

1 **BUILDING CONSTRUCTION AMENDMENTS**

2 2020 GENERAL SESSION

3 STATE OF UTAH

4 **Chief Sponsor: Casey Snider**

5 Senate Sponsor: Curtis S. Bramble

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7 **LONG TITLE**

8 **Committee Note:**

9 The Business and Labor Interim Committee recommended this bill.

10 Legislative Vote: 12 voting for 0 voting against 8 absent

11 **General Description:**

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

14 **Highlighted Provisions:**

15 This bill:

16 ▶ amends the definition of the State Construction Code to include standards for the  
17 use of mass timber products;

18 ▶ enacts building standards for the use of mass timber products for residential and  
19 commercial building construction; and

20 ▶ makes technical and conforming changes.

21 **Money Appropriated in this Bill:**

22 None

23 **Other Special Clauses:**

24 None

25 **Utah Code Sections Affected:**

26 AMENDS:

27 **15A-1-102**, as enacted by Laws of Utah 2011, Chapter 14



28 15A-2-101, as enacted by Laws of Utah 2011, Chapter 14  
29 15A-2-102, as last amended by Laws of Utah 2016, Chapter 249

30 ENACTS:

- 31 15A-2a-101, Utah Code Annotated 1953
- 32 15A-2a-102, Utah Code Annotated 1953
- 33 15A-2a-201, Utah Code Annotated 1953
- 34 15A-2a-202, Utah Code Annotated 1953
- 35 15A-2a-203, Utah Code Annotated 1953
- 36 15A-2a-204, Utah Code Annotated 1953
- 37 15A-2a-301, Utah Code Annotated 1953
- 38 15A-2a-302, Utah Code Annotated 1953
- 39 15A-2a-401, Utah Code Annotated 1953

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

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

43 **15A-1-102. Definitions.**

44 As used in this title:

45 (1) "Board" means the Utah Fire Prevention Board created in Section 53-7-203.

46 (2) "Division" means the Division of Occupational and Professional Licensing created  
47 in Section 58-1-103, except as provided in:

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

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

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

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

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

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

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

58 (e) Chapter 6, Additional Construction Requirements.

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

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

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

63 **15A-2-101. Title -- Adoption of code.**

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

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

68 (a) this chapter;

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

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

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

75 (e) Chapter 6, Additional Construction Requirements.

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

77 **15A-2-102. Definitions.**

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

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

85 (2) "IBC" means the edition of the International Building Code adopted under Section  
86 **15A-2-103**.

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

89 (4) "IECC" means the edition of the International Energy Conservation Code adopted

90 under Section 15A-2-103.

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

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

95 (7) "IPC" means the edition of the International Plumbing Code adopted under Section  
96 15A-2-103.

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

99 (9) "NEC" means the edition of the National Electrical Code adopted under Section  
100 15A-2-103.

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

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

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

106 **Part 1. General Provisions**

107 **15A-2a-101. Title.**

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

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

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

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

117 **15A-2a-102. Definitions.**

118 As used in this chapter:

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

121 dimensions of Type IV construction.

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

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

126 (a) any metal or wood stud wall that supports more than 100 pounds per linear foot  
 127 (1459 N/m) of vertical load in addition to its own weight; or

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

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

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

132 **15A-2a-201. Amendments to Chapter 4 of IBC.**

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

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

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

145 **15A-2a-202. Amendments to Chapter 5 of IBC.**

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

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

<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>	

149	A, B, E, F, M, S, U	NS <sup>b</sup>	UL	160	65	55	65	55	65	65	65	65	50	40
		S	UL	180	85	75	85	75	180	120	85	85	70	60
150	H-1, H-2, H-3, H-5	NS <sup>c, d</sup>	UL	160	65	55	65	55	120	90	65	65	50	40
		S		180	85	75	85	75	140	100	85	85	70	60
151	H-4	NS <sup>c, d</sup>	UL	160	65	55	65	55	65	65	65	65	50	40
		S	UL	180	85	75	85	75	140	100	85	85	70	60
152	I-1 Condition 1, I-3	NS <sup>d, e</sup>	UL	160	65	55	65	55	65	65	65	65	50	40
		S	UL	180	85	75	85	75	180	120	85	85	70	60
153	I-1 Condition 2, I-2	NS <sup>d, e, f</sup>	UL	160	65	55	65	55	65	65	65	65	50	40
		S	UL	180	85									
154	I-4	NS <sup>d, g</sup>	UL	160	65	55	65	55	65	65	65	65	50	40
		S	UL	180	85	75	85	75	180	120	85	85	70	60
155	R <sup>h</sup>	NS <sup>d</sup>	UL	160	65	55	65	55	65	65	65	65	50	40
		S13D	60	60	60	60	60	60	60	60	60	60	50	40
		S13R	60	60	60	60	60	60	60	60	60	60	60	60
		S	UL	180	85	75	85	75	180	120	85	85	70	60

