

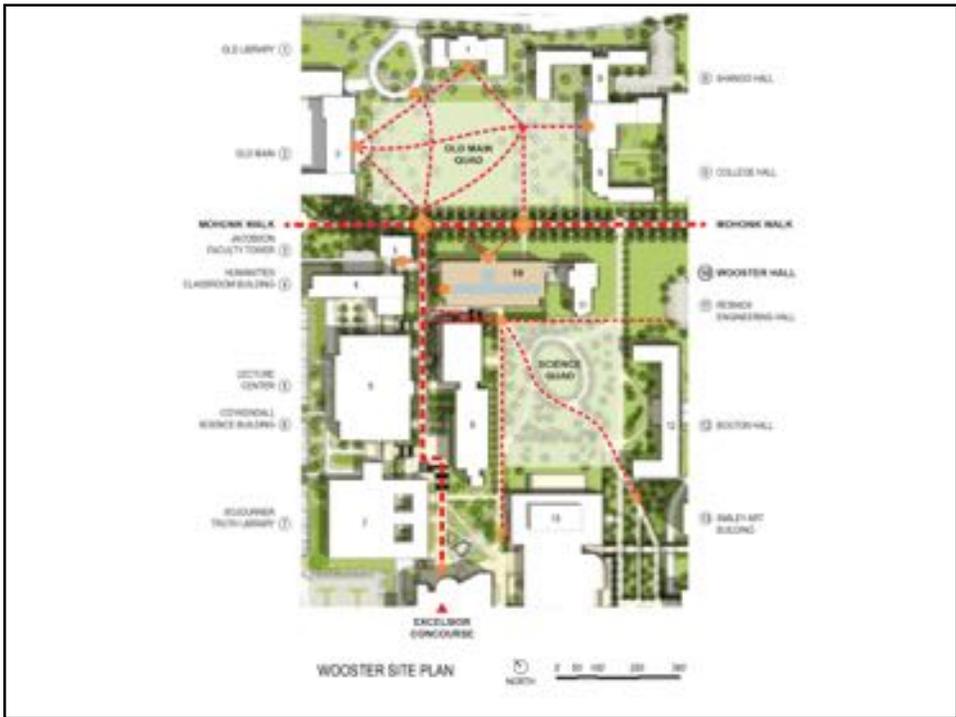
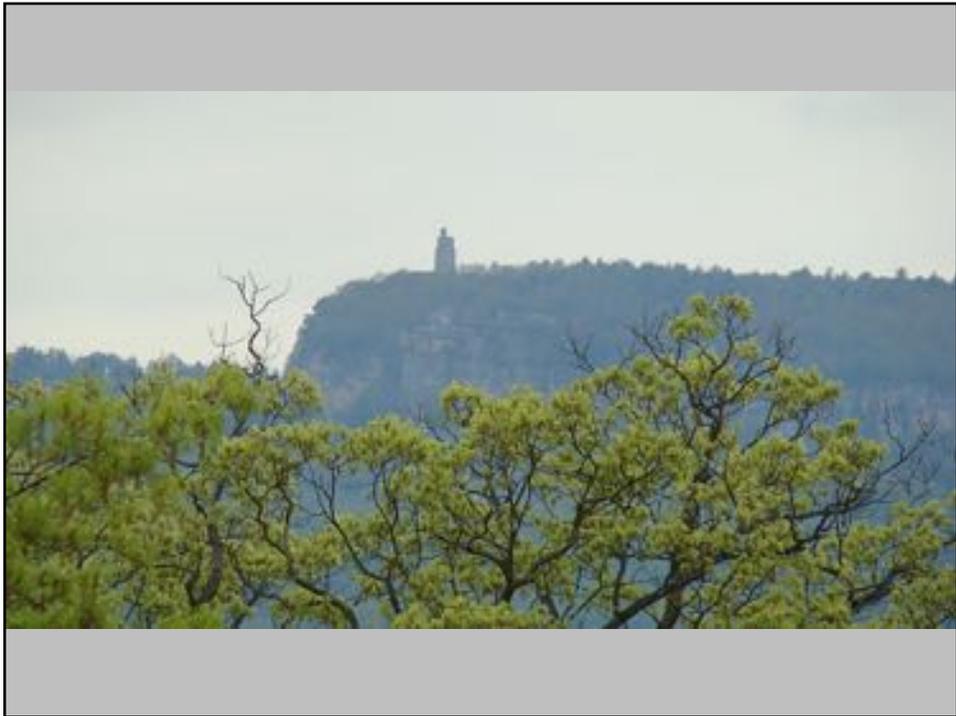
Achieving Deep Energy Retrofits in Historic and Modern-Era Buildings

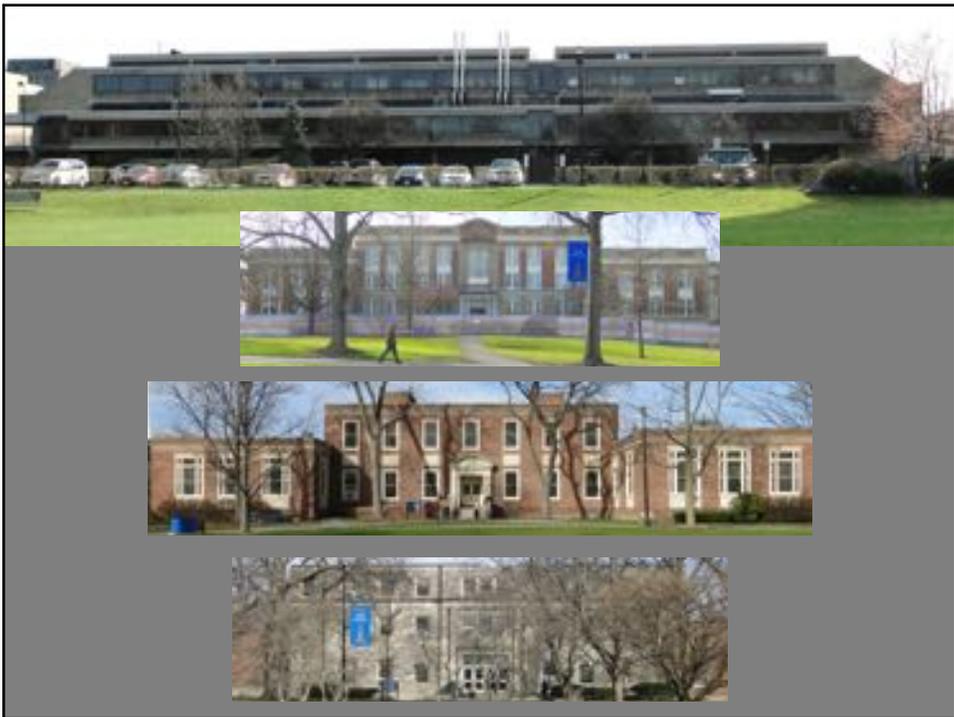
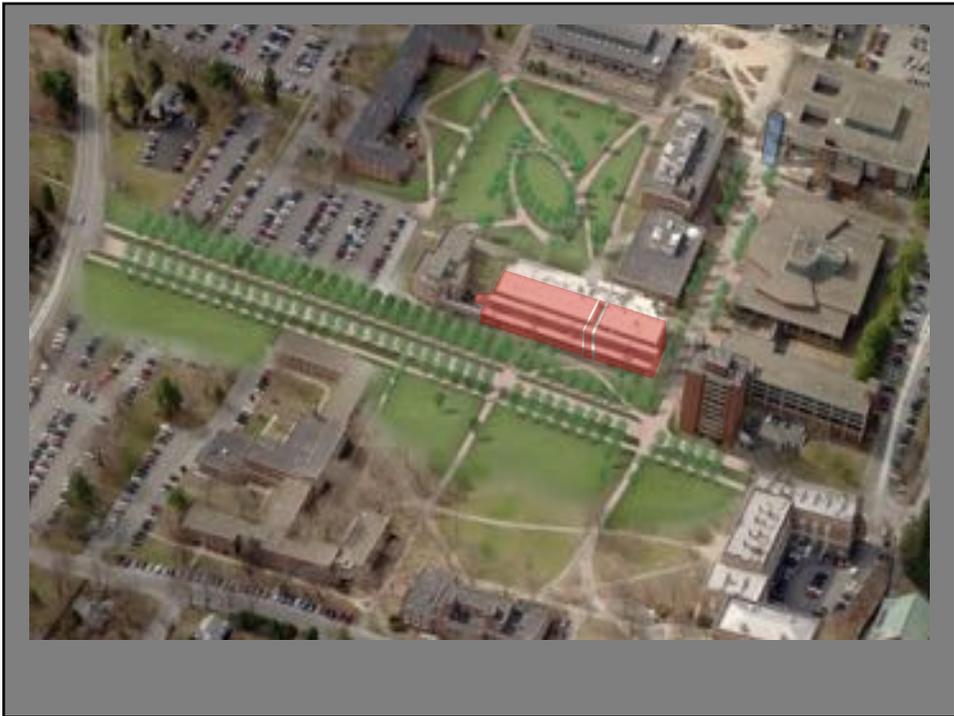


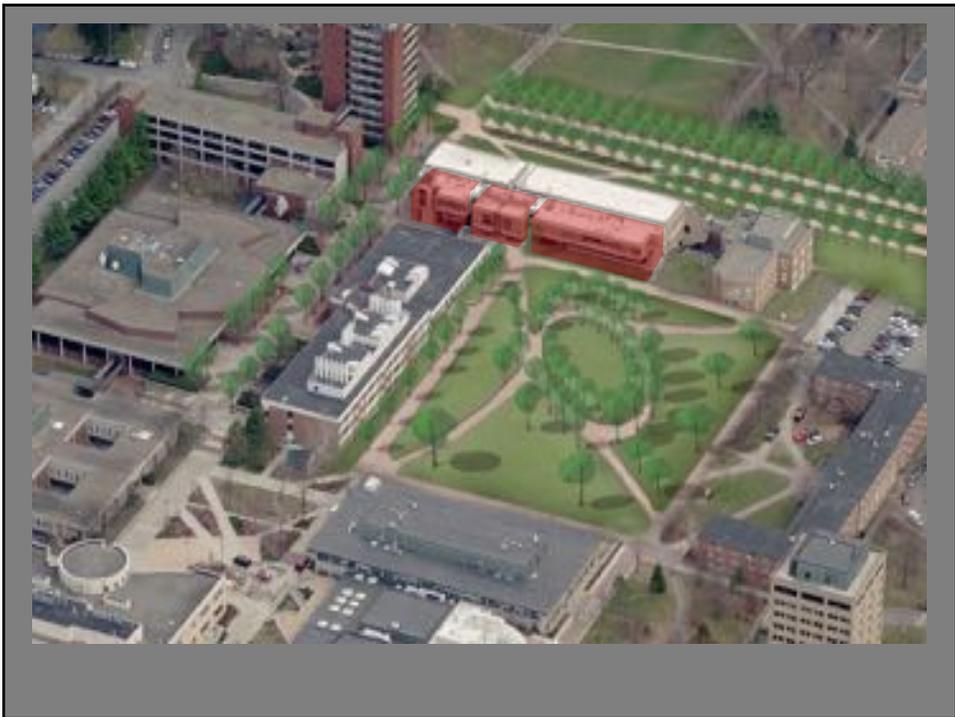
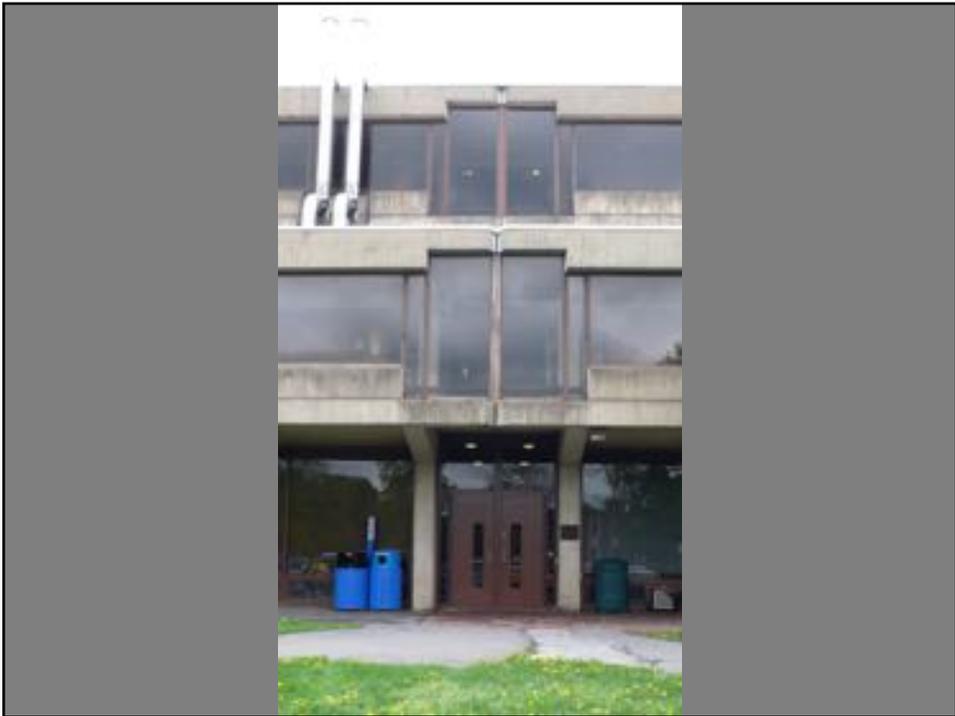
Achieving Deep Energy Retrofits in Historic and Modern-Era Buildings

