

Student Success Center: Adaptive Renovation for a Sustainable Building

“From Rendering to Reality”



Learning Outcomes

The intended learning outcomes of this presentation include:

- It is technically and financially feasible to adaptively re-use 1950's era academic buildings
- Collaborative approaches to the design process can lead to innovative re-use strategies to create engaging spaces to meet today's needs
- Building renovations can create new spaces that are highly energy efficient and sustainable

Peterson Hall 2







Friendship Walk

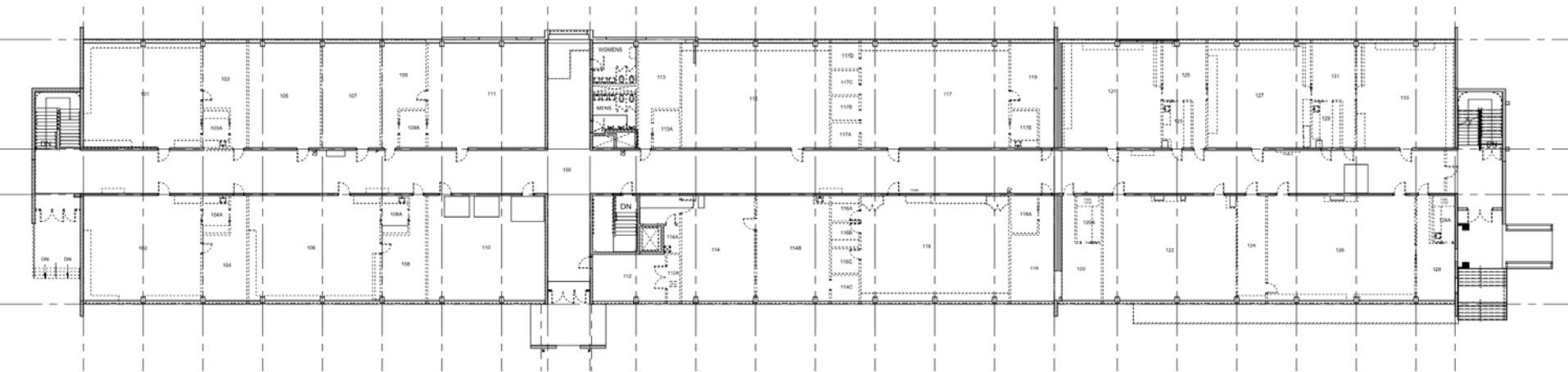
Central Quad

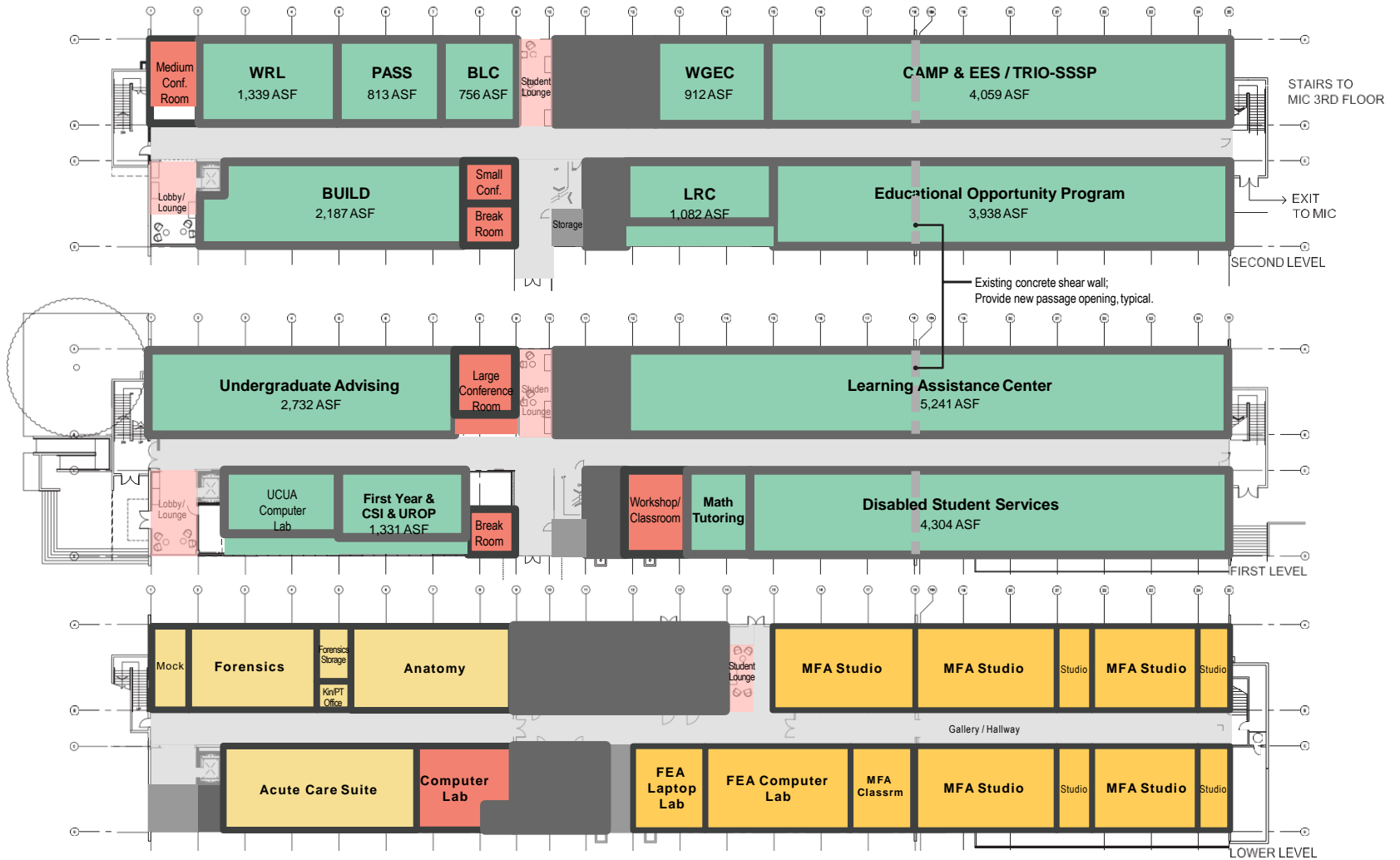
A LOOK BACK

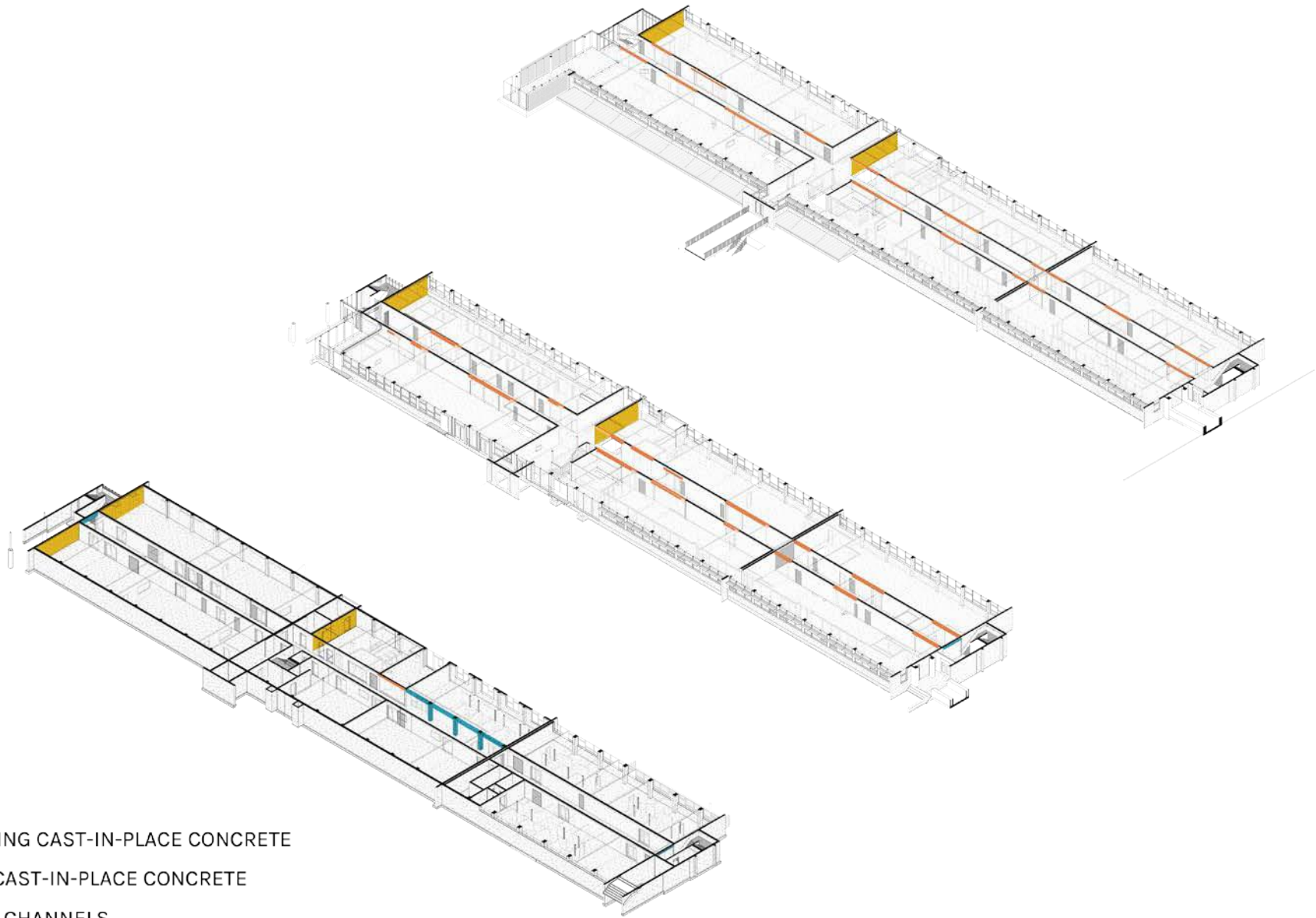
MID 1950s- RECENTLY COMPLETED PETERSON HALL 2, FIRST PHASE
(The West Two-Thirds Of The Current Building)



Rigid Floor Plan

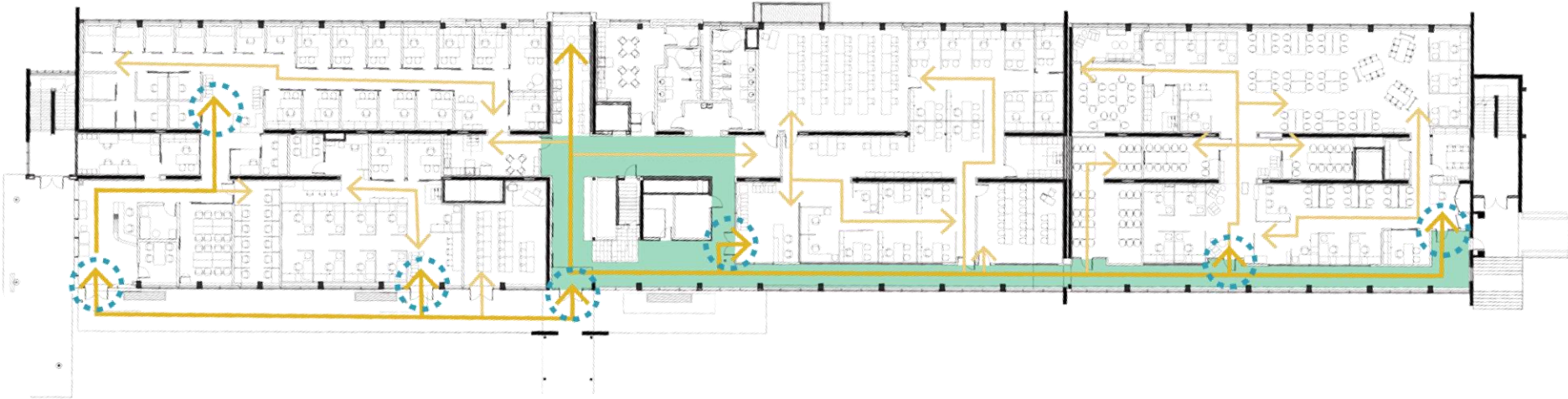




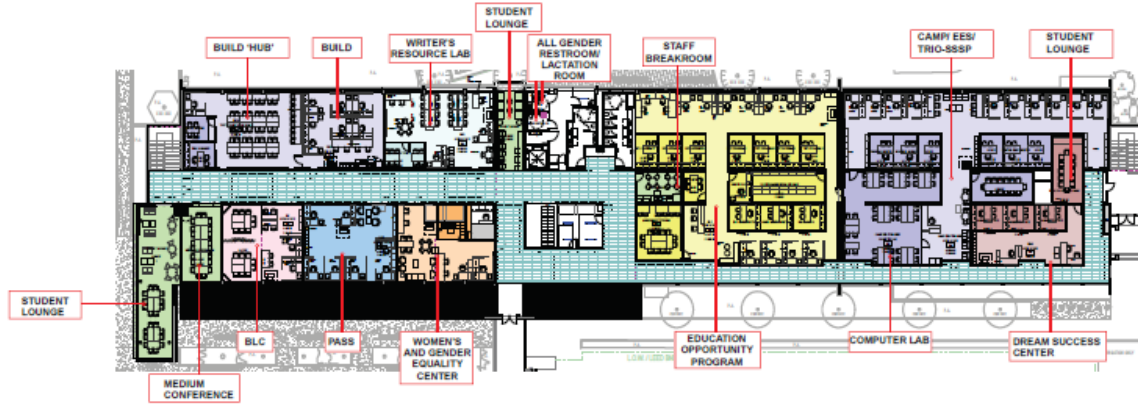


- EXISTING CAST-IN-PLACE CONCRETE
- NEW CAST-IN-PLACE CONCRETE
- STEEL CHANNELS
- SHOTCRETE OVER EXISTING CAST-IN-PLACE CONCRETE
- FIBER MESH

