



UB FLOATS

Adesina, Bachar, Buenafe, Hunka, Katzer, McCadden, Prieto, Van Oss
Department of Civil, Structural & Environmental Engineering

The State University of New York

School of Engineering and Applied Sciences (SEAS), University at Buffalo, State University of New York



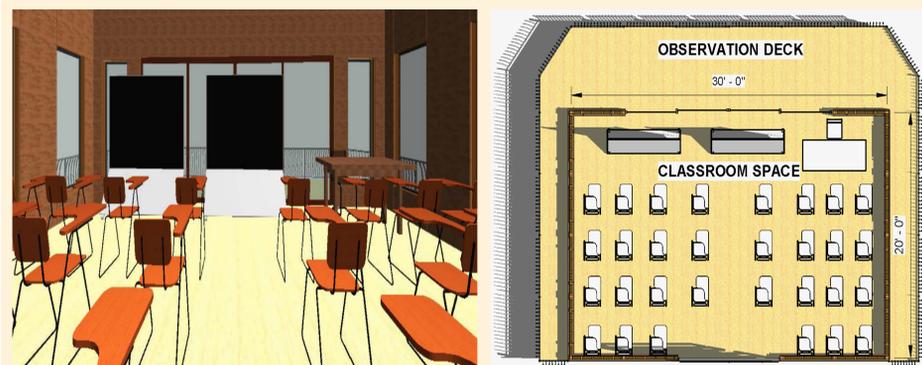
ABSTRACT

As part of the SEAS Experiential Learning Program, conceptual designs for a floating classroom were developed. The preliminary classroom concept has been designed to facilitate:

- Exploration for toddlers and preschool children with a view over the water
- Lectures and labs where ecology, environment, and sustainability are central
- Unique events including art shows, where creativity is emphasized.

In addition, the design embraces use of recycled materials in alignment with the university's vision for sustainability. Campus life and the surrounding community will be enriched with the introduction of a new, unique, and interactive learning environment.

BASE MODEL



General

- Interior: 600 ft²
- Exterior: 360 ft²

Lighting

- Interior is lighted by the sun during daylight hours.
- Luci lights, a type of light fixture that uses a solar-powered battery, will allow for accessibility of the classroom at other hours.

Safety

- Readily accessible life rings
- Surrounding hand rails designed up to Building Code
- Heavy timber-fire resistant roof beams
- ADA compliant gangway

Cost Estimate: \$26/sq. foot = \$24,960

CALCULATIONS

All loading calculations were done according to ASCE 7-10

- Withstand winds up to 120 mph
- Withstand snow loads up to 105 psf, which is comparable to 6 ft. of snow
- Accounts for furniture and occupant loads in each different use case

ADDITIONAL FEATURES

Comfort Plus

- Interior heating & lighting
- Flexible interior additions



Cost Estimate: \$46/sq. foot = \$44,160

Net-Zero

- Green Roofing or Solar-Paneled Roof for insulation or energy independence, respectively.



Cost Estimate: \$56/sq. foot = \$53,760

DESIGN REQUIREMENTS

The idea behind the structure was initially proposed in order to satisfy three uses: child care, academic, and community.

Requirements:

- Maximum occupancy of 32
- Remain in Lake LaSalle year round
- Deck space surrounding the structure for outdoor use and added stability
- Fully enclosed classroom space with doorways onto the outer deck space

This classroom is proposed as a demonstration project, aimed to last three years. As a demonstration project, maintenance would be minimal.

MATERIALS

Locally Sourced Materials

Materials for superstructure:

- Glass for windows and doors
- Roof panels
- Wood panels for walls
- Railing surrounding deck space

Materials for substructure:

- Composite wood for decking
- Cylindrical drums for flotation device
- Anchoring system

FUTURE DIRECTION

In order to proceed with this demonstration project, funding is an essential component. Once funding is obtained, detailed plan sheets with exact measurements of each structural item will be composed.

REFERENCES

The New York State Building Code, 2010
The New York State Fire Code, 2010
Minimum Design Loads for Buildings and Other Structures, ASCE 7-10

ACKNOWLEDGEMENTS

Dr. Andrew Olewnik
Russell Crispell
Scott Ludkta

Jason Havens, P.E.
Dan Ball