



NEW LAND
ENTERPRISES



**Thornton
Tomasetti**



Ascent MKE: Designing the Tallest Mass Timber Building in the World

Chicago Wood Design Symposium

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





Option 2 illustrated with a glulam curtain wall and podium base

image: MICHAEL GREEN ARCHITECTURE





TYPE IV(IBC 2015)
CONSTRUCTION:

HEIGHT LIMIT:
85 FT/ 25.9 M

SIX STORIES OF TIMBER
OVER A CONCRETE
PODIUM



ACTON OSTRY ARCHITECTS: BROCK COMMONS VANCOUVER

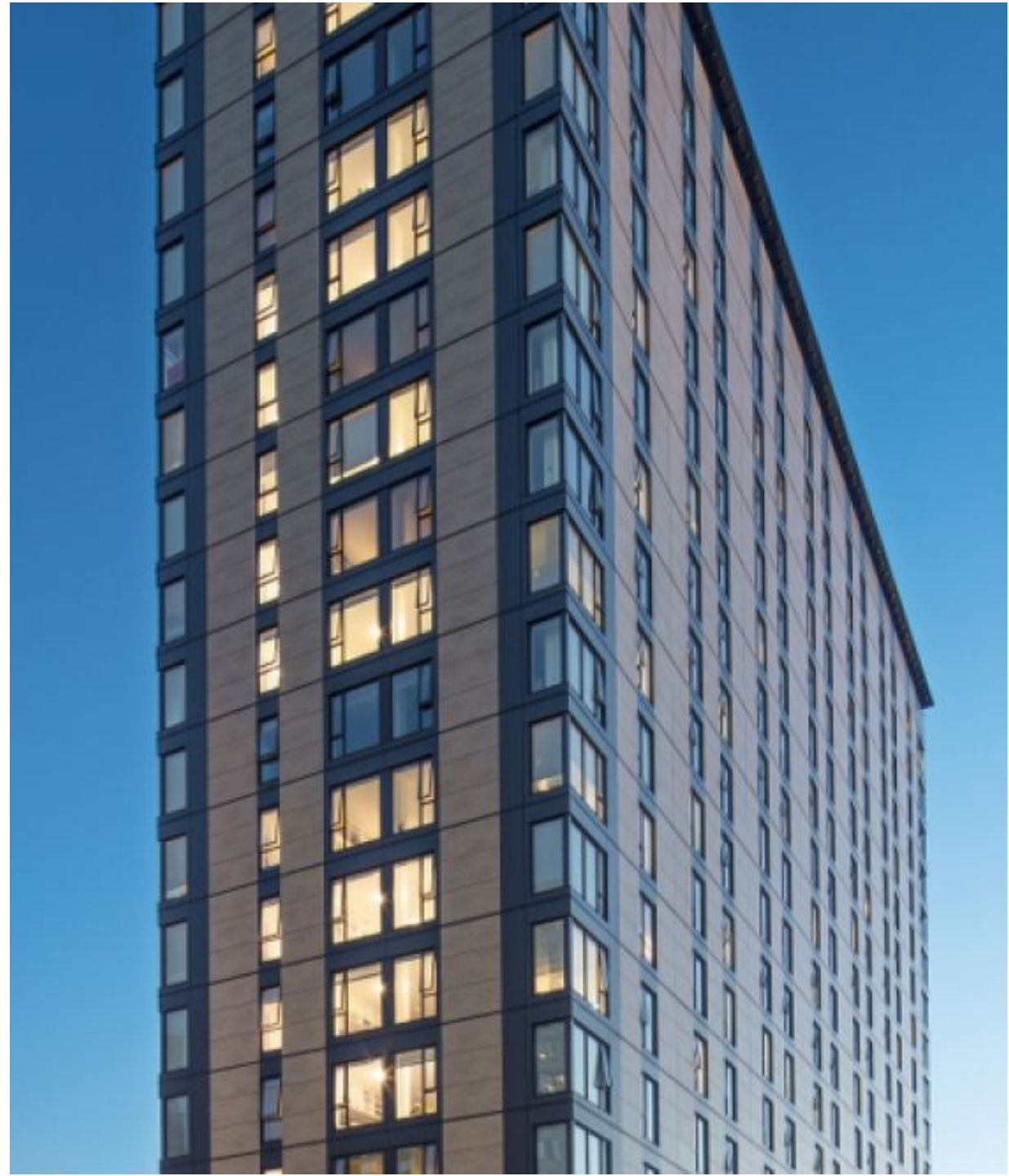
HEIGHT:
174 FT/ 53 M

SEVENTEEN STORIES OF TIMBER OVER A CONCRETE PODIUM.