## Learning Objectives

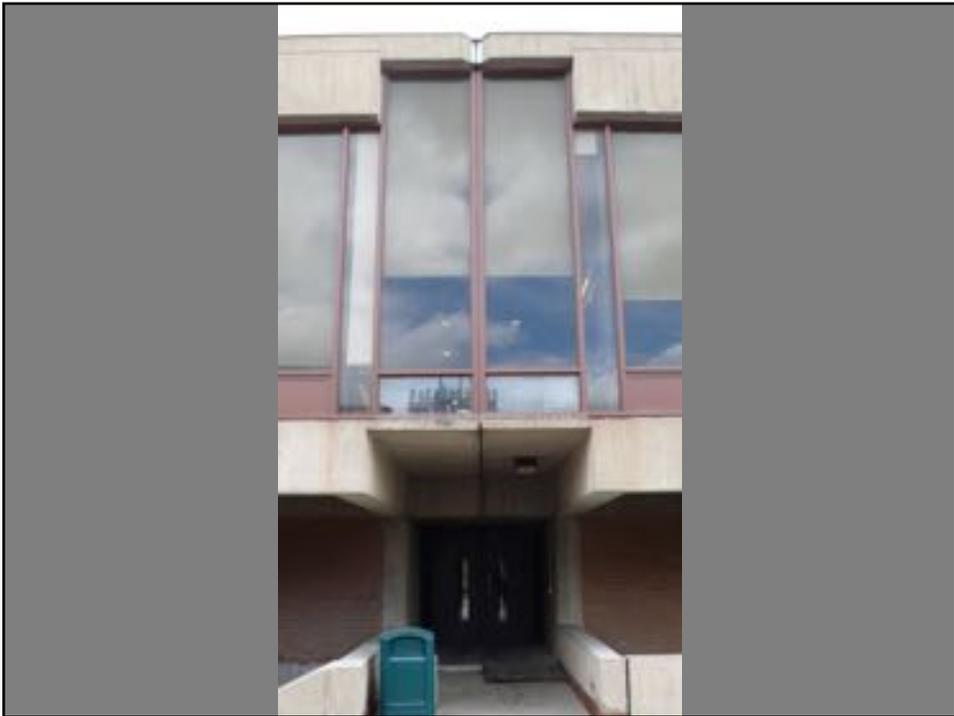
- ASSESS the sustainable potentials and limitations of an existing building of historic/cultural significance.
- PRIORITIZE the overall active and passive design strategies within the physical limitations and the historic/community values of a given setting.
- DISCUSS a daylighting strategy that combines the use of direct and diffuse daylight and thermal loading attuned to functional need.
- ANTICIPATE the future of the building in transition to sustainability and generate an “anticipatory” design to support the implementation of that vision.

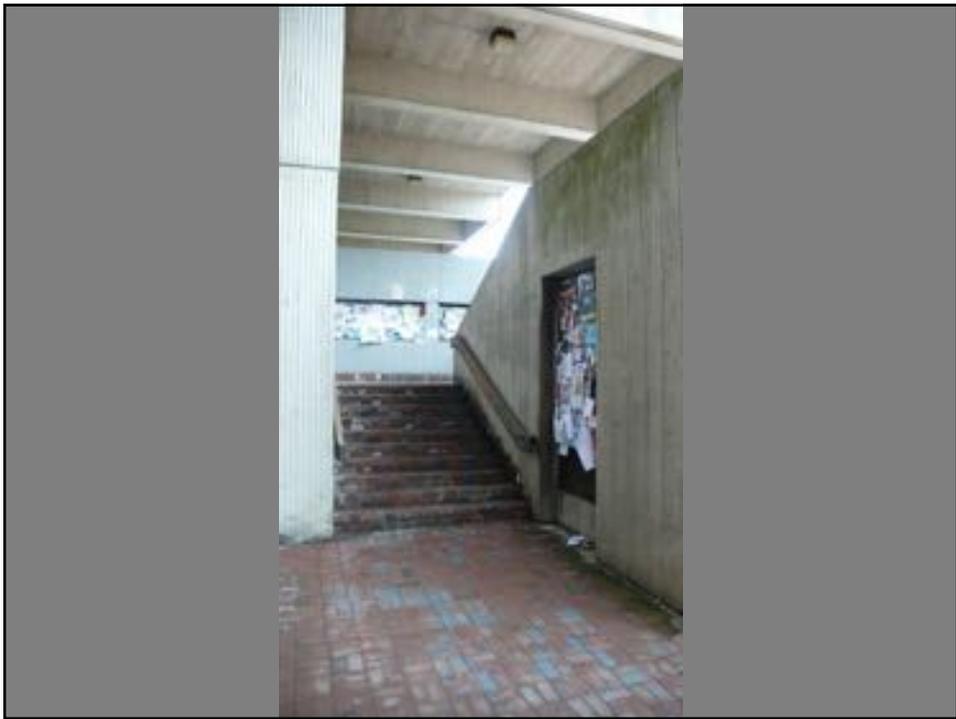


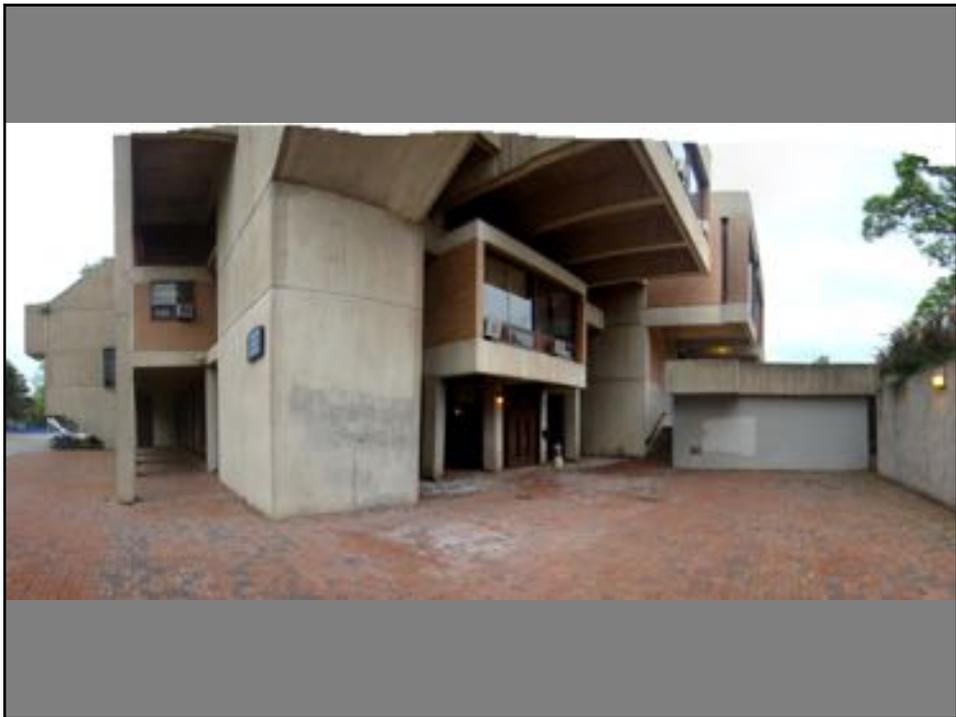


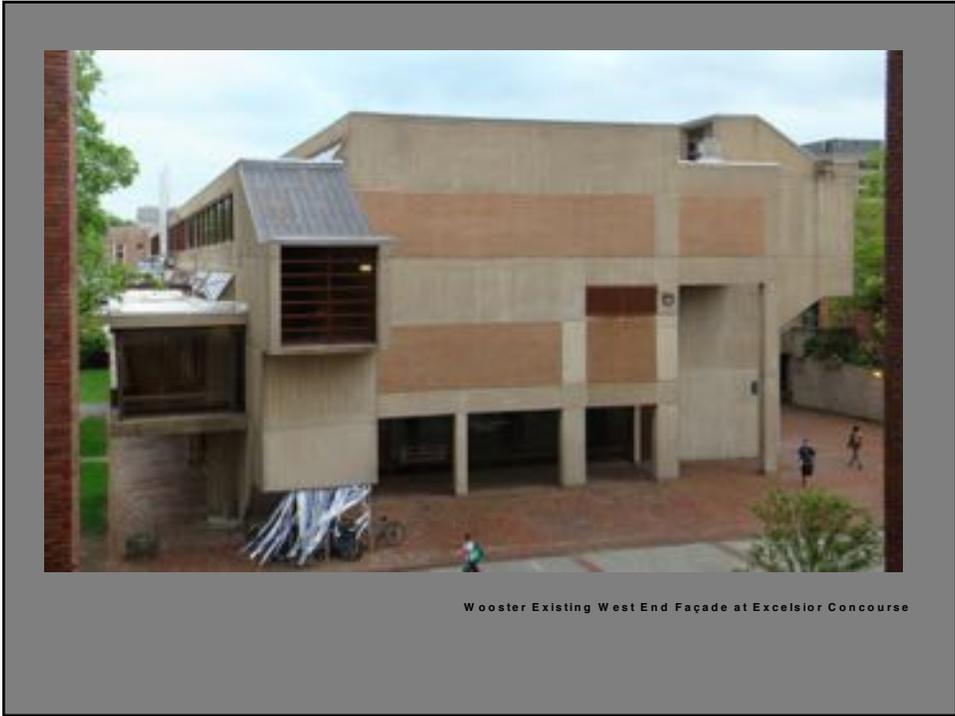














Existing hallway/entry to Teaching Labs: View to Old Main Quad

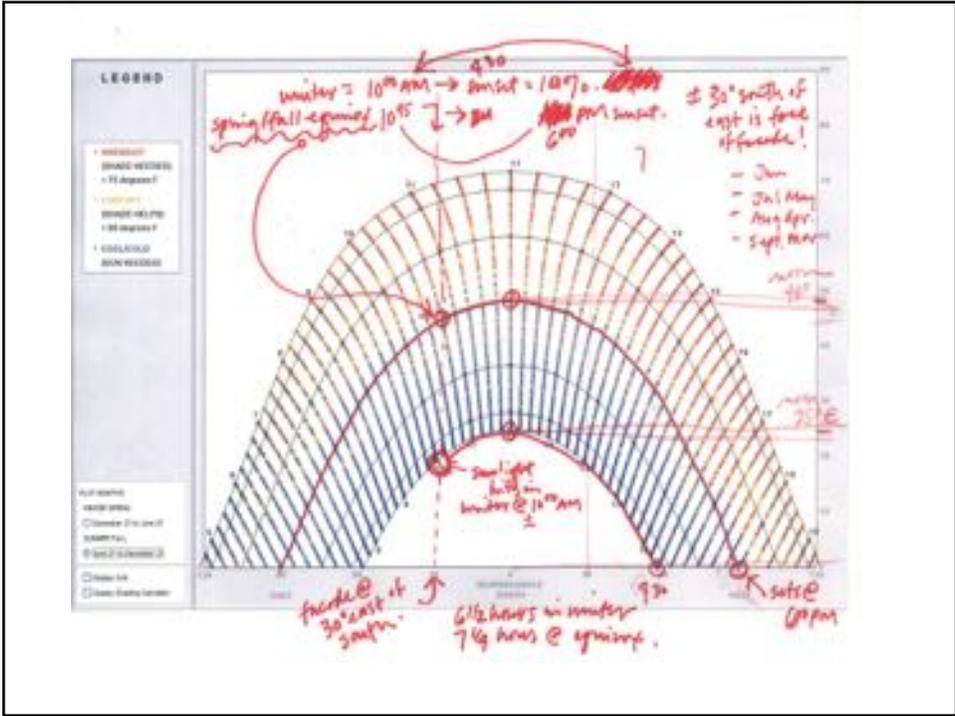
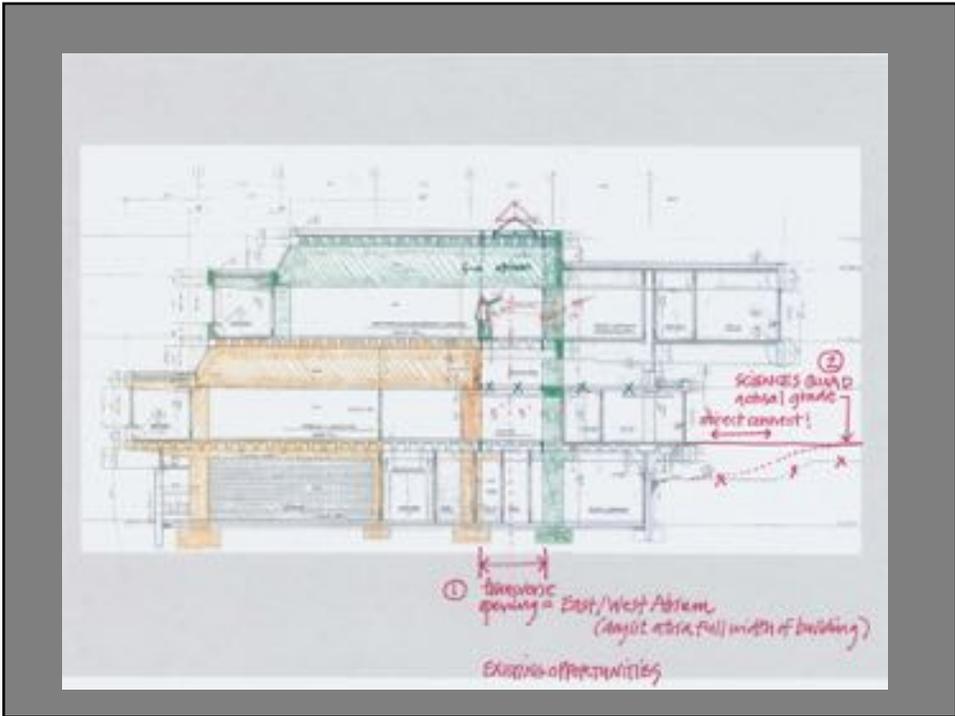


