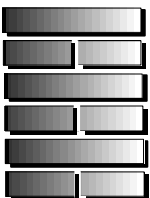

Heat-Kit System
Modular Contraflow Masonry Heater Core
Assembly Manual

Custom Design for Dave Horre
22" See-Through Firebox with Custom Side Channels, Bake Oven
and Heated Bench

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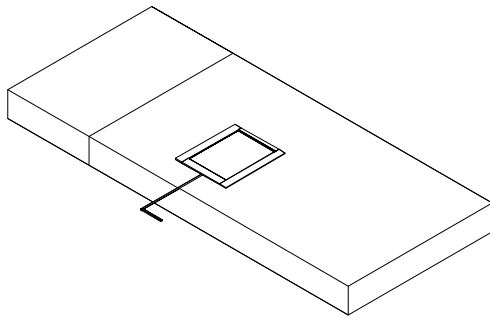
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Material List (in addition to core components)

410	Standard Firebricks 4.5"x9"x2.5" (2.5" dimension may vary. Important: The 4.5" and 9" dimensions are important)
20	Firebrick "Splits" 4.5"x9"x1.25"
40	Common clay bricks (8"x4" nominal)
3 bags	"Mortar Mix" (ie., premixed with sand, as opposed to "Masonry Cement", which requires mason's sand)

Assembling the Bottom End



Note: This view is from the kitchen side. The outside air control shown won't be used, since you will have a first floor ashbox instead, on the kitchen side. Simply fill in the hole in the base slab.

Figure 1

Position insulating base slab dry to determine layout for heater and chimney. Mark final position at corners with a pencil.

Install insulating base slab level onto a mortar bed. (Mortar = "Mortar Mix" premixed mortar, or regular brick mortar)

The joint between the two pieces should be dry, but tight.

The combustion air shut off damper is shown installed, but it is better to install it after the core is finished, since the handle will get in the way during construction. With a heated bench, the actual damper will have an extended handle to clear the bench.

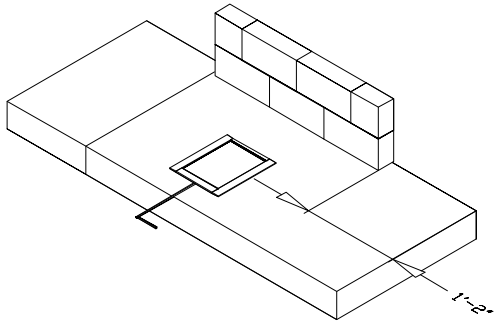


Figure 2

Build connecting channel, using refractory mortar. 3 Firebrick width shown is 27\".

Firebrick shiner is flush with outside of slab.

(Note: "shiner" = brick set on edge)

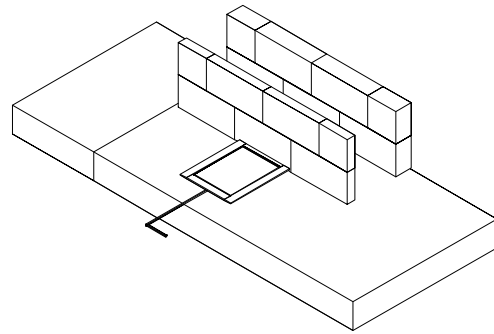


Figure 3

Firebrick split shiner is set to form a 6-1/2\" channel.

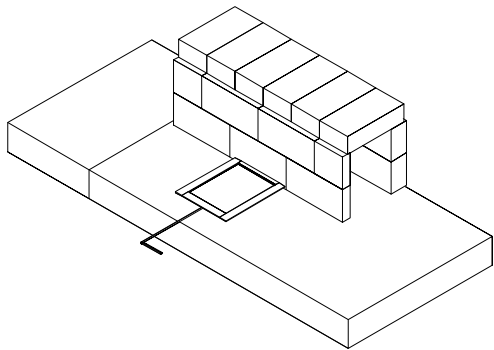


Figure 4

Form connecting channel ceiling as shown.

Sponge inside of channel to remove hanging drips.

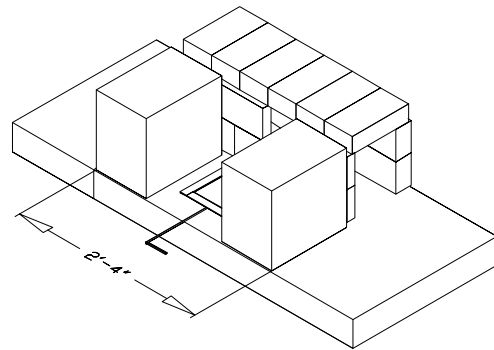


Figure 5

To form support for firebox floor, build up fill as shown to same height as firebrick. Fill can consist of common clay bricks and common mortar. Gap for ashes between fill pieces is approx. 8\" - 10\".

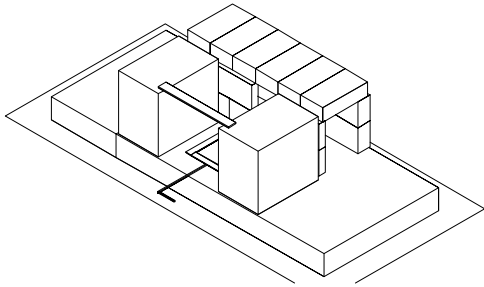


Figure 6

Install 14" flatbar as shown to provide extra support for firebox floor. Use mortar joint to gain height

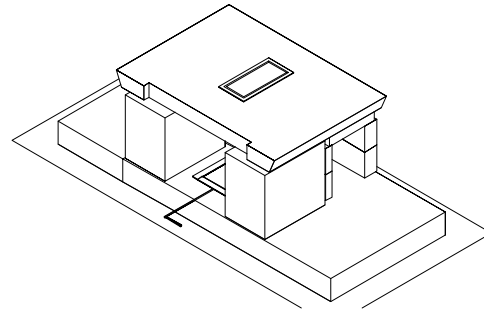


Figure 7

Install firebox floor onto generous mortar bed and level accurately.

Back edge of floor is 1/2" in from edge of insulating base slab.

Ensure full mortar bed between flat bar and floor.

If there are any voids in the mortar bed around the edges of firebox, fill these now.

You are now ready to build the firebox.

Assembling the Firebox

The firebox is laid up from standard firebricks. Standard firebricks are 4 ½” wide by 9” long by 2 ¼” thick. The thickness will vary between 2 ¼” and 2 ½” depending on the supplier. Since the Heat-Kit is designed around the standard firebrick module, it is important to check the width and length of your bricks beforehand, to avoid having to make modifications to the assembly procedure.

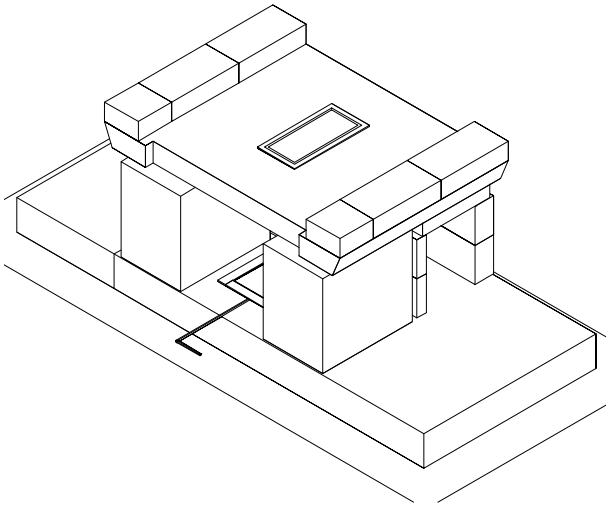


Figure 8

Lay up firebox as indicated, using air setting refractory mortar.

