

VANSTONE FAMILY PIZZA OVEN KIT

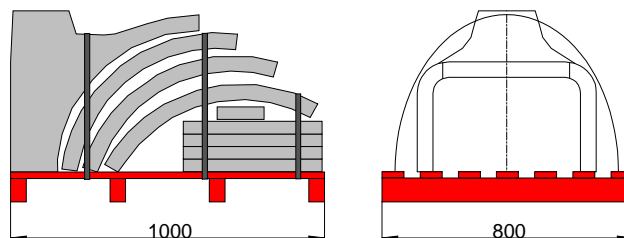
Introduction

The *Vanstone Family Pizza Oven Kit* is a kit that enables you to build your own fully functioning pizza oven at home. The dome dimensions, flow-through and vent flue sizes and ratios are all in balance and working well. The kit provides the basic structure that allows you to complete the oven around it. For your convenience it also supplies essential materials that are usually difficult to source.

Size: The oven floor is 900mm in diameter. Depending on the sizes of the pizzas, you can cook a batch of four pizzas simultaneously. With a small fire on the side, the oven's heat can be maintained such that many batches can be cooked one after the other. Cooking time for pizza is usually 10 – 15 minutes and this depends on the oven temperature. Obviously the oven can also be used for cooking other dishes like your favourite roasts, breads, fish bakes or roasted vegetables.

The basic *Vanstone Family Pizza Oven Kit* includes:

- Dome components: 4 pieces precast concrete
- Floor: 5 pieces precast concrete
- Door arch precast concrete
- Chimney pipe or flue. A single economy galvanised pipe 150mm diameter x 900mm long is provided with the basic kit. The heat will soon burn up the galvanising and you can then paint it with heat resistant paint. Never use enamel or other solvent based paints as it will catch fire. More durable flue pipes are available depending on your preference;
- Vermiculite bricks for a base under the oven;
- Rock wool blanket 2.5m x 1.2m.



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Important Basic Principles

Read these important basics before you start building.

1. Well Ventilated Space:

The oven must be built in a well ventilated space. Outdoors or semi-outdoors like your patio or lapa is ideal. If you are going to build it indoors, make sure that you comply with the fire regulations for indoor fireplaces.

2. Plan for the Chimney:

Make provision and plan for the chimney. It is important that the oven “draw” effectively i.e. air must move freely through the opening via the dome to the chimney and away. Apart from this, if you don’t get rid of the smoke, your experience will be unpleasant and even bad for your health.

The chimney top should protrude above any nearby bulky structure like a wall by at least 500mm. Nearby is say two metres but the local situation must be considered for free wind movement. If the oven is indoors or under a patio roof, the chimney must lead outside and above the roof. The path should preferably be vertical all the way. If this is not possible, use as few bends as possible.

3. Insulation:

The oven must be insulated very well. This goes for both the floor and the dome. If this is not done, heat will escape through these membranes and the oven will not maintain enough heat to function properly. Take care when handling rock wool or similar products like glass wool. It is made of sharp-pointed fine volcanic rock fibre. It is not asbestos that has health consequences but, if handled carelessly, rock wool can leave you very itchy. A few precautions: Wear a long sleeved shirt, long pants, gloves and a dust filter. Do not over-handle the rock wool, do not throw it, bash it or tear it. Cut with good domestic scissors.

4. Learn How to Use Your Oven:

Learn how to use your pizza oven. It is not as straight forward as a braai. So learn the few basics and it will be easy and a pleasure for you and your family and friends to enjoy for years to come.

Getting Started

1. Plan your Work

After having read the Important Basic Principles and having glanced over these guidelines, plan your building operation by:

- Deciding on a position for your oven while knowing where and how the chimney is going to be,
- Deciding how the platform will be built,
- Deciding what type of surrounding structure (dome or box-house) to use,
- Making a few basic sketches and calculations,
- Sourcing building materials and thinking about what labour to use,
- Planning the launch party.

