

A GUIDE TO BUILDING YOUR ROCKCOTE TRADITIONAL ARTS WOOD FIRED PIZZA OVEN

**A Genuine Retained Heat Oven For Cooking
Traditional Bread, Pizza, Roasts & More**



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ROCKCOTE & Wood Fired Natural Clay Ovens

Rockcote has become involved in Wood Fired Natural Clay Ovens because of Our Vision and Our Purpose.

Our Vision: To be celebrated for championing the societal, commercial and environmental benefits of a culture of innovation that brings ancient wisdom, biomimicry and modern science together.

Our Purpose: To unlock the potential of traditional skills and materials to make healthy modern buildings renowned for natural beauty.

Our ovens allow us to do this, starting in a small way by helping us with the future of natural building materials and application methods in which we are currently in danger of losing in the modern world.

Building with Cob

Earth is the most common, and perhaps the most versatile building material on the planet. Mixed with sand and straw a clay subsoil will become very hard and durable; indeed it was the first natural "concrete." In the Americas this material is called "adobe," from an Arabic word, al-toba, meaning "the brick." Invading Moors brought the word to Spain from North Africa where the ancient tradition of mud building continues today. In Britain, the continuing tradition of earthen building is called cob, from an old English word meaning "lump." The Brits skipped the step of forming bricks, and made their walls by packing wet blobs of mud on top of each other, letting them dry, and carving them smooth. Five hundred year old cob houses are common in Devon, England, where they are recognized on historic registers, and command high prices when sold.

Building a cob oven is like building a cob house, on a smaller scale. The dome shape is basic in nature, common to beehives, birds' nests, caves, cliff dwellings, igloos, huts and the Houston Astrodome – strong, self-supporting, easy to build and heat.

History of Wood Fired Ovens

Archaeologists have discovered ovens that are made of clay and were buried for nearly 7000 years. So far they have been able to find five clay ovens in Bolaghi Gorge along with other numerous discoveries in this ancient site. However, geophysical studies suggest there must still be four other clay ovens buried in this area. Based on the evidence at hand, experts believe that there must have existed a large clay workshop in Bolaghi Gorge sometime around 5000 BC.



Wood-fired ovens, are ovens that use wood fuel for cooking. There are two types of wood-fired ovens: "black ovens" and "white ovens". Black ovens are heated by burning wood in a chamber and the food is cooked in that same chamber alongside the fire while it is still going, or in the heated chamber after the fire and coals have been swept out. White ovens are heated by heat transfer from a separate combustion chamber and flue-gas path, and thus the oven remains "white", or clean from ash.

Unlike modern household gas or electric ovens which provide a nearly constant cooking temperature, a black oven is typically heated only once during the firing stage (the combustion of wood inside the oven chamber). After the coals are raked out, the oven gradually cools over a period of hours or even days (in the case of a well-insulated oven). Immediately after a firing, the oven temperature may easily exceed 600 degrees. The mass of the oven acts as a 'thermal battery', which slowly releases heat over time. The retained heat in the oven may be used to cook multiple batches of bread, or alternatively, foods requiring different temperatures can be cooked in succession as the temperature of the oven slowly drops. This practice maximizes the efficiency of the oven, by fully utilizing the thermal energy stored during the firing process.

RESEEK & DEVELOP: Five Axioms

Embrace Ancient Knowledge and Traditional Skills.

Learning from our ancestors is not a new idea. Over 2,000 years ago Marcus Vitruvius Pollio, a man often considered the world's first architect, wrote "I cannot too strongly insist upon the need of a return to the method of old times." Vitruvius, who would later be immortalized by Leonardo da Vinci, was commenting on how to choose the site for a new city, but this point had a much wider application. Over 100 billion people have lived on earth. Most learned to build their own shelters in communities that lived more intimately with Mother Nature than we do. They mastered the art of working with the materials she provided. Always innovators, they grew to be visionaries and artisans. Many great architectural accomplishments came before industrialization or the emergence of modern engineering and materials. Their skills and creativity were exceptional and enduring. So why would we not look to them still for inspiration and guidance today? After all, as Tolkien once put it "do not despise the lore that has come down from distant years; for oft it may chance that old wives keep in memory word of things that once were needful for the wise to know."

To Live In Harmony with Mother Nature, Mimic Her.

Biomimicry may be a modern term, but its central themes aren't. Vitruvius argued that by imitating nature in our choice of materials, construction methods and sense of proportion, buildings are better able solid (*firmitas*), useful (*utilitas*), and beautiful (*venustas*). Far more recently biomimicry pioneer Janine Benyus wrote: "After 3.8 billion years of evolution, nature has learned: What works. What is appropriate. What lasts." Nature has no waste. Natural systems have ingenious ways of solving highly complex problems. We must study nature. Understand it. Learn from it. And reapply what we learn. This sentiment has been at the heart of our approach to designing our sustainable manufacturing and operational facilities. And it has an equal impact on how we innovate, from our processes and products to our culture and business models too.

Be Judicious with Modern Science and Technology.

Around 600 years ago German writer Thomas Murner coined the term 'das kindt mit dem bad vß schitten' ('to throw the baby out with the bath water'). Sadly, as we migrate from old to new technologies, this occurs all too often. Modern science unleashes many wonderful benefits. But how much of the \$1.2 trillion dollars spent globally on R&D rests on materials that bring with them problems as well as solutions? Our 'minimum intervention' model uses just enough advanced technology to develop products that meet the needs of skilled craftsmen and the demands of our punishing Australian climate.

