

MANAGING ACOUSTICS IN MASS TIMBER HIGH-RISES: INTRO CLEVELAND CASE STUDY

JOHN MITCHELL
ASSOCIATE PARTNER
HARTSHORNE PLUNKARD ARCHITECTURE

PRESENTATION FOR:
WOODWORKS

FEBRUARY 14, 2024

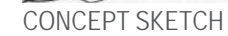
*DISCLAIMER: THIS PRESENTATION WAS DEVELOPED BY
A THIRD PARTY AND IS NOT FUNDED BY WOODWORKS OR
THE SOFTWOOD LUMBER BOARD.*



An aerial photograph of a dense evergreen forest, likely a spruce or fir forest. The trees are tall and thin, with a uniform green color. The perspective is from directly above, showing the canopy of the forest. The lighting is soft, suggesting a slightly overcast day or a time of day like dawn or dusk. The overall texture is a repeating pattern of tree tops and branches.

INTRO - PROJECT OVERVIEW

SUSTAINABILITY: LEED GOLD CERTIFIED



TIMBER APPROVAL PROCESS

- 18-MONTH TOTAL TIMELINE, INITIATED DURING CONCEPT DESIGN
- ENGAGED CODE CONSULTANT AND ICC AD-HOC COMMITTEE DURING REVIEW PROCESS WITH THE CITY OF CLEVELAND
- LIFE SAFETY ENHANCEMENTS
 - NON-COMBUSTIBLE VERTICAL EGRESS COMPONENTS
 - ADDED ENCAPSULATION IN CORRIDORS
 - ALL TIMBER IS SIZED FOR 2HR RATING, REGARDLESS OF ENCAPSULATION



FINAL RENDERING



CONCRETE CORES

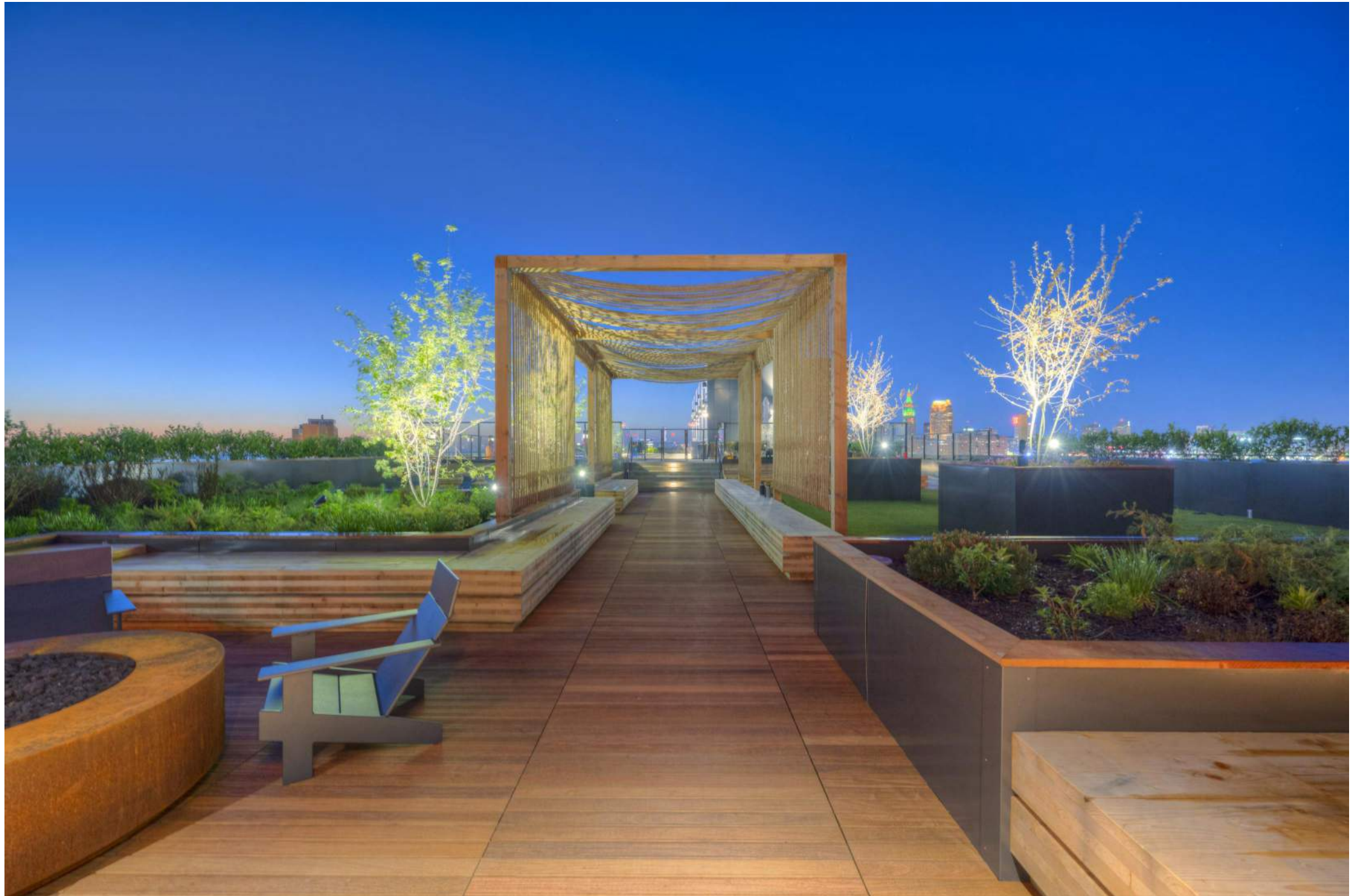


TEMPORARY PROTECTION OF TIMBER IN PLACE

ACHIEVEMENTS

- TALLEST AND LARGEST MASS TIMBER BUILDING IN THE COUNTRY WHEN COMPLETED IN 2022
- TIMBER COST SIMILAR TO CONCRETE
- LEASING VELOCITY - FULLY OCCUPIED WITHIN 2 MONTHS, AND AT RENTS SUBSTANTIALLY HIGHER THAN ORIGINAL BUDGET



