The 5-Run Masonry Heater is a symmetric top-venting design that allows for many variations.

Operating at above 80% overall efficiency and emitting only 1-2 g/Kg of particulate, a masonry heater is the cleanest burning and most efficient ways to heat a home with wood.

One 40 lb. load of firewood cleanly burned in a masonry heater is capable of providing 10,000 BTU/hr over 24 hours. The heater continues to radiate warmth to the living space long after the fire has gone out. For higher heat output, two fires a day with a half reload each can generate up to 30,000 BTU/hr.

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5RO Masonry Heater Planning Guide

Introduction

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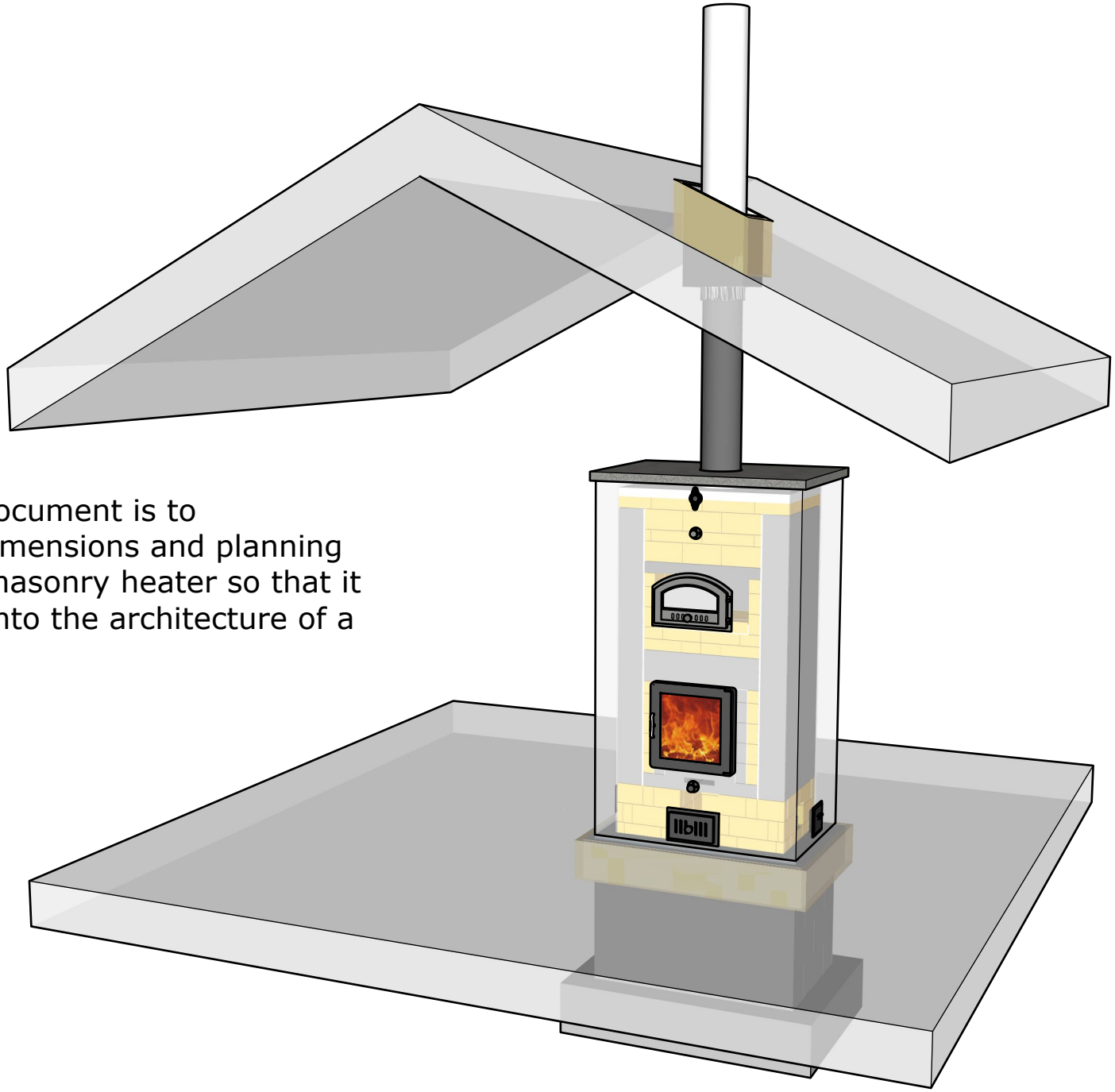

The purpose of this document is to communicate basic dimensions and planning considerations for a masonry heater so that it can be incorporated into the architecture of a home.

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Perspective

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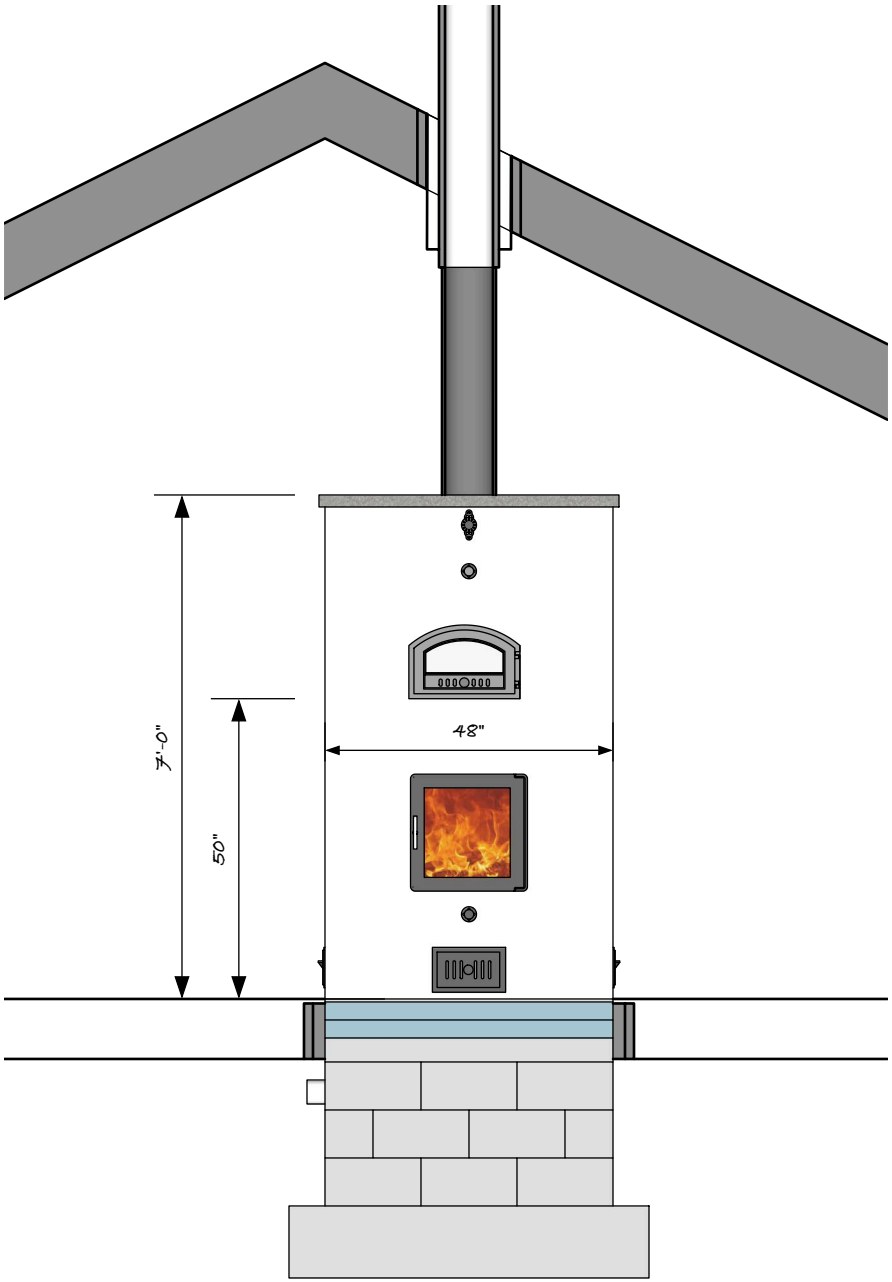