HYBRID STRUCTURE – STAIRS AND ELEVATOR CORE ARE CIPC

FIRST COMPLETED PROJECT UNDER CANADA'S TALL WOOD
DEMONSTRATION BUILDING PROJECT

ACHIEVES CLASS FIRE RESISTANCE THROUGH ENCAPSULATION –
ALL TIMBER IS COVERED WITH THREE LAYERS OF GYPSUM BOARD



LEVER ARCHITECTS/ KPFF: FRAMEWORK PORTLAND

HEIGHT:
148 FT/ 45 M

TWELVE STORIES OF TIMBER ABOVE GRADE

PURE MASS TIMBER BUILDING – INCLUDING STAIR + ELEVATOR CORES

APPROVED + PERMITTED UNDER 2015 IBC'S "SPECIAL ASSEMBLY" SECTION

TESTED TO WITHSTAND EARTHQUAKES THROUGH ROCKING WALLS

PRIMARY STRUCTURAL MEMBERS MUST MEET A TWO HOUR FIRE RATING,
FLOORS ARE TWO HOUR

ACHIEVES CLASS FIRE RESISTANCE THROUGH SACRIFICIAL/
CHAR METHOD – ALL TIMBER COLUMNS, BEAMS, AND SLABS ARE EXPOSED

CANCELLED DUE TO FINANCIAL CONSIDERATIONS



PATH ARCHITECTS/ KPFF:
CARBON 12 PORTLAND





VOLL ARKITEKTER: Mjøstårnet: 85.4M / 280.2FT



Why Mass Timber:
Aesthetics







Why Mass Timber: Sustainability

1. The building will sequester approximately 7,200 metric tons of CO₂.
2. It will take approximately 25 minutes to grow this volume of wood in North American forests.

This CO₂ benefit is also equivalent to taking approximately 2400 cars off the road for a year or the energy to operate over 1100 homes for a year.



SITE





ASCENT MILWAUKEE

EIGHTEEN STORIES OF TIMBER OVER A CONCRETE PODIUM

HEIGHT:
284 FT/ 86.56 M

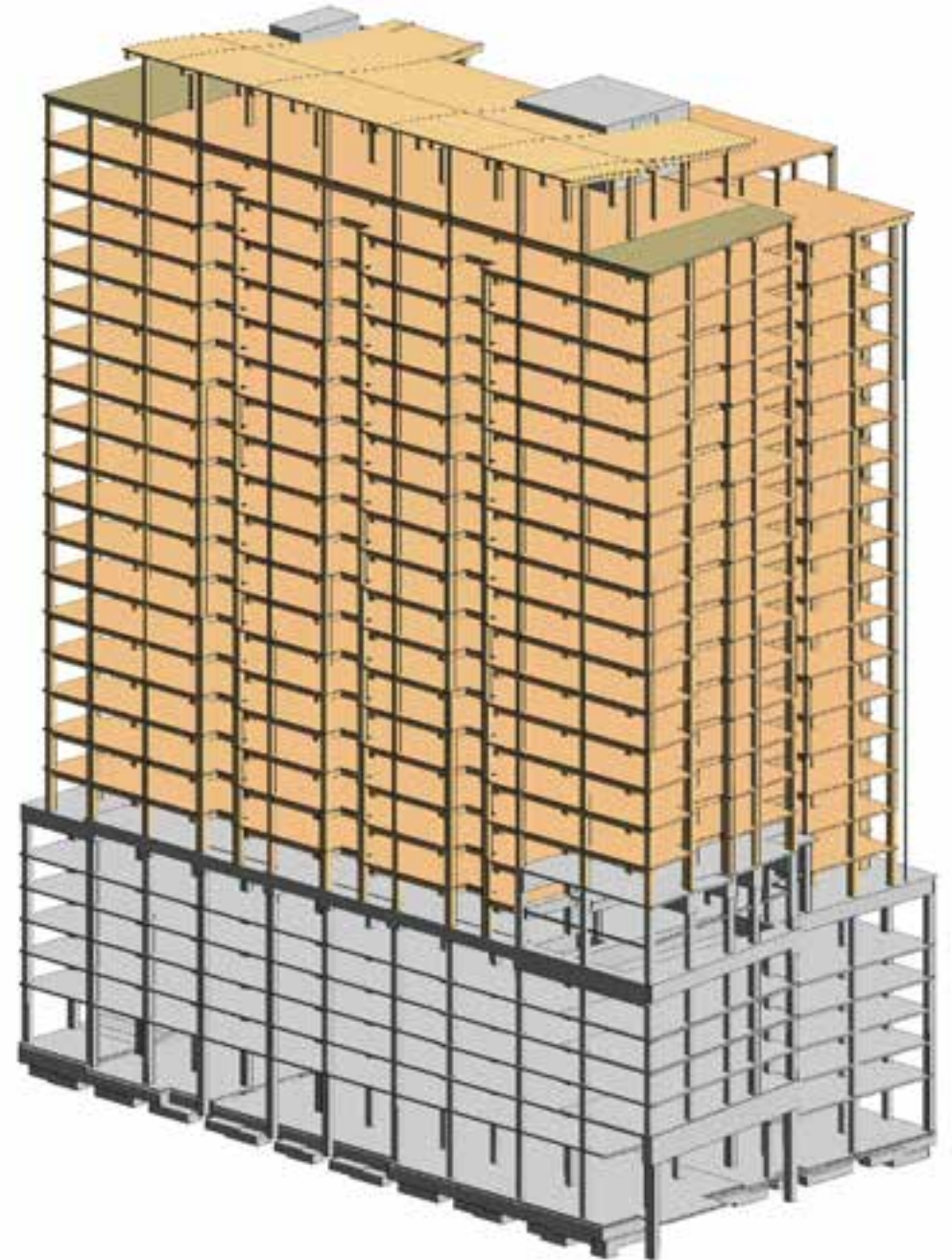
FLOOR AREA OF TIMBER:
APPROX. 324,400 SF /30,136 SM

