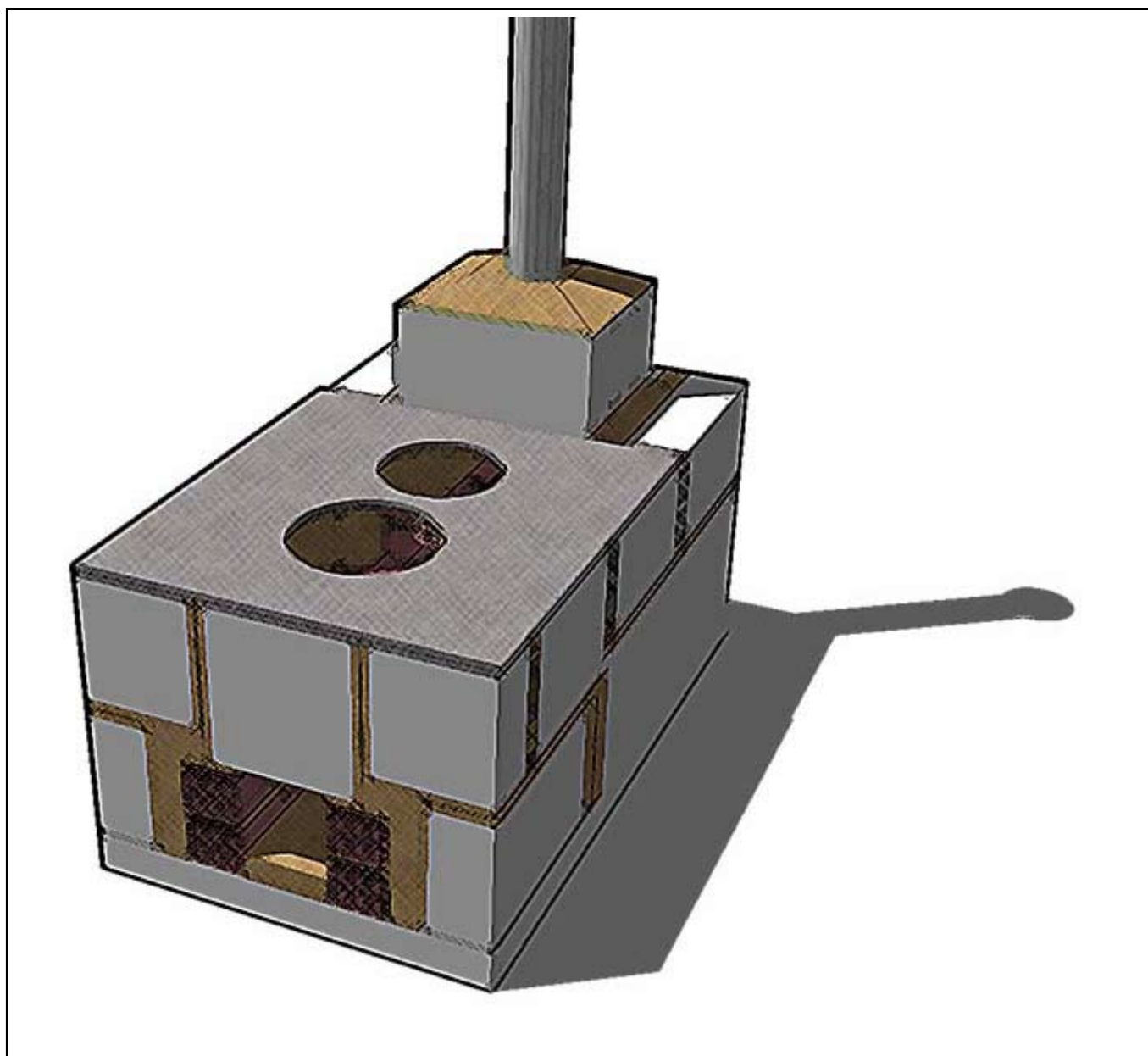




2013



# Peace Corps Guide to Improved Cookstoves

Project Considerations  
Construction Guide  
Monitoring Strategies

## **Peace Corps Guide to Improved Cookstoves**

The manual design is based in part on the Mejorada Familiar Pichqa from GIZ.

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Peace Corps Peru  
Vía Láctea #132  
Lima, Perú  
Phone: (511) 617-2200  
[www.peacecorps.gov](http://www.peacecorps.gov)

Cooperación Técnica Alemana – GIZ  
Prolongación Arenales #80  
Lima, Perú  
Phone: (511) 422-9067  
[giz-peru@pe.giz.de](mailto:giz-peru@pe.giz.de)

### **Authors:**

Dan Restivo, Peru 16  
Brian Liberatore, Perú 18  
Will Jensen, Peru 18  
Greg 'Goyo' Plimpton, Peru 18

Lima, Perú



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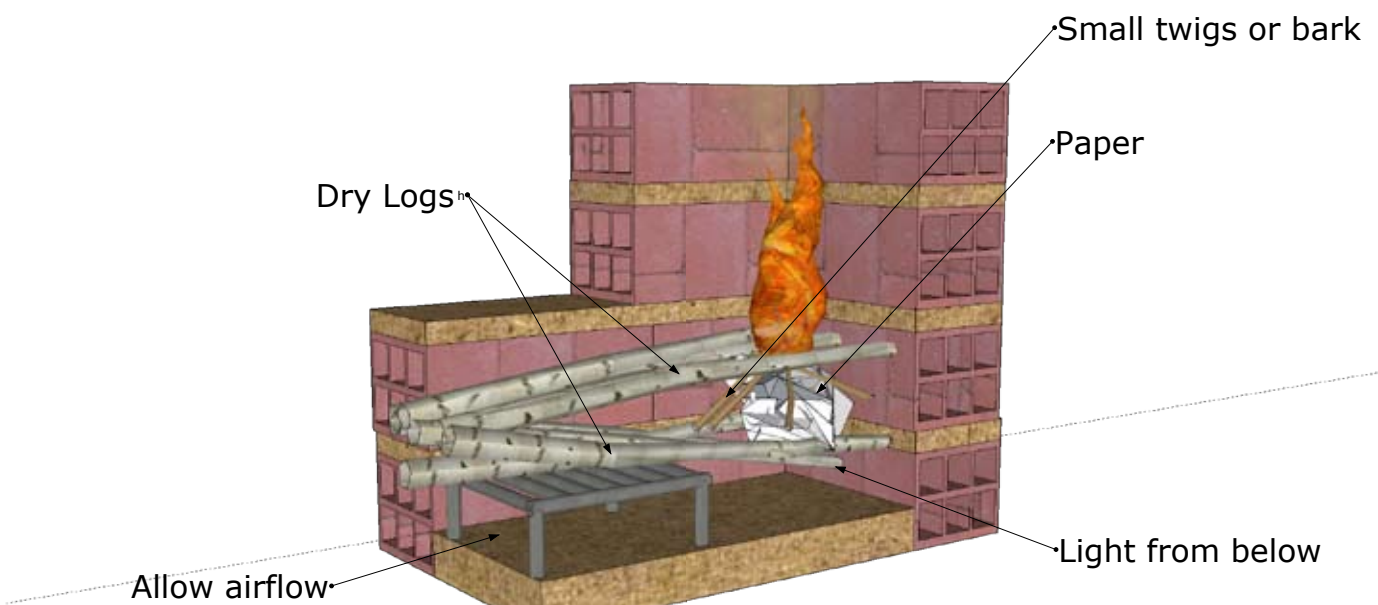
# PRE-CONSTRUCTION

## Feasibility and Appropriateness

The heart of any Volunteer activity is capacity building, with an ultimate aim for changed behaviors. As Volunteers and their partners plan promotion and outreach efforts, they have to consider behavior change concepts and strategies. Before beginning a Cocinas project, there are several factors that a PCV should consider and review with potential users. While cooking on a Cocina Mejorada has many advantages, it also requires significant **behavioral changes** for the user.

Cooking techniques on a cocina mejorada are very different from cooking on an open fire. The front pot will get hotter and boil water faster than on an open fire, while the back pot will not perform as well. Cooking times will have to be changed accordingly. Instead of simply moving a pot to the side of an open fire to “turn down the heat”, some wood must be removed or pulled back from the fire box of a cocina mejorada to reduce heat.

In addition, starting and tending a fire in a cocina mejorada requires change in technique. A smaller fire is started in a recessed firebox. Paper and fine kindling and smaller wood sticks (leña) are set in the firebox as shown below.



It is easier to light the fire with a long, fine wooden “match” (end dipped in kerosene – optional). Pots should be in place before the fire is lit to avoid excessive smoking.

As the fire gains strength, larger wood (up to 3 cm diameter) can be added, but never fill the entire entrance to the firebox, as that will choke the fire. The ends of the wood will burn hot and quickly, and must be pushed forward into the fire box every 10 minutes or so. This is a large change from the “set it and forget it” tending of an open fire. For best results always use dry wood, although a quick dip of the wood in kerosene can aid fire starting. Also, a “supladore” – a long tube, with which you can blow on the fire, can also assist fire starting.

A cocina mejorada also requires use of smaller diameter firewood than is used in open fires. 3cm (about 1 1/2”) diameter wood is the maximum size recommended. Large wood will not burn as hot or efficiently. This is a **critical change**, that must be made. As with any firewood, it should be kept covered and dry and raised up off the ground.



Finally, the Cocina Mejorada requires more maintenance than an open fire pit. Ash must be removed from the Fire-box after each use and from the upper heat chamber regularly. The chimney must be cleaned of soot and creosote build-up (suggested every month) to maintain efficiency and prevent chimney fire. Any breaks in the body of the Cocina or the losa should be repaired as soon as they appear.

Failure to accept and adopt these behavioral changes has caused many cocina mejoradas to be abandoned. Being clear on the needed changes from the start and performing training and follow-up on the changes once the cocina is built will ensure a good cooking experience for the user.

Consideration should also be given to the circumstances where a cocina mejorada will be most appropriate. Families currently cooking indoors on an open fire will benefit most from a cocina mejorada, especially families with small children as they tend to be more susceptible to respiratory illnesses. Generally, homes where gas is already the main cooking fuel should be avoided. The anticipated outcome of cocinas projects is that the beneficiaries use their cocina for at least 50 percent of household cooking needs, or in other words, at least to prepare lunch. Therefore, families that currently use gas for most cooking needs, and likewise families that do not have access to reliable wood supply, are generally not considered ideal beneficiaries.

## **Promotion Strategies**

Keeping in mind the feasibility of a project, a volunteer will often need to promote the idea of cocinas. Some communities have experiences with cocinas – both positive and negative. For other communities, the concepts and certainly the models in this manual may be unfamiliar. Please see the **PROMOTIONAL BROCHURE** on the following page for a basic rundown on the advantages of a cocina.

A great way to promote the cocina mejorada in the PCV’s community and help get the project off the ground is to build a pilot cocina in a highly visible location. In the past, volunteers have built these in comedor populares, vaso de leches, local comunales, and even in their host families houses. The primary advantage to having a pilot cocina up and running in starting the project is that it will allow the PCV to do real demonstrations as opposed to just using pictures and drawings, and community members who use it will promote its advantages amongst themselves.



Cuerpo de Paz - Perú  
Programa de Agua, Saneamiento e Higiene

# La Cocina Mejorada

## Salud:

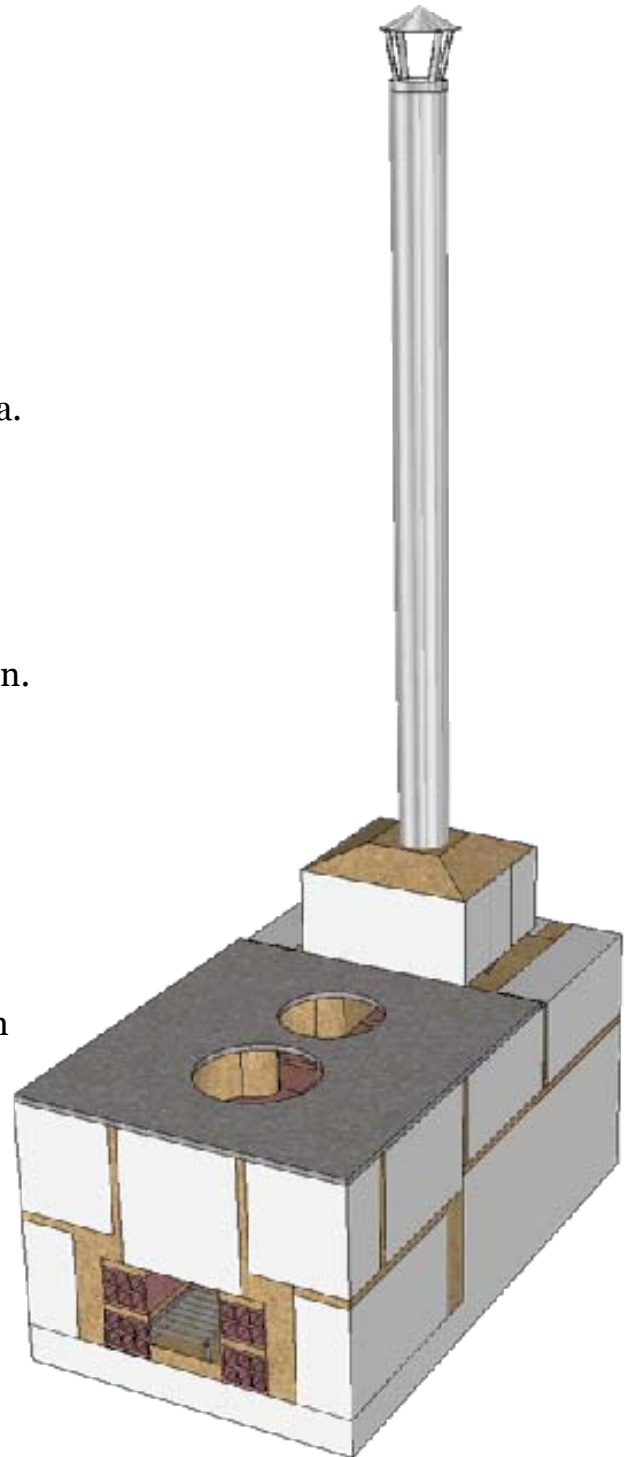
- Reduce los problemas respiratorios y oculares.
- Menor riesgo de sufrir quemaduras.
- Evita la contaminación al interior de la vivienda con humos tóxicos.
- Facilita las labores domésticas y mejora la higiene de la cocina.
- No expulsa el humo al ambiente de la cocina.

## Económico:

- Mejora la economía familiar por el uso racional de leña.
- Ahorra en un 40% el material de combustión.
- Reduce el tiempo de cocción de los alimentos.

## Social:

- Mayor comodidad al momento de preparar los alimentos.
- Evita la mala posición y permite cocinar con facilidad e higiene.



## The traditional cocina

The following represent the principle problems with a traditional fire:

- ▶ Due to inefficient combustion, an open fire produces more smoke
- ▶ The smoke is concentrated in the room that is used to cook, especially in instances where there is poor ventilation.
- ▶ The person cooking is in an uncomfortable position. Working for long periods of time in a hunched position can damage the back.
- ▶ The pots on an open fire are poorly supported, thereby increasing the risk of spills or burns.
- ▶ The heat escapes in all directions.
- ▶ An open fire uses at least three times the wood necessary with a cocina mejorada.



These issues can seriously damage one's health. The risk is especially grave for women and children.

## The cocina mejorada

The models offered in this manual offer the following benefits:

- ▶ Smoke leaves through the chimney improving the quality of air within the house.
- ▶ The person cooking is better positioned.
- ▶ The heat from the fire stays concentrated around the pots.
- ▶ The cocina uses about a third of the wood of a traditional open fire as the cocina better uses the energy in the firewood. This can save money.
- ▶ The fire burns hotter, which means there is less smoke.
- ▶ There is a lower risk of burns.
- ▶ The cocina can cook much faster than a traditional fire.
- ▶ **The cocina will protect the health of the family.**





# PROJECT DESIGN

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## **Project Phases:**

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A common problem PCVs in previous years have run into when trying to implement a cocina project in their communities is that they try and include too many families in their project. Volunteers have tried to do projects that include upwards of 50-100 families and each family does not receive the attention needed whether it is in the training or monitoring sectors of the project for it to truly be successful and sustainable. One solution to this problem is to break the project into two to three phases.