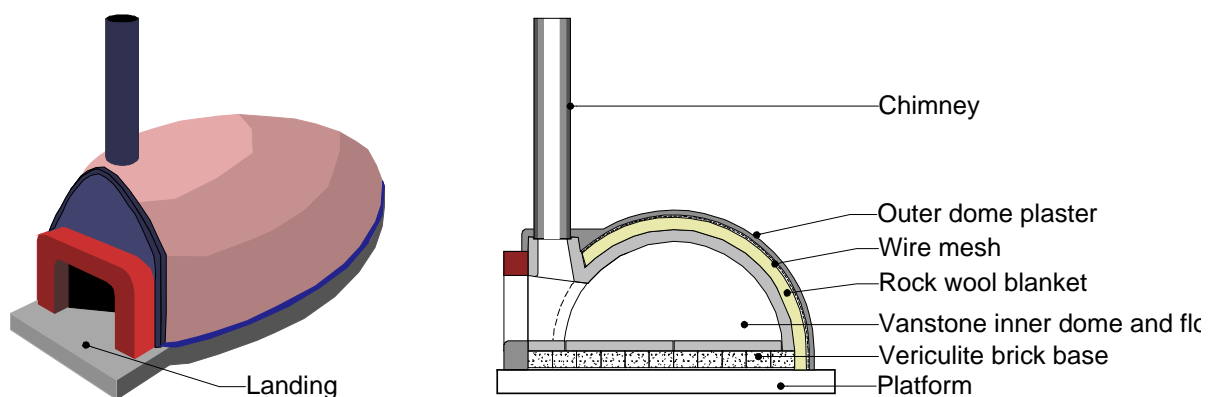
2. The Outer Structure

The precast concrete dome supplied with the kit will not work very well by itself unless it is properly insulated against heat loss. The floor is insulated by building the whole of the oven on top of a base layer of vermiculite bricks as supplied. The dome is insulated by covering it with the thick mineral wool blanket supplied. This is held in position and protected by either plastering over it or building a structure around and over it. Some ovens, which are not stand-alone, are built behind a wall with only the oven door showing. The oven behind the wall still has to be insulated as described.

Two main types of outer structures that are generally being used are the dome structure and the box-house.

2.1 Dome Structure:

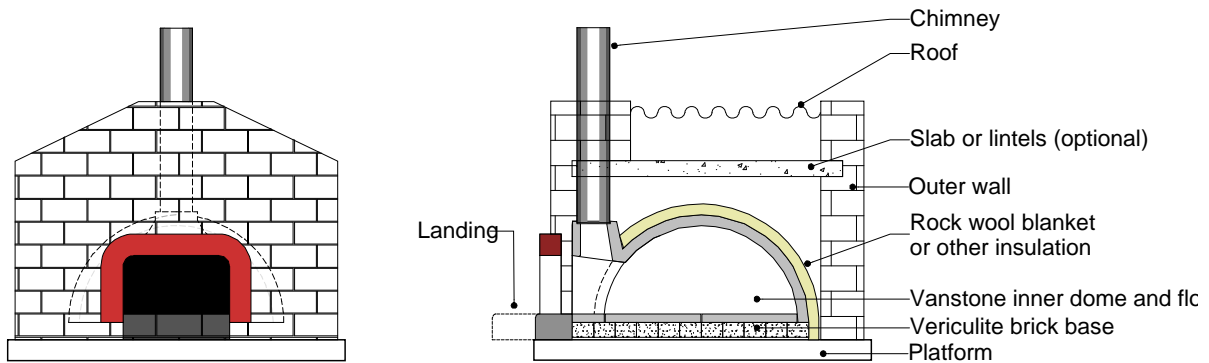
An outer dome is built over the inner dome and takes its shape from it. A bit of special care is needed when building the outer dome to not compress the insulation blanket.



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2.2 Box-House:

The box-house has vertical walls built around the inner dome and a roof placed on top of the walls just like a large dolls' house. Usually it is not supported by the dome and neither the walls nor the roof will touch it. The gap in-between holds the insulation. This type can be insulated very effectively and is recommended for outdoor use in cold areas.