Distance between outside corners (side to side) is 31 1/2”

All cut bricks shown are half bricks (4 1/2”)

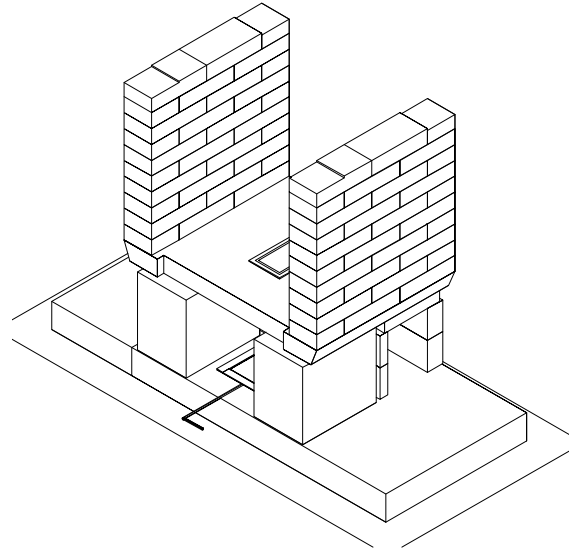


Figure 9

Set the cut edges of the half bricks to the front or back, not to the sides.

Notch top course of firebox as shown to provide a recess for the 1/4” angle iron lintels, which should be flush.

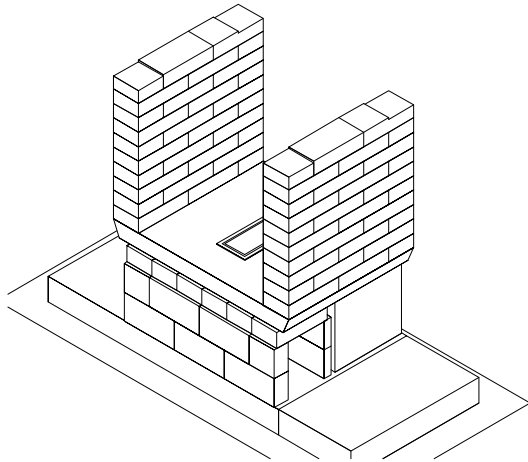


Figure 10

Same as Figure 9., shown from the living room side.

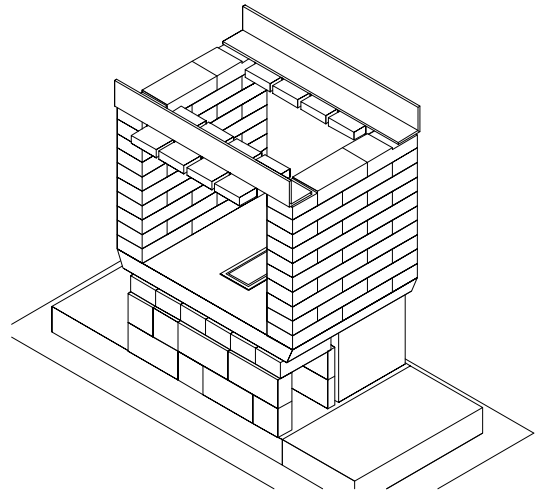


Figure 11

Set lintels in place. You can use a bed of Sairset to bring them up exactly flush.

Brackets on lintel are for heat shields (firebrick splits)

Note: some of the drawings show the heat shield bricks installed - they can be installed at the very end.

Building the Upper Firebox

Note: This section is identical to a standard core, and show illustrations from the standard core assembly. Ignore the bottom channels and the standard firebox. The view is from the kitchen side. Also not shown is the second firebox lintel for the see-through firebox. Continue the firebrick layout as shown above the lintel.

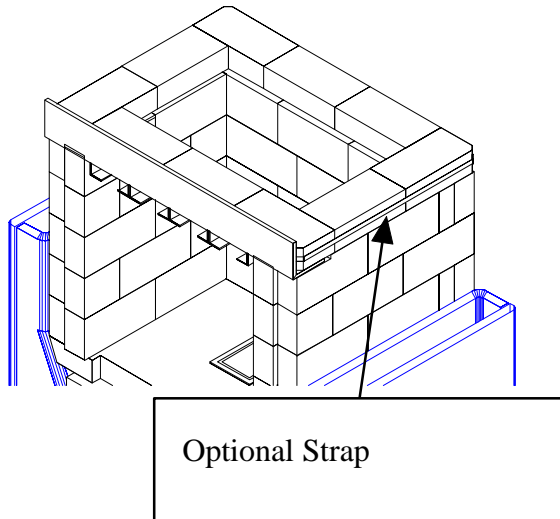


Figure 12

(View is from kitchen side)

Lay up next course as shown. Use a dry joint with lintel. This course can be strapped as shown, but this is optional. If a strap is used, then round outside corners of bricks slightly.

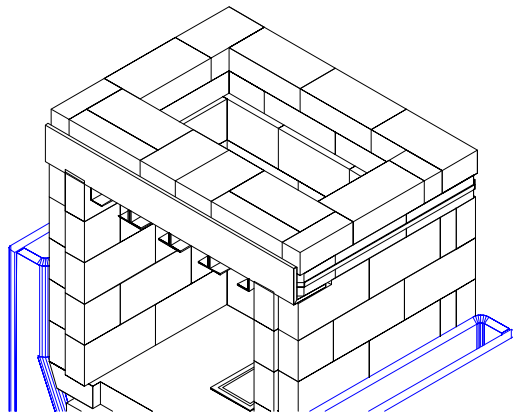


Figure 13

A total of 10 soaps (5 bricks ripped lengthwise) is used.

All bricks are either full length (9"), $\frac{3}{4}$ length (6 $\frac{3}{4}$ ") or half length (4 $\frac{1}{2}$ ")

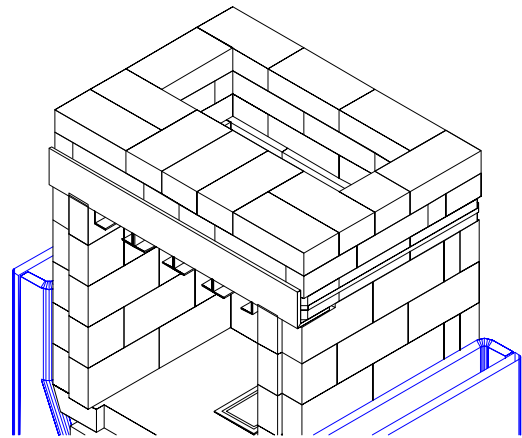


Figure 14

Next course.

Installing the Oven

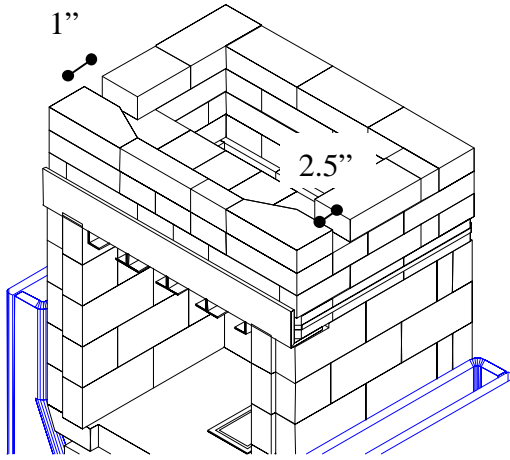


Figure 15

Check bricks for level before starting this course to see if there are high or low spots. When setting this course, carefully level the section where the oven will sit.

Cut front corner bricks as shown. Leave oven floor heat bypass gaps as shown. (2.5" and 1").

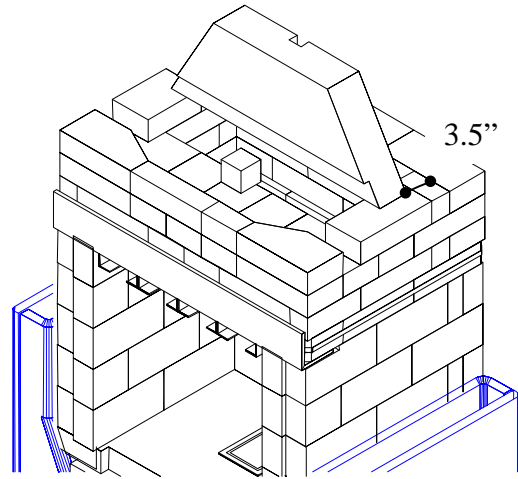


Figure 16

Dry set oven back as shown. Leave a 3½ inch channel behind. Install small floor support piece as shown.

