BOSTON MASS TIMBER ACCELERATOR

Suffolk Downs Building B16

JUNE 14, 2022

Project Team

The HYM Investment Group

DEVELOPER

Thornton Tomasetti

ENGINEERING AND SUSTAINABILITY

Elkus Manfredi Architects

ARCHITECT

John Moriarty and Associates

CONSTRUCTION AND COST ESTIMATING

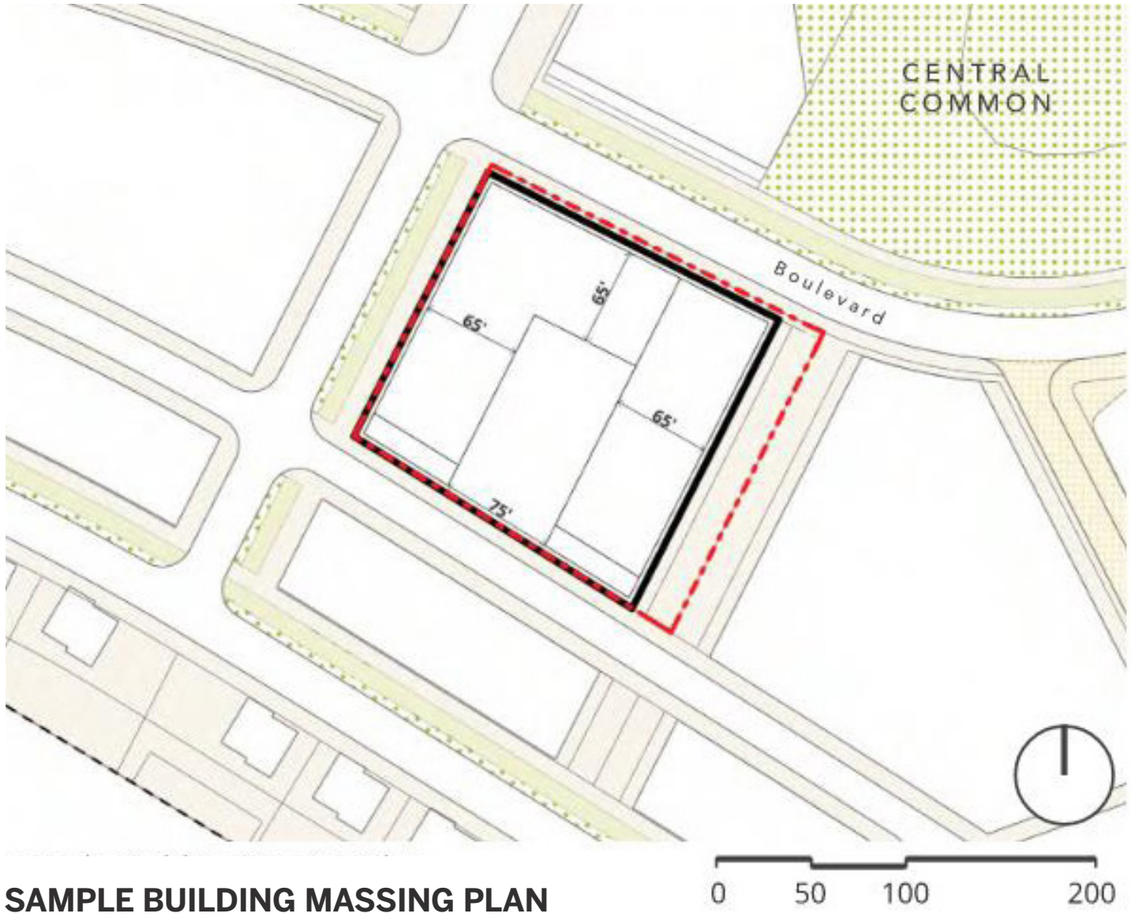
Site Location

Image: CBT Architects

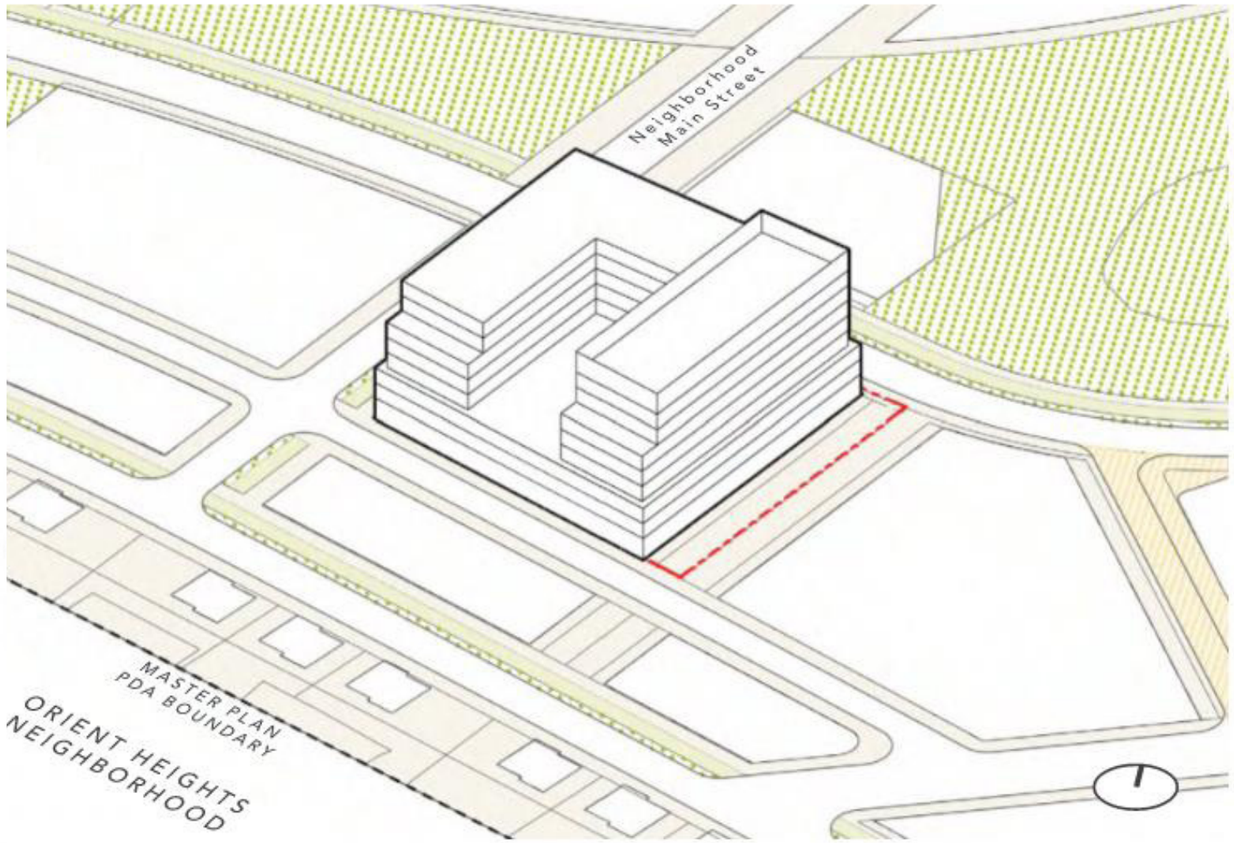
Site Location

Image: CBT Architects

Zoning Volume



SAMPLE BUILDING MASSING PLAN

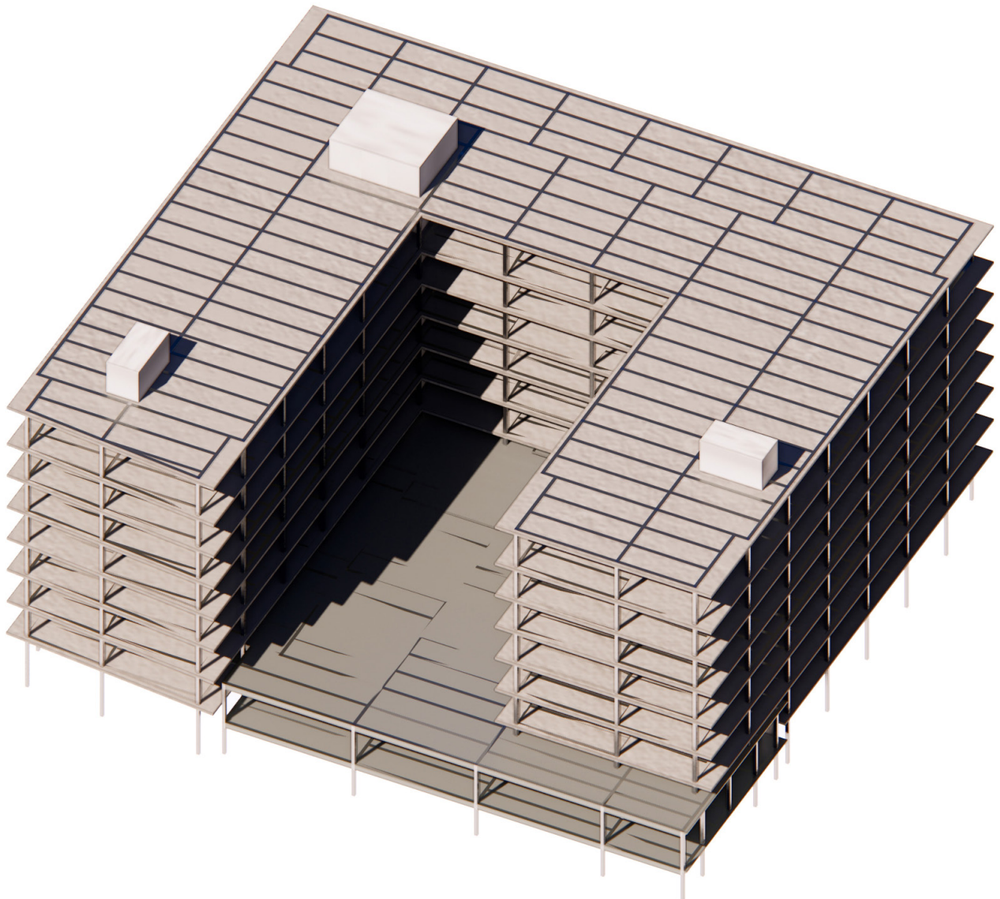


Base Image: CBT Architects

