Meeting and Exceeding Code with Wood and Mass Timber

Type III Construction: Fire-Resistance Detailing for Exterior Walls

By Ali Fattah, Sr. Research Engineer

City of San Diego Development Services Department

Disclaimer: This presentation was developed by a third party and is not funded by WoodWorks or the Softwood Lumber Board.

Historical perspective- Type III Construction

- Were initially constructed with exterior masonry walls and used in multi-story construction until the advent of the steel frame at the turn of the last century.
- Prior to the 1973 Uniform Building Code exterior walls in Type III were required to be non-combustible based on FSD. Inner and outer face of walls have to be noncombustible.
- During the era of the UBC Type III construction consisted of masonry and concrete tilt-up buildings and was common in supermarkets, bowling alleys and eventually in multi-story office buildings.
- Type III became very popular in multi-family housing in the late 1990's.



Why Choose Type III Construction?

- It is permitted to be constructed entirely of combustible construction.
- Taller and larger than Type V
- In the CBC Type I, II or IIIA construction and NFPA 13 fire sprinklers required to omit emergency escape and rescue openings.



Most common construction type for low-rise hotel (R-1) and multifamily housing (R-2).

Type III vs Type II Construction

- For R-1 and R-2 occupancies the allowable height and area and number of stories is the same as permitted for the equivalent level of protection as Type II construction.
- A Type III A building is a fully combustible building with hardened exterior walls and is considered equivalent to a non-combustible building equally protected building.
 - Exterior walls in Type III require more protection than Type V construction (2-hour load bearing) and non-combustible wall framing or fire-retardant treated wood (FRTW) for wall framing and sheathing.
 - NFPA 285 testing required for exterior wall cladding for Type III construction but not Type II.
 - Balconies and similar projections can be combustible in both types of construction however in Type II need to be with FRTW.

What Is All The Fuss About

- When constructed utilizing platform construction is the floor cavity a part of the wall or a part of the floor?
- Does the floor framing that intersects the upper and lower wall of the interstory floor cavity require fire resistance if the exterior wall above/below is 2hour or 1-hour protected.
 - Does in need to be fire retardant treated wood (FRTW)?
- Does the rim board and blocking require fire resistance? Does it need to be constructed with FRTW?
- Why is FRTW required when the wall assembly is protected?
- What is a wall?

Maintaining the Exterior Wall Assembly Protection is the Problem

- 602.3 Type III. Type III construction is that type of construction in which the exterior walls are of noncombustible materials and the interior building elements are of any material permitted by this code. Fire-retardant-treated wood framing and sheathing complying with Section 2303.2 shall be permitted within exterior wall assemblies of a 2-hour rating or less.
- 705.6 Structural stability. Exterior walls shall extend to the height required by Section 705.11. Interior structural elements that brace the exterior wall but that are not located within the plane of the exterior wall shall have the minimum fire-resistance rating required in Table 601 for that structural element. Structural elements that brace the exterior wall but are located outside of the exterior wall or within the plane of the exterior wall shall have the minimum fire-resistance rating required in Tables 601 and 602 for the exterior wall.

What is an Exterior Wall

- Not defined but commonly understood to provide a building envelope.
- Vertical continuity is required for fire walls and fire barriers.
- Vertical continuity is required for exterior walls when parapets are required.
- A story I measured from finished floor to finished floor when verifying exterior wall openings.
- Some jurisdictions consider the inter-floor cavity to be a part of the wall.

Speaker's Contact Info

Ali Fattah, P.E. City of San Diego Development Services Department <u>https://www.sandiego.gov/development-services</u>

afattah@sandiego.gov