Gibbs House Compost Heat Recovery System

Overview

The Compost Heat Recovery System for the Gibbs House was awarded a Student Sustainability Grant for the Fall 2015 allocation for over $6,000. The grant included an AgriLab Feasibility Study, a workshop with travel included for Gaelan Brown on October 10, 2015, and all necessary materials for build. The pilot project shall effectively heat the grow beds in the west hoop house during the winter.

Leading up to the workshop in October, most of the system has already been constructed. Radiant loops within the hoop house are laid and insulated trenches for transmission lines will be constructed prior to the workshop. Design plans for the system are drawn in Revit 2015 (see attached). Additional activities to take place prior to the workshop include staging, pre-mixing of infill materials, building the coil tower, air pressure testing the loops.

Materials being utilized include: 1” pex tubing for inside the mound, aerated tubing for beneath the mound, rewire mesh for radiant flooring structure, Taco pump, the Feasibility study, and mound infill materials (manure, sawdust, woodchips). Beneath each grow bed is a unique insulative material: rigid polymer foam board, hay bales, and empty wine bottles with a cob matrix. The industry standard for organic insulative material is void of definitive solutions, thus we are testing three of the most common methods.

Landscape Services has agreed to donate a corn crib to contain the infill material. The corn crib will then be encased in the hay bale insulative barrier. A certified plumber from Facilities Management visited the property on August () and is reviewing the system based on WMU standards and codes. FM will facilitate adding propylene glycol to the system, per FM’s and Gaelan’s recommendations. The Office of Community Outreach will share project updates with the community and the BTR park.

HOBOware sensors will be placed prior to system start up to test soil temperature, air temperature, relative humidity, and system pressure. An Arduino test system will also be installed as a pilot project.
Action Items:

1. Finalize event details.
2. Pre-mix as much infill material as possible, time permitting.
3. Dig transmission trenches and insulate lines.
4. Building coil tower and test movability.
5. Air pressure test radiant loops.

Workshop Event

On October 10, Gaelan Brown will be visiting to host an educational workshop for the building of the compost mound. The workshop will be a one day event from 9 AM to 4 PM. OfS students and staff are encouraged to attend along with invited community members. The event will begin with a one-hour presentation about the theory, construction process, and the importance of compost heating by Gaelan Brown. Following the information session, the team and community members will mix infill material and build the compost mound.

Future Plans

Following construction and connections, the mound shall effectively run for at least eight months. Tear down of the mound will be facilitated by Elijah, Kelsey, and Josh. The remaining composted material will serve as soil supplement for the Gibbs Farm.

Example Compost Mounds