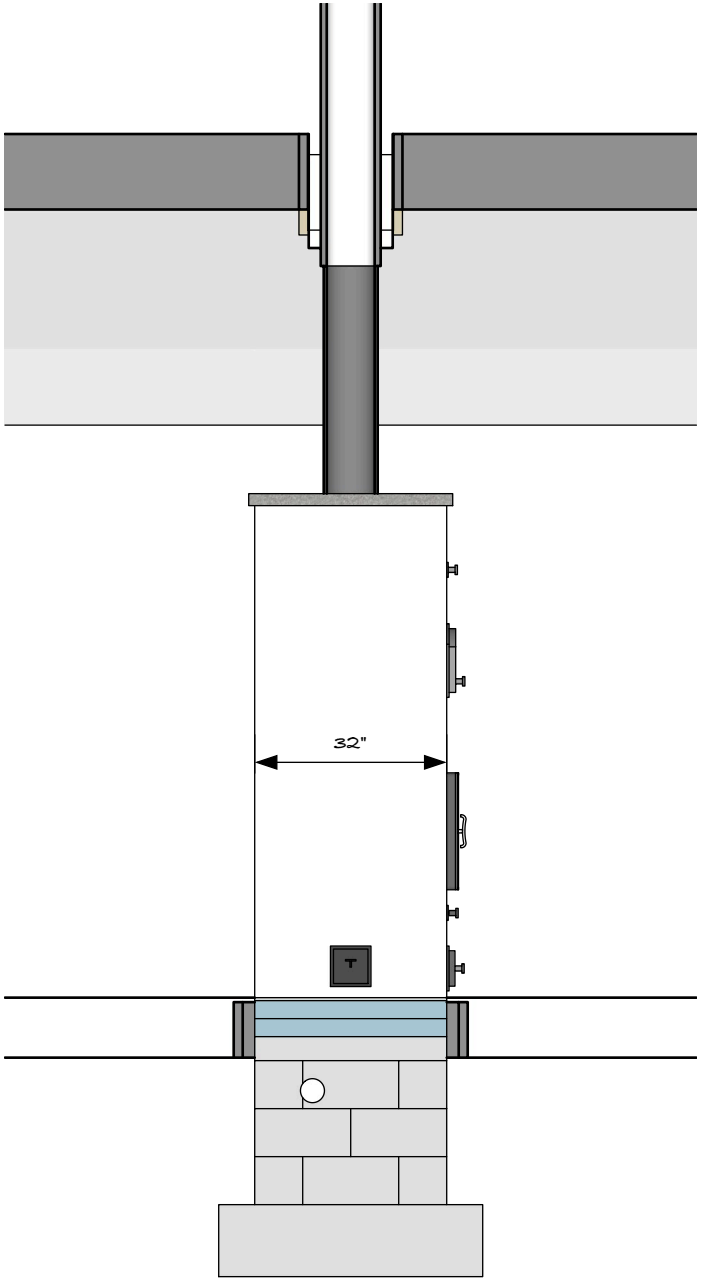

Note: Drawings for Slab-On-Grade Assembly Forthcoming.

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5RO Masonry Heater Planning Guide
Elevation

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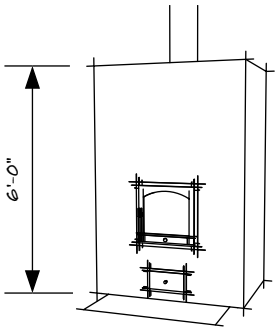
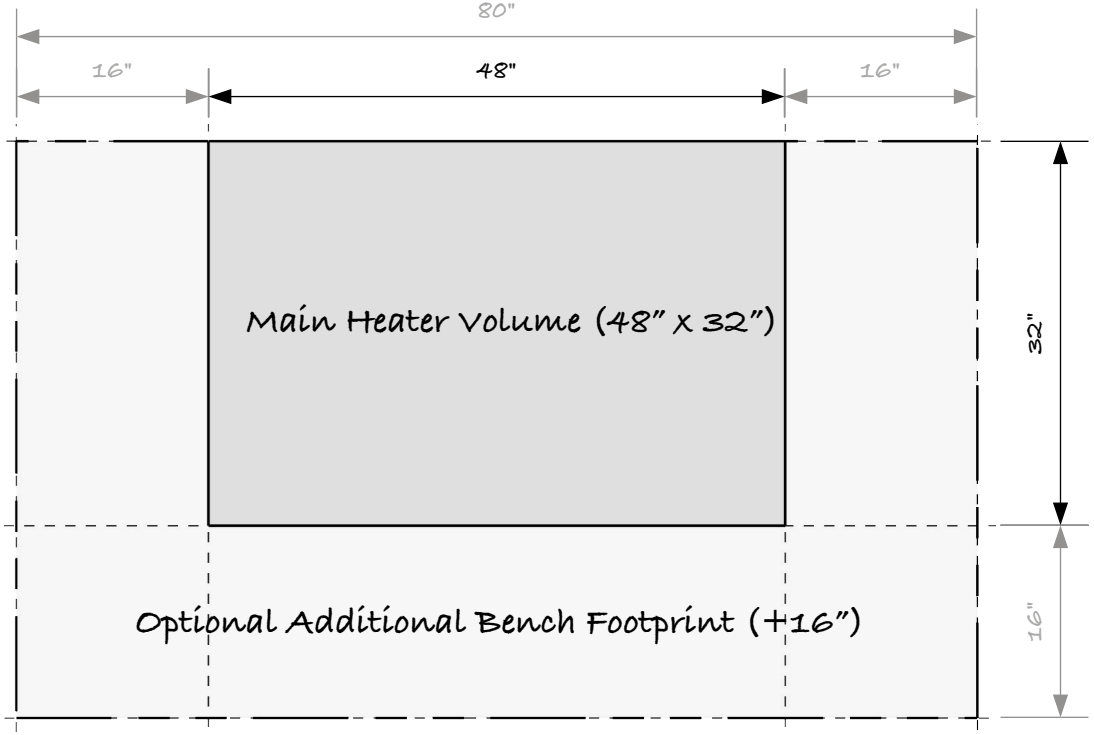
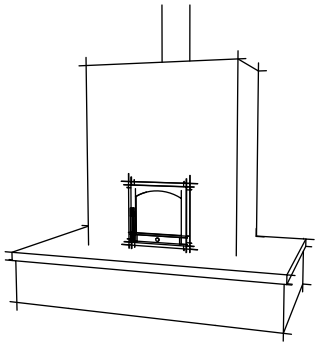
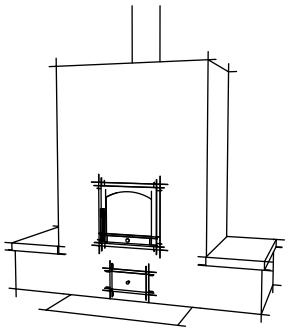
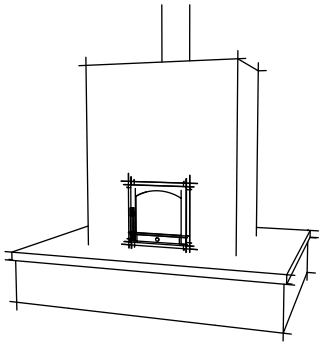
The design allows for many variations including options for heated and unheated benches, an oven facing the same way or opposite to the firebox, and the addition of domestic hot water heat exchanger.

