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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

- Bruce Lindsey
Senior Technical Director - WoodWorks - Wood Products Council
- 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



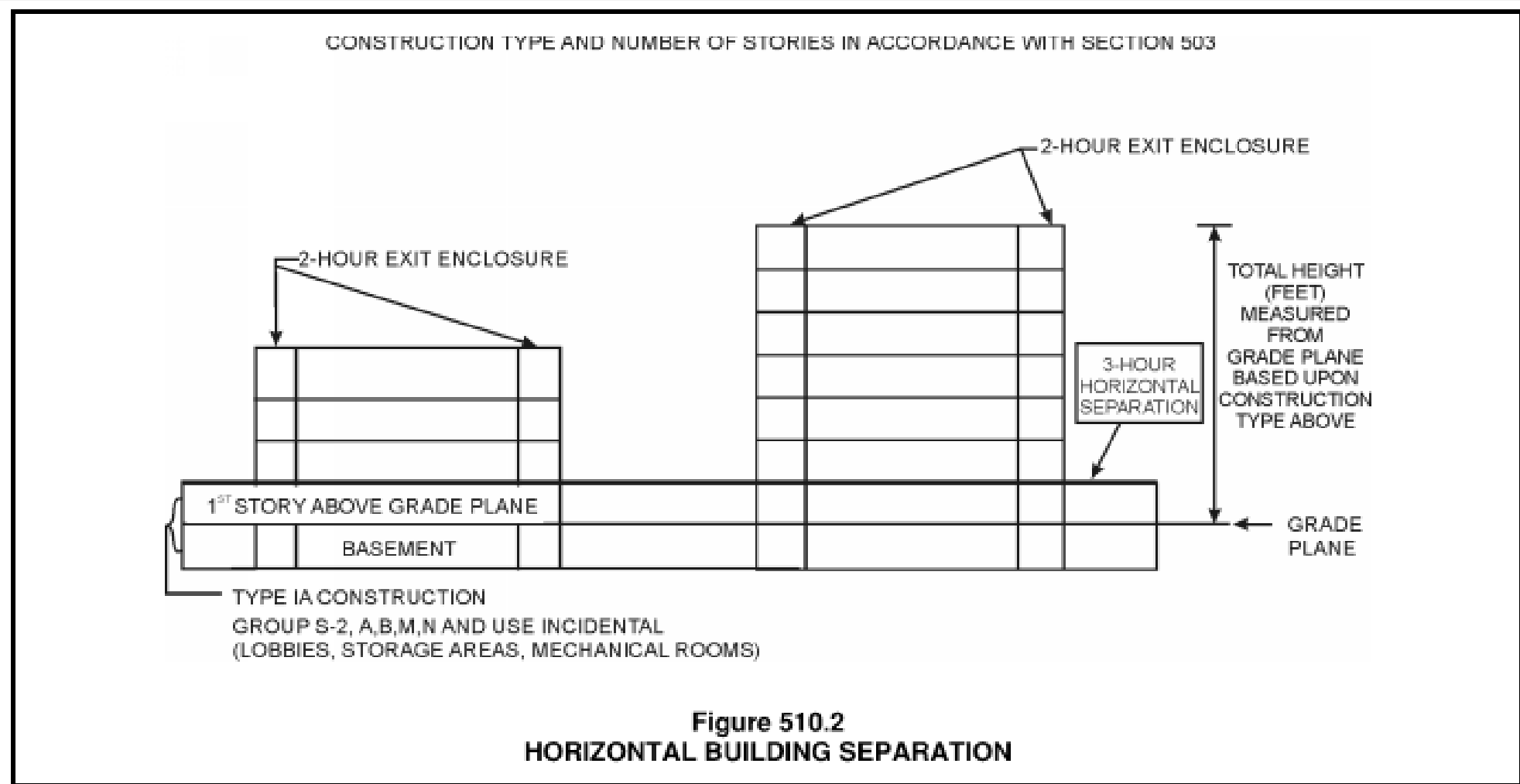
Podium Construction



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



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 IIIA 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

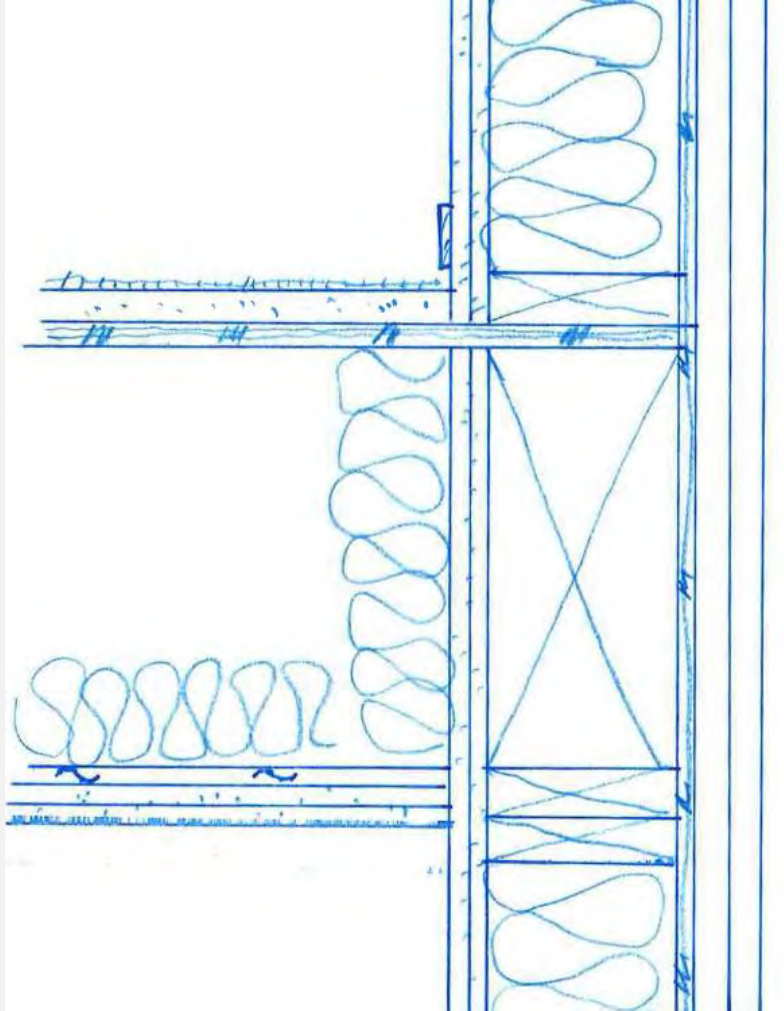
- Up to 270 Feet of R Occupancy
- Up to 18 stories of R-2 Occupancy
- Details for another session



Wood Frame Detailing – Exterior Walls

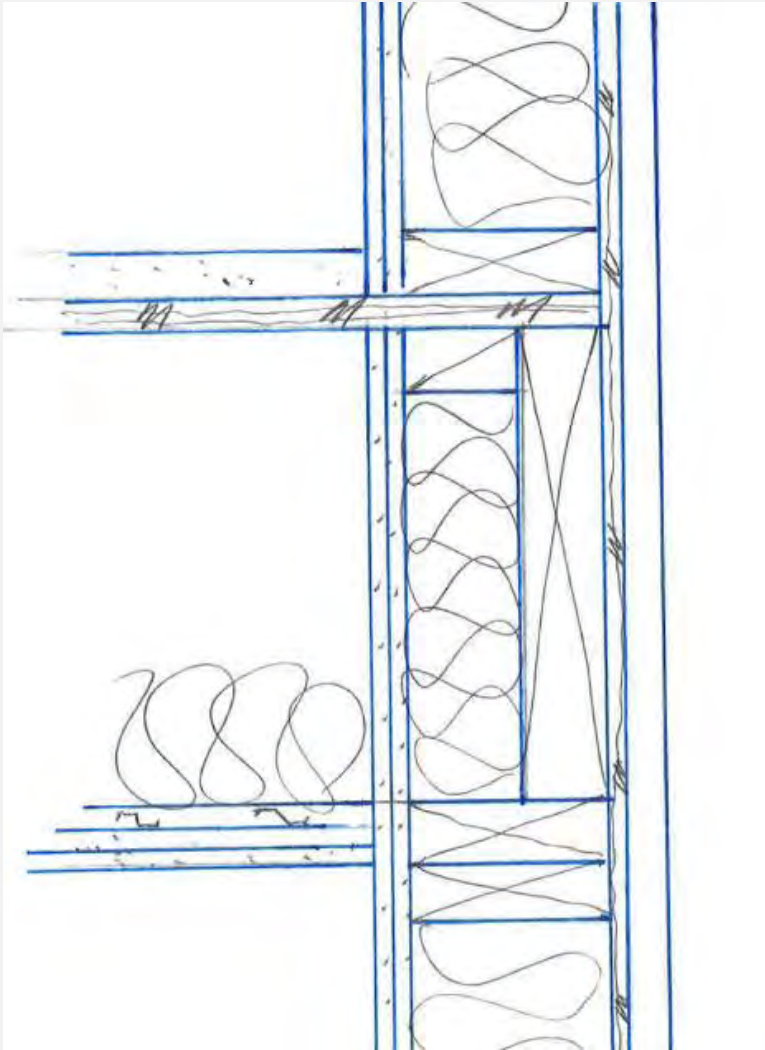


Bearing Wall to Floor – Type IIIA



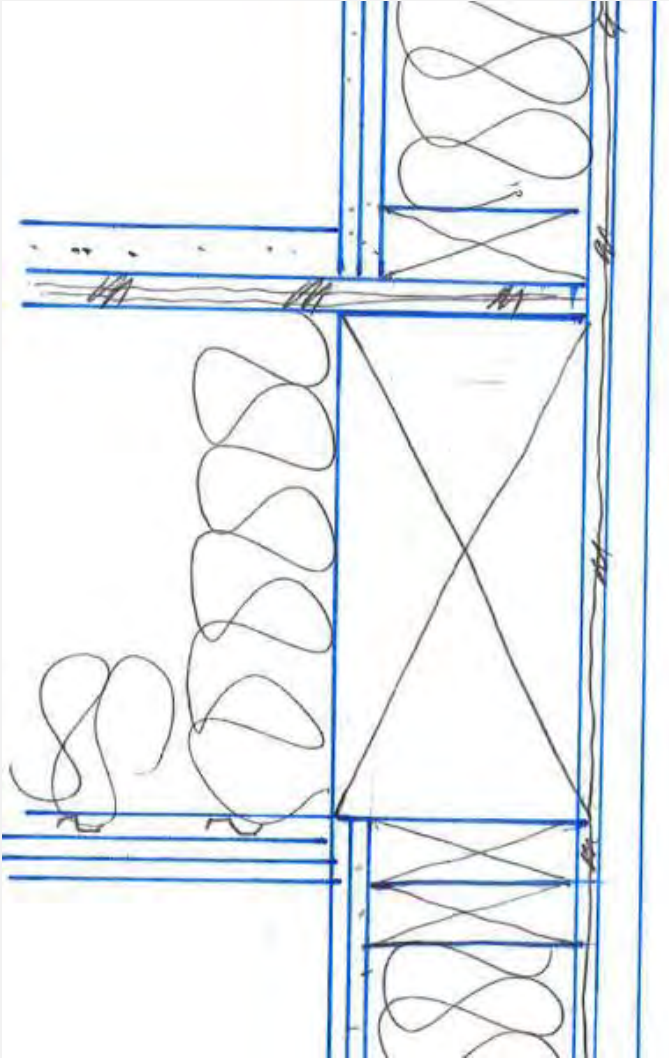
- 1 Hour Rated Floor
- 2 Hour Rated Bearing Wall
- Fire Retardant Treated
- Rated From One Side
(> 10 feet per IBC 705.5)

Bearing Wall to Floor – Type IIIA



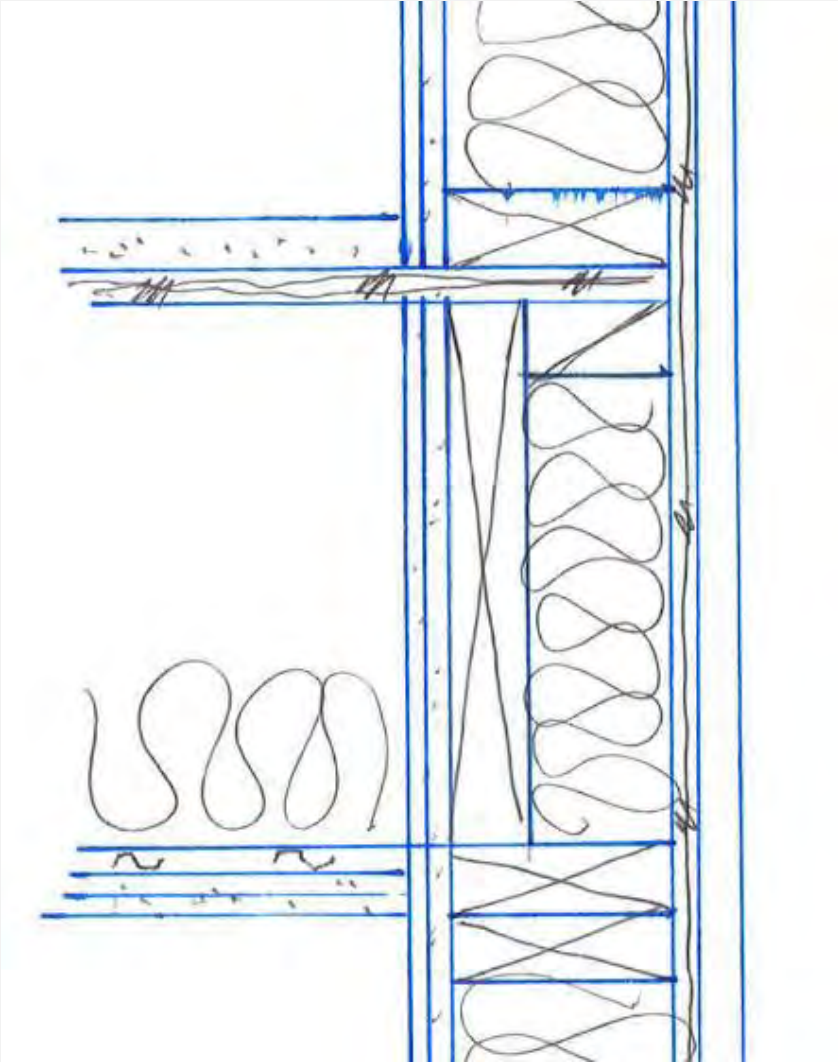
- 1 Hour Rated Floor
- 2 Hour Rated Bearing Wall
- Fire Retardant Treated
- Rated From One Side
(> 10 feet per IBC 705.5)

Bearing Wall to Floor – Type IIIA



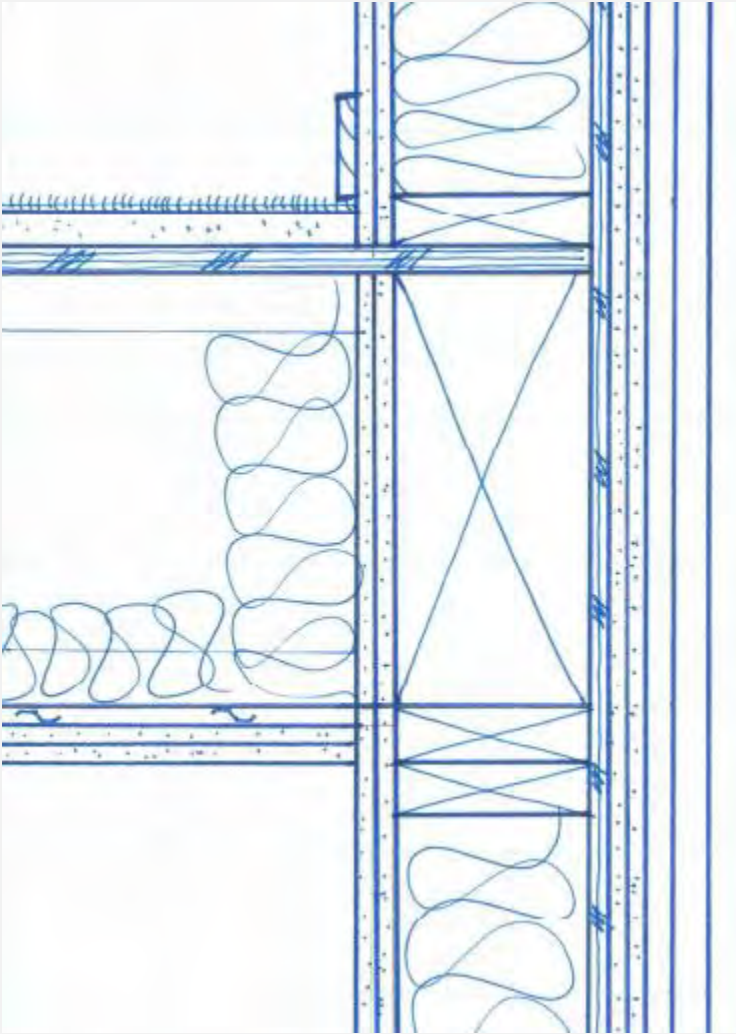
- 1 Hour Rated Floor
- 2 Hour Rated Bearing Wall
- Fire Retardant Treated
- Rated From One Side
(> 10 feet per IBC 705.5)