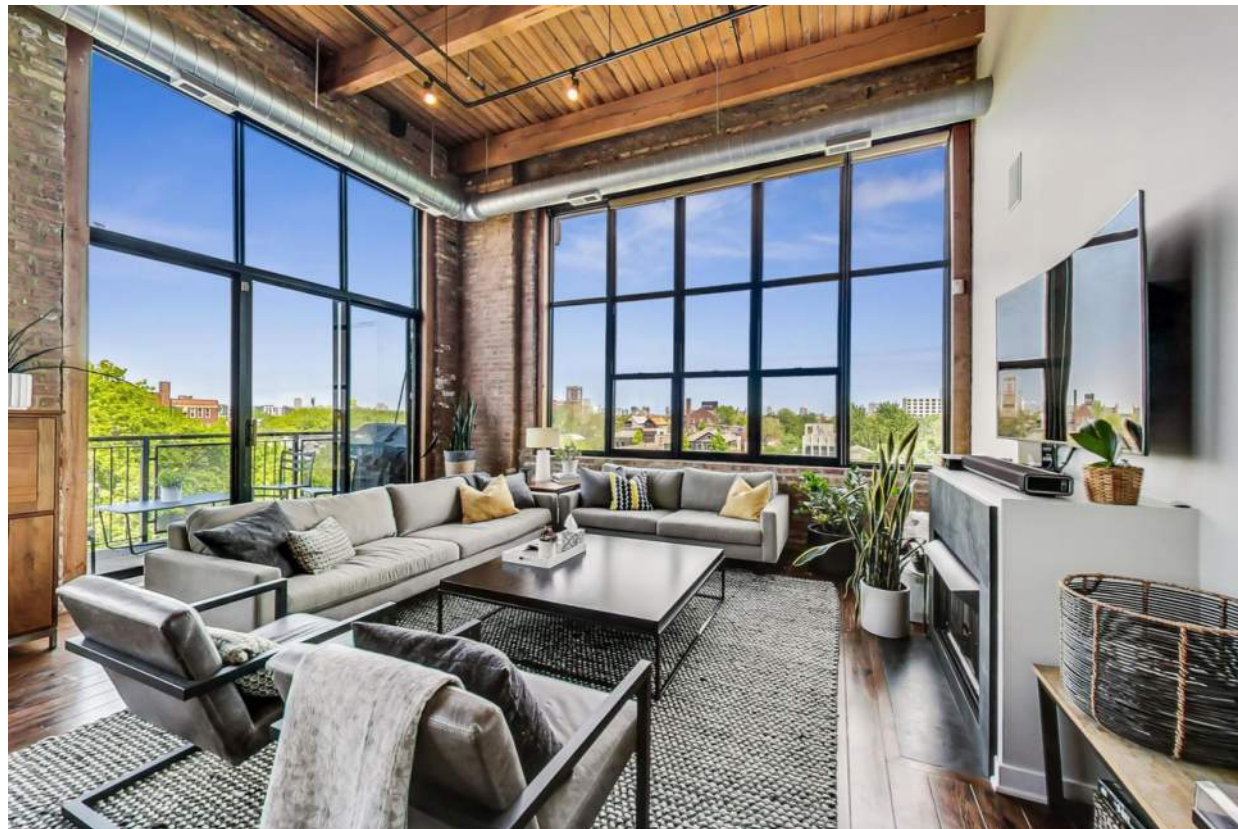


An aerial photograph of a dense evergreen forest, likely a spruce or fir forest. The trees are tightly packed, creating a textured, green canopy. The lighting is soft, suggesting a slightly overcast day or a time of day like dawn or dusk. The perspective is from directly above, looking down on the forest floor.

ACOUSTIC DETAILS - DESIGN APPROACH

DESIGN GOALS

1. ACHIEVE THE LOOK AND FEEL OF HISTORIC LOFT BUILDINGS, BUT WITH NEW CONSTRUCTION: MAXIMIZE THE AMOUNT OF EXPOSED MASS TIMBER AT CEILINGS AND COLUMNS, AND MAXIMIZE NATURAL LIGHTING INTO EACH UNIT.
2. INCLUDE 3,000 SF FITNESS CENTER AT THE TOP FLOOR (ABOVE PENTHOUSE UNITS).
3. INCLUDE A 500-PERSON EVENT SPACE AT THE TOP FLOOR (ABOVE PENTHOUSE UNITS).



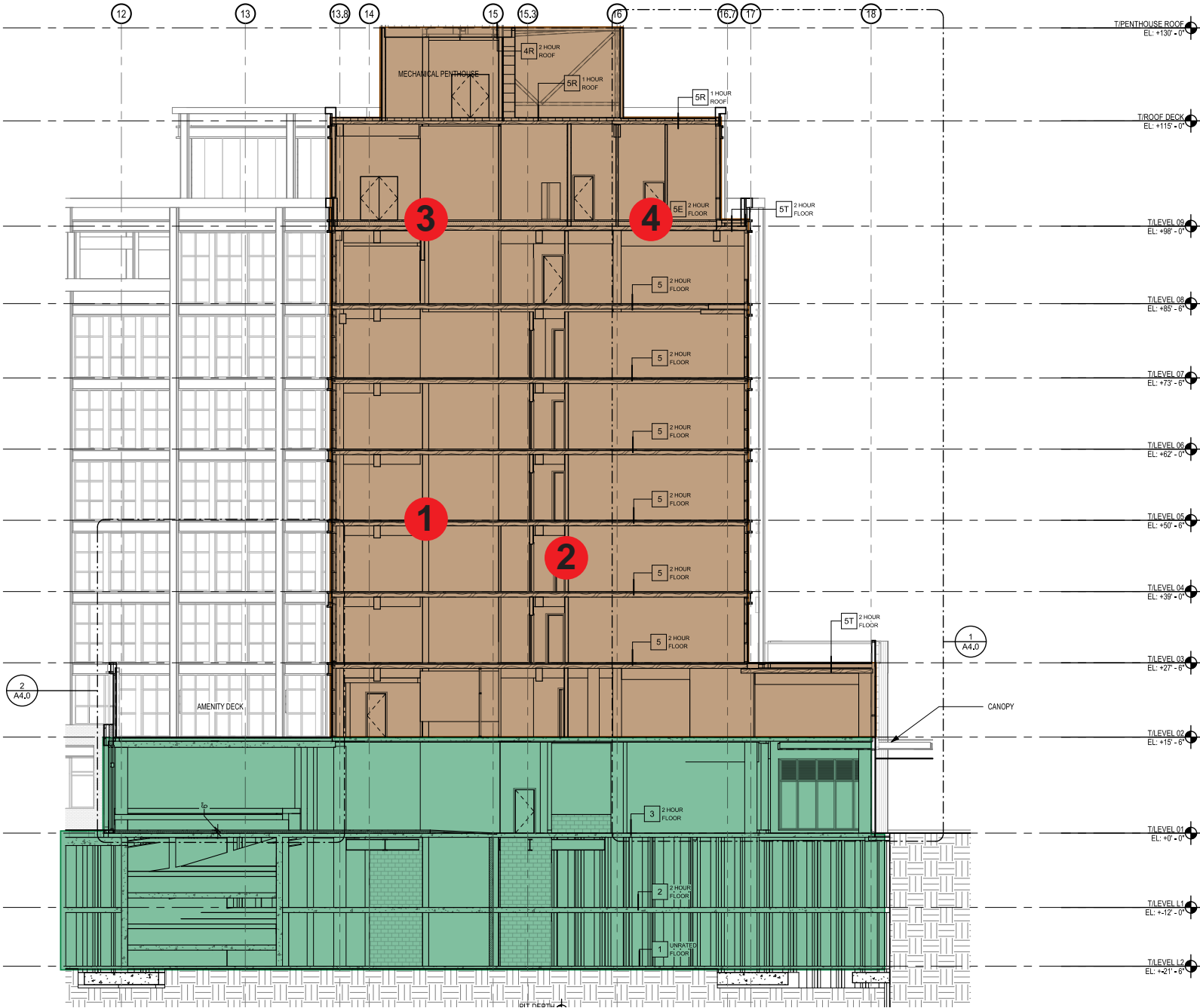
SIGNATURE LOFTS - BUCKTOWN (CHICAGO, IL)



CHINA CLUB LOFTS - FULTON MARKET (CHICAGO, IL)

