Type III Construction for Multifamily: Best Practices and Detailing for Success

Course Number: LL901
Thursday, June 8, 2023, 10:30am-11:30am
Learning Units: 1.00 LU/RIBA

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Questions related to specific products and services may be addressed at the conclusion of this presentation.
Speakers List

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• Jon Hall, AIA  
  Principal - GGLO
Course / Learning Objectives

• Explore the code path for type III structures as it relates to height, area, and construction requirements

• Discuss efficiencies and approaches within the design process that contribute to cost effectiveness and constructability

• Review details and design methodologies common to Type III, multi-family projects, including rated assemblies, structural layout, and balcony design.

• Highlight available resources and forthcoming code language specific to Type III construction, focusing on wall/floor intersections.
Wood Frame Construction

- Type IIIA
- Type VA
- Type IV
Group R-2 Construction

Apartments & Condominiums

- 1 Hour Demising Walls
- 1 Corridor Walls
- 2 Hour Fire Walls
- 2 Hour Shaft Walls
Podium Construction

IBC 510.2
• Type 1A Below Podium
• 3 Hour Horizontal Separation
• Separate Building Above Podium for Stories & Area
• Height Measured from Grade Plane
Podium Construction

CONSTRUCTION TYPE AND NUMBER OF STORIES IN ACCORDANCE WITH SECTION 503

2-HOUR EXIT ENCLOSURE

TOTAL HEIGHT (FEET) MEASURED FROM GRADE PLANE BASED UPON CONSTRUCTION TYPE ABOVE

1ST STORY ABOVE GRADE PLANE

BASEMENT

TYPE IA CONSTRUCTION
GROUP S-2, A, B, M, N AND USE INCIDENTAL (LOBBIES, STORAGE AREAS, MECHANICAL ROOMS)

GRADE PLANE

Fig. 510.2
HORIZONTAL BUILDING SEPARATION
Type VA Construction

IBC 504
• 4 Stories & 70 feet of R-2
• 5 Stories in WA State
Type VA Construction

IBC Table 601
• 1 Hour Bearing Walls
• 1 Hour Floors
• 1 Hour Roof Construction
Type IIIA Construction

IBC 504
• 5 Stories & 85 feet of R-2
• 6 Stories in WA State & Seattle
Type IIA Construction

IBC Table 601
- 2 Hour Exterior Bearing Walls
- 1 Hour Interior Bearing Walls
- 1 Hour Floors
- 1 Hour Roof Construction
- Exterior Wall Framing of Non-Combustible / Fire Retardant Treated Materials
- 2 Hour First Framed Floor in Seattle
Type IV Heavy Timber Construction

IBC 504 & 601

• Up to 270 Feet of R Occupancy
• Up to 18 stories of R-2 Occupancy
• Details for another session
Wood Frame Detailing – Exterior Walls
Bearing Wall to Floor – Type IIIA

- 1 Hour Rated Floor
- 2 Hour Rated Bearing Wall
- Fire Retardant Treated
- Rated From One Side
  (> 10 feet per IBC 705.5)
Bearing Wall to Floor – Type IIIA

- 1 Hour Rated Floor
- 2 Hour Rated Bearing Wall
- Fire Retardant Treated
- Rated From One Side
  (> 10 feet per IBC 705.5)
Bearing Wall to Floor – Type IIIA

- 1 Hour Rated Floor
- 2 Hour Rated Bearing Wall
- Fire Retardant Treated
- Rated From One Side
  (> 10 feet per IBC 705.5)
Bearing Wall to Floor – Type IIIA

- 1 Hour Rated Floor
- 2 Hour Rated Bearing Wall
- Fire Retardant Treated
- Rated From One Side
  (> 10 feet per IBC 705.5)
Bearing Wall to Floor – Type IIIA

- 1 Hour Rated Floor
- 2 Hour Rated Bearing Wall
- Fire Retardant Treated
- Rated from Both Sides
Bearing Wall to Floor – Type IIIA

- 1 Hour Rated Floor
- 2 Hour Rated Wall
- Fire Retardant Treated
  - Wall Framing
  - Wall Sheathing
Bearing Wall to Floor – Type IIIA

- 1 Hour Rated Floor
- 2 Hour Rated Wall
- Fire Retardant Treated
  - Wall Framing
  - Wall Sheathing
  - Rim Beam
Bearing Wall to Floor – Type IIIA

- 1 Hour Rated Floor
- 2 Hour Rated Wall
- Fire Retardant Treated
  - Wall Framing
  - Wall Sheathing
  - Rim Beam
  - Floor Joists for at least 10’ & individually wrapped with GWB
Bearing Wall to Floor – Type IIIA

- 1 Hour Rated Floor
- 2 Hour Rated Wall
- Fire Retardant Treated
  - Wall Framing
  - Wall Sheathing
Bearing Wall to Floor – Type IIIA

- 1 Hour Rated Floor
- 2 Hour Rated Wall
- Fire Retardant Treated
Bearing Wall to Floor – Type IIIA

- 1 Hour Rated Floor
- 2 Hour Rated Wall
- Fire Retardant Treated
- Offset Joist Hangers
Bearing Wall to Floor – Type IIIA

- 1 Hour Rated Floor
- 2 Hour Rated Wall
- Fire Retardant Treated
- Fit GWB around joists and fire caulk
Bearing Wall to Floor – Type IIA

- 1 Hour Rated Floor
- 2 Hour Rated Non-Bearing Wall
- Fire Retardant Treated
- Fire Retardant Sheathing or eq.
Type IIA – Bearing Walls
Non-Bearing Wall to Floor – Type IIIA

