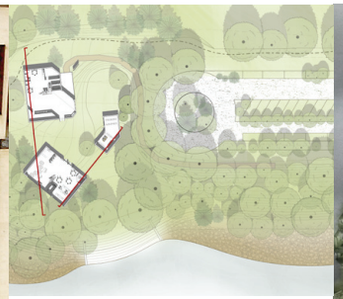
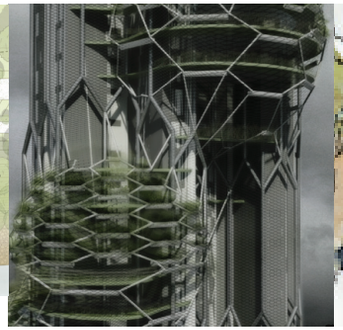
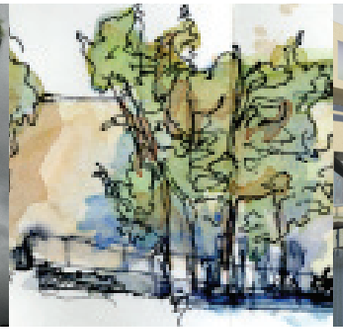
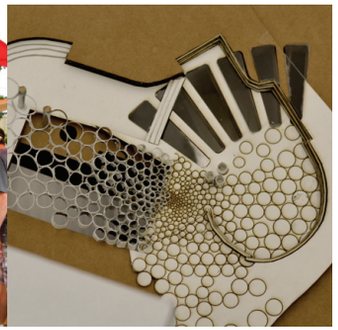
PORTFOLIO || spring 2014

ASHLEY WONG

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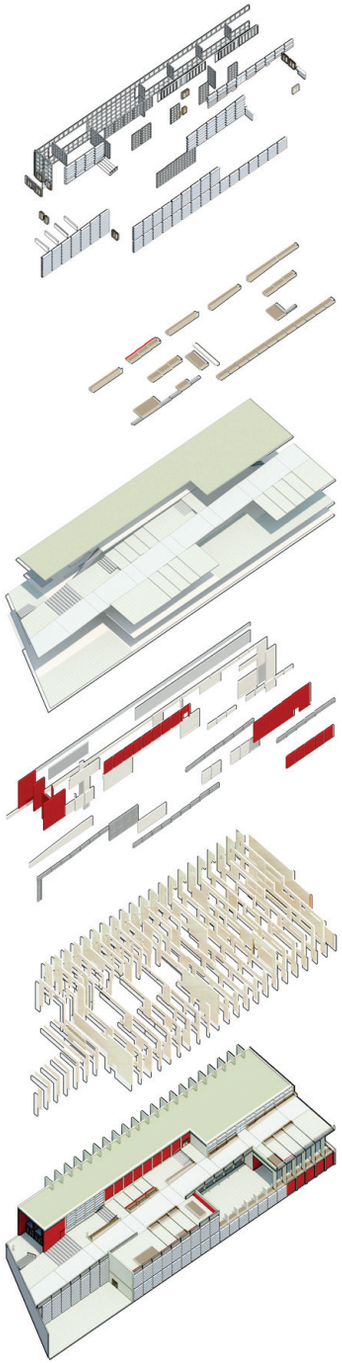
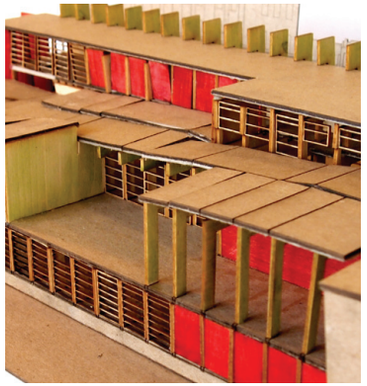
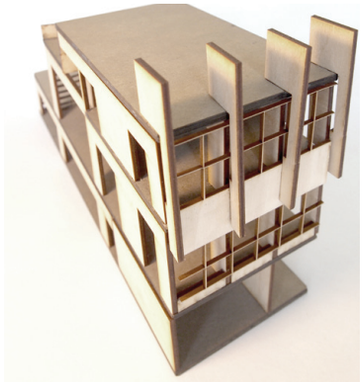


Whole school, CLT ribs, solid walls, floors, troughs, windows and shading devices



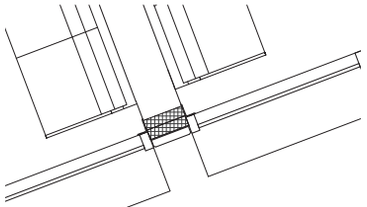
Painted model

Rendering of pedestrian path on the roof of the studio, outdoor classrooms behind the planters