B16 MASS TIMBER MISSION STATEMENT

“To evaluate the *value* of Mass Timber for residential block B16 and future development at Suffolk Downs.”

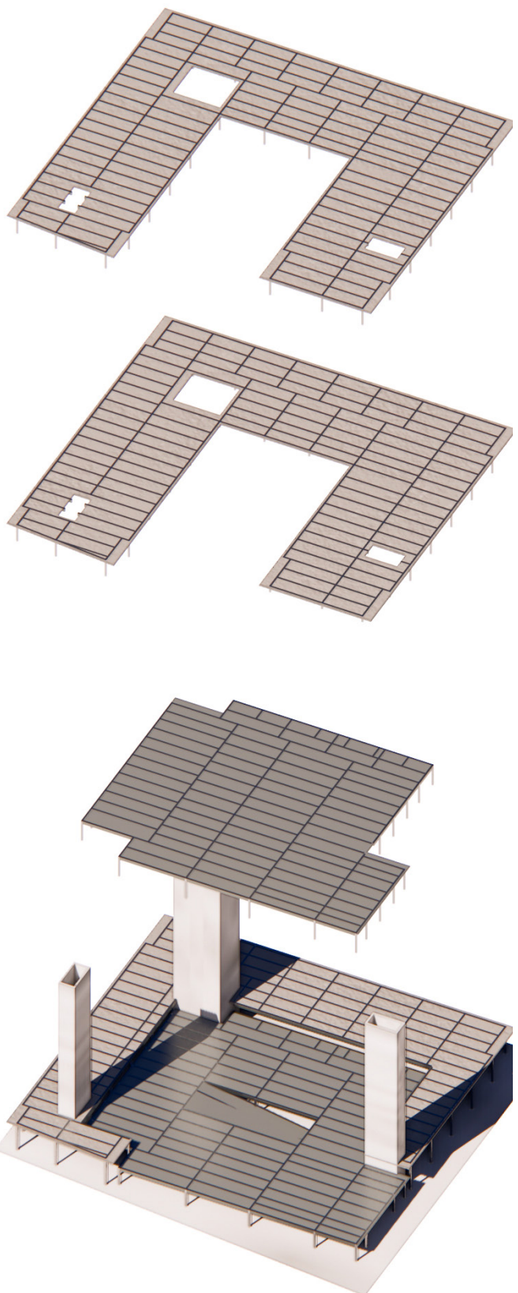
Building B16: Comparing Mass Timber to Steel



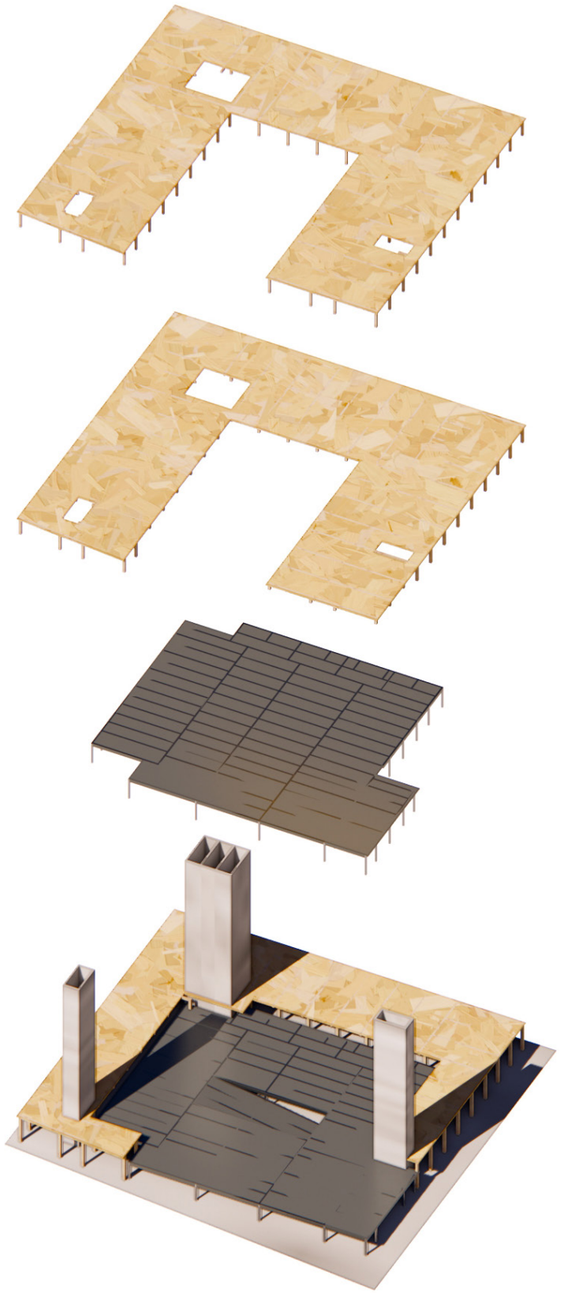
STEEL STRUCTURE

MASS TIMBER STRUCTURE

Building B16: Comparing Mass Timber to Steel



STEEL STRUCTURE



MASS TIMBER STRUCTURE

Building B16: Comparing Mass Timber to Steel

2

LEVELS OF PARKING

Above-grade parking podium in both schemes is framed with structural steel and employs slab-on-deck construction.

