ULTIMATE SURVIVAL FORTRESS

Ultimate Survival Fortress

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Ordering Information:

Please visit https://www.diysanctuary.net/

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Introduction

Have you been thinking about building a fortress or a bunker on your property but have been a little intimidated by the price or the complexity? There are many reasons why a sturdy, bullet-proof building would come in handy. There is, of course, the very real concern of domestic invasion or economic collapse, but natural disasters such as tornadoes, hurricanes and earthquakes may make your home an unsafe place to be, too.

Regardless of what disaster you are preparing for, it most likely involves the risk that your home may not be secure enough to protect you and yours. Unfortunately, the cost of erecting a fortress or digging a bunker is insanely expensive because of the costly materials involved and the specialty labor that you'd have to hire. Most people simply don't have the money or the skills necessary to build a place that they may go to in times of unrest.

But what if we told you that, as long as you're relatively able-bodied, you could build your own bullet-and weather-proof emergency fortress for very little money and with no training or special knowledge whatsoever? Would you be interested? Of course you would.

Good news, then. We've got exactly the building that you're looking for and we're going to walk you through the construction step-by-step. Get ready, because in a matter of just a few days or weeks, depending upon how industrious you are and how much help you have, you can have a safe place to take your family, and your neighbors don't even need to know about it.

Chapter 1:
The Benefits of Building Your Own Ultimate SURVIVAL Fortress

The world that we live in today is unstable and the threats to our way of life are numerous. Many of us are concerned about invasion, global economic collapse and biological warfare.

On top of that, if you live in a region that is prone to natural weather disasters, then you have to worry about that, too. Having a safe place to take your family is paramount to your peace of mind but has thus far been cost-prohibitive and mechanically intimidating.

No more. The retreat fortress detailed in this book eradicates those concerns and many more.

1. IT'S CHEAP.

Every bit of material for this structure can be purchased for under $300 if you're keeping it simple.

If you already have sandbags in your stockpile, then your major expense may already be covered. You won't need any concrete or steel, and very little wood.

2. NO SPECIAL SKILLS REQUIRED.

Though you will need to be fairly able-bodied, you won't need any other special skills.

We'll detail the project so clearly that you won't have any problem building this as a weekend project. Get the kids to help and turn it into a family endeavor.

3. IT'S DISCREET.

If you were to build a standard bunker or fortress, your neighbors would see delivery trucks and concrete trucks coming and going and would know that something was up. This project can be made with materials that you carry in your truck.

The only thing that you may need to have delivered is whatever ballast material you choose to fill the bags with. Since you may not want the world to know that you've got a protected, stocked, easily defensible place, discretion is key.

4. IT'S RESISTANT TO NATURAL DISASTERS.

If something comes along and huffs and puffs so hard that it blows this structure down, then the rest of the town is dust.

The tragedy of natural disasters isn't necessarily the homelessness that often results, but the loss of life that occurs because people don't have a safe structure in which to ride out the storm. "Stuff" can be replaced; lives can't.

This structure will get you through hurricanes, tornadoes and even earthquakes and floods as long as you build it properly.

5. IT'S BULLET-RESISTANT.

Because of the design, this structure is built with walls that are up to 18 inches thick and consist of sand, stone or whatever ballast you choose.

Most bullets, and even standard grenades, can't penetrate that. Since you use the bags for the entire structure, your only week points would be the door and any windows that you decide to build into the fortress.

The decision to do that is, of course, entirely up to you.

6. IT'S FIREPROOF.

You don't have to worry about somebody starting a fire to burn you out because even if they would get the outside to catch fire, you're protected by the thick walls and naturally non-flammable, non-toxic materials that you're going to use.

7. IT'S RESISTANT TO ROT AND DECAY.

Even if you choose to modify the plans and use this as part of an Earth-bermed or Earth-sheltered structure, the materials are resistant to rot and decay. The only part of the structure that may be bio-degradable are the bags but there are a couple of methods that we'll discuss that will make this a non-issue.

8. YOU CAN MAKE IT AS LARGE OR AS COMPACT AS YOU'D LIKE.

Unlike most blueprints, these instructions are easy to modify so that you can make your fortress any size that you'd like. As written, the fortress is 14 feet in diameter.

If you'd like to build a bug-out shelter big enough for your entire family, you may do so, or you can make it a small, emergency shelter only. It's entirely up to you based upon your prepping plan and the size of your property.

9. EASILY DEFENSIBLE.

If you're stocked up, the only way that anybody will be able to breach your structure is to quite literally tear it down. Otherwise, you need only defend the door and windows, if you've added any.

10. NATURALLY INSULATED.

Just as with caves or igloos, the thick, solid walls of this structure help

to keep it cool in the summer and warm in the winter. Since maintaining body temperature is your number one survival priority, this really adds to the value of the fortress.

11. CAN BE USED AS STORAGE OR AS A GUEST COTTAGE IN TIMES OF PEACE.

Depending upon whether you decide to reserve your shelter for emergencies only, you can opt to use it as a work studio, guess cottage, storage shed or just about anything else that you'd like. Since it's protected from the weather and maintains moderate temperatures, it's good for multiple uses.

The advantages to building this structure are numerous and we're sure that you'll also find your own set of benefits in addition to these.

Now that we've addressed a few of the ones that we think are important, let's move on to the building materials that you'll need.

Chapter 2: Building Supplies

You really don't need much in the way of supplies and what you do need won't cost you much. Just as with anything else, you can always make the project as expensive as you'd like, but a basic structure requires very little.

There are, however, a few choices that you'll have to make when ordering your supplies so we're going to outline a few advantages and disadvantages of some of those options.

What You Need

Bags

We used standard polypropylene bags to build our structure because once you've plastered the walls, it's not going to decay. This is necessary if you're using loose materials such as sand, stone, or urbanite (busted up concrete and other materials from demolished buildings).

If you're using adobe or other materials that will solidify after you've placed the bags, you can use burlap or other biodegradable bags because you won't need the strength of the bag to contain the loose rubble.

You'll also have the option of using rolls of bags but we don't like those because they tend to roll over and not stay in place. They don't pack down as well as smaller, rectangular bags either. They're heavier and harder, if not impossible, for one person to manage. The bags that we used ended up being about 35 pounds, which we can manhandle easily.

If you use the polypropylene bags as we suggest, keep them covered with a tarp until you get them plastered because the sun and weather will damage them if you leave them exposed.

Door and Door Frame

We chose to use a wooden door but you could just as easily use a steel one. Steel doors are extremely expensive if you buy them new, but you can often pick a used one up off of local trade sites or at auctions or demolitions. Look for schools, restaurants or government buildings that are being remodeled or torn down. It's a safe bet that they have steel doors that you may be able to pick up for next to nothing, or possibly even for free!

For your door frame, you're going to need 3 lengths of 2x6-inch boards for the sides and the top. Using a 4"x6" or even a sturdy log would also be acceptable and would add even more strength to the frame.

For the arch form, you'll also going to need about 16 feet of 2"x4" lumber and a piece of plywood. The good thing about this is that you can use it more than once if you decide to build more than one fortress. They are, after all, quite versatile.

Vents

Though you don't have to install vents, we recommend that you do. If you're stuck inside this shelter for any length of time, you're going to need fresh air. Also, you may want to install a stove pipe so that you have cooking or heating options inside.

For our fortress, we installed a stainless steel insulated stovepipe in the dome along with a capped air vent that will let air in, but keep the rain out. You can pick them up at any home-improvement or building store.

You may want to screen this so that bugs can't get in, if it didn't already come with a built-in screen. Since mosquitoes, flies and other insects carry diseases, this is an especially good idea to preserve your health. After all, a few pieces of dirt-cheap screen installed now may very well save your life or that of a loved one in a survival situation. As an added precaution, we hung a ball the size of the opening (a tetherball, actually) from the upper vent so that we can seal it completely if we need to. If you'd like, you can also install inlet air vents along the walls of the fortress as you're building it. Be mindful of putting them too low though; you don't want floodwater to be able to seep through them. Again, if you choose to use these, consider screening them.

Barbed Wire

This prickly wire is typically used for fencing but in this case, it's going to help hold the bags at the proper angle as you build the structure in. It comes in various strengths and you can choose between two-point and 4-point. Basically, barbed wire consists of a couple of lengths of wire twined together with smaller pieces of sharpened wire wrapped around it at regular intervals to form barbs. 2-point only uses one piece of wire wrapped at intervals to provide 2 barbs: one from each end of the wire. 4-point has 2 pieces of wire wrapped around to form 4 barbs.

Which kind you choose is really up to you but we prefer to use 4-point just because it gives it a bit more biting power and may help hold the bags in place a little better.

Stone

You're going to need enough stone to line the perimeter trench of the fortress. Just about any stone will work as long as it's big enough to allow for drainage but small enough that you get it fairly level so that your first layer of bags will lay smoothly in the trench without big

humps in them. We used local stone so it didn't cost hardly anything. You can even gather it yourself for free if you have rocky terrain.

Windows

If you choose to install windows in your fortress, you can go to local glass or window manufacturers and pick up odd pieces for next to nothing. There isn't anything wrong with them; they're just pieces that were cut incorrectly or that somebody ordered but didn't pick up.

You may want to consider double-paned glass to keep moisture from settling and to provide better insulation if you live in an area that is damp or gets significant rain. You can use whatever kind you'd like but since you're building this fortress for protection and defense, consider using a glass that is wind-rated or that is shatter-resistant.

We chose to use round skylight windows but square glass will work, too. It's just a matter of how you shape your plaster around it.

Ballast for the Bags

What you use in your bags is entirely up to you. You can use locally-sourced soil or stone, or you can choose to purchase it. Sand and soil alone don't insulate as well as stone or rice hulls do. Using a composite of sand or soil and rocks is a good idea. That's what we used in our rendition and it worked wonderfully. Research your local materials and make your decision accordingly.

Building Supplies List

As designed, this fortress' inner diameter will be 18' 5" and it will be about 16' 8" tall. The square footage, not counting loft space (the upper floor, which is 153 square feet), will be 263 square feet. See the exact measurements in the plans attached at the end of this e-book. You can adapt this to make the structure larger or smaller in order to meet your needs.

To help you out, we've put together a supply list along with some links and current prices so that you can get what you need. Adapt this list according to any modifications in size or amenities that you make.

Required Building Materials

- 900-1000 standard polypropylene bags (15 in x 27 in) - price: $0.30 per empty bag ($300 for 1000 pieces), or $3.50 per piece for filled bags (www.nmdirtbags.com)
- Material for filling the bags if you buy them empty (each bag could be filled with 50 kg of composite - earth, sand or gravel (www.nmdirtbags.com)
- Pressure-treated lumber (2x4) - 20 pieces of 2 in x 4 in x 16 ft - overall current price: $150-$160 (www.lowes.com)
- Pressure-treated lumber (2x6) - 2-3 pieces of 2 in x 6 in x 8 ft boards for the door frame - current price per piece: $12 (www.lowes.com)
- Barbed wire - approximately 3700 ft (3 packs of 1320 ft) – current overall price: $195 (www.homedepot.com)
- Round skylight windows of 12.5 inch diameter – current price: $22 each (www.homedepot.com)
- One wooden door – 102.5 inch height – current price: starting from $100

- Door frame anchors – current price: $0.04 – $0.08 each (www.alibaba.com) Or you may use pieces of wood with threaded rod screwed into them)
- Stainless steel insulated stove pipe (to use as vent) – price: $35
- Silicone sealant – price: $4 (www.homedepot.com)
- Ball of string – 190' length roll – current price: $5 (www.amazon.com)

Most of these materials, with the exception of the bags, are fairly easy to find used (check sites such as freecycle.com and craigslist.org) so you could significantly reduce your cost to build your fortress if you go that route.

In theory, if you find and repurpose the building materials for free and dig your own composite material to fill the bags, you could build this fortress, exactly as designed, for about $300. Not too shabby for a bullet-proof, weather-proof structure that may save your life!

Required Tools

- Tape line
- Water Level
- Tamper
- Metal plate
- Plastering tools

Chapter 3
Building Your Ultimate Survival Fortress

Now that you've gathered your supplies, it's time to start building! There are several steps that you'll need to follow exactly in order to make sure that your fortress is stable and secure. It's important that you follow each step exactly in order to ensure that the end result is a secure, durable building that will withstand wind, weather and invasion.

Don't skip steps and don't go out of order. We've made it so simple that all you need to do is follow directions so you could build your earth bag house.

Let's get started!

Choosing Your Site

Any building is only as good as its foundation, so it's imperative that you choose a site for your fortress that drains well and can be leveled. You may also want to build in a spot that's not visible to casual observers, though that's entirely up to you.

If you live in terrain that is hilly or mountainous, you may want to position the back wall of your building against a steep grade that doesn't allow for easy access, just as an added measure of security.

In addition to making your building less accessible to attackers, a mountain or cliff behind you will also help shield you even more from the weather. Just be sure that if you do this, rainwater won't wash away your foundation and destabilize your entire fortress. If you build properly on stable ground that drains well, this fortress will last for years.

Preparing your Site

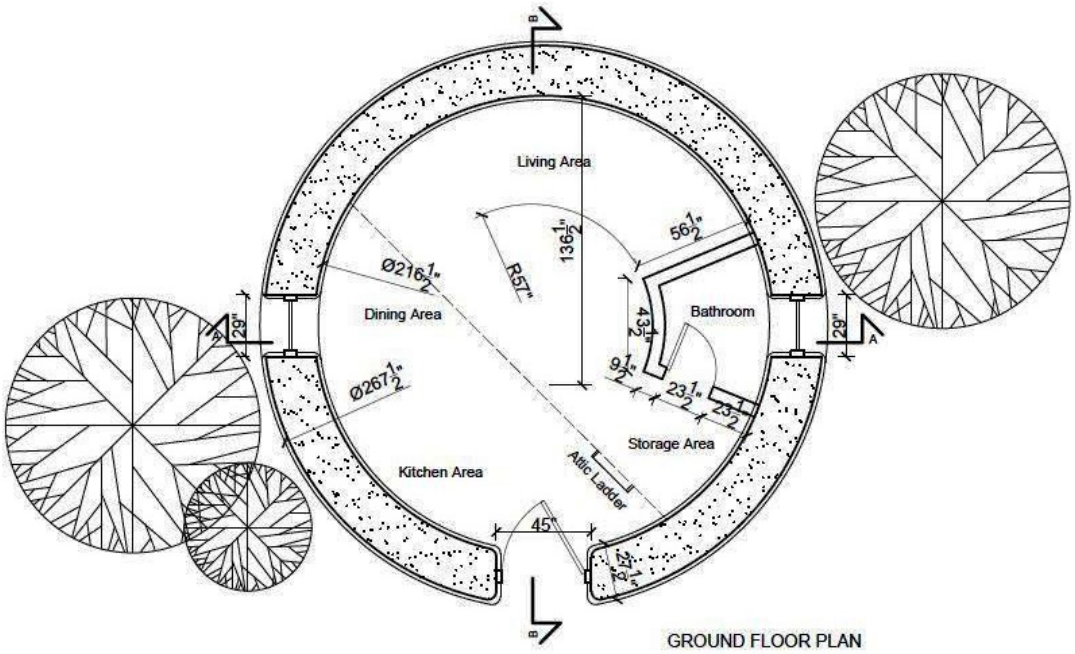
After you find the perfect location for your fortress, you need to level the site. If one side of your building is higher than the other, gravity will eventually pull your building off balance and could damage the integrity of the structure. Water will tend to settle on the low side, which can create a whole host of issues.

Finally, if the perimeter isn't exactly level for your base course of bags, the differences will become more and more pronounced as you build up.

