Keywords

What was the experience like?

By: Ty Pritchard

Fast, and unlike anything I have ever done in my life. Some of the design-build crew had been working since January and others since July, but I feel we all took away something that cannot be taught and must be experienced first-hand. From the beginning until now, the design-build project has been full of small interactions and moments that I know I will carry with me the rest of my life. The design phase showed me that, though it may be difficult at times, many individuals can join forces to develop amazing work. Until we'd had our first few meetings, I had never really fully trusted in the value of collaboration. But then I started to see things that couldn't have happened in any other way. It took some time this summer before the reality of the project started to kick in. It didn't fully sink in until we rolled up the large metal door of the Progress Building and saw the blank, empty floor. We began building the floor diaphragm and kept working until the project was complete. It was no longer an idea, but a real harmony of everyone's hard work and determination. The experience was filled with anticipation, exhaustion, and joy.

Brittany awaiting the nail gun. She was not happy we stole it.

The fair-goers enjoying some time off their feet. The shading structure was the cool place to sit.

Peter and Chris A. shooting the breeze through the kitchen window.

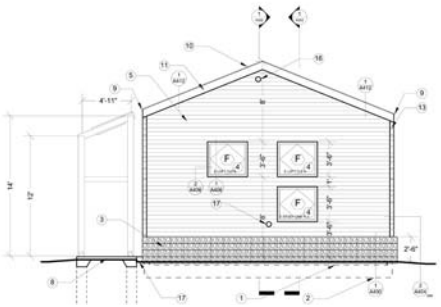
The second day when the floor diaphragm was completed. The same day Mike's pickup broke down. Nick and I were stranded on site until almost 8:30pm.

"Pack your bags; you're going places, kid."

-unknown

The schematic design (left) used very large Skatelite panels as an exterior wainscoting. The construction documents (right) specified smaller, 'brick'-style gabions. Those seen at the Eco Experience (bottom) were about four times larger than the brick-style concept.

Can You Buy Gabions?



Andrew Budke

Gabions are fairly common in civil projects where erosion is an issue: terraces, canals, highways, etc. But they're enormous; manufactured gabions are usually not less than three feet thick in any dimension. The gabions on the Passive House could be much slimmer (just four inches thick) and use far less metal because they were not acting in the same loadbearing capacity as their larger cousins. Instead, the gabions performed as a ventilated rainscreen much like brick or siding. These systems rely on a cavity behind the finish layer which, depending on the arrangement of openings, ensures proper drainage and/or ventilation.

ga · bi · on \'gā-bē-ən, 'ga-\
noun: a basket or cage filled with earth or rocks and used especially in building a support or abutment

merriam-webster.com

It is possible to buy large gabions, but those seen on the Passive House were made by hand during construction. Their design was not finalized until midway through the construction phase, even though the decision to use gabions was made early in design development. There were two different methods used to create the steel cages of the required sizes. [continued...]

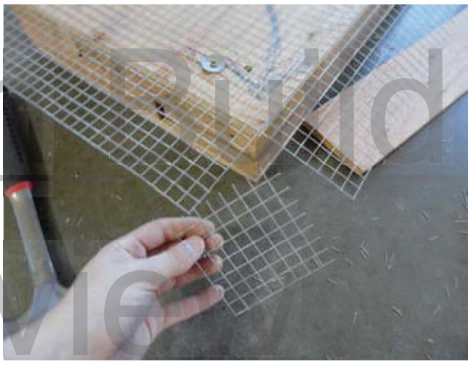
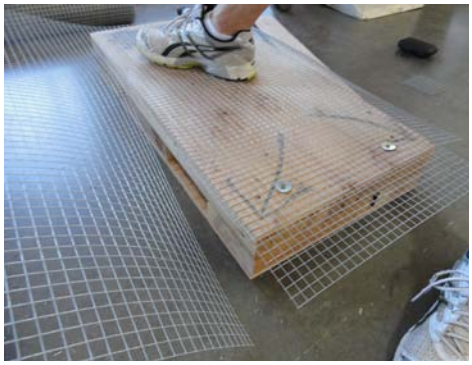
[...continued]

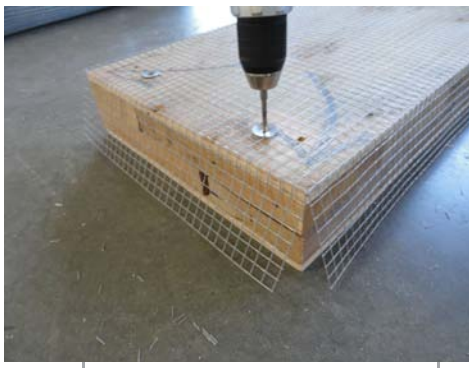
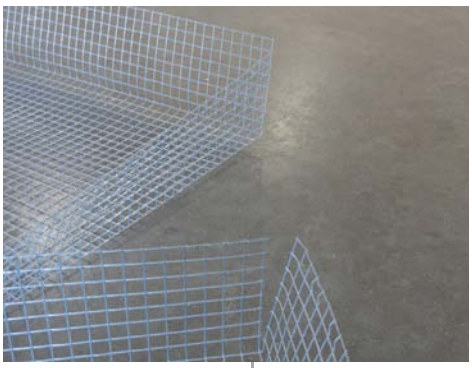
The first method, used to produce the north- and eastside gabions, proved to be the most elegant. The cages measured 32" tall by 16" wide and 4" deep. Each cage started as a sheet of 36" hardwire cloth which was temporarily fastened to a template block measuring 32" x 16". An extra 4" of steel extended beyond two sides of the template; this distance represented the gabions' depth. A small square was cut from the corner of the material and the two 'flaps' were folded along the template.