8

STORIES

Both schemes are designed with 11′-2″ typical floor-to-floor height.

196

RESIDENTIAL UNITS

The same residential unit mix is used in both designs.

2024

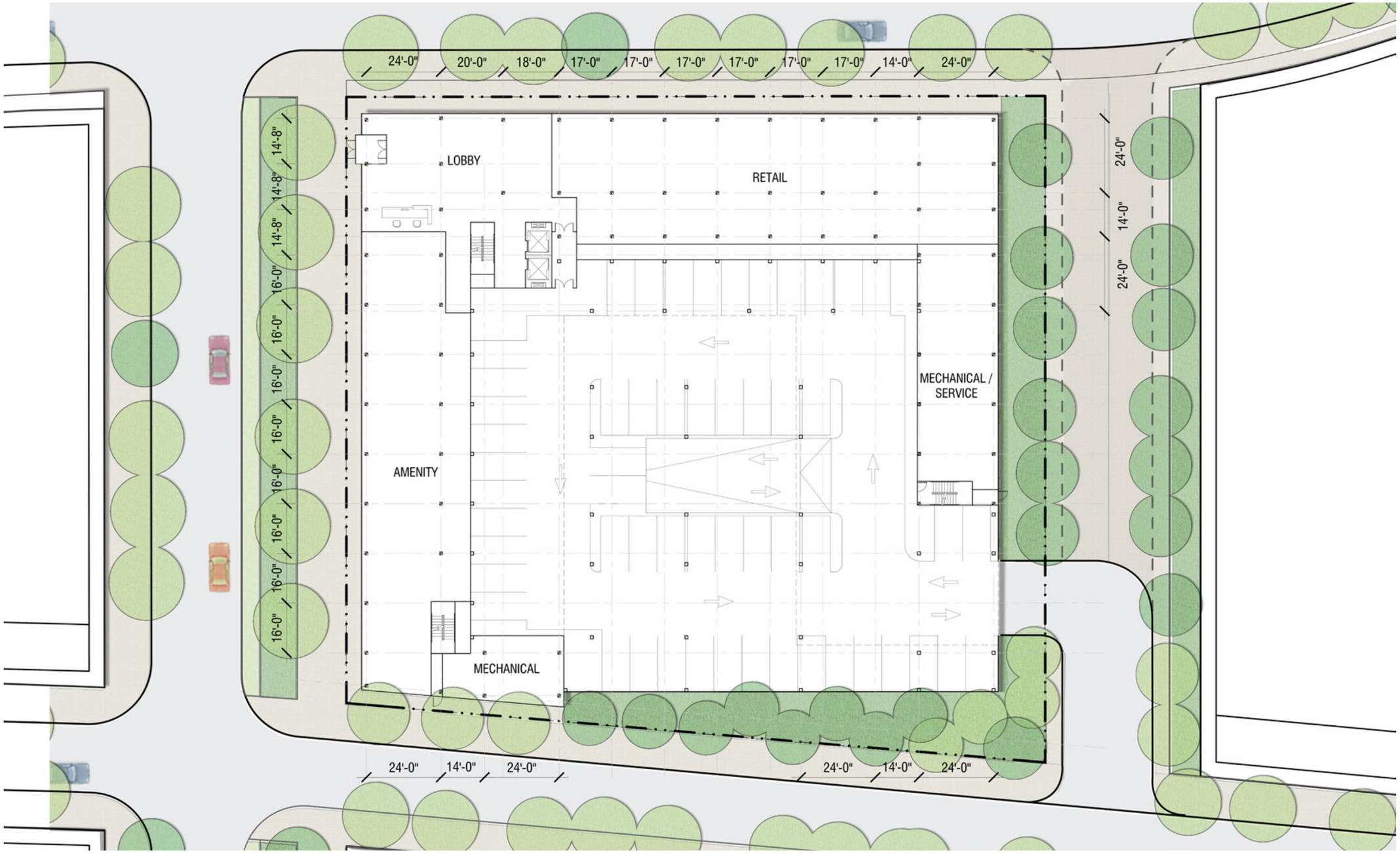
IBC 11TH EDITION

Estimated construction start: 2025–2026.

Building will be Type IV B (new type in 10th Edition/ IBC 2021).

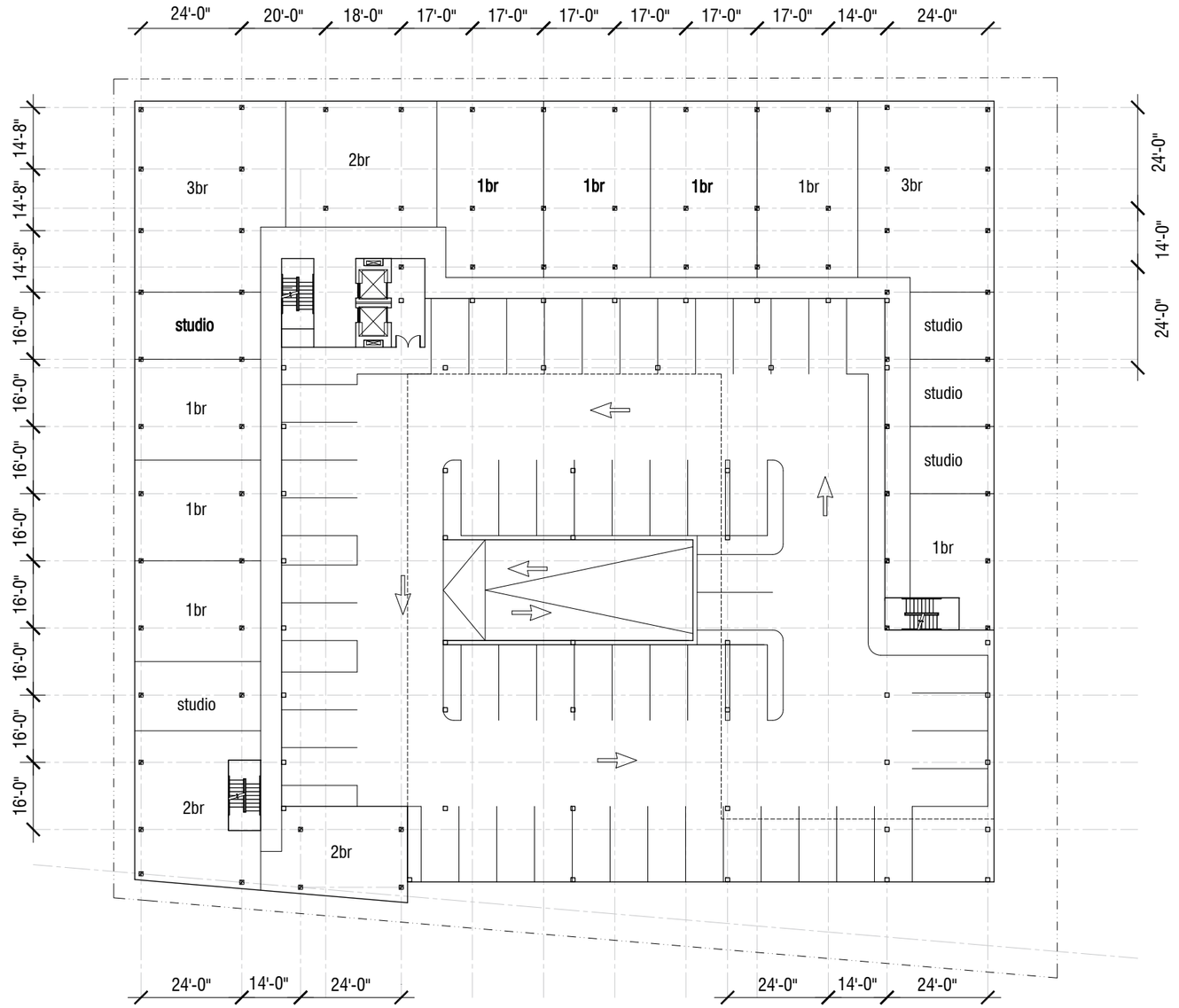
Anticipates the future adoption of the 11th Edition of building code based on IBC 2024, which allows the exposure of > 25% of wood structure in Type IV B.