To begin leveling, place a stake in the center of where you're going to place your fortress. Attach a string to your center post that is cut to the radius of the base of your structure, plus two feet. In this case, the radius of the inside of the base is 7 feet. Allowing another two feet for the trench, you need to cut your string 9 feet long.

Pull the string out straight from the center post and begin marking your outer perimeter. Dig out as necessary to get your building site level. Don't eyeball this part: use a level to get it right. Also, be sure that your perimeter exactly matches the length of the extended string at all points or else your fortress will be egg-shaped, or worse.

While you're leveling the site, tamp down the ground so that it's packed solid. Otherwise, you're wasting your time with leveling because as the dirt settles, it will do so unevenly which can destabilize your fortress. See the figure below and Plan 4 at the end of the e-book to get a good visual and some exact measurements of your house.



Digging Your Perimeter Trench

The first step after defining your perimeter is to dig a trench in which to place drainage stones. You may also wish to bury your first course or two of bags. Though you don't have to recess the first layers of bags, it can be well worth your time.

A perimeter trench lined with rubble or stones will allow you to set the first layer or two of your wall down into the ground. This serves a few of purposes.

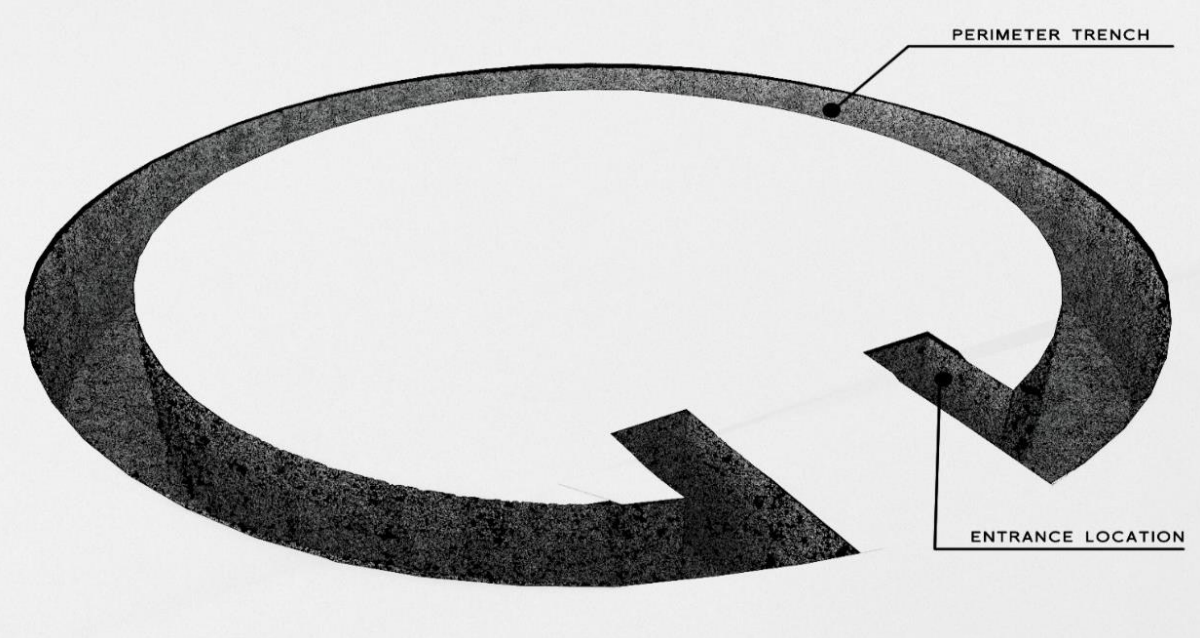
• First, a lined perimeter trench adds more stability to the entire structure in the case of heavy winds or even enemy attack.

• Next, a trench helps keep water from getting into the inside of your structure or from seeping up through the bags in case it floods or you live in a place where the soil doesn't drain well.

• Finally, the trench keeps your bags from freezing and heaving during the winter. From a defense standpoint, a deeper trench will make your structure more difficult to infiltrate, too.

As you can see, a lined perimeter trench has several benefits that will add to the stability and security of your fortress. Before you opt not to recess at least a layer or two of bags, consider the ramifications carefully.

To see how your trench should be shaped, refer to the next figure.



To begin digging your trench, measure the width of your bag because that's how wide the trench should be. Then, subtract the width of the bag from the length of the sting that you used to mark the outside perimeter. Using the newly-measured string, mark your inner perimeter and begin digging.

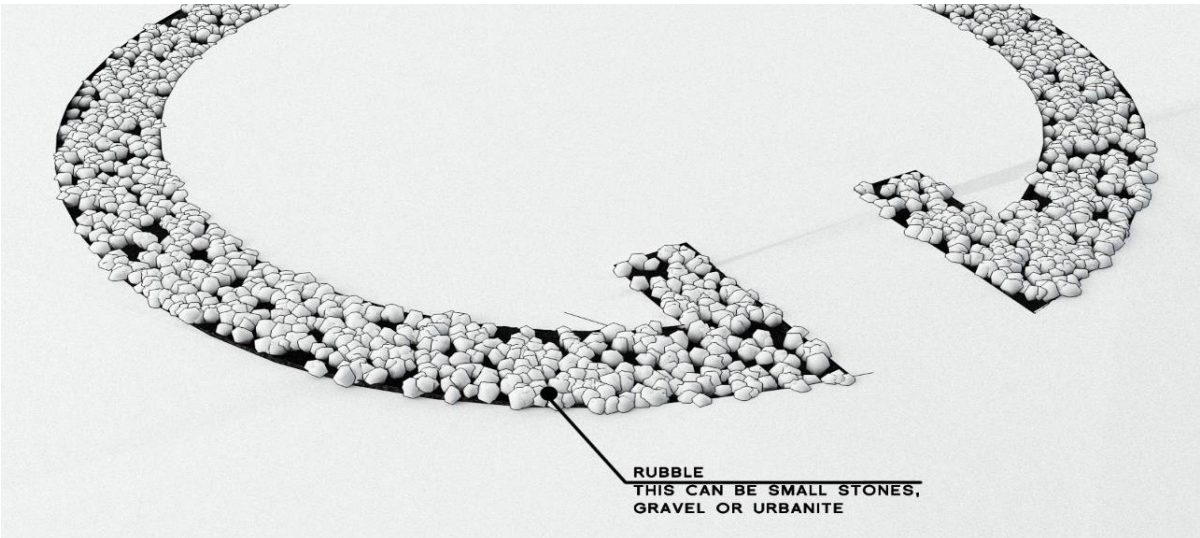
Don't forget to mark where your entrance will be located. Leave enough space for the width of your door as well as the frame. Remember that the door will be recessed a bit because the walls of the fortress are domed, so the entrance will be a couple of feet inside of your circle. How deep you go is up to you but we recommend making it at least a foot or so deep because that allows room for your stone and your first layer of bags. You may want to go deep enough to recess your first

two or three layers of bags if you live in an area prone to tornadoes or flooding just for the added stability.

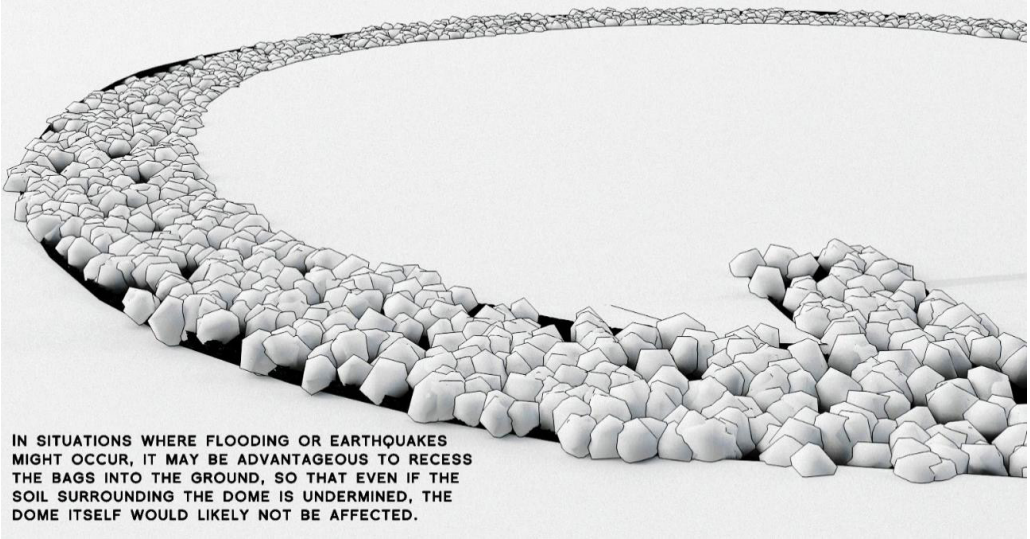
This is a good security measure too as it makes it more difficult to dig underneath the walls to cause a weakness. If you're not recessing your first layer, just dig the trench deep enough for your stone. If your soil is extremely loose or sandy, it's a good idea to line the trench with mesh wire to keep the walls of the trench from collapsing as you dig.

Line the Trench with Stone

Depending upon your terrain, you may choose to lay a layer of sand or pea gravel for extra drainage. If you live somewhere that drains well, this isn't strictly necessary. You do, however, need to add a layer of stone, gravel, or urbanite. If you have good drainage, a few inches of stone will do. If you don't, you may want to add a few extra inches. Allow for that when you're digging your trench. It's important that you keep the stone level so that the bottom layer of bags is level, too. Don't leave any humps that will cause ripples in the walls as you build up. See the following figure for an example of how your trench should look after you've added the stone. Note how level it is and that there is some space between the stones to allow for drainage.



Also, the figure below shows you what your trench should look like if you choose to start building at ground level.



Filling the Bags

How you fill and close your bags is important because you want them full but not so full that you can't tamp them down flat when you're stacking them. There needs to be enough room at the top to close it properly, too. When you're filling the bags for the first row, you may want to double bag if you're using thin bags so that the rocks in the trench don't puncture them.

You may choose to simply have somebody hold the bag open while you fill it but this can be backbreaking. Remember, you're going to be filling hundreds of them. A good method that we discovered involved pulling the bag over a piece of pipe that is just a bit smaller than the bag so that the bag fits well enough to keep from sliding down.

Stand the pipe upright with the bag on the bottom and put the rocks in the pipe. Fill it to within a few inches of the top of the bag, leaving about 8-10 inches so that you can fold the bag over when you add it to

a course. After just a bit of practice, you'll figure out how full to fill the pipe before sliding it out.

Don't worry about sealing the bag; you'll do that before putting it in position if you need to. For now, just fold it down because that's how the majority of them will remain.

Building the Entryway

The entryway needs extra stability to support the dome and to hold the shape, so we add columns built in an inset design. Since these bags won't be butted up against other bags, you'll need to staple or sew them closed securely enough that they won't burst even when you tamp them.

These bags will vary in size as you'll need to adjust the length and shape of them in order to dovetail the wall bags into them for stability. Your best bet is to fill them as you need them so that you can customize each one. See the next pictures to get a better idea of how to incorporate your columns into the walls.

Even though you'll be using oddly-sized bags, you still need to make sure that you lay them in a brick-like fashion as much as possible so that the cracks of one row are stabilized by the bag on top of it. Modify the placement of your polypropylene strings as well as you can.

Placing the Bags for the First Course

You may find it easier (or at least less tedious and back-breaking) to fill one row, or course, of bags at a time, at least on the larger bottom rows. You can also lay them as you fill them if you'd rather. It's just a matter of preference but if you're filling the bags with something that will solidify, don't fill more than you'll need that day.

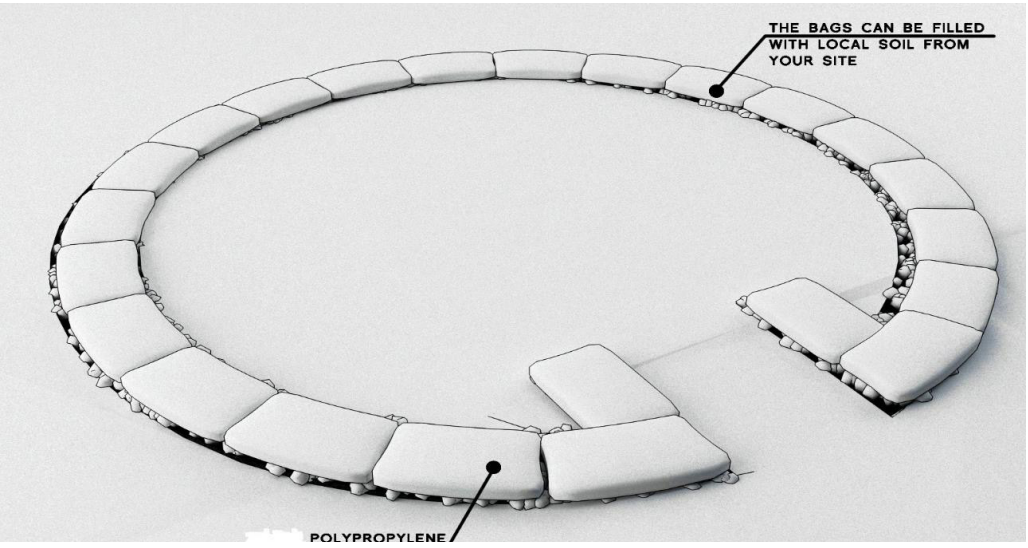
Start at the beginning of the trench where you made the cut-out for

the door and lay the first bag with the top facing where you will lay the next bag. Remember the special instructions for placing the bags for the entry columns that we just discussed and incorporate that method into each layer.

Place a 5-foot length of polypropylene twine underneath the bag so that you can eventually secure the first three courses of bags together. Do this with each bag and make sure that the ends of the string hang freely until you're ready to tie a few layers of bags together.

The folded-over flap at the top of the bag should be tucked snugly underneath so that the weight of the bag holds it closed. Make sure that the other end is pushed as close to the wall as possible so that you get a solid start. Lay the following bags snugly end to end until you've completed the first layer, or course, of your fortress.

The next figure shows you what your first course of bags should look like when complete.



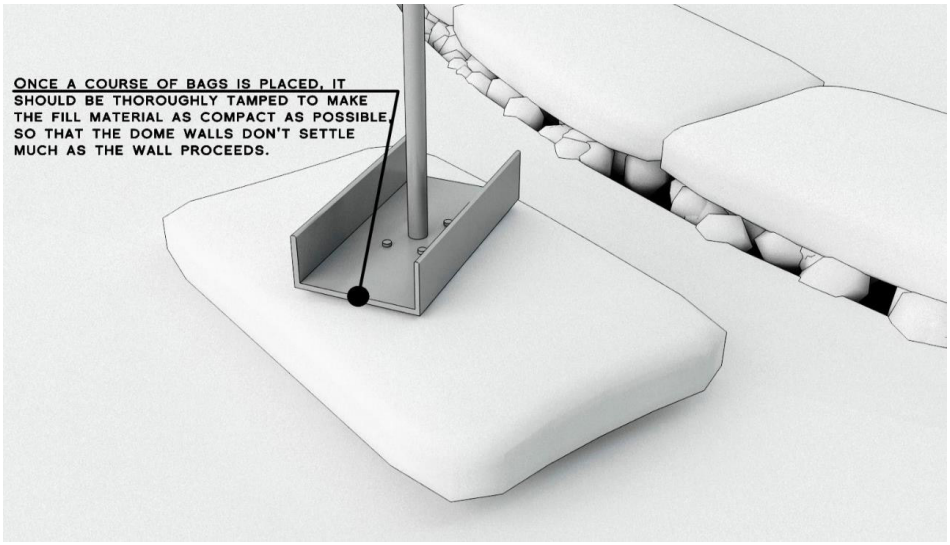
Tamping the Bags

Once you have the first layer completed, tamp each bag down firmly so that the contents are as compacted as possible.