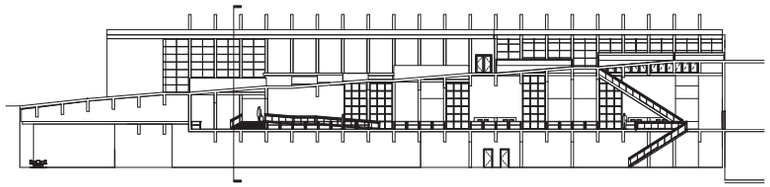


Sectional model; view from the North side

Sectional model; view from the South

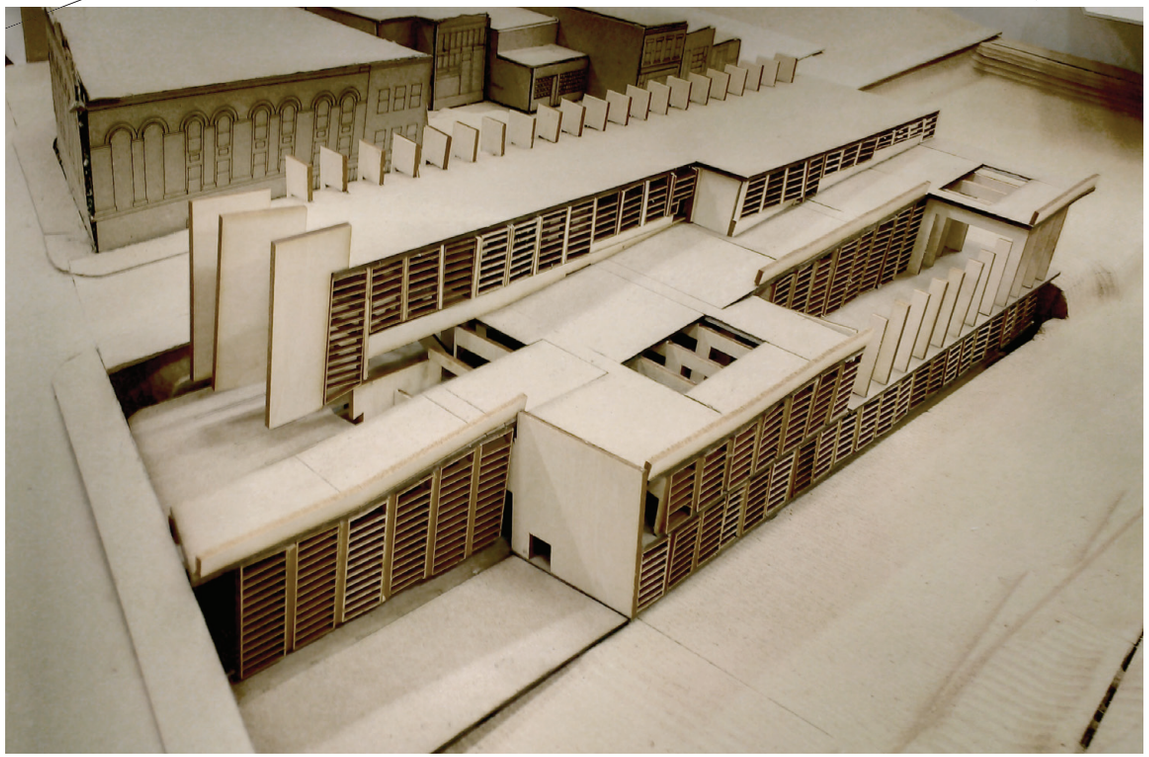


Plan detail of insulated mullions

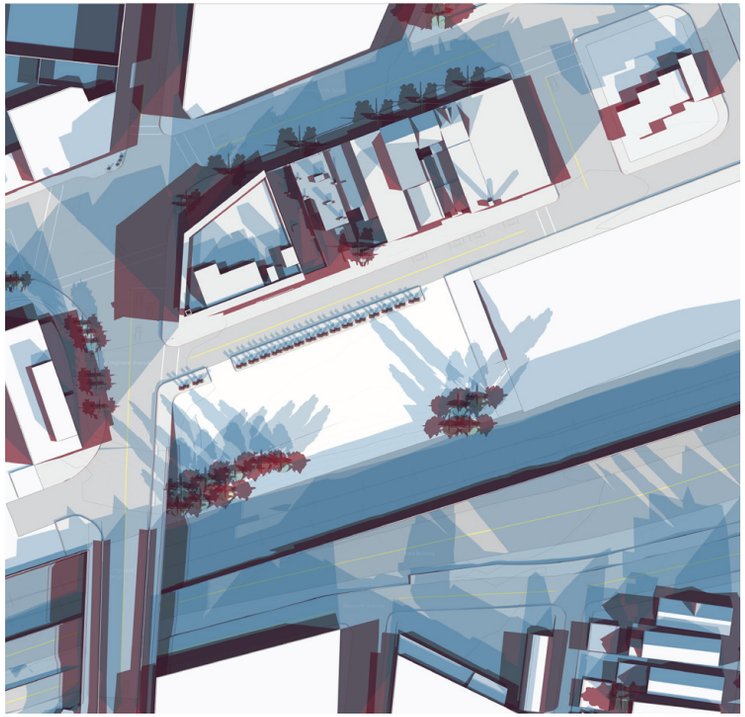


Longitudinal section

View from railroad, parking ramp to the East of school missing



Model without stepped outdoor classrooms, surrounding context model



Shadow Analysis; blue represents winter shadows, red summer shadows

CRAFTWORK SCHOOL OF WOOD BUILDING

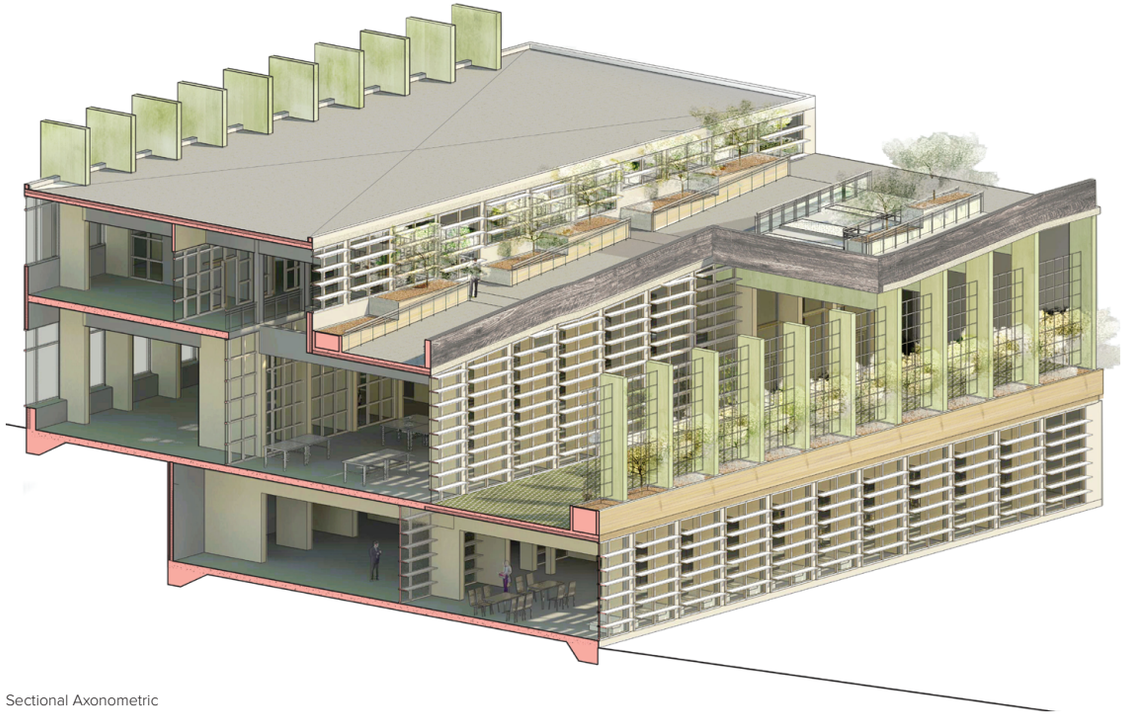
spring 2013

This partner project started with a shadow analysis of the site in Pittsburgh's East Liberty. Since it was between the end of a bike path and a major transit hub, we decided to incorporate an extension of the bike path into the roof. The concept of a lattice system emerged as a method for physically separating the pedestrians and bicyclists from the students of the school; this system eventually evolved into cross-laminated timber fins or ribs that defined occupiable space. A central studio for schoolwide interaction formed the major axis, where students could move from individual work space to specialized machine shops which were displayed at street level. Priate areas on the ground floor were subdivided by the fins, while seminar rooms overlooked the workshops. Fins on the exterior served as signage; bright paint was used in the finish to protect the wood outdoors while marking the program.