Mass Timber: Ground Floor Plan



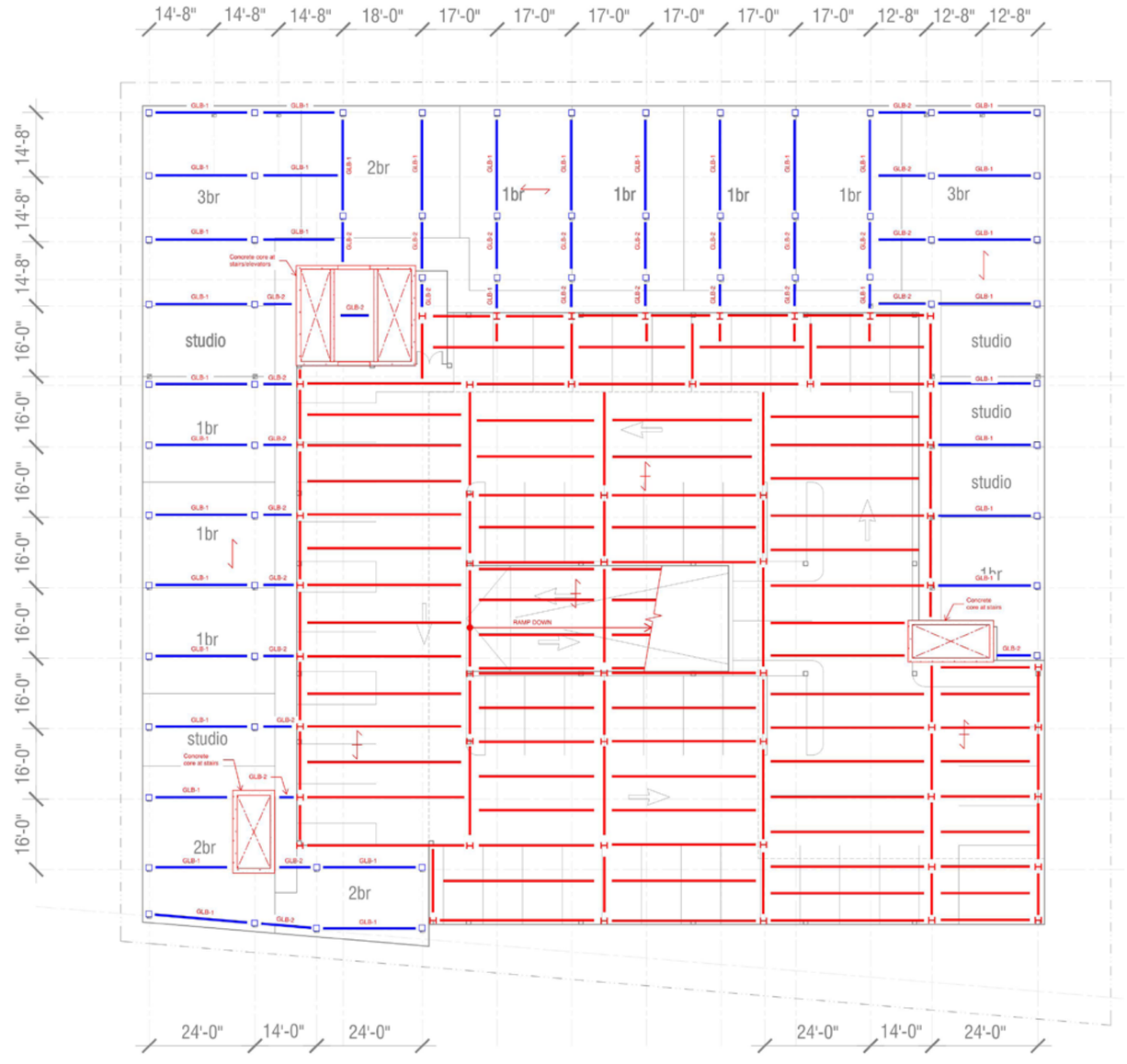
0 8 16 32 64 ft

Mass Timber: Level 2 Floor Plan



0 8 16 32 64 ft

Mass Timber: Level 2 (Parking) Framing Plan

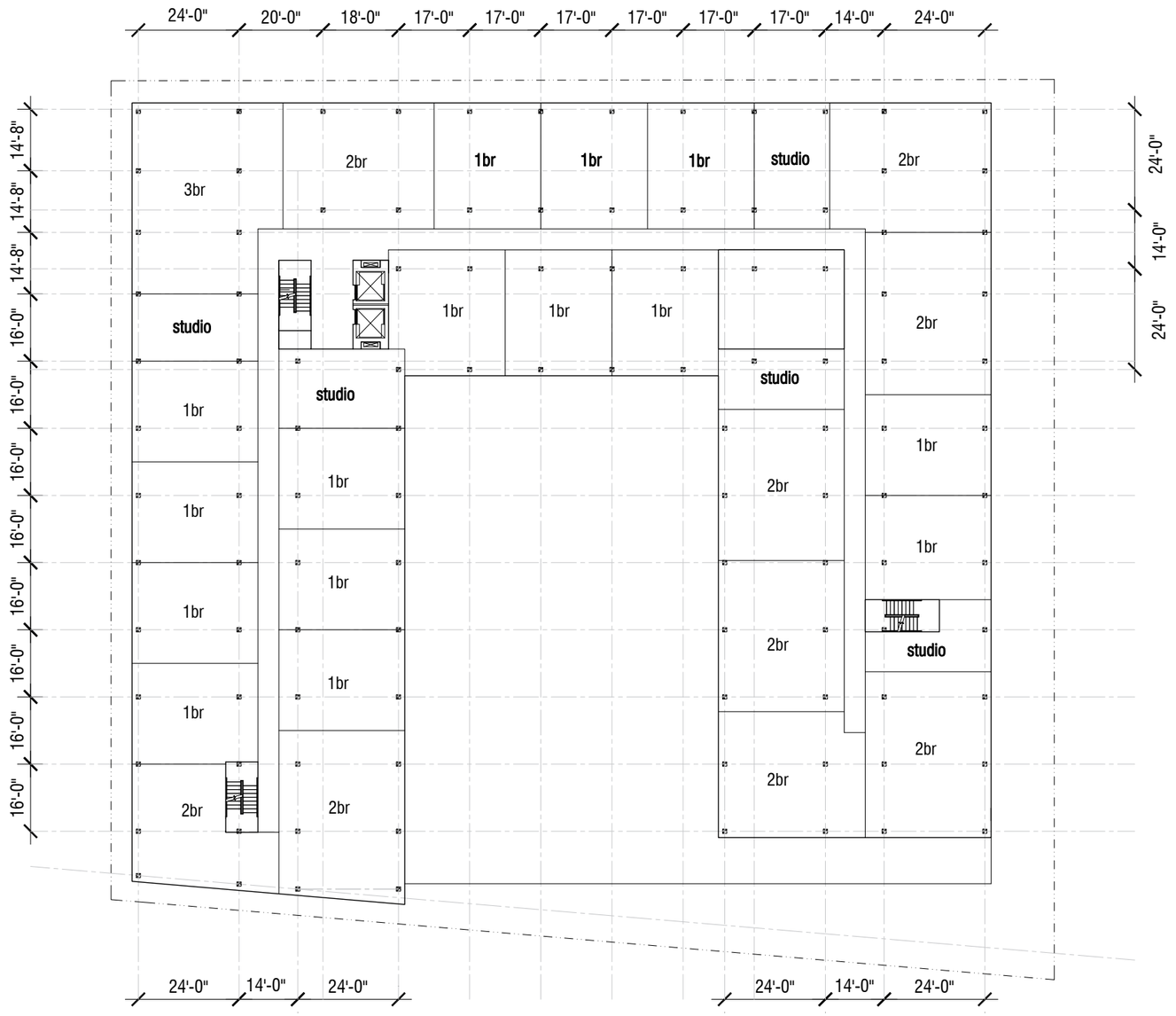


GLULAM BEAM

STEEL BEAM

0 8 16 32 64 ft

