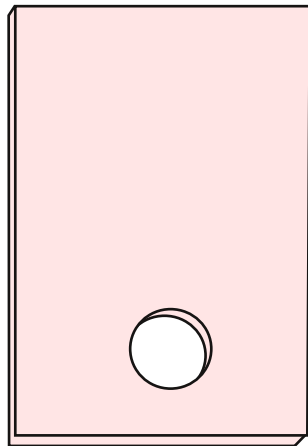
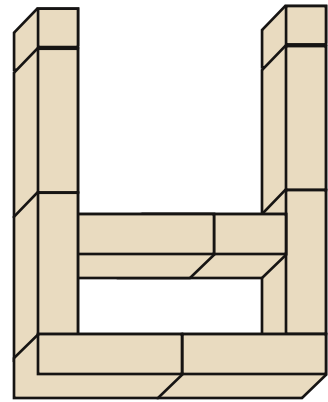


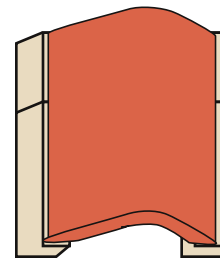
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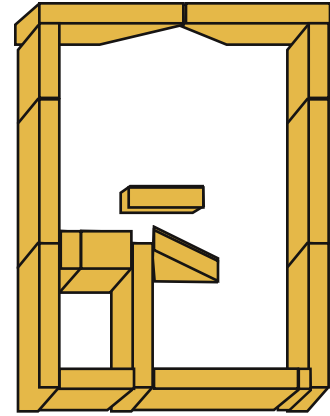
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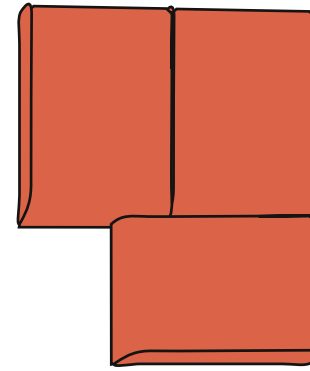
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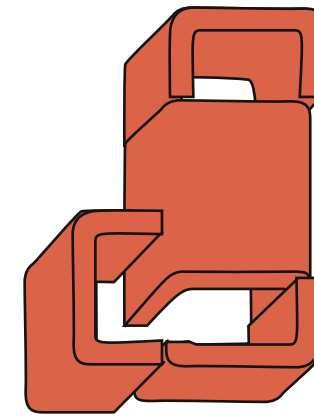
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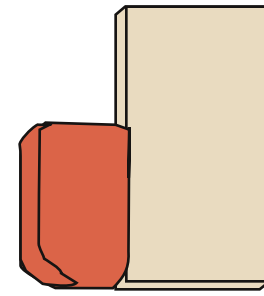
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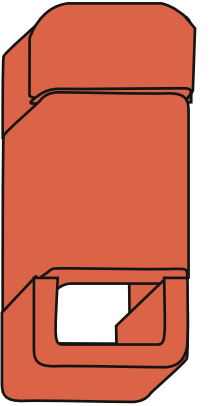
5



6



7



Kiko's Heater Hat:

Drawings by Erica Wisner, based on Kiko Denzer's report at www.handprintpress.com:
<http://www.handprintpress.com/authors/masonry-heater-hat-videos-construction-details/>
<http://www.handprintpress.com/ovens/bring-in-the-mud/>

Kiko Denzer built this "heater hat" prototype, a mini masonry-heater atop a small woodstove. Above are the complete set of parts. Below, you see how they fit together.

1 - A large slab of high-temp refractory cement, with a hole cast into it to fit the stove's collar. Mortar and kaowool gasketing are used between stove and slab (expansion joint and seal).

2a- Firebrick, cut and pieced as needed, define the outer perimeter and the back of a "white oven" (smokeless baking oven).

2b- The oven, made from pieces of firebrick and ceramic chimney liner.

3- Half-firebricks continue the walls and trap the smoke. The center-bottom brick traps some heat around the oven. Firebrick are cut to fit over the oven's curved shape.

3b) Scraps of firebrick block the back of the oven, and support the next course over the oven roof. (The scraps shown vary slightly from Kiko's video, but show the general placement.)

4- A floor course of large ceramic slabs, mostly made by cutting down wide chimney-liner tiles

5- A set of channels in cut chimney tile. The side channel with no floor is the 'chimney' for the course below. (Note: The side slot connecting these channels does not show in the video; it was cut later.)