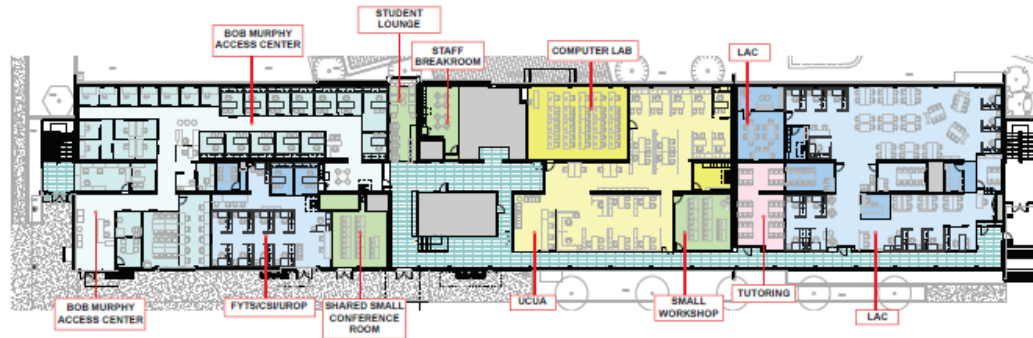
Fluid Floor Plan



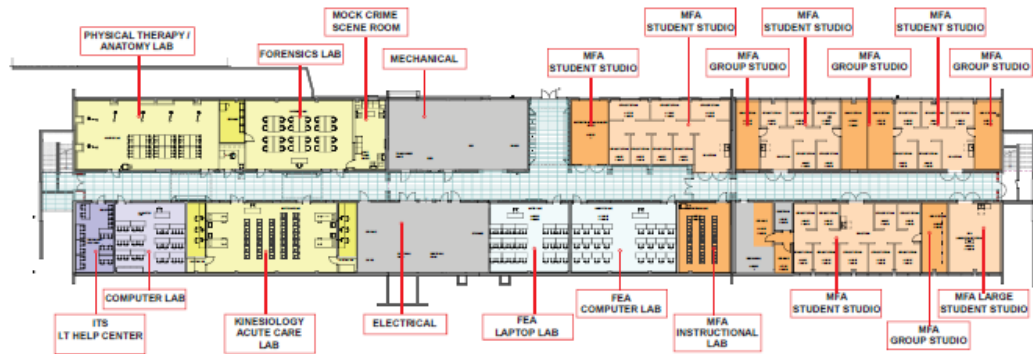
LEVEL TWO



LEVEL ONE



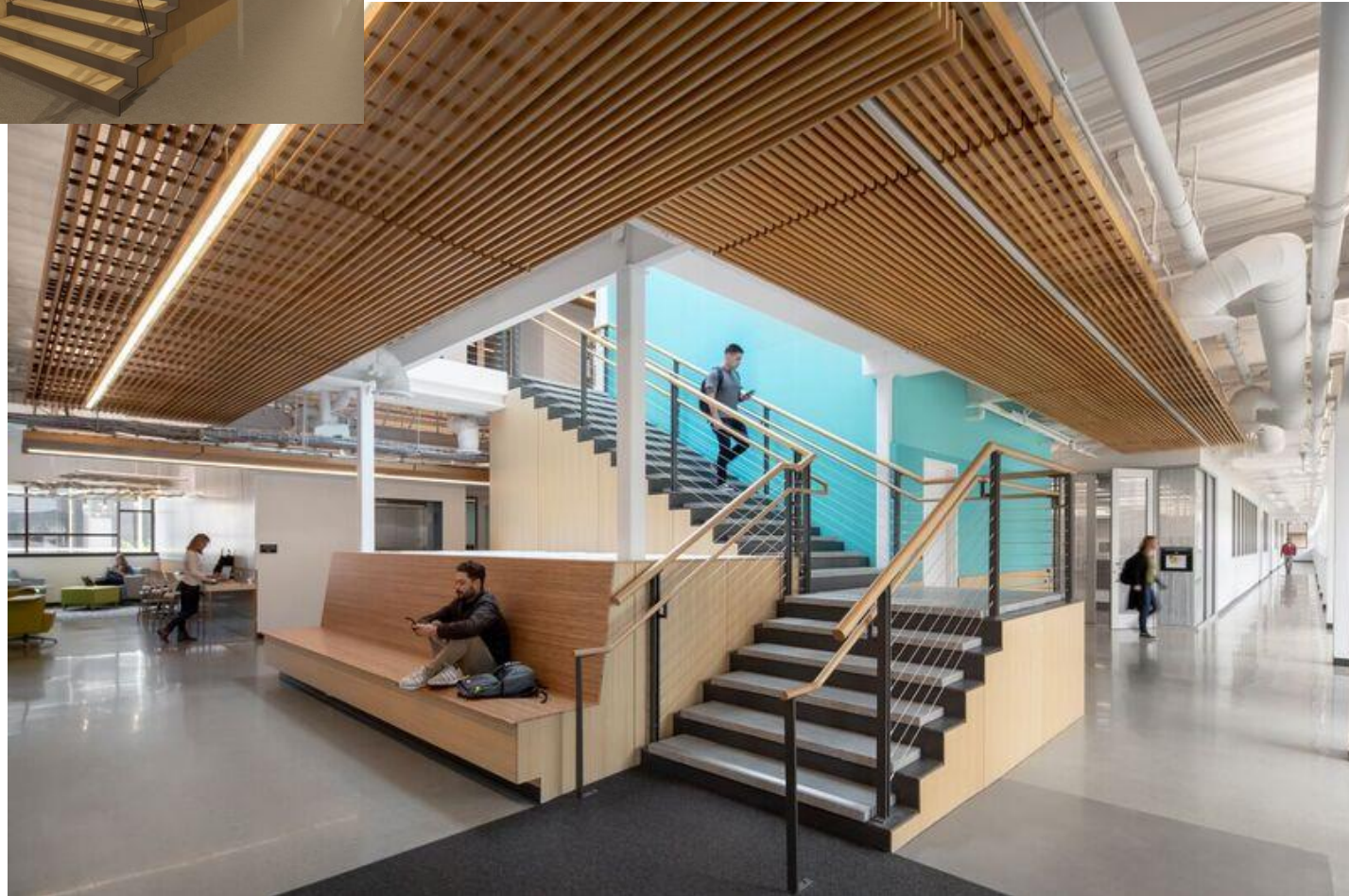
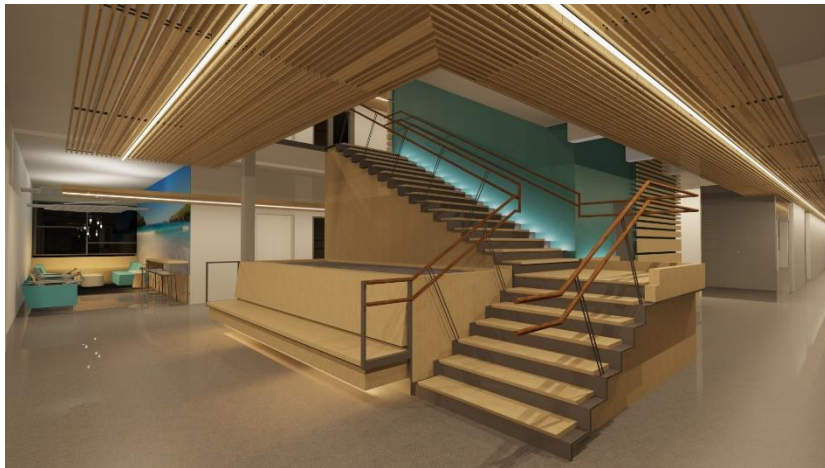
BASEMENT LEVEL



