

COVID-19

HANDWASHING WITH SOAP (HWWS) FACILITIES

Compendium of Indicative Layouts,
Designs and Cost Estimates

April 2020



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DESIGNS WITH ESTIMATES FOR HANDWASHING WITH SOAP UNIT

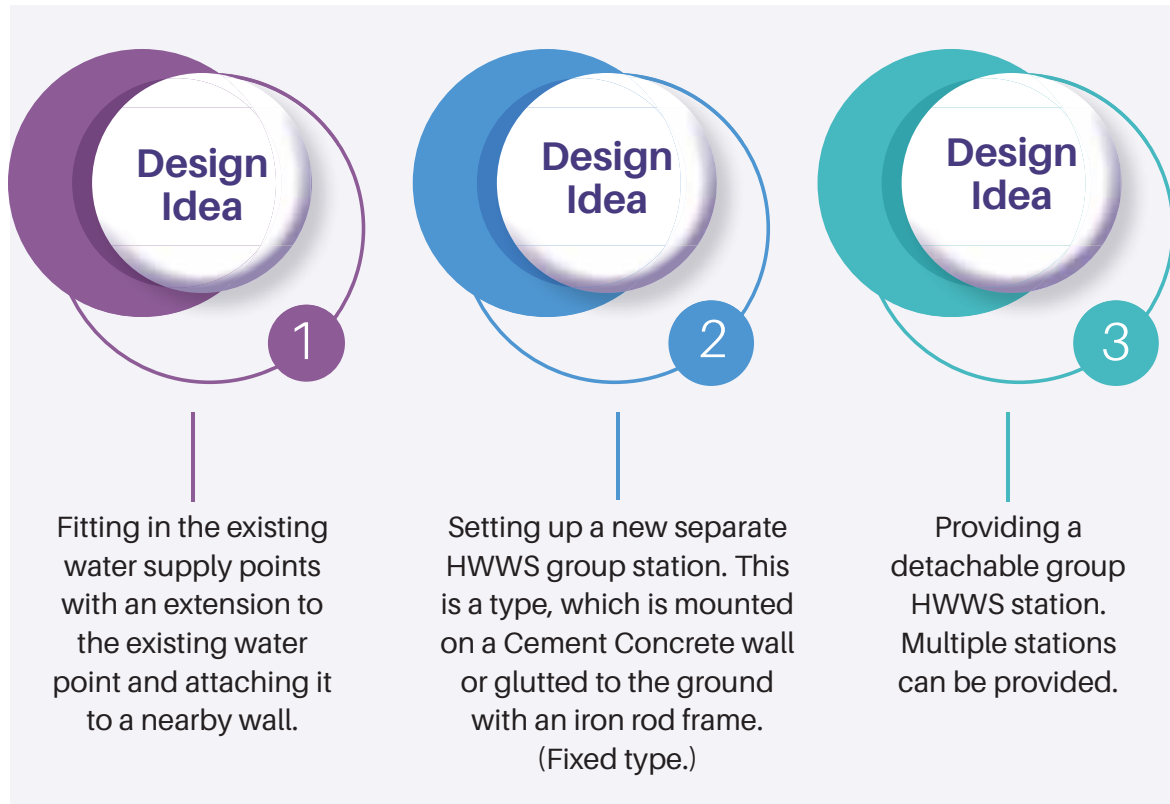
Background

Handwashing with soap for minimum 40 seconds is one of the precautionary measures suggested and advocated globally since the outbreak of COVID-19 (Corona Virus Disease). The pandemic has created a demand for behaviour change and sustained practices of Handwashing with soap. This calls for exploring existing options of handwashing stations and create newer designs of handwashing stations globally, majorly catering to the demand of COVID responsive features. This document explores some of the suggestions and possible options in different situations.

1. Principles for Design

 <p>Minimal Hand touch in handling water spout and soap dispensers</p>	 <p>Availability of running water for handwashing</p>	 <p>Height of the handwashing point should be accessible 2 to 4 feet (Age sensitive)</p>	 <p>Physical distance between 2 handwashing points to be minimum 2 Meters</p>
 <p>Accident-free location and can be set up at barrier free locations</p>	 <p>Easy to handle and can be made locally</p>	 <p>Cost effective and durable for at least crisis period and durable preferably</p>	 <p>Easy to transport, assemble and dissemble</p>
 <p>Can be set up by a lay man with minimum workmanship</p>	 <p>Provision for soap accessibility, and safety against threat</p>	 <p>Provision for suitable disposal/ reuse of wastewater</p>	

2. Simple and sample thoughts behind hand washing station design



3. Checklist for setting up the handwashing stations

- a. Pipes should have an appropriate slope for uniform water discharge.
- b. The wash basin platform must have proper slope for drainage.
- c. The wastewater should be drained out to a soak pit of proper size.
- d. Soap dispenser must be made available which is likely to change in local situations or contexts.
- e. For managing the waste, a pedal operated dustbin should be placed nearby.
- f. The wash basin height should be between 2.5 to 3 feet for comfortable use.
- g. There should be a minimum distance of 2 meters between two tap points.
- h. Pipelines and wash basins should be free of leakages.
- i. Regular checkup and fixing up of leakages should be done.



4. Necessary Components other than the station

SN.	Component	Quantity	Remark
1.	Stored Water or Flowing Water	250 to 350 ml of water per user	With proper continued controlled flow User should be careful in using the water to not waste water but ensure proper cleaning of hands at the same time
2.	Liquid Soap (No bar soap)	Less than 5 ml of proper liquid soap	In case liquid soap is used, it should not be diluted. Bar soap can be used to make liquid soap. No other disinfectant should be used
3.	Soak Pit	1 m ³ (1 m x 1m x 1m)	If soap pit can not be constructed, proper drainage should be ensured
4.	Display board/ poster	At least one display per unit, visibly placed	Proper steps of handwashing (prototypes of IEC material are displayed in the document)
Hand Drying Step		Air dry preferred or Individual clean cloth/ paper napkin	Multiple use cloth to be avoided

The Itemized cost and total cost of the unit shown here are indicative only and may need adapting to site specific conditions.

5. Operation and Maintenance of the facility in general

- ✓ Continuous flow of water to be ensured
- ✓ Liquid soap to be available all the time
- ✓ Wastewater should be managed effectively
- ✓ All the leakages should be taken care off
- ✓ The moving parts and joints require regular lubrication.
- ✓ Social distancing be maintained, and use should be done without crowding the place
- ✓ Frequent cleaning and disinfection of taps and handwashing station depending on usage should be done. Depending upon the model or type of station, an operation and maintenance model should be worked out.

DISCLAIMER: The designs provided in this compendium are based on inputs received from partners working in the sector. UNICEF duly acknowledges the contribution. There is no intent to promote any brand or commercial interest in this effort. In wake of the outbreak of COVID-19, these designs are compiled in one document and is being shared for further use in field situations as per the necessity and willingness of the users and implementers. This document is prepared on an urgent basis and hence, the possibility of some errors cannot be denied. Quality of some photographs may be low.

Exchange Rate: 1 USD=75.57 INR @ 1st April 2020



DESIGN: 1

Hand wash unit developed by Bhopal Municipal Corporation For COVID 19



This type of unit is suitable for public places where local material such as drums sheets are available readily, and can be sourced at a cheaper cost. A skilled fabricator can erect such unit in one day. This unit is for single person's use at a time, however, a number of such units can be installed if frequency of visitors is more. The placement of units and distance between users should be as defined in principles of design.



Itemized cost estimate (Single Tap Unit)

S.No.	Item details	Quantity	Cost in INR
1.	Water drum 1000 lts @4.5INR/lts	1 no.	4500
2.	Angle (35*5) @50 INR/kg	35 kg	1750
3.	M.S. Strip(Patti) @ 50 INR/kg	3 kg	150
4.	18gauge cover for tank (lumpsum)		300
5.	2 steel tap @50 INR each	2	100
6.	2 spring @20 INR each	2	40
7.	Sheet tray (small basin)	1	500
8.	Waste water pipe	1	200
9.	Welding, labour etc.		1500
9.	One liquid hand wash	1	100
10.	Foot rest plastic @50 INR each	4	200
11.	Painting and IEC messages on unit		400
Total, INR			9740/- Say INR 10000/- USD 132



DESIGN: 2

Safety Hand wash Station (West Singhbhum Jharkhand)

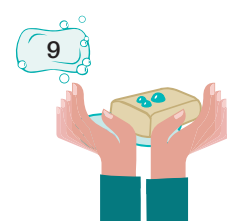


This type of unit is suitable for public places/ offices where visitors are more. The number of taps can be increased or decreased as per the requirements. This is suitable where running water/ piped connections are available. A skilled fabricator can erect such unit in one day. The placement of units and distance between users should be as defined in principles of design.

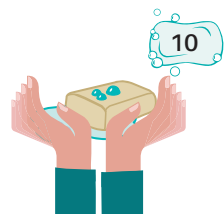
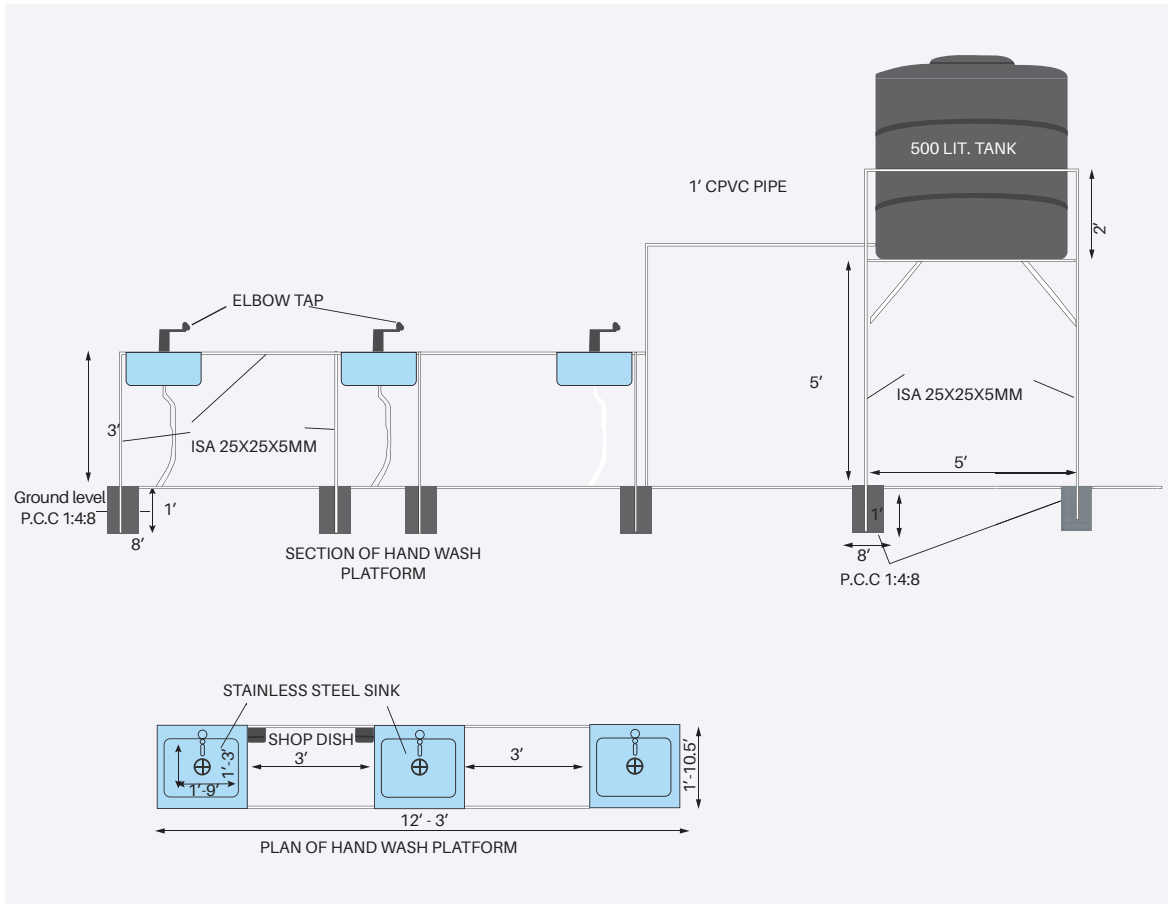


Itemized cost estimate

SN.	Item	Qty.	Unit	Rate, INR	Amount INR
1	Concrete Work				
	Providing and laying in position cement concrete of specified grade excluding cost of centering and shuttering 1:4:8 (1 Cement, 4 coarse sand, 8 grade stone aggregate 40 mm nominal size)	0.144	CUM	4200	604.8
2	Steel work				
	Steel work welded in built up sections/ framed work, including cutting, hoisting, fixing in position and applying priming coat of approved steel, primer using structural steel and sand blasting 2 coat etc. complete	33.8	Kgs	75	2535
3	Stainless steel sink	3	Nos	1800	5400
4	Elbow tap	3	Nos.	350	1050
5	Shop dish	3	Nos.	200	600
6	5 Lit tank	1	Nos.	3500	3500
7	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) Pipes	15	Rmt.	200	3000
Total, INR					16689 Say INR 17000/- USD 225



Drafted Design: COVID-19 safety hand wash station



DESIGN: 3

Low cost waste tank used hand wash station



Picture shown is for representational purpose only, a distance of atleast 1 meter to be ensured between two users.

This type of unit is suitable for Institutions/ Schools etc. where visitors are more. The number of taps can be increased or decreased as per the requirements. This is suitable where running water/ piped connections are available. A skilled fabricator can erect such unit in one day. The placement of units and distance between users should be as defined in principles of design.



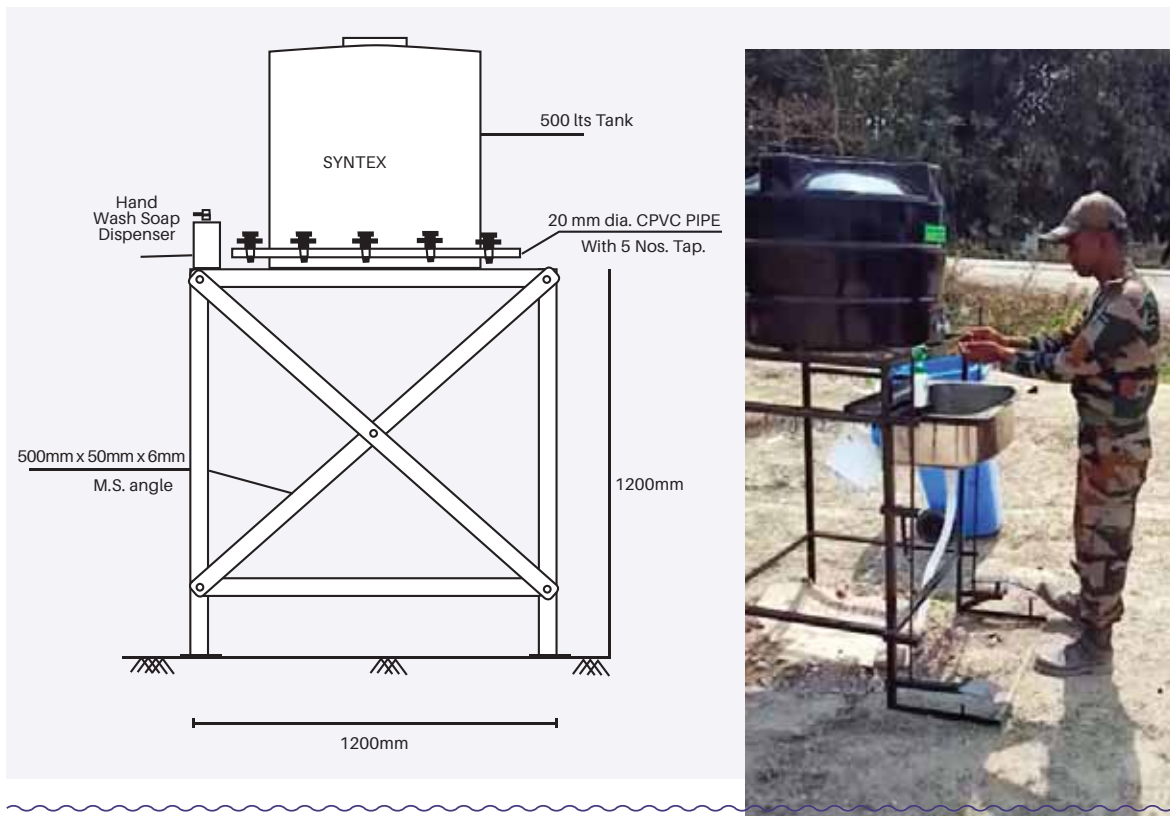
Itemized cost estimate

S.N.	Item	Qty.	Unit	Rate, INR	Amount INR
1.	Plastic drum	1/2	No.	1000	500
2.	Taps	4	No	130	520
3.	Pipe (1 M)	1	RMT	100	100
4.	Structure Frame	1	No	1500	1500
5.	Fabrication charges	1	No	500	500
6.	Painting	1	No	100	100
Total, INR					INR 3200 USD 42



DESIGN: 4

Hands free soap and water dispenser foot operated handwashing station, Dibrugarh, Assam: Developed by PHED Dibrugarh Assam for COVID 19 campaign



This type of unit is suitable for public places/ Institution where visitors are limited. In case of more visitors, a suitable number of units need to be installed. This units can be used where running water/ piped connections are not available, however a workable system for filling the tanks is required. A skilled fabricator can erect such unit in one day. The placement of units and distance between users should be as defined in Principles of Design.



Itemized cost estimate

S N.	Description of work	Unit	Qty	Rate	Amount
1	Installation of M.S. Staging of 50x50x3 mm Angle 1.20 m height and 1.20 width with paddle pumps for soap and water dispensing	each	1	(LS) 5,000	5,000
2	Installation of 500 lit capacity syntex water tank on the M.S staging complete as specified	each	1	(LS) 5,000	5,000
3	Installation of Steel sink at MS staging (24 inches (L) X 18 inches (B) X 10 inches (H) with tap and wastepipe connections	each	1	2,500	2,500
4	Carriage and other sundries such as liquid soap etc			1,000	1,000
Total, INR					INR 13,500 USD 178



DESIGN: 5

Push Tap Design (Chhattisgarh)



This type of unit is entirely indigenous, suitable for Institutions/ homes where visitors are limited. In case of more visitors/ users, a suitable number of units need to be installed. This units can be used where running water/ piped connections are not available, however a workable system for filling the tanks is required. Even an unskilled worker/ user can erect such unit. The push tap type unit needs extra care with regards to hygiene of the tap. The placement of units and distance between users should be as defined in Principles of Design.



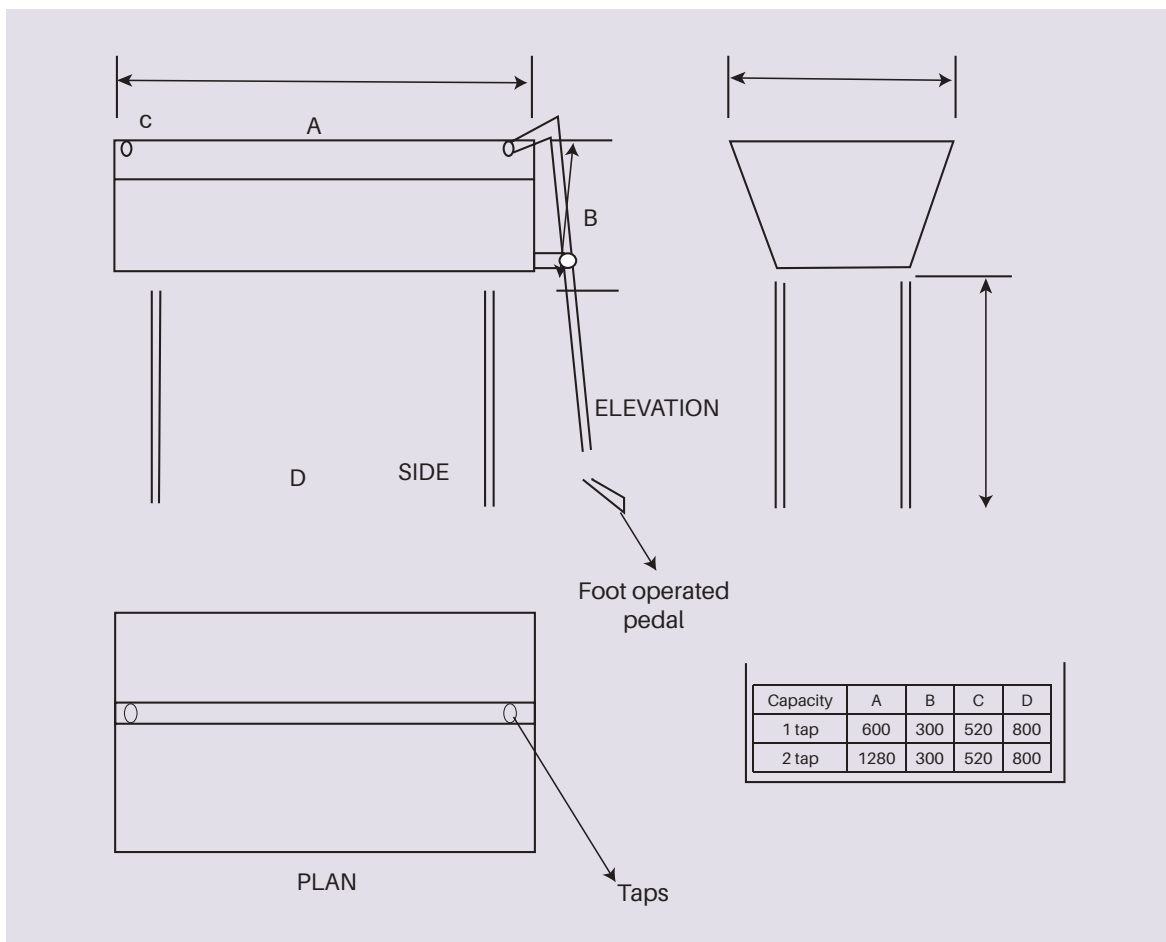
Itemized cost estimate

S. N.	Item	Qty.	Unit	Rate, INR	Amount, INR
1.	Water can	1	INR	300	300
2.	Wooden frame	1	Nos	200	200
3.	Pureit tap	1	Nos	100	100
4.	Bobine (used in sewing machine)	1	Nos.	10	10
5.	Breast cupping	1	Nos.	50	50
6.	Spring	1	Nos.	30	30
7.	Pipe	1	Nos	50	50
8.	Wooden Pedal	1	Nos.	50	50
9.	Pipe to connect water can to the pureit tap and drainage pipe from water basin to the collecting point (<i>Chillum</i>)	2	Nos	25	50
10.	Nail (<i>Khilla in hindi</i>)	1 packet	Nos	50	50
11.	(Wash basin(<i>Ghamela/ Tagadi</i>))	1	Nos	200	200
12.	Rope	1	Nos.	50	50
13.	M-Seal white	1	Nos	50	50
14.	Packing tape	1	Nos	20	20
15.	Nipple elbow	1	Nos	50	50
16.	Labor charge	1	Nos.	500	500
17.	Bamboo stand (Bass)	1	Nos	500	500
Total, INR					2,260.00 Say INR 2500 USD 33



DESIGN: 6

Pre Fabricated Stainless Steel 2 Taps Handwash Unit (Proposed)



This type of unit is suitable for Institutions/ Schools etc. where visitors are more. The number of taps can be increased or decreased as per the requirements. This is suitable where running water/ piped connections are available. A skilled fabricator can erect such unit in one day. The placement of units and distance between users should be as defined in principles of design.



Cost estimate

SN.	Type	Material of construction	Cost with pedal operation of the cock	Cost with electronic device auto operation
1.	1 tap single side	Stainless Steel for water tray and Mild steel for structure.	INR 6800 USD 90	INR 7800 USD 103
2.	2 tap single side	Stainless Steel for water tray and Mild steel for structure.	INR 8800 USD 116	INR 10800 USD 142

Notes :

- ✓ The above costs are ex works. Transportation to destination will cost extra at actuals.
- ✓ The cost does not include any other costs incurred due to supply pipe, water storage tank, installation etc.
- ✓ The electronic parts will carry guarantee as provided by the manufacturer.



DESIGN: 7

Handwash Unit West Central Railways, Bhopal



This type of unit is suitable for public places/ offices where visitors are limited. The number of taps/ basins can be increased or decreased as per the requirements. This is suitable where running water/ piped connections are available. This is developed by railways using some standard fixtures, normally installed in railway coaches, eg MS basin/ tap. This units can be installed on the existing wall alongwith handwash holding device/ soap dispenser. A skilled fabricator can erect such unit in one day. The placement of units and distance between users should be as defined in principles of design.



Cost estimate

Quantity/ Items	Indicative Price
Flusher Valve	
Steel Washbasin	
Existing pipe connection	INR 1500
Mild steel frame	USD 20
Liquid handwash	
Rubber Hose	

Designed by : Senior Divisional Mechanical Engineer, WC Railway Bhopal Division

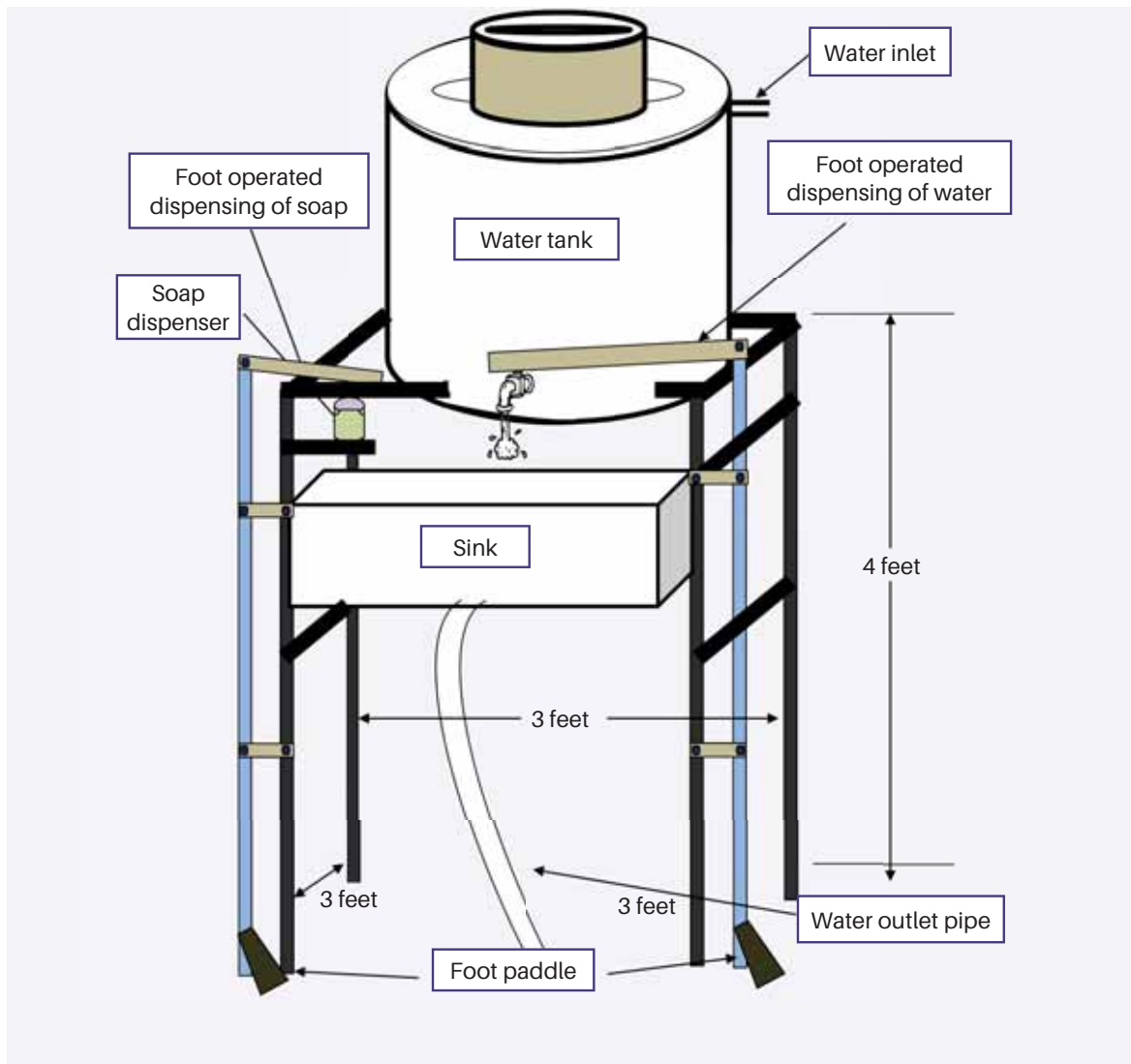


PREFABRICATED PEDAL OPERATED DESIGNS

*This section provides information to prefabricated models available in the market in India. Inclusion of these is to facilitate information only. They are not endorsed or promoted by UNICEF.

Model: 1

Hands free water and soap dispenser



Note: the measurements here are indicative. Length and breadth will depend on the dimension of the tank



Specifications of the materials

Component	Specification	
Water tank (from reputed company)	Capacity	1000 Litres
	Material	100% Food Grade Plastic (Virgin)
	Layer	Triple Layered
Tap	Plastic - branded - best quality available in the market	
Capacity of the soap dispenser	250 ML (largest available in the market) Larger capacity may also be made	
Material and dimension of the sink	Stainless Steel 24 inches (L) X 18 inches (B) X 10 inches (H)	

This type of unit is suitable for public places/ Institution where visitors are limited. In case of more visitors, a suitable number of units need to be installed. This units can be used where running water/ piped connections are not available, however a workable system for filling the tanks is required. A skilled fabricator can erect such unit in one day. The placement of units and distance between users should be as defined in Principles of Design.

Cost estimate

Quantity	Indicative Price
10 pieces or less	INR 35,000/- + GST @ 18% + Transportation Ex Kolkata USD 463 + GST @ 18% + Transportation Ex Kolkata
More than 10 pieces	INR 30,000/- + GST @ 18% + Transportation Ex Kolkata USD 396 + GST @ 18% + Transportation Ex Kolkata

Designed by: WASHONOMICS FULCRUM PVT. LTD, Kolkata (Proprietary Item)



Model: 2

GEMINI- two user hand wash unit

<https://www.3sindia.com/cleaning-services-product-rental/hand-wash-stations/>

✓ Hand wash basin/sink for public places. large catering and mega even.

Dimensions in feet	Material used	Tank Capacity in Liters
3.5x 2 x4.5	Polyethylene	Fresh Water: 230 Waste Water: 190



Model: 3

Water can used pedal operated HWS

<https://www.google.com/imgres?imgurl=https%3A%2F%2Fi.pinimg.com%2Foriginals%2Ffc%2F8a%2Fd2%2Ffc8ad24742f28c3d6f90d7fdec13eb6e.jpg&imgrefurl=https%3A%2F%2Fwww.pinterest.com%2Fpin%2F404268504044627688%2F&tbnid=mYjRZACknKLV6M&vet=1&docid=14MHDICT1YRWM&w=3216&h=4288&q=Pedal%20operated%20hand%20washing%20station&source=sh%2F%2Fim>



Model: 4

Foot operated Hand wash sink

<https://images.app.goo.gl/M1aXYb6XLgofQ3ts5>

Estimated cost INR 22,000 (USD 291), Both units can be placed in opposite direction to maintain social distance



Model: 5

KTC-INDIA Pedal Operated Hand Wash Sink

<https://images.app.goo.gl/tnSth7PWLQsSXdy88>



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