This will prevent the building from settling too much, which can damage the integrity of the dome. You can stomp them flat with your feet if you'd like but that's not the fastest or easiest way to do it.

There is a variety of tamping tools available that are heavy but balanced well so that you don't have to put much effort into dropping it onto the bags. It will be heavy to lift, but easy to drop. Choose one that's about the same width as the bag and you'll make your job much faster. Be sure to tamp each bag in the course before laying the barbed wire and moving on to the next layer.

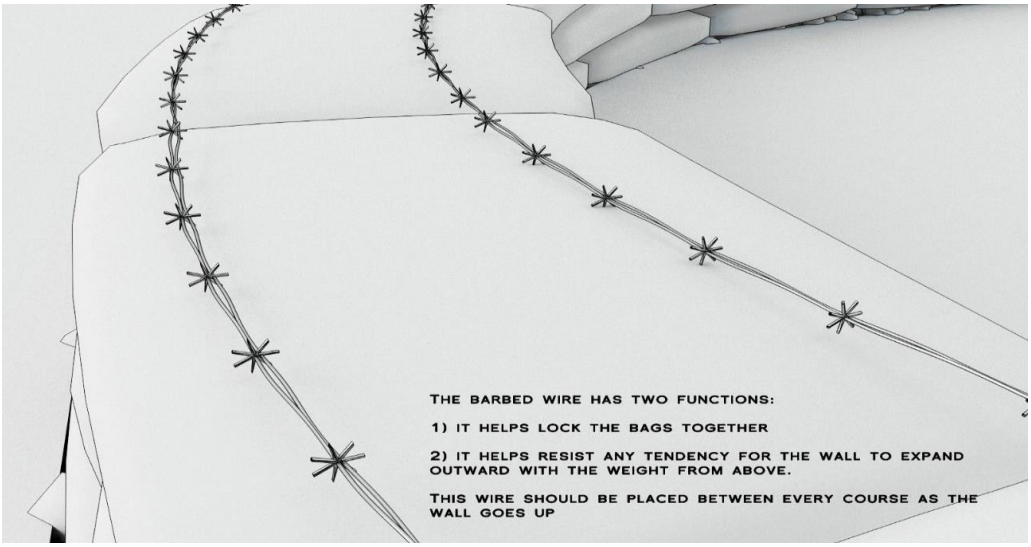
The figure below shows a good example of a tamping tool that's wide enough to be useful yet small enough not to wear you out.



Lock the Layers with Barbed Wire

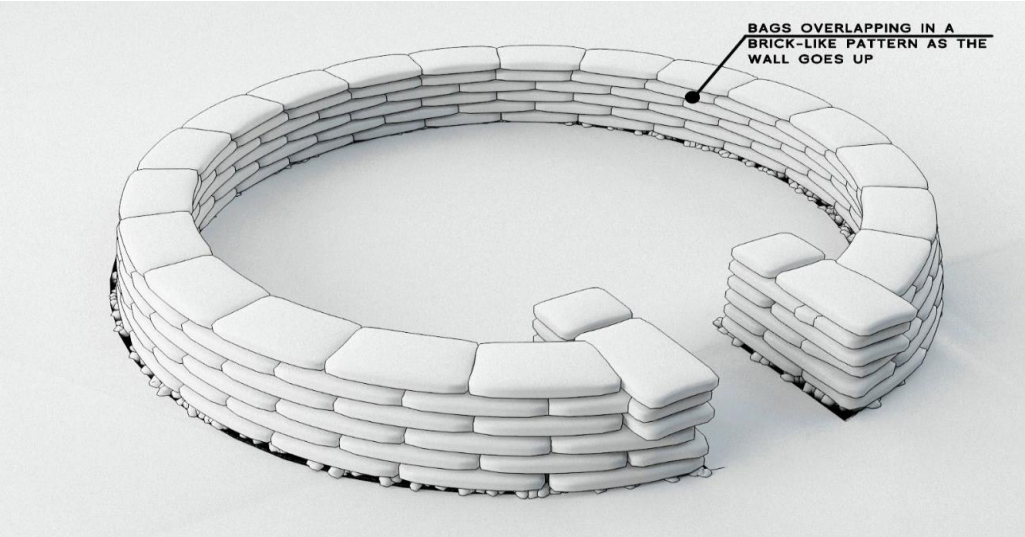
In between each course of bags, it's important to run two strands of barbed wire. This serves a couple of purposes: it secures the bags together and it keeps the sides of the wall from bulging out from the weight as you reach the top.

Once you've finished a course of bags, run the strands so that each one is about 4 inches from the edge of the bag. To keep in in place, just use a rock or a cinderblock until you can add another bag on top of it. There should be a layer of barbed wire in between each course of bags. Though this may seem like an extra step, if you want your fortress to hold its shape and last for years, barbed wire is essential. See the figure below for an illustration of this technique.



Adding the Next Courses

The first few layers of the fortress will be pretty much vertical. For the second course, simply layer the bags on top of the first layer but do so in a brick-like fashion so that the center of the bag is over the crack between two bags on the bottom layer as shown in the figure below.



This adds both strength and stability to your fortress. Place a length of poly string under each bag just as you did with the first layer.

Don't leave any gaps between the bags and don't forget to tuck the folded over portion underneath each bag. Finish the course by tamping it down and adding the barbed wire, just as you did with the first layer.

Once you add the third course, bring the ends of the string that you placed under the first layer of bags up and over, then tie it off so that it secures the first three courses together. Once you add the third course, use the string that you placed under the second course to tie those three courses together, and so on. The string not only helps to secure the walls but it will give the plaster something to hold on to when you add it.

Getting the Angle of the Walls Right

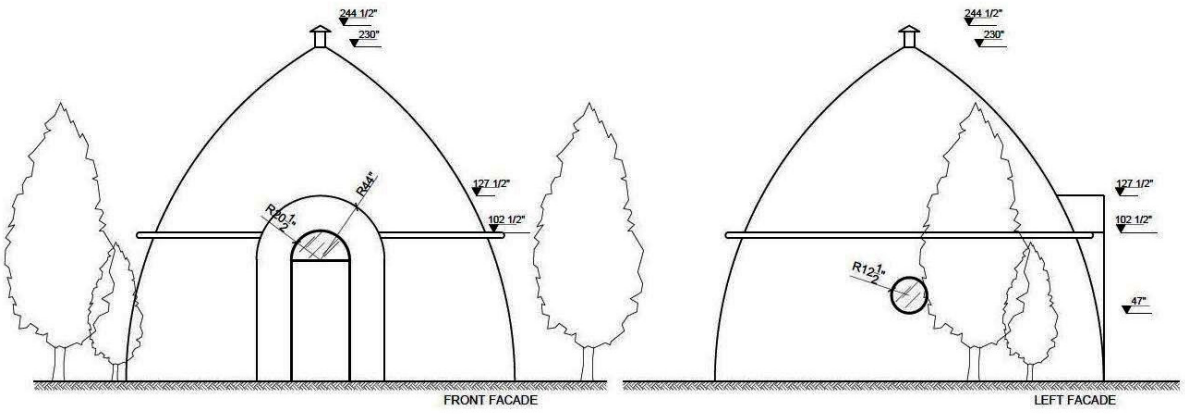
After the first few layers, you will start angling the walls inward so that you can eventually build it to a dome shape. To measure the angle correctly, use a pole or string that is cut to exactly the length of the inside diameter of the fortress. If you're building exactly as we did, your string or pole will be 14 feet long.

Place the end of the pole against the ground-level course at the opposite side of the course as you are measuring. The string or pole will reach the inside of the bag on the bottom layer.

As you build your courses upward, just keep the pole or string taut and move it up. It will naturally form a dome-shaped curve as you build up if you use it as your guide to figure out where to place the inside of each bag. This will work as far up as loft-level.

Once you get that high, use a 30/60-degree triangle to figure the placement of the last several courses of the fortress. Using a tripod up there will help you to get the angle exactly right so that none of the bags slope in too sharply. It also helps with the head room in the loft.

The Plan 5 at the end of the e-book gives you the measurements to help guide you.

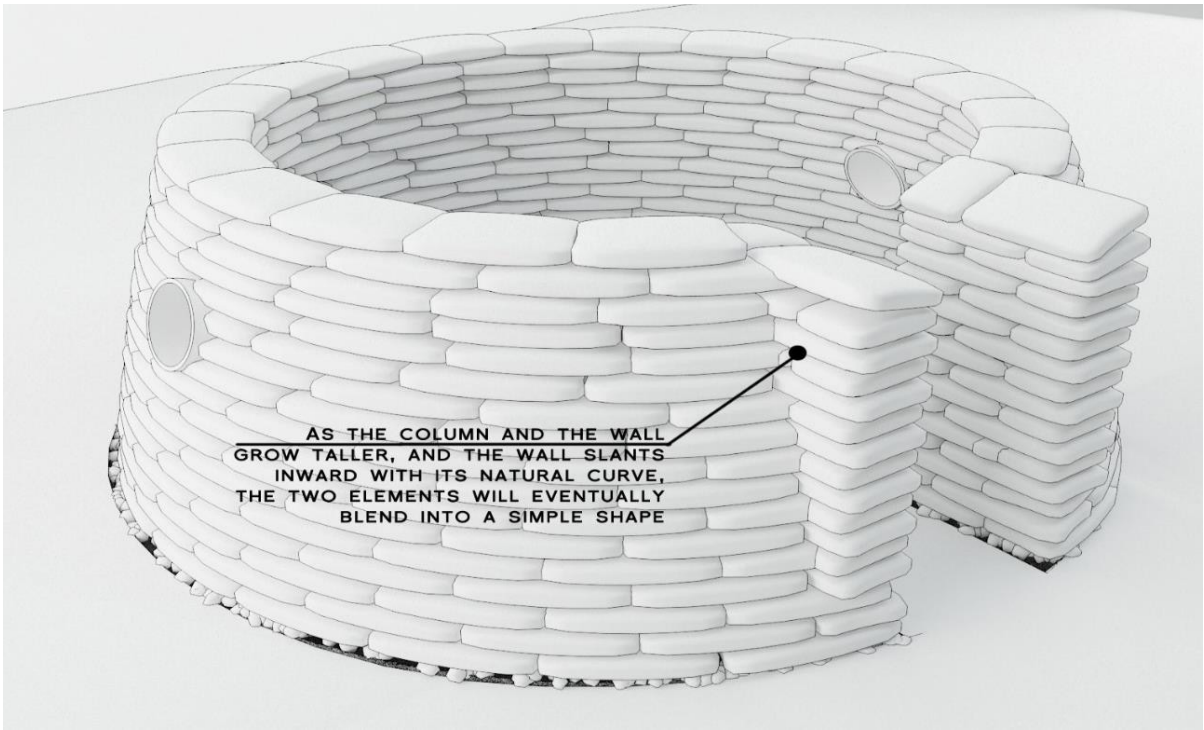


Merging the Walls and the Columns

You want to dovetail the wall bags into the columns for maximum strength. The walls will naturally slant in with the curve of the design. As shown in the next figure, the columns will get shallower as the walls get higher because of that curve.

Though it will be a bit tricky, make sure that you size the bags correctly and tamp them in well in order to make your entryway as solid as possible. Also, be sure to use the polypropylene rope both for added stability and to give the plaster something to grip.

When you reach the top of the door frame where the arch form will be placed, the columns will curve around the top of the frame to form the arch. That's another step altogether, but when you're building the columns to that point, just incorporate the first bag of each course of the wall into the column design. Using the picture as an aid will help you through this process.



Adding Windows

Though you don't have to add windows, you can if you'd like. It's easy to do; we just used pieces of PVC pipe.

You can make them as large or as small as you like. Just cut the piece of pipe to match the width of your walls and then build your wall around them as you layer your courses as shown in the next two figures.

Make sure that you angle the pipes accordingly and you may want to set them up several feet on your wall so that if you face flooding, they won't let water in. This is a good idea for defense purposes, too. If the windows are low, they'll be easier to breach than if they're higher up.

When you're applying the plaster, you can place glass over the window openings so that no rain can get in so don't worry about that part for now.

Adding Inlet Vents

Just as with windows, inlet vents are optional. Since we don't know what kind of SHTF scenario we may be facing when you need to use your fortress, we recommend that if you install vents in your walls that you also place screen over them and make a way to completely seal them from the inside if need be.

Make sure that you place them high enough so that water won't be able to seep in if it rains or floods.

Building Around the Door Frame

Every three courses, you'll need to work with the door frame area a little differently than you do the rest of the course in order to provide enough support for the frame and the door. This is one of the primary reasons for the columns. You'll need to add in anchors to attach the door frame to as you layer your courses.

You'll add the first anchor after you've laid the third course of above-ground bags in the column. Screw a piece of threaded rod that's about 6 inches longer than the width of a bag into a 12-inch-long 2x4-inch piece of lumber. Place the lumber on the inside of the column so that the rod sticks out over the bag and into the entryway. Screw a washer and nut onto the end that will be sticking out into the entrance.

Place the board so that the rod so lines up inside the inner perimeter of the wall in such a way that the door frame will hang level even with the arch in the door. You want the threaded rod to be a bit long because you can always cut it off after you build the frame onto it.

Using the string or rod that you're using to determine the curvature of the walls, figure out where the top of the door frame will be. Use this as the starting point to determine where to place the anchors so

that your door frame is vertical to the ground. A plumb bob will help tremendously here or you can use a washer on a string to get your anchors vertical.

If you don't wish to do this now, you can always wait until the fortress is complete and drive the rod completely through the column, then attach it to the wood on the inside of the structure. This may actually be easier because then you'll be able to correctly adjust for the curve of the arch. If you're using sand or loose soil, you'll damage the bags and risk causing a leak, so consider that when deciding. Whichever way that you choose to do it will work but we preferred to do it as we went.

Attaching the Door Frame

When you've built your walls to the height of the top of the door, it's time to attach the door frame. If you measured carefully when you were inserting your anchors, this is going to be a piece of cake. Measure and cut the lumber for the door frame according to the dimensions of your door. Measure the height of your anchor bolts from the ground. Mark your boards to line up with them.

Drill holes in your frame to line up with the anchor bolts. Use a countersinking bit so that you can recess the bolts into the board to leave clearance for the door. Place your frame on your anchors, bolt them so that they're secure and trim off the excess threaded rod flush with the board. Add your top board or post and you've officially made a door frame for your fortress.

Building the Arch Form

The arch form will go on top of your door frame so that you can build the arch above. It's simple to build and you can use it over and over because once you've completed the dome, you can remove the form

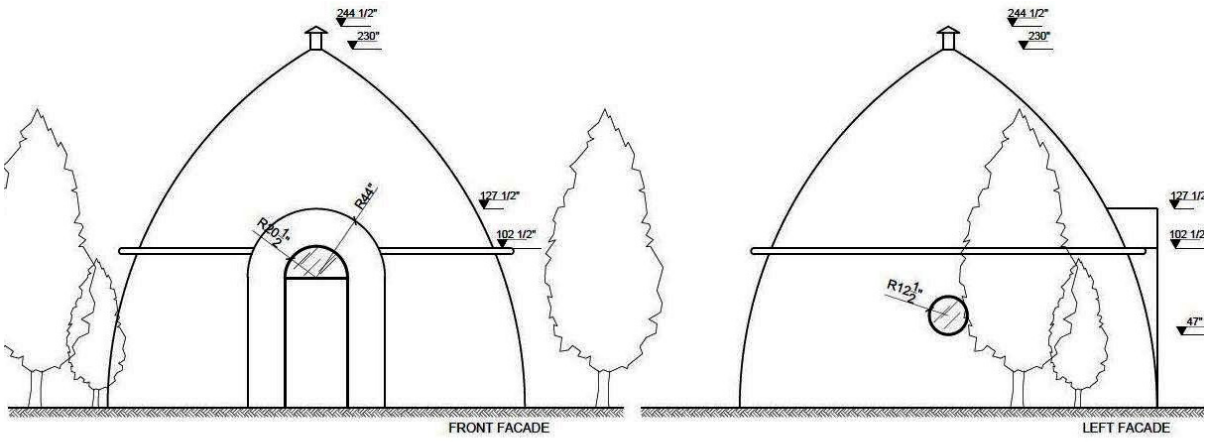
from the structure. Measure the top of the door frame. That's how wide the bottom of the arch will be. Using the edge of the plywood, mark the length of the top of the door frame. This will be the bottom of the arch.

