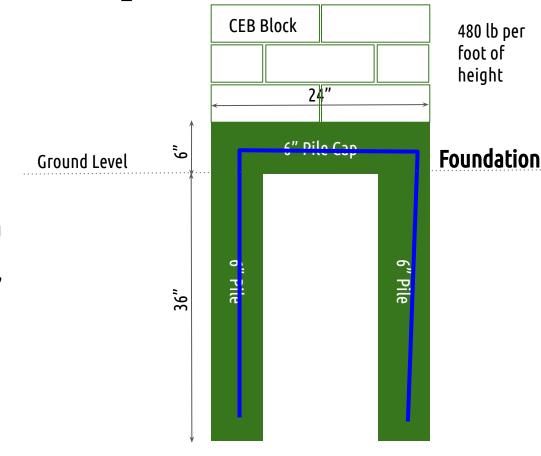
Modular Workshop

Requirements

- PV roof no roofing needed
- v1 no insulation, but does have day lighting
- 100% off grid via nickel iron batteries + PV
- CEB column walls
- Modular roof sections 16'x16'
 - Modular overhang extensions
- Modular sections, 16'x16'
 New sections can be joined as needed
- 3D printed glazing from scrap
- 3D printed waterproof PV rails for PV mounting
- Earth cement floor

6" cap

- Concrete pile foundation, 16' centers, 2' square,
- Modular panel infill doors, windows, etc.
- Standard roof structure, but roofing is replaced with solar panels with 3D printed PV rails.
- Lime cement production included
- Plastic filament production included
 CEB Production included
- Zero material destruction for additions
- Executable via small public XM workshops



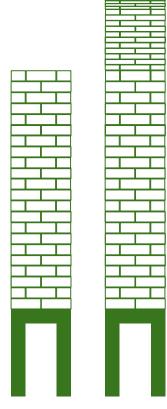


Piers

Issue:

- Flat roof does not allow for easy PV mounting
- Sloped roof is needed.
 - Resolution use 3 over 16 roof for PV.

Solution





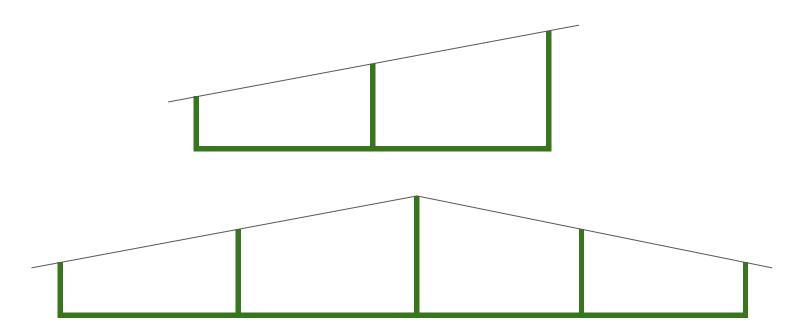




Solution:

Shape

- 5-8-11 roof
 - 5 is functional with storage on the short side
- Or 6-9-12 roof but that requires more skill in brick laying or triangulation of brick column
- North side is living roof

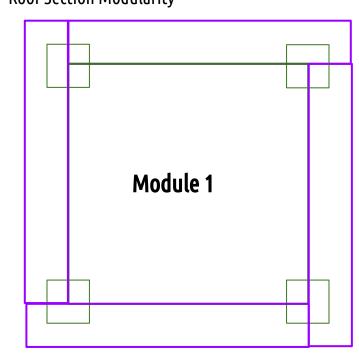




Issue:

Modularity

- 1. Need to build one section at a time for easy workshops
 - a. Module 1 is straightforward including rototilled floor cement + limestone crusher fines
 - b. **Roof** is a 16' section
 - c. Roof section has 2' overhangs modules
- 2. Column modularity easy with pile foundation
- 3. Roof Section Modularity

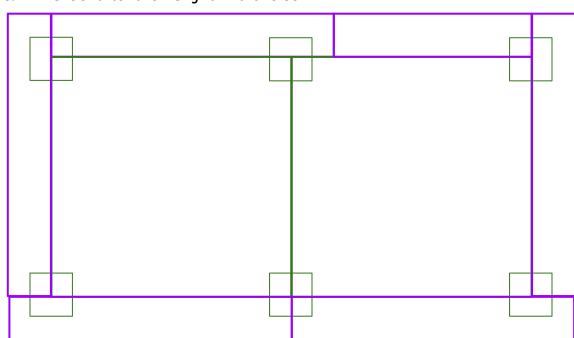




Issue:

Module 2

- Getting to 2nd module -
 - Make 2 columns
 - Take off right overhang
 - Add removed overhang to South side. Zero material waste to this point.
 - Make another overhang for East side
 - Make shorter overhang for North side



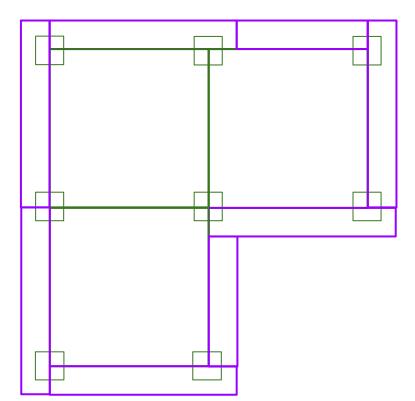






- Getting to 3rd module
 - a. Make 2 columns
 - b. Take off bottom overhang
 - c. Add removed overhang to South side
 - d. Make another overhang for West side
 - e. Make shorter overhang for East side

Module 3







Getting to rth module -

- Make 1 column only
- Take off 2 interfering overhangs b.
- Add one removed overhang to East side
- Add one removed overhang to South side d.
- Retains 0 overhang waste! e.

Module 4