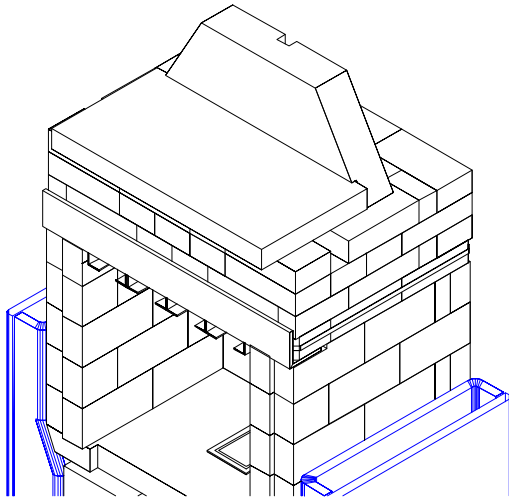


Figure 17
Install oven floor as shown. Set floor into Sairset. Inset into relief in oven back (not shown), without Sairset.

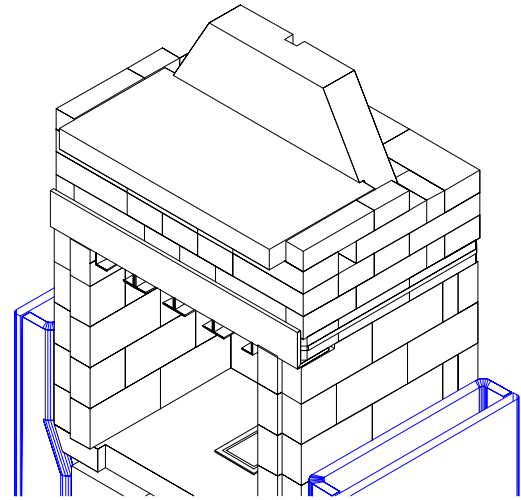


Figure 18
Install soaps as shown and level accurately.

The smooth side of the oven floor is the top.
There are two pieces of soapstone cast into the bottom of the oven floor. These go towards the front.

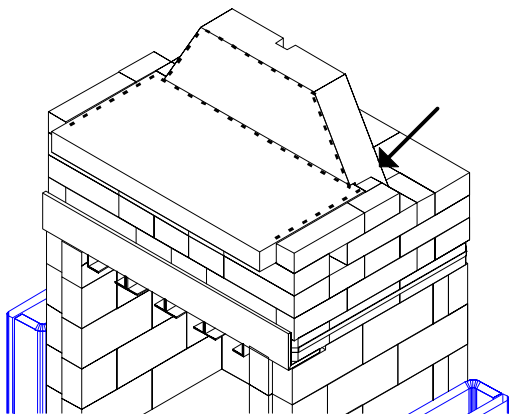


Figure 19
Install small wedge shaped pieces of firebrick (supplied) shown by the arrow. Set wedges in Sairset. The dotted lines indicate the gasket locations (installed later).

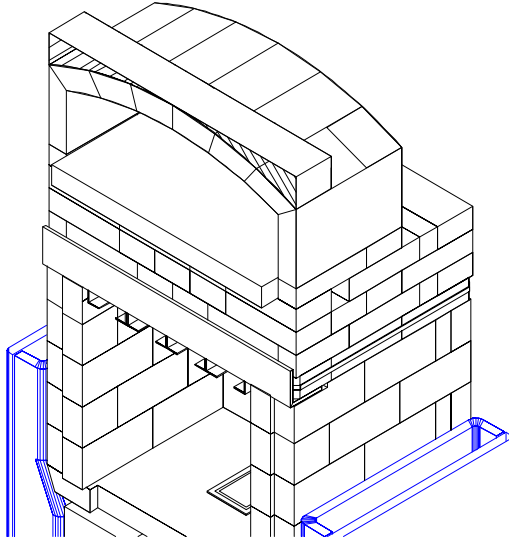


Figure 20

Apply Sairset to the soaps that will be under oven sidewalls. Make sure that you have adequate foot scaffold, and install large oven casting as shown. Use a helper, being sure to set oven straight down vertically onto back.

NOTE: the custom oven casting supplied for this layout differs from the illustration.

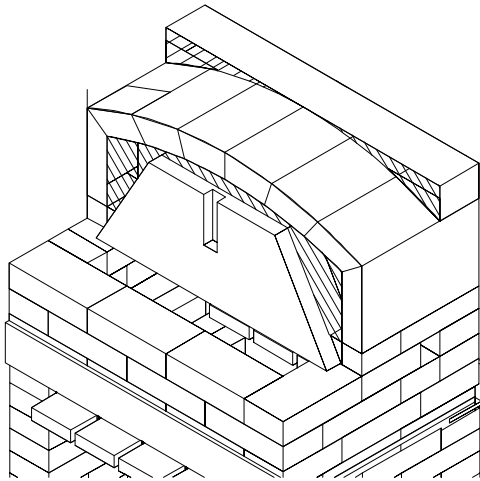


Figure 21

View from living room side.

If necessary, oven back insert can be shimmed with cut-up brick ties to ensure snug gasket space at top (other side)

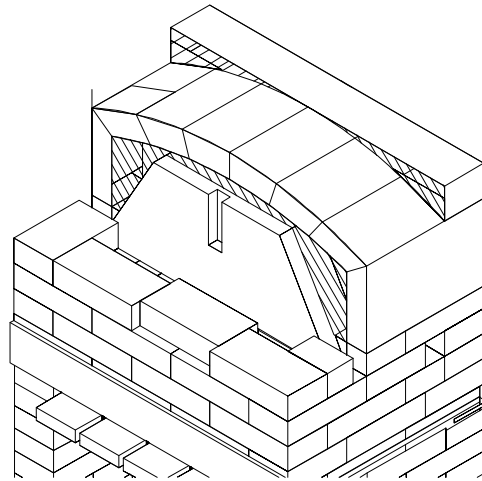


Figure 22

Project back brick $\frac{3}{4}$ " as shown to form ledge for millboard.

The recess formed by the setback brick can be filled later with ordinary mortar to maintain a smooth surface on the outside of the core.

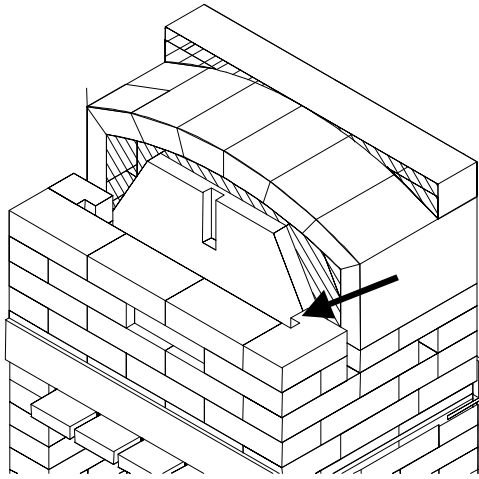


Figure 23

Form notches as shown for 1 inch millboard. Make notches slightly over 1 inch to allow for irregularities when sliding in millboard. The easiest way to cut these notches is to make 2 or 3 saw kerfs and pop the piece out with brick hammer.

There are 5 courses of notches.

Note that first two courses of notched bricks are shorter, to clear oven back insert. Continue as shown

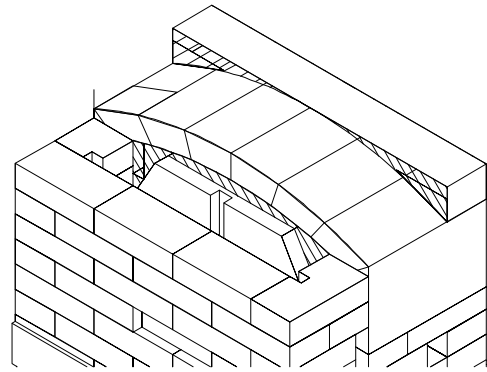


Figure 24

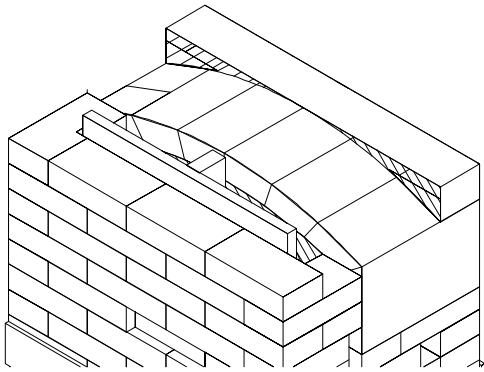


Figure 25

Slide in piece of millboard.

