

# How To Construct a Five Cabin Latrine



# Be Advised

The following power point presentation assumes the user is familiar with plumbing, concrete and masonry construction techniques and has a basic knowledge of geometry so as to select the proper dimensions of the latrine given site specific criteria.



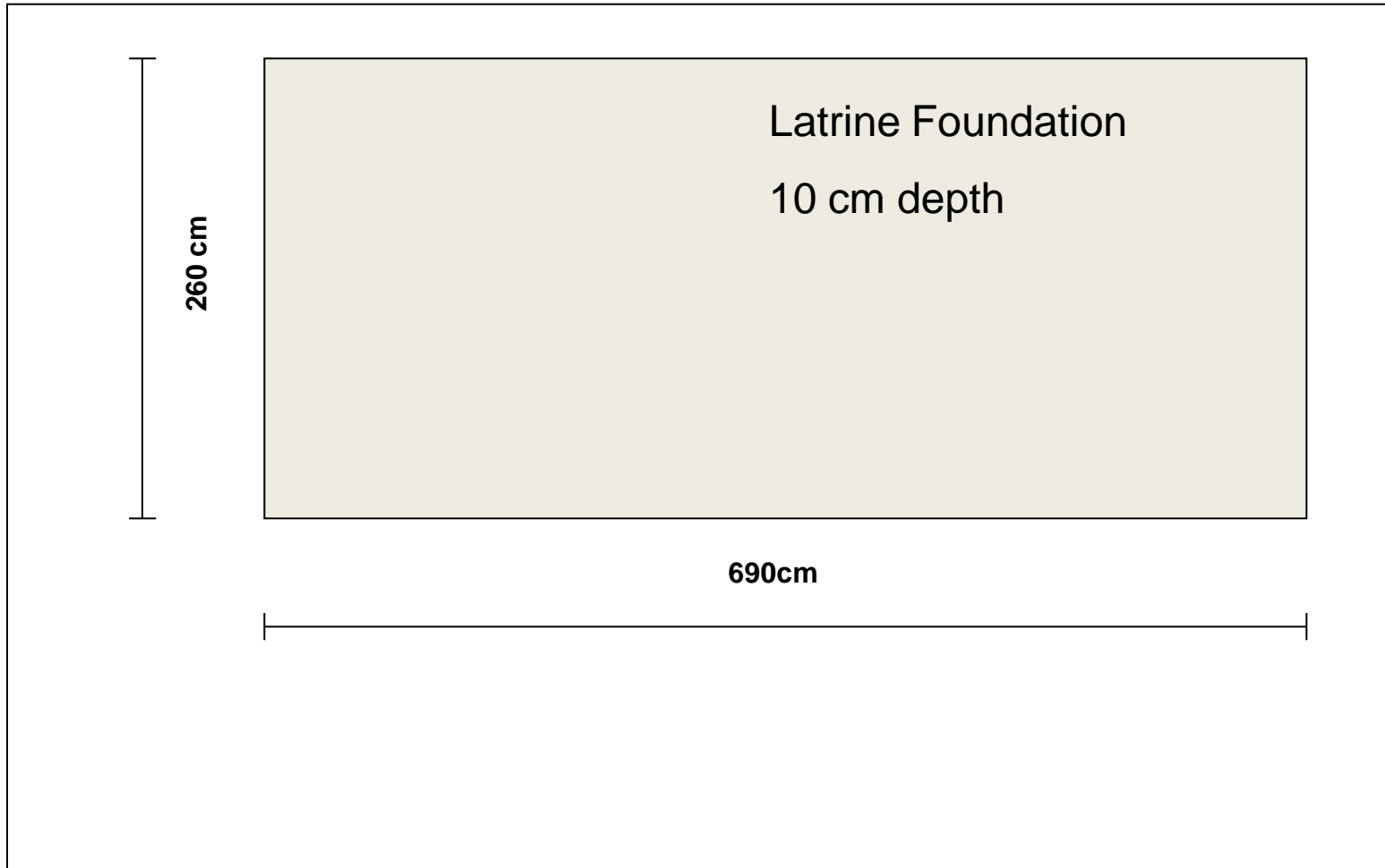


# Site Preparation and Calculations



An area of land 3m by 7m must be cleared and made level. Any large protruding stones, plant roots, or other obstructions should be removed from the soil, and a 1m level should be used to check for a plane surface.

