

# How To Construct a Wall Style Hand Washing Station



# Be Advised

The following power point presentation assumes the user is familiar with plumbing, concrete construction techniques and has a basic knowledge of geometry so as to select the proper dimensions of the hand wash station. Further, the exact dimensions will depend on the design criteria, but at a minimum, a hand wash station should have a clean out and shut off valves; entry of water from the water source; and sufficient faucets to serve the distribution system.

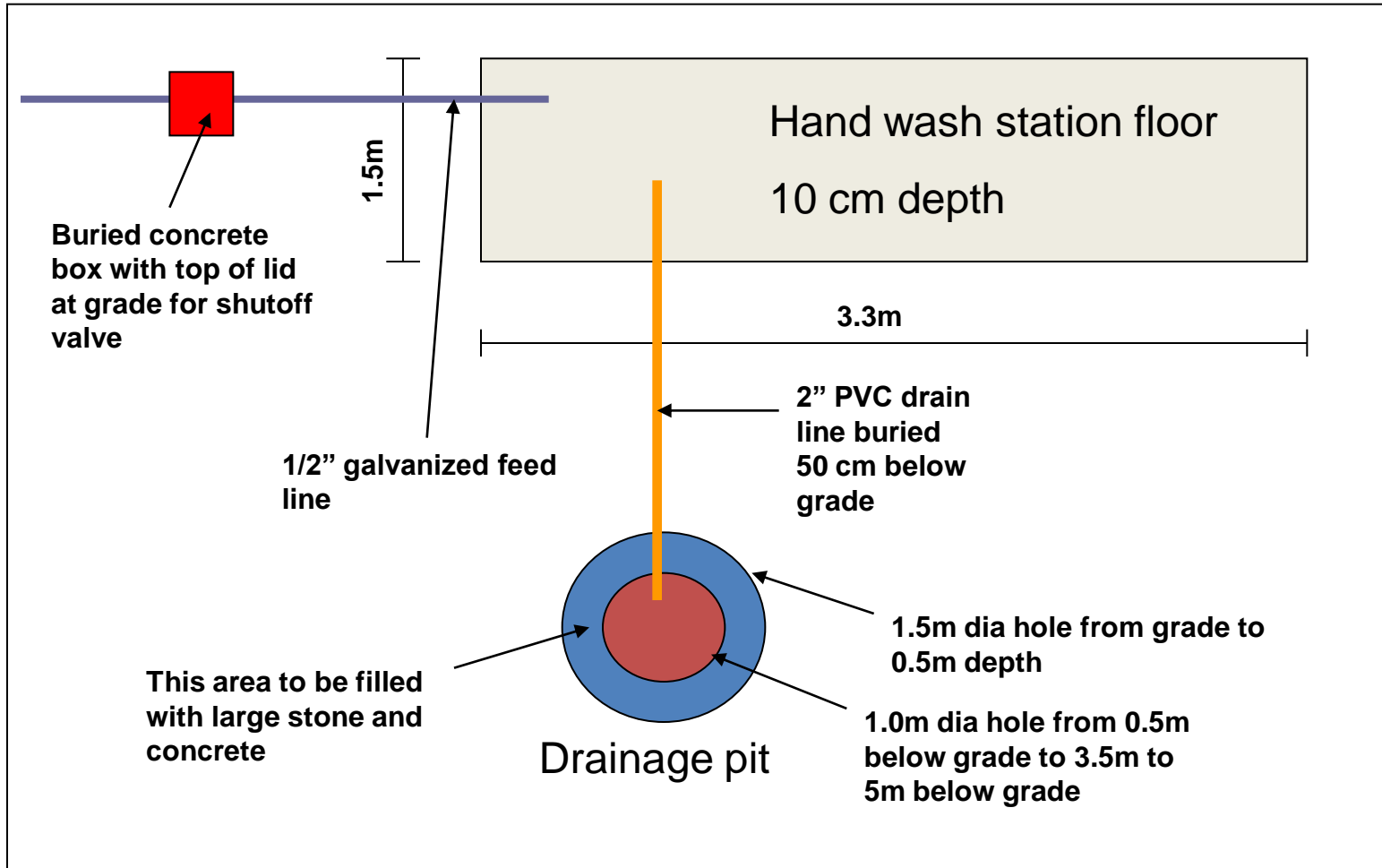




# Site Preparation and Calculations



# Site Plan



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



# Materials

- Galvanized Pipe
  - Four (4) ½" 90° Elbows
  - Nine (9) ½" couples
  - Eight (8) ½" water tap valves
  - One (1) ½" gate valve (shutoff)
  - Nine (9) ½" X 10cm Nipples
  - Seven (7) ½" x 35cm Nipples
  - One (1) Length (6m) ½" Tube
  - Eight (8) ½" Tees
- PVC Pipe
  - Two (2) ½" Male PVC to Galv Adaptor
  - One (1) Length (6m) ½" Pipe
  - Two (2) Lengths (12m) 2" Drain Pipe
  - Six (6) 2" Drainage Tees
  - 1/8 Gallon PVC glue
  - Two (2) 2" Female Threaded Adaptors
  - Two (2) 2" Male Threaded Plugs
- Two (2) rolls Teflon tape
- Drain covers (see slide #24, "Drain Layout")
- Two (2) lbs 2-1/2" Nails
- Two (2) lbs 4" Nails
- Wood for formwork
  - Two (2) lengths 12'X2"X4"
- Two (2) cubic meters Large stone (6 to 12 in dia.)
- Thirteen (13) 3/8"x 6m reinforcing steel bars
- Five (5) lbs Tie Wire
- Ten (10) 45kg bags of cement
- 1.5 Cubic meters Sand
- 1.5 cubic meters Gravel
- Water





# Site Preparation

Cut enough room for the entire handwashing station to sit on solid, flat ground. A flat area to will also be needed to mix concrete.



