

Building a Masonry Stove for Efficient Wood Heat

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What we' ll cover

1. Why Use a Masonry Stove?

- **Brief history**
- **My reasoning, my limitations**

2. Design Considerations

3. Basic Stove Components and Terms

4. Construction Sequence

5. Resources

6. Questions?

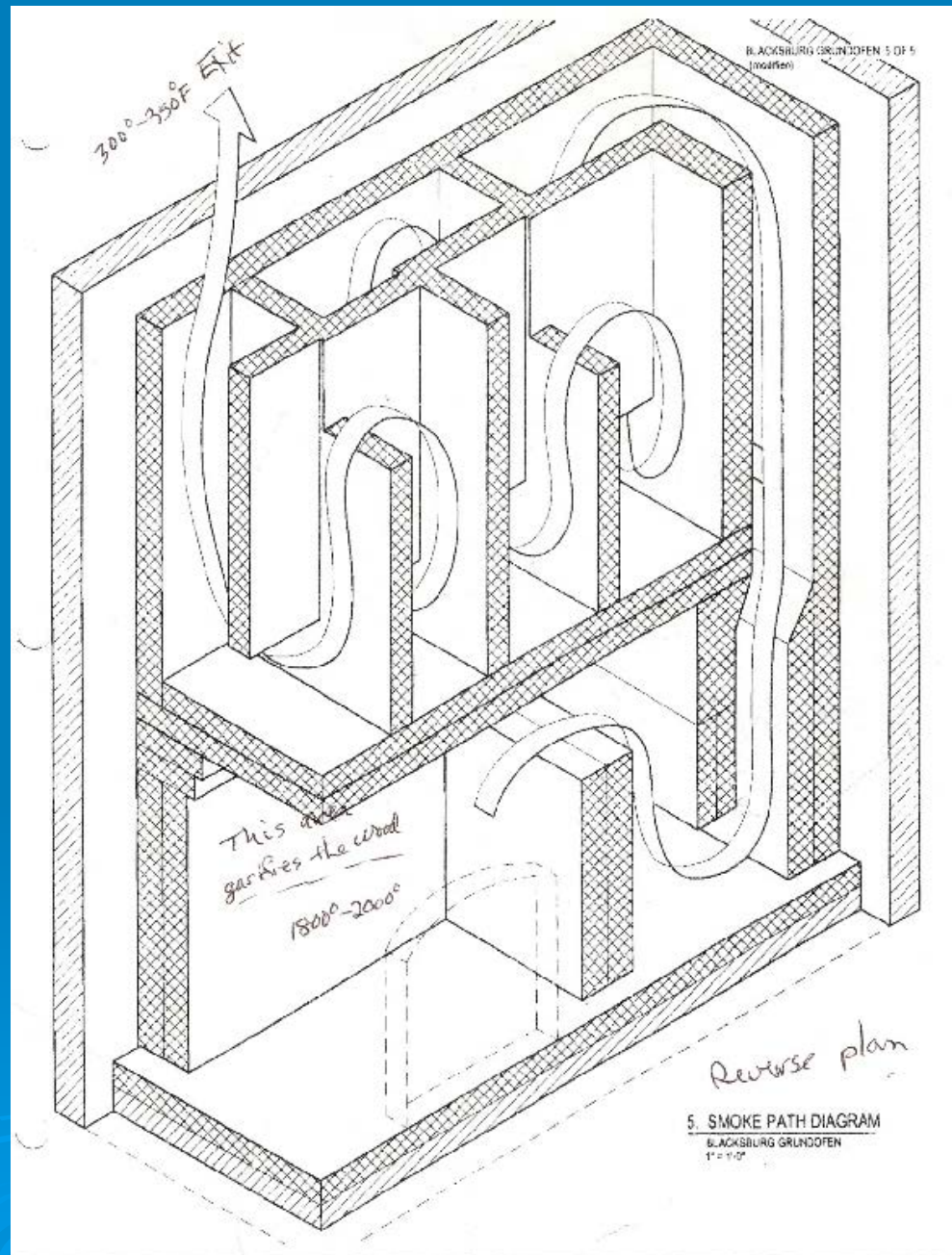
Why Use a Masonry Heater?