To pencil in the arch, find and mark the center of the measurement that you just marked by dividing the length of it in half. Tie a string to a pencil and cut the string to the length that you just found. Place the end of the string on the mid-way mark that you made on the plywood. Pull the string tight and mark the shape of the arch on the plywood.

Repeat this entire process twice so that you have both ends of the form ready to cut. Cut them out.

To form the ribs that attach the two ends of the arch form, cut a 12 2-feet-long sections of 2X4-inch boards. In other words, you'll have 12 pieces of wood that are each two feet long. Nail these between the two pieces of plywood to form the arch form.

Finally, to make the bottom of the form, measure or trace it onto the plywood and cut it out. Nail the bottom of the form to the top section that you just made and you're finished. See the plans no. 1 and 2 for your dimensions.



Building the Arch

Now that you've got your walls built and your door frame installed, it's time to do the arch. It's fairly easy to do but it's important that you do it well because if you don't build the arch solidly and perfectly, it can collapse later and may even bring down your whole dome.

Place the arch form that you just built on top of the door frame with a couple of 1-inch shims between it and the door frame. The shims will make it easy to release the form when it's time. Secure it loosely from under the door frame if necessary with a couple of nails. You'll be taking these out later so don't attach it too securely.

To make the form, you'll be using bags stuffed and stitched closed just like the ones that you used for the columns.

Starting at the exact height of the top of the door frame lay a longer bag and a shorter one to match the size of the columns so that the long side is against the form, and repeat on the other side. You have to build the arch from both sides so that your bags meet at the top. If not, you won't be able to build the arch properly. Alternate the position of the long and short bags so that you maintain the brick-like pattern that you've been using.

Tamp each bag down as well as possible before adding the next bag. Once you get to the top, getting the last few bags in can be tricky. You may need to use a couple of pieces of plywood to help hold the hole open so that you can fit the final bags in tightly.

Whatever you do, DO NOT take the form out until the entire dome is solidly built. Otherwise, it will likely collapse and cause a ton of work to rebuild.

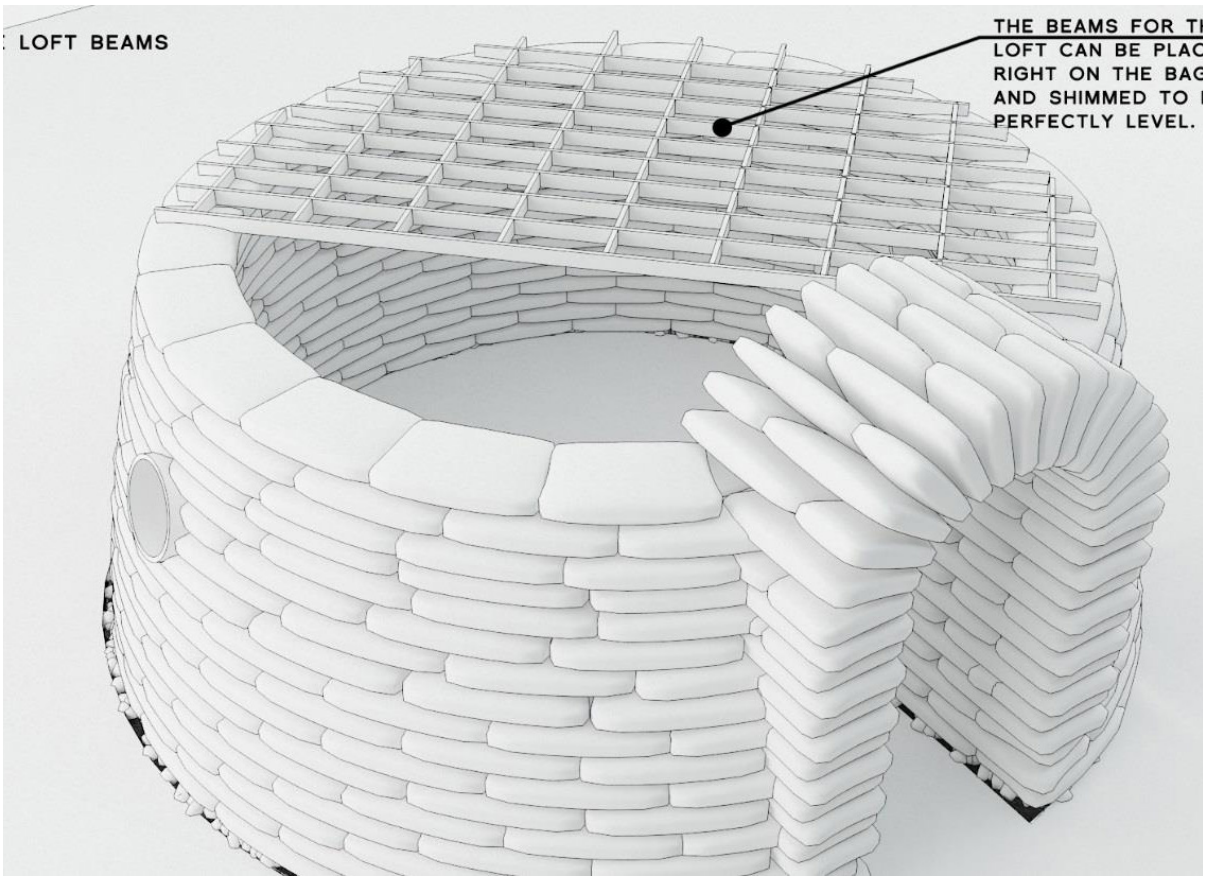
Adding the Loft Joints

Once you get to the point where you want your loft to begin, it's time to lay your joists.

Measure your lumber so that it's just a bit shorter than the diameter of the top layer of bags, then use spacers of lumber cut to the length of a bag.

You can build the joist on the ground and hoist it up whole or build it right on top of the wall. Shim each joist as necessary to make sure that they are perfectly level. Next figure shows you how your loft should look when finished.

If you'd like to stabilize the joists even more, or if you choose to use logs for your loft, you can secure the ends to the bags that they are resting on with steel plates.



After you've completed placing the bags for the loft joist layer, start another course of bags on top of them just like all of your others and continue on.

Building the Dome

Once you have the loft joists in place, all that's left to do is finish the dome. This is where you're really going to start sloping in and you'll need to use the triangle that we discussed earlier to ensure proper angles. By this point, your structure is plenty secure enough that you can climb on the outside to finish the top of it. Be careful with your footing because the bags can be extremely slick. To get an idea of the measurements, see the plans at the end of the e-book.

Installing the Upper Ventilation Pipe

Before you close off the top of the dome, we highly recommend installing an upper ventilation pipe with a rain bonnet to keep the weather out. This is particularly important if you didn't install any inlet air vents throughout the walls. If you're stuck in your fortress for any amount of time, fresh air will be necessary.

We used one with a small ball attached to it with a string so that we could close it off if we chose to or needed to for some reason. The plans give measurements and a good illustration of what your ventilation pipe should look like when it's installed.

Installing a Stove Pipe

This is just an option but you may choose to install a stove so that you can heat the place or have a place to cook. If you decide that you want to do this, you need to vent the stove. The best time to install the pipe is while you're building the dome. Because the top of the pipe gets extremely hot, you'll need to use insulated pipe.

You can buy this at any hardware or home improvement store and it's one of the few items that you shouldn't try to go cheap on because it's a safety issue.

Remove the Arch Form

You're now ready to remove the arch form and start plastering. To remove the form, simply remove the nails from the door frame if you used any to secure the form.

Then knock out the shims that you placed between the door frame and the bottom of the arch form. Slide the form out and store it somewhere for use later in case you decide to build another fortress.

Plastering Your Survival Fortress

Though the structure of your fortress is completely secure, you need to apply plaster in order to protect the bags from weather. After they are sealed with plaster, they won't biodegrade for decades or even longer.

If exposed to sunlight, however, the bags will break down. This isn't a huge issue if you used adobe or some other material that hardens but if you used stone, soil or sand, damaged bags will ruin all of your hard work.

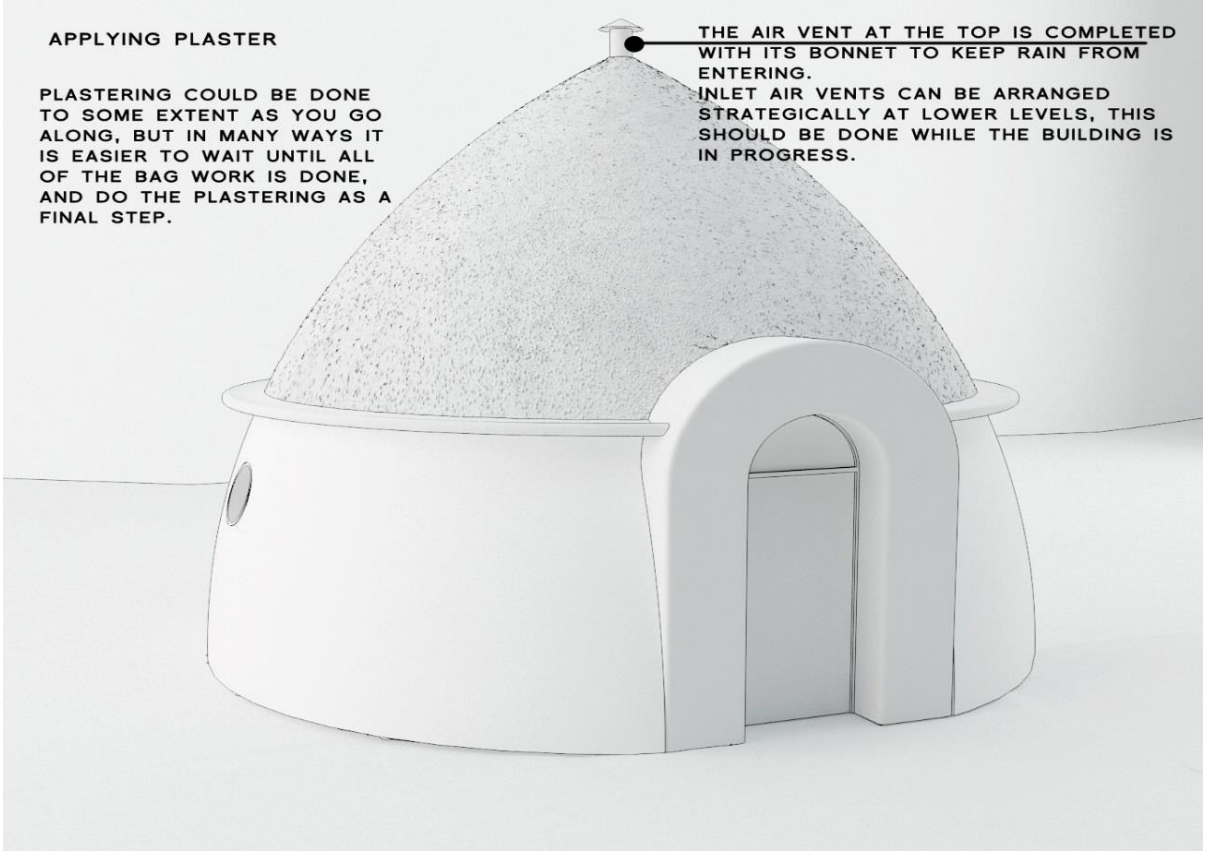
You could conceivably do quite a bit of the plastering as you build if you'd rather but we found it easier to just do the entire fortress at once.

Plaster not only protects the bags but also helps to insulate your fortress. Depending upon what type of plaster you choose to use, you may need to apply a moisture barrier between the dome and the plaster. If so, you'll also need to apply the netting to help the plaster adhere to the wall.

We applied two layers of plaster to our fortress and we also plastered the inside for added insulation.

How you add the plaster is up to you but we prefer to plaster the columns first. That way, by the time that you finish the rest of the fortress, the columns will be dried and cured enough so that you may hang the door.

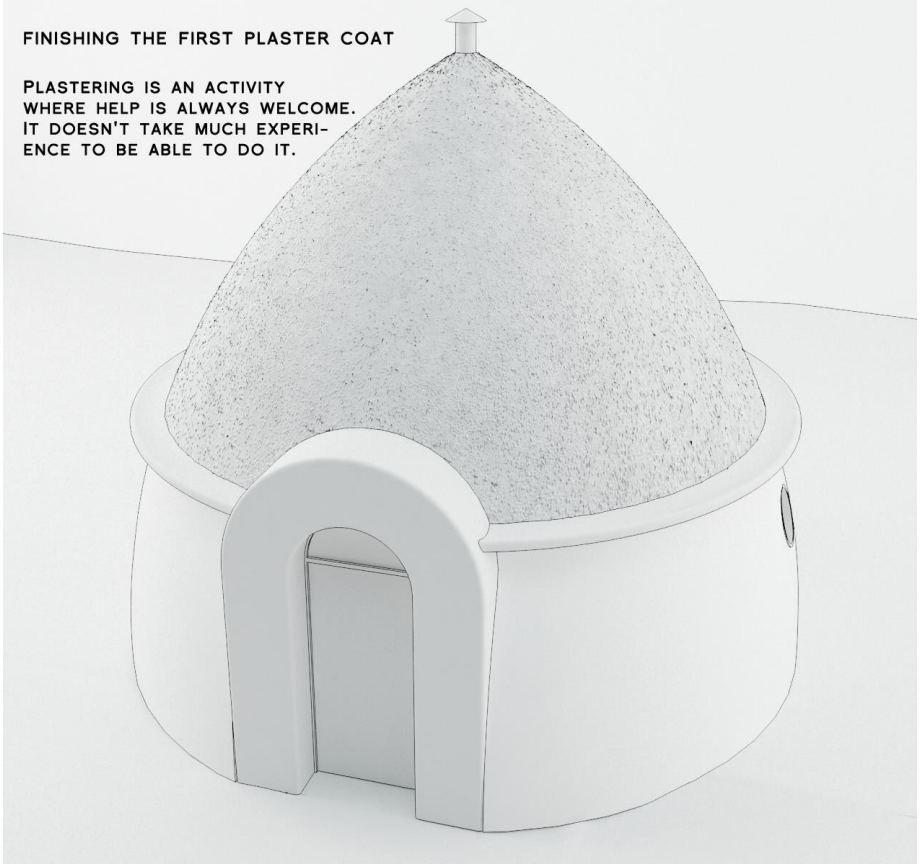
After you do the columns, work your way up around the arch. If you want to install wood or glass in the arch, this is the time to do it. We'll give you directions in just a minute for that. Once you have the columns and the arch covered, move on to the rest of the walls. Start from the bottom of the fortress and work your way up, going in small patches and smoothing as you go.