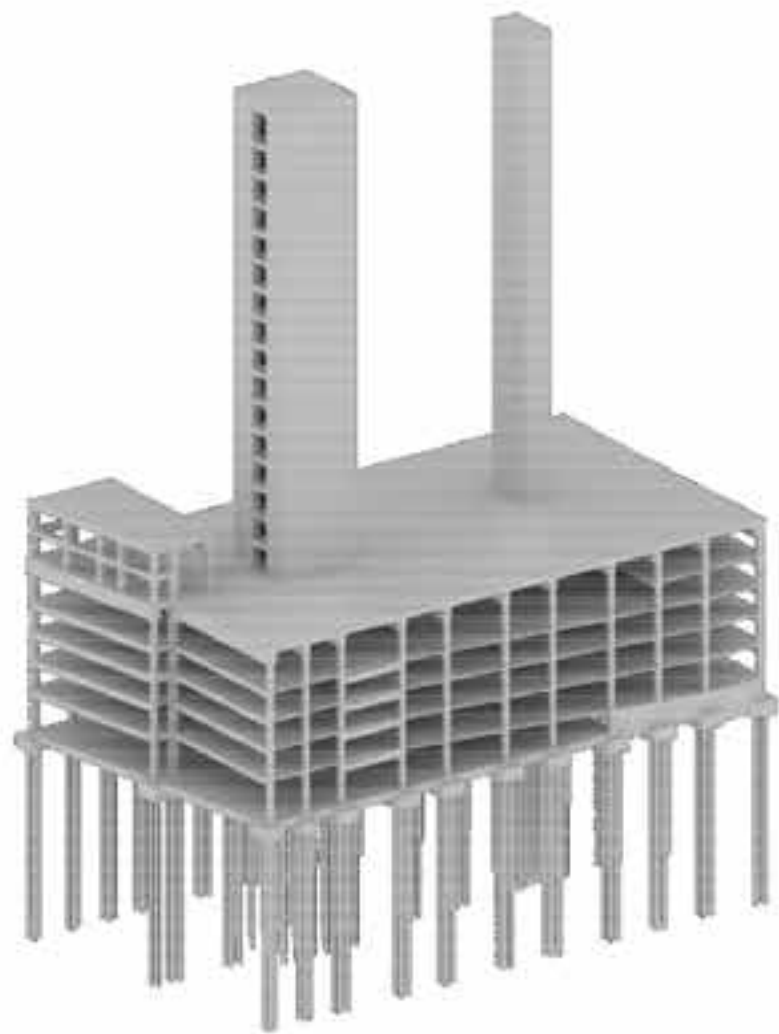
APPROVALS PURSUED UNDER 2015 IBC'S "SPECIAL ASSEMBLY"
SECTION

HYBRID STRUCTURE – STAIRS AND ELEVATOR CORES ARE CIPC

ACHIEVES CLASS FIRE RESISTANCE THROUGH BOTH
EXCAPSULATION AND SACRIFICIAL/ CHAR METHOD – APPROX. 50%
OF TIMBER COLUMNS, BEAMS, AND SLABS ARE EXPOSED –
PRIMARILY IN LIVING SPACES