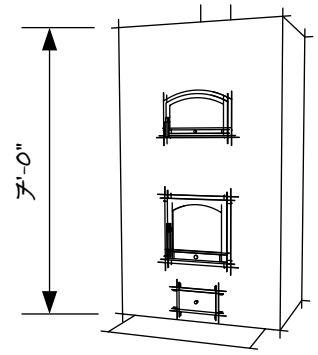


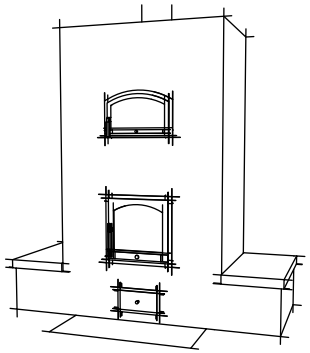


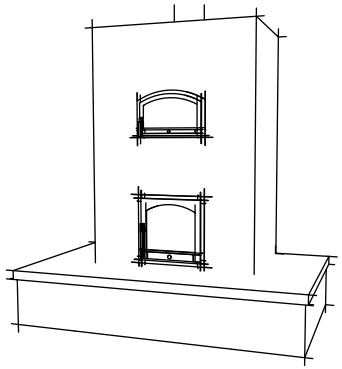


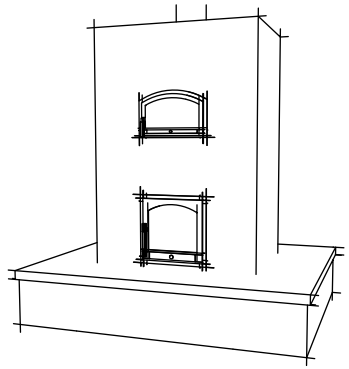












Support for variations beyond the basic design, including addressing the specific architecture of a home, is provided through our Custom Design Services.

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5RO Masonry Heater Planning Guide

Bench Variations

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Custom Masonry Heaters allow for a wide range of material choices to adapt to the project's architecture and aesthetics.

Masonry Heaters are typically built in a double-skin construction. There is a refractory core that addresses many of the technical functions of the heater and a facing which serves as an aesthetic wrap and also provides mass for the unit to act as a thermal battery.

Once draft is established in a chimney, it is possible to pull combusted gases through a longer heat exchange pathway.

This natural phenomenon is similar to water's ability to climb uphill in a hose when siphoning.

Masonry Heaters maximize efficiency by optimizing both important processes of transforming wood into heat energy:

Overall Efficiency =

Combustion Efficiency x Heat Exchange Efficiency

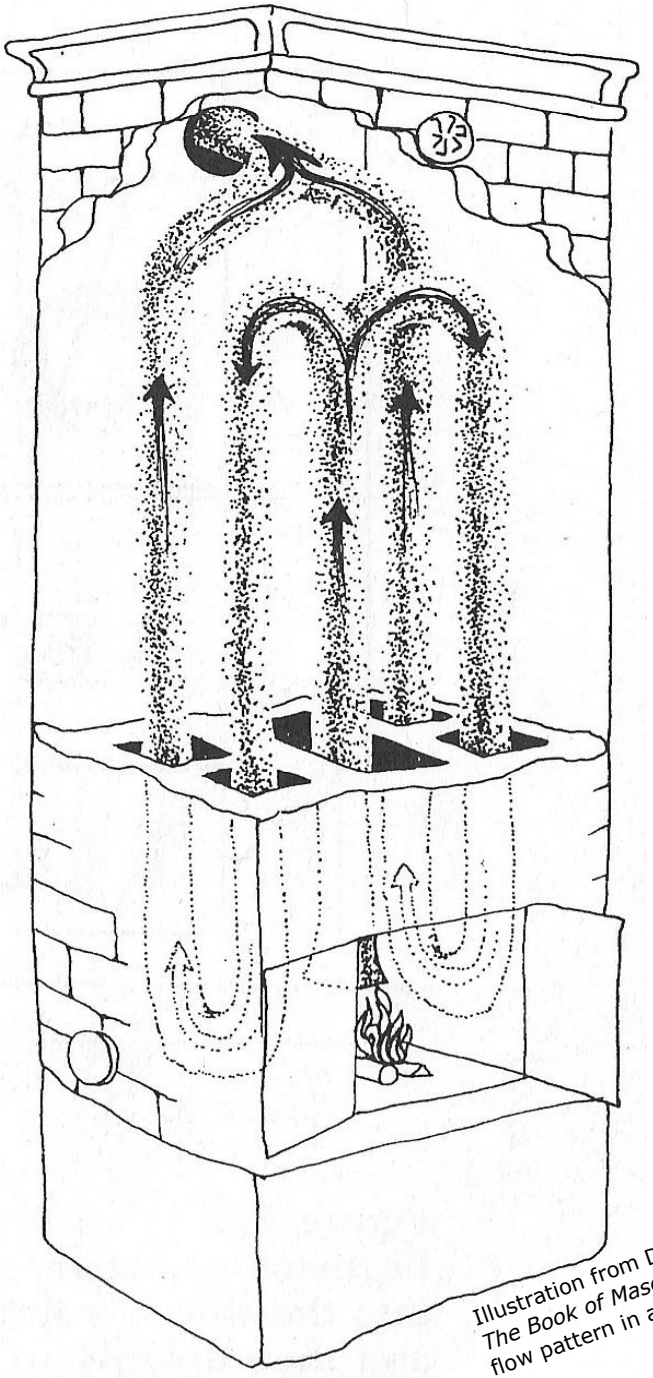
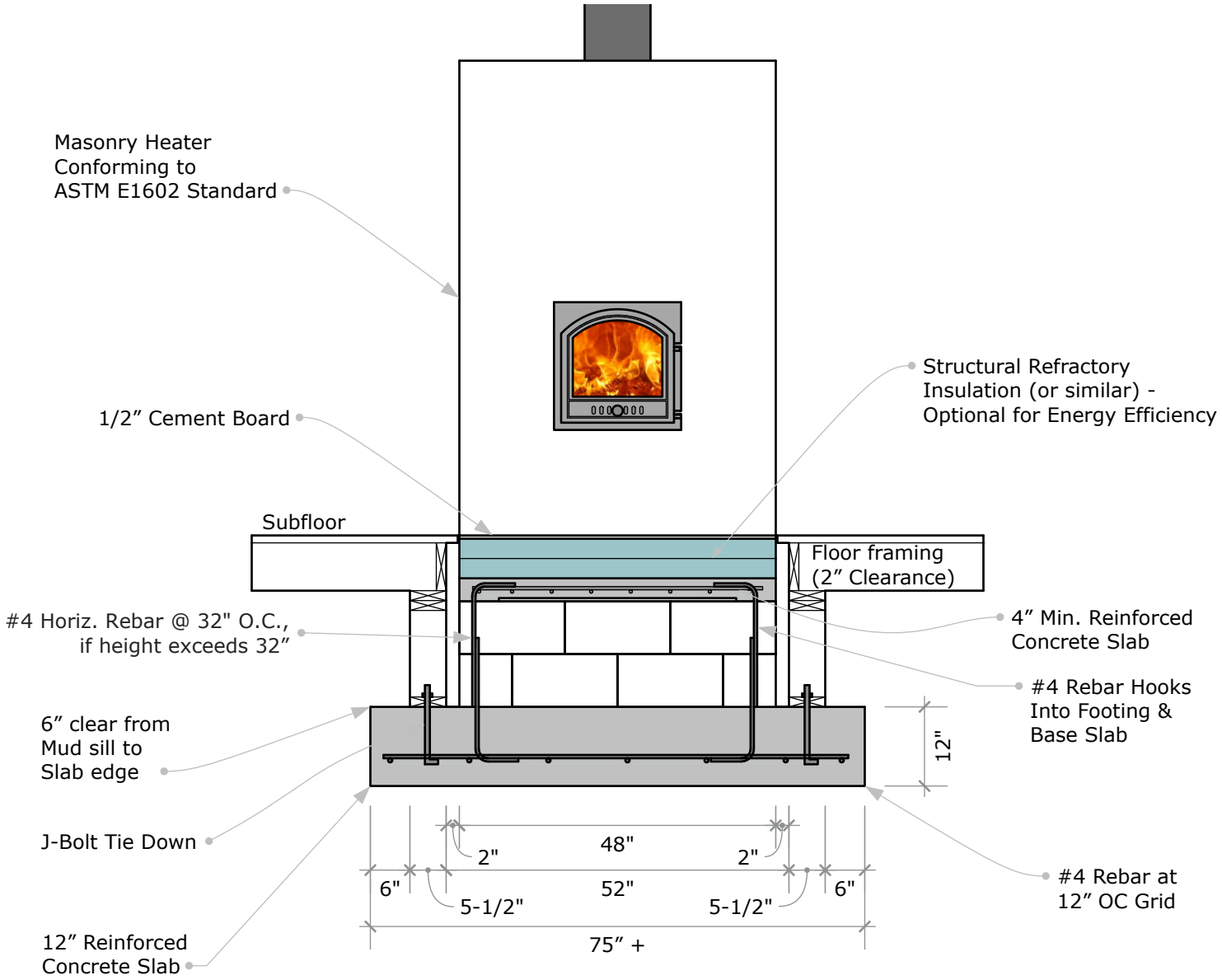