The reason that you work from the bottom to the top is that the plaster will stick better if there's plaster underneath it. Just think about gravity and this will make sense.

Once you get to the top of the dome, seal the plaster around the pipes as well as you can. You may want to seal the cracks around the upper vent(s) with silicone for added waterproofing.

Another step that you may wish to take is applying water sealant to the ends of the joists to prevent them from absorbing too much water and to keep them from rotting.



Covering the Arch

You may choose to use glass or wood to fill in the arch. Either way, you'll need to set it in the plaster as you apply it. Cut your material so that it fits snugly into the arch, but not so snug that it will buckle if the walls settle a bit.

After you've applied the plaster around the inner part of the arch, push the "window" into the arch so that it's flush with the plaster, and level. You may then plaster the rest of the inside of the arch on the inside to hold the "window" in place.

Installing the Windows

As you apply the plaster around the window, you need to set the glass into the plaster. Simply apply the plaster and then press the glass

into the plaster so that it leaves an imprint. As it dries a bit, trim a layer of the plaster from the inside of the imprint so that the glass fits inside of the plaster. Do this carefully because you want a perfect fit, and don't remove all of the plaster from behind the glass.

Make the ledge of plaster beneath the window thin enough that the glass sits on the ledge but doesn't recess into in completely. This is so that water can run off of the glass without pooling on the ledge.

Set the glass into the cut-out and plaster over it with the second layer of plaster so that the edges of the glass are covered with only the window hole showing around the top and sides. The bottom will still look squared.

Plastering the Inside

Once you have the outside done, you should do the inside as well. This adds an extra layer of insulation and protects the bags from humidity. Plaster the inside just like you did the outside; start from the bottom and work your way up.

Hanging the Door

Depending on the type of door you chose, this will most likely be an extremely simple process. If you're using a wood door, you'll need to cut out the space for the hinges so that you may recess them. This allows the door to close properly.

After you have the cutouts, attach the hinges to the door, then attach the other side of the hinges to the door frame. Add the doorknob and any locks that you'd like to use and you're done.

Finishing Up

Your fortress is now technically finished but you can always choose to paint it. You may also wish to camouflage it if you really don't want people to know what you have. If you don't mind if people see it, paint it whatever color makes you happy. We do recommend using a waterproof paint just to add a bit more protection to your fortress. Depending on what type of plaster you use, this may be necessary to preserve the integrity of the plaster.

You now have the ultimate survival fortress. It's bullet proof, waterproof and weatherproof. It will get you through hurricanes, tornadoes and even floods and earthquakes for decades to come.

In the case of invasion or other disaster, you have a safe place to take your family. If you've stocked it properly, you can stay in it for as long as you need, because it surely isn't going anywhere.

Chapter 4:
Other Options and Additions

Your fortress may be as plush or as minimalist as you prefer. There are a few options that you may choose to add just to make it a bit more user-friendly and self-contained.

Here are just a few ideas to make your fortress more comfortable and more secure.

Bathroom

If you're building this so that you have a safe, secure bug-in facility, you may wish to install indoor plumbing in it. This may not work if you lose water, but if you're going to be using it during a storm, a flushing toilet will be a welcome luxury.

You don't have to get fancy; just install a toilet. You can enclose it with a couple of plywood walls if you're planning on sharing the space.

If you want to install plumbing, you should plan for this before you start building the fortress because it's much easier to run the pipes before you dig your trench and start building.

Remember to account for the depth of the trench when running the pipe. This may not be a viable option if you don't build the fortress near any of your other plumbing because you won't have a readily-available water supply.

Wood Burning Stove

If you have to be locked inside your fortress for too long, especially in cold weather, a wood burning stove will be a welcome addition. Because you have limited space, you may want to consider installing

a wood burning cook stove. That way you can heat and cook using the same stove.

Shelving

Even if you're only going to use this as an equipment shed, shelving is always a good way to stay organized. If you're using it for survival, shelving is almost a necessity so that you can efficiently stock the fortress with food and supplies.

The easiest way to install shelving would be to simply run wooden shelves along the walls.

Flooring

You don't necessarily need to install any kind of flooring in your fortress as long as you're OK with a dirt floor. However, you may choose to pour a concrete floor or build in a wooden one much like you would do in a barn.

Flooring can be nice, especially if you get a large amount of rain. That way you don't have to worry about a mud floor instead of a dirt one if any water breaches your fortress or if you track it in from outside.

Completed Loft

Adding flooring to the loft will give you added storage and can even serve as a "bedroom" should you have your entire family in the fortress. You can just use lumber for this purpose, or plywood.

Conclusion

If you've managed to find frugal ways to obtain most of your supplies, you have now built the ultimate survival fortress for very little money. Even if you chose to order your supplies and buy your stone and whatever you used to fill your bags, you still didn't spend a ton of money and your structure will serve as a safe place to take your family in just about any emergency.

We recommend keeping some of your stockpile in your fortress so that if you need to move to it in a hurry, you'll already have food and supplies available. This can save valuable time and may even save your life.

Stocking it with other items such as a medical supplies, or at least a good first aid kit, is always a good idea, too. Just think about what you may need to get you through a few days and stock it with that!

Good luck with your new ultimate survival fortress. May you never need it for its intended purpose, but if you do, then here's to being bullet-proof!

Annex

Print and use the following plans and figures in order to build your 300 ft earth bag house.

The following plans relate to:

Plan 1 – Front & left façade plan

Plan 2 - Back & right façade plan

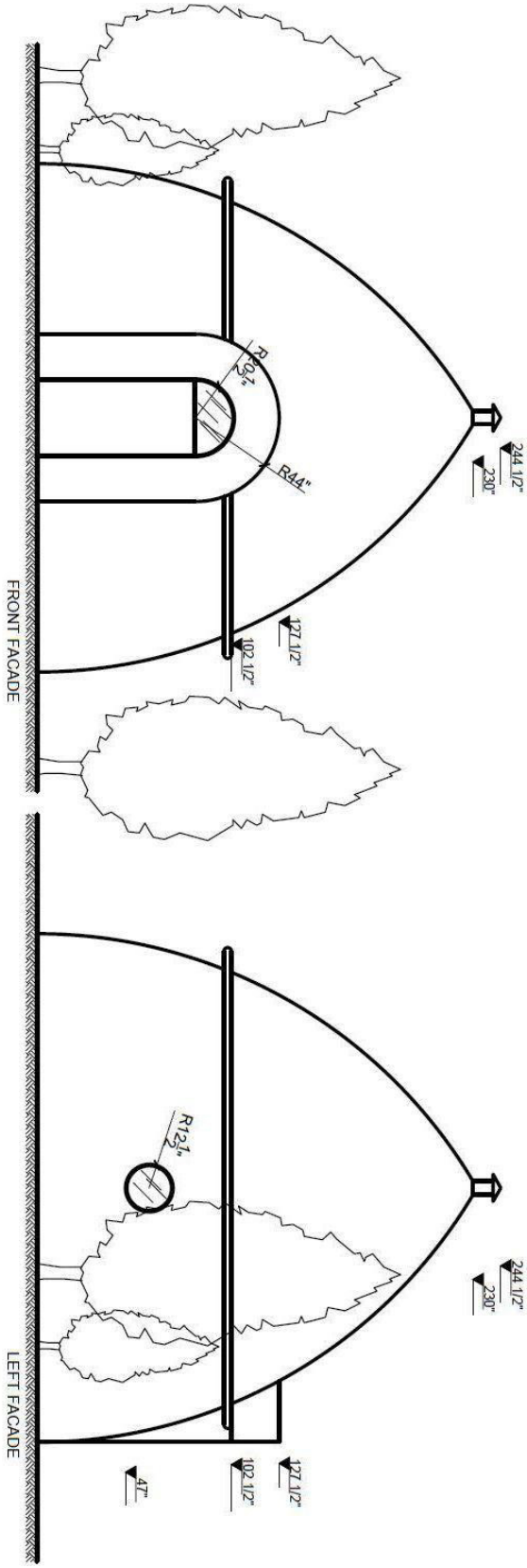
Plan 3 - Ground floor plan

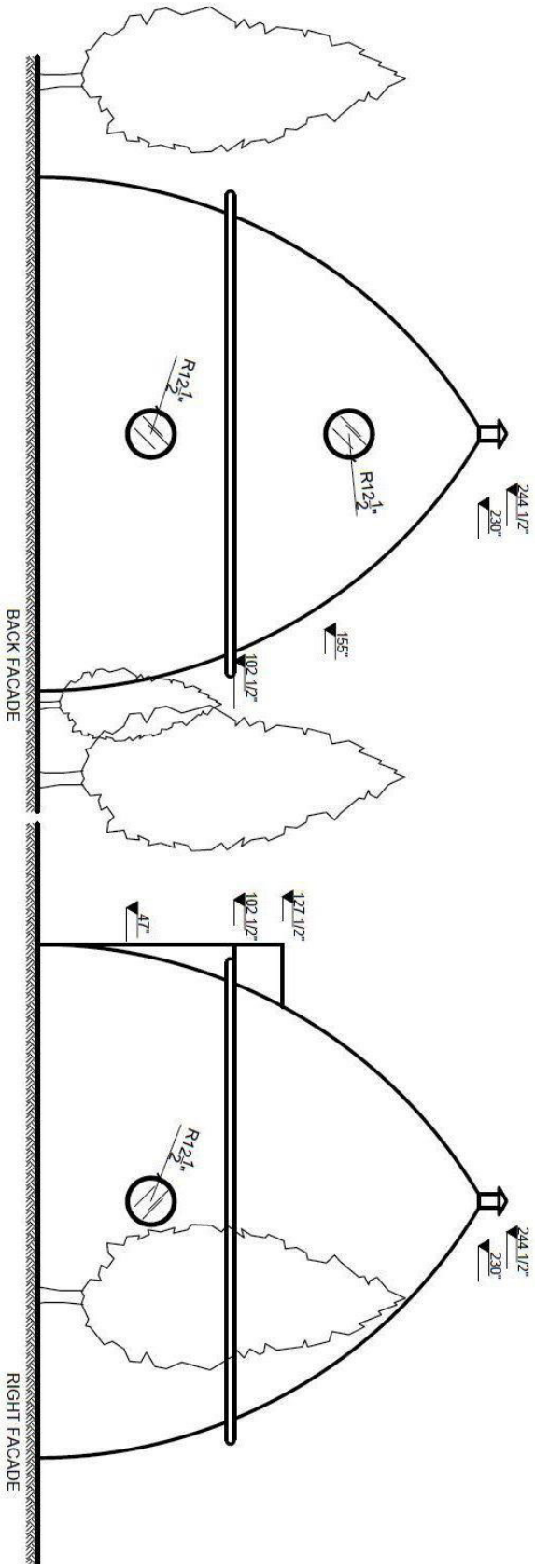
Plan 4 - Upper floor plan

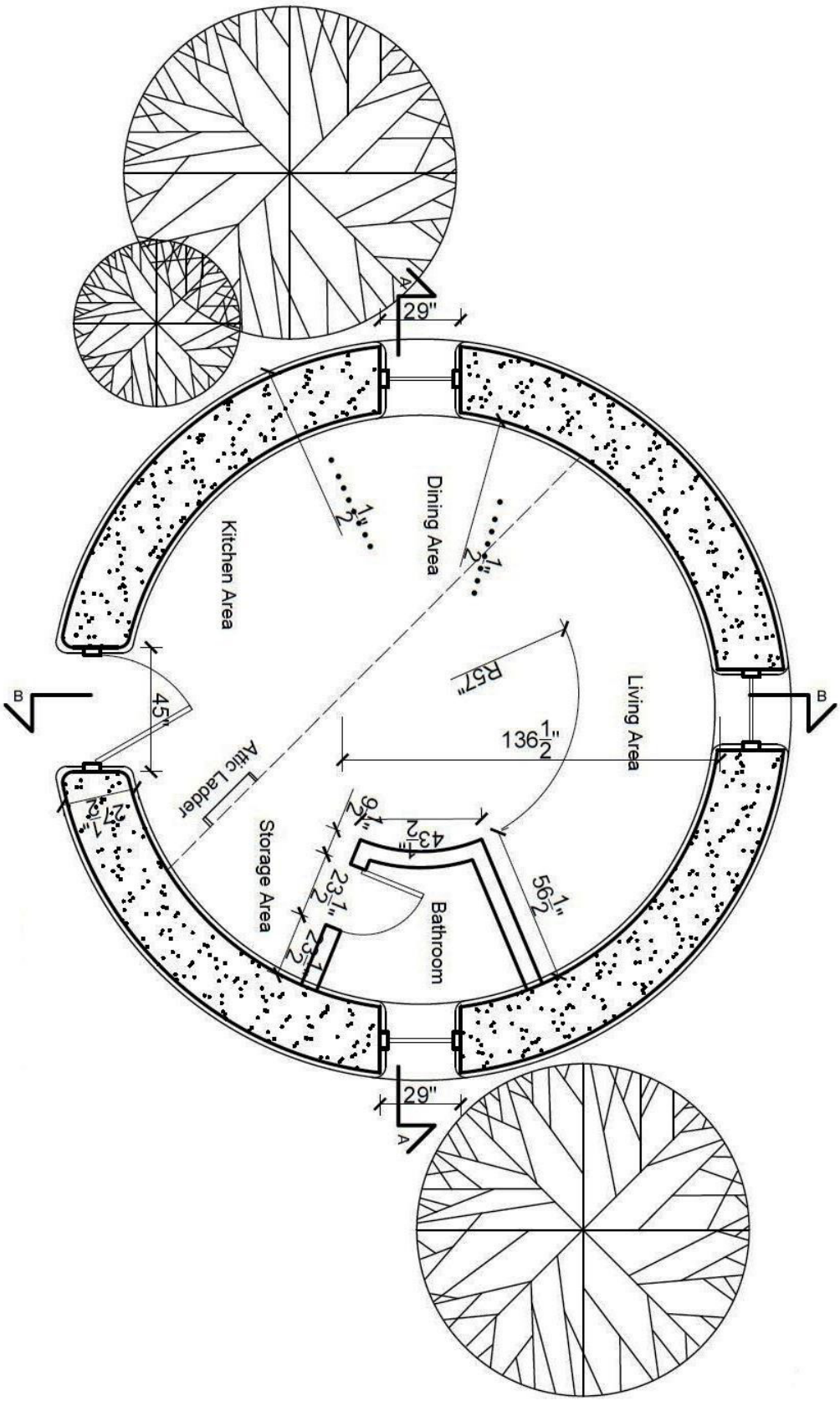
Plan 5 - Cross section plan

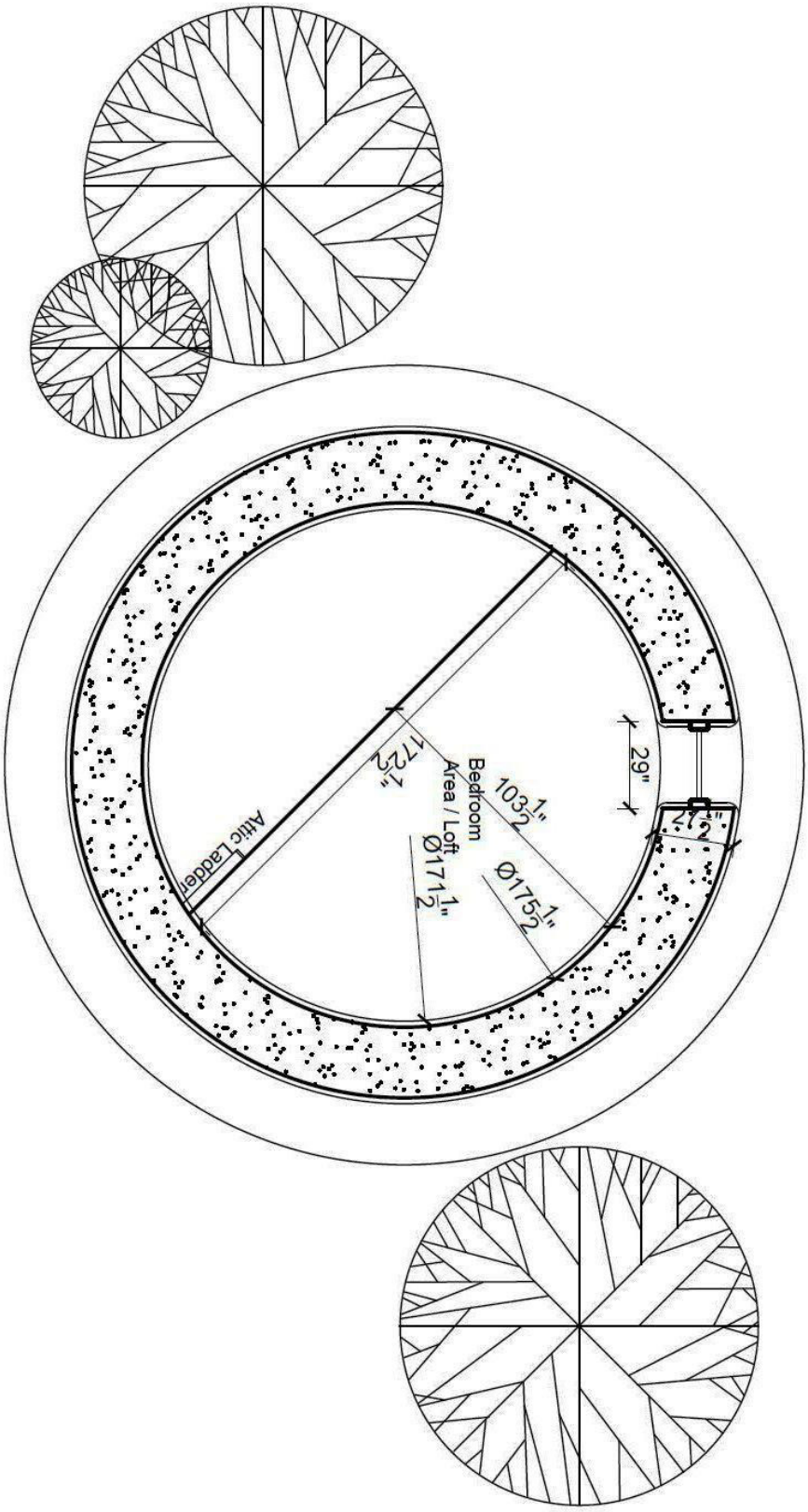
Also, print and use the pictures with brief Step-by-step instructions to follow while building the house.

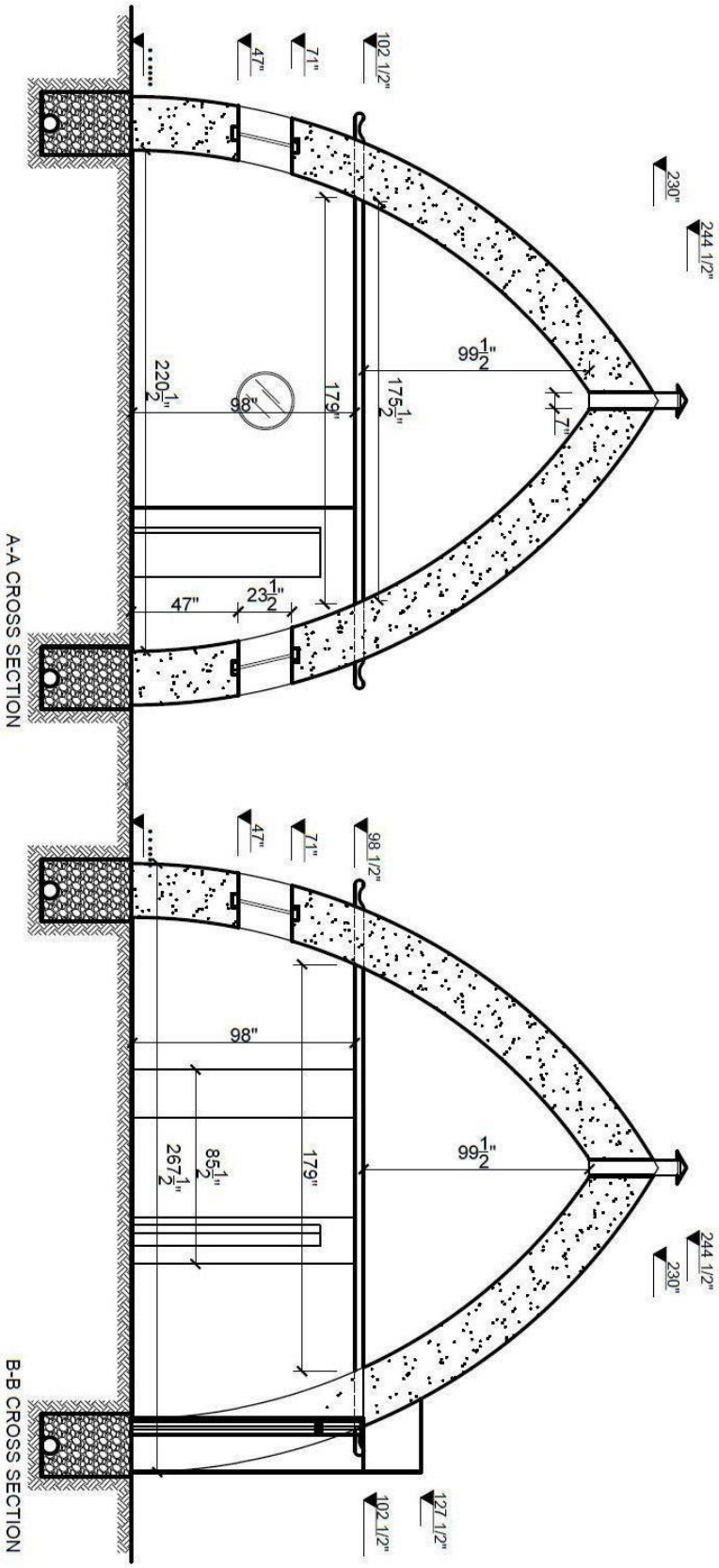
STEP BY STEP INSTRUCTIONS

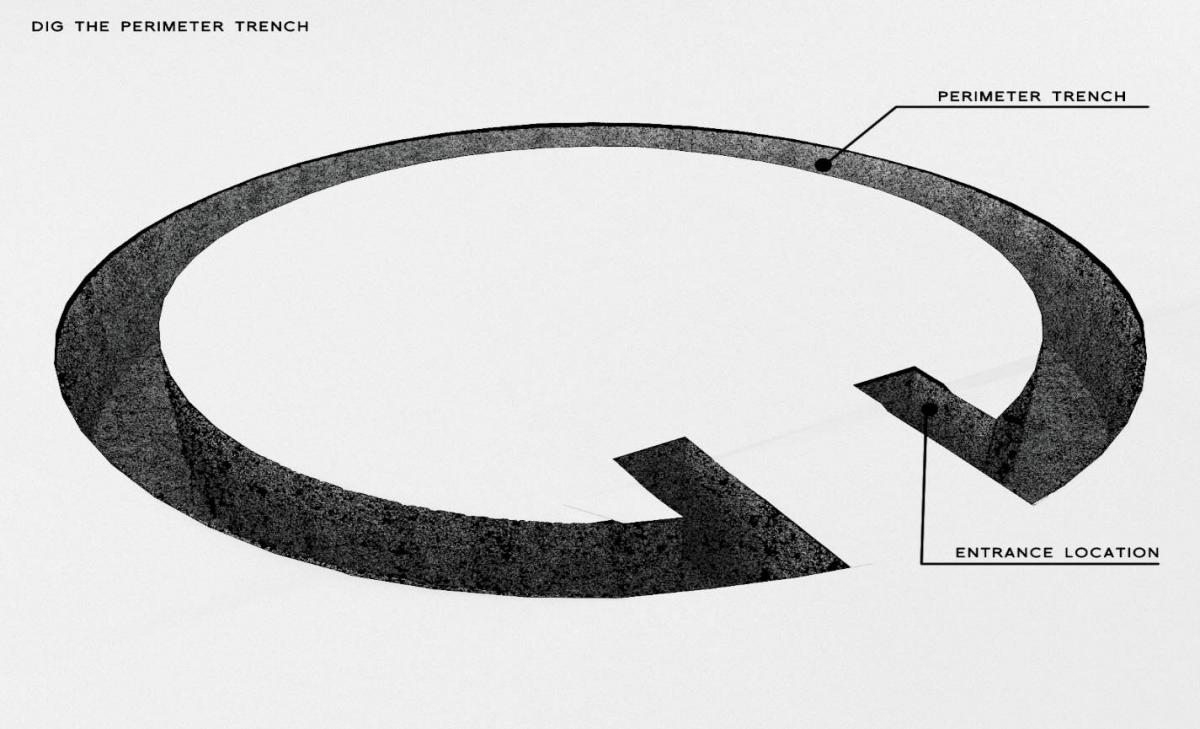

FRONT FACADE
R23.7"
R44"
244 1/2"
230"
127 1/2"
102 1/2"
LEFT FACADE
R121.1"
244 1/2"
230"
47"
102 1/2"
127 1/2"

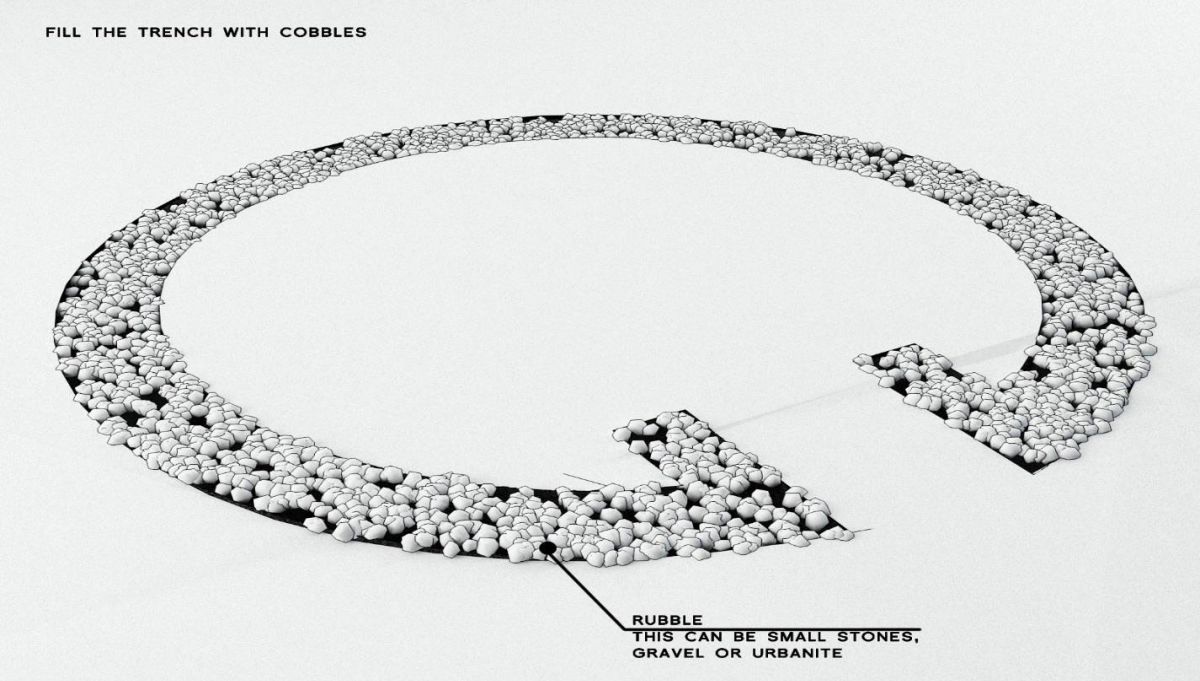

BACK FACADE
R121"
R121"
244 1/2"
230"
155"
102 1/2"
RIGHT FACADE
47"
102 1/2"
127 1/2"
R121"
244 1/2"
230"

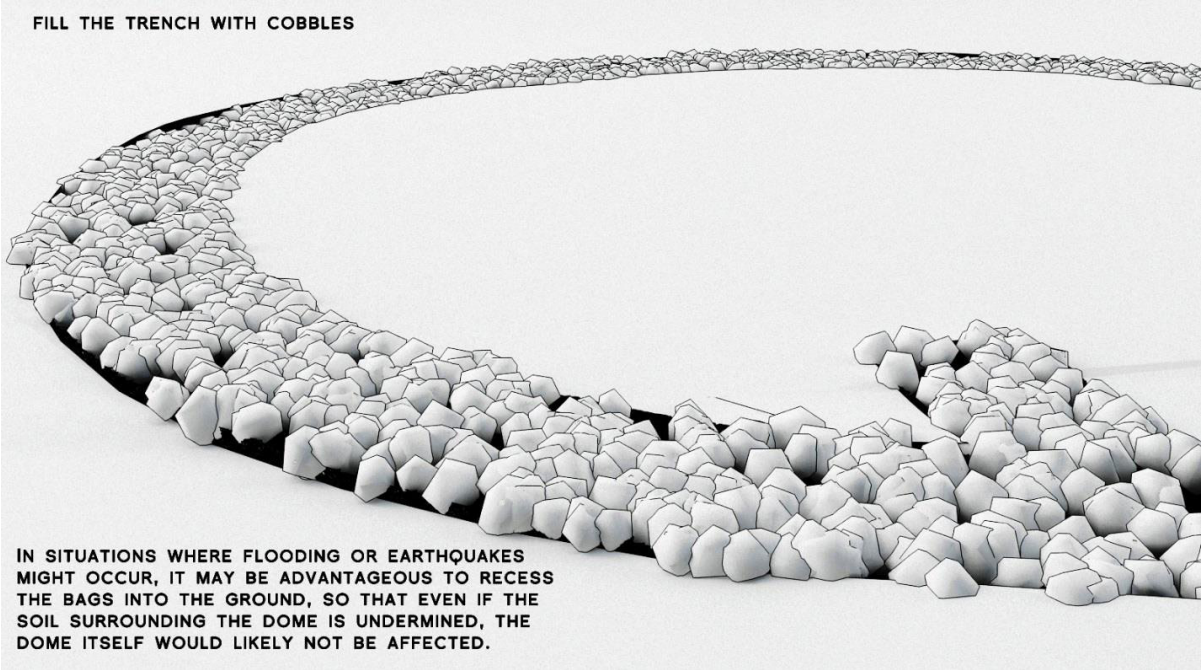

A
29"
Kitchen Area
Dining Area
Living Area
Attic Ladder
Storage Area
Bathroom
B
B
45"
R57"
136 1/2"
9 1/2"
43 1/2"
56 1/2"
23 1/2"
29"
A