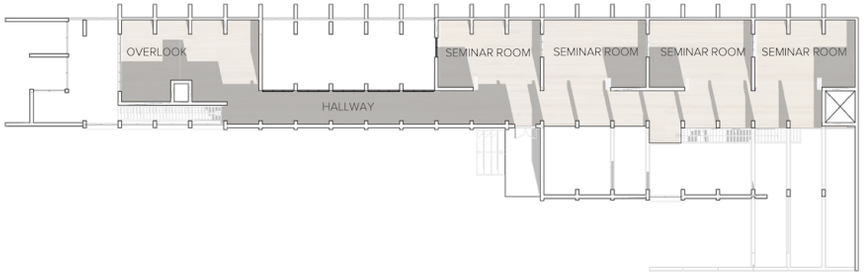
Painted model, view from the North

Painted Model, view from East

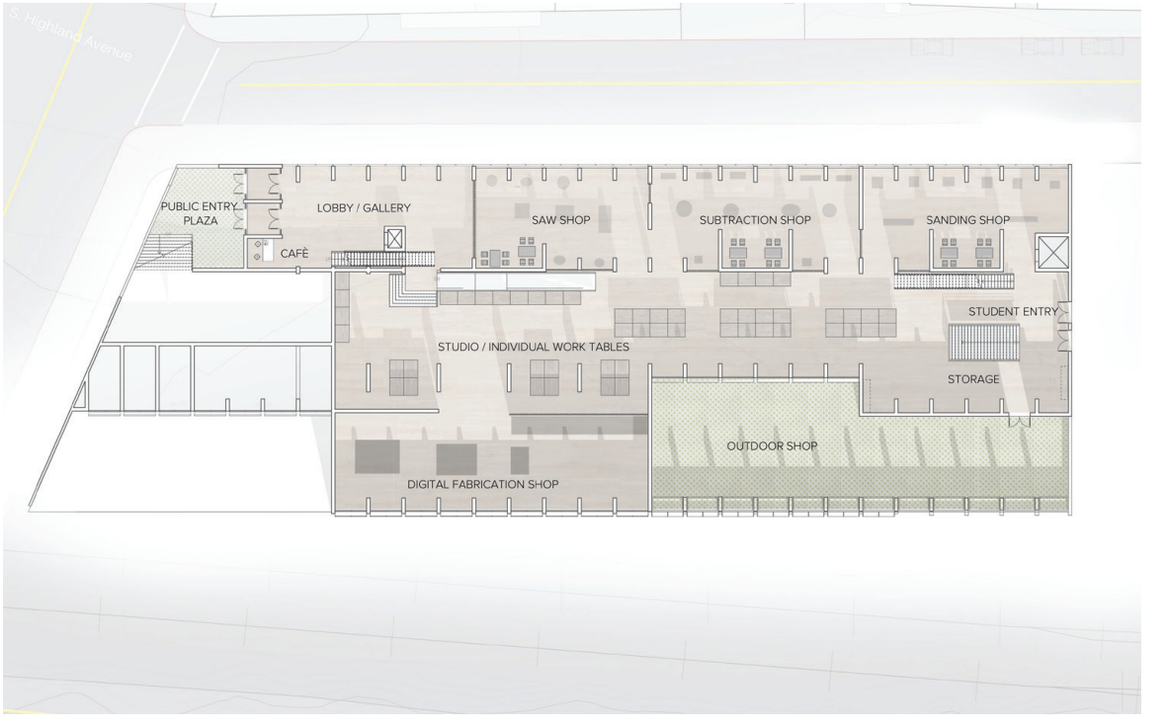
Model; view of studio space



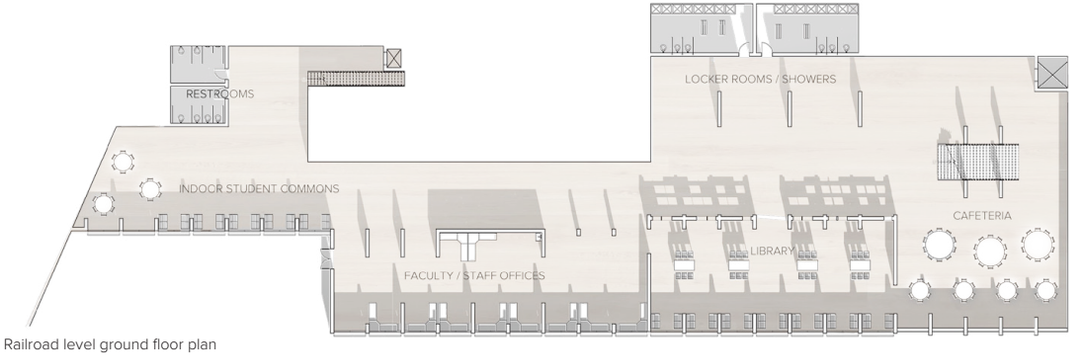
Sectional Axonometric



Seminar level second floor plan



Street level floor plan



Railroad level ground floor plan

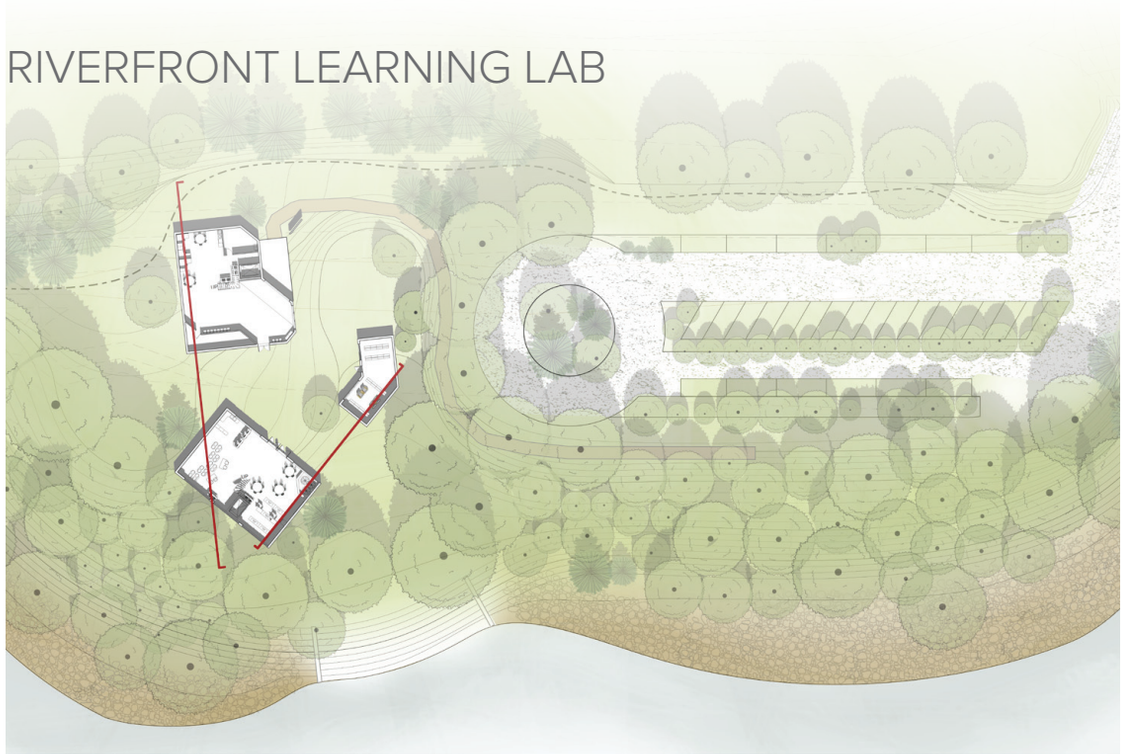
TO MEANDER

RIVERFRONT LEARNING LAB

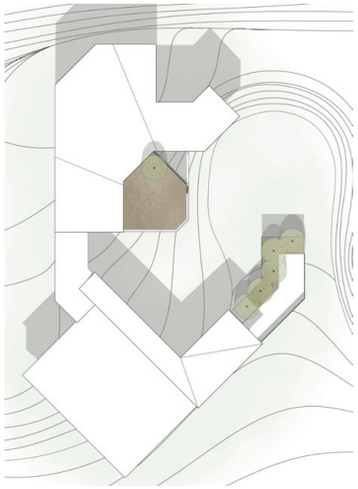
fall 2012

The way people move through this site was crucial for the ecology lab. Bikers and hikers need to move through easily on public trails. Visitors come to explore and to be instructed. Employers and researchers work and study. As a riverfront learning lab, the scheme took its cue from the form of the stretch of the Monongahela River that it is situated on. Riverbends are called meanders, already implying an arbitrary course, but their formation is not random, so the form of the site should likewise not be random. The bike path echoes the initial stage in the formation of a meander, flowing smoothly through the site, bending slightly to deposit people towards the public areas of the building. The visitors' path from the parking lot captures the nature of a meandering river, with a wandering path that leads slowly towards the waterfront, great curves depositing people into learning spaces. Outdoor learning areas resemble oxbow lakes where the curves grow so much as to cut off loops of the river.

The descent from the first floor to the ground floor seeks to evoke submergence below the surface of the river. Overlooks and balconies mark the circulation level, reminding those in the classrooms and labs that they are below the surface. The site deliberately restricts access to the waterfront. The movement through the project itself acts as a surrogate experience of river, rather than physically occupying it. The architecture becomes the learning tool to enhance the understanding of the river.



Site plan and ground floor plan



Roof plan

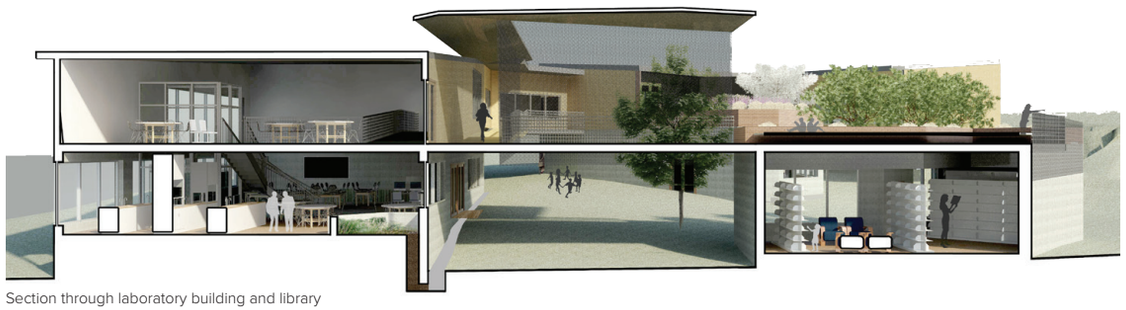
Second floor plan

First floor plan

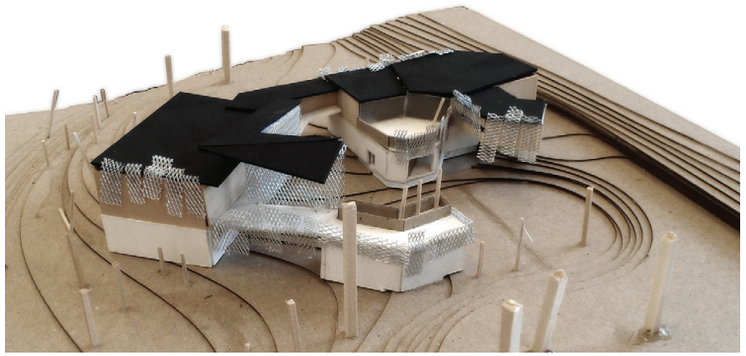
Section through both classroom buildings