- 1 Hour Rated Floor
- 1 Hour Rated Non-Bearing Wall
- Fire Retardant Treated
Bearing Wall to Floor – Type IIIA

- 2 Hour Rated Floor
- 2 Hour Rated Bearing Wall
- Fire Retardant Treated
Bearing Wall to Floor – Type IIIA

- 2 Hour Rated Floor
- 1 Hour Rated Bearing Wall
- Fire Retardant Treated
- Not allowed per IBC 704.1 – Supporting Construction Requirements
Wood Frame Detailing – Roof / Ceiling
Roof Detailing

- Open Web Joists
- 1 Hour Bearing Wall
- 1 Hour Roof Ceiling
- Unrated Parapet
- Fill Cavity or Sprinkler
- Vented Roof Assembly
Roof Detailing

- Flat Joists
- 1 Hour Bearing Wall
- 1 Hour Roof Ceiling
- Unrated Parapet
- Unvented Roof Assembly
Parapet Detailing

- IBC 705.11 Exceptions
- Not a Parapet
- 1 Hour Exterior Wall (NLB in Type IIIA)
- 1 Hour Roof Ceiling
- No Openings within 5 feet
Parapet Detailing

- IBC 705.11 Exceptions
- Not a Parapet
- Class C roofing
- 2 Hour Exterior Wall
- FRT Roof Sheathing or
- 5/8” GWB under roof sheathing
Parapet Detailing

- IBC 705.11 Exceptions
- Not a Parapet
- Fire Separation Distance allows >25% unprotected openings
Parapet Detailing

- IBC 705.11.1
- Rating same as wall
- Non-combustible facing at top 18”
- 30” above roof surface
Wood Frame Detailing – Interior Walls
Interior Wall to Floor

- 1 Hour Rated Floor
- 1 Hour Rated Wall
Interior Demising Wall to Floor

- 1 Hour Rated Floor
- 1 Hour Rated Demising Wall
- Fire Blocking Required
Interior Wall to Floor

- 1 Hour Rated Floor
  - Parallel Framing
- 2 Hour Rated Wall
Interior Wall to Floor

- 1 Hour Rated Floor
  - Perpendicular Framing
- 2 Hour Rated Wall
- Fire Retardant Sheathing or eq.
Interior Wall to Wall

- 1 Hour Rated Wall
- 2 Hour Rated Wall
Interior Wall to 2 Hour Floor

- 2 Hour Rated Floor
- 1 Hour Rated Wall - NLB
Interior Wall to 2 Hour Floor

- 2 Hour Rated Floor
- 2 Hour Rated Wall – Load Bearing
Wood Frame Detailing – Fire & Shaft Walls
Fire Wall Detailing

- Structurally Independent
- UL U336
  - (2) 1” Shaft Wall
  - H Studs
  - ¾” Air Gap
  - Nonrated wood walls
  - Breakaway clips
  - Continuous Plywood

[SEAO SC LIGHT-FRAMING CONSTRUCTION COMMITTEE](https://bcdg.hoop.la/fileSendAction/fcType/O/fcOid/330620847500508934/filePointer/330620847500673387/fodoid/330620847500673385/Firewall_Final.pdf)
Fire Wall Detailing

- Structurally Independent
- Two Wood Frame Walls
- Plywood Continuous
- Fire Retardant Sheathing at Rim
- Fire Retardant Sheathing at Wall Gap or eq.
Fire Wall Detailing

- Structurally Independent
- Masonry Walls
- Furred Plumbing Walls
Shaft Wall Detailing

- Mechanical
  - 2-hour rating thru 1 hour wall
  - One side with shaft wall for access
Stair Wall Detailing

- Stair
  - Rating Continuous
  - Only Beams Penetrate Shaft
  - Secondary Stair Framing
  - Furred wall for MEPF
Elevator Wall Detailing

- Elevator
  - Beam at Door Opening
  - C-T Shaft Wall
Wood Frame Detailing – Balconies & Decks
Deck Detailing

- Bolt On Balcony
  - Aluminum or Steel
  - Sprinkler Requirements
  - Floor Area Implications
Deck Detailing

- Bolt On Balcony
- 2 Hour Rated Wall
Deck Detailing

- Framed Balcony
  - Decking Options
    - Review Tested Assemblies
  - Step and Slope Limitations
    - Review for Accessibility
  - Venting Requirements
  - Waterproofing Implications
  - FRT or Rated Assemblies
    - Non-rated or non-FRT if sprinkled in cavity
Deck Detailing

- Framed Balcony
  - 2 Hour Rated Wall
  - FRT or Rated Assemblies
    - Non-rated or non-FRT if sprinkled in cavity
  - Dry Sprinkler Required
Wood Frame Detailing – Columns & Beams
Column Detailing

- Column Protection
  - 8x8 = 1 layer GWB w/ cover
  - 4x4 = 2 layers GWB w/ cover
  - Wood = Char Rating Calcs
    - [http://www.woodworks.org/experttip/dolight-frame-wood-columns-that-are-located-entirely-within-fire-resistance-rated-walls-also-require-individual-fire-protection-or-encasement/](http://www.woodworks.org/experttip/dolight-frame-wood-columns-that-are-located-entirely-within-fire-resistance-rated-walls-also-require-individual-fire-protection-or-encasement/)
Column Detailing

- Column Protection
  - 4x4 = 2x8 wall minimum
  - Wood = Char Rating Calcs
Beam Detailing

- Beam Protection
  - Spray Applied Fire Resistive Material
THANK YOU!