

Warp 10: Mass Timber for a Pharmaceutical Manufacturing Facility

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WoodWorks | The Wood Products Council

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Questions related to specific materials, methods, and services will be addressed at the conclusion of this presentation.





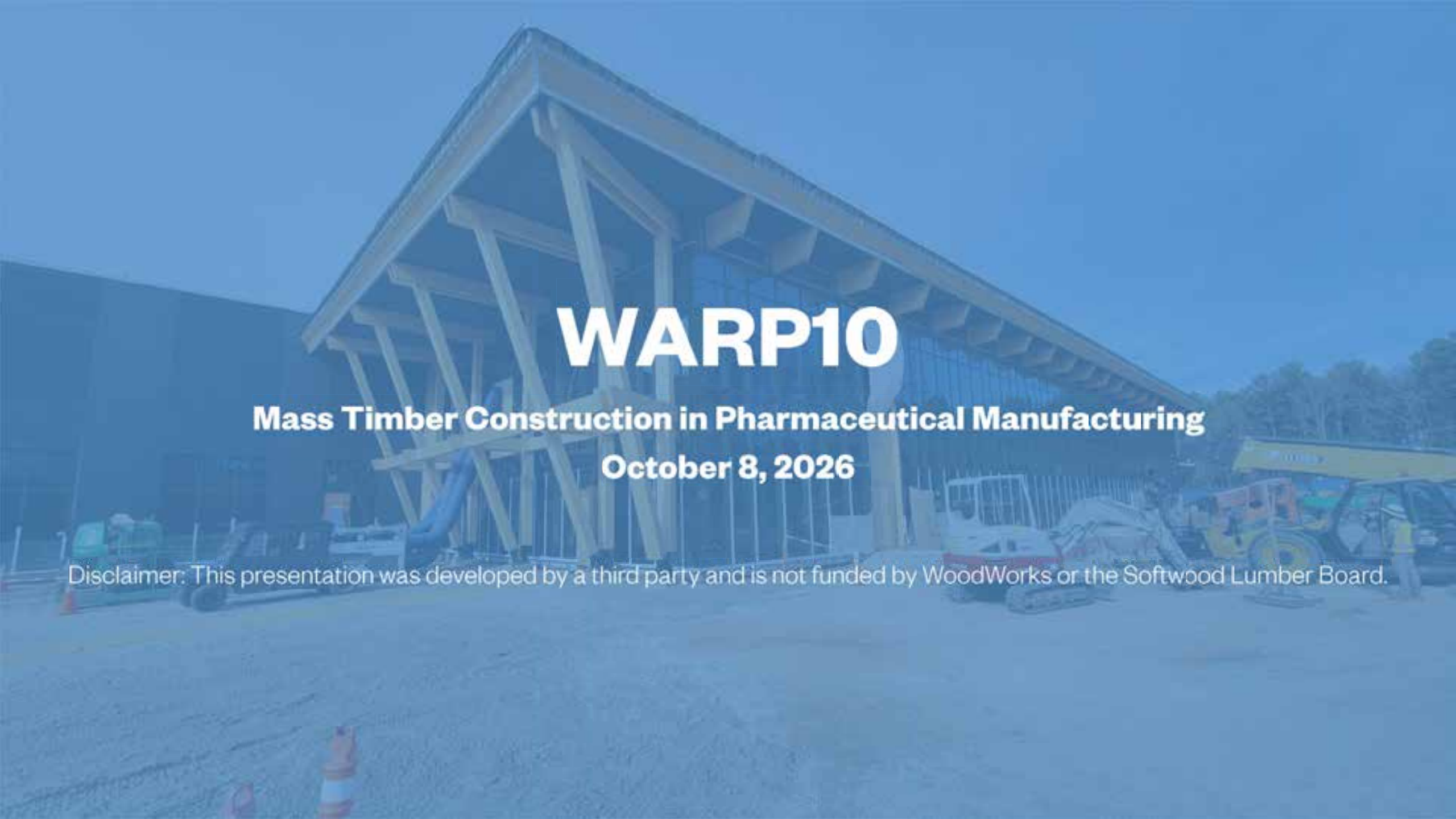
Course Description

Biotechnology manufacturing facilities present unique design challenges due to stringent regulatory requirements, specialized building systems, and demanding structural performance criteria. This course examines the design and construction of Warp 10, a 196,000-square-foot pharmaceutical manufacturing facility that utilizes a mass timber structural system while pursuing zero embodied carbon goals.

Participants will explore how the project team balanced Current Good Manufacturing Practice (cGMP) requirements, large clear spans, moisture management during construction, and the use of wood products in highly controlled environments. The course also reviews structural and enclosure design decisions, including the integration of mass timber framing, timber curtain walls, and durable wood cladding systems to meet performance, durability, and sustainability objectives. Through this case study, attendees will gain practical insights into applying mass timber in industrial and life sciences facilities while addressing carbon reduction goals, building performance, and long-term resilience.

Learning Objectives

1. Identify the structural, regulatory, and operational requirements that influence the design of mass timber pharmaceutical manufacturing and warehouse facilities.
2. Evaluate strategies for integrating mass timber systems into facilities with cGMP clean rooms, laboratories, and large clear-span spaces while maintaining building performance and occupant safety.
3. Assess moisture management, enclosure, and material selection strategies that improve the durability and long-term performance of mass timber buildings during construction and operation.
4. Analyze design decisions that reduce embodied carbon while meeting the functional, structural, and environmental performance requirements of industrial and life sciences facilities.

The background image shows a large-scale construction project featuring a building with a prominent timber frame. The structure has a steep, gabled roof supported by numerous vertical and diagonal wooden posts. In the foreground and to the right, various pieces of heavy construction equipment are visible, including a yellow excavator, a white truck, and a large pile of lumber or debris. The entire scene is overlaid with a semi-transparent blue filter.

WARP10

Mass Timber Construction in Pharmaceutical Manufacturing

October 8, 2026

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



PROJECT OVERVIEW



WARP10 Research Triangle Park, North Carolina

PROJECT GOALS & CHALLENGES

- Speed to Market
- Net Zero Carbon
- Programmatic Needs:
 - Current Good Manufacturing Practice (cGMP) Clean Rooms
 - Warehousing