Illustration from David Lyle's excellent text *The Book of Masonry Stoves* shows the gas flow pattern in a 5-Run Masonry Heater.



Foundation Slab for Masonry Heater shall be 12” Thick
and Extend 6” Beyond the Footprint of the Heater in all Directions.
#4 Rebar, 12” OC Placed in Lower Third of Slab.
Prescriptions per IRC R1001.2

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5RO Masonry Heater Planning Guide

Typical Crawl Space Foundation

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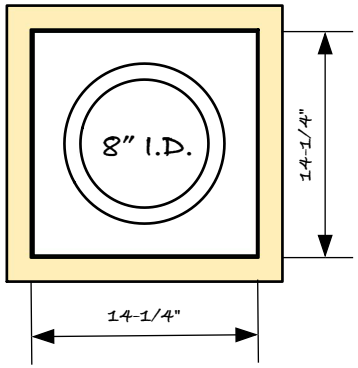
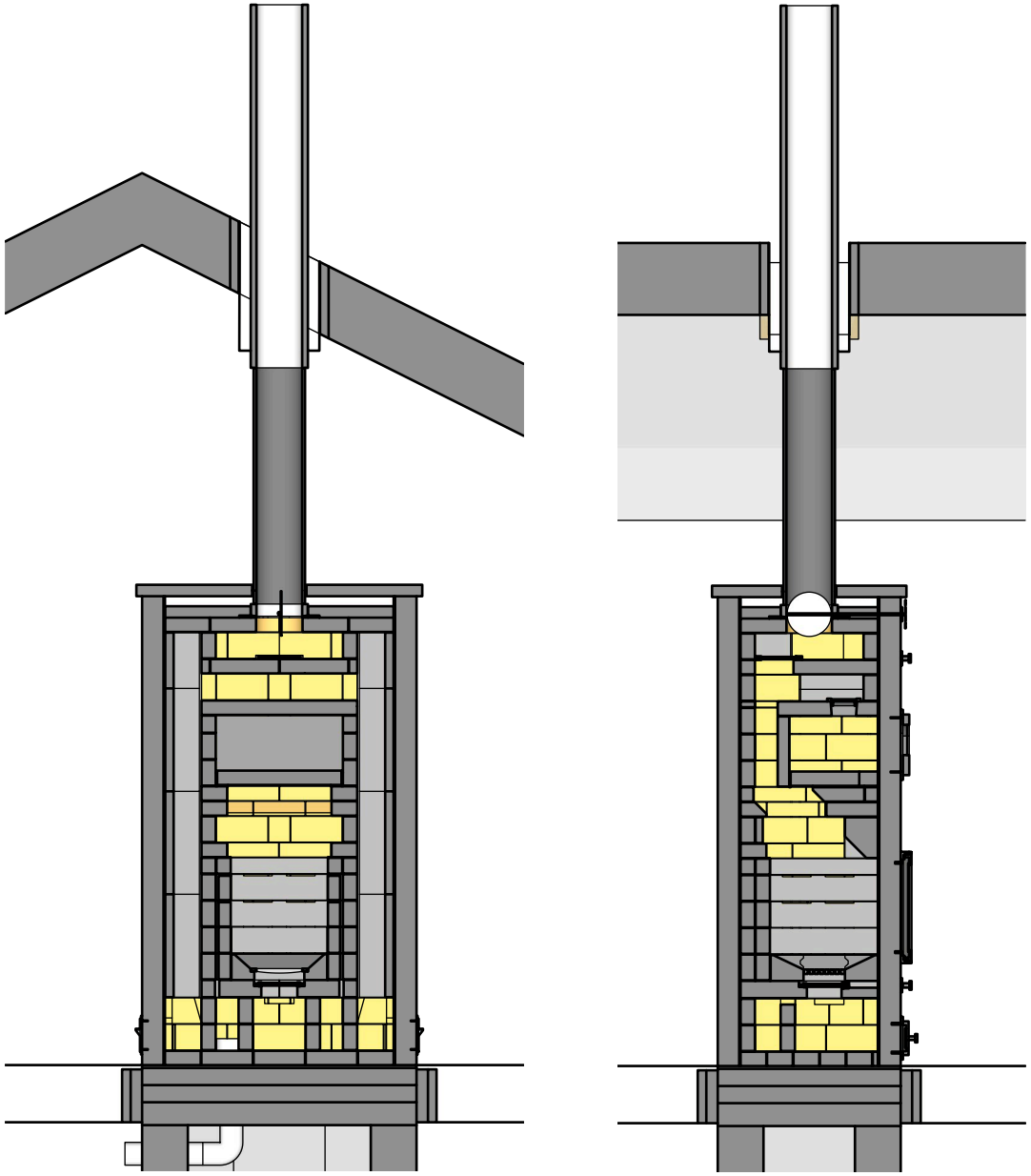
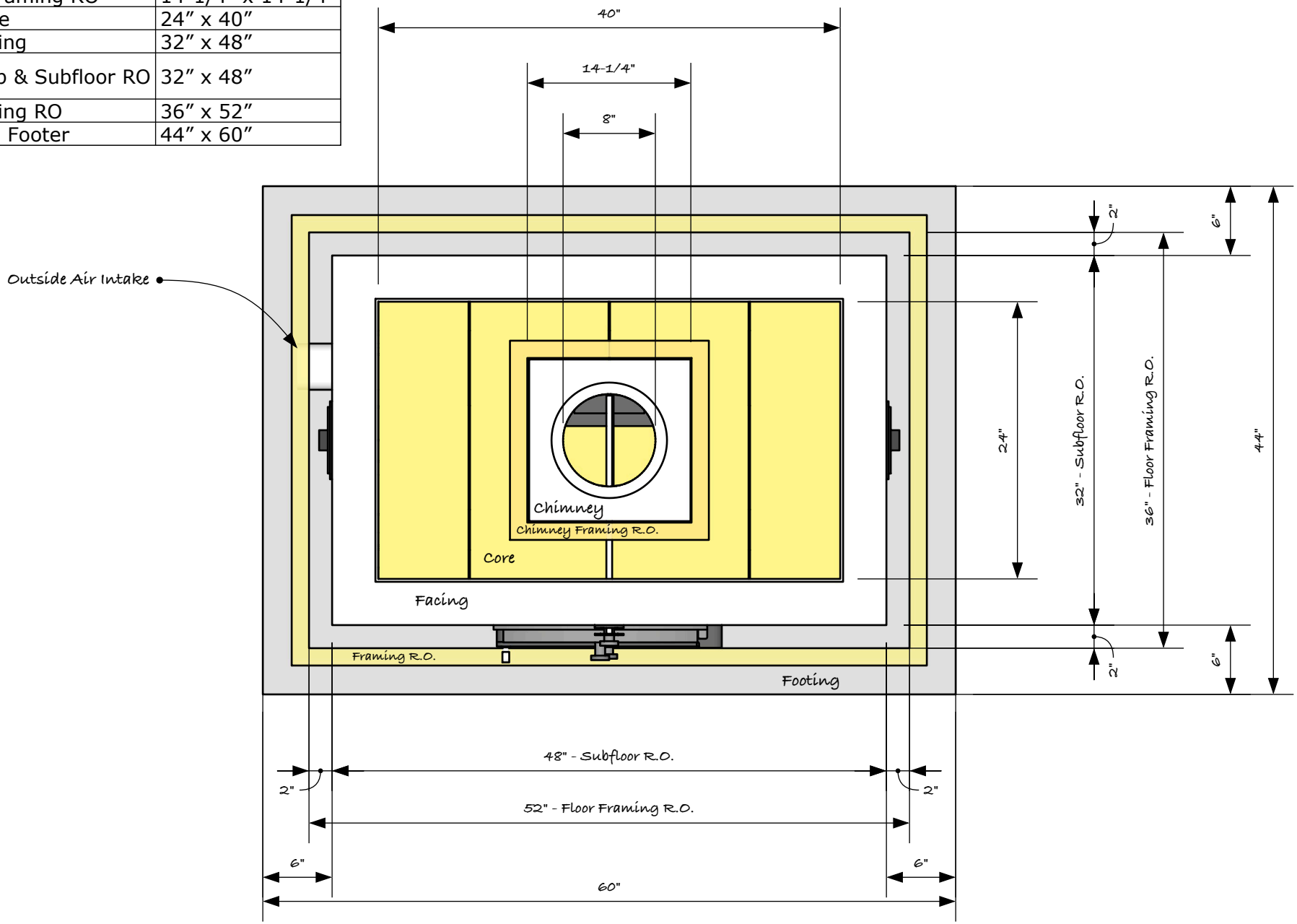


