



11 E. LENOX



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IN COLLABORATION WITH:

MONTE FRENCH DESIGN STUDIO

Passive to **POSITIVE**

NORDIC | H+O
STRUCTURES

NORTHEAST
EARTHWORKS

 Boston Real Estate
Collaborative, LLC


D² DEVELOPMENT
LLC

CODE RED
CONSULTANTS



11 E. Lenox



About the project

Project Type: Multifamily – Passive House

Area of Building: 37,232 sq. ft.

Number of Units: 34, Number of Parking Spaces: 8

Project Cost: 14 million, Timber Cost: 2 million

CLT frame cost: \$13-15 more per sq ft, as compared to a 5 over 2 podium frame

Timber Manufacturer: Nordic Structures

Timber Installer: Nordic Structures + Eragall

Timber species: Black Spruce, Jack Pine – FSC certified

Carbon savings: 1171 metric tons of CO2

PATH TO CODE COMPLIANCE

Building Code

- BUILDING:** 780 CMR 9TH EDITION
- FIRE:** 527 CMR
- ACCESSIBILITY:** 521 CMR
FAIR HOUSING ACT
- ELECTRICAL:** 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN
- MECHANICAL:** 527 CMR 12.00
- PLUMBING:** 2015 IMC AS AMENDED BY 780 CMR 28.00
- ENERGY:** 248 CMR 10.00
- OTHER:** 2015 IECC AS AMENDED BY 780 CMR 13.00
THE MASSACHUSETTS STRETCH ENERGY CODE
NFPA STANDARDS, AS REFERENCED BY THE ABOVE CODES

Zoning Code

BOSTON ZONING CODE	DIMENSIONAL REGULATION	REQUIRED	PROPOSED	COMPLIANCE
ARTICLE 50 ROXBURY NEIGHBORHOOD ZONING SUBDISTRICT: MFR TABLE F	LOT AREA, MINIMUM FOR DWELL. UNIT(S) SPECIFIED (SQ.FT.)	4,000 FOR FIRST 3 UNITS	SEE BELOW	RELIEF REQUESTED
	ADDITIONAL LOT AREA FOR EACH ADDITL DWELL UNIT	1,000		
	LOT AREA, MINIMUM FOR PROPOSED NUMBER OF DWELLING UNITS (34 UNITS)	35,000	8,464	
	LOT WIDTH MINIMUM (FEET)	40'-0"	104'-2"	COMPLIANT
	LOT FRONTAGE MINIMUM (FEET)	40'-0"	94'-1"	COMPLIANT
	FLOOR AREA RATIO MAXIMUM	1.0	4.40	RELIEF REQUESTED
	BUILDING HEIGHT MAXIMUM STORIES	4	7	RELIEF REQUESTED
	BUILDING HEIGHT MAXIMUM FEET	45'-0"	69' - 11"	RELIEF REQUESTED
	USABLE OPEN SPACE MINIMUM SQ. FT. PER DWELLING UNIT (c)	200	46	RELIEF REQUESTED
	USABLE OPEN SPACE TOTAL REQUIRED	6,800	1,564	
	FRONT YARD MINIMUM DEPTH (FEET) (d)	20	0'-0"	RELIEF REQUESTED
	SIDE YARD MINIMUM WIDTH (FEET)	10	0'-0"	RELIEF REQUESTED
	REAR YARD MINIMUM DEPTH (FEET)	20	16'-0"	RELIEF REQUESTED
	REAR YARD MAXIMUM OCCUPANCY BY ACCESSORY BUILDINGS (PERCENT)	25%	0%	COMPLIANT

