

BUILDING CONSTRUCTION AMENDMENTS

2020 GENERAL SESSION

STATE OF UTAH

Chief Sponsor: Casey Snider

Senate Sponsor: Curtis S. Bramble

LONG TITLE

General Description:

This bill amends the State Construction and Fire Codes Act and enacts provisions regarding the use of mass timber products.

Highlighted Provisions:

This bill:

- ▶ amends the definition of the State Construction Code to include standards for the use of mass timber products;
- ▶ enacts building standards for the use of mass timber products for residential and commercial building construction; and
- ▶ makes technical and conforming changes.

Money Appropriated in this Bill:

None

Other Special Clauses:

None

Utah Code Sections Affected:

AMENDS:

15A-1-102, as enacted by Laws of Utah 2011, Chapter 14

15A-2-101, as enacted by Laws of Utah 2011, Chapter 14

15A-2-102, as last amended by Laws of Utah 2016, Chapter 249

ENACTS:

15A-2a-101, Utah Code Annotated 1953

15A-2a-102, Utah Code Annotated 1953

- 30 [15A-2a-201](#), Utah Code Annotated 1953
- 31 [15A-2a-202](#), Utah Code Annotated 1953
- 32 [15A-2a-203](#), Utah Code Annotated 1953
- 33 [15A-2a-204](#), Utah Code Annotated 1953
- 34 [15A-2a-301](#), Utah Code Annotated 1953
- 35 [15A-2a-302](#), Utah Code Annotated 1953
- 36 [15A-2a-401](#), Utah Code Annotated 1953



38 *Be it enacted by the Legislature of the state of Utah:*

39 Section 1. Section **15A-1-102** is amended to read:

40 **15A-1-102. Definitions.**

41 As used in this title:

42 (1) "Board" means the Utah Fire Prevention Board created in Section [53-7-203](#).

43 (2) "Division" means the Division of Occupational and Professional Licensing created

44 in Section [58-1-103](#), except as provided in:

45 (a) Part 4, State Fire Code Administration Act; and

46 (b) Chapter 5, State Fire Code Act.

47 (3) "State Construction Code" means the State Construction Code adopted by:

48 (a) Chapter 2, Adoption of State Construction Code;

49 (b) Chapter 2a, Tall Wood Buildings of Mass Timber Construction Incorporated as

50 Part of State Construction Code;

51 [~~(b)~~] (c) Chapter 3, Statewide Amendments Incorporated as Part of State Construction
52 Code; [~~and~~]

53 [~~(c)~~] (d) Chapter 4, Local Amendments Incorporated as Part of State Construction
54 Code[-]; and

55 (e) Chapter 6, Additional Construction Requirements.

56 (4) "State Fire Code" means the State Fire Code adopted by Chapter 5, State Fire Code
57 Act.

58 (5) "Utah Code" means the Utah Code Annotated (1953), as amended.

59 Section 2. Section **15A-2-101** is amended to read:

60 **15A-2-101. Title -- Adoption of code.**

61 (1) This chapter is known as the "Adoption of State Construction Code."

62 (2) In accordance with Chapter 1, Part 2, State Construction Code Administration Act,
63 the Legislature repeals the State Construction Code in effect on July 1, 2010, and adopts the
64 following as the State Construction Code:

65 (a) this chapter;

66 (b) Chapter 2a, Tall Wood Buildings of Mass Timber Construction Incorporated as
67 Part of State Construction Code;

68 [~~(b)~~] (c) Chapter 3, Statewide Amendments Incorporated as Part of State Construction
69 Code; [~~and~~]

70 [~~(c)~~] (d) Chapter 4, Local Amendments Incorporated as Part of State Construction
71 Code[~~;~~]; and

72 (e) Chapter 6, Additional Construction Requirements.

73 Section 3. Section **15A-2-102** is amended to read:

74 **15A-2-102. Definitions.**

75 As used in this chapter [~~and~~], Chapter 2a, Tall Wood Buildings of Mass Timber
76 Construction Incorporated as Part of State Construction Code, Chapter 3, Statewide
77 Amendments Incorporated as Part of State Construction Code, and Chapter 4, Local
78 Amendments Incorporated as Part of State Construction Code:

79 (1) "HUD Code" means the Federal Manufactured Housing Construction and Safety
80 Standards Act, as issued by the Department of Housing and Urban Development and published
81 in 24 C.F.R. Parts 3280 and 3282 (as revised April 1, 1990).

82 (2) "IBC" means the edition of the International Building Code adopted under Section
83 **15A-2-103**.

84 (3) "IEBC" means the edition of the International Existing Building Code adopted
85 under Section **15A-2-103**.

86 (4) "IECC" means the edition of the International Energy Conservation Code adopted
87 under Section 15A-2-103.

88 (5) "IFGC" means the edition of the International Fuel Gas Code adopted under
89 Section 15A-2-103.

90 (6) "IMC" means the edition of the International Mechanical Code adopted under
91 Section 15A-2-103.

92 (7) "IPC" means the edition of the International Plumbing Code adopted under Section
93 15A-2-103.

94 (8) "IRC" means the edition of the International Residential Code adopted under
95 Section 15A-2-103.

96 (9) "NEC" means the edition of the National Electrical Code adopted under Section
97 15A-2-103.

98 (10) "UWUI" means the edition of the Utah Wildland Urban Interface Code adopted
99 under Section 15A-2-103.

100 Section 4. Section 15A-2a-101 is enacted to read:

101 **CHAPTER 2a. TALL WOOD BUILDINGS OF MASS TIMBER CONSTRUCTION**
102 **INCORPORATED AS PART OF STATE CONSTRUCTION CODE**

103 **Part 1. General Provisions**

104 **15A-2a-101. Title.**

105 (1) This chapter is known as "Tall Wood Buildings of Mass Timber Construction
106 Incorporated as Part of State Construction Code."

107 (2) This chapter establishes building standards for the use of mass timber products in
108 residential and commercial building construction and is applicable statewide.

109 (3) Where this chapter replaces a section of the IBC that Chapter 3, Statewide
110 Amendments Incorporated as Part of State Construction Code, or Chapter 4, Local
111 Amendments Incorporated as Part of State Construction Code, amends, the amendment in
112 Chapter 3 or 4 shall apply to the IBC replacement in this chapter.

113 Section 5. Section 15A-2a-102 is enacted to read:

114 **15A-2a-102. Definitions.**

115 As used in this chapter:

116 (1) "Mass timber" means a structural element of Type IV construction primarily of
117 solid, built-up, panelized or engineered wood products that meet minimum cross section
118 dimensions of Type IV construction.

119 (2) "Non-combustible protection" (for mass timber) means non-combustible material in
120 accordance with IBC Section 703.5, designed to increase the fire-resistance rating and delay the
121 combustion of mass timber.

122 (3) "Wall, load-bearing" means any wall meeting either of the following classifications:

123 (a) any metal or wood stud wall that supports more than 100 pounds per linear foot
124 (1459 N/m) of vertical load in addition to its own weight; or

125 (b) any masonry or concrete, or mass timber wall that supports more than 200 pounds
126 per linear foot (2919 N/m) of vertical load in addition to its own weight.

127 Section 6. Section **15A-2a-201** is enacted to read:

128 **Part 2. Statewide Amendments to International Building Code**

129 **15A-2a-201. Amendments to Chapter 4 of IBC.**

130 In IBC, Section 403.3.2, is deleted and replaced with the following: "403.3.3 Water
131 supply to required fire pumps. In all buildings that are more than 420 feet (128m) in building
132 height, and buildings of Type IV-A and IV-B construction that are more than 120 feet in
133 building height, required fire pumps shall be supplied by connections to not fewer than two
134 water mains located in different streets. Separate supply piping shall be provided between each
135 connection to the water main and the pumps. Each connection and the supply piping between
136 the connection and the pumps shall be sized to supply the flow and pressure required for the
137 pumps to operate.

138 Exception: Two connections to the same main shall be permitted provided that the main
139 is valved such that an interruption can be isolated so that the water supply will continue
140 without interruption through not fewer than one of the connections."