**Concrete mixed here**

**Construct a wooden mould for the base of the hand wash station**

**Smooth and compact floor area**

# Drainage Pit

- Dig hole with 1.5 m inside diameter to 0.5m depth
- **CAUTION:** DO NOT DIG DRAINAGE PIT IN FILL SOIL. WHEN IN DOUBT USE SHORING







- Cover sides with stone
- Be sure to maintain at least 1.0m inside diameter
- Add concrete to outside of stone to set in place
- Leave opening for drainage pipe





# Drainage Pit

Dig 1m inside diameter hole to additional 3m to 5m depth

***Depth is a function of the absorption of the soil. In clay soils, a 5.5m total depth will be needed.***

Hole will extend to 3.5m to 5.5 below grade.



# Hand Wash Station Floor

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 this area. Rebar for hand wash station will fit inside this area.

Galvanized water line in place

Drain pipe in place



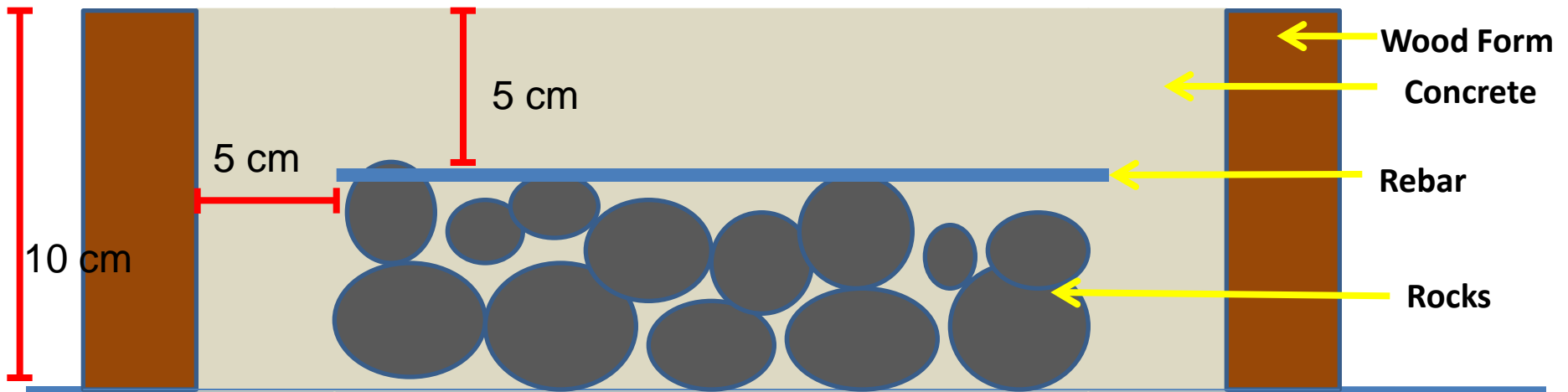
Ensure forms are held firmly in place

4 to 6 inch diameter stone is placed to cover the ground

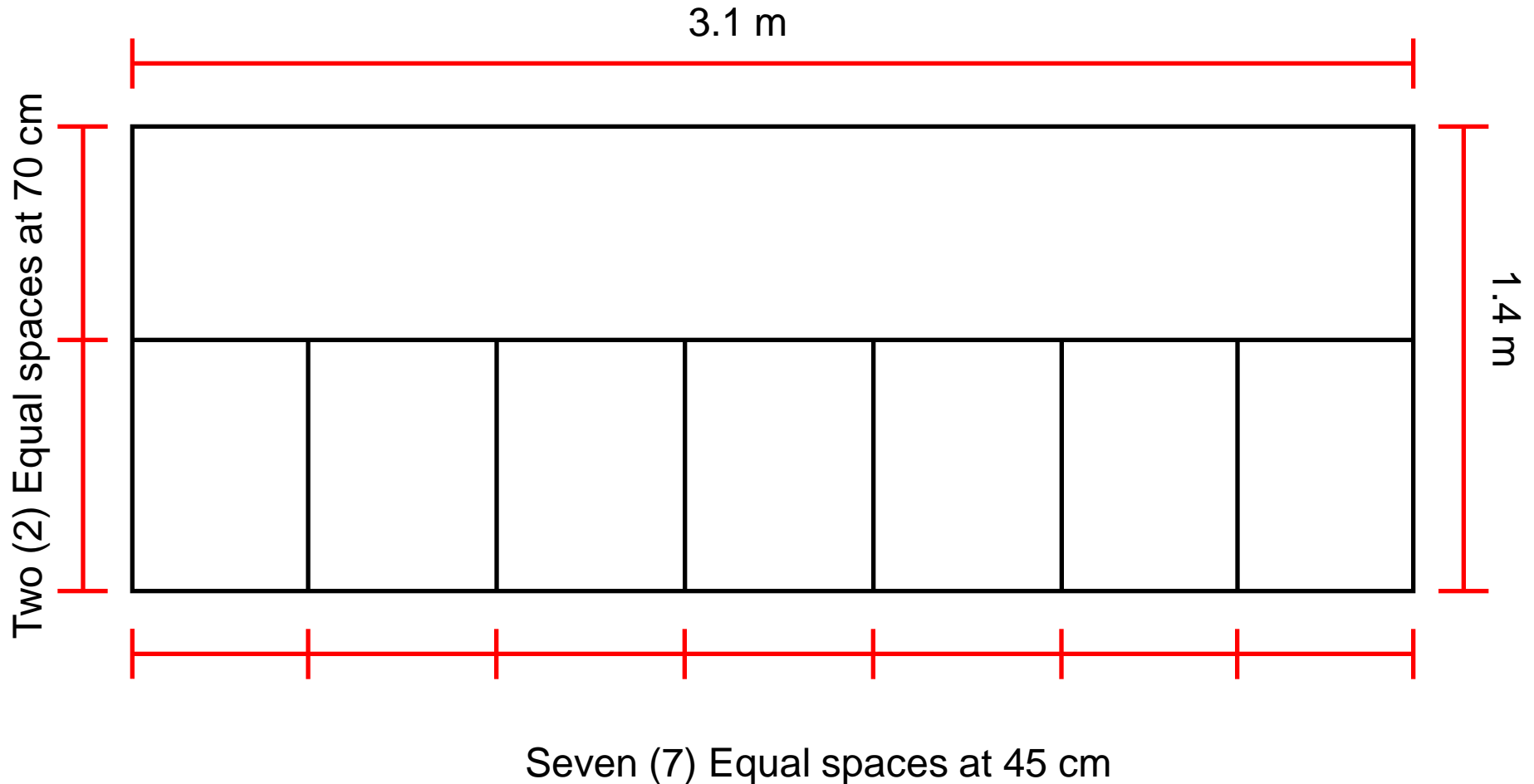
Leave a minimum gap of 5 cm between rebar and form to allow concrete to fill this area. Do not place stone between rebar and form.



