

**Ad Hoc Committee – Tall Wood Buildings
Codes and Standards Work Group
Draft Code Change Proposal
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File name: Table 504.3

The following is a draft code change proposal that has been developed by the Codes and Standards Work Group (WG) of the Ad Hoc Committee on Tall Wood Buildings (TWB). This draft proposal has been reviewed by the TWB Committee and is posted for information and comments. Please direct comments to the Chair of the WG: Carl Baldassarra (cbaldassarra@wje.com). **This is a draft only and is subject to change prior to submittal to cdpACCESS by the January 8, 2018 deadline.**

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IBC Chapter 5

Table 504.3
ALLOWABLE BUILDING HEIGHT IN FEET ABOVE GRADE PLANE^{a, d}

Occupancy Classification	SEE FOOTNOTES	TYPE OF CONSTRUCTION											
		TYPE I		TYPE II		TYPE III		TYPE IV				TYPE V	
		A	B	A	B	A	B	<u>A</u>	<u>B</u>	<u>C</u>	HT	A	B
A, B, E, F, M, S, U	NS ^{b, d}	UL	160	65	55	65	55	<u>65</u>	<u>65</u>	<u>65</u>	65	50	40
	S	UL	180	85	75	85	75	<u>270</u>	<u>180</u>	<u>85</u>	85	70	60
H-1, H-2, H-3, H-5	NS ^{c, d}	UL	160	65	55	65	55	<u>120</u>	<u>90</u>	<u>65</u>	65	50	40
	S	UL						<u>65</u>	<u>65</u>	<u>65</u>			
H-4	NS ^{c, d}	UL	160	65	55	65	55	<u>65</u>	<u>65</u>	<u>65</u>	65	50	40
	S	UL	180	85	75	85	75	<u>140</u>	<u>100</u>	<u>85</u>	85	70	60
I-1 Condition 1, I-3	NS ^{d, e}	UL	160	65	55	65	55	<u>65</u>	<u>65</u>	<u>65</u>	65	50	40
	S	UL	180	85	75	85	75	<u>180</u>	<u>120</u>	<u>85</u>	85	70	60
I-1 Condition 2, I-2	NS ^{d, e, f}	UL	160	65	55	65	55	<u>65</u>	<u>65</u>	<u>65</u>	65	50	40
	S	UL	180	85								70	60
I-4	NS ^{d, g}	UL	160	65	55	65	55	<u>65</u>	<u>65</u>	<u>65</u>	65	50	40
	S	UL	180	85	75	85	75	<u>270</u>	<u>180</u>	<u>85</u>	85	70	60
R ^h	NS ^d	UL	160	65	55	65	55	<u>65</u>	<u>65</u>	<u>65</u>	65	50	40
	S13R	60	60	60	60	60	60	<u>60</u>	<u>60</u>	<u>60</u>	60	60	60
	S	UL	180	85	75	85	75	<u>270</u>	<u>180</u>	<u>85</u>	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 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

REASON

The Tall Wood Building Ad Hoc Committee (TWB) has created several code change proposals with respect to the concept of tall buildings of mass timber and the background information is at the end of this Statement. Within the statement are important links to information, including documents and videos, used in the deliberations which resulted in these proposals.

Relying upon each new type of construction proposed for tall wood buildings (IV-A, IV-B and IV-C), the committee examined each type of construction for its safety and efficacy with regard to each occupancy type. A report of the fire tests conducted at ATF and data are available at www.awc.org/tallwood.

The following approach was thought to be appropriate for the heights of the new construction types, based on the conclusions of the committee:

1. Based upon presentations to the whole TWB of fire safety and structural integrity, Type IV-B should be equated to Type I-B for height (in feet);
2. Type IV-A should be somewhat larger than IV-B but the unlimited heights of Type I-A could not simply be copied over to IV-A, so it was agreed that simply increasing the IV-B by a factor of 1.5 would achieve a rational increase;
3. IV-C was sufficiently similar to existing HT that the height in feet ought to be based upon the existing Type IV-HT numbers, although additional number of stories is proposed for IV-C.

The committee applied professional judgment (from both a fire safety and a structural perspective), to examine the newly generated working draft table cell by cell for all occupancy types.

It was determined that a nonsprinklered value would be necessary for existing buildings so it was determined that all new types of construction would be assigned the existing Type IV-HT values for every occupancy. The committee determined to not propose any heights greater than current IV-HT values for the NS rows. In most cases, these will be unimportant because the building height, in feet, will exceed the threshold for High Rise Buildings thus triggering the sprinkler requirements in Section 403.

Groups H-1, H-2, and H-3 heights were intentionally made equal to the existing Heavy Timber heights. For Example, H-4, being corrosives which represents a health hazard to first responders, was also significantly reduced to recognize that issue in any emergency response.

Group I occupancies are those in which care or supervision is provided to the occupants, who may or may not be capable of self preservation without physical assistance. Given the restrictions of I-1 and I-2, height limits were adjusted to be lower. Height was further adjusted in I-3 because response is further restricted by physical barriers. I-4 was deemed to be far less of an issue and resulted in minor adjustments.

Group E was determined to be adequately addressed in the method above and in the current requirements of the code for egress, configuration, finishes, etc.

Group B, however, was determined to have about the same fuel load issues as the base case, adequate protections, including sprinkler systems in high rise, and represent a group where occupants are typically awake and aware of their surroundings thus able to respond to emergency conditions in an appropriate manner. Thus Group B was increased in stories but not in height in feet. All of the other groups were examined and a few moderate tweaks made to their permitted heights.

Cost impact: None, this section provides information that was not previously set forth in the code, and does not change the requirements of current code, thus no cost impact is derived.