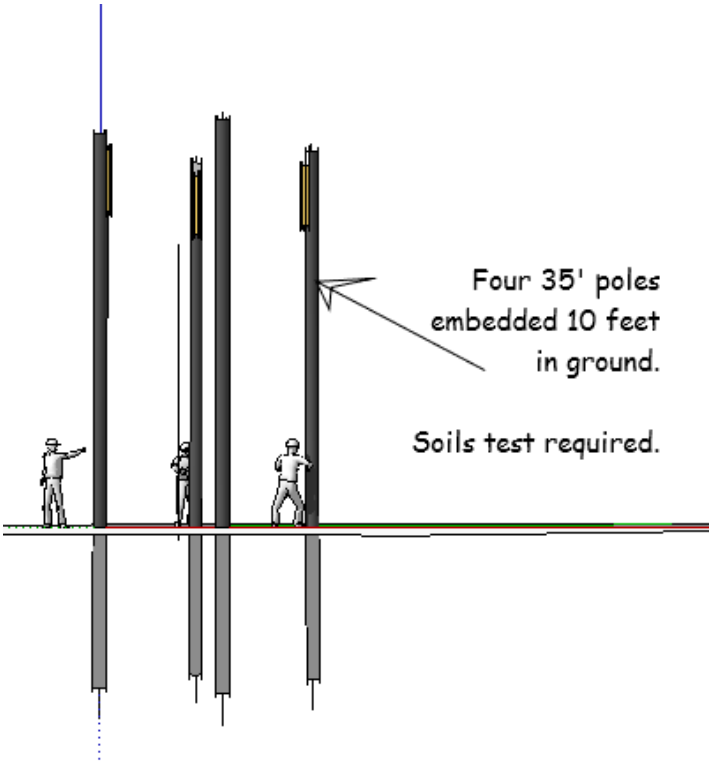
Pole Structure

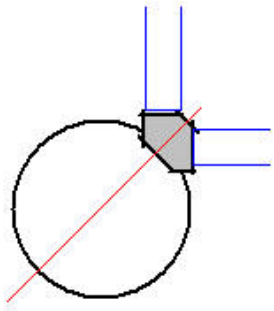
The poles are to be embedded in compacted soil, free from moisture and expansive clay. This is a friction bearing structure that must be well drained. Soil tests determine depth and loading.

Alignment should be vertical and square. All wind loads must be transmitted to the four poles through the shear connections as a rigid four legged structure.

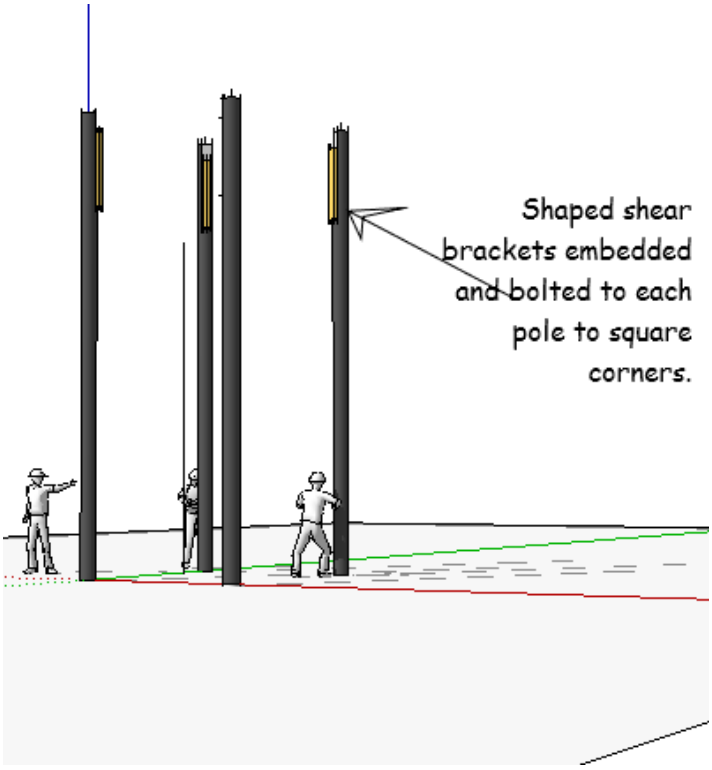


Shaped Shear Brackets

These brackets are shaped from clear long grain 6x, fir or glued composite.



