

**IBC APPENDIX P**  
**TALL MASS TIMBER BUILDINGS**

**P101**  
**GENERAL**

**P101.1 Purpose.** The purpose of this appendix is to provide criteria for three new mass timber construction types: Type IV-A, Type IV-B and Type IV-C. These building types expand the allowable use of mass timber construction to larger areas and greater heights than allowed for Type IV-HT construction.

**P101.2 Scope.** The provisions in this appendix shall be permitted to be used in addition to or in lieu of the corresponding sections in the 2018 International Building Code, and shall be mandatory where Types IV-A, IV-B and IV-C construction are used. Where building Types IV-A, IV-B, or IV-C are not used, this appendix does not apply.

**P102**  
**AMENDMENTS TO THE 2018 INTERNATIONAL BUILDING CODE**

**CHAPTER 1**  
**SCOPE AND ADMINISTRATION**

*Add new text as follows:*

**110.3.5 Type IV-A, IV-B and IV-C connection protection inspection.** In buildings of Type IV-A, IV-B and IV-C Construction where connection fire resistance ratings are provided by wood cover calculated to meet the requirements of Section 2304.10.1 inspection of the wood *cover* shall be made after the cover is installed but before any other coverings or finishes are installed.

**CHAPTER 2**  
**DEFINITIONS**

*Add new text as follows:*

**MASS TIMBER.** Structural elements of Type IV construction primarily of solid, built-up, panelized or engineered wood products that meet minimum cross section dimensions of Type IV construction.

**NONCOMBUSTIBLE PROTECTION (FOR MASS TIMBER).** Noncombustible material, in accordance with Section 703.5, designed to increase the fire-resistance rating and delay the combustion of mass timber.

*Revise as follows:*

**[BS] WALL, LOAD-BEARING.** Any wall meeting either of the following classifications:

1. Any metal or wood stud wall that supports more than 100 pounds per linear foot (1459 N/m) of vertical load in addition to its own weight.

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

**CHAPTER 4  
SPECIAL DETAILED REQUIREMENTS BASED ON OCCUPANCY AND USE**

Revise as follows:

**[F] 403.3.2 Water supply to required fire pumps.** In all buildings that are more than 420 feet (128 m) in building height, and buildings of Type IV-A and IV-B construction that are more than 120 feet in building height, required fire pumps shall be supplied by connections to not fewer than two water mains located in different streets. Separate supply piping shall be provided between each connection to the water main and the pumps. Each connection and the supply piping between the connection and the pumps shall be sized to supply the flow and pressure required for the pumps to operate.

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

**CHAPTER 5  
GENERAL BUILDING HEIGHT AND AREAS**

Revise as follows:

**TABLE 504.3  
ALLOWABLE BUILDING HEIGHT IN FEET ABOVE GRADE PLANE<sup>a</sup>**

OCCUPANCY CLASSIFICATION	TYPE OF CONSTRUCTION												
	SEE FOOTNOTES	TYPE I		TYPE II		TYPE III		TYPE IV				TYPE V	
		A	B	A	B	A	B	A	B	C	HT	A	B
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	270	180	85	85	70	60
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												
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
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
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									
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
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	270	180	85	85	70	60

For SI: 1 foot = 304.8 mm

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

- a. See Chapters 4 and 5 for specific exceptions to the allowable heights in the chapter.
- b. See Section 903.2 for the minimum thresholds for protection by an automatic sprinkler system for specific occupancies.
- c. New Group H occupancies are required to be protected by an automatic sprinkler system in accordance with Section 903.2.5
- d. The NS value is only for use in evaluation of existing building height in accordance with the International Existing Building Code.
- e. New Group I-1 and I-3 occupancies are required to be protected by an automatic sprinkler system in accordance with Section 903.2.6. For new Group I-1 occupancies Condition 1, see Exception 1 of Section 903.2.6.
- f. New and existing Group I-2 occupancies are required to be protected by an automatic sprinkler system in accordance with Section 903.2.6 and Section 1103.5 of the International Fire Code.
- g. For new Group I-4 occupancies, see Exceptions 2 and 3 of Section 903.2.6.
- h. New Group R occupancies are required to be protected by an automatic sprinkler system in accordance with Section 903.2.8.

Revise as follows:

**TABLE 504.4**  
**ALLOWABLE NUMBER OF STORIES ABOVE GRADE PLANE<sup>a, b</sup>**

OCCUPANCY CLASSIFICATION	TYPE OF CONSTRUCTION												
	SEE FOOTNOTES	TYPE I		TYPE II		TYPE III		TYPE IV				TYPE V	
		A	B	A	B	A	B	A	B	C	HT	A	B
A-1	NS	UL	5	3	2	3	2	3	3	3	3	2	1
	S	UL	6	4	3	4	3	9	6	4	4	3	2
A-2	NS	UL	11	3	2	3	2	3	3	3	3	2	1
	S	UL	12	4	3	4	3	18	12	6	4	3	2
A-3	NS	UL	11	3	2	3	2	3	3	3	3	2	1
	S	UL	12	4	3	4	3	18	12	6	4	3	2
A-4	NS	UL	11	3	2	3	2	3	3	3	3	2	1
	S	UL	12	4	3	4	3	18	12	6	4	3	2
A-5	NS	UL	UL	UL	UL	UL	UL	1	1	1	UL	UL	UL
	S	UL	UL	UL	UL	UL	UL	UL	UL	UL	UL	UL	UL
B	NS	UL	11	5	3	5	3	5	5	5	5	3	2
	S	UL	12	6	4	6	4	18	12	9	6	4	3
E	NS	UL	5	3	2	3	2	3	3	3	3	1	1
	S	UL	6	4	3	4	3	9	6	4	4	2	2
F-1	NS	UL	11	4	2	3	2	3	3	3	4	2	1
	S	UL	12	5	3	4	3	10	7	5	5	3	2