VERTICAL STRUCTURAL MEMBERS MUST MEET A THREE HOUR
FIRE RATING, FLOORS ARE TWO HOUR





Ascent MKE Timeline:

01 March 2018: Directive from New Land Enterprises to pursue MTF Tower

03 May 2018: Presentation to DNS Commissioner and Alderman

24 July 2018: Introduction to DNS Staff

21 October 2018: Project unveiled at CTBUH World Conference, Dubai

11 November 2018: Presentation to MFD leadership

22 July 2019: First working meeting with DNS Staff

07 November 2019: Second working meeting with DNS Staff

17 December 2019: Witnessed three hour fire test (4th of 9)

13 February 2020: Variance review meeting with DNS Staff

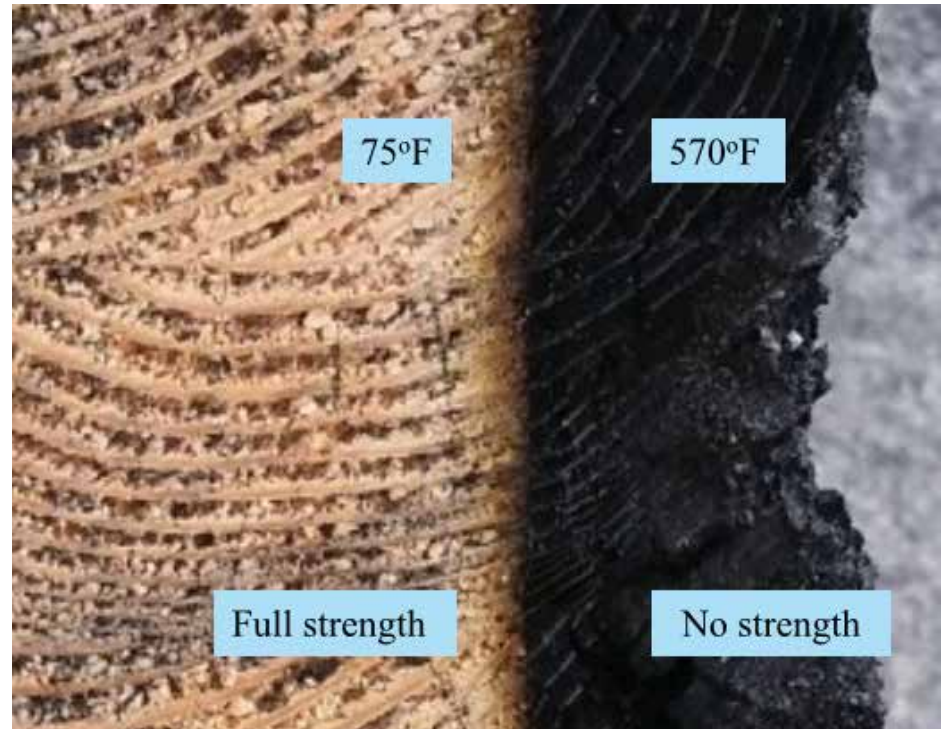
21 February 2020: Four variance petitions filed with DNS