Bearing Wall to Floor – Type IIIA



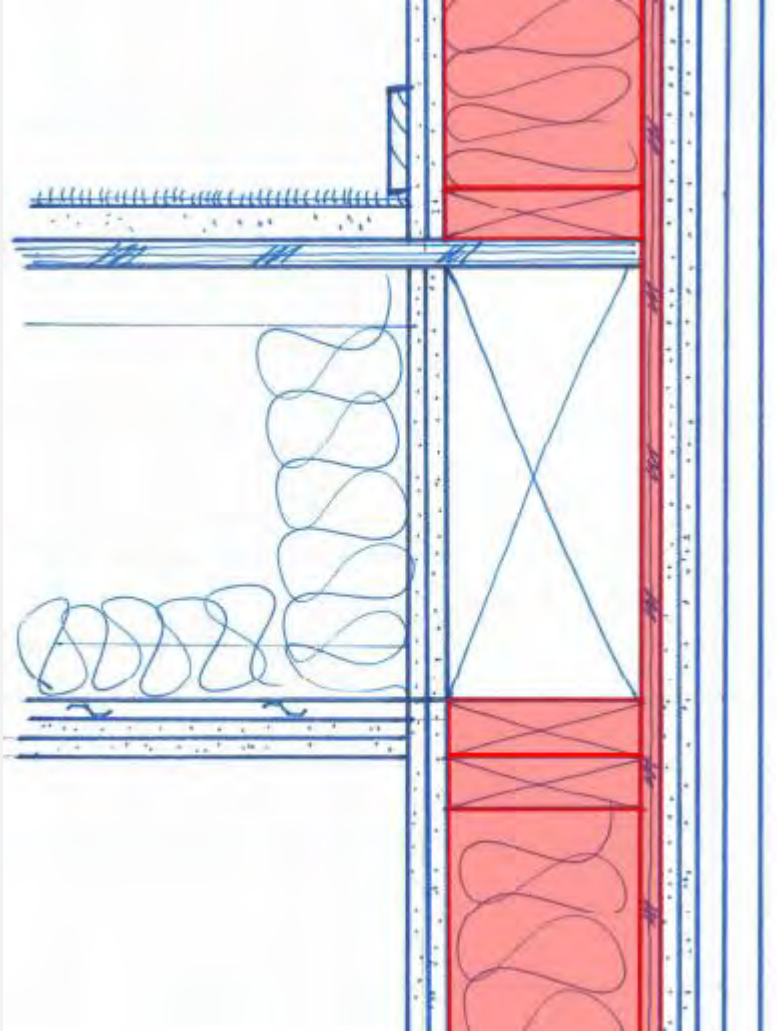
- 1 Hour Rated Floor
- 2 Hour Rated Bearing Wall
- Fire Retardant Treated
- Rated From One Side
(> 10 feet per IBC 705.5)

Bearing Wall to Floor – Type IIIA



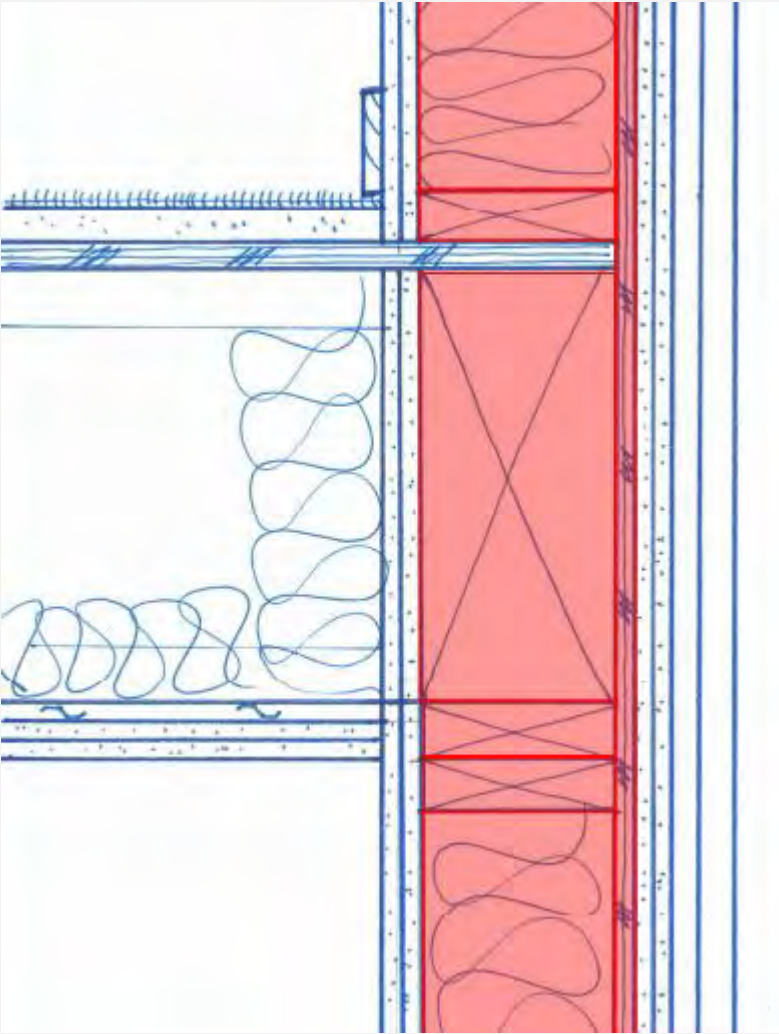
- 1 Hour Rated Floor
- 2 Hour Rated Bearing Wall
- Fire Retardant Treated
- Rated from Both Sides

Bearing Wall to Floor – Type IIIA



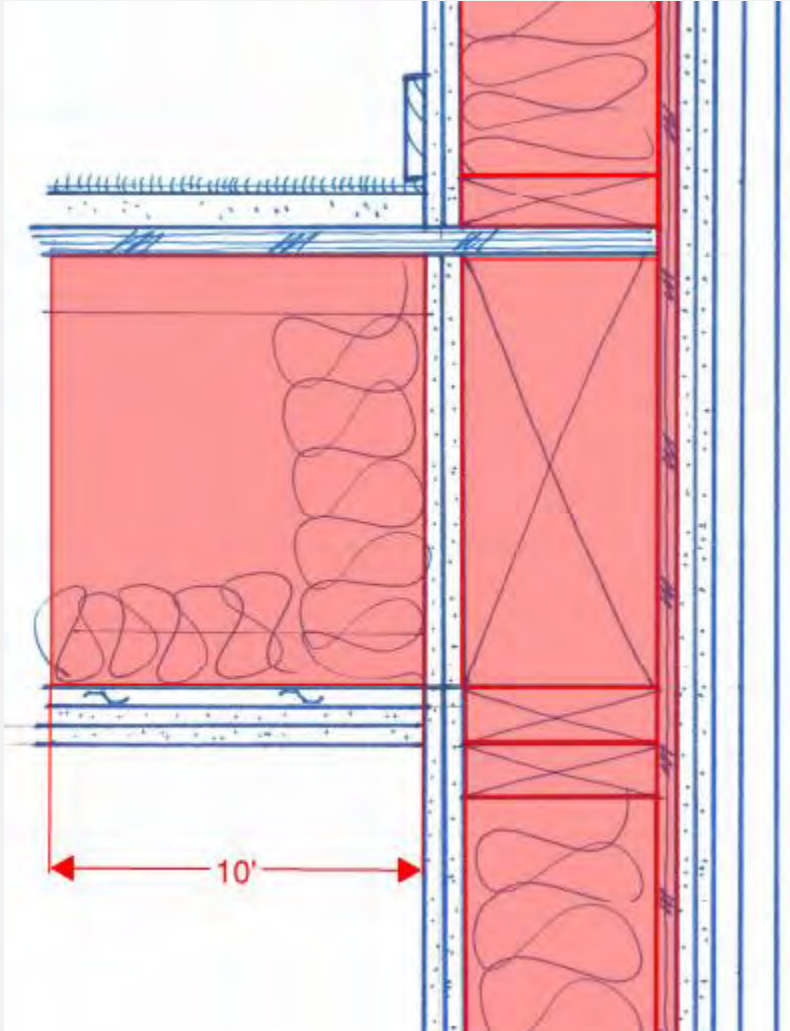
- 1 Hour Rated Floor
- 2 Hour Rated Wall
- Fire Retardant Treated
 - Wall Framing
 - Wall Sheathing

Bearing Wall to Floor – Type IIIA



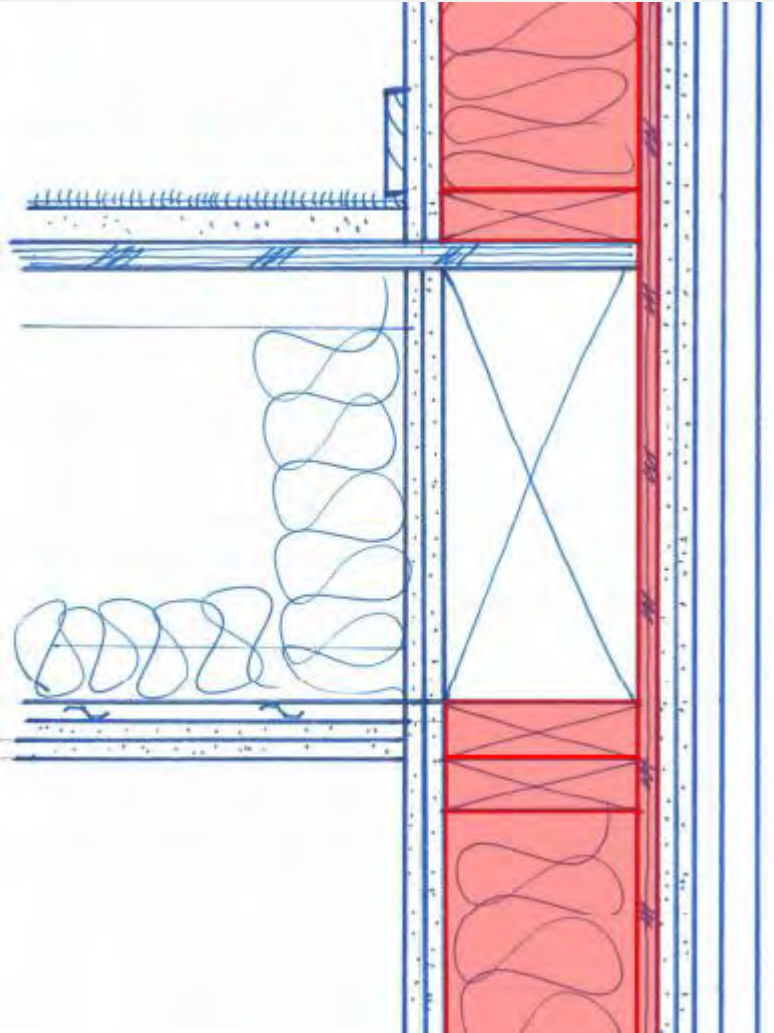
- 1 Hour Rated Floor
- 2 Hour Rated Wall
- Fire Retardant Treated
 - Wall Framing
 - Wall Sheathing
 - Rim Beam

Bearing Wall to Floor – Type IIIA



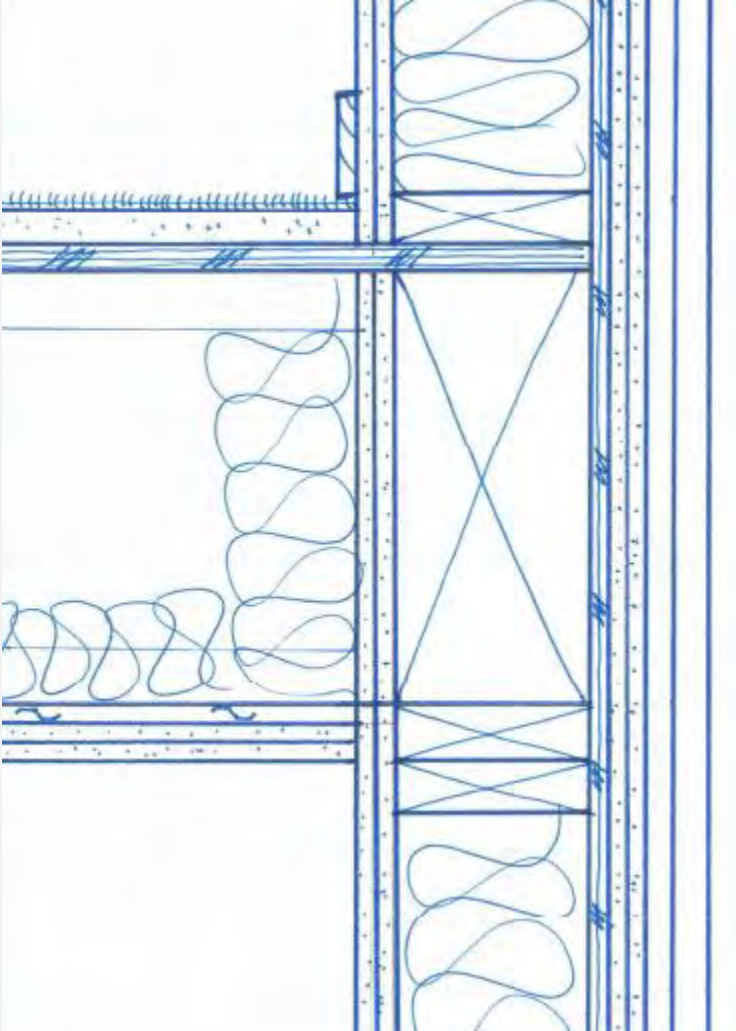
- 1 Hour Rated Floor
- 2 Hour Rated Wall
- Fire Retardant Treated
 - Wall Framing
 - Wall Sheathing
 - Rim Beam
 - Floor Joists for at least 10' & individually wrapped with GWB