ACOUSTIC FOCUS AREAS

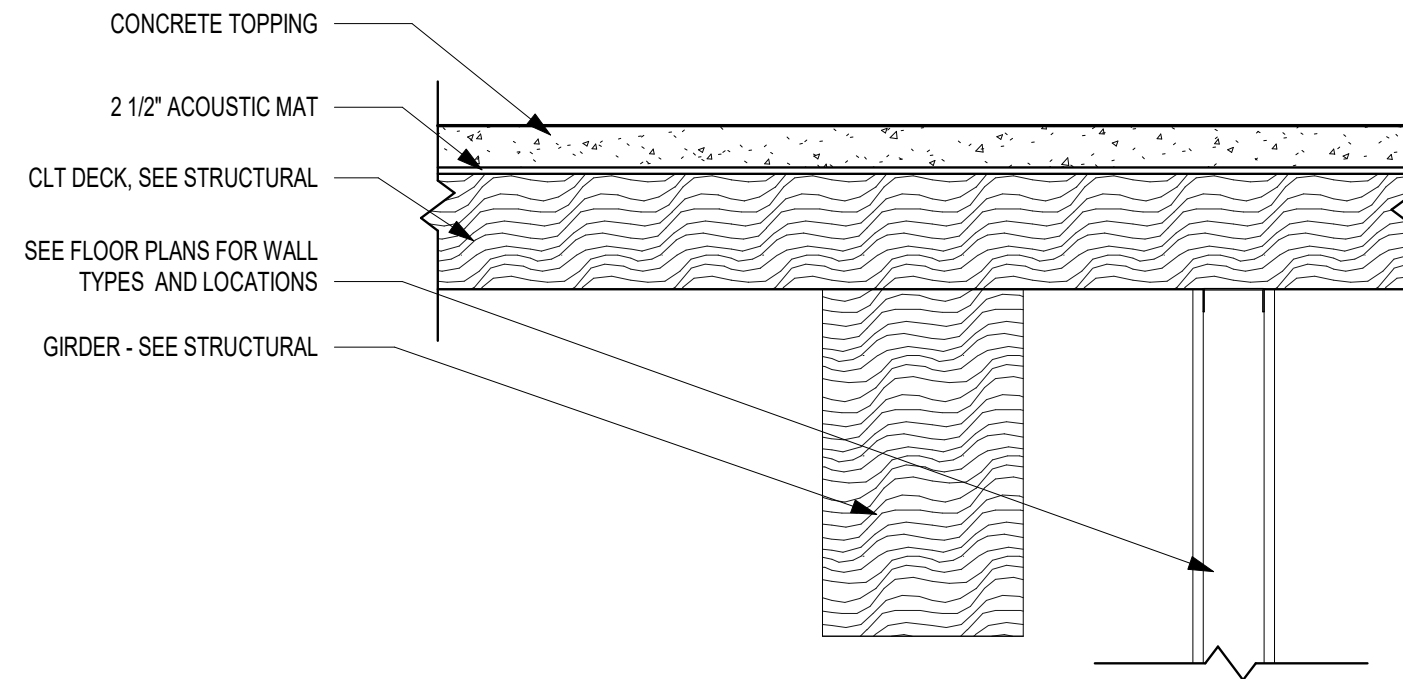
- 1. TYPICAL FLOOR-CEILING ASSEMBLY
- 2. DEMISING WALLS - HEAD AND BASE
- 3. FITNESS FLOOR
- 4. EVENT SPACE/ PENTHOUSE FLOOR-CEILING



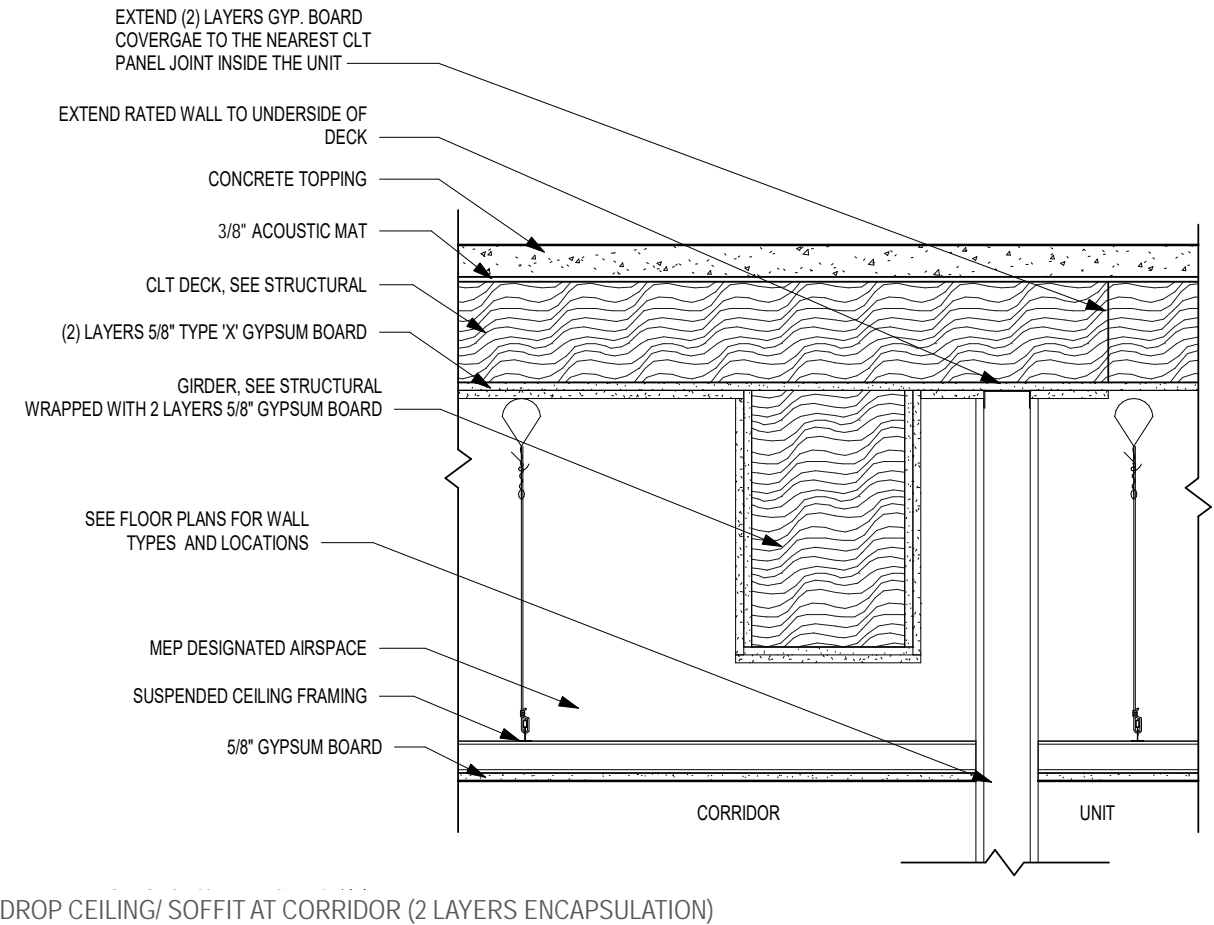
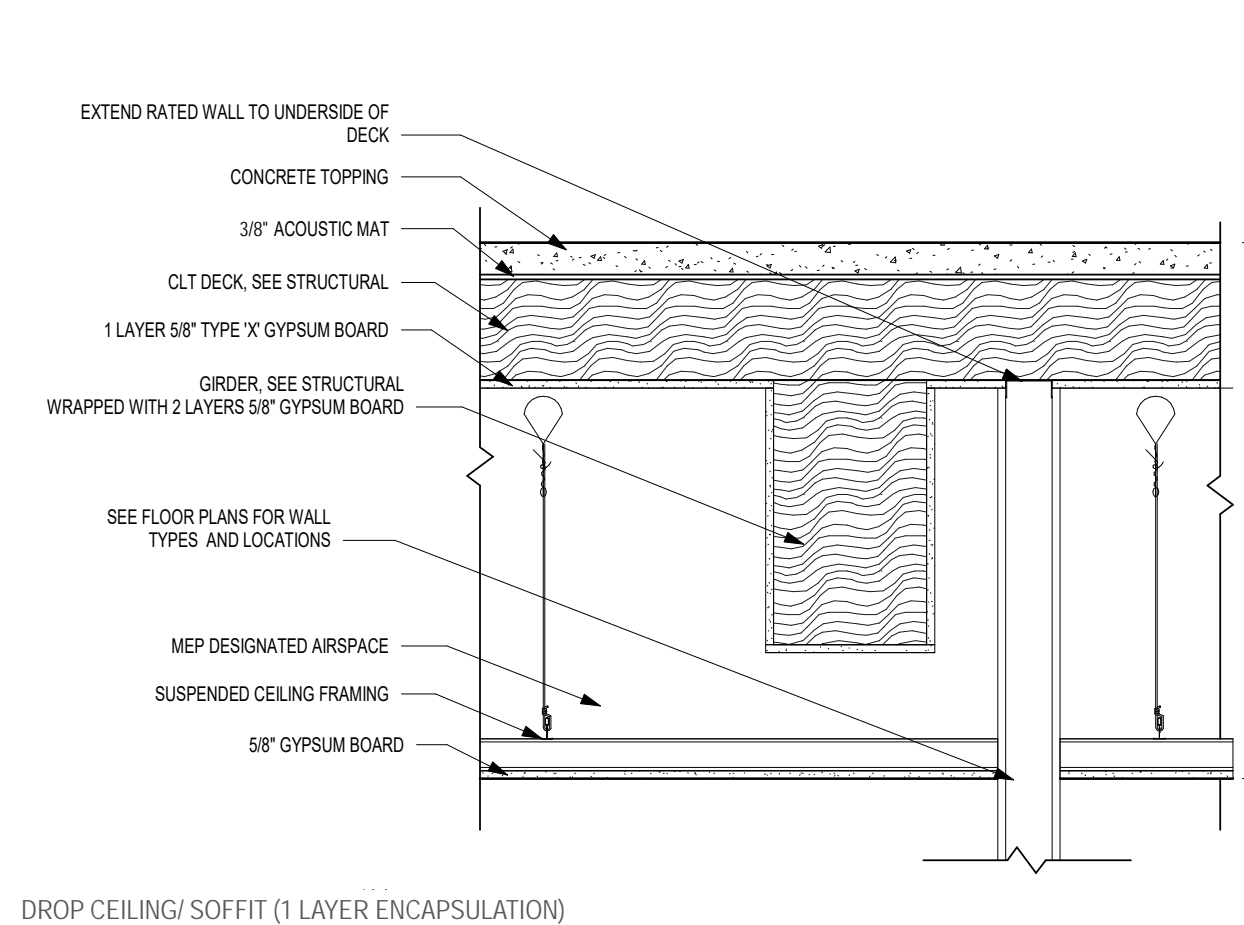
SECTION DIAGRAM