Rip a firebrick split to provide a snug wedge as shown, into the precast groove in the oven back.

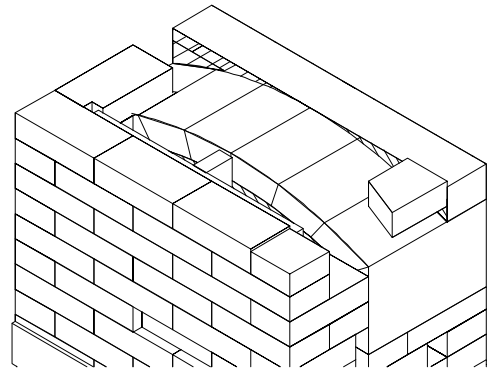


Figure 26

Tapered brick shown is 4.5" on the short side and 6.25" on the long side.

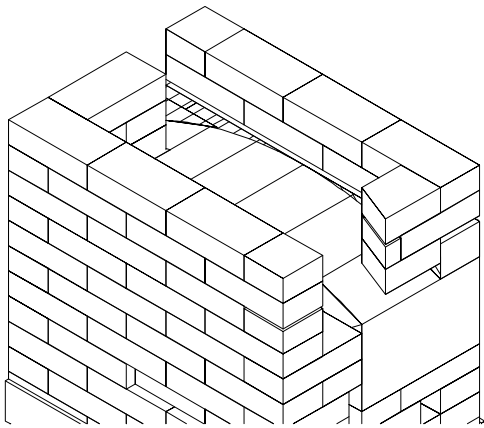


Figure 27

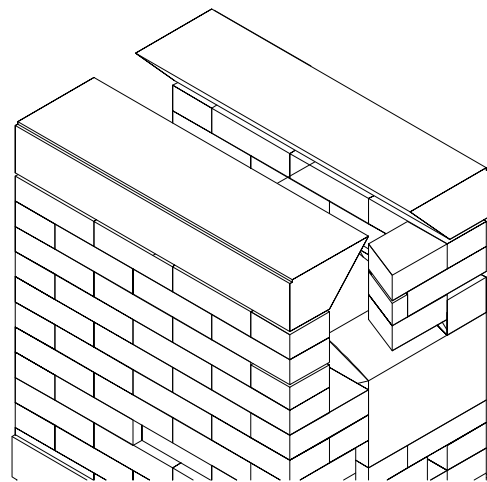


Figure 28

Install ceiling transition pieces as shown, onto a bed of Sairset.

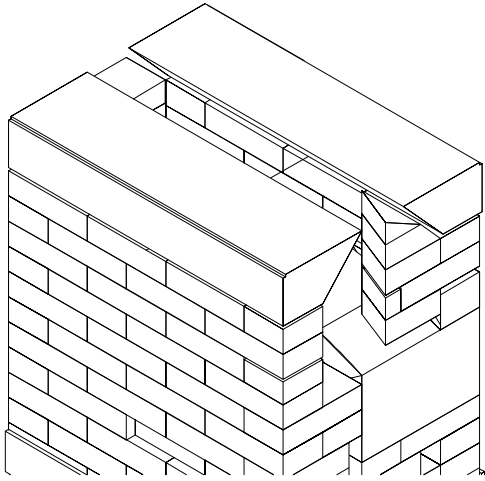


Figure 29

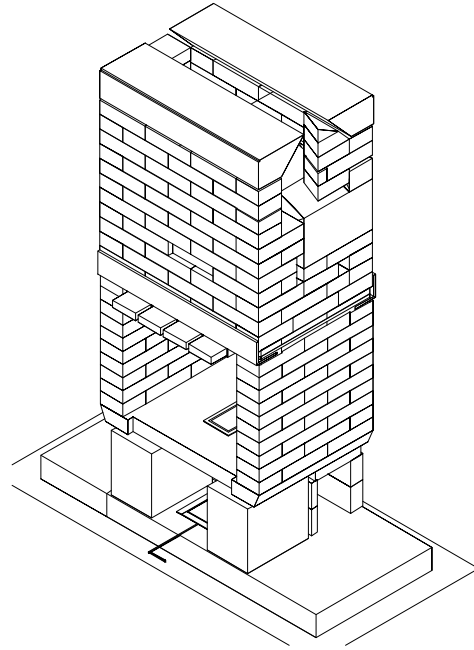


Figure 30

Fill in around ceiling transition as shown.

Building the Side Channels

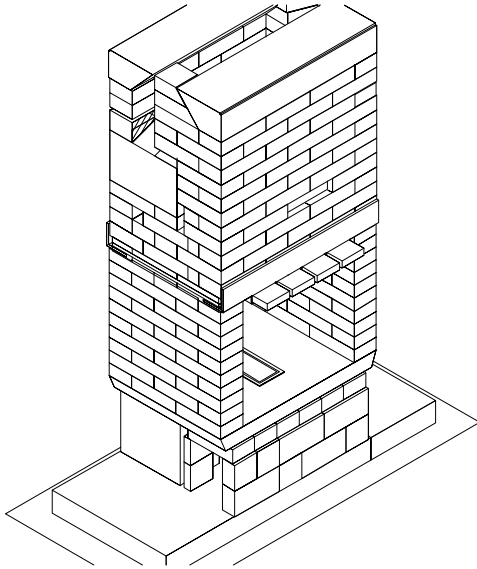


Figure 31

View is from living room side,
Fill in around ceiling transition as shown.

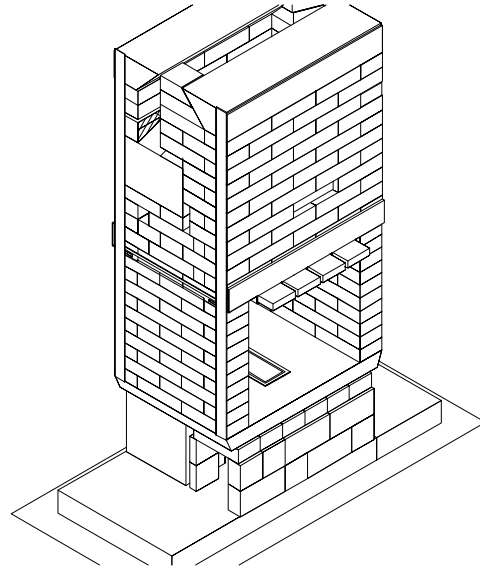


Figure 32

Install expansion joint where shown. Cut 2" strips of 1" thick white ceramic blanket (supplied). Split the 1" thick strips in half, so that you have 2 strips 1/2" thick by 2" wide. Adhere them to the firebricks with dabs of silicone.

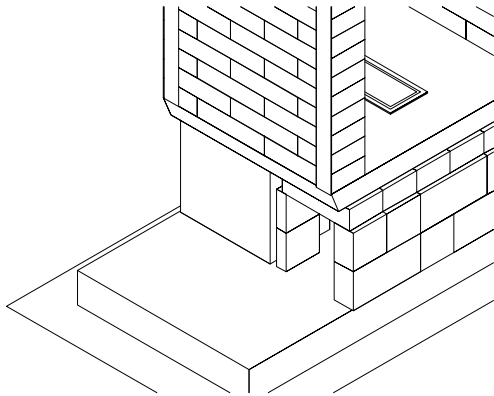


Figure 33

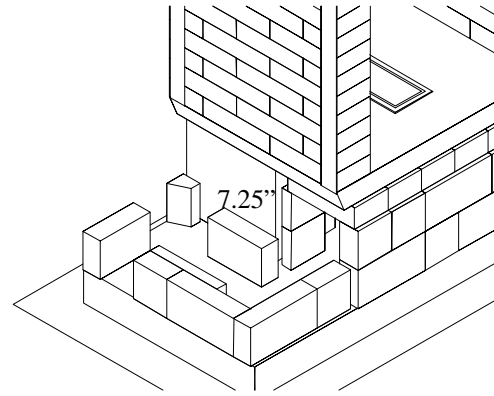


Figure 34

Layout base of side channel as shown. Refer to Figure 35.