156 For SI: 1 foot = 304.8 mm

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

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

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

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

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

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

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

175 g. New Group I-4 occupancies see Exceptions 2 and 3 of Section 903.2.6.  
 176 h. New Group R occupancies are required to be protected by an automatic sprinkler  
 177 system in accordance with Section 903.2.8."

178 (2) In IBC, Table 504.4, "Allowable Number of Stories Above Grade Plane<sup>a, b</sup>" delete  
 179 Type IV and replace it with the following, in relation to the occupancy classification and  
 180 footnotes as indicated:

OCCUPANCY CLASSIFICATION	TYPE OF CONSTRUCTION				
	SEE FOOTNOTES	TYPE IV			
		A	B	C	HT
A-1	NS	3	3	3	3
	S	9	6	4	4
A-2	NS	3	3	3	3
	S	18	12	6	4
A-3	NS	3	3	3	3
	S	18	12	6	4
A-4	NS	3	3	3	3
	S	18	12	6	4
A-5	NS	1	1	1	UL
	S	UL	UL	UL	UL
B	NS	5	5	5	5
	S	18	12	9	6
E	NS	3	3	3	3
	S	9	6	4	4
F-1	NS	3	3	3	4
	S	10	7	5	5
F-2	NS	5	5	5	5
	S	12	8	6	6
H-1	NS <sup>c, d</sup>	NP	NP	NP	1
	S	1	1	1	
H-2	NS <sup>c, d</sup>	1	1	1	2
	S	2	2	2	
H-3	NS <sup>c, d</sup>	3	3	3	4
	S	4	4	4	
H-4	NS <sup>c, d</sup>	5	5	5	5
	S	8	7	6	
H-5	NS <sup>c, d</sup>	2	2	2	3
	S	3	3	3	
I-1 Condition 1	NS <sup>d, e</sup>	4	4	4	4
	S	10	7	5	
I-1 Condition 2	NS <sup>d, e</sup>	3	3	3	4
	S	10	6	4	
I-2	NS <sup>d, f</sup>	NP	NP	NP	1
	S	7	5	1	

199	<u>I-3</u>	<u>NS<sup>d, e</sup></u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>
		<u>S</u>	<u>7</u>	<u>5</u>	<u>3</u>	<u>3</u>
200	<u>I-4</u>	<u>NS<sup>d, g</sup></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>
201	<u>M</u>	<u>NS</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>
		<u>S</u>	<u>12</u>	<u>8</u>	<u>6</u>	<u>5</u>
202	<u>R-1<sup>h</sup></u>	<u>NS<sup>d</sup></u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>
		<u>S13R</u>				
		<u>S</u>	<u>18</u>	<u>12</u>	<u>8</u>	<u>5</u>
203	<u>R-2<sup>h</sup></u>	<u>NS<sup>d</sup></u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>
		<u>S13R</u>				
		<u>S</u>	<u>18</u>	<u>12</u>	<u>8</u>	<u>5</u>
204	<u>R-3<sup>h</sup></u>	<u>NS<sup>d</sup></u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>
		<u>S13D</u>				
		<u>S13R</u>				
		<u>S</u>	<u>18</u>	<u>12</u>	<u>5</u>	<u>5</u>
205	<u>R-4<sup>h</sup></u>	<u>NS<sup>d</sup></u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>
		<u>S13D</u>				
		<u>S13R</u>				
		<u>S</u>	<u>18</u>	<u>12</u>	<u>5</u>	<u>5</u>
206	<u>S-1</u>	<u>NS</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>
207		<u>S</u>	<u>10</u>	<u>7</u>	<u>5</u>	<u>5</u>
208	<u>S-2</u>	<u>NS</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>
209		<u>S</u>	<u>12</u>	<u>8</u>	<u>5</u>	<u>5</u>
210	<u>U</u>	<u>NS</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>
211		<u>S</u>	<u>9</u>	<u>6</u>	<u>5</u>	<u>5</u>