141 Section 7. Section **15A-2a-202** is enacted to read:

142 **15A-2a-202. Amendments to Chapter 5 of IBC.**

143 (1) In IBC, Table 504.3, is deleted and replaced with the following: "Table 504.3

144 **ALLOWABLE BUILDING HEIGHT IN FEET ABOVE GRADE PLANE**

145 <u>OCCUPANCY CLASSIFICATION</u>	<u>TYPE OF CONSTRUCTION</u>												
	<u>SEE FOOTNOTES</u>	<u>TYPE I</u>		<u>TYPE II</u>		<u>TYPE III</u>		<u>TYPE IV</u>				<u>TYPE V</u>	
		<u>A</u>	<u>B</u>	<u>A</u>	<u>B</u>	<u>A</u>	<u>B</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>HT</u>	<u>A</u>	<u>B</u>
146 <u>A, B, E, F, M, S, U</u>	<u>NS^b</u>	<u>UL</u>	<u>160</u>	<u>65</u>	<u>55</u>	<u>65</u>	<u>55</u>	<u>65</u>	<u>65</u>	<u>65</u>	<u>65</u>	<u>50</u>	<u>40</u>
	<u>S</u>	<u>UL</u>	<u>180</u>	<u>85</u>	<u>75</u>	<u>85</u>	<u>75</u>	<u>180</u>	<u>120</u>	<u>85</u>	<u>85</u>	<u>70</u>	<u>60</u>
147 <u>H-1, H-2, H-3, H-5</u>	<u>NS^{c, d}</u>	<u>UL</u>	<u>160</u>	<u>65</u>	<u>55</u>	<u>65</u>	<u>55</u>	<u>120</u>	<u>90</u>	<u>65</u>	<u>65</u>	<u>50</u>	<u>40</u>
	<u>S</u>		<u>180</u>	<u>85</u>	<u>75</u>	<u>85</u>	<u>75</u>	<u>140</u>	<u>100</u>	<u>85</u>	<u>85</u>	<u>70</u>	<u>60</u>
148 <u>H-4</u>	<u>NS^{c, d}</u>	<u>UL</u>	<u>160</u>	<u>65</u>	<u>55</u>	<u>65</u>	<u>55</u>	<u>65</u>	<u>65</u>	<u>65</u>	<u>65</u>	<u>50</u>	<u>40</u>
	<u>S</u>	<u>UL</u>	<u>180</u>	<u>85</u>	<u>75</u>	<u>85</u>	<u>75</u>	<u>140</u>	<u>100</u>	<u>85</u>	<u>85</u>	<u>70</u>	<u>60</u>
149 <u>I-1 Condition 1, I-3</u>	<u>NS^{d, e}</u>	<u>UL</u>	<u>160</u>	<u>65</u>	<u>55</u>	<u>65</u>	<u>55</u>	<u>65</u>	<u>65</u>	<u>65</u>	<u>65</u>	<u>50</u>	<u>40</u>
	<u>S</u>	<u>UL</u>	<u>180</u>	<u>85</u>	<u>75</u>	<u>85</u>	<u>75</u>	<u>180</u>	<u>120</u>	<u>85</u>	<u>85</u>	<u>70</u>	<u>60</u>
150 <u>I-1 Condition 2, I-2</u>	<u>NS^{d, e, f}</u>	<u>UL</u>	<u>160</u>	<u>65</u>	<u>55</u>	<u>65</u>	<u>55</u>	<u>65</u>	<u>65</u>	<u>65</u>	<u>65</u>	<u>50</u>	<u>40</u>
	<u>S</u>	<u>UL</u>	<u>180</u>	<u>85</u>		<u>65</u>	<u>55</u>	<u>65</u>	<u>65</u>	<u>65</u>	<u>65</u>	<u>50</u>	<u>40</u>
151 <u>I-4</u>	<u>NS^{d, g}</u>	<u>UL</u>	<u>160</u>	<u>65</u>	<u>55</u>	<u>65</u>	<u>55</u>	<u>65</u>	<u>65</u>	<u>65</u>	<u>65</u>	<u>50</u>	<u>40</u>
	<u>S</u>	<u>UL</u>	<u>180</u>	<u>85</u>	<u>75</u>	<u>85</u>	<u>75</u>	<u>180</u>	<u>120</u>	<u>85</u>	<u>85</u>	<u>70</u>	<u>60</u>
152 <u>R^h</u>	<u>NS^d</u>	<u>UL</u>	<u>160</u>	<u>65</u>	<u>55</u>	<u>65</u>	<u>55</u>	<u>65</u>	<u>65</u>	<u>65</u>	<u>65</u>	<u>50</u>	<u>40</u>
	<u>S13D</u>	<u>60</u>	<u>60</u>	<u>60</u>	<u>60</u>	<u>60</u>	<u>60</u>	<u>60</u>	<u>60</u>	<u>60</u>	<u>60</u>	<u>50</u>	<u>40</u>
	<u>S13R</u>	<u>60</u>	<u>60</u>	<u>60</u>	<u>60</u>	<u>60</u>	<u>60</u>	<u>60</u>	<u>60</u>	<u>60</u>	<u>60</u>	<u>60</u>	<u>60</u>
	<u>S</u>	<u>UL</u>	<u>180</u>	<u>85</u>	<u>75</u>	<u>85</u>	<u>75</u>	<u>180</u>	<u>120</u>	<u>85</u>	<u>85</u>	<u>70</u>	<u>60</u>

153 For SI: 1 foot = 304.8 mm

154 UL = Unlimited; NS = Buildings not equipped throughout with an automatic sprinkler
 155 system; S = Buildings equipped throughout with an automatic sprinkler system installed in
 156 accordance with Section 903.3.1.1; S13R = Buildings equipped throughout with an automatic
 157 sprinkler system installed in accordance with Section 903.3.1.2; S13D = Buildings equipped
 158 throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.3.

159 a. See Chapters 4 and 5 for specific exceptions to the allowable height in this chapter.

160 b. See Section 903.2 for the minimum thresholds for protection by an automatic
 161 sprinkler system for specific occupancies.

162 c. New Group H occupancies are required to be protected by an automatic sprinkler
 163 system in accordance with Section 903.2.5.

164 d. The NS value is only for use in evaluation of existing building area in accordance
 165 with the IEBC.

166 e. New Group I-1 and I-3 occupancies are required to be protected by an automatic
 167 sprinkler system in accordance with Section 903.2.6. For new Group I-1 occupancies,
 168 Condition 1, see Exception 1 of Section 903.2.6.

169 f. New and existing Group I-2 occupancies are required to be protected by an automatic
 170 sprinkler system in accordance with Section 903.2.6 and Section 1103.5 of the International
 171 Fire Code.

172 g. New Group I-4 occupancies see Exceptions 2 and 3 of Section 903.2.6.

173 h. New Group R occupancies are required to be protected by an automatic sprinkler
 174 system in accordance with Section 903.2.8."

175 (2) In IBC, Table 504.4, "Allowable Number of Stories Above Grade Plane^{a, b}" delete
 176 Type IV and replace it with the following, in relation to the occupancy classification and
 177 footnotes as indicated:

<u>OCCUPANCY CLASSIFICATION</u>	<u>TYPE OF CONSTRUCTION</u>				
	<u>SEE FOOTNOTES</u>	<u>TYPE IV</u>			
		<u>A</u>	<u>B</u>	<u>C</u>	<u>HT</u>
<u>A-1</u>	<u>NS</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
	<u>S</u>	<u>9</u>	<u>6</u>	<u>4</u>	<u>4</u>
<u>A-2</u>	<u>NS</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
	<u>S</u>	<u>18</u>	<u>12</u>	<u>6</u>	<u>4</u>
<u>A-3</u>	<u>NS</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
	<u>S</u>	<u>18</u>	<u>12</u>	<u>6</u>	<u>4</u>
<u>A-4</u>	<u>NS</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
	<u>S</u>	<u>18</u>	<u>12</u>	<u>6</u>	<u>4</u>
<u>A-5</u>	<u>NS</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>UL</u>
	<u>S</u>	<u>UL</u>	<u>UL</u>	<u>UL</u>	<u>UL</u>
<u>B</u>	<u>NS</u>	<u>5</u>	<u>5</u>	<u>5</u>	<u>5</u>
	<u>S</u>	<u>18</u>	<u>12</u>	<u>9</u>	<u>6</u>
<u>E</u>	<u>NS</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
	<u>S</u>	<u>9</u>	<u>6</u>	<u>4</u>	<u>4</u>