Bearing Wall to Floor – Type IIIA



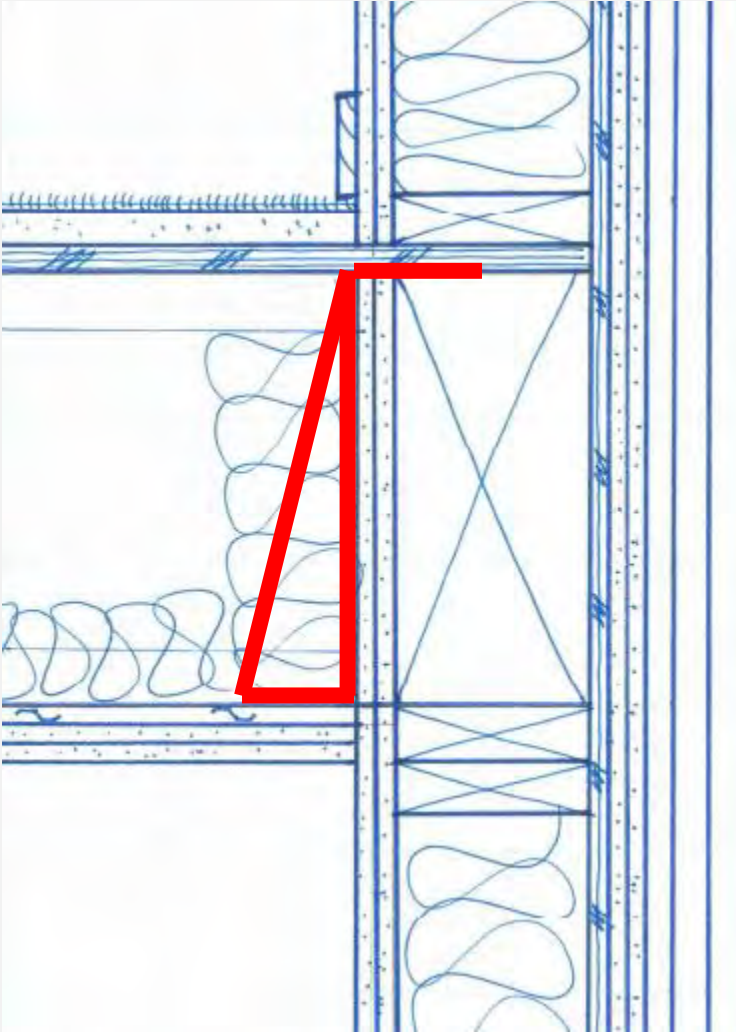
- 1 Hour Rated Floor
- 2 Hour Rated Wall
- Fire Retardant Treated
 - Wall Framing
 - Wall Sheathing
- https://awc.org/wp-content/uploads/2021/12/awc-dca3_20210209_awcwebsite.pdf

Bearing Wall to Floor – Type IIIA



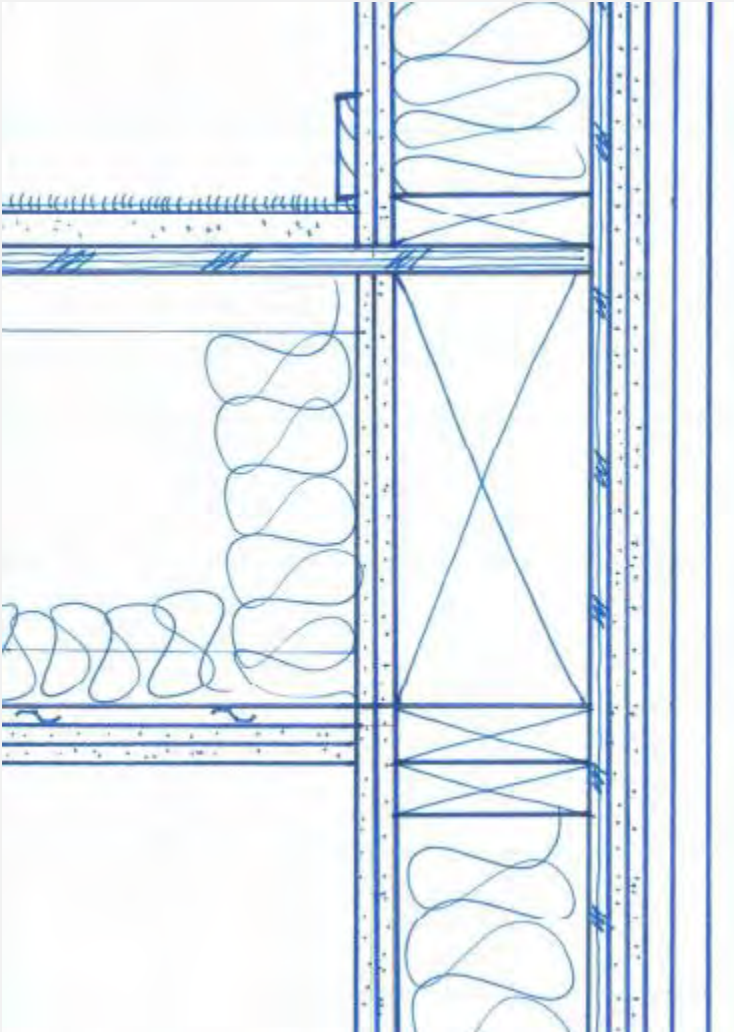
- 1 Hour Rated Floor
- 2 Hour Rated Wall
- Fire Retardant Treated

Bearing Wall to Floor – Type IIIA

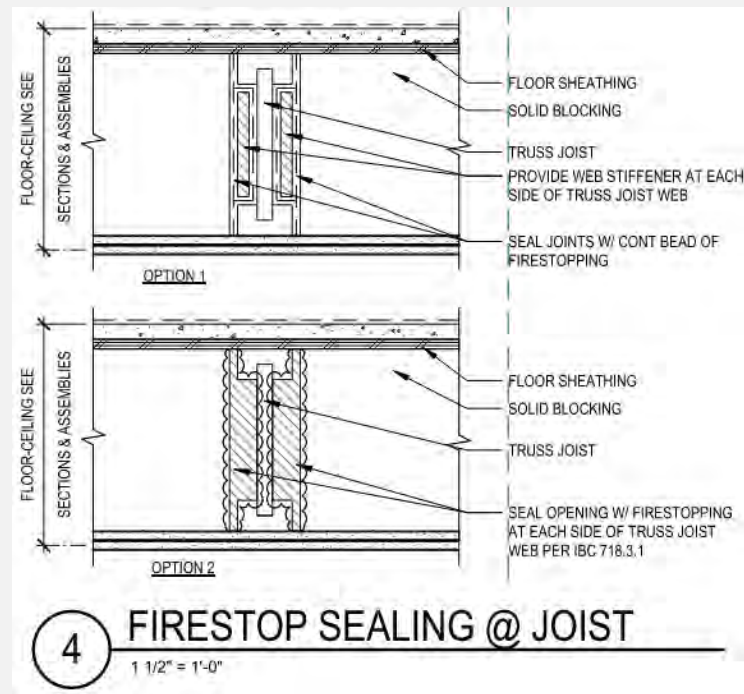


- 1 Hour Rated Floor
- 2 Hour Rated Wall
- Fire Retardant Treated
- Offset Joist Hangers

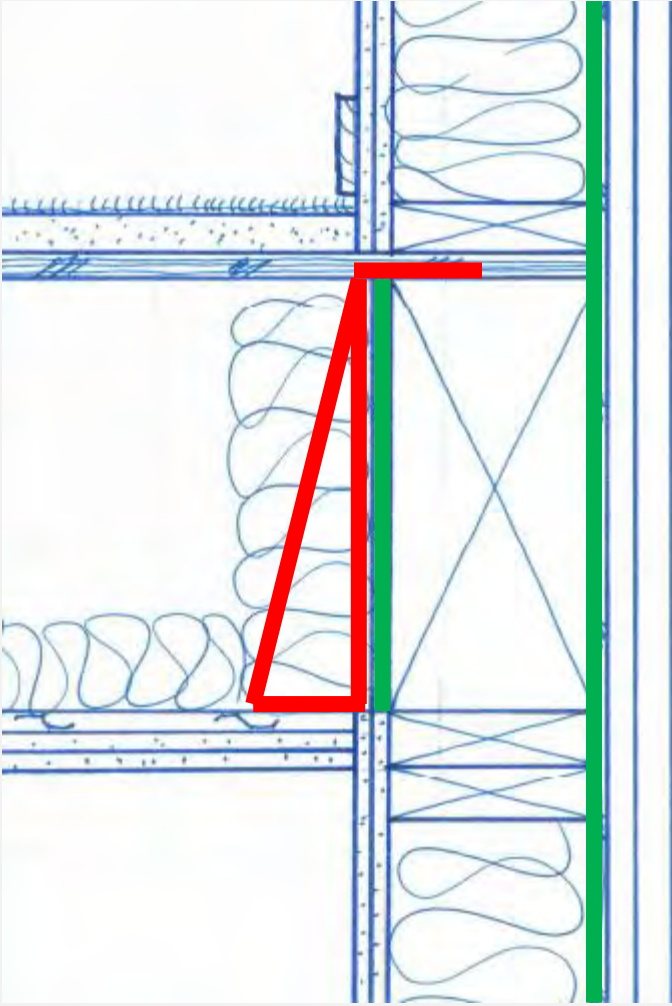
Bearing Wall to Floor – Type IIIA



- 1 Hour Rated Floor
- 2 Hour Rated Wall
- Fire Retardant Treated
- Fit GWB around joists and fire caulk



Bearing Wall to Floor – Type IIIA

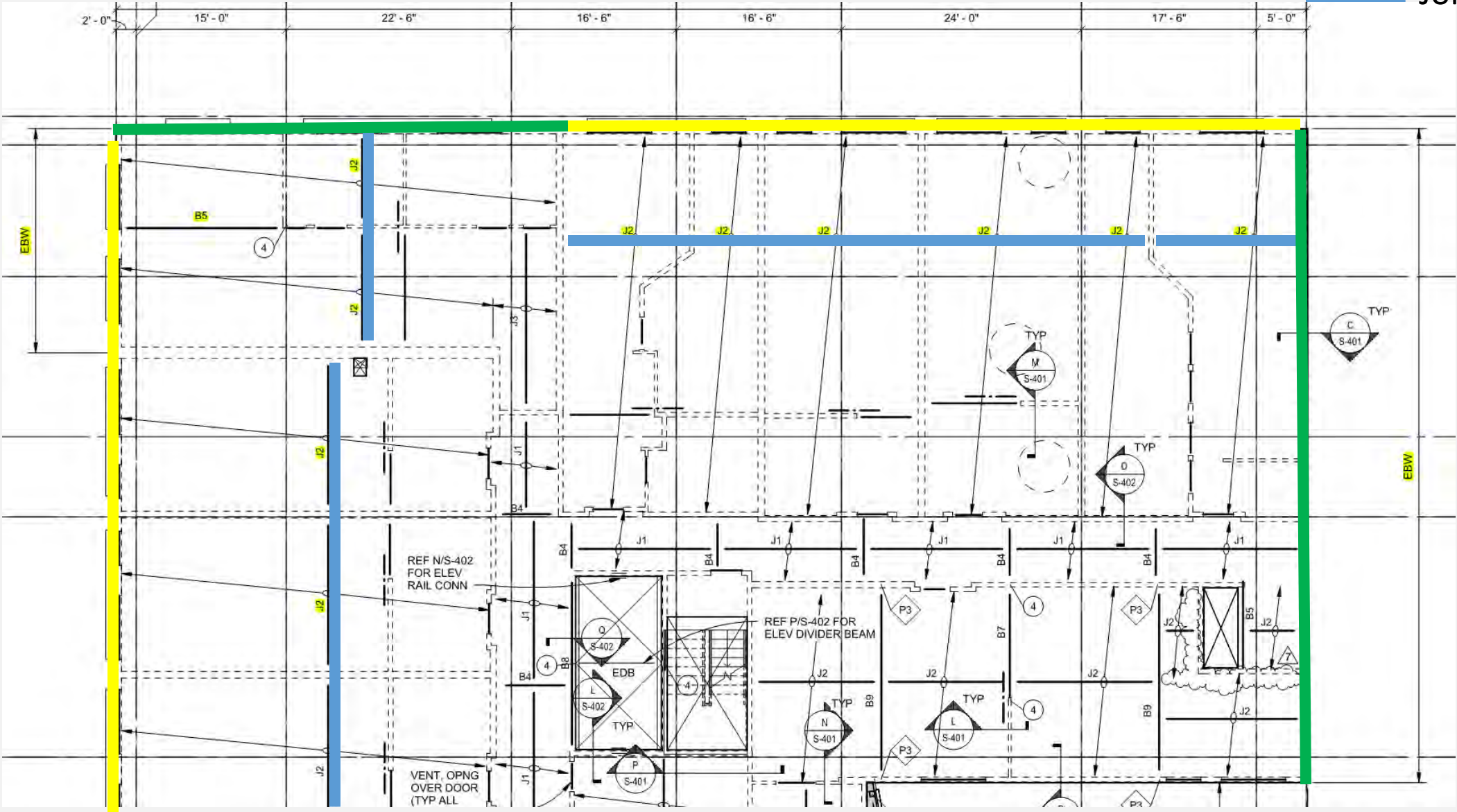


- 1 Hour Rated Floor
- 2 Hour Rated Non-Bearing Wall
- Fire Retardant Treated
- Fire Retardant Sheathing or eq.