Opening in rear is for cleanout, and is 4.5" wide.

Opening in side is 4.5" wide and is for bench connection. No expansion joint is required at this level between side channel and brickwork under firebox floor.

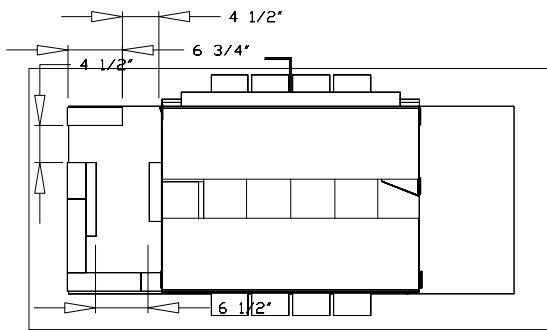


Figure 35

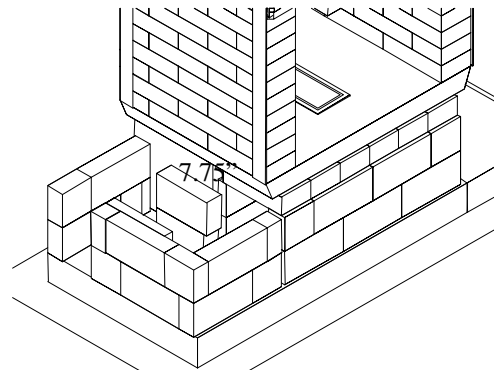


Figure 36

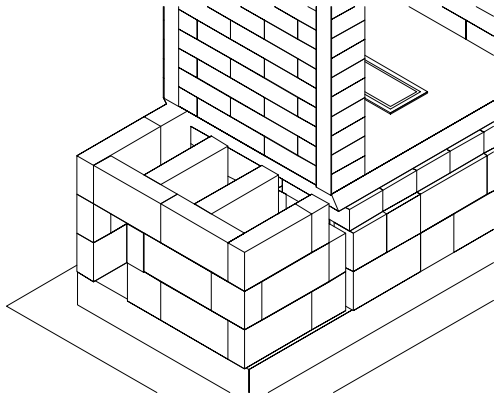


Figure 37

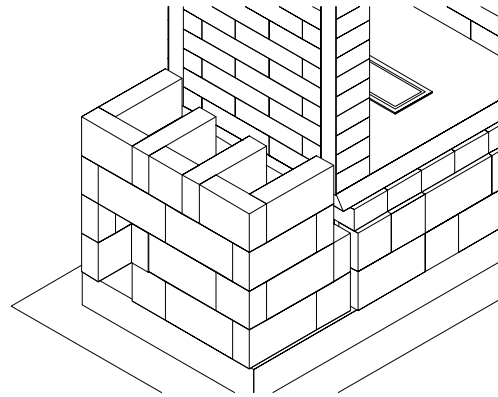


Figure 38

Bricks should compress expansion joints moderately.

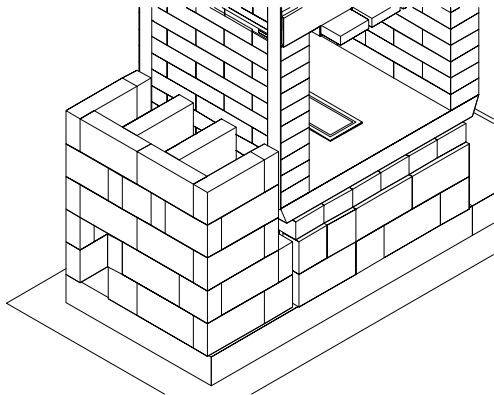


Figure 39

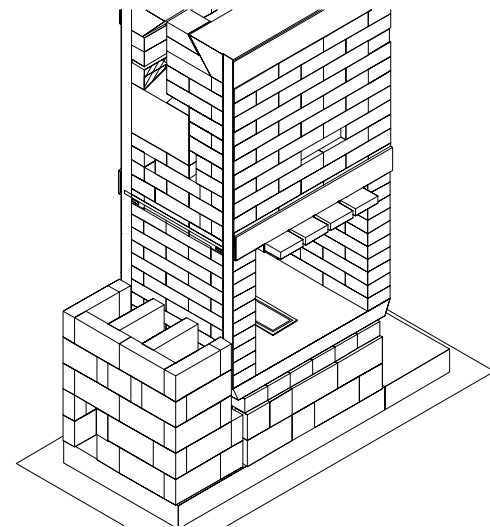


Figure 40

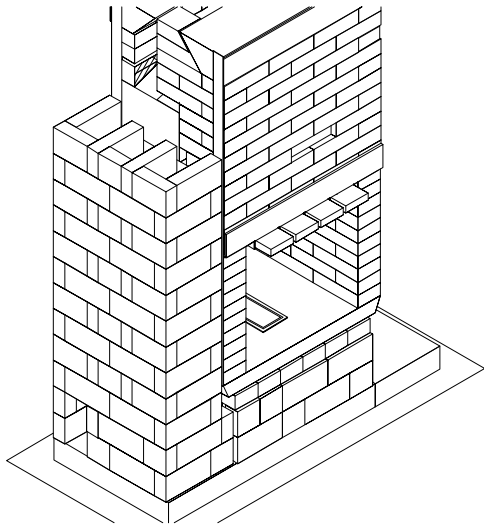


Figure 41

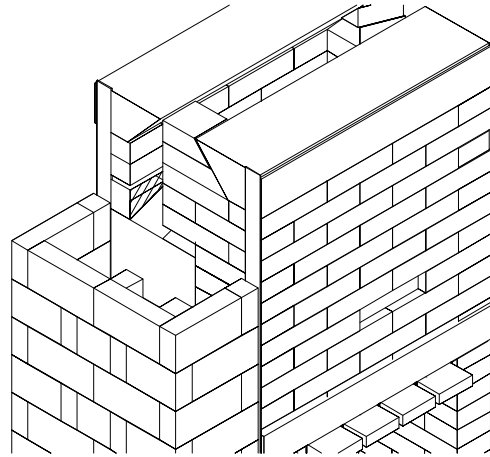


Figure 42

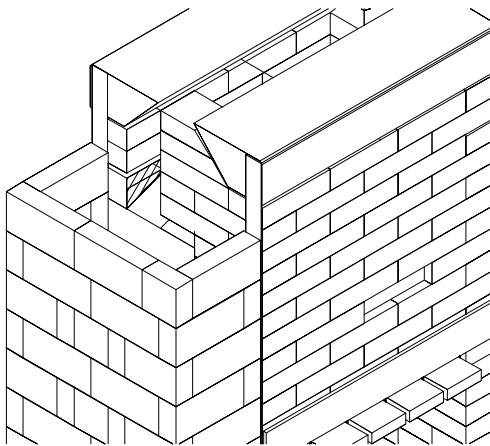


Figure 43

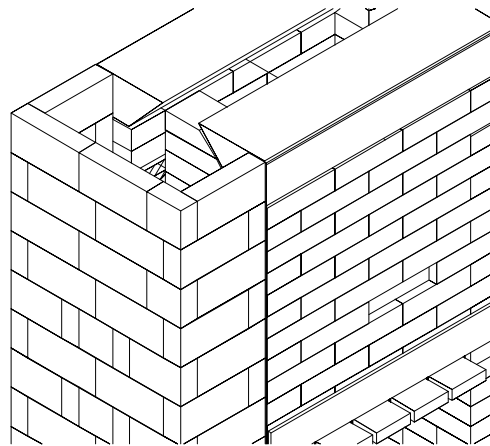


Figure 44

Trim last course of brick to be flush with top of precast angled ceiling transitions.