Brief History

- Northern Europe – variety of stove types
- Looking for more efficient use of wood
- Burn hot, fast and “clean” - store heat in large mass

Smoke Path Diagram

- many different patterns depending on model



Why Use a Masonry Heater?

My Reasoning

Renewable fuel source – very efficient and clean

Back- up for gas, initially, then primary with more building envelope advances?



Why Use a Masonry Heater?

My Limitations

I'm certainly no expert on masonry heaters.....

Location in house not ideal, but best for us

I like using scraps...



Design Considerations

Stove placement

- Relative to floor plan?
- Required clearances?
- Chimney location?
- Where do you want to direct heat to?

New construction versus retrofit

Foundation

- Finished stove weighs 5000-6000 lbs, depending
- Combustion Air

Steel bracing – earthquakes

Advanced planning helpful....

Basic Stove Components - Terminology

Core

Veneer

Combustion Air

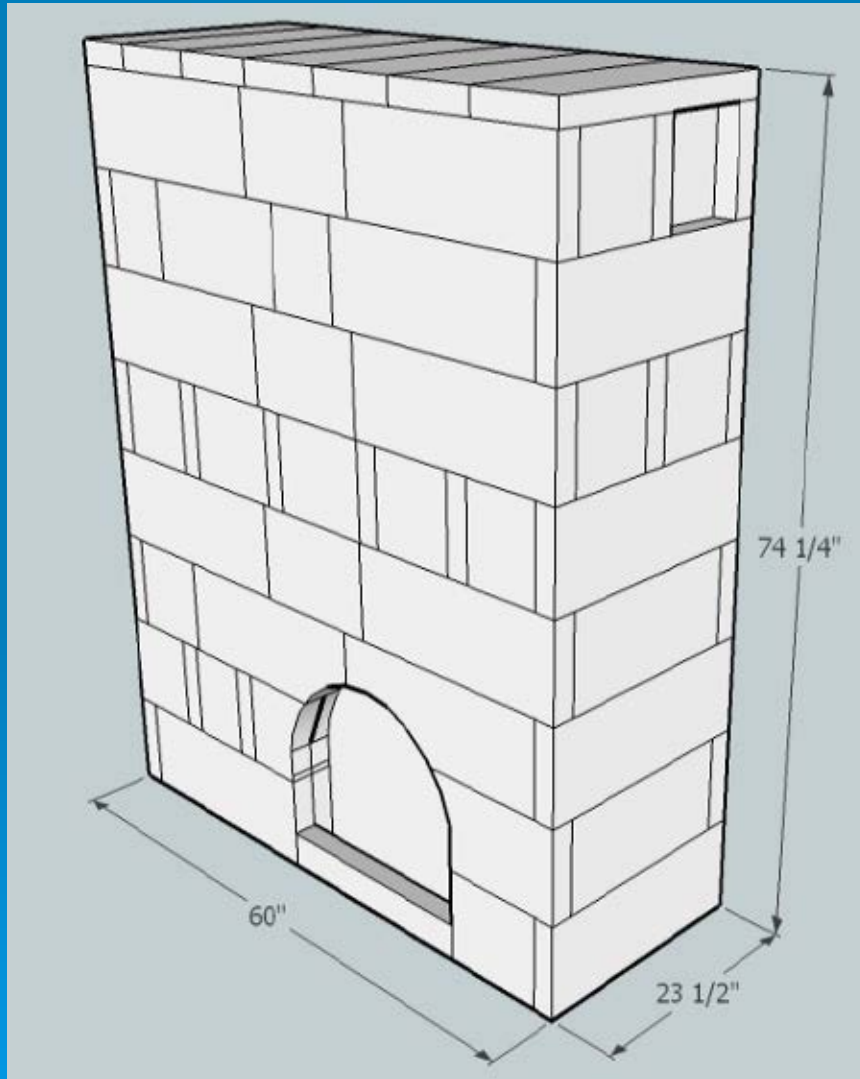
Hearth

Cleanouts

Bake Oven

Foam Glass

Core



Pre-cast blocks
High-temp concrete
made from
refractory cement

Veneers

Term for Outer Layer

Many options:

- Tile over concrete block
- Soapstone
- Other stone – river rock or granite, etc



Veneers



Foundation Considerations

- Core Weight – 3700 lbs for me
- Veneer Weight – 3000 lbs minimum
- Example – from Empire Masonry Stoves
 - Thin 4" Prefab veneer = 3100 lbs
 - Brick 8" veneer = 5800 lbs
 - Natural stone 9" veneer = 7200 lbs

Construction - foundation



Construction - foundation



Construction - foundation



Construction - foundation



Construction - foundation



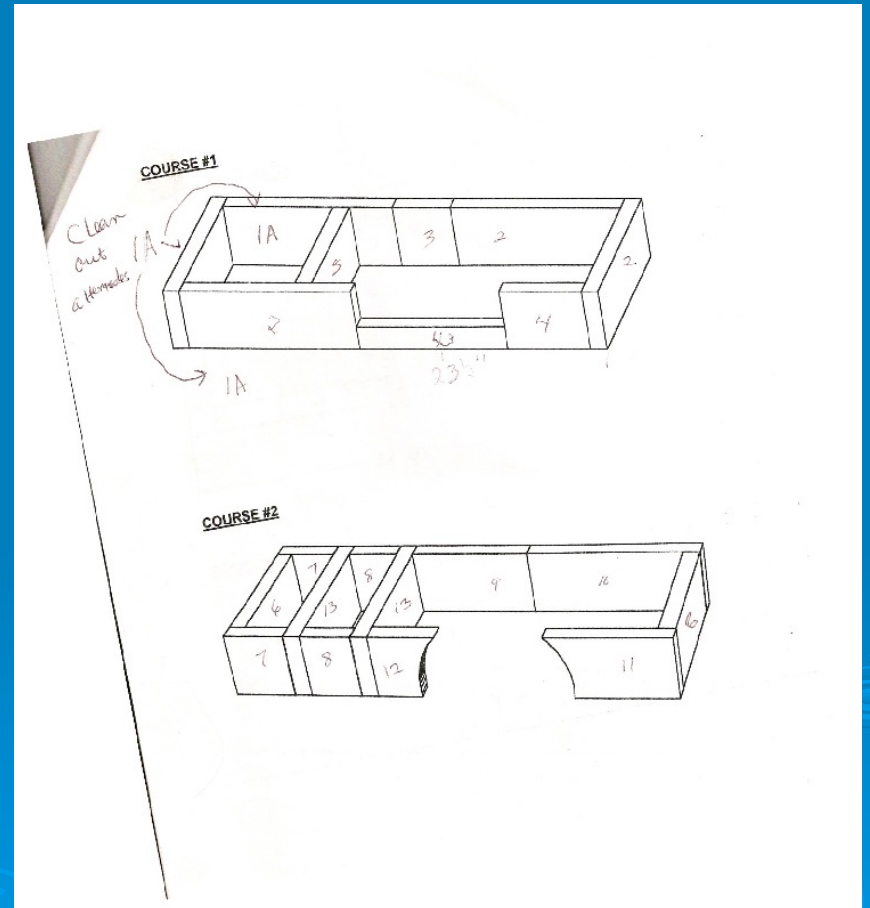
Construction – stove base



Construction – Core Assembly



Construction – Core Assembly



Construction – Core Assembly



Firebox



Construction – Core Assembly Dry Run



Construction – Back Veneer



Construction – Core Assembly



Construction Core Assembly



Construction – Core Assembly (Smoke Paths)



