

Brooklyn College Rainways

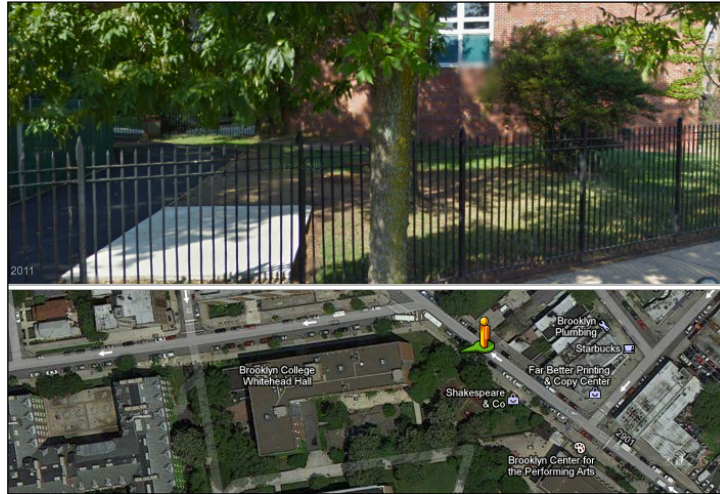
Macaulay Honors College Seminar Three: The Science of NYC

Professor Cheng, October 18, 2012

Group Members:

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PROJECT LOCATION:



Our project space, located outside the eastern wall of Whitehead Hall.

PROJECT SUMMARY:

Our group plans to install two drainage pipes on the eastern-most side of Whitehead Hall that will lead rainwater down into a series of rainwater storage barrels. The liquid stored in these rain barrels will be used to water a rain garden that will be planted just a few feet from the barrels in the grass patch outside of Whitehead Hall.

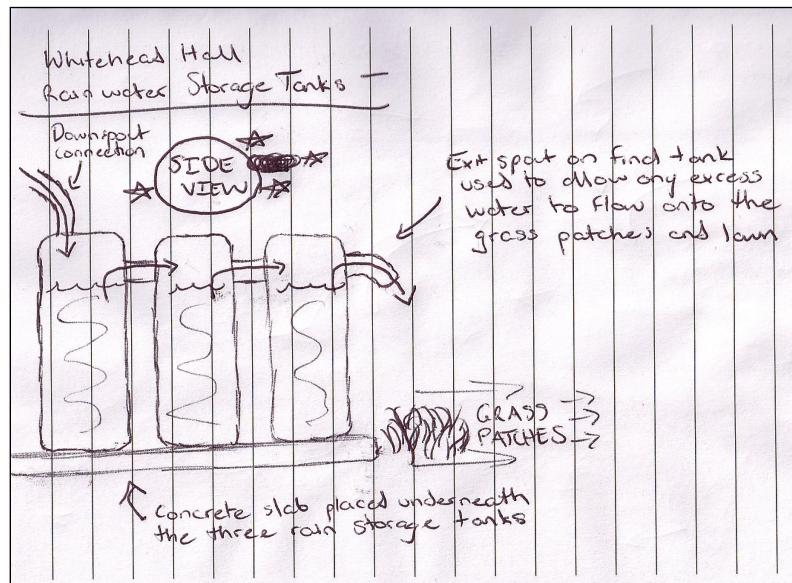


The empty space outside of Whitehead Hall's east side (facing Campus Road).