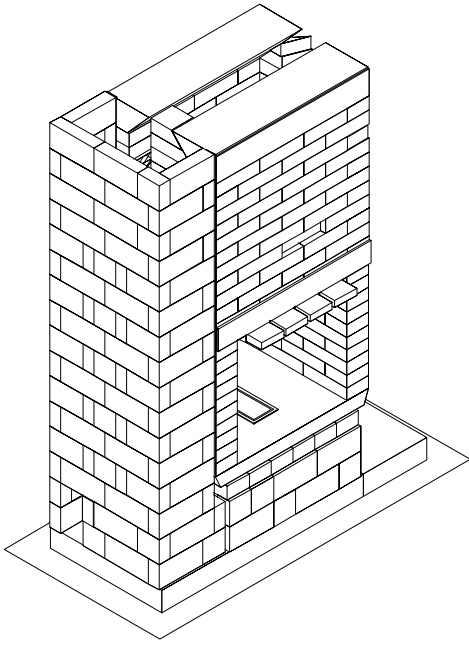


Figure 45

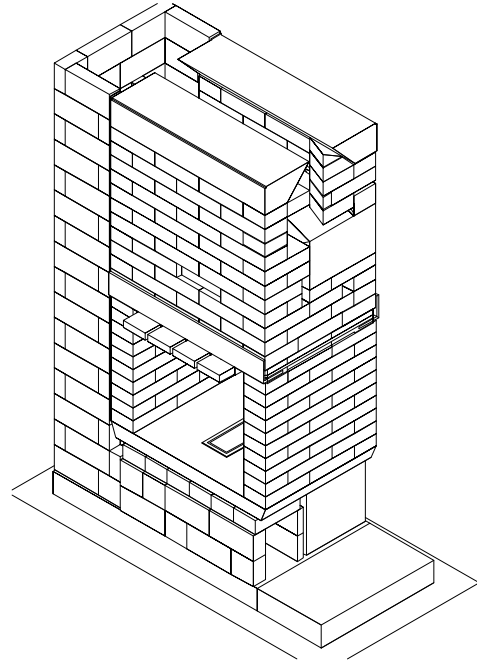


Figure 46

View from right side

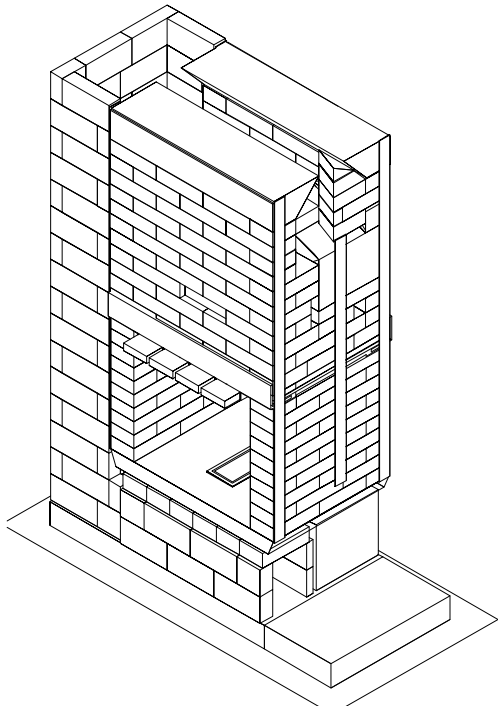


Figure 47

Attach 2" strips of ceramic blanket where shown. Refer to Figure 52 for location of centre strip.

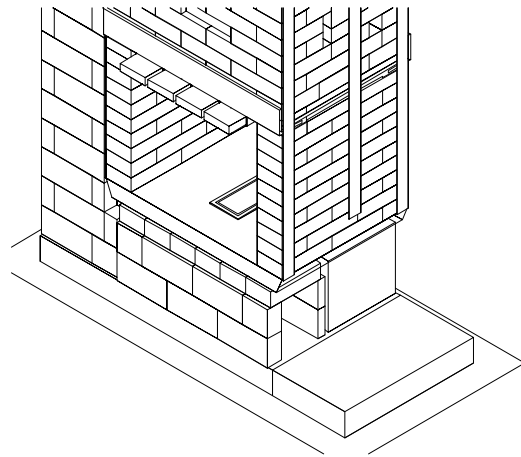


Figure 48

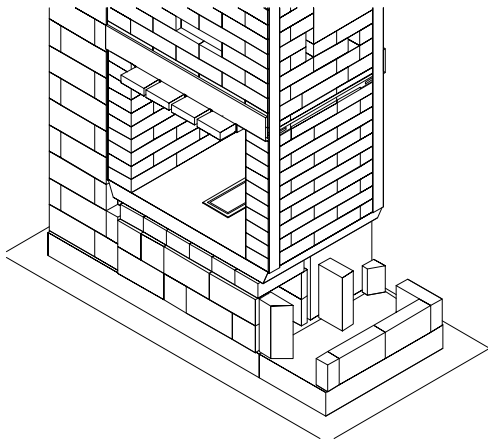


Figure 49

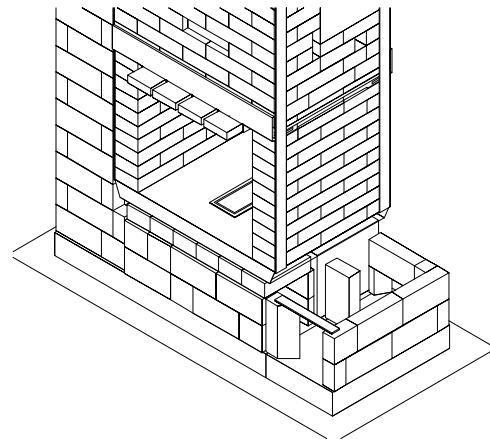


Figure 50

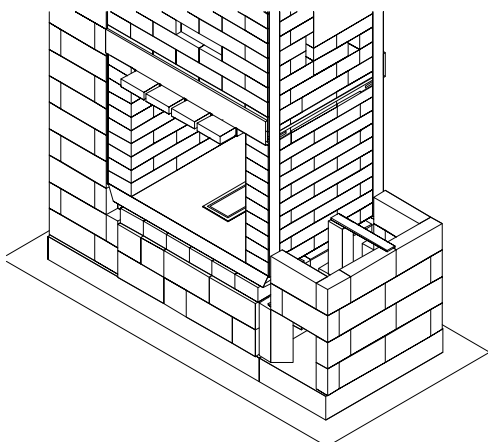
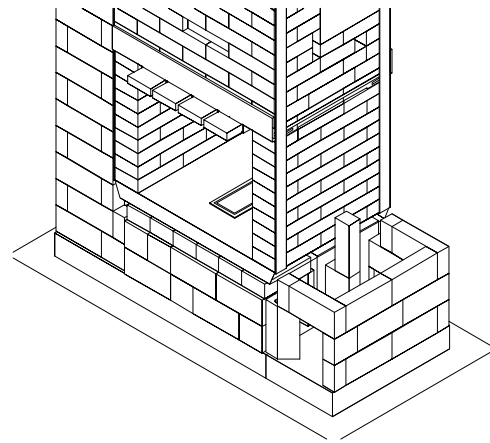
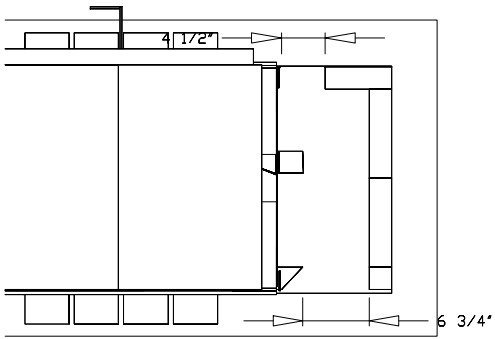