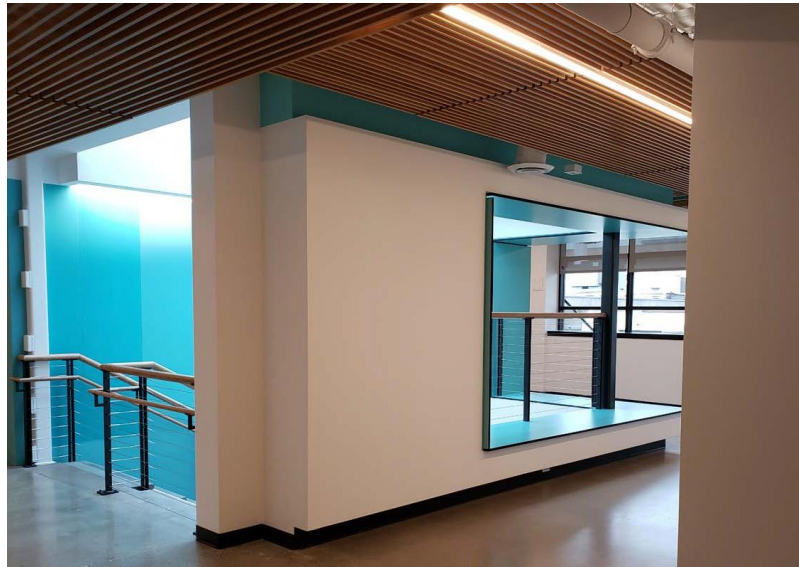
PETERSON HALL: STUDENT SUCCESS CENTER

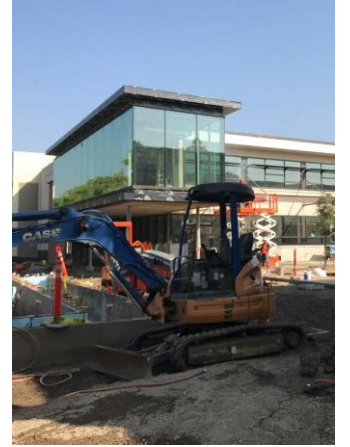
A New Presence



















Energy and Atmosphere

Optimize Energy Performance

- Targeting min. 32% or better than ASHRAE 90.1-2007
- Project will improve on the thermal performance of the envelope as well as utilizing new high efficiency mechanical and electrical systems.



Innovation in Design

LEED Accredited Professional

- Implementation of an Integrated Pest Management Program
- Implementation of a green cleaning program
- Implementing comprehensive recycling program

Materials and Resources

Construction Waste Management

- Plan to divert a minimum of 90% of all construction waste from landfills
- Utilizes existing campus building stock which will conserve material resources and reduce construction waste
- Remediated hazardous materials
- Greater than 20% of the value of materials devoted to recycled content
- Greater than 50% of wood based products come from certified sustainable forests



Indoor Environment Quality

Daylight and Views

- Requiring low-emitting materials to improve indoor air quality
- Project will take advantage of the extensive use of daylighting to minimize lighting energy and offer individual controllability of lighting
- Interior planning flexibility will create student centered neighborhoods creating more opportunities for departmental collaboration
- Individual controllability of lighting
- Conducting thermal comfort survey to optimize thermal environment



Water Efficiency

Water Use Reduction

- 40% reduction of indoor potable water through low-flow and zero-flow plumbing
- Project will reduce potable water use by 50% for landscaping by utilizing native plants and high efficiency irrigation, also an improved stormwater infiltration by providing bioswales will be provided
- Future connection to a reclaimed water landscape system



Sustainable Sites

Alternative Transportation and Public Transportation Access

- Building is within a 1/4 mile of CSULB Campus Shuttle and Long Beach Transit bus stops
- Situated in a community that can provide basic services and housing within walking distance in order to minimize automobile use
- Site will provide year-round visual interest and enhance outdoor experiences

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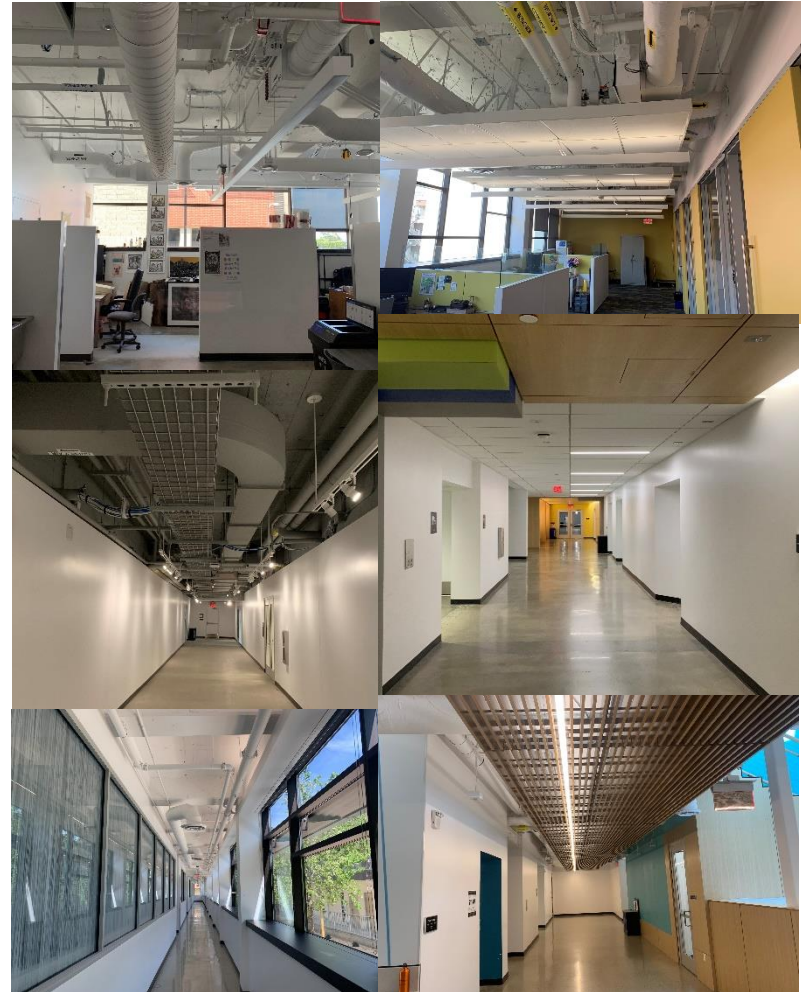
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New MEP Systems