Cut the top of the poles so that shear the loads are embedded. Bolt through the post at 3" end distance and 9" centers to make the braket integral with the posts themselves.



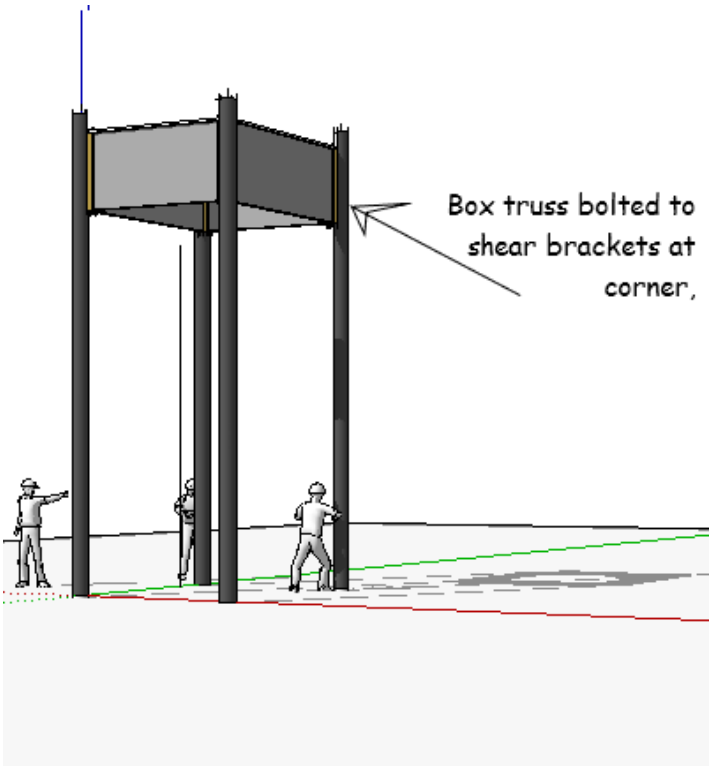
Box Truss

The box beam is a conventionally designed truss with plywood panel sides structurally nailed to both sides of a 2x4 frame.

Use structural connectors for the truss frame joints and lag bolt to the shear brackets in the field before structurally nailing the outer panel.

Add strap ties to inner joints to bind the truss panels to all four sides. Connection to the shear bracket occurs through the structural nailing and the straps.

The result is a rigid structural frame.



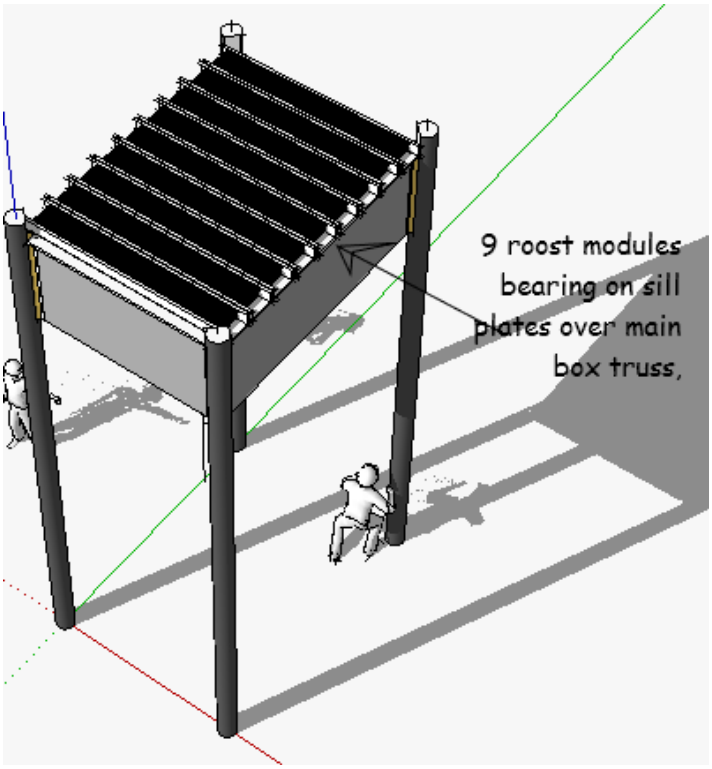
Roost Modules

The nine modules drop into place **after** the box trusses are bolted to the piers and the weather skirt are in place.

The roost modules bear temporarily on the top cord of the box truss, until the inside collar of the weather skirt is in place.