SCHEDULE KEY MILESTONES

JANUARY 2023

DESIGN COMMENCED

MAY 2024

FOUNDATIONS COMMENCED

SEPT 2025

STRUCTURE TOPPED OUT

OCT 2025

BUILDING DRY IN

SEPT 2026

CONSTRUCTION COMPLETE

FEB 2027

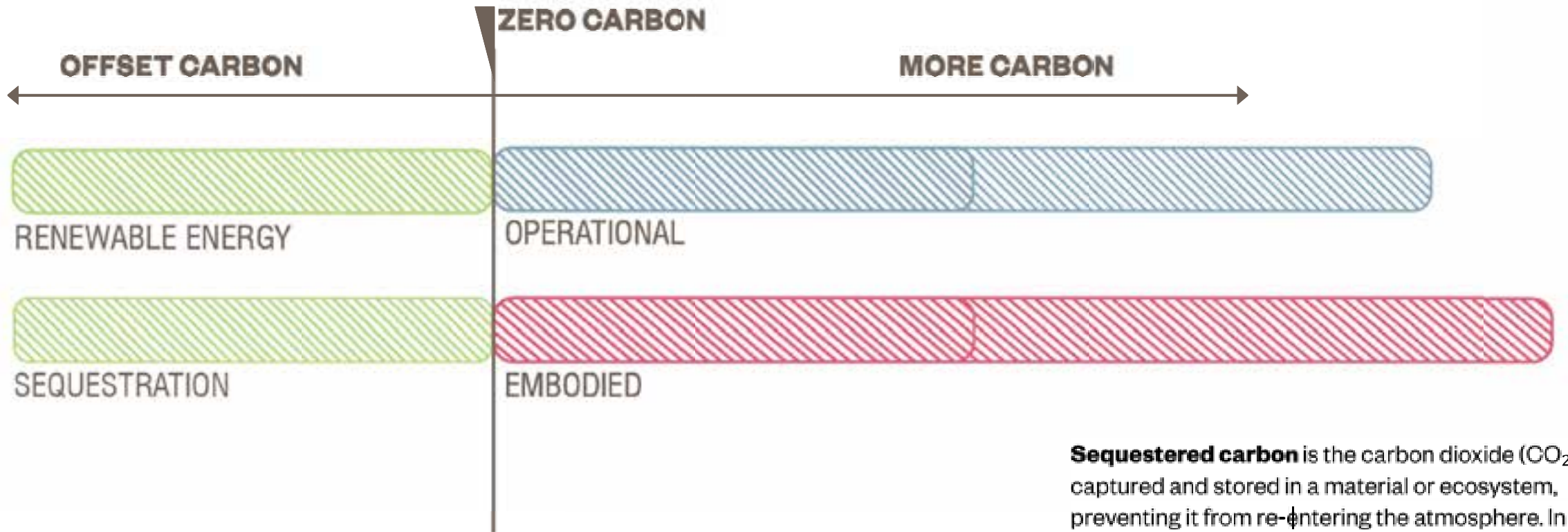
SUBSTANTIAL COMPLETION

Q4 2027

FACILITY OPERATIONAL

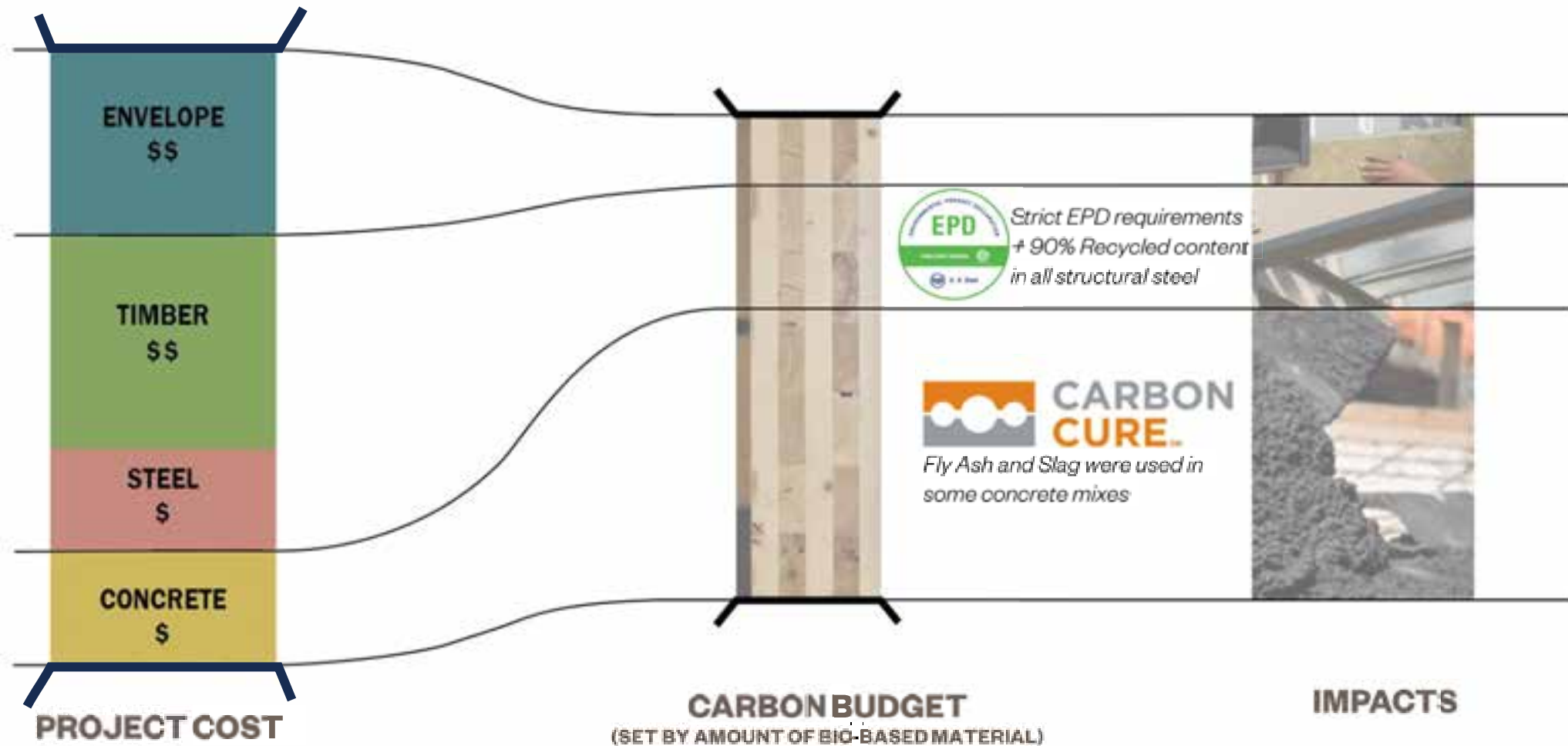
NET ZERO CARBON

"NET ZERO ENERGY"

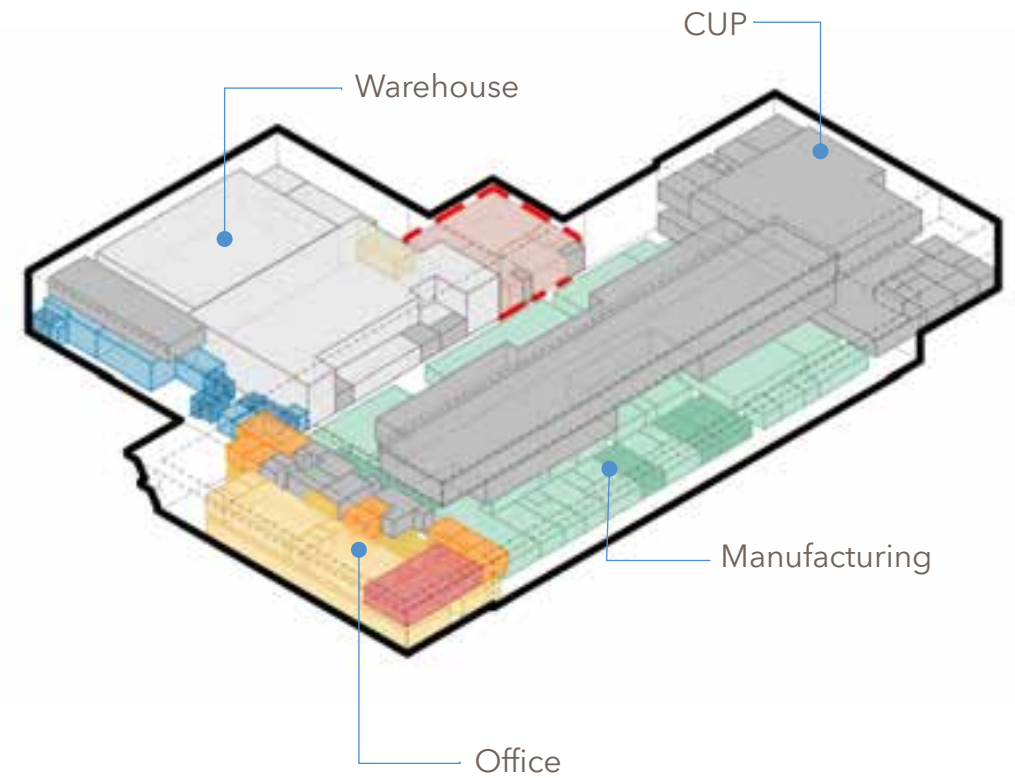


Sequestered carbon is the carbon dioxide (CO₂) captured and stored in a material or ecosystem, preventing it from re-entering the atmosphere. In buildings, it typically refers to carbon stored in biogenic materials like mass timber.

