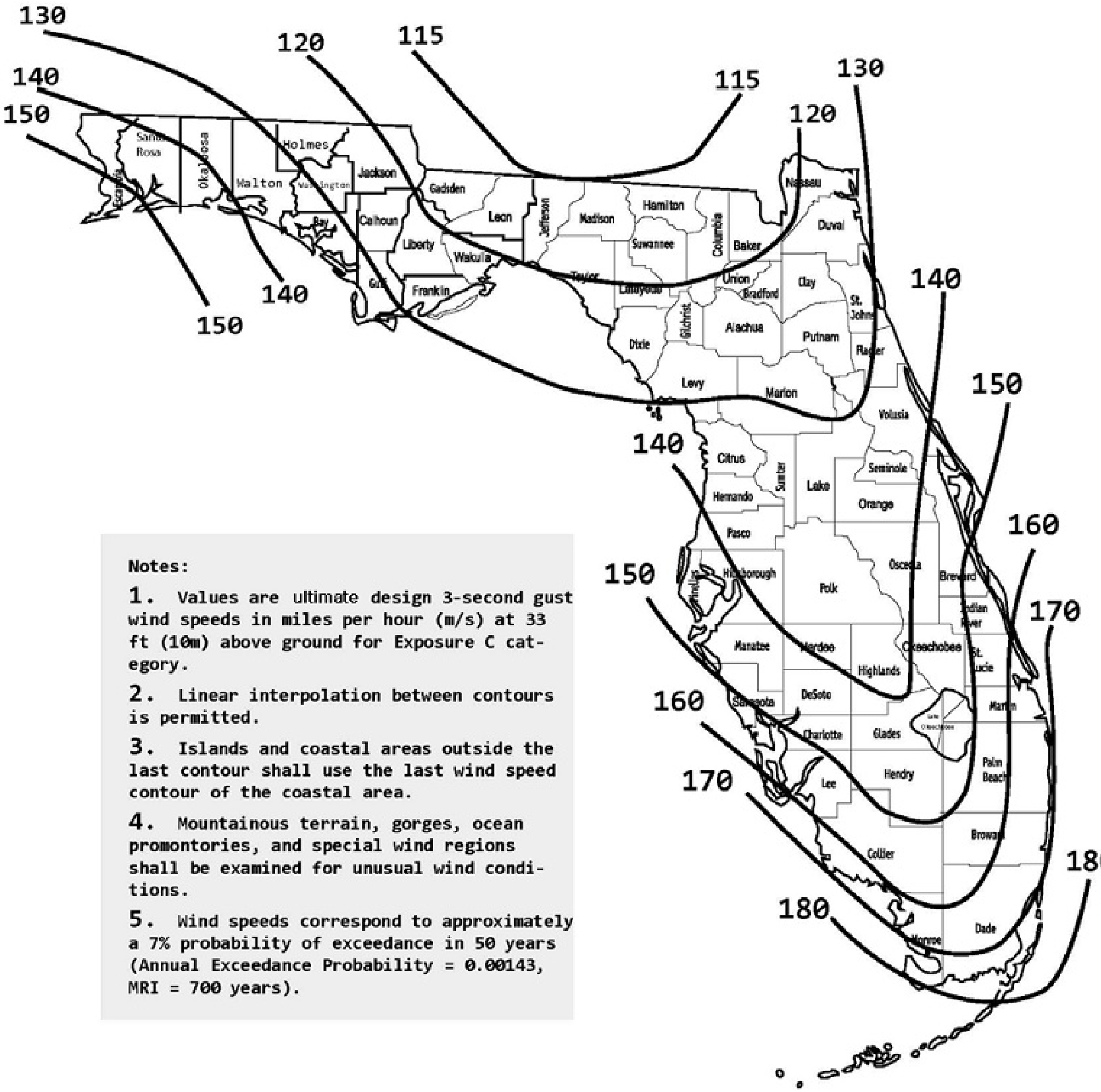
6.2.2.3 *Wind Zone 3*—150 mph (58 m/s) <ultimate design wind speed, *Vult* < ~~160~~ 170 mph (63 m/s), or 140 mph (54 m/s) ≤ ultimate design wind speed, *Vult* ≤ ~~160~~ 170 mph (63 m/s) and within one mile (1.6 km) of the coastline. The coastline shall be measured from the mean high water mark.