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

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

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

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

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

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

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

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

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

234 (3) In IBC, Table 506.2, "Allowable Area Factor (A<sub>i</sub> = NS, S1, S13R, S13D or SM, as  
 235 applicable) in Square Feet<sup>a, b</sup>" delete Type IV and replace it with the following, in relation to the  
 236 occupancy classification and footnotes as indicated:

"OCCUPANCY CLASSIFICATION"	SEE FOOTNOTES	TYPE OF CONSTRUCTION			
		TYPE IV			
		A	B	C	HT
A-1	NS	45,000	30,000	18,750	15,000
	S1	180,000	120,000	75,000	60,000
	SM	135,000	90,000	56,250	45,000
A-2	NS	45,000	30,000	18,750	15,000
	S1	180,000	120,000	75,000	60,000
	SM	135,000	90,000	56,250	45,000
A-3	NS	45,000	30,000	18,750	15,000
	S1	180,000	120,000	75,000	60,000
	SM	135,000	90,000	56,250	45,000
A-4	NS	45,000	30,000	18,750	15,000
	S1	180,000	120,000	75,000	60,000
	SM	135,000	90,000	56,250	45,000
A-5	NS	UL	UL	UL	UL
	S1				
	SM				

243	B	NS	<u>108,000</u>	<u>72,000</u>	<u>45,000</u>	<u>36,000</u>
		S1	<u>432,000</u>	<u>288,000</u>	<u>180,000</u>	<u>144,000</u>
		SM	<u>324,000</u>	<u>216,000</u>	<u>135,000</u>	<u>108,000</u>
244	E	NS	<u>76,500</u>	<u>51,000</u>	<u>31,875</u>	<u>25,500</u>
		S1	<u>306,000</u>	<u>204,000</u>	<u>127,500</u>	<u>102,000</u>
		SM	<u>229,500</u>	<u>153,000</u>	<u>95,625</u>	<u>76,500</u>
245	F-1	NS	<u>100,500</u>	<u>67,000</u>	<u>41,875</u>	<u>33,500</u>
		S1	<u>402,000</u>	<u>268,000</u>	<u>167,500</u>	<u>134,000</u>
		SM	<u>301,500</u>	<u>201,000</u>	<u>125,625</u>	<u>100,500</u>
246	F-2	NS	<u>151,500</u>	<u>101,000</u>	<u>63,125</u>	<u>50,500</u>
		S1	<u>606,000</u>	<u>404,000</u>	<u>252,500</u>	<u>202,000</u>
		SM	<u>454,500</u>	<u>303,000</u>	<u>189,375</u>	<u>151,500</u>
247	H-1	NS <sup>c</sup>	<u>10,500</u>	<u>10,500</u>	<u>10,500</u>	<u>10,500</u>
		S1				
248	H-2	NS <sup>c</sup>	<u>10,500</u>	<u>10,500</u>	<u>10,500</u>	<u>10,500</u>
		S1				
		SM				
249	H-3	NS <sup>c</sup>	<u>25,500</u>	<u>25,500</u>	<u>25,500</u>	<u>25,500</u>
		S1				
		SM				
250	H-4	NS <sup>c, d</sup>	<u>72,000</u>	<u>54,000</u>	<u>40,500</u>	<u>36,000</u>
		S1	<u>288,000</u>	<u>216,000</u>	<u>162,000</u>	<u>144,000</u>
		SM	<u>216,000</u>	<u>162,000</u>	<u>121,500</u>	<u>108,000</u>
251	H-5	NS <sup>c, d</sup>	<u>72,000</u>	<u>54,000</u>	<u>40,500</u>	<u>36,000</u>
		S1	<u>288,000</u>	<u>216,000</u>	<u>162,000</u>	<u>144,000</u>
		SM	<u>216,000</u>	<u>162,000</u>	<u>121,500</u>	<u>108,000</u>
252	I-1	NS <sup>d, e</sup>	<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>
<u>253</u>	<u>I-2</u>	<u>NS<sup>d, f</sup></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>
<u>254</u>	<u>I-3</u>	<u>NS<sup>d, e</sup></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>
<u>255</u>	<u>I-4</u>	<u>NS<sup>d, g</sup></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>
<u>256</u>	<u>M</u>	<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>
<u>257</u>	<u>R-1<sup>h</sup></u>	<u>NS<sup>d</sup></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>
<u>258</u>	<u>R-2<sup>h</sup></u>	<u>NS<sup>d</sup></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>
<u>259</u>	<u>R-3<sup>h</sup></u>	<u>NS<sup>d</sup></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>				
<u>260</u>	<u>R-4<sup>h</sup></u>	<u>NS<sup>d</sup></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>SM</u>	<u>184,500</u>	<u>123,000</u>	<u>76,875</u>
		<u>NS</u>	<u>76,500</u>	<u>51,000</u>	<u>31,875</u>
261	<u>S-1</u>	<u>S1</u>	<u>306,000</u>	<u>204,000</u>	<u>127,500</u>
		<u>SM</u>	<u>229,500</u>	<u>153,000</u>	<u>95,625</u>
		<u>NS</u>	<u>115,500</u>	<u>77,000</u>	<u>48,125</u>
262	<u>S-2</u>	<u>S1</u>	<u>462,000</u>	<u>308,000</u>	<u>192,500</u>
		<u>SM</u>	<u>346,500</u>	<u>308,000</u>	<u>144,375</u>
		<u>NS<sup>i</sup></u>	<u>54,000</u>	<u>36,000</u>	<u>22,500</u>
263	<u>U</u>	<u>S1</u>	<u>216,000</u>	<u>144,000</u>	<u>90,000</u>
		<u>SM</u>	<u>162,000</u>	<u>108,000</u>	<u>67,500</u>