BALANCING COST AND CARBON

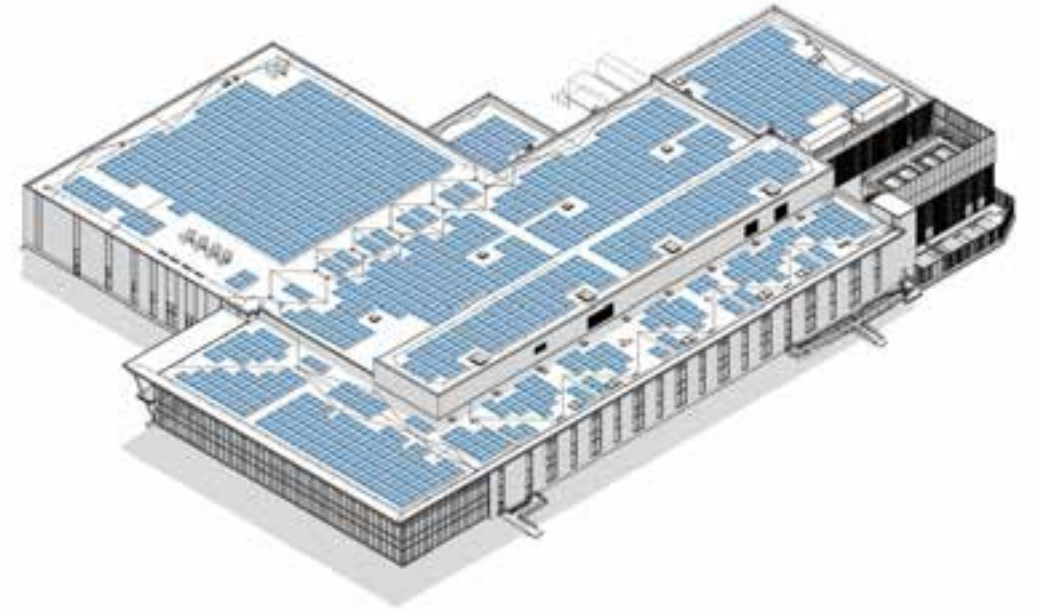


PROGRAM OVERVIEW

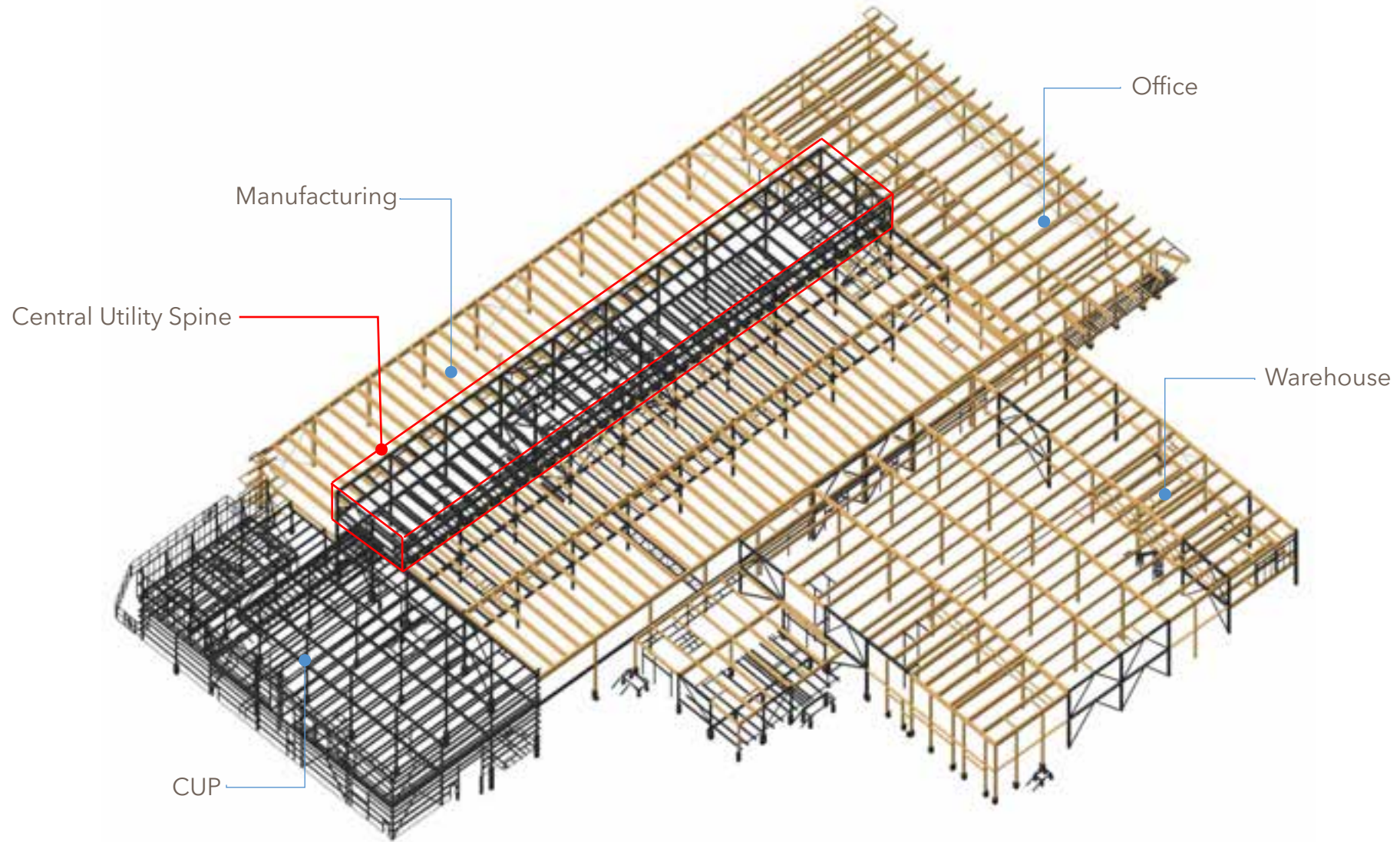


WARP 10

Rooftop Solar Array



THE RIGHT MATERIALS FOR THE APPLICATION



TIMBER STRUCTURE



GLULAM BEAMS + COLUMNS



CLT ROOF DECK



CLT WALLS

HYBRID STRUCTURE

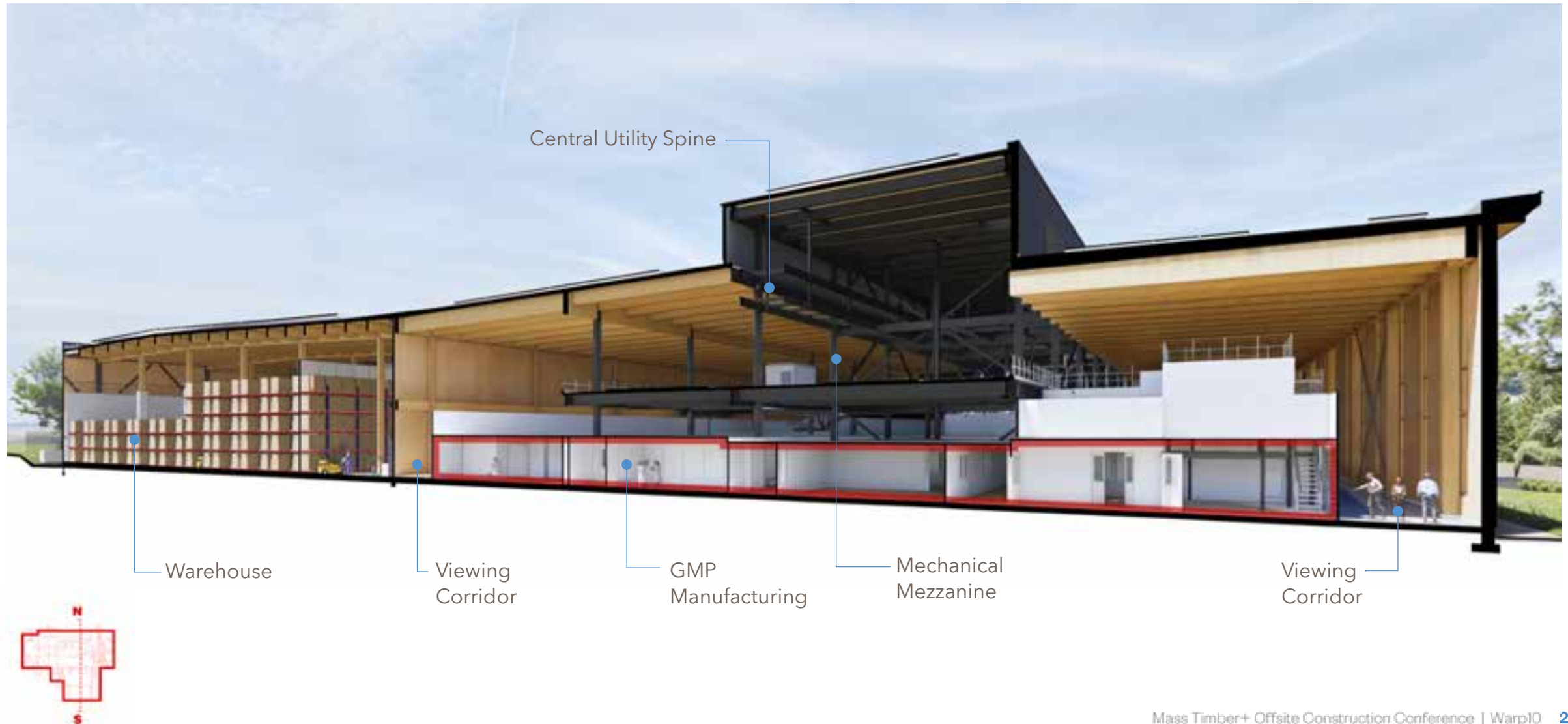


HYBRID MASS TIMBER + GREEN STEEL

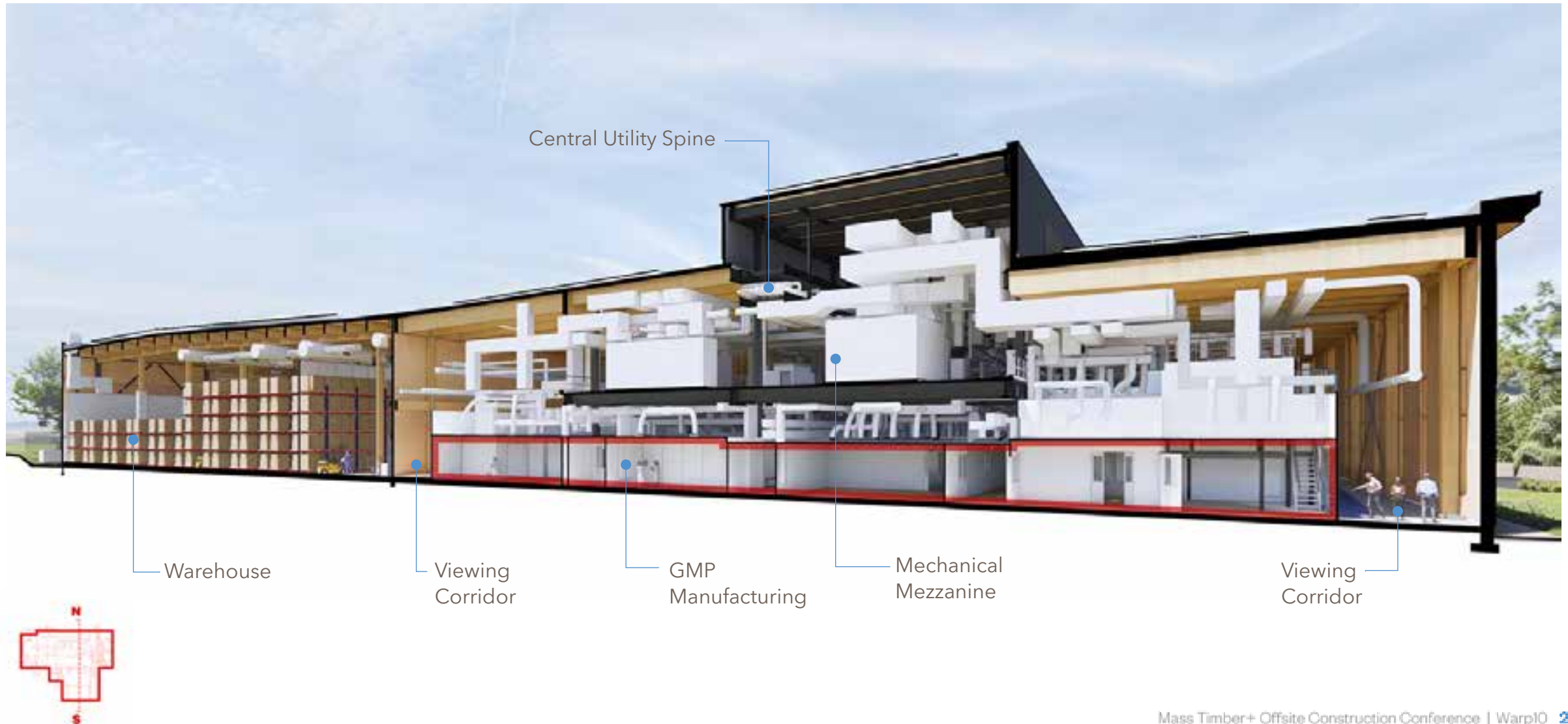
HYBRID STRUCTURE



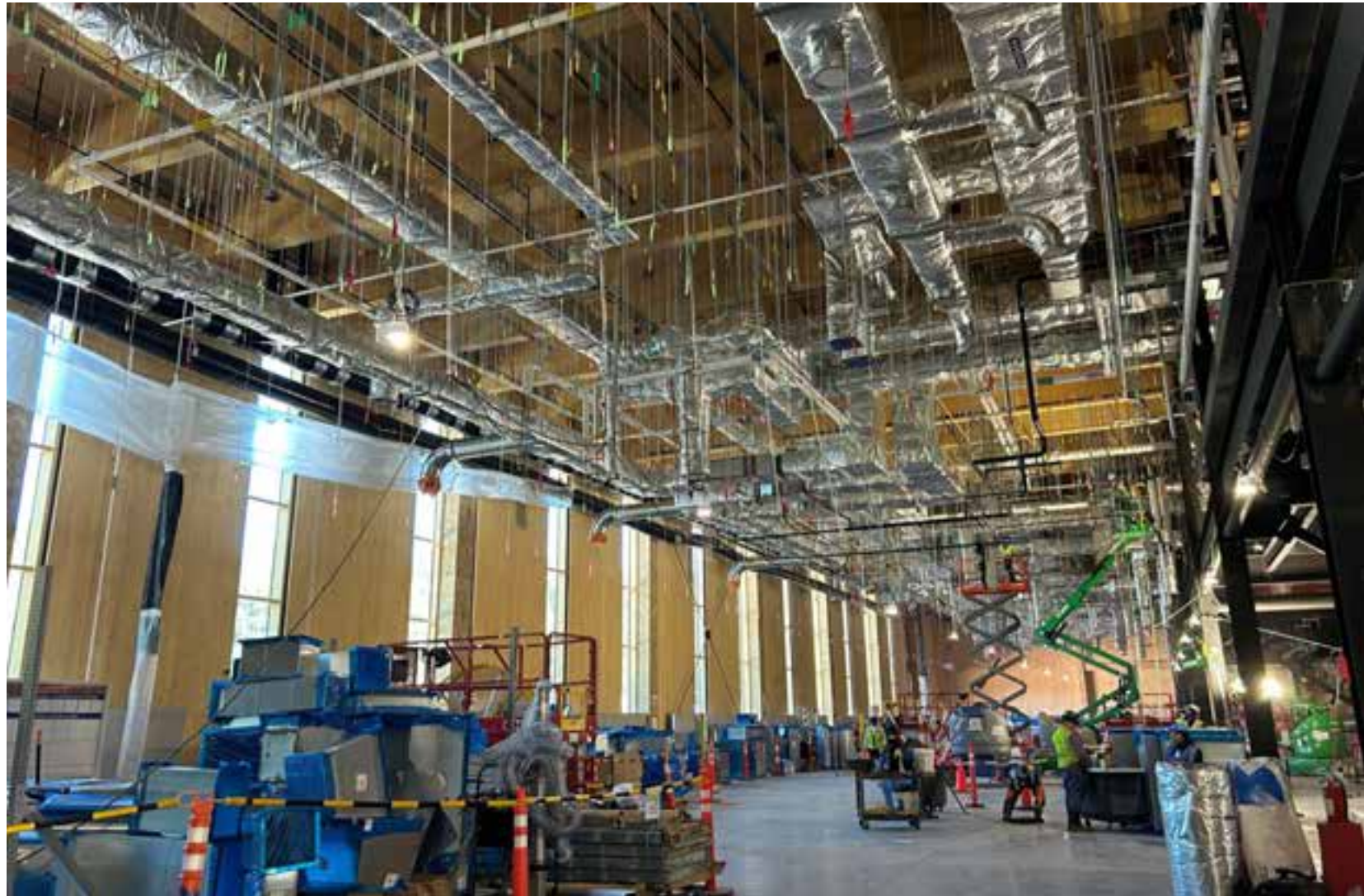
SECTION PERSPECTIVE



SECTION PERSPECTIVE



UTILITIES + HANGERS