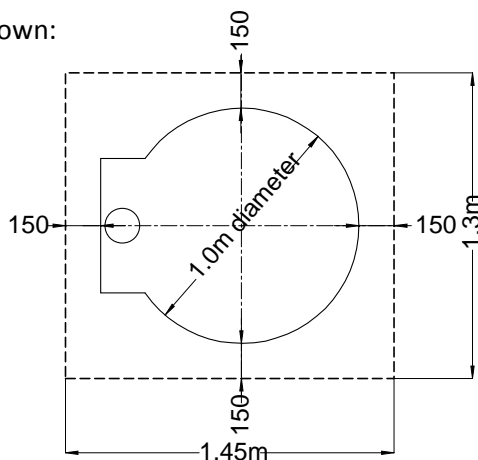


2.3 Landing:

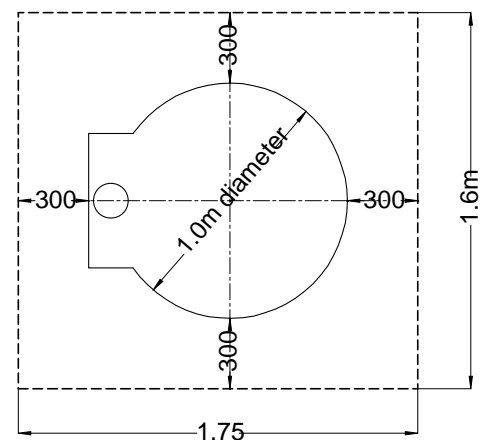
Although it is not essential, it is convenient to have a landing in front of the oven door. If you have the space it is worth considering. Bear it in mind when setting out the oven.

3. The Platform

The reason for the platform is convenience. It is much easier to use the oven at waist to chest height than on the ground. A good average height from the floor to the top of the platform is 1.1m, which is slightly higher than the standard kitchen top. The plan size of the platform should be sufficient to hold the inner dome plus whatever outer structure you plan to build. Some working space next to the oven to prepare food is also a good idea. The net outer dimensions of the inner dome are shown:



Typical Platform for a Dome Type

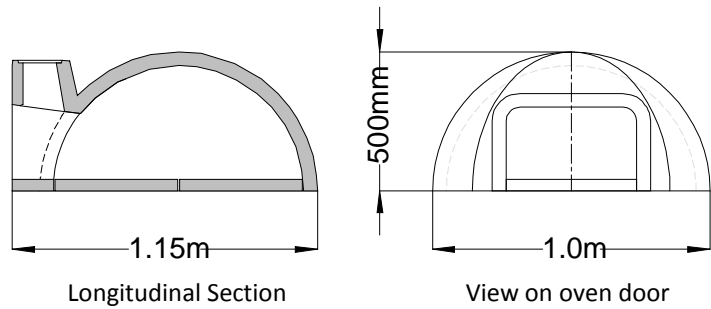


Typical Platform for a Box-House Type

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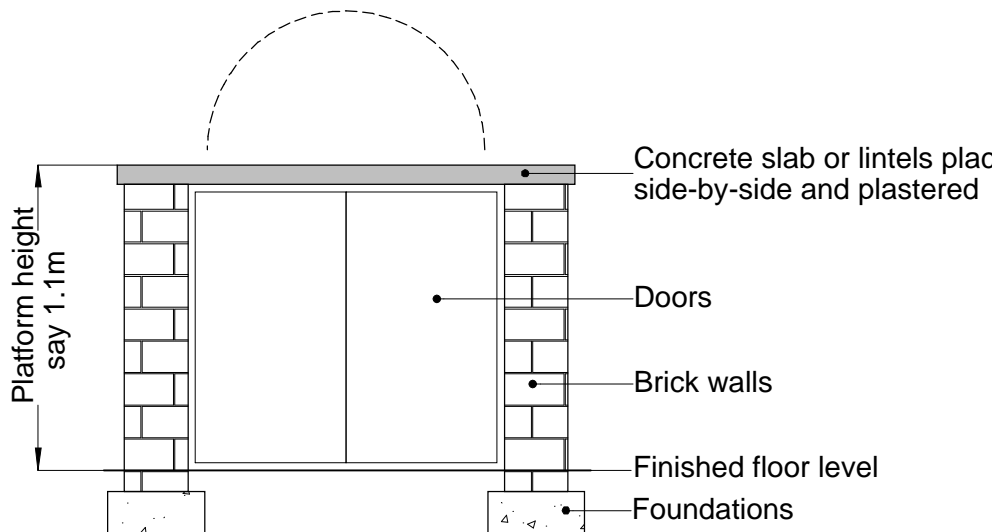
If a space of 300mm is allowed all around, the platform size should be 1.75m deep x 1.6m wide.