# Site Plan



**NOTE: A CIRCULAR AREA, 2m IN DIAMETER SHOULD BE KEPT CLEAR FOR MIXING OF CONCRETE**

# Materials

- (5) Steel Doors 180cm X 60cm
- (1) lbs 2-1/2in Nails
- (1) lbs 4in Nails
- (2) lbs Nails para lamina
- (10) Lamina de 8in
- Wood for formwork
  - (2) lengths 12ft X 2in X 4in
  - (2) lengths 8ft X 3in X 4in
  - (2) lengths 8ft X 3/4in X 2.5in
- (4) cubic meters Large Stone (15cm to 30cm dia.)
- (200) kg 3/8in reinforcing steel bars
- (15) rods 1/4in reinforcing steel bars
- (6) lbs Tie Wire
- (30) 50kg bags of Cement
- (3) Cubic meter Sand
- (2) cubic meter Gravel
- (425) Blocks 20\*15\*40
- Water

# Site Preparation

- Cut enough room for the entire latrine station to sit on solid, flat ground. A flat area nearby will be needed to mix concrete.
- Make sure the area is properly compacted and free of debris.
- Construct a wooden mold for the latrine foundation.

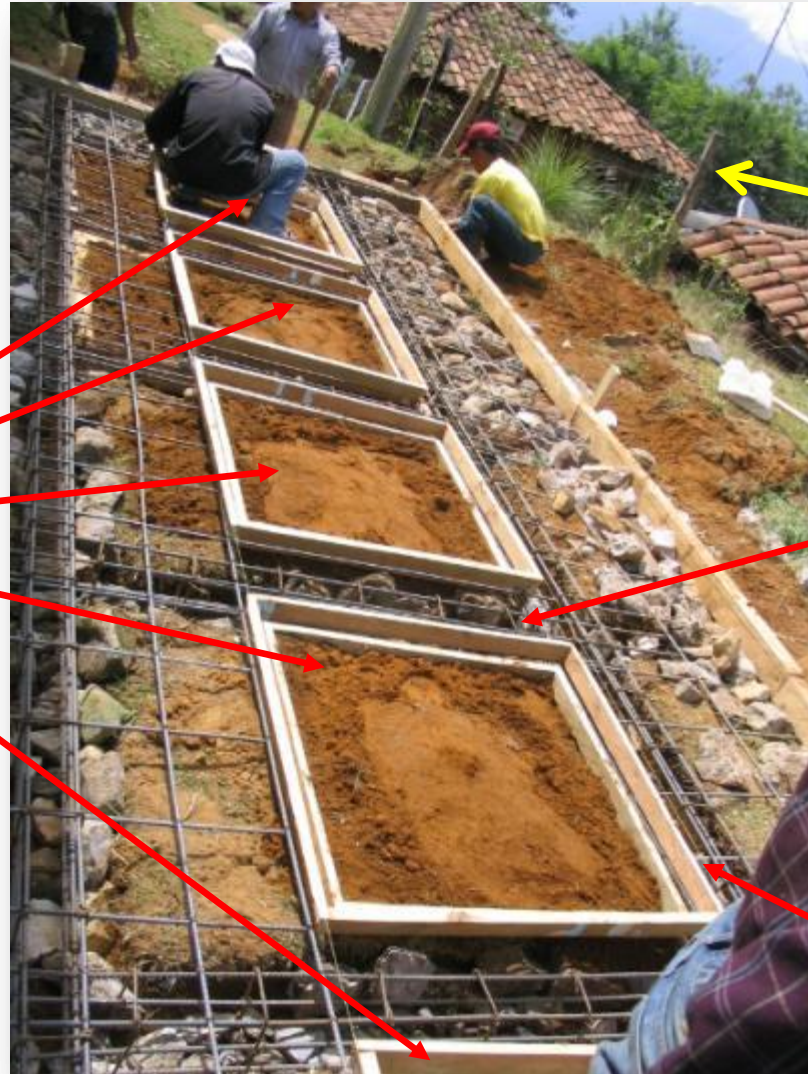




# Latrine Foundation

Use a level to ensure that the form is level, so once the cement is poured, the base is level

Concrete will not be poured in these areas.