UTILITIES + HANGERS





SITE + FOUNDATIONS

RESEARCH TRIANGLE PARK, NC

United Therapeutics' Warp-10



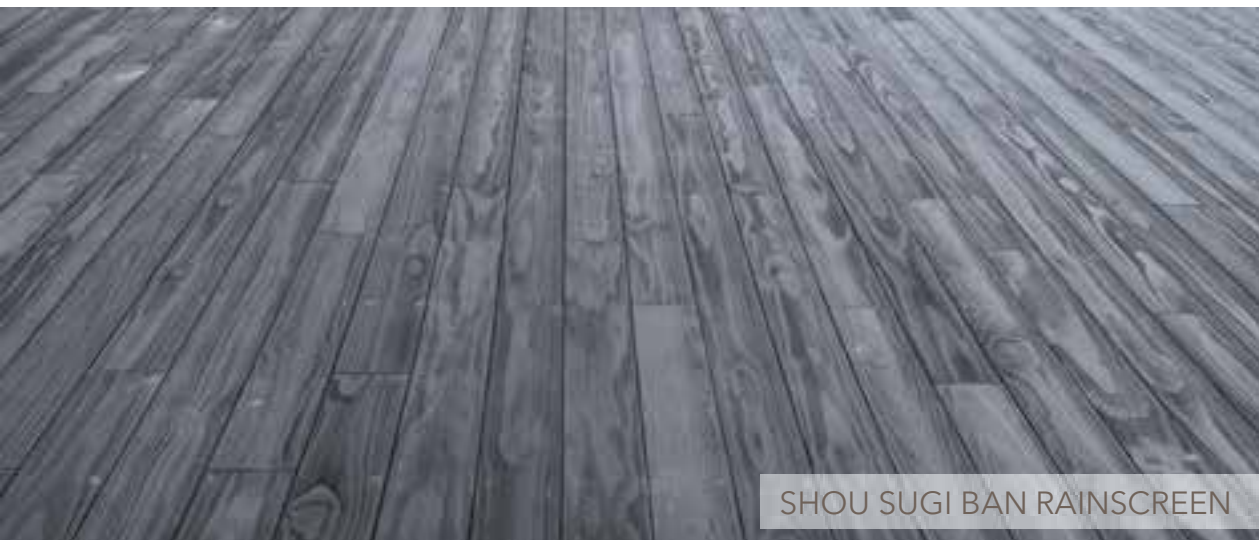
SITE FOUNDATIONS



FAÇADE + ENVELOPE

A blue-tinted photograph of a building under construction. The image shows a grid of vertical and horizontal structural elements, likely steel or concrete, forming the facade and envelope. A crane arm is visible on the right side of the frame, extending upwards. The text "FAÇADE + ENVELOPE" is overlaid in white, bold, sans-serif font in the center of the image.