21 February 2020: Footings and Foundation Permit applied for

15 May 2020: Anticipated groundbreaking



Intermediate design May 2019





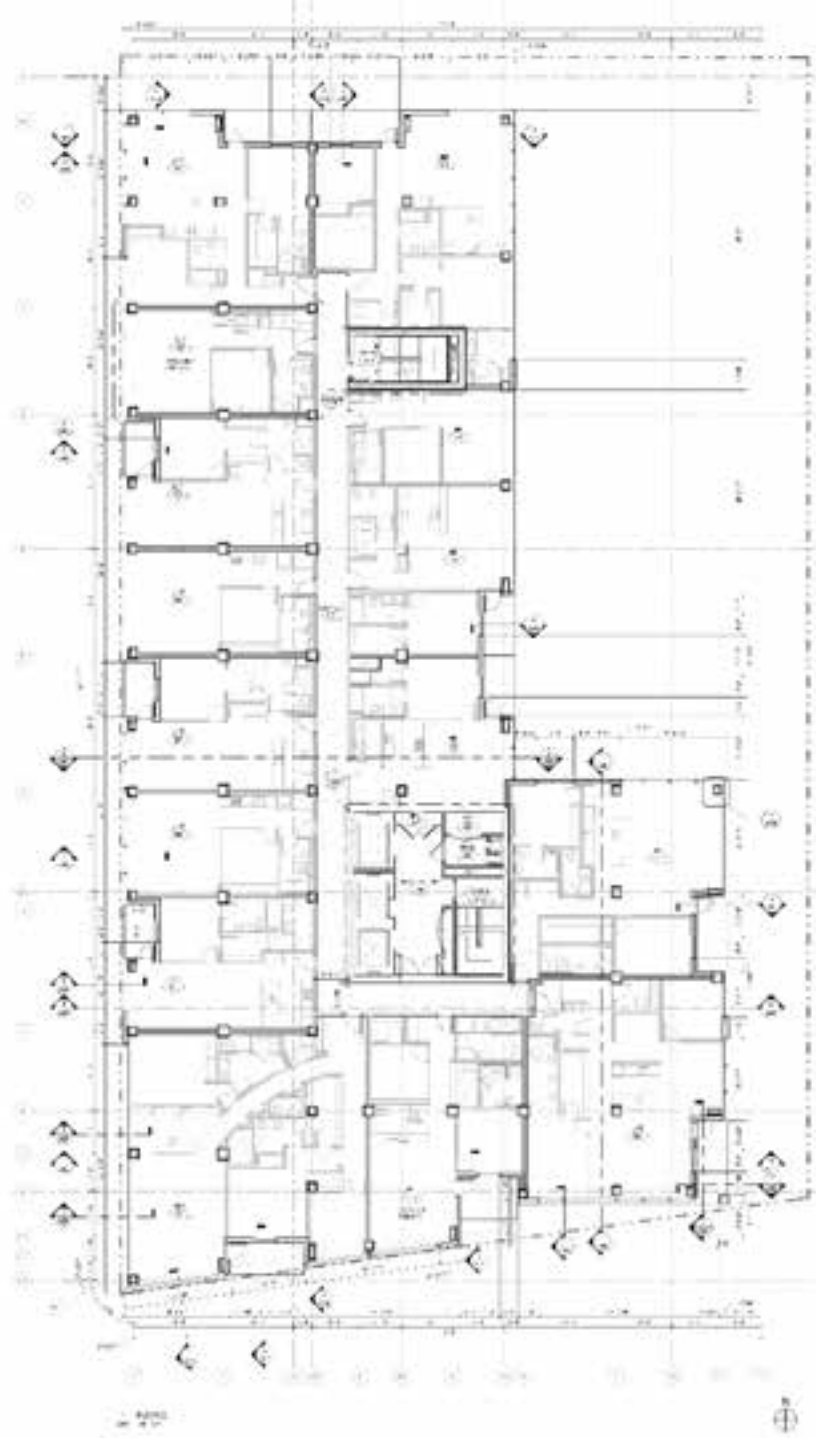
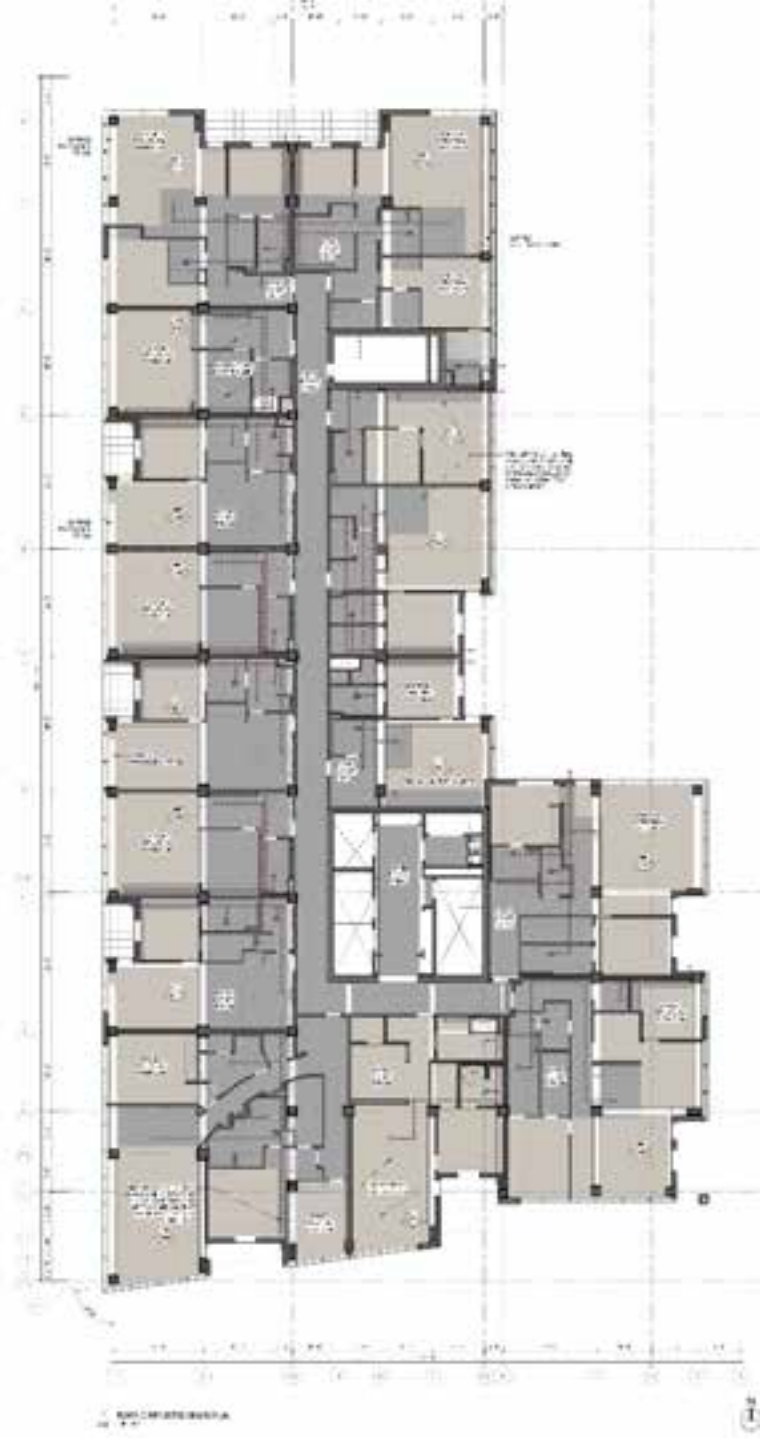


