



FOAM ADVOCATES

FROM SURFACE TO VOLUME

BRANDON CLIFFORD + WES MCGEE

Periscope is the winning entry in the national 10UP! competition, but it is also an experiment derived from our ~~obsession~~ ongoing research into foam as a building material.

In recent years, the boom in digital fabrication has empowered architects. By directly engaging the fabrication process architects have been able to regain control over practices and techniques previously relegated to the construction industry. Unfortunately, industrialized construction materials have been compressed into economically-friendly, paper-thin sheets. Industry, driven by economies of production and manufacturing, attempts to provide better building materials at an efficient price. Composite woods are covered in luxurious veneers, stone construction is reduced to wafer thin cladding on stacked CMU, and walls are rendered as thin as possible. These well intentioned innovations have had a parallel effect on architecture -- collapsing depth and favoring thin over thick. The catalog of sheet materials grow and contemporary digital fabrication methods

EPS FOAM UNIT

HEIGHT: 8'-0"
WIDTH: 4'-0"
DEPTH: 12"
WEIGHT: 32 LBS



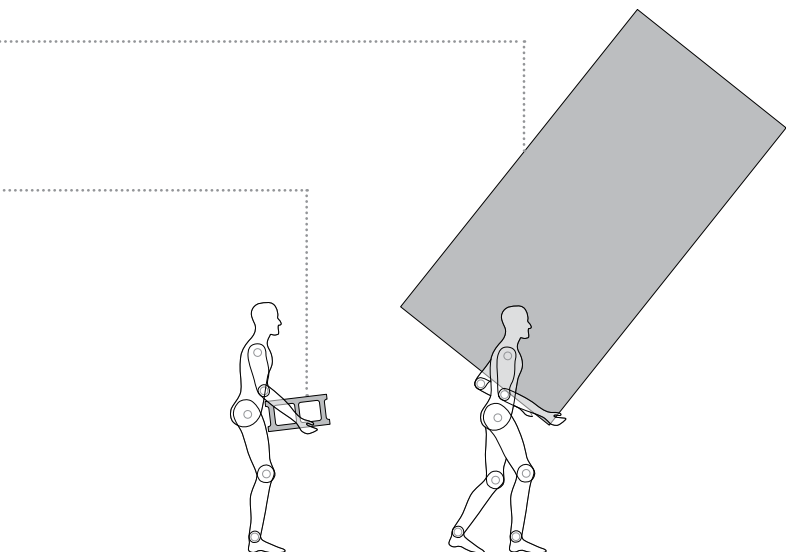
STANDARD CMU

HEIGHT: 8"
WIDTH: 16"
DEPTH: 8"
WEIGHT: 32 LBS



continue to produced a plethora of folded, notched, bent, perforated and otherwise surface-driven projects.

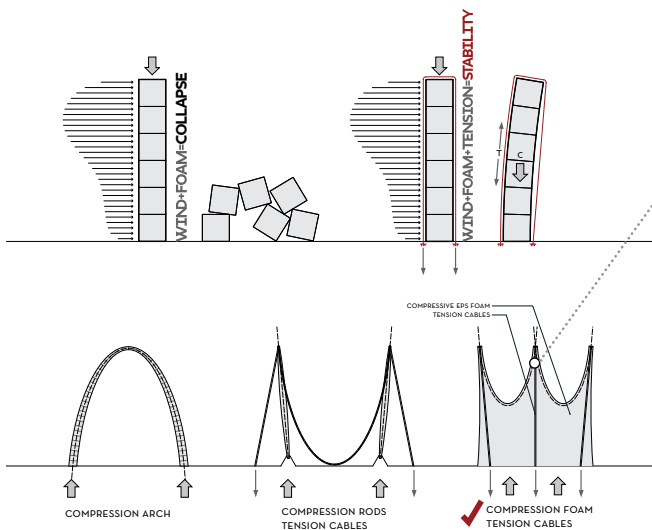
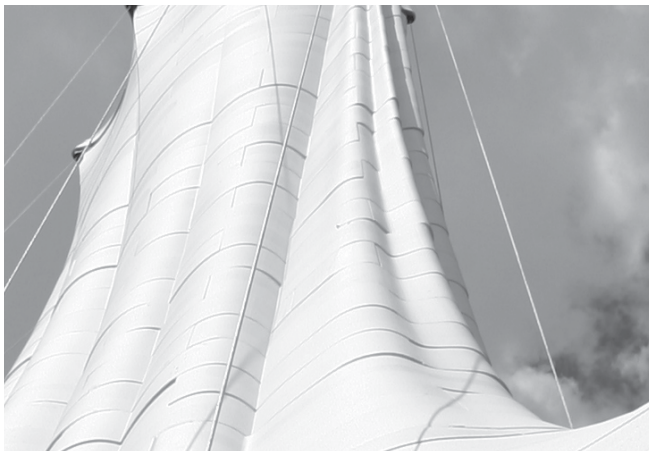
In order to resist that tendency, we advocate a material with depth, though one that might still compete with the economic logic of sheets. Cheap and thick, expanded polystyrene (EPS) foam is inherently volumetric (98% air) and at around \$1 per cubic foot, one of the cheapest building materials available. Perhaps because of this fact, it has a certain stigma and is usually relegated to fill material. The Federal Highway Administration currently uses large blocks as earth fill under highways (EPS foam is literally cheaper than dirt!). But there are a number of other advantages to the material that have perhaps been underappreciated. It contains no CFC's and is 100% recyclable (manufacturers that supply stock material will also pick up scraps from the fabrication process to toss back into their next batch). These material properties in conjunction with advanced fabrication methods provided a solid platform to revert back to a stereotomic logic of construction.



