SED TANK MASTER PLAN

This table serves as an overall guide to 1 L/s Sedimentation Tank fabrication and is meant to be used as a supplement to the Prefab Model - Spring 2016 Final Report.

Always read these notes before starting each new step!

STEP	MATERIALS NEEDED	IMPORTANT NOTES
Cutting the corrugated pipe at 15°	- 3' diameter corrugated pipe - Circular saw - Track/guide for blade	- Be careful to keep the angle of the saw blade constant!
Making the base ellipse	- ¼" thick plastic sheets - 1/4" Thick, 48" x 96" - Rigid HDPE sheets (Qty. 1) - Ellipse equation - Computer & projector - Yardstick - Sharpie - Bandsaw	- Plot the ellipse using a website - Dimensions must remain proportional when tracing onto plastic sheet (use a yardstick to check lengths of minor and major axes) - **Mark the axes of the ellipse with sharpie**, as you'll need to cut across the minor axis line with the bandsaw
Welding the jet reverser to semi-ellipses (Base/jet reverser unit)	- 2" diameter 36" length pipe (Qty. 1) - cut the pipe in half lengthwise - PVC Welder - Welding rod	- Bevel the connecting edges of the semi-ellipses to make the weld more secure - Use the 60° angle from equilateral triangular prisms, possibly out of cardboard, to guide your welding.
Welding the sloped base to the tank	- PVC Welder - Welding rod - Bottom section of corrugated pipe - Base/jet reverser unit	- **DO NOT OVERHEAT WALLS OF CORRUGATED PIPE!** - They are very thin and this will lead to a puncture in the pipe a.k.a LEAKS - Take breaks or switch to weld a different section after a few minutes to allow cooling
Molding the jet diffusers	- PVC Welder - Metal diffuser mold	- Heat evenly, or the diffusers will deform

	- 1” diameter pipes, about 6 to 7” length (depending on location on of corrugations and height about diffuser) (Qty. - Enough to span the diameter of the tank once their ends are opened using the spreader, so roughly 30) - Pipe ends must be compressed to fit into manifold holes - hammer/mallet	- Recommendation: Heat just until the pipes start to turn light brown, then they’ll be ready to push onto the metal wedge - Use the hammer to tap the pipe farther onto the metal mold while still applying heat to the welder
Attaching jet diffusers to inlet manifold	- Hole saw - PVC primer and glue	
Drilling the inlet manifold tank entrance	- Hole saw - Shear/metal cutting scissors	- Drill into the corrugation itself, not the spacing between them. - Cut the area around that corrugation away and sand it down using the air sander (to make a nicer contact area for welding the inlet manifold-tank interface)
Cutting Plate Settler Sheets	- 1/16 th inch thick plastic sheets (Qty. 5) - Mark each 22” long - Use the **SedTankMasterPlan** Mathcad file to find the **required widths** of each sheet - Shear (in Hollister basement storage) - Tape measure - Sharpies/marker for the holes	- **Measurements must be extremely accurate!** - Check 3 times, cut once policy
Drilling holes in Plate Settlers	- ⅜” drill bit - Rods need to run perpendicular to the plates!	- You will need to determine location of the holes in each plate separately - Measurements must be extremely accurate! - **“Check 3 times, drill once” policy**

Fabricating Plate Settler Bundle	- ¼" diameter threaded steel rods, 3' length - (Qty. dependent on geometry. Try to get each rod to go through as many plates as possible) - 2.5 cm nylon spacers (¼' minimum inner diameter) - Nuts for securing both ends of each rod	- Sand down any bumps/uneven areas around the holes before assembling - **At least three rods should be used in a triangle formation so that the plates cannot twist in relation to each other**
Floc Hopper	- Hole saw - PVC pipe - 90 degree elbow - Bulkhead fitting	- Cut/trim back all corrugations to make room for the bulkhead
Exit Launder	- Hole saw - 3" diameter, 36" length pipe	- How many holes in the pipe? What diameter? Evenly spaced, vertical orientation of openings
Welding corrugated pipe together	- Plastic welder - Welding rod - Silicon	- ***If you push the inner walls too hard while welding, the wall may bend inward/outward. - Apply extra thin strips of plastic to the seam so that the weld is thicker and you have more material to work with
Tank Support	- 2x4's/ metal bracing	- Be sure to fasten the support to the bottom of the tank to prevent rotation
Fastening the plate settlers	- Fishing line - S-hooks - Wooden block - saw	- Tie knots around both ends. One end on the rod, other around hole in the wood - Can also choose to drill holes through the corrugated pipe and string the fishing line through them