PRESCRIPTED CHAR RATE:
1.5IN/ HR

TESTED CHAR RATE:
1.29-1.31 IN/ HR







NOTES:

1. DETAIL 3A: 4 SCREWS
DETAIL 3B: 6 SCREWS
DETAIL 3C: 9 SCREWS

1 CONCEALED GLULAM BEAM TO GLULAM COLUMN (D3#)
SCALE: 3" = 1'-0"

SCALE: 3" = 1'-0"

Technical drawing of a beam support bracket. The drawing includes the following dimensions and annotations:

- Top Left:** A dimension of 15 1/4" is shown for the top horizontal section.
- Left Side:** A dimension of 15 1/4" is shown for the left vertical section.
- Internal Vertical Spacing:** A dimension of 9 1/8" is shown between the top and bottom horizontal sections.
- Right Side:** A dimension of 9 1/4" MIN is shown for the right vertical section.
- Bottom Section:** A dimension of 0-1 9/16" is shown for the bottom horizontal section.
- Assembly Instructions:**
 - A note at the top states: "SING ASSY VG C5K 5/16"x1-1/8" LAG SCREWS OR EQUIVALENT. SEE NOTE 1 FOR NUMBER OF SCREWS".
 - Two locations on the right vertical section are labeled "CHAR WHERE BEAM EXPOSED" with a dimension of 3.30" from the top and bottom edges.

2A REINFORCEMENT PLAN

Technical drawing of a column-beam joint, showing two views: a side elevation and a cross-section.

Side Elevation View (Left):

- Shows a column with a beam passing through it.
- Reinforcement bars are shown extending through the column.
- A concrete pour is indicated by a stippled pattern.

Cross-Section View (Right):

- Shows the column's internal structure, including a central core and outer layers.
- Reinforcement bars are shown extending through the column.
- Dimensions and material specifications are provided for various components.