MATERIAL PALETTE



EXTERIOR MATERIALS



GABION RETAINING WALLS



EXPOSED TIMBER



CORTEN STEEL + RIVER ROCK

EXTERIOR ELEVATIONS



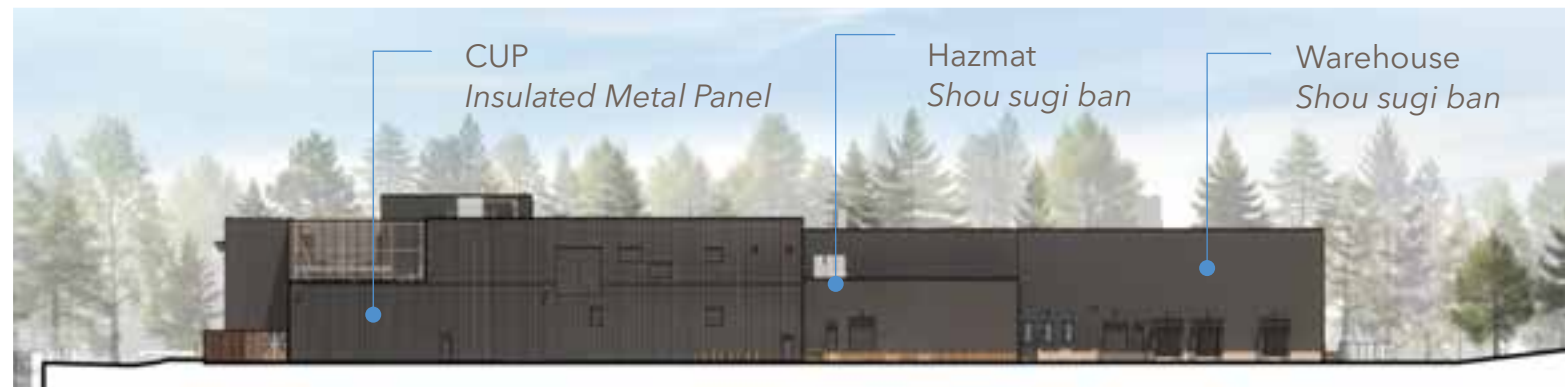
EXTERIOR ELEVATIONS



PROFILED INSULATED METAL PANEL



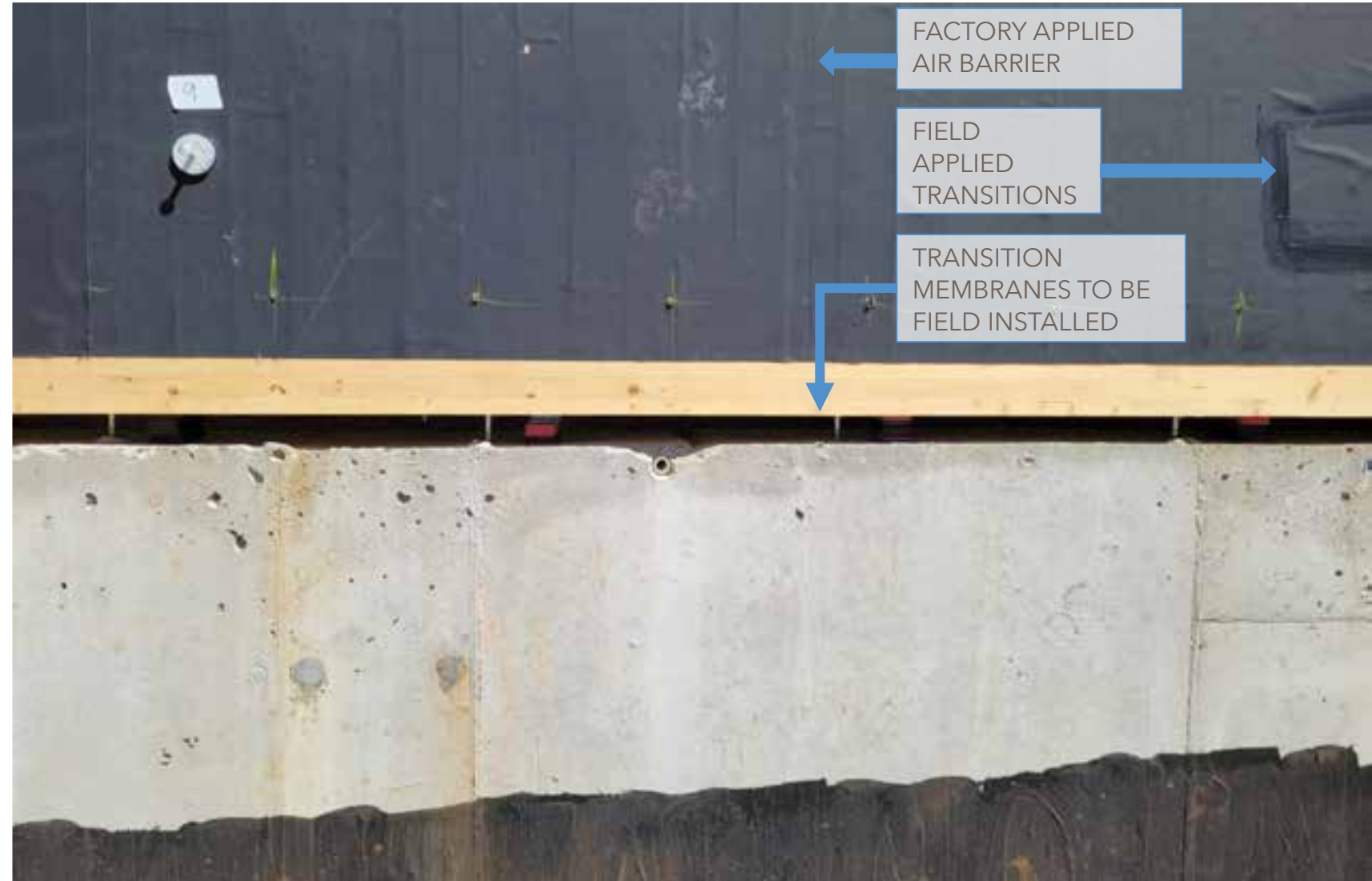
SOUTH ELEVATION



WEST ELEVATION

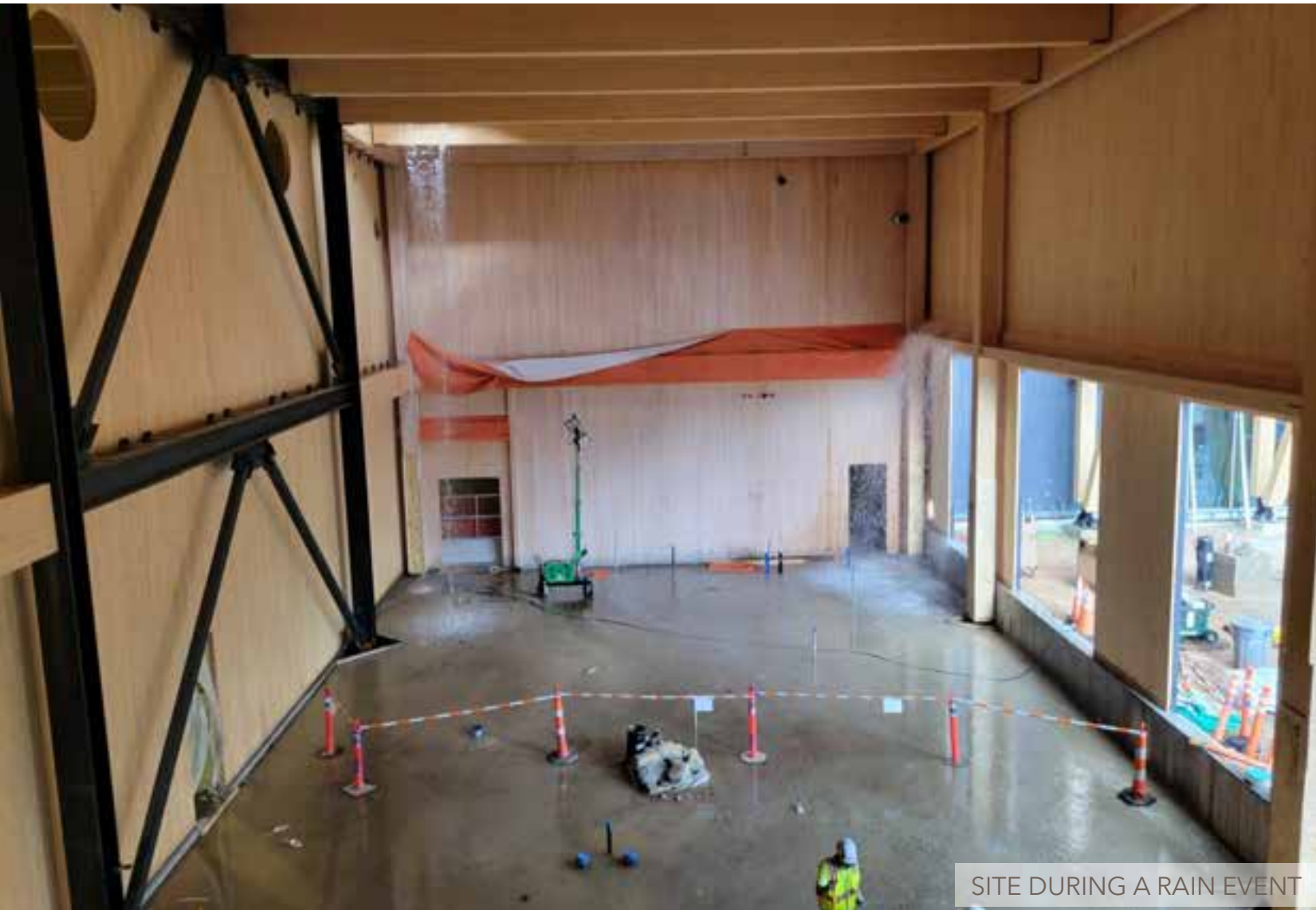
ENVELOPE DECISIONS

Factory installed membranes



ENVELOPE DECISIONS

Moisture Management



SITE DURING A RAIN EVENT



SITE JUST AFTER A RAIN EVENT



SWEEPING STANDING WATER

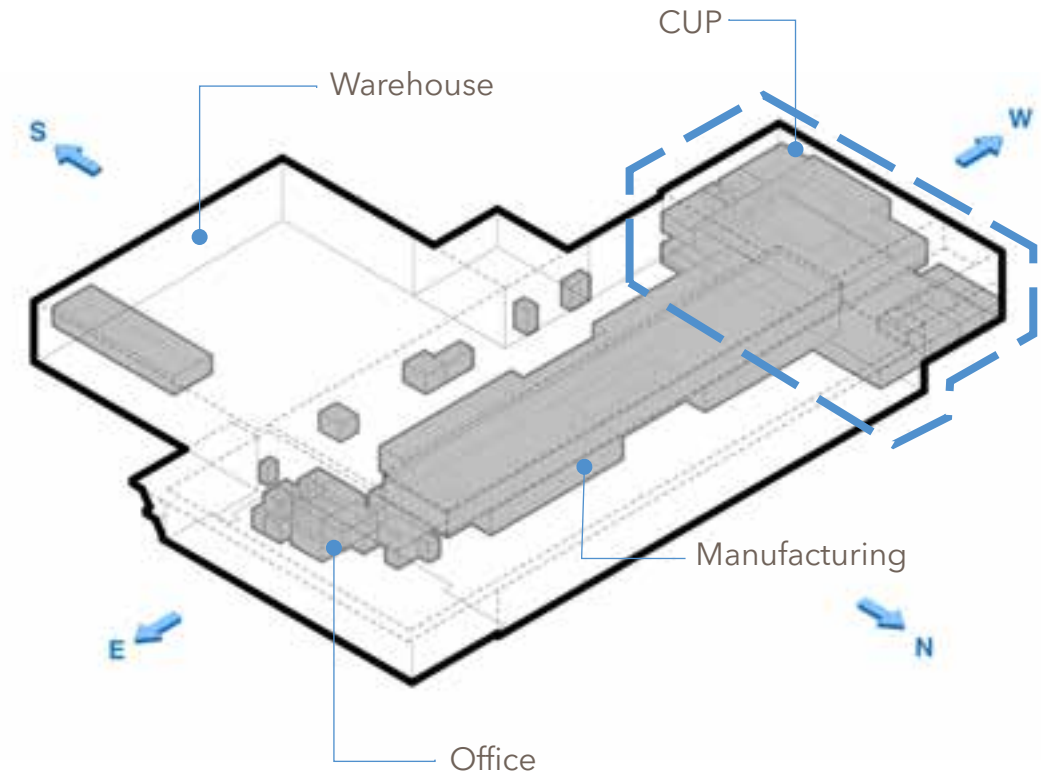
CENTRAL UTILITIES PLANT

The background image shows a construction site for the Central Utilities Plant. A large building is under construction, with extensive scaffolding visible. In the foreground, there are various construction elements, including a sign that reads "SUNBELT RENTALS" and "JIB LIFT". The entire image is overlaid with a semi-transparent blue filter.

WARP 10 Central Utilities Plant (CUP)

PROGRAM LEGEND

- 1 LAB CIRCULATION
- 2 LAB SPACE
- 3 LAB SUPPORT
- 4 GMP - CIRCULATION
- 5 GMP - MANUFACTURING
- 6 GMP - SUPPORT
- 7 CIRCULATION
- 8 OFFICE
- 9 COLLABORATION
- 10 CONFERENCING
- 11 AMENITY
- 12 WAREHOUSE
- 13 BLDG SUPPORT
- 14 HAZMAT
- 15 SHELL



