Plan for the Installation of a Green Roof
On Sampson-Hoffland Laboratories

Logan Langley
Hannah Lindblom
David Pedrick
Thomas Wagner
Sam Zook

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Abstract:
When building Sampson-Hoffland Laboratories Luther College spent extra money to equip a portion of the roof with enough infrastructures to hold a green roof. The College is currently interested in finishing this project. After reviewing a previous report on the benefits of a green roof, written by a previous class, we decided to focus on the installation of a green roof. We determined that the Live Roof system was best for our case and the company Roof Top Sedums should be contacted as soon as possible to start the installation process.

Why a green roof is needed:
Luther College applied for LEED certification in 2009 for their new building, Sampson-Hoffland Laboratories. During the construction of these buildings, money was invested so that the roof of the atrium could support a green roof. That money will have been put into a barren project unless the green roof is actually completed (Wicks, Stocks, Beckman; Green Roof Proposal 2009). After tallying the score for LEED certification, Luther scored enough points for a Gold rating. The College is currently advertising that a green roof will be installed in the future. Not only should the College finish what it has started, but it is in its best interest to support such an endeavor that will increase the schools ‘green’ persona.

Benefits of Green Roof:
Although green roofs are expensive, they are well worth having due to the expansive benefits that they bring. Not only will having a green roof save money in the long-run, but they also have positive, important impacts on the environment. A green roof will save approximately $200,000 in its life-time (epa). This saved money comes from the reduced energy consumption that a green roof allows (epa). It acts as insulation on top of the roof, keeping the building warmer in the winter, while absorbing the sun-light in the summer, making the building cooler. The positive environmental impacts that a green roof provides are amazing. A green roof removes heat from the air through evapotraspiration, which is “The process by which water is transferred from the land to the atmosphere by evaporation from the soil and other surfaces and by transpiration from plants” (dictionary). Green roofs also reduce air pollution and greenhouse gas emissions. It would enhance storm water management and water quality. Also, there would be less run-off water from the roof on Sampson-Hoffland. Over all, a green roof improves the quality of life in the area that it is located. There was a group before ours who researched the benefits more than we did because we focused on the installation of a green roof. For more information visit the Sustainability website at
http://www.luther.edu/sustainability/education/studentprojects/ and click on Green Roof Proposal.

**Companies We Contacted:**

As a group we looked into many different companies that specialize in green roof construction and installation. We contacted three different contractors. Ecogardens and Enviroscape, the first two, are franchises of Roofscapes Inc based out of Chicago and Indianapolis, respectively. The third contractor, associated with Live Roofs Inc., Roof Top Sedums is based out of Davenport, Iowa.

We picked these three companies due to their close proximity to the college, their history of installing roof landscapes similar to that of Luther’s needs, and the command their franchises have on the market. We want to be as sustainable as possible when seeking out our green roof so it was important for us to find a contractor that was nearby and had good rapport with their customers.

The first company we contacted was Enviroscape. They installed Central College’s green roof in Pella, Iowa. This company offered very honest and helpful advice; they said that for a small site like ours a module unit is probably best. Their system, a built in place continuous earthen system, is only economical for large spaces, thus recommending that we go with another company. We still requested a quote and it was in the ballpark of $55,000.

We then contacted Ecogardens, another built in place system, and they charge $25-30 per sq. ft. That would equal $50,150 for the entire project. If we provided our own labor, the price would be reduced 20-30%. That would be $35,105. This $35,105 is a rough estimate on the lower side of things.

Roof Top Sedums was the final company we contacted. They gave us a quote of $27,772 for a completely modular system. Roof Top Sedums is a franchise of Live Roof. If Luther wanted to install the green roof themselves, Roof Top Sedums offers a 2-hour class that costs $50 per person in Davenport. In order to cut down on cost, we recommend someone from Luther take the class.

**Recommendation:**

We recommend Roof Top Sedums, because they have had a lot of success with their previous projects and they have the most cost efficient system. Also with the proper certification Luther would install the green roof itself and cut out a middle man who would do the installation. The last day to order is June 15th, but we’d like to get that order in sooner. Roof Top Sedums, LLC. installs module units that provide the green roof. We contacted the Department head of the Penn State Green Roof Research Station, Dr. Berghage and he added, “There is little cost advantage to the built in place system over the module - for a larger roof the built in place system is generally going to be less expensive. The modular systems make the most sense when instant roof is needed or the logistics are difficult or the roof is small so you cannot achieve any economies of scale otherwise cost should drive you to use a built in place system.” To the best of our knowledge the module system is the best option based on estimates and advice from green roof researchers.

Roof Top Sedums and LiveRoof are both module systems, but due to their hybrid green roof system it appears to be one continuous veldt. Because the modules are grown in their greenhouses, when they arrive on site, the roof is instantly green. Time will not be spent waiting for it to grow. Their website states, “LiveRoof® fully-grown modules make installation easy, discourage weeds,
and don’t require the post-installation “farming” period of plant material establishment. This means **reduced installation and maintenance costs** for you.” The Modules themselves are warranted for up to 20 years from material defects and photo-degradation. A refund will be granted to all defective individual modules, the refund will only be for the module itself not the soil, plants, or installation methods. Plant warranties may be offered by the grower depending on the maintenance conditions, or a warranty may be offered by the maintenance provider if Luther should choose to do so in the future.

**Conclusions:**

Due to the lack of prior knowledge and planning, Luther cannot fund installing a green roof on Sampson-Hoffland at this time. But this project should still be a top priority for Luther College. Although this project is expensive, it could save Luther a lot of money in the long run.

**Sources:**