150
151



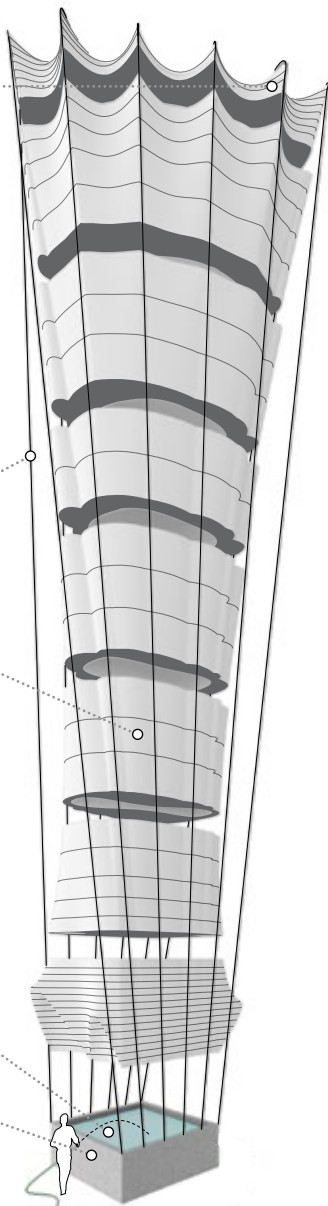
Foam sub-assemblies are designed to be carried by two people.



RHETORICAL STRUCTURE

TENSION CABLES

7/16" DIAMETER CABLE

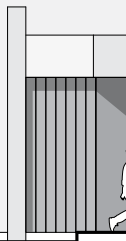
**EPS FOAM SUB-
ASSEMBLY**2LB DENSITY
SIZED FOR 2 PERSON
CARRYING CAPACITY**WATER**2050 GALLONS
16,500 LBS**BALLAST BOX**

In an effort to test this theory we searched for a competition that would allow us to control the process of fabrication and assembly. The 10up competition called for large-scale installation proposal to serve as signage for the week-long '*Modern Atlanta*' event while addressing contemporary architectural concerns. More to the point, a series of stringent parameters needed to be addressed.

- Fabrication in less than 1 month
- Completion for less than \$5,000
- 10'x10' maximum footprint.
- Installation on-site in less than 24 hrs.

There was a strange omission from these regulations -- a height restriction. As one might suspect, other entries remained in a 10' cube volume setting. at 50', '*Periscope*' stood out as one of the most ambitious of proposals.

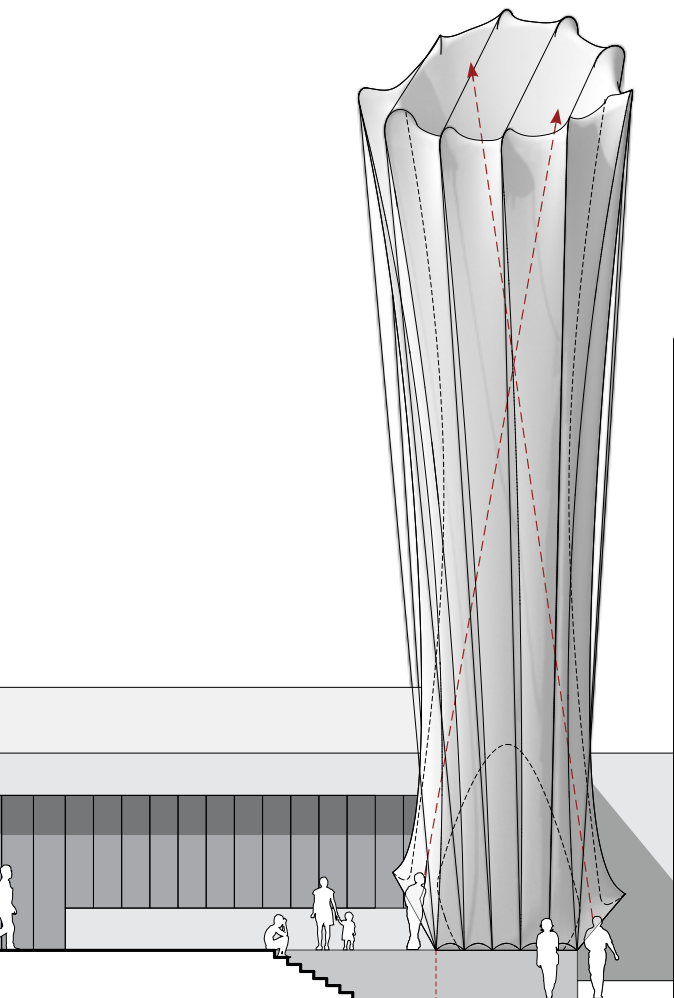
At first glance, the tower appears to be a tensile fabric pulled vertically by compressive rods, similar perhaps to a deployable tent. In fact, the tower functions in opposition to that initial reading. Where the eye reads tensile fabric, the tower is in fact compressive foam, and the rods in fact perform as tensile cables. This rhetorical inversion invites spectators in for closer inspection to find the tower is not constructed of thin surfaces at all, but rather carved from solid blocks of EPS foam. Upon discovering this illusion, the spectator is offered a glimpse into the means and methods of fabrication that make the tower possible. Though it has been cut by a robotic hotwire, the logic of this installation is in fact closer to stone masonry than to laser cut panels. The 500+ custom carved foam blocks stack in a running bond. The interior and exterior surface of the volume kiss at a minimum of 4" in the center of the tower but are free to expand and depart from each other via an internal poché that no-one minds. After all it is just foam!