### **Phase 1:**

Building a few pilot cocinas in several locations in site where the project will be taking place. This can be viewed as the introduction phase of the project where the community gets their first taste of what the cocina is.

### **Phase 2:**

First group of participants in the cocina project. It has been observed that projects with 15-30 families are easiest to manage and result in the highest rates of passing cocinas after 4 months of use. With a more manageable amount of families volunteers can spend more time doing individual house visits to ensure that cocinas are being used and maintained properly.

### **Phase 3:**

Second group of participants in the cocina project. This second group of families could have been selected at the same time as the first group of families or they could have been found upon completion of the cocinas from phase 2. What generally happens after a cocina project is that the people who did not participate in the first project suddenly see what other community members have and assuming that that their neighbors cocinas work properly they realize what they are missing out on. Volunteers can and should take advantage of this self-generated interest in the cocina by the community to try and include another group of families in a phase 3 of their cocina project.

One very important factor PCVs need to consider when taking on a project in several phases is the time frame with which they are working in. Obviously breaking a project down into three distinct separate mini-projects will result in a much larger time frame. Breaking down a project into several phases (specifically phase 2 and 3) is designed primarily for larger communities where a majority of the community members will not be included in the first group of participants in the project.

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## **Financing**

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As with any project facilitated by a PCV, community and other local investment is essential for promoting the sustainability of the project. With improved cookstoves projects, many PCVs have been successful in obtaining in-country financing and support for the greater part of project costs, well over the 40 percent minimum required by outside grants. This section aims to provide examples of some the ways that families, municipalities, and private companies and NGOs can contribute to the project, as well as a summary of the outside grants that PCVs typically apply for in order to cover any remaining costs.

### **Family Contributions – Cash**

With the right kinds of promotional strategies, PVCs have been able to “sell” the improved cookstove technology to families, convincing them to contribute anywhere from S/. 50 to S/.80 cover certain costs. Their contribution may cover, for example:

- Labor and a few materials such as bricks and cement, or
- The cost of the metal parts that need to be replaced periodically, such as the chimney and the metal grates that hold up the wood and the pots, reasoning that if they cannot pay for these materials currently, than they will unlikely pay for their replacement.

While many of the families that we are working with have a low income, almost all of them can come up with S/. 70 over the course of a month or two. In some cases, the families that at first were not willing to pay later signed up for a second phase of the project after seeing how well the cookstoves performed. A smaller group of beneficiary families that have invested their own money in the project is much more desirable and sustainable than a large group of families that are only giving adobe bricks and mud. And with a smaller group of families, PCVs are much more likely to dedicate the time necessary for training and follow up on use and maintenance.

With any cash contribution, it is especially important to have the families **sign a contract** with clear description or list of what their money will be used for, and also what will be covered by any other party, such as the municipality or the PCV through an outside grant. The PCV should maintain the original contracts and leave a copy with the family.

### **Family Contributions – Local Materials**

Regardless of whether a family is giving cash, it is highly recommended that families be required to provide the following materials:

- 6-7 carretilladas (wheelbarrow-fulls) of mud for laying adobe bricks. The dirt ideally should be sifted to remove rocks, glass, or other foreign objects.
- Water for mixing concrete (9 liters)
- Enough water for soaking bricks.
- 1 bucket of ash.
- 1 bucket of estiércol (cow, horse or donkey manure).

It is also highly recommended, especially if families are not contributing money to the project, that families provide the following local materials:

- Adobe bricks (quantity varies depending on brick and cookstove size)
- 1/2 bucket (9 liters) of clean crushed rock (<1” in diameter) for mixing concrete
- 3/4 bucket (15 liters) of clean coarse sand for mixing concrete

In some cases, PCVs have had families purchase themselves other materials, such as cement and bricks, instead of giving money to the volunteer to purchase these materials. This however, may cause delays in the project if families are not timely in their purchases.

### **Municipal Contributions**

In many cookstoves projects, PCVs have turned to their alcaldes to request the funding by writing a basic project profile and presenting it to the municipality along with a solicitud clearly requesting funding for some simple project costs. Some of the most common and easily assumed costs covered by the municipality are, for example:

- Transportation
- Aggregate materials
- Cement
- Bricks
- Labor

In this regard, it is important to be realistic about the role of the municipality and how quickly and reliably they can fulfill their part of the agreement. And as always, make them sign a formal agreement of what they will contribute, with deadlines for when they need to complete it by. In other cases PCVs have received funding by their municipalities for labor and all non-local materials.

### **Private Companies and NGOs**

In some sites, especially in the coast, there are private companies that may employ a significant number of potential cookstove beneficiaries. In these cases, some volunteers have been able to receive funding for a few simple materials, such as cement, bricks, etc. First, an introductory meeting should be arranged with the company where the PCV describes the project and the benefits that it would provide to the workers in the area. During the meeting, the PCV can present a copy of the project profile, along with a formal solicitation for funding. Even if a company does not employ many workers in the beneficiary community, they may choose to support the project as a means of improving public relations or as part of a *programa de responsabilidad social*. As another incentive, a PCV may offer a space on the cookstove for the company to put their logo.

In some sites there are local NGOs already active in cookstove promotion and PCVs have the opportunity to complement their projects or provide technical assistance. In other cases, PCVs have coordinated with volunteer groups or NGOs from the U.S. such as Engineers Without Borders to realize improved cookstove projects.

### **Peace Corps Small Grants Program**

Before considering applying for a small grant through the Peace Corps, it is essential to have thoroughly reviewed the Peace Corps Small Grants Program Volunteer Handbook ([www.peacecorps.gov/ggm/smallgrants/](http://www.peacecorps.gov/ggm/smallgrants/)), which contains much more detailed information on the requirements and guidelines for applying to the grants mentioned in this section. The following is a list of the three most common outside sources that PC/Peru works with to fund community-based improved cookstove projects:

- 1.** Small Project Assistance (SPA) – SPA funds are provided by the U.S. Agency for International Development (USAID) for small-scale, self-help activities. PCVs may apply for up to \$2,000 USD to subsidize their cookstove project, however, they must do so by also incorporating into their project the objectives outlined in either the Sustainable Landscaping or the Clean Productive Environment focus areas of the SPA program. For more information, PCVs should consult their APCD or PCVC.

- 2.** Peace Corps Partnership Program (PCPP) – PCPP is a mechanism created by Peace Corps to channel private donor funds to PCV-sponsored projects. Donors can be individuals or groups (e.g. family, friends, past colleagues, schools, churches, Returned PCV groups, private companies). PCVs may apply for up to \$3,000 USD to subsidize their cookstove project, and while the objectives of the project are more flexible, they must address the indicators in the WASH framework.

Energy and Climate Partnership of Americas (ECPA) – ECPA is a U.S. Government fund that, as

3. of 2011, PCVs have access to through the Renewable Energy committee. The goals of ECPA are:
- Increase municipal, school and communities' awareness and knowledge of climate change, energy efficiency, renewable energy, and mitigation and adaptation to climate change;
  - Enhance the availability of small business and micro-financing to support communities' abilities to implement, access, and maintain renewable energy technologies;
  - Support community-led energy efficiency, renewable energy and climate mitigation and adaptation projects.

It is important to note that when working on an ECPA grant, data must be gathered both before and after the cookstove project for ECPA specific indicators that are different from those reported in the Volunteer Report Form (VRF). These indicators are:

- Estimated average monthly savings in kilograms of fuel wood used per household
  - » Avg. monthly savings per household (kg) = Avg. wood used per month after construction (kg) – Avg. wood used per month before construction (kg)
- Estimated average monthly savings in hours spent gathering wood (broken up by adult male, adult female, child male, child female)
  - » Avg. monthly savings gathering wood (hours) = Avg. hours spent per month after construction – Avg. hours spend per month before construction

ECPA grants are limited to a maximum of \$1,000 USD per PCV. Like SPA and PCPP grants, the community must contribute at least 40% of the total project cost. Interested PCVs should contact the current head of the Renewable Energy Committee for more information.

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### **The Ideal Beneficiary**

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The volunteer should keep in mind several criteria when selecting cocina recipients. Grant funds are designed to help families whose health will benefit from a cocina and who would use it but perhaps cannot afford it. Volunteers should look to select families based on need as well as interest. The families need to contribute to the cocina's construction in labor, cash, materials, or all three. Without an investment, families are likely to undervalue the cocina and not use it.

Working with the health post is a great way to identify families and also share some of the burden. Criteria for selecting families include:

- Is the family cooking meals on open fire indoors?
- Does the family do more than half of their cooking with wood (cooking lunch using wood qualifies as using wood for more than half of their daily cooking)?
- Is the kitchen adequately ventilated?
- Are there young children in the house?

Inevitably, there will be families who want cocinas but don't make the cut and others on the list that perhaps aren't the ideal candidates. Don't worry. The purpose of the project is to create demand for the cocinas and to train members of the community in their construction. A properly functioning cocina is a powerful advertisement even if it is not serving a family with the greatest need.

The following application offers a template for selecting families.

# Aplicación para las cocinas

El propósito de este proyecto es dar los recursos a familias para que puedan obtener cocinas mejoradas en sus casas, evitando la presencia del humo en casa para mejorar la salud familiar. Hay que ser familias que no pueden alcanzar el dinero sin ayuda para construir las cocinas.

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Nombre y Apellidos de la cocinera

DNI

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Dirección

Número de Teléfono

## Familia

Número de miembros \_\_\_\_\_

Número de niños menores de 8 años \_\_\_\_\_

Número de bebés menores de 2 años \_\_\_\_\_

## Cocina actual

¿Qué tipos de cocinas tiene (gas, leña)? \_\_\_\_\_

¿La cocina esta bajo techo? \_\_\_\_\_

¿Hay ventilación adecuada? \_\_\_\_\_

## Quien cocina

¿Quién cocina la mayoría de comida en la casa? \_\_\_\_\_

Edad de la cocinera: \_\_\_\_\_

¿Cual niños están presentes cuando cocina?

Ponga las edades (i.e.: 2,8,14) \_\_\_\_\_

## Ingresos

Cual son las profesiones de los miembros de la familia.

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¿Qué es el ingreso mensual (promedio) de la familia? \_\_\_\_\_

# CONSTRUCTION

The following construction guide is designed to help the volunteer, hence it is in English. The volunteer will also have **construction documents**, which can be printed separately and given to a contractor.



## Location of the cocina mejorada

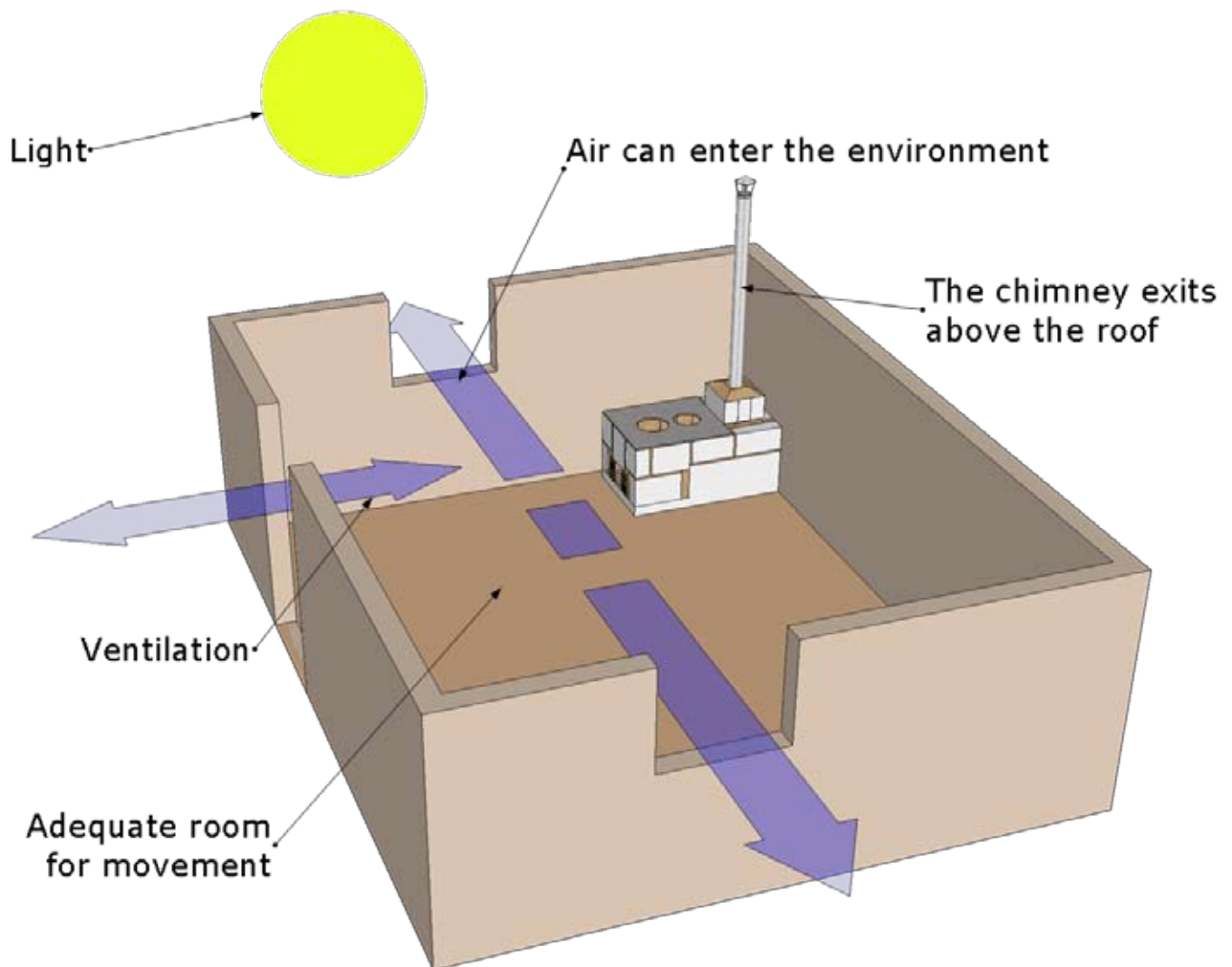
A commonly overlooked yet extremely important decision each family needs to make is in regards to the location of their new cocina mejorada. For many families this will be in the location of where they are currently cooking, which is completely fine and should be encouraged.

However, a common desire that has been expressed to volunteers in previous projects is that families sometimes want to build a new kitchen around their new cocina mejorada in a completely different location from where their existing kitchen stands. This can be fantastic news as long as the kitchen is already built before the construction of the cocina mejorada begins. The major problem with building a cocina in a location that will eventually be used for the future kitchen is that until that kitchen is built, the families will more than likely not use the cocina and it will essentially be abandoned.

An easy solution to this problem is for the volunteer to do a house visit before allowing the family to participate and making sure that they understand the need for the new kitchen to already be constructed. When deciding upon the specific location inside of a house where the new cocina will be built volunteers must be sure that there is proper ventilation and adequate lighting.



In determining where to put the cocina, keep in mind the following criteria:



### **Light**

There needs to be sufficient light, ideally through a window.

### **Air:**

The space should allow for sufficient movement of the air.

### **Ventilation:**

Despite the fact that there will be little smoke the room should still have adequate ventilation.

### **Location:**

There needs to be room for people to move about the room.

### **Chimney:**

The chimney must exit above the roof to expel all of the smoke.

# Logistics of Construction

The main goal behind the logistics section of this manual is to help volunteers get an idea as to what to expect during the construction phase of their cocina project and to help them manage it with as little turbulence as possible. Being logistically organized will allow volunteers to stay on their proposed budget and timeline.

## Transportation-Distribution of Materials:

Getting the materials needed for the construction of the cocina from the producer to each individual participant's house can be one of the most logistically complex aspects of any cocina project. For some volunteers this could be as easy as hauling adobes across the street, however for others it could mean loading up a cart pulled by a donkey and taking them up a muddy road to an individual's house three hours from town.



For this reason it is important for volunteers to know exactly how every piece of material is going to arrive at its desired location and how much it will cost. A common yet highly UN-RECOMMENDED practice that volunteers have been known to do when creating their project budgets is to simply put an arbitrary number down for the transportation costs without actually verifying them. This can destroy a project.