6.2.2.4 *Wind Zone 4*— ultimate design wind speed, *Vult* > ~~160~~ 170 mph (6

Section 1609.3 Ultimate design wind speed. Revise to read as follows:

1609.3 Ultimate design wind speed. The ultimate design wind speed, V_{ult}, in mph, for the determination of the wind loads shall be determined by Figures 1609.3(1), 1609.3(2) and 1609.3(3). The ultimate design wind speed, V_{ult}, for use in the design of Risk Category II buildings and structures shall be obtained from Figure 1609.3(1). The ultimate design wind speed, V_{ult}, for use in the design of Risk Category III and IV buildings and structures shall be obtained from Figure 1609.3(2). The ultimate design wind speed, V_{ult}, for use in the design of Risk Category I buildings and structures shall be obtained from Figure 1609.3(3). The ultimate design wind speed, V_{ult}, for the special wind regions indicated near mountainous terrain and near gorges shall be in accordance with local jurisdiction requirements. The ultimate design wind speeds, V_{ult}, determined by the local jurisdiction shall be in accordance with Section 26.5.1 of ASCE 7. The exact location of wind speed lines shall be established by local ordinance using recognized physical landmarks such as major roads, canals, rivers and lake shores wherever possible.

No change to the remaining text



Notes:

1. Values are ultimate design 3-second gust wind speeds in miles per hour (m/s) at 33 ft (10m) above ground for Exposure C category.

2. Linear interpolation between contours is permitted.

3. Islands and coastal areas outside the last contour shall use the last wind speed contour of the coastal area.

4. Mountainous terrain, gorges, ocean promontories, and special wind regions shall be examined for unusual wind conditions.

5. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (Annual Exceedance Probability = 0.00143, MRI = 700 years).