"Submerged" classroom rendering

Classrooms and lab



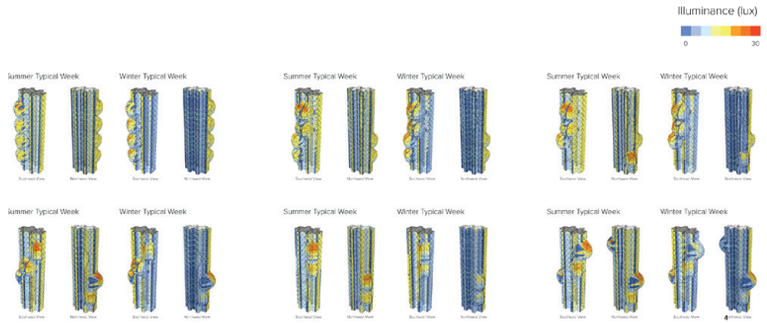
Section through laboratory building and library



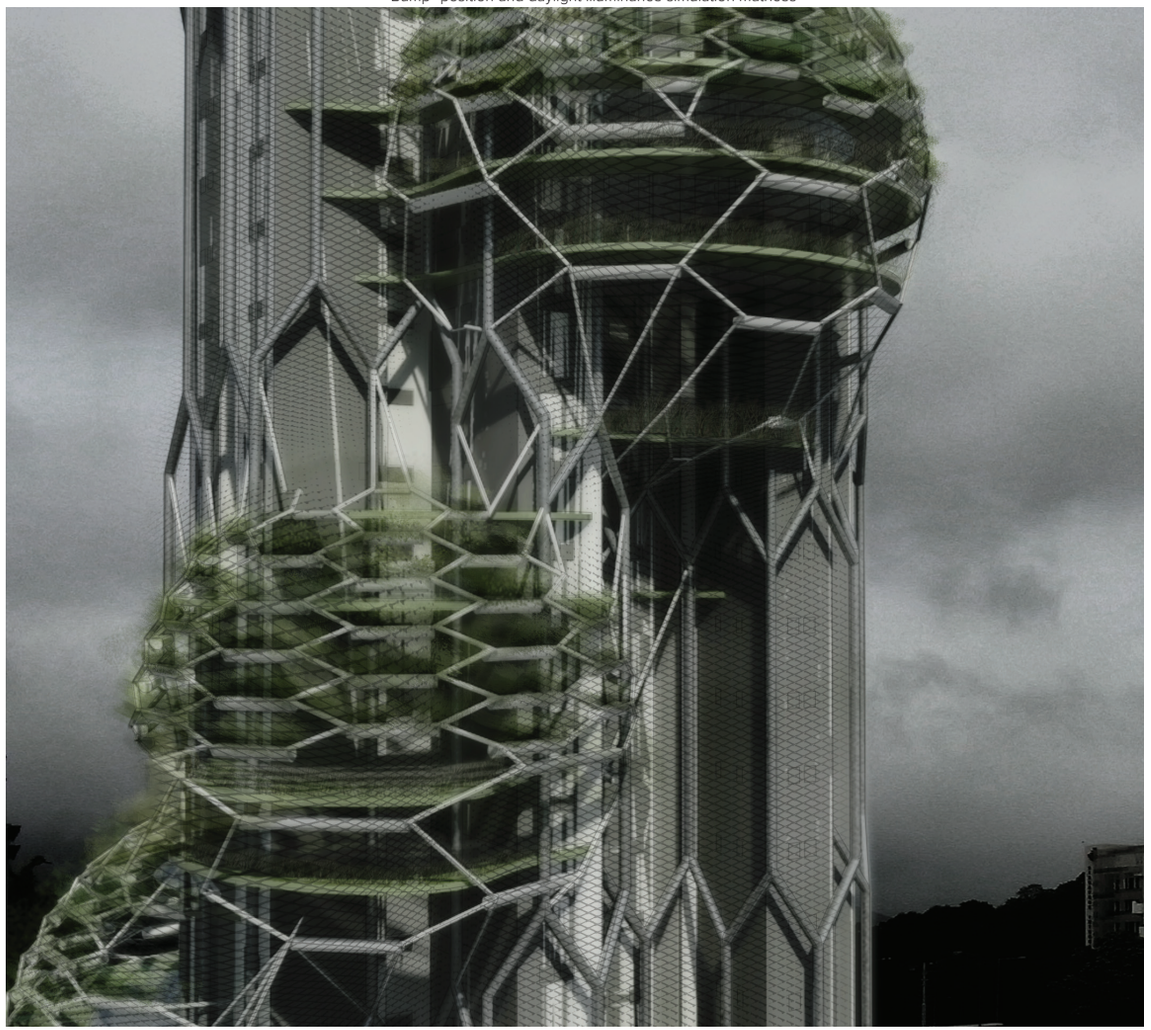
spring 2014

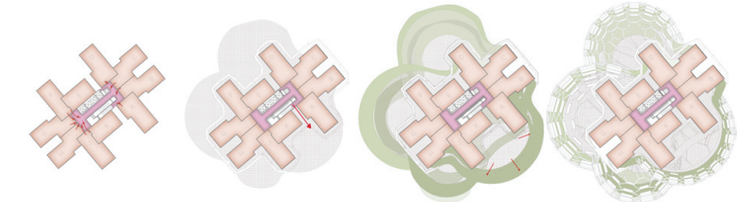
This project sought to apply an aquaponics sytem to the facade of apartments in Aberdeen, Hong Kong. There was a lack of general social spaces that the residents of the high rise could share. Thus, the system included extensions of the floor on certain storeys to allow residents to tend to the fish or plants on the outside and to spend time in a communal area.Digital solar analysis tools were used to see the amount of solar illuminance that the shape, size, and position of the bumps caused. The goal was to find the greatest variation of thermal conditions in each bump. The structure became an independent system that included pipes where bacteria could break down solid wastes. The troughs containing the plants and fish are solely on the bumps, where they will be accessible to the residents. The edge of the floor holds cattails that filter water.

