Building a Green Roof at Boston College
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Introduction
A green roof system is an extension of an already existing roof. Green roofs provide eco-friendly heat and cooling insulation, support water drainage and water storage, increase air quality, and most importantly provide opportunities for social gathering. We are proposing that Boston College invests in eco-friendly infrastructure and builds a green roof at the new rec-center. The Green roof has the potential to be a quiet natural space on campus for people to unwind, socialize, and study. In addition, it will be an area for people to learn about sustainable infrastructure and the environment.

Until 1957, lower campus was a small reservoir, which makes it prone to flooding. This image from 2014 shows just how extensive the damage can be. A green roof could help manage some of this flooding.

Methods
Environmental: We collected data from architects, botanists, and relevant case studies in order to determine which green roof design would provide optimal stormwater management, air filtration, and insulation.

Economic: We studied data from relevant case studies in order to determine which green roof design would provide optimal stormwater management, air filtration, and insulation.

Social: We collected qualitative data via survey to determine whether or not they would benefit from spending time at a green roof.

We recommend an extensive roof rather than an intensive roof because of their low additional loads, and ability to be retrofitted on an existing building.

A boarder zone, which is the area surrounding the perimeter filled with ballast to collect and store rainwater.

Survey Results
94.2% of Boston College students who took the survey believed that the university should build a green roof on campus. At least 75% of students surveyed believed green roofs improve air quality, energy efficiency, well being, and are a good economic investment.

Recomendations
Boston College should implement an extensive, or low maintenance green roof on the new recreation building. We recommend the roof be designed in a similar fashion as The Burnham Building in Boston, featuring low lying foliage vegetation that is specific to a temperate climate.

Social: There's a significant need for more space for students to relax, study, & socialize (figure 1)

Environmental: Green roofs reduce energy demand for AC by 75%

Economic: Green roofs sustain plant life & provide habitat for invertebrates and bird species

Discussion
Our team believes it is in Boston College’s best interest to build a green roof on the Margot Connell Recreation center. Our research concluded green roofs provide environmental, economic, and social benefits.

- Green roofs retain 70-90% of precipitation in the summer, and 25-40% in the winter
- Green roofs sustain plant life & provide habitat for invertebrates and bird species

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Surveys

- Figure 1: 68.3% of students surveyed did not believe Boston College provides enough space to socialize.
- Figure 2: 47.5% of our survey sample chose ‘outside’ as their preferred place to hangout with friends.

Long-term infrastructure and the environment.

Building Energy Performance

Rainwater harvesting systems: Rainharvesting.co.uk/types-of-rainwater-harvesting-systems.


Vegetation that is specific to the temperate climate.

Boston College provides enough space to socialize.