F-2	NS	UL	11	5	3	4	3	5	5	5	5	3	2				
	S	UL	12	6	4	5	4	12	8	6	6	4	3				
H-1	NS <sup>c,d</sup>	1	1	1	1	1	1	NP	NP	NP	1	1	NP				
	S							1	1	1							
H-2	NS <sup>c,d</sup>	UL	3	2	1	2	1	1	1	1	2	1	1				
	S							2	2	2							
H-3	NS <sup>c,d</sup>	UL	6	4	2	4	2	3	3	3	4	2	1				
	S							4	4	4							
H-4	NS <sup>c,d</sup>	UL	7	5	3	5	3	5	5	5	5	3	2				
	S	UL	8	6	4	6	4	8	7	6	6	4	3				
H-5	NS <sup>c,d</sup>	4	4	3	3	3	3	2	2	2	3	3	2				
	S							3	3	3							
I-1 Condition 1	NS <sup>d,e</sup>	UL	9	4	3	4	3	4	4	4	4	3	2				
	S	UL	10	5	4	5	4	10	7	5	5	4	3				
I-1 Condition 2	NS <sup>d,e</sup>	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP				
	S <sup>i</sup>	UL	10	3	2	2	1	7	4	1	2	2	1				
I-2	NS <sup>d,f</sup>	UL	4	2	1	1	NP	NP	NP	NP	1	1	NP				
	S	UL	5	3				7	5	1							
I-3	NS <sup>d,e</sup>	UL	4	2	1	2	1	2	2	2	2	2	1				
	S	UL	5	3	2	3	2	7	5	3	3	3	2				
I-4	NS <sup>d,g</sup>	UL	5	3	2	3	2	3	3	3	3	1	1				
	S	UL	6	4	3	4	3	9	6	4	4	2	2				
M	NS	UL	11	4	2	4	2	4	4	4	4	3	1				
	S	UL	12	5	3	5	3	12	8	6	5	4	2				
R-1 <sup>h</sup>	NS <sup>d</sup>	UL	11	4	4	4	4	4	4	4	4	4	3	2			
	S13R	4	4										4	4	4	4	4
	S	UL	12										5	5	5	5	18
R-2 <sup>h</sup>	NS <sup>d</sup>	UL	11	4	4	4	4	4	4	4	4	4	3	2			
	S13R	4	4										4	4	4	4	4
	S	UL	12										5	5	5	5	18
R-3 <sup>h</sup>	NS <sup>d</sup>	UL	11	4	4	4	4	4	4	4	4	4	3	3			
	S13D	4	4										4	4	4	4	4
	S13R	4	4										4	4	4	4	4
	S	UL	12										5	5	5	5	18
R-4 <sup>h</sup>	NS <sup>d</sup>	UL	11	4	4	4	4	4	4	4	4	4	3	2			
	S13D	4	4										4	4	4	4	4
	S13R	4	4										4	4	4	4	4
	S	UL	12										5	5	5	5	18
S-1	NS	UL	11	4	2	3	2	4	4	4	4	3	1				
	S	UL	12	5	3	4	3	10	7	5	5	4	2				
S-2	NS	UL	11	5	3	4	3	4	4	4	4	4	2				
	S	UL	12	6	4	5	4	12	8	5	5	5	3				
U	NS	UL	5	4	2	3	2	4	4	4	4	2	1				
	S	UL	6	5	3	4	3	9	6	5	5	3	2				

UL = Unlimited; NP = Not Permitted; NS = Buildings not equipped throughout with an automatic sprinkler system; S = Buildings equipped throughout with an automatic sprinkler

system installed in accordance with Section 903.3.1.1; S13R = Buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.2; S13D = Buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.3.

- a. See Chapters 4 and 5 for specific exceptions to the allowable height in this chapter.
- b. See Section 903.2 for the minimum thresholds for protection by an automatic sprinkler system for specific occupancies.
- c. New Group H occupancies are required to be protected by an automatic sprinkler system in accordance with Section 903.2.5.
- d. The NS value is only for use in evaluation of existing building height in accordance with the International Existing Building Code.
- e. New Group I-1 and I-3 occupancies are required to be protected by an automatic sprinkler system in accordance with Section 903.2.6. For new Group I-1 occupancies, Condition 1, see Exception 1 of Section 903.2.6.
- f. New and existing Group I-2 occupancies are required to be protected by an automatic sprinkler system in accordance with Section 903.2.6 and 1103.5 of the International Fire Code.
- g. For new Group I-4 occupancies, see Exceptions 2 and 3 of Section 903.2.6.
- h. New Group R occupancies are required to be protected by an automatic sprinkler system in accordance with Section 903.2.8.
- i. For all I-1 Condition 2, the building shall be protected throughout with an approved automatic sprinkler system, installed in accordance with NFPA 13 as adopted by the Rules and Regulations of the Safety Fire Commissioner. No increase in story height shall be permitted.

Revise as follows:

**TABLE 506.2**  
**ALLOWABLE AREA FACTOR ( $A_t$  = NS, S1, S13R, S13D OR SM, as applicable) IN**  
**SQUARE FEET<sup>a,b</sup>**