See the roost module details S3.0 of the Bat Habitat Prototypical Design by Gary Jaster, PE, dated 17 November 2008 for details and sizes.

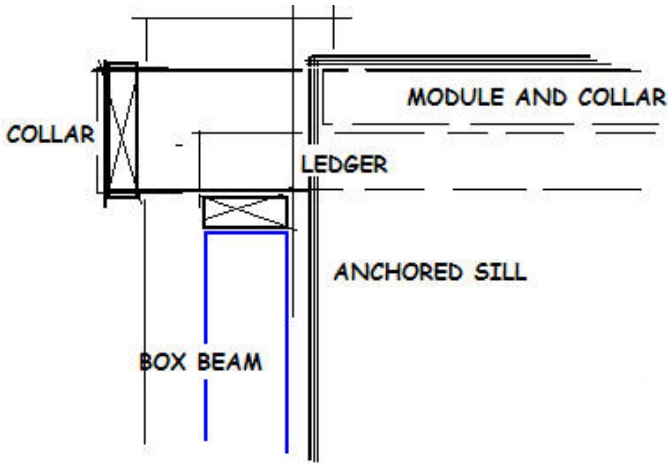
Jaster uses 1/4" plywood and PVC rings along a 3/8" threaded rod which may be too fragile for Florida installation. Recommend 3/4 rod, 1/2" plywood and 2 less vertical panels per module.



Loading of Jaster Module

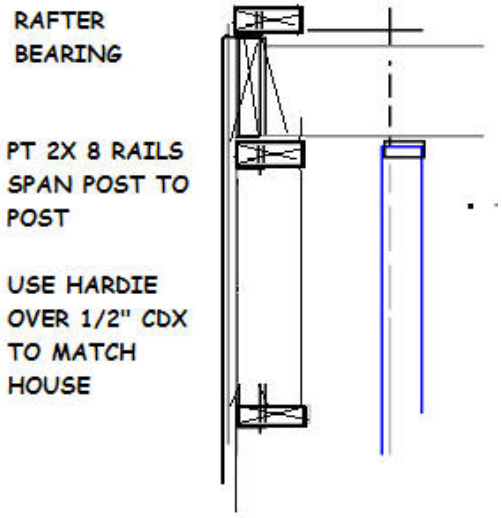
Each module sits on a ledger running the full length of the joist that spans the width. The joists hang from the inside collar of the weather skirt.

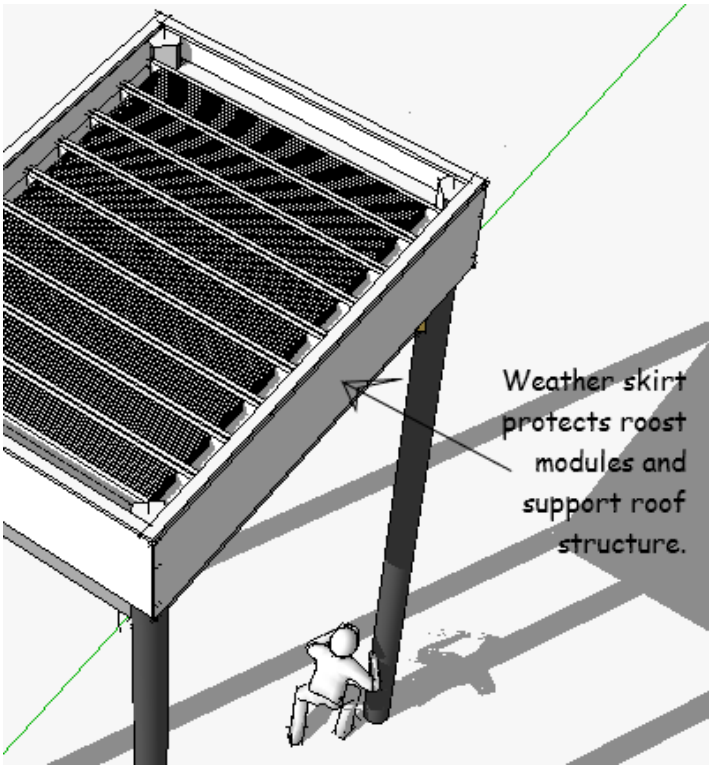
Bearing on the box beam is temporary until structural connection is made at the roof.



Weather Skirt

The weather skirt supports the roof loads and protects the roost modules.