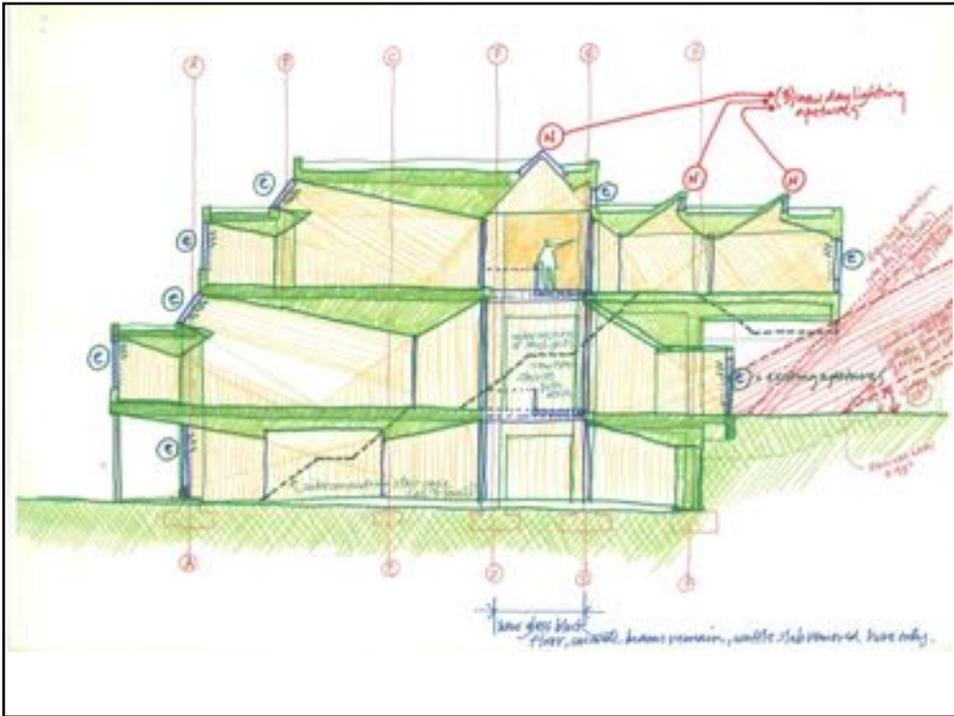
Existing Teaching Labs with high contrast, high glare daylight

(Note: No view to outside, dark finishes)











# Insight The Perfect Wall

An edited version of this Insight first appeared in the ASHRAE Journal.

By Joseph W. Lstiburek, Ph.D., P.Eng., Fellow  
ASHRAE

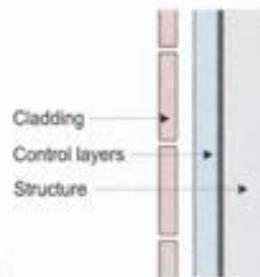


Figure 1:  
"The Perfect Wall"

In concept the perfect wall has the rainwater control layer, the air control layer, the vapor control layer and the thermal control layer on the exterior of the structure. The cladding's function is principally to act as an ultra-violet screen. Oh, and architects might consider the aesthetics of the cladding to be important.



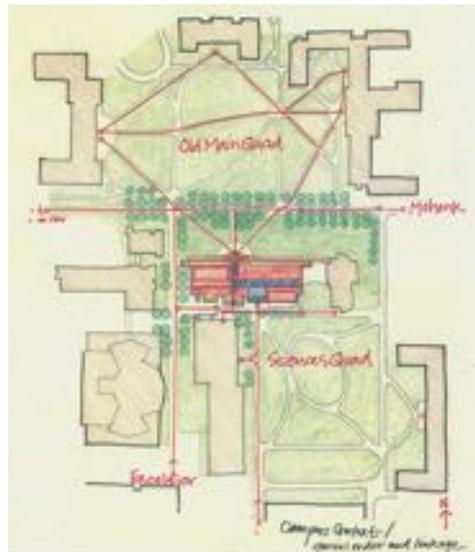
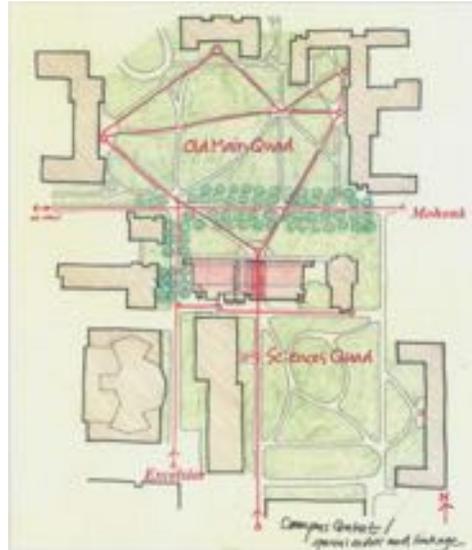


Skytop Tower on Mohonk Mountain

**Campus Mater Plan + Urban Design Issues**

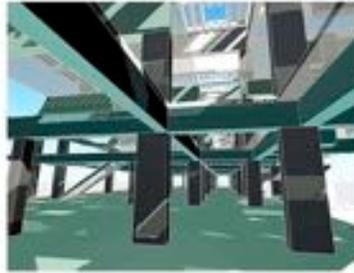
**Proposal #2**

Grand Stairway and transitions between Sciences Quad and Old Main



**Proposal #3**

New Entry  
off Sciences Quad  
(east/west atrium)  
Original Entry off  
Old Main Quad



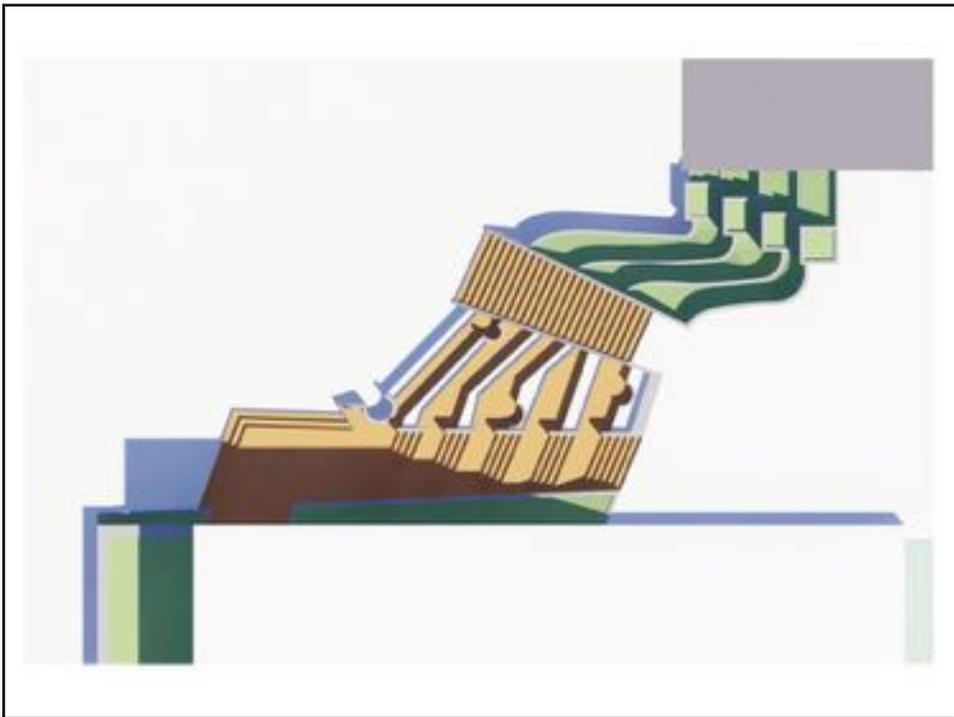
Wooster Structural Frame: 96% retained



West End Wooster Structural Frame



Conceptual Approval of West End-to-South Transition and Stairway

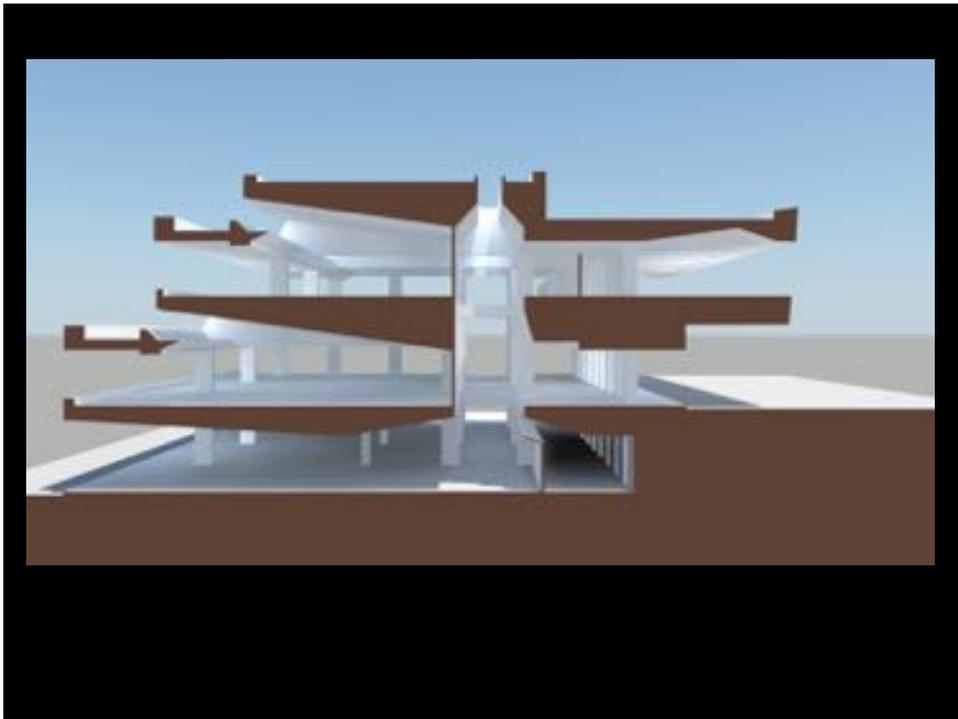
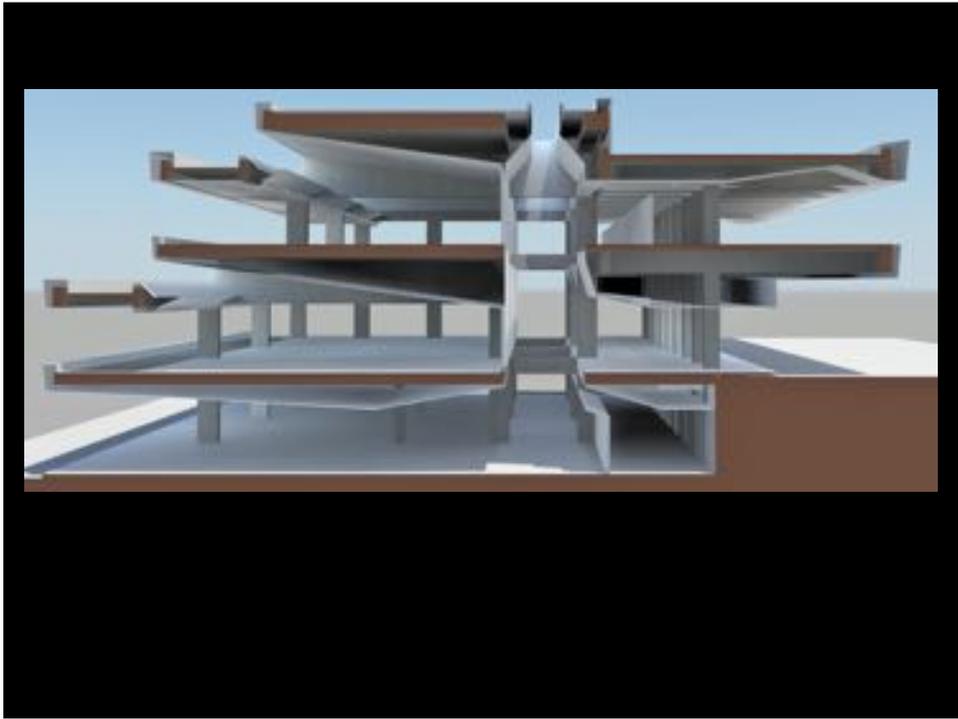