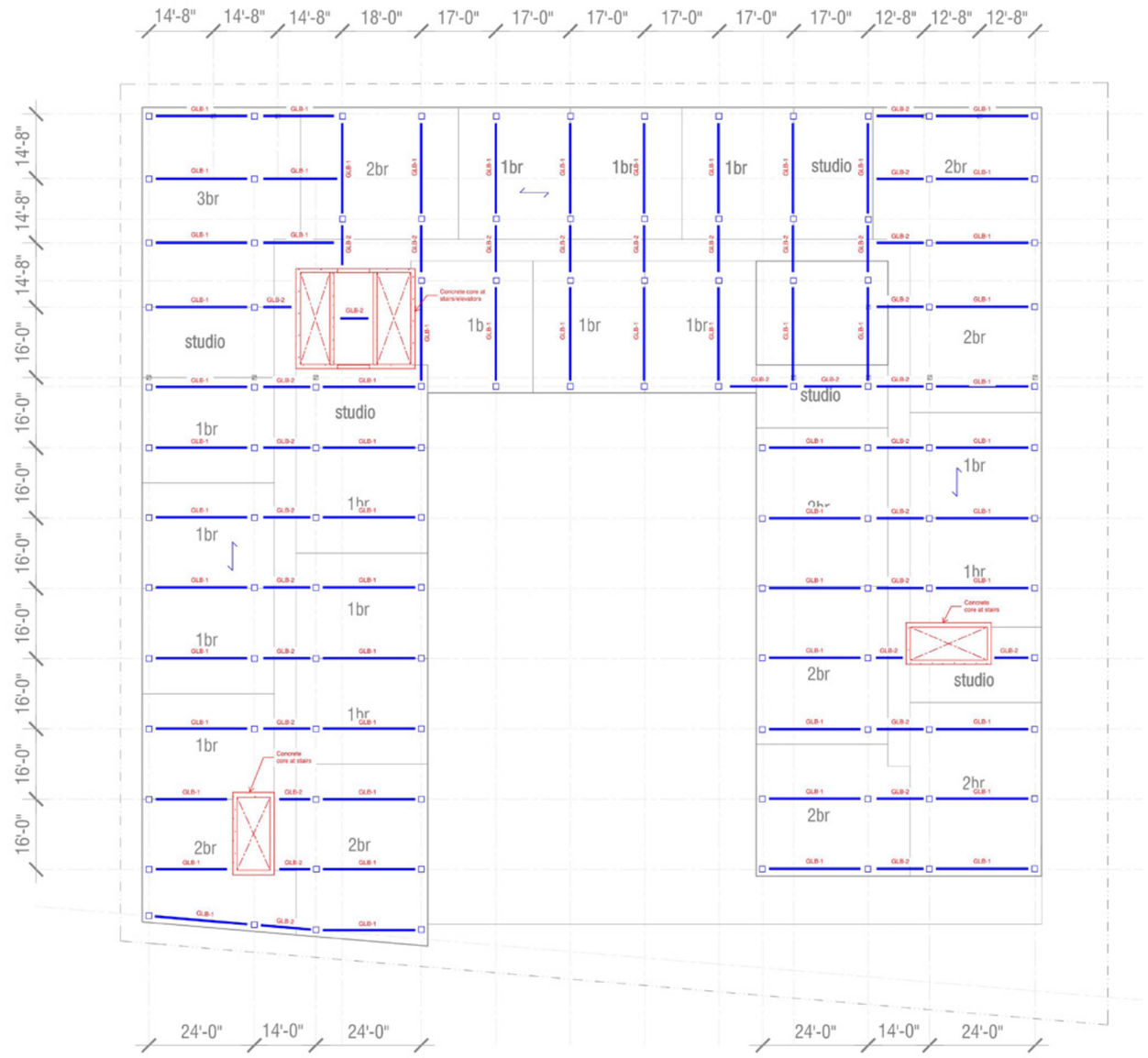
Mass Timber: Typical Floor Plan



0 8 16 32 64 ft

N

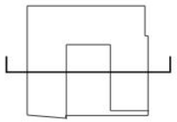
Mass Timber: Typical Framing Plan

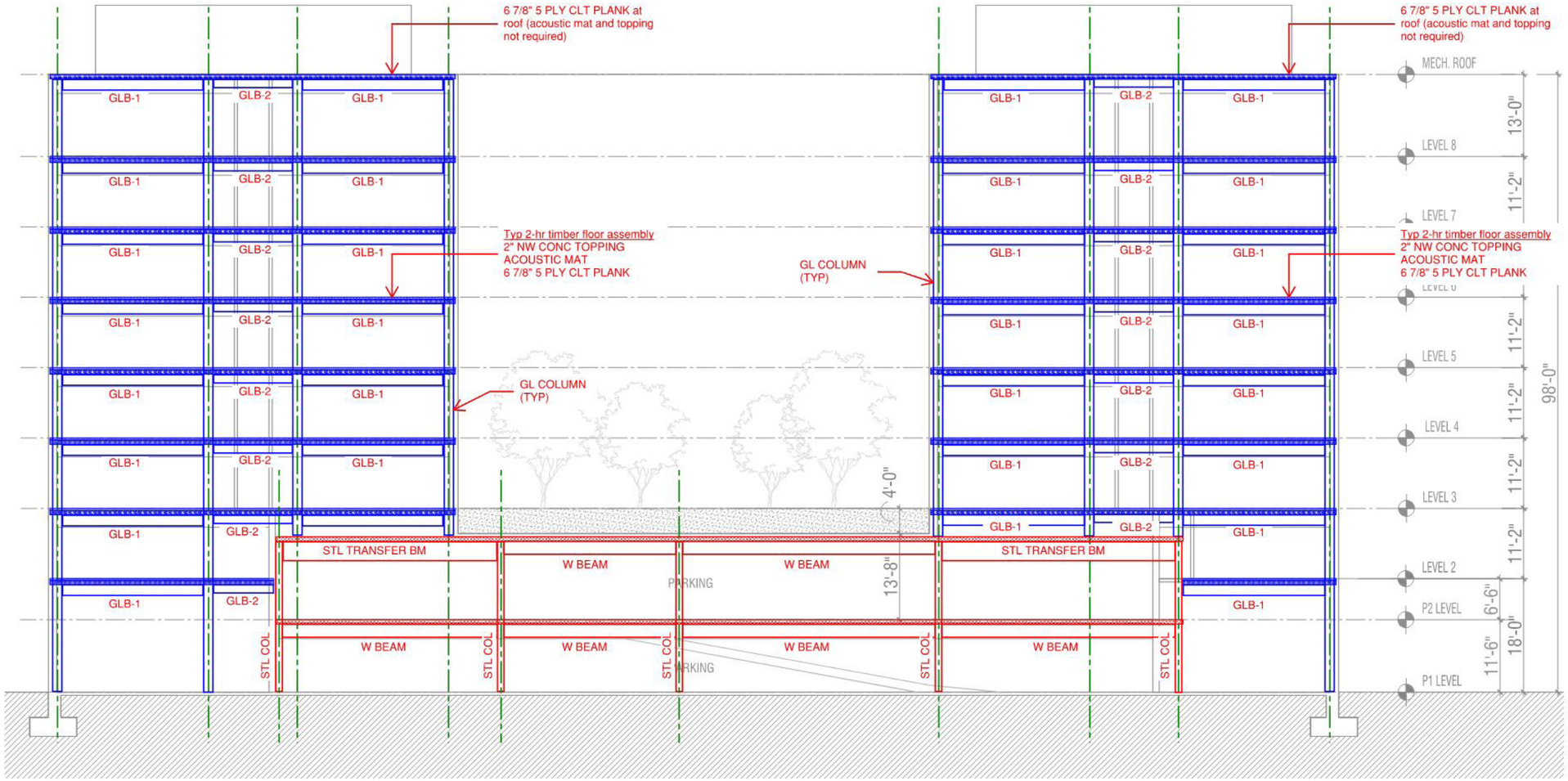


GLULAM BEAM

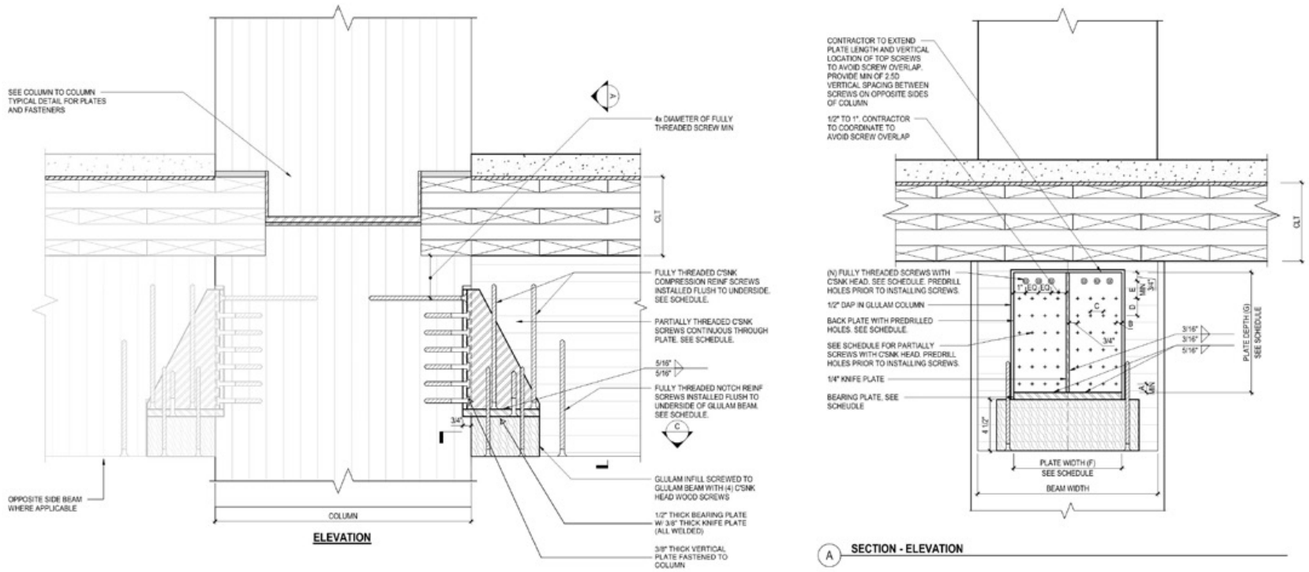