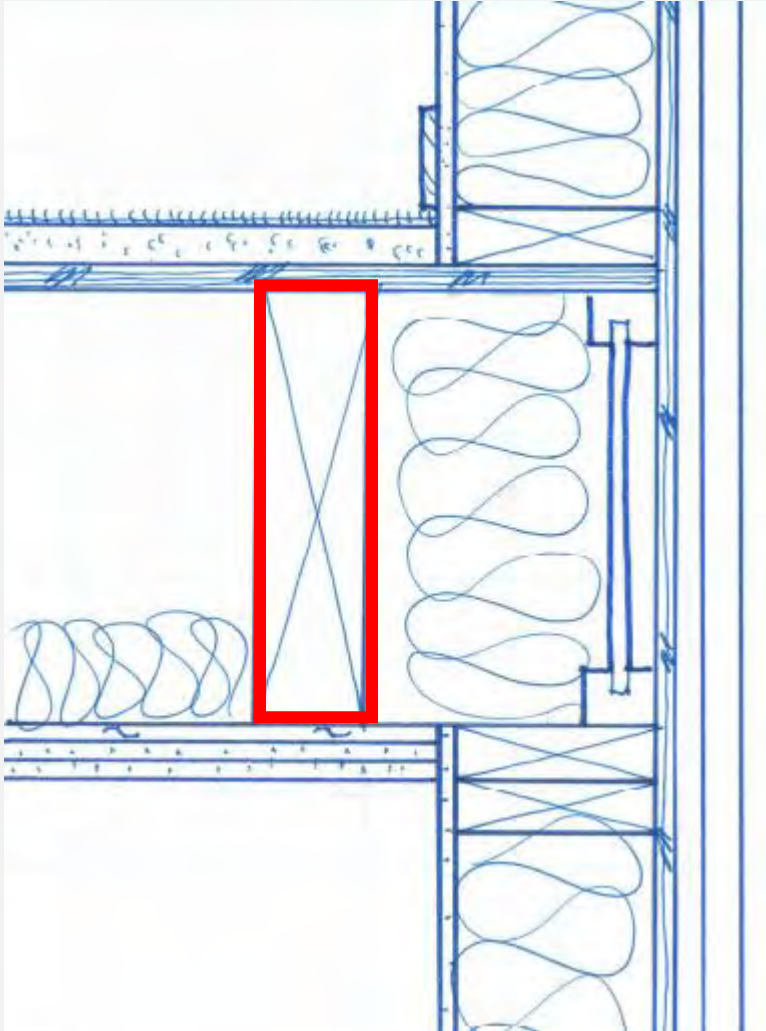


Type IIIA – Bearing Walls

- Bearing
- Non-Bearing
- Joist

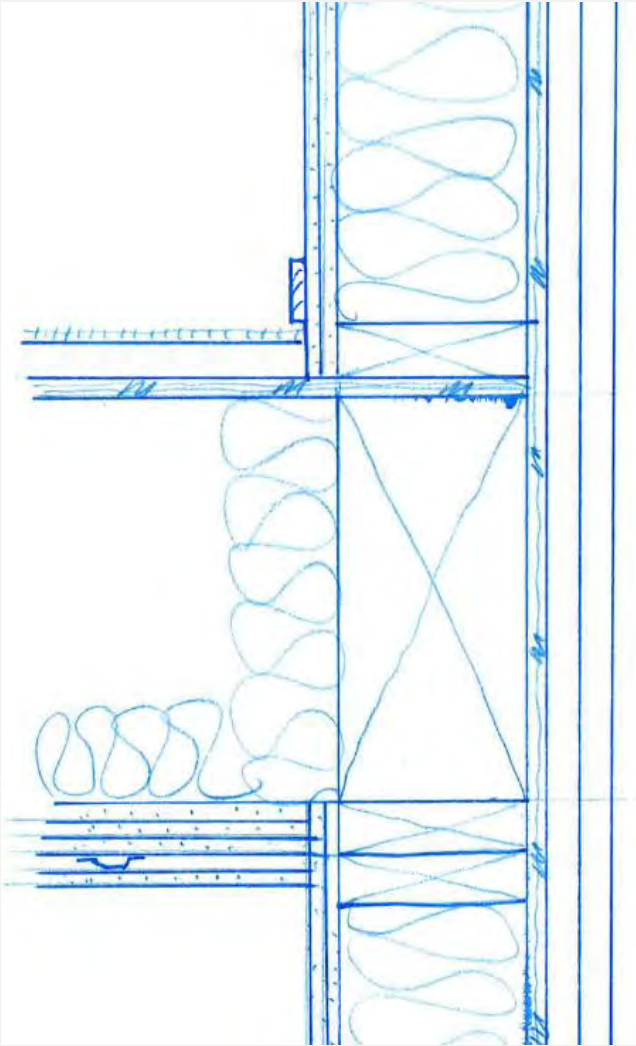


Non-Bearing Wall to Floor – Type IIIA



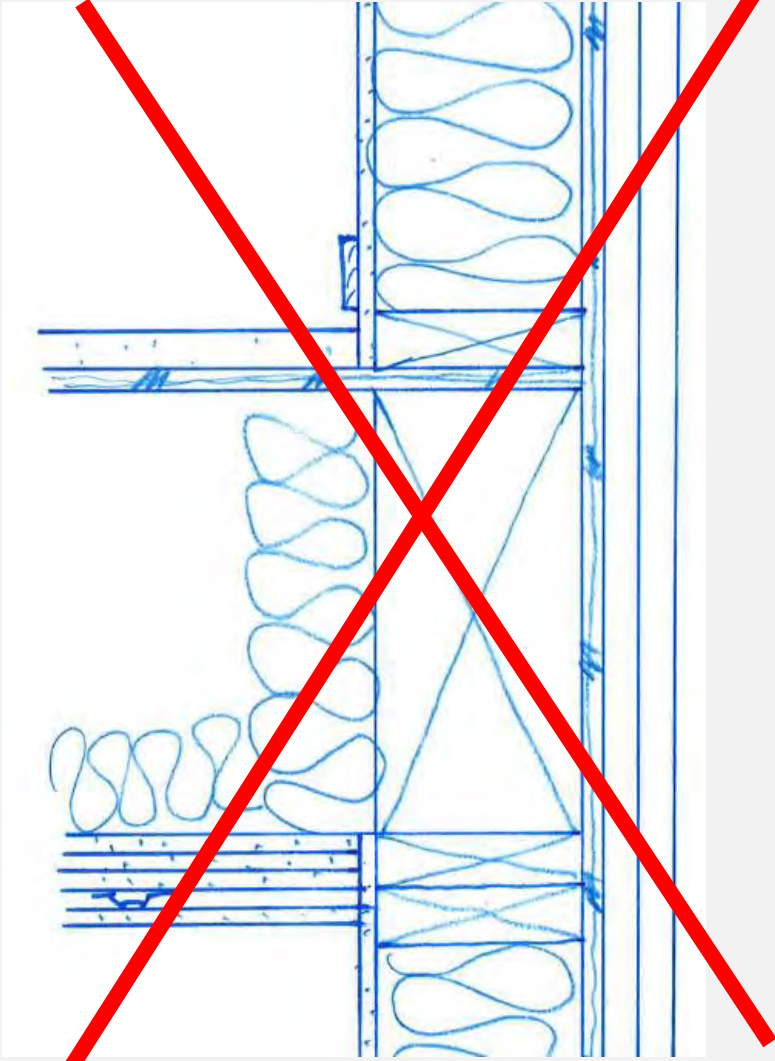
- 1 Hour Rated Floor
- 1 Hour Rated Non-Bearing Wall
- Fire Retardant Treated

Bearing Wall to Floor – Type IIIA



- 2 Hour Rated Floor
- 2 Hour Rated Bearing Wall
- Fire Retardant Treated

Bearing Wall to Floor – Type IIIA

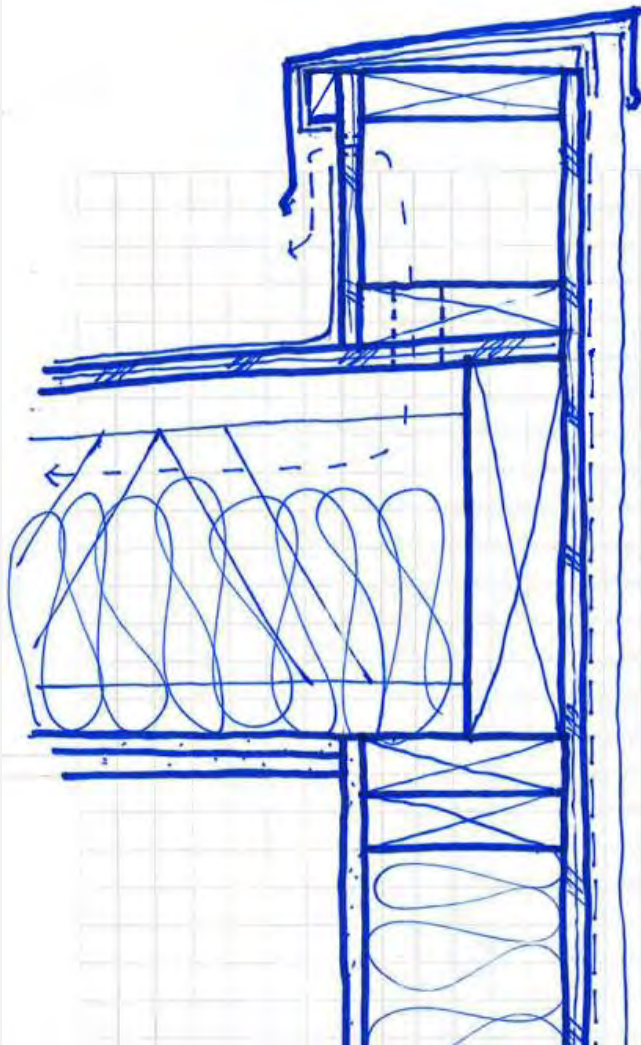


- 2 Hour Rated Floor
- 1 Hour Rated Bearing Wall
- Fire Retardant Treated
- Not allowed per IBC 704.1 – Supporting Construction Requirements

Wood Frame Detailing – Roof / Ceiling

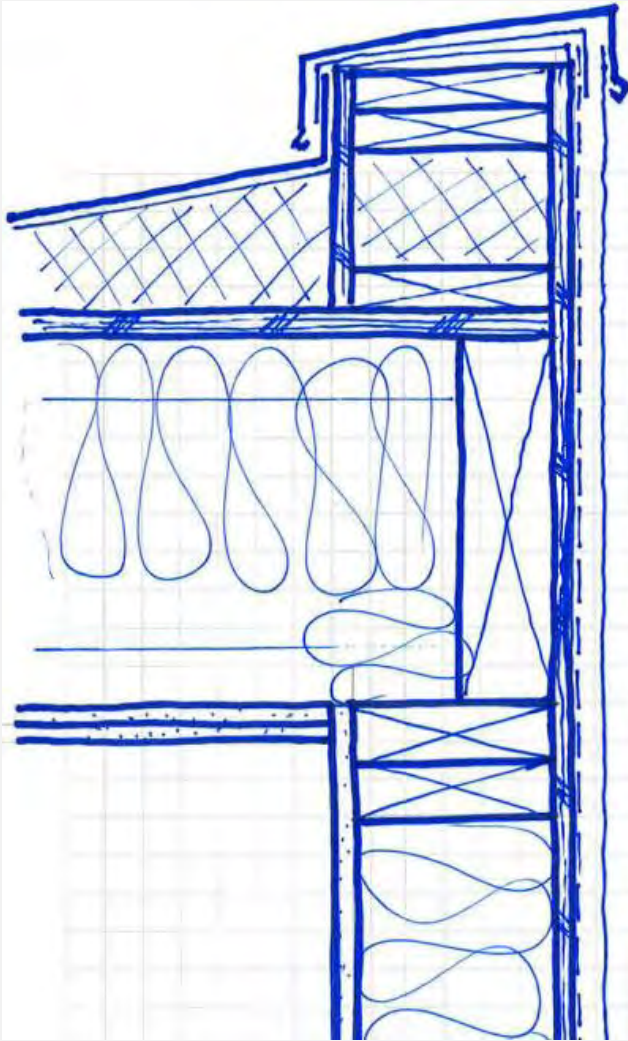


Roof Detailing



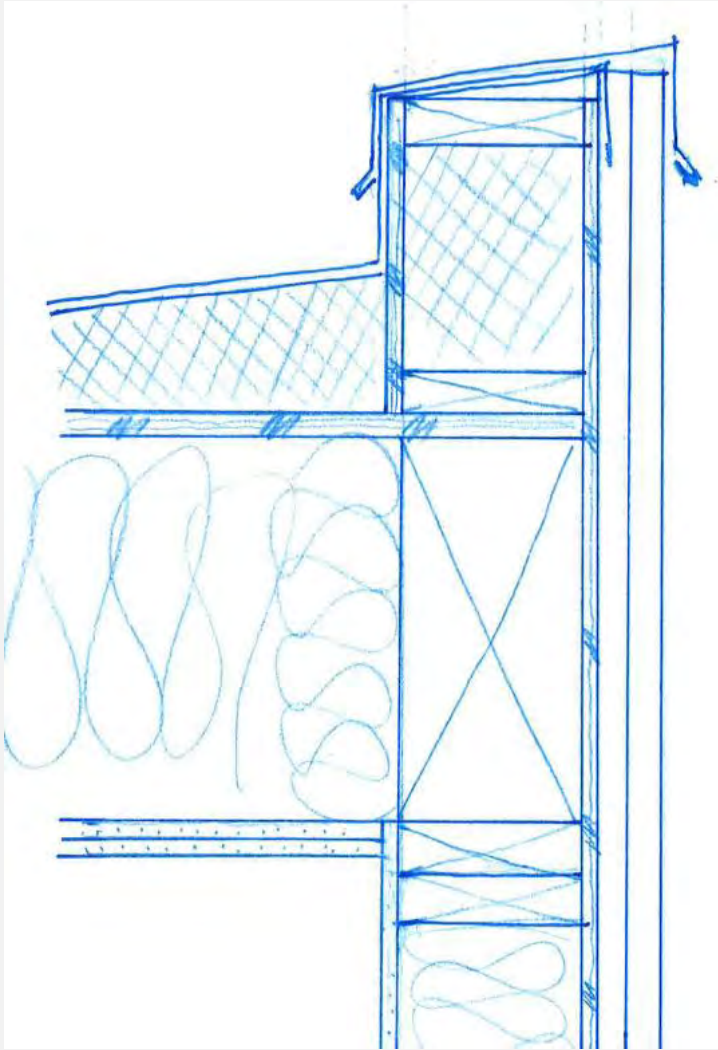
- Open Web Joists
- 1 Hour Bearing Wall
- 1 Hour Roof Ceiling
- Unrated Parapet
- Fill Cavity or Sprinkler
- Vented Roof Assembly

Roof Detailing



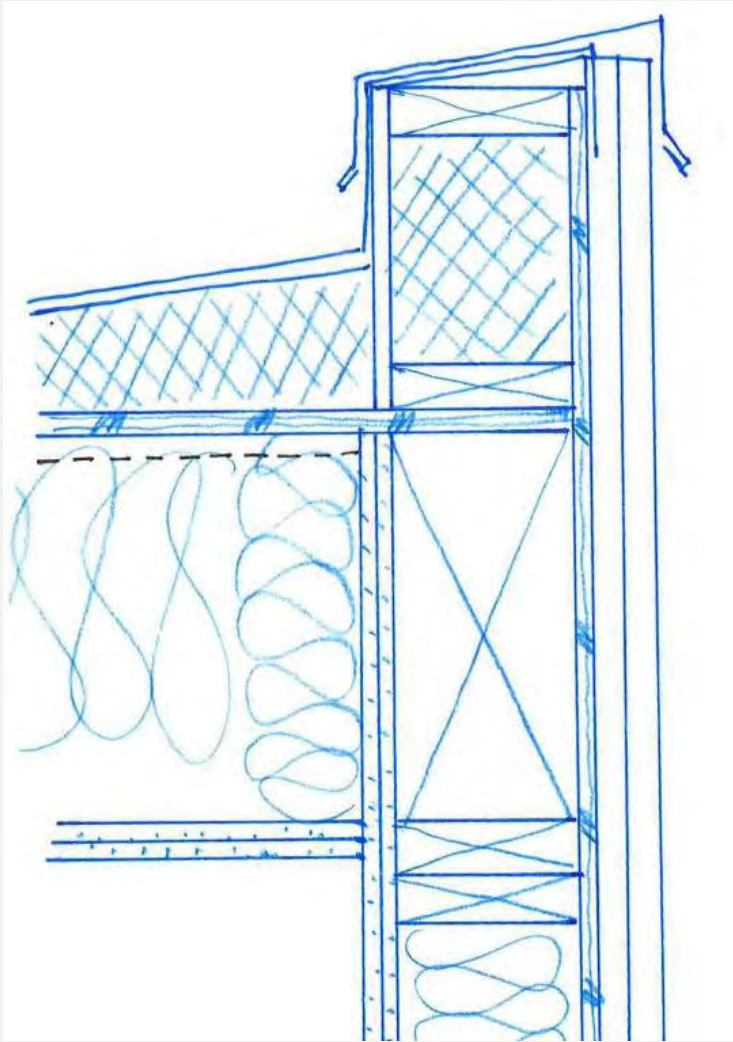
- Flat Joists
- 1 Hour Bearing Wall
- 1 Hour Roof Ceiling
- Unrated Parapet
- Unvented Roof Assembly

Parapet Detailing



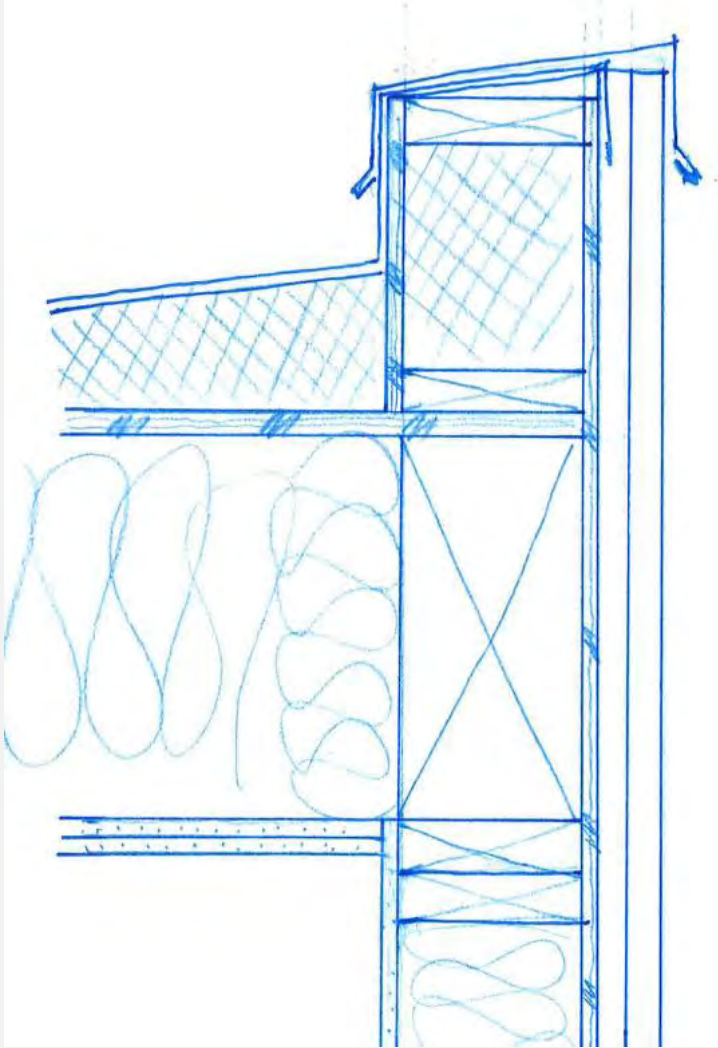
- IBC 705.11 Exceptions
- Not a Parapet
- 1 Hour Exterior Wall
(NLB in Type IIIA)
- 1 Hour Roof Ceiling
- No Openings within 5 feet