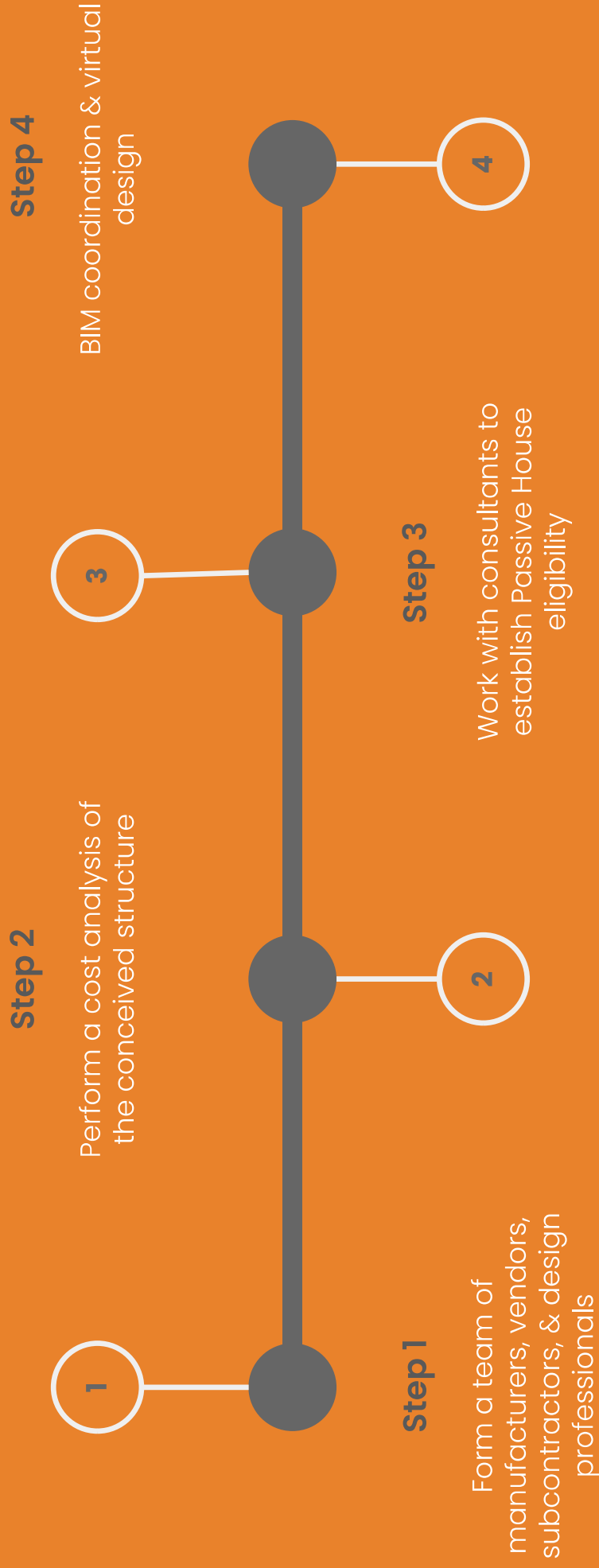
BUILDING CODE APPEALS:

1. 780 CMR 504.5 NUMBER OF STORIES ABOVE GRADE
2. 780 CMR 602.5 CONCEALED SPACES

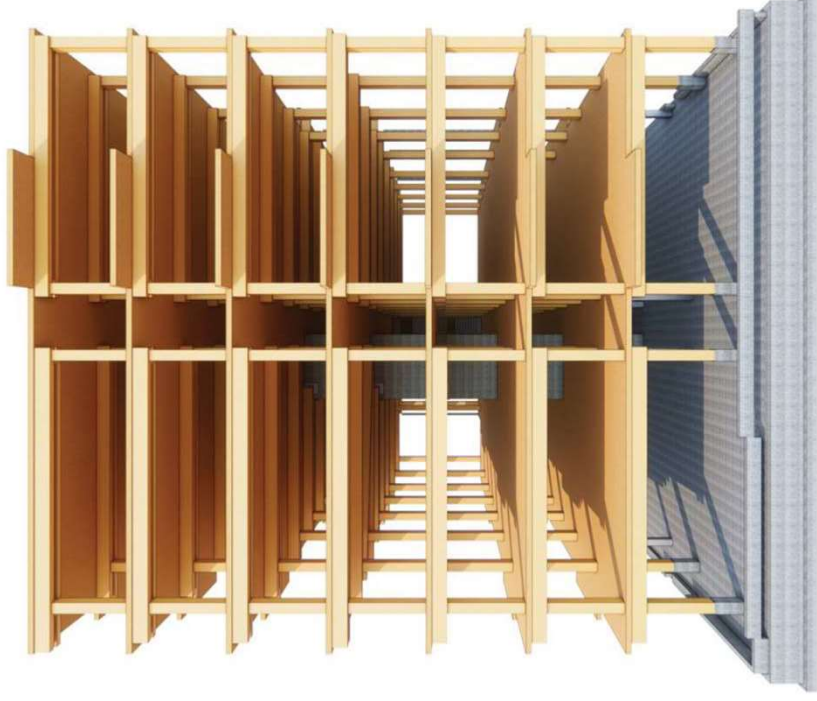
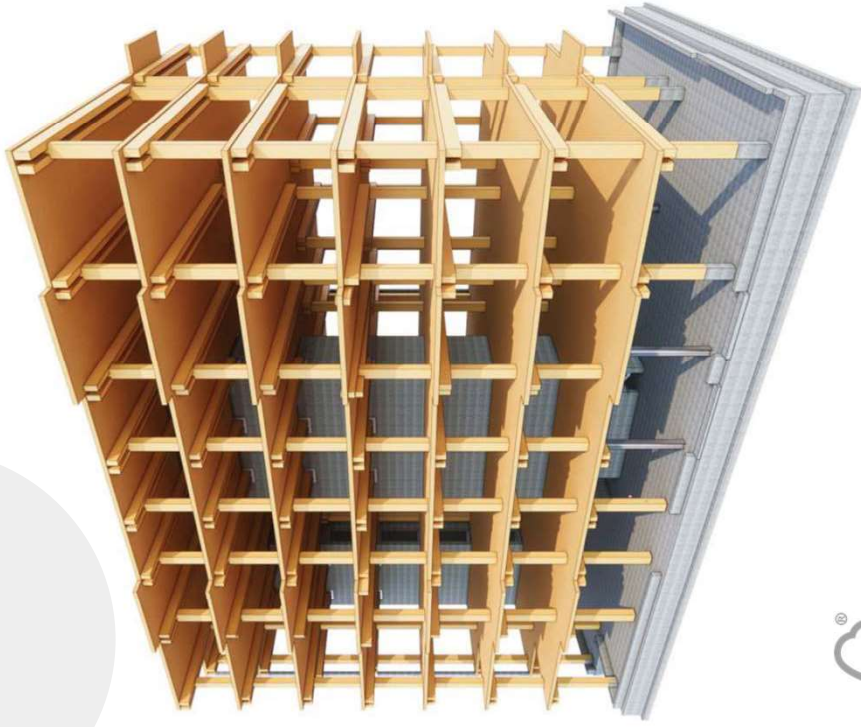
Classification:

Most akin to a type IV-C structure in the 10th edition 780 CMR

INTEGRATED PROCESS & VIRTUAL DESIGN COORDINATION



CLT
STRUCTURAL
SYSTEM

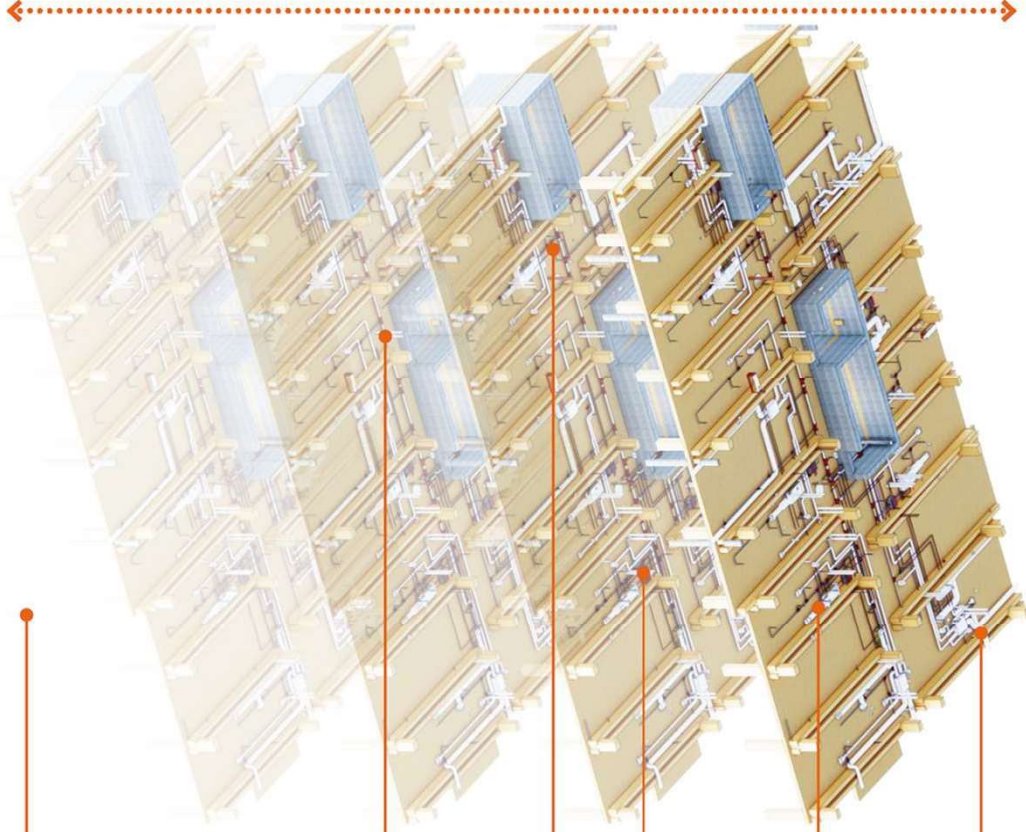


- 7 stories glulam post & beam
- 7 stories CLT floors
- CIP slab on grade & foundations
- Prefab modular concrete cores
- Double-beam scheme
- 12 steel beams & posts
- Lightweight recycled insulated fill



All timber is sustainably sourced

Rooftop PV Array
(Not shown)



Individual ERV
Ventilation

Sensored Short Run
Hot Water Supply

Sanden Heat Pump
Hot Water System
(COP 5.96)

Daikin VRV Fan Coil
Air Conditioning

Per-unit Panasonic
ERV Ventilation
Units

SYSTEMS DESIGN

- Tightly integrated & coordinated design approach
- Stacked decentralized systems
- Short run systems design
- Solar array: 40kW-DC, offsetting 55% of the estimated common area load

