Building a Wood Fired Oven Stand
The first step in the construction of a Wood Fired Oven is to construct a stand to build it on. There are several ways of building a stand, but our preferred method is to use a combination of poured reinforced concrete and cinder blocks. You could replace the cinder blocks with brick walls, they’re just more challenging to build.

These instructions have been written to assist anyone looking to build a Wood Fired Oven, whether one of our Kits, or a design entirely of your own. You’ll find that we go into a lot of detail — we prefer to explain why we do things as opposed to just telling what to do. Once you understand each concept, you’ll be able to apply it to your situation.

**STEP 1 – LOCATION**

You should check with your local council for any restrictions on the location of your wood fired oven. Most councils that we have dealt with consider wood fired ovens as barbeques and don’t put any restrictions on them, but you would be wise to contact them yourself to check the requirements for your area.

Check the ground conditions at your preferred site. You need solid footings to build your oven on as the total weight of the oven, stand and foundations can reach 5 tons. Avoid areas with poor drainage or sandy soil if possible. **If you’re in a region where the ground freezes in winter you should contact a local contractor for advice on the design of your foundations, as you may need to dig footings down below the frost line to avoid frost heave.**

If you can build in a sheltered area that doesn’t get a lot of wind, you’ll find the smoke will draw much more freely up your flue. If you don’t have an area like this, please don’t worry – there are ways of dealing with it! If possible, position the oven so that you can use it from a covered area. It’s great being able to use your oven regardless of the weather!

Think about where the flue of your oven will be. If the oven is under a roof, you’ll want to avoid having the flue clash with an overhead beam or rafter, if possible. While you can get bends for your flue, if you can avoid them by good planning then all the better. See the diagrams on our website for our Oven Kit flue locations.

**STEP 2 – GET THE SIZE RIGHT**

The most important step is to **plan your build well**! The old saying ‘fail to plan, plan to fail’ is apt here – you need to decide the style, shape and **size** of the oven you’re going to build before you start building your stand. We’ve had several customers build a stand for an oven design they had in mind, only to find out it’s too small.

If you’re building a stand for one of our Wood Fired Oven Kits, check our [web page](#) for the specific oven size you’re building – we’ve put up detailed layouts for a range of stand designs to make the process easy for you.

If you’re building to your own design, you need to account for the thickness of the oven walls. See over the page our D105 PreCut Brick Oven as an example, note the thickness of the walls once the insulation and render are applied.
Calculating Wall Thickness

For a brick oven, the wall thickness is usually as follows;

- **Half Brick:** 115mm (4.5”)
- **Ceramic Fibre Blanket Insulation:** 50mm (2”)
- **Perlite Insulating Render:** 50mm (2”)

**Total Wall Thickness:** 215mm (8.5”)

As you can see above, the walls of a brick oven are very thick. You need to allow for this when you design the stand, so it’ll be big enough to take your oven.
As a general guide for an igloo style oven use the dimensions below;

**Stand Width:** Oven ID + 430mm (17’’) wall each side + 50mm (2’’) clearance to sides of rendered dome

**Stand Depth:** Oven ID + 430mm (17’’) walls front and back + 380mm (15’’) vent area, rear clearance & landing

Example: You plan on building an igloo oven with an internal diameter (ID) of 1000mm

\[
\text{Stand Width} = 1000 + 430 + 50 = 1480\text{mm (58.3’’)}
\]

\[
\text{Stand Depth} = 1000 + 430 + 380 = 1810\text{mm (71.25’’)}
\]

*Please note that you could build the stand slightly smaller.* If you’re low on space, you could do away with the 25mm (1”) clearance to the edges, and get rid of the landing area at the front (we have allowed ~200mm for the landing). We don’t recommend this as it will make building your oven a bit harder, but it’s up to you! An example of a compact stand is shown below for our D105 Oven Kit, with no room allowed for a landing.
STEP 3 - FOUNDATIONS

*Note: These instructions are based on climatic conditions that aren’t affected by groundwater freezing and subsequent ground movement. If you’re building in an area that gets properly cold over Winter, we recommend that you contact a local contractor for assistance in designing suitable footings.*

EXCAVATE

To begin, excavate the layer of topsoil until you hit solid clay. If you have solid, well drained, hard clay you can skip the next step and pour your concrete slab directly on top of this base. However, if you’re like most of us and your clay base isn’t perfect, you’ll need a sub-base layer.