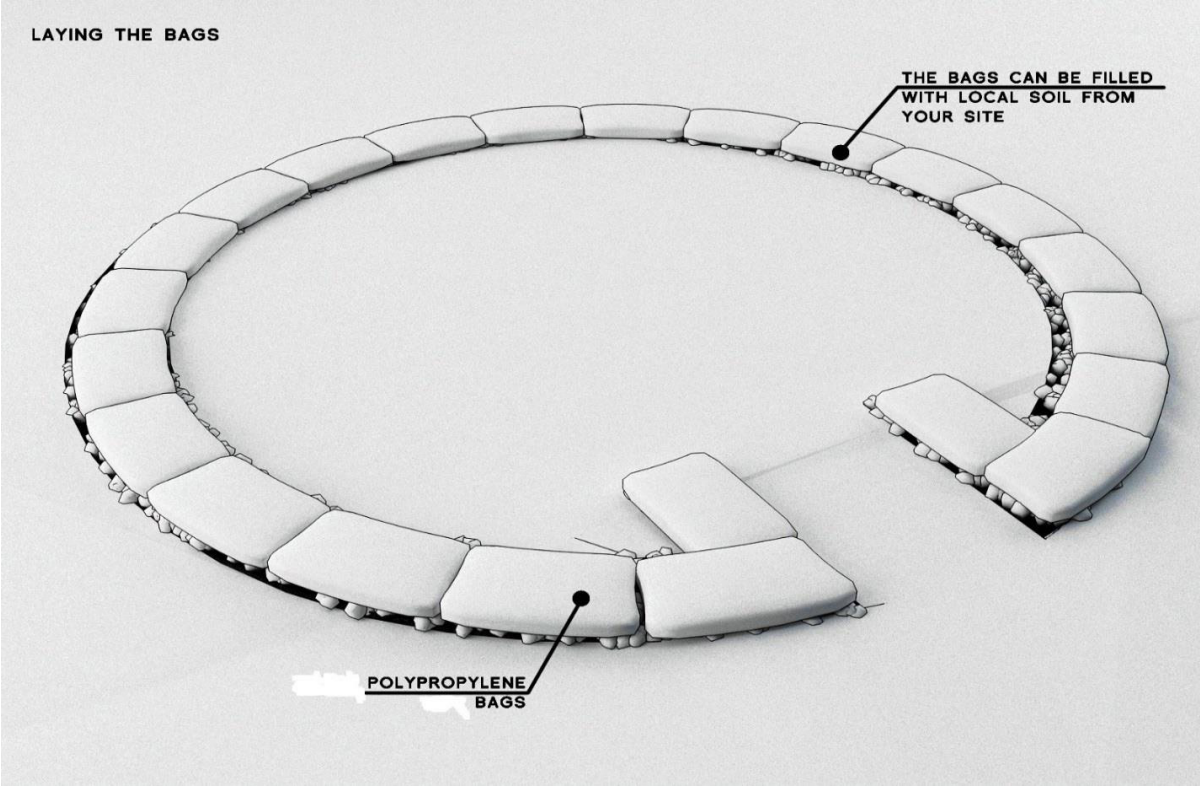

Attic Ladder
Bedroom
Area / Loft
172"
103 1/2"
Ø171 1/2"
Ø175 1/2"
29"
27"

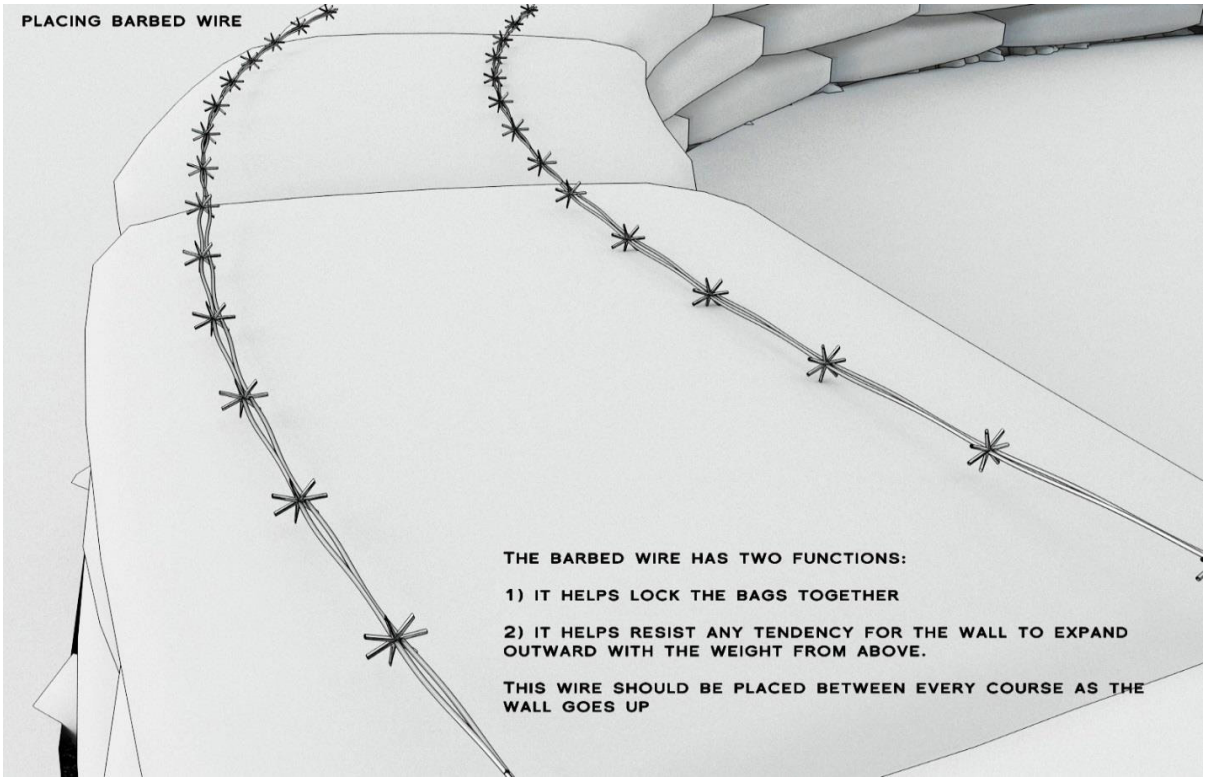

A-A CROSS SECTION
47"
71"
102 1/2"
230"
244 1/2"
99 1/2"
7"
220 1/2"
98"
179"
175 1/2"
47"
23 1/2"
B-B CROSS SECTION
47"
71"
98 1/2"
98"
99 1/2"
179"
85 1/2"
267 1/2"
244 1/2"
230"
102 1/2"
127 1/2"

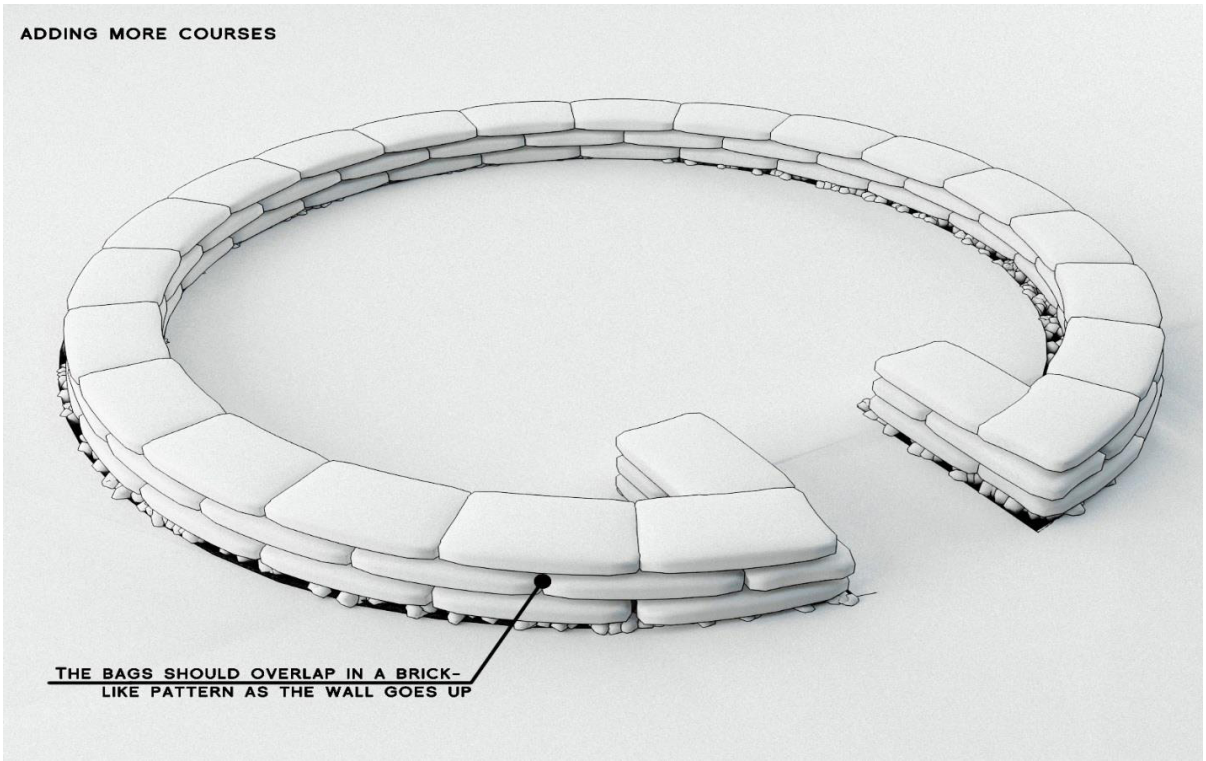

DIG THE PERIMETER TRENCH
PERIMETER TRENCH
ENTRANCE LOCATION

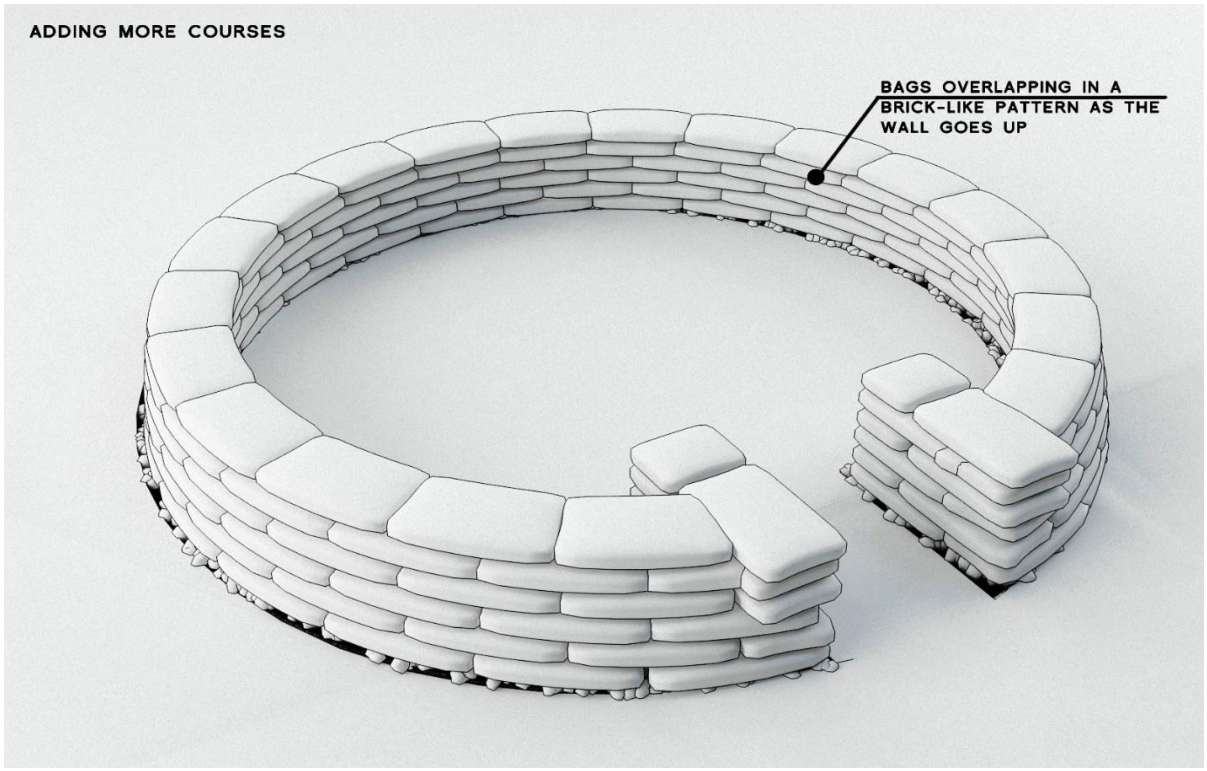

FILL THE TRENCH WITH COBBLES
RUBBLE
THIS CAN BE SMALL STONES,
GRAVEL OR URBANITE

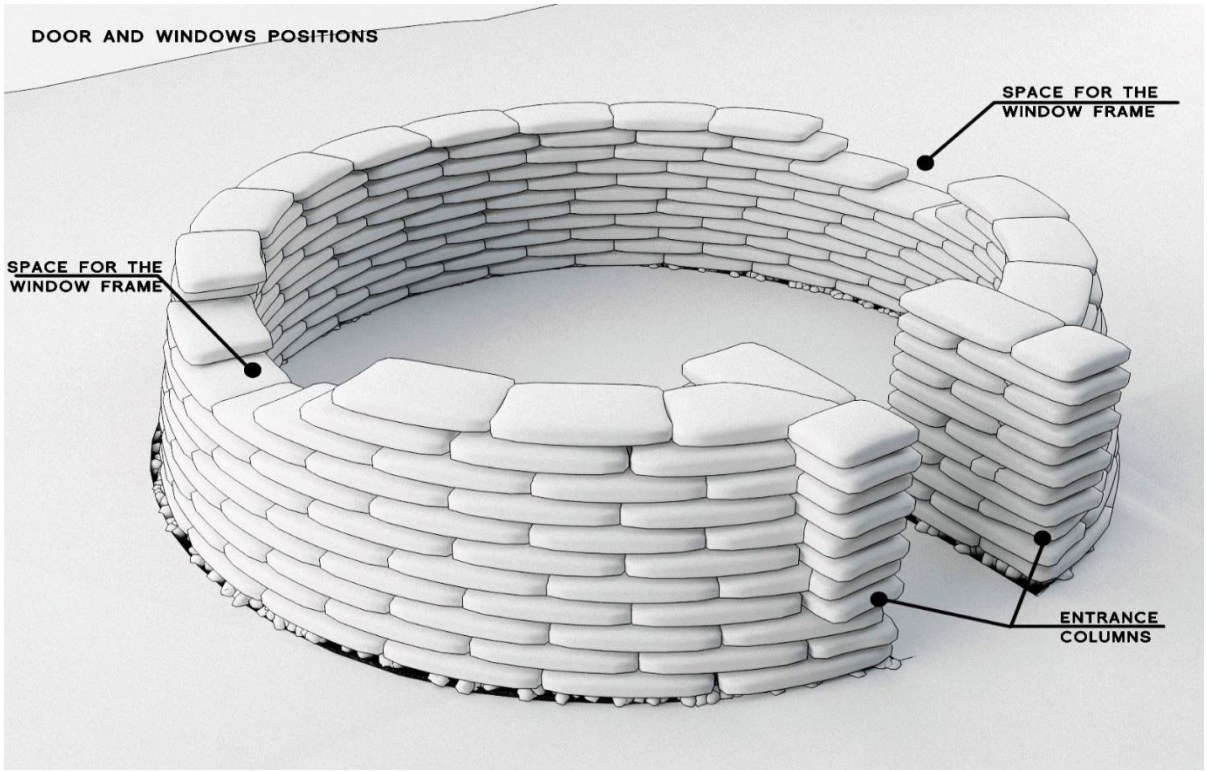

FILL THE TRENCH WITH COBBLES
IN SITUATIONS WHERE FLOODING OR EARTHQUAKES MIGHT OCCUR, IT MAY BE ADVANTAGEOUS TO RECESS THE BAGS INTO THE GROUND, SO THAT EVEN IF THE SOIL SURROUNDING THE DOME IS UNDERMINED, THE DOME ITSELF WOULD LIKELY NOT BE AFFECTED.