# Hand Wash Station Floor Section View



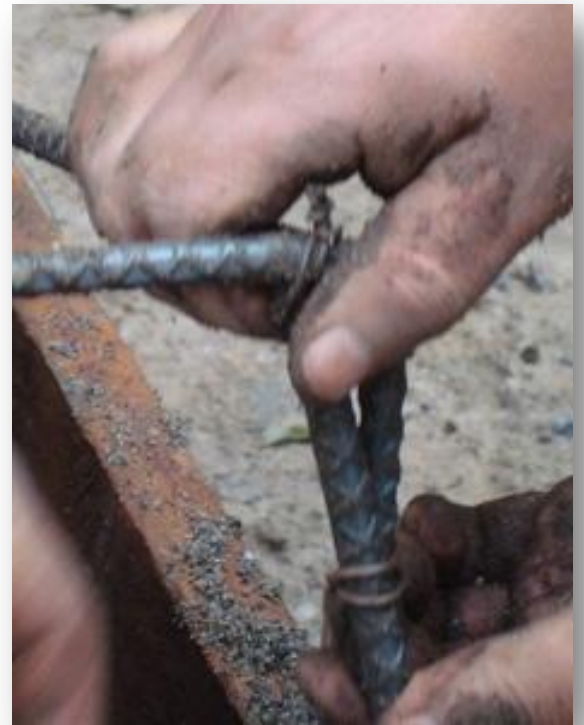
# Hand Wash Station Floor Rebar Layout





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



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





For the base, use a sand, gravel to cement ratio by volume of

- 3 parts gravel
- 1.5 parts sand
- 1 part cement



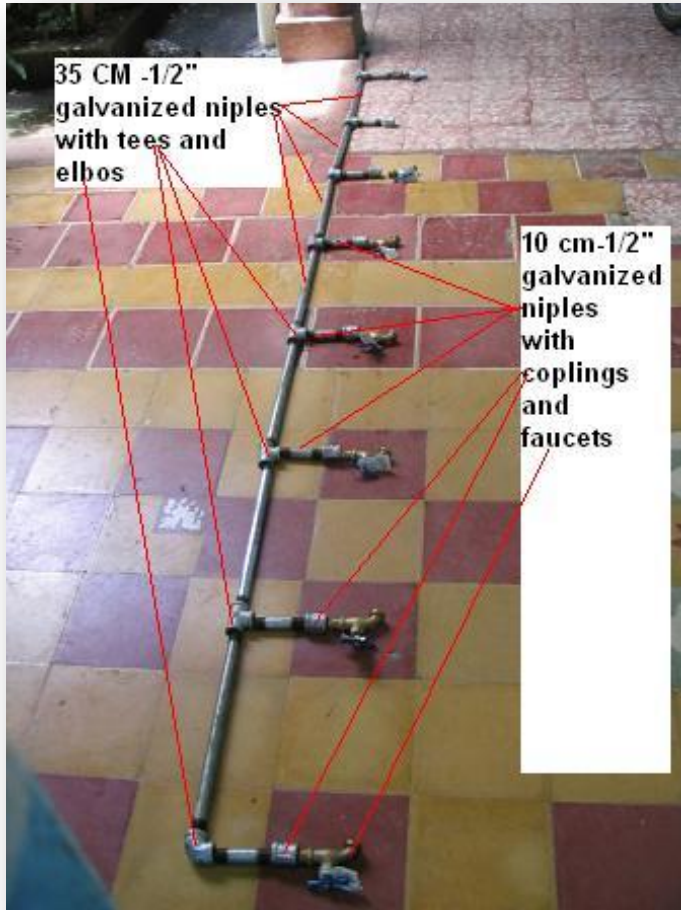
It is not necessary to smooth the tank floor to perfection. A finishing layer will be added as a last step.