6 - Capping slabs of tile or refractory. The grey slab stops short of the end to allow smoke upward.

7 - Final channel: capped at far end, open at back to exhaust into stovepipe chimney over the original stove opening.

Assembly:

After dry prototyping, the assembly was built in place. Bricks were set w/homemade mortar: fines and clay; thin joints. (Note: commercial refractory cement is just fines, sodium silicate, and water. Kiko's formula is a traditional masonry heater mortar, with clay as the binder instead of sodium silicate).

An outer layer of earthen plaster provides secondary seal, with decorative tiles and slabs set in the plaster. The wooden oven door is carved to fit the opening, and clay plaster at the edges makes a perfect fit. (The traditional wooden door is soaked before baking, and has not needed replacement yet.)

Performance Report:

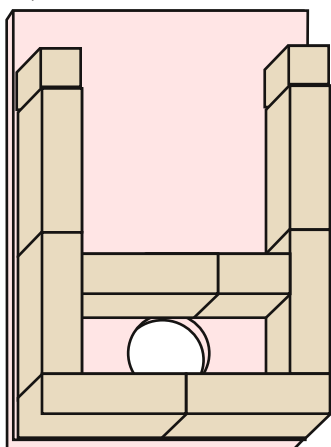
The hat is holding up well, stores heat for hours or even overnight, and has baked numerous loaves of bread.

The uneven shapes and heating have caused a few cracks, some big enough to leak smoke (with the damper closed) and presumably air (with the damper open). With earthen plaster, cracks can be repaired almost as soon as they are detected. Kiko also wishes he had included more cleanout access to the channels somehow.

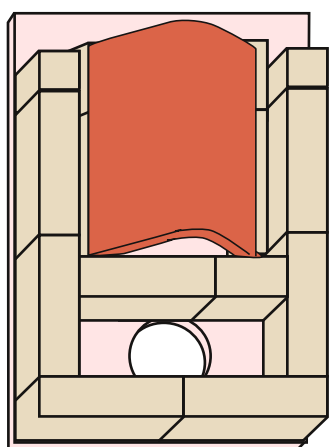
Next Steps: Kiko is considering a similar design with more symmetry (like a round bell to trap heat), to reduce the stress that comes from different-temperature parts and the concentration of those forces at particular points in the design.



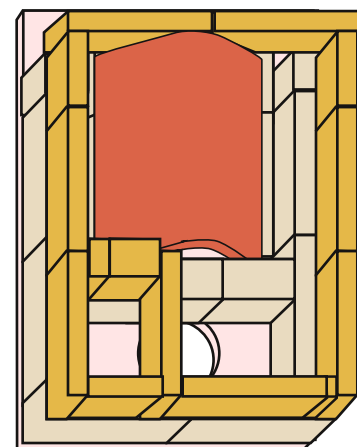
1, 2a



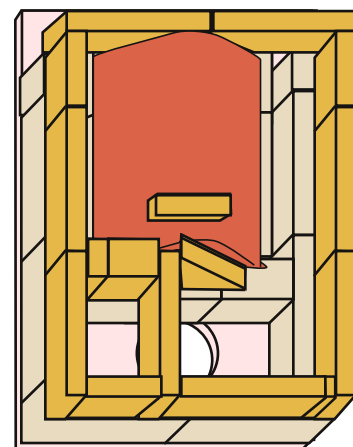
2b



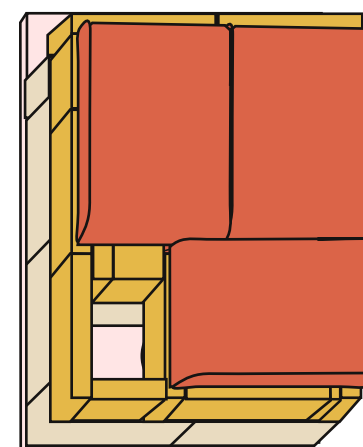
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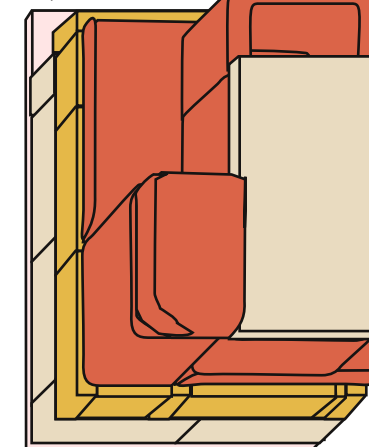
3b



4



5, 6



7