Parapet Detailing



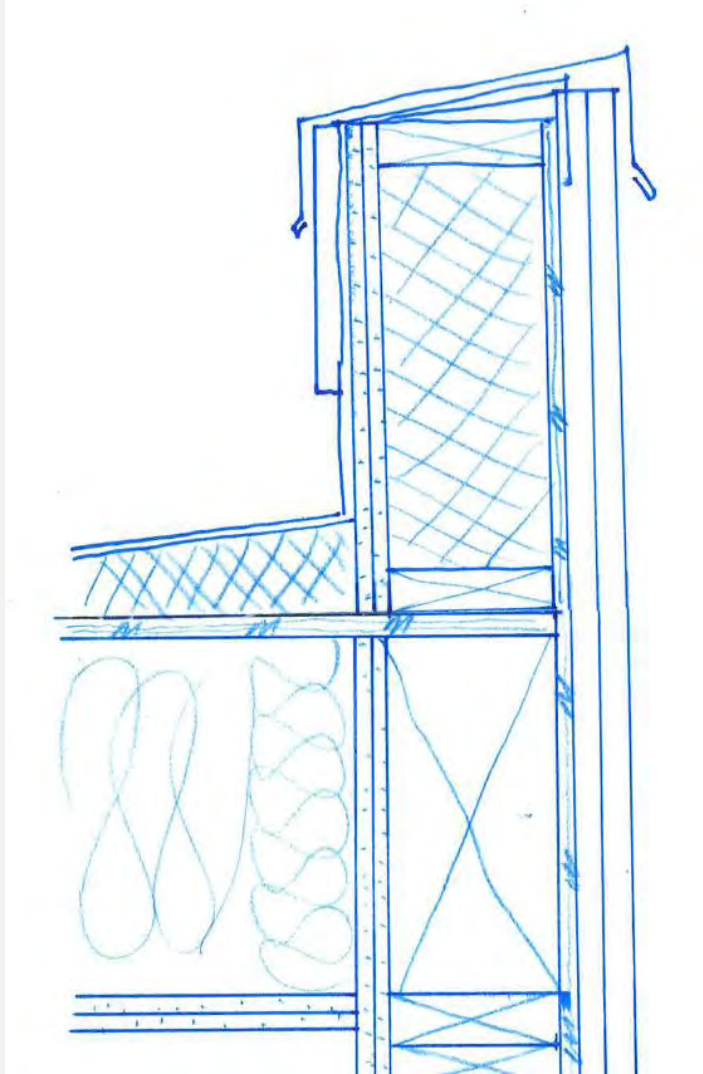
- IBC 705.11 Exceptions
- Not a Parapet
- Class C roofing
- 2 Hour Exterior Wall
- FRT Roof Sheathing or
- 5/8" GWB under roof sheathing

Parapet Detailing



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

Parapet Detailing

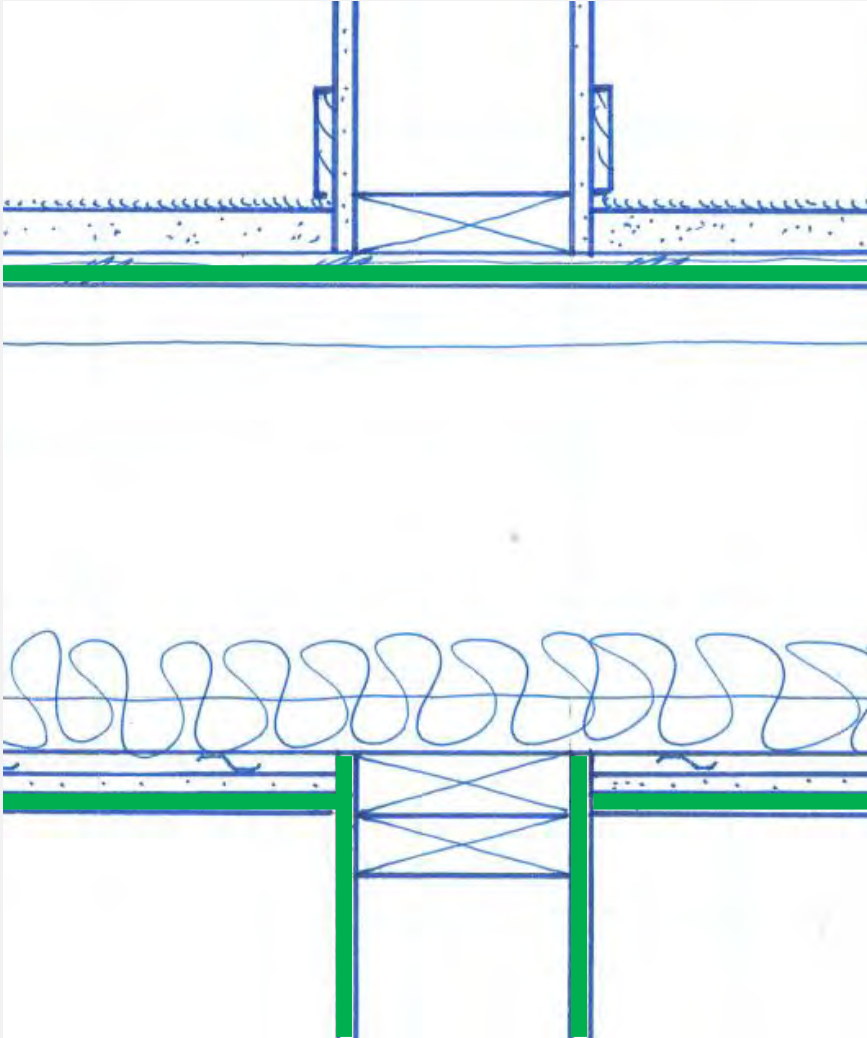


- IBC 705.11.1
- Rating same as wall
- Non-combustible facing at top 18"
- 30" above roof surface

Wood Frame Detailing – Interior Walls

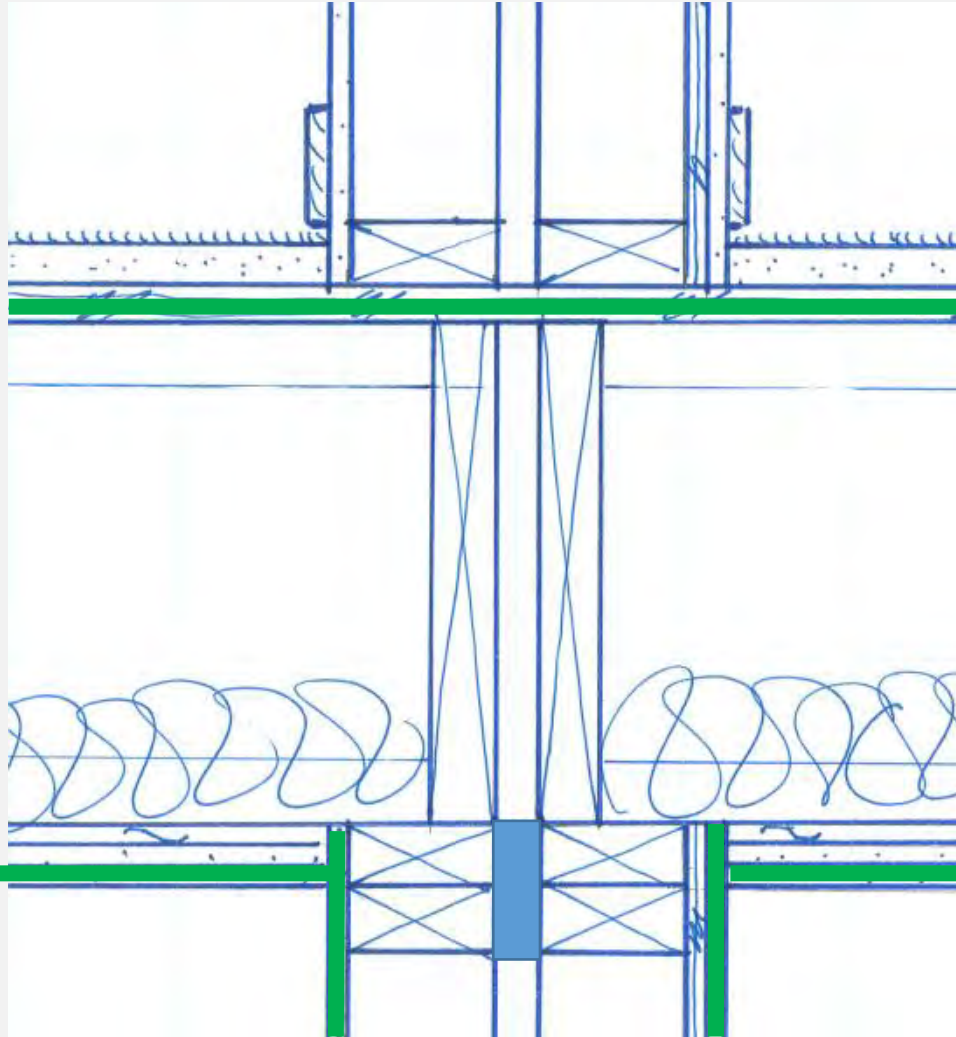


Interior Wall to Floor



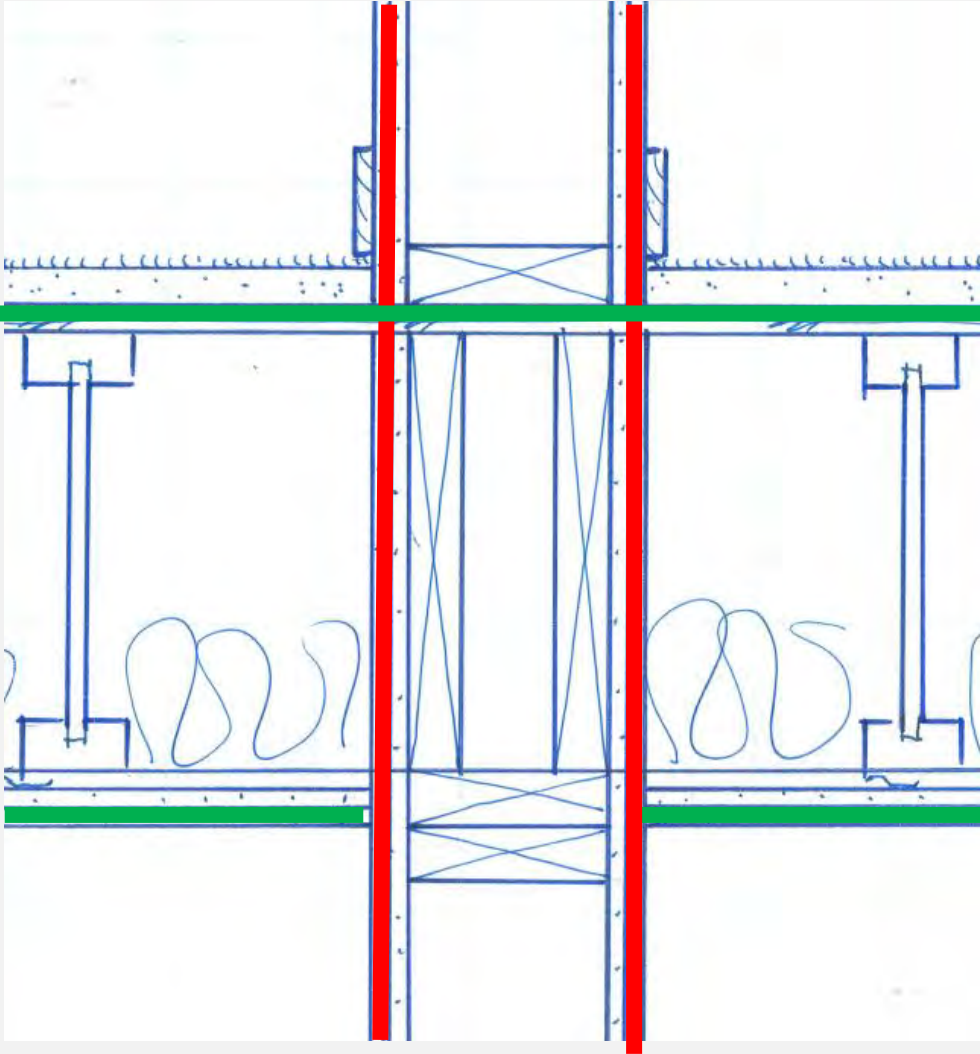
- 1 Hour Rated Floor
- 1 Hour Rated Wall

Interior Demising Wall to Floor



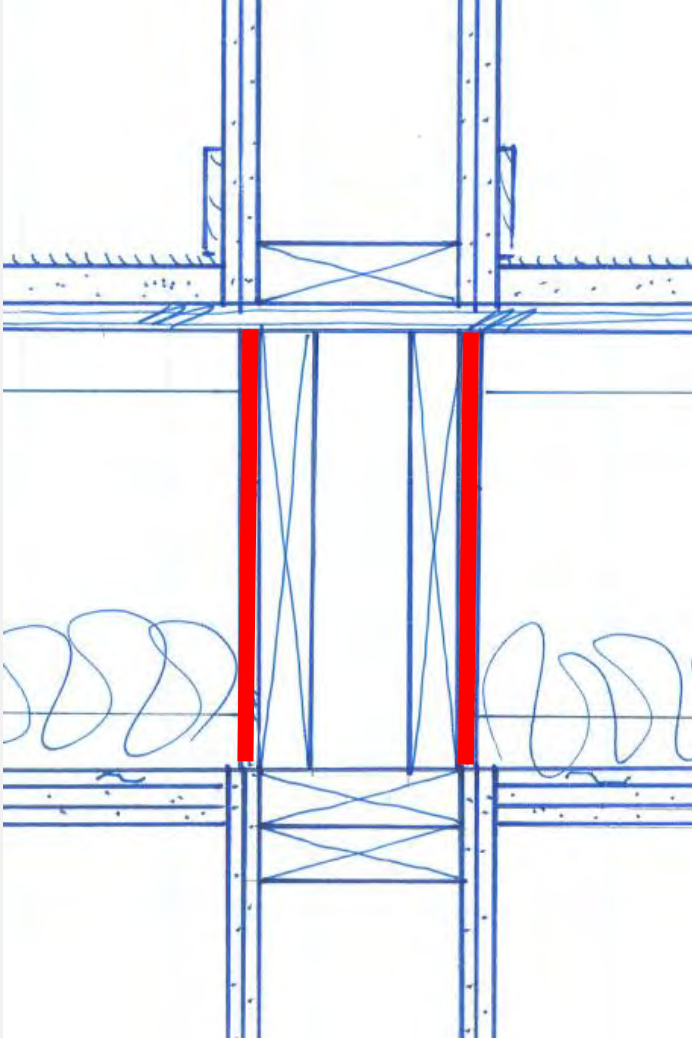
- 1 Hour Rated Floor
- 1 Hour Rated Demising Wall
- Fire Blocking Required