Figure 51

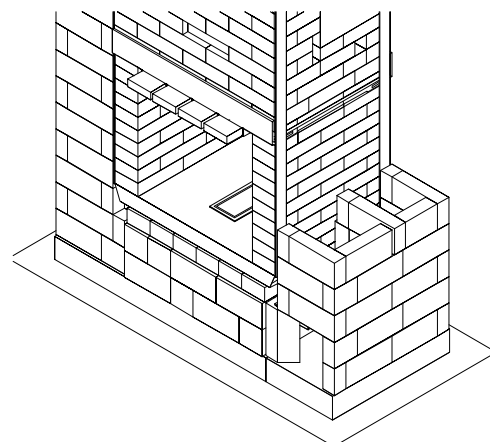


Figure 52

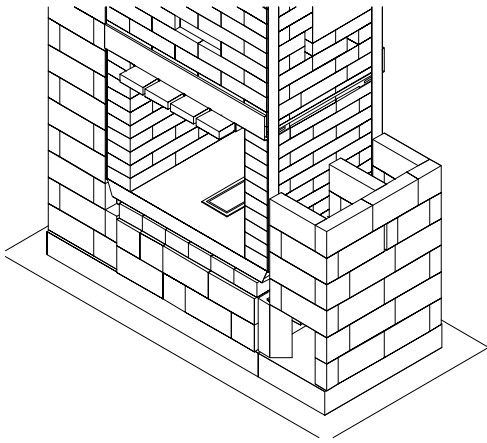


Figure 53

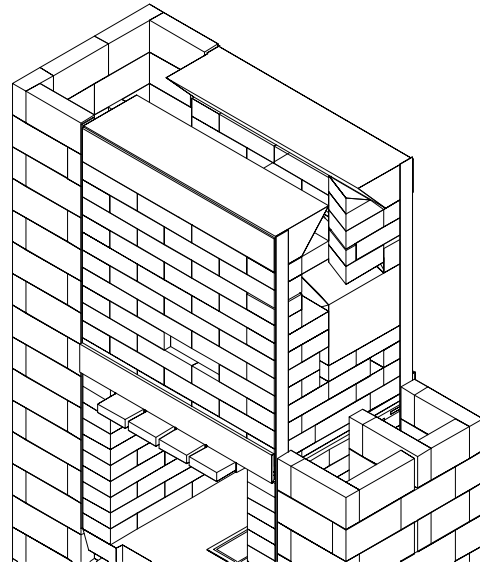


Figure 54

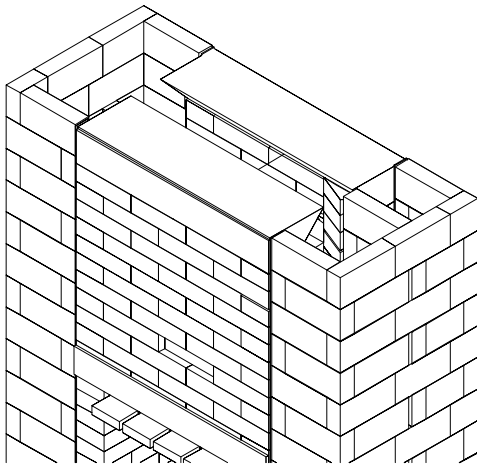


Figure 55

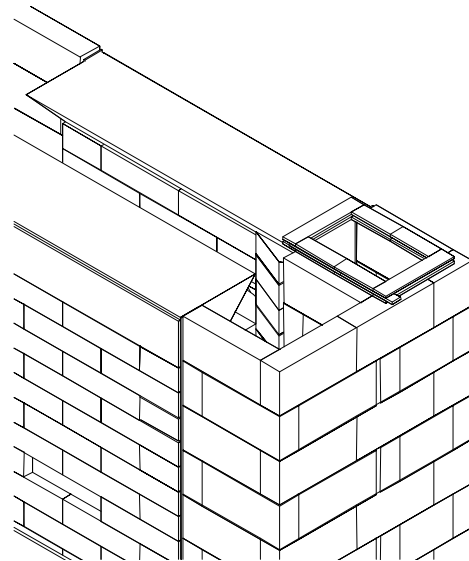


Figure 56

Install damper frame at this level. Fill around frame with ordinary mortar as necessary to support the next course of firebricks. Slot in damper frame faces kitchen.

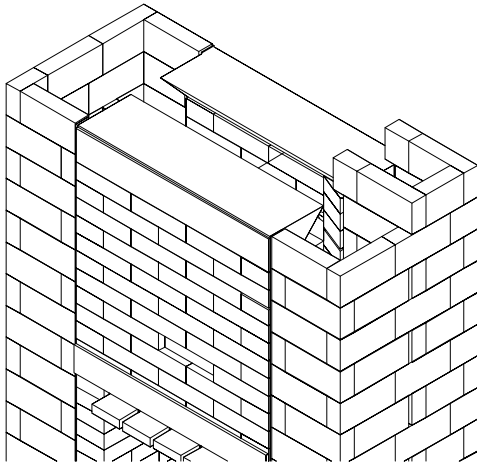


Figure 57

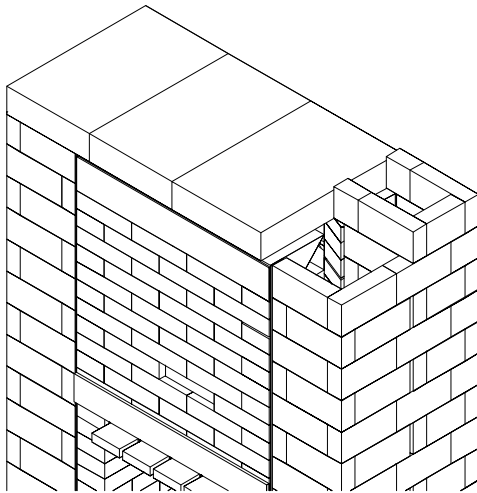


Figure 58

Install ceiling slabs as shown. Slabs are installed dry. Joints between slabs and underneath slabs are caulked carefully with silicone.

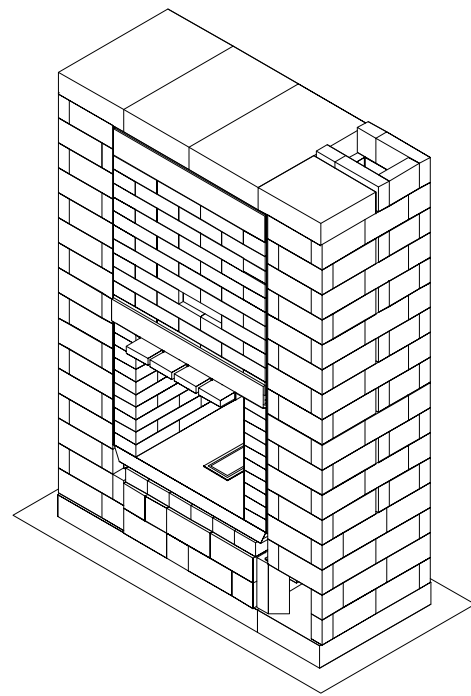


Figure 59

Install the additional ceiling slab as shown. This slab can be mortared in place with Sairset.

Installing the Fiberglass Slip Joint

Note: These instructions are taken from the standard installation, so the illustrations of the core are different:

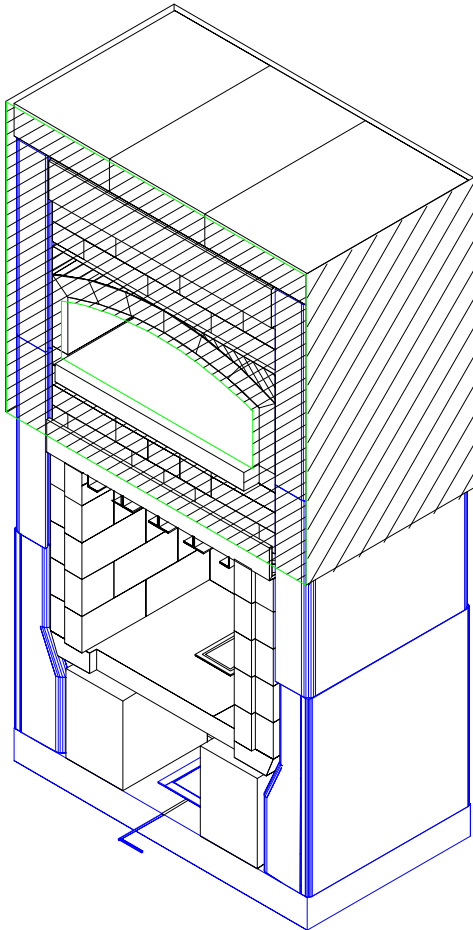


Figure 60

Next comes a double wrap of fiberglass matt to act as an expansion and slip joint. The mat is somewhat fragile, and releases glass fibres if handled too much - wear old clothes.