Transportation of materials is a great opportunity for volunteers to solicit municipal help. Most municipalities are in possession of a truck of some sort and volunteers in the past have used this truck (with municipal chauffeur) to bring materials from capital cities to their sites or from their sites to the more isolated families. Listed below are a few things to consider when planning out the transportation of materials.

- COSTS COSTS COSTS! Is it per truckload? Per day? Per hour? Does it include gas or is that extra?
- Is the driver familiar with where you are going? Will the vehicle you are using even be able to get to where you want to go?
- Is it feasible to even distribute all of the materials in one day?
- If you are relying on the families to pick up the materials from a central location how will they carry them back to their houses?

Once the materials have been distributed it is important that each family properly store and care for them until the cocina is constructed. A great way to ensure that each family does this is to get them to sign for their materials and make them sign an agreement that if anything goes missing or is damaged that they will either pay to replace it or will lose the opportunity to participate in the



project. This can be included in the initial project contract agreement with each family, however when delivering the materials the volunteer should give each family a friendly reminder.

### **Construction Schedule:**

The construction schedule for any cocina project will vary greatly from site to site, and the primary factor that affects this schedule will be the location of each family that is participating in the project in relation to one another. Having families clustered in one town is ideal, however not always realistic. One of the best ways to schedule the actual construction of the cocinas is to draw out a map of the town/district displaying the location of each participating family. On this map corresponding travel times between each family should be displayed. From here the volunteer and the albañil(es) should sit down and determine in what order the cocinas will be built taking into account how the albañil prefers to build a cocina and any specific preferences voiced by the families over a certain day that construction absolutely cannot occur. Due to the fact that the losa of the cocina must be poured at least 24-48hrs before it can be installed on top of the cocina, many albañiles prefer to pour them in the morning first thing and then build that days cocina(s). In general a normal albañil can build two cocinas per day. This is assuming travel time between them is less than 30 minutes. Paying your albañil per cocina is an easy way to motivate them to build 2 a day.

In order for the construction process to run smoothly it is important for the volunteer to train the families on proper site preparation before the albañil arrives to build the cocina. This includes but is not limited to:

- Adobes and pandereta bricks are moved to a location close to where the cocina will be built.
- Barro is mixed and ready to be used.
- Water is either poured in buckets ready to be used or a water source is located near the construction site.
- If albañil uses electrical tools volunteer needs to discuss with the family where the household power source is (if available).
- If family is providing someone to assist with the construction (mano de obra), volunteer must ensure that this person will actually be there at the designated time and date set for the construction.
- Volunteer must ensure that the house will be open for the construction team to enter.

### **Training:**

Deciding upon an albañil or maestro to use for a cocina project can at times be a rather daunting experience. In small towns it may seem like there are no qualified people and in a larger town there will be too many options to choose from. The good news is that the construction of cocinas is not a very complicated task, so virtually anybody can be trained to build them and having an overabundance of trained professionals allows the volunteer to use more than just one albañil for his or her project.

In general it is not recommended for volunteers to rely upon the Peace Corps to hold training sessions on the construction of cocinas for albañiles. In the past these training sessions have been hosted through ECPA, however the chances of the training session and your project lining up perfectly are rather slim so it is recommended for the volunteer to train his or her maestro(a) in their own site. The actual training of the worker(s) who will build the cocinas for the project can basically be done with the actual project cocinas being built in the participants houses. If the PCV decides to use a professional albañil then he or she will most likely be just directing them with dimensions and helping them understand the design.

If the albañil is not a professional than the PCV will more than likely have to work hand in hand with

them demonstrating the proper way to lay an adobe brick or how to get the cocina nice and level. Some people learn how to build the cocina after the construction of their first one while others don't fully grasp it until half a dozen cocinas are built. Once the maestro learns how to build the cocina up to the PCV standards it is not necessary to watch over them constantly and the volunteer can spend this free time making sure the next cocina's site is prepped and ready to go.

Here are a few main points PCV should consider when selecting/training/hiring a maestro:

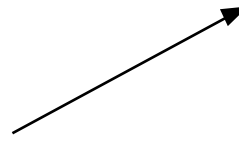


- Using somebody who has construction experience is recommended but not necessary.
- Training can be done as you go.
- Using more than one maestro allows the project to be more sustainable in the sense that once the PCV leaves there will be more than one person who know how to build and repair a cocina.
- Make sure the maestro signs a contract upon a set price per cocina and make sure he or she understands that if the cocina is not built up to the PCV standards they will not be paid.

# Materials list

## Tools

- Shovel
- Wheelbarrow
- Trowels
- Wire snips
- Tape measure (metric),
- Level (one with measurements on side is handy)
- Hacksaw or grinder for cutting metal and brick
- Drywall saw for cutting adobe or hammer & chisel
- Hammer
- Machete



**Note:** a course metal or green plastic scouring pad makes clean-up much easier. Also, a cup or small plastic tub is handy to wet surfaces. A long handle lighter is nice, also.

## Materials - Household Cookstove

Materials	Dimensions	Quantity
Construction Adobes	16cm x 26cm x 43cm**	27-30*
Bricks	9cm x 11cm x 23cm	32
1/4" Rebar	30cm	2
	76cm	3
	81cm	2
1/2" Rebar	45cm	4
Metal Mesh	76cm x 81cm	1
Metal Wire	1 meter	1
Cement		Quarter bag (10 kilos)
Mud	wheelbarrow	6-7
Sand		15 liters
Gravel	less than 1 cm diameter	9 liters
Ash		15 liters
Dry cow manure		15 liters
Water		Reliable source
Parilla (metal grate)	<i>see construction documents</i>	
Chimenea (chimney)	<i>see construction documents</i>	
Folded plastic sheet	80cm x 136cm	1
Metal reduction rings		2

## Materials - Industrial Cookstove

Materials	Dimensions	Quantity
Construction Adobes	16cm x 26cm x 43cm**	25-28*
Bricks	9cm x 11cm x 23cm	28
1/4" Rebar	30cm	2
	76cm	2
	83cm	2
Metal Mesh	76cm x 83cm	1
Metal Wire	1 meter	1
Cement		Quarter bag (10 kilos)
Mud	wheelbarrow	6-7
Sand		15 liters
Gravel	less than 1 cm diameter	9 liters
Ash		15 liters
Dry cow manure		15 liters
Water		Reliable source
Parilla (metal grate)	<i>see construction documents</i>	
Parilla de Sostén (supporting metal grate)	<i>see construction documents</i>	
Chimenea (chimney)	<i>see construction documents</i>	
Folded plastic sheet	80cm x 122cm	1
Metal reduction rings		2

\*The quantity of adobes naturally depends on their dimensions. Volunteers should have received an adobe calculator along with a digital version of this manual, which gives a rough estimate. Counting the adobes when building a pilot project would give a more accurate number.

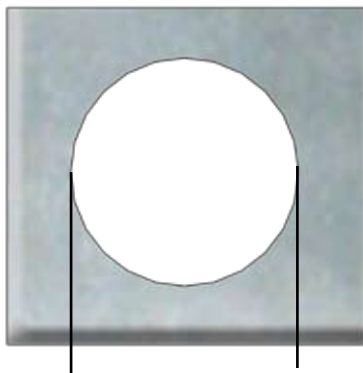
\*\*These dimensions represent the size of the construction adobes, which are common in the sierra. The coastal adobes are typically much smaller.

## Modifications and Adaptations

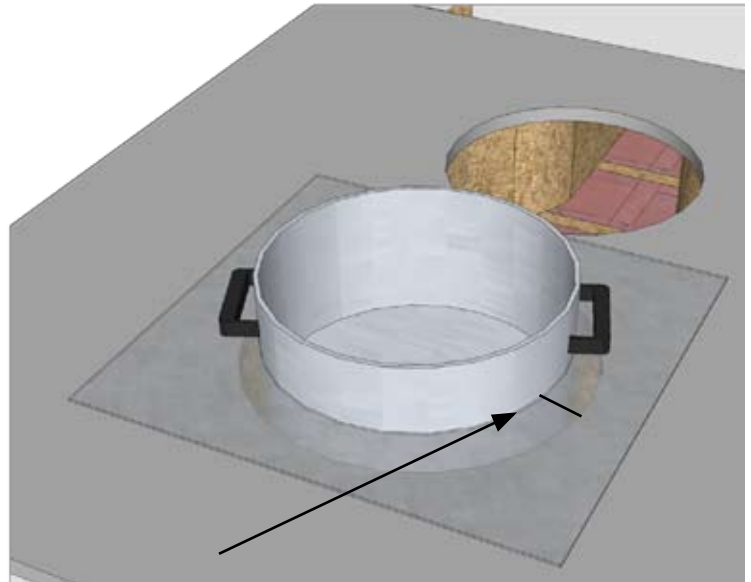
Each cocina is naturally personalized to the family's pot sizes and environment. Volunteers should keep the following modifications in mind while constructing cocinas.

### REDUCTION RING

The reduction rings are made from 0.55mm galvanized sheet metal. It allows the family to use smaller pot burners. Simply cut the dimension of the smaller pot into a square that is large enough to cover the larger burner.



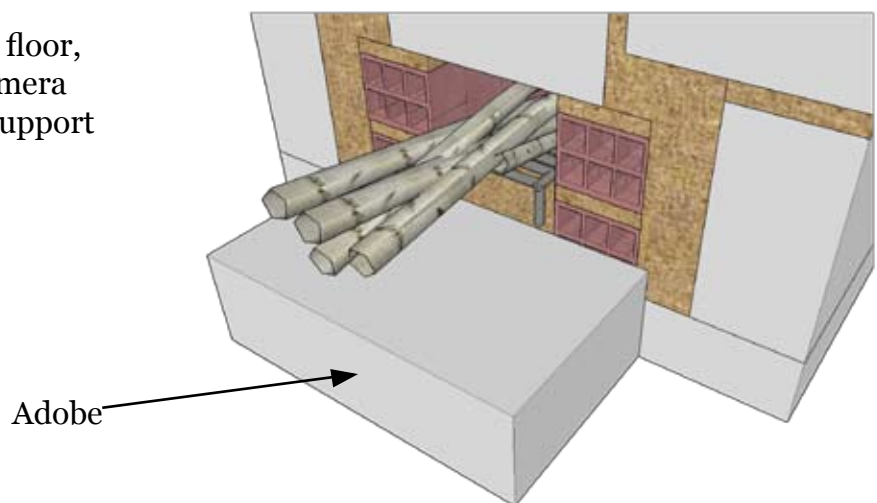
Dimension of the smaller pot



Notice that the ring covers the gap between the smaller pot and the edges of the opening in the losa

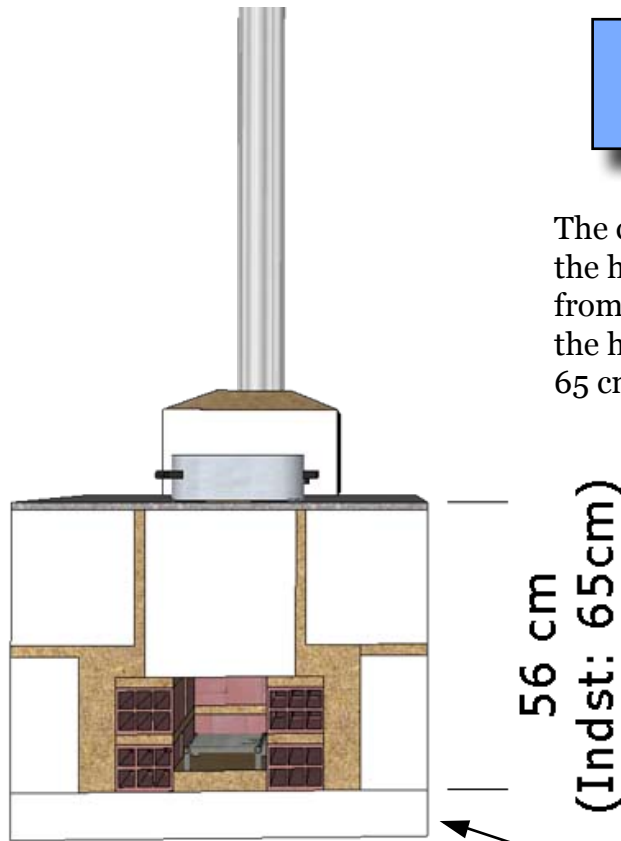
### BALCONY

If the cocina is elevated above the floor, an adobe placed in front of the camera will provide a useful platform to support longer firewood.



## COCINA HEIGHT

The cocina can be modified based on the height of the cook. Measure 56 cm from the top of the base to determine the height of the domestic cocina and 65 cm for the industrial cocina.

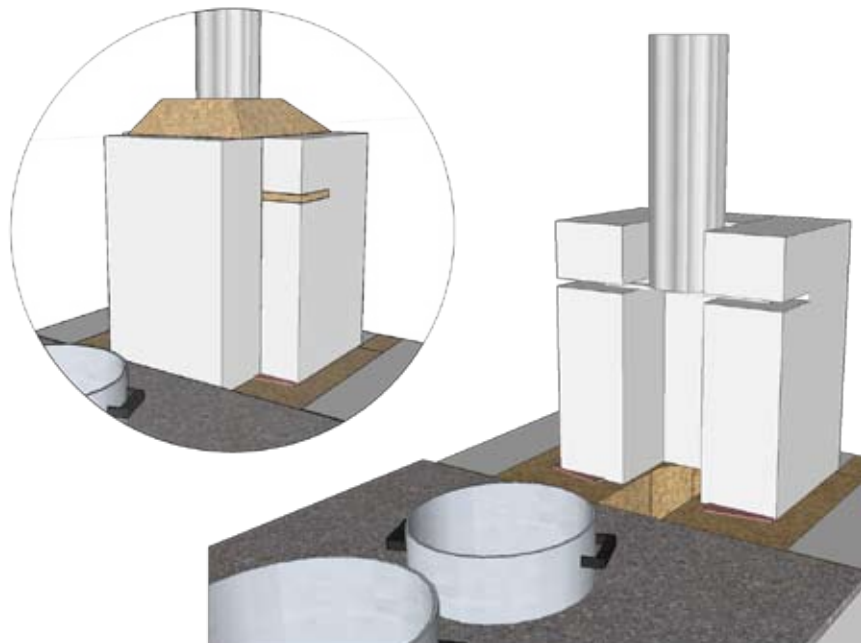


Base can be adjusted to meet the needs of the family

## CHIMNEY HEIGHT

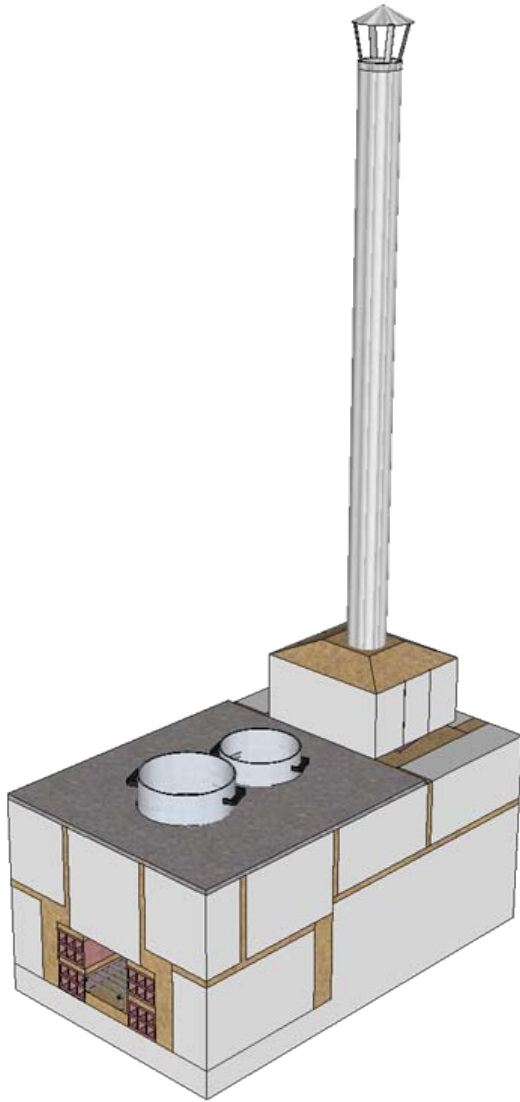
One can raise the chimney to accommodate a higher roof. Simply cut notches in two adobes in which to place the 1/4" rebar supports.