186	F-1	NS	3	3	3	4
		S	10	7	5	5
187	F-2	NS	5	5	5	5
		S	12	8	6	6
188	H-1	NS ^{c, d}	NP	NP	NP	1
		S	1	1	1	
189	H-2	NS ^{c, d}	1	1	1	2
		S	2	2	2	
190	H-3	NS ^{c, d}	3	3	3	4
		S	4	4	4	
191	H-4	NS ^{c, d}	5	5	5	5
		S	8	7	6	6
192	H-5	NS ^{c, d}	2	2	2	3
		S	3	3	3	
193	I-1 Condition 1	NS ^{d, e}	4	4	4	4
		S	10	7	5	5
194	I-1 Condition 2	NS ^{d, e}	3	3	3	4
		S	10	6	4	
195	I-2	NS ^{d, f}	NP	NP	NP	1
		S	7	5	1	
196	I-3	NS ^{d, e}	2	2	2	2
		S	7	5	3	3
197	I-4	NS ^{d, g}	3	3	3	3
		S	9	6	4	4
198	M	NS	4	4	4	4
		S	12	8	6	5
199	R-1 ^h	NS ^d	4	4	4	4
		S13R				
		S	18	12	8	5
200	R-2 ^h	NS ^d	4	4	4	4
		S13R				
		S	18	12	8	5
201	R-3 ^h	NS ^d	4	4	4	4
		S13D				
		S13R				
		S	18	12	5	5
202	R-4 ^h	NS ^d	4	4	4	4
		S13D				
		S13R				
		S	18	12	5	5

203	<u>S-1</u>	<u>NS</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>
204		<u>S</u>	<u>10</u>	<u>7</u>	<u>5</u>	<u>5</u>
205	<u>S-2</u>	<u>NS</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>
206		<u>S</u>	<u>12</u>	<u>8</u>	<u>5</u>	<u>5</u>
207	<u>U</u>	<u>NS</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>
208		<u>S</u>	<u>9</u>	<u>6</u>	<u>5</u>	<u>5</u>

209 UL = Unlimited; NP = Not Permitted; NS = Buildings not equipped throughout with an
 210 automatic sprinkler system; S = Buildings equipped throughout with an automatic sprinkler
 211 system installed in accordance with Section 903.3.1.1; S13R = Buildings equipped throughout
 212 with an automatic sprinkler system installed in accordance with Section 903.3.1.2; S13D =
 213 Buildings equipped throughout with an automatic sprinkler system installed in accordance with
 214 Section 903.3.1.3.

215 a. See Chapters 4 and 5 for specific exceptions to the allowable height in this chapter.

216 b. See Section 903.2 for the minimum thresholds for protection by an automatic
 217 sprinkler system for specific occupancies.

218 c. New Group H occupancies are required to be protected by an automatic sprinkler
 219 system in accordance with Section 903.2.5.

220 d. The NS value is only for use in evaluation of existing building height in accordance
 221 with the IEBC.

222 e. New Group I-1 and I-3 occupancies are required to be protected by an automatic
 223 sprinkler system in accordance with Section 903.2.6. For new Group I-1 occupancies,
 224 Condition 1, see Exception 1 of Section 903.2.6.

225 f. New and existing Group I-2 occupancies are required to be protected by an automatic
 226 sprinkler system in accordance with Sections 903.2.6 and 1103.5 of the International Fire
 227 Code.

228 g. For new Group I-4 occupancies, see Exceptions 2 and 3 of Section 903.2.6.

229 h. New Group R occupancies are required to be protected by an automatic sprinkler
 230 system in accordance with Section 903.2.8."

231 (3) In IBC, Table 506.2, "Allowable Area Factor (A_t = NS, S1, S13R, S13D or SM, as
 232 applicable) in Square Feet^{a, b}" delete Type IV and replace it with the following, in relation to the

233 occupancy classification and footnotes as indicated:

234	<u>"OCCUPANCY CLASSIFICATION</u>	<u>SEE FOOTNOTES</u>	<u>TYPE OF CONSTRUCTION</u>			
			<u>TYPE IV</u>			
			<u>A</u>	<u>B</u>	<u>C</u>	<u>HT</u>
235	<u>A-1</u>	<u>NS</u>	<u>45,000</u>	<u>30,000</u>	<u>18,750</u>	<u>15,000</u>
		<u>S1</u>	<u>180,000</u>	<u>120,000</u>	<u>75,000</u>	<u>60,000</u>
		<u>SM</u>	<u>135,000</u>	<u>90,000</u>	<u>56,250</u>	<u>45,000</u>
236	<u>A-2</u>	<u>NS</u>	<u>45,000</u>	<u>30,000</u>	<u>18,750</u>	<u>15,000</u>
		<u>S1</u>	<u>180,000</u>	<u>120,000</u>	<u>75,000</u>	<u>60,000</u>
		<u>SM</u>	<u>135,000</u>	<u>90,000</u>	<u>56,250</u>	<u>45,000</u>
237	<u>A-3</u>	<u>NS</u>	<u>45,000</u>	<u>30,000</u>	<u>18,750</u>	<u>15,000</u>
		<u>S1</u>	<u>180,000</u>	<u>120,000</u>	<u>75,000</u>	<u>60,000</u>
		<u>SM</u>	<u>135,000</u>	<u>90,000</u>	<u>56,250</u>	<u>45,000</u>
238	<u>A-4</u>	<u>NS</u>	<u>45,000</u>	<u>30,000</u>	<u>18,750</u>	<u>15,000</u>
		<u>S1</u>	<u>180,000</u>	<u>120,000</u>	<u>75,000</u>	<u>60,000</u>
		<u>SM</u>	<u>135,000</u>	<u>90,000</u>	<u>56,250</u>	<u>45,000</u>
239	<u>A-5</u>	<u>NS</u>	<u>UL</u>	<u>UL</u>	<u>UL</u>	<u>UL</u>
		<u>S1</u>				
		<u>SM</u>				
240	<u>B</u>	<u>NS</u>	<u>108,000</u>	<u>72,000</u>	<u>45,000</u>	<u>36,000</u>
		<u>S1</u>	<u>432,000</u>	<u>288,000</u>	<u>180,000</u>	<u>144,000</u>
		<u>SM</u>	<u>324,000</u>	<u>216,000</u>	<u>135,000</u>	<u>108,000</u>
241	<u>E</u>	<u>NS</u>	<u>76,500</u>	<u>51,000</u>	<u>31,875</u>	<u>25,500</u>
		<u>S1</u>	<u>306,000</u>	<u>204,000</u>	<u>127,500</u>	<u>102,000</u>
		<u>SM</u>	<u>229,500</u>	<u>153,000</u>	<u>95,625</u>	<u>76,500</u>

242	F-1	<u>NS</u>	<u>100,500</u>	<u>67,000</u>	<u>41,875</u>	<u>33,500</u>
		<u>S1</u>	<u>402,000</u>	<u>268,000</u>	<u>167,500</u>	<u>134,000</u>
		<u>SM</u>	<u>301,500</u>	<u>201,000</u>	<u>125,625</u>	<u>100,500</u>
243	F-2	<u>NS</u>	<u>151,500</u>	<u>101,000</u>	<u>63,125</u>	<u>50,500</u>
		<u>S1</u>	<u>606,000</u>	<u>404,000</u>	<u>252,500</u>	<u>202,000</u>
		<u>SM</u>	<u>454,500</u>	<u>303,000</u>	<u>189,375</u>	<u>151,500</u>
244	H-1	<u>NS^c</u>	<u>10,500</u>	<u>10,500</u>	<u>10,500</u>	<u>10,500</u>
		<u>S1</u>				
245	H-2	<u>NS^c</u>	<u>10,500</u>	<u>10,500</u>	<u>10,500</u>	<u>10,500</u>
		<u>S1</u>				
		<u>SM</u>				
246	H-3	<u>NS^c</u>	<u>25,500</u>	<u>25,500</u>	<u>25,500</u>	<u>25,500</u>
		<u>S1</u>				
		<u>SM</u>				
247	H-4	<u>NS^{c, d}</u>	<u>72,000</u>	<u>54,000</u>	<u>40,500</u>	<u>36,000</u>
		<u>S1</u>	<u>288,000</u>	<u>216,000</u>	<u>162,000</u>	<u>144,000</u>
		<u>SM</u>	<u>216,000</u>	<u>162,000</u>	<u>121,500</u>	<u>108,000</u>
248	H-5	<u>NS^{c, d}</u>	<u>72,000</u>	<u>54,000</u>	<u>40,500</u>	<u>36,000</u>
		<u>S1</u>	<u>288,000</u>	<u>216,000</u>	<u>162,000</u>	<u>144,000</u>
		<u>SM</u>	<u>216,000</u>	<u>162,000</u>	<u>121,500</u>	<u>108,000</u>
249	I-1	<u>NS^{d, e}</u>	<u>54,000</u>	<u>36,000</u>	<u>18,000</u>	<u>18,000</u>
		<u>S1</u>	<u>216,000</u>	<u>144,000</u>	<u>72,000</u>	<u>72,000</u>
		<u>SM</u>	<u>162,000</u>	<u>108,000</u>	<u>54,000</u>	<u>54,000</u>
250	I-2	<u>NS^{d, f}</u>	<u>36,000</u>	<u>24,000</u>	<u>12,000</u>	<u>12,000</u>
		<u>S1</u>	<u>144,000</u>	<u>96,000</u>	<u>48,000</u>	<u>48,000</u>
		<u>SM</u>	<u>108,000</u>	<u>72,000</u>	<u>36,000</u>	<u>36,000</u>