Interior Wall to Floor



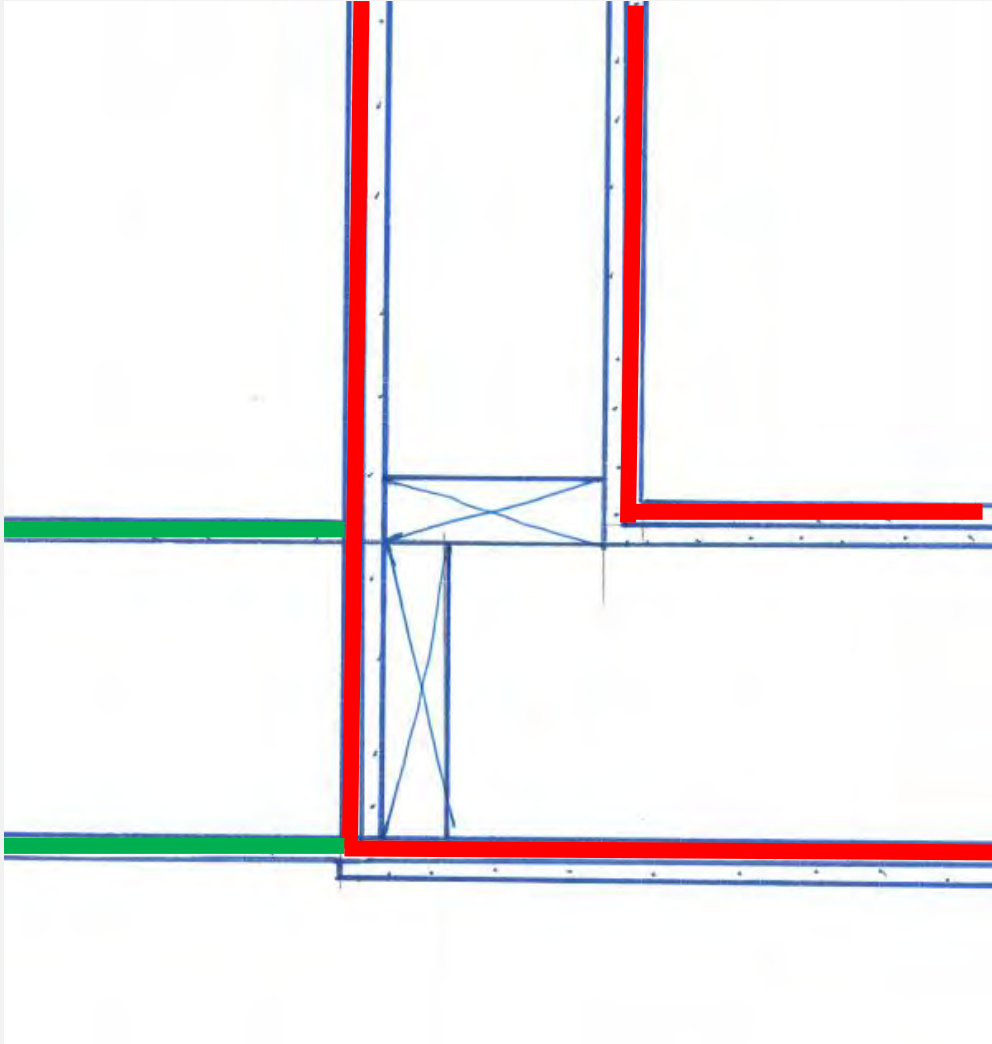
- 1 Hour Rated Floor
 - Parallel Framing
- 2 Hour Rated Wall

Interior Wall to Floor



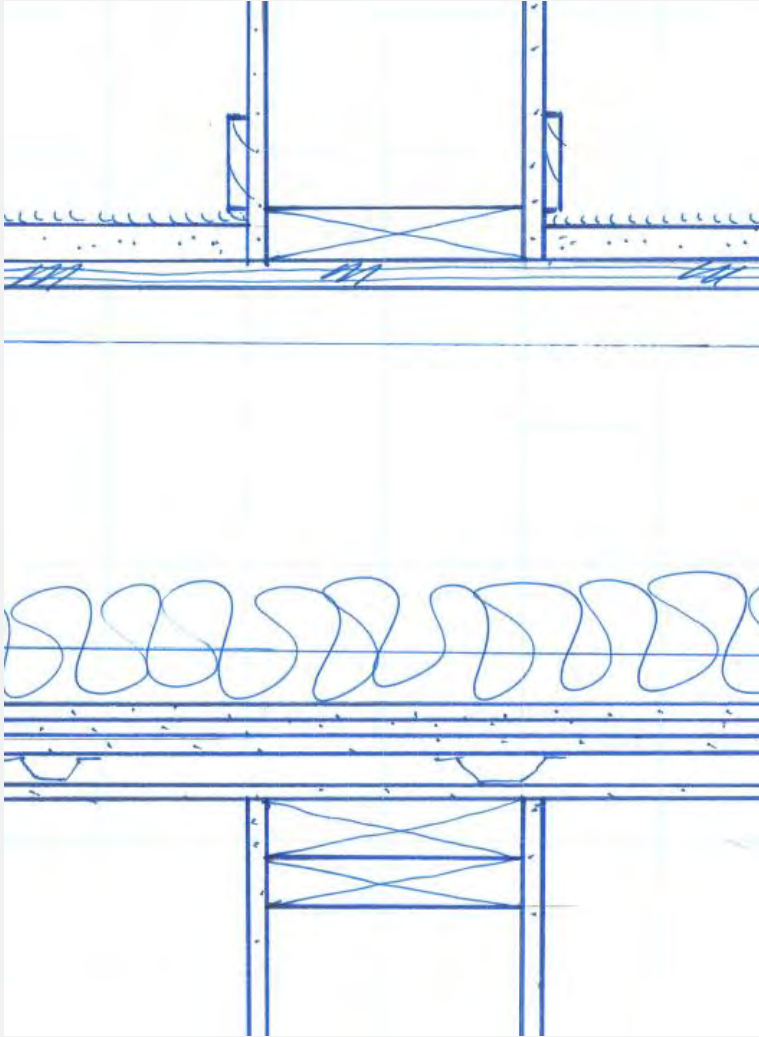
- 1 Hour Rated Floor
 - Perpendicular Framing
- 2 Hour Rated Wall
- Fire Retardant Sheathing or eq.

Interior Wall to Wall



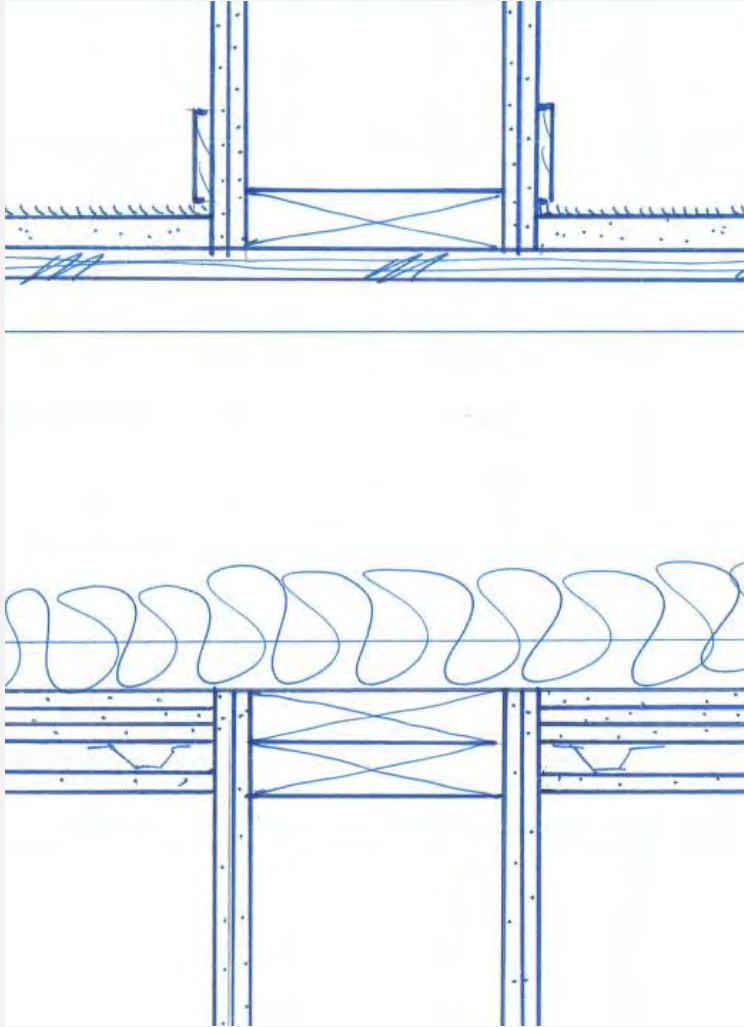
- 1 Hour Rated Wall
- 2 Hour Rated Wall

Interior Wall to 2 Hour Floor



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

Interior Wall to 2 Hour Floor

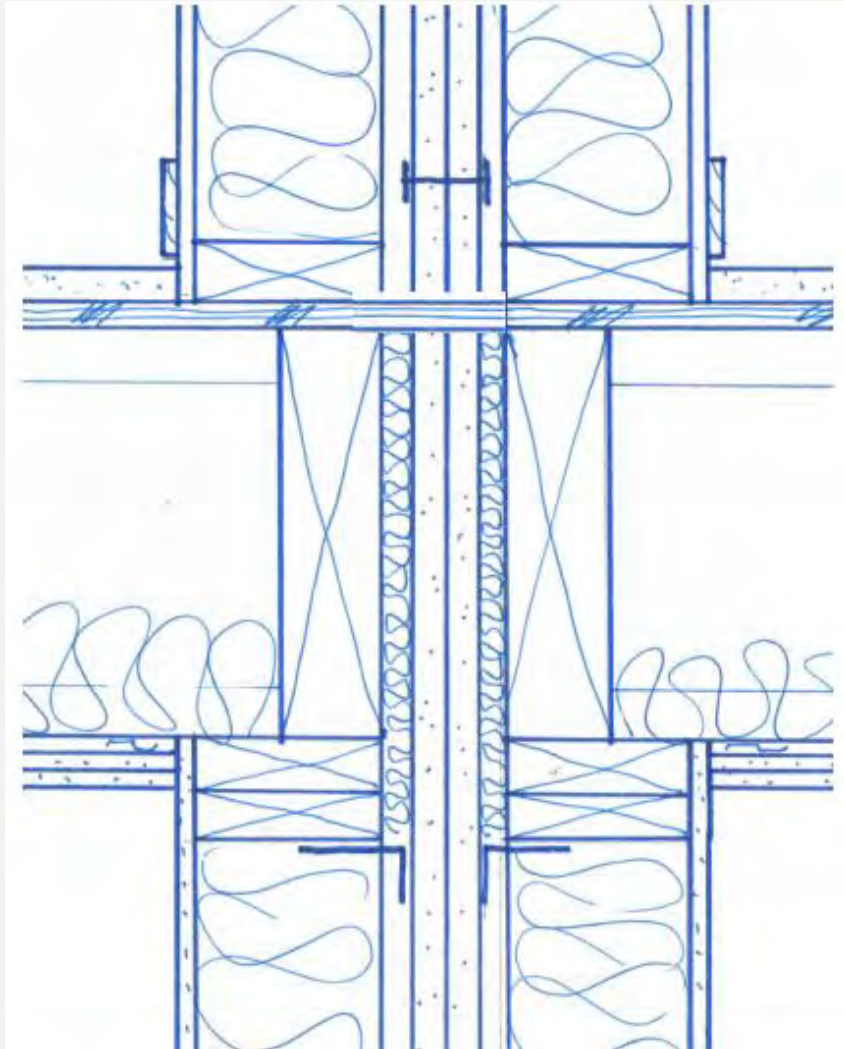


- 2 Hour Rated Floor
- 2 Hour Rated Wall – Load Bearing

Wood Frame Detailing – Fire & Shaft Walls



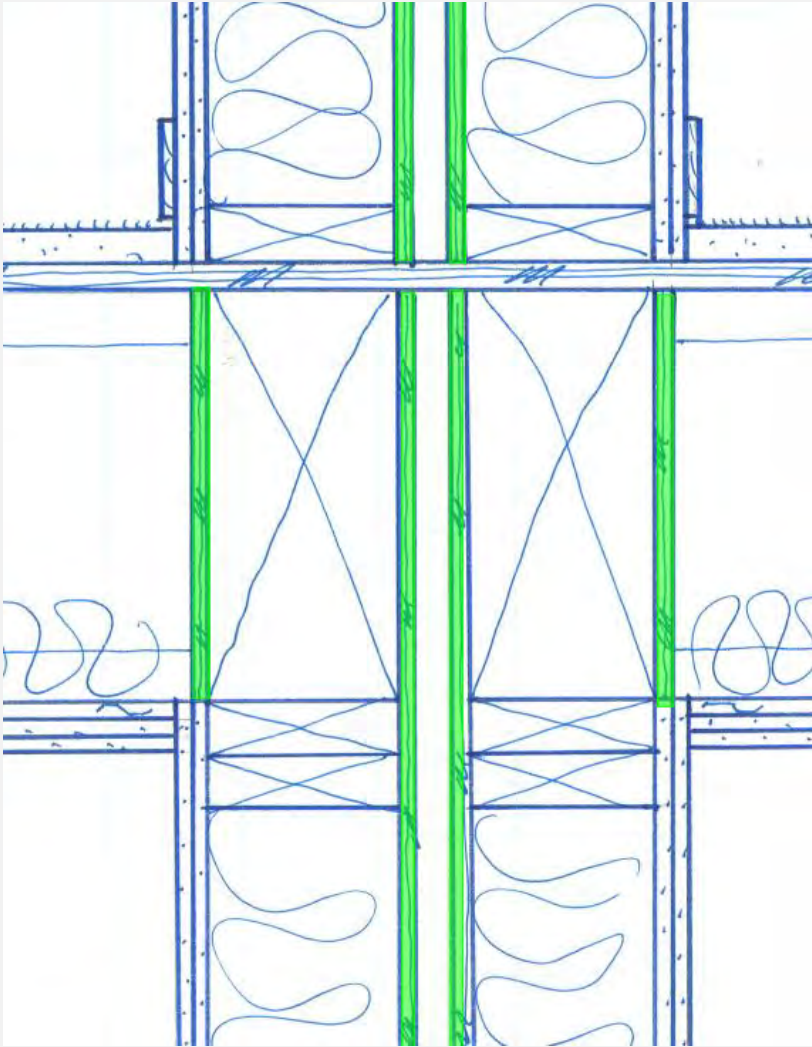
Fire Wall Detailing



- Structurally Independent
- UL U336
 - (2) 1" Shaft Wall
 - H Studs
 - 3/4" Air Gap
 - Nonrated wood walls
 - Breakaway clips
 - Continuous Plywood
 - [SEAO SC LIGHT-FRAMING CONSTRUCTION COMMITTEE
https://bcdg.hoop.la/fileSendAction/fcType/0/fcOid/330620847500508934/filePointer/330620847500673387/fodoid/330620847500673385/Firewall_Final.pdf](https://bcdg.hoop.la/fileSendAction/fcType/0/fcOid/330620847500508934/filePointer/330620847500673387/fodoid/330620847500673385/Firewall_Final.pdf)