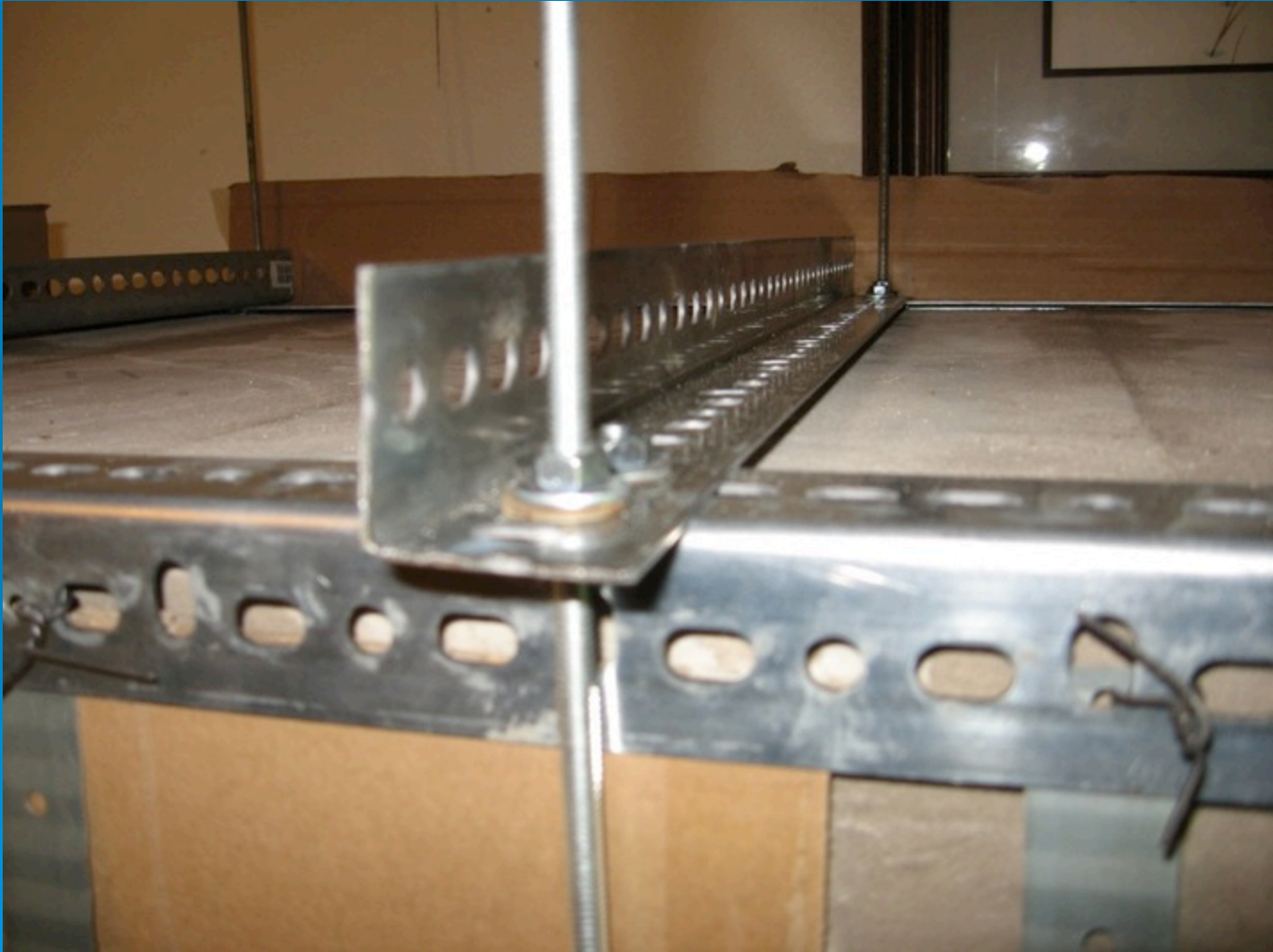
Construction – Steel Bracing



Construction – Bracing, brick ties



Construction – bracing



Construction – Chimney connection



- Can go out top or side

Construction – Veneer



Construction – Veneer



Construction – Veneer



Construction – Veneer



Construction – Door



Construction – Cleanouts



Need dry wood!

Bake Ovens

Smaller versions



Some temps during firing



Outside
Chimney
275 F

Face of Glass
680 F

Veneer Temps 10 hours AFTER Firing

Degrees F

(Imagine no flames)



And 225F inside
burn chamber

Resources

- Dan Givens – Stonecastle Masonry – 907-474-3465
- Harry Aulman – Talkeetna
- Masonry Heater Association – mha-net.org
- Alaska Insulation Supply, EJ Bartels
- Alaska Masonry Heat – 3 Stores – Tulikivi stoves

Questions?

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