ENERGY SAVING FEATURES

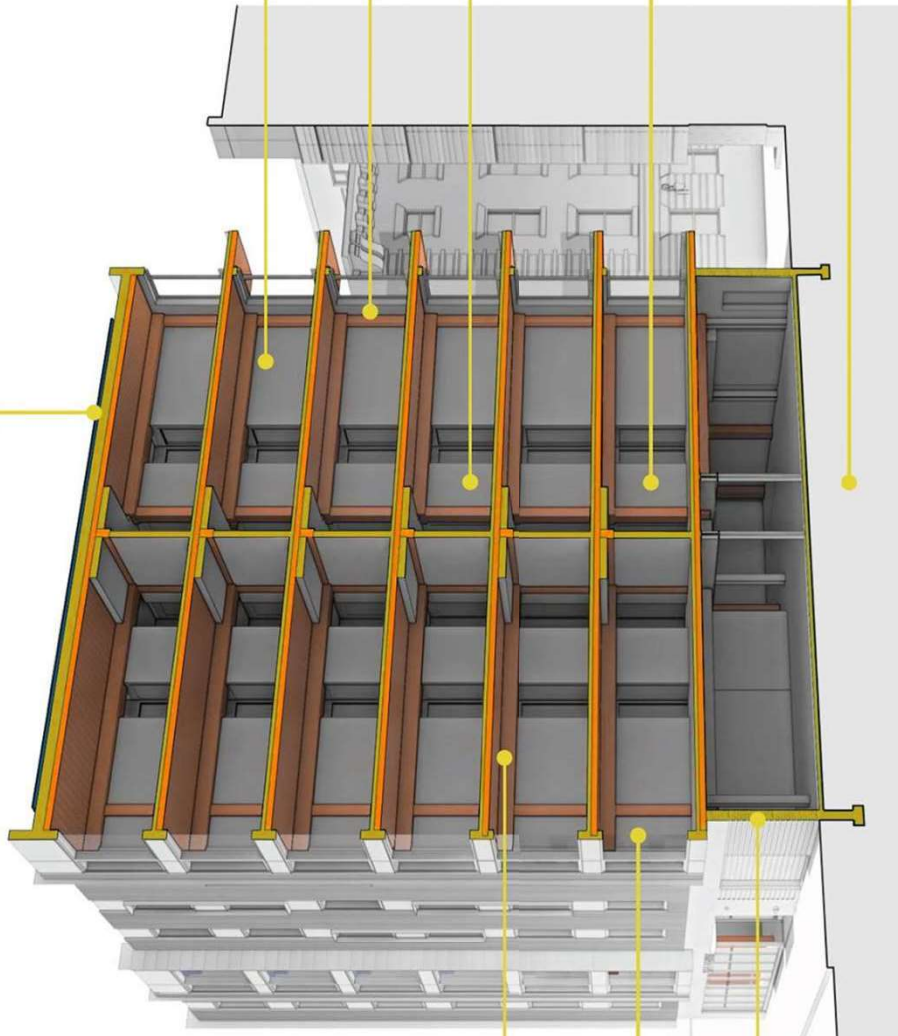
PROJECT SUMMARY

- PHIUS+ PURSUANT
- LIGHTWEIGHT STRUCTURE
- NO BASEMENT, RESILIENT DESIGN
- ALL ELECTRIC, NO GAS
- PV ARRAY, EV CHARGING
- NO THERMAL BRIDGING



PHOTOVOLTAIC (PV) PANELS

PURSUANT CERTIFICATIONS & INITIATIVES



VARIABLE REFRIGERANT FLOW (VRF) HVAC



ENERGY RECOVERY VENTILATOR (ERV)



ENERGY STAR APPLIANCES



WATERWISE PLUMBING FIXTURES

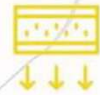


GROUNDWATER RECHARGE

<CO₂>
LOW CARBON FOOTPRINT
MASS TIMBER & CLT
BUILDING SYSTEM



HIGH EFFICIENCY TRIPLE PANE WINDOWS



SUPER INSULATED & AIRTIGHT BUILDING ENVELOPE

CARBON SUMMARY



Volume of wood products used:
950 cubic meters (33,549 cubic
feet)



US and Canadian forests grow
this much wood in: 3 minutes



Carbon stored in the wood: 844
metric tons of carbon dioxide



Avoided greenhouse gas emissions:
327 metric tons of carbon dioxide



Total potential carbon benefit:
1171 metric tons of carbon
dioxide

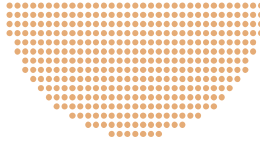
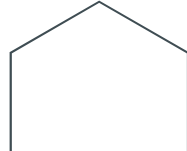
Equivalent to:



247 cars off the road for a year



Energy to operate 124 homes for
a year



EXTERIOR DESIGN

EXTERIOR COMPONENTS

EUROPEAN TILT-TURN WINDOWS

TERRACOTTA PANELS
(VARYING PANEL JOINT SIZES)