STRUCTURAL CHOICES

Maintaining Mass Timber



STRUCTURAL CHOICES

Maintaining Mass Timber



MASS TIMBER STAIR TOWER



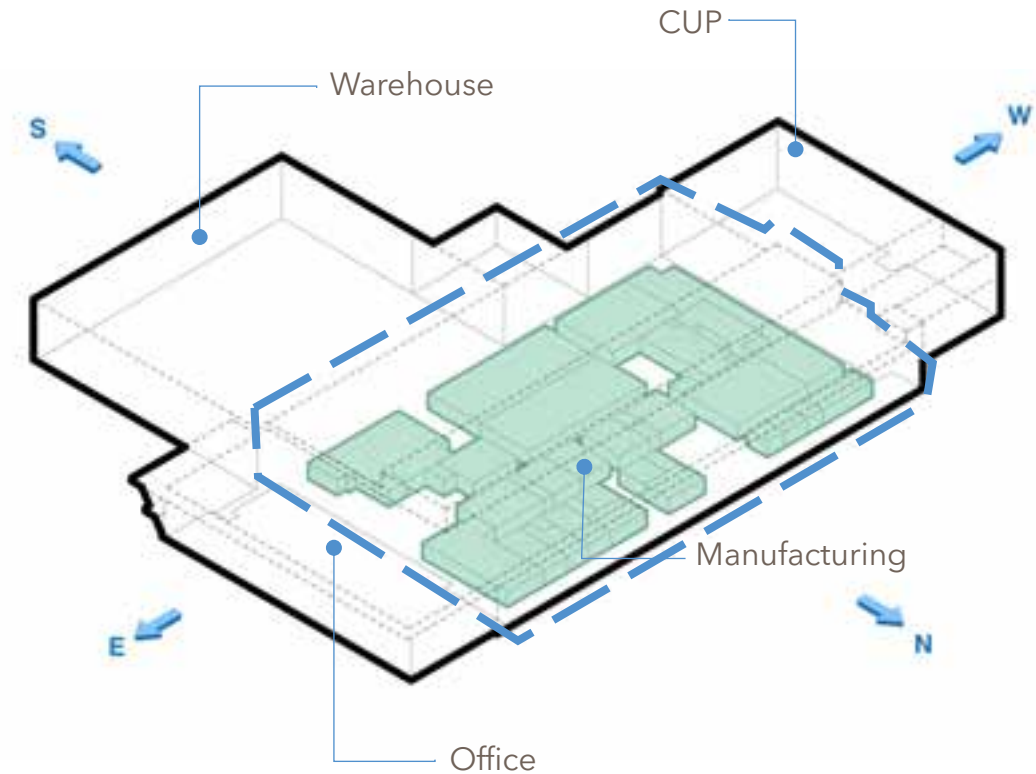


MANUFACTURING

WARP 10 Manufacturing – Ground Floor

PROGRAM LEGEND

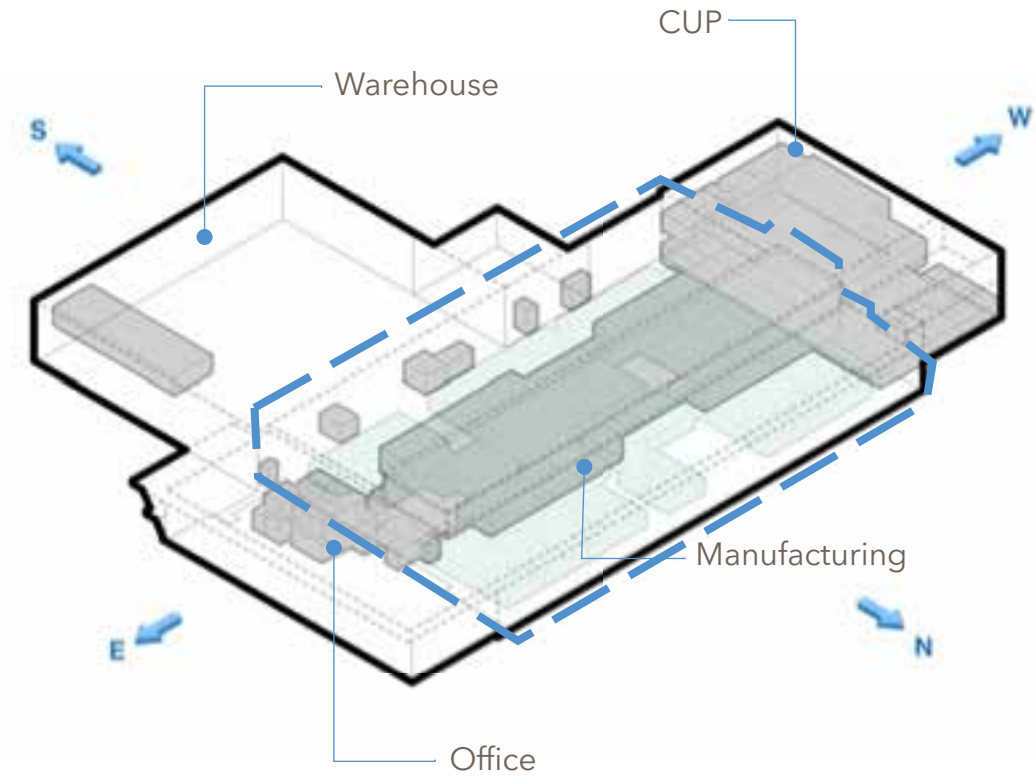
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- 14 HAZMAT
- 15 SHELL



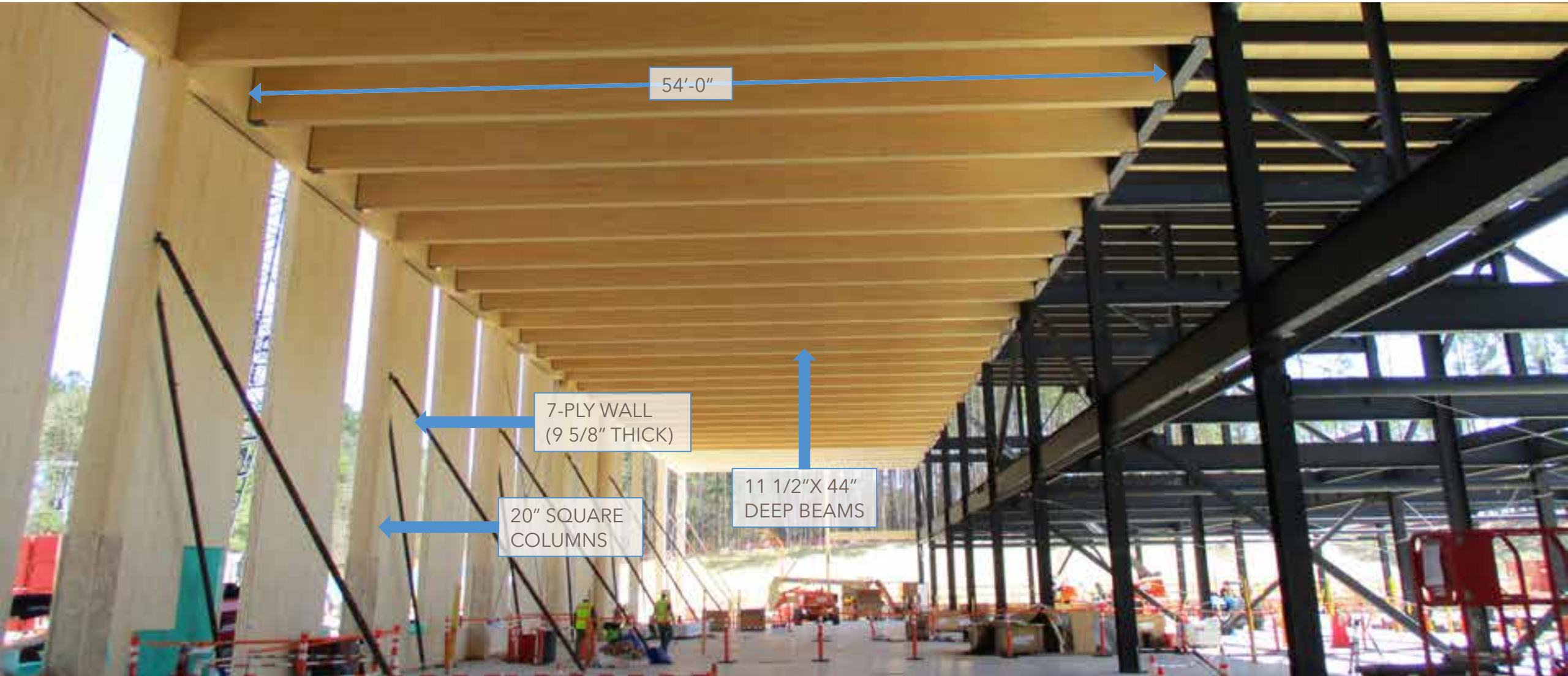
WARP 10 Manufacturing – Second Floor

PROGRAM LEGEND

- 1 LAB CIRCULATION
- 2 LAB SPACE
- 3 LAB SUPPORT
- 4 GMP - CIRCULATION
- 5 GMP - MANUFACTURING
- 6 GMP - SUPPORT
- 7 CIRCULATION
- 8 OFFICE
- 9 COLLABORATION
- 10 CONFERENCING
- 11 AMENITY
- 12 WAREHOUSE
- 13 BLDG SUPPORT
- HAZMAT
- SHELL
- SOLAR