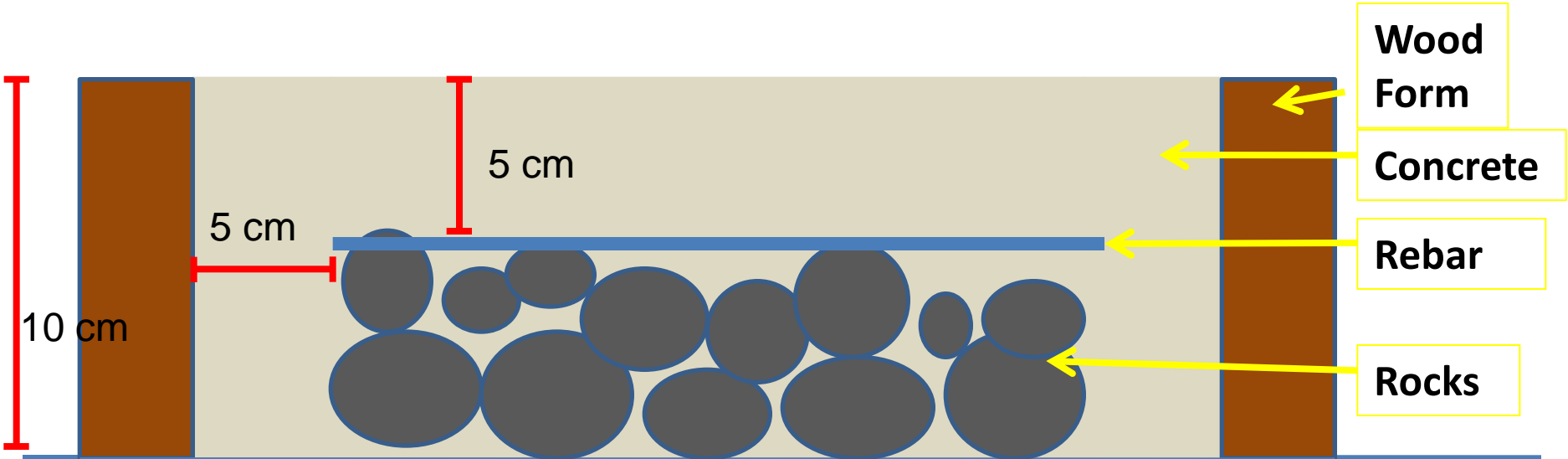
Ensure forms are held firmly in place

5cm diameter stone is placed to cover the ground

Leave a minimum gap of 5 cm between rebar and form to allow concrete to fill this area. Do not place stone between rebar and form.

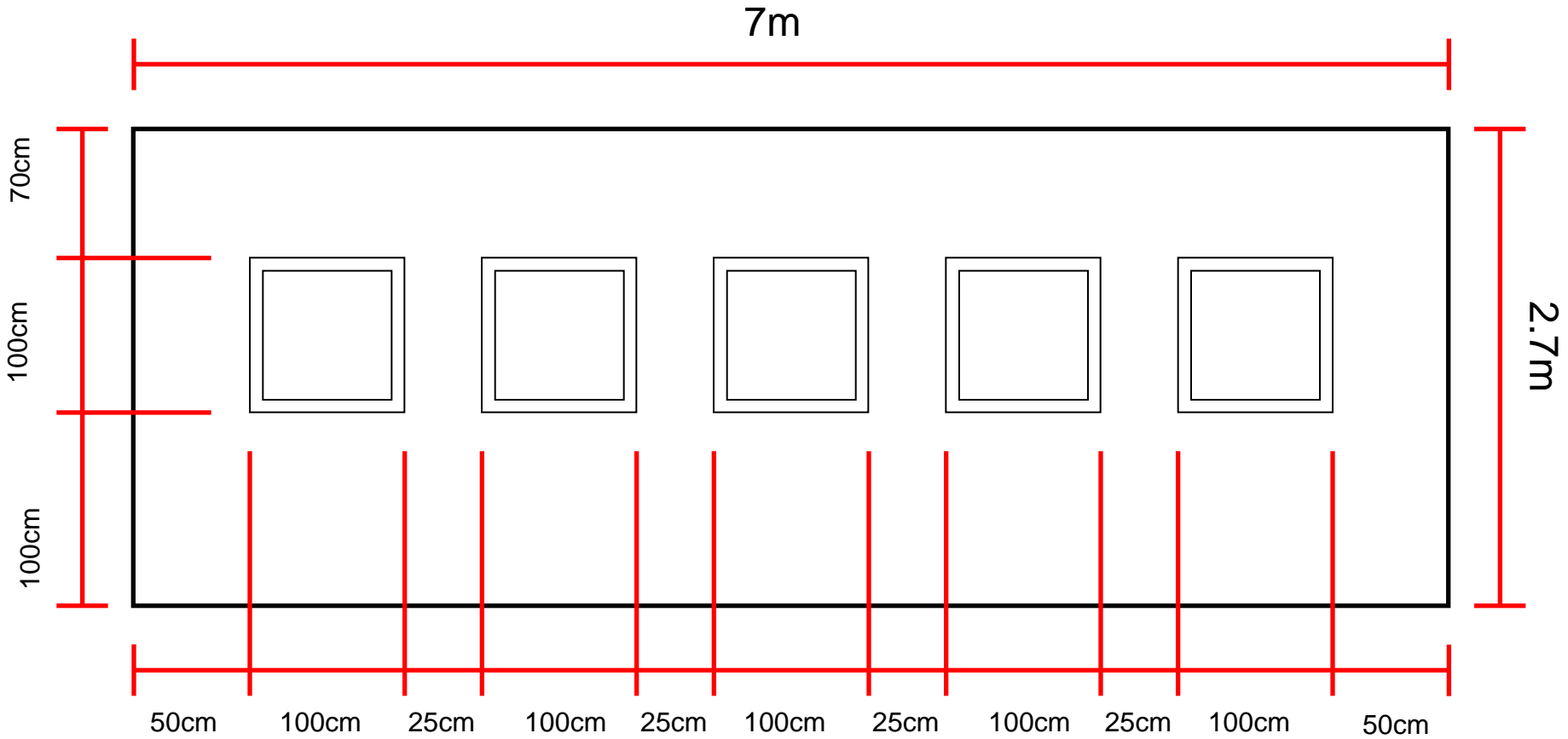
# Latrine Foundation

## Section View





# Latrine Foundation Layout

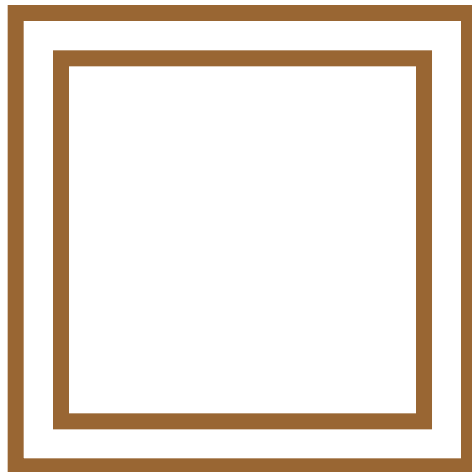


**FRONT**

**See following slide for detail of mold of (5) squares**

# Latrine Foundation Layout

- (5) square molds should be placed spaced equally at 25cm
- After the foundation has cured, pits will be dug in these locations

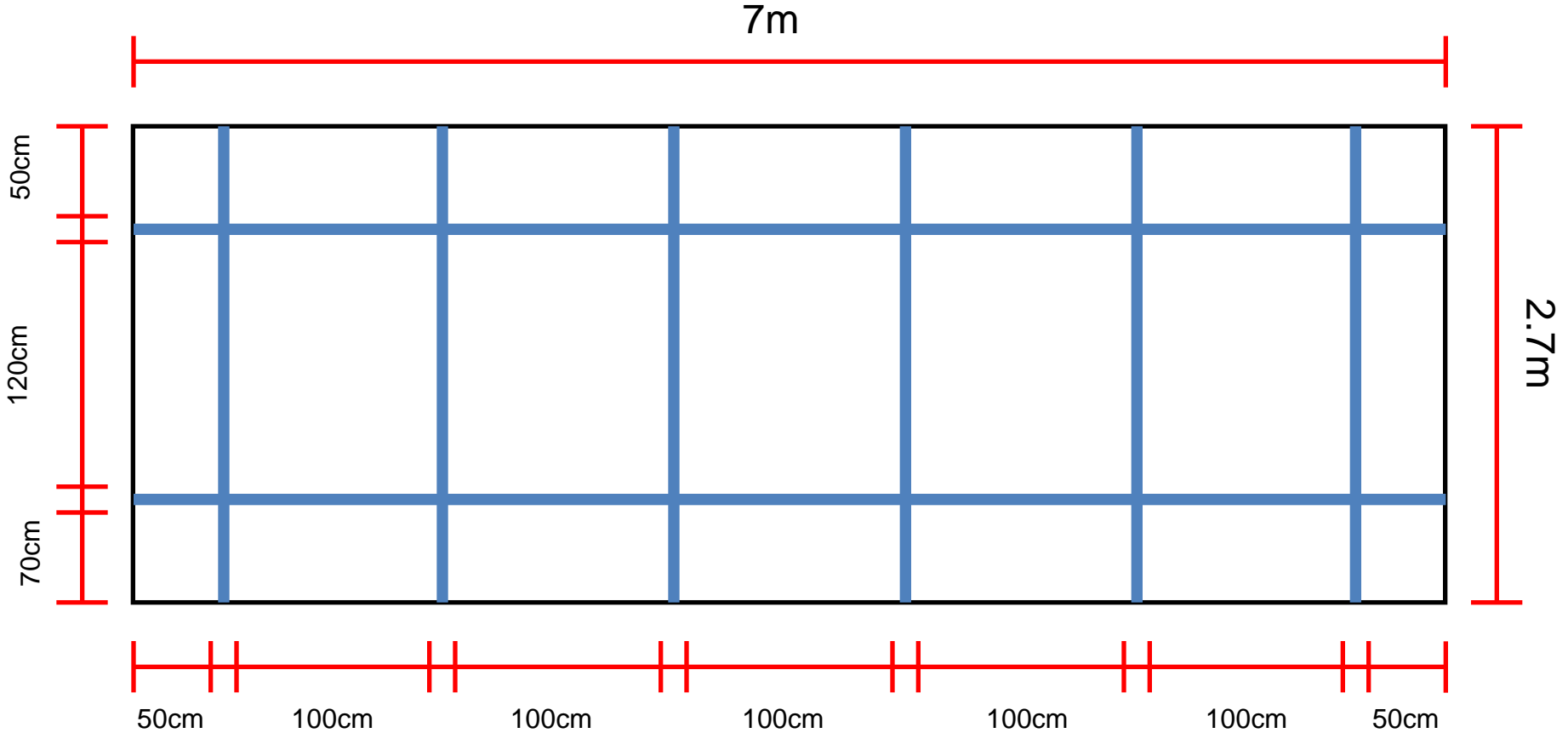


90cm outside dia.

100cm outside dia.



# Latrine Foundation Trench Layout



**FRONT**

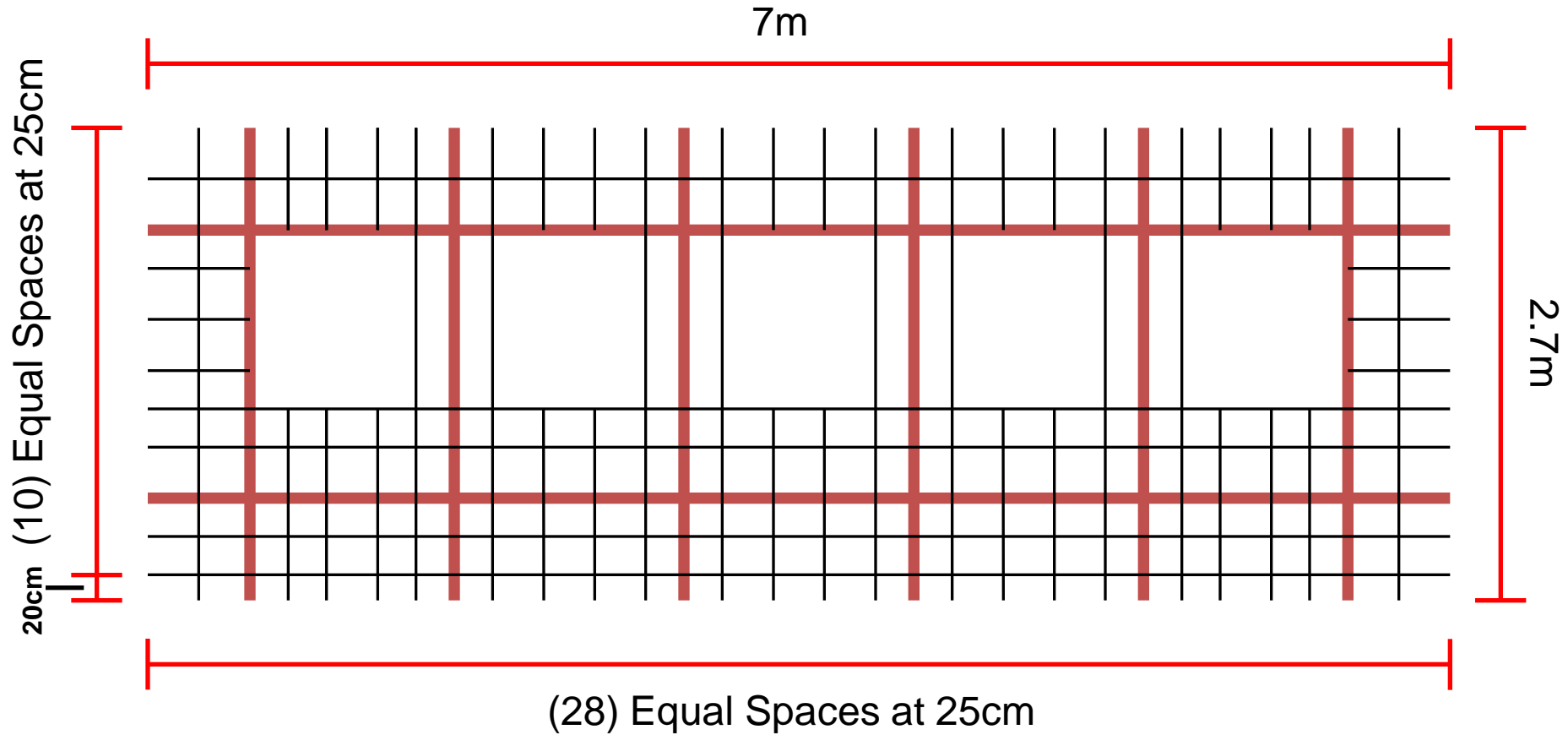
**Trench – Cross section (15cm X 15cm)**

# Latrine Foundation Trench Layout





# Latrine Foundation Rebar Layout



**FRONT**

Strip Footing Rebar (see following slide for details)

— 3/8in Rebar

# Latrine Foundation

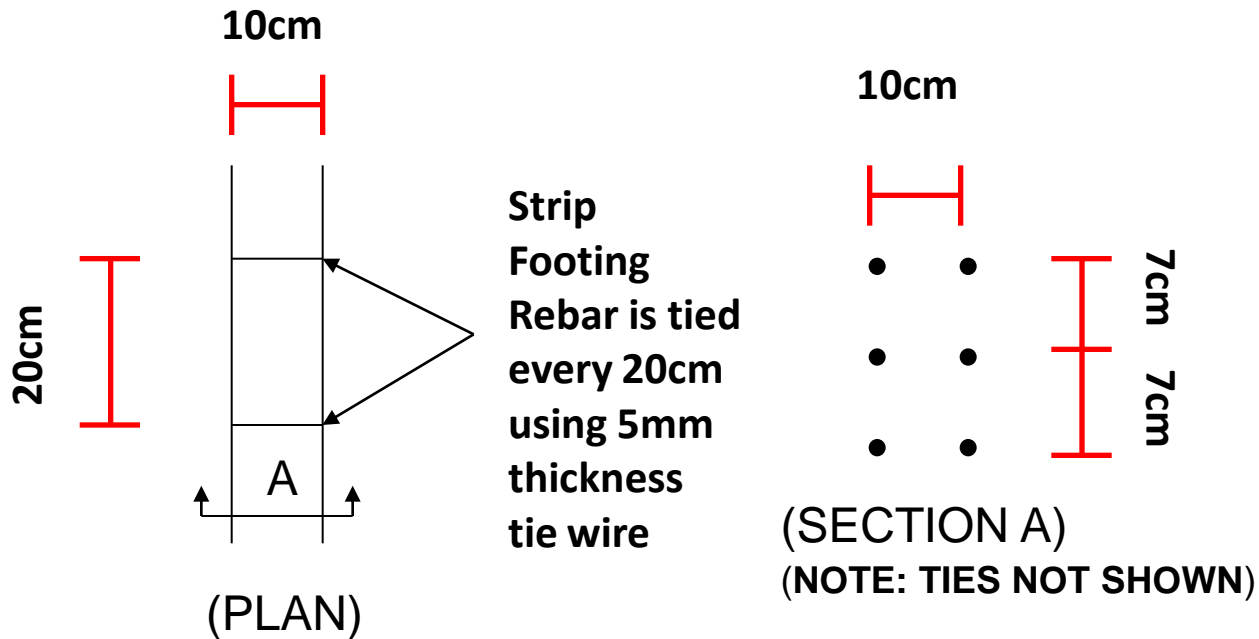
## Rebar Layout



**Note:** In these photos rebar was terminated 20cm before the form all around. 10cm diameter stones were added to fill this area. **Agua Para La Salud** considers this an acceptable design.

# Latrine Foundation

## Strip Footing Rebar Details



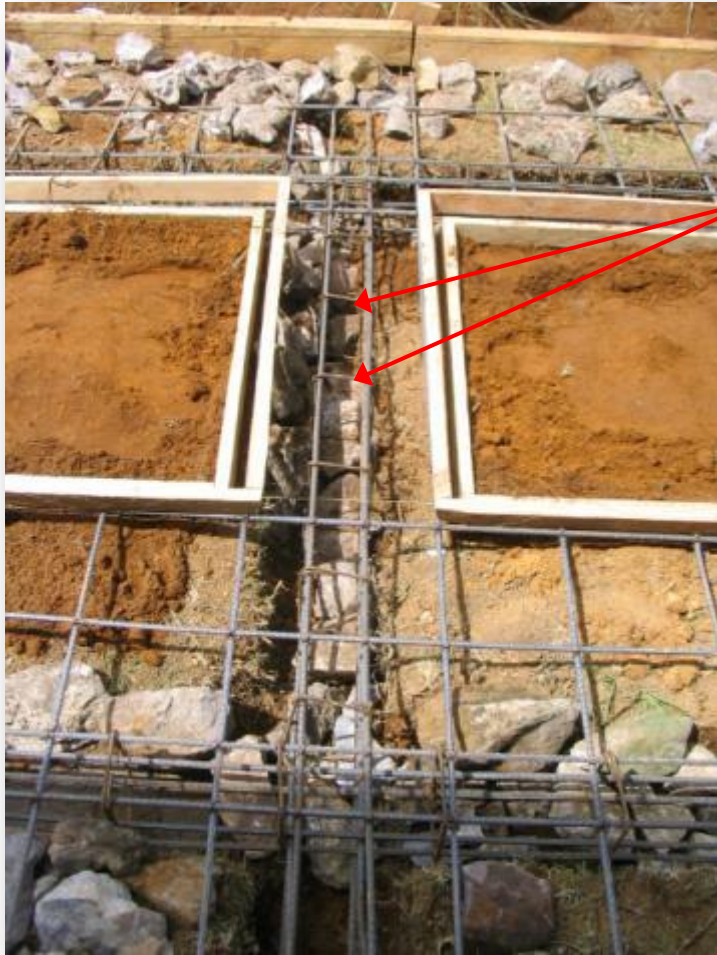
All Reinforcing steel shall be 3/8in

Strip Footing Rebar should be tied every 20cm using 5mm thickness tie wire

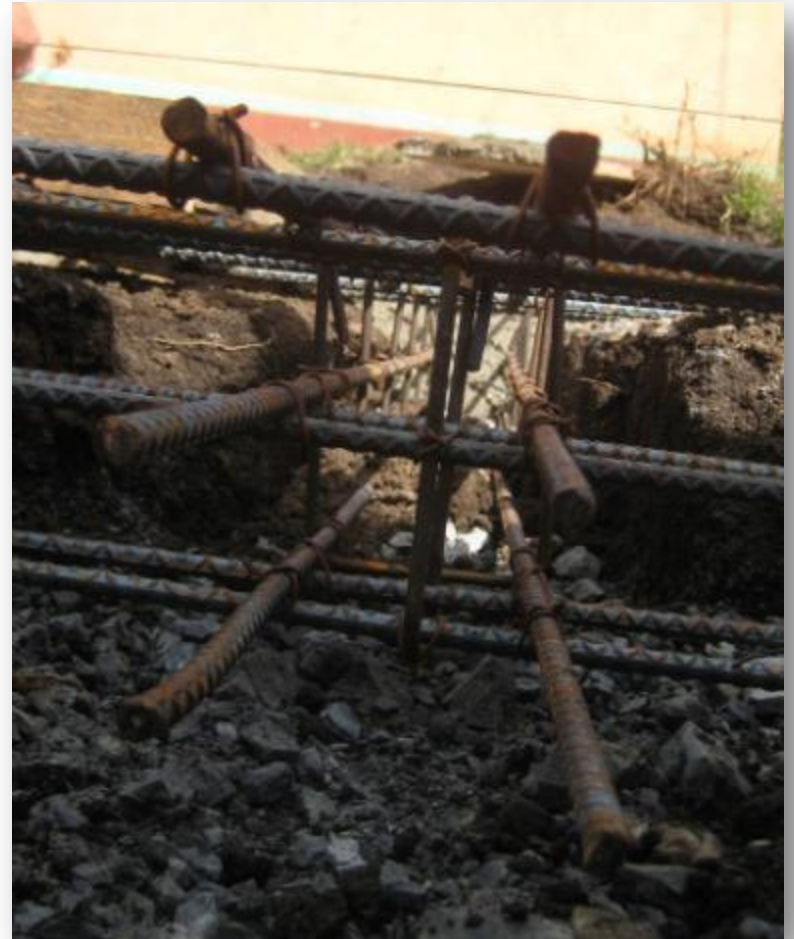


# Latrine Foundation

## Strip Footing Rebar Details



Strip  
Footing  
Rebar is  
tied every  
20cm  
using  
5mm  
thickness  
tie wire





# Latrine Foundation

## Strip Footing Rebar Details

- Attach the rods using small pieces of metal wire, ensuring that once tied, there are no sharp tails left.
- For rods that are parallel to each other, a simple wrap round and twist with a pair of pliers, will be sufficient. Allow at least 10 cm overlap of bars.



# Latrine Foundation

## Strip Footing Rebar Details

- For rods that are perpendicular to each other use an “iron workers knot” illustrated in the pictures opposite.



# Latrine Foundation



## Strip Footing Rebar Details

- For the foundation, use a sand, gravel to cement ratio by volume of
  - 3 parts gravel
  - 1.5 parts sand
  - 1 part cement
- It is not necessary to smooth the tank floor to perfection. A finishing layer will be added as a last step.



# Pouring Concrete

- Concrete should first be mixed dry to obtain a homogeneous mixture
- Water is added until the desired consistency is obtained
- Concrete is then poured into the form





# Placing Block



# Placing Block



## How to Begin

- Mortar is mixed as 2 parts sand to one part cement by volume, then placed below the block along the edges.
- First the 4 corner blocks are placed, with the outside face of the block placed 50cm from the edge of concrete.
- A level tool should be used to ensure the block is placed level.
- Once the 4 corner blocks have been set, place a string (fishing line works well) across the top edge of a block to another corner block. A hack saw blade can be used to put a line in the block to allow the string to pass exactly across the top edge of the block. The string will be used to your line while setting block.

# Placing Block

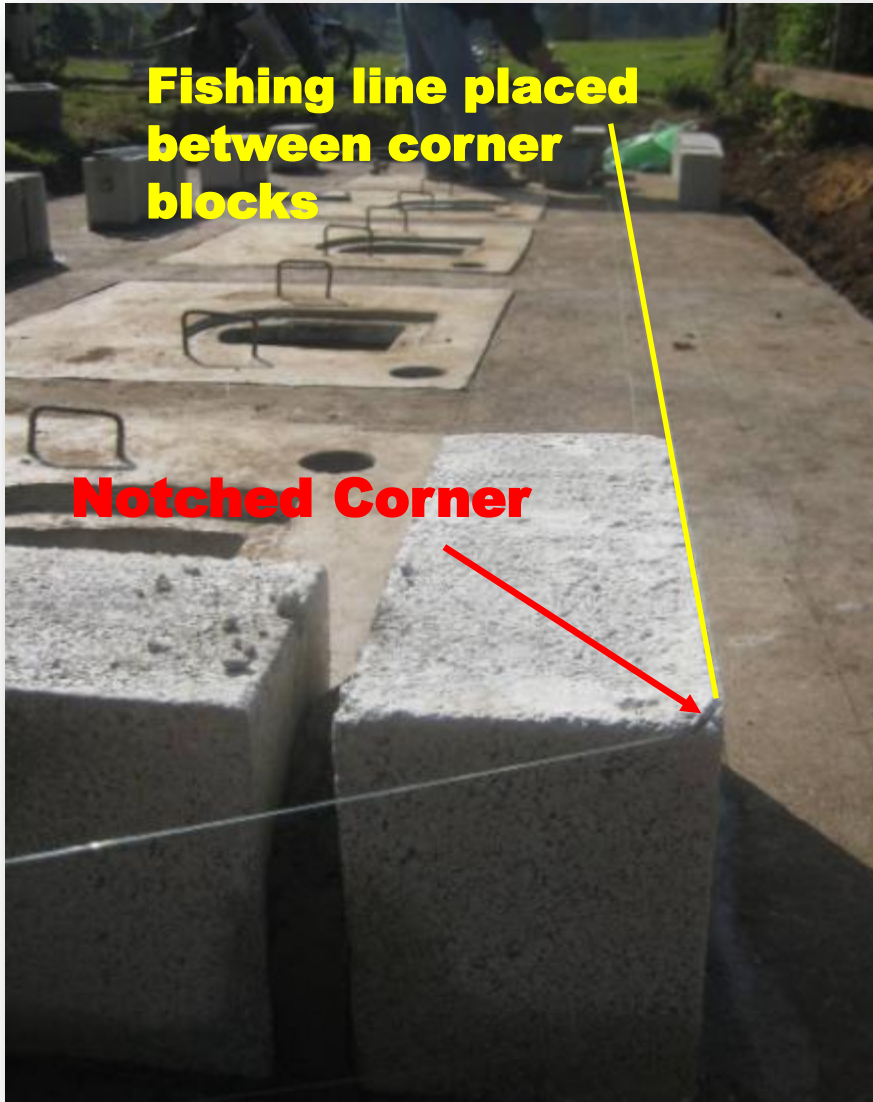


## Setting Corners Level

- Use a level tool to ensure the block is set level
- Also measure the height of the block to be sure the top of block is at the same height



# Placing Block



## Set a String

- Cut a small notch into the top corner of the blocks at each end
- Run a string (fishing line works well) across to another corner block
- The string will be used to set the blocks in between at correct location and height
- Be sure the string runs along the top edge of each corner block



# Placing Block



## Set a String

- The string should be used whenever setting a new line of block
- Here, a string is placed to set the wall in between two stalls

# Placing Block

## How To

1. Place two lines of mortar along where the bottom edge of the block will sit



# Placing Block

## How To

2. Add mortar onto the block, on the side that will attach to the block at one side





# Placing Block

## How To

3. Place the block in position
4. Use a hammer to get the top edge of the block perfectly in line with the string set for this purpose





# Placing Block

## How To

5. Fill in any remaining gaps with mortar and make the joint flush on all sides



# Placing Block



## Finishing Mortar Joints

- The joints between each stone should be finished using a 3/8" diameter bar to give a clean joint
- All exposed joints should be finished

# Placing Block



## Finishing Mortar Joints

- When the joint has been finished it should look like this

# Finishing Touches

- A final layer of cement is used to give the seats a smooth finish
- Mix cement for finishing layer with 2 parts sand to 1 part cement
- A hammer should be used to knock out cement and ensure a good fit of the seat within the contours





# Seats



- Once the seats are completed, they are set on top of the holes in each latrine cabin
- There is no need to fix the seats using adhesive or clips of any kind
- They will stay in place just from the weight, they're heavy!

# Roof

Attach the roof using nails to wood beams that are fixed to the top of the block. And now...



**They are ready to use!**

