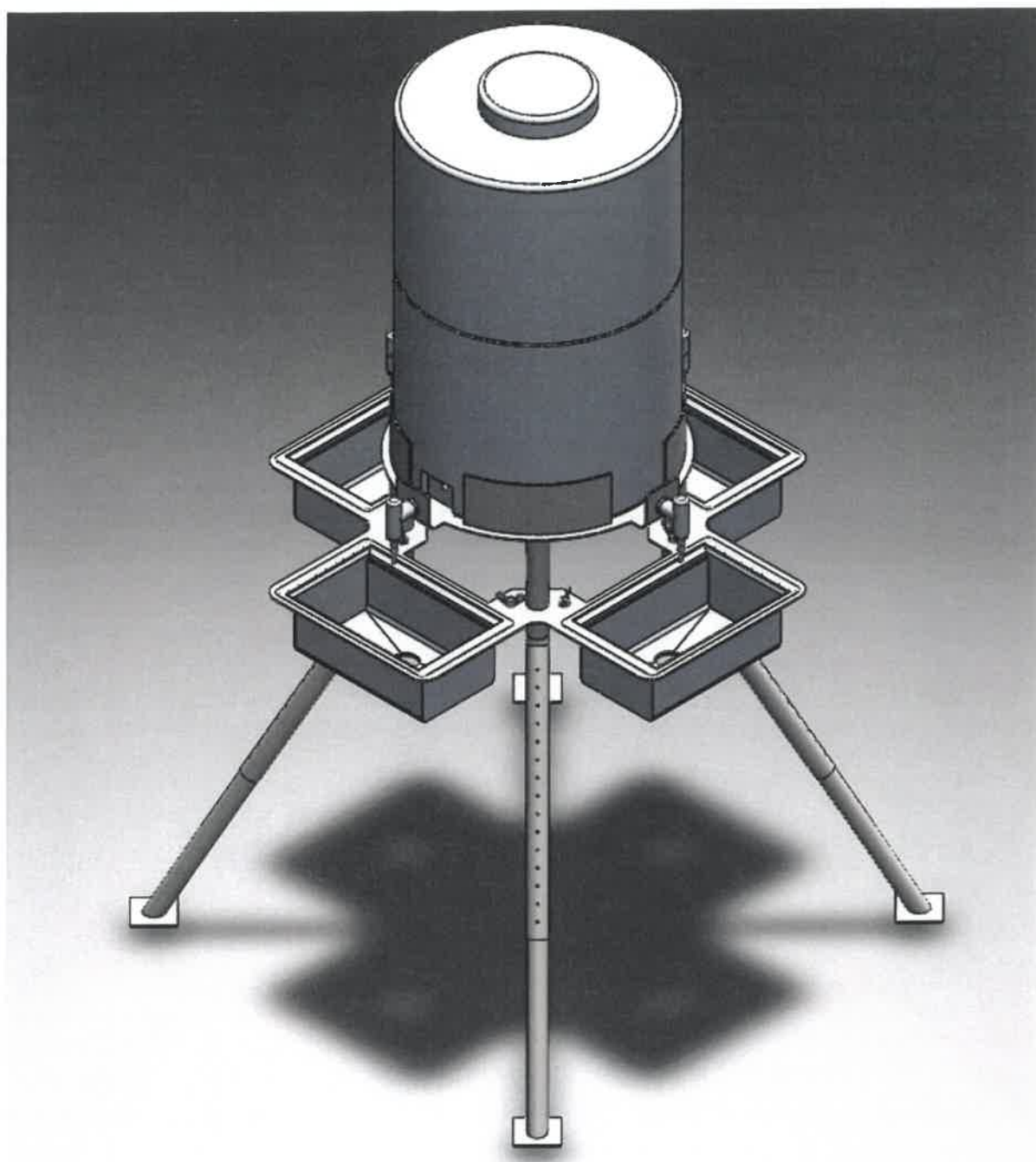


LRC MOBILE HANDWASHING STATION TECHNICAL REPORT
26 Nov 2020



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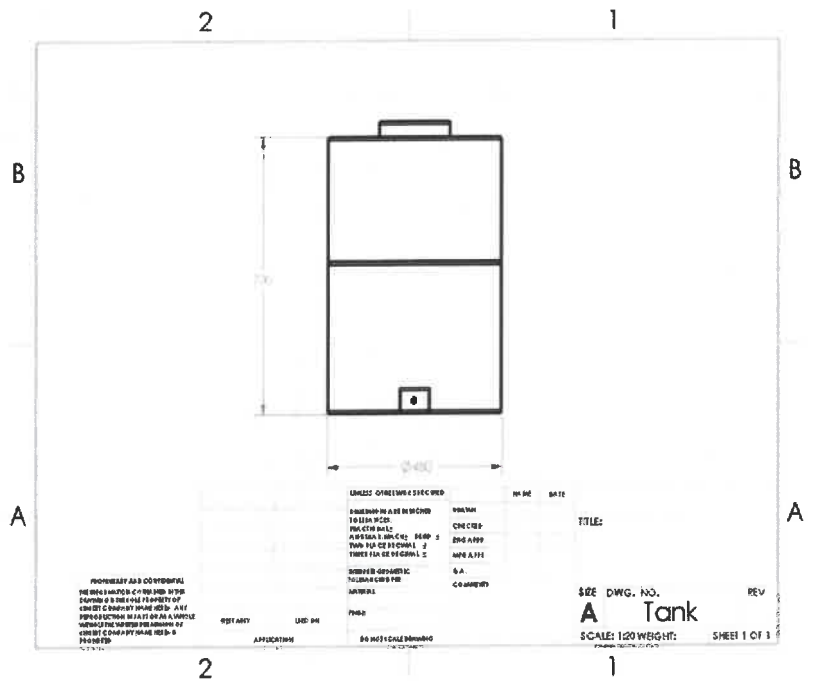
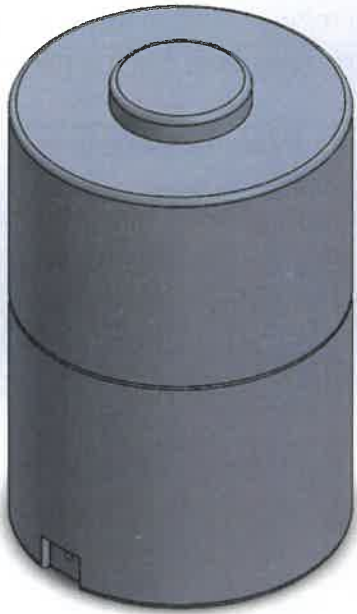
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I. Manufacturing

a. Tank:

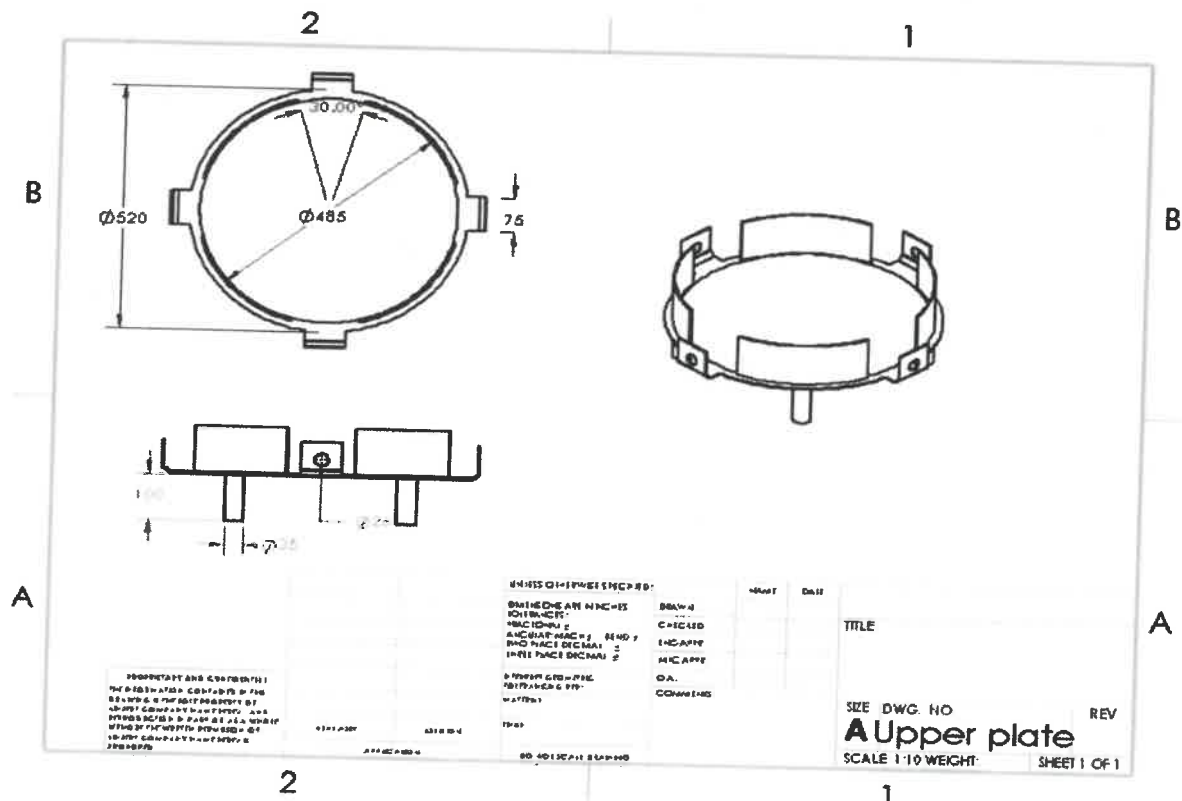
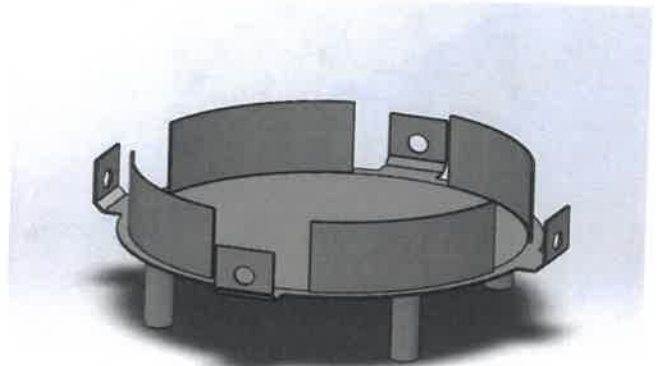
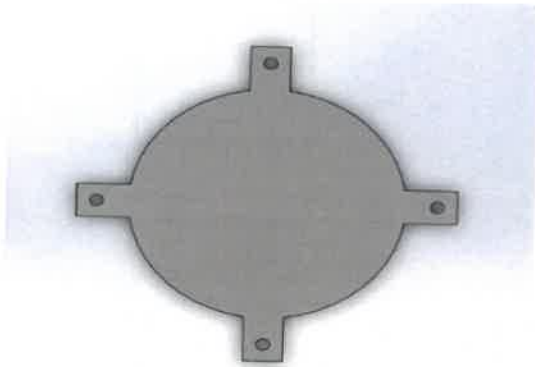
The tank used in the station is a 100L single layer PVC tank that is widely available in the market. However, we were able to contact a large supplier in Lebanon, NTG (Nassar Techno Group) where he provided us with the dimensions and price.



b. Upper Plate: (Tank Support)

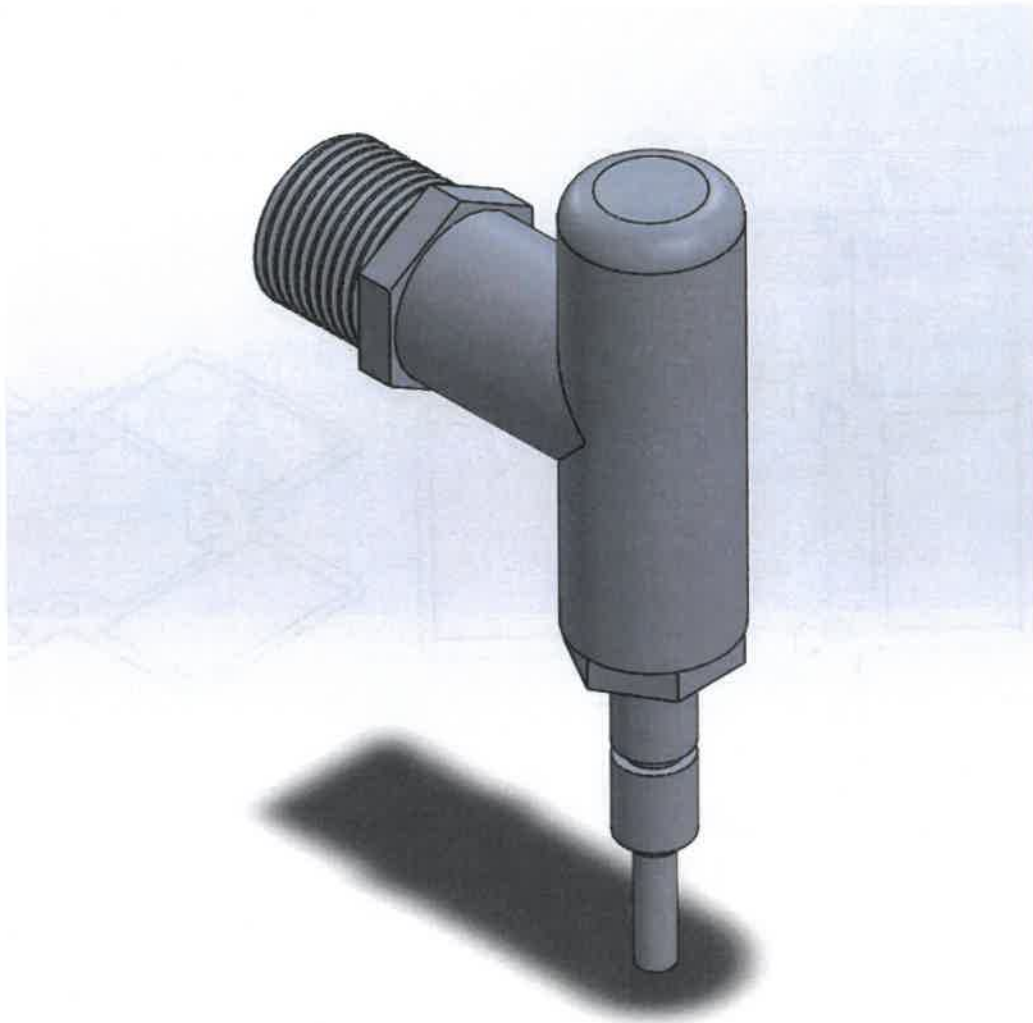
The upper plate is the component that holds the tank and the taps in place. It is made out of AISI 304 stainless steel.

1. The flat plate is a 4mm sheet metal that includes the taps supports and is manufactured using laser cutting. The tap supports are bent twice using the sheet metal bending machine (2 bends at 45° each)
2. The curved support sheets are 3mm metal sheets used to hold the tank and not letting it slip in any direction. The manufacturing process includes rolling the sheet metal based on the dimension of the tank and it is cut according to the given dimensions and it is finally welded on the flat plate at a distance of 0.25cm from each side
3. The tubes are 3.5cm diameter tubes with a thickness of 1.25mm that come in standard pipe diameter and are cut to the specific dimension given. They are welded to the flat plate.



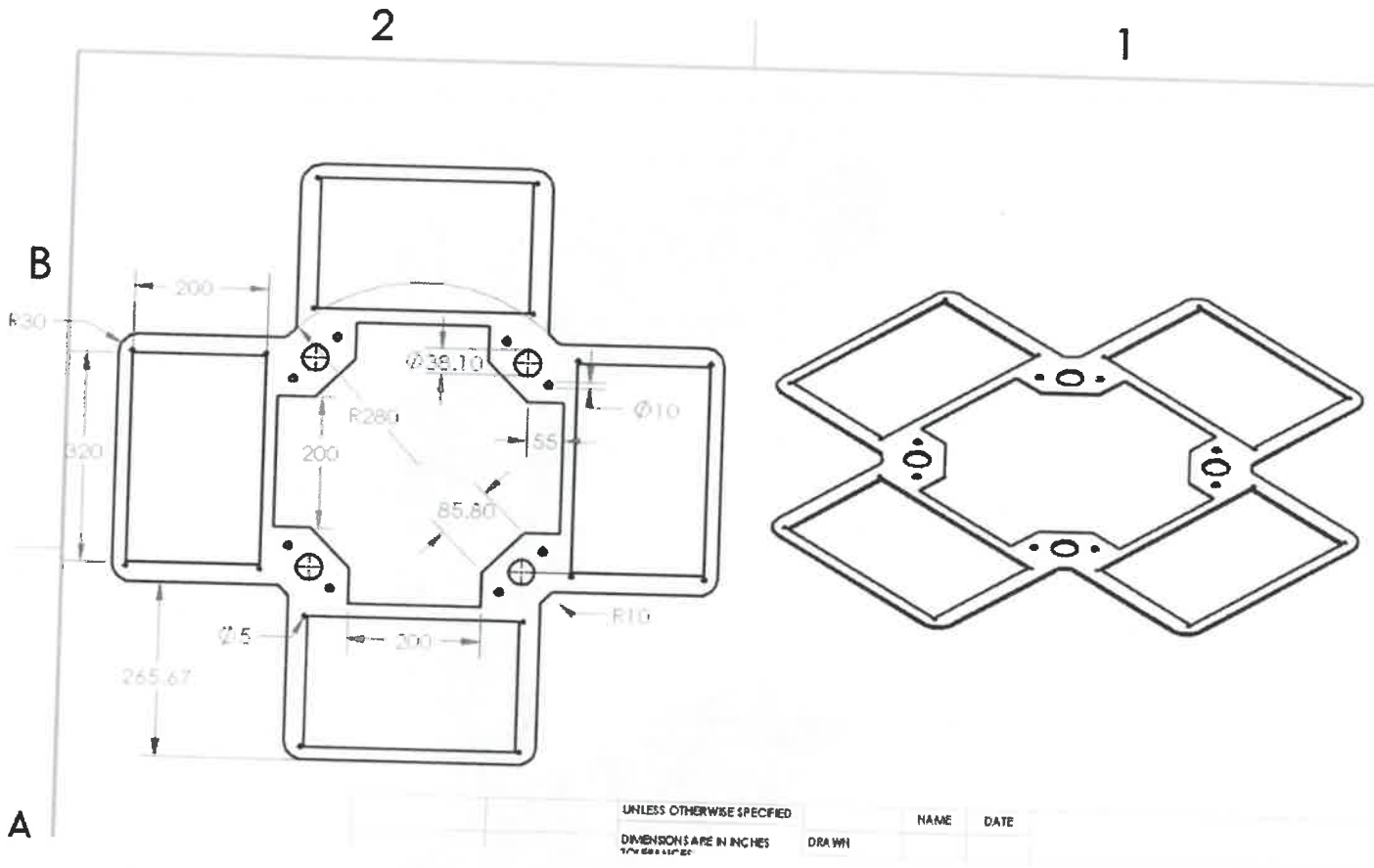
c. Taps

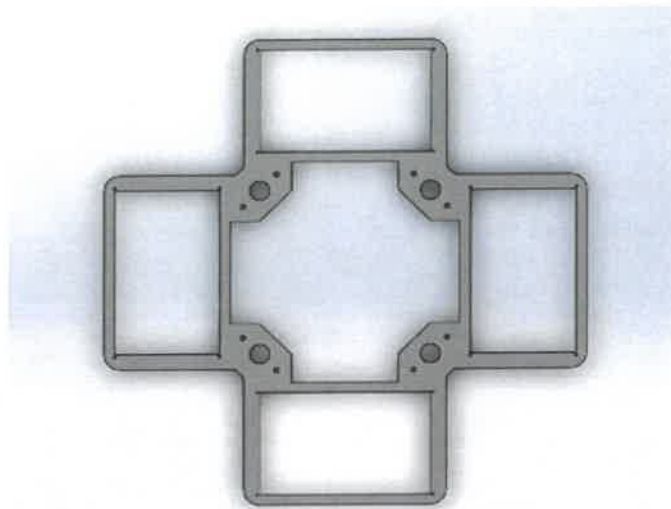
The taps used in the station, are Handy Wash taps by Oxfam which will be procured from Oxfam. These taps have relatively low area of contact which will reduce the risk of contamination between each user. It is actuated by pressing upwards which will release water as long as it is actuated which will help regulate the loss in water.



d. Lower Plate: (sinks support)

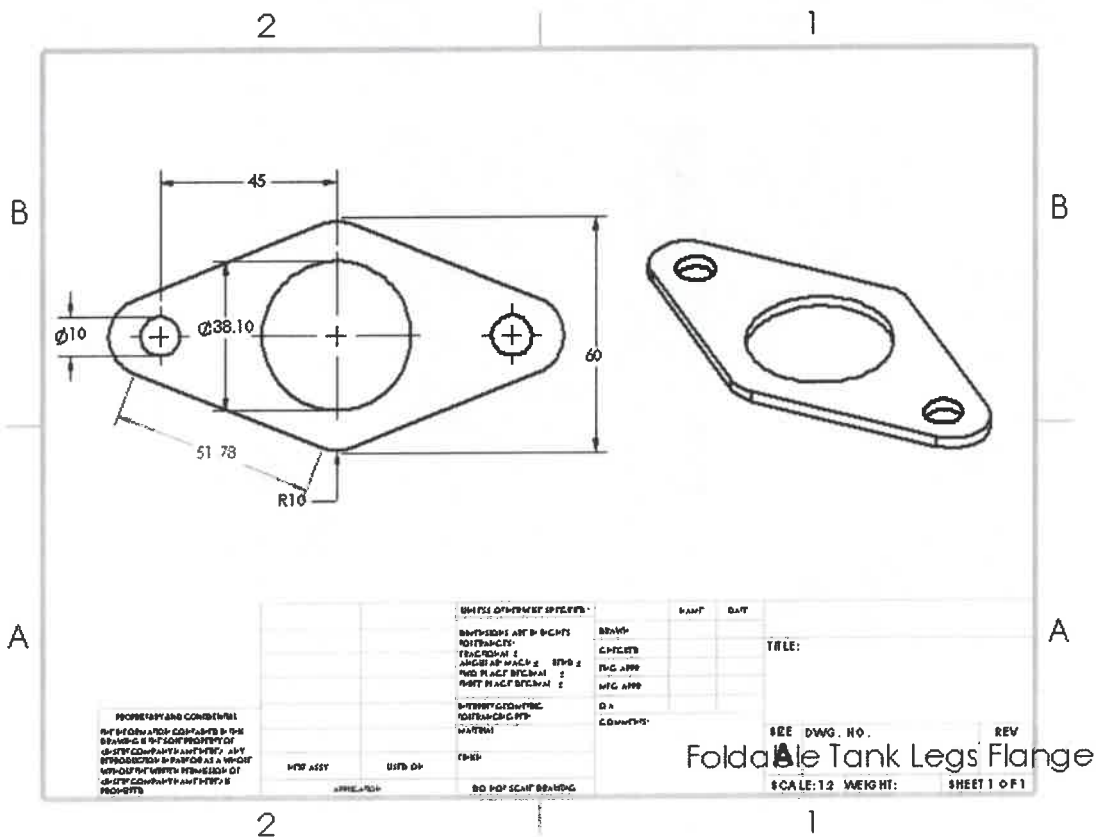
The lower plate is a 3mm AISI 304 SS sheet metal that acts as the main component holding the station together. It is laser cut with respect to the dimensions given. In order to reduce the weight of the plate, we decided to create an empty space in the middle since it will not hinder the robustness of the station and the stress levels are extremely low at these points. The lower plate will be connected to the station using a flange, M10x1.6 screws, and M10 wing nuts.

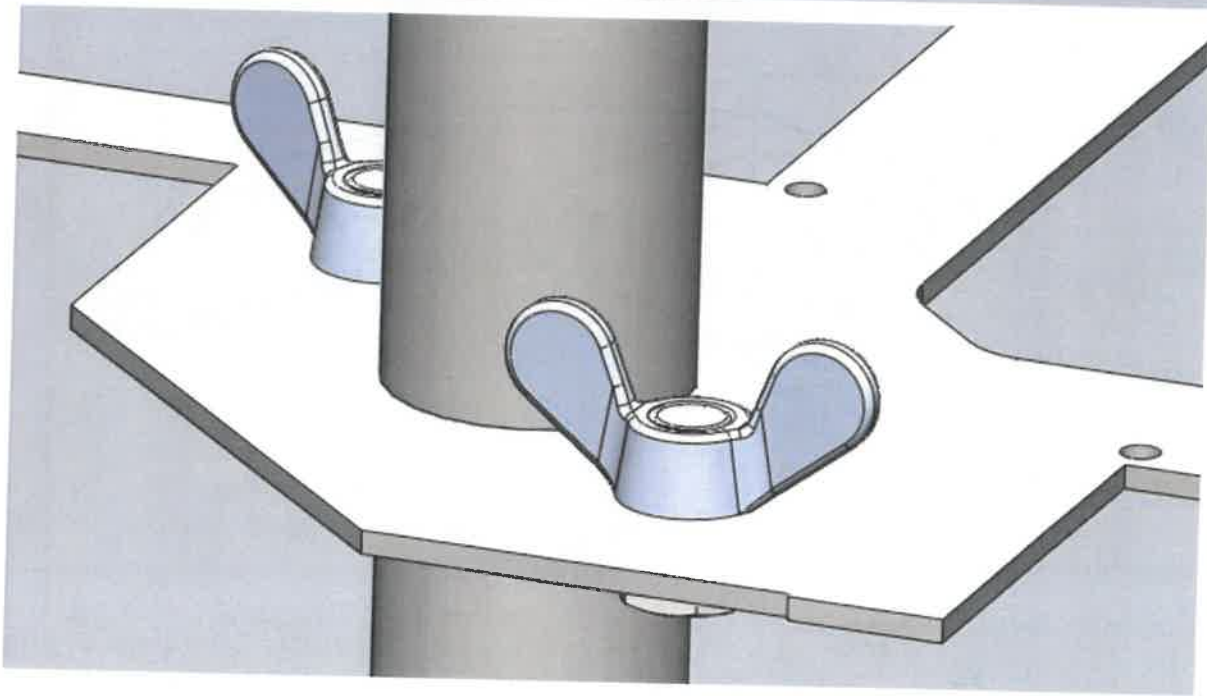
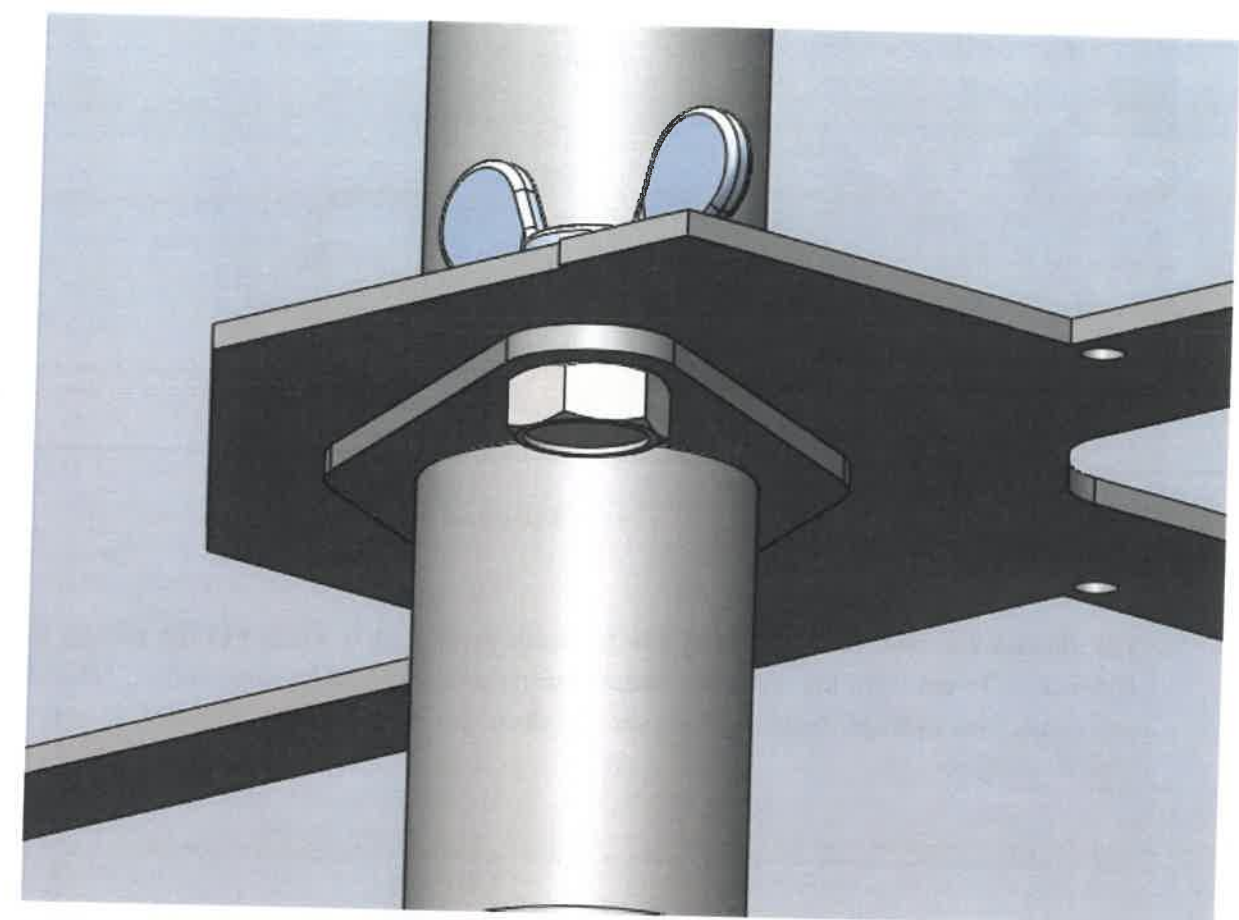




e. Flange

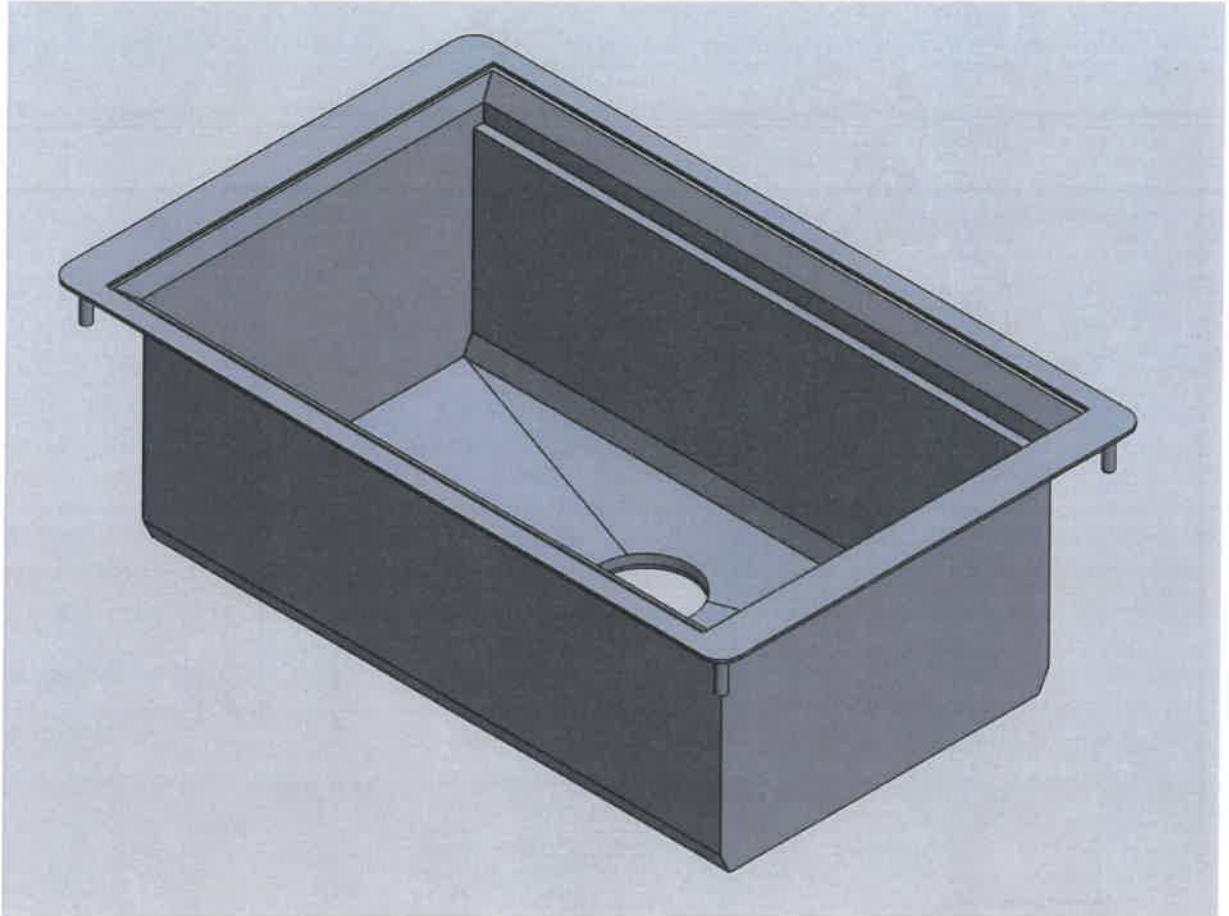
The flanges are made of 3mm AISI 304 SS sheet metal and is welded to the middle legs at a distance of 15 cm from the top. The manufacturing process includes laser cutting. This distance represents the average height difference between the tap and the sink for a comfortable handwashing process.





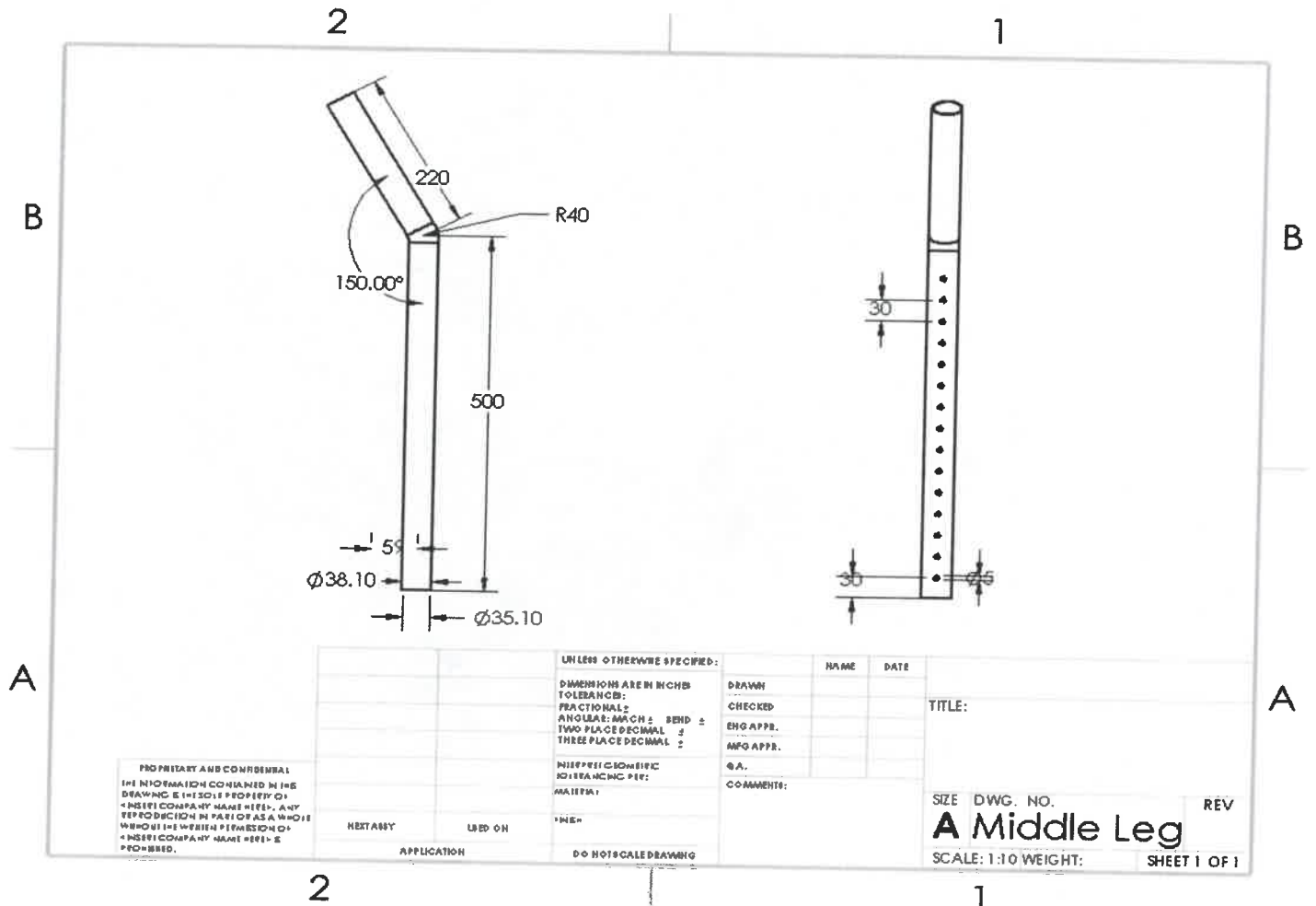
f. Sinks

The 4 sinks used in the station are 30x20x10cm sinks. The manufacturing process is a common process in Lebanon and many industries specialized in stainless steel can manufacture this type of customized sinks. (30cm length, 20cm width, 10cm depth). In order to fix the sink on the station, specifically the lower plate, M5 screws are welded to the sinks and fixed with M5 wing nuts.



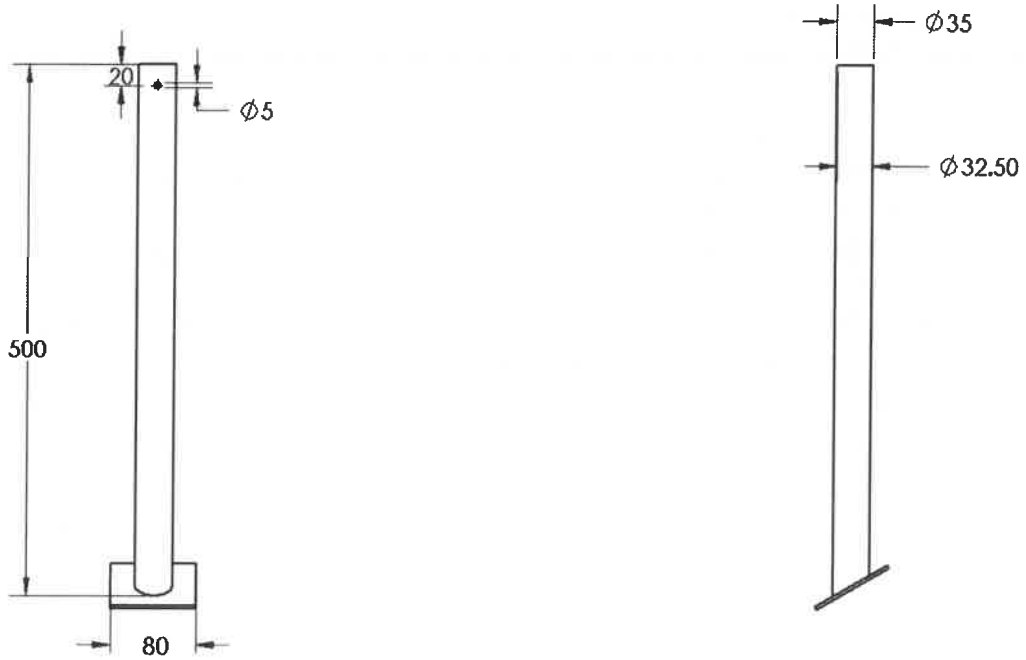
g. Middle Legs

The middle legs are 38.1mm AISI 304 SS pipes having a 1.25 mm thickness. The design of the middle leg can be manufactured using tube bending and drilling with respect to the dimensions given. The size of the pipes is a standard one and is supplied locally through the several suppliers available including Tchaghlassian Steel and many others as well. As mentioned previously, the flange will be welded on each leg to hold the lower support plate.



h. Lower Legs

The lower legs are 35mm AISI 304 SS pipes having a thickness of 1.25mm. The role of this leg is to be fitted inside the middle leg and adjust the overall height of the station. To achieve the design attached below, the pipe should be drilled to include the adjustable height feature on the station and cut to dimensions. The flat plate on the bottom is acting as the point of contact between the station and the floor and it will be welded to the bottom part of the leg at a 30° angle.



UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
 TOLERANCES:
 FRACTIONAL ±
 ANGULAR: MACH ± BEND ±
 TWO PLACE DECIMAL ±
 THREE PLACE DECIMAL ±

DRAWN
 CHECKED
 ENG APPR.
 MFG APPR.

NAME DATE

TITLE:

II. Assembly

- 1- The upper plate support is placed on the ground and the empty tank is then placed on the upper plate support.
- 2- In parallel, the lower leg is assembled with the middle leg and adjusting the height of each leg to reach a flat position for the sink and tank. A pin is inserted in the holes of each lower and middle leg to fix the height reached.
- 3- The lower plate is then fitted in its position with respect to the middle leg. The lower plate will then be screwed in place in connection with the flange using the M10 screws and tightened with M10 wing nuts.
- 4- The upper plate support with the tank is then lifted and inserted using the pipes that are welded on the upper plate that have smaller in diameter than the middle leg. This will help fix the position of the plate in place.
- 5- The sinks can be then assembled on the lower plate and tightened using the M5 wing nuts which will help fix it in place.
- 6- The taps are then positioned in the corresponding holes and tightened using 1 in nuts and Teflon.
- 7- A plastic pipe is connected to the tank and then branched out several times using T connections for the water to reach the 4 taps.
- 8- Finally, the tank is filled with water.