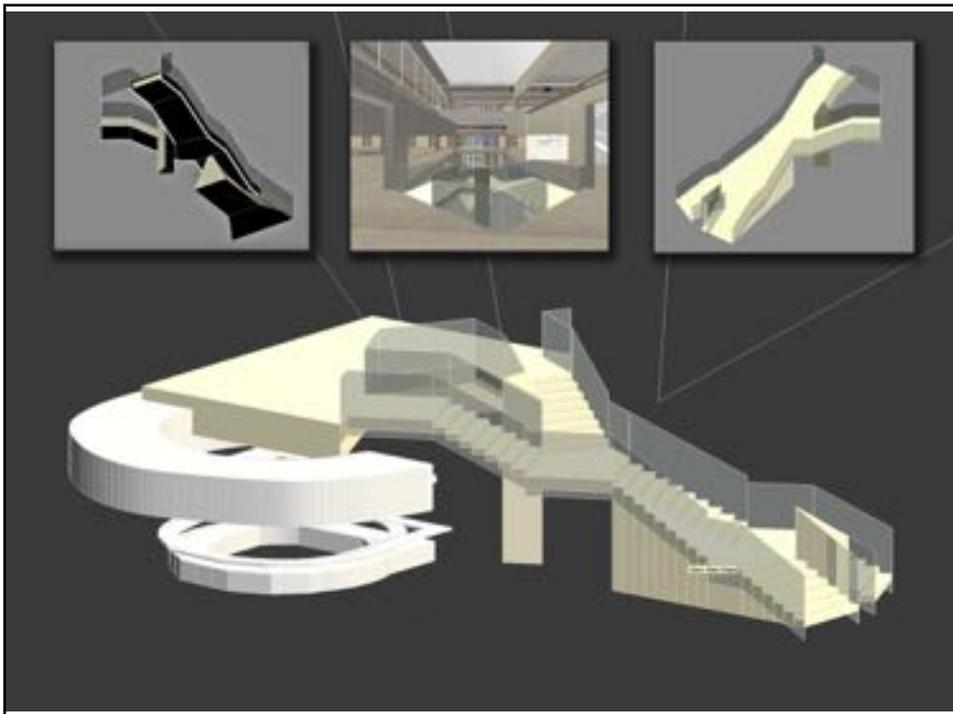


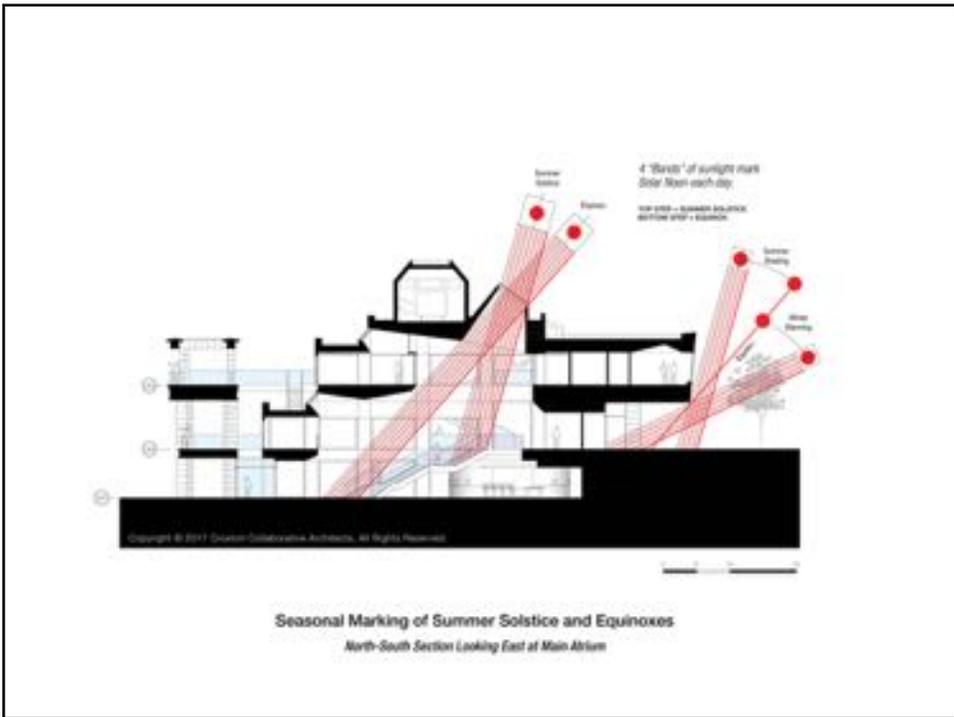
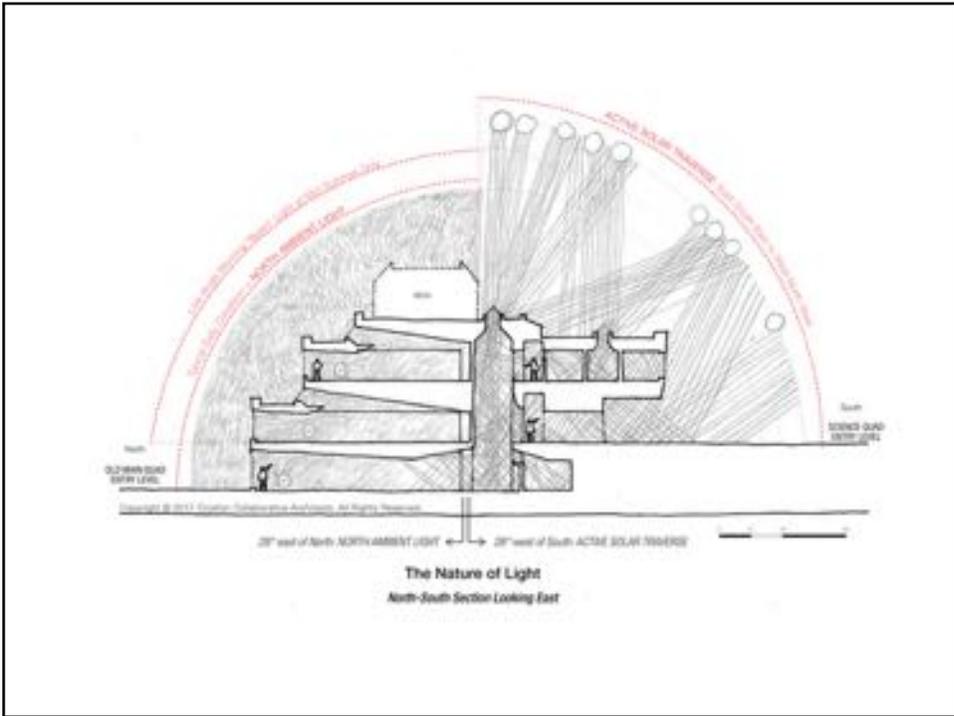


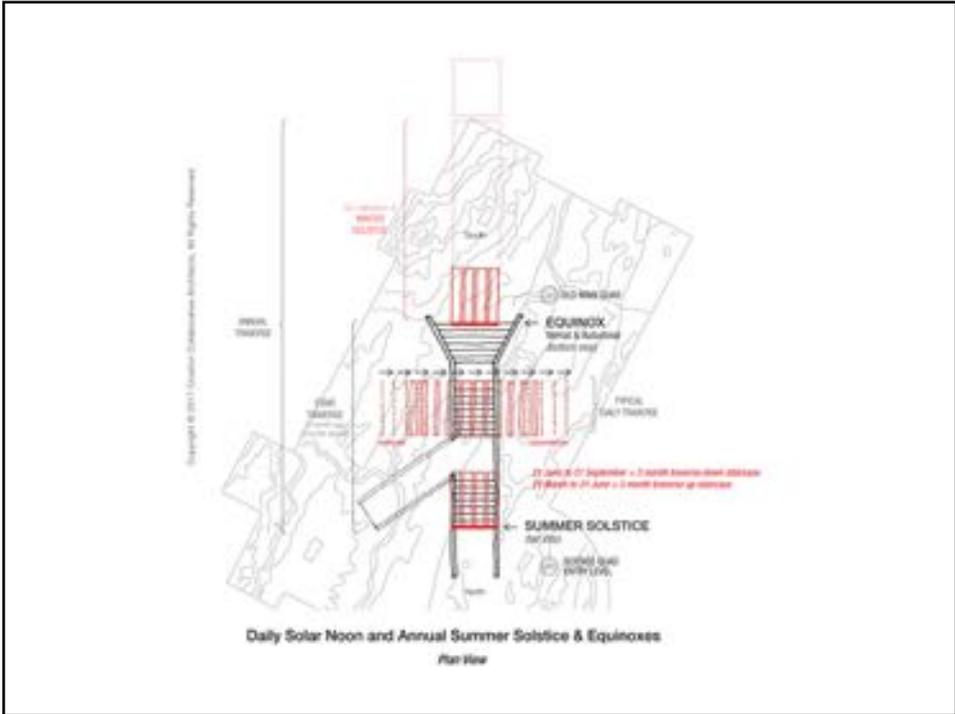
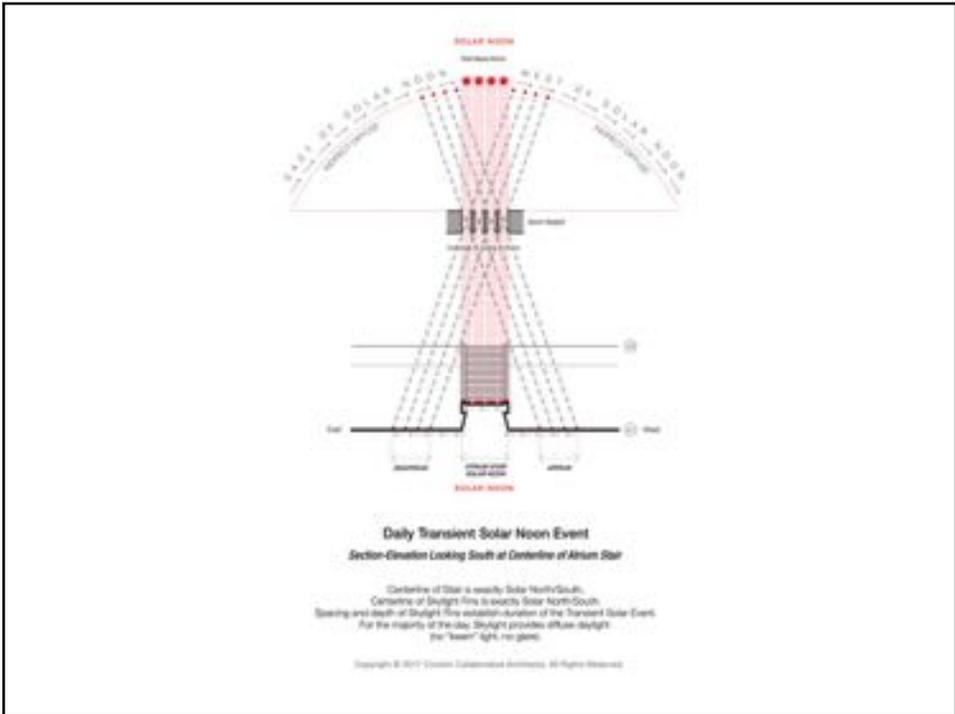