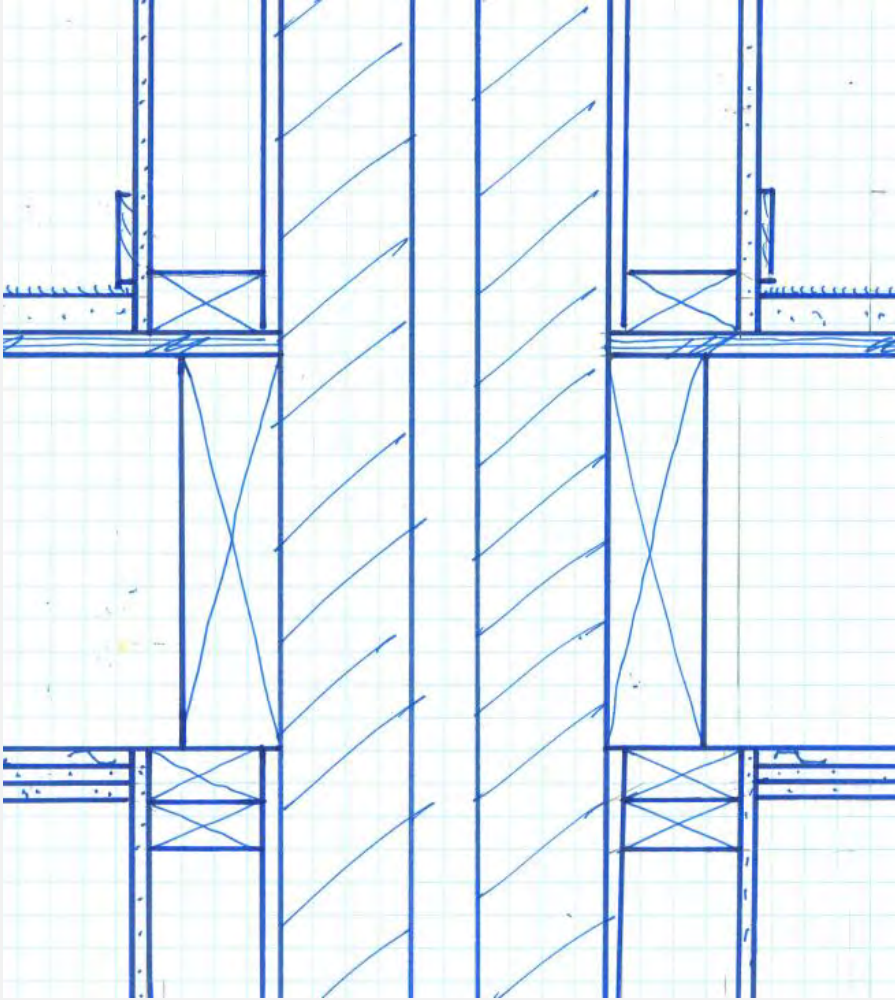


Fire Wall Detailing



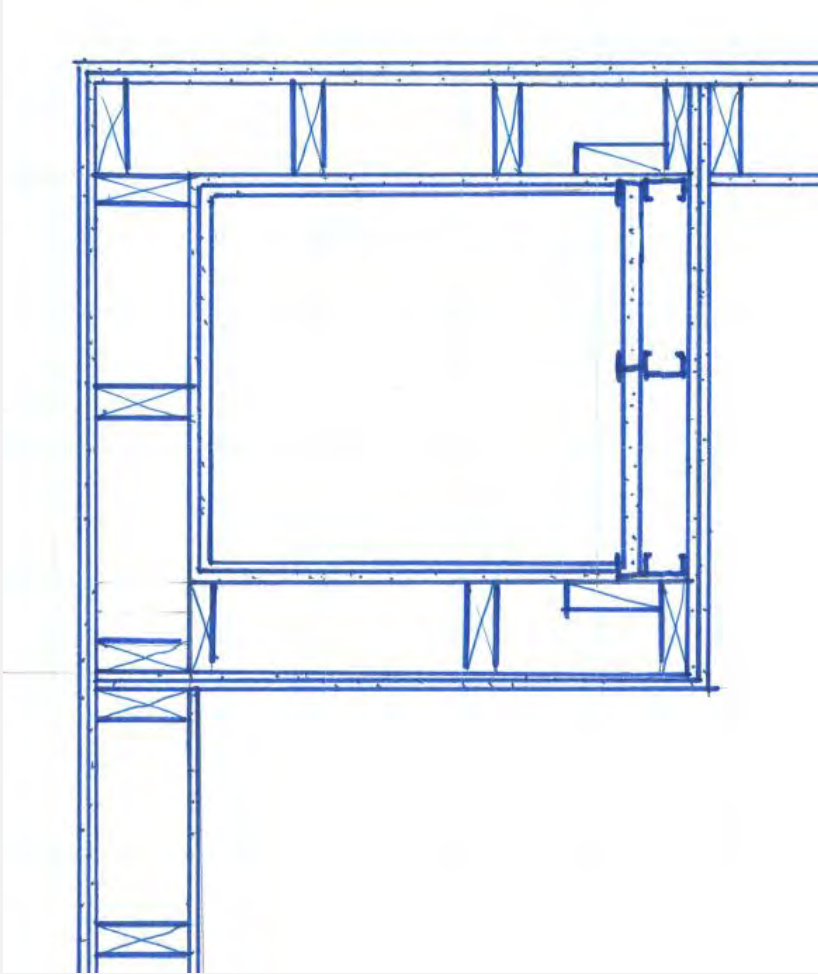
- Structurally Independent
- Two Wood Frame Walls
- Plywood Continuous
- Fire Retardant Sheathing at Rim
- Fire Retardant Sheathing at Wall Gap or eq.

Fire Wall Detailing



- Structurally Independent
- Masonry Walls
- Furred Plumbing Walls

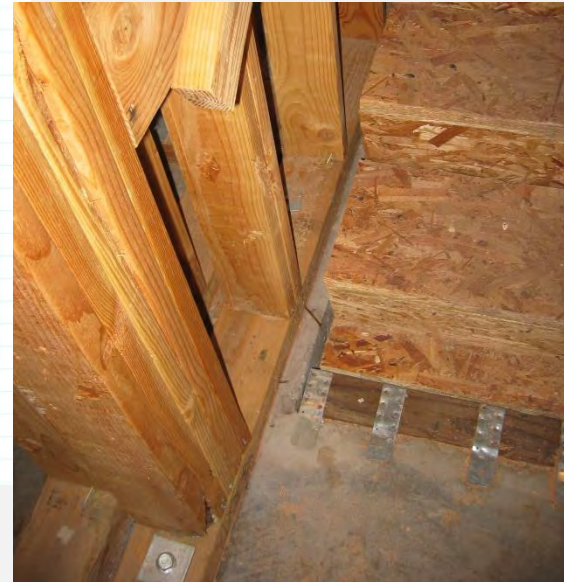
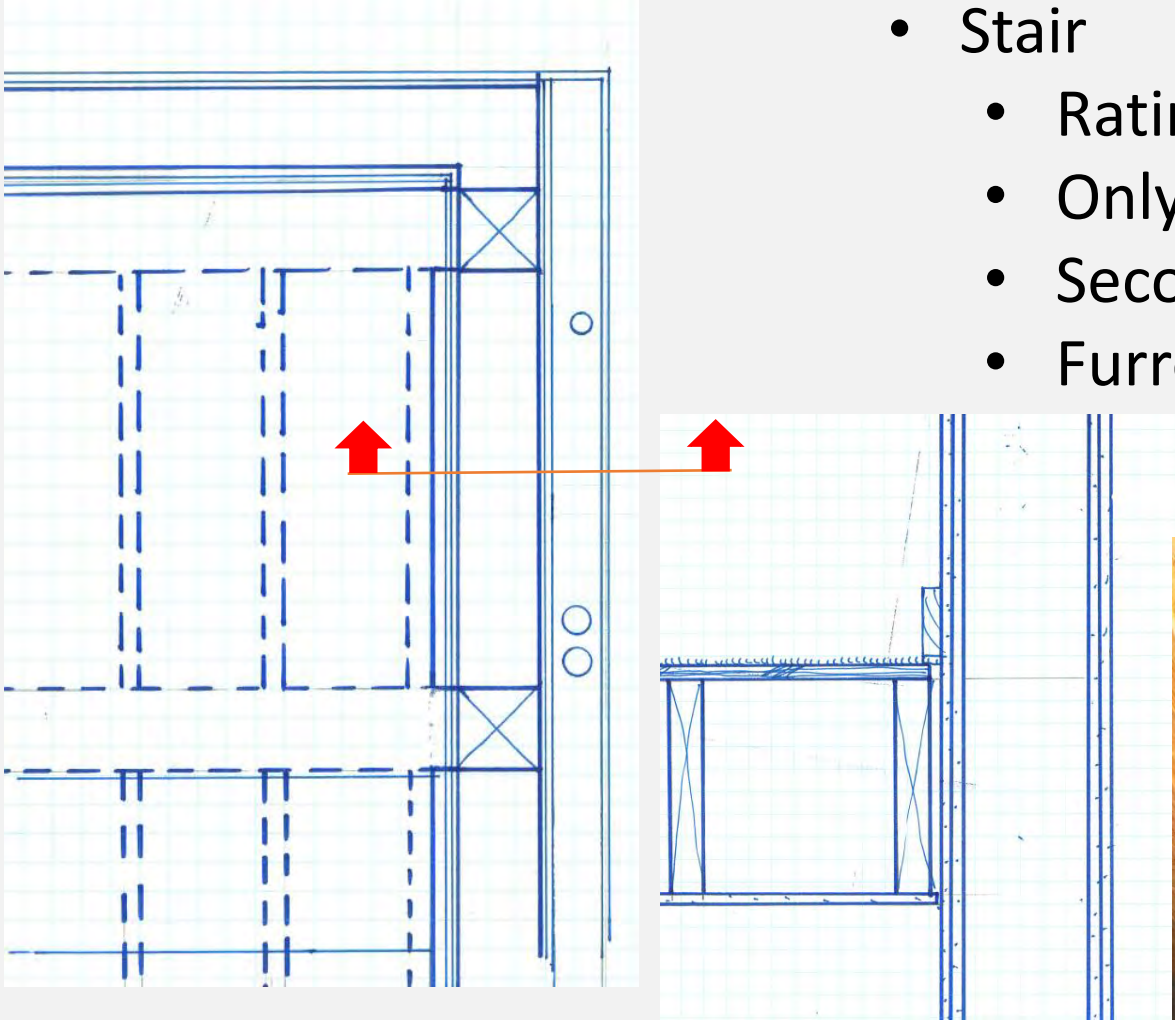
Shaft Wall Detailing



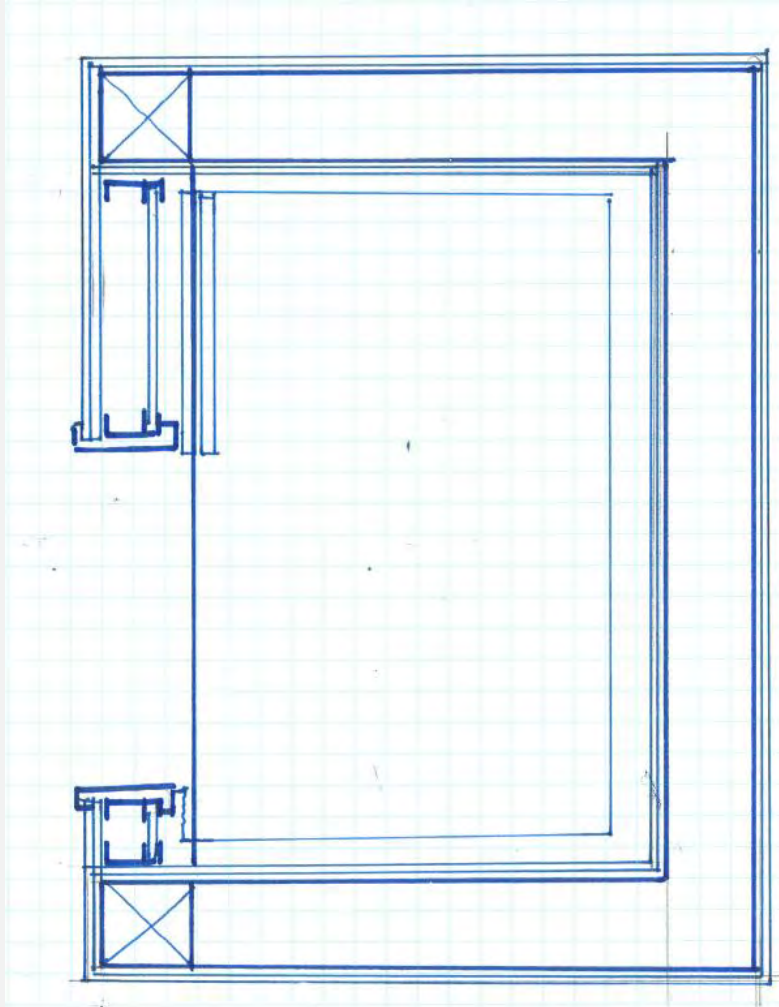
- Mechanical
 - 2-hour rating thru 1 hour wall
 - One side with shaft wall for access
 - http://www.woodworks.org/wp-content/uploads/wood_solution_paper-Shaft-Wall-Solutions-for-Wood-Frame-Buildings-WoodWorks.pdf

Stair Wall Detailing

- Stair
 - Rating Continuous
 - Only Beams Penetrate Shaft
 - Secondary Stair Framing
 - Furred wall for MEPP