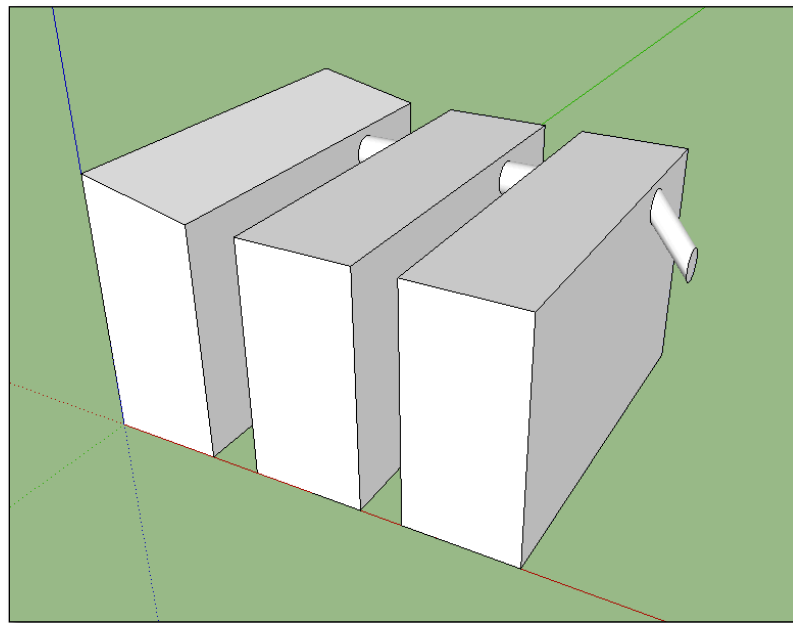
As an added function, small metal pinwheels will be attached to the side of Whitehead Hall in the pathways of the downspouts. As the water flows down the building, it will spin the pinwheels, which will in turn spin small motors next to the rain barrels. These motors can be hooked up to small batteries like the ones used to power the golf carts that traverse the Brooklyn College campus on a daily basis.

FUNCTION, DIMENSIONS AND SKETCHES:

The two rain barrel systems that will be installed will each have three containers. When the first container fills up with water, an exit pipe will redirect the water flow to a second tank. When that tank fills, another exit pipe will redirect the water flow again to a third tank, and when that tank fills, the water will be let out into our rain garden.



The original concept drawing (side view) of our rainwater storage tank.



A rough draft of our rainwater storage tank concept made in Google SketchUp.

The two tanks will be installed on the east wall of Whitehead Hall (the façade facing Campus Road). One will be installed on the left side of the windows already located in the eastern wall, and the other will be installed on the right side of the windows. One problem is that we will need to build a

second slab of concrete to hold the water tank/barrel. There is already one near the eastern wall of Whitehead Hall, but we will need a second on the opposite side of the windows. We cannot just lay the tank on the grass, because it would sink into the grass due to its heavy weight, even before collecting any water. The grassy space that the rain garden will reside on measures up to 2800 square feet, minus the two 8 by 14 foot (or 224 square feet) concrete slabs that would be there.

This plan will improve rain storage flexibility and exterior aesthetic appeal. Two tanks are also more efficient than one because we will need more than just one pipe collecting rainwater. Since the roof of Whitehead Hall is over 13,000 cubic feet, the extra gutter, pipe, and tank system will reduce the amount of overflowed water left on the top gutter for evaporation, and waste. The more water stored and used, the more successful the project will be.

OTHER BENEFITS:

In addition to rainwater conservation, energy conservation and redirection of water to more efficient locations (and to be used more efficiently), our project will provide many interesting benefits after implementation. For one, we will be using recycled soil for the building of the rain garden, thus using up recycled materials as a more eco-friendly solution rather than basic soil. In the process of cleaning up the wall used in the water wheel portion of our project, we will have to do a bit of landscaping on the vines growing along the bricks. While we do not want to remove too many vines since they help cool the building, we will remove enough that it will be possible to see the Whitehead Building name, which will be useful to visitors trying to identify the building (the sign is currently obscured by overgrown vines).



The grassy space outside Whitehead Hall is ready for a makeover. Our group plans to plant a new rain garden with eco-friendly soil.

In terms of aesthetics, any rain garden work we do will definitely be an improvement over the current state of the lawn. As of now, it contains some lawn grass, tree stumps, and a slab of concrete. We will really put an 'artsy spin' on the rain barrels, and spinning water wheels/pinwheels will definitely be a fascinating addition to the campus. The new garden plants and flowers we plant will bring texture and color to a mostly bare landscape, and add some character. We even intend to research certain plant species that could be beneficial to the animals that reside on our campus (squirrels, birds, etc.). It will be very nice to beautify this particular area, since it is right in front of a children's playground. It would be amazing if the children could enjoy and even participate in the care of the garden.