0 8 16 32 64 ft

Mass Timber: Structural Section

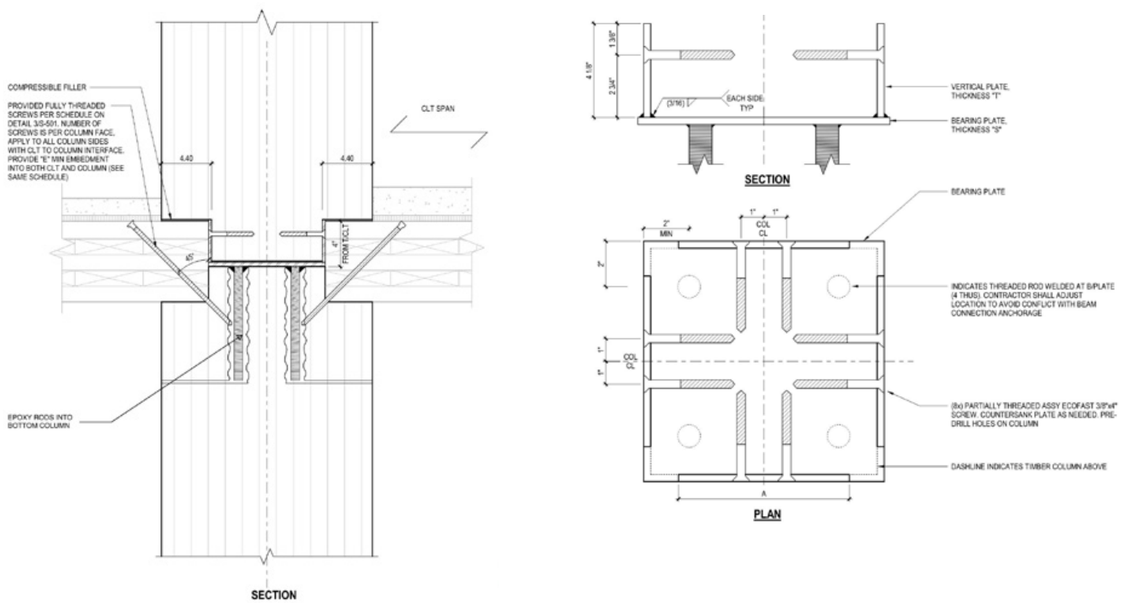




Mass Timber Scheme: Construction Details



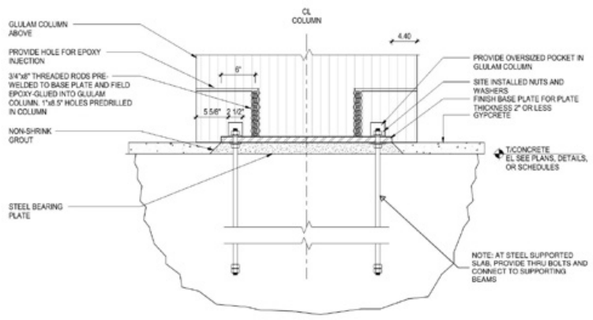
TYPICAL BEAM-COLUMN CONNECTION DETAIL



TYPICAL COLUMN-COLUMN CONNECTION DETAIL