Revive the use of Natural Materials.

There are many naturally occurring minerals that we use extensively today, like quartz and marble chips. But many other natural materials – lime, mud, clay and fibrous ingredients like straw and horse hair – have the potential to create stunning and enduring buildings that are healthier and have a lower impact on our environment. We are dedicated to reviving them, and the skills craftsmen need to use them. An obvious choice for cob and straw bale homes, and the revived use of natural substrates like bamboo, they are equally relevant as architectural coatings that complement contemporary home design and construction too.

Keep Our Eyes on the Prize: Naturally Beautiful Buildings.

In real estate, location may be important, but a good site alone isn't capable of creating buildings that achieve their potential to enliven our senses and enrich our souls. Inspired by the great fresco and plaster artists of the Renaissance, our brand of beauty is natural rather than synthetic in nature. We strive for an aesthetic that combines rich, deep colours with mood altering textures in coatings that ooze classic qualities, bring naturally occurring minerals to the fore and enhance, rather than fight with the environments in which buildings are located, be that rural, suburban or a cityscape. Well-crafted Rockcote buildings, we have found, are so stunning to their creators, owners and visitors find it hard to resist the urge to touch them, as well as be touched by them.

ROCKCOTE COB OVEN

Professional

- Custom designed to suite your needs

Midi – Internal size 700 x 800mm

- 1 x custom door arch, cast from ROCKCOTE Firestone
- 1 x oven door, custom made to fit the arch
- 23 x 20kg bags ROCKCOTE Clay Cob Base
- 13 x 20kg bags bedding sand
- 2 x bales compressed straw
- 42 x traditional pressed Oven bricks
- 1 x adhesive notched trowel 280 x 115mm
- A piece of shade cloth to mix Clay Cob Base on



Bambino – Internal size 600 x 700mm

For the smaller backyard and will use less wood

- 1 x custom door arch, cast from ROCKCOTE Firestone
- 1 x oven door, custom made to fit the arch
- 20 x 20kg bags ROCKCOTE Clay Cob Base
- 13 x 20kg bags bedding sand
- 2 x bales compressed straw
- 37 x traditional pressed Oven bricks
- 1 x adhesive notched trowel 280 x 115mm
- A piece of shade cloth to mix Clay Cob Base on



YOU WILL ALSO NEED

- A base to build your oven on
- A shelter to keep your oven under
- 450mm measuring stick
- Tape measure
- String
- Pencil
- Spirit level
- Square
- Rubber mallet
- Baby pool, old bath tub, wheelbarrow or other large vessel
- Shovels
- Table to make cobs on
- Something to store cobs on
- Paper – Use the empty bags
- A couple of buckets
- A hose with adjustable nozzle

SELECTING A SITE

The oven must be built and kept under a sheltered area and protected from direct weather.

Check with your local council regulations in regards to where you can build your oven. Check with engineers before building on a patio or verandah as the oven weighs a substantial amount.

Make sure the site is well away from any combustible materials and consult your local by-laws as to fire restrictions.

You might also want to think about keeping the chef dry by providing a cooking bench under the shelter to work from.



A BASE TO BUILD ON

Before you can build your oven, you need something to build it on.

You can build your oven base or stand out of whatever, you like. It needs to be strong, and at least 1200mm x 1200mm, apart from that it is up to you.

We have plans available on the following pages for a very easy base you can build out of Hebel. But you can also build it out of bricks, besser blocks, a big rock, or old tires filled with dirt or any natural material (image shows the pallet being filled with clay and straw to be used as the base)



A TEAM TO HELP

Invite all your friends, family and neighbours. This is part of the reason we build ovens is to rebuild our sense of community.

The more people you have available to help the quicker you will be able to raise your oven. Oven raising circles can quickly evolve into cooking clubs.



Oven Stand Components

Optional Extra

STAND COMES WITH

- 18 x Hebel blocks 600x150x200mm
- 4 x Hebel blocks 450x150x200mm
- 2 x Hebel blocks 300x150x200mm
- 2 x Hebel Power Panels 1200x600x75mm

YOU WILL ALSO NEED

- Stirring Stick
- Buckets
- Tape Measure
- String Line
- Pencil
- Spirit level
- Square
- Solid slab or foundation to build it on.