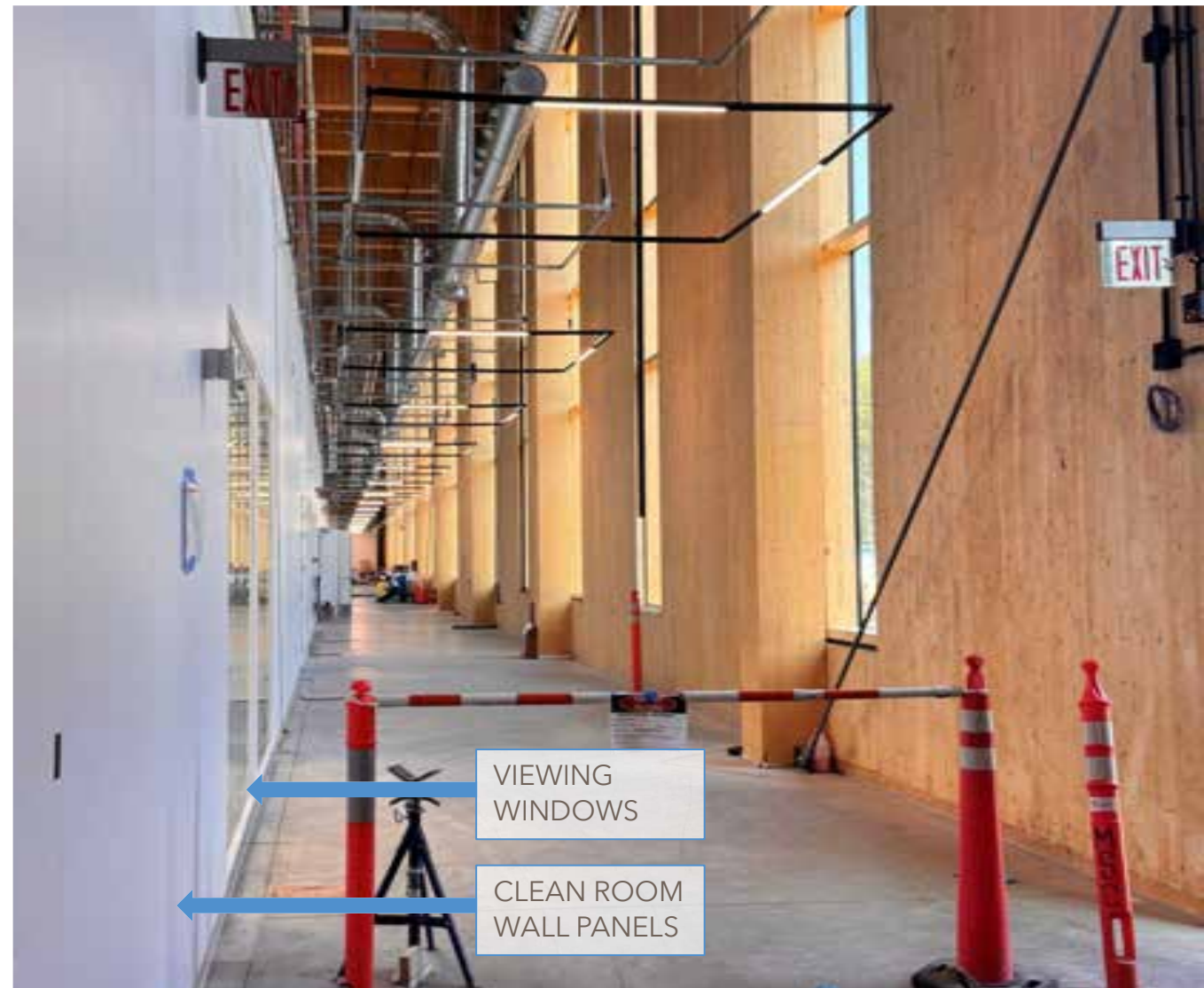
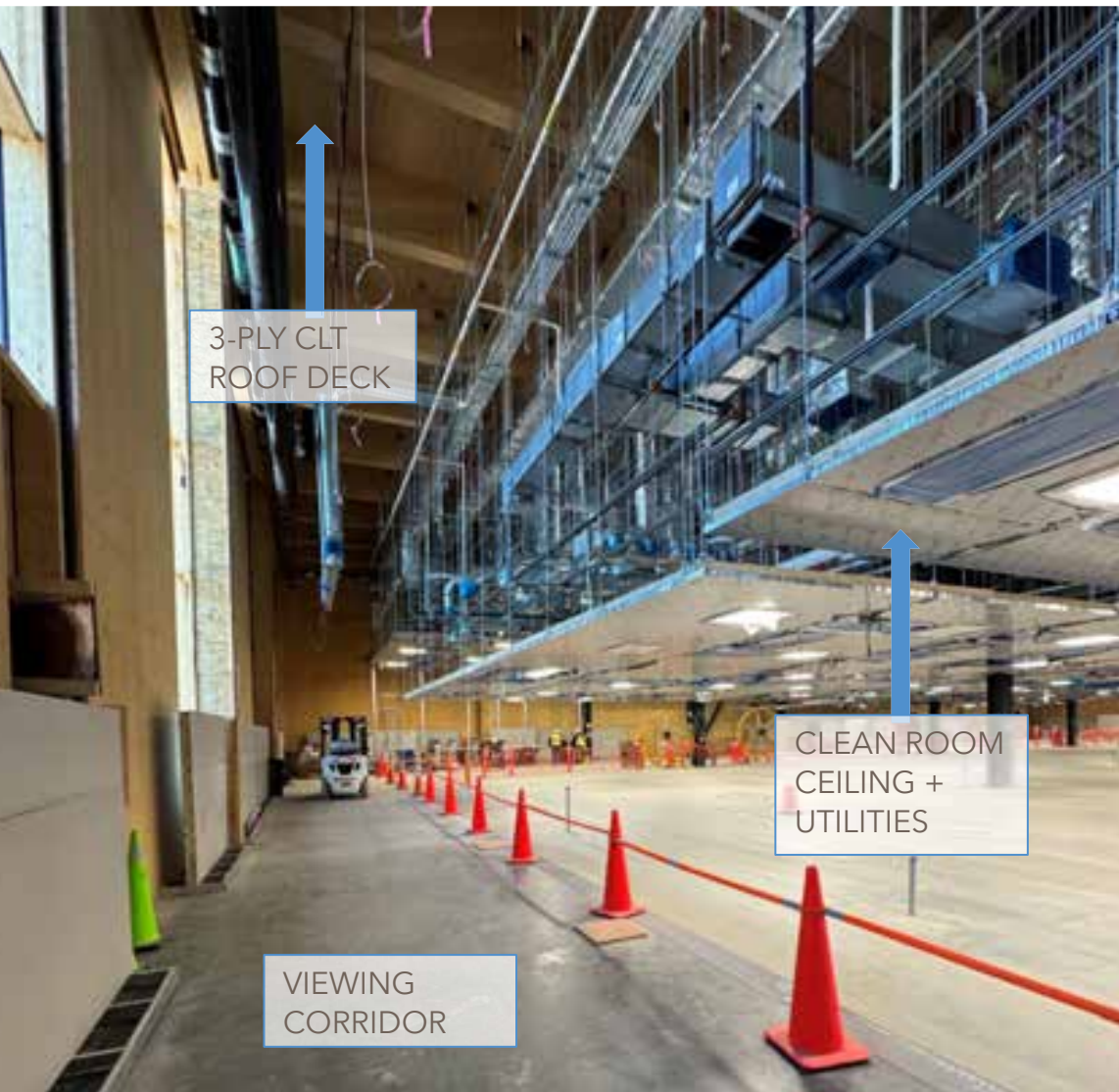
CLEANROOMS AND UTILITY SPINE



LATERAL ROD BRACING



MASS TIMBER AND CLEANROOMS



MECHANICAL MEZZANINE



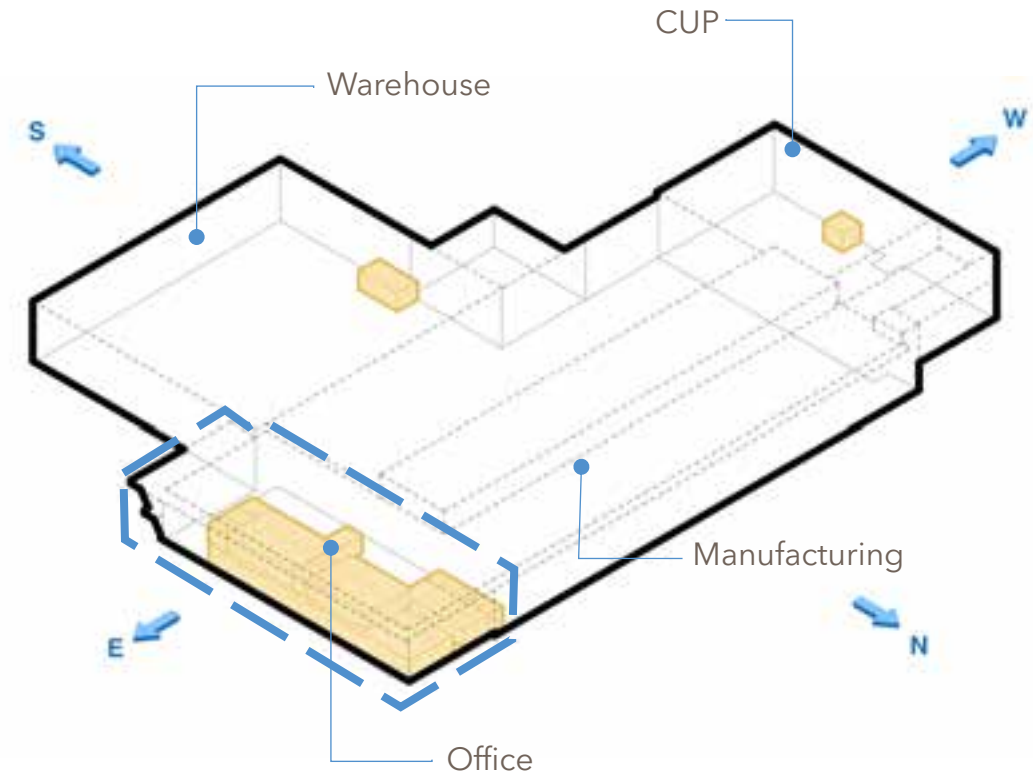


OFFICE

WARP 10 Office – Ground Floor

PROGRAM LEGEND

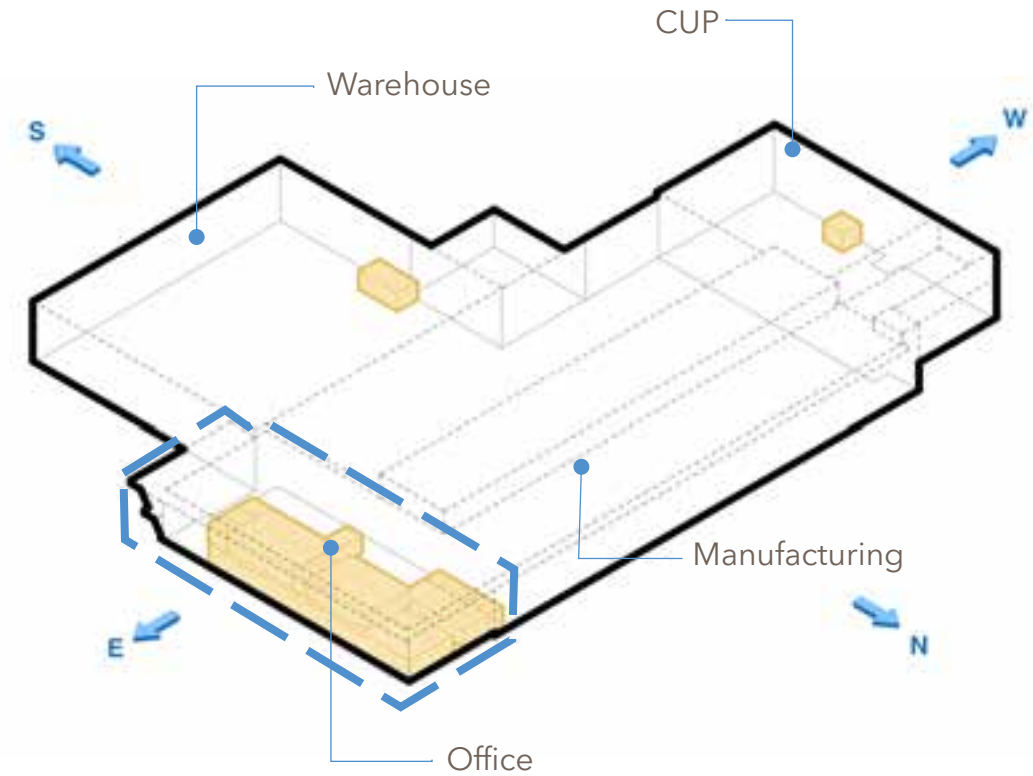
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WARP 10 Office – Second Floor

PROGRAM LEGEND

- 1 LAB CIRCULATION
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TREE WALK Pedestrian walkway