OCCUPANCY CLASSIFICATION	SEE FOOTNOTES	TYPE OF CONSTRUCTION											
		TYPE I		TYPE II		TYPE III		TYPE IV			TYPE V		
		A	B	A	B	A	B	A	B	C	HT	A	B
A-1	NS	UL	UL	15,500	8,500	14,000	8,500	45,000	30,000	18,750	15,000	11,500	5,500
	S1	UL	UL	62,000	34,000	56,000	34,000	180,000	120,000	75,000	60,000	46,000	22,000
	SM	UL	UL	46,500	25,500	42,000	25,500	135,000	90,000	56,250	45,000	34,500	16,500
A-2	NS	UL	UL	15,500	9,500	14,000	9,500	45,000	30,000	18,750	15,000	11,500	6,000
	S1	UL	UL	62,000	38,000	56,000	38,000	180,000	120,000	75,000	60,000	46,000	24,000
	SM	UL	UL	46,500	28,500	42,000	28,500	135,000	90,000	56,250	45,000	34,500	18,000
A-3	NS	UL	UL	15,500	9,500	14,000	9,500	45,000	30,000	18,750	15,000	11,500	6,000
	S1	UL	UL	62,000	38,000	56,000	38,000	180,000	120,000	75,000	60,000	46,000	24,000
	SM	UL	UL	46,500	28,500	42,000	28,500	135,000	90,000	56,250	45,000	34,500	18,000
A-4	NS	UL	UL	15,500	9,500	14,000	9,500	45,000	30,000	18,750	15,000	11,500	6,000
	S1	UL	UL	62,000	38,000	56,000	38,000	180,000	120,000	75,000	60,000	46,000	24,000
	SM	UL	UL	46,500	28,500	42,000	28,500	135,000	90,000	56,250	45,000	34,500	18,000
A-5	NS												
	S1	UL	UL	UL	UL	UL	UL	UL	UL	UL	UL	UL	UL
	SM												
B	NS	UL	UL	37,500	23,000	28,500	19,000	108,000	72,000	45,000	36,000	18,000	9,000
	S1	UL	UL	150,000	92,000	114,000	76,000	432,000	288,000	180,000	144,000	72,000	36,000
	SM	UL	UL	112,500	69,000	85,500	57,000	324,000	216,000	135,000	108,000	54,000	27,000
E	NS	UL	UL	26,500	14,500	23,500	14,500	76,500	51,000	31,875	25,500	18,500	9,500
	S1	UL	UL	106,000	58,000	94,000	58,000	306,000	204,000	127,500	102,000	74,000	38,000
	SM	UL	UL	79,500	43,500	70,500	43,500	229,500	153,000	95,625	76,500	55,500	28,500
F-1	NS	UL	UL	25,000	15,500	19,000	12,000	100,500	67,000	41,875	33,500	14,000	8,500
	S1	UL	UL	100,000	62,000	76,000	48,000	402,000	268,000	167,500	134,000	56,000	34,000
	SM	UL	UL	75,000	46,500	57,000	36,000	301,500	201,000	125,625	100,500	42,000	25,500
F-2	NS	UL	UL	37,500	23,000	28,500	18,000	151,500	101,000	63,125	50,500	21,000	13,000
	S1	UL	UL	150,000	92,000	114,000	72,000	606,000	404,000	252,500	202,000	84,000	52,000
	SM	UL	UL	112,500	69,000	85,500	54,000	454,500	303,000	189,375	151,500	63,000	39,000
H-1	NS <sup>c</sup>												
	S1	21,000	16,500	11,000	7,000	9,500	7,000	10,500	10,500	10,500	10,500	7,500	NP
H-2	NS <sup>c</sup>												
	S1	21,000	16,500	11,000	7,000	9,500	7,000	10,500	10,500	10,500	10,500	7,500	3,000
	SM												
H-3	NS <sup>c</sup>												
	S1	UL	60,000	26,500	14,000	17,500	13,000	25,500	25,500	25,500	25,500	10,000	5,000
	SM												
H-4	NS <sup>c,d</sup>	UL	UL	37,500	17,500	28,500	17,500	72,000	54,000	40,500	36,000	18,000	6,500
	S1	UL	UL	150,000	70,000	114,000	70,000	288,000	216,000	162,000	144,000	72,000	26,000
	SM	UL	UL	112,500	52,500	85,500	52,500	216,000	162,000	121,500	108,000	54,000	19,500

H-5	NS <sup>c,d</sup>	UL	UL	37,500	23,000	28,500	19,000	72,000	54,000	40,500	36,000	18,000	9,000
	S1	UL	UL	150,000	92,000	114,000	76,000	288,000	216,000	162,000	144,000	72,000	36,000
	SM	UL	UL	112,500	69,000	85,500	57,000	216,000	162,000	121,500	108,000	54,000	27,000
I-1	NS <sup>d,e</sup>	UL	55,000	19,000	10,000	16,500	10,000	54,000	36,000	18,000	18,000	10,500	4,500
	S1	UL	220,000	76,000	40,000	66,000	40,000	216,000	144,000	72,000	72,000	42,000	18,000
	SM	UL	165,000	57,000	30,000	49,500	30,000	162,000	108,000	54,000	54,000	31,500	13,500
I-2	NS <sup>d,f</sup>	UL	15,000	11,000	12,000	NP	NP	36,000	24,000	12,000	12,000	9,500	NP
	S1	UL	60,000	44,000	48,000	NP	NP	144,000	96,000	48,000	48,000	38,000	NP
	SM	UL	45,000	33,000	36,000	NP	NP	108,000	72,000	36,000	36,000	28,500	NP
I-3	NS <sup>d,e</sup>	UL	15,000	10,000	10,500	7,500	36,000	24,000	12,000	12,000	7,500	5,000	
	S1	UL	45,000	40,000	42,000	30,000	144,000	96,000	48,000	48,000	30,000	20,000	
	SM	UL	45,000	30,000	31,500	22,500	108,000	72,000	36,000	36,000	22,500	15,000	
I-4	NS <sup>d,g</sup>	UL	60,500	26,500	13,000	23,500	13,000	76,500	51,000	25,500	25,500	18,500	9,000
	S1	UL	121,000	106,000	52,000	94,000	52,000	306,000	204,000	102,000	102,000	74,000	36,000
	SM	UL	181,500	79,500	39,000	70,500	39,000	229,500	153,000	76,500	76,500	55,500	27,000
M	NS	UL	21,500	12,500	18,500	12,500	61,500	41,000	25,625	20,500	14,000	9,000	
	S1	UL	86,000	50,000	74,000	50,000	246,000	164,000	102,500	82,000	56,000	36,000	
	SM	UL	64,500	37,500	55,500	37,500	184,500	123,000	76,875	61,500	42,000	27,000	
R-1 <sup>h</sup>	NS <sup>d</sup>												
	S13R	UL	UL	24,000	16,000	24,000	16,000	61,500	41,000	25,625	20,500	12,000	7,000
	S1	UL	UL	96,000	64,000	96,000	64,000	246,000	164,000	102,500	82,000	48,000	28,000
	SM	UL	UL	72,000	48,000	72,000	48,000	184,500	123,000	76,875	61,500	36,000	21,000
R-2 <sup>h</sup>	NS <sup>d</sup>												
	S13R	UL	UL	24,000	16,000	24,000	16,000	61,500	41,000	25,625	20,500	12,000	7,000
	S1	UL	UL	96,000	64,000	96,000	64,000	246,000	164,000	102,500	82,000	48,000	28,000
	SM	UL	UL	72,000	48,000	72,000	48,000	184,500	123,000	76,875	61,500	36,000	21,000
R-3 <sup>h</sup>	NS <sup>d</sup>												
	S13D												
	S13R	UL	UL	UL	UL	UL	UL	UL	UL	UL	UL	UL	UL
	S1												
	SM												
R-4 <sup>h</sup>	NS <sup>d</sup>												
	S13D												
	S13R	UL	UL	24,000	16,000	24,000	16,000	61,500	41,000	25,625	20,500	12,000	7,000
	S1	UL	UL	96,000	64,000	96,000	64,000	246,000	164,000	102,500	82,000	48,000	28,000
	SM	UL	UL	72,000	48,000	72,000	48,000	184,500	123,000	76,875	61,500	36,000	21,000
S-1	NS	UL	48,000	26,000	17,500	26,000	17,500	76,500	51,000	31,875	25,500	14,000	9,000
	S1	UL	192,000	104,000	70,000	104,000	70,000	306,000	204,000	127,500	102,000	56,000	36,000
	SM	UL	144,000	78,000	52,500	78,000	52,500	229,500	153,000	95,625	76,500	42,000	27,000
S-2	NS	UL	79,000	39,000	26,000	39,000	26,000	115,500	77,000	48,125	38,500	21,000	13,500
	S1	UL	316,000	156,000	104,000	156,000	104,000	462,000	308,000	192,500	154,000	84,000	54,000
	SM	UL	237,000	117,000	78,000	117,000	78,000	346,500	231,000	144,375	115,500	63,000	40,500
U	NS <sup>i</sup>	UL	35,500	19,000	8,500	14,000	8,500	54,000	36,000	22,500	18,000	9,000	5,500
	S1	UL	142,000	76,000	34,000	56,000	34,000	216,000	144,000	90,000	72,000	36,000	22,000
	SM	UL	106,500	57,000	25,500	42,000	25,500	162,000	108,000	67,500	54,000	27,000	16,500