264 For SI: 1 square foot = 0.0929 m<sup>2</sup>.

265 UL = Unlimited; NP = Not Permitted; NS = Buildings not equipped throughout with an

266 automatic sprinkler system; S1 = Buildings a maximum of one story above grade plane

267 equipped throughout with an automatic sprinkler system installed in accordance with Section

268 903.3.1.1; SM = Buildings two or more stories above grade plane equipped throughout with an

269 automatic sprinkler system installed in accordance with Section 903.3.1.1; S13R = Buildings

270 equipped throughout with an automatic sprinkler system installed in accordance with Section

271 903.3.1.2; S13D = Buildings equipped throughout with an automatic sprinkler system installed

272 in accordance with Section 903.3.1.3.

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

274 b. See Section 903.2 for the minimum thresholds for protection by an automatic

275 sprinkler system for specific occupancies.

276 c. New Group H occupancies are required to be protected by an automatic sprinkler

277 system in accordance with Section 903.2.5.

278 d. The NS value is only for use in evaluation of existing building area in accordance

279 with the IEBC.

280 e. New Group I-1 and I-3 occupancies are required to be protected by an automatic sprinkler

281 system in accordance with Section 903.2.6. For new Group I-1 occupancies,

282 Condition 1, see Exception 1 of Section 903.2.6.

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

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

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

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

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

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

304 (6) In IBC, Section 509, a new section is added as follows: "509.4.1.1 Type IV-B and  
305 IV-C construction. Where Table 509 specifies a fire-resistance-rated separation, mass timber  
306 elements serving as fire barriers or a horizontal assembly in Type IV-B or IV-C construction  
307 shall be separated from the interior of the incidental use with an approved thermal barrier  
308 consisting of a minimum of 1/2 inch (12.7 mm) gypsum board or a material that is tested in  
309 accordance with and meets the acceptance criteria of both the Temperature Transmission Fire  
310 Test and the Integrity Fire Test of NFPA 275."