Rendering across three buildings

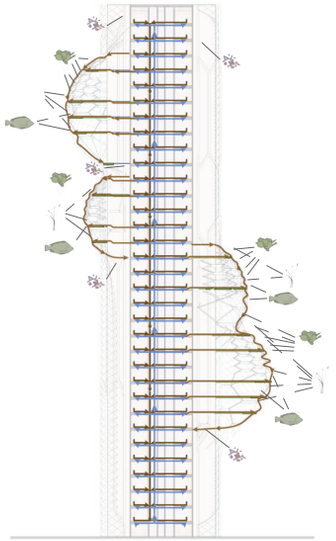


"Bump" position and daylight illuminance simulation matrices

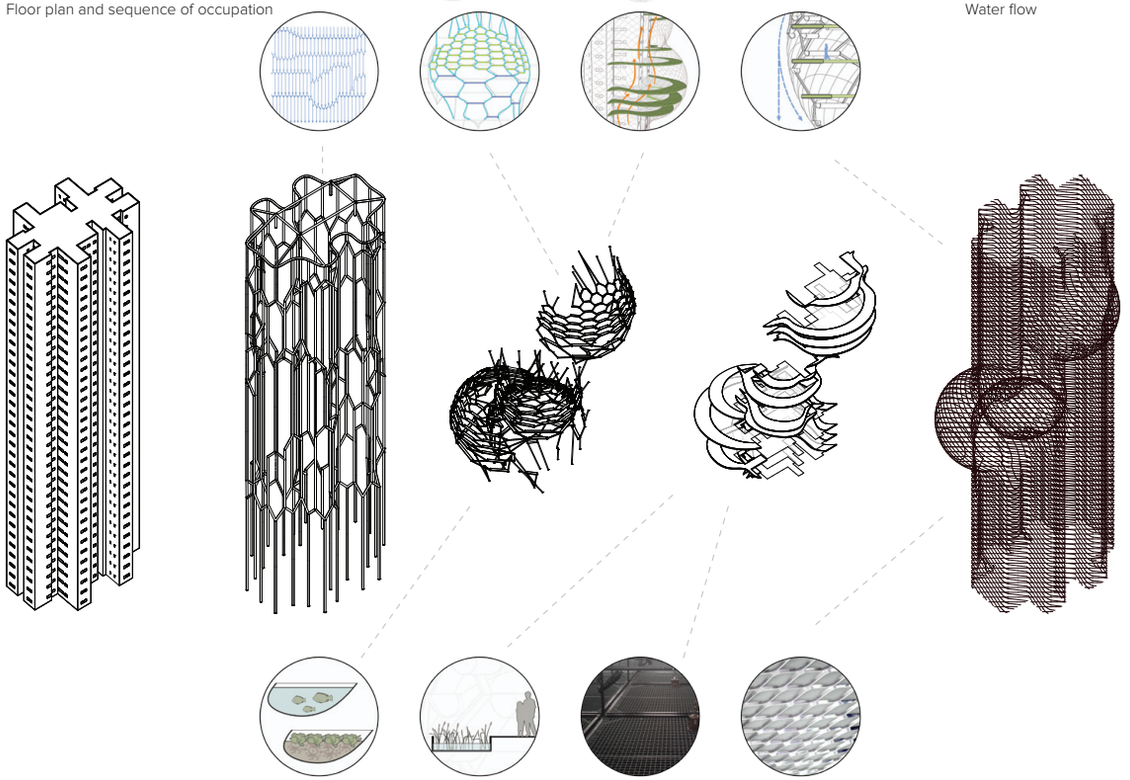




Floor plan and sequence of occupation



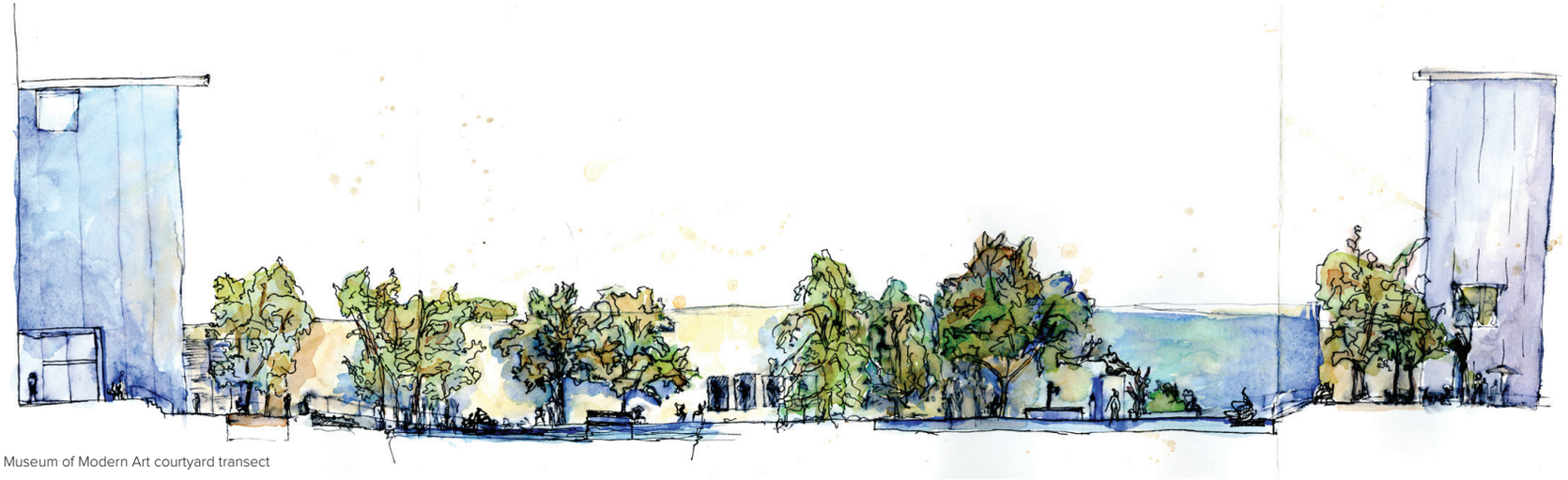
Water flow



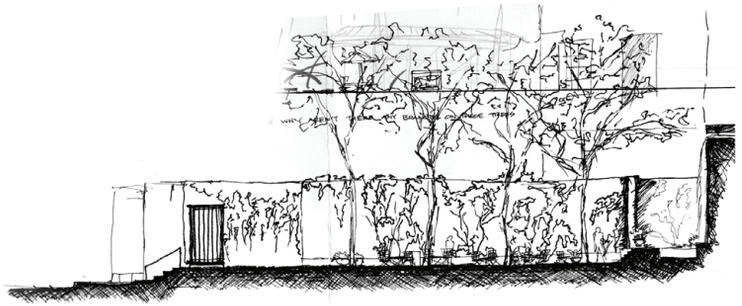
Exploded axohometric with details, from left to right, of the existing apartment high-rise, the structural pipes, the pipe and trough bumps, floor plate extensions, and rain screen