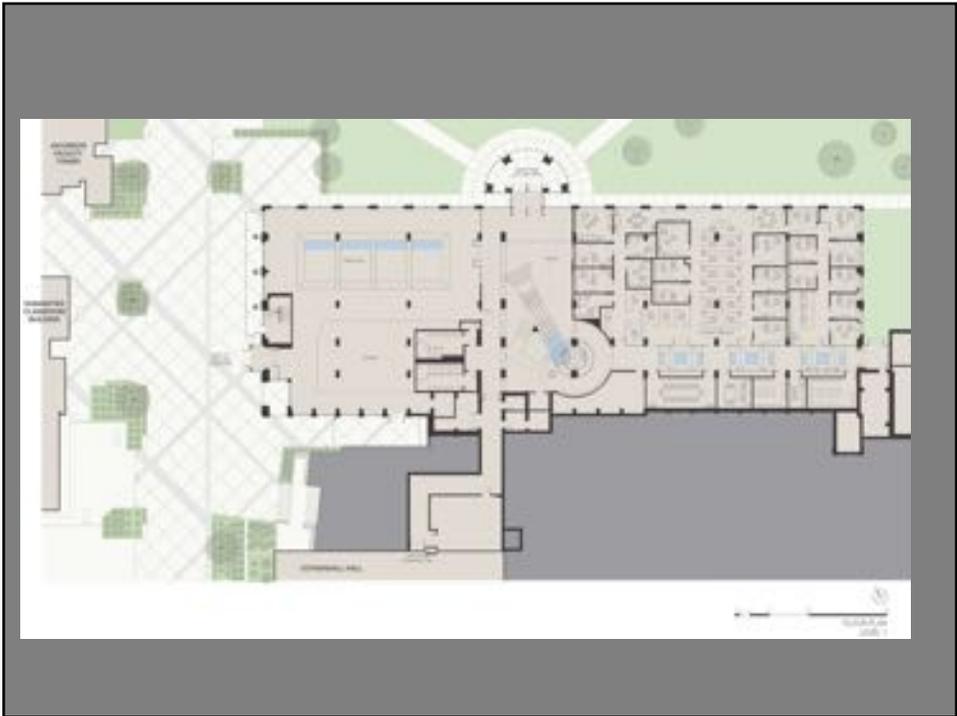


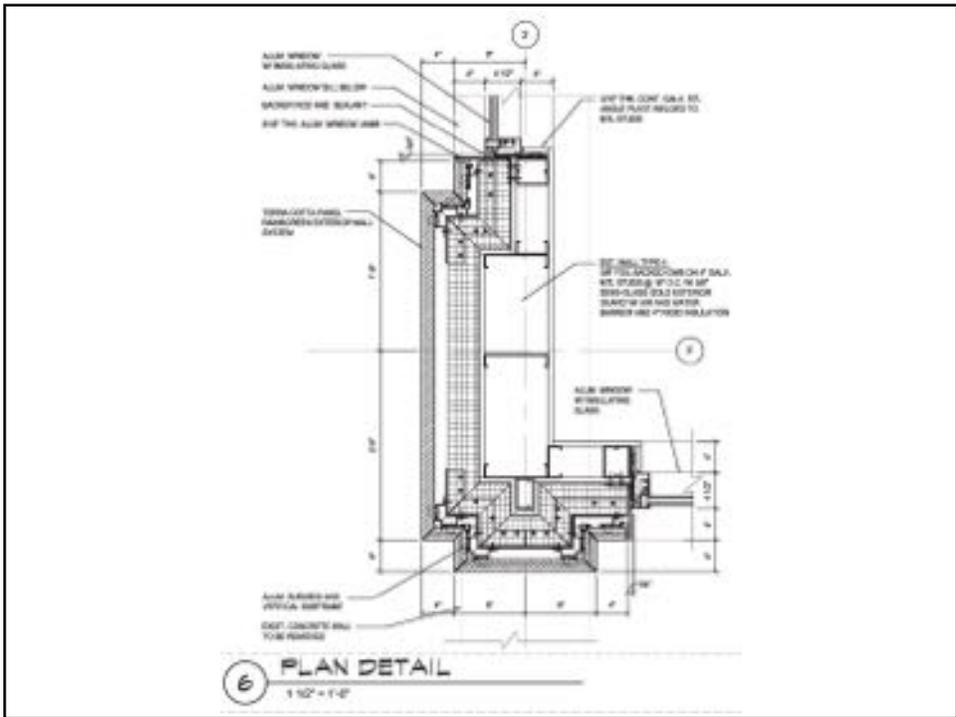
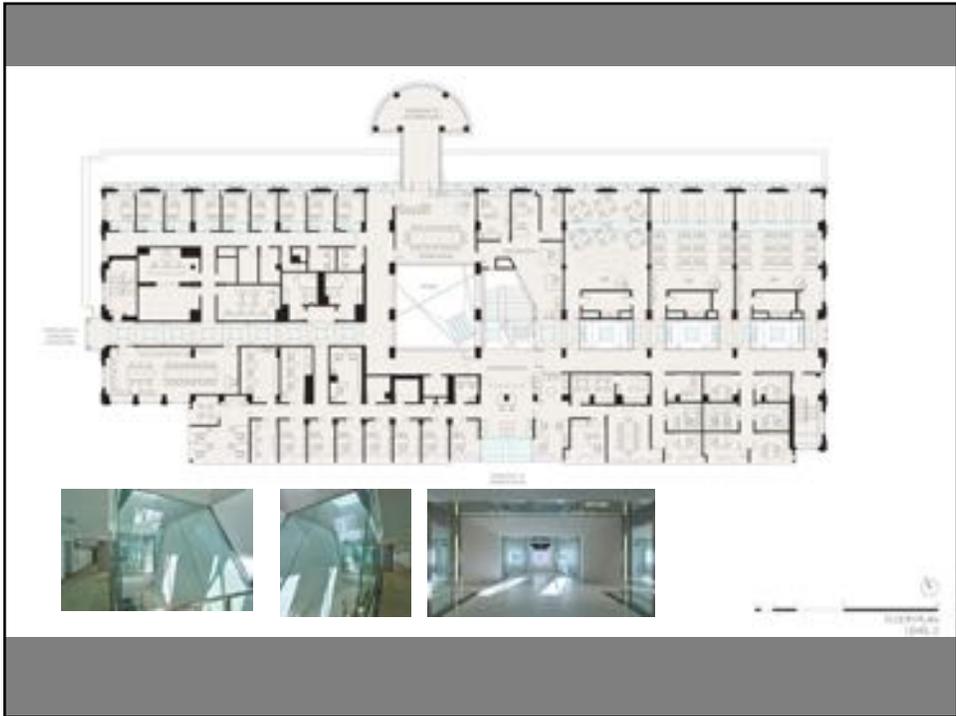