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

312 **15A-2a-203. Amendments to Chapter 6 of IBC.**

313 (1) In IBC, Table 601 is deleted and replaced with the following:  
 314 "TABLE 601 FIRE-RESISTANCE RATING REQUIREMENTS FOR BUILDING  
 315 ELEMENTS (HOURS)

BUILDING ELEMENT	TYPE I		TYPE II		TYPE III		TYPE IV				TYPE V	
	A	B	A	B	A	B	A	B	C	HT	A	B
Primary structural frame <sup>f</sup> (see Section 202)	3 <sup>a, b</sup>	2 <sup>a, b</sup>	1b	0	1b	0	3a	2a	2a	HT	1b	0
Bearing walls Exterior <sup>e, f</sup>	3	2	1	0	2	2	3	2	2	2	1	0
Interior	3 <sup>a</sup>	2 <sup>a</sup>	1	0	1	0	3	2	2	1/HT	1	0
Nonbearing walls and partitions Exterior	See Table 602											0
Nonbearing walls and partitions Interior <sup>d</sup>	0	0	0	0	0	0	0	0	0	See Section 2304.1 1.2	0	0
Floor construction and associated secondary members (see Section 202)	2	2	1	0	1	0	2	2	2	HT	1	0
Roof construction and associated secondary members (see Section 202)	11/ b 2	1b, c	1b, c	0 c	1b, c	0	11/	1	1	HT	1b, c	0

323 For SI: 1 foot = 304.8 mm.

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

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

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

333 d. Not less than the fire-resistance rating required by other sections of this code.  
 334 e. Not less than the fire-resistance rating based on fire separation distance (see Table  
 335 602).

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

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

338 "TABLE 602 FIRE-RESISTANCE RATING REQUIREMENTS FOR EXTERIOR WALLS  
 339 BASED ON FIRE SEPARATION DISTANCE <sup>a, d, g</sup>

<u>Fire Separation Distance = X (feet)</u>	<u>TYPE OF CONSTRUCTION</u>	<u>OCCUPANCY GROUP H<sup>e</sup></u>	<u>OCCUPANCY GROUP F-1, M, S-1<sup>f</sup></u>	<u>OCCUPANCY GROUP A, B, F-2, I, Ri, S-2, Uh</u>
<u>&lt; 5<sup>b</sup></u>	<u>All</u>	<u>3</u>	<u>2</u>	<u>1</u>
<u>5 ≤ X &lt; 10</u>	<u>IA, IVA</u>	<u>3</u>	<u>2</u>	<u>11</u>
	<u>Others</u>	<u>2</u>	<u>1</u>	
<u>10 ≤ X &lt; 30</u>	<u>IA, IB, IVA,</u>	<u>2</u>	<u>1</u>	<u>1<sup>c</sup></u>
	<u>IVB</u>	<u>1</u>	<u>0</u>	<u>0</u>
	<u>IIB, VB</u>	<u>1</u>	<u>1</u>	<u>1<sup>c</sup></u>
	<u>Others</u>			
<u>X ≥ 30</u>	<u>All</u>	<u>0</u>	<u>0</u>	<u>0</u>

345 For SI: 1 foot = 304.8 mm.

346 a. Load-bearing exterior walls shall also comply with the fire-resistance rating  
 347 requirements of Table 601.

348 b. See Section 706.1.1 for party walls.

349 c. Open parking garages complying with Section 406 shall not be required to have a  
 350 fire-resistance rating.

351 d. The fire-resistance rating of an exterior wall is determined based upon the fire  
 352 separation distance of the exterior wall and the story in which the wall is located.

353 e. For special requirements for Group H occupancies, see Section 415.6.

354 f. For special requirements for Group S aircraft hangars, see Section 412.3.1.

355 g. Where Table 705.8 permits nonbearing exterior walls with unlimited area of

356 unprotected openings, the required fire-resistance rating for the exterior walls is 0 hours.

357 h. For a building containing only a Group U occupancy private garage or carport, the  
358 exterior wall shall not be required to have a fire-resistance rating where the fire separation  
359 distance is 5 feet (1523 mm) or greater.

360 i. For a Group R-3 building of Type II-B or Type V-B construction, the exterior wall  
361 shall not be required to have a fire-resistance rating where the fire separation distance is 5 feet  
362 (1523 mm) or greater."