Dimensions and Material Specifications:

- (1) 2" ASSY VG CSK 3/8"x11" FULLY THREADED COUNTERSUNK COMPRESSION REINF SCREWS INSTALLED FLUSH TO UNDERSIDE
- (2) ASSY VG CSK 3/8"x8" FULLY THREADED COUNTERSUNK SCREWS
- 5/16" 5/16"
- FULLY THREADED REINF SCREWS INSTALLED FLUSH TO UNDERSIDE OF GLULAM BEAM
- 1 LAYER 2.5" CALCIUM SILICATE BOARD W/ (4) 1/4"x4" FULLY THREADED
- 6-1/2"x6"x1" GLULAM INFILL SCREWED TO GLULAM BEAM WITH (4) 3/8"x5" CSK HEAD

Column Depth (D):

Indicated by a dimension line at the bottom of the cross-section view.

COLUMB DEPTH (m)

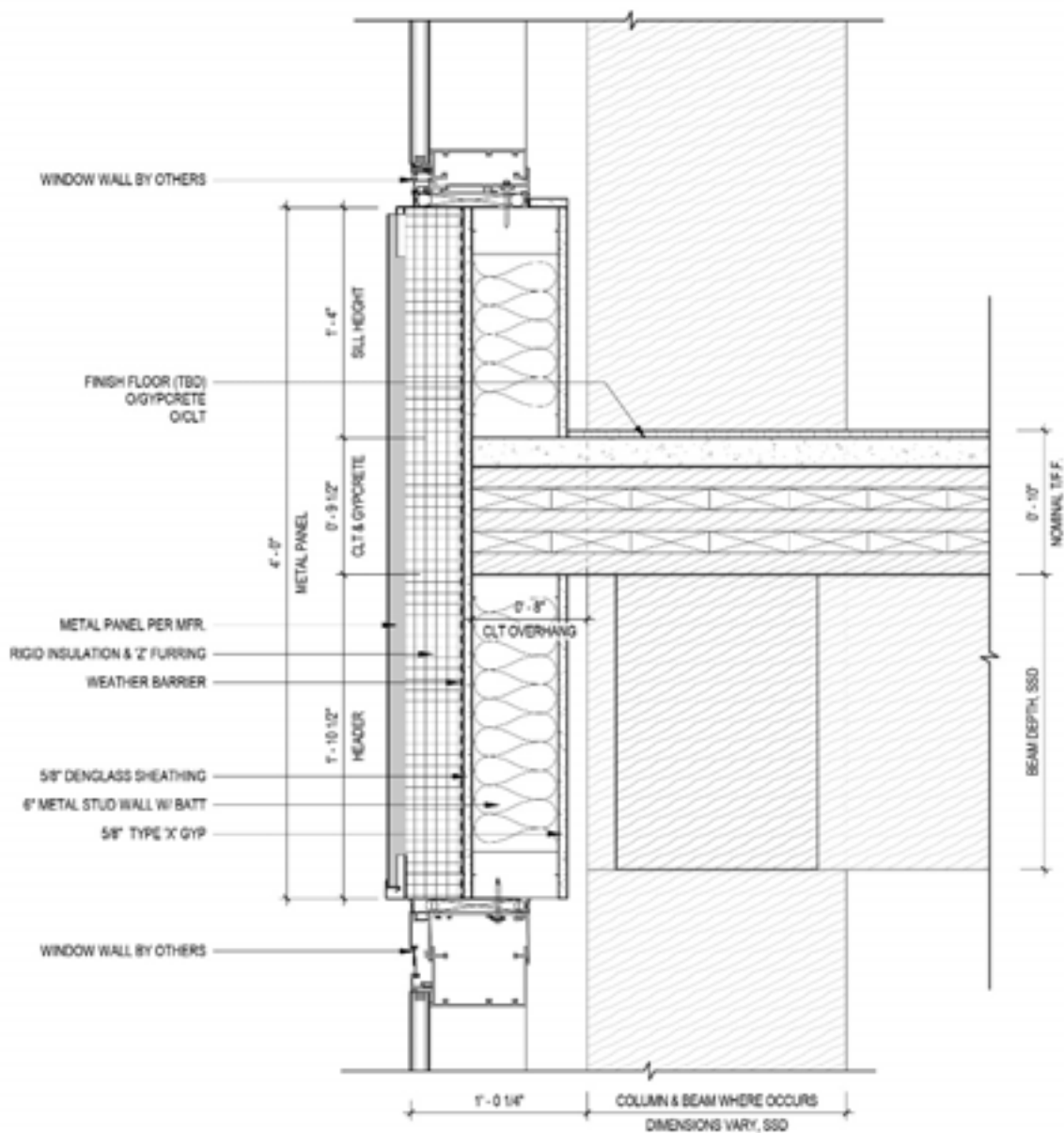
1 LAYER 2.5" CALCIUM SULFATE BOARD W/ (6) 1/4"x4" FULLY THREADED WOOD SCREWS INTO GULLAM. CONTINUOUS HLT1 P5 ONE MAX FIRESTOP SEALANT AT BOTTOM BETWEEN BOARD AND GULLAM.

