

Drip Irrigation

Saving Plants and Water Alike

Come Clean, Go Green Submission



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Introduction

Have you ever seen poor flowers getting beaten with an automatic sprinkler? Or have you ever thought, “Why do sprinklers aim up and away when plants’ roots are underground?” Since ancient times, drip irrigation has been used to concentrate water onto plants roots as opposed to modern-day sprinkler systems which mimic how rain works. Much of the water from sprinklers sits on top of plants and gets wasted through evaporation. Drip irrigation is a more efficient way to water plants, and it keeps them from getting sprayed forcefully by sprinklers. It also helps ensure that water is more evenly distributed to the plants, so each one looks just as beautiful as all the others. Other benefits of drip irrigation include enhanced and improved plant growth, better management of fertilizers, weed control, decrease in energy costs when compared to sprinkler systems, and a decrease in pest damage and most importantly a decrease in water usage⁴.

Lewis University is deemed a green campus, and many students, faculty, staff members, and visitors love to see the flowers and foliage come spring, so why not allow those two characteristics to become one? By using drip irrigation in areas where pretty flowers are planted, Lewis University will not be wasting water like they currently do with automatic sprinklers and it will continue to have a welcoming, beautiful campus.

Conserving water is currently a priority at Lewis University, but why stop at basins which collect rain water? The current means of watering plant life at Lewis is not efficient and drip irrigation can show passersby how easily it can be implemented in their home gardens. Since drip irrigation uses roughly half the water than conventional watering methods use¹, installing drip irrigation at Lewis University is a no-brainer.

Implementation Plan

Where

Drip irrigation would be placed in areas with a high concentration of flowers and plant life, namely the stretch of University Parkway which welcomes everyone who enters Lewis University’s campus, as well as the area between Lots M and MM. Drip irrigation

networks can be easily disguised due to the large amount of flowers typically planted in those areas. Signs with information on how drip irrigation works should also be included so that anyone who passes by can learn more about water conservation and the benefits of drip irrigation. This is currently implemented with other water saving techniques used on campus such as the Glen and bioswales. Education to the community of sustainable practices plays a large role in the implementation of this project. This is just the beginning of an evolution to drip irrigation throughout the entire campus to conserve our water without sacrificing the high standards our landscapes represent.



Figure 1. Here is general outline of where this project will occur. The green boxes outline areas of implementation.

How

The first step needed to carry one with this project is to understand the land we have. Close work with the groundskeepers will be necessary for this to be successful. The type of soil and plants being used are important in finding the most beneficial irrigation system. Because of changing Chicagoland weather, the amount of water needed will change as seasons change, or even day to day. Regular sprinklers do not allow for this alteration, allowing more water to go unused. This system will always give the exact water needed for the plants to flourish. The precise water amount that is needed for certain plants will be extracted through online research as charts and tables are readily available along with experimentation discussed below.

A small section of land will be used as the experimental grounds used to understand and test this technique in real time. Keeping track of how the plants react to this is very important as it is how the effectiveness of the drip irrigation is seen. Once the drip method is working to the highest degree, it can start to be incorporated to other areas on campus. Much time and attention is needed to create something impactful that actually lasts. Drip irrigation at Lewis University will create this long term impact that will not only keep the grounds as beautiful as