# Piping Layout



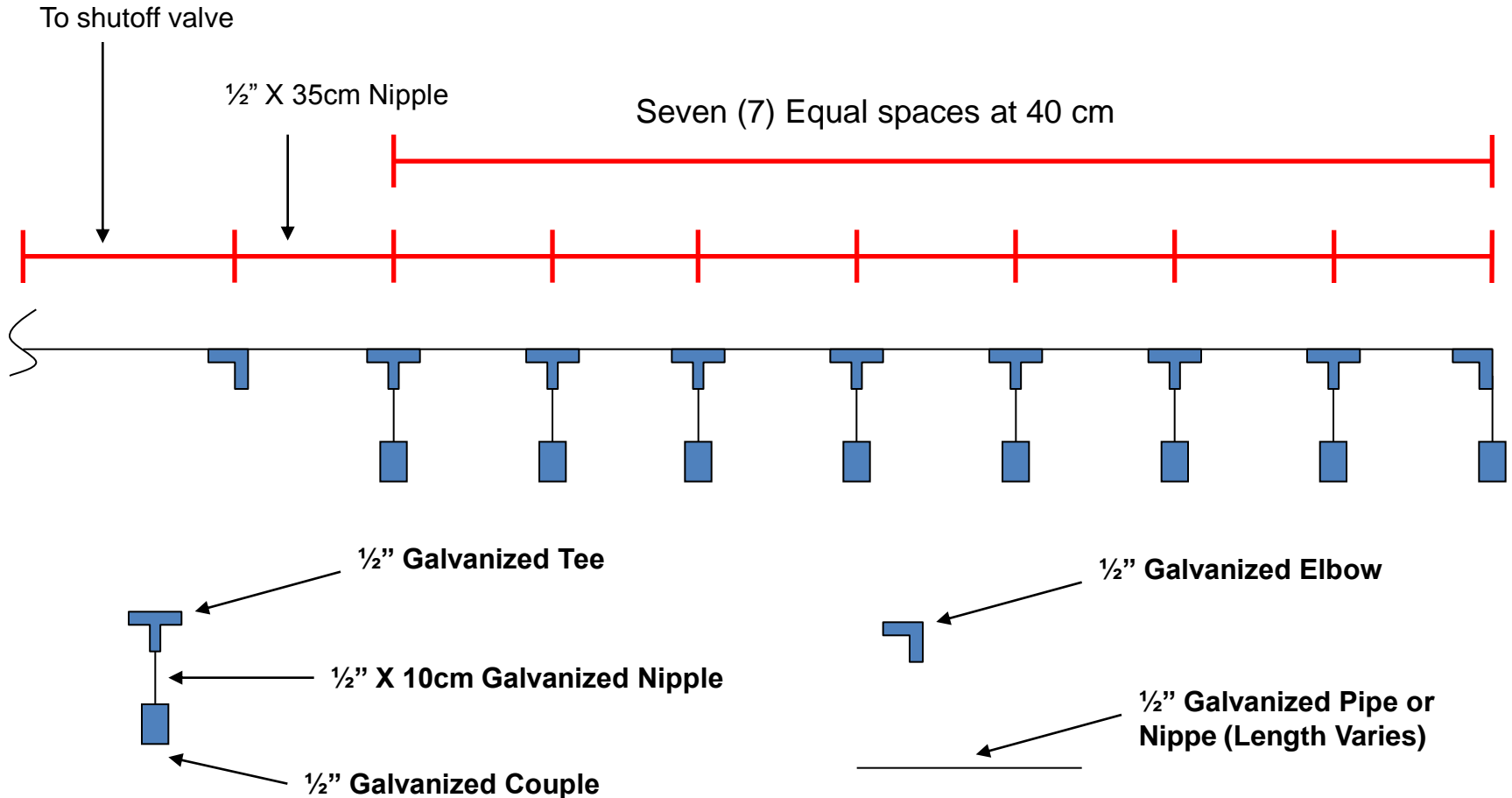


# Galvanized Piping Layout



**NOTE: DO NOT ACCEPT A SUBSTITUTE FOR GALVANIZED PIPE**

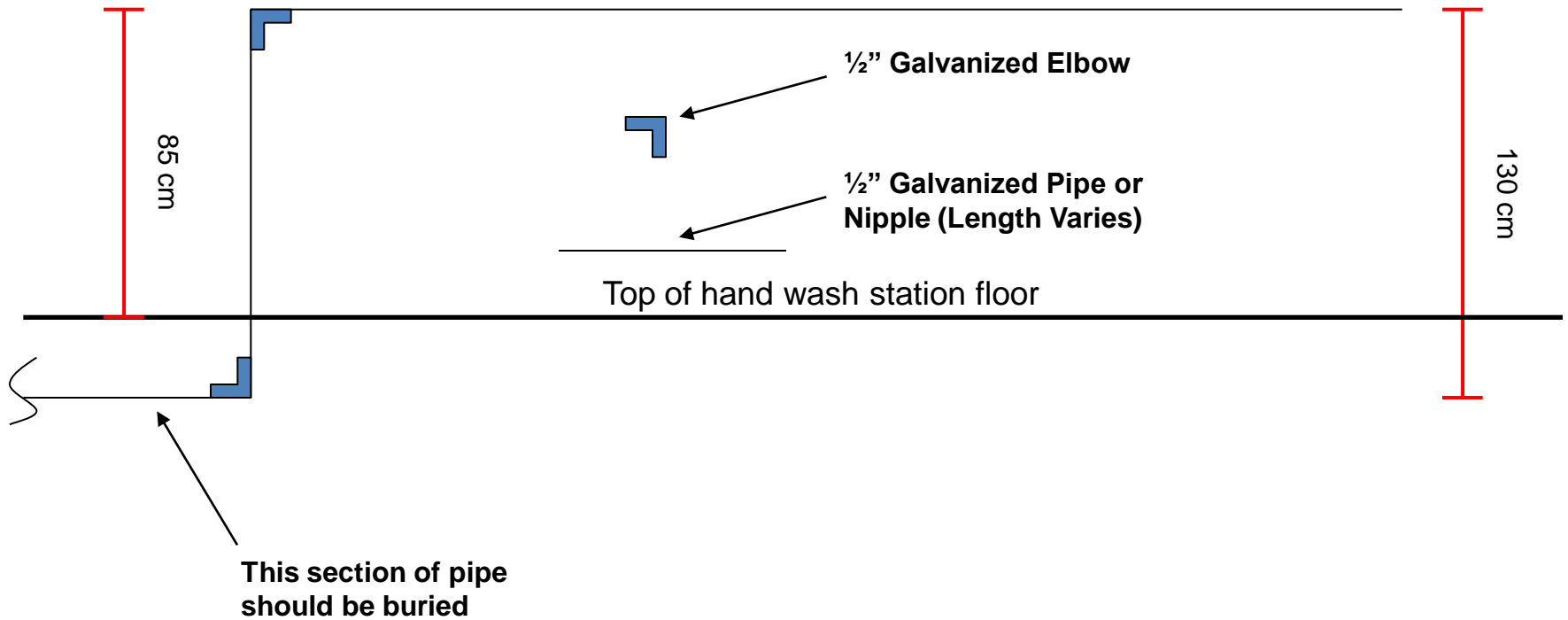
# Piping Layout (Plan)