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

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

- See Chapters 4 and 5 for specific exceptions to the allowable height in this chapter.
- See Section 903.2 for the minimum thresholds for protection by an automatic sprinkler system for specific occupancies.
- New Group H occupancies are required to be protected by an automatic sprinkler system in accordance with Section 903.2.5.
- The NS value is only for use in evaluation of existing building area in accordance with the International Existing Building Code.
- New Group I-1 and I-3 occupancies are required to be protected by an automatic sprinkler system in accordance with Section 903.2.6. For new Group I-1 occupancies, Condition 1, see Exception 1 of Section 903.2.6.
- New and existing Group I-2 occupancies are required to be protected by an automatic sprinkler system in accordance with Section 903.2.6 and Section 1103.5 of the International Fire Code.
- New Group I-4 occupancies see Exceptions 2 and 3 of Section 903.2.6.

- h. New Group R occupancies are required to be protected by an automatic sprinkler system in accordance with Section 903.2.8.
- i. The maximum allowable area for a single-story nonsprinklered Group U greenhouse is permitted to be 9,000 square feet, or the allowable area shall be permitted to comply with Table C102.1 of Appendix C.

*Revise as follows:*

**508.4.4.1 Construction.** Required separations shall be fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both, so as to completely separate adjacent occupancies. Mass timber elements serving as fire barriers or horizontal assemblies to separate occupancies in Type IV-B or IV-C construction shall be separated from the interior of the building with an approved thermal barrier consisting of gypsum board that is not less than 12 inch (12.7 mm) in thickness or a material that is tested in accordance with and meets the acceptance criteria of both the Temperature Transmission Fire Test and the Integrity Fire Test of NFPA 275.

*Add new text as follows:*

**509.4.1.1 Type IV-B and IV-C construction.** Where Table 509 specifies a fire-resistance-rated separation, mass timber elements serving as fire barriers or horizontal assemblies in Type IV-B or IV-C construction shall be separated from the interior of the incidental use with an approved thermal barrier consisting of gypsum board that is not less than 12 inch (12.7 mm) in thickness or a material that is tested in accordance with and meets the acceptance criteria of both the Temperature Transmission Fire Test and the Integrity Fire Test of NFPA 275.

## CHAPTER 6 TYPES OF CONSTRUCTION

*Revise as follows:*

### **602.4 Type IV.**

Type IV construction is that type of construction in which the building elements are mass timber or noncombustible materials and have fire resistance ratings in accordance with Table 601. Mass timber elements shall meet the fire resistance rating requirements of this section based on either the fire resistance rating of the noncombustible protection, the mass timber, or a combination of both and shall be determined in accordance with Section 703.2 or 703.3. The minimum dimensions and permitted materials for building elements shall comply with the provisions of this section and Section 2304.11. Mass timber elements of Type IV-A, IV-B and IV-C construction shall be protected with noncombustible protection applied directly to the mass timber in accordance with Sections 602.4.1 through 602.4.3. The time assigned to the noncombustible protection shall be determined in accordance with Section 703.8 and comply with Section 722.7.

Cross laminated timber shall be labeled as conforming to PRG 320-19 as reference in Section 2303.1.4.

Exterior load bearing walls and nonload-bearing walls shall be mass timber construction, or shall be of noncombustible construction.

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

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

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

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

In buildings of Type IV-A, IV-B and IV-C, construction with an occupied floor located more than 75 feet (22 860 mm) above the lowest level of fire department access, up to and including 12 stories or 180 feet (54 864 mm) above grade plane, mass timber interior exit and elevator hoistway enclosures shall be protected in accordance with Section 602.4.1.2. In buildings greater than 12 stories or 180 feet (54 864 mm) above grade plane, interior exit and elevator hoistway enclosures shall be constructed of non-combustible materials.

*Add new text as follows:*

**602.4.1 Type IV-A.** Building elements in Type IV-A construction shall be protected in accordance with Sections 602.4.1.1 through 602.4.1.6. The required fire resistance rating of noncombustible elements and protected mass timber elements shall be determined in accordance with Section 703.2 or Section 703.3.

**602.4.1.1 Exterior protection.** The outside face of exterior walls of mass timber construction shall be protected with noncombustible protection with a minimum assigned time of 40 minutes as determined in Table 722.7.1(1). Components of the exterior wall covering shall be of noncombustible material except water resistive barriers having a peak heat release rate of less than 150 kW/m<sup>2</sup>, a total heat release of less than 20 MJ/m<sup>2</sup> and an effective heat of combustion of less than 18 MJ/kg as determined in accordance with ASTM E1354 and having a flame spread index of 25 or less and a smoke-developed index of 450 or less as determined in accordance with ASTM E84 or UL 723. The ASTM E1354 test shall be conducted on specimens at the thickness intended for use, in the horizontal orientation and at an incident radiant heat flux of 50 kW/m<sup>2</sup>.

**602.4.1.2 Interior protection.** Interior faces of all mass timber elements, including the inside faces of exterior mass timber walls and mass timber roofs, shall be protected with material complying with Section 703.5.

**602.4.1.2.1 Protection time.** Noncombustible protection shall contribute a time equal to or greater than times assigned in Table 722.7.1(1), but not less than 80 minutes. The use of materials and their respective protection contributions listed in Table 722.7.1(2) shall be permitted to be used for compliance with Section 722.7.1.

**602.4.1.3 Floors.** The floor assembly shall contain a noncombustible material not less than 1 inch (25 mm) in thickness above the mass timber. Floor finishes in accordance with Section

804 shall be permitted on top of the noncombustible material. The underside of floor assemblies shall be protected in accordance with 602.4.1.2.

**602.4.14 Roofs.** The interior surfaces of roof assemblies shall be protected in accordance with Section 602.4.1.2. Roof coverings in accordance with Chapter 15 shall be permitted on the outside surface of the roof assembly.

**602.4.15 Concealed spaces.** Concealed spaces shall not contain combustibles other than electrical, mechanical, fire protection, or plumbing materials and equipment permitted in plenums in accordance with Section 602 of the International Mechanical Code, and shall comply with all applicable provisions of Section 718. Combustible construction forming concealed spaces shall be protected in accordance with Sections 602.4.1.2.

**602.4.16 Shafts.** Shafts shall be permitted in accordance with Section 713 and Section 718. Both the shaft side and room side of mass timber elements shall be protected in accordance with Section 602.4.1.2.

**602.4.2 Type IV-B.** Building elements in Type IV-B construction shall be protected in accordance with Sections 602.4.2.1 through 602.4.2.6. The required fire resistance rating of noncombustible elements or mass timber elements shall be determined in accordance with Section 703.2 or Section 703.3.

**602.4.2.1 Exterior protection.** The outside face of exterior walls of mass timber construction shall be protected with non-combustible protection with a minimum assigned time of 40 minutes as determined in Table 722.7.1(1). Components of the exterior wall covering shall be of noncombustible material except water resistive barriers having a peak heat release rate of less than 150 kW/m<sup>2</sup>, a total heat release of less than 20 MJ/m<sup>2</sup> and an effective heat of combustion of less than 18 MJ/kg as determined in accordance with ASTM E1354, and having a flame spread index of 25 or less and a smoke-developed index of 450 or less as determined in accordance with ASTM E84 or UL 723. The ASTM E1354 test shall be conducted on specimens at the thickness intended for use, in the horizontal orientation and at an incident radiant heat flux of 50 kW/m<sup>2</sup>.

**602.4.2.2 Interior protection.** Interior faces of all mass timber elements, including the inside face of exterior mass timber walls and mass timber roofs, shall be protected, as required by this section, with materials complying with Section 703.5.

**602.4.2.2.1 Protection time.** Noncombustible protection shall contribute a time equal to or greater than times assigned in Table 722.7.1(1), but not less than 80 minutes. The use of materials and their respective protection contributions listed in Table 722.7.1(2) shall be permitted to be used for compliance with Section 722.7.1.

**602.4.2.2.2 Protected area.** Interior faces of all mass timber elements, including the inside face of exterior mass timber walls and mass timber roofs, shall be protected in accordance with Section 602.4.2.2.1.

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

1. Unprotected portions of mass timber ceilings and walls complying with one of the following:

1.1 Unprotected portions of mass timber ceilings, including attached beams, shall be permitted and shall be limited to an area equal to 20 percent of the floor area in any dwelling unit or fire area.

1.2 Unprotected portions of mass timber walls, including attached columns, shall be permitted and shall be limited to an area equal to 40 percent of the floor area in any dwelling unit or fire area.

1.3 Unprotected portions of both walls and ceilings of mass timbers, including attached columns and beams, in any dwelling unit or fire area shall be permitted in accordance with Section 602.4.2.2.3.

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

**602.4.2.2.3 Mixed unprotected areas.** In each dwelling unit or fire area, where both portions of ceilings and portions of walls are unprotected, the total allowable unprotected area shall be determined in accordance with Equations 6-1.

$$(U_{tc}/U_{ac}) + (U_{tw}/U_{aw}) \leq 1 \quad \text{(Equation 6-1)}$$

where:

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

$U_{ac}$  = Allowable unprotected mass timber ceiling area conforming to Exception 1.1 of Section 602.4.2.2.2.

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

$U_{aw}$  = Allowable unprotected mass timber wall area conforming to Exception 1.2 of Section 602.4.2.2.2.

**602.4.2.2.4 Separation distance between unprotected mass timber elements.** In each dwelling unit or fire area, unprotected portions of mass timber walls and ceilings shall be not less than 15 feet (4572 mm) from unprotected portions of other walls and ceilings, measured horizontally along the ceiling and from other unprotected portions of walls measure horizontally along the floor.

**602.4.2.3 Floors.** The floor assembly shall contain a noncombustible material not less than 1 inch (25 mm) in thickness above the mass timber. Floor finishes in accordance with Section 804 shall be permitted on top of the noncombustible material. The underside of floor assemblies shall be protected in accordance with Section 602.4.1.2.

**602.4.2.4 Roofs.** The interior surfaces of roof assemblies shall be protected in accordance with Section 602.4.2.2 except, in nonoccupiable spaces, they shall be treated as a concealed space with no portion left unprotected. Roof coverings in accordance with Chapter 15 shall be permitted on the outside surface of the roof assembly.

**602.4.2.5 Concealed spaces.** Concealed spaces shall not contain combustibles other than electrical, mechanical, fire protection, or plumbing materials and equipment permitted in

plenums in accordance with Section 602 of the International Mechanical Code, and shall comply with all applicable provisions of Section 718. Combustible construction forming concealed spaces shall be protected in accordance with Section 602.4.1.2.

**602.4.2.6 Shafts.** Shafts shall be permitted in accordance with Section 713 and Section 718. Both the shaft side and room side of mass timber elements shall be protected in accordance with Section 602.4.1.2.

**602.4.3 Type IV-C.** Building elements in Type IV-C construction shall be protected in accordance with Sections 602.4.3.1 through 602.4.3.6. The required fire resistance rating of building elements shall be determined in accordance with Section 703.2 or Section 703.3.

**602.4.3.1 Exterior protection.** The exterior side of walls of combustible construction shall be protected with noncombustible protection with a minimum assigned time of 40 minutes as determined in Table 722.7.1(1). Components of the exterior wall covering shall be of noncombustible material except water resistive barriers having a peak heat release rate of less than 150 kW/m<sup>2</sup>, a total heat release of less than 20 MJ/m<sup>2</sup> and an effective heat of combustion of less than 18 MJ/kg as determined in accordance with ASTM E1354 and having a flame spread index of 25 or less and a smoke-developed index of 450 or less as determined in accordance with ASTM E84 or UL 723. The ASTM E1354 test shall be conducted on specimens at the thickness intended for use, in the horizontal orientation and at an incident radiant heat flux of 50 kW/m<sup>2</sup>.

**602.4.3.2 Interior protection.** Mass timber elements are permitted to be unprotected.

**602.4.3.3 Floors.** Floor finishes in accordance with Section 804 shall be permitted on top of the floor construction.

**602.4.3.4 Roofs.** Roof coverings in accordance with Chapter 15 shall be permitted on the outside surface of the roof assembly.

**602.4.3.5 Concealed spaces.** Concealed spaces shall not contain combustibles other than electrical, mechanical, fire protection, or plumbing materials and equipment permitted in plenums in accordance with Section 602 of the International Mechanical Code, and shall comply with all applicable provisions of Section 718. Combustible construction forming concealed spaces shall be protected with noncombustible protection with a minimum assigned time of 40 minutes as specified in Table 722.7.1(1).

**602.4.3.6 Shafts.** Shafts shall be permitted in accordance with Section 713 and 718. Shafts and elevator hoistway and interior exit stairway enclosures shall be protected with noncombustible protection with a minimum assigned time of 40 minutes as specified in Table 722.7.1(1), on both the inside of the shaft and the outside of the shaft.

**602.4.4 Type IV-HT.** Type IV-HT (Heavy Timber) construction is that type of construction in which the exterior walls are of noncombustible materials and the interior building elements are of solid wood, laminated heavy timber or structural composite lumber (SCL), without concealed spaces. The minimum dimensions for permitted materials including solid timber, glued-laminated timber, structural composite lumber (SCL) and cross laminated timber (CLT) and

details of Type IV construction shall comply with the provisions of this section and Section 2304.11. Exterior walls complying with Section 602.4.4.1 or 602.4.4.2 shall be permitted. Interior walls and partitions not less than 1-hour fire resistance rating or heavy timber conforming with Section 2304.11.2.2 shall be permitted.

*Renumber and Revise as follows:*

**602.4.1 to 602.4.4.1 Fire-retardant-treated wood in exterior walls.** Fire-retardant-treated wood framing and sheathing complying with Section 2303.2 shall be permitted within exterior wall assemblies not less than 6 inches (152 mm) in thickness with a 2-hour rating or less.

**602.4.2 to 602.4.4.2 Cross-laminated timber in exterior walls.** Cross-laminated timber complying with Section 2303.1.4 shall be permitted within exterior wall assemblies not less than 6 inches (152 mm) in thickness with a 2-hour rating or less, provided the exterior surface of the cross-laminated timber is protected by one of the following:

1. Fire-retardant-treated wood sheathing complying with Section 2303.2 and not less than <sup>15</sup>/<sub>32</sub> inch (12 mm) thick; or
2. Gypsum board not less than <sup>1</sup>/<sub>2</sub> inch (12.7 mm) thick; or
3. A noncombustible material.

**602.4.3 to 602.4.4.3 Exterior structural members.** Where a horizontal separation of 20 feet (6096 mm) or more is provided, wood columns and arches conforming to heavy timber sizes complying with Section 2304.11 shall be permitted to be used externally.

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

BUILDING ELEMENT	TYPE I		TYPE II		TYPE III		TYPE IV				TYPE V	
	A	B	A	B	A	B	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>	1 <sup>b</sup>	0	1 <sup>b</sup>	0	<u>3<sup>a</sup></u>	<u>2<sup>a</sup></u>	<u>2<sup>a</sup></u>	HT	1 <sup>b</sup>	0
Bearing walls	3	2	1	0	2	2	<u>3</u>	<u>2</u>	<u>2</u>	2	1	0
Exterior <sup>e,f</sup>	3 <sup>a</sup>	2 <sup>a</sup>	1	0	1	0	<u>3</u>	<u>2</u>	<u>2</u>	1/HT	1	0
Interior												
Nonbearing walls and partitions Exterior	See Table 602											
Nonbearing walls and partitions Interior <sup>d</sup>	0	0	0	0	0	0	<u>0</u>	<u>0</u>	<u>0</u>	See Section 2304.11.2	0	0

Floor construction and associated secondary members (see Section 202)	2	2	1	0	1	0	<u>2</u>	<u>2</u>	<u>2</u>	HT	1	0
Roof construction and associated secondary members (see Section 202)	1 $\frac{1}{2}^b$	1 <sup>b,c</sup>	1 <sup>b,c</sup>	0 <sup>c</sup>	1 <sup>b,c</sup>	0	$\frac{1}{2}$	<u>1</u>	<u>1</u>	HT	1 <sup>b,c</sup>	0

For SI: 1 foot = 304.8 mm.

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

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

FIRE SEPARATION DISTANCE = X (feet)	TYPE OF CONSTRUCTION	OCCUPANCY GROUP H <sup>e</sup>	OCCUPANCY GROUP F-1, M, S-1 <sup>f</sup>	OCCUPANCY GROUP A, B, E, F-2, I, R <sup>i</sup> , S-2, U <sup>h</sup>
X < 5 <sup>b</sup>	All	3	2	1
5 ≤ X < 10	IA, IV-A	3	2	1
	Others	2	1	1
10 ≤ X < 30	IA, IB, IV-A, IV-B	2	1	1 <sup>c</sup>
	IIB, VB	1	0	0
	Others	1	1	1 <sup>c</sup>
X ≥ 30	All	0	0	0

For SI: 1 foot = 304.8 mm.

- a. Load-bearing exterior walls shall also comply with the fire-resistance rating requirements of Table 601.
- b. See Section 706.1.1 for party walls.
- c. Open parking garages complying with Section 406 shall not be required to have a fire-resistance rating.
- d. The fire-resistance rating of an exterior wall is determined based upon the fire separation distance of the exterior wall and the story in which the wall is located.
- e. For special requirements for Group H occupancies, see Section 415.6.
- f. For special requirements for Group S aircraft hangers, see Section 412.3.1.
- g. Where Table 705.8 permits nonbearing exterior walls with unlimited area of unprotected openings, the required fire-resistance rating for the exterior walls is 0 hours.
- h. For a building containing only a Group U occupancy private garage or carport, the exterior wall shall not be required to have a fire-resistance rating where the fire separation distance is 5 feet (1523 mm) or greater.
- i. For a Group R-3 building of Type II-B or Type V-B construction, the exterior wall shall not be required to have a fire-resistance rating where the fire separation distance is 5 feet (1523 mm) or greater.

## CHAPTER 7 FIRE AND SMOKE PROTECTION FEATURES

*Add new text as follows:*

**703.8 Determination of noncombustible protection time contribution.** The time, in minutes, contributed to the fire resistance rating by the noncombustible protection of mass timber building elements, components, or assemblies, shall be established through a comparison of assemblies tested using procedures set forth in ASTM E119 or UL263. The test assemblies shall be identical in construction, loading, and materials, other than the noncombustible protection. The two test assemblies shall be tested to the same criteria of structural failure with the following conditions:

1. Test Assembly 1 shall be without protection.
2. Test Assembly 2 shall include the representative noncombustible protection. The protection shall be fully defined in terms of configuration details, attachment details, joint sealing details, accessories and all other relevant details.

The noncombustible protection time contribution shall be determined by subtracting the fire resistance time, in minutes, of Test Assembly 1 from the fire resistance time, in minutes, of Test Assembly 2.

*Add new text as follows:*

**703.9 Sealing of adjacent mass timber elements.** In buildings of Type IV-A, IV-B and IV-C construction, sealant or adhesive shall be provided to resist the passage of air in the following locations:

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

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

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

*Revise as follows:*

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

**Exceptions:**

1. On buildings of Types I and II construction, three stories or less above grade plane, fire-retardant-treated wood shall be permitted for balconies, porches, decks and exterior stairways not used as required exits.
2. Untreated wood and plastic composites that comply with ASTM D7032 and Section 2612 are permitted for pickets, rails and similar guard components that are limited to 42 inches (1067 mm) in height.
3. Balconies and similar projections on buildings of Types III, IV-HT and V construction shall be permitted to be of Type V construction and shall not be required to have a fire-resistance rating where sprinkler protection is extended to these areas.
4. Where sprinkler protection is extended to the balcony areas, the aggregate length of the balcony on each floor shall not be limited.

*Revise as follows:*

**718.2.1 Fireblocking materials.** Fireblocking shall consist of the following materials:

1. Two-inch (51 mm) nominal lumber.
2. Two thicknesses of 1-inch (25 mm) nominal lumber with broken lap joints.
3. One thickness of 0.719-inch (18.3 mm) wood structural panels with joints backed by 0.719-inch (18.3 mm) wood structural panels.
4. One thickness of 0.75-inch (19.1 mm) particleboard with joints backed by 0.75-inch (19 mm) particleboard.
5. One-half-inch (12.7 mm) gypsum board.
6. One-fourth-inch (6.4 mm) cement-based millboard.
7. Batts or blankets of mineral wool, mineral fiber or other approved materials installed in such a manner as to be securely retained in place.
8. Cellulose insulation installed as tested for the specific application.
9. Mass timber complying with Section 2304.11.

Add new text as follows:

**722.7 Fire resistance rating of mass timber.** The required fire resistance of mass timber elements in Section 602.4 shall be determined in accordance with Section 703.2 or Section 703.3. The fire resistance rating of building elements shall be as required in Tables 601 and 602 and as specified elsewhere in this code. The fire resistance rating of the mass timber elements shall consist of the fire resistance of the unprotected element added to the protection time of the noncombustible protection.

**722.7.1 Minimum required protection.** Where required by Sections 602.4.1 through 602.4.3, noncombustible protection shall be provided for mass timber building elements in accordance with Table 722.7.1(1). The rating, in minutes, contributed by the noncombustible protection of mass timber building elements, components, or assemblies, shall be established in accordance with Section 703.8. The protection contributions indicated in Table 722.7.1(2) shall be deemed to comply with this requirement where installed and fastened in accordance with Section 722.7.2.

**TABLE 722.7.1(1)  
PROTECTION REQUIRED FROM NONCOMBUSTIBLE COVERING MATERIAL**

REQUIRED FIRE-RESISTANCE RATING OF BUILDING ELEMENT PER TABLE 601 AND TABLE 602 (hours)	MINIMUM PROTECTION REQUIRED FROM NONCOMBUSTIBLE PROTECTION (minutes)
1	40
2	80
3 or more	120

**TABLE 722.7.1(2)  
PROTECTION PROVIDED BY NONCOMBUSTIBLE COVERING MATERIAL**

NONCOMBUSTIBLE PROTECTION	PROTECTION CONTRIBUTION (minutes)
<sup>1</sup> / <sub>2</sub> -inch Type X gypsum board	25
<sup>5</sup> / <sub>8</sub> -inch Type X gypsum board	40

**722.7.2 Installation of gypsum board noncombustible protection.** Gypsum board complying with Table 722.7.1(2) shall be installed in accordance with this section.

**722.7.2.1 Interior surfaces.** Layers of Type X gypsum board serving as noncombustible protection for interior surfaces of wall and ceiling assemblies determined in accordance with Table 722.7.1(1) shall be installed in accordance with the following:

1. Each layer shall be attached with Type S drywall screws of sufficient length to penetrate the mass timber at least 1-inch (25 mm) when driven flush with the paper surface of the gypsum board.  
**Exception:** The third layer, where determined necessary by Section 722.7, shall be permitted to be attached with 1-inch (25 mm) No. 6 Type S drywall screws to furring channels in accordance with AISI S220.
2. Screws for attaching the base layer shall be 12 inches (305 mm) on center in both directions.
3. Screws for each layer after the base layer shall be 12 inches (305 mm) on center in both directions and offset from the screws of the previous layers by 4 inches (102 mm) in both directions.
4. All panel edges of any layer shall be offset 18 inches (457 mm) from those of the previous layer.
5. All panel edges shall be attached with screws sized and offset as in Items 1 through 4 and placed at least 1 inch (25 mm) but not more than 2 inches (51 mm) from the panel edge.
6. All panels installed at wall-to-ceiling intersections shall be installed such that ceiling panels are installed first and the wall panels are installed after the ceiling panel has been installed and is fitted tight to the ceiling panel. Where multiple layers are required, each layer shall repeat this process.
7. All panels installed at a wall-to-wall intersection shall be installed such that the panels covering an exterior wall or a wall with a greater fire resistance rating shall be installed first and the panels covering the other wall shall be fitted tight to the panel covering the first wall. Where multiple layers are required, each layer shall repeat this process.
8. Panel edges of the face layer shall be taped and finished with joint compound. Fastener heads shall be covered with joint compound.
9. Panel edges protecting mass timber elements adjacent to unprotected mass timber elements in accordance with Section 602.4.2.2 shall be covered with 1 ¼-inch (32 mm) metal corner bead and finished with joint compound.

**722.7.2.2 Exterior surfaces.** Layers of Type X gypsum board serving as noncombustible protection for the outside of the exterior mass timber walls determined in accordance with Table 722.7.1(1) shall be fastened 12 inches (305 mm) on center each way and 6 inches (152 mm) on center at all joints or ends. All panel edges shall be attached with fasteners located at least 1 inch (25 mm) but not more than 2 inches (51 mm) from the panel edge. Fasteners shall comply with one of the following:

1. Galvanized nails of minimum 12 gage with a 7/16-inch (11 mm) inch head of sufficient length to penetrate the mass timber a minimum of 1 inch (25 mm).
2. Screws which comply with ASTM C1002 (Type S, W, or G) of sufficient length to penetrate the mass timber a minimum of 1 inch (25 mm).

## CHAPTER 14 EXTERIOR WALLS

*Revise as follows:*

**1405.1.1 Types I, II, III and IV-HT construction.** On buildings of Types I, II, III and IV-HT construction, *exterior wall coverings* shall be permitted to be constructed of combustible materials, complying with the following limitations:

1. Combustible *exterior wall coverings* shall not exceed 10 percent of an *exterior wall* surface area where the *fire separation distance* is 5 feet (1524 mm) or less.
2. Combustible *exterior wall coverings* shall be limited to 40 feet (12 192 mm) in height above *grade plane*.
3. Combustible *exterior wall coverings* constructed of *fire-retardant-treated wood* complying with Section 2303.2 for exterior installation shall not be limited in wall surface area where the *fire separation distance* is 5 feet (1524 mm) or less and shall be permitted up to 60 feet (18 288 mm) in height above *grade plane* regardless of the *fire separation distance*.
4. Wood *veneers* shall comply with Section 1404.5.

## CHAPTER 17 SPECIAL INSPECTIONS AND TESTS

*Add new text as follows:*

**1705.5.3 Mass Timber construction.** Special inspections of mass timber elements in Types IV-A, IV-B and IV-C construction shall be in accordance with Table 1705.5.3.

*Add new table as follows:*

**TABLE 1705.5.3**  
**REQUIRED SPECIAL INSPECTION OF MASS TIMBER CONSTRUCTION**

TYPE		CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION	
1.	Inspection of anchorage and connections of mass timber construction to timber deep foundation systems.	—	X	
2.	Inspect erection of mass timber construction.	—	X	
3.	Inspection of connections where installation methods are required to meet design loads.			
	Threaded fasteners	Verify use of proper installation equipment.	—	X
		Verify use of pre-drilled holes where required.	—	X
		Inspect screws, including diameter, length, head type, spacing, installation angle and depth.	—	X
	Adhesive anchors installed in horizontal or upwardly inclined orientation to resist sustained tension loads.		X	—
	Adhesive anchors not defined in preceding cell.		—	X
	Bolted connections.		—	X
	Concealed connections.		—	X

*Add new text as follows:*

**1705.19 Sealing of mass timber** Periodic special inspections of sealants or adhesives shall be conducted where sealant or adhesive required by Section 703.9 is applied to mass timber building elements as designated in the approved construction documents.

## CHAPTER 23 WOOD

*Add new text as follows:*

**2304.10.1 Connection fire-resistance rating.** Fire resistance ratings for connections in Type IV-A, IV-B, or IV-C construction shall be determined by one of the following:

1. Testing in accordance with Section 703.2 where the connection is part of the fire resistance test.
2. Engineering analysis that demonstrates that the temperature rise at any portion of the connection is limited to an average temperature rise of 250°F (139° C), and a maximum temperature rise of 325°F (181° C), for a time corresponding to the required fire resistance rating of the structural element being connected. For the purposes of this analysis, the connection includes connectors, fasteners, and portions of wood members included in the structural design of the connection.

## CHAPTER 31 SPECIAL CONSTRUCTION

*Revise as follows:*

**3102.3 Type of construction.** Noncombustible membrane structures shall be classified as Type II B construction. Noncombustible frame or cable-supported structures covered by an approved membrane in accordance with Section 3102.3.1 shall be classified as Type II B construction. Heavy timber frame-supported structures covered by an approved membrane in accordance with Section 3102.3.1 shall be classified as Type IV-HT construction. Other membrane structures shall be classified as Type V construction.

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

*Revise as follows:*

**3102.6.1.1 Membrane.** A membrane meeting the fire propagation performance criteria of Test Method 1 or Test Method 2, as appropriate, of NFPA 710 shall be permitted to be used as the roof or as a skylight on buildings of Type II B, III, IV-HT and V construction, provided that the membrane is not less than 20 feet (6096 mm) above and floor, balcony or gallery.

## CHAPTER 35 REFERENCED STANDARDS

*Revise as follows:*

### **APA**

APA – Engineered Wood Association  
7011 South 19<sup>th</sup> Street  
Tacoma WA 98466-7400

#### **ANSI/APA PRG 320 –19: Standard for Performance-rated Cross-laminated Timber**

602.4, 2303.1.4

*Add new text as follows:*

### **ASTM**

ASTM International  
100 Barr Harbor Drive, P.O. Box C700  
West Conshohocken PA 19428-2959

#### **D3498—03(2011): Standard Specification for Adhesives for Field-Gluing Plywood to Lumber Framing for Floor Systems**

703.9

### **AWC**

American Wood Council  
222 Catocin Circle SE, Suite 201  
Leesburg, VA 20175

#### **ANSI/AWC SDPWS-2021: Special Design Provisions for Wind and Seismic**

202, 2305.1, 2305.2, 2305.3, 2306.1, 2306.2, 2306.3, Table 2306.3(1), Table 2306.3(3), 2307.1

### **AWC**

American Wood Council  
222 Catocin Circle SE, Suite  
201 Leesburg, VA 20175

## APPENDIX D FIRE DISTRICTS

*Revise Appendix D as follows:*

**D102.2.5 Structural fire rating.** Walls, floors, roofs and their supporting structural members shall be not less than 1-hour fire-resistance-rated construction.

#### **Exceptions:**

1. Buildings of Type IV-HT construction.

2. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.
3. Automobile parking structures.
4. Buildings surrounded on all sides by a permanently open space of not less than 30 feet (9144 mm).
5. Partitions complying with Section 603.1, Item 11.