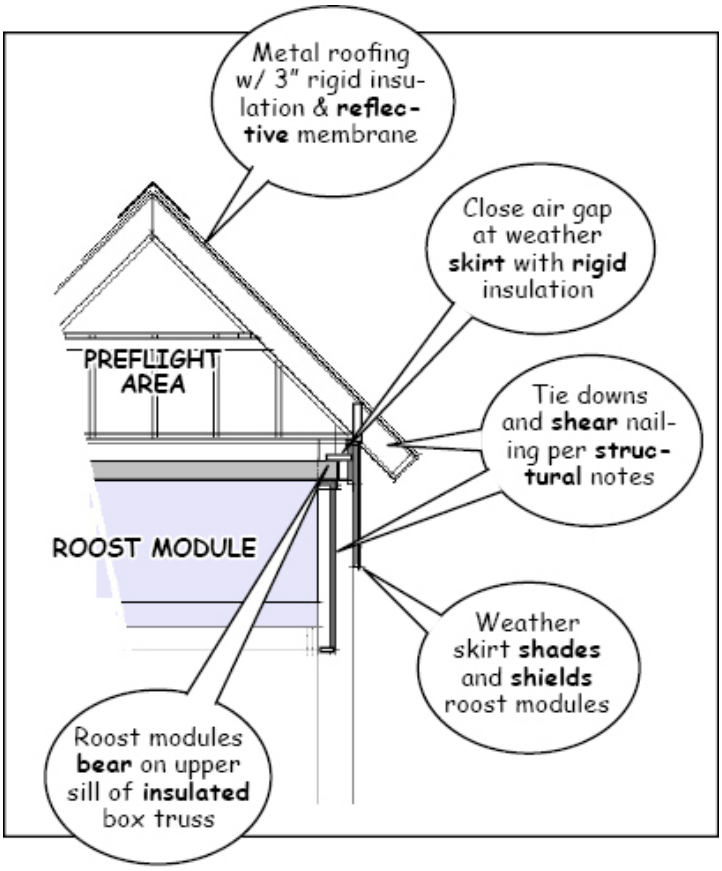


SECTION THROUGH ROOST

The weather skirt supports the roof structure to isolate roof loads and create an **air gap** between the sides of the box truss and the roost modules.

The idea is to cut down on solar gain and buffer wind loads on the modules.

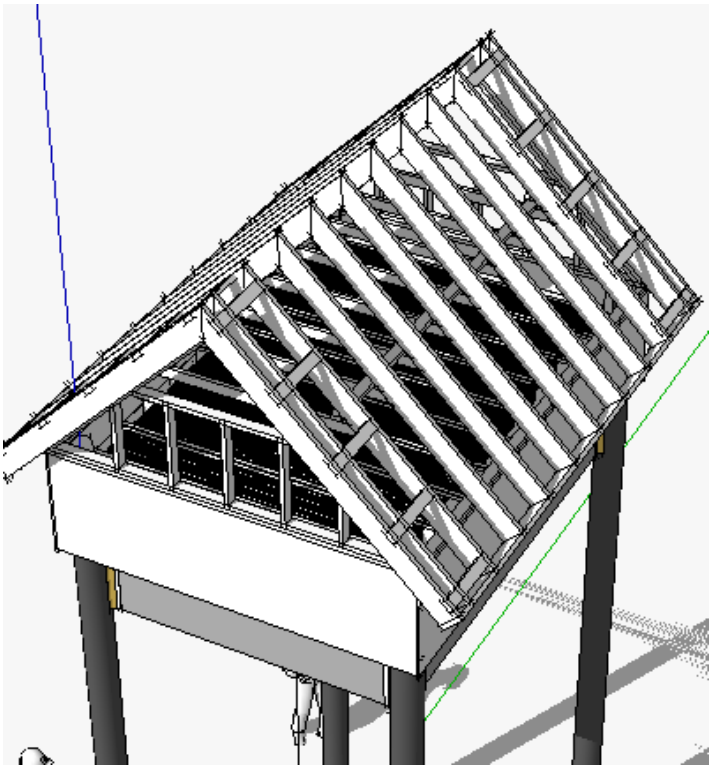
Note that the preflight area and roost modules are sealed with a **removeable** rigid insulation colar prior to setting the roof on the weather skirt.



SECTION THROUGH ROOST

The **fully assembled** roof is then lifted and installed using a hinged ridge similar to that used in modular home construction, leaving the ridge cap to seal the joint.