Mechanical and plumbing systems

- SERVED FROM EXISTING CAMPUS CENTRAL HEATING AND COOLING PLANT
- DEDICATED AIR HANDLING UNITS WITH VAV SYSTEM
- FLATTENED DUCT SYSTEMS DUE TO LOWER CEILING HEIGHTS
- OPEN STRUCTURE WITH EXPOSED DUCT WORK
- COORDINATION WITH SHEAR WALLS AND LIMITING STRUCTURAL OPENINGS
- LOW FLOW FIXTURES TO MINIMIZE WATER CONSUMPTION



Electrical systems

- SERVED FROM EXISTING 12KV CAMPUS DISTRIBUTION SYSTEM
- LED LIGHTING WITH DAYLIGHT AND OCCUPANCY SENSORS
- OCCUPANCY CONTROLLED POWER OUTLETS

Renovate or Replace - Sustainable Context



CSU Facilities

- **Mid-Century Building Boom:** Majority of CSU Campuses were founded 1947-1965

Los Angeles, Sacramento, Long Beach, Fullerton, East Bay, Stanislaus, San Fernando Valley, Sonoma, San Bernardino, Dominguez Hills, and Bakersfield

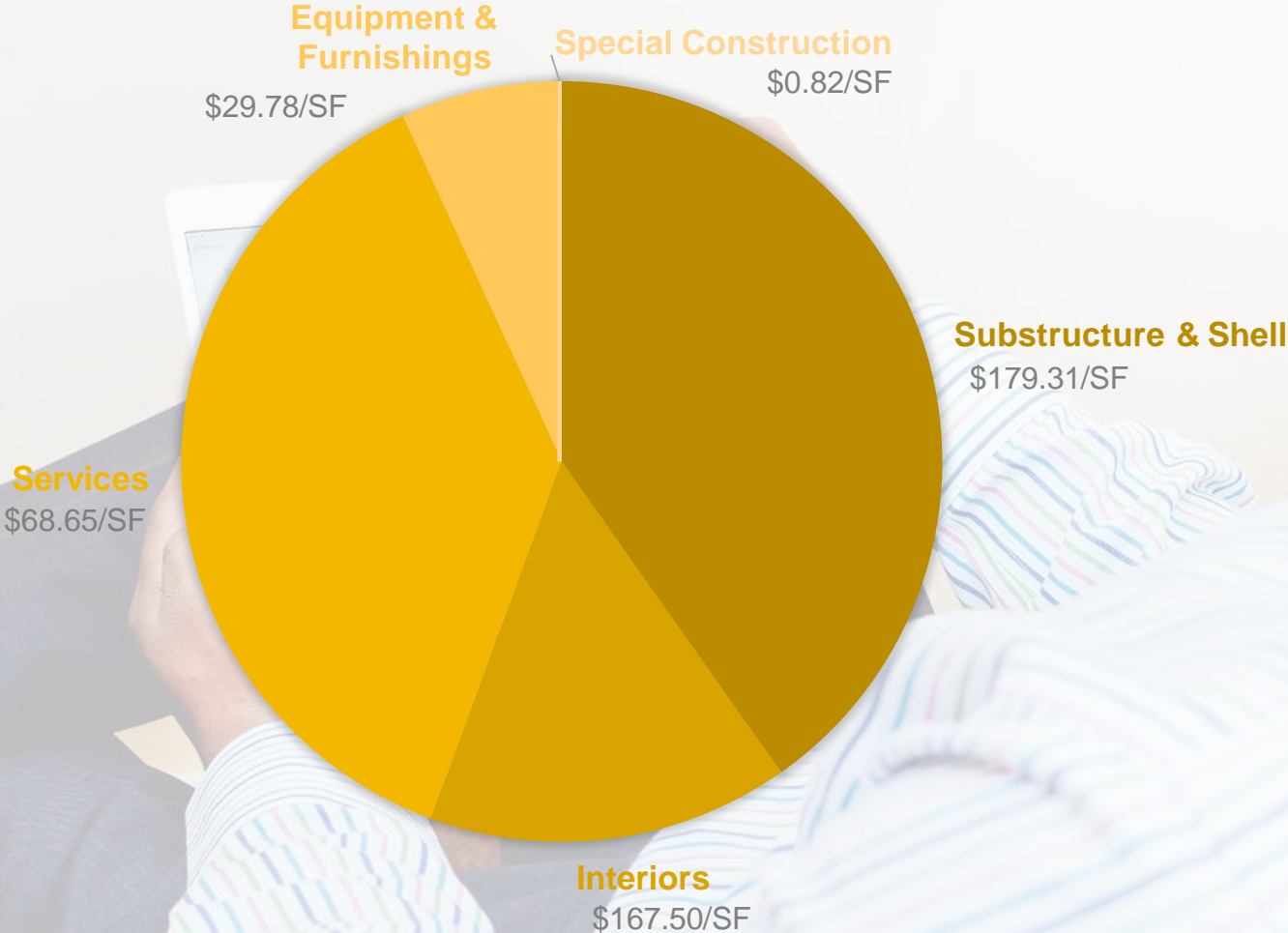
- **Renovation is in Your DNA:** Entire campuses repurpose existing facilities