Fill in those gaps with mud. While the chimney can rest on several rows of adobes, consider using a longer chimney if the roof is exceptionally high.



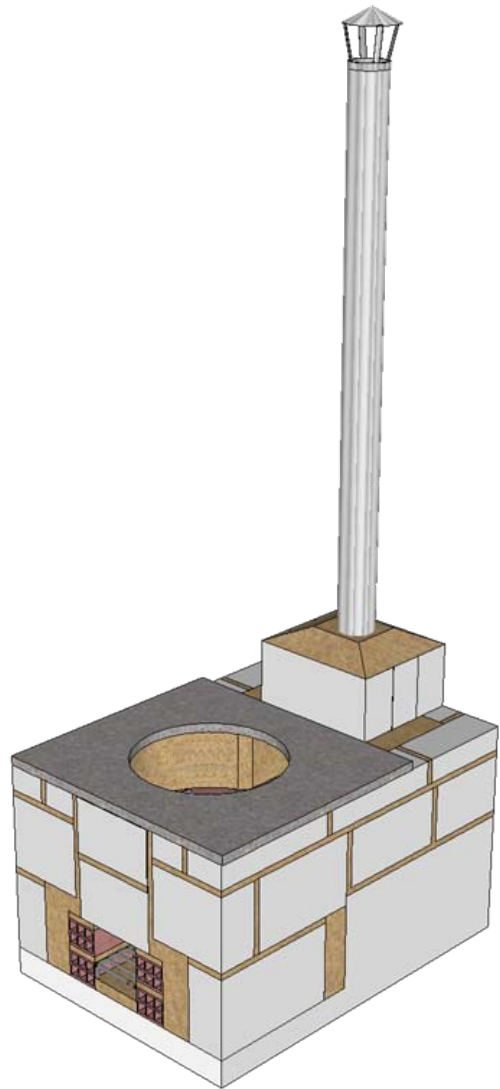
# Cocina Models

## Domestic



The domestic cocina accommodates two pots. The maximum diameter of the larger pot is 40 cm. The diameters of the two pots combined cannot exceed 70 cm.

## Industrial



The industrial cocina has a single burner for a large pot. The pot diameter typically will not exceed 50 cm. But the volunteer can modify the cocina to accommodate a larger pot.

# Domestic

## Construction of the Losa (Concrete Platform)

The losa is one of the most important and also one of the most visible aspects of the cocina. Be sure it is done well. The thickness of the losa is especially important. A losa thicker than 3 cm can affect the performance of the cocina.

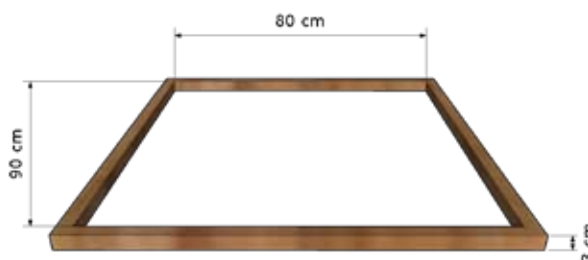
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### Instructions

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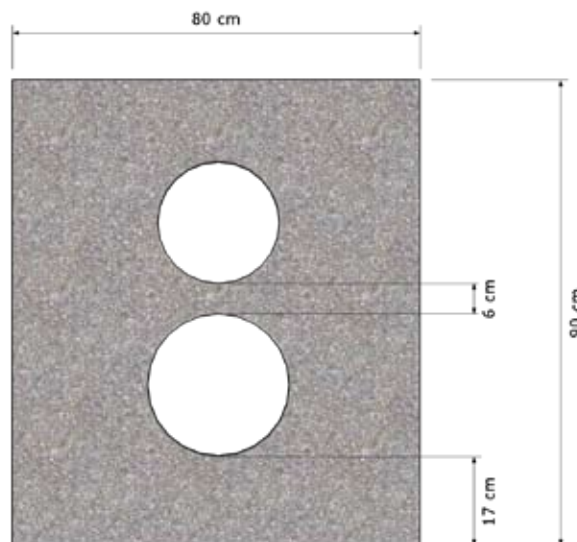
1. Find a place to cast the top. A smooth sheet of plywood (triplay) is also good. Last resort is to level an area on the ground. The smoother the surface, the better the top will look.
2. Locate the two pots that will be used in the cocina. The owner will not be able to use them overnight. The combined diameter of the pots cannot exceed 70 cm. The largest cannot exceed 40 cm.

### Wooden Frame



3. Wrap cardboard (cartón) or sheet metal (latón) around the pot bottoms (especially needed when pots do not have flat bottoms). If you use cardboard, prep it by scoring it vertically every 1/4" or so and then pulling it around a convenient pole. Either way, secure the strip with GOOD tape, so that it creates an extension of the pot sides, down to a flat bottom. (See "Options for Measuring Losa Openings.")

### Dimensions



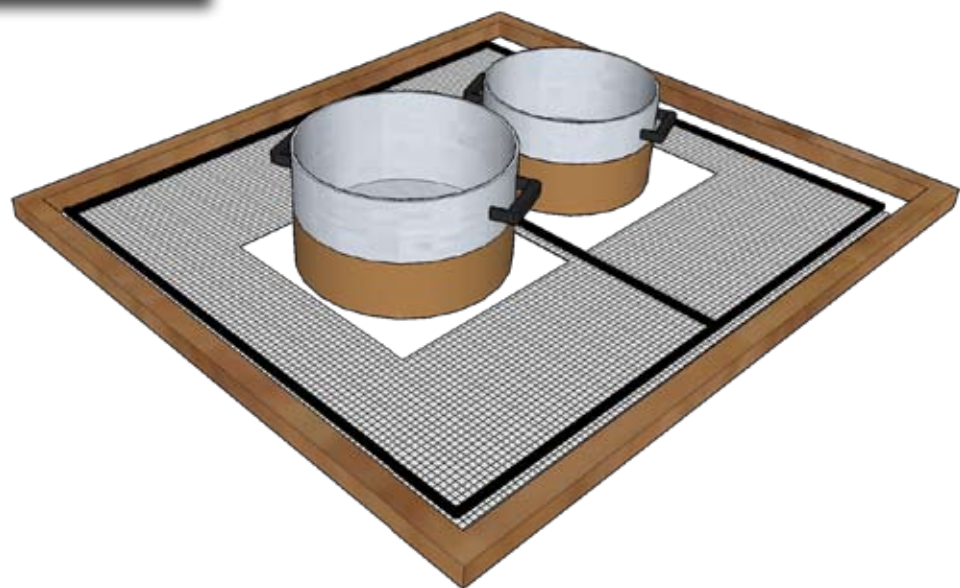
4. Trim the corners of the wire mesh (if needed) and lay it on flat surface. Place the pots in the center with the largest pot 17 cm from the inside edge of the frame and at least 6 cm between the two pots.
5. Cut squares in the metal mesh to accommodate the size of the pots. Leave about 2cm between the edge of the pot and the mesh.
6. Lay down the plastic and set the mold frame. If you use 4 pieces of wood, be sure they are square with a T square or by measuring equal distance between corners diagonally. Brace the frame with rocks or abobe, so it won't move during casting.
7. Center the wire mesh in the frame and place the wrapped pots in their holes. Place a large rock or adobe inside each pot to stabilize it. Scoot the mesh up the pot sides, so it will be out of your way during casting. If the pots have no handles, you can actually remove the mesh.



8. Mix the cement and gravel according to the specified mix. The drier the mix, the stronger it will be. But, with all the wire and rebar, it's not so important.
9. It is always good practice to oil the frame before casting. Vegetable or motor oil will do.
10. Gently trowel or scoop the concrete into the mold, until it is about 1/2 full, working concrete well into side and pot walls.
11. Lay the long rebar down each side and wiggle them down into the concrete a bit, but not to the bottom.
12. Slide the mesh down and work it into the mix, as well. Throw out any small stones which are in the way.
13. Fill the form to the top and work in the 3 short rebar at each end and center.
14. Concrete should be worked and wiggled to get all air voids out. The pots can also be CAREFULLY rotated. Smooth the top with a wet, clean trowel to get a nice slick surface. You'll also get a slicker looking surface if you sprinkle some cement powder over the completed surface and smooth it in.
15. Wet the two rice bags lightly and place them over the completed casting. Instruct the user to sprinkle water or otherwise keep the bags moist. The point is to not expose the concrete to direct sun or heat. It wants to cure slowly.
16. Allow the concrete to cure for at least 24 hours and remove the pots and form frame. Remove the plastic and place in a shady spot and allow to cure for another 24 hours before installation.

### **Concrete Mix**

6 liters of cement  
15 liters of sand  
9 liters of gravel (less than 1 cm diameter)  
9 liters of clean water



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## Options for measuring the losa openings

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Measuring the losa openings can be a challenge. Keep in mind that the opening needs to be the size of the pot diameter 7 cm from the bottom. There are several techniques for achieving this. The results are typically better with a professional.

### Important:

- In all instances the pots should be removed after four or five hours. At this point the concrete is much easier to cut or smooth.
- An angle grinder is ideal.



### Materials to wrap the pots:

- Cardboard (If using cardboard, one should wear down the cardboard to break the joints. This can be done by pulling the strip around a pole.)
- Sheet metal and duct tape. Use bricks to brace the sheet metal if not using the pot.
- Thin plywood (triplay)



Plywood

Cardboard

## Another option:

- Dig holes into the ground to put the pots at the correct level.



## Note:

- Use mortar (concrete and sand) to repair small holes in the losa.
- In dry climates, keep the top moist

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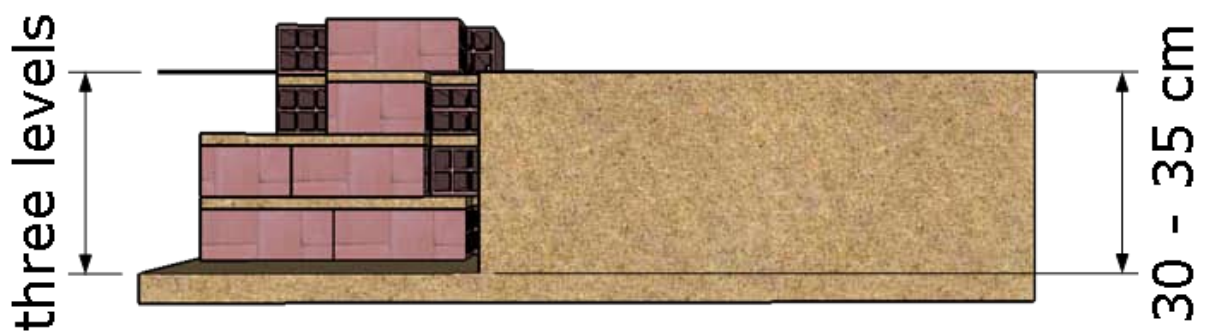
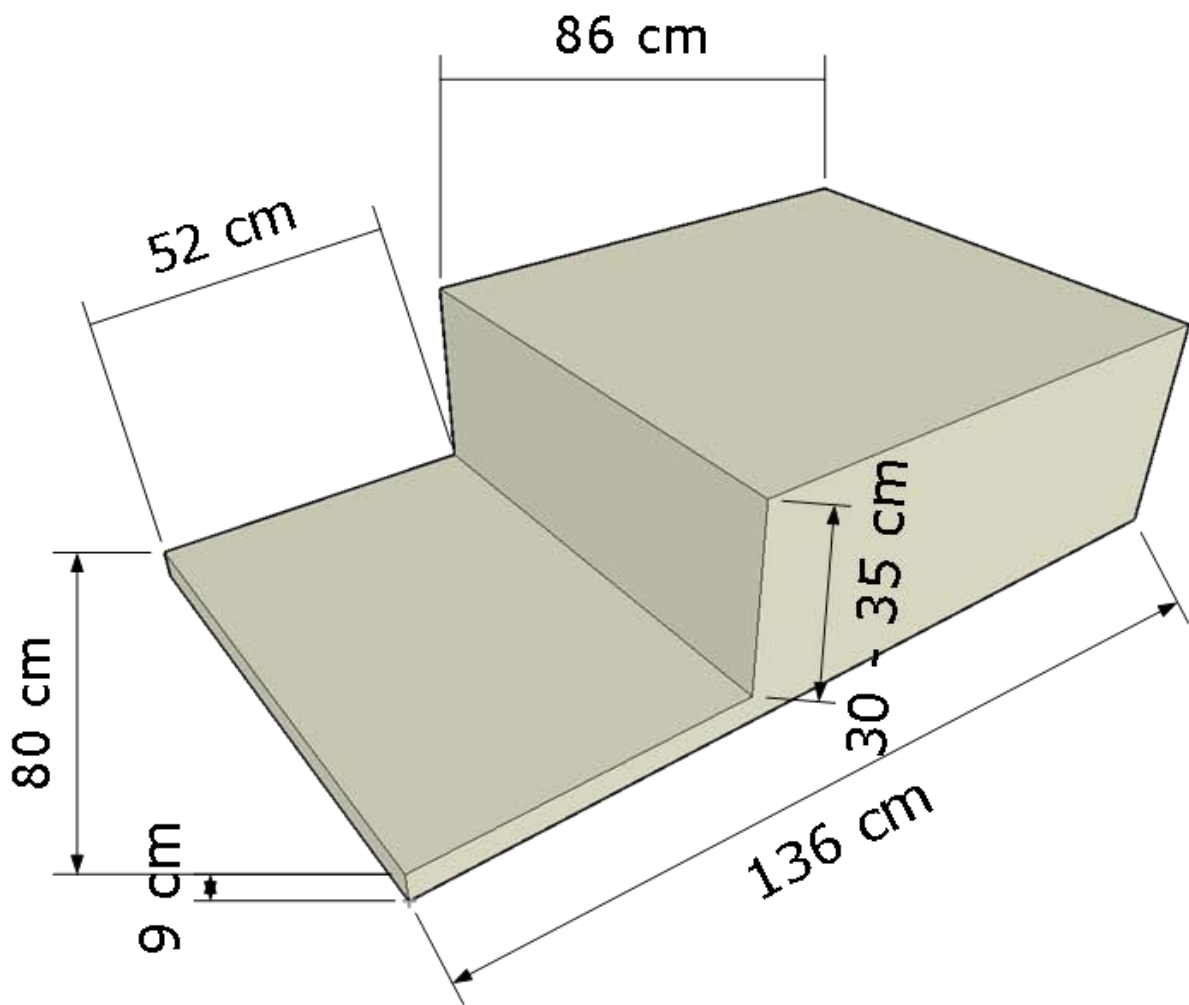
## Construction of the Base

This manual purposely does not specify the exact layout of the adobes for the base. Adobes vary greatly by region and by site. Contractors (albañiles) will know how to lay adobes so that the joints/seams alternate. The dimensions of the base are important, not the exact pattern of adobe bricks.

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## Instructions

1. Locate the cocina site and level the area.
2. Lay plastic down to prevent soil moisture from decaying the adobe. The plastic will remain under the cocina.
3. Mix adobe mud to pudding consistency and use between all layers and blocks. For better adhesion, wet blocks before using.
4. Build a base layer 80 cm by 136 cm. Note: the height of this layer can be adjusted to achieve the desired height of the cocina. To calculate, add 56 cm to the height of the base for the final cocina height.
5. Build a back structure 86cm wide on the back 52cm of the base. This should be between 30 cm and 35 cm above the base when complete. The back of the base should be level with the first three rows of bricks in the combustion chamber.



## Combustion Chamber (Cámara de Combustión)

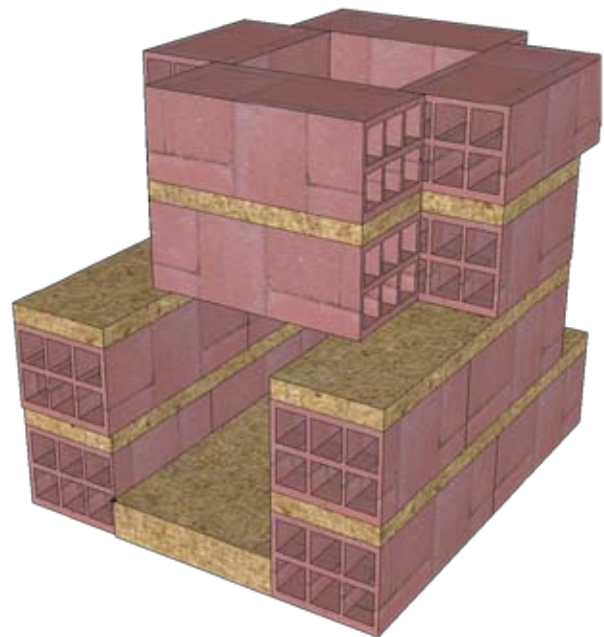
The combustion chamber or cámara de combustión is crucial to the cocina's operation. Place the bricks carefully and measure twice.