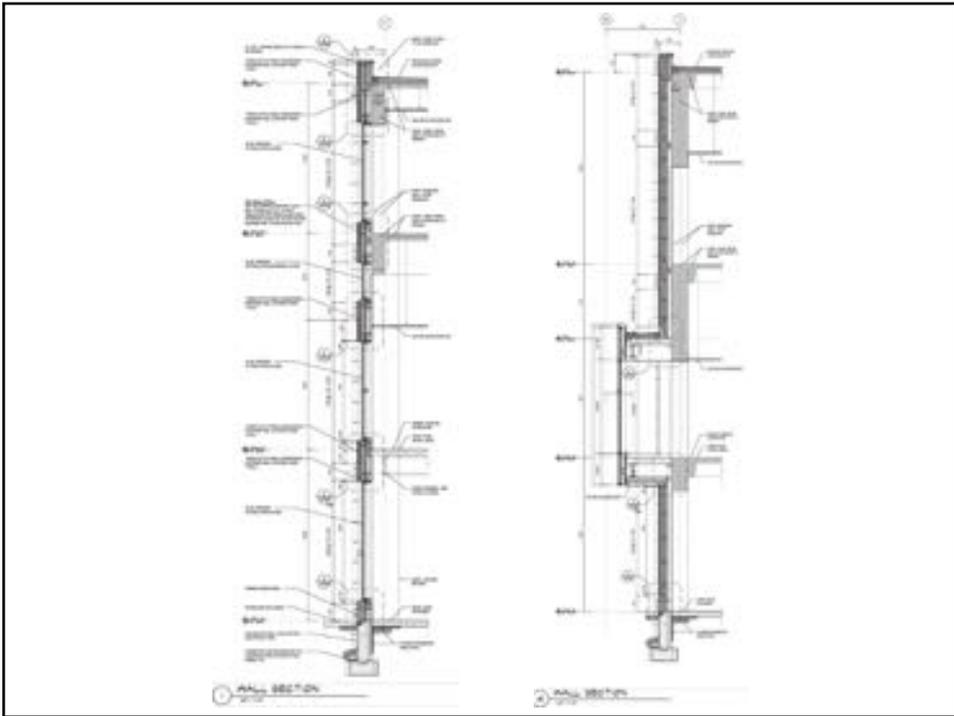








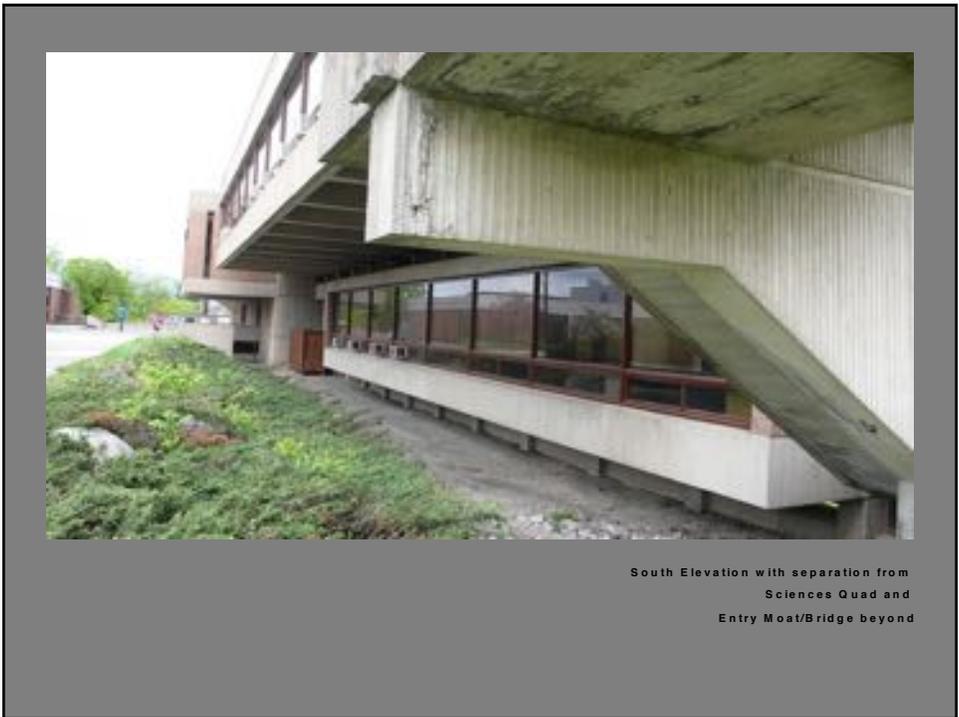






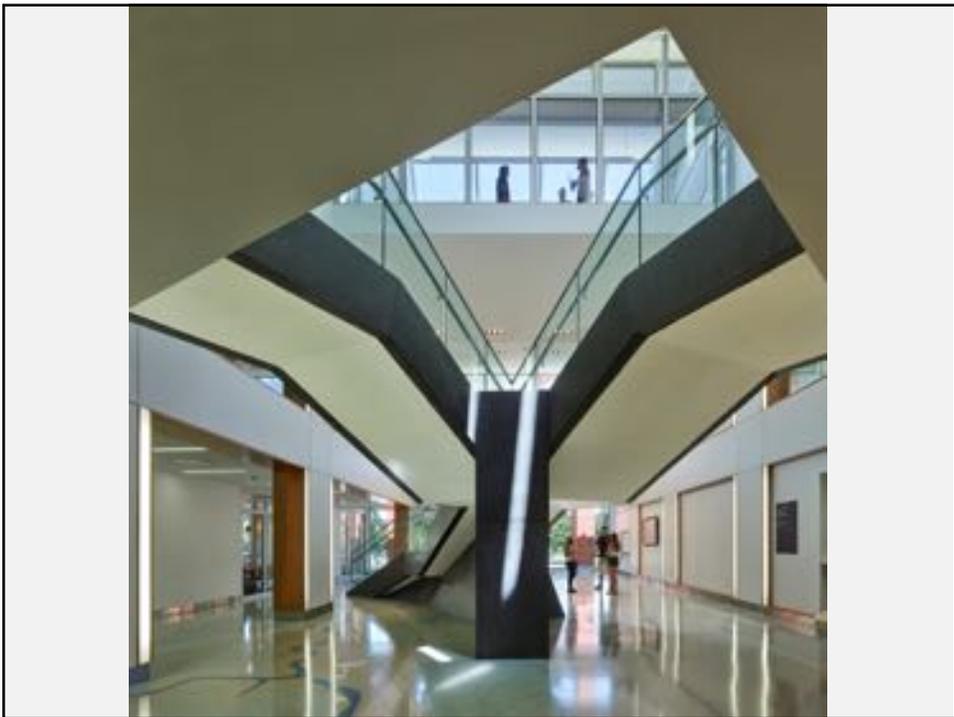


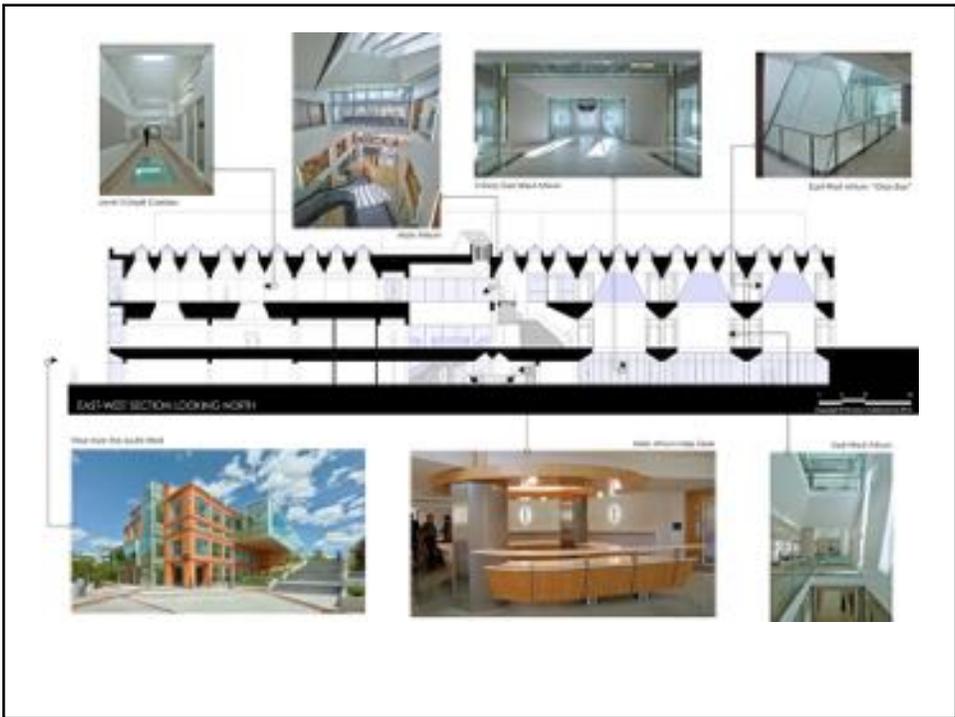
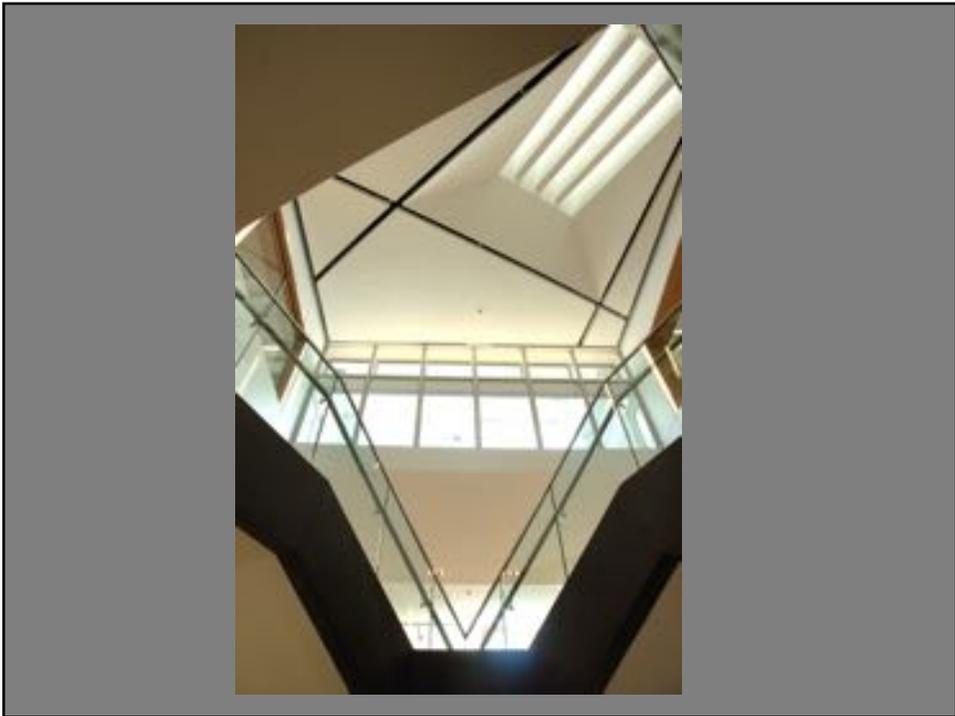