Monterey Bay & Channel Islands

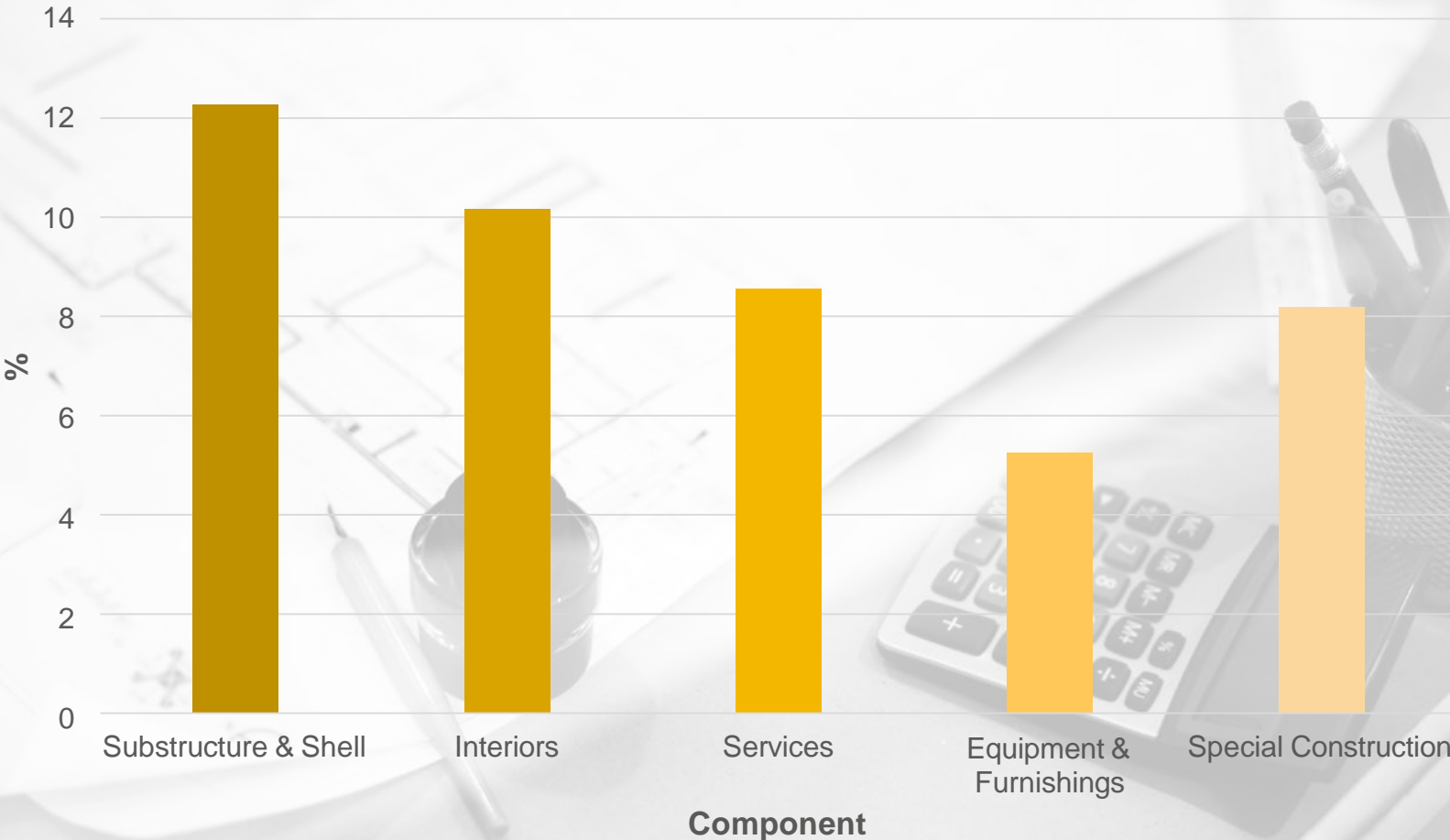
Cost Context

- Construction costs at their peak
- Exterior enclosure and structure are escalating fastest
- Renovation may be better return on investment