1. TYPICAL FLOOR-FLOOR ASSEMBLY

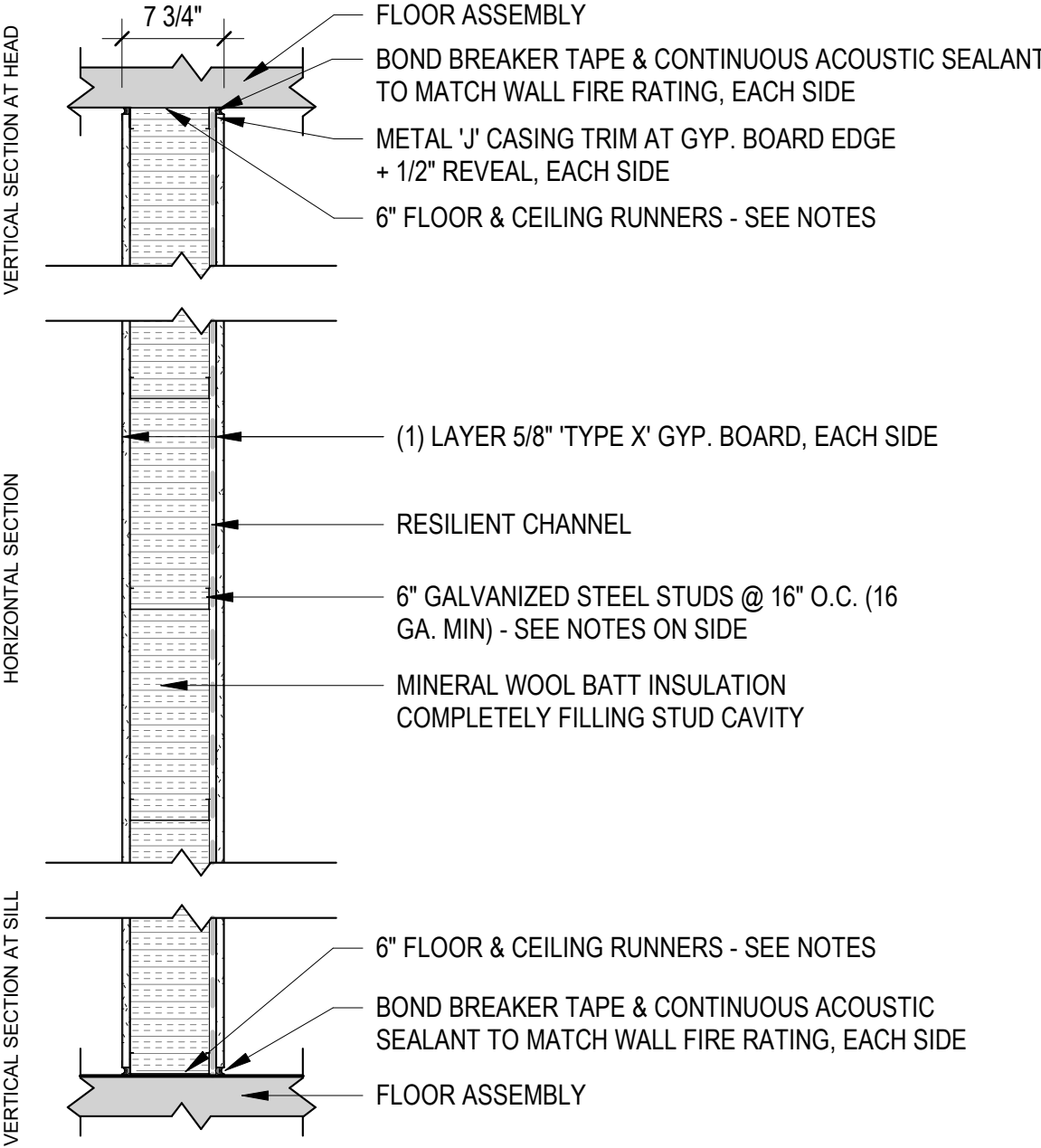
GOAL - PROVIDE SOUND ISOLATION CONSISTENT WITH MARKET COMPS
(CONCRETE), USING LIGHTER WEIGHT MASS TIMBER STRUCTURE.