A dome-type outer structure takes up less space and a size of 1.45m deep x 1.3m wide should do.



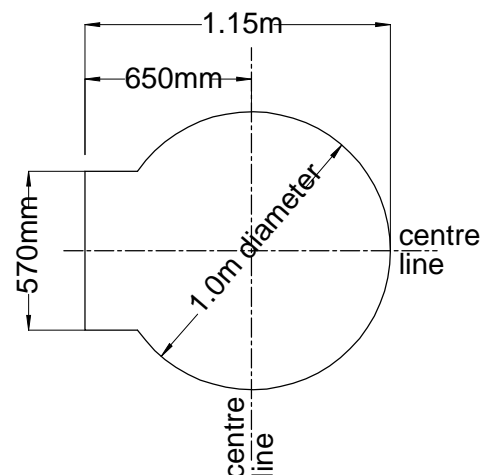
Choice of building materials for the platform:

The oven with its outer structure is going to be heavy. Therefore, build it in masonry using brick support walls and a concrete slab. Either face bricks or plastered stock bricks can be used. The concrete slab will consist of formwork, reinforcing steel and concrete. A good alternative to this is to use concrete lintels side-by-side and plaster it over to make it smooth. The space under the platform can be useful to store wood and tools.



4. Setting out the oven

When setting out the oven on the platform, allow space all around for the outer structure that you are going to build. Determine the extremes of the outer structure and then the position of the Vanstone inner dome. Trace the dome on the platform in its final position. Use the footprint diagram on the right.



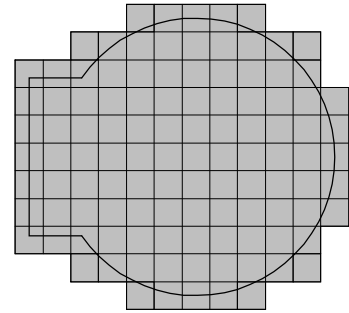
Footprint of the inner dome
Mark out centre lines well past the outline for later reference

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5. Laying the Vermiculite Bricks

The vermiculite bricks supplied are 100mm x 100mm x 70mm high. There are sufficient bricks to cover the footprint completely.

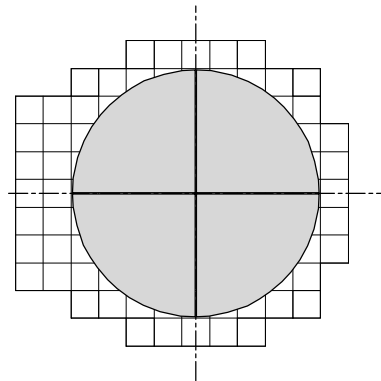
- First place a layer of ordinary brick mortar, about 20mm thick, where the bricks are going to be laid.
- Lay the bricks as shown bedded in the soft mortar.
- Make sure that the top surfaces of the bricks are reasonably in-plane and level.
- It is not important to keep the lines absolutely straight as you are not going to see them again.



After a day or two the mortar will be strong enough to proceed.

6. Installing the 4 x Floor Panels

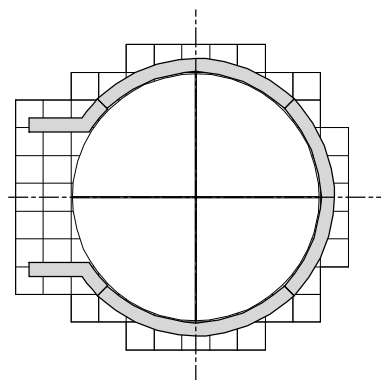
- Locate the centre lines that you set out before.
- Loosely place the 4 x precast concrete floor panels on top of the bricks SMOOTH SIDE UP so that their joints line up with the centre lines. Mark and place aside.
- Place a thin layer of brick mortar on top of the vermiculite bricks.
- Level off with a straight edge.
- Replace the four panels, making sure they are bedded in and level on top. This is the final oven floor. Make sure it is flat and level.
- Wait a while for the mortar to set before proceeding further.



7. Installing the Dome

As for the floor, the dome is supplied in quadrants. The quadrants are quite heavy. Get someone to help you lift and place them.

- First loosely place the panel with the door opening and make sure it faces the way you want it to. Mark and place aside.
- Place a 10mm thick x 50mm wide layer of soft brick mortar on the vermiculite bricks along the line of all the dome walls as shown.



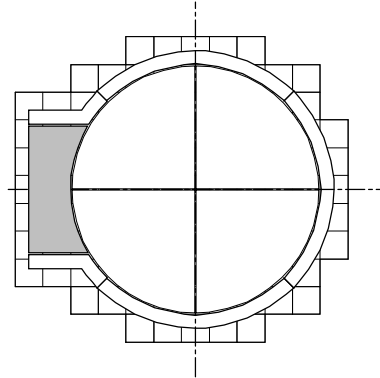
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- Now place first the panel with the door opening in. The apex should be in the centre above the cross on the floor.
- Then place the other three quadrants. Make sure that all panels fit together closely. The butt joints between panels must be as small as possible. Make sure proper bedding is achieved.

8. The last floor panel

The fifth floor panel can now be installed into the door opening.

- Again use some soft mortar and place it on the vermiculite bricks in the door opening.
- Level it off and lay the floor panel SMOOTH SIDE UP on it. Wriggle into position.
- Make sure the top of this panel is in-plane with the tops of the already installed oven floor.



9. Jointing the Floor

This works needs to be done with care. The oven floor is the bare cooking surface for pizza and it needs to be flat and smooth without any holes or unevenness in it. The floor panels supplied are smooth and you have already ensured that these are installed with their top surfaces in-plane. The jointing closes the gaps between these panels.

- Use a dry-ish mortar made of a courser sand like riversand or crusher sand. A good mix is cement:sand = 1:4. After adding water it should have the consistency of moist topping or moist Christmas cake mix.
- Work the mortar into all joints within the oven - all around the dome floor and also the cross joint.
- Ram the material tightly into the joints with a piece of wood say 100mm long x 12mm thick so that all cavities are filled densely.
- Smooth off around the walls and remove any surplus mortar.
- Now pay good attention to the cross joint and the door joints. Use a steel trowel and broad scraper to scrape it down to zero. Get the joints flush and smooth by downward pressure with the flat face of the trowel. Add bits of mortar as required.
- When you are happy with the joints, remove all surplus material and carefully clean round the floor with a damp sponge.
- Leave to harden for a day.

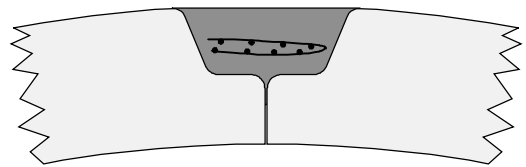
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10. Dome Joints

This work can be started directly after the floor joints have been done. As seen before, the four quadrants of the dome butt against each other forming a recess on the outside all along the joints.

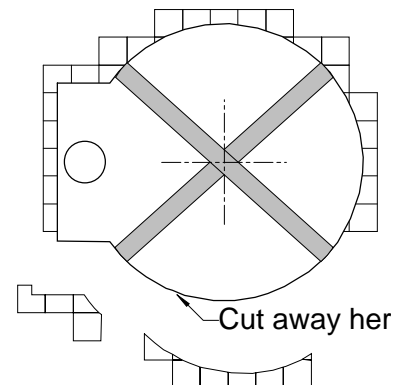
This recess is to be filled during the jointing process as follows:

- Cut out 2 x strips of chicken mesh: 80mm wide x 1.5m long.
- Fold along the length resulting in a double strip 40mm wide x 1.5m long. You will have two of these.
- Pre-fit the strips into the joints by bending it to shape. Set aside.
- Clean the recesses with a wire brush and moisten with water.
- Use ordinary brick mortar but not too wet and fill the joints halfway.
- Place the chicken mesh strips in the joints and press down into the mortar.
- Complete by filling up the joints up with mortar and flush.
- Cover the dome with a canvas or a plastic sheet for three days so that moisture is retained.



11. Trimming the Vermiculite Bricks

Once the joints are all cured and strong, the inner dome is secure. You can now trim away the excess vermiculite bricks all along the outer edge of the dome. Use a small angle grinder or chisel carefully.



12. Fitting the Chimney

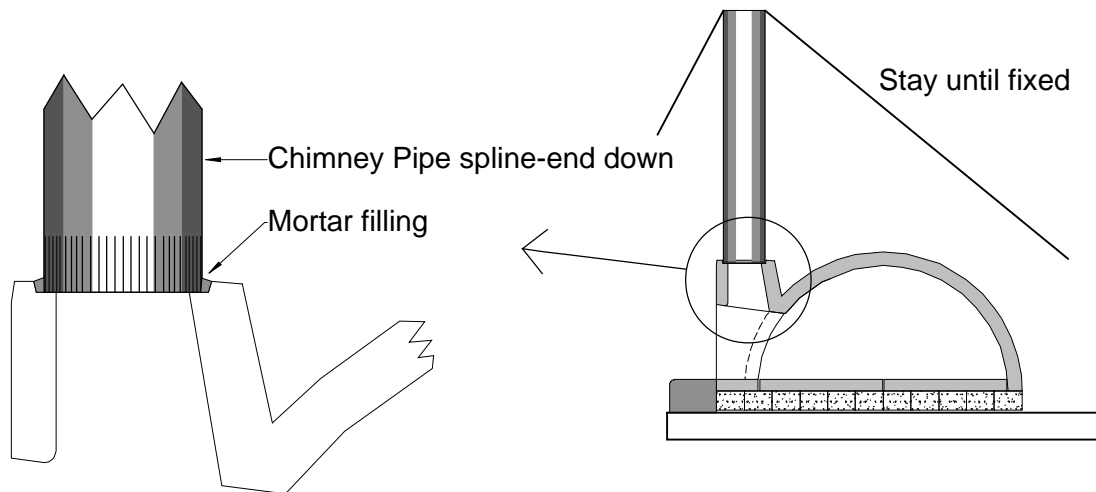
Supplied with the basic kit is a single 900mm length of 150mm diameter galvanised chimney pipe. This is sufficient for most outdoor applications. However read *Important Basic Principles* for more about chimneys and what will work best in your case.

Although you can fit your chimney now, it is probably better to do it later together with the building of the outer structure as the chimney will be supported by the outer structure.

The 150mm diameter chimney pipe sits neatly on the chimney collar above the door.

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- Place the chimney pipe into position on the collar – spline-end down.
- Plumb the chimney with a spirit level and stay securely.
- Fill the recess around the pipe with some brick mortar. Reinforce with chicken mesh if necessary.
- Once the chimney pipe is fixed to the outer structure, the stays may be removed.



13. Installing the Rock Wool Blanket

Just as the vermiculite bricks insulate the oven floor, the rock wool blanket is important for insulating the oven over the dome to protect it from heat loss.

Caution: Take care when handling rock wool or similar products like glass wool. It is made of sharp-pointed fine volcanic rock fibre. It is not asbestos that has health consequences but, if handled carelessly, rock wool can leave you very itchy. A few precautions: Wear a long sleeved shirt, long pants, gloves and a dust filter. Do not over-handle the rock wool, do not throw it, bash it or tear it. It can be cut with good domestic scissors.

Tips:

- The rock wool blanket relies on the space between the fibres for good insulation. For best performance, the fibres must not be compacted or solidified by wet cement mixes.
- Make sure the whole of the dome is covered. Surplus corners and edges may be trimmed off and used to patch up awkward places like around the chimney. Use packaging tape to hold the blanket in position while you are working.

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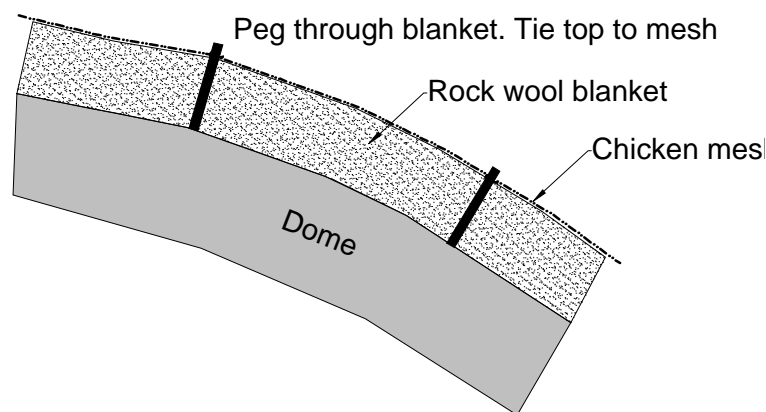
Once the blanket is installed, covering the dome as well as possible and held in position, you are ready to proceed with the outer structure. By now you must know what type of outer structure you are going to use. If it is a box-house that is not supported by the dome, the blanket may be left as is. You may even fill it up with loose vermiculite or other light insulating material to improve it further.

14. Plastering the Dome

Important: This is only required for a dome-type

For the dome structure, care needs to be taken with the insulation blanket as the dome is usually plastered over the Vanstone dome and is supported by it. The challenge here is to not compress the blanket too much. The following are suggested:

- Cover the blanket as installed with a sturdy galvanized mesh like chicken mesh to support the plaster. Prop the mesh with spacer pegs installed through the blanket at regular distances. Use say, 6mm steel pegs 60mm long. Bore these through the blanket perpendicular to the dome surface underneath and tie the mesh to it with thin binding wire

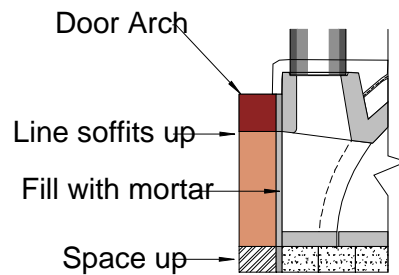


- Place the Door Arch into position and note how it is going to fit against the door opening. Mark and remove the arch and put aside for later fitment. Read more about the door arch hereunder.
- Use a two coat plaster of which the first coat must be dry-ish so that it will sit on the mesh and not run through it. Make sure the mesh does not compact the blanket. Pack it by hand and spread it evenly over the surface about 20mm thick. Do not smooth it over. It will not look very pretty at this stage. Allow the plaster to harden and gain strength for at least a day.
- Wet the first coat with water and apply a final coat of ordinary plaster. Finish it neatly around the chimney and along all edges. Cover it with plastic to protect it against drying out for seven days.

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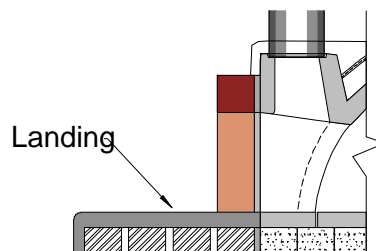
15. The Door Arch

Bring the arch into position making sure it is plumb and symmetrical. It is meant to stand on the same level as the concrete door section. You may need to space it up with ordinary bricks to get the inside of the arch soffit to line up with the concrete door soffit. Join the arch to the oven with brick mortar. Make sure all gaps are filled around the arch and also underneath. Join neatly to the plaster and floor and leave finished and clean. Prop in position if necessary and allow mortar to gain strength. Keep the arch clean throughout and wipe any mortar off with a damp sponge.



16. The Landing

The landing is an extension of the oven floor out-of and in front of the door. It may be built with bricks and mortar to the size that suits you and plastered to the same level as the oven floor. It can also be tiled or mosaic-tiled as you prefer. Any hard durable surface will work.



17. Decorating the Oven

Decorating the oven is your pleasure. If it is a box-house oven, the house will be your design and style, decorated as you wish.

The dome type oven can be painted, decorated with mosaic or any other material that can stand a bit of heat. Because of the insulation blanket, the outside of the oven should not get hotter than touchable. However if you are going to paint it use a good external quality water-based paint like Placon Polvin or equivalent.

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The chimney gets very hot and if it is the galvanized type, the galvanizing will soon burn off. Paint only then with a special heat proof paint. Follow the manufacturer's instructions.

18. More Information

The Vanstone Pizza Oven is a live project and more information will be available on the website. The intension is to regularly post updates as it becomes available through users' contributions, experiences and tips. Kindly visit at (Under construction)