

Design and Construction of a Delinting Facility for a Public Breeding Program

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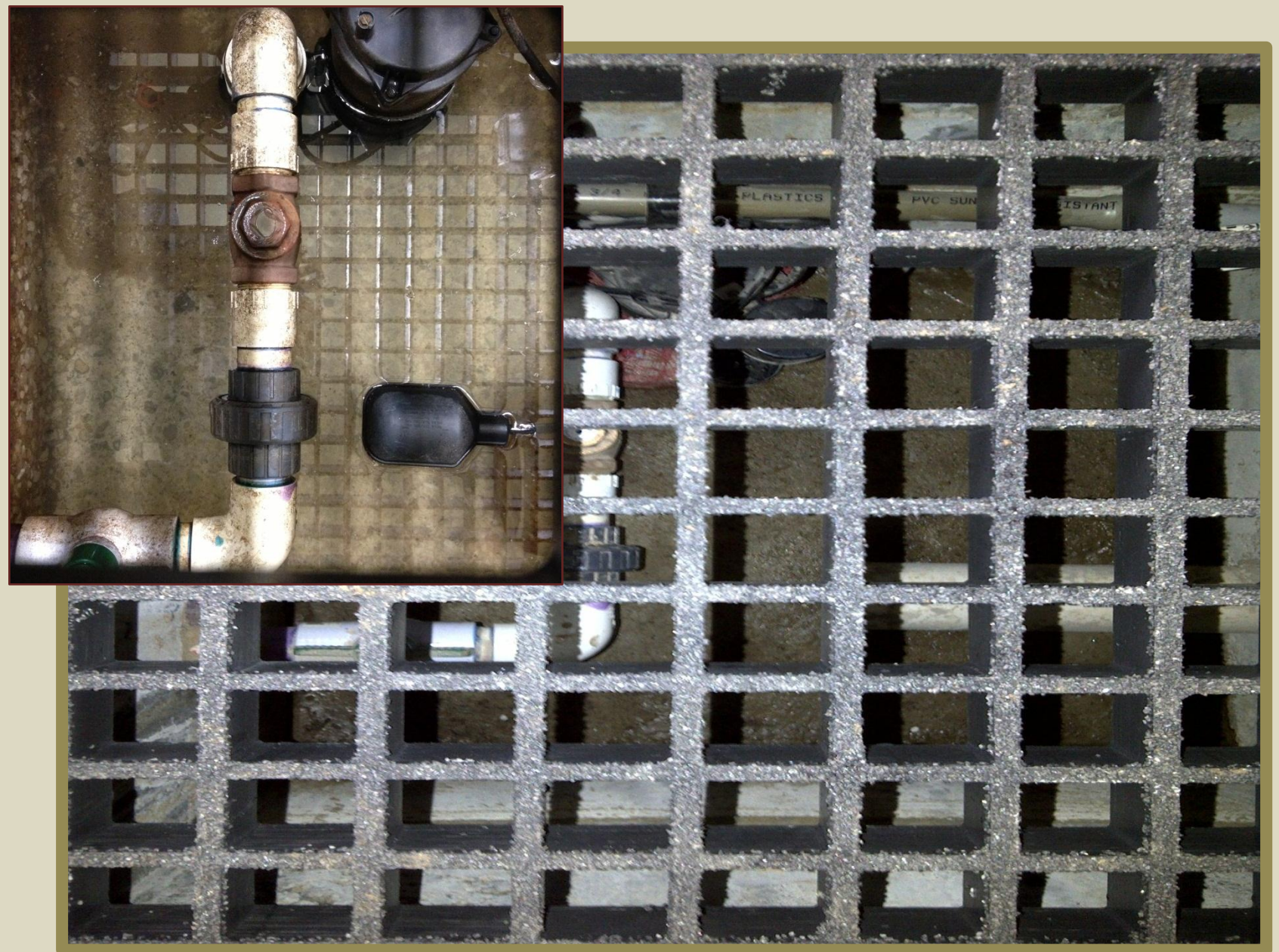
Sloped Foundation- The reinforced concrete foundation was poured at a specific slope to ensure proper drainage of acid water and debris. The sloped area was split into 2 parts to allow adequate support for the grated flooring. A 2inch by 1inch lip was given on the inner perimeter of the sloped area to allow the fiberglass reinforced poly grated flooring to be installed.



Sink- The sink is made of a poly material resistant to corrosion with 3 separate wash areas for different stages of the delinting process.
Electrical Outlets- The outlets are all covered for water resistance to allow interior walls to be sprayed down without damaging or tripping the electrical system.



Filters- Attached to each drain are modified pump filters to catch debris washed out during the delinting process to prevent pump malfunction.



Sump Pump Holding Cell- The cell consists of a 3inch PVC drain to allow the separate sloped area to drain freely to prevent overflow, and a 2-1/2inch PVC with a backflow valve connected to a 3.5hp sump pump feeding the acid water into two poly tanks on the exterior of the lab.



Tanks- Two 15,000 gal tanks are split with a y-valve to allow the waste water to be diverted to either tank.



Tank Rack- 2x2x1/8 inch square tubing elevates tanks off ground level to prevent wear and hold tanks in place.



Transfer Tank- A 5.5hp engine pumps waste water from holding tanks to transfer tank where waste water is neutralized prior to disposal.



Cement Mixer- When larger samples require delinting a cement mixer is used to allow higher volumes of seed to be easily and quickly delinted.



Rafters- Built to specific dimension, the rafter allows for the heating unit to be tucked away in the attic space.



Heating Unit- To dry seed quickly and efficiently a heating unit like one used in a household circulates warm air through a dryer box.



Thermostat- A sensor directly placed in the box allows the thermostat to keep the temperature at any desired setting. A switch to manually turn on the fan was installed if no heat was desired to dry the seed. With the return air pulling the warm air directly from the dryer box the heating unit itself is not required to run continuously making the dryer more efficient.



Dryer Box- The box was built using 2x4 inch lumber and 1/4 inch plywood with a sheet metal lining to help hold in the heat. With dual levels this box allows a maximum of 30 racks to be dried simultaneously. The entire top opens for easy access and to allow for cleaning.