1. OTHER COMMON FLOOR-FLOOR ASSEMBLIES

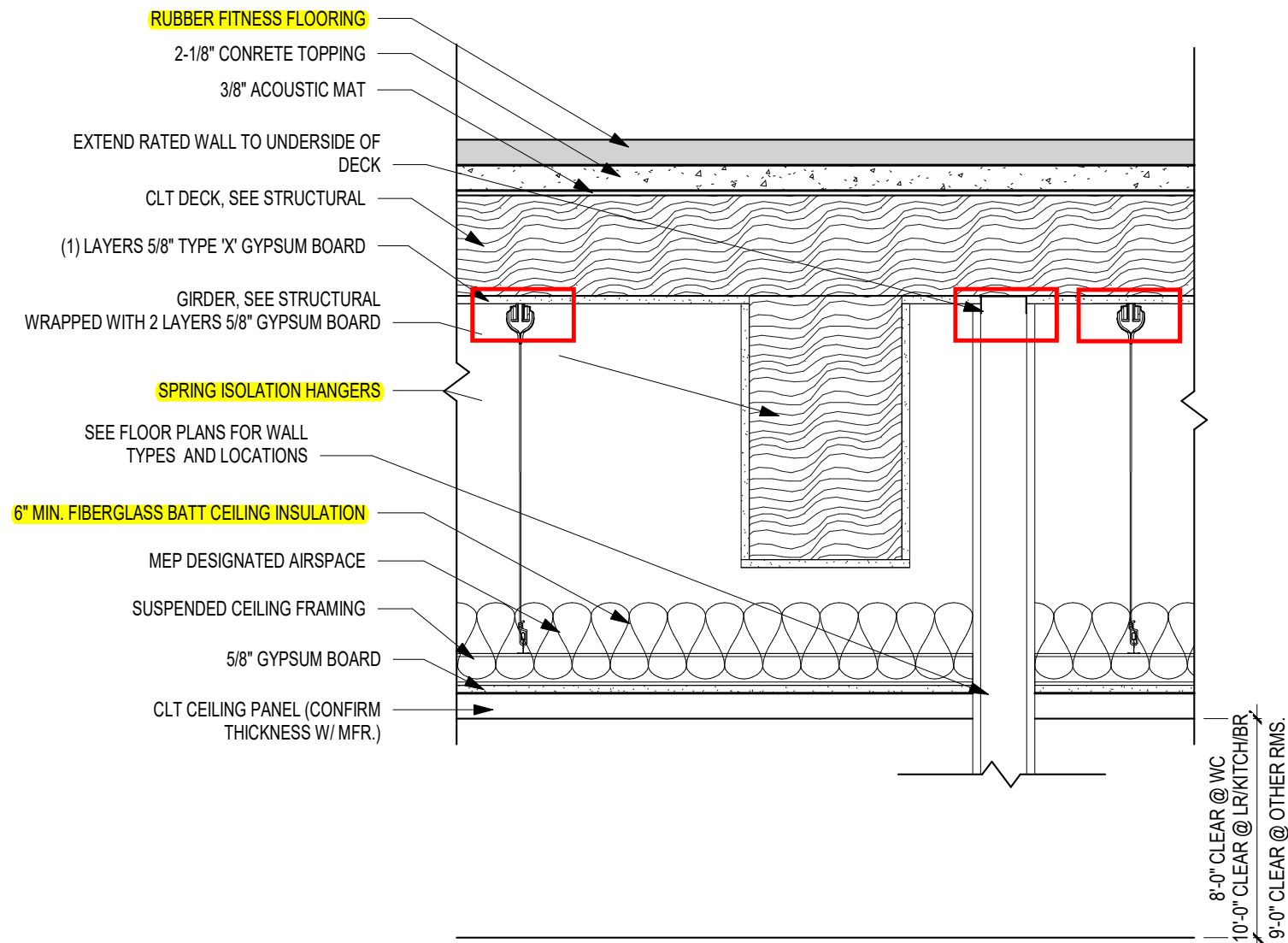


2. DEMISING WALLS



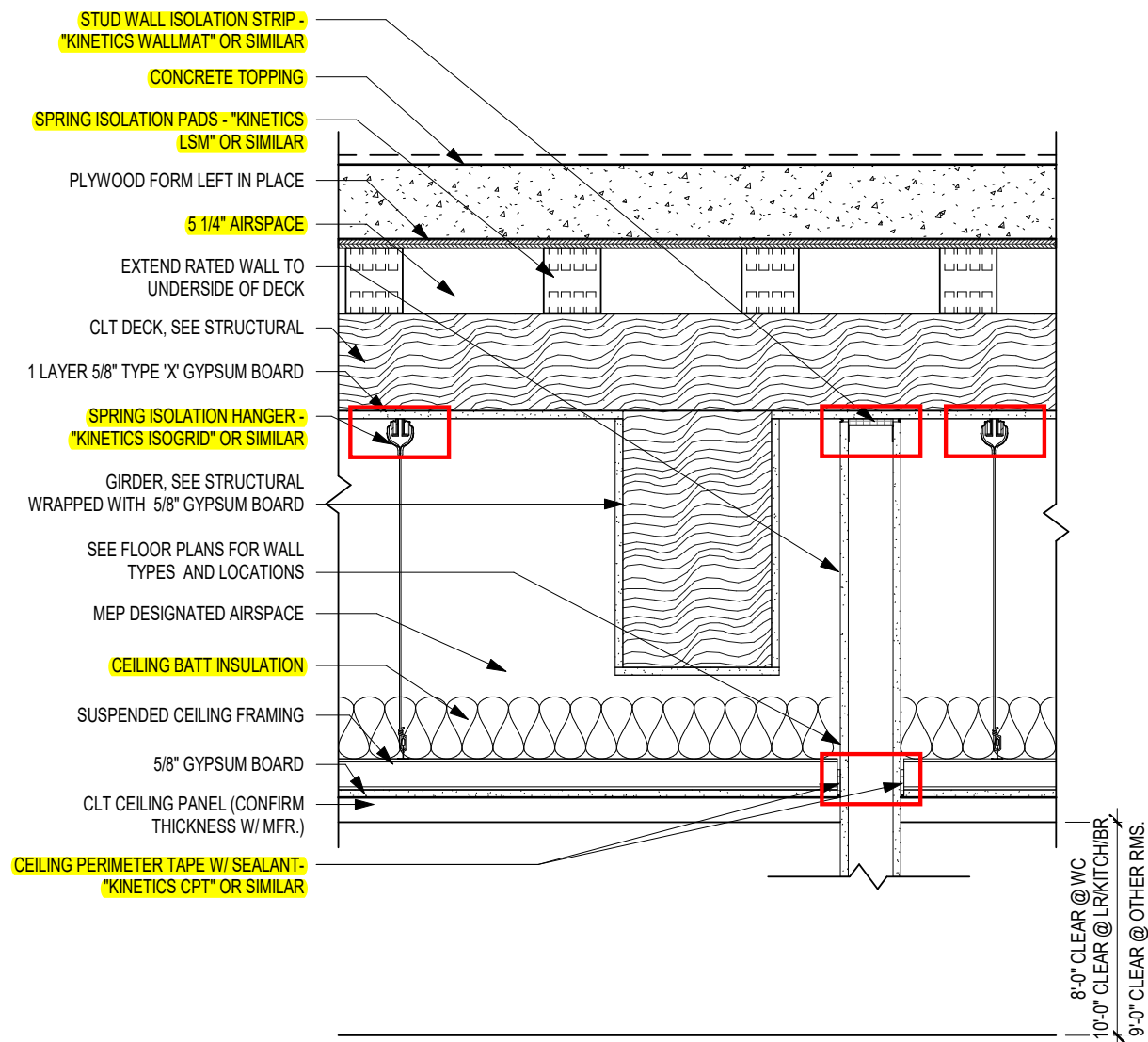
3. FITNESS FLOOR

GOAL - MINIMIZE SOUND TRANSMISSION FROM IMPACT NOISE (WEIGHTS)
TO THE PREMIUM-RENT PENTHOUSE UNITS BELOW.



4. EVENT SPACE/ PENTHOUSE FLOOR-CEILING ASSEMBLY

GOAL - MINIMIZE SOUND TRANSMISSION FROM EVENT SPACE - CONVERSATION, LOUD MUSIC, DANCING (IMPACT NOISE), TO THE PREMIUM-RENT PENTHOUSE UNITS BELOW.



An aerial photograph of a dense evergreen forest, likely a spruce or fir forest. The trees are tall and thin, with a uniform green color. The perspective is from directly above, showing the tops of the trees and the dense canopy. The lighting is soft, suggesting a slightly overcast day or early morning/late afternoon. The text "ACOUSTIC DETAILS - EXECUTION" is overlaid in the center of the image in a dark, serif font.

ACOUSTIC DETAILS - EXECUTION

1. TYPICAL FLOOR-FLOOR



CLT DECK PREPPED FOR ACOUSTIC MAT LAYOUT



ACOUSTIC MAT INSTALLATION IN PROGRESS



ACOUSTIC MAT INSTALLATION COMPLETE AND READY FOR TOPPING SLAB

2. DEMISING WALLS - CORRIDOR



TIMBER FRAMING IN PLACE



ADDED CORRIDOR DRYWALL INSTALLED PRIOR TO ACOUSTIC MAT AND TOPPING SLAB



CORRIDOR ROUGH FRAMING

2. DEMISING WALLS - UNITS

LESSONS LEARNED:

1. DRYWALL ENCAPSULATION HELPS ACOUSTIC PERFORMANCE, BUT REQUIRES MORE COORDINATION DURING CONSTRUCTION.
2. SIMPLIFY/ STANDARDIZE THE DETAILS WHEREVER POSSIBLE.
3. TO MANAGE FLANKING, DETAILS AT TOP, BOTTOM, AND INTERSECTIONS ARE AS IMPORTANT AS THE OVERALL WALL ASSEMBLY.