SUB-BASE LAYER

To ensure your oven is well supported you’ll need a layer of compacted crushed rock. With your foundation dug, spread out a 50mm (2”) thick layer of crushed rock (available from most landscape supply stores). To compact the crushed rock, wet it down slightly and pack it thoroughly. To pack it down you can use a ‘whacker plate’ that you can get from most hire shops, or alternatively you could use a heavy crowbar with a square piece of wood, about 150mm square, taped to the end. Pack the crushed rock layer down thoroughly.

CONCRETE FOUNDATION SLAB

To support your oven stand you need a reinforced concrete foundation, which should be approximately 120mm (5”) thick. Why so thick I hear you ask? It’s all about ‘concrete cover’ – steel reinforcing requires a minimum of 40mm (1 ½”) of concrete between it and the air/ground to protect it from corrosion. See the illustration below.

![Concrete Cover Illustration](image-url)
FOUNDATION REINFORCING

To prevent your foundation cracking from the stress of supporting the walls and oven above, you’ll need some fairly heavy reinforcing steel in the areas directly under the walls of the stand. We recommend two 16mm (5/8”) reinforcing bars 200mm (8”) apart directly under the walls of your stand, as shown below. The bars need to be suspended 40mm (1 ½”) above the base using plastic or concrete spacers.

![Foundation Reinforcing Diagram]

The center of the slab isn’t under any direct load, however it’s still under stress and needs to be reinforced to prevent cracking. Instead of using heavy bars in the center, you can use steel reinforcing mesh here. Mesh 7mm / 9/32” bar diameter, 200mm (8”) mesh spacing will be sufficient). The combination of heavy steel reinforcement in the high stress areas and mesh for crack control in the center is engineering overkill, and that’s the way we like it.

FOUNDATION FORMWORK

Set up formwork to pour your slab. Effectively, you just need to create a wooden box to pour the concrete into. You can use plywood, framing timber, treated pine, just about any timber at all. The timber just needs to be straight, because you’ll be using the edges as a ‘screed rail’, to get the wet concrete flat and level. Make your timber box, and drive stakes into the ground against it. Screw or nail the sides of this box to the stakes to set the depth of the foundation, making sure it’s level. Keep the stakes below the top edges of the formwork so they don’t get in the way when you’re screeding it.
You’re ready for concrete! Take our advice – use your local mini-mix rather than mixing your own concrete. We’ve been there and done that, any money saved on materials is COMPLETELY wiped out by all the extra effort it takes to shovel cement, sand and gravel. Plus the cost of hiring a cement mixer. Did we already mention the effort?

When you order concrete from a mini-mix supplier, you will want to order the following:

- **25MPa (3500psi) Concrete**: Strength of the concrete
- **80mm Slump**: How stiff, or ‘thick’ the mix is
- **14mm Stone**: Maximum aggregate size
- **Volume**: This is easy to calculate from your slab area and thickness

Always order at least 10% more concrete than you have calculated, to allow for any wastage and just to be on the safe side. The mini-mix company will often take back any excess concrete at the end of the pour for no extra cost.

**VIBRATE THE CONCRETE**

When you pour the concrete, it will be a very thick mix. If you just try to poke it between the reinforcing you’ll end up with voids and air pockets throughout your slab. If you vibrate the wet concrete as it’s being poured, it will flow around the reinforcing almost like water, filling the formwork completely. The vibration also allows all of the air bubbles in the mix to rise to the surface, condensing the mix and making a stronger slab. Vibrate the concrete using a concrete immersion vibrator, easy to find at any good equipment hire shop. This is important, so don’t be cheap and try to get away without it!

The two photos below show a sample of reinforced concrete that we formed up and poured, and trowelled neatly. The top looks great, smooth and well compacted. The underside however has large voids and air pockets throughout, you can see the exposed reinforcing. The reinforcing in this slab would eventually rust and cause the slab to fail.

If you vibrate the concrete properly you won’t have the issues above – the air pockets in the concrete will rise to the surface, and the resulting slab will be dense, solid concrete.
SCREED THE CONCRETE

Once you have filled the formwork with concrete and vibrated it thoroughly you need to *screed* the slab flat – this is the easy bit! You need a straight edged piece of metal or timber (your screed), that’s at least 100mm/4” wider than the slab you’re screeding. Work the screed from one edge of the slab to the other, sliding it back and forth to ‘screed’ the slab nice and flat.

WAIT

Let the concrete take its initial set. This can take anywhere from one to several hours depending on the weather conditions (hot & windy = quick, cold = slow). The surface will be firm to the touch, when it gets to this stage you can use a steel trowel on the surface to give it a better finish if you want to. This isn’t entirely necessary, as this slab will be built over soon enough, and the area that isn’t covered is usually used for storing firewood.