FACADE FOR HONG KONG HIGH RISES GREENHOUSE

PRECEDENTS RIOLA PARISH AND NYC PARKS



Museum of Modern Art courtyard transect



Paley Park transect

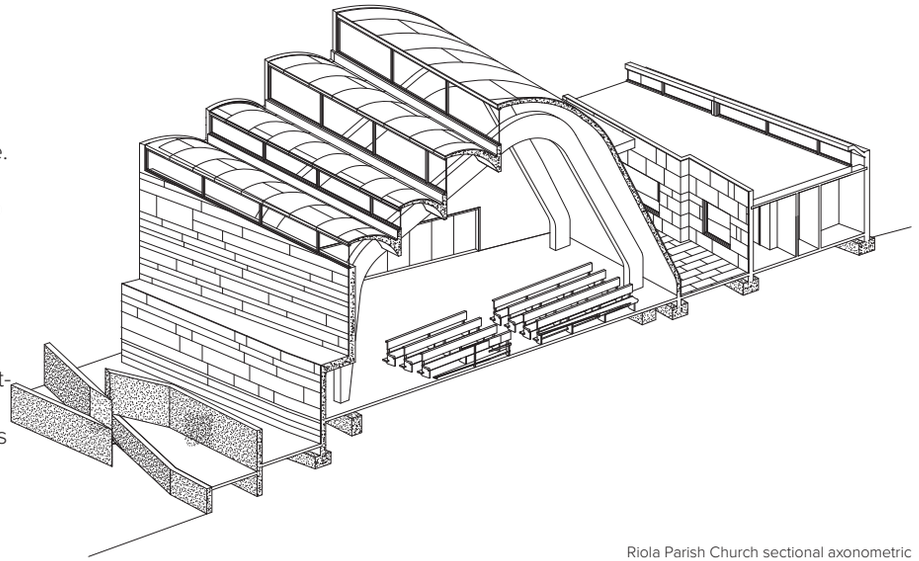
Bryant Park partial transect

fall 2012

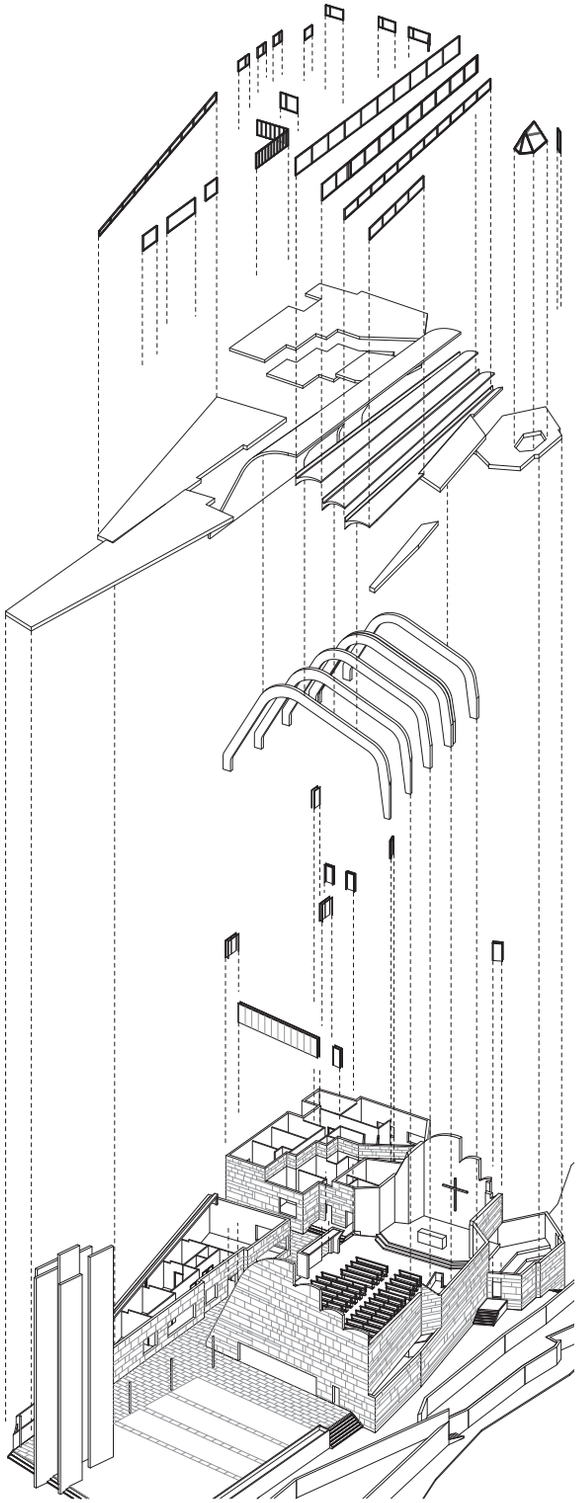
During a trip to New York City, our studio class visited several public outdoor spaces to examine the requirements for defining inside from outside. Several on-site sketches demonstrated that changes in elevation and uses of trees sufficiently provide differentiation and enclosure of space to imply indoor and outdoor.

spring 2013

This studio analyzed a precedent building's tectonic systems. For this partner project, we built a digital model of Alvar Aalto's Riola Parish Church. We discovered how the precast concrete ribs supported the curved shells of the roof to make the distinctive light scoops and created a section drawing and an exploded axonometric drawing to show so.



Riola Parish Church sectional axonometric

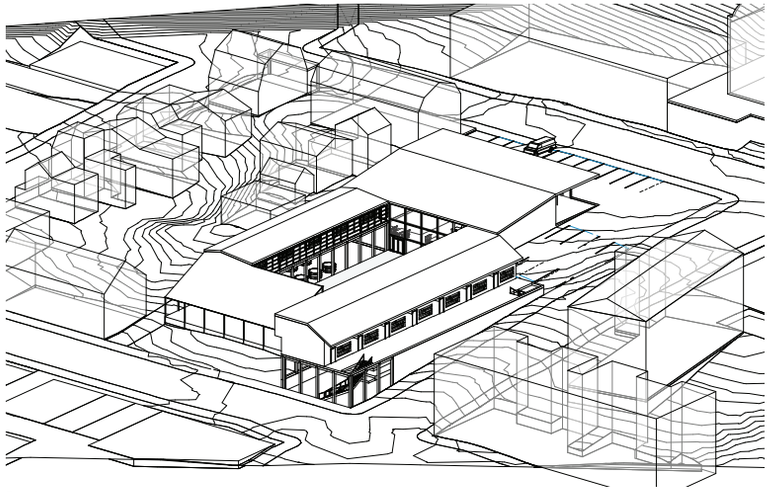


Riola Parish Church exploded axonometric

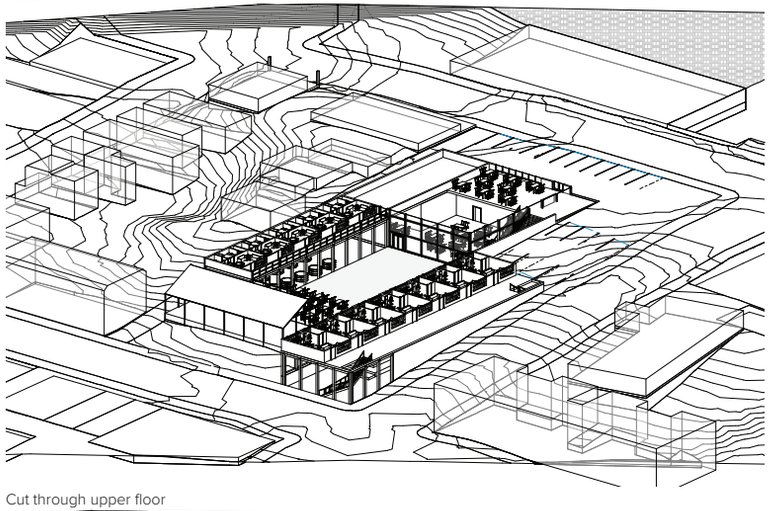
MILLVALE SUSTAINABLE COHOUSING SHOWCASE

fall 2013

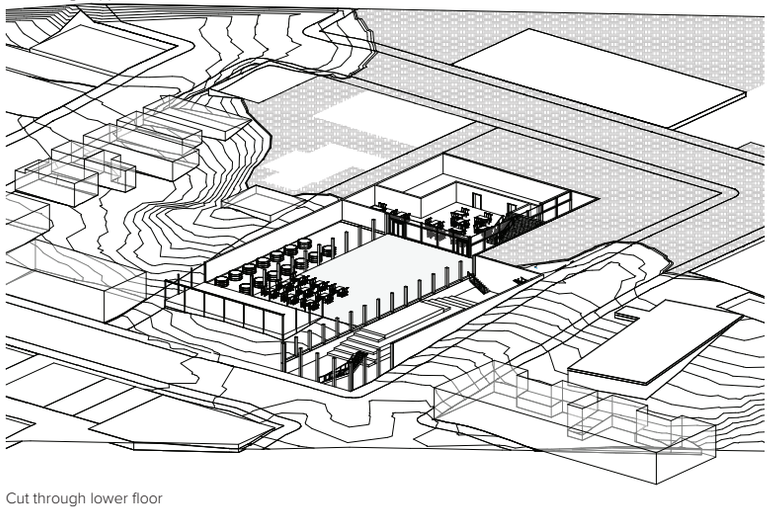
For a borough with a shrinking population and a declining economy like Millvale, PA, the goal of this project was to create a cohousing community that supported a business—in this case, a restaurant. Analysis of the borough determined a commercial axis on Grant Avenue and the biggest tourist attraction, Mr Smalls Theater, on Lincoln Avenue. Therefore, the proposed site was located between the two streets to connect visitors to the theater to the residents. A permeable parking lot for the public introduces visitors to the site. Because there are no places that are open late around, the restaurant is a much needed hang out for audiences after a show to stick around and provide business they would have otherwise taken out of Millvale. The cohousing apartment units form long arms that sit over the community spaces and aquaculture area that surround the central courtyard where the restaurant seating can spill out onto in good weather.