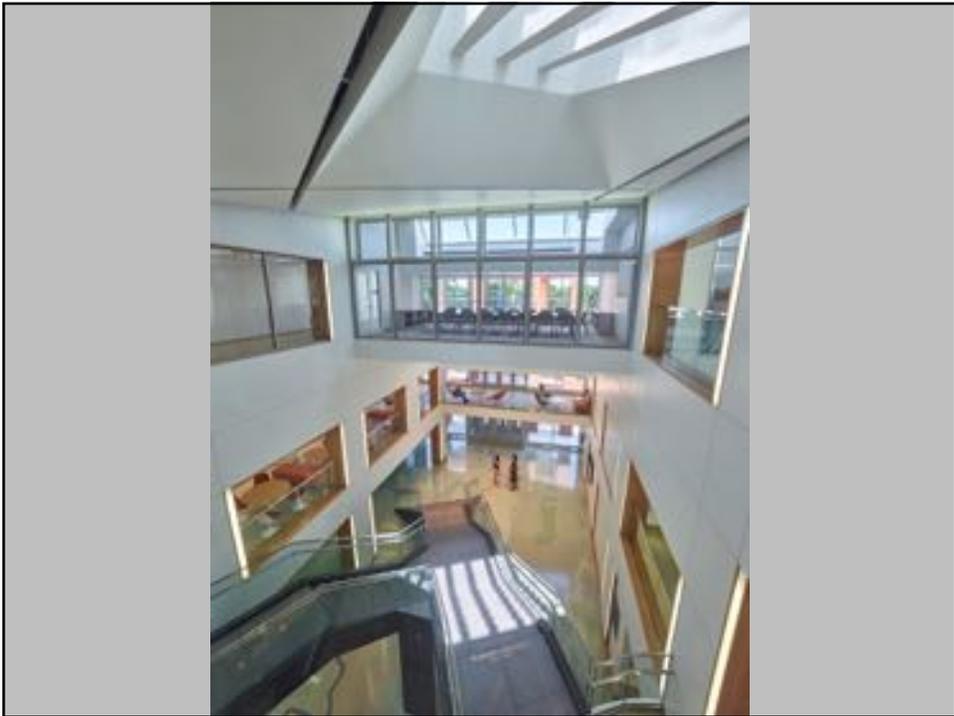


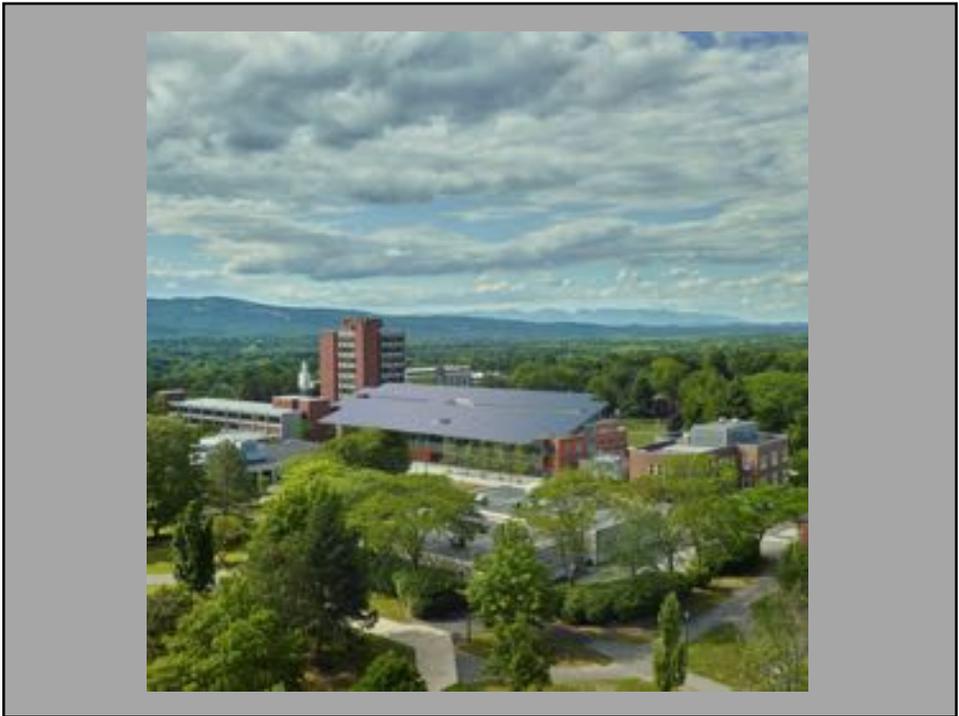




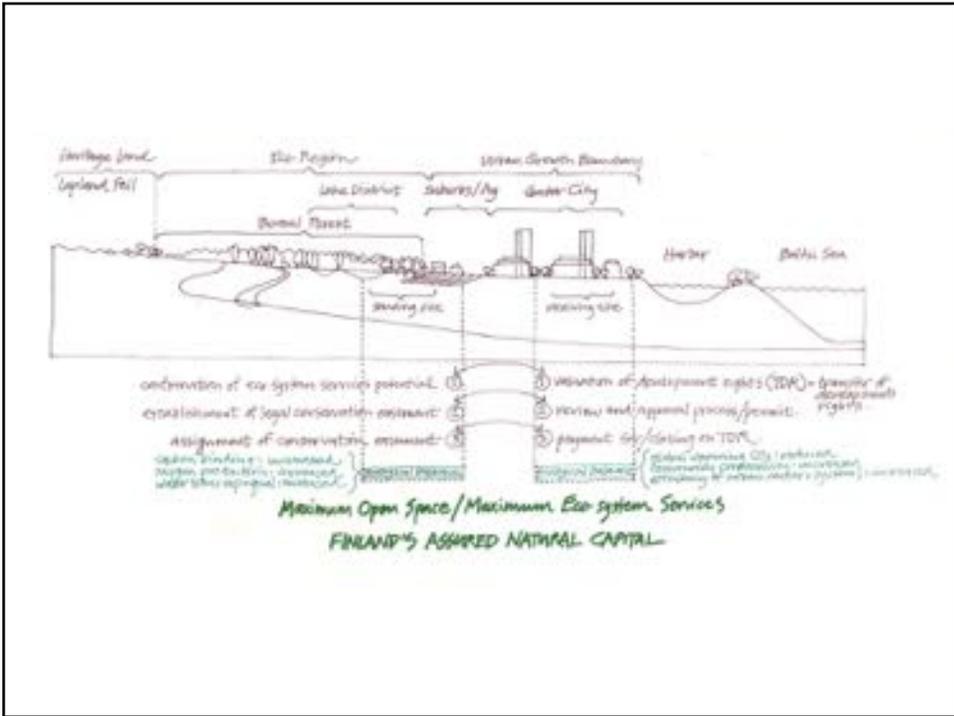












### CULTURAL CONNECTIVITY DESIGN & INNOVATION

**LOCAL CULTURAL RESOURCES**

**THE BRYANT SCHOOL LOCAL LANDMARK**

**STUDENT ARTWORK**

**NEIGHBORHOOD**



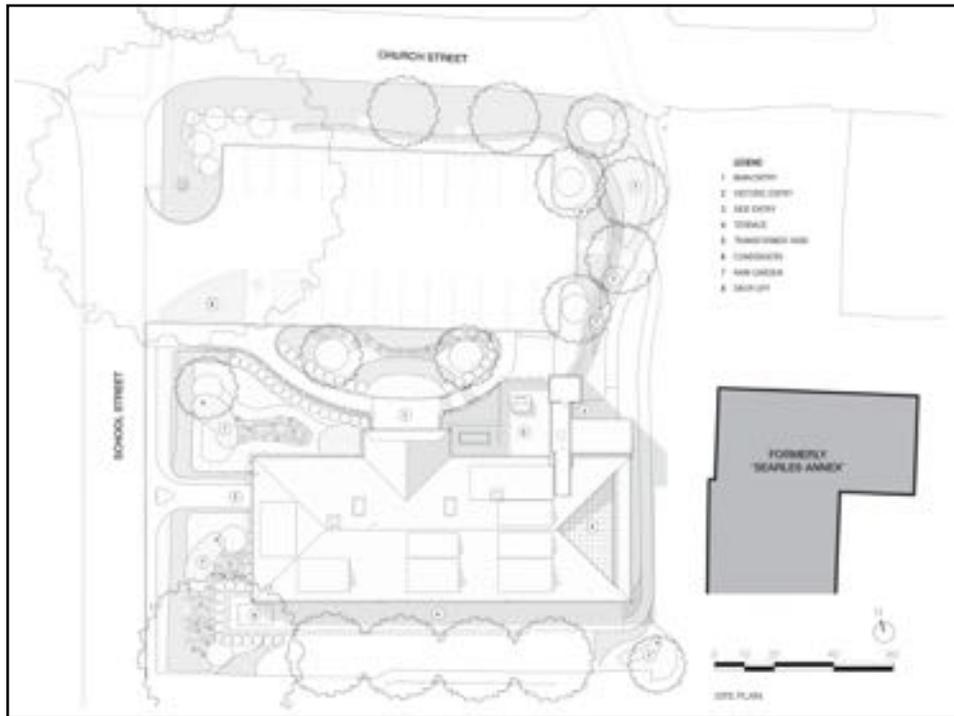
**HISTORIC COMMUNITY ELEVATIONS**

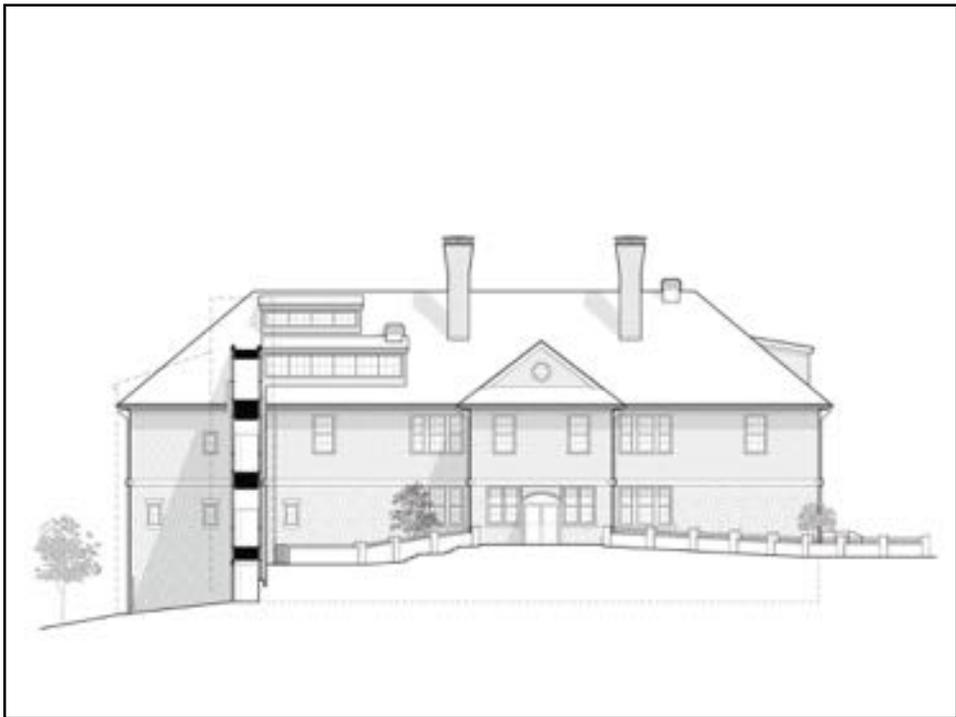


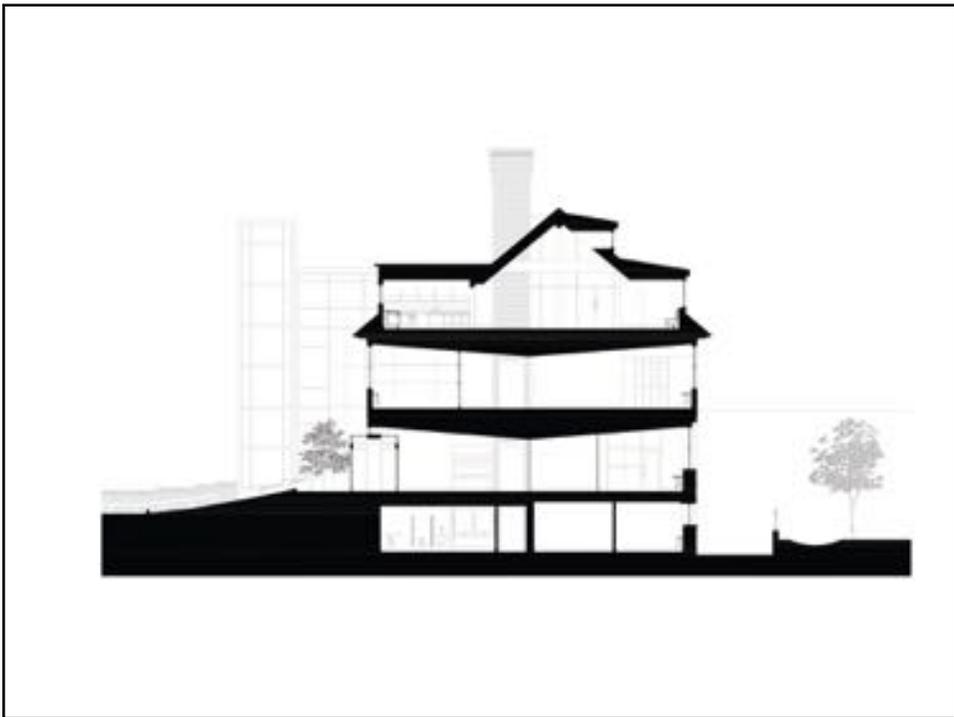
**REGIONAL & COMMUNITY DESIGN**

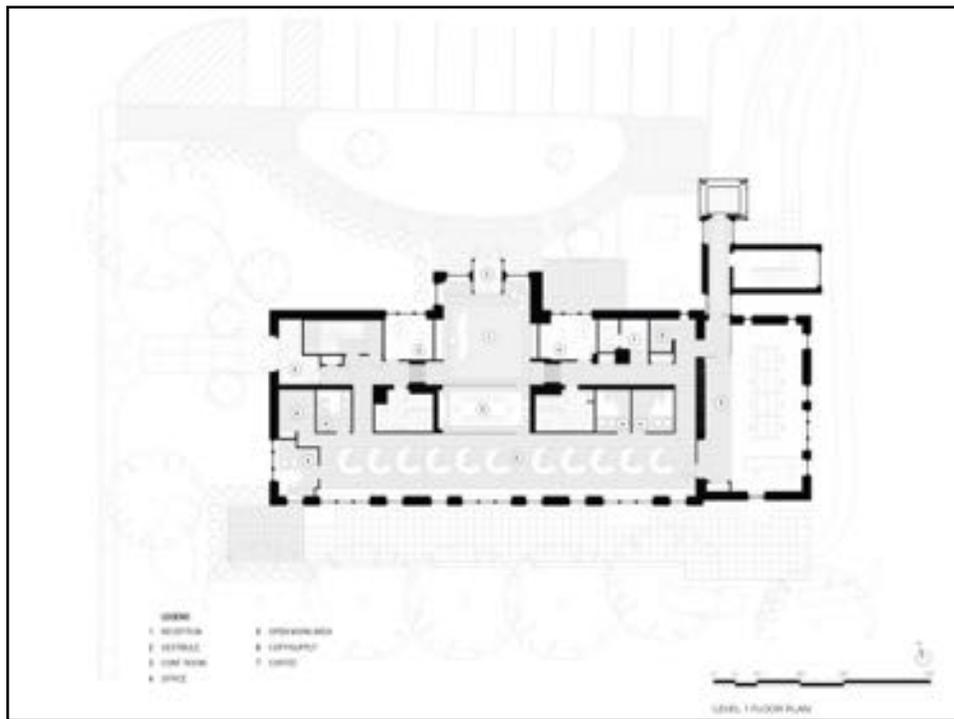


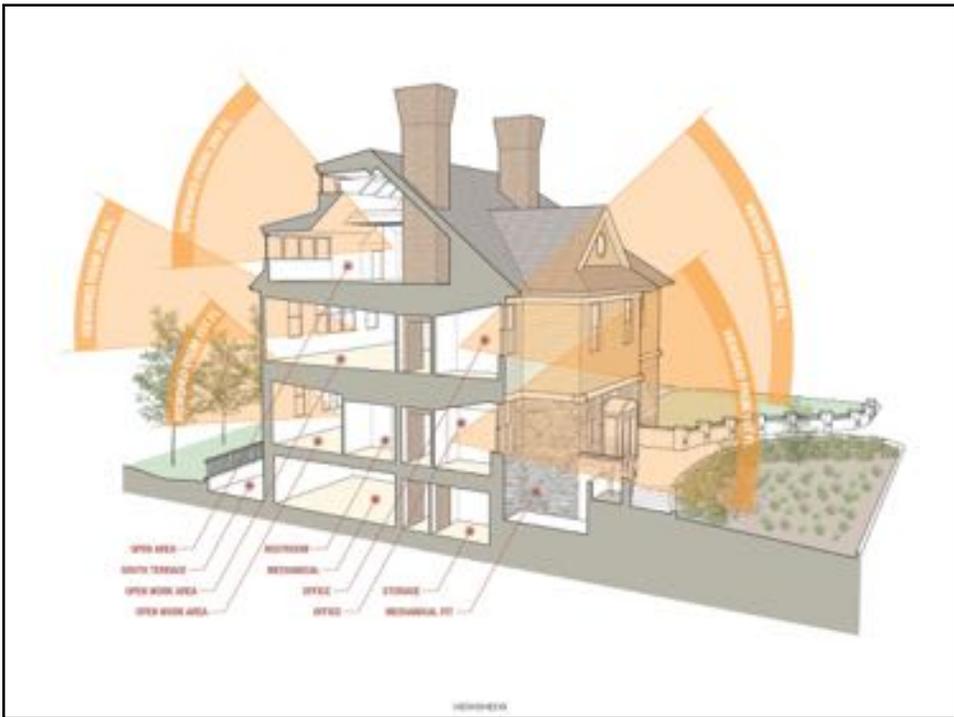
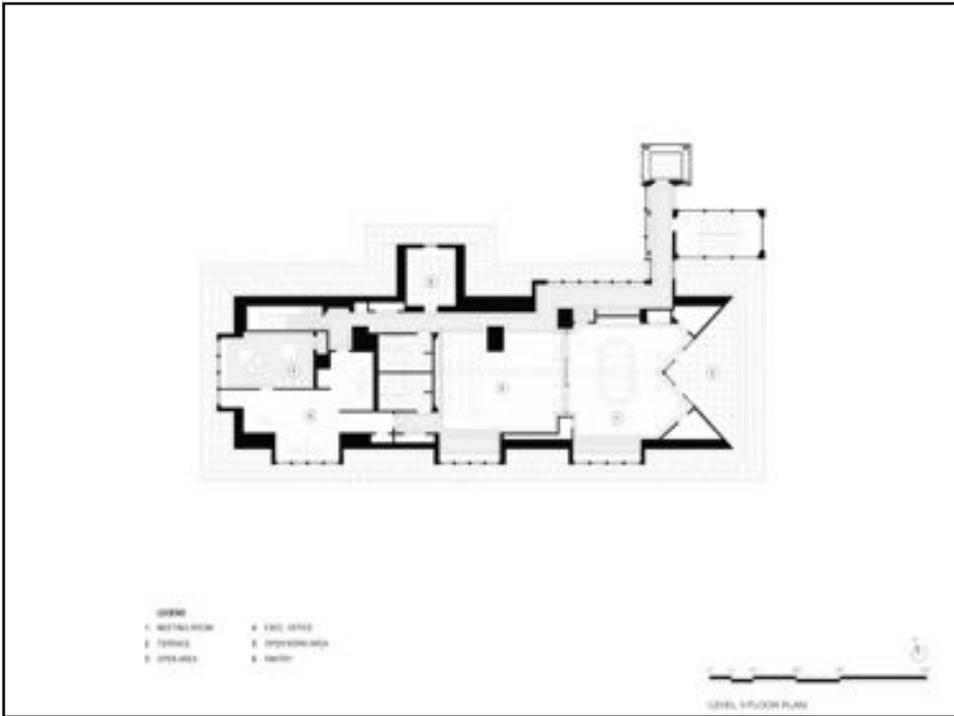