This produced a single corner, or three sides, of the cage. When this shape was combined with its reciprocal, a full, six-sided form was created. The two halves were then 'stitched' together using steel tie wire and reinforced with rebar ties. A top flap was left open so that rock could be added once the cages were fastened to the wall.

The method was time-consuming, but effective and very efficient in terms of material. Each gabion utilized about 94% of the hardwire cloth needed to produce it. The template block formed clean, consistent edges which lent the wainscoting a surprisingly light, crisp quality.

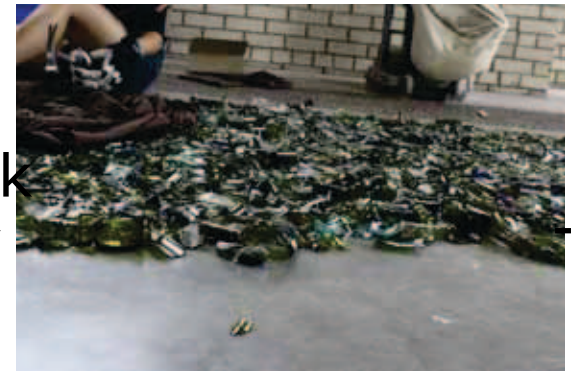



Wine bottles?

break →



mix →

mold →

float →

grind →

install →

Often times restaurants are not required by the city to recycle the copious amounts of glass, aluminum, plastic and paper they go through on a daily basis. While working in a restaurant and seeing countless wine bottles tossed into the garbage, I thought collecting them could give us the opportunity to explore a material that gave new life to this otherwise discarded product. We did many experiments with ratios of glass, cement and aggregate. Using the glass as the majority of the aggregate reduced our need for new materials and saved many bottles from the landfill. The recycled do-it-yourself projects on display at the fair were an opportunity for us to discuss with viewers the embodied energy within these materials, the importance of recycling with visitors and the easy ways anyone can create new, beautiful products out of waste.

Twenty-two creative (at times competitive) minds designing a six-hundred-square-foot cabin result in a collision of concepts. Ideas are thrown up, interpreted, exchanged, interpreted, transformed, interpreted. The source of the idea becomes less important through the design process—it is lost in iterations. This, I believe, is the beauty of collaborative design. The project is then presented, installed/built and then opened for a new round of interpretations. Above is my representation of the collage of driving elements or ideas that I believe identify our project—interpret it as you like.

What are 3D **renderings**?

These images are generated from a 3D digital model of the Passive House that was rendered to have photorealistic qualities. Images like these helped the student team understand what the Passive House might look like during the design phase by representing the house with simulated lighting and materials. 3D renderings are sometimes used to generate interest and excitement for a project in the Architectural profession, and in the case of the Passive House, they were one of the ways that the team chose to communicate design intention when the house design was first exhibited for public display.

However, these pictures were not the only means used to represent the Passive House design. From models, to sketches, to beautiful hand drawings, each student on the design team contributed to the vision of the Passive House by bringing a unique set of skills to the group. 3D renderings such as these were just one of the visualization methods used.

Computer-generated imagery is a relatively new means of visual communication that has been gaining momentum over the last two decades. The software involved is becoming simpler to use while allowing its users to achieve ever more convincing photo-realism. As one of the many skills that was developed during the Passive House Design phase, this exercise in virtual representation was a great way for some of the students on the Design team to become more familiar with this visualization tool.

Time-Lapse

How to use time-Lapse to record construction?

After we made the decision to use time-lapse we needed to figure out how. At first the task seemed too difficult, but we soon discovered that by installing an application called "time-lapse" on an old iPhone, everything got a lot easier. After this discovery we were able to determine more ways we could use the technology to document the project. We further decided to use two iPhones at once to gain two vantage points. We also mounted each phone so it always recorded the same vantage point. Typically one of the phones remained at the front of the structure, while the other phone moved around to capture more specific type of work that happened throughout the build.

During the build, the daily ritual included setting the phones to take a picture every five seconds, checking them periodically, downloading the images, and making them into a time-lapse movie. This movie was then uploaded to YouTube every night and posted on the studio's blog, *ndsudesignbuild.com*. Although the time-lapse documented in detail the entire build, it also drew a lot of attention to the project as it was happening. Anyone anywhere could follow our progress by watching daily uploads. The intensified speed of the time-lapse and ability to watch fourteen people work at once was very exciting.