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SECTION

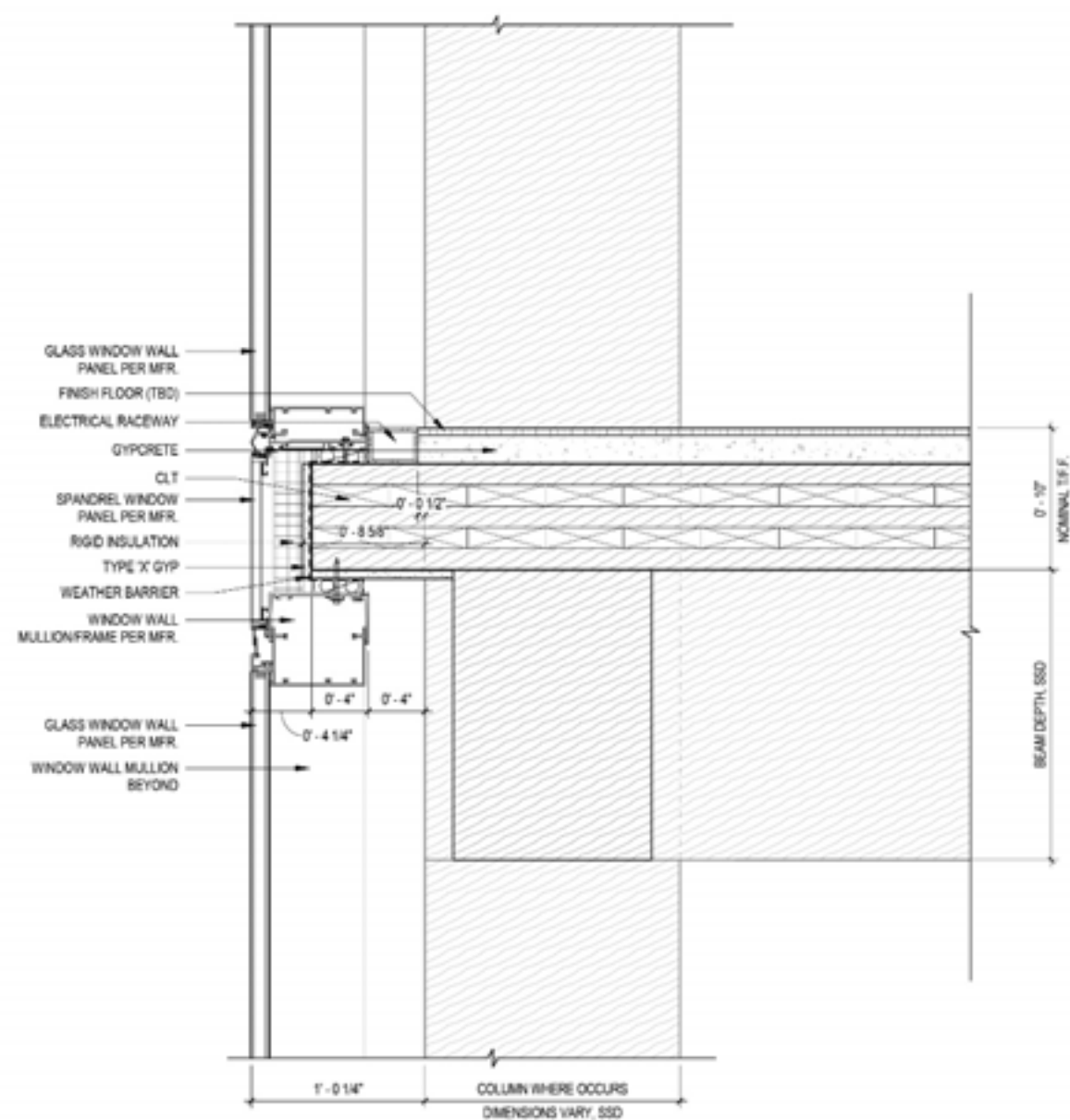
1

NOT TO SCALE



6 WINDOW WALL SECTION AT KNEE WALL

A520 1 1/2" = 1'-0"



3 WINDOW WALL - SLAB EDGE SECTION

A520 1 1/2" = 1'-0"











Thank you!

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