FIGURE 1609.3(1) ULTIMATE DESIGN WIND SPEEDS, V_{ULT}, FOR RISK CATEGORY II BUILDINGS AND OTHER

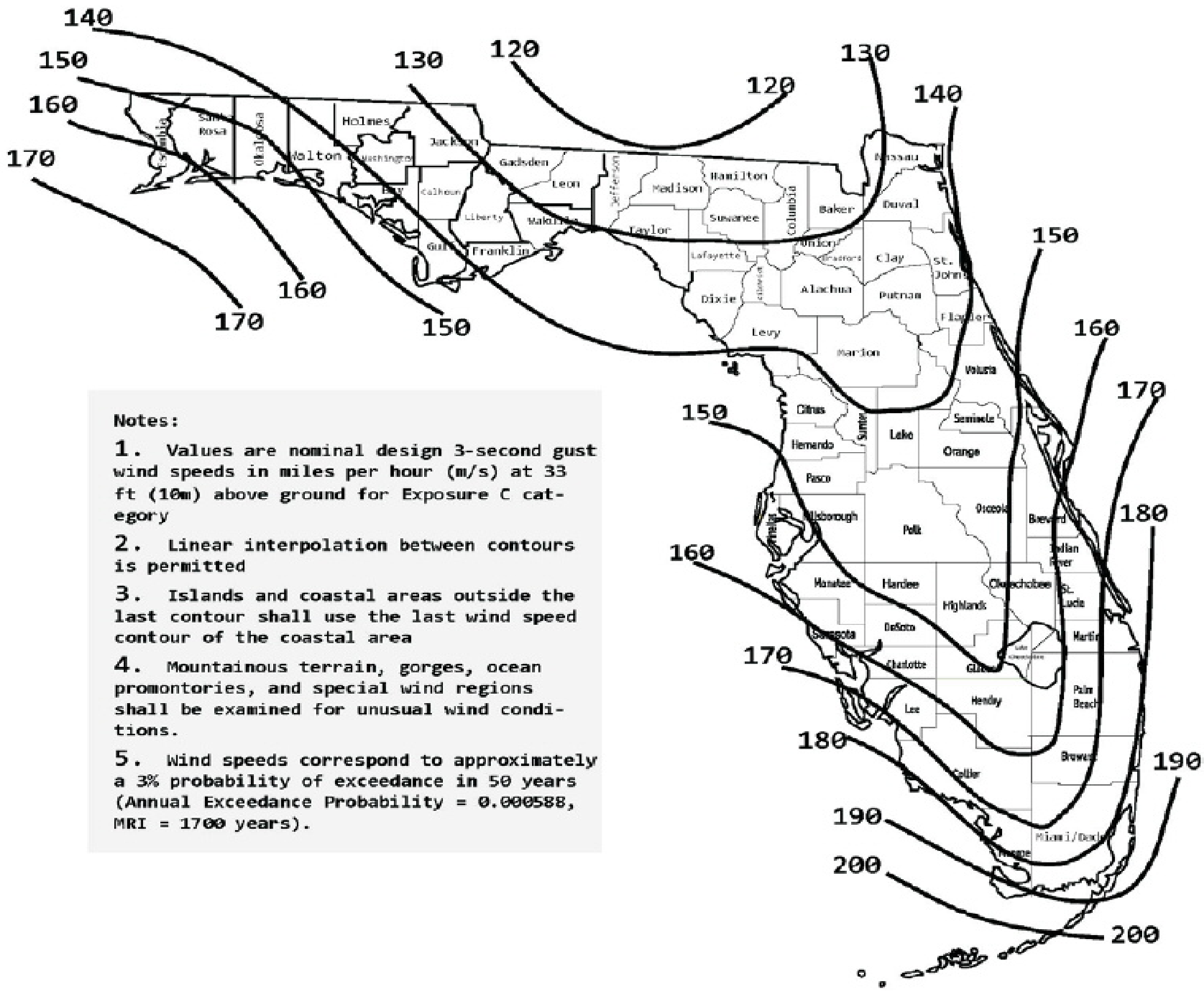


FIGURE 1609.3(2) ULTIMATE DESIGN WIND SPEEDS, V_{ULT}, FOR RISK CATEGORY III AND IV BUILDINGS AND OTHER STRUCTURES

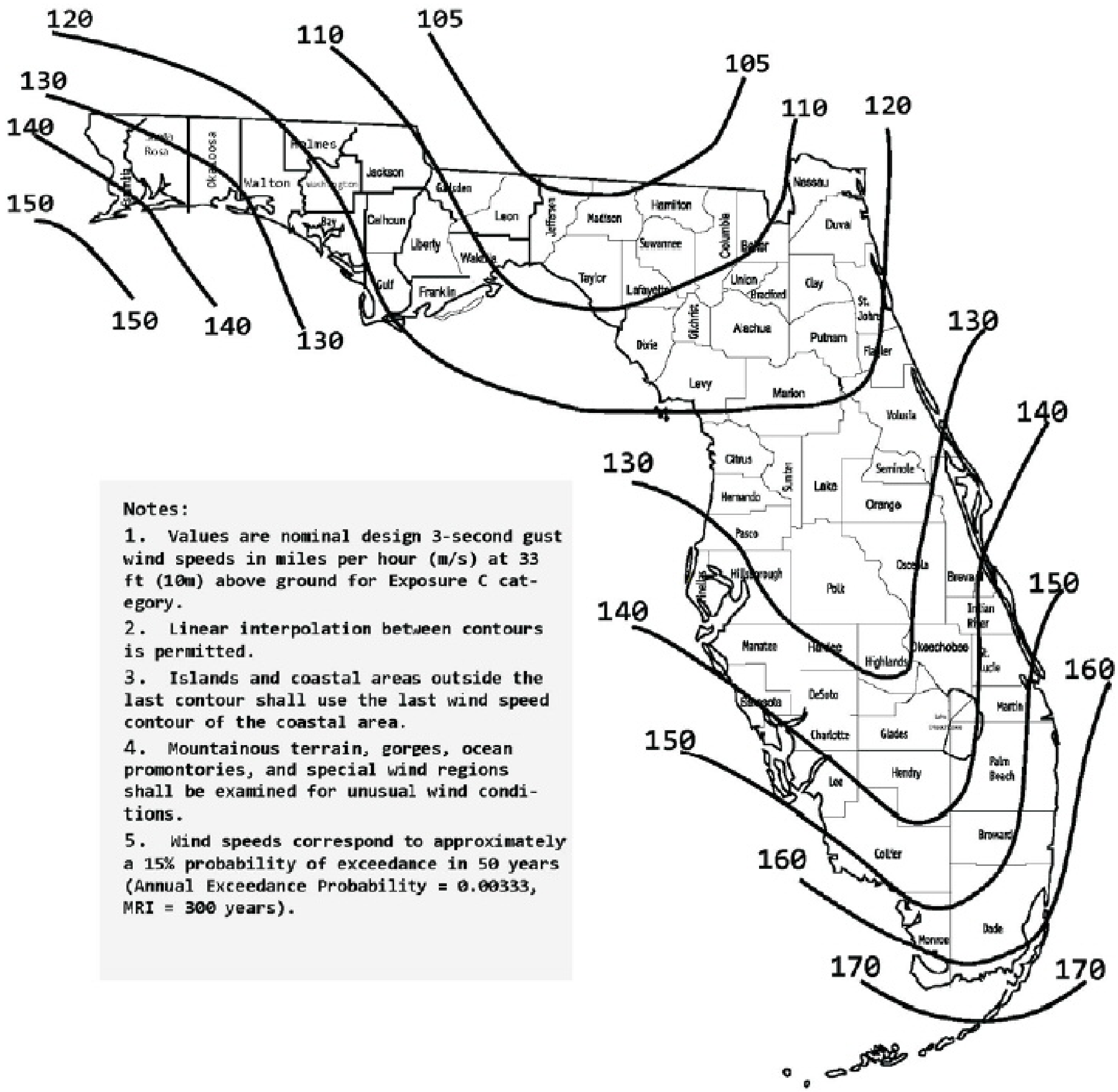


FIGURE 1609.3(3) ULTIMATE DESIGN WIND SPEEDS, V_{ULT}, FOR RISK CATEGORY I BUILDINGS AND OTHER STRUCTURES

S63-16

Back

TABLE 1604.3
DEFLECTION LIMITS

CONSTRUCTION	*L*	*S* or *W* f	*D* + *L*d, g, j
Roof members:e			
Supporting plaster or stucco ceiling	l/360	l/360	l/240
Supporting nonplaster ceiling	l/240	l/240	l/180
Not supporting ceiling	l/180	l/180	l/120
Members supporting screen surface	—	—	l/60
Floor members	l/360	—	l/240
Exterior walls:			
With plaster or stucco finishes	—	l/360	—
With other brittle finishes	—	l/240	—
With flexible finishes	—	l/120	—
Interior partitions: b			
With plaster or stucco finishes	l/360	—	—
With other brittle finishes	l/240	—	—
With flexible finishes	l/120	—	—
Farm buildings	—	—	l/180
Greenhouses	—	—	l /120