251	I-3	<u>NS^{d, e}</u>	<u>36,000</u>	<u>24,000</u>	<u>12,000</u>	<u>12,000</u>
		<u>S1</u>	<u>144,000</u>	<u>96,000</u>	<u>48,000</u>	<u>48,000</u>
		<u>SM</u>	<u>108,000</u>	<u>72,000</u>	<u>36,000</u>	<u>36,000</u>
252	I-4	<u>NS^{d, g}</u>	<u>76,500</u>	<u>51,000</u>	<u>25,500</u>	<u>25,500</u>
		<u>S1</u>	<u>306,000</u>	<u>204,000</u>	<u>102,000</u>	<u>102,000</u>
		<u>SM</u>	<u>229,000</u>	<u>153,000</u>	<u>76,500</u>	<u>76,500</u>
253	M	<u>NS</u>	<u>61,500</u>	<u>41,000</u>	<u>25,625</u>	<u>20,500</u>
		<u>S1</u>	<u>246,000</u>	<u>164,000</u>	<u>102,500</u>	<u>82,000</u>
		<u>SM</u>	<u>184,500</u>	<u>123,000</u>	<u>76,875</u>	<u>61,500</u>
254	R-1 ^h	<u>NS^d</u>	<u>61,500</u>	<u>41,000</u>	<u>25,625</u>	<u>20,500</u>
		<u>S13R</u>				
		<u>S1</u>	<u>246,000</u>	<u>164,000</u>	<u>102,500</u>	<u>82,000</u>
		<u>SM</u>	<u>184,500</u>	<u>123,000</u>	<u>76,875</u>	<u>61,500</u>
255	R-2 ^h	<u>NS^d</u>	<u>61,500</u>	<u>41,000</u>	<u>25,625</u>	<u>20,500</u>
		<u>S13R</u>				
		<u>S1</u>	<u>246,000</u>	<u>164,000</u>	<u>102,500</u>	<u>82,000</u>
		<u>SM</u>	<u>184,500</u>	<u>123,000</u>	<u>76,875</u>	<u>61,500</u>
256	R-3 ^h	<u>NS^d</u>	<u>UL</u>	<u>UL</u>	<u>UL</u>	<u>UL</u>
		<u>S13D</u>				
		<u>S13R</u>				
		<u>S1</u>				
		<u>SM</u>				
257	R-4 ^h	<u>NS^d</u>	<u>61,500</u>	<u>41,000</u>	<u>25,625</u>	<u>20,500</u>
		<u>S13D</u>				
		<u>S13R</u>				
		<u>S1</u>	<u>246,000</u>	<u>164,000</u>	<u>102,500</u>	<u>82,000</u>
		<u>SM</u>	<u>184,500</u>	<u>123,000</u>	<u>76,875</u>	<u>61,500</u>

		<u>NS</u>	<u>76,500</u>	<u>51,000</u>	<u>31,875</u>	<u>25,500</u>
258	<u>S-1</u>	<u>S1</u>	<u>306,000</u>	<u>204,000</u>	<u>127,500</u>	<u>102,000</u>
		<u>SM</u>	<u>229,500</u>	<u>153,000</u>	<u>95,625</u>	<u>76,500</u>
		<u>NS</u>	<u>115,500</u>	<u>77,000</u>	<u>48,125</u>	<u>38,500</u>
259	<u>S-2</u>	<u>S1</u>	<u>462,000</u>	<u>308,000</u>	<u>192,500</u>	<u>154,000</u>
		<u>SM</u>	<u>346,500</u>	<u>308,000</u>	<u>144,375</u>	<u>115,500</u>
		<u>NSⁱ</u>	<u>54,000</u>	<u>36,000</u>	<u>22,500</u>	<u>18,000</u>
260	<u>U</u>	<u>S1</u>	<u>216,000</u>	<u>144,000</u>	<u>90,000</u>	<u>72,000</u>
		<u>SM</u>	<u>162,000</u>	<u>108,000</u>	<u>67,500</u>	<u>54,000</u>

261 For SI: 1 square foot = 0.0929 m².

262 UL = Unlimited; NP = Not Permitted; NS = Buildings not equipped throughout with an
 263 automatic sprinkler system; S1 = Buildings a maximum of one story above grade plane
 264 equipped throughout with an automatic sprinkler system installed in accordance with Section
 265 903.3.1.1; SM = Buildings two or more stories above grade plane equipped throughout with an
 266 automatic sprinkler system installed in accordance with Section 903.3.1.1; S13R = Buildings
 267 equipped throughout with an automatic sprinkler system installed in accordance with Section
 268 903.3.1.2; S13D = Buildings equipped throughout with an automatic sprinkler system installed
 269 in accordance with Section 903.3.1.3.

270 a. See Chapters 4 and 5 for specific exceptions to the allowable height in this chapter.

271 b. See Section 903.2 for the minimum thresholds for protection by an automatic
 272 sprinkler system for specific occupancies.

273 c. New Group H occupancies are required to be protected by an automatic sprinkler
 274 system in accordance with Section 903.2.5.

275 d. The NS value is only for use in evaluation of existing building area in accordance
 276 with the IEBC.

277 e. New Group I-1 and I-3 occupancies are required to be protected by an automatic
 278 sprinkler system in accordance with Section 903.2.6. For new Group I-1 occupancies,

279 Condition 1, see Exception 1 of Section 903.2.6.

280 f. New and existing Group I-2 occupancies are required to be protected by an automatic
281 sprinkler system in accordance with Section 903.2.6 and Section 1103.5 of the International
282 Fire Code.

283 g. For New Group I-4 occupancies see Exceptions 2 and 3 of Section 903.2.6.

284 h. New Group R occupancies are required to be protected by an automatic sprinkler
285 system in accordance with Section 903.2.8.

286 i. The maximum allowable area for a single-story nonsprinklered Group U greenhouse
287 is permitted to be 9,000 square feet, or the allowable area shall be permitted to comply with
288 Table C102.1 of Appendix C."

289 (4) In IBC, Section 508.4.4 is deleted and replaced with the following: "508.4.4
290 Separation. Individual occupancies shall be separated from adjacent occupancies in accordance
291 with Table 508.4."

292 (5) In IBC, Section 508.4.4.1 is deleted and replaced with the following: "508.4.4.1
293 Construction. Required separations shall be fire barriers constructed in accordance with Section
294 707 or horizontal assemblies constructed in accordance with Section 711, or both, so as to
295 completely separate adjacent occupancies. Mass timber elements serving as fire barriers or
296 horizontal assemblies to separate occupancies in Type IV-B or IV-C construction shall be
297 separated from the interior of the building with an approved thermal barrier consisting of a
298 minimum of 1/2 inch (12.7 mm) gypsum board or a material that is tested in accordance with
299 and meets the acceptance criteria of both the Temperature Transmission Fire Test and the
300 Integrity Fire Test of NFPA 275."

301 (6) In IBC, Section 509, a new section is added as follows: "509.4.1.1 Type IV-B and
302 IV-C construction. Where Table 509 specifies a fire-resistance-rated separation, mass timber
303 elements serving as fire barriers or a horizontal assembly in Type IV-B or IV-C construction
304 shall be separated from the interior of the incidental use with an approved thermal barrier
305 consisting of a minimum of 1/2 inch (12.7 mm) gypsum board or a material that is tested in
306 accordance with and meets the acceptance criteria of both the Temperature Transmission Fire

307 Test and the Integrity Fire Test of NFPA 275."

308 Section 8. Section **15A-2a-203** is enacted to read:

309 **15A-2a-203. Amendments to Chapter 6 of IBC.**

310 (1) In IBC, Table 601 is deleted and replaced with the following:

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

BUILDING ELEMENT	TYPE I		TYPE II		TYPE III		TYPE IV				TYPE V		
	<u>A</u>	<u>B</u>	<u>A</u>	<u>B</u>	<u>A</u>	<u>B</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>HT</u>	<u>A</u>	<u>B</u>	
313 <u>Primary structural frame^f</u> 314 <u>(see Section 202)</u>	<u>3^{a, b}</u>	<u>2^{a, b}</u>	<u>1b</u>	<u>0</u>	<u>1b</u>	<u>0</u>	<u>3a</u>	<u>2a</u>	<u>2a</u>	<u>HT</u>	<u>1b</u>	<u>0</u>	
315 <u>Bearing walls</u> <u>Exterior^{e, f}</u>	<u>3</u>	<u>2</u>	<u>1</u>	<u>0</u>	<u>2</u>	<u>2</u>	<u>3</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>1</u>	<u>0</u>	
<u>Interior</u>	<u>3^a</u>	<u>2^a</u>	<u>1</u>	<u>0</u>	<u>1</u>	<u>0</u>	<u>3</u>	<u>2</u>	<u>2</u>	<u>1/HT</u>	<u>1</u>	<u>0</u>	
316 <u>Nonbearing walls and</u> <u>partitions Exterior</u>	<u>See Table 602</u>												
317 <u>Nonbearing walls and</u> <u>partitions Interior^d</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>See</u> <u>Section</u> <u>2304.1</u> <u>1.2</u>	<u>0</u>	<u>0</u>
318 <u>Floor construction and</u> <u>associated secondary</u> <u>members (see Section</u> <u>202)</u>	<u>2</u>	<u>2</u>	<u>1</u>	<u>0</u>	<u>1</u>	<u>0</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>HT</u>	<u>1</u>	<u>0</u>	
319 <u>Roof construction and</u> <u>associated secondary</u> <u>members (see Section</u> <u>202)</u>	<u>1^{1/2 b}</u>	<u>1^{b, c}</u>	<u>1^{b, c}</u>	<u>0^c</u>	<u>1^{b, c}</u>	<u>0</u>	<u>1^{1/2}</u>	<u>1</u>	<u>1</u>	<u>HT</u>	<u>1^{b, c}</u>	<u>0</u>	

320 For SI: 1 foot = 304.8 mm.

321 a. Roof supports: Fire-resistance ratings of primary structural frame and bearing walls
 322 are permitted to be reduced by 1 hour where supporting a roof only.

323 b. Except in Group F-1, H, M and S-1 occupancies, fire protection of structural
 324 members in roof construction shall not be required, including protection of primary structural
 325 frame members, roof framing and decking where every part of the roof construction is 20 feet
 326 or more above any floor immediately below. Fire-retardant-treated wood members shall be
 327 allowed to be used for such unprotected members.

328 c. In all occupancies, heavy timber complying with Section 2304.11 shall be allowed
 329 where a 1-hour or less fire-resistance rating is required.

330 d. Not less than the fire-resistance rating required by other sections of this code.

331 e. Not less than the fire-resistance rating based on fire separation distance (see Table
 332 602).

333 f. Not less than the fire-resistance rating as referenced in Section 704.10."

334 (2) In IBC, Table 602 is deleted and replaced with the following:

335 "TABLE 602 FIRE-RESISTANCE RATING REQUIREMENTS FOR EXTERIOR WALLS
 336 BASED ON FIRE SEPARATION DISTANCE ^{a, d, g}

<u>Fire Separation</u> <u>Distance = X</u> <u>(feet)</u>	<u>TYPE OF</u> <u>CONSTRUCTI</u> <u>ON</u>	<u>OCCUPANC</u> <u>Y GROUP H^e</u>	<u>OCCUPANCY</u> <u>GROUP F-1, M,</u> <u>S-1^f</u>	<u>OCCUPANCY</u> <u>GROUP A, B,</u> <u>F-2, I, Rⁱ, S-2,</u> <u>U^h</u>
<u>< 5^b</u>	<u>All</u>	<u>3</u>	<u>2</u>	<u>1</u>
<u>5 ≤ X < 10</u>	<u>IA, IVA</u> <u>Others</u>	<u>3</u> <u>2</u>	<u>2</u> <u>1</u>	<u>11</u>
<u>10 ≤ X < 30</u>	<u>IA, IB, IVA,</u> <u>IVB</u> <u>IIB, VB</u> <u>Others</u>	<u>2</u> <u>1</u> <u>1</u>	<u>1</u> <u>0</u> <u>1</u>	<u>1^c</u> <u>0</u> <u>1^c</u>
<u>X ≥ 30</u>	<u>All</u>	<u>0</u>	<u>0</u>	<u>0</u>

342 For SI: 1 foot = 304.8 mm.

- 343 a. Load-bearing exterior walls shall also comply with the fire-resistance rating
344 requirements of Table 601.
- 345 b. See Section 706.1.1 for party walls.
- 346 c. Open parking garages complying with Section 406 shall not be required to have a
347 fire-resistance rating.
- 348 d. The fire-resistance rating of an exterior wall is determined based upon the fire
349 separation distance of the exterior wall and the story in which the wall is located.
- 350 e. For special requirements for Group H occupancies, see Section 415.6.
- 351 f. For special requirements for Group S aircraft hangars, see Section 412.3.1.
- 352 g. Where Table 705.8 permits nonbearing exterior walls with unlimited area of
353 unprotected openings, the required fire-resistance rating for the exterior walls is 0 hours.
- 354 h. For a building containing only a Group U occupancy private garage or carport, the
355 exterior wall shall not be required to have a fire-resistance rating where the fire separation
356 distance is 5 feet (1523 mm) or greater.
- 357 i. For a Group R-3 building of Type II-B or Type V-B construction, the exterior wall
358 shall not be required to have a fire-resistance rating where the fire separation distance is 5 feet
359 (1523 mm) or greater."
- 360 (3) In IBC, Section 602.4 is deleted and replaced with the following: "602.4 Type IV.
361 Type IV construction is that type of construction in which the building elements are mass
362 timber or non-combustible materials and have fire-resistance ratings in accordance with Table
363 601. Mass timber elements shall meet the fire-resistance rating requirements of this section
364 based on either the fire-resistance rating of the non-combustible protection, the mass timber, or
365 a combination of both and shall be determined in accordance with Section 703.2 or 703.3. The
366 minimum dimensions and permitted materials for building elements shall comply with the
367 provisions of this section and Section 2304.11. Mass timber elements of Types IV-A, IV-B and
368 IV-C construction shall be protected with non-combustible protection applied directly to the
369 mass timber in accordance with Sections 602.4.1 through 602.4.3. The time assigned to the
370 non-combustible protection shall be determined in accordance with Section 703.8 and comply

371 with Section 722.7.

372 Cross-laminated timber shall be labeled as conforming to PRG 320-18 as referenced in
373 Section 2303.1.4.

374 Exterior load-bearing walls and nonload-bearing walls shall be mass timber
375 construction, or shall be of non-combustible construction.

376 Exception: Exterior load-bearing walls and nonload-bearing walls of Type IV-HT
377 Construction in accordance with Section 602.4.4.

378 The interior building elements, including nonload-bearing walls and partitions, shall be
379 of mass timber construction or of non-combustible construction.

380 Exception: Interior building elements and nonload-bearing walls and partitions of Type
381 IV-HT Construction in accordance with Section 602.4.4.

382 Combustible concealed spaces are not permitted except as otherwise indicated in
383 Sections 602.4.1 through 602.4.4. Combustible stud spaces within light frame walls of Type
384 IV-HT construction shall not be considered concealed spaces, but shall comply with Section
385 718.

386 In buildings of Type IV-A, B, and C, construction with an occupied floor located more
387 than 75 feet above the lowest level of fire department access, up to and including 12 stories or
388 180 feet above grade plane, mass timber interior exit and elevator hoistway enclosures shall be
389 protected in accordance with Section 602.4.1.2. In buildings greater than 12 stories or 180 feet
390 above grade plane, interior exit and elevator hoistway enclosures shall be constructed of
391 non-combustible materials."

392 (4) In IBC, Section 602.4.1 is deleted and replaced with the following: "602.4.1 Type
393 IV-A. Building elements in Type IV-A construction shall be protected in accordance with
394 Sections 602.4.1.1 through 602.4.1.6. The required fire-resistance rating of non-combustible
395 elements and protected mass timber elements shall be determined in accordance with Section
396 703.2 or Section 703.3."

397 (5) In IBC, Section 602, a new section is added as follows: "602.4.1.1 Exterior
398 Protection. The outside face of exterior walls of mass timber construction shall be protected

399 with non-combustible protection with a minimum assigned time of 40 minutes as determined
400 in Section 722.7.1. All components of the exterior wall covering shall be on non-combustible
401 material except water resistive barriers having a peak heat release rate of less than 150 kW/m²,
402 a total heat release of less than 20 MJ/m² and an effective heat of combustion of less than 18
403 MJ/kg as determined in accordance with ASTM E1354 and having a flame spread index of 25
404 or less and a smoke-developed index of 450 or less as determined in accordance with ASTM
405 E84 or UL723. The ASTM E1354 test shall be conducted on specimens at the thickness
406 intended for use, in the horizontal orientation and at an incident radiant heat flux of 50
407 kW/m²."

408 (6) In IBC, Section 602, a new section is added as follows: "602.4.1.2 Interior
409 Protection. Interior faces of all mass timber elements, including the inside faces of exterior
410 mass timber walls and mass timber roofs, shall be protected with materials complying with
411 Section 703.5."

412 (7) In IBC, Section 602, a new section is added as follows: "602.4.1.2.1 Protection
413 Time. Non-combustible protection shall contribute a time equal to or greater than times
414 assigned in Table 722.7.1(1), but not less than 80 minutes. The use of materials and their
415 respective protection contributions listed in Table 722.7.1(2) shall be permitted to be used for
416 compliance with Section 722.7.1."

417 (8) In IBC, Section 602, a new section is added as follows: "602.4.1.3 Floors. The floor
418 assembly shall contain a non-combustible material not less than one inch in thickness above the
419 mass timber. Floor finishes in accordance with Section 804 shall be permitted on top of the
420 non-combustible material. The underside of floor assemblies shall be protected in accordance
421 with Section 602.4.1.2."

422 (9) In IBC, Section 602, a new section is added as follows: "602.4.1.4 Roofs. The
423 interior surfaces of roof assemblies shall be protected in accordance with Section 602.4.1.2.
424 Roof coverings in accordance with Chapter 15 shall be permitted on the outside surface of the
425 roof assembly."

426 (10) In IBC, Section 602, a new section is added as follows: "602.4.1.5 Concealed

427 spaces. Concealed spaces shall not contain combustibles other than electrical, mechanical, fire
428 protection, or plumbing materials and equipment permitted in plenums in accordance with
429 Section 602 of the IMC, and shall comply with all applicable provisions of Section 718.
430 Combustible construction forming concealed spaces shall be protected in accordance with
431 Section 602.4.1.2."

432 (11) In IBC, Section 602, a new section is added as follows: "602.4.1.6 Shafts. Shafts
433 shall be permitted in accordance with Sections 713 and 718. Both the shaft side and room side
434 of mass timber elements shall be protected in accordance with Section 602.4.1.2."

435 (12) In IBC, Section 602.4.2 is deleted and replaced with the following: "602.4.2 Type
436 IV-B. Building elements in Type IV-B construction shall be protected in accordance with
437 Sections 602.4.2.1 through 602.4.2.6. The required fire resistance rating of non-combustible
438 elements or mass timber elements shall be determined in accordance with Section 703.2 or
439 Section 703.3."

440 (13) In IBC, Section 602, a new section is added as follows: "602.4.2.1 Exterior
441 protection. The outside face of exterior walls of mass timber construction shall be protected
442 with non-combustible protection with a minimum assigned time of 40 minutes as determined
443 in Section 722.7.1. All components of the exterior wall covering shall be of non-combustible
444 material except water resistive barriers having a peak heat release rate of less than 150 kW/m²,
445 a total heat release of less than 20 MJ/m² and an effective heat of combustion of less than
446 18MJ/kg as determined in accordance with ASTM E1354, and having a flame spread index of
447 25 or less and a smoke-developed index of 450 or less as determined in accordance with
448 ASTM E84 or UL 723. The ASTM E1354 test shall be conducted on specimens at the
449 thickness intended for use, in the horizontal orientation and at an incident radiant heat flux of
450 50 kW/m²."

451 (14) In IBC, Section 602, a new section is added as follows: "602.4.2.2 Interior
452 protection. Interior faces of all mass timber elements, including the inside face of exterior mass
453 timber walls and mass timber roofs, shall be protected, as required by this section, with
454 materials complying with Section 703.5."

455 (15) In IBC, Section 602, a new section is added as follows: "602.4.2.2.1 Protection
456 time. Non-combustible protection shall contribute a time equal to or greater than times
457 assigned in Table 722.7.1(1), but not less than 80 minutes. The use of materials and their
458 respective protection contributions listed in Table 722.7.1(2) shall be permitted to be used for
459 compliance with Section 722.7.1."

460 (16) In IBC, Section 602, a new section is added as follows: "602.4.2.2.2 Protected
461 area. All interior faces of all mass timber elements shall be protected in accordance with
462 Section 602.4.2.2.1, including the inside face of exterior mass timber walls and mass timber
463 roofs.

464 Exceptions: Unprotected portions of mass timber ceilings and walls complying with
465 Section 602.4.2.2.4 and the following:

466 1. Unprotected portions of mass timber:

467 (a) ceilings, including attached beams, shall be permitted and shall be limited to an
468 area equal to 20% of the floor area in any dwelling unit or fire area;

469 (b) walls, including attached columns, shall be permitted and shall be limited to an area
470 equal to 40% of the floor area in any dwelling unit or fire area; or

471 (c) walls and ceilings, including attached columns and beams, in any dwelling unit or
472 fire area shall be permitted in accordance with Section 602.4.2.2.3.

473 2. Mass timber columns and beams which are not an integral portion of walls or
474 ceilings, respectively, shall be permitted to be unprotected without restriction of either
475 aggregate area or separation from one another."

476 (17) In IBC, Section 602, a new section is added as follows: "602.4.2.2.3 Mixed
477 unprotected areas. In each dwelling unit or fire area, where both portions of ceilings and
478 portions of walls are unprotected, the total allowable unprotected area shall be determined in
479 accordance with Equation 6-1.

480 $(U_{tc}/U_{a\ c}) + (U_{tw}/U_{a\ w}) \leq 1$ (Equation 6-1) where:

481 U_{tc} = Total unprotected mass timber ceiling areas

482 $U_{a\ c}$ = Allowable unprotected mass timber ceiling area conforming to Section

483 602.4.2.2.2, Exception 1

484 U_{tw} = Total unprotected mass timber wall areas

485 U_{a w} = Allowable unprotected mass timber wall area conforming to Section

486 602.4.2.2.2, Exception 2."

487 (18) In IBC, Section 602, a new section is added as follows: "602.4.2.2.4 Separation
488 distance between unprotected mass timber elements. In each dwelling unit or fire area,
489 unprotected portions of mass timber walls and ceilings shall be not less than 15 feet from
490 unprotected portions of other walls and ceilings, measured horizontally along the ceiling and
491 from other unprotected portions of walls measured horizontally along the floor."

492 (19) In IBC, Section 602, a new section is added as follows: "602.4.2.3 Floors. The
493 floor assembly shall contain a non-combustible material not less than one inch in thickness
494 above the mass timber. Floor finishes in accordance with Section 804 shall be permitted on top
495 of the non-combustible material. The underside of floor assemblies shall be protected in
496 accordance with Section 602.4.1.2."

497 (20) In IBC, Section 602, a new section is added as follows: "602.4.2.4 Roofs. The
498 interior surfaces of roof assemblies shall be protected in accordance with Section 602.4.2.2
499 except, in non-occupiable spaces, they shall be treated as a concealed space with no portion left
500 unprotected. Roof coverings in accordance with Chapter 15 shall be permitted on the outside
501 surface of the roof assembly."

502 (21) In IBC, Section 602, a new section is added as follows: "602.4.2.5 Concealed
503 spaces. Concealed spaces shall not contain combustibles other than electrical, mechanical, fire
504 protection, or plumbing materials and equipment permitted in plenums in accordance with
505 Section 602 of the IMC, and shall comply with all applicable provisions of Section 718.
506 Combustible construction forming concealed spaces shall be protected in accordance with
507 Section 602.4.1.2."

508 (22) In IBC, Section 602, a new section is added as follows: "602.4.2.6 Shafts. Shafts
509 shall be permitted in accordance with Section 713 and Section 718. Both the shaft side and
510 room side of mass timber elements shall be protected in accordance with Section 602.4.1.2."

511 (23) In IBC, Section 602.4.3 is deleted and replaced with the following: "602.4.3 Type
512 IV-C. Building elements in Type IV-C construction shall be protected in accordance with
513 Sections 602.4.3.1 through 602.4.3.6. The required fire-resistance rating of building elements
514 shall be determined in accordance with Section 703.2 or Section 703.3."

515 (24) In IBC, Section 602, a new section is added as follows: "602.4.3.1 Exterior
516 Protection. The exterior side of walls of combustible construction shall be protected with
517 non-combustible protection with a minimum assigned time of 40 minutes as determined in
518 Section 722.7.1. All components of the exterior wall covering shall be of non-combustible
519 material except water resistive barriers having a peak heat release rate of less than 150 kW/m²,
520 a total heat release of less than 20 MJ/m² and an effective heat of combustion of less than
521 18MJ/kg as determined in accordance with ASTM E1354 and having a flame spread index of
522 25 or less and a smoke-developed index of 450 or less as determined in accordance with
523 ASTM E84 or UL723. The ASTM E1354 test shall be conducted on specimens at the thickness
524 intended for use, in the horizontal orientation and at an incident radiant heat flux of 50
525 kW/m²."

526 (25) In IBC, Section 602, a new section is added as follows: "602.4.3.2 Interior
527 protection. Mass timber elements are permitted to be unprotected."

528 (26) In IBC, Section 602, a new section is added as follows: "602.4.3.3 Floors. Floor
529 finishes in accordance with Section 804 shall be permitted on top of the floor construction."

530 (27) In IBC, Section 602, a new section is added as follows: "602.4.3.4 Roofs. Roof
531 coverings in accordance with Chapter 15 shall be permitted on the outside surface of the roof
532 assembly."

533 (28) In IBC, Section 602, a new section is added as follows: "602.4.3.5 Concealed
534 spaces. Concealed spaces shall not contain combustibles other than electrical, mechanical, fire
535 protection, or plumbing materials and equipment permitted in plenums in accordance with
536 Section 602 of the IMC, and shall comply with all applicable provisions of Section 718.
537 Combustible construction forming concealed spaces shall be protected with non-combustible
538 protection with a minimum assigned time of 40 minutes as determined in Section 722.7.1."

539 (29) In IBC, Section 602, a new section is added as follows: "602.4.3.6 Shafts. Shafts
540 shall be permitted in accordance with Section 713 and Section 718. Shafts and elevator
541 hoistway and interior exit stairway enclosures shall be protected with non-combustible
542 protection with a minimum assigned time of 40 minutes as determined in Section 722.7.1, on
543 both the inside of the shaft and the outside of the shaft."

544 (30) In IBC, Section 602, a new section is added as follows: "602.4.4 Type IV-HT.
545 Type IV construction (Heavy Timber, HT) is that type of construction in which the exterior
546 walls are of non-combustible materials and the interior building elements are of solid wood,
547 laminated heavy timber or structural composite lumber (SCL), without concealed spaces. The
548 minimum dimensions for permitted materials including solid timber, glued-laminated timber,
549 structural composite lumber (SCL) and cross laminated timber (CLT) and details of Type IV
550 construction shall comply with the provisions of this section and Section 2304.11. Exterior
551 walls complying with Section 602.4.4.1 or 602.4.4.2 shall be permitted. Interior walls and
552 partitions not less than one-hour fire-resistance rating or heavy timber conforming with Section
553 2304.11.2.2 shall be permitted."

554 (31) In IBC, Section 602, a new section is added as follows: "602.4.4.1
555 Fire-retardant-treated wood in exterior walls. Fire-retardant-treated wood framing and
556 sheathing complying with Section 2303.2 shall be permitted within exterior wall assemblies
557 not less than 6 inches (152 mm) in thickness with a two-hour rating or less."

558 (32) In IBC, Section 602, a new section is added as follows: "602.4.4.2
559 Cross-laminated timber in exterior walls. Cross-laminated timber complying with Section
560 2303.1.4 shall be permitted within exterior wall assemblies not less than 6 inches (152 mm) in
561 thickness with a two-hour rating or less, provided the exterior surface of the cross-laminated
562 timber is protected by one the following:

- 563 1. fire-retardant-treated wood sheathing complying with Section 2303.2 and not less
564 than 15/32 inch (12 mm) thick;
- 565 2. gypsum board not less than 1/2 inch (12.7 mm) thick; or
- 566 3. a non-combustible material."

567 (33) In IBC, Section 602, a new section is added as follows: "602.4.4.3 Exterior
568 structural members. Where a horizontal separation of 20 feet (6096 mm) or more is provided,
569 wood columns and arches conforming to heavy timber sizes complying with Section 2304.11
570 shall be permitted to be used externally."

571 Section 9. Section **15A-2a-204** is enacted to read:

572 **15A-2a-204. Amendments to Chapter 7 of IBC.**

573 (1) In IBC, Section 703, a new section is added as follows: "703.8 Determination of
574 non-combustible protection time contribution. The time, in minutes, contributed to the
575 fire-resistance rating by the non-combustible protection of mass timber building elements,
576 components, or assemblies, shall be established through a comparison of assemblies tested
577 using procedures set forth in ASTM E119 or UL263. The test assemblies shall be identical in
578 construction, loading, and materials, other than the non-combustible protection. The two test
579 assemblies shall be tested to the same criteria of structural failure.

580 (a) Test Assembly 1 shall be without protection.

581 (b) Test Assembly 2 shall include the representative non-combustible protection. The
582 protection shall be fully defined in terms of configuration details, attachment details, joint
583 sealing details, accessories and all other relevant details.

584 The non-combustible protection time contribution shall be determined by subtracting
585 the fire-resistance time, in minutes, of Test Assembly 1 from the fire-resistance time, in
586 minutes, of Test Assembly 2."

587 (2) In IBC, Section 703, a new section is added as follows: "703.9 Sealing of adjacent
588 mass timber elements. In buildings of Type IV-A, IV-B, and IV-C construction, sealant or
589 adhesive shall be provided to resist the passage of air in the following locations:

590 1. At abutting edges and intersections of mass timber building elements required to be
591 fire-resistance-rated.

592 2. At abutting intersections of mass timber building elements and building elements of
593 other materials where both are required to be fire-resistance-rated.

594 Sealants shall meet the requirements of ASTM C920. Adhesives shall meet the

595 requirements of ASTM D3498.

596 Exception: Sealants or adhesives need not be provided where they are not a required
597 component of a tested fire-resistance-rated assembly."

598 (3) In IBC, Section 718.2.1 is deleted and replaced with the following: "718.2.1

599 Fireblocking materials. Fireblocking shall consist of the following materials:

600 1. Two-inch (51 mm) nominal lumber.

601 2. Two thicknesses of 1-inch (25 mm) nominal lumber with broken lap joints.

602 3. One thickness of 0.719-inch (18.3 mm) wood structural panels with joints backed by
603 0.719-inch (18.3 mm) wood structural panels.

604 4. One thickness of 0.75-inch (19.1 mm) particleboard with joints backed by 0.75-inch
605 (19 mm) particleboard.

606 5. 1/2 inch (12.7 mm) gypsum board.

607 6. 1/4 inch (6.4 mm) cement-based millboard.

608 7. Batts or blankets of mineral wool, mineral fiber or other approved materials installed
609 in such a manner as to be securely retained in place.

610 8. Cellulose insulation installed as tested for the specific application.

611 9. Mass timber complying with Section 2304.11."

612 (4) In IBC, Section 722, a new section is added as follows: "722.7 Fire-Resistance
613 rating of mass timber. The required fire resistance of mass timber elements in Section 602.4
614 shall be determined in accordance with Section 703.2 or Section 703.3. The fire-resistance
615 rating of building elements shall be as required in Tables 601 and 602 and as specified
616 elsewhere in this code. The fire-resistance rating of the mass timber elements shall consist of
617 the fire-resistance of the unprotected element added to the protection time of the
618 non-combustible protection."

619 (5) In IBC, Section 722, a new section is added as follows: "722.7.1 Minimum required
620 protection. Where required by Sections 602.4.1 through 602.4.3, non-combustible protection
621 shall be provided for mass timber building elements in accordance with Table 722.7.1(1). The
622 rating, in minutes, contributed by the non-combustible protection of mass timber building

623 elements, components, or assemblies, shall be established in accordance with Section 703.8.
 624 The protection contributions indicated in Table 722.7.1(2) and Section 722.7.2 shall be deemed
 625 to comply with this requirement when installed and fastened in accordance with Section
 626 722.7.2."

627 (6) In IBC, Section 722, a new table is added as follows: "TABLE 722.7.1(1)
 628 PROTECTION REQUIRED FROM NON-COMBUSTIBLE COVERING MATERIAL

<u>Required Fire Resistance Rating of</u> <u>Building Element per Tables 601 and 602</u> <u>(hours)</u>	<u>Minimum Protection Required from</u> <u>Non-combustible</u>
<u>1</u>	<u>40</u>
<u>2</u>	<u>80</u>
<u>3 or more</u>	<u>120"</u>

633 (7) In IBC, Section 722, a new table is added as follows: "TABLE 722.7.1(2)
 634 PROTECTION PROVIDED BY NON-COMBUSTIBLE COVERING MATERIAL

<u>Non-combustible Protection</u>	<u>Protection</u> <u>(minutes)</u>
<u>1/2 inch Type X Gypsum</u>	<u>25</u>
<u>5 /8 inch Type X Gypsum</u>	<u>40"</u>
<u>Board</u>	

640 (8) In IBC, Section 722, a new section is added as follows: "722.7.2 Installation of
 641 gypsum board non-combustible protection. Gypsum board complying with Table 722.7.1(2)
 642 shall be installed in accordance with this section."

643 (9) In IBC, Section 722, a new section is added as follows: "722.7.2.1 Interior surfaces.
 644 Layers of Type X gypsum board serving as non-combustible protection for interior surfaces of
 645 wall and ceiling assemblies determined in accordance with Table 722.7.1(1) shall be installed
 646 in accordance with the following:

647 1. Each layer shall be attached with Type S drywall screws of sufficient length to
648 penetrate the mass timber at least 1 inch when driven flush with the paper surface of the
649 gypsum board.

650 Exception: The third layer, where determined necessary by Section 722.7, shall be
651 permitted to be attached with 1 inch #6 Type S drywall screws to furring channels in
652 accordance with ASTM C645.

653 2. Screws for attaching the base layer shall be 12 inches on center in both directions.

654 3. Screws for each layer after the base layer shall be 12 inches on center in both
655 directions and offset from the screws of the previous layers by 4 inches in both directions.

656 4. All panel edges of any layer shall be offset 18 inches from those of the previous
657 layer.

658 5. All panel edges shall be attached with screws sized and offset as in items 1 through
659 4 above and placed at least 1 inch but not more than 2 inches from the panel edge.

660 6. All panels installed at wall-to-ceiling intersections shall be installed such that ceiling
661 panels are installed first and the wall panels are installed after the ceiling panel has been
662 installed and is fitted tight to the ceiling panel. Where multiple layers are required, each layer
663 shall repeat this process.

664 7. All panels installed at a wall-to-wall intersection shall be installed such that the
665 panels covering an exterior wall or a wall with a greater fire resistance rating shall be installed
666 first and the panels covering the other wall shall be fitted tight to the panel covering the first
667 wall. Where multiple layers are required, each layer shall repeat this process.

668 8. Panel edges of the face layer shall be taped and finished with joint compound.
669 Fastener heads shall be covered with joint compound.

670 9. Panel edges protecting mass timber elements adjacent to unprotected mass timber
671 elements in accordance with Section 602.4.2.2 shall be covered with 1-1/4 inch metal corner
672 bead and finished with joint compound."

673 (10) In IBC, Section 722, a new section is added as follows: "722.7.2.2 Exterior
674 surfaces. Layers of Type X gypsum board serving as non-combustible protection for the outside

675 of the exterior heavy timber walls determined in accordance with Table 722.7.1(1) shall be
676 fastened 12 inches on center each way and 6 inches on center at all joints or ends. All panel
677 edges shall be attached with fasteners located at least 1 inch but not more than 2 inches from
678 the panel edge. Fasteners shall comply with one of the following:

679 1. Galvanized nails of minimum 12 guage with a 7/16 inch head of sufficient length to
680 penetrate the mass timber a minimum of 1 inch.

681 2. Screws which comply with ASTM C1002 (Type S, Type W, or Type G) of sufficient
682 length to penetrate the mass timber a minimum of 1 inch."

683 (11) In IBC, Section 1705, a new section is added as follows: "1705.19 Sealing of mass
684 timber. Periodic special inspections of sealants or adhesives shall be conducted where sealant
685 or adhesive required by Section 703.9 is applied to mass timber building elements as
686 designated in the approved construction documents."

687 (12) In IBC, Section 3102.3 is deleted and replaced with the following: "3102.3 Type
688 of construction. Non-combustible membrane structures shall be classified as Type IIB
689 construction. Non-combustible frame or cable-supported structures covered by an approved
690 membrane in accordance with Section 3102.3.1 shall be classified as Type IIB construction.
691 Heavy timber frame-supported structures covered by an approved membrane in accordance
692 with Section 3102.3.1 shall be classified as Type IV-HT construction. Other membrane
693 structures shall be classified as Type V construction.

694 Exception: Plastic less than 30 feet (9144 mm) above any floor used in greenhouses,
695 where occupancy by the general public is not authorized, and for aquaculture pond covers is
696 not required to meet the fire propagation performance criteria of Test Method 1 or Test Method
697 2, as appropriate, of NFPA 701."

698 (13) In IBC, Section 3102.6.1.1 is deleted and replaced with the following: "3102.6.1.1
699 Membrane. A membrane meeting the fire propagation performance criteria of Test Method 1 or
700 Test Method 2, as appropriate, of NFPA 701 shall be permitted to be used as the roof or as a
701 skylight on buildings of Type IIB, III, IV-HT and V construction, provided that the membrane
702 is not less than 20 feet (6096 mm) above any floor, balcony or gallery."

703 Section 10. Section **15A-2a-301** is enacted to read:

704 **Part 3. Statewide Amendments to International Fire Code**

705 **15A-2a-301. Amendments to Chapter 7 of IFC.**

706 In IFC, Section 701.6 is deleted and replaced with the following: "701.6 Owner's
707 responsibility. The owner shall maintain an inventory of all required fire-resistance-rated
708 construction, construction installed to resist the passage of smoke and the construction included
709 in Sections 703 through 707 and Sections 602.4.1 and 602.4.2 of the International Building
710 Code. Such construction shall be visually inspected by the owner annually and properly
711 repaired, restored or replaced where damaged, altered, breached or penetrated. Records of
712 inspections and repairs shall be maintained. Where concealed, such elements shall not be
713 required to be visually inspected by the owner unless the concealed space is accessible by the
714 removal or movement of a panel, access door, ceiling tile or similar movable entry to the
715 space."

716 Section 11. Section **15A-2a-302** is enacted to read:

717 **15A-2a-302. Amendments to Chapters 9 and 33 of IFC.**

718 (1) In IFC, Section 914.3.1.2 is deleted and replaced with the following: "914.3.1.2
719 Water supply to required fire pumps. In all buildings that are more than 420 feet (128m) in
720 building height, and buildings of Type IV-A and IV-B construction that are more than 120 feet
721 in building height, required fire pumps shall be supplied by connections to not fewer than two
722 water mains located in different streets. Separate supply piping shall be provided between the
723 connection and the pumps shall be sized to supply the flow and pressure required for the pumps
724 to operate.

725 Exception: Two connections to the same main shall be permitted provided that the main
726 is valved such that an interruption can be isolated so that the water supply will continue
727 without interruption through not fewer than one of the connections."

728 (2) In IFC, Section 3308, a new section is added as follows: "3308.9 Fire safety
729 requirements for buildings of Types IV-A, IV-B, and IV-C construction. Buildings of Types
730 IV-A, IV-B, and IV-C construction designed to be greater than six stories above grade plane

731 shall comply with the following requirements during construction unless otherwise approved
732 by the fire code official:

733 1. Standpipes shall be provided in accordance with Section 3313.

734 2. A water supply for fire department operations, as approved by the fire code official
735 and the fire chief.

736 3. Where building construction exceeds six stories above grade plane, at least one layer
737 of non-combustible protection where required by Section 602.4 of the International Building
738 Code shall be installed on all building elements more than 4 floor levels, including mezzanines,
739 below active mass timber construction before erecting additional floor levels.

740 Exception: Shafts and vertical exit enclosures shall not be considered a part of the
741 active mass timber construction.

742 4. Where building construction exceeds six stories above grade plane required exterior
743 wall coverings shall be installed on all floor levels more than 4 floor levels, including
744 mezzanines, below active mass timber construction before erecting additional floor level.

745 Exception: Shafts and vertical exit enclosures shall not be considered a part of the
746 active mass timber construction."

747 Section 12. Section **15A-2a-401** is enacted to read:

748 **Part 4. Reference Standards**

749 **15A-2a-401. Reference Standards.**

750 ASTM

751 D3498-03(2011): Standard Specification for Adhesives for Field-Gluing Plywood to
752 Lumber Framing for Floor Systems

753 ASTM International

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