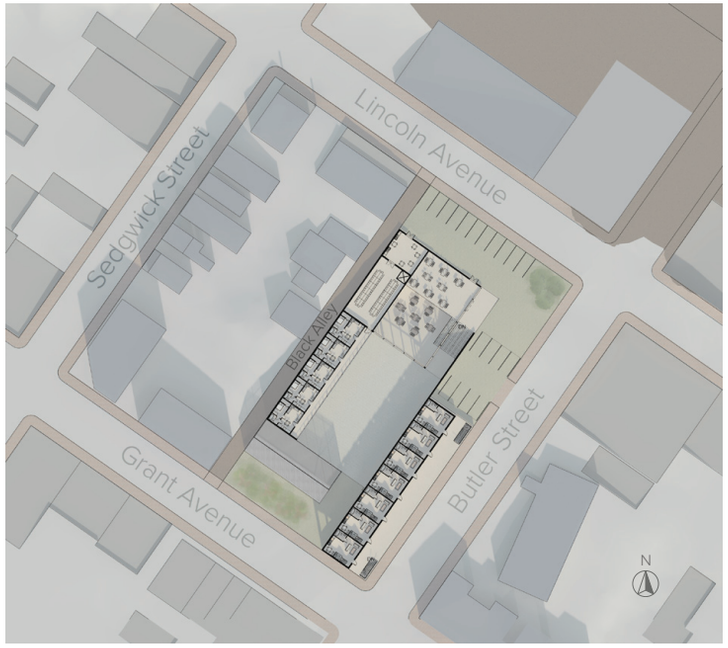
Roofs



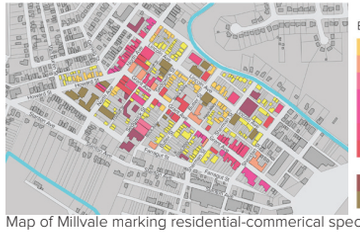
Cut through upper floor



Cut through lower floor

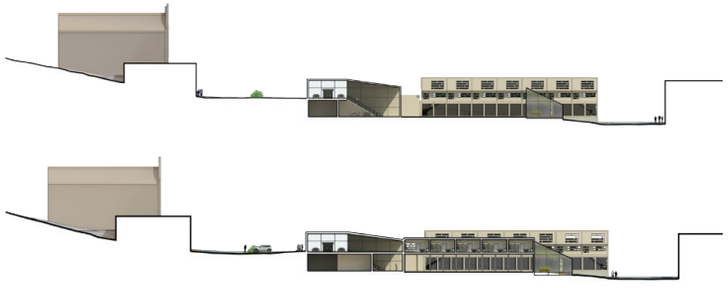


Site and upper level plan



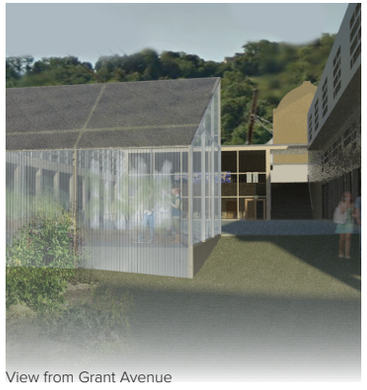
Map of Millvale marking residential-commerical spectrum

Section cut parallel to Grant Avenue, facing restaurant



Site sections showing how the restaurant transitions between height difference

View down aquaculture corridor, towards restaurant

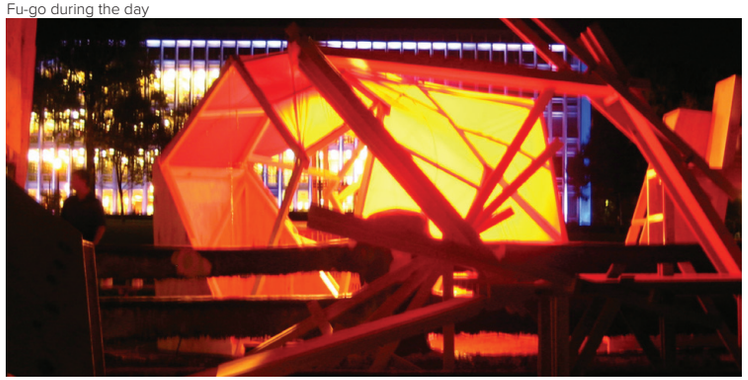


View from Grant Avenue

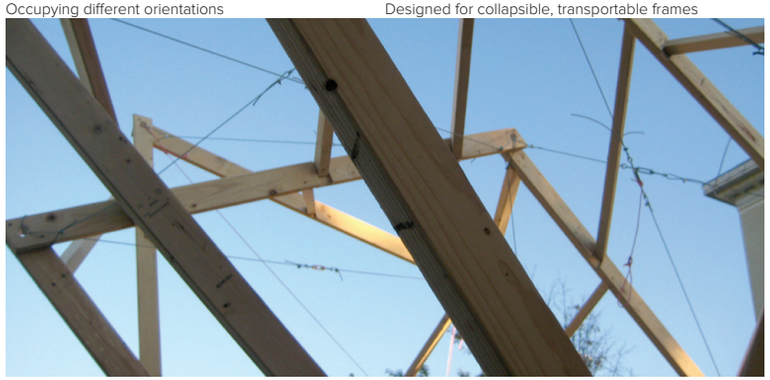
Fu-go during the day

Occupying different orientations

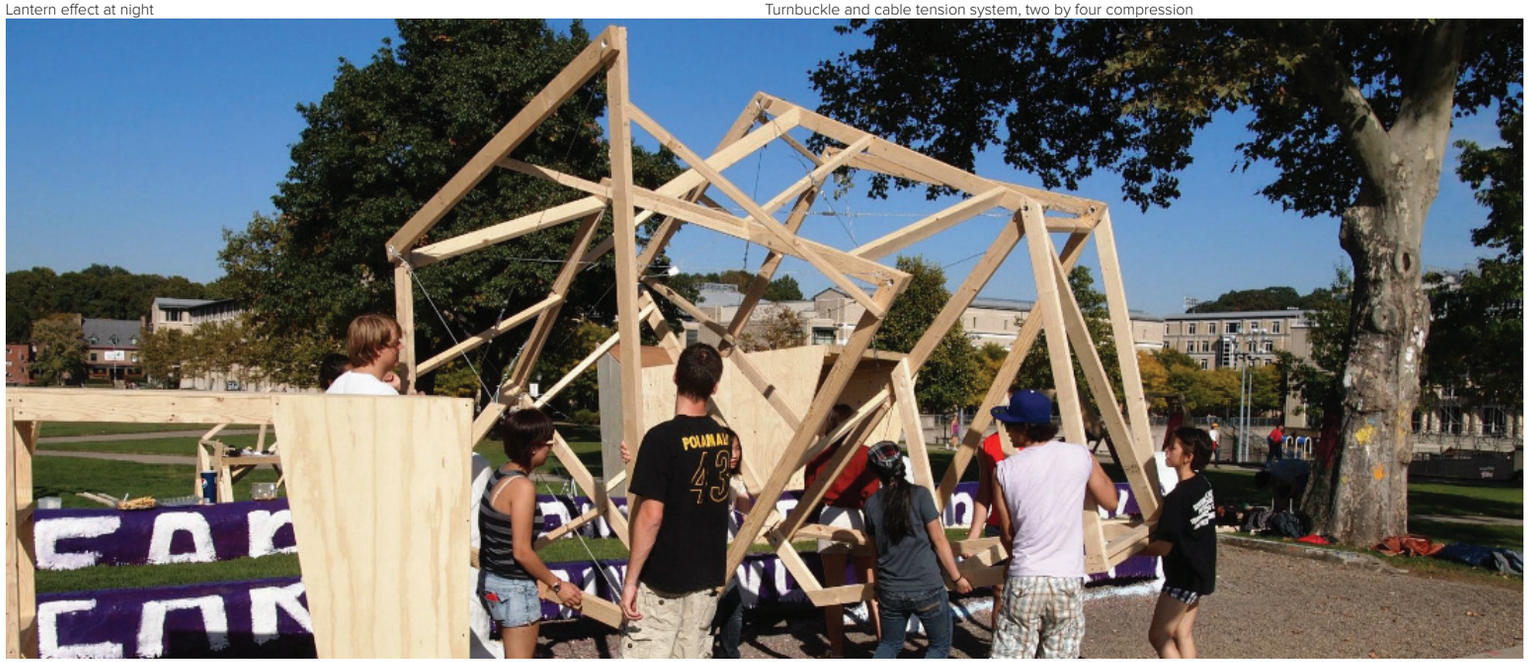
Designed for collapsible, transportable frames



