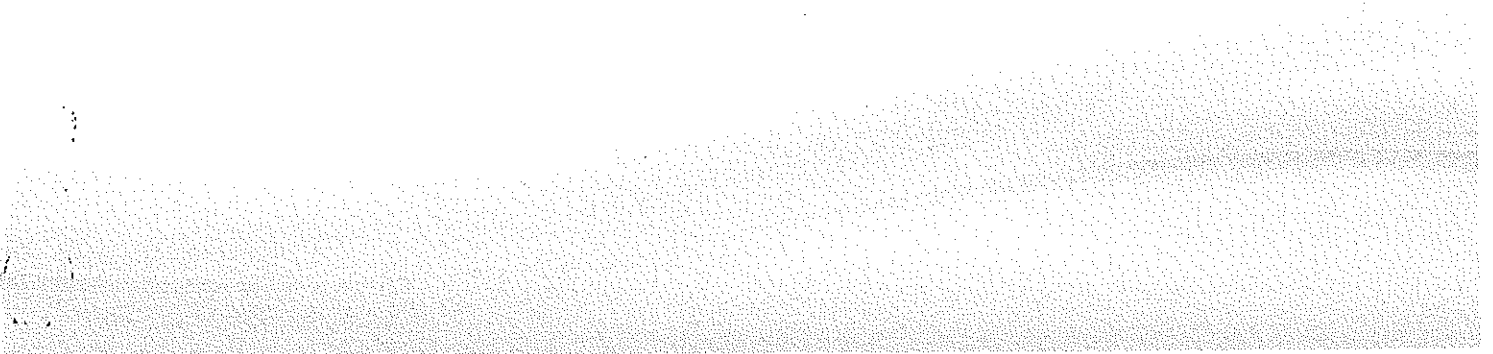


The Greening Of Aiken Landscape Proposal

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Introduction

The Rubenstein School of Environmental and Natural Resources seeks to become a national center for sustainability, science, and natural resources. A renewed and expanded George D. Aiken Center has been proposed and initiated to provide needed space with a reduced ecological footprint. Traditional and new disciplines of ecological economics, conservation biology, watershed science and management, ecological design and planning, spatial analysis, and ecosystem health will be applied in the design of the new Aiken Center. The building is intended to demonstrate innovative and sustainable practices in building design and operation coupled with research opportunities linking humans and natural communities. The *Greening of Aiken Project* includes the EcoMachine, technologies to naturally light the interior, renew and clean building air, a native and functional landscape design, and other appropriate designs to reduce the ecological footprint of the Aiken Center. Integral to the Greening of Aiken Project is connecting the vibrant interior with the functional landscape, as these two demonstrate the interconnectedness of land, structures, and people. Like the other features of the *Greening of Aiken Project* the new Aiken landscape design will redefine the relationship between the building and people that demonstrates a more sustainable future.

Goals

Professor John Shane has created a team of three Rubenstein School students with guidance from graduate student Kathleen Murphy to head the task of designing a landscape plan that matches the acclaimed design of the new Aiken building. Knowing that the act of construction will tear up most of the current plantings that surround Aiken, we decided it would be best to scrap the current design and start over. Starting from here has allowed us to generate a fully functional design that encompasses five serviceable goals. Because the new Aiken building will be LEED certified, we felt that our first goal should be to have the landscape match the building. Consequently, we decided to research possible LEED credits and design our plan to achieve as many as possible. Our second goal was aimed at student learning. We felt that the students would benefit greatly if the plantings matched those being taught in classes like Dendrology. To do this, not only did we propose to plant a wide diversity of trees and ground cover but also we

strategically placed each species to match the cardinal direction of a mountains slope in which they would be found in nature. In doing so we have mimicked natural communities. Obviously, the Aiken boundary doesn't slope like a mountain, so we creatively imagined the building itself to be the peak. Additionally, we felt that if we could attract birds to the site it would create a visually pleasing environment while also allowing those future ornithologists to practice their identification skills. Accordingly, our third goal was to use fruiting species that provide food to birds. Our fourth goal was to protect the condition of the site. We noticed that bikers are causing erosion to the area as they are not using the paths provided in their means of travel. To stop this, we added armed species at the top of the hill to force bikers towards the paths. Finally, our fifth and last goal was to integrate all of the previous goals into an aesthetically pleasing design. It took some time and careful planning but we feel that we appropriately placed the many different species of trees, shrubs, and ground cover in places that would satisfyingly catch people's attention. Once the design is installed, it is our feeling that people would accurately assume that the Aiken center houses the Rubenstein School, based on the landscape around it.

LEED

To match the LEED certification that the future Aiken building will have our group decided that the surrounding landscape should contribute to the LEED certification adding as many credits possible. Of the many LEED credits, we found 5 credits that pertain to Aiken's boundaries. Due to careful planning our proposal achieves all of the credits. Of the 5 credits, 3 are listed under the heading "Sustainable Sites" and the other two under "Water Efficiency".

Credit SS 5.1

The first credit, SS 5.1 requires that we protect 50% of the site area (excluding the Aiken building) with native/adapted plants. We calculated the protected area to be 2,613 square meters. Within this area we planted 43 native trees, which equaled out to be about 1 tree for every 60 square meters. Additionally, we added 7 patches of shrubs/ground

cover. Between both the trees and shrubs/ground cover we feel that not only did we complete the certification of 50% but we near 100%.

Credit SS 5.2

Credit SS 5.2 states that the protected area with native plants must also exceed the local zoning space requirement by 25%. We found the local zoning space requirement to be 40%, so we need to exceed 50 % just like in the previous credit SS 5.1, which we already achieved.

Credit SS 7.1

The last credit under “Sustainable Sites” is credit 7.1 called “Heat Island Effect (Non-roof)”, which necessitates that 50% of the sites impervious surface must be shaded. Although we don’t have an actual percentage of shade, we can guarantee that it’s well over 50%. There isn’t a large amount of hardscape at this site to begin with and the Aiken building itself shades quite a bit of it. What wasn’t shaded, we made sure was through our proposed tree canopies. We estimate that 80% of the hardscape is shaded through our proposed plan.

Credit WE 1.1 & 1.2

The last two credits we achieved coincide with each other greatly. Under the “Water Efficient Landscaping” title, both credits 1.1 and 1.2 require improvements to an irrigation system or having no irrigation system at all. Purposely, we have chosen a landscape plan with species that will not require the need for irrigation. So we achieved both of these credits rather easily.

Student Learning

Our design proposes a total of 22 different tree species and 7 different types of shrubs/groundcover. Species diversity provides the Rubenstein school students with a service as it will immediately help their identification skills. Additionally, by placing each species systematically with where they are found in nature helps teach natural communities. We have divided our imaginary mountain into three slopes facing West, North, and South. We then went further and divided those 3 directions into different sections as it applies to our proposed plantings. Below are the descriptions of each facing slope and their corresponding sections.

West: Found in warmer climate areas, such as the Champlain Valley, the Western Aspect, representing the Oak-Pine-Northern Hardwood Forest type is known as the “Transition Hardwood Forest” by the Society of the American Foresters. It is comprised of the mixed hardwoods characteristic to the Northern Hardwood type along with dryer site species including oaks, hickories and pine. This forest type is found spread throughout areas of the northern forest, specifically in areas of southern aspects resulting in drier conditions.

W1, W2, W3- With a “western” facing aspect, these plantings represent the transition between a dry oak plain forest and a rich northern hardwood. Species included are white pine, red oak, American beech and aspen. The two planters with aspens are being established with goals of eventually eliminating bike traffic through the W2 and W3 sections. This section also includes the raised planter, which would include a musclewood, due to its low growing, wide, open form and attractive wood qualities.

W4, W5- Having similar components as W1-W3, this section also includes a *Rubus* component (raspberry, blackberry, purple flowering raspberry). While filling in landscape space that may be too steep for larger plantings, these shrubs represent examples of the genus *Rubus* for identification purposes as well as for

the purpose as a wildlife attractant, with the goals of increasing the presence of migratory birds on campus.

W6- With primary goals of diverting bike traffic down the hill in this section, a large portion of this planter will consist of barberry. A red maple will also be planted at the end towards the stairs with ground cover consisting of partridgeberry.

F1, F2- These planters, located at the top of stairs, line the entrance to the rear of the building. It is important that they offer aesthetic qualities while at the same time limiting shading into the first floor windows. A mix of shrubs and small trees were selected, which include serviceberry, paper birch, high-bush cranberry and choke cherry.

North: Most widely known for its fall colors in New England, the Northern Aspect representing the Northern Hardwood Forest is dominated by sugar maple, American beech, yellow birch and hemlock. Described as “cool-temperate and moist” (Sorenson and Thompson 2000) this forest type creates the transition between the Spruce-Fir-Northern Hardwood type to the North and the Oak-Pine-Northern Hardwood Forest to the South.

N1- This planting, on the corner of the “western” border, outlines the rear entrance to the building. As it is located outside of the stairwell, there are no windows to consider not blocking, therefore making size not a limiting factor. Black oak, white pine and hemlock with a mixed fern ground cover were chosen to represent the potential varieties of species located in a northern facing slope.

N2, N3- This area, which is now primarily grass with a few scattered trees, offers prime recreation and leisure opportunities for students in between class. For this reason, open spaces will be somewhat retained with the limited addition native trees and shrubs to the area. Trees added will be a white cedar, hemlock,

roundleaf dogwood, chokecherry, elderberry, yellow birch, beech and hobblebush. A large white ash will also be placed adjacent to the large boulder in the area, as a source of shade.

South: A product of warmer climates and shallow soils, the Southern Aspect representing the Dry Oak-Hickory-Hophornbeam Forest type is often described as park-like due to the low level of shrubs present and its overall open nature. This forest type is often found on rocky ledges and raised hilltops with South facing aspects.

S1- Representing the border between the south and western facing slopes as well as lining the rear entrance, this planter will include red maple, ironwood and musclewood.

S2- With a primary goal of eliminating bike traffic through this area, a large component of native barberry and hawthorn would be used. A large shagbark hickory would also be included as a specimen tree due to its prime location next to the Davis center stairwell.

Conclusion/Overview

In preparation for the Greening of Aiken our group has created this landscape proposal. Knowing that in the act of construction some of the vegetation will be moved and most discarded we found ourselves starting from an absolute beginning. This has allowed us to create new themes for the design. The Greening of Aiken will mean that the building itself will be LEED certified thus we thought the entire boundary of Aiken should be also. Our design will meet the criteria to achieve 5 of the 5 possible LEED points available. In addition, to encourage student learning our proposed plan is a prime example of bio-diversity as we have included a number of different tree species, shrubs and even ground cover. Not only that, but if you were to imagine the Aiken building as mountain peak each sloping side is directionally correlated to the particular species that would grow there. This theme has resulted with a plan to plant 22 different species of trees for a total of 43 trees planted. Our design also covers 7 different shrubs and ground

cover. Additionally, of those species planted many of them bare fruit that attracts a number of different bird species. Our team has also realized many bikers don't follow the extended walkways and just take the landscaped hill causing erosion. In response, we have proposed the planting of hawthorn, a species with armed thorns, at the top of the hill to discourage this. Conclusively, we believe that our proposal consists of all the necessities needed for a great landscape. We understand that the "greening of Aiken" has been postponed, so we leave this proposal on file for the future in hopes that it will someday be looked at again.

Works Cited

Thompson, H. Elizabeth & Sorenson, R. Eric. "Wetland, Woodland, Wildland". Vermont Department of Fish and Wildlife and The Nature Conservancy. USA 2005.