Elevator Wall Detailing

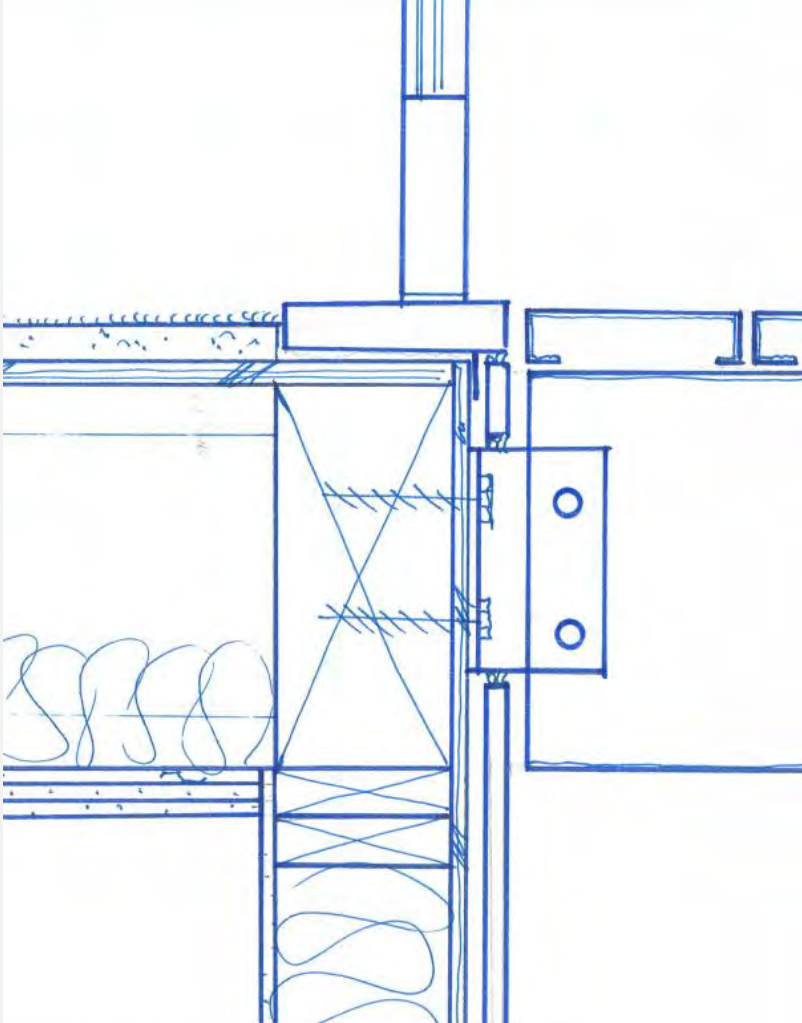


- Elevator
 - Beam at Door Opening
 - C-T Shaft Wall

Wood Frame Detailing – Balconies & Decks

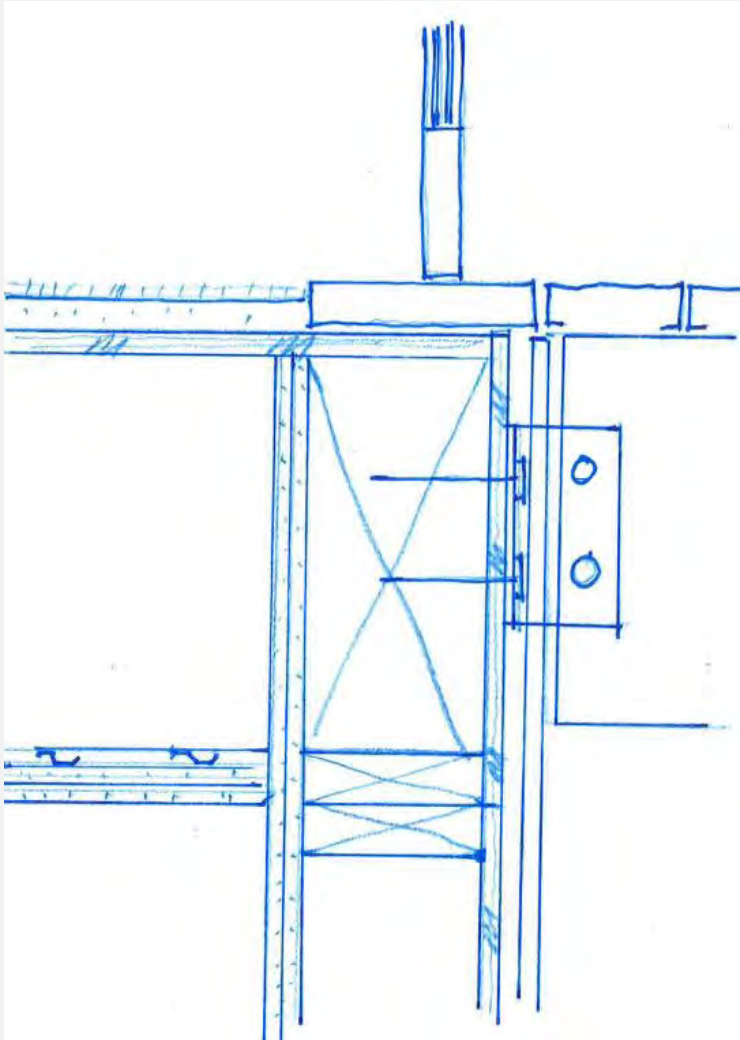


Deck Detailing



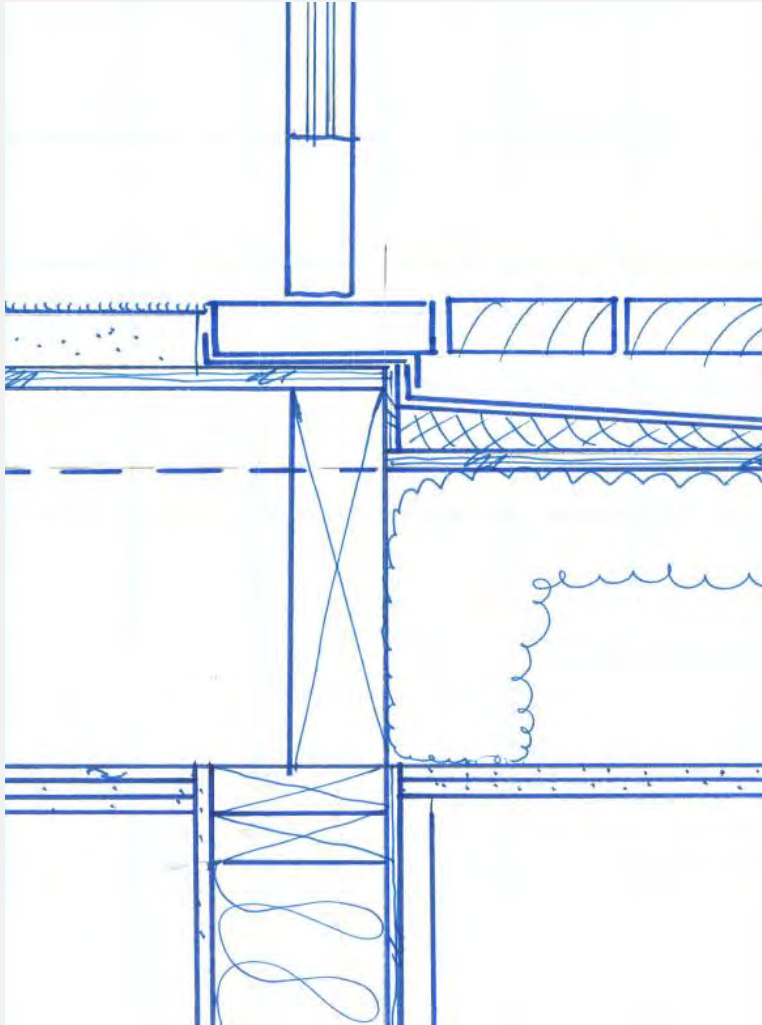
- Bolt On Balcony
 - Aluminum or Steel
 - Sprinkler Requirements
 - Floor Area Implications

Deck Detailing



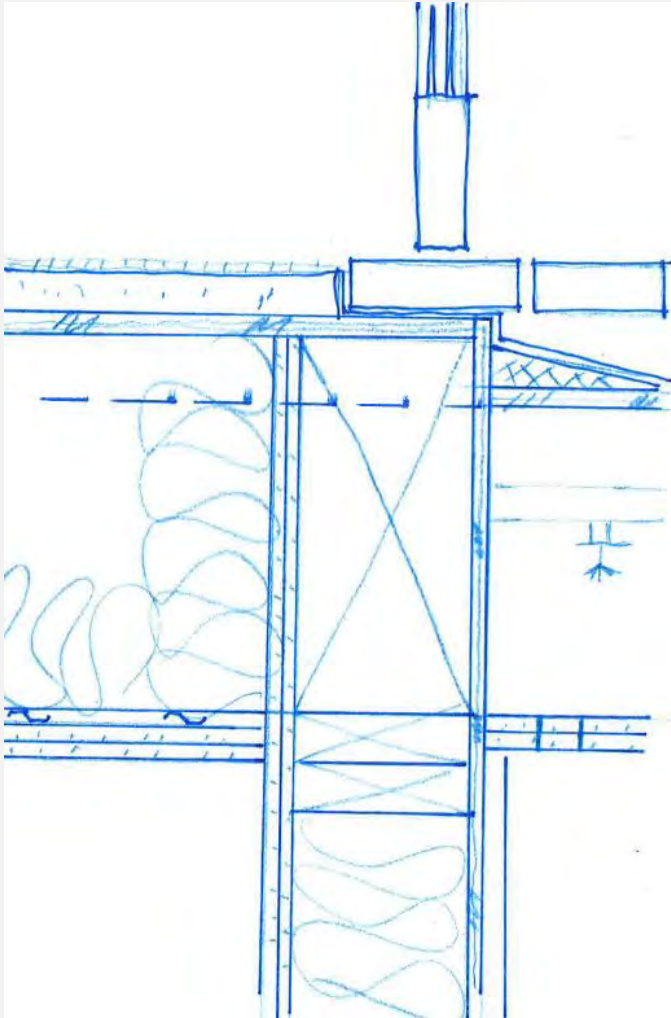
- Bolt On Balcony
 - 2 Hour Rated Wall

Deck Detailing

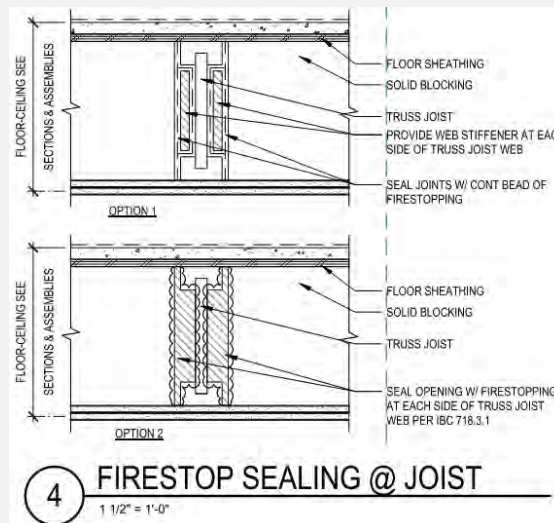


- Framed Balcony
 - Decking Options
 - Review Tested Assemblies
 - Step and Slope Limitations
 - Review for Accessibility
 - Venting Requirements
 - Waterproofing Implications
 - FRT or Rated Assemblies
 - Non-rated or non-FRT if sprinkled in cavity

Deck Detailing



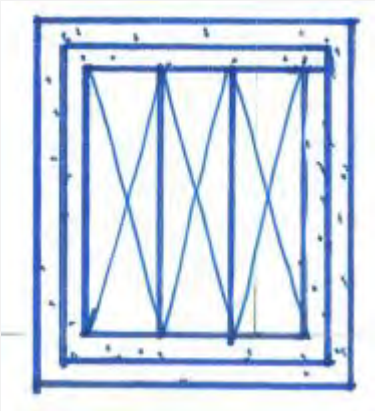
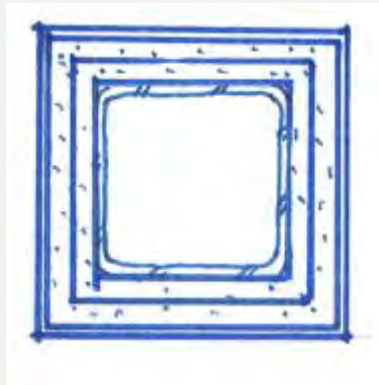
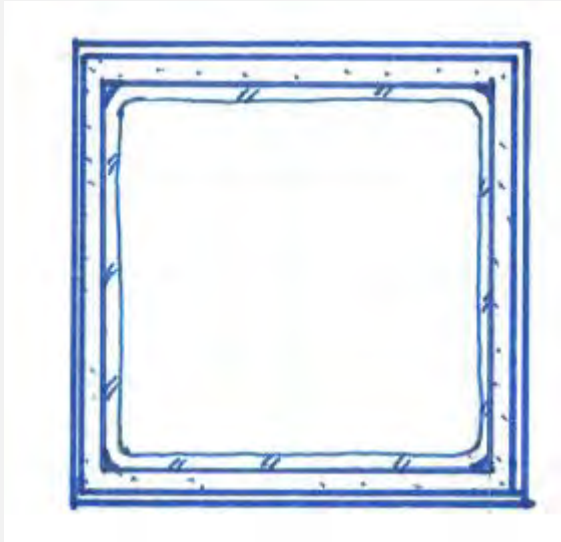
- Framed Balcony
 - 2 Hour Rated Wall
 - FRT or Rated Assemblies
 - Non-rated or non-FRT if sprinkled in cavity
 - Dry Sprinkler Required



Wood Frame Detailing – Columns & Beams



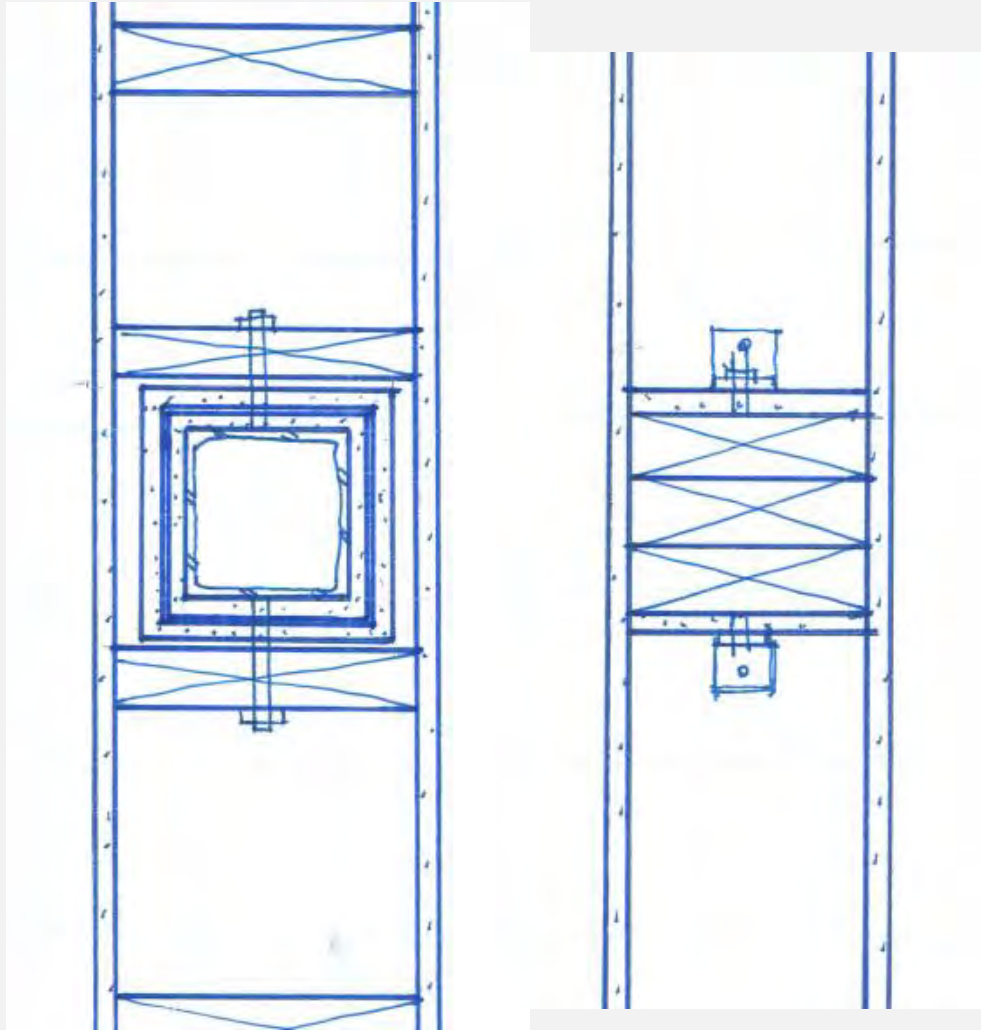
Column Detailing



- Column Protection

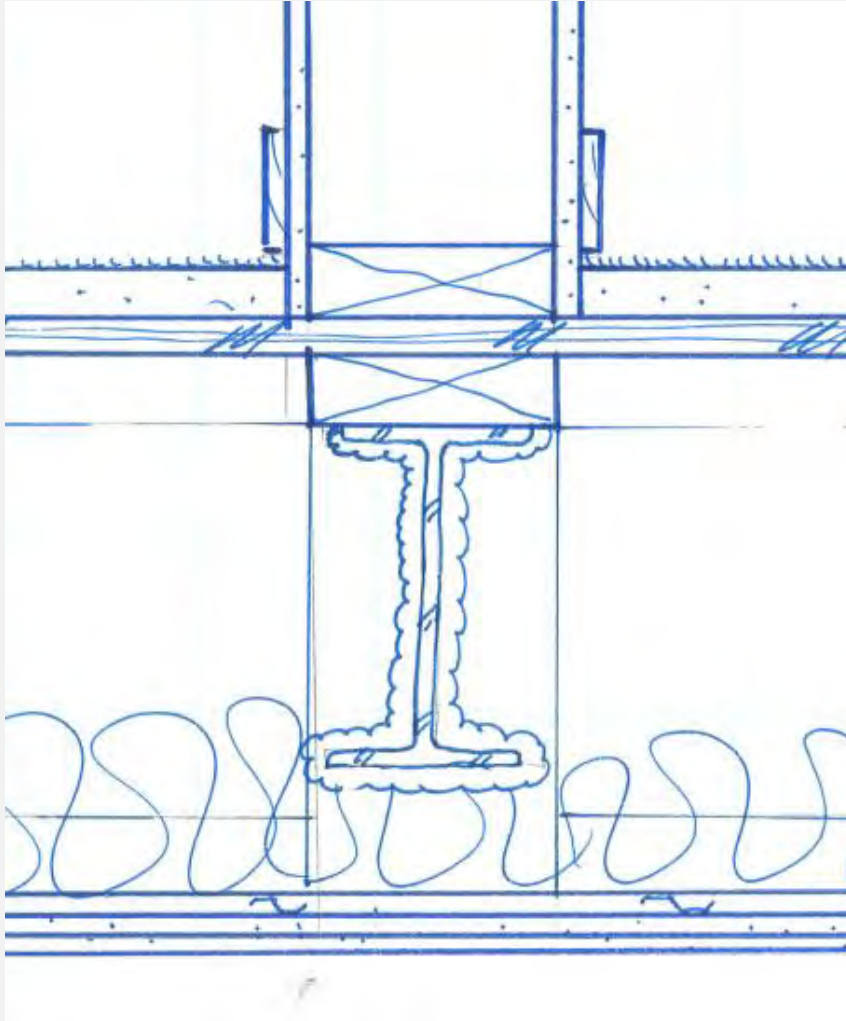
- 8x8 = 1 layer GWB w/ cover
- 4x4 = 2 layers GWB w/ cover
- Wood = Char Rating Calcs
- <http://www.woodworks.org/experttip/do-light-frame-wood-columns-that-are-located-entirely-within-fire-resistance-rated-walls-also-require-individual-fire-protection-or-encasement/>

Column Detailing



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

Beam Detailing



- Beam Protection
 - Spray Applied Fire Resistive Material



Wood Frame Detailing



THANK YOU!