VERTICAL METAL TRIM

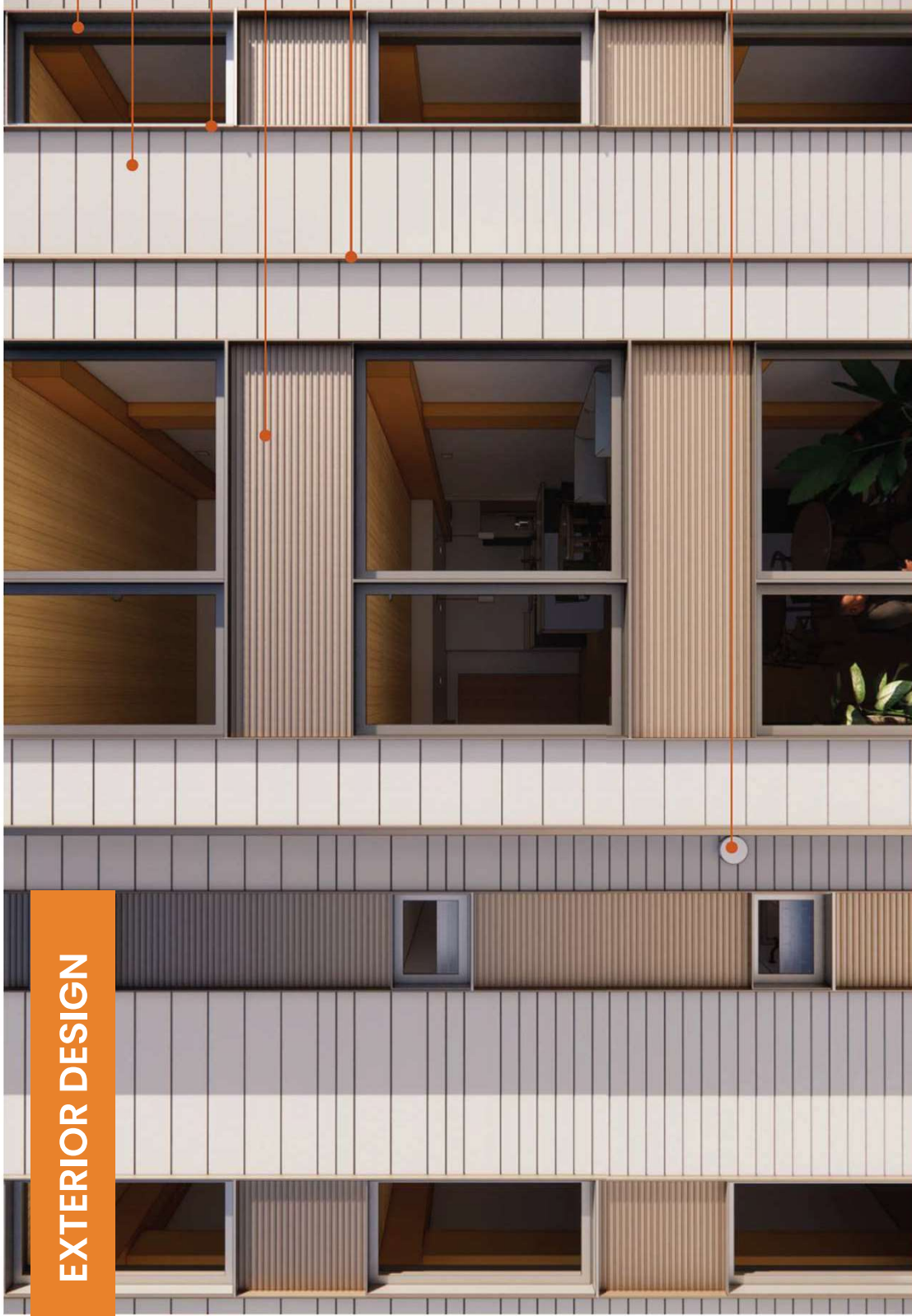
COATED CORRUGATED
METAL SIDING

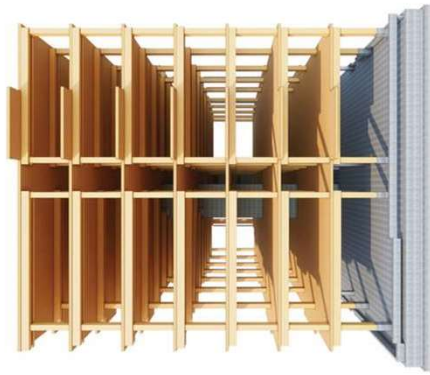
METAL OUTSIDE CORNER REVEAL
TRIM



SHADE CANOPIES

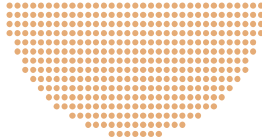
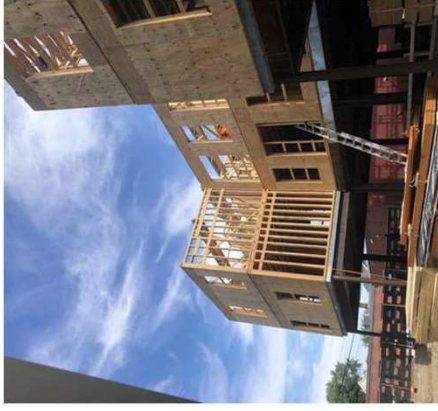
FRESH AIR VENTILATION INTAKES &
EXHAUST LOUVERS





11 E. Lenox vs Podium

While similar in design to 44 North Beacon, 11 E. Lenox is safer, more practical and more sustainable



Continuity

The absence of a podium allows for greater continuity of workforce



Safety

11 E. Lenox is more fire resistant than light-frame wood. Both means of egress will be in the building immediately upon erection



Efficiency

Less workforce is required and less time is needed for construction





WHAT WE LEARNED



CHALLENGES

- Getting Nordic Structures on board
- Achieving code compliance
- Coordinating logistics

TAKEAWAYS

- VDC & BIM coordination increase efficiency
- The use of CLT is faster, safer, & more systematic
- CLT + Passive House features reduce embodied carbon and GHG emissions



THANK YOU

Get in touch!

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Up Next: Sunny Dillard