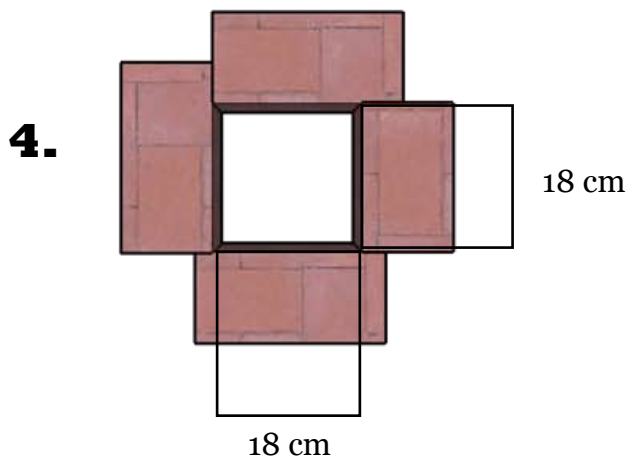
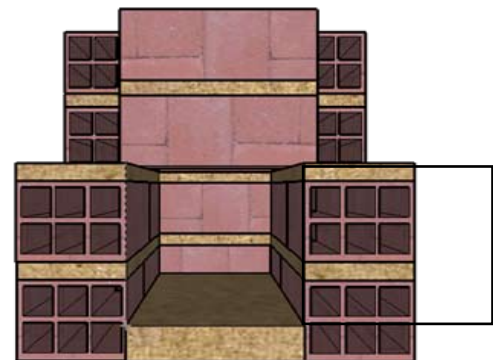
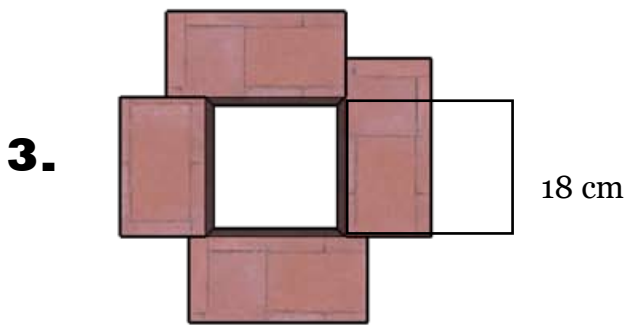
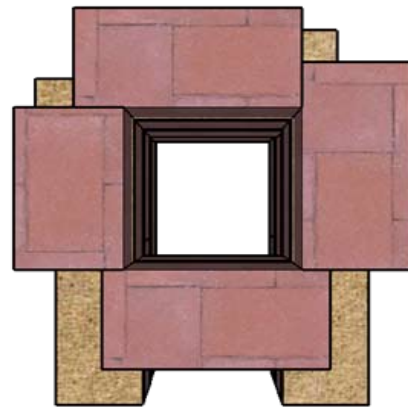
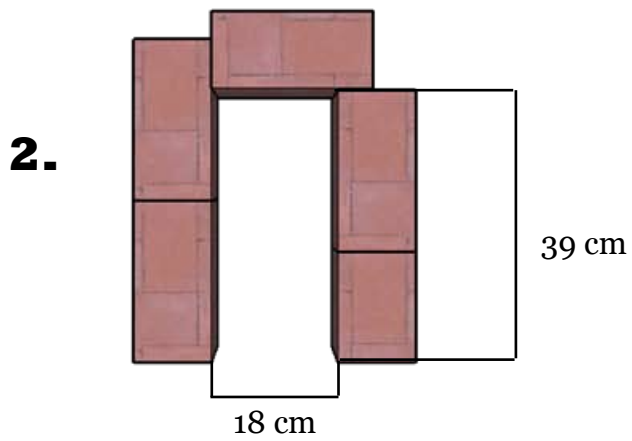
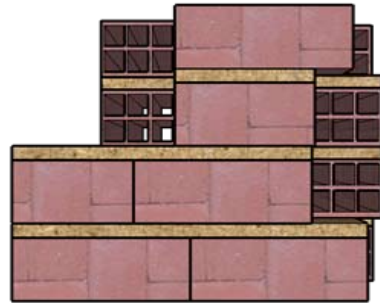
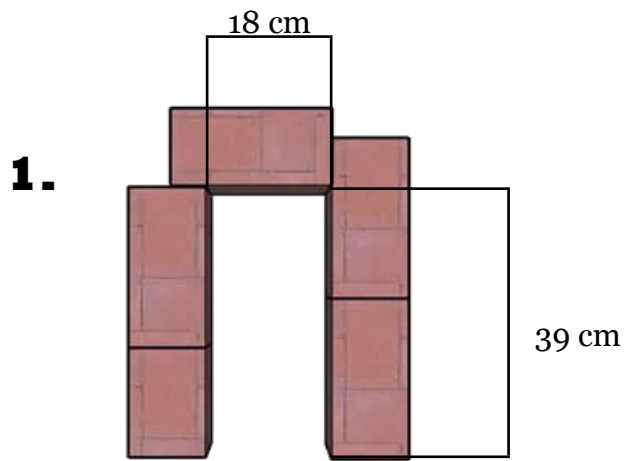
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### Instructions

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1. Mix the adobe mud to a pudding consistency.
2. Level the front part of the base with a thin layer of mud.
3. For better adhesion, always wet bricks and adobe surfaces before applying mud or laying brick.
4. Lay down a center line and build first layer of brick in "U" shape, so that you have an opening 18 cm wide and 39 cm deep, on center and level. This will use 4 and ½ bricks.
5. Spread an even layer about 1-2 cm thick over the entire first layer of brick and fill in all joints.
6. Build a second layer on top of that, but stagger the brick so that the joints are NOT above each other. Maintain alignment to the bottom layer, measurements of 18 x 39 cm and level. Another 4 and ½ bricks. Another layer of mud and fill joints.
7. Third layer starts the upward firebox flue. Place 2 and ½ bricks to form the back part of the "U". Make sure that it is level and aligns with the lower layers and the 18 cm width.
8. Place 1 brick at the front of the "U", so that you form an 18 cm square in the center of this layer.
9. Place another brick in front of the last one. It will extend slightly past the front of the lower layers.
10. At this point, the top layer of brick should be level with the back of the base. If it is lower, make the next layer of mud extra thick to compensate. Fill joints.
11. The final layer is 4 bricks, shaped in a square around an 18 cm center. Note that the corners will not be fully supported. You could add brick scrap or rocks for support.
12. Fill the bottom of the firebox with mud, up to 18 cm from the bottom of the front overhanging brick, and level. You can get a nice square front lip by propping a piece of plywood or other flat object against the front.
13. Smooth all interior joints with wet hands (carefully)
14. The result should be a square (18 cm) shaft, in an "L" shape.



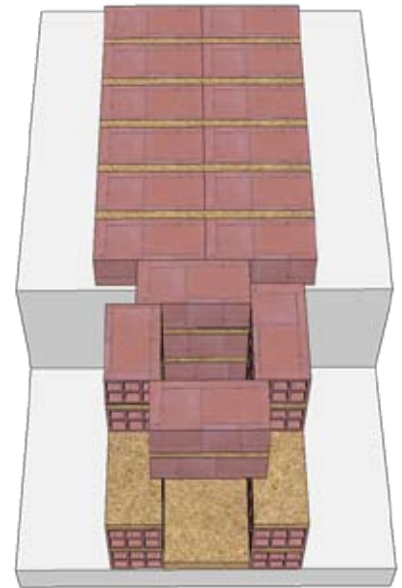


## Construction of the Sides

### Instructions

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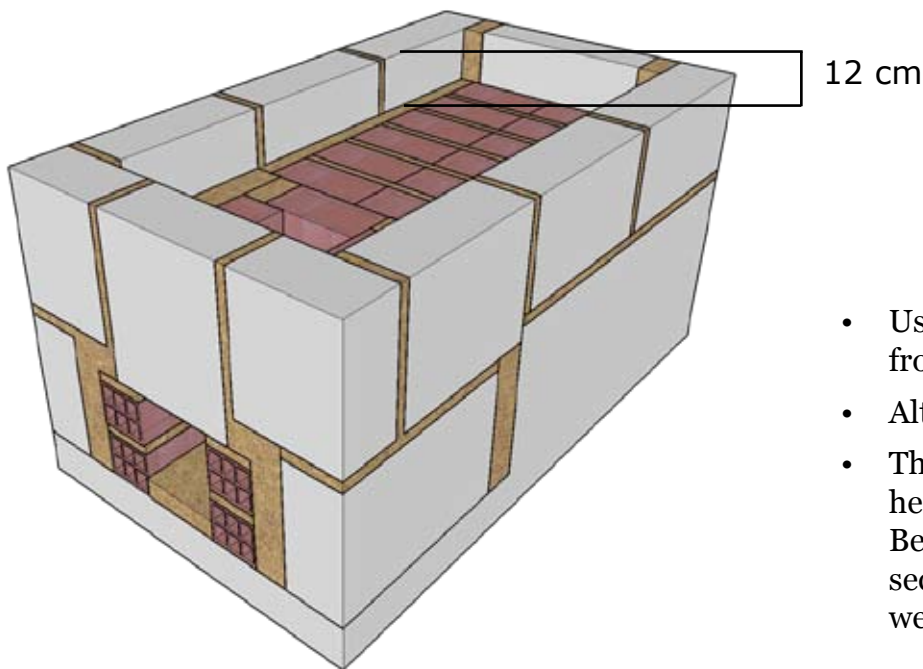
1. Assure that the back of the base is even with the third level of bricks in the combustion chamber (as shown on page 25).
2. Run six rows of two bricks from the back of the chimney toward the end of the base. The brick runner is designed to improve heat conduction. Leave room at the end of the base to place an adobe.



Like the instructions for the base, this manual does not deal with specific adobe placement in this section. There are however a few key aspects to completing this stage of the cocina construction.

### Construction Aspects

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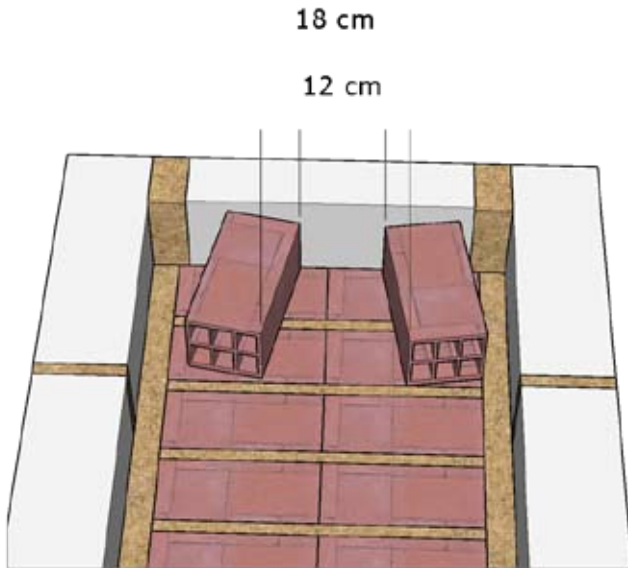


- Use a solid adobe across the front of the camera opening.
- Alternate seems on the adobes.
- The sides need to reach to a height of 12 cm from the base. Be sure the sides are level and secure. They will have to hold the weight of the losa.

## Construction of the Burners (Hornillas)

### Instructions

1. Place two bricks according to the diagram to support the chimney.



2. Dry blend the mud:  $\frac{1}{2}$  barro,  $\frac{1}{4}$  ash and  $\frac{1}{4}$  guano mix. Save some dry mix aside.

3. It is very important that this mix not be too wet, or you will get sagging walls. It's hard to turn a dry mix, so add water to make a normal pudding consistency, then add the extra in until you lose the "slick" appearance. You want a thorough mix (no dry clumps), but firm. Cookie dough consistency.

4. Let the mix rest while you set the 2 cooking pots according to the losa's dimensions.

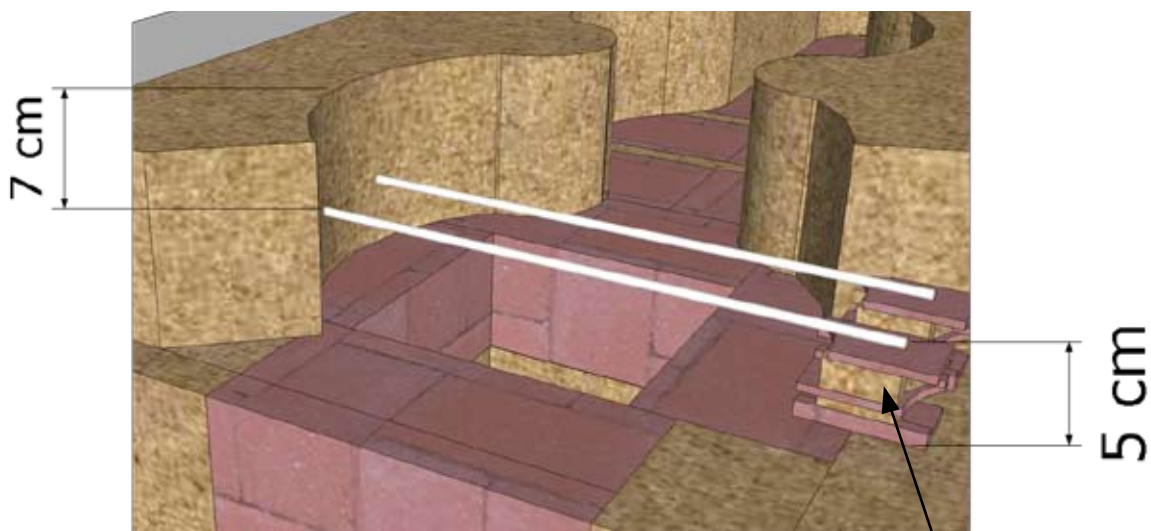
5. Clean off the top of the firebox and the rest of the cook floor. Put some big rocks or adobe in each pot to hold it in place. (Put covers on pots, if available.)

6. Place cardboard or thin plywood in front of the chimney opening to keep it clean.

7. Fill the entire cooking area, up to 5 cm, with the dry mud mix. Fill in several layers, pressing each layer down tight, to avoid air voids, but be careful not to push out the new adobe sides or front.

8. Pull out the pots.

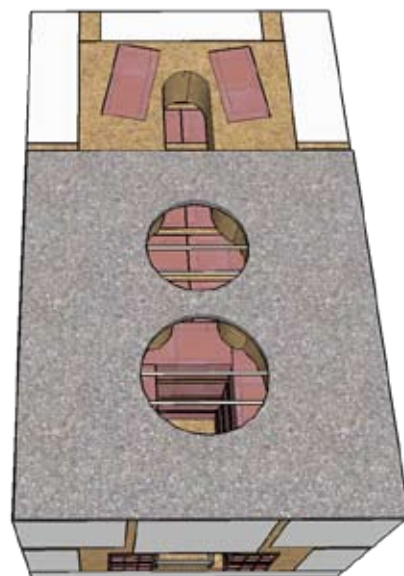
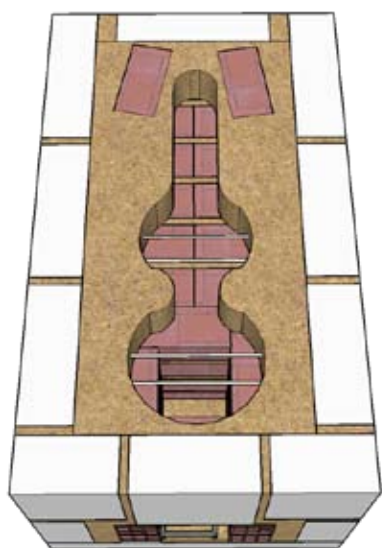
9. Use shards of brick and mud to support two  $\frac{1}{2}$ " rebar rods cut to 45 cm each. Place the rods 8 or 9 cm apart depending on the size of the pot. Make sure the top of the bar is 5 cm from the top of the firebox. Also make sure they are level.



