



Date: November 15, 2023
To: City of Houston HPW-HPC
Attention: CCM
From: Jensen Hughes
Subject: Heavy Timber

This technical memo is provided to describe the significant changes to the Houston Construction Codes with regards to requirements of heavy timber.

Heavy timber has never been specifically defined in the IBC; its meaning is derived partially from various code provisions addressing its application in regard to the regulation of building design and construction. Heavy timber members have large cross sections to achieve a slow burning characteristic, with minimum dimensions established in Table 2304.11 of the IBC. Although regulated in various forms when heavy timber structural elements are used on a limited basis throughout a building, the primary recognition of such materials is through the type of construction classification of Type IV. This construction type, like Type III, is made up of structural members that typically must meet the criteria for heavy timber members (exceptions include exterior and interior walls). A new definition recognizes that Mass timber represents both the large wood building elements historically recognized as Heavy Timber (now Type IV-HT) construction and the three new construction types contained in the 2021 IBC (Types IV-A, IV-B, and IV-C). A single term now represents the various sawn and engineered wood products referenced in Chapter 23 (Wood) of the IBC and in ANSI/APA PRG 320 Standard for Performance-rated Cross-laminated Timber.

Type IV-HT mass timber construction has exterior walls made of noncombustible materials, fire-retardant-treated wood (FRTW), or cross-laminated timber (CLT) protected in accordance with IBC Section 602.4.4 Interior building elements must be of solid or laminated wood. Columns, roof/floor beams, girders, flooring, roof decking, and partitions must have minimum nominal dimensions per Table 2304.11. A key feature recognizes that Type IV-HT is deemed to meet an acceptable degree of fire resistance based solely on its required minimum dimensions. In contrast, mass timber used in construction Types IV-A, IV-B, and IV-C is required to have a fire-resistance rating. The rating may be determined in accordance with Section 703.2.2 addressing various methods for determining fire resistance, including calculations performed in accordance with Section 722.

Another new definition addresses the passive fire protection sometimes required for mass timber construction. Depending on the building's type of construction, mass timber is permitted to have its own fire-resistance rating, have a fire-resistance rating through a combination of the inherent mass timber fire-resistance plus protection with noncombustible insulating materials, or use the noncombustible protection to provide the entire fire-resistance rating. The definition of noncombustible protection also recognizes its value in delaying the combustion of mass timber members.

Mass timber is now specifically defined as representative of both the large wood building elements historically recognized as Heavy Timber (now Type IV-HT) construction and the three new construction types of IV-A, IV-B, and IV-C.

memo.

Please see the following index where relevant information for mass timber can be found in the 2021 IBC as well as the 2021 IBC commentary:

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