TREE WALK AERIAL VIEW



LOBBY VIEW OF TREE WALK

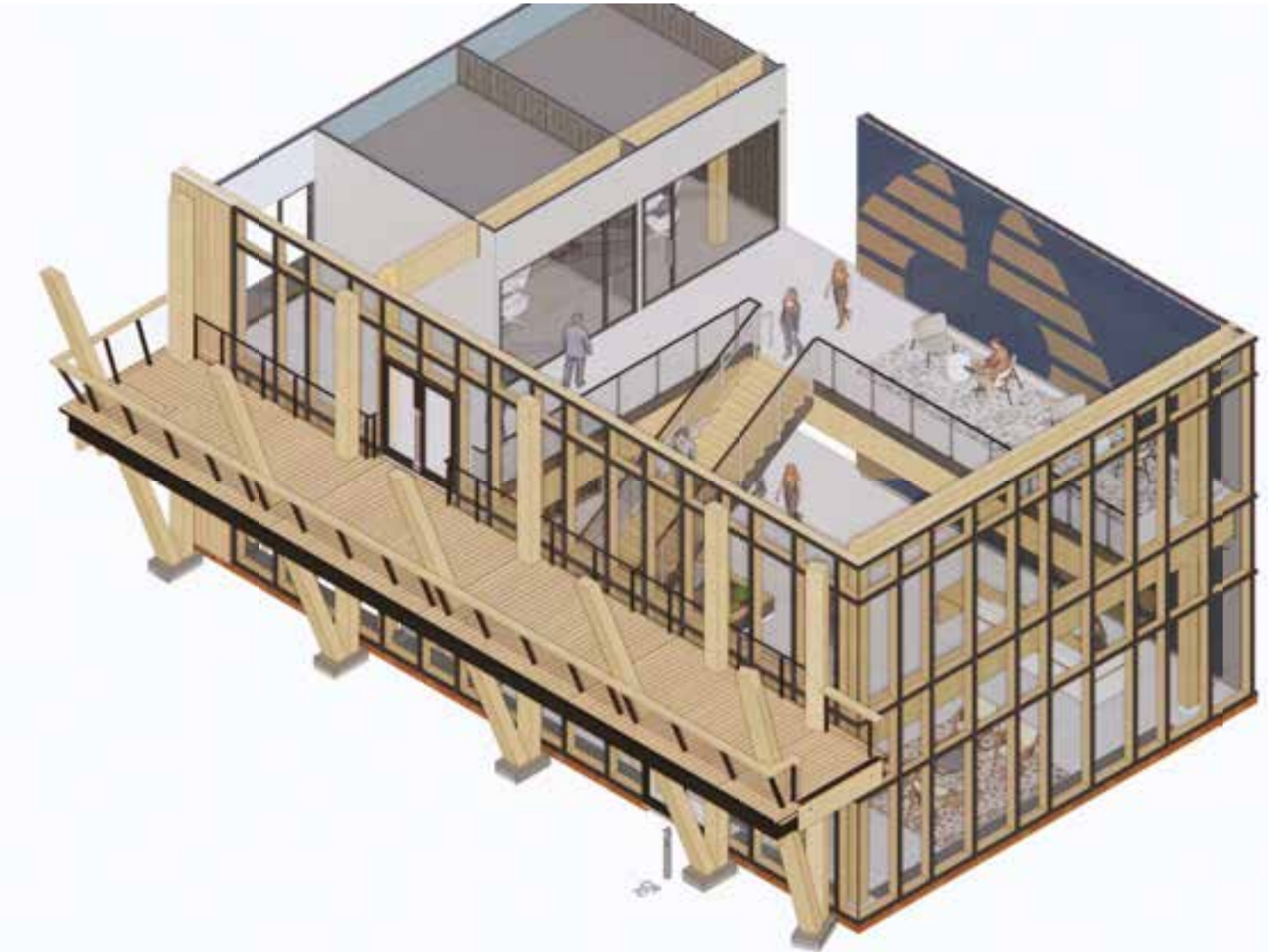


TREE WALK - AUGUST 2026

OFFICE EXTERIOR Timber species



MAIN ENTRANCE



OPEN OFFICE LAYOUT



TRAINING ROOM



LEVEL 2 OPEN OFFICE



LEVEL 2 OPEN OFFICE

OPEN OFFICE LAYOUT Construction Progress



OPEN OFFICE LAYOUT



OPEN OFFICE LAYOUT



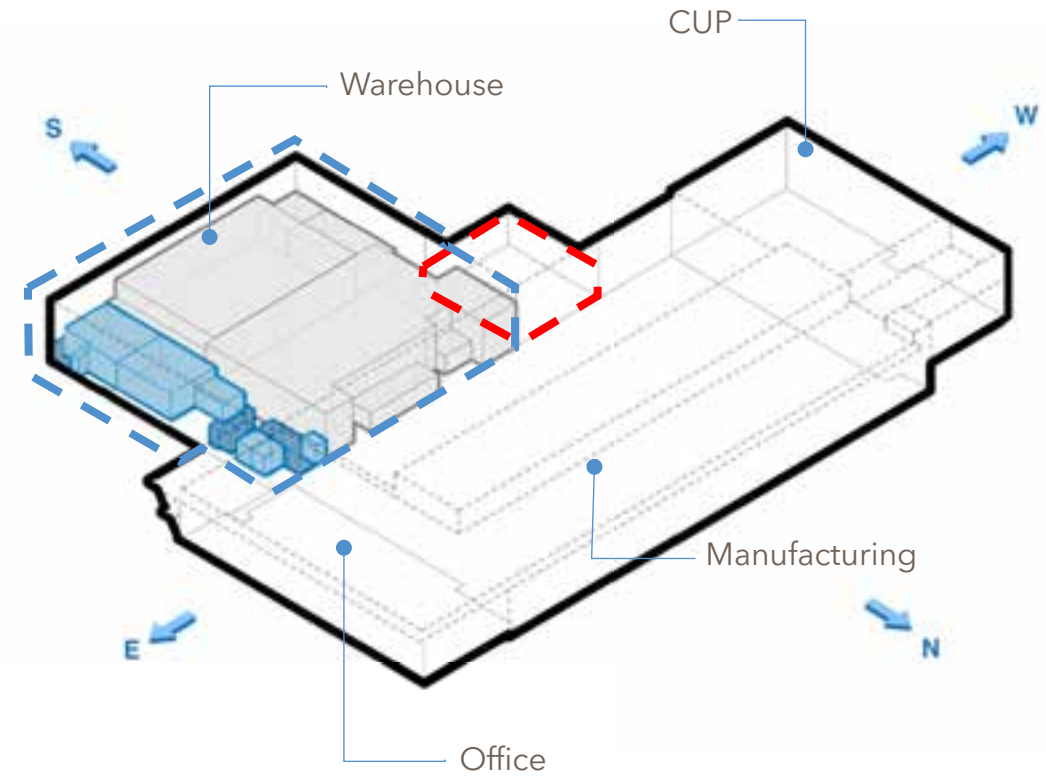
The image shows the interior of a vast, modern industrial building, likely a warehouse or laboratory. The structure features a high ceiling with a complex network of white steel trusses and beams. The floor is highly reflective, showing clear reflections of the overhead structure and the ambient light. The entire scene is bathed in a cool, blue-toned light, giving it a clean, futuristic feel. In the background, some faint outlines of equipment and structural elements are visible, but the space is mostly empty. Centered over the image is the text 'WAREHOUSE + LAB' in a bold, white, sans-serif font. The text is contained within a thin, light-blue rectangular border.

WAREHOUSE + LAB

WARP 10 Warehouse and Lab

PROGRAM LEGEND

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WAREHOUSE



38" DEEP
GIRDERS

15 1/2"
SQUARE
COLUMNS

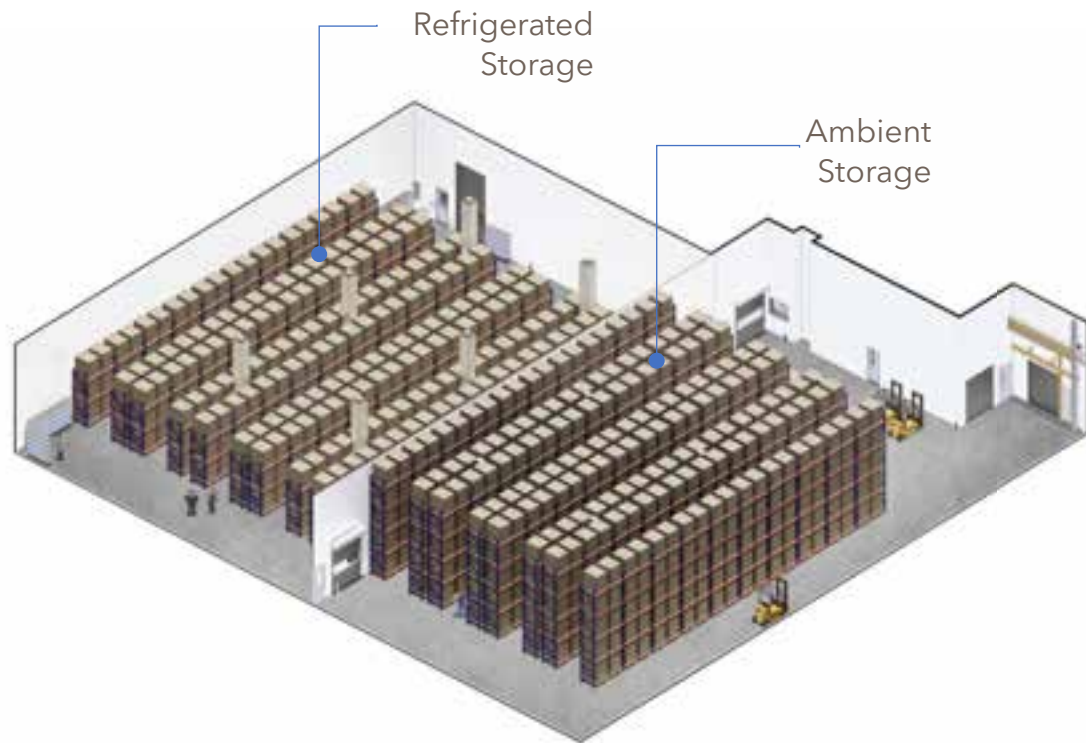
WAREHOUSE



CNC CUT
OPENING



WAREHOUSE



WAREHOUSE STORAGE DIAGRAM



REFRIGERATED STORAGE



A large, modern glass-walled building under construction, with a blue overlay and the word CONCLUSION in white text.

CONCLUSION

This Concludes The American Institute of Architects Continuing Education Systems Course.

**EWING
COLE**

WARP10 Research Triangle Park, North Carolina