The 5RO masonry heater is vented with a 8" I.D. solid-fuel manufactured chimney like the ones sold for wood stoves. This typical installation shows a ceiling support box with exterior class A chimney pipe penetrating and extending above the roofline. A double-wall telescoping connector is used to connect from the anchor plate on the unit to the chimney. For particularly tall chimneys (20'+), a 7" I.D. chimney may be used. Consult manufacturer's specifications for details of chimney assembly and requirements.



Dimensions	
Chimney	7″ or 8″ ID
Chimney Framing RO	14-1/4″ x 14-1/4″
Heater Core	24″ x 40″
Heater Facing	32″ x 48″
Heater Slab & Subfloor RO	32″ x 48″
Floor Framing RO	36″ x 52″
Foundation Footer	44″ x 60″



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5RO Masonry Heater Planning Guide
Heater, Framing, and Footing

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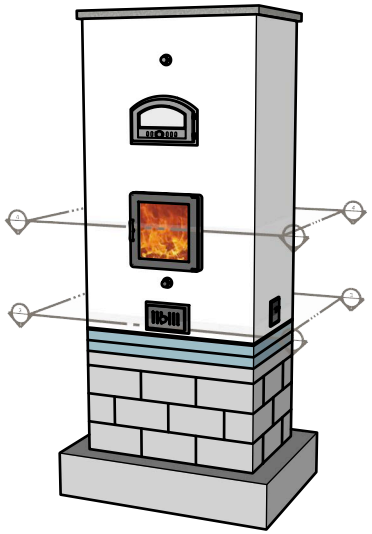