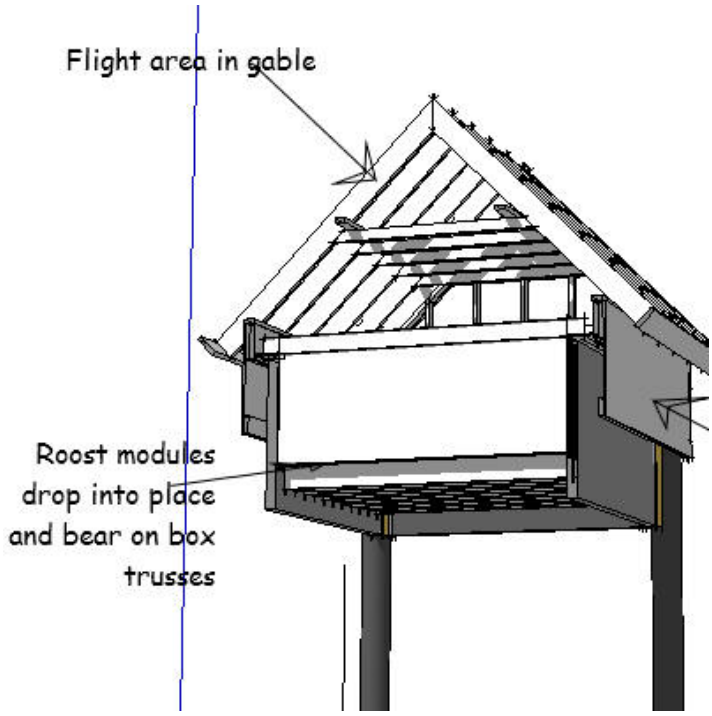
Roof structure is conventionally framed with prescriptive code tiedowns at **each** rafter base and peak. All connections to be plate spliced, **both** sides and structurally nailed.



STRUCTURAL NOTES

The topography for the batt house is **fully** exposed with rolling contours. Wind loads are anticipated to **accelerate** over the smooth surface.

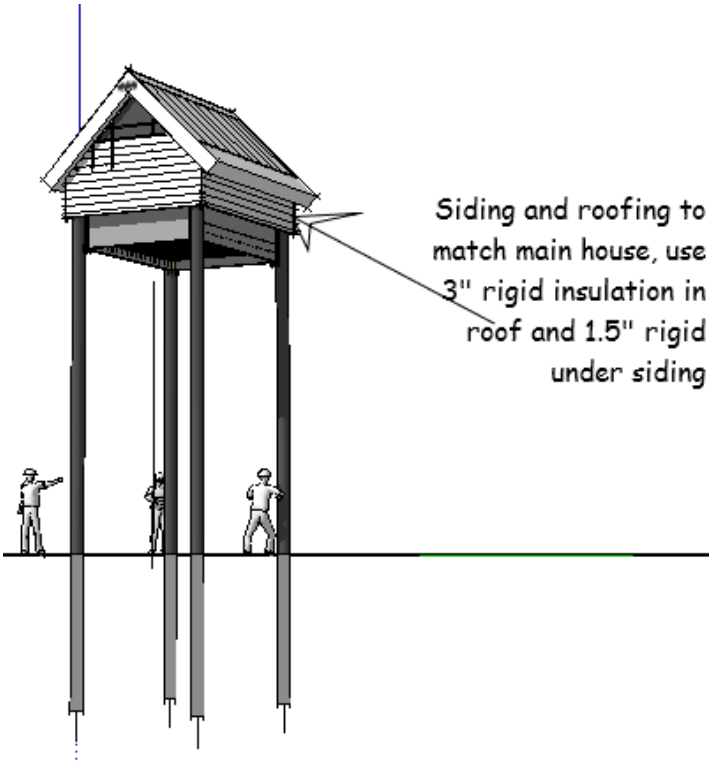
Lateral racking from direct hurricane force winds are anticipated as the main structural force, with **relatively** minimal loads from uplift or suction.



FINISH WORK

Elevated work can be minimized by prefinishing materials on the ground and completing as much assembly as possible before lifting.

Use a pinion beam through the gable ends to rig for the lift. Weather skirts can be field engineered to be placed as four separate panels, with 1x4 Hardie corner boards to seal.



OPTIONS

The preflight area, insulated panels, and seasonal ventilation require review by batt experts since conflicting guidelines seem to be published on the web.

See references:

Batt Conservatory Research

Batt House Project

Batt House Resource Links

Prefab Batt Condo

Other Batt Houses