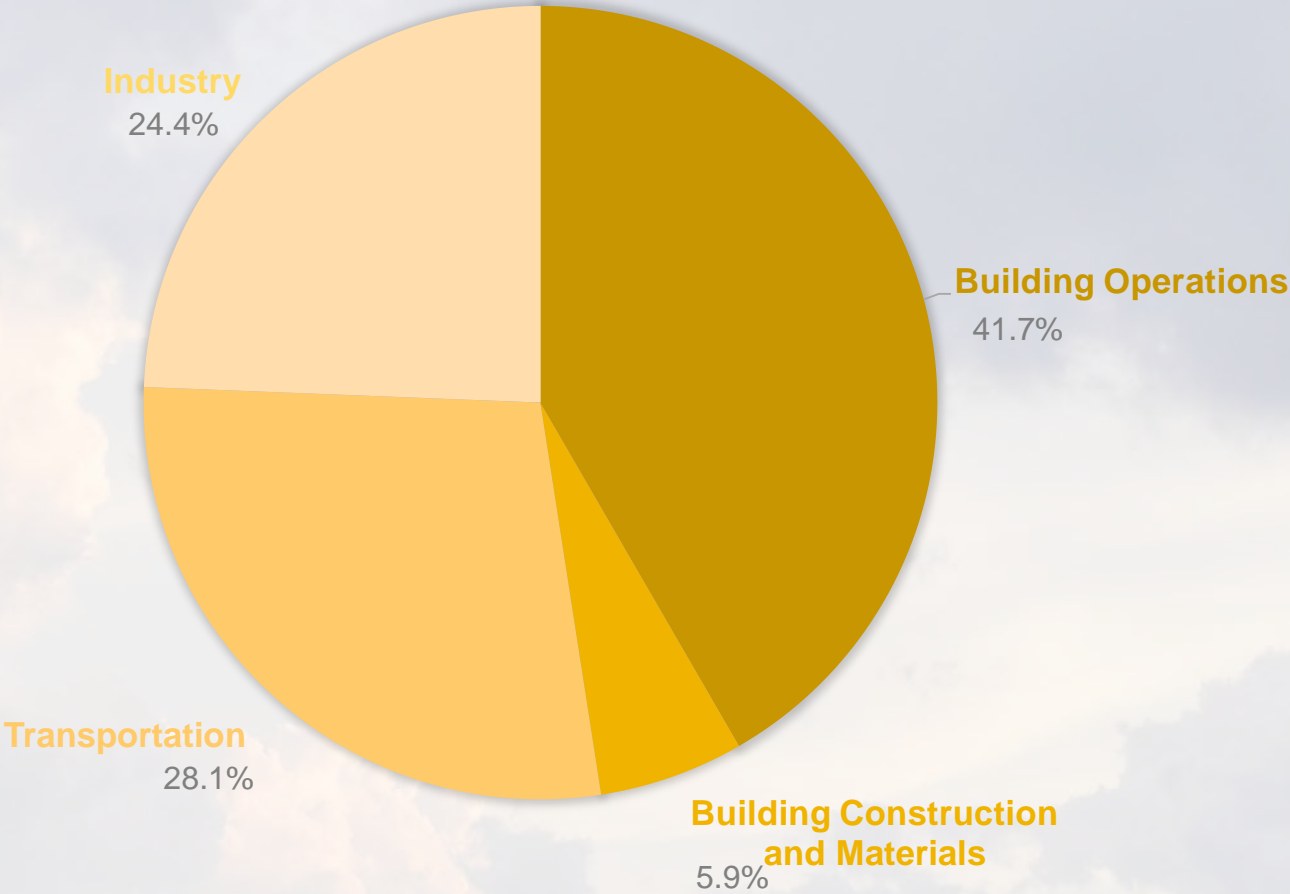
Average Component Cost



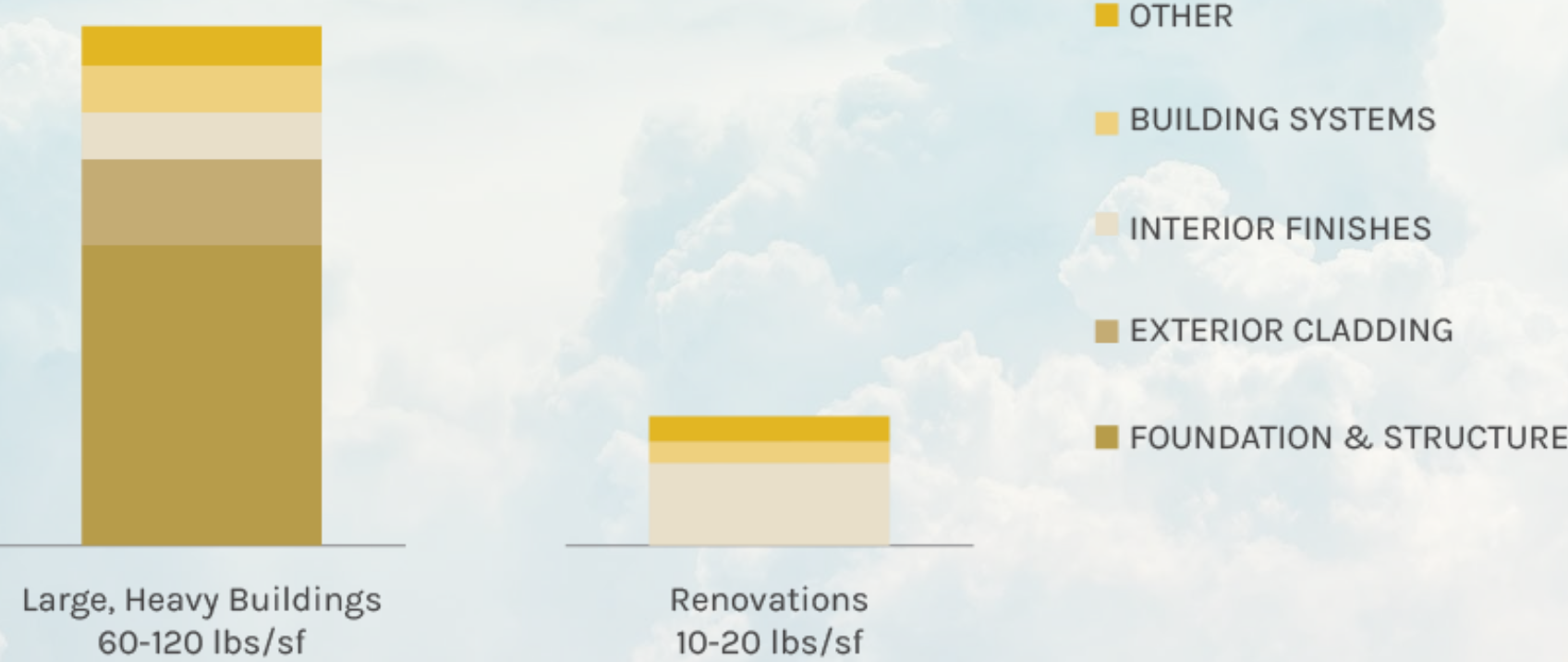
Cost Escalations 2017-2018



Energy Use by Sector



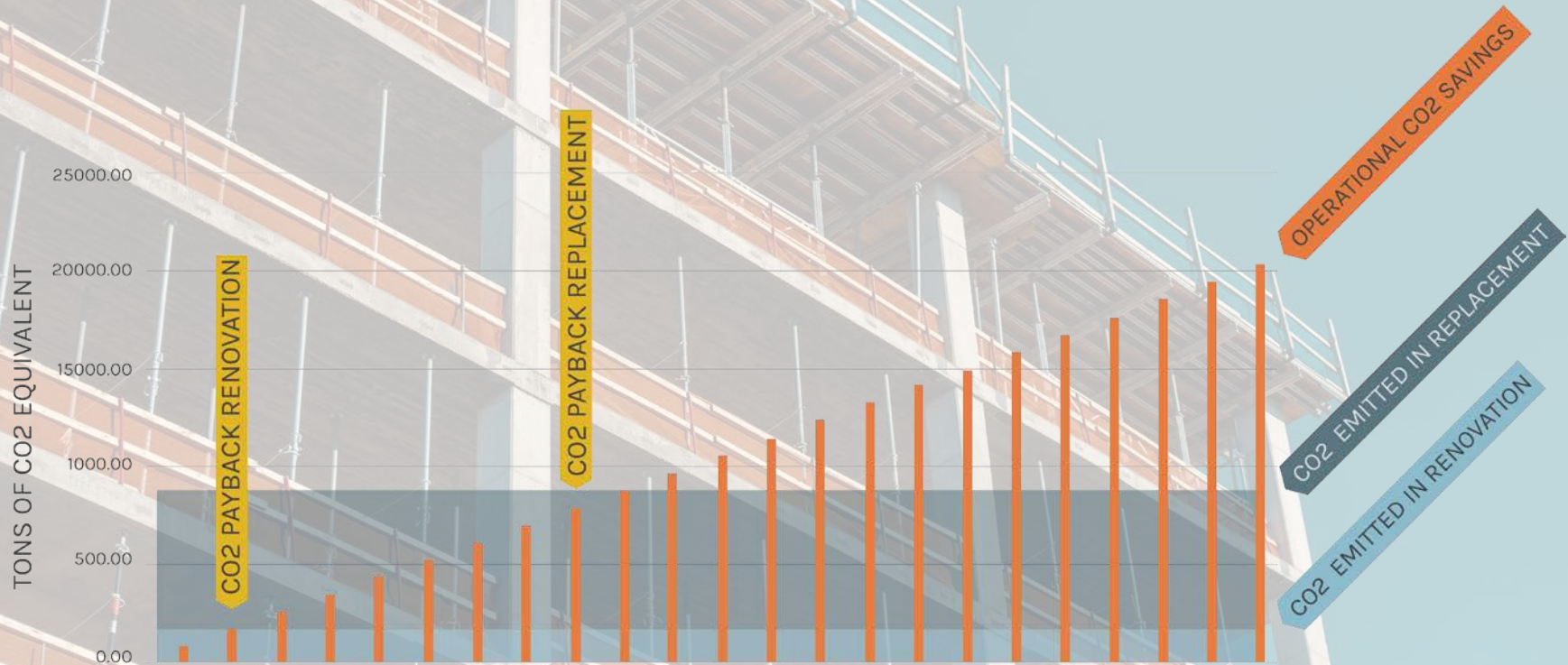
Carbon Emissions

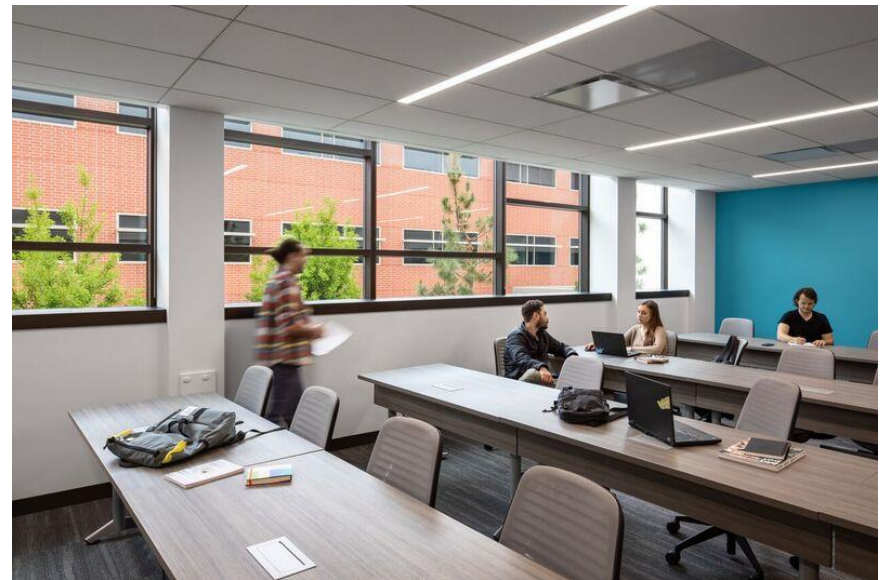