COVER & CURE

Once the slab has taken its initial set you need to cover it with a wet sheet, and then a tarpaulin or plastic sheet. This prevents the concrete from dehydrating too quickly, which causes ‘drying shrinkage cracking’.

Keep the sheet damp by soaking it with a hose once a day or as often as is necessary (on a 40°C/100°F day you’ll want to soak it several times). Do this for 3 days, then leave the slab to cure under the tarpaulin for a further 4 days.

At the end of this 7 days of curing the slab will be more than ready for you to start the next step in the process – building the walls of the stand.
STEP 4 - BLOCK WALLS

The walls of your oven stand could be built with normal house bricks (if you intend to do this, build it two bricks thick) but we highly recommend using mortarless concrete blocks. In Australia we use Adbri Masonry ‘Versaloc’ blocks. Your local landscape supplier should have them, or a similar mortarless block system. If you can’t find these in your area, you could use hollow concrete cinder blocks instead.

The mortarless block systems are designed with straight units, left and right hand corner units, full end unit and half end units. These units can be used to make a variety of different layouts, which you can see in the images below.

If you’re building a stand for one of our Wood Fired Oven Kits, we have put together block layout designs for each of our ovens that you can download from our website.

*An important note when you design your slab – design around the blocks that you’re using.* If you dimension the walls of your stand to use full length units in the system you’re using, you won’t have to cut them down. There are many layouts you could use – from the basic ‘U’ shape, to more complex layouts like the ones shown over the page. We have these layouts available for download on our website, just find the page for the oven kit you’re planning to build, and look for the section ‘BUILDING AN OVEN STAND FOR YOUR OVEN’.

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**D105 Rectangular Stand**

**D105 Rectangular Stand with Side Opening**

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An important note when you design your slab – design around the blocks that you’re using. If you dimension the walls of your stand to use full length units in the system you’re using, you won’t have to cut them down. There are many layouts you could use – from the basic ‘U’ shape, to more complex layouts like the ones shown over the page. We have these layouts available for download on our website, just find the page for the oven kit you’re planning to build, and look for the section ‘BUILDING AN OVEN STAND FOR YOUR OVEN’.
If your foundation slab is flat and smooth, you can stack the blocks like big, heavy Lego. If your foundation slab is a little uneven, you’ll need to bed the first layer of concrete blocks onto a layer of mortar to get them flat and level.
SETTING THE STAND HEIGHT

The key here is to build the stand such that the oven floor is at a height that you can see into the oven. You spend much more time looking into the oven than you do using your pizza peel, so you don’t want to be bending down every time you need to check on what you’re cooking.

Standard blocks are 200mm (8”) high, and we recommend building your stand 4 blocks high. With a 120mm suspended slab cast on top of the blockwork you’ll have a finished bench height of 920mm (36”). You can make the stand higher, particularly if you’re tall – I am 6’2” and prefer to have the top of the stand at about 1050mm (42”) above ground level.

Please see some images below which will hopefully help you understand how the height of the oven stand will affect your line of sight into the oven. We have put together detailed Stand Height Guides for each oven kit, which are available to download on the website, in the ‘BUILDING A STAND FOR YOUR OVEN’ area.
POURING THE CORES

To lock the blocks together we pour concrete into the ‘cores’ (the hollow sections in the blocks). Pour wet concrete into the cores, filling them completely. Take a piece of 12mm or 16mm (15/32” or 5/8”) reinforcing bar and push it into the wet concrete, wiggling it side to side until it hits the bottom, then get it centred in the core. This reinforcing bar should protrude at least 50mm (2”) above the top of the blocks, so that it can be tied into the suspended slab.

CONCRETE FOR FILLING CORES

The amount of concrete required to fill the cores will vary from one block system to another, but for 150mm (6”) blocks you’ll need approximately 6L (1.5gal) of concrete per block. In our standard D105 Rectangular Stand there are 56 blocks, requiring a total of 0.336m3 (89gal) of concrete to fill them. 20Mpa (3000psi) concrete will be sufficient.

If you’re wanting to mix your own concrete for the cores, go for it – this concrete won’t be under much stress at all, and doesn’t need to be as strong as the foundations or suspended slab.
SUSPENDED SLAB

Firstly, you will need to ‘box up’ the underside of your suspended slab. You’ll need plywood; 17mm (43/64”) formply works well, but other ply can be used providing you stick to 17mm or thicker, framing pine (90x45mm is cheap and easy to use), a hammer drill, and a 6mm (1/4”) masonry drillbit.