Quickly dab silicone approximately 4" - 6" o.c. over entire area indicated. Start at top of ceiling slab and go 38" down. Carefully unfold fiberglass mat and, with a helper, wrap around heater. Make sure mat goes all the way to top

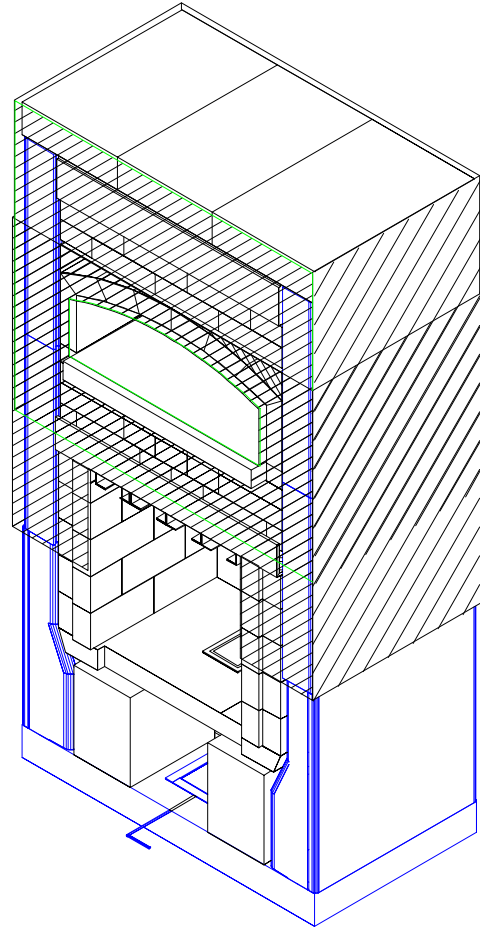


Figure 61

of ceiling slab. Have helper hold in ends in place, and go around heater, patting the mat onto the silicone. Trim to give approx. 4" overlap, and secure end with silicone dabs and several 3" pieces of duct tape.

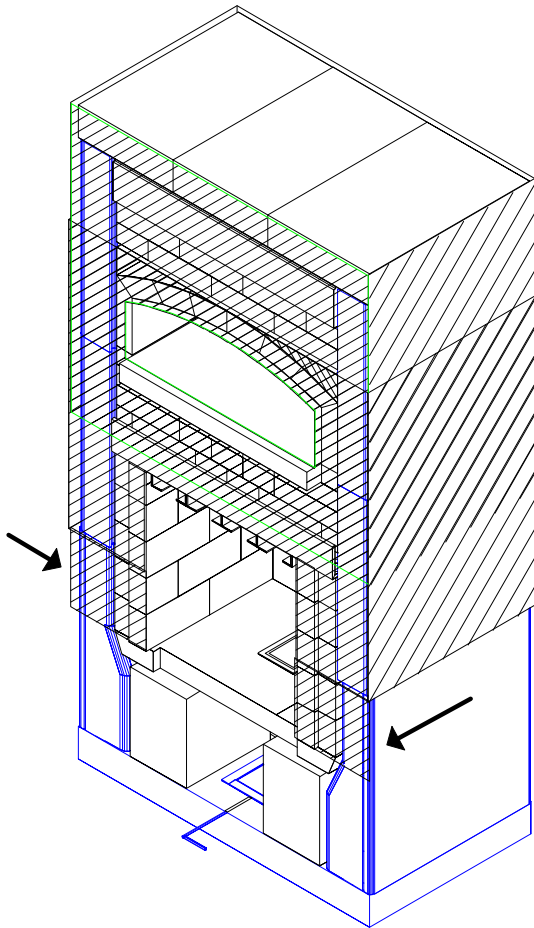


Figure 62

Add two additional pieces as shown.

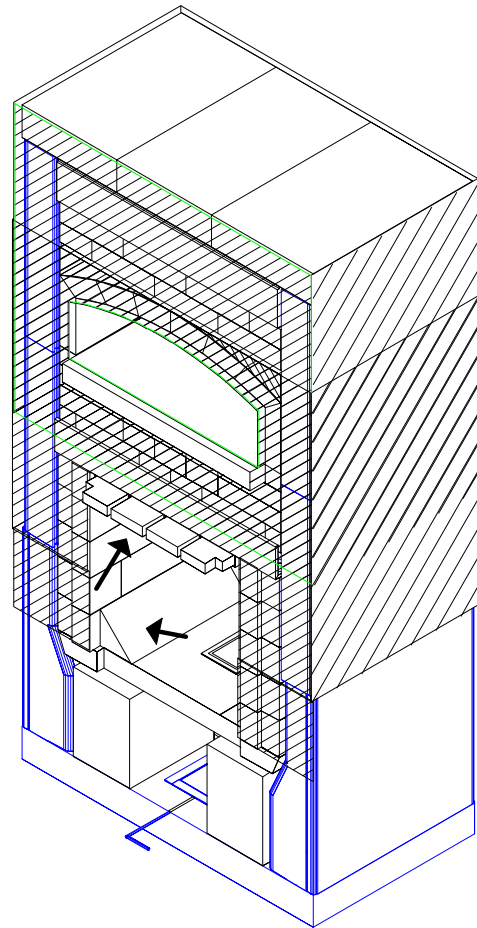


Figure 63

Note location of firebrick split heat shields.
Install sloped floor pieces onto a bed of refractory mortar, similar to setting a firebrick.

Notes on the Heater Facing

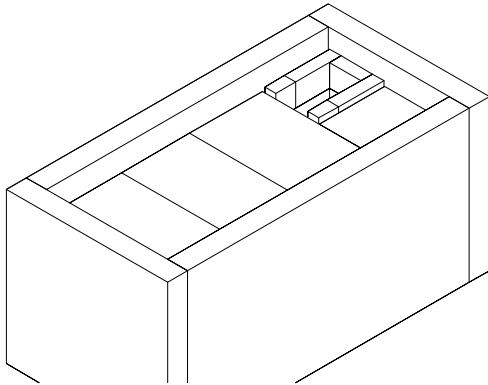


Figure 64

Run the facing approximately 4" - 5" higher than the heater core.

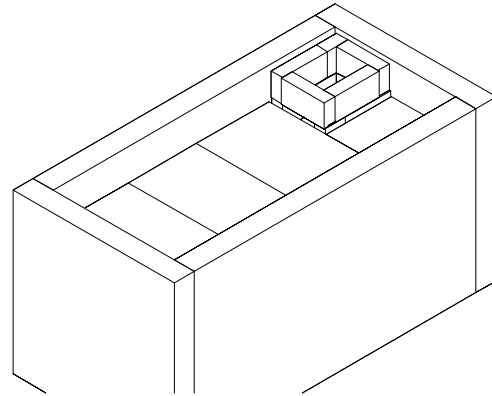


Figure 65

Bring the exit flue firebricks 1/4" lower than the height of the facing.

Fill the 4" space above the core with vermiculite and cap with mortar, as described in "Finishing Instructions". Leave it 1/2" lower than the facing.

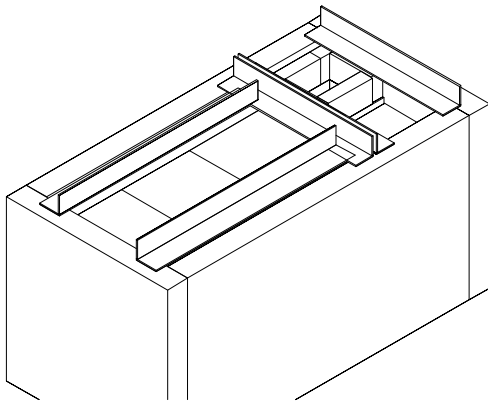


Figure 66