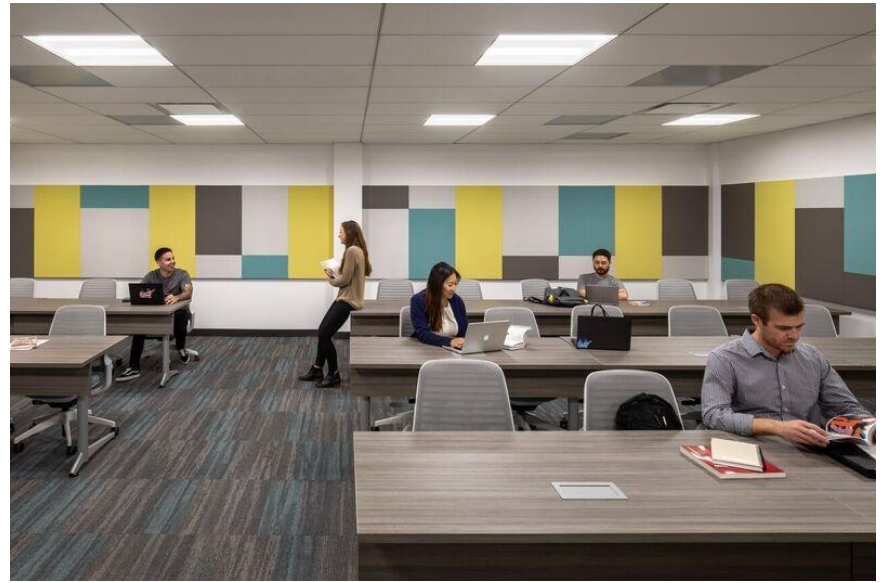
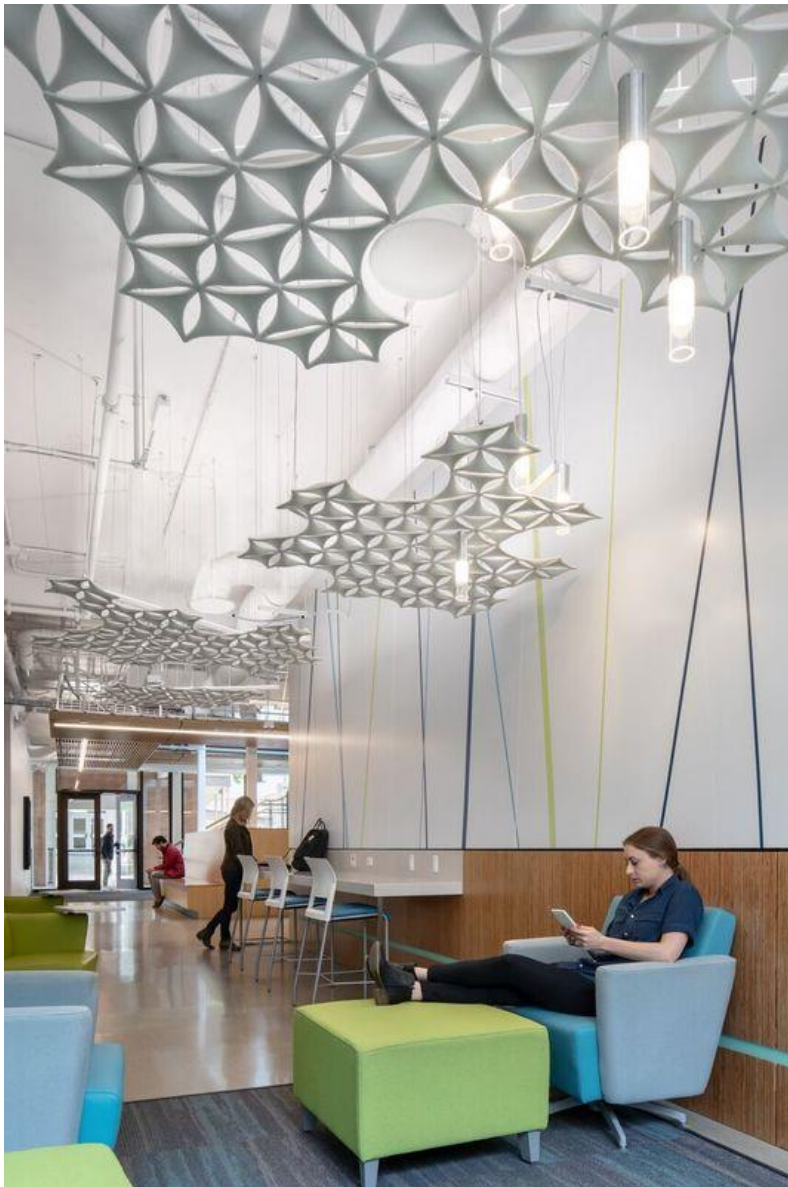


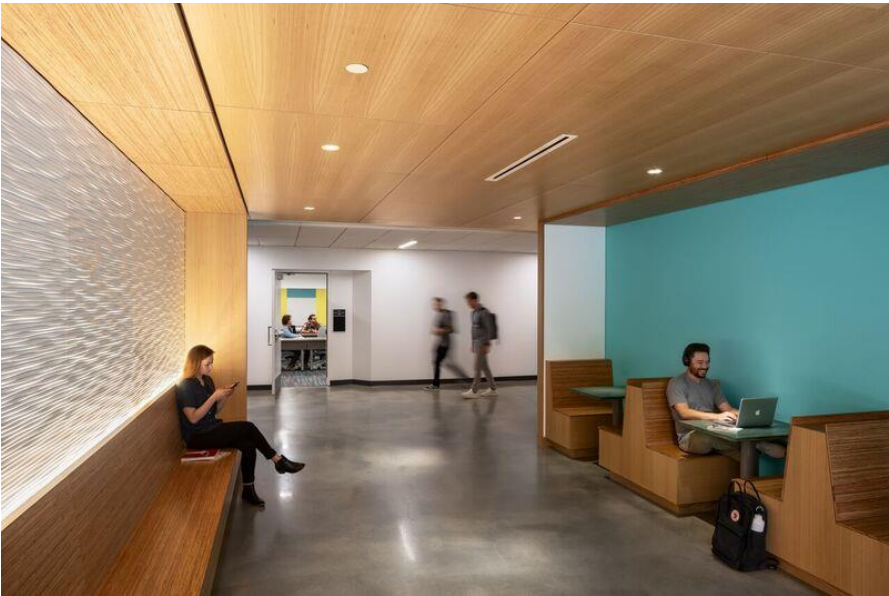
CARBON EMISSIONS BY BUILDING TYPE AND BUILDING ELEMENT

Embodied Carbon

Renovation activities expend 50-75% less embodied energy than new construction.







Questions?