Start by attaching pieces of timber to the inside face of your blockwork, 25mm (1”) down from the top of the blocks; hold the pine in position and drill straight through into the block behind it. You can insert plastic plugs into the holes and use screws to attach the timber to the blocks, or you can simply use two big nails hammered in together (they squeeze into the hole and lock).

With timbers attached along each inside face, cut the plywood to fit the hole you’re trying to fill. Drop the plywood on top of these supporting timbers and screw or nail it down. Fill any gaps between the ply and the cinder blocks with silicone.
SUSPENDED SLAB REINFORCING

Before you put up the sides of your formwork, take the opportunity to set up the steel reinforcement for the slab. We recommend using SL81 Mesh, 8mm (5/6”) bars spaced at 100mm (4”) centres. If you want to go for overkill, 12mm (15/32”) reinforcing bar spaced at 150mm (6”) centres will be enough for the biggest oven.

Remember, the reinforcing needs to have 40mm (1 ½”) of concrete ‘cover’ between it and the edge of the slab. Use plastic or concrete bar chairs to support the first layer of reo (one direction) above your plywood base. Cut the bars to length so they stop 40mm short of either end. Use the first layer to support the second layer of reo, and tie the bars together using annealed tie wire.

(Tip – buy the reinforcing from somewhere like ARC, Smorgons or a local rebar supplier— they’ll cut the bars to length, and they stock the plastic bar chairs and tie wire that you’ll need).

SIDE FORMWORK

Time to form up the sides of the slab – you’ll need four strips of plywood cut to around 200mm (8”) wide, at least as long as the sides of the slab, and 90x45mm framing pine. The 200mm width is so that you have 120mm of plywood above the top edge of your blockwork, leaving 80mm overlapping the blocks which you can then put screws/nails through, to secure the plywood to the concrete blocks.

Start by cutting two strips of plywood to the exact length of the long sides of the slab. Cut framing pine to the same length, and screw the framing pine to the back of the plywood strip as shown, about 20mm down from the top edge. Use plenty of screws! The plywood is the forming face, while the framing pine is there to give strength and stiffness to the plywood, to stop it bowing out under the pressure of the concrete.
Take this assembly and attach it to the side of the blockwork using either the screw or nail method described earlier, so that the top edge of the plywood strip is 120mm above the edge of the block wall. Put in one screw, then **check the top edge of the plywood with a spirit level.** Providing your formwork is level, put a screw/pair of nails in every 300mm (minimum). Repeat with the opposite side.

With the two sides attached, cut two more strips of plywood, this time long enough to overlap the sections attached to the sides. Cut pieces of framing pine to the same length, and screw the framing pine to the back of the plywood strip, about 20mm (3/4”) down from the top edge. Take the assembly and line it up with the top edges of the side forms, screwing through into the timber formwork behind it. Once again, you’ll need to put in a screw/pair of nails into the blockwork every 300mm (1’) as a minimum. Make sure the back and sides are properly screwed together where they intersect. Repeat with the front piece.

If you have an opening in your blockwork, which is very likely, you won’t have any blocks to attach your plywood to in that area. Instead, attach it to the horizontal sheet of plywood that forms the base of your suspended slab, using timber screws.
POURING THE SUSPENDED SLAB

Once again, time to contact your local mini-mix supplier. This time you will want to order the following:

<table>
<thead>
<tr>
<th>Material</th>
<th>Calculation Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>32MPa Concrete</td>
<td>Strength of the concrete</td>
</tr>
<tr>
<td>80mm Slump</td>
<td>How stiff, or ‘thick’ the mix is</td>
</tr>
<tr>
<td>20mm Stone</td>
<td>Maximum aggregate size</td>
</tr>
<tr>
<td>Volume</td>
<td>Calculate from your slab area and thickness</td>
</tr>
</tbody>
</table>

Always order at least 10% more concrete than you have calculated, to allow for any wastage and just to be on the safe side.

The process for pouring the suspended slab is the same as that for the foundation slab;

**VIBRATE THE CONCRETE, SCREED, WAIT**

**COVER & CURE**

Once the slab has taken its initial set you need to cover it with a wet sheet or hessian, and then a tarpaulin or plastic sheet. This prevents the concrete from dehydrating, which causes ‘drying shrinkage cracking’. Keep the sheet damp by soaking it with a hose once a day or as often as is necessary (on a 40°C/100°F day you’ll want to soak it several times). Do this for 3 days, then leave the slab to cure under the tarpaulin for a further 4 days.

*Congratulations! Your stand is now complete, and ready to build your oven on. If you have followed these instructions you’ll have built something that will truly stand the test of time.*