

Sustainable Design/Build Program: A Yestermorrow and UMass Collaboration

Questions + Answers from the April 1, 2013 Webinar

Q: It does not look like any ADA requirements were considered. Why not? [Roy Gee]

A: [See Q& A of talk] This is admittedly a shortcoming of both project outcomes, and one that we hope to address in future projects. There were many conversations about universal design. Faculty and students were aware of the general requirements of ADA, and these constraints were considered. Given the client profile of both projects, site constraints, and other competing considerations these opportunities were just not prioritized.

Q: Please address potential and problems in applying Universal design in a Tiny House. [Tom Hirsch]

A: [See Q&A of talk and previous response] Two big obstacles for barrier-free design in a tiny house are 1: access to the front door due to extreme grade change, as most tiny houses are raised on a trailer, and 2: appropriately-sized clear circulation paths. For example, imagine a single wheelchair clear width in a hallway (36") + minimum maneuvering clearance in a bathroom (5'). When these components are laid width-wise in a tiny house on a trailer, they reach the width limit for most state's basic towing restrictions (without a permit), even without wall thickness. This points to a need for innovative solutions that would keep the building tiny, while also supporting universal design clearances.

Q: A question about the wet bath. I like it a lot and did something similar on a small 267 s.f. house I did. The problem I had was with the plumbing code and the shower area infringing on the clear area in front of the toilet. The plumbing inspector wouldn't allow me to call the drain a "shower drain" but instead I designated it a "floor drain" that required a trap primer to insure the trap was always full with water. Did you get around the plumbing code in a creative manner?

[Michael Fifield]

A: We were fortunate not to encounter this problem: we worked without building codes due to the trailered site, and the toilet was waterless. We would be curious to talk to the building inspector to hear their concerns.

Q: Were there any outgassing issues to be considered in the small house re using exposed plywood at the interior?

[Michael Cohalan]

A: The outgassing from the plywood and finish was a concern. Again, this is an issue of balancing competing considerations. Beyond aesthetic reasons, we determined that we needed the plywood to act structurally in transport to resist shear, as well as for a nailing surface. Supposedly the exterior-grade plywood contains phenol formaldehydes that do not off-gas, as opposed to some of the interior grades that use urea formaldehyde. If someone has more information on this we would be interested to hear it.

Q: Were students able to obtain credit at their home school for course work? [J Kevin Ruedisueli]

A: For the most part, this varies across sending institutions. The curriculum was designed to be an equivalent to a typical semester in architecture school, and we are working with every student's home institution to craft equivalent credit courses that are useful to them.

Q: Is sustainable site planning part of the general curriculum? [Peter Smith]

A: Yes it is part of the sustainable design semester. In the case of a mobile tiny house, this issue gets complicated by the building's changeable site. Still, students created a client manual with suggestions for siting and orientation.

Q: How much emphasis is put on building science techniques? Do you find that the students are familiar with these techniques, or is it something new? [Chris Gummo]

A: Students are coming to our program above all to learn how to design and build. Therefore, ensuring that they leave with competency in this area has become a priority. In the past two semesters we have focused on sustainability metrics in the New England climate. We have experts in the field also come in to give guest lectures, such as John Snell, founder

of the Snell Group, who gave a talk on infrared thermography, building envelopes, and insulation. Typically these concepts are new to students.

Q: Given your experience leading the design/build studio project, what do you think is transferrable to those in the profession who are involved in integrated project delivery or design/build? [Tony Gray]

A: Our DB process allows us to be very flexible in the field. We often times enter the building process with very few drawings and maybe just a vague idea of what we want to achieve. But because we are both creating and executing our own ideas, we can produce great results within tight tolerances. In these cases, we rely heavily on mockups. While this may not directly translate to the field, it provides a new lens for improving the dialogue between architects, contractors, and their subs. A good challenge for professional architects is to ask “how would I build what I am drawing?” and to really imagining the act of creation. This of course requires that more architects gain the experience of actually building something at full-scale.

Q: Did you encounter any problems working with the local building officials, especially with the custom used pipe lighting fixtures and the UL Listing requirement? [Raymond J. Kelly]

A: No.

Q: Is there are price tag attached to the houses that could be built commercially without student labor? [Roy Gee]

A: With free student labor the last two projects have been completed around \$100 - \$130 a square foot. Because these projects are much more like custom works of art-architecture then they are prototype models designed for replication, translating the labor into a dollar amount is complicated. It would probably be expensive to do some of the things our students do for free.

Q: What type of heating systems were used in both of these small houses? [Raymond J. Kelly]

A: In the 2011 project, two Broan electric kick space heaters were controlled by a single thermostat. In the 2012 project, an Elm woodstove manufactured by Vermont Iron Stove, and a backup Rinnai direct vent propane wall furnace were provided.

Q: What was the time frame used to design/build the small trailer house and what about the cost and what Bauhaus have to deal with the project? [Mohammed Musleh]

A: Four weeks to design, and 12 weeks to build. Our program finds roots in the Bauhaus movement through direct lineage and teaching methodology. Johannes Itten > Josef Albers > Robert Engman > Dave Sellers > John Connell.

Q: Do you, and if so, how do you work with the building department permit in the 2012 project in terms of schedule for example? [Jozef van Ruiten]

A: We brought our local building authority in to give an educational talk with students, and they went above and beyond to accommodate us. They also turned around drawing approval in a short timeframe. It helps that we have good relationships with these people and are proactive about making sure we're meeting their requirements.

Q: Have ever you suggested that students look at repurposed materials inc. website wonderful items that may spark the creative process? [Stephan Brander]

A: We haven't. Although one of our instructors is a real collector of salvage materials, and we encourage students to scout Craigslist and other physical salvage stores for their materials.

Q: What were the budgets for the two houses? [Jesse Schwartz]

A: 2011 = \$36K and 2012 = \$80K

Q: Have you ever considered using SIP (Structural Insulated Panel) panel construction on any of your projects?

[Raymond J. Kelly]

A: Yes, we certainly discuss SIPs as part of our building science lectures. So far they just haven't found a place in our buildings. If weight is not a constraint, as it was in the first tiny house, we've preferred to use cellulose.