Lantern effect at night



Turnbuckle and cable tension system, two by four compression



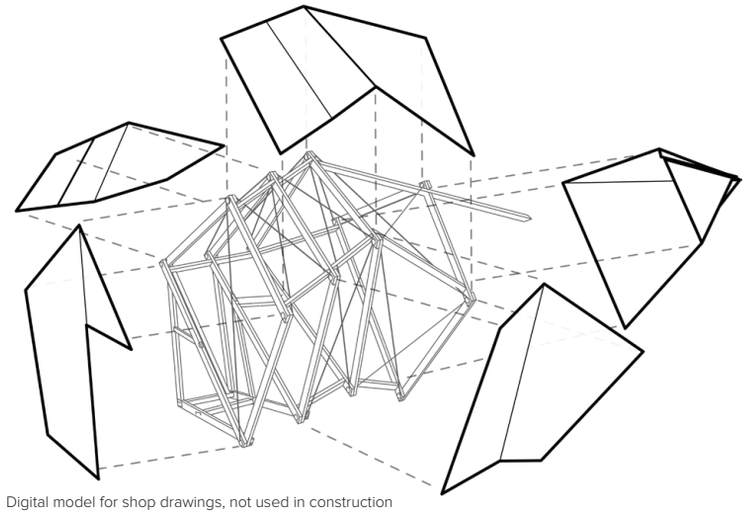
Transporting frame to site

FU-GO A SHELTER AT THE FENCE

fall 2011

Our studio class was broken up into 10 teams and each assigned to build a shelter for students guarding Carnegie Mellon's traditional fence. They were to be built out of 2x4s and screws with plywood and canvas enclosure. Shop drawings of each component were required before we were allowed to begin building. Our group decided to explore connecting 2x4s at irregular angles and so arrived at a construction method that deviated from the assigned screws and canvas. The irregularity of the offset trapezoidal frames called for flexible joints and for adjustable tension cables for structural reinforcement. The non-planar frame meant the skin could not be easily built with plywood, and canvas would not protect from inclement weather. We developed the idea of using waterproof ripstop nylon as an enclosure.

While the shop drawings were largely abandoned during fabrication due to the low tolerances of the digital model, the assembly method allowed enough adjustments for the shelter to be built sturdily. The fiery red that ripstop was available in resulted in the final project giving the impression of a lightweight, vermilion paper lantern. Thus, our group's shelter was nicknamed "Fu-Go" after the Japanese "fire balloon" weapons used in WWII. Like its namesake, the unconventional materials and construction of the Fu-Go shelter had a unique effect.



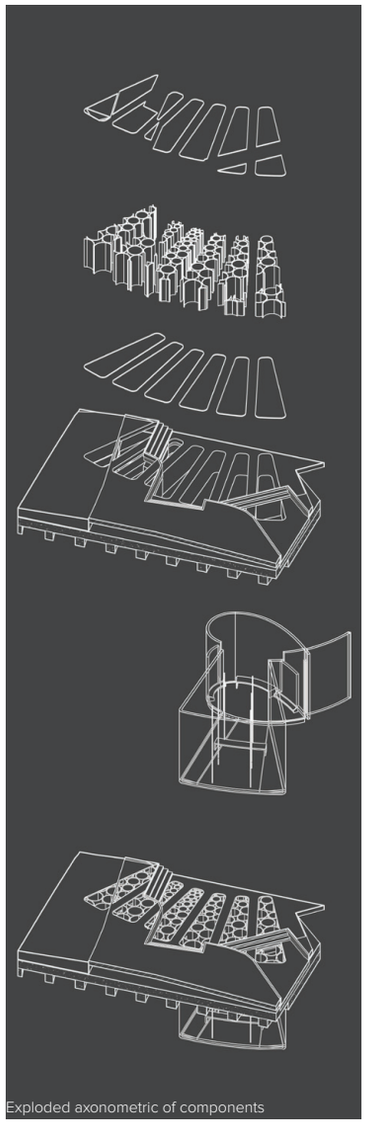
Digital model for shop drawings, not used in construction

spring 2012

This group assignment made a replacement entrance canopy for the Harvard Square train stop in Boston. While Harvard Square presented a clear transition space between commercial and academic areas across its surface, we sought to emphasize the transition from below to above ground and vice versa. We used packed, circular aluminum rings as the major component not just in the canopy, but in the surrounding square. At the top of the canopy, the rings produced shadows and faint caustics on the ground. Lower down the canopy, they made portholes allowing those in the square to peer down at the stairs. On the ground, the rings were embedded into the concrete square. Between existing structural elements, windows were punched entirely through the ground so that sunlight could shine through the rings down to the station in the day and that the T station lights could shine upwards at night. A small “observation deck” was created for users to linger in the space between below and above ground.

Top view of rings set in windows

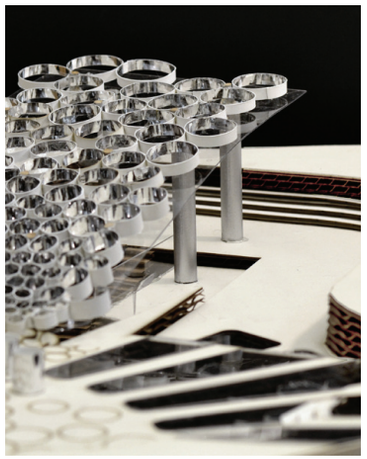
View of the “observation deck” from underground



Exploded axonometric of components

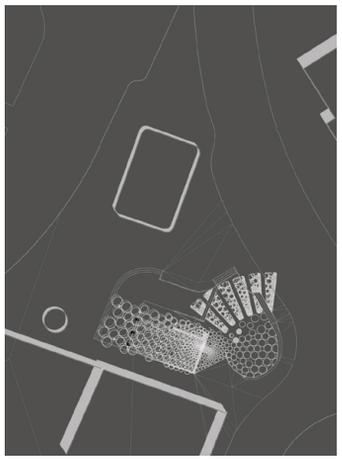
Site model

View of the “observation deck” from bottom of subway entrance

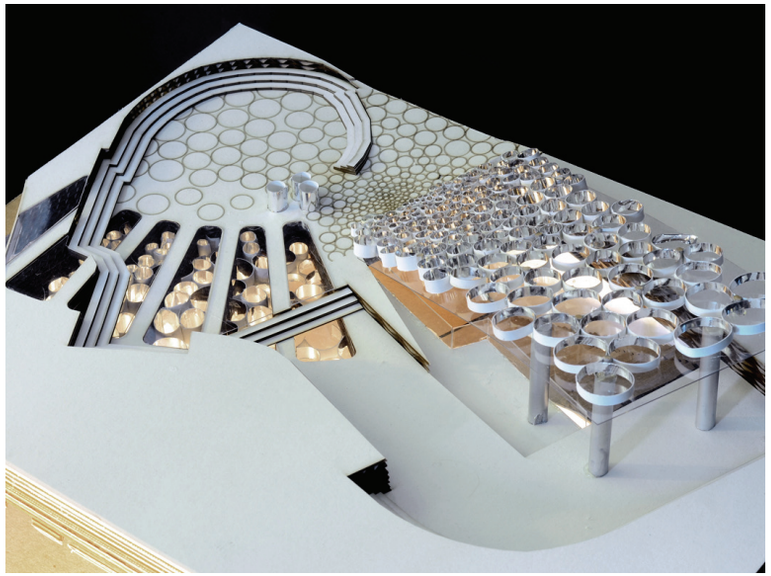


Model showing rings

Rendering of table-style windows



Site Plan



Model showing night time lighting effect

Model showing sunlight through rings effect

SUBWAY ENTRANCE CANOPY HARVARD SQUARE