ASCENT MILWAUKEE: TALLEST MASS TIMBER BUILDING IN N. AMERICA

Architect: Korb + Associates; Structural Engineer: Thornton Tomasetti



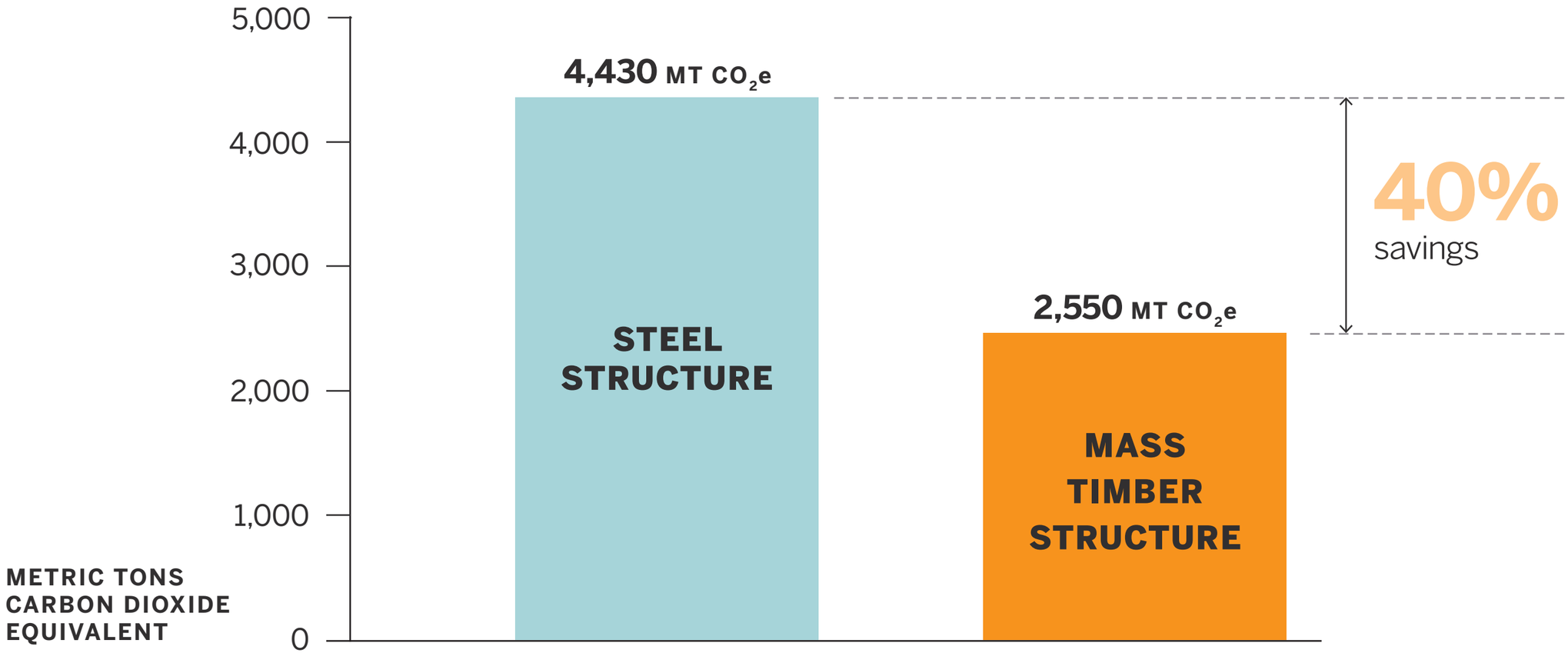
TYPICAL COLUMN DETAIL AT BASE

What is the Value of Mass Timber in Multi-Family Residential?