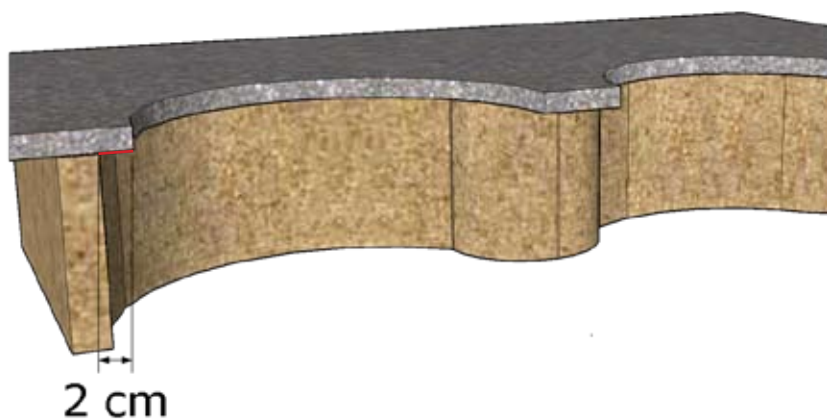
Brick scraps



10. Place the pots on top of the rods and fill the rest of the cocina with the dry mud mix.
11. Let the mud set for 10-15 minutes.
12. Gently twist and lift each pot out of its hole. Remove the cardboard blocking the chimney opening.
13. When removing the first pot, check to see that the side walls remain firm. If they start to slump down, the mix was too wet. Get the pot back in and wait at least 30 min for mud to set
14. Make a centerline on the firebox flue and the chimney opening. A wet trowel will slice nicely. Using a clean & wet trowel, cut down through the mud 8 cm on both sides of the centerline and remove the block of mud. Do the same in front of the chimney opening.
15. Place the cocina top (losa).
16. Pack mud into any gap at the top of the walls. An upward filling motion works best.



17. With wet hands, smooth the walls all around, remembering to keep the walls 2 cm back from the pot holes
18. Clean and generally spiff up the cocina. Smooth rough edges.



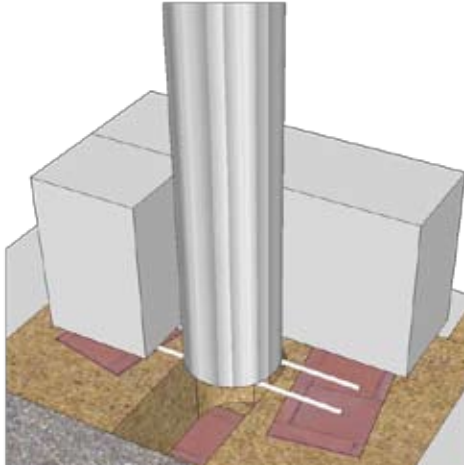
## Installing the Chimney

Quarter-inch rebar rods work to support the chimney. The chimney will typically be long enough to reach past the roof. If not, see “Chimney Height” in the “Modifications and Adaptations” section of this manual.

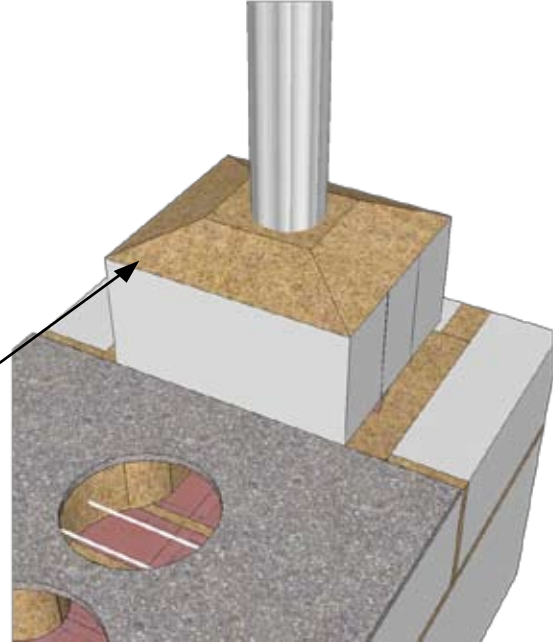
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### Instructions

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Surround with mud and adobe



1. Place on the bricks two 1/4” rebar rods cut to 30 cm.
2. Place the chimney on top of the rods. Assure that the chimney is straight and that the top exits the roof.
3. Surround the chimney with adobes and mud. Be sure there is no space for the smoke to escape.

#### **Note:**

If the chimney does not have support from a roof, it may require additional adobe support at the base.

#### **Important:**

See “Common Building Mistakes” on page 43.

# Industrial

## Construction of the Losa (Concrete Platform)

The losa is one of the most important and also one of the most visible aspects of the cocina. Be sure it is done well. The thickness of the losa is especially important. A losa thicker than 3 cm can affect the performance of the cocina.

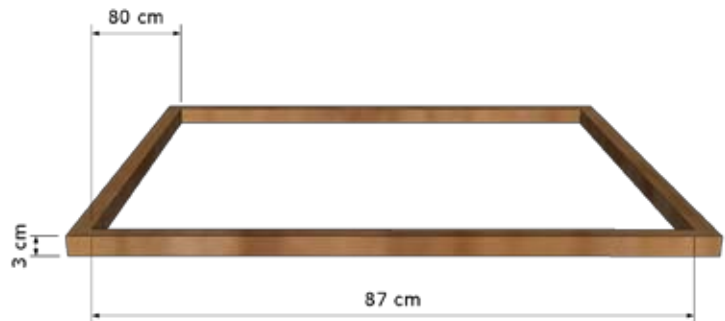
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### Instructions

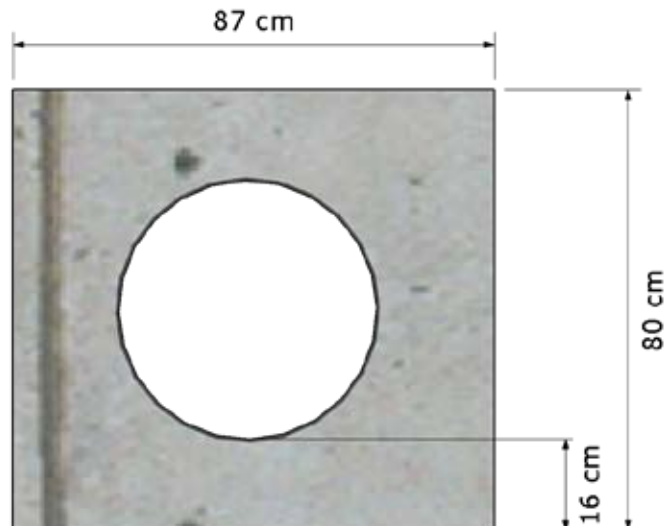
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1. Find a place to cast the top. A smooth sheet of plywood (triplay) is also good. Last resort is to level an area on the ground. The smoother the surface, the better the top will look.
2. Select the pot that will be used in the cocina. The owner will not be able to use it overnight.
3. Wrap cardboard (cartón) or sheet metal (latón) around the pot bottom (especially needed when pots do not have flat bottoms). If you use cardboard, prep it by scoring it vertically every 1/4" or so and then pulling it around a convenient pole. Either way, secure the strip with GOOD tape, so that it creates an extension of the pot sides, down to a flat bottom. (See "Options for Measuring Losa Openings.")
4. Trim the corners of the wire mesh (if needed) and lay it on flat surface. Place the pot in the center 16 cm from the inside edge of the frame.
5. Cut a square in the metal mesh to accommodate the size of the pot. Leave about 2cm between the edge of the pot and the mesh.
6. Lay down the plastic and set the mold frame. If you use 4 pieces of wood, be sure they are square with a T square or by measuring equal distance between corners diagonally. Brace the frame with rocks or adobe, so it won't move during casting.
7. Center the wire mesh in the frame and place the wrapped pot in the holes. Place a large rock or adobe inside the pot to stabilize it. Scoot the mesh up the pot sides, so it will be out of your way during casting. If the pots have no handles, you can actually remove the mesh.
8. Mix the cement and gravel according to the specified mix. The drier the mix, the stronger it will be. But, with all the wire and rebar, it's not so important.
9. It is always good practice to oil the frame before casting. Vegetable or motor oil will do.
10. Gently trowel or scoop the concrete into the mold, until it is about 1/2 full, working concrete well into side and pot walls.

### Wooden Frame



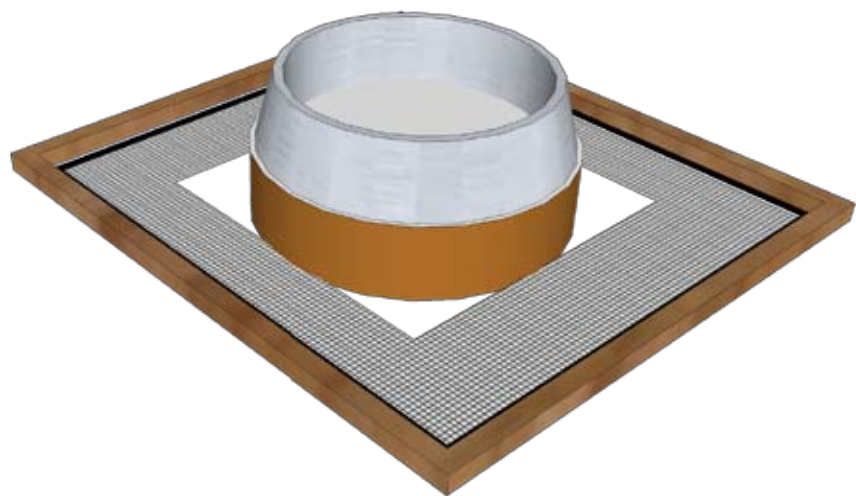
### Dimensions



11. Lay the long rebar down each side and wiggle them down into the concrete a bit, but not to the bottom.
12. Slide the mesh down and work it into the mix, as well. Throw out any small stones which are in the way.
13. Fill the form to the top and work in the rebar.
14. Concrete should be worked and wiggled to get all air voids out. The pot can also be CAREFULLY rotated. Smooth the top with a wet, clean trowel to get a nice slick surface. You'll also get a slicker looking surface if you sprinkle some cement powder over the completed surface and smooth it in.
15. Wet two rice bags lightly and place them over the completed casting. Instruct the user to sprinkle water or otherwise keep the bags moist. The point is to not expose the concrete to direct sun or heat. It wants to cure slowly.
16. Allow the concrete to cure for at least 24 hours and remove the pots and form frame. Remove the plastic and place in a shady spot and allow to cure for another 24 hours before installation.

### **Concrete Mix**

6 liters of cement  
15 liters of sand  
9 liters of gravel (less than 1 cm diameter)  
9 liters of clean water



## Options for measuring the losa openings

Measuring the losa openings can be a challenge. Keep in mind that the opening needs to be the size of the pot diameter 7 cm from the bottom. There are several techniques for achieving this. The results are typically better with a professional.

### Important:

- In all instances the pots should be removed after four or five hours. At this point the concrete is much easier to cut or smooth.
- An angle grinder is ideal.



### Materials to wrap the pots:

- Cardboard (If using cardboard, one should wear down the cardboard to break the joints. This can be done by pulling the strip around a pole.)
- Sheet metal and duct tape. Use bricks to brace the sheet metal if not using the pot.
- Thin plywood (triplay)



Cardboard

Plywood

## Another option:

- Dig holes into the ground to put the pots at the correct level.



## Note:

- Use mortar (concrete and sand) to repair small holes in the losa.
- In dry climates, keep the top moist

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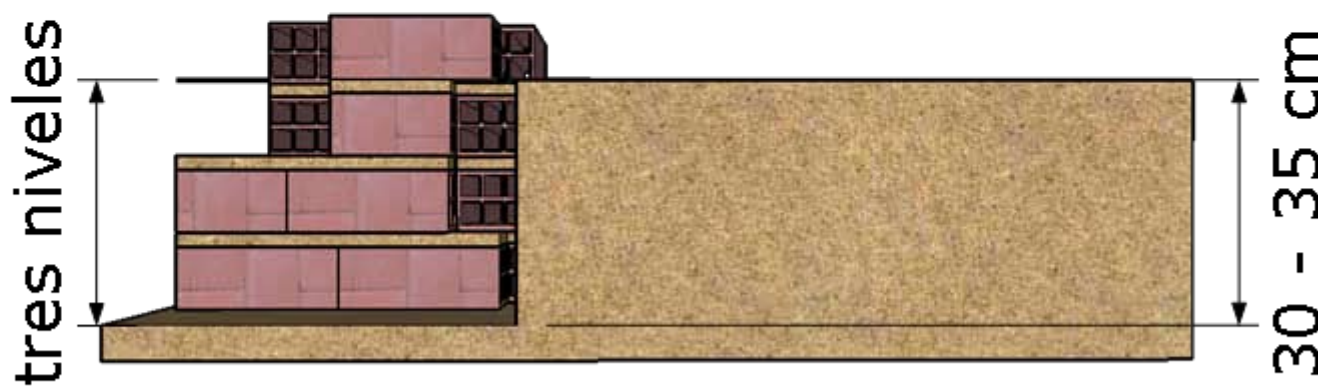
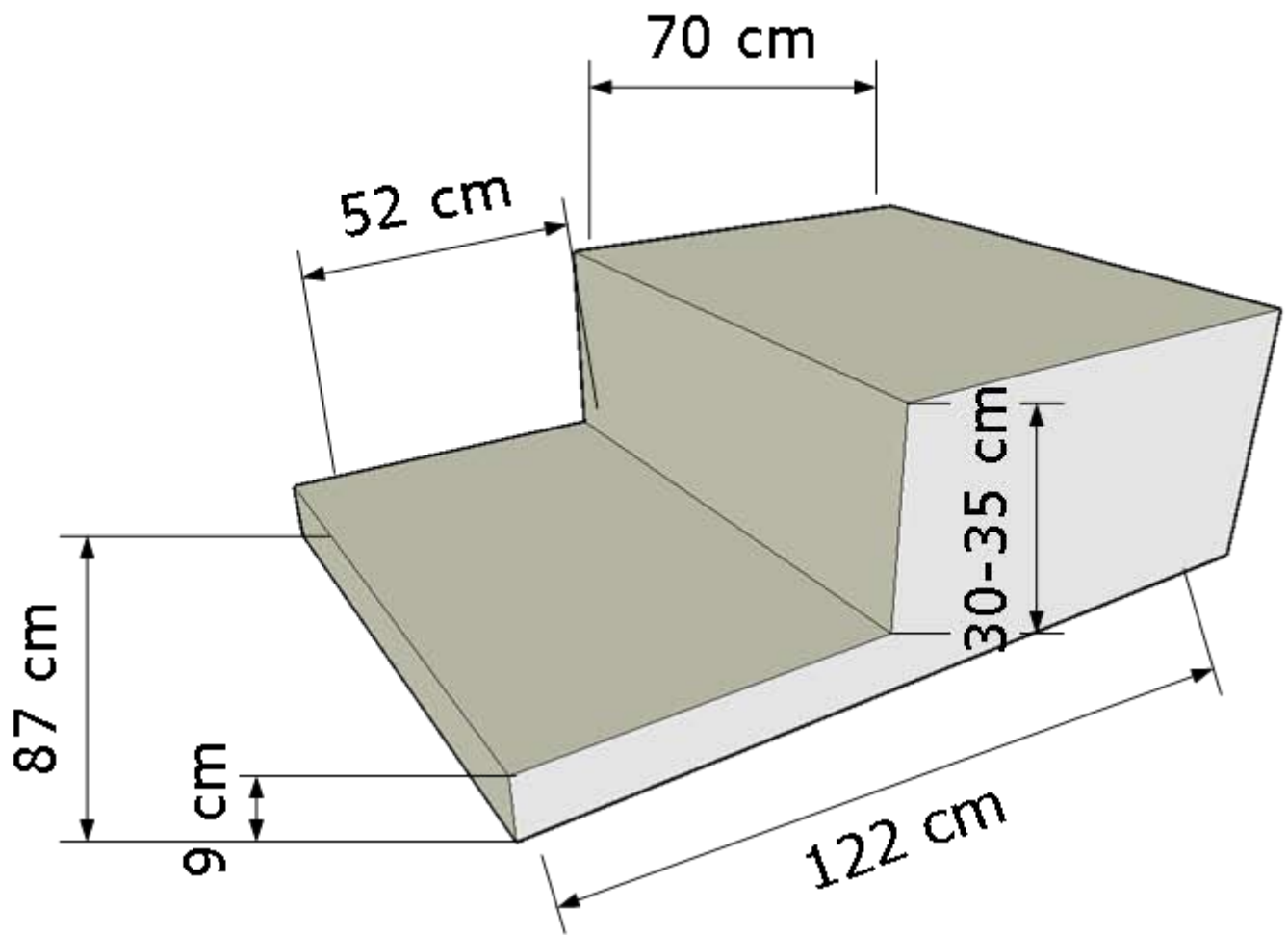
## Construction of the Base

This manual purposely does not specify the exact layout of the adobes for the base. Adobes vary greatly by region and by site. Contractors (albañiles) will know how to lay adobes so that the joints/seams alternate. The dimensions of the base are important, not the exact pattern of adobe bricks.