363 (3) In IBC, Section 602.4 is deleted and replaced with the following: "602.4 Type IV.  
364 Type IV construction is that type of construction in which the building elements are mass  
365 timber or non-combustible materials and have fire-resistance ratings in accordance with Table  
366 601. Mass timber elements shall meet the fire-resistance rating requirements of this section  
367 based on either the fire-resistance rating of the non-combustible protection, the mass timber, or  
368 a combination of both and shall be determined in accordance with Section 703.2 or 703.3. The  
369 minimum dimensions and permitted materials for building elements shall comply with the  
370 provisions of this section and Section 2304.11. Mass timber elements of Types IV-A, IV-B and  
371 IV-C construction shall be protected with non-combustible protection applied directly to the  
372 mass timber in accordance with Sections 602.4.1 through 602.4.3. The time assigned to the  
373 non-combustible protection shall be determined in accordance with Section 703.8 and comply  
374 with Section 722.7.

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

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

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

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

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

385 Combustible concealed spaces are not permitted except as otherwise indicated in  
386 Sections 602.4.1 through 602.4.4. Combustible stud spaces within light frame walls of Type

387 IV-HT construction shall not be considered concealed spaces, but shall comply with Section  
388 718.

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

395 (4) In IBC, Section 602.4.1 is deleted and replaced with the following: "602.4.1 Type  
396 IV-A. Building elements in Type IV-A construction shall be protected in accordance with  
397 Sections 602.4.1.1 through 602.4.1.6. The required fire-resistance rating of non-combustible  
398 elements and protected mass timber elements shall be determined in accordance with Section  
399 703.2 or Section 703.3."

400 (5) In IBC, Section 602, a new section is added as follows: "602.4.1.1 Exterior  
401 Protection. The outside face of exterior walls of mass timber construction shall be protected  
402 with non-combustible protection with a minimum assigned time of 40 minutes as determined  
403 in Section 722.7.1. All components of the exterior wall covering shall be on non-combustible  
404 material except water resistive barriers having a peak heat release rate of less than 150 kW/m<sup>2</sup>,  
405 a total heat release of less than 20 MJ/m<sup>2</sup> and an effective heat of combustion of less than 18  
406 MJ/kg as determined in accordance with ASTM E1354 and having a flame spread index of 25  
407 or less and a smoke-developed index of 450 or less as determined in accordance with ASTM  
408 E84 or UL723. The ASTM E1354 test shall be conducted on specimens at the thickness  
409 intended for use, in the horizontal orientation and at an incident radiant heat flux of 50  
410 kW/m<sup>2</sup>."

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

415 (7) In IBC, Section 602, a new section is added as follows: "602.4.1.2.1 Protection  
416 Time. Non-combustible protection shall contribute a time equal to or greater than times  
417 assigned in Table 722.7.1(1), but not less than 80 minutes. The use of materials and their

418 respective protection contributions listed in Table 722.7.1(2) shall be permitted to be used for  
419 compliance with Section 722.7.1."

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

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

429 (10) In IBC, Section 602, a new section is added as follows: "602.4.1.5 Concealed  
430 spaces. Concealed spaces shall not contain combustibles other than electrical, mechanical, fire  
431 protection, or plumbing materials and equipment permitted in plenums in accordance with  
432 Section 602 of the IMC, and shall comply with all applicable provisions of Section 718.  
433 Combustible construction forming concealed spaces shall be protected in accordance with  
434 Section 602.4.1.2."

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

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

443 (13) In IBC, Section 602, a new section is added as follows: "602.4.2.1 Exterior  
444 protection. The outside face of exterior walls of mass timber construction shall be protected  
445 with non-combustible protection with a minimum assigned time of 40 minutes as determined  
446 in Section 722.7.1. All components of the exterior wall covering shall be of non-combustible  
447 material except water resistive barriers having a peak heat release rate of less than 150 kW/m<sup>2</sup>,  
448 a total heat release of less than 20 MJ/m<sup>2</sup> and an effective heat of combustion of less than

449 18MJ/kg as determined in accordance with ASTM E1354, and having a flame spread index of  
450 25 or less and a smoke-developed index of 450 or less as determined in accordance with  
451 ASTM E84 or UL 723. The ASTM E1354 test shall be conducted on specimens at the  
452 thickness intended for use, in the horizontal orientation and at an incident radiant heat flux of  
453 50 kW/m<sup>2</sup>."