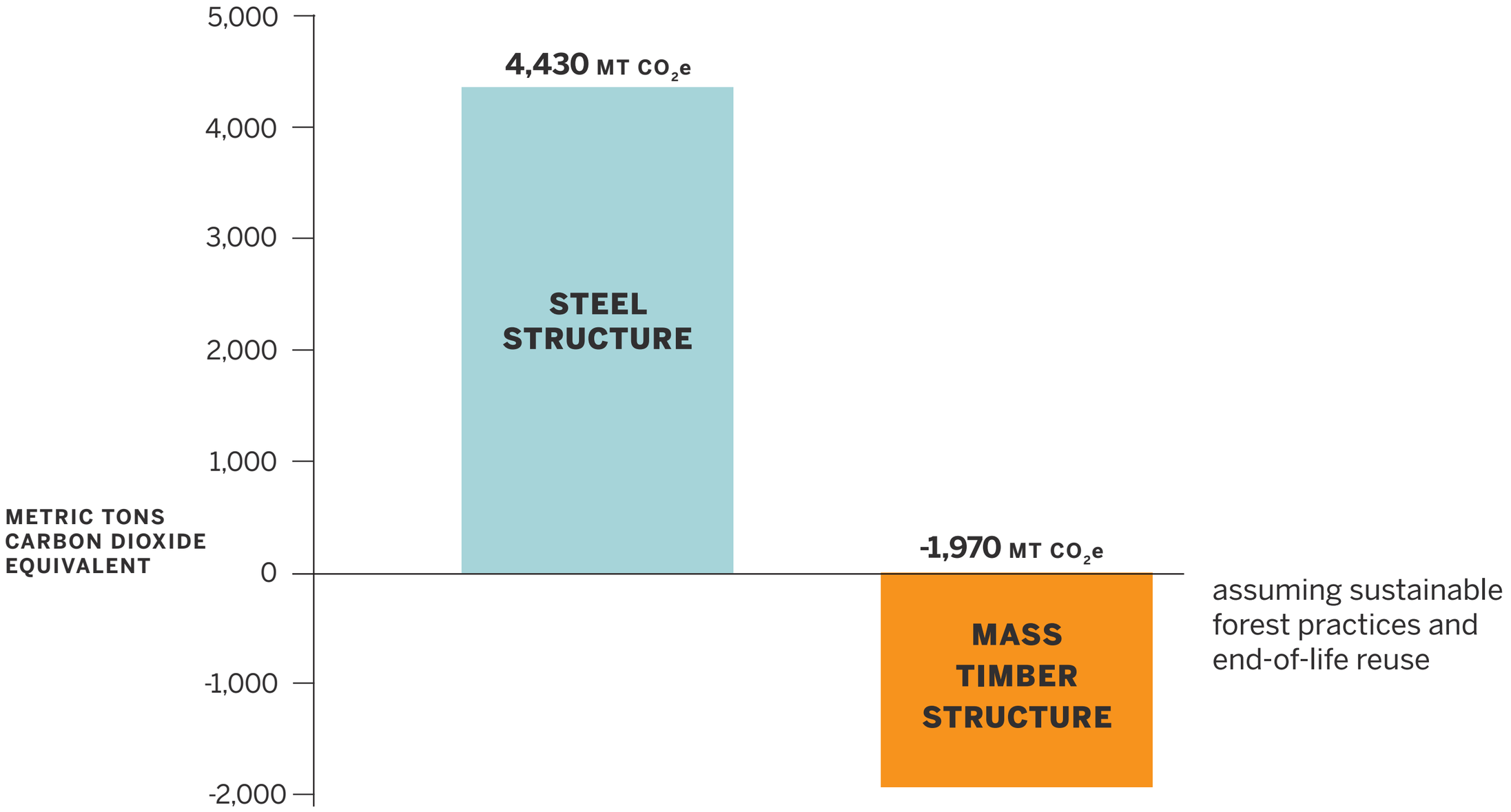
Environmental	• Embodied Carbon savings
Efficiency	• Economic • Time • Simplification
Differentiation	• Biophilia • Occupant comfort • Unique aesthetic

Environmental

Embodied Carbon Comparison: Steel vs. Mass Timber



Embodied Carbon Comparison: Biogenic Storage Potential



assuming sustainable forest practices and end-of-life reuse

Embodied Carbon Avoided by Suffolk Downs B16

1,880 metric tons

OF CO_2E EMISSIONS AVOIDED

EQUAL TO THE CARBON SEQUESTERED BY

2,225 acres

OF U.S. FORESTS IN ONE YEAR, SIMILAR TO THE SIZE OF THE MIDDLESEX FELLS RESERVATION

Embodied Carbon Avoided: What if Boston's Yearly Goal of New Residential Units was Met with Projects like Suffolk Downs B16?

9.4 METRIC TONS OF CO_2E EMISSIONS AVOIDED PER RESIDENTIAL UNIT

x

3,300 UNITS (BOSTON'S YEARLY GOAL OF NEW RESIDENTIAL UNITS)

=

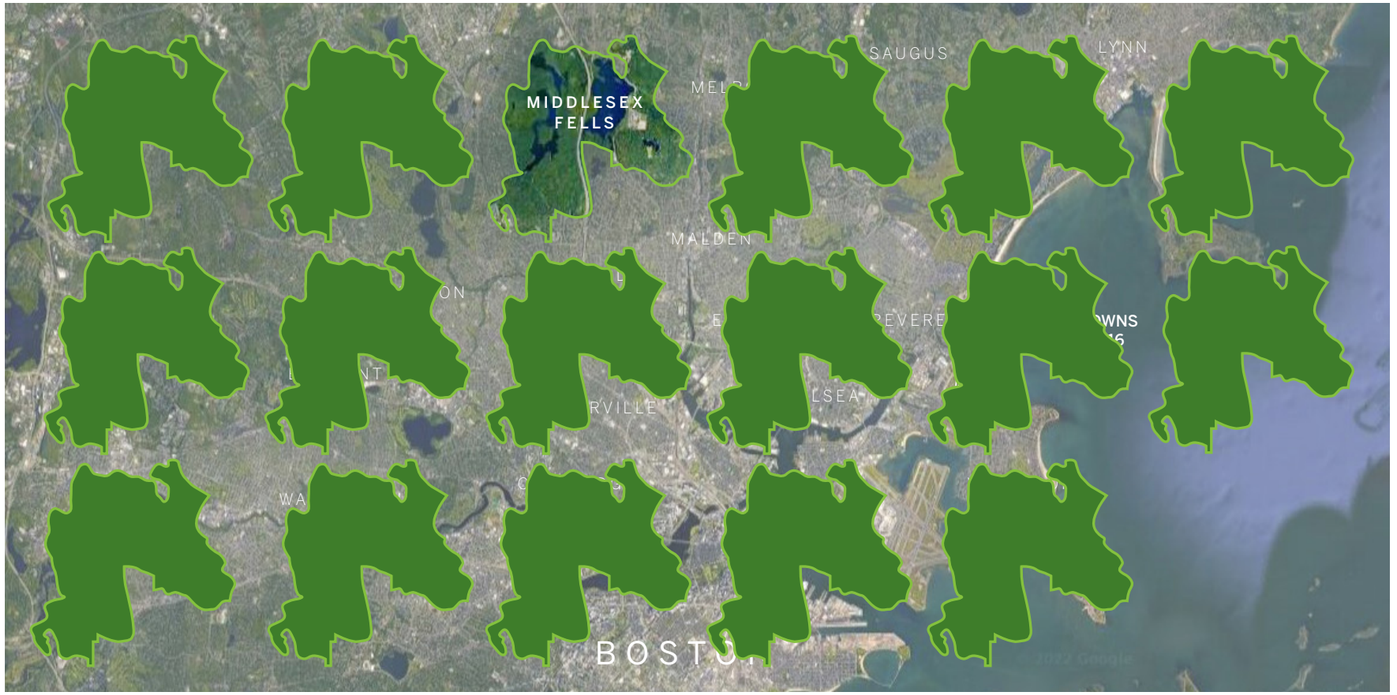
31,020 METRIC TONS OF CO_2E EMISSIONS AVOIDED

=

THE CARBON SEQUESTERED EACH YEAR BY

17 forests

SIMILAR IN SIZE TO THE MIDDLESEX FELLS



Efficiency

How do we evaluate construction cost differences?

Efficiency

- Reduced overall duration of construction (general condition savings)
- Flexibility for sequencing of work (early access to floors)
- Reduced staging time on site (less crane time)
- Fire detail reduction (less welding)

Materials

- **Reduction in framing, drywall and interior finish on surfaces where timber is exposed**
- **Reduction or elimination of spray-applied fireproofing**
- **Lighter structure allows potential 20% reduction in foundation concrete quantity in timber frame option**
- Floor leveling allowance?
- Floor penetration allowance?

Items in bold incorporated in conceptual cost estimate

Differentiation

Mass Timber in Residential Buildings

Middle Unit—Steel Frame Building

Middle Unit—Mass Timber Frame Building

Corner Unit—Steel Frame Building

Corner Unit—Mass Timber Frame Building