---

## Instructions

1. Locate the cocina site and level the area.
2. Lay plastic down to prevent soil moisture from decaying the adobe. This plastic will remain under the cocina.
3. Mix adobe mud to pudding consistency and use between all layers and blocks. For better adhesion, wet blocks before using.
4. Build a base layer 80 cm by 122 cm. Note: the height of this layer can be adjusted to achieve the desired height of the cocina. To calculate, add 65 cm to the height of the base for the final cocina height.
5. Build a back structure 86cm wide on the back 52cm of the base. This should be between 30 cm and 35 cm above the base when complete. The back of the base should be level with the first three rows of bricks in the combustion chamber.



## Combustion Chamber (Cámara de Combustión)

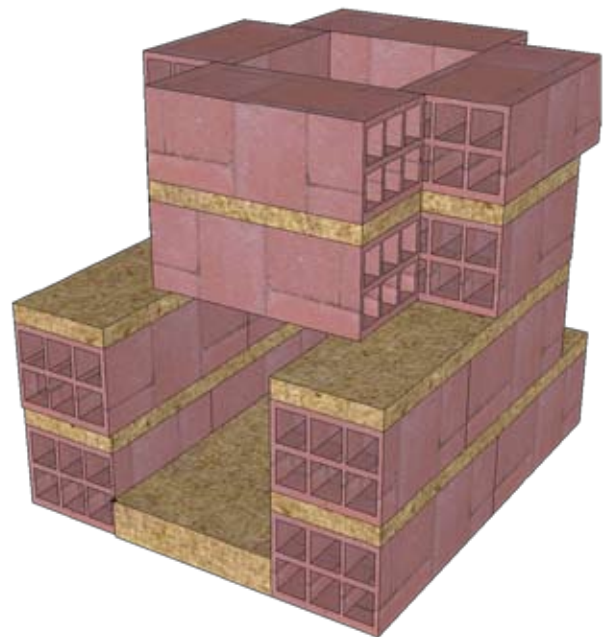
The combustion chamber or cámara de combustión is crucial to the cocina's operation. Place the bricks carefully and measure twice.

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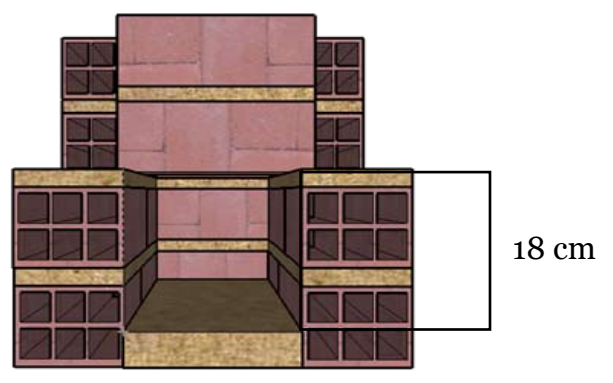
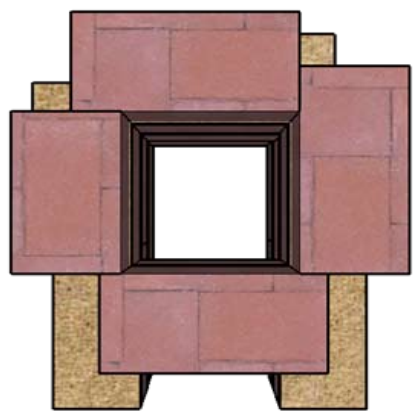
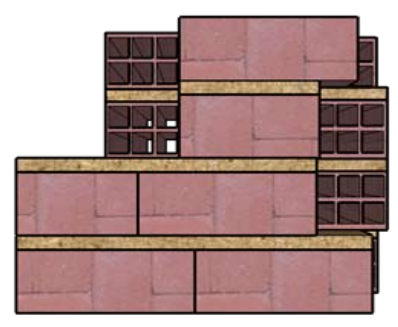
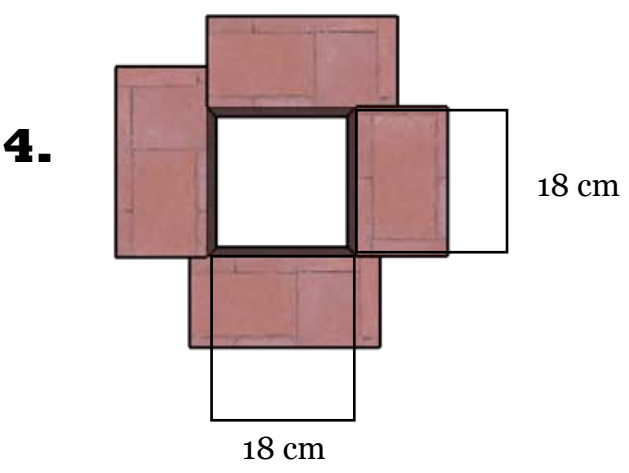
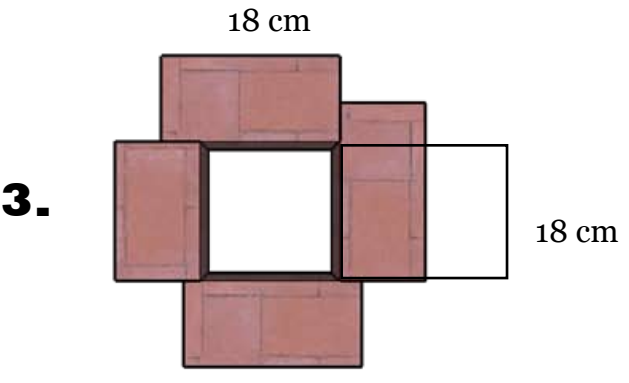
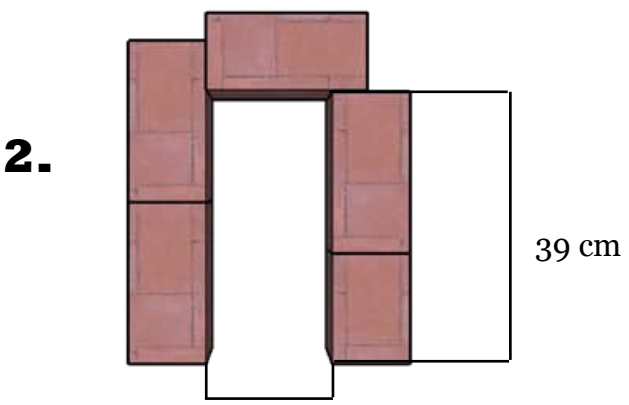
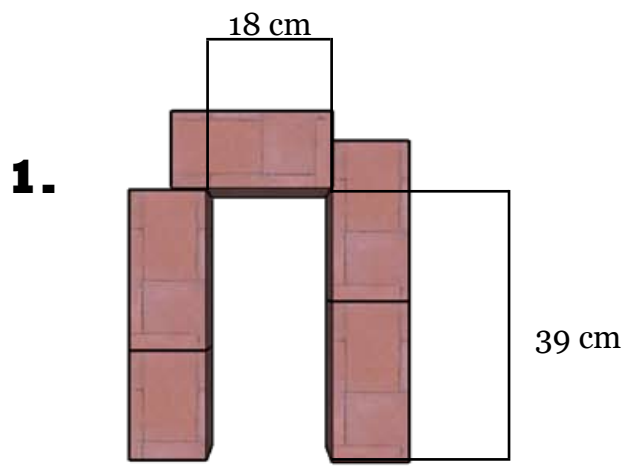
### Instructions

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1. Mix the adobe mud to a pudding consistency.
2. Level the front part of the base with a thin layer of mud.
3. For better adhesion, always wet bricks and adobe surfaces before applying mud or laying brick.
4. Lay down a center line and build first layer of brick in "U" shape, so that you have an opening 18 cm wide and 39 cm deep, on center and level. This will use 4 and 1/2 bricks.
5. Spread an even layer about 1-2 cm thick over the entire first layer of brick and fill in all joints.
6. Build a second layer on top of that, but stagger the bricks so that the joints are NOT above each other. Maintain alignment to the bottom layer, measurements of 18 x 39 cm and level. Another 4 and 1/2 brick. Another layer of mud and fill joints.
7. Third layer starts the upward firebox flue. Place 2 and 1/2 bricks to form the back part of the "U". Make sure that it is level and aligns with the lower layers and the 18 cm width.
8. Place 1 brick at the front of the "U", so that you form an 18 cm square in the center of this layer.
9. Place another brick in front of the last one. It will extend slightly past the front of the lower layers.
10. At this point, the top layer of brick should be level with the back of the base. If it is lower, make the next layer of mud extra thick to compensate. Fill joints.
11. The final layer is 4 bricks, shaped in a square around an 18 cm center. Note that the corners will not be fully supported. You could add brick scrap or rocks for support.
12. Fill the bottom of the firebox with mud, up to 18 cm from the bottom of the front overhanging brick, and level. You can get a nice square front lip by propping a piece of plywood or other flat object against the front.
13. Smooth all interior joints with wet hands (carefully)
14. The result should be a square (18 cm) shaft, in an "L" shape.



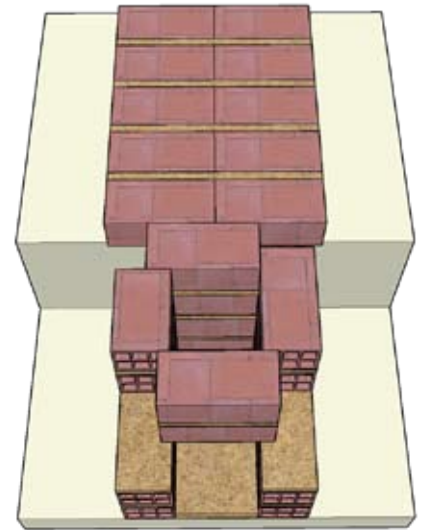




## Construction of the Sides

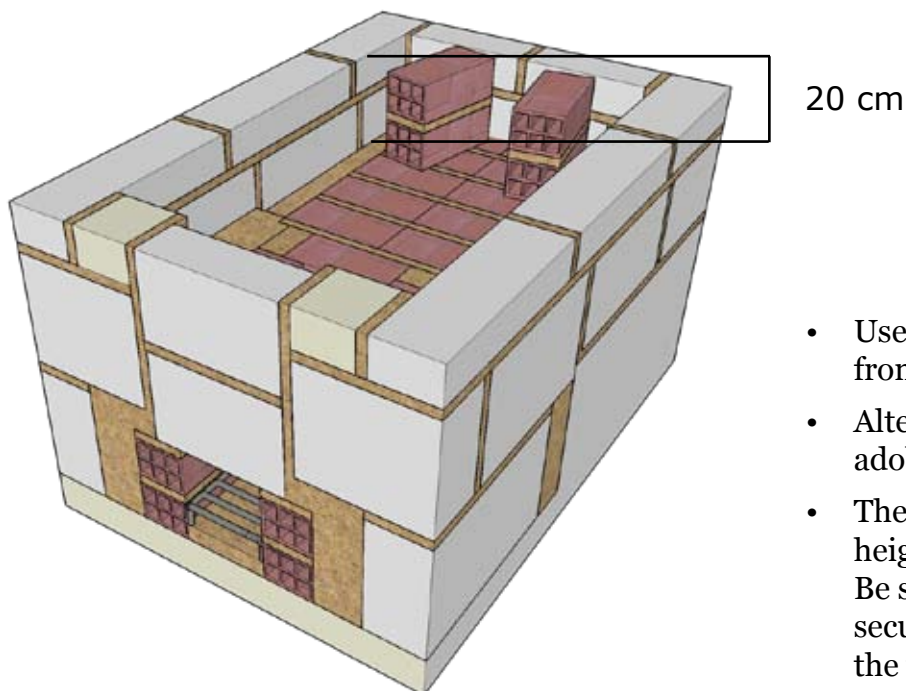
### Instructions

1. Assure that the back of the base is even with the third level of bricks in the combustion chamber (as shown on page 36).
2. Run five rows of two bricks from the back of the chimney toward the end of the base. The brick runner is designed to improve heat conduction. Leave room at the end of the base to place an adobe.



Like the instructions for the base, this manual does not deal with specific adobe placement in this section. There are however a few key aspects to completing this stage of the cocina construction.

### Construction Aspects

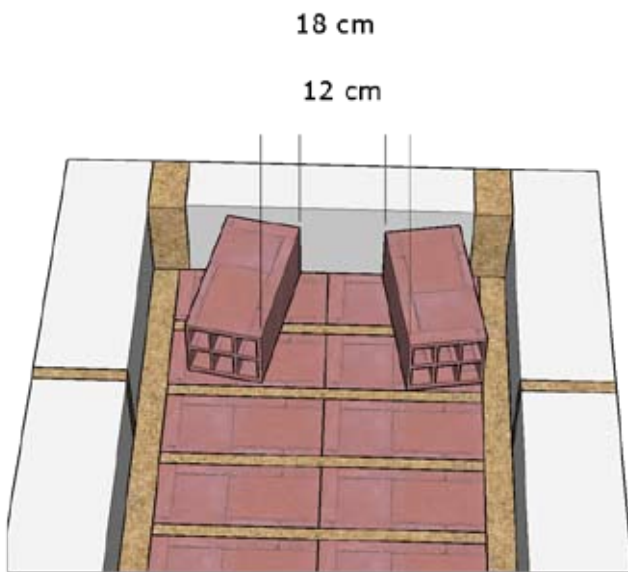


- Use a solid adobe across the front of the camera opening.
- Alternate joints/seams on the adobes.
- The sides need to reach to a height of **20 cm** from the base. Be sure the sides are level and secure. They will have to hold the weight of the losa.

## Construction of the Burners (Hornillas)

### Instructions

1. Place two bricks according to the diagram to support the chimney.



2. Dry blend the mud:  $\frac{1}{2}$  barro,  $\frac{1}{4}$  ash and  $\frac{1}{4}$  guano mix. Save some dry mix aside.

3. It is very important that this mix not be too wet, or you will get sagging walls. It's hard to turn a dry mix, so add water to make a normal pudding consistency, then add the extra in until you lose the "slick" appearance. You want a thorough mix (no dry clumps), but firm. Cookie dough consistency.

4. Let the mix rest while you set the pot according to the losa's dimensions.

5. Clean off the top of the firebox and the rest of the cook floor. Put some big rocks or adobe in the pot to hold it in place. (Put covers on pots, if available.)

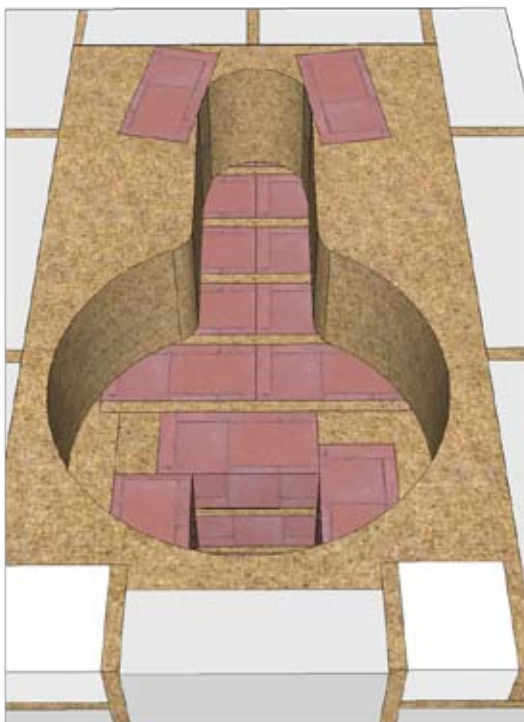
6. Place cardboard or thin plywood in front of the chimney opening to keep it clean.