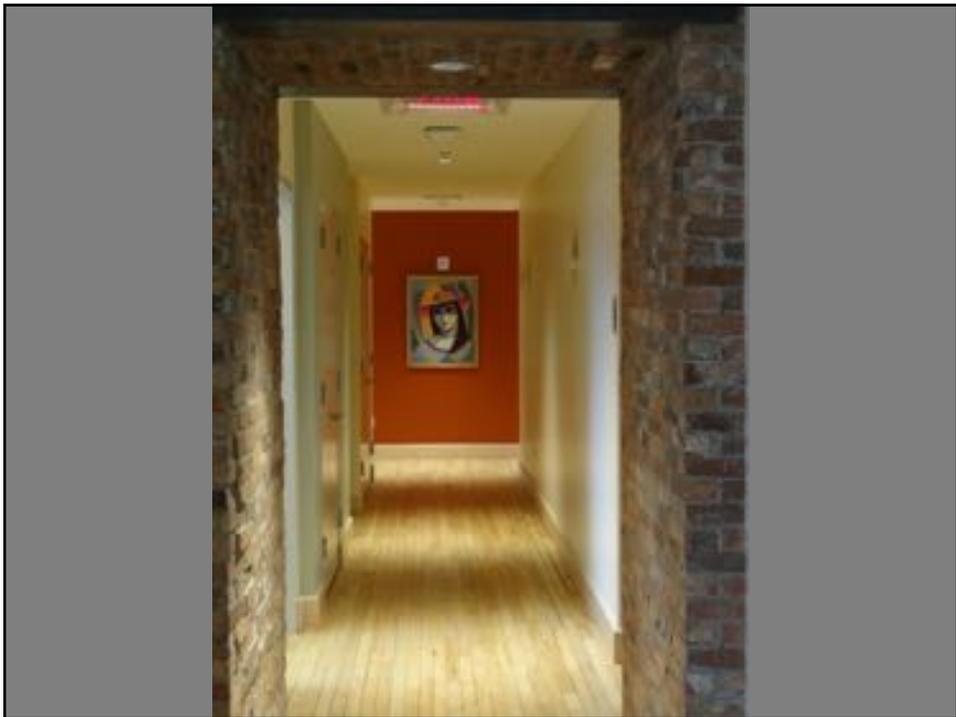


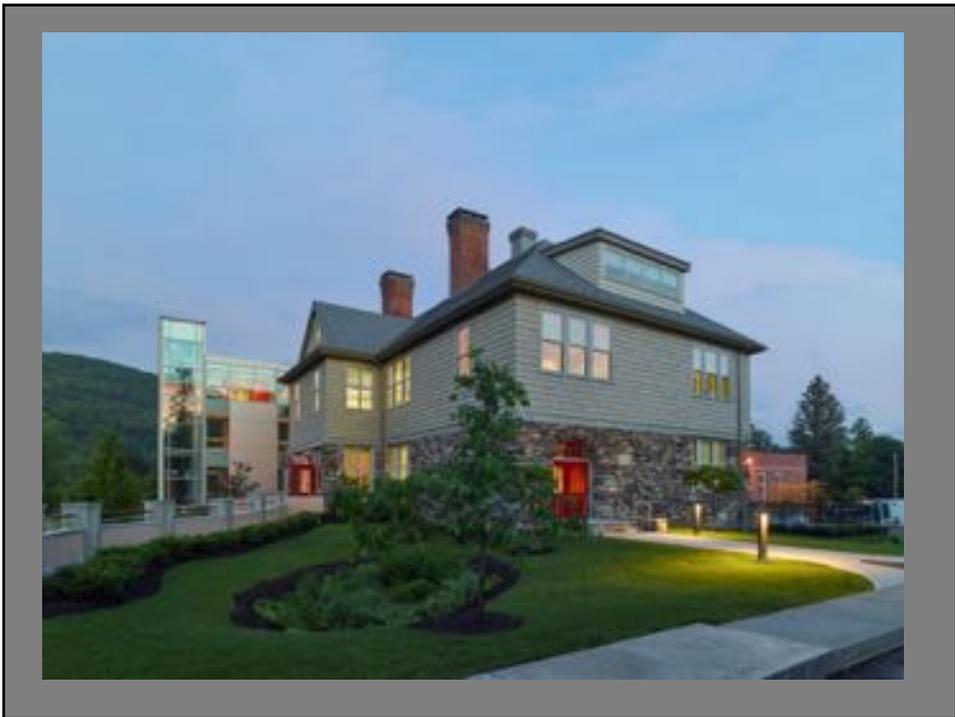


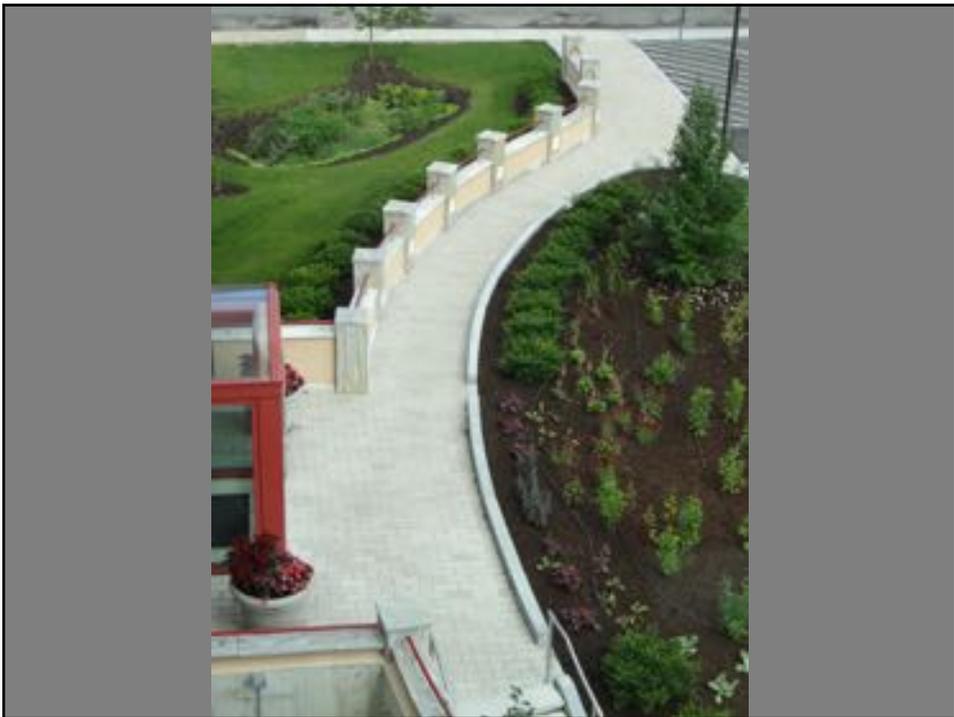


The image contains several architectural diagrams and a photograph. On the left, there is a cross-section diagram of a building showing internal spaces and a roof structure. Below this is a circular diagram with a red dashed border, containing a simplified floor plan. At the bottom left, there is a psychrometric chart with the text "PSYCHROMETRIC CHART" and "WET BULB GLOBE TEMPERATURE" visible. On the right, there is a photograph of the building's exterior, showing a stone wall and a wooden deck area. The text "BIOCLIMATIC DESIGN" is written vertically in red on the right side of the image.

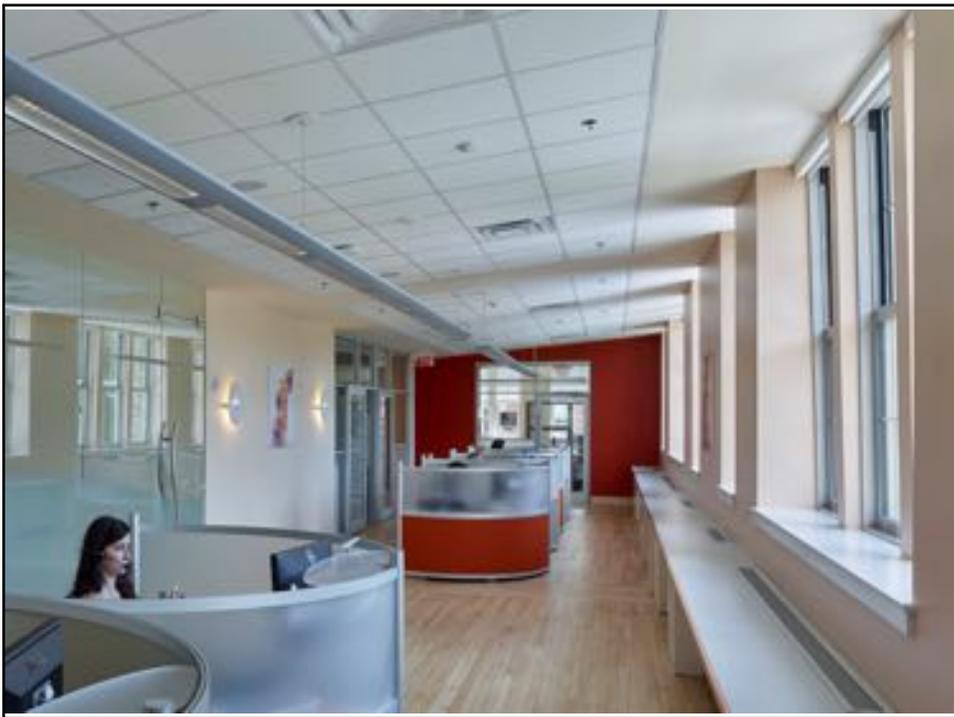
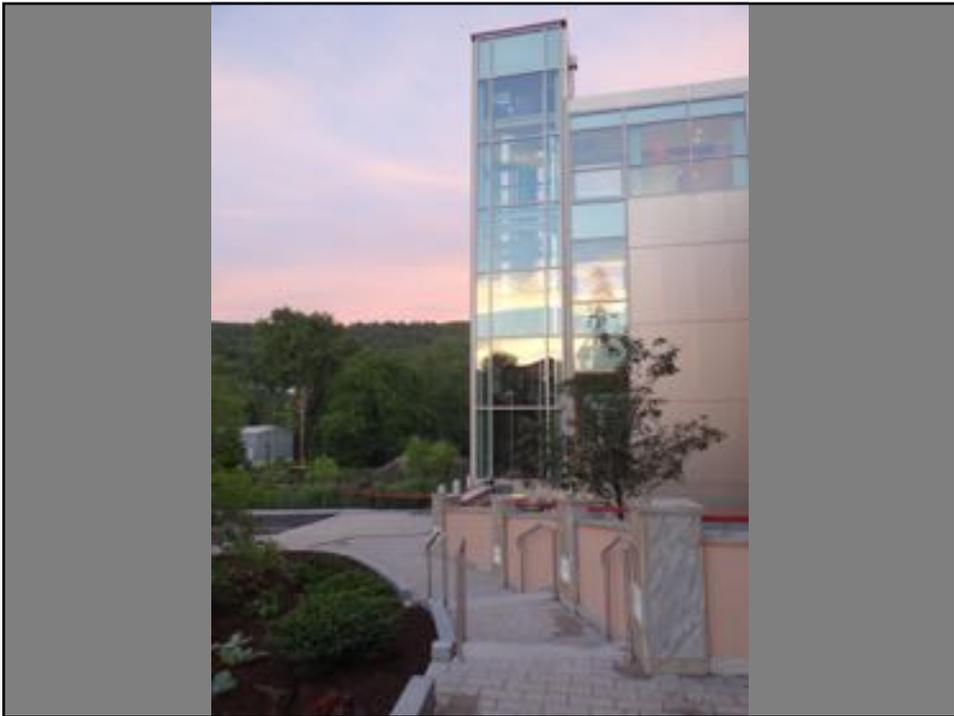






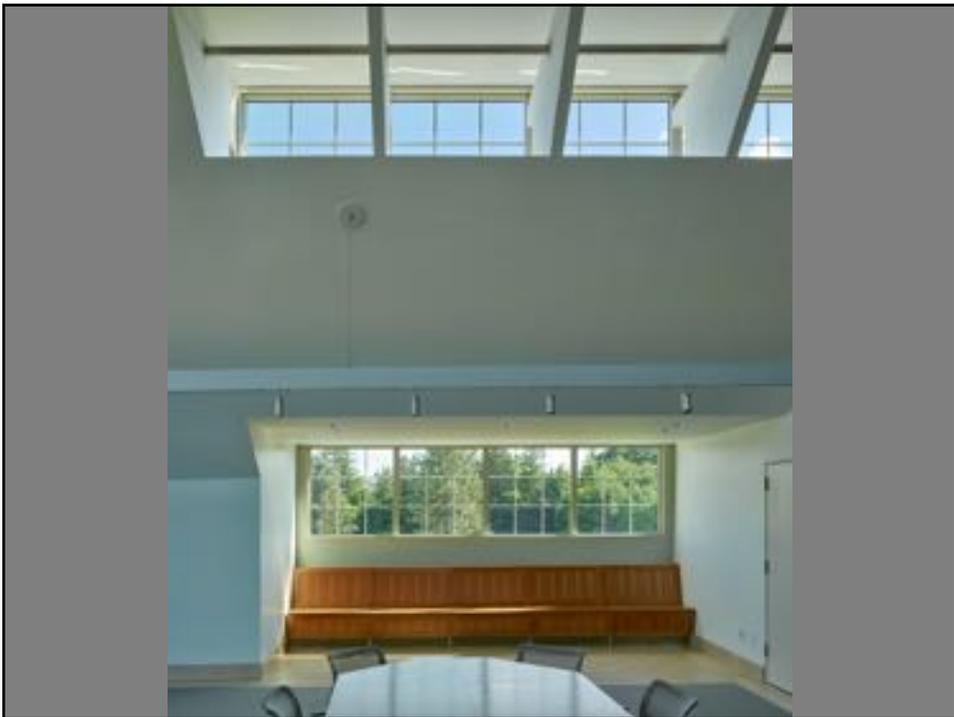


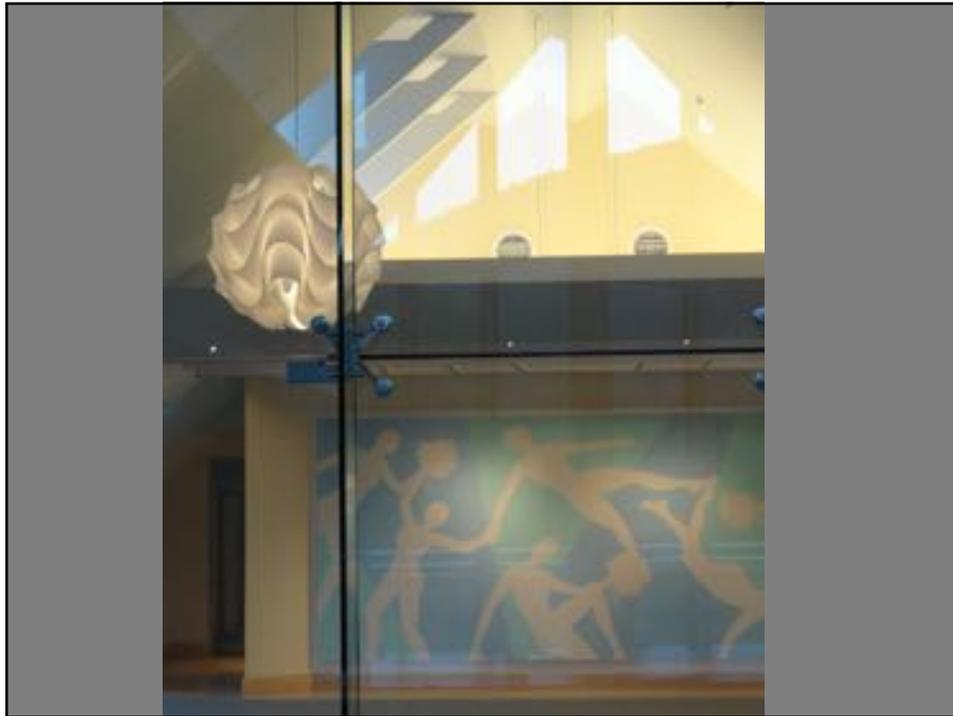












## Three Questions of Interest

- What is the order of the design priorities in undertaking a deep energy retrofit of a building of historic/cultural merit?
- Where do such projects fit within the larger societal goals of sustainability, net-zero carbon (NZC), and net-zero energy (NZE)?
- What performance potentials are achievable as a result?