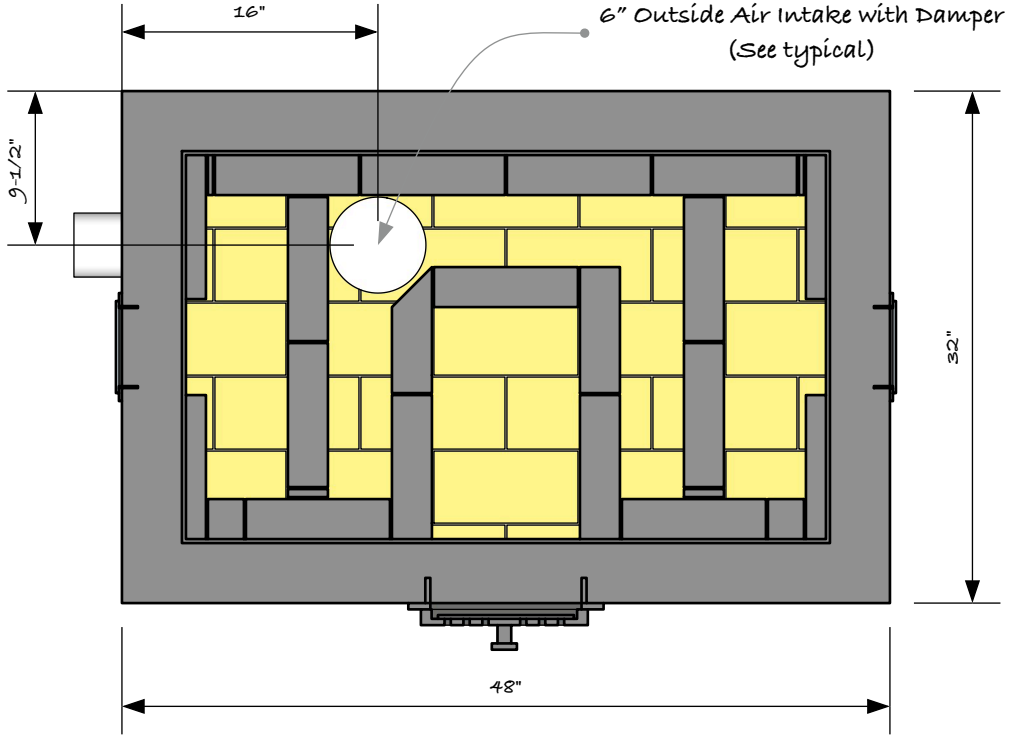

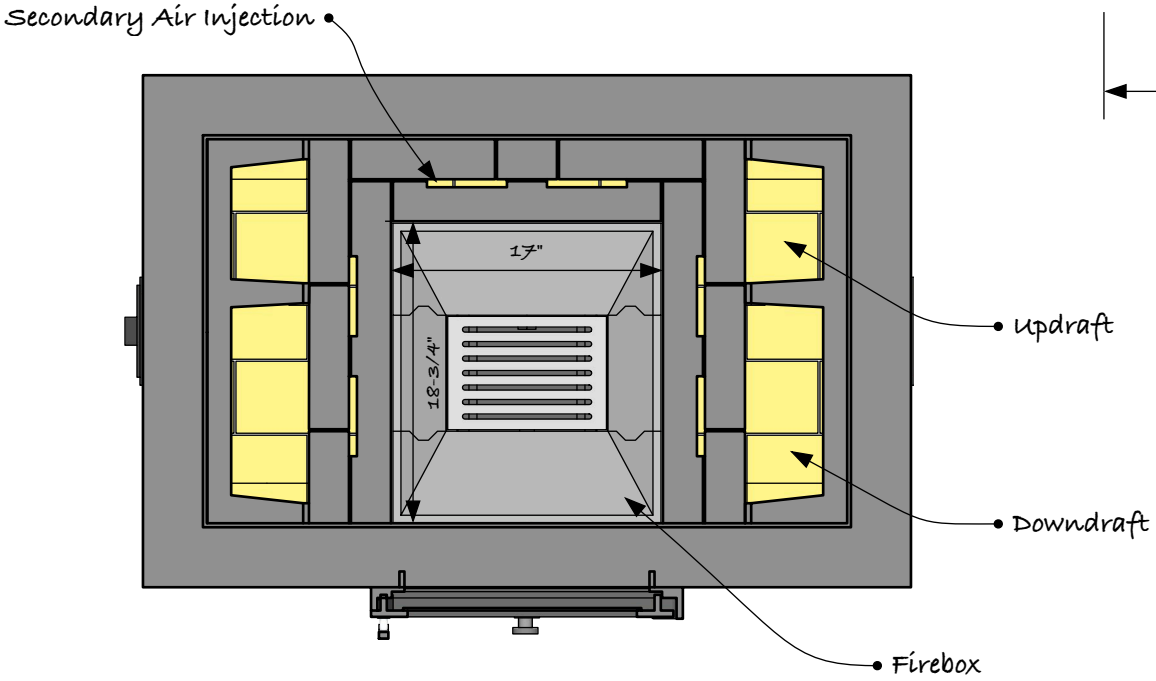

Detailed course-by-course drawings are offered with purchase of kit.

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5RO Masonry Heater Planning Guide
Sections - Base & Firebox

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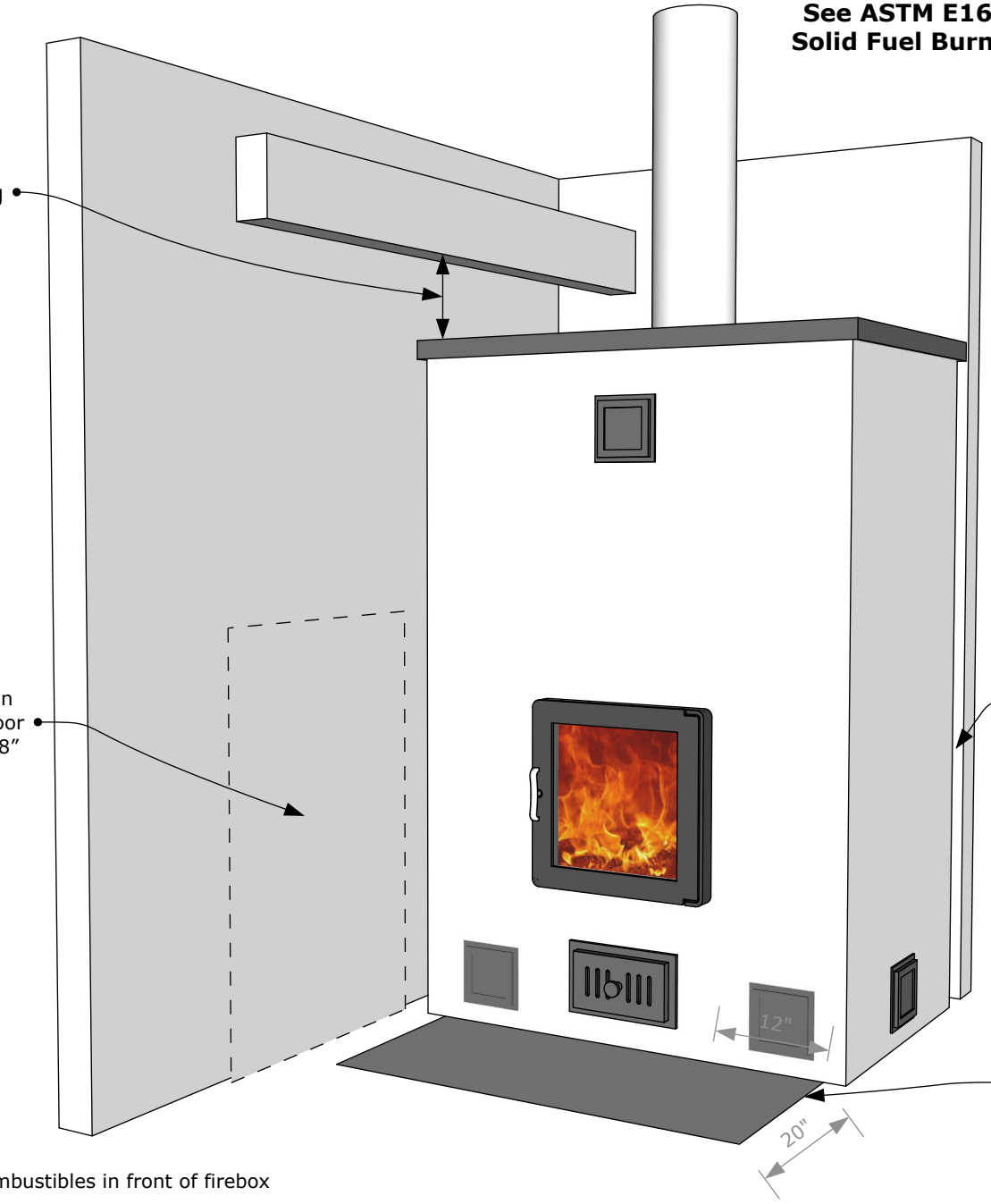
See ASTM E1602 Standard Guide for Construction of Solid Fuel Burning Masonry Heaters for full reference.



Min. 8” to Exposed Framing Or Ceiling

Heat shield necessary when distance between firebox door and side wall is less than 48”

4” Clearance to Combustibles
(back and sides)
when firebox walls are min. 8” thick and heat exchange walls are min. 5” thick

Hearth Extension
Non-Combustible Finished Floor
min. 12” either side of firebox opening and 20” into room

Minimum 48” to combustibles in front of firebox

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5RO Masonry Heater Planning Guide
Minimum Clearances Summary