**NOTE: All connections should be made using Teflon (tape or paste) to prevent water leakage**



# Piping Layout (Elevation)



# Measurements for an 8 tap hand wash station



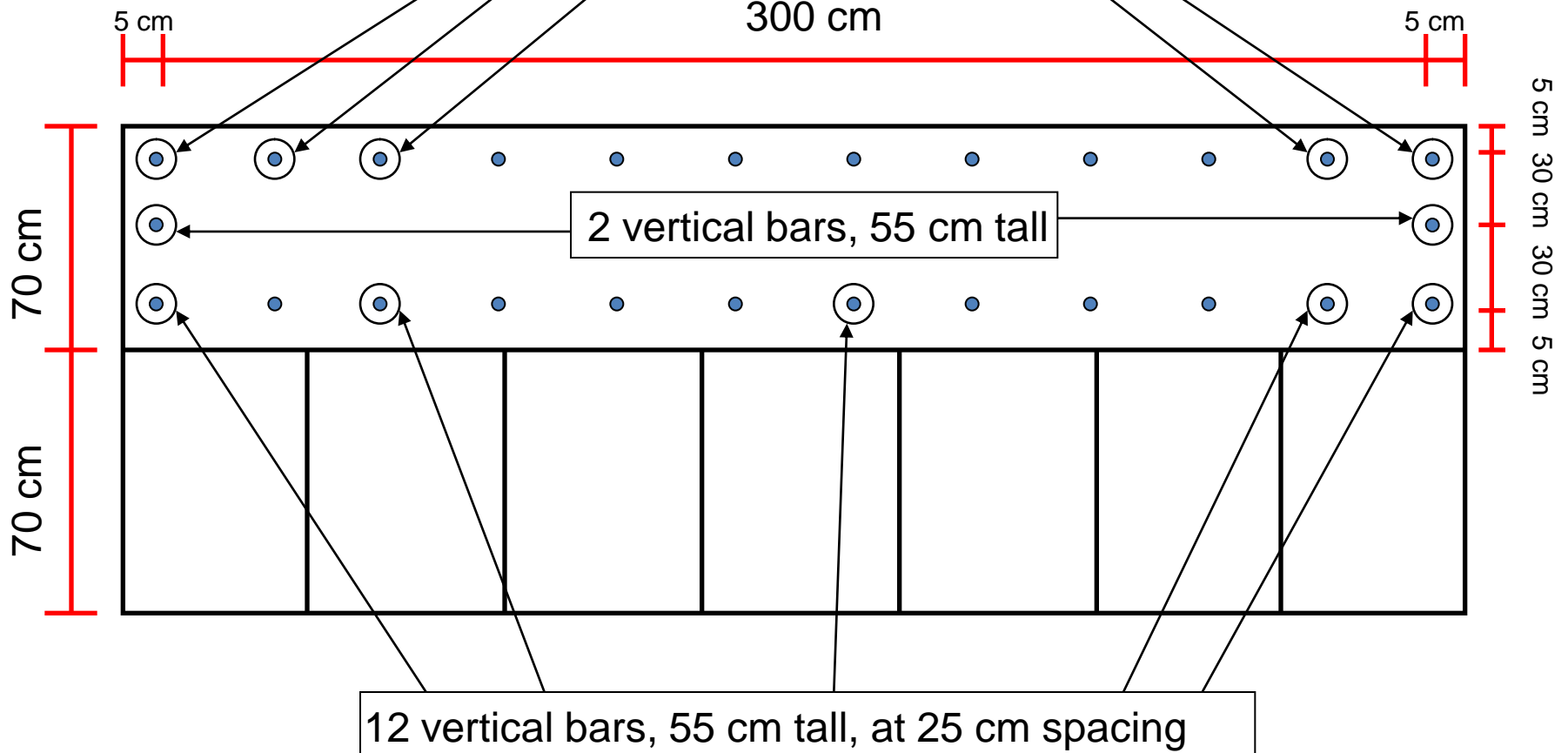


# Hand Wash Station Rebar Layout



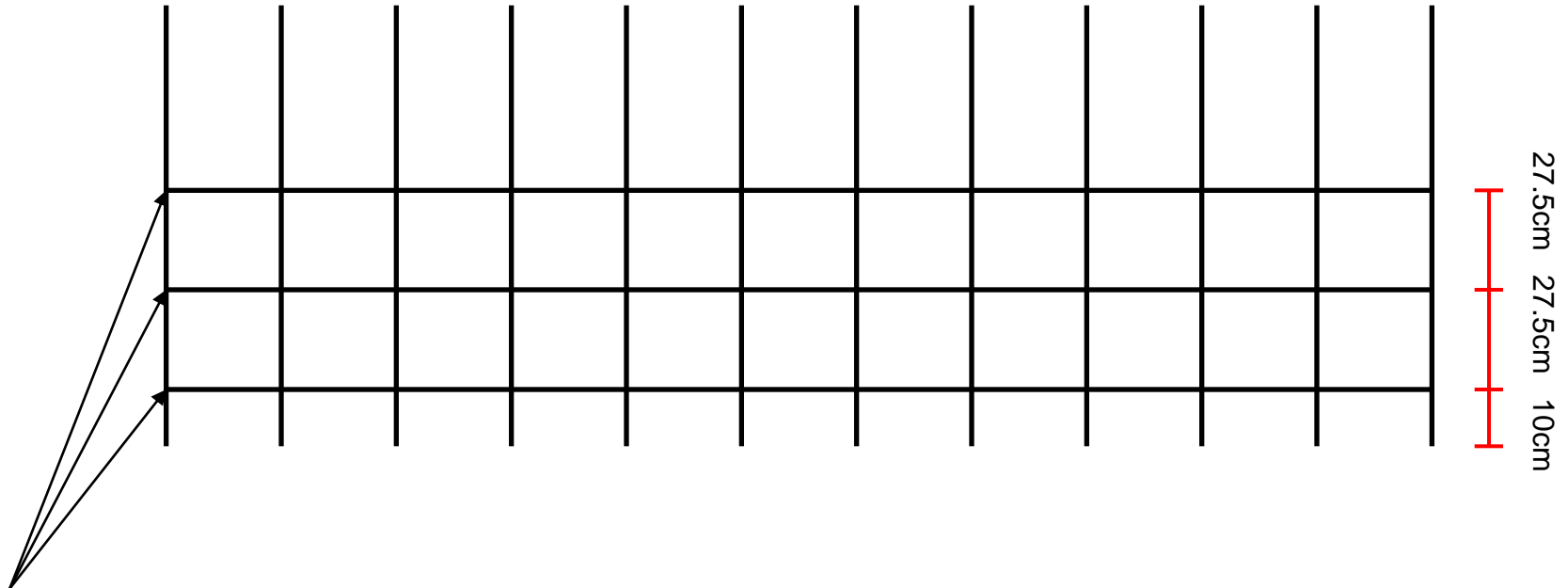
# Hand Wash Station Rebar Layout (Plan)

12 vertical bars, 100 cm tall, at 25 cm spacing



(Horizontal rebar not shown)

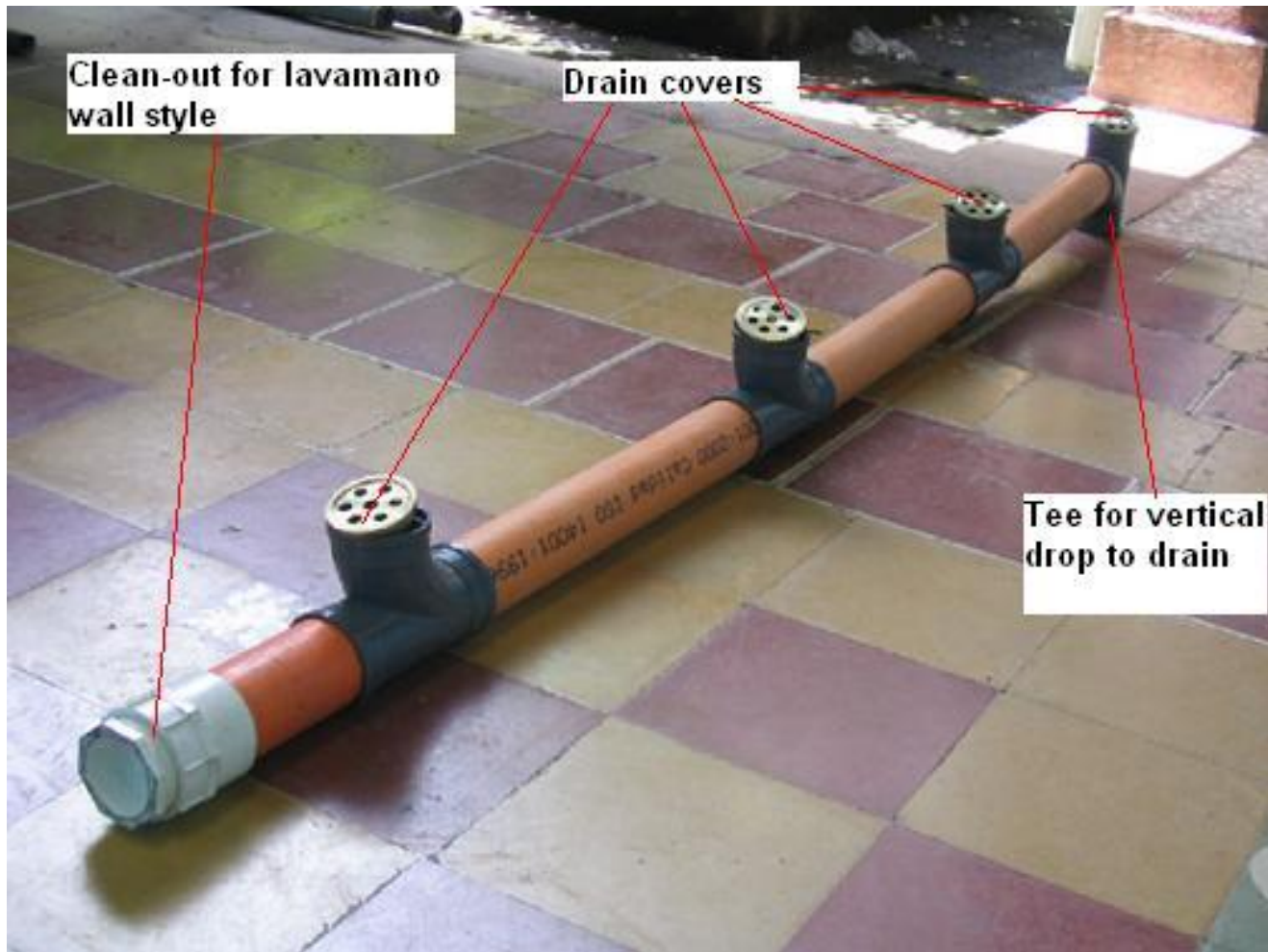
# Hand Wash Station Rebar Layout (Section)



THREE (3) HORIZONTAL BARS, ALL AROUND



# Drain Layout

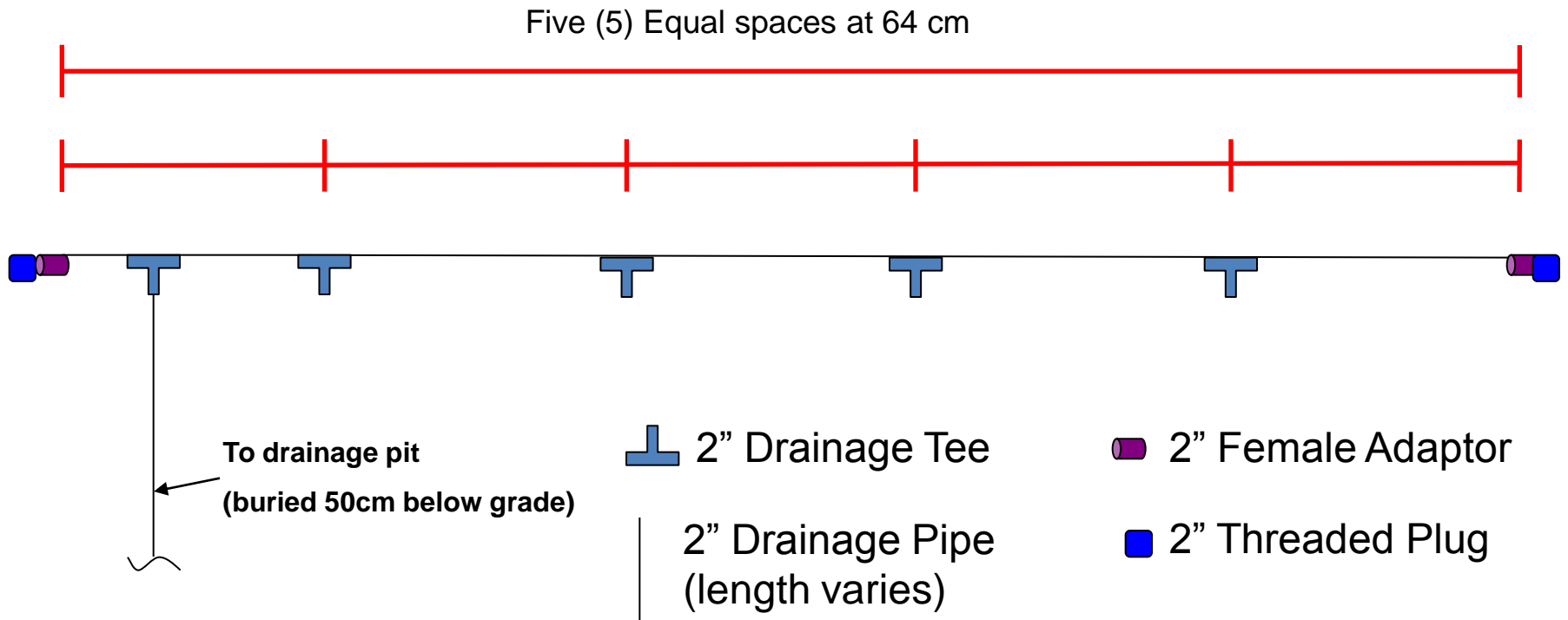


# Drain Covers



- A 2" PVC cap can be used for a drain cover by simply drilling 3/8" holes

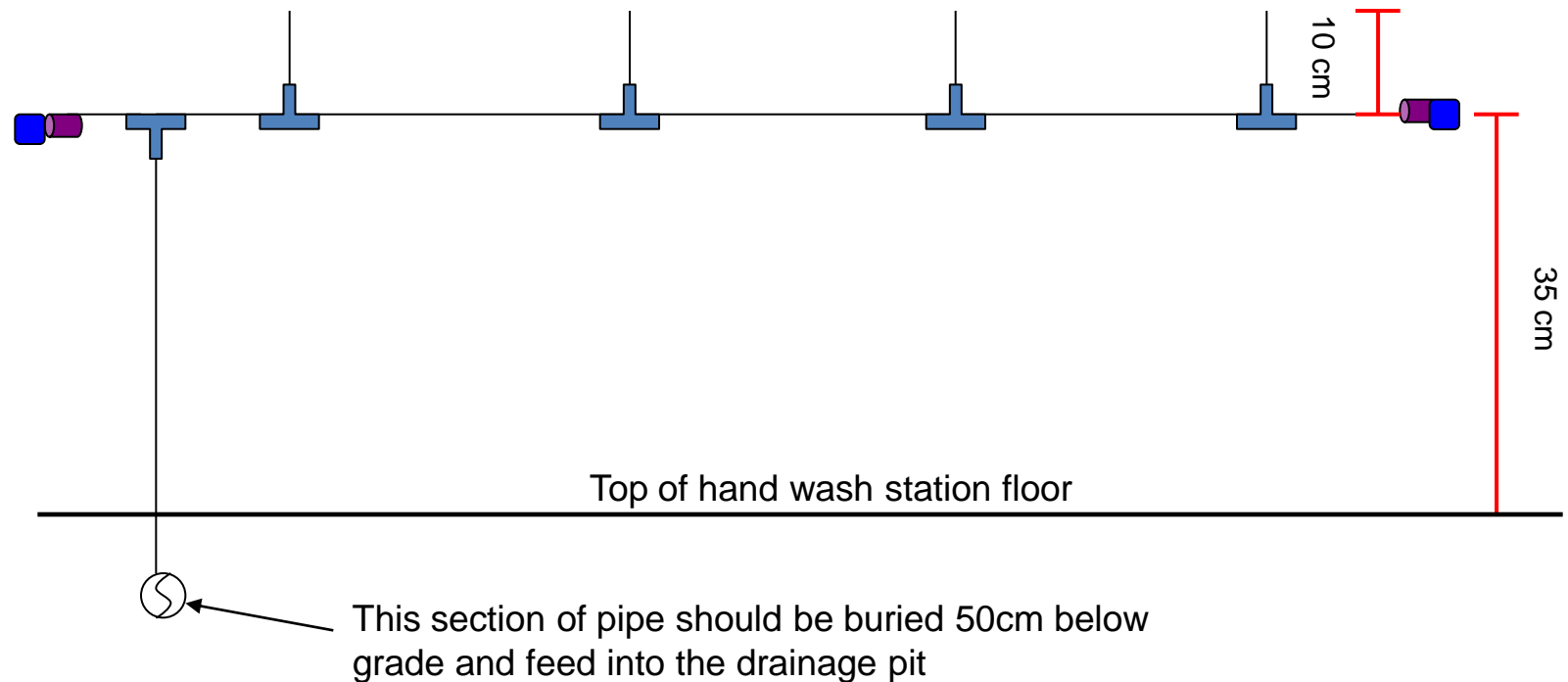
# Drain Layout (Plan)



**NOTE: All connections should be made using Teflon (tape or paste) to prevent water leakage**



# Drain Layout (Elevation)



- Cleanout: 2" Threaded plug screwed into 2" Female Adaptor (See Next Slide)
- A drain cover should be attached to the end of the 10cm section of pipe. This cover will sit at the base of the sink.

# Cleanout

- Cleanout Plug (Tapon de Limpieza in Spanish)
- Threaded plug should be removable from exterior or hand wash station
- One cleanout is placed on either end of the main drain pipe (see slide #24 “Drain Layout”)





# Place Framework

- 5 cm clear spacing should be maintained between rebar and framework
- The area in the center of the rebar will be filled with large stone, then concrete.
- Place drainline before adding concrete





# Pouring Concrete

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

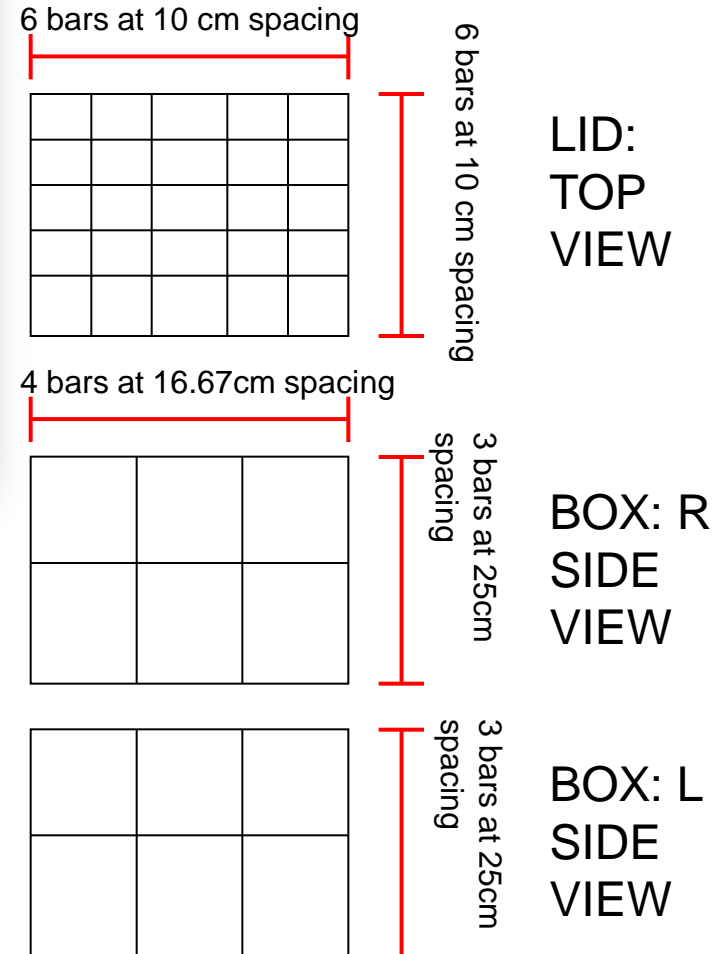


# Shutoff Valve Box



- A piece of rebar should be bent as seen above to serve as a handle for the lid
- A thickness of 10 cm should be maintained on box walls, floor, and lid
- The box has 4 walls without top or bottom
- For shutoff valve box location see slide #4 “Site Plan.” Choose location per site conditions.

Rebar placement shown below





# Finishing Touches



- A final layer of cement plaster is added to give the station a smooth finish
- Mix concrete for finishing layer with 2 parts sand to 1 part cement
- Concrete on the sink should be sloped towards the drain lines



# Ready to Use!



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Optional: Add step for little ones