SELECTING A SITE

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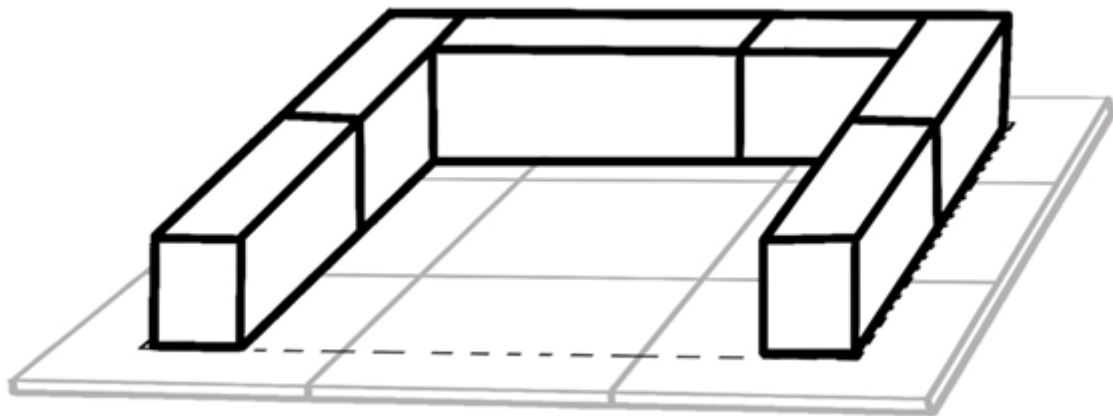
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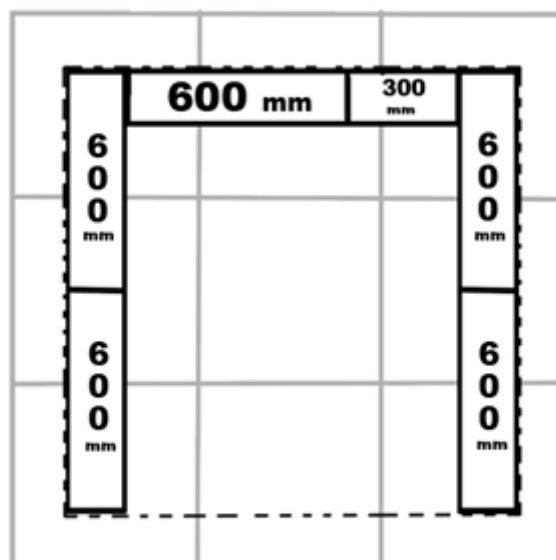


Starting the Walls of the Oven Stand

- Apply the cob mortar to the floor slab with notched trowel prior to laying the first row of blocks.
- Lay blocks to the inside of the dotted line as shown. NB: The 300mm Block on the back.
- Lay the blocks using a straight edge, by placing a wooden board along dotted line.



Top View

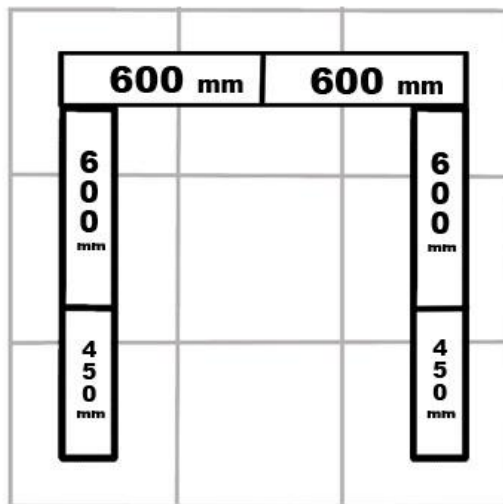


Front

Continuing the Walls of the Oven Stand

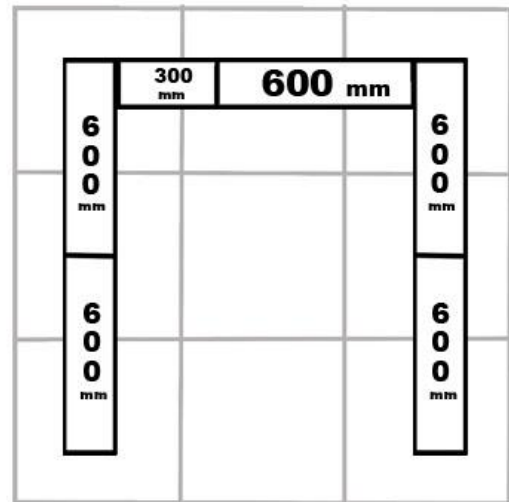
- Apply cob to the top of hebel block.
- Lay blocks as shown. NB: Different sizes of the length base blocks for each layer.

Top View of 2nd Layer



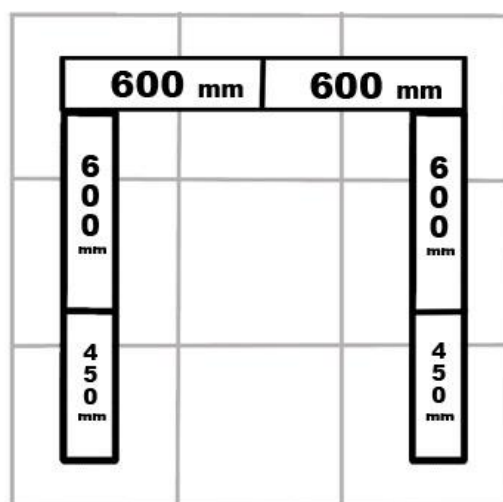
Front

Top View of 3rd Layer



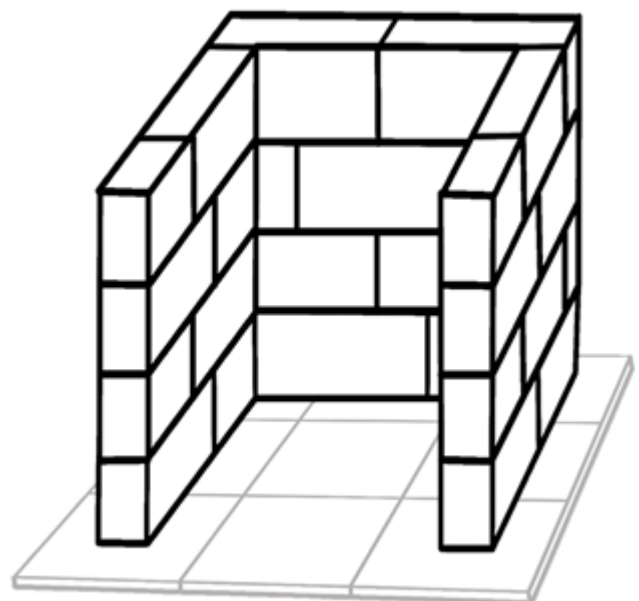
Front

Top View of 4th Layer



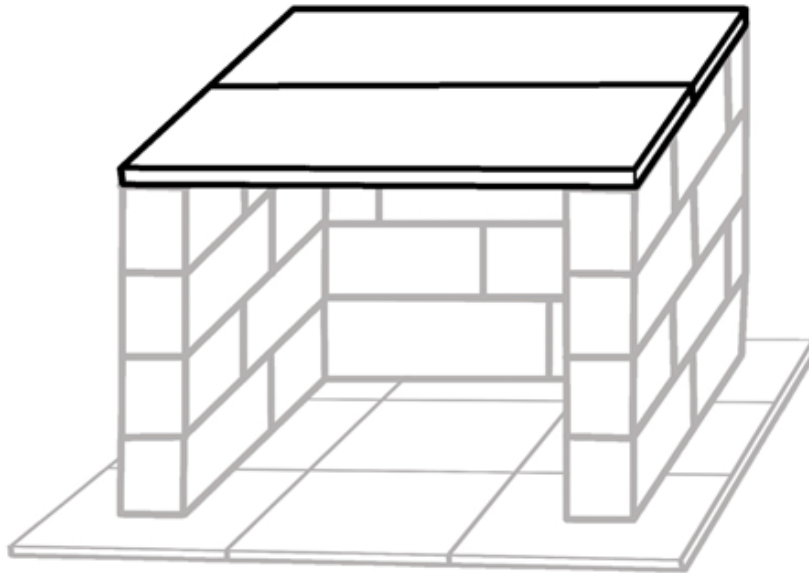
Front

Final Assembly



Putting the Top On

- Use the notch trowel to cob the top of the blocks and bed Hebel panels into place as shown. This top will make up the main base of the oven floor.
- Brace the centre of the oven, with a piece of wood, to provide additional strength during the construction of the oven.

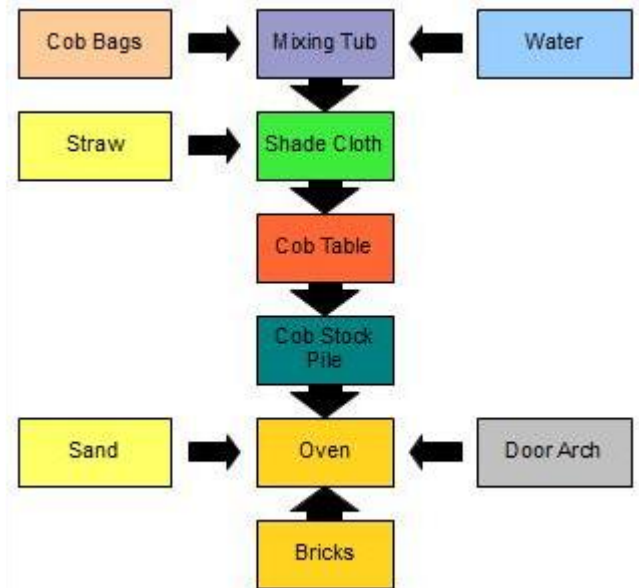


Final assembly

SET UP ON THE DAY

Setting up your site properly will make building your oven much easier.

- First separate the materials into sand, cob, bricks, door and straw.
- It is easiest to work backwards from where you are going to build your oven.
- Decide on somewhere very close to the oven, about a metre square where you can stock pile completed cobs.
- Set up a sturdy cob building table, ideally somewhere shady about 2 metres away, a tarp might be good.
- Lay down your piece of shade cloth, on the closest flat grassy place.
- Put the two bales of straw next to the shade cloth.
- Put your tub or wheel barrow (or dig a hole) next to the shade cloth. Also run a hose so you can mix the cob and water. Put your shovels down here.
- Put your cob bags next to the tub so you can break them into the tub easily.
- You will need to dampen the sand before you use it to form the mould. Try and put the sand somewhere close to the oven.
- Put the door and the bricks next to the oven base as you will need them first.



MIXING UP COB

- It is a good idea to soak the clay the day before.
- Mix together 10 – 12 bags at a time with a shovel then make a well, tip in water (4 litres per bag). Allow to soak through.
- Cover wet clay with hessian or plastic overnight.
- Spread out the piece of shade cloth on the ground.
- Tip cob mix into a pile on the shade cloth.
- On top of the cob mix place roughly an equal volume of straw.
- Remove shoes & stomp around on the straw and cob until the straw is well covered in cob.
- Roll the shade cloth over to form the cob back into a pile, and continue stomping on it. Repeat.
- After a while, once the straw is mixed in well, your mix is ready to form into cobs.



OVEN FLOOR

- Mix $\frac{1}{4}$ of a bag of clay with 2 litres of water to make a thick paste to use as masonry glue to bed the oven bricks onto the base.
- Use the notched trowel to spread out the clay paste to lay the oven bricks on.
- Arrange them as shown in the diagram on the next page. Start at the front, putting one brick either side of where you want the centre of your oven to be.
- Tap the firebricks down and ensure they are sitting level square.
- These bricks will make up the bottom floor of your oven that you will cook on.

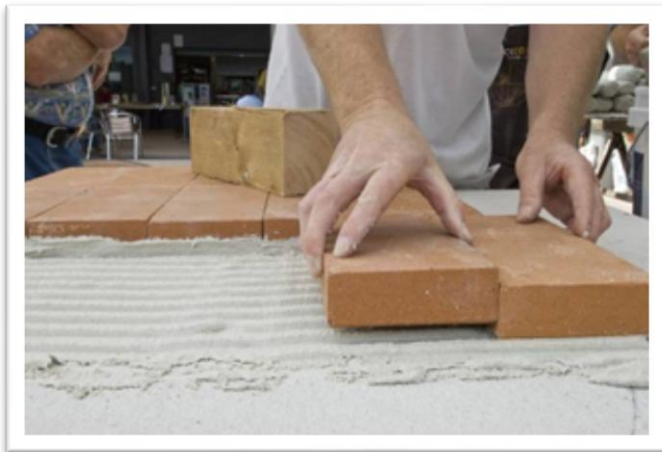
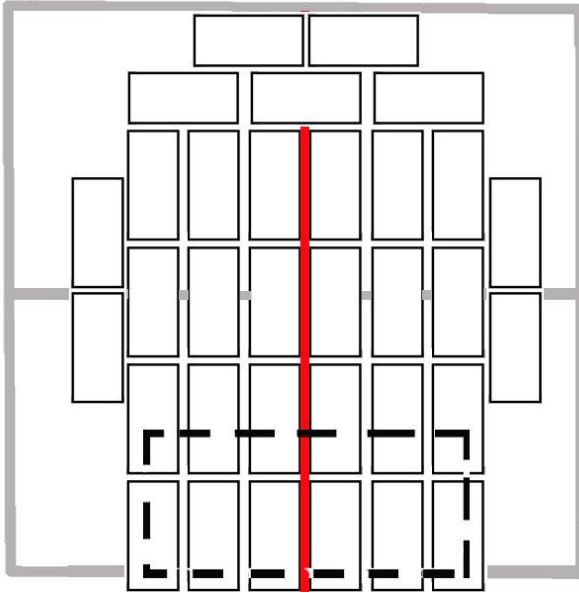


FIGURE 1

TOP VIEW



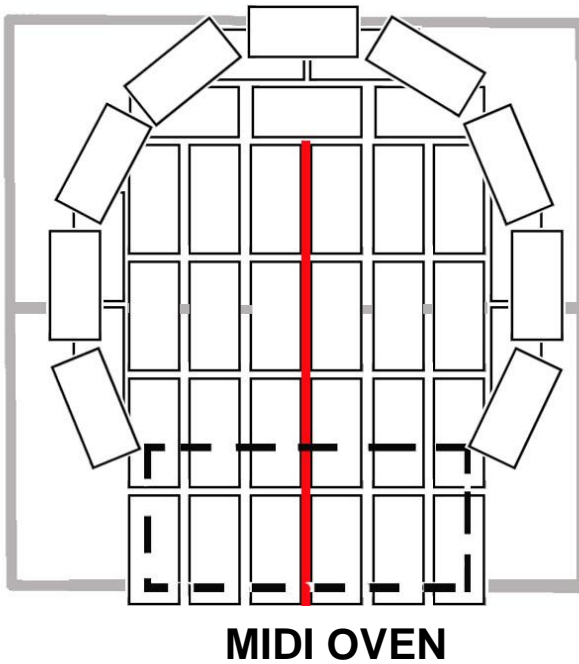
- Mark out your centre line **(SHOWN IN RED)** so you can lay your fire bricks. From the centre lay 3 bricks either side of the line as shown in Figure 1
- Continue on to make a total of 4 rows of fire bricks.
- Lay 3 bricks at the end as per figure 1
- Now lay 2 bricks on either side and at the end.
- Sit the arch in place **(SHOWN IN DOTTED BLACK LINE)**

INSTALLING THE FIRESTONE ARCH

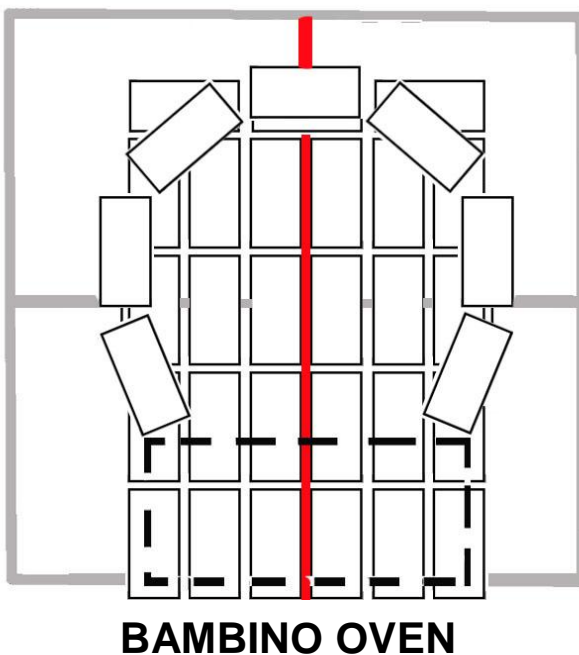
- Unpack your ROCKCOTE Firestone door arch. Knock out the piece of foam at the top of the arch with a stick.
- Place the arch at the front of your oven so that it sits in the middle on the bricks.
- Ensure that you have the arch facing the right way, so you can move the door completely in and out.
- Ensure that the arch is square with the front of the pavers and sitting back about 50mm from the front of the base.
- Once you are happy with the positioning, mix up a quarter of a bag of cob mix and a litre of water to make a stiff adhesive glue.
- Move the arch out the way, and with the adhesive trowel, put a line of mortar about 50mm wide where you want the arch to sit on the base.
- Place the arch on top of the mortar in the same position you did before.



FIGURE 2



- Now you are ready to lay a row of bricks to make the shape of your oven.
- Start from the corner of the arch and work your way around laying your bricks on their side making sure you keep the bricks touching each other.
- You want to make the shape of the oven as an oval not a circle as shown in Figure 2.
- To achieve this you should use a total of 9 bricks.
- Fill in between and below the bricks with the clay cob.



FORMING THE COB INTO BRICKS

- To speed up the building of your pizza oven, it is a good idea to have a few people forming cobs while others start work on the next step.
- Cob is safe to use, and washes off easily. To form the cobs, place the cob that was just stomped onto a table.
- Grab a chunk of cob and start forming it into a rounded brick shape, roughly 20cm long, 10cm high and 10cm wide. Don't make the cobs too long.
- Knead and roll your cob until it can hold its shape and feels fairly solid.
- You will need quite a few cobs for your oven. Store them in a pile close to the oven.
- There is no rush, it will not "go off" like modern cement. Enjoy it!



FILLING WITH SAND

- **Brace the middle of your base with a piece of wood. The sand is very heavy.**
- Tamp the sand down.
- Start filling the oven with the sand. Place a stick 450mm high into the sand and continue filling until the top of the sand is at the height of the stick.
- Mould sand into an egg-like shape as in the pictures and diagrams. This will be the shape of the inside of your oven. Take your time getting it right! Once you are happy with the shape of the sand, wet the bags which the clay and sand came in and lay them over it.
- Make sure you get a full round curve as shown in Figure 3. Figure 3A is not what you want to get.



FIGURE 3

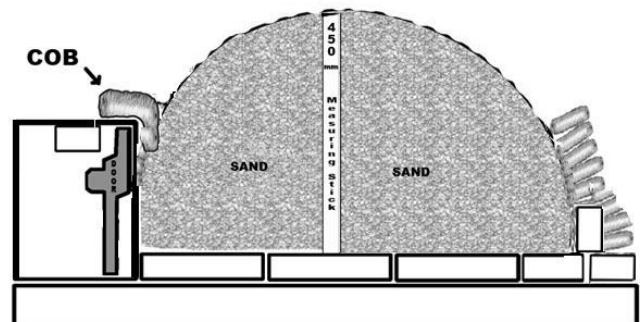
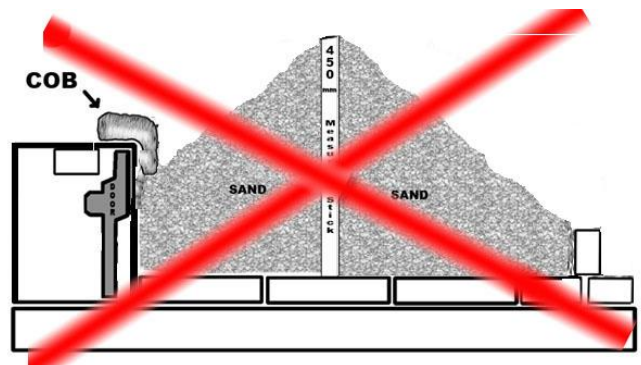


FIGURE 3A

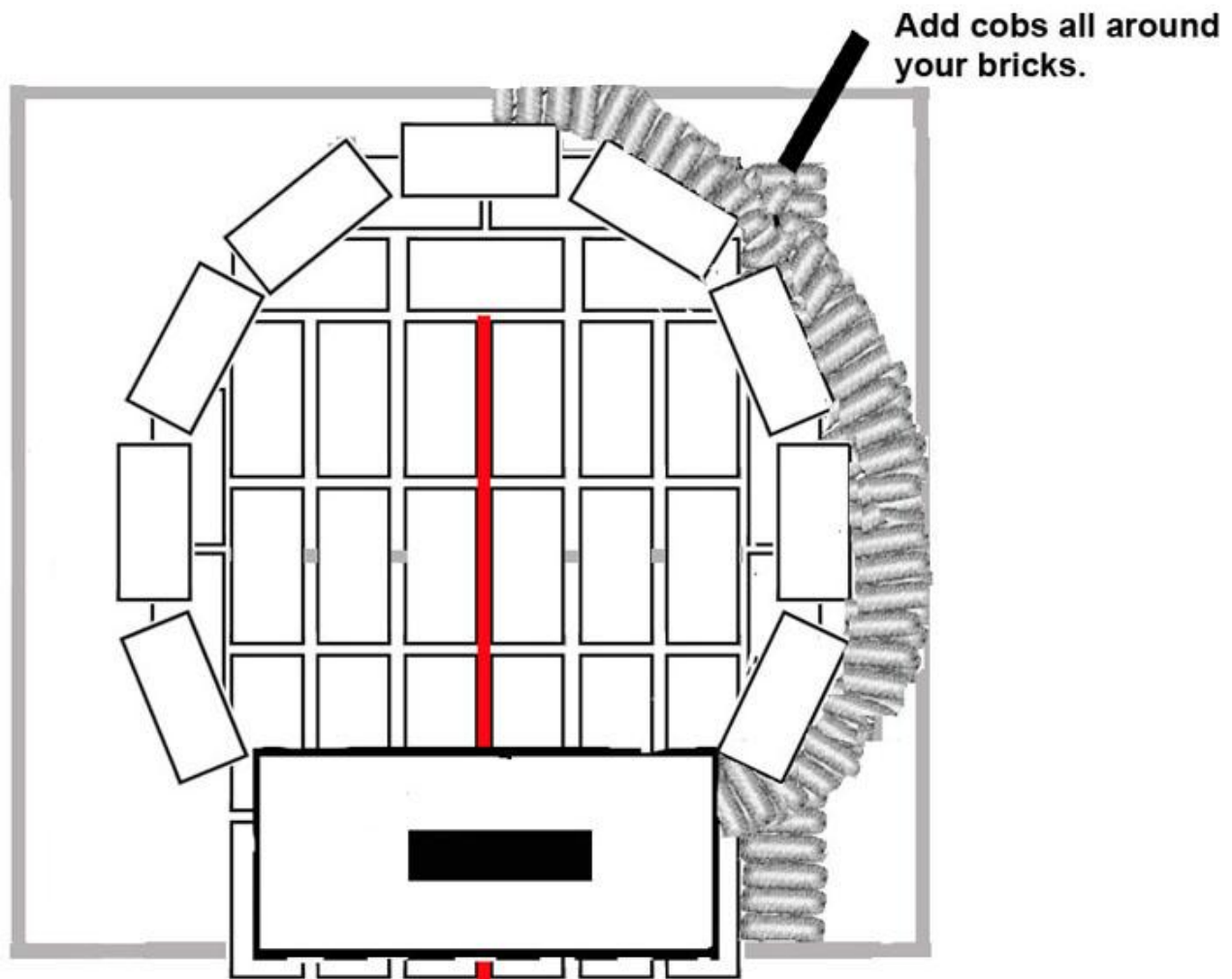


BUILDING THE WALLS OF THE OVEN

- Place cobs around the firebricks.
- Start laying the cobs around the bricks using the sand to support the cobs as you build, lay more cobs in a radial pattern.
- Continue laying the cobs, packing them into each other firmly, and bringing the walls in gradually with each new layer.
- Don't be shy about pushing a cob wall into a better shape. Ensure that it is leaning in slightly more with each layer of cob.
- Build the cob up around the door arch as you go.
- As you get towards the end, the angle that the cobs are laying at will increase until the last few are sitting almost vertically.



FIGURE 4



BUILDING THE CHIMNEY

- To make the chimney, place some cobs around the hole in the top of the arch, around where you knocked out the foam.
- Continue to build the chimney up to above the height of your head when standing. If it is getting difficult to build, you can leave it a few days until the cob underneath dries out and is strong enough to build on top of.
- Leaning the chimney back slightly may help its strength, and direct smoke away. See figure 5.
- If necessary you can reinforce the chimney by building it up with cob behind it.

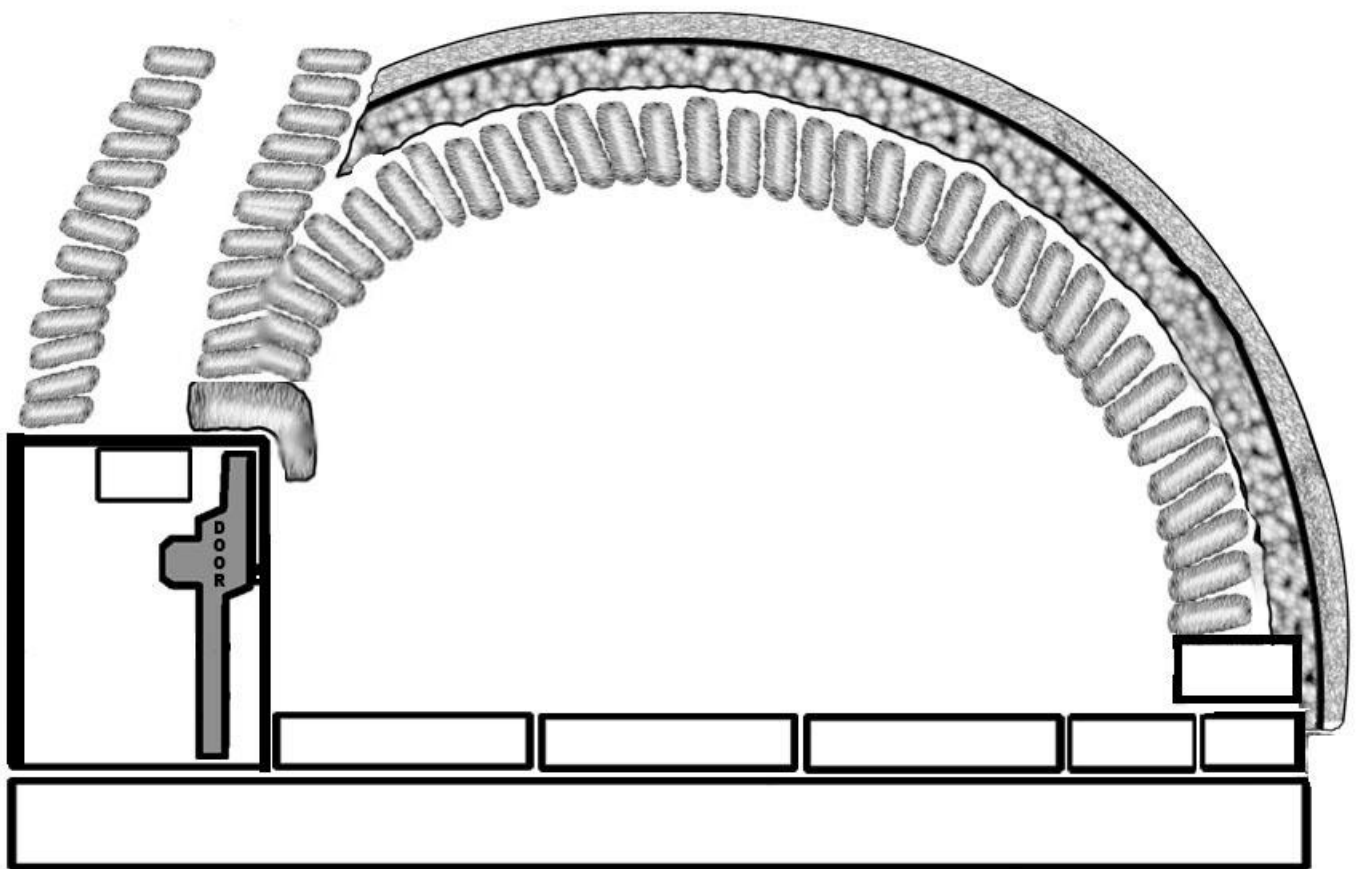


THE INSULATION COAT

- Mix up some water and cob into a sloppy paste.
- Dip and roll large handfuls of straw into the mix until the straw is well covered, but is still mostly straw.
- Place the coated straw onto the oven without compacting it too much. Start at the bottom and work your way up the oven.
- If your oven is overhanging the base slightly, stop the insulation coat from sliding down by inserting some sticks into the oven at the bottom of the oven to give the insulation coat something to rest on.
- Cover the oven with the straw, lightly plopping it all over the oven.
- If you are looking to do something creative with your oven, this layer can also be used to start to build out the required sculptural elements of the finished design.



FIGURE 5



OPTIONAL FINAL COAT & DECORATION

- The final coat is optional. Used when you want to decorate your oven.
- Thoroughly mix together a bag of cob with water to form a fairly stiff paste. (If another colour is desired use ROCKCOTE Clay Décor or similar)
- Spread the mix over the oven using your hands, making it just thick enough to cover well.
- Decorate your oven with old tiles, stones, or anything else you think you would like.
- You may also like to use the clay to render your base at this stage.
- We now can supply you with Rockcote Bodycote, Décor and lime plaster to give your oven that personal touch
- See next page for some ideas

TAKING THE SAND OUT AND FIRING

- After about 5 days the oven should have dried out enough to remove the sand through the door arch.
- Once the sand is out you can start lighting a small fire in the oven each day for about a week to help it to dry out.
- Very Important. When lighting fire do not put the door in place until the oven has totally dried out. Otherwise, the increased pressure may cause the oven to collapse.
- Once your oven has dried out it should be strong enough to start cooking in!

COOKING IN YOUR OVEN

- Check with your local fire authority to ensure that you are not breaking any fire bans by lighting your oven.
- NEVER burn treated wood in your oven. Off cuts from building sites will be treated, and SHOULD NOT BE USED to fuel your oven.
- Place some lightly scrunched newspaper into the back of your oven. Place kindling over the newspaper and light the bottom of the newspaper.
- As the kindling takes light commence putting slightly larger pieces of wood onto the fire.
- Give the oven about sixty minutes to heat up.
- You can cook either with the door on or off. Use the door to regulate the temperature of the oven, by adjusting the amount of air that feeds the fire.

TELL US ABOUT YOUR OVEN RECIPES AND COOKING EXPERIENCES

- We want to know how you went, what worked, what was confusing, what you are cooking up in it. What advice would you offer to other communities building ovens.
- Send you photos, stories or comments to josh@traditionalarts.com.au or join our forums at www.traditionalarts.com.au
Thanks for helping us revive the traditional arts!

COMPLETED OVENS