TOP OF TOWER
ELEVATION 50' - 0"

154

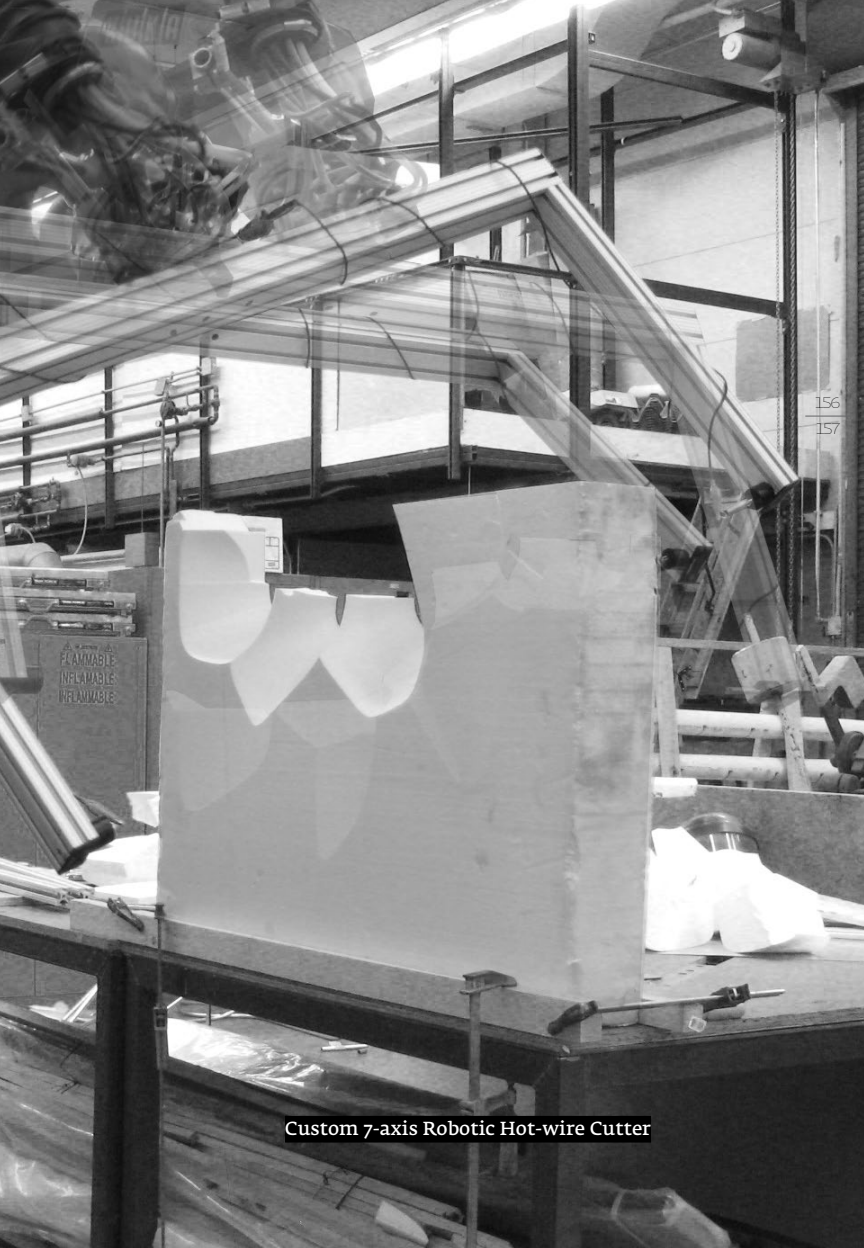
155



TOP OF BALLAST
ELEVATION 3' - 0"

GROUND
ELEVATION 0' - 0"





156

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Custom 7-axis Robotic Hot-wire Cutter