DRYWALL ENCAPSULATION AT DUCT SOFFIT



FINISHED UNIT

3. FITNESS FLOOR



RUBBER FLOOR TILES AT WEIGHT MACHINES

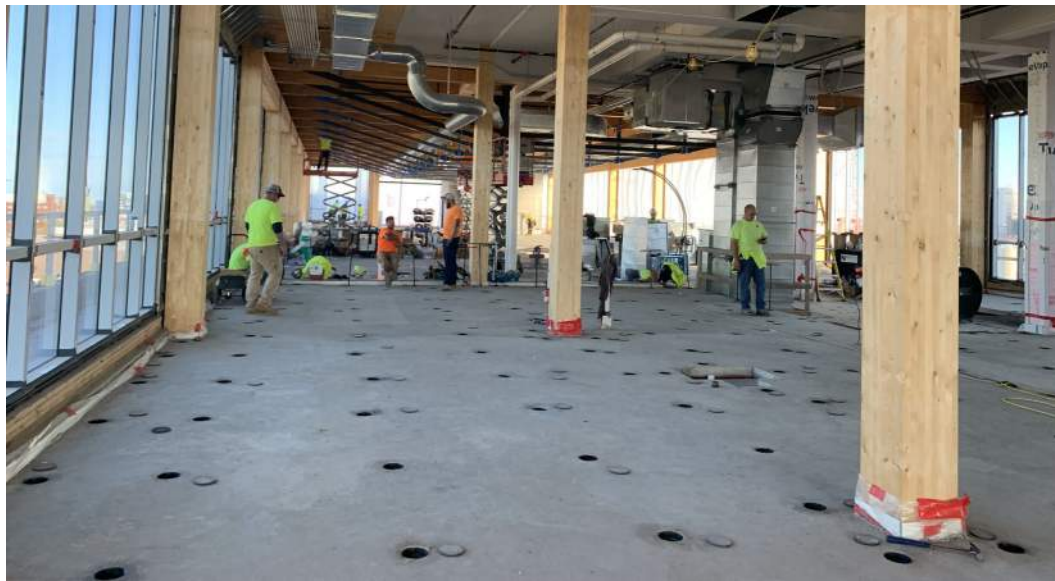


RUBBER FLOOR TILES AT WEIGHT MACHINES

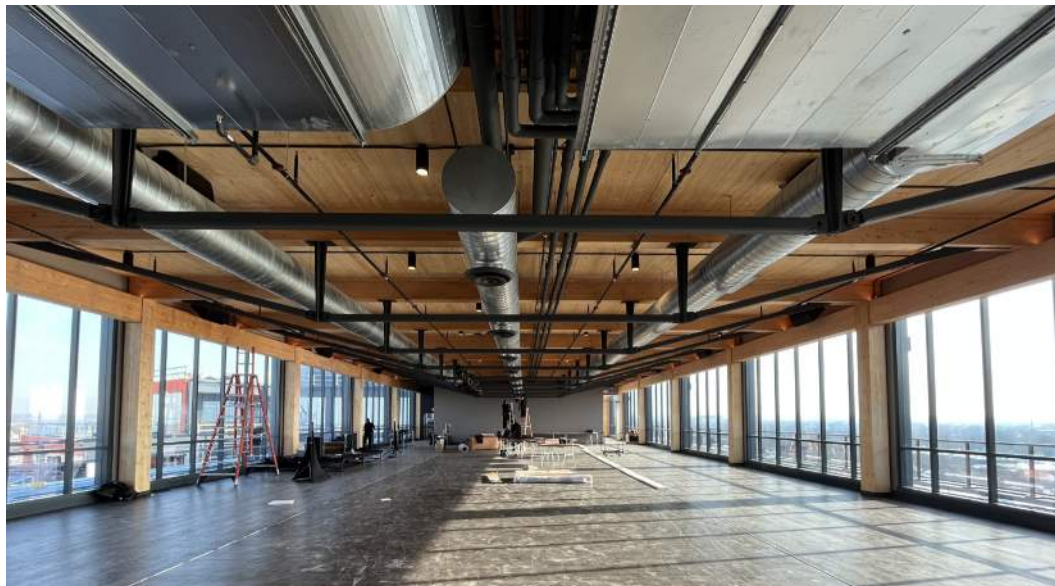
4. EVENT SPACE/ PENTHOUSE FLOOR-CEILING ASSEMBLY



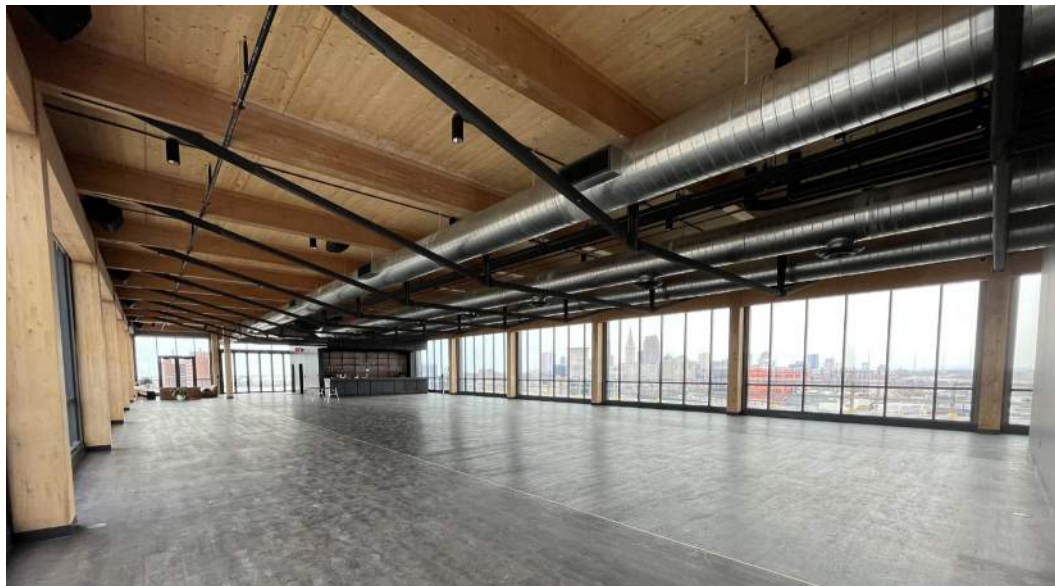
FLOATING SLAB INSTALLATION IN PROGRESS



FLOATING SLAB INSTALLATION IN PROGRESS



FINISHED EVENT SPACE



FINISHED EVENT SPACE

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APPLICATION - INTRO BUCKHEAD