For SI: 1 foot = 304.8 mm.

a. For structural roofing and siding made of formed metal sheets, the total load deflection shall not exceed *1*/60. For secondary roof structural members supporting formed metal roofing, the live load deflection shall not exceed *1*/150. For secondary wall members supporting formed metal siding, the design wind load deflection shall not exceed *1*/90. For roofs, this exception only applies when the metal sheets have no roof covering.

b. Flexible, folding and portable partitions are not governed by the provisions of this section. The deflection criterion for interior partitions is based on the horizontal load defined in Section 1607.14.

c. See Section 2403 for glass supports.

d. The deflection limit for the *D*+*L* load combination only applies to the deflection due to the creep component of long-term dead load deflection plus the short-term live load deflection. For wood structural members that are dry at time of installation and used under dry conditions in accordance with the AWC NDS, the creep component of the long-term deflection shall be permitted to be estimated as the immediate dead load deflection resulting from 0.5*D*. For wood structural members at all other moisture conditions, the creep component of the long-term deflection is permitted to be estimated as the immediate dead load deflection resulting from *D*. The value of 0.5*D* shall not be used in combination with AWC NDS provisions for long-term loading.

e. The above deflections do not ensure against ponding. Roofs that do not have sufficient slope or camber to ensure adequate drainage shall be investigated for ponding. See Section 1611 for rain and ponding requirements and Section 1503.4 for roof drainage requirements.

f. The wind load is permitted to be taken as 0.42 times the “component and cladding” loads for the purpose of determining deflection limits herein. Where members support glass in accordance with Section 2403 using the deflection limit therein, the wind load shall be no less than 0.6 times the “component and cladding” loads for the purpose of determining deflection.

g. For steel structural members, the dead load shall be taken as zero.

h. For aluminum structural members or aluminum panels used in skylights and sloped glazing framing, roofs or walls of sunroom additions or patio covers not supporting edge of glass or aluminum sandwich panels, the total load deflection shall not exceed *1*/60. For continuous aluminum structural members supporting edge of glass, the total load deflection shall not exceed *1*/175 for each glass lite or *1*/60 for the entire length of the member, whichever is more stringent. For aluminum sandwich panels used in roofs or walls of sunroom additions or patio covers, the total load deflection shall not exceed *1*/120.

i. For cantilever members, *1* shall be taken as twice the length of the cantilever.

j. Screen surfaces shall be permitted to include a maximum of 25% solid flexible finishes.

S64-16

Back

TABLE 1604.3
DEFLECTION LIMITS

CONSTRUCTION	***L***	***S* or *W* f**	***D* + *L*d, g, j**
Roof members:e			
Supporting plaster or stucco ceiling	*l*/360	*l*/360	*l*/240
Supporting nonplaster ceiling	*l*/240	*l*/240	*l*/180
Not supporting ceiling	*l*/180	*l*/180	*l*/120
Members supporting screen surface	—	—	*l*/60
Floor members	*l*/360	—	*l*/240
Exterior walls:			
With plaster or stucco finishes	—	*l*/360	—
With other brittle finishes	—	*l*/240	—
With flexible finishes	—	*l*/120	—

Interior partitions: [b] With plaster or stucco finishes With other brittle finishes With flexible finishes	*l*/360 *l*/240 *l*/120	— — —	— — —
Farm buildings	—	—	*l*/180
Greenhouses	—	—	*l* /120

For SI: 1 foot = 304.8 mm.

a. For structural roofing and siding made of formed metal sheets, the total load deflection shall not exceed *1*/60. For secondary roof structural members supporting formed metal roofing, the live load deflection shall not exceed *1*/150. For secondary wall members supporting formed metal siding, the design wind load deflection shall not exceed *1*/90. For roofs, this exception only applies when the metal sheets have no roof covering.

b. Flexible, folding and portable partitions are not governed by the provisions of this section. The deflection criterion for interior partitions is based on the horizontal load defined in Section 1607.14.

c. See Section 2403 for glass supports.

d. The deflection limit for the *D+L* load combination only applies to the deflection due to the creep component of long-term dead load deflection plus the short-term live load deflection. For wood structural members that are dry at time of installation and used under dry conditions in accordance with the AWC NDS, the creep component of the long-term deflection shall be permitted to be estimated as the immediate dead load deflection resulting from 0.5*D*. For wood structural members at all other moisture conditions, the creep component of the long-term deflection is permitted to be estimated as the immediate dead load deflection resulting from *D*. The value of 0.5*D* shall not be used in combination with AWC NDS provisions for long-term loading.