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

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

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

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

469 1. Unprotected portions of mass timber:

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

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

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

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

479 (17) In IBC, Section 602, a new section is added as follows: "602.4.2.2.3 Mixed

480 unprotected areas. In each dwelling unit or fire area, where both portions of ceilings and  
481 portions of walls are unprotected, the total allowable unprotected area shall be determined in  
482 accordance with Equation 6-1.

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

484  $U_{tc}$  = Total unprotected mass timber ceiling areas

485  $U_{a\ c}$  = Allowable unprotected mass timber ceiling area conforming to Section  
486 602.4.2.2.2, Exception 1

487  $U_{tw}$  = Total unprotected mass timber wall areas

488  $U_{a\ w}$  = Allowable unprotected mass timber wall area conforming to Section  
489 602.4.2.2.2, Exception 2."

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

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

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

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

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

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

518 (24) In IBC, Section 602, a new section is added as follows: "602.4.3.1 Exterior  
519 Protection. The exterior side of walls of combustible construction shall be protected with  
520 non-combustible protection with a minimum assigned time of 40 minutes as determined in  
521 Section 722.7.1. All components of the exterior wall covering shall be of non-combustible  
522 material except water resistive barriers having a peak heat release rate of less than 150 kW/m<sup>2</sup>,  
523 a total heat release of less than 20 MJ/m<sup>2</sup> and an effective heat of combustion of less than  
524 18MJ/kg as determined in accordance with ASTM E1354 and having a flame spread index of  
525 25 or less and a smoke-developed index of 450 or less as determined in accordance with  
526 ASTM E84 or UL723. The ASTM E1354 test shall be conducted on specimens at the thickness  
527 intended for use, in the horizontal orientation and at an incident radiant heat flux of 50  
528 kW/m<sup>2</sup>."

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

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

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

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

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

547 (30) In IBC, Section 602, a new section is added as follows: "602.4.4 Type IV-HT.  
548 Type IV construction (Heavy Timber, HT) is that type of construction in which the exterior  
549 walls are of non-combustible materials and the interior building elements are of solid wood,  
550 laminated heavy timber or structural composite lumber (SCL), without concealed spaces. The  
551 minimum dimensions for permitted materials including solid timber, glued-laminated timber,  
552 structural composite lumber (SCL) and cross laminated timber (CLT) and details of Type IV  
553 construction shall comply with the provisions of this section and Section 2304.11. Exterior  
554 walls complying with Section 602.4.4.1 or 602.4.4.2 shall be permitted. Interior walls and  
555 partitions not less than one-hour fire-resistance rating or heavy timber conforming with Section  
556 2304.11.2.2 shall be permitted."

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

561 (32) In IBC, Section 602, a new section is added as follows: "602.4.4.2  
562 Cross-laminated timber in exterior walls. Cross-laminated timber complying with Section  
563 2303.1.4 shall be permitted within exterior wall assemblies not less than 6 inches (152 mm) in  
564 thickness with a two-hour rating or less, provided the exterior surface of the cross-laminated  
565 timber is protected by one the following:

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

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

573 shall be permitted to be used externally."

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

575 **15A-2a-204. Amendments to Chapter 7 of IBC.**

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

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

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

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

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

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

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

597 Sealants shall meet the requirements of ASTM C920. Adhesives shall meet the  
598 requirements of ASTM D3498.

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

601 (3) In IBC, Section 718.2.1 is deleted and replaced with the following: "718.2.1  
602 Fireblocking materials. Fireblocking shall consist of the following materials:

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

- 604 2. Two thicknesses of 1-inch (25 mm) nominal lumber with broken lap joints.
- 605 3. One thickness of 0.719-inch (18.3 mm) wood structural panels with joints backed by
- 606 0.719-inch (18.3 mm) wood structural panels.
- 607 4. One thickness of 0.75-inch (19.1 mm) particleboard with joints backed by 0.75-inch
- 608 (19 mm) particleboard.
- 609 5. 1/2 inch (12.7 mm) gypsum board.
- 610 6. 1/4 inch (6.4 mm) cement-based millboard.
- 611 7. Batts or blankets of mineral wool, mineral fiber or other approved materials installed
- 612 in such a manner as to be securely retained in place.
- 613 8. Cellulose insulation installed as tested for the specific application.
- 614 9. Mass timber complying with Section 2304.11."