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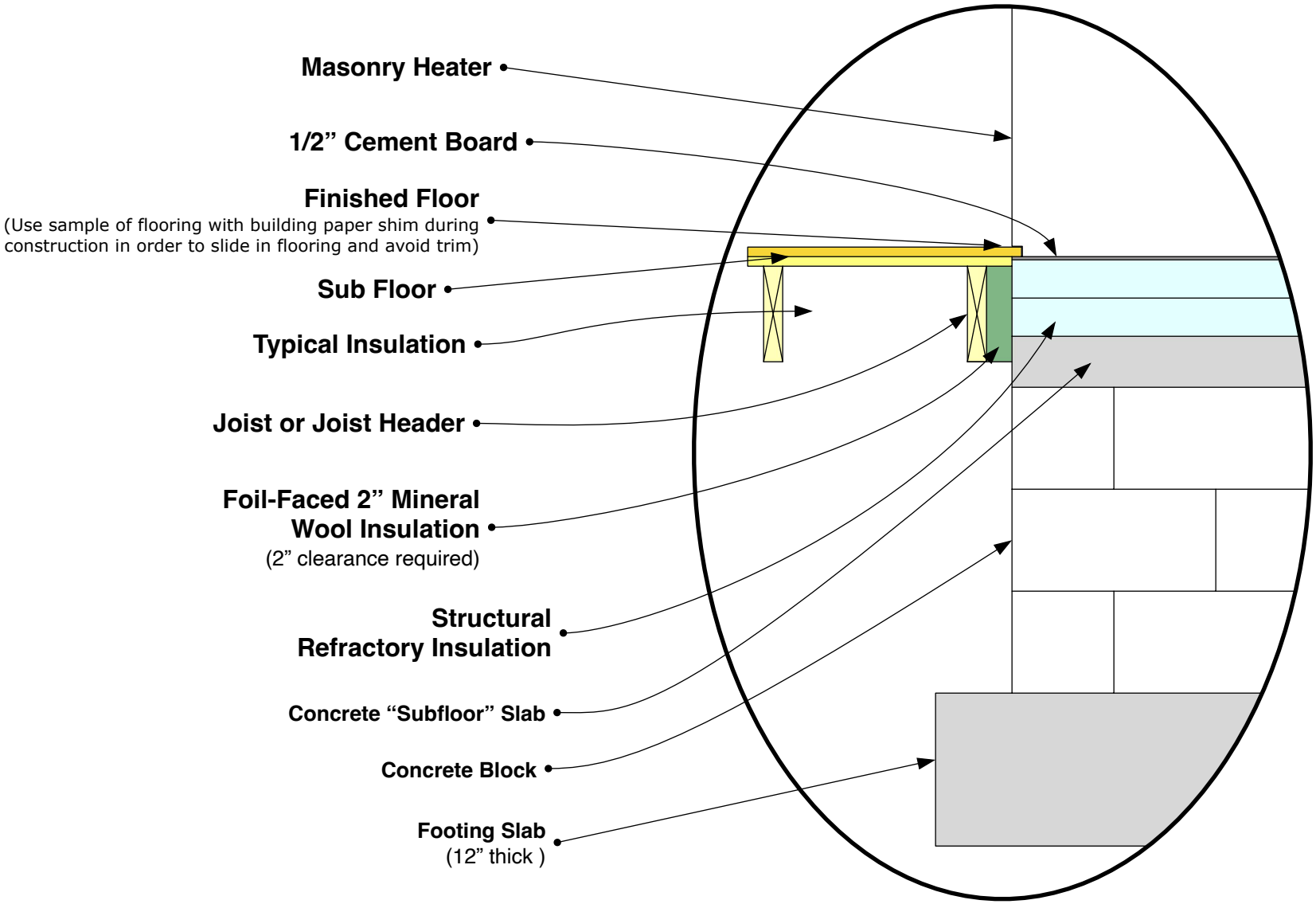

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5RO Masonry Heater Planning Guide

Typical Foundation & Floor Assembly

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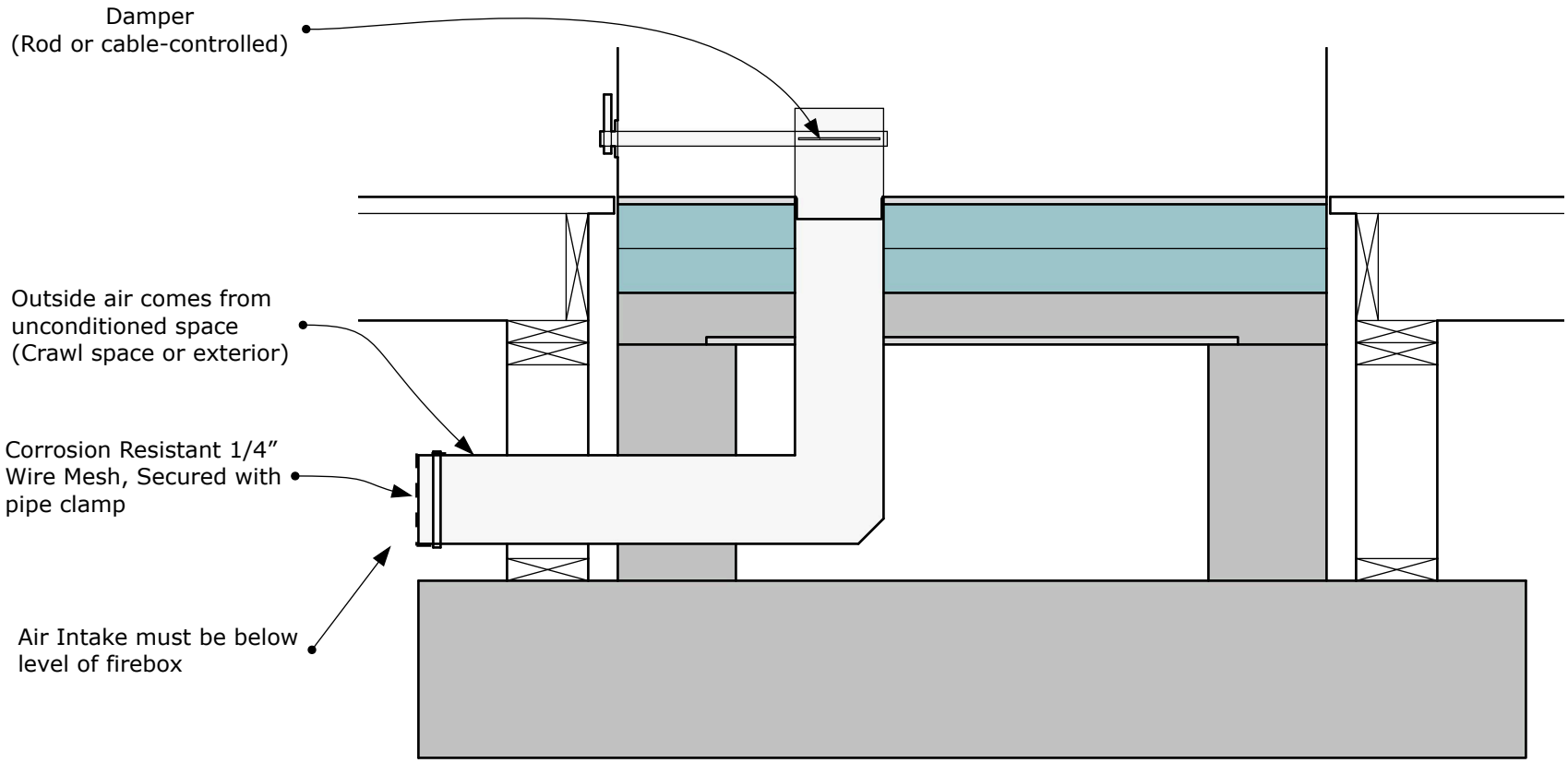