e. The above deflections do not ensure against ponding. Roofs that do not have sufficient slope or camber to ensure adequate drainage shall be investigated for ponding. See Section 1611 for rain and ponding requirements and Section 1503.4 for roof drainage requirements.

f. The wind load is permitted to be taken as 0.42 times the “component and cladding” loads for the purpose of determining deflection limits herein. Where members support glass in accordance with Section 2403 using the deflection limit therein, the wind load shall be no less than 0.6 times the “component and cladding” loads for the purpose of determining deflection.

g. For steel structural members, the dead load shall be taken as zero.

h. For aluminum structural members or aluminum panels used in skylights and sloped glazing framing, roofs or walls of sunroom additions or patio covers not supporting edge of glass or aluminum sandwich panels, the total load deflection shall not exceed *1*/60. For continuous aluminum structural members supporting edge of glass, the total load deflection shall not exceed *1*/175 for each glass lite or *1*/60 for the entire length of the member, whichever is more stringent. For aluminum sandwich panels used in roofs or walls of sunroom additions or patio covers, the total load deflection shall not exceed *1*/120.

i. For cantilever members, *1* shall be taken as twice the length of the cantilever.

j. Screen surfaces shall be permitted to include a maximum of 25% solid flexible finishes.

S65-16 BACK

TABLE 1604.3
DEFLECTION LIMITS

CONSTRUCTION	***L***	***S* or *W f***	***D* + *L*d, g, j**
Roof members:e Supporting plaster or stucco ceiling Supporting nonplaster ceiling Not supporting ceiling Members supporting screen surface	 *l*/360 *l*/240 *l*/180 —	 *l*/360 *l*/240 *l*/180 —	 *l*/240 *l*/180 *l*/120 *l*/60
Floor members	*l*/360	—	*l*/240
Exterior walls: With plaster or stucco finishes With other brittle finishes With flexible finishes	 — — —	 *l*/360 *l*/240 *l*/120	 — — —
Interior partitions: [b] With plaster or stucco finishes With other brittle finishes With flexible finishes	 *l*/360 *l*/240 *l*/120	 — — —	 — — —
Farm buildings	—	—	*l*/180
Greenhouses	—	—	*l* /120

For SI: 1 foot = 304.8 mm.

a. For structural roofing and siding made of formed metal sheets, the total load deflection shall not exceed *1*/60. For secondary roof structural members supporting formed metal roofing, the live load deflection shall not exceed *1*/150. For secondary wall members supporting formed metal siding, the design wind load deflection shall not exceed *1*/90. For roofs, this exception only applies when the metal sheets have no roof covering.

b. Flexible, folding and portable partitions are not governed by the provisions of this section. The deflection criterion for interior partitions is based on the horizontal load defined in Section 1607.14.

c. See Section 2403 for glass supports.

d. The deflection limit for the *D+L* load combination only applies to the deflection due to the creep component of long-term dead load deflection plus the short-term live load deflection. For wood structural members that are dry at time of installation and used under dry conditions in accordance with the AWC NDS, the creep component of the long-term deflection shall be permitted to be estimated as the immediate dead load deflection resulting from 0.5*D*. For wood structural members at all other moisture conditions, the creep component of the long-term deflection is permitted to be estimated as the immediate dead load deflection resulting from *D*. The value of 0.5*D* shall not be used in combination with AWC NDS provisions for long-term loading.

e. The above deflections do not ensure against ponding. Roofs that do not have sufficient slope or camber to ensure adequate drainage shall be investigated for ponding. See Section 1611 for rain and ponding requirements and Section 1503.4 for roof drainage requirements.

f. The wind load is permitted to be taken as 0.42 times the "component and cladding" loads for the purpose of determining deflection limits herein. Where members support glass in accordance with Section 2403 using the deflection limit therein, the wind load shall be no less than 0.6 times the "component and cladding" loads for the purpose of determining deflection.

g. For steel structural members, the dead load shall be taken as zero.

h. For aluminum structural members or aluminum panels used in skylights and sloped glazing framing, roofs or walls of sunroom additions or patio covers not supporting edge of glass or aluminum sandwich panels, the total load deflection shall not exceed *1*/60. For continuous aluminum structural members supporting edge of glass, the total load deflection shall not exceed *1*/175 for each glass lite or *1*/60 for the entire length of the member, whichever is more stringent. For aluminum sandwich panels used in roofs or walls of sunroom additions or patio covers, the total load deflection shall not exceed *1*/120.

i. For cantilever members, *1* shall be taken as twice the length of the cantilever.