7. Fill the entire cooking area, up to the sides of the cocina, with the dry mud mix. Fill in several layers, pressing each layer down tight, to avoid air voids, but be careful not to push out the new adobe sides or front.

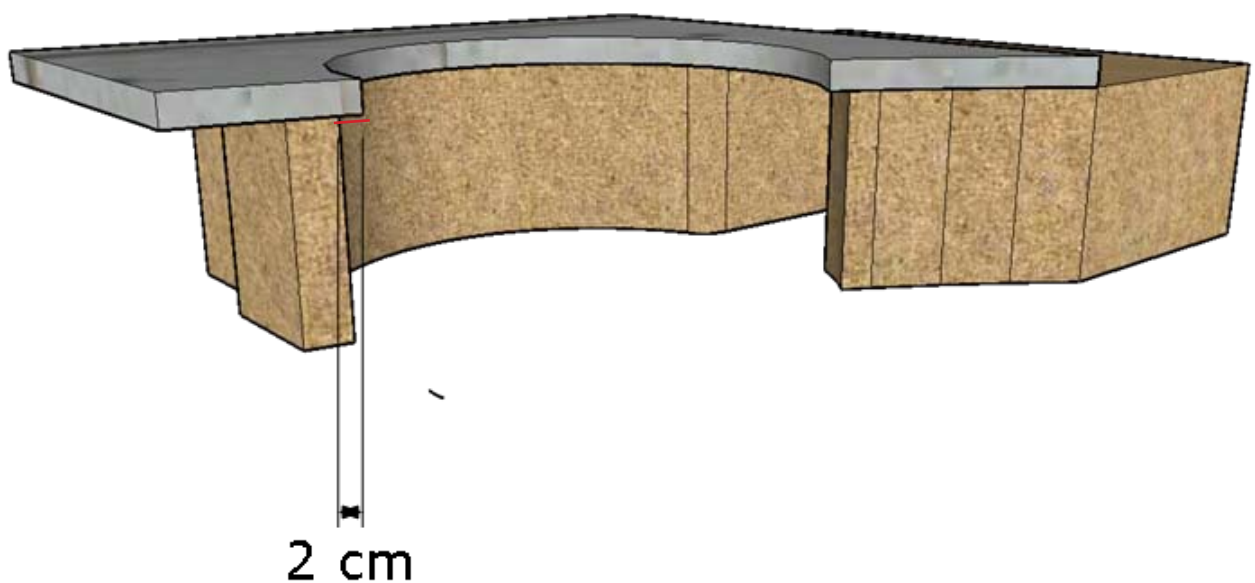
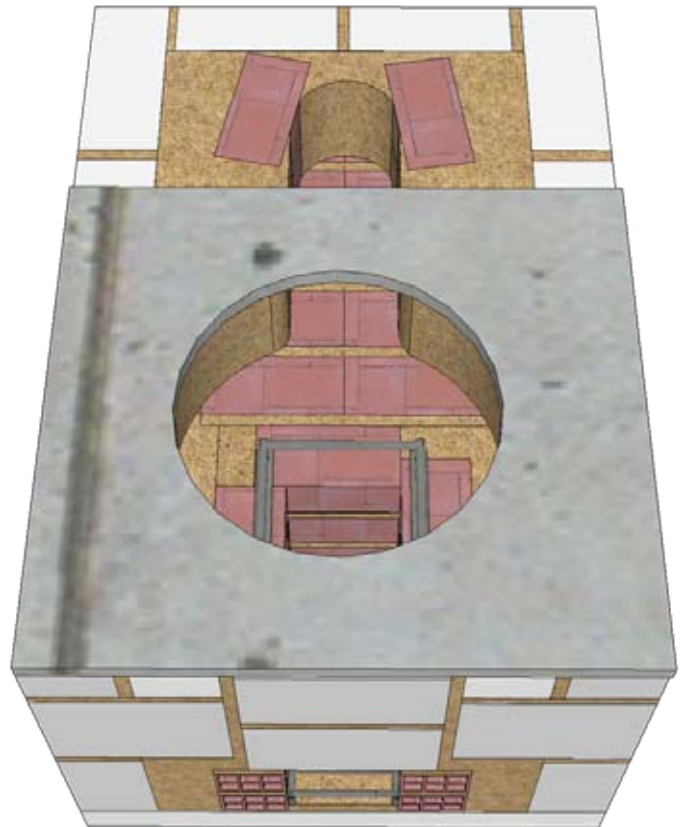
8. Pull out the pot.

9. Let the mud set for 10-15 minutes.

10. Gently twist and lift each pot out of its hole. Remove the cardboard blocking the chimney opening.



11. When removing the pot, check to see that the side walls remain firm. If they start to slump down, the mix was too wet. Get the pot back in and wait at least 30 min for mud to set
12. Make a centerline on the firebox flue and the chimney opening. A wet trowel will slice nicely. Using a clean & wet trowel, cut down through the mud 8 cm on both sides of the centerline and remove the block of mud. Do the same in front of the chimney opening.
13. Place the cocina top (losa).
14. Pack mud into any gap at the top of the walls. An upward lifting motion works best.
15. With wet hands, smooth the walls all around, remembering to keep the walls 2 cm back from the pot holes
16. Clean and generally spiff up the cocina. Smooth rough edges.



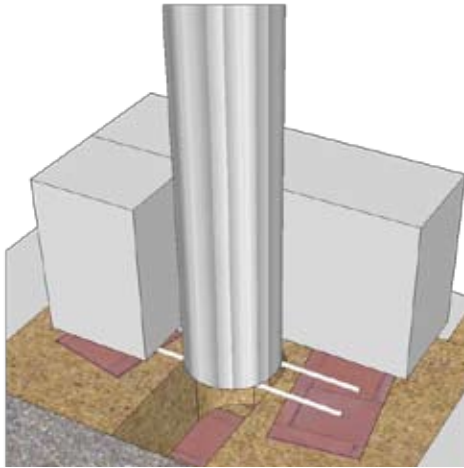
## Installing the Chimney

Quarter-inch rebar rods work to support the chimney. The chimney will typically be long enough to reach past the roof. If not, see “Chimney Height” in the “Modifications and Adaptations” section of this manual.

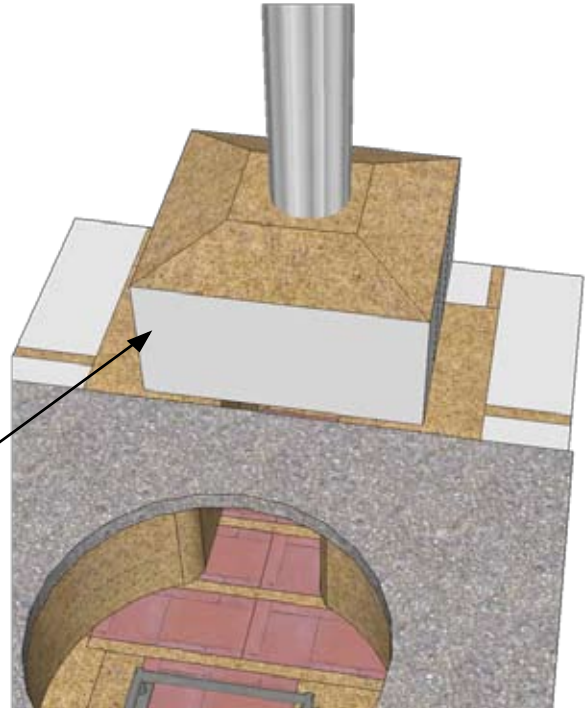
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### Instructions

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Surround with mud and adobe



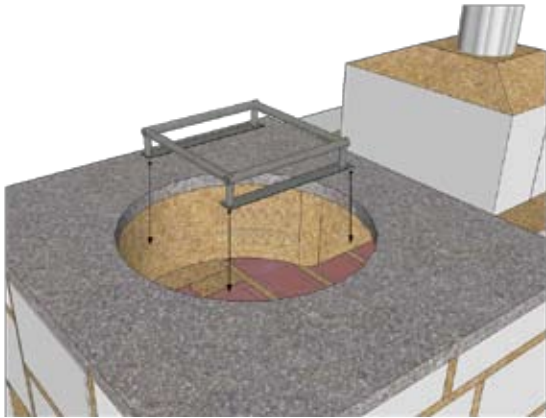
1. Place on the bricks two 1/4" rebar rods cut to 30 cm.
2. Place the chimney on top of the rods. Assure that the chimney is straight and that the top exits the roof.
3. Surround the chimney with adobes and mud. Be sure there is no space for the smoke to escape.

#### **Note:**

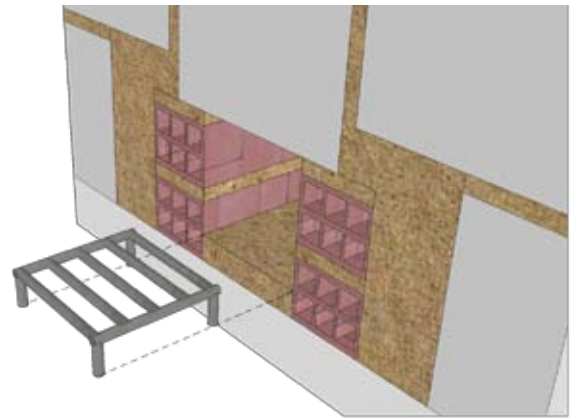
If the chimney does not have support from a roof, it may require additional adobe support at the base.

## Arm the Cocina

Now that the cocina construction is complete, place the metal grates.



Place the 25 cm grate in the top of the chimney assuring that the feet straddle the firebox opening. The grate will support the weight of the pot.



Place the smaller grate in the opening leaving it toward the front of the firebox. This assures that the air can pass under the grate and fuel the fire.

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## Common Building Mistakes

The following are easy to overlook, but can create serious problems if overlooked:

- Don't allow families to build the room around the cocina. The recipient should have an appropriate space ready.
- Pay attention to where the chimney is going to exit the roof. Roof beams can create serious headaches.
- Don't make the losa too thick. Three centimeters is the standard.
- Pay attention to the concrete mixture for the losa. Use a tub or a wheelbarrow to mix the cement if possible. This keeps it clean of dirt and mud, which can impair the durability.
- Put down a moisture barrier between the base and the ground. Over time moisture will destroy the bottom adobes if allowed.
- Support the rebar under the pots in the two-burner model using brick pieces or small stones. Otherwise, the bars will sink over time.

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## Construction Documents

Volunteers should use the construction documents that accompany this manual, which serve as guidelines for training local masons in cocina construction. A volunteer should always work with a mason when building cocinas. Training personnel assures sustainability and results in better quality cocinas.

# MONITORING AND EVALUATION

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The only way to truly ensure a successful cocina project is through diligent monitoring and evaluating. Volunteers need to think of this as a long term relationship that will require a lot of patience and persistence and not just a one night stand whose name you can't even remember the next day.

In order for a cocina to be considered successfully passing Peace Corps standards it must be in use for four months for over 50 percent of their daily cooking needs (defined as using for at least for the mid-day or main meal every day). During those first four months volunteers are expected to visit the families at least once per month and for some families it will be a lot more than that if the volunteer feels that the individual family needs extra training or monitoring. The list below is a sample monitoring/evaluating house visit itinerary for a cocina project.



## **Visit 1:**

This first visit should occur between 1-5 days after successful construction of the cocina to ensure that the barro has dried out and is ready to be fired up.

The main point of this visit is to light the cocina for the first time with the family and ensure that it works properly. During this visit the PCV can work hand in hand with the cocineras to ensure that they understand the proper way to start the cocina and maintain a strong fire inside the camera de combustión. It is also important for the PCV to reiterate proper maintenance procedures and their respective frequencies. The volunteer should fill out M&E checklist with the family and explain to them how often they will be returning.

**Visit 2:**

The second visit should occur 5-10 days after Visit 1. This is an unannounced visit during a time when the family should be cooking using their new cocina mejorada. The main point in returning so soon is to ensure that the family has gotten off to a good start with the cocina. It is much easier to create new good habits with the family than it is to go back several months later and reteach them how to use the cocina and break their bad habits that they have formed. During this visit the volunteer should observe the cocina in use and fill out the M&E checklist. Any problems the volunteer sees with the usage or maintenance of the cocina should be explained to the family and resolved together. If problems are observed that will need further follow up the volunteer should plan on returning anywhere from 3-7 days later and do another unannounced visit. If no problems are observed and the volunteer is happy with how the family is adapting to their new cocina than they proceed to Visit 3.

**Visit 3-5:**

These final three visits should each occur a month after each other beginning one month after Visit 2. They are all essentially the same type of visit where the volunteer should fill out the M&E checklist with the family and make sure that the cocina is being used and maintained properly. Once again if the volunteer feels extra time needs to be spent with the family in order to improve the way they use their cocina or maintain it he or she should arrange for extra house visits.

If the PCV decides to carry out one of Visits 3-5 during a time when the family is not cooking there are a few things he or she must remember/keep in mind when evaluating whether or not the cocina is still being used properly:

- Families have been known to lie to volunteers about their daily usage of the cocina.
- Look for signs of open fire cooking near the cocina or outside of the house.
- A cocina that is being used on a daily basis should have a very black camera de combustion, chimney, and should have a wear and tear look to it.
- Cobwebs growing amongst the hornillas is a sign that the cocina is not being used.
- If a family claims they recently cooked on the cocina ask them specifically what they cooked and how it turned out.



## Ficha de Inspección de la Cocina Mejorada

Inspector(a): \_\_\_\_\_ Fecha: \_\_\_\_\_ No. de Visita \_\_\_\_\_

Apellidos de Familia: \_\_\_\_\_ # of Beneficiarios: \_\_\_\_\_

Región: \_\_\_\_\_ Distrito: \_\_\_\_\_ Comunidad: \_\_\_\_\_

### Cocina Construida

Descripción del Diagnóstico	Si	No	Observaciones y Recomendaciones
<b>Estructura</b>			
1. ¿No hay espacios en la estructura donde sale humo?			
2. ¿La loza está en buen estado, sin grietas/rajaduras?			
3. ¿Los fierros que soportan las ollas están seguros?			
4. ¿La chimenea está segura?			
<b>Uso y Mantenimiento</b>			
5. ¿Está en uso la cocina más de 50 por ciento de las comidas? (Almuerzo = 50 por ciento) • <u>En caso de "No"</u> : ○ ¿Por qué?			
6. ¿Usa leña menos de 3 cm en diámetro?			
7. ¿Sabe prender bien la cocina?			
8. ¿Sabe mantener bien la candela?			
9. ¿Las ollas se quedan bien en las hornillas sin dejar el humo escapar?			
10. <b>Pregunta:</b> ¿Cocina más rápido?			
11. ¿Evita prender la cocina con plástico?			* Recordar que el humo de plástico es tóxico y muy dañino para la salud. <b>Mejor es usar leña seca.</b>
12. ¿Mantiene la segunda hornilla tapada cuando no está en uso?			* Recordar que es importante tapar la otra hornilla para que el humo se vaya para la chimenea. También se puede aprovechar la otra hornilla para hervir agua.
13. ¿Almacena la leña en un lugar seco?			
14. ¿Limpia la ceniza de la candela después de cada uso?			

Descripción del Diagnóstico	Si	No	Observaciones y Recomendaciones
15. ¿Limpia la ceniza donde quedan las hornillas cada mes?			* El calor no puede pasar si hay demasiada ceniza.
16. ¿Limpia la chimenea cada mes?			* Cuando no se la limpia, la cocina no funciona bien y hay riesgo de incendio

**NUMERO TOTAL DE RESPUESTAS “SI”:**                    /16

Nota: Una cocina aprobada tiene un puntaje mayor de 8.

Comentarios:

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### Preguntas Adicionales

1. A veces hay que reemplazar la chimenea o los fierros. ¿Dónde puede comprarlos?
  
2. ¿Qué le gusta de la nueva cocina?
  
3. ¿Qué no le gusta de la nueva cocina?
  
4. ¿Qué tal la comida con la nueva cocina?
  
5. Comentarios adicionales: