

LFSRSF Team Detailed Task List

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1 30-cm Filter

The LFSRSF team shall complete filter fabrication and begin testing the filter for performance, flow distribution and headloss requirements for fluidization and backwash.

1.1 Complete fabrication of filter body (by February 13)

- Complete backwash pipe installation
- Hose clamp flexible tubing to barbed fittings
- Get the body adjusted for process control (below)

1.2 Test and apply torque to hose clamps (by February 19)

- Order more hose clamps
- Obtain torque wrench and use it to tighten hose clamps (The band is 1/2" wide and 0.023" thick. Tighten with a wrench, slotted screwdriver, or 5/16" hex nutdriver. Torque is 40 in.-lbs.) see <http://www.mcmaster.com/#standard-hose-clamps/=qmx76c>
- Take adjustable hose clamp to failure to test how tightly we can clamp them (might be better to use the recommended torque)
- Check stability of central filter column joint after clamps have been maxed out
- If central joint is still unstable, investigate possibility of using wider stainless steel shim stock sheets and/or taller rubber gasket

1.3 Pipe stubs (by February 28)

- Determine height of pipe stubs (relative heights between entrance/exit tanks)
- Orifice design on pipe stubs
- Minimize k factor as water enters the stubs from the entrance tank - punch a hole of a certain diameter through a rubber cap?

1.4 Slotted manifolds (by February 28)

- Try and figure out mathcad specifics on slotted manifolds, so that we can:
- Order slotted manifolds from mathcad analysis and test. (If we can't soon enough, use a close-enough assumption)

1.5 Recycling system (by February 21)

- Obtain submersible pumps, connectors and PVC Piping (if not in lab)
- Pump water into entrance tank
- Pump water from "waste" back into entrance tank

1.6 Supports for inlet and exit tanks (after hose clamp test, if necessary)

- Analyze necessity of extra supports under inlet and exit tanks. If necessary, use props to make tanks more stable, prevent filter from listing

1.7 Sand Drain (by March 7)

- Develop new method to close off sand drain. Invent and test a method to open and close the sand stream so that the operator can easily unload the sand into a series of buckets or porous bags. Possibilities include pinching a flexible tube, or raising the level of a flexible tube above the hydraulic grade line to stop the flow, or another, new method!

1.8 Process control Requirements (by March 7)

- Drill holes for pressure sensors on main filter body - holes should be tapped.
- Investigate use of 1/8" valves soldered to mesh
- Hook up filter to process controller

1.9 Operate Filter for First Time! (by March 14)

- Evaluate Timing