<u>j. Screen surfaces shall be permitted to include a maximum of 25% solid flexible finishes.</u>

S66-16 Back

TABLE 1604.3
DEFLECTION LIMITS

CONSTRUCTION	*L*	*S* or *W f*	*D* + *L*d, g, j
Roof members:e Supporting plaster or stucco ceiling Supporting nonplaster ceiling Not supporting ceiling Members supporting screen surface	 *l*/360 *l*/240 *l*/180 —	 *l*/360 *l*/240 *l*/180 —	 *l*/240 *l*/180 *l*/120 *l*/60
Floor members	*l*/360	—	*l*/240
Exterior walls: With plaster or stucco finishes With other brittle finishes With flexible finishes	 — — —	 *l*/360 *l*/240 *l*/120	 — — —
Interior partitions: [b] With plaster or stucco finishes With other brittle finishes With flexible finishes	 *l*/360 *l*/240 *l*/120	 — — —	 — — —
Farm buildings	—	—	*l*/180
Greenhouses	—	—	*l* /120

For SI: 1 foot = 304.8 mm.

a. For structural roofing and siding made of formed metal sheets, the total load deflection shall not exceed *1*/60. For secondary roof structural members supporting formed metal roofing, the live load deflection shall not exceed *1*/150. For secondary wall members supporting formed metal siding, the design wind load deflection shall not exceed *1*/90. For roofs, this exception only applies when the metal sheets have no roof covering.

b. Flexible, folding and portable partitions are not governed by the provisions of this section. The deflection criterion for interior partitions is based on the horizontal load defined in Section 1607.14.

c. See Section 2403 for glass supports.

d. The deflection limit for the *D*+*L* load combination only applies to the deflection due to the creep component of long-term dead load deflection plus the short-term live load deflection. For wood structural members that are dry at time of installation and used under dry conditions in accordance with the AWC NDS, the creep component of the long-term deflection shall be permitted to be estimated as the immediate dead load deflection resulting from 0.5*D*. For wood structural members at all other moisture conditions, the creep component of the long-term deflection is permitted to be estimated as the immediate dead load deflection resulting from *D*. The value of 0.5*D* shall not be used in combination with AWC NDS provisions for long-term loading.

e. The above deflections do not ensure against ponding. Roofs that do not have sufficient slope or camber to ensure adequate drainage shall be investigated for ponding. See Section 1611 for rain and ponding requirements and Section 1503.4 for roof drainage requirements.

f. The wind load is permitted to be taken as 0.42 times the “component and cladding” loads for the purpose of determining deflection limits herein. Where members support glass in accordance with Section 2403 using the deflection limit therein, the wind load shall be no less than 0.6 times the “component and cladding” loads for the purpose of determining deflection.

g. For steel structural members, the dead load shall be taken as zero.

h. For aluminum structural members or aluminum panels used in skylights and sloped glazing framing, roofs or walls of sunroom additions or patio covers not supporting edge of glass or aluminum sandwich panels, the total load deflection shall not exceed *1*/60. For continuous aluminum structural members supporting edge of glass, the total load deflection shall not exceed *1*/175 for each glass lite or *1*/60 for the entire length of the member, whichever is more stringent. For aluminum sandwich panels used in roofs or walls of sunroom additions or patio covers, the total load deflection shall not exceed *1*/120.

i. For cantilever members, *1* shall be taken as twice the length of the cantilever.

j. Screen surfaces shall be permitted to include a maximum of 25% solid flexible finishes.

S67-16 Back

TABLE 1604.3
DEFLECTION LIMITS

CONSTRUCTION	***L***	***S* or *W* f**	***D* + *L*d, g, j**
Roof members:e			
Supporting plaster or stucco ceiling	*l*/360	*l*/360	*l*/240
Supporting nonplaster ceiling	*l*/240	*l*/240	*l*/180
Not supporting ceiling	*l*/180	*l*/180	*l*/120
Members supporting screen surface	—	—	*l*/60
Floor members	*l*/360	—	*l*/240

Exterior walls: With plaster or stucco finishes With other brittle finishes With flexible finishes	 — — —	 *l*/360 *l*/240 *l*/120	 — — —
Interior partitions: [b] With plaster or stucco finishes With other brittle finishes With flexible finishes	*l*/360 *l*/240 *l*/120	— — —	— — —
Farm buildings	—	—	*l*/180
Greenhouses	—	—	*l* /120

For SI: 1 foot = 304.8 mm.

a. For structural roofing and siding made of formed metal sheets, the total load deflection shall not exceed *1*/60. For secondary roof structural members supporting formed metal roofing, the live load deflection shall not exceed *1*/150. For secondary wall members supporting formed metal siding, the design wind load deflection shall not exceed *1*/90. For roofs, this exception only applies when the metal sheets have no roof covering.

b. Flexible, folding and portable partitions are not governed by the provisions of this section. The deflection criterion for interior partitions is based on the horizontal load defined in Section 1607.14.

c. See Section 2403 for glass supports.

d. The deflection limit for the *D+L* load combination only applies to the deflection due to the creep component of long-term dead load deflection plus the short-term live load deflection. For wood structural members that are dry at time of installation and used under dry conditions in accordance with the AWC NDS, the creep component of the long-term deflection shall be permitted to be estimated as the immediate dead load deflection resulting from 0.5*D*. For wood structural members at all other moisture conditions, the creep component of the long-term deflection is permitted to be estimated as the immediate dead load deflection resulting from *D*. The value of 0.5*D* shall not be used in combination with AWC NDS provisions for long-term loading.

e. The above deflections do not ensure against ponding. Roofs that do not have sufficient slope or camber to ensure adequate drainage shall be investigated for ponding. See Section 1611 for rain and ponding requirements and Section 1503.4 for roof drainage requirements.

f. The wind load is permitted to be taken as 0.42 times the “component and cladding” loads for the purpose of determining deflection limits herein. Where members support glass in accordance with Section 2403 using the deflection limit therein, the wind load shall be no less than 0.6 times the “component and cladding” loads for the purpose of determining deflection.

g. For steel structural members, the dead load shall be taken as zero.

h. For aluminum structural members or aluminum panels used in skylights and sloped glazing framing, roofs or walls of sunroom additions or patio covers not supporting edge of glass or aluminum sandwich panels, the total load deflection shall not exceed *1*/60. For continuous aluminum structural members supporting edge of glass, the total load deflection shall not exceed *1*/175 for each glass lite or *1*/60 for the entire length of the member, whichever is more stringent. For aluminum sandwich panels used in roofs or walls of sunroom additions or patio covers, the total load deflection shall not exceed *1*/120.

i. For cantilever members, *1* shall be taken as twice the length of the cantilever.

j. Screen surfaces shall be permitted to include a maximum of 25% solid flexible finishes.

S69-16 Back

TABLE 1604.3
DEFLECTION LIMITS

CONSTRUCTION	***L***	***S* or *W f***	***D* + *L*d, g, j**
Roof members:e Supporting plaster or stucco ceiling Supporting nonplaster ceiling Not supporting ceiling Members supporting screen surface	 *l*/360 *l*/240 *l*/180 —	 *l*/360 *l*/240 *l*/180 —	 *l*/240 *l*/180 *l*/120 *l*/60
Floor members	*l*/360	—	*l*/240
Exterior walls: With plaster or stucco finishes With other brittle finishes With flexible finishes	 — — —	 *l*/360 *l*/240 *l*/120	 — — —
Interior partitions: [b] With plaster or stucco finishes With other brittle finishes With flexible finishes	 *l*/360 *l*/240 *l*/120	 — — —	 — — —
Farm buildings	—	—	*l*/180
Greenhouses	—	—	*l* /120

For SI: 1 foot = 304.8 mm.

a. For structural roofing and siding made of formed metal sheets, the total load deflection shall not exceed *1*/60. For secondary roof structural members supporting formed metal roofing, the live load deflection shall not exceed *1*/150. For secondary wall members supporting formed metal siding, the design wind load deflection shall not exceed *1*/90. For roofs, this exception only applies when the metal sheets have no roof covering.

b. Flexible, folding and portable partitions are not governed by the provisions of this section. The deflection criterion for interior partitions is based on the horizontal load defined in Section 1607.14.

c. See Section 2403 for glass supports.

d. The deflection limit for the *D+L* load combination only applies to the deflection due to the creep component of long-term dead load deflection plus the short-term live load deflection. For wood structural members that are dry at time of installation and used under dry conditions in accordance with the AWC NDS, the creep component of the long-term deflection shall be permitted to be estimated as the immediate dead load deflection resulting from 0.5*D*. For wood structural members at all other moisture conditions, the creep component of the long-term deflection is permitted to be estimated as the immediate dead load deflection resulting from *D*. The value of 0.5*D* shall not be used in combination with AWC NDS provisions for long-term loading.

e. The above deflections do not ensure against ponding. Roofs that do not have sufficient slope or camber to ensure adequate drainage shall be investigated for ponding. See Section 1611 for rain and ponding requirements and Section 1503.4 for roof drainage requirements.

f. The wind load is permitted to be taken as 0.42 times the “component and cladding” loads for the purpose of determining deflection limits herein. Where members support glass in accordance with Section 2403 using the deflection limit therein, the wind load shall be no less than 0.6 times the “component and cladding” loads for the purpose of determining deflection.

g. For steel structural members, the dead load shall be taken as zero.

h. For aluminum structural members or aluminum panels used in skylights and sloped glazing framing, roofs or walls of sunroom additions or patio covers not supporting edge of glass or aluminum sandwich panels, the total load deflection shall not exceed *1*/60. For continuous aluminum structural members supporting edge of glass, the total load deflection shall not exceed *1*/175 for each glass lite or *1*/60 for the entire length of the member, whichever is more stringent. For aluminum sandwich panels used in roofs or walls of sunroom additions or patio covers, the total load deflection shall not exceed *1*/120.

i. For cantilever members, *1* shall be taken as twice the length of the cantilever.

j. Screen surfaces shall be permitted to include a maximum of 25% solid flexible finishes.