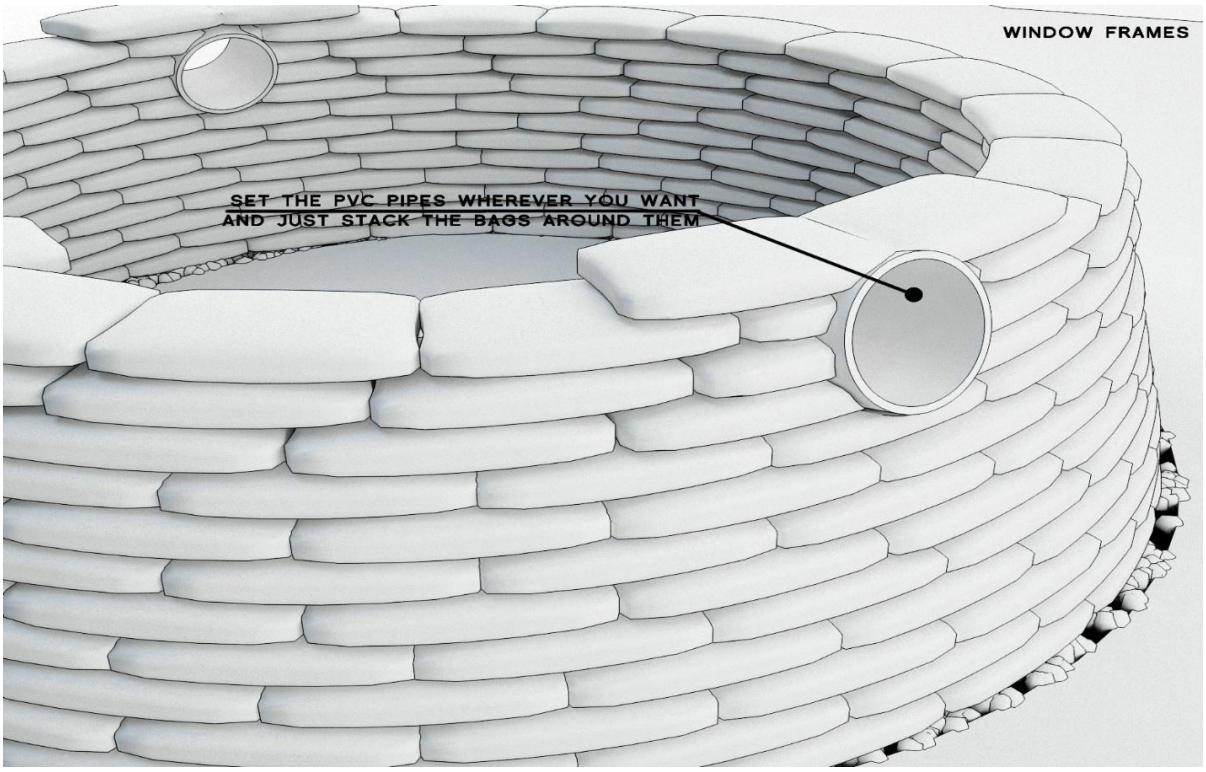

LAYING THE BAGS
THE BAGS CAN BE FILLED WITH LOCAL SOIL FROM YOUR SITE
POLYPROPYLENE BAGS

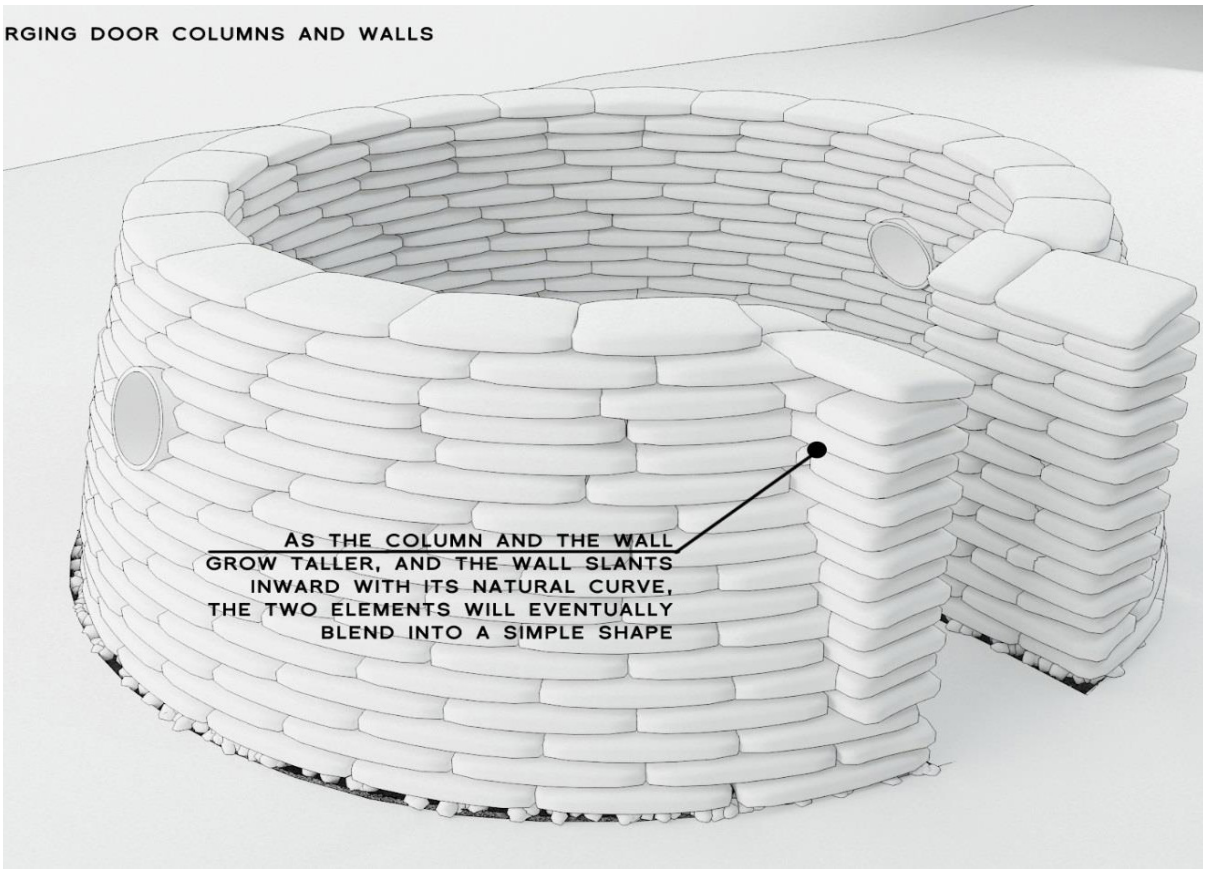

PLACING BARBED WIRE
THE BARBED WIRE HAS TWO FUNCTIONS:
1) IT HELPS LOCK THE BAGS TOGETHER
2) IT HELPS RESIST ANY TENDENCY FOR THE WALL TO EXPAND OUTWARD WITH THE WEIGHT FROM ABOVE.
THIS WIRE SHOULD BE PLACED BETWEEN EVERY COURSE AS THE WALL GOES UP


ADDING MORE COURSES
THE BAGS SHOULD OVERLAP IN A BRICK-LIKE PATTERN AS THE WALL GOES UP

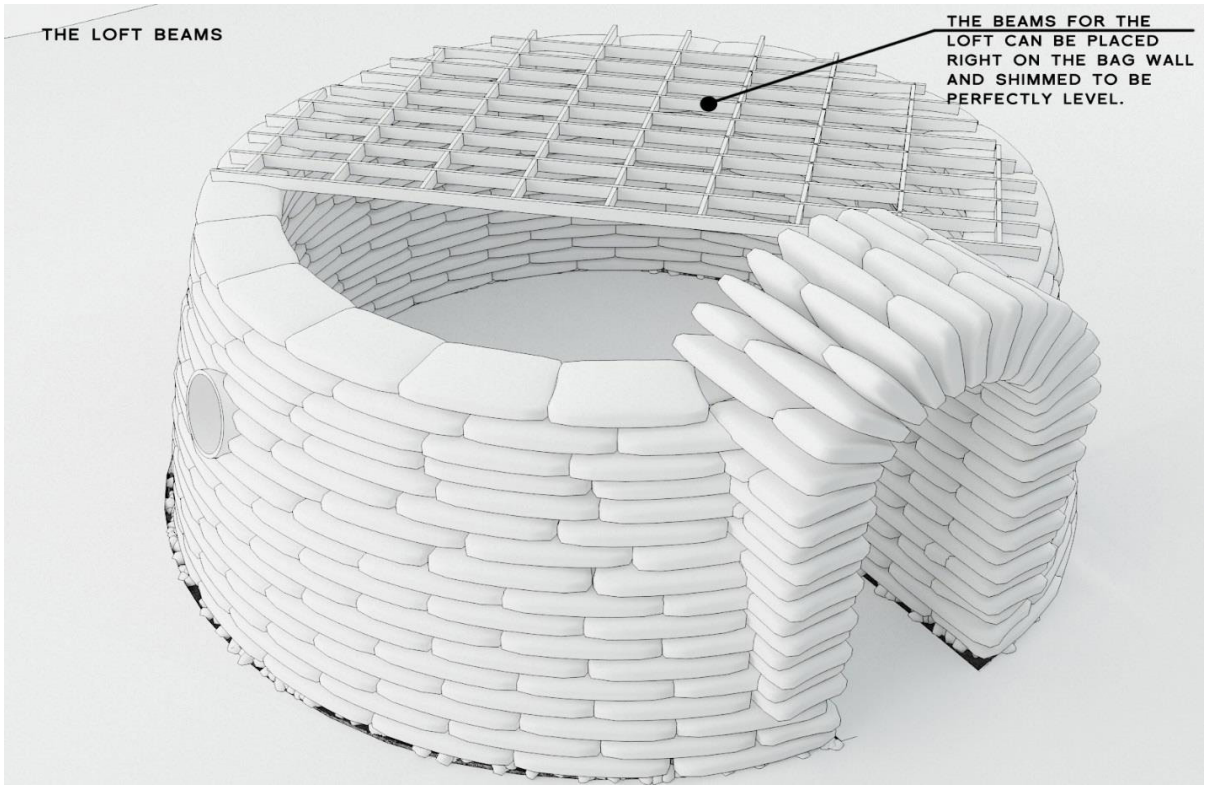

ADDING MORE COURSES
BAGS OVERLAPPING IN A BRICK-LIKE PATTERN AS THE WALL GOES UP

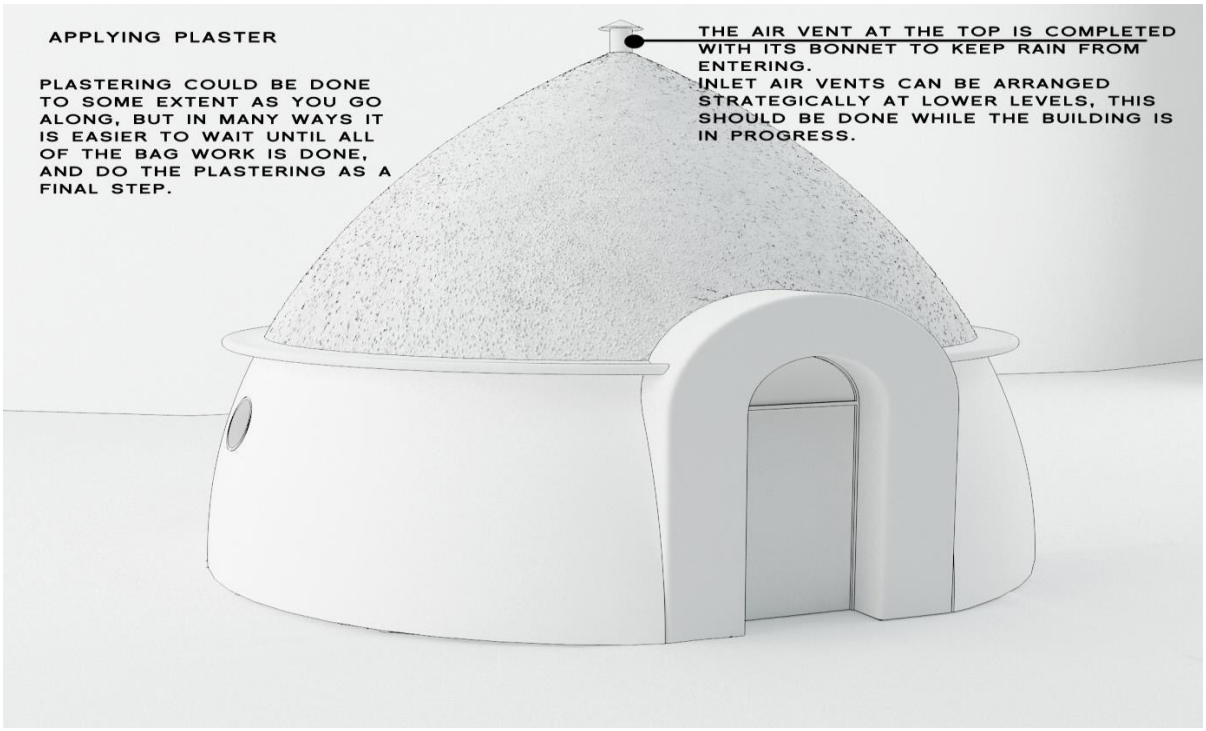

DOOR AND WINDOWS POSITIONS
SPACE FOR THE WINDOW FRAME
SPACE FOR THE WINDOW FRAME
ENTRANCE COLUMNS


WINDOW FRAMES
SET THE PVC PIPES WHEREVER YOU WANT
AND JUST STACK THE BAGS AROUND THEM


RGING DOOR COLUMNS AND WALLS
AS THE COLUMN AND THE WALL
GROW TALLER, AND THE WALL SLANTS
INWARD WITH ITS NATURAL CURVE,
THE TWO ELEMENTS WILL EVENTUALLY
BLEND INTO A SIMPLE SHAPE


THE ARCH FORM
THE FORM FOR THE ARCH WAS MADE WITH TWO PIECES OF PLYWOOD CUT TO THE RIGHT SHAPE.
THE FORM CAN BE USED OVER AND OVER FOR ANY ARCH OF THIS SIZE.
THE BAGS ARE PLACED IN SUCH A WAY THAT THEY RADIATE OUTWARD, AND SHOULD BE TAMPED INTO PLACE.


THE LOFT BEAMS
THE BEAMS FOR THE LOFT CAN BE PLACED RIGHT ON THE BAG WALL AND SHIMMED TO BE PERFECTLY LEVEL.


APPLYING PLASTER
PLASTERING COULD BE DONE TO SOME EXTENT AS YOU GO ALONG, BUT IN MANY WAYS IT IS EASIER TO WAIT UNTIL ALL OF THE BAG WORK IS DONE, AND DO THE PLASTERING AS A FINAL STEP.
THE AIR VENT AT THE TOP IS COMPLETED WITH ITS BONNET TO KEEP RAIN FROM ENTERING.
INLET AIR VENTS CAN BE ARRANGED STRATEGICALLY AT LOWER LEVELS, THIS SHOULD BE DONE WHILE THE BUILDING IS IN PROGRESS.


FINISHING THE FIRST PLASTER COAT
PLASTERING IS AN ACTIVITY WHERE HELP IS ALWAYS WELCOME. IT DOESN'T TAKE MUCH EXPERIENCE TO BE ABLE TO DO IT.