INTRO BUCKHEAD

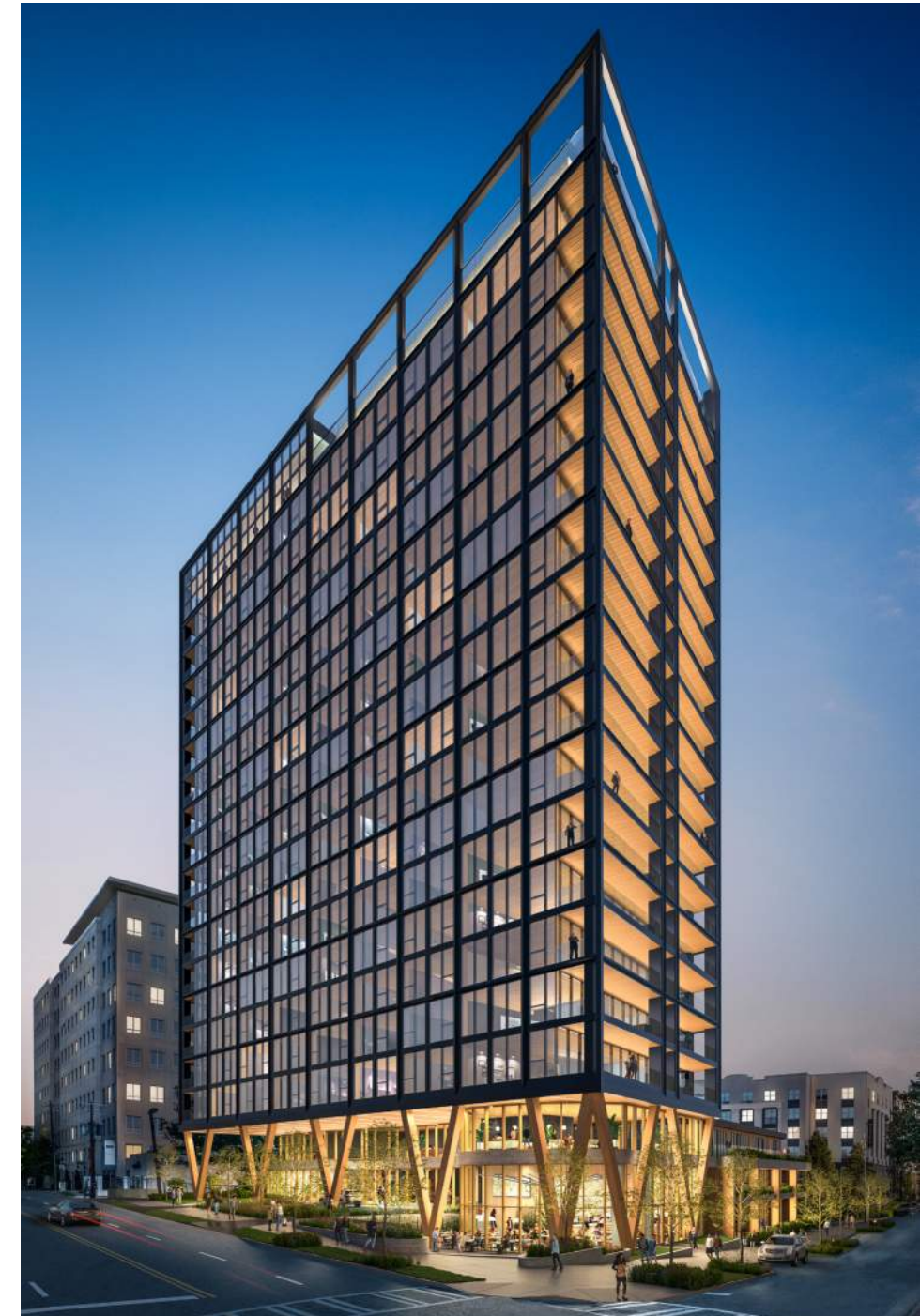
LOCATION:
ATLANTA, GA

TYPE:
MULTIFAMILY RESIDENTIAL

SIZE:
519,000 SF GROSS

HEIGHT:
225', 22 STORIES

CONSTRUCTION:
GLULAM POST & BEAM WITH CLT PLANKS, CONCRETE PODIUM



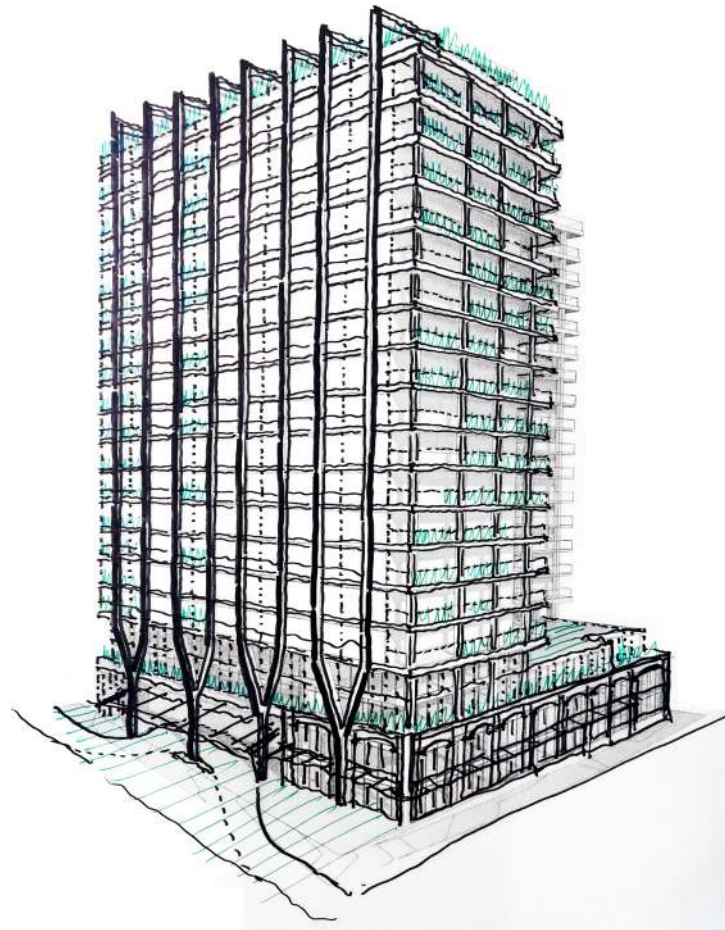
STREAMLINING MASS TIMBER HIGH-RISE

SIMPLIFIED PROGRAM:

1. NO EVENT SPACE.
2. FITNESS ROOM IS ON THE PODIUM SLAB RATHER THAN ABOVE PENTHOUSES.

STRATEGIC UNIT PLANNING:

1. STACKED FLOORPLATE.
2. MORE EXPOSED TIMBER CEILINGS THAN INTRO CLEVELAND.



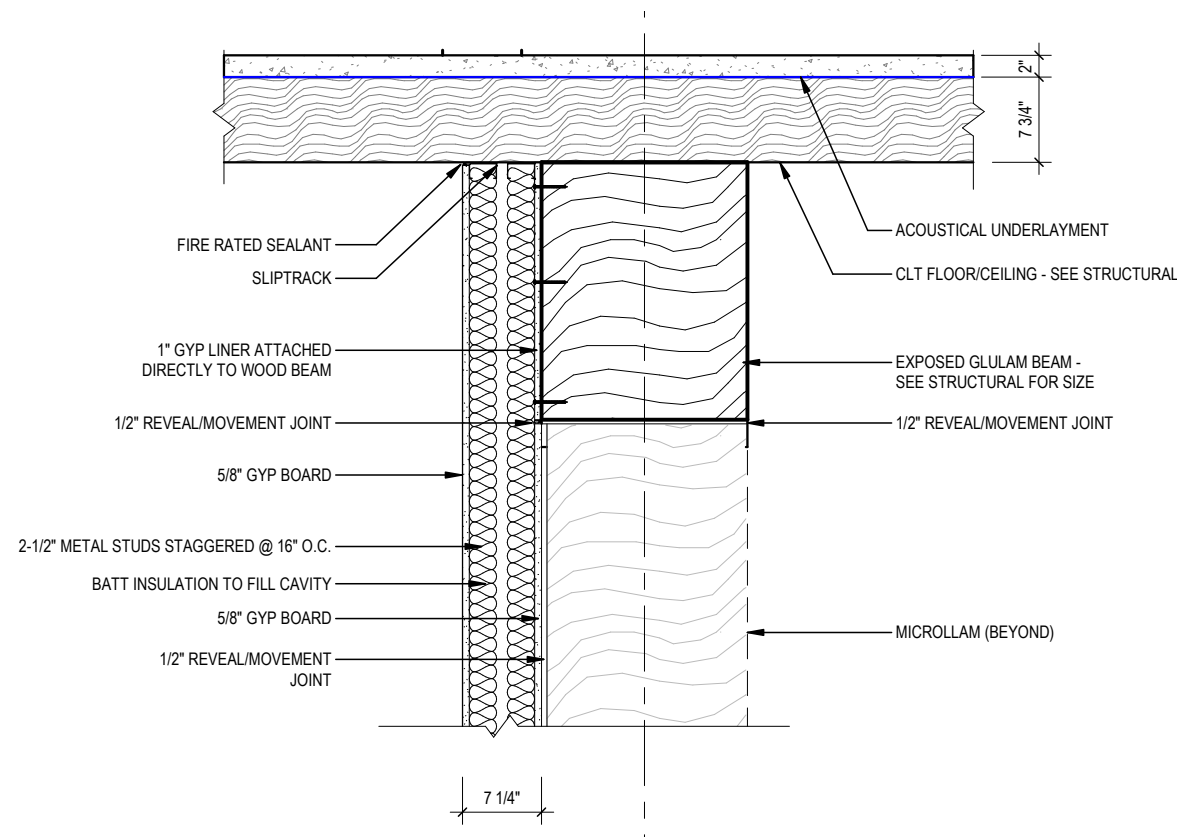
INITIAL CONCEPT SKETCH



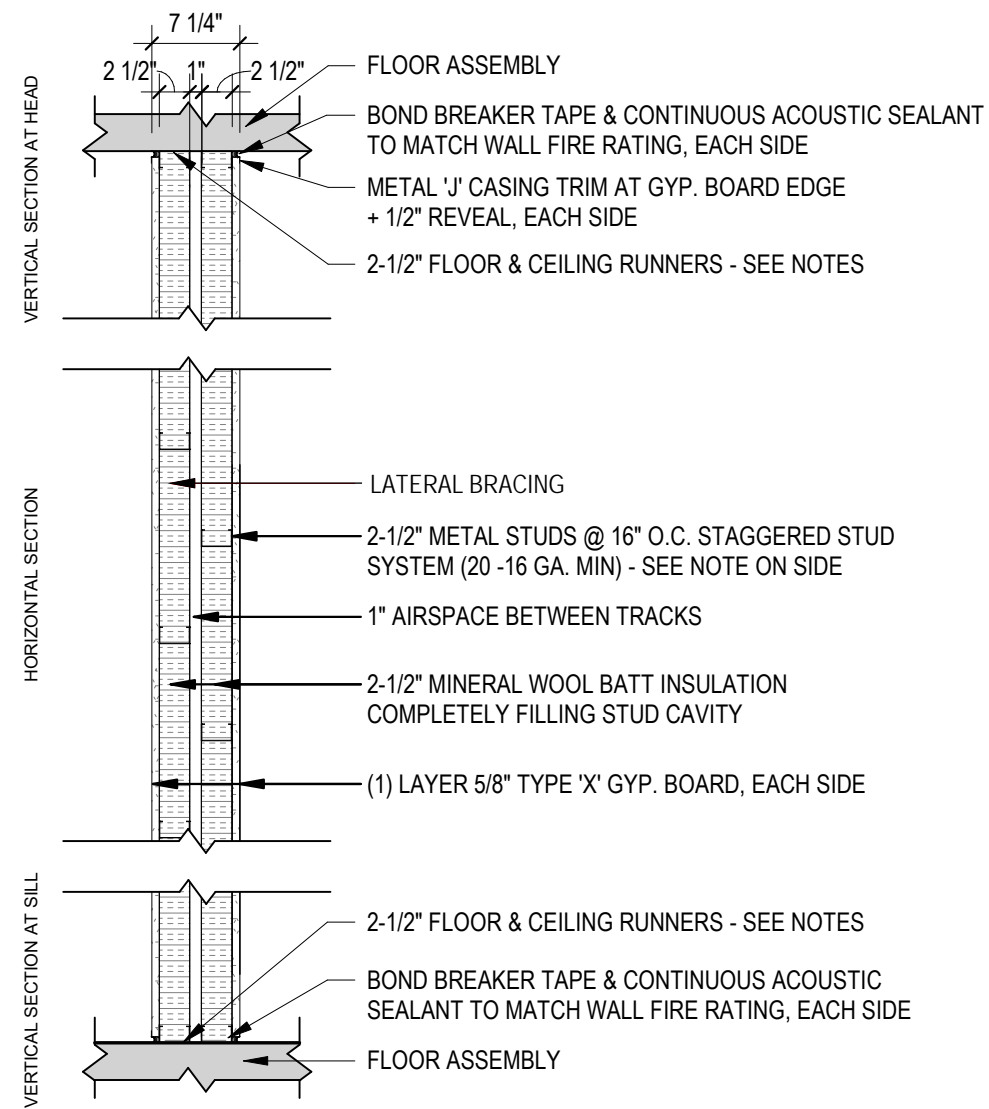
ENLARGED CONCEPT SKETCH AT 'Y' COLUMNS

STREAMLINING MASS TIMBER HIGH-RISE

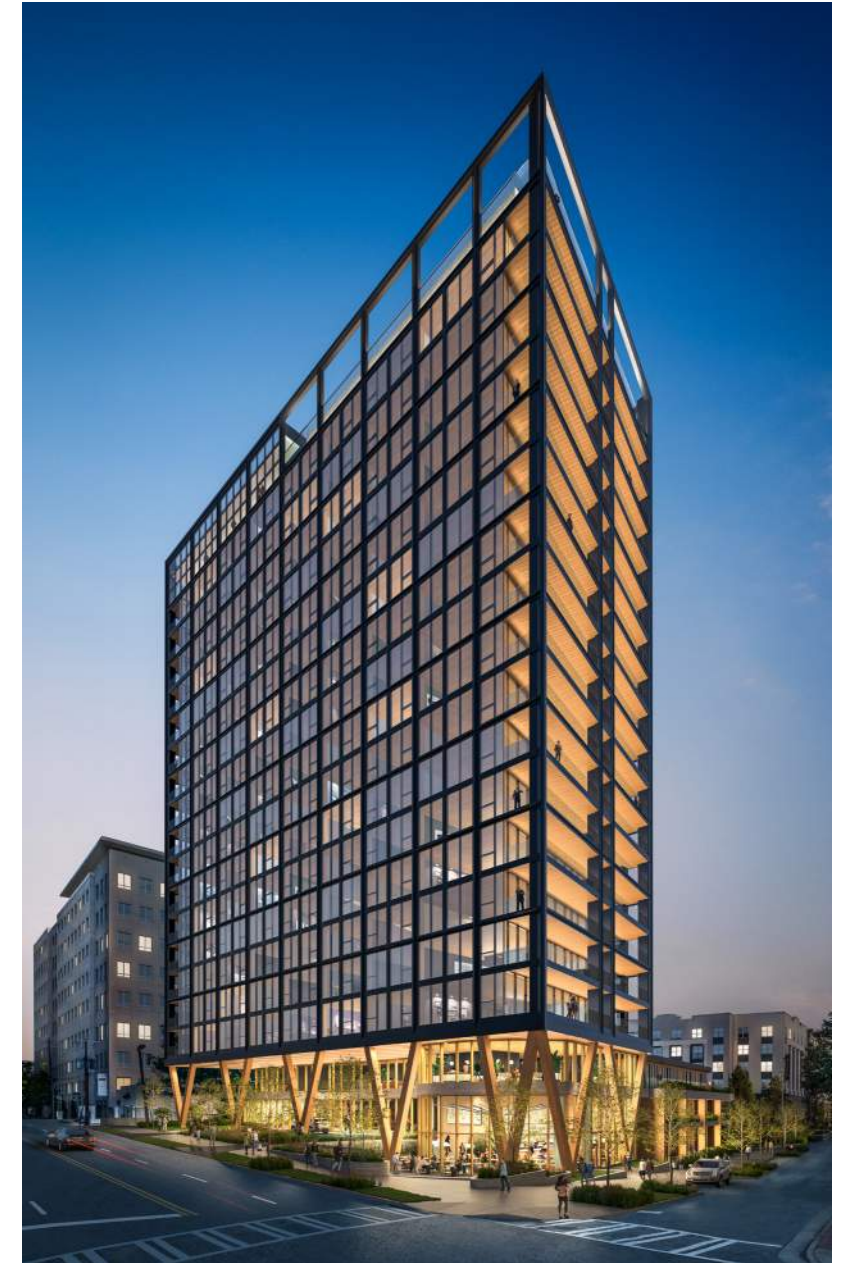
- DEMISING WALLS:
- 1. WALLS ARE ADJACENT TO, NOT UNDER, BEAMS.
 - 2. STAGGERED STUD ROWS INSTEAD OF SINGLE STUD + RESILIENT CHANNEL TO REDUCE FLANKING.



DEMISING WALL SECTION DIAGRAM



TYPICAL UNIT-UNIT DEMISING WALL ASSEMBLY



THANK YOU

THIS CONCLUDES THE AMERICAN INSTITUTE OF ARCHITECTS CONTINUING EDUCATION SYSTEMS COURSE.