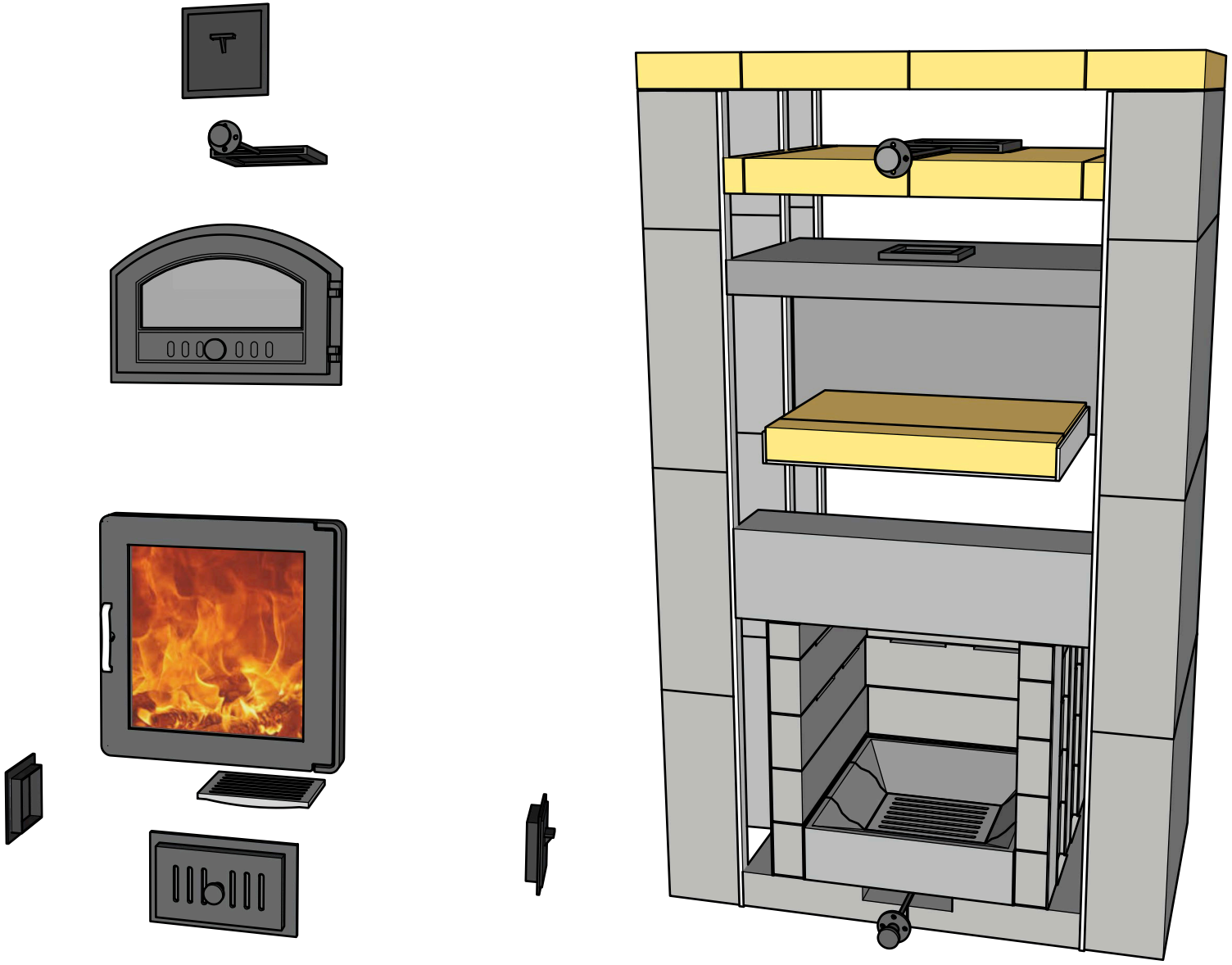
ASTM E1602 - 5.6 **Outside Combustion Air**—When required by the local building code, provide a duct with a minimum cross-sectional area of 7700 mm2 (12 in.2) or equivalent. When outside combustion air is required by the authority having jurisdiction the duct shall have a damper that can be fully closed when not in use. Materials shall be non-combustible and methods of construction shall comply with the requirements of the authority having jurisdiction.

5.6.1 In applications in which outside air is introduced directly into the firebox, the air duct must enter the building at a level below the firebox.

5.6.2 Design and position the air inlet to prevent live coals from entering the air duct. To prevent rodents from entering the air duct, cover the outside entry opening of the duct with a 6 mm (1⁄4 in.) corrosion resistant wire mesh.

5.6.4 When outside air is introduced into the firebox, construct the air duct from noncombustible materials.

This is a leading edge topic in masonry heater and building design. Please visit https://www.firespeaking.com/masonry-heaters/outside-air/ for the latest.



This is an illustration of the items that are included in our kits. We have two hardware lines to choose from and there are additional options such as an anchor plate, oven thermometer, and refractory mortar which are not shown here. Our goal is to provide you with all of the specialty items you need on one pallet to build a state-of-the-art masonry heater in combination with firebrick and facing masonry from a local masonry yard.

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5R & 5RO Materials & Budgeting Worksheet

Local Masonry Supplier Order

Overage: 10%

Item	Quantity	Unit	$/Unit	$
FOUNDATION				
Concrete - Footing (60# Bags)	45			
#4 Rebar - Footing	46	ft		
Concrete (60# Bags) - Subfloor Slab	9			
#4 Rebar - Subfloor Slab	41	ft		
Cement Board - 0.5x36x60	2			
Calsil Insulation - 3x24x36	8			
BLOCK AND MORTAR				
CMU - 8x8x16	24			
CMU Bond Beam - 8x8x16	0			
CMU Bond Beam Corners - 8x8x16	0			
Type N Mortar (80 lb Sacks)	3			
CORE				
Firebrick - Full	217			
Firebrick - Split	14			
Refractory Mortar - 55 lb pail	2			
Flue Tile (Bench) - 8x12x12	0			
FACING				
Facing Brick - 4x8x2.5	406			
Type N Mortar (80 lb Sacks)	3			
Insulation Cap	1.02	cu ft		
Thin Set Mortar - Plaster Scratch Coat 1/4" (50 lb Sacks)	3			
Plaster - Brown Coat (3/8")	91	sq ft		
Plaster - Finish Coat (1/8")	91	sq ft		
SLABS				
Stone slab or countertop material (eg, bluestone)	11.4	sq ft		

Firespeaking Masonry Heater Modules & Parts Order

SKU	Item	Quantity	$/Unit	$
CAST REFRACTORY MODULES				
M-FB3	Eco Firebox Module	1		
M-O	Oven Module	1		
M-HE-5RO	5-Run with Oven Heat Exchanger Module	1		
M-HE-5R	5-Run (no Oven) Heat Exchanger Module			
HARDWARE				
FW-PR04	Fireway PR04 Firebox Door			
PS-HTT402	Pisla HTT 402 Firebox Door	1		
FS-FBT	Stainless Trim & Insulation for Firebox Door	1		
FW-K204	Fireway K204 Oven Door			
PS-HTT432	Pisla HTT432 Oven Door	1		
PS-HTTBRAC	Door Mounting Clamp Set	2		
FW-B104	Ash/Air Door			
PS-HTT612	Ash/Air Door	1		
PS-HTT114	Ash Door Masonry Frame (for Pisla)	1		
PS-HTT112	Ash Drawer	1		
THERM7.5	Oven Thermometer	1		
FW-P104	Cleanout Doors			
PS-HTT605	Cleanout Doors	3		
PS-HTT113/5	Cleanout Masonry Frame (for Pisla)	3		
MISCELLANEOUS				
	Dayton 6" Outside Air Damper			
	8" Anchor Plate with Damper	1		

This is a sample materials and budgeting worksheet that applies to the heater illustrated in the 5RO planning guide. Please consult our office at **info@firespeaking.com** or **(541) 632-3028** to obtain a quote for the parts that we offer.