S75-16 Back

TABLE 1604.5
RISK CATEGORY OF BUILDINGS AND OTHER STRUCTURES

RISK CATEGORY	NATURE OF OCCUPANCY
I	Buildings and other structures that represent a low hazard to human life in the event of failure, including but not limited to: • Agricultural facilities. • Certain temporary facilities. • Minor storage facilities. • Screen enclosures.
II	Buildings and other structures except those listed in Risk Categories I, III and IV
III	Buildings and other structures that represent a substantial hazard to human life in the event of failure, including but not limited to: • Buildings and other structures whose primary occupancy is public assembly with an occupant load greater than 300. • Buildings and other structures containing Group E occupancies with an occupant load greater than 250. • Buildings and other structures containing educational occupancies for students above he 12th grade with an occupant load greater than 500. • Group I-2 occupancies with an occupant load of 50 or more resident care recipients but not having surgery or emergency treatment facilities. • Group I-3 occupancies. • Any other occupancy with an occupant load greater than 5,000a. • Power-generating stations, water treatment facilities for potable water, waste water treatment facilities and other public utility facilities not

	included in Risk Category IV. • Buildings and other structures not included in Risk Category IV containing quantities of toxic or explosive materials that: Exceed maximum allowable quantities per control area as given in Table 307.1(1) or 307.1(2) or per outdoor control area in accordance with the ~~*International*~~ <u>*Florida*</u> *Fire* <u>*Prevention*</u> *Code*; and Are sufficient to pose a threat to the public if releasedb.
IV	Buildings and other structures designated as essential facilities, including but not limited to: • Group I-2 occupancies having surgery or emergency treatment facilities. • Fire, rescue, ambulance and police stations and emergency vehicle garages. • Designated earthquake, hurricane or other emergency shelters. • Designated emergency preparedness, communications and operations centers and other facilities required for emergency response. • Power-generating stations and other public utility facilities required as emergency backup facilities for Risk Category IV structures. • Buildings and other structures containing quantities of highly toxic materials that: Exceed maximum allowable quantities per control area as given in Table 307.1(2) or per outdoor control area in accordance with the ~~*International*~~ *Florida Fire* <u>*Prevention*</u> *Code*; and Are sufficient to pose a threat to the public if releasedb. • Aviation control towers, air traffic control centers and emergency aircraft hangars. • Buildings and other structures having critical national defense functions. • Water storage facilities and pump structures required to maintain water pressure for fire suppression.

a. For purposes of occupant load calculation, occupancies required by Table 1004.1.2 to use gross floor area calculations shall be permitted to use net floor areas to determine the total occupant load.

b. Where approved by the building official, the classification of buildings and other structures as Risk Category III or IV based on their quantities of toxic, highly toxic or explosive materials is permitted to be reduced to Risk Category II, provided it can be demonstrated by a hazard assessment in accordance with Section 1.5.3 of ASCE 7 that a release of the toxic, highly toxic or explosive materials is not sufficient to pose a threat to the public.

S104-16 Back

1609.1.1 Determination of wind loads.
Wind loads on every building or structure shall be determined in accordance with Chapters 26 to 30 of ASCE 7 or provisions of the alternate all-heights method in Section 1609.6. ~~The type of opening protection required, the ultimate design wind speed,~~ ~~V_{ult},~~ ~~and the exposure category for a site is permitted to be determined in accordance with Section 1609 or ASCE 7.~~ Wind shall be assumed to come from any horizontal direction and wind pressures shall be assumed to act normal to the surface considered.

Exceptions: (no change)

Exceptions:

1 - 4 No change

5. Designs using TIA-222 for antenna-supporting structures and antennas, provided the horizontal extent of Topographic Category 2 escarpments in Section 2.6.6.2 of TIA-222 shall be 16 times the height of the escarpment. <u>Design using this standard shall be permitted for communication tower and steel antenna support structures.</u>

6. No change.

<u>7. Wind loads for screen enclosures shall be determined in accordance with Section 2002.4.</u>

<u>8.</u> <u>Exposed mechanical equipment or appliances fastened to a roof or installed on the ground in compliance with the code using rated stands, platforms, curbs, slabs, walls, or other means are deemed to comply with the wind resistance requirements of the 2007 Florida Building Code, as amended. Further support or enclosure of such mechanical equipment or appliances is not required by a state or local official having authority to enforce the Florida Building Code.</u>

S150-16 Back

1709.5 Exterior window and door assemblies.

The design pressure rating of exterior windows and doors in buildings shall be determined in accordance with Section 1709.5.1 or 1709.5.2. For the purposes of this section, the required design pressure shall be determined using the allowable stress design load combinations of Section 1605.3.

Exception: Custom doors. Custom (one-of-a-kind) exterior door assemblies shall be tested by an approved testing laboratory or be designed and engineered in accordance with accepted engineering practices by a Florida Registered Design Professional. Signed and sealed copies of the rational analysis and calculations shall be provided to the building official upon permit application.