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

622 (5) In IBC, Section 722, a new section is added as follows: "722.7.1 Minimum required  
 623 protection. Where required by Sections 602.4.1 through 602.4.3, non-combustible protection  
 624 shall be provided for mass timber building elements in accordance with Table 722.7.1(1). The  
 625 rating, in minutes, contributed by the non-combustible protection of mass timber building  
 626 elements, components, or assemblies, shall be established in accordance with Section 703.8.  
 627 The protection contributions indicated in Table 722.7.1(2) and Section 722.7.2 shall be deemed  
 628 to comply with this requirement when installed and fastened in accordance with Section  
 629 722.7.2."

630 (6) In IBC, Section 722, a new table is added as follows: "TABLE 722.7.1(1)  
 631 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>
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632

633	<u>1</u>	<u>40</u>
634	<u>2</u>	<u>80</u>
635	<u>3 or more</u>	<u>120"</u>

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

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

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

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

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

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

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

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

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

661 5. All panel edges shall be attached with screws sized and offset as in items 1 through

662 4 above and placed at least 1 inch but not more than 2 inches from the panel edge.

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

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

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

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

676 (10) In IBC, Section 722, a new section is added as follows: "722.7.2.2 Exterior  
677 surfaces. Layers of Type X gypsum board serving as non-combustible protection for the outside  
678 of the exterior heavy timber walls determined in accordance with Table 722.7.1(1) shall be  
679 fastened 12 inches on center each way and 6 inches on center at all joints or ends. All panel  
680 edges shall be attached with fasteners located at least 1 inch but not more than 2 inches from  
681 the panel edge. Fasteners shall comply with one of the following:

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

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

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

690 (12) In IBC, Section 3102.3 is deleted and replaced with the following: "3102.3 Type  
691 of construction. Non-combustible membrane structures shall be classified as Type IIB  
692 construction. Non-combustible frame or cable-supported structures covered by an approved

693 membrane in accordance with Section 3102.3.1 shall be classified as Type IIB construction.  
694 Heavy timber frame-supported structures covered by an approved membrane in accordance  
695 with Section 3102.3.1 shall be classified as Type IV-HT construction. Other membrane  
696 structures shall be classified as Type V construction.

697 Exception: Plastic less than 30 feet (9144 mm) above any floor used in greenhouses,  
698 where occupancy by the general public is not authorized, and for aquaculture pond covers is  
699 not required to meet the fire propagation performance criteria of Test Method 1 or Test Method  
700 2, as appropriate, of NFPA 701."

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

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

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

708 **15A-2a-301. Amendments to Chapter 7 of IFC.**

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

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

720 **15A-2a-302. Amendments to Chapters 9 and 33 of IFC.**

721 (1) In IFC, Section 914.3.1.2 is deleted and replaced with the following: "914.3.1.2  
722 Water supply to required fire pumps. In all buildings that are more than 420 feet (128m) in  
723 building height, and buildings of Type IV-A and IV-B construction that are more than 120 feet

724 in building height, required fire pumps shall be supplied by connections to not fewer than two  
725 water mains located in different streets. Separate supply piping shall be provided between the  
726 connection and the pumps shall be sized to supply the flow and pressure required for the pumps  
727 to operate.

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

731 (2) In IFC, Section 3308, a new section is added as follows: "3308.9 Fire safety  
732 requirements for buildings of Types IV-A, IV-B, and IV-C construction. Buildings of Types  
733 IV-A, IV-B, and IV-C construction designed to be greater than six stories above grade plane  
734 shall comply with the following requirements during construction unless otherwise approved  
735 by the fire code official:

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

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

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

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

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

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

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

751 **Part 4. Reference Standards**

752 **15A-2a-401. Reference Standards.**

753 ASTM

754 D3498-03(2011): Standard Specification for Adhesives for Field-Gluing Plywood to

755 Lumber Framing for Floor Systems  
756 ASTM International  
757 100 Barr Harbor Drive,  
758 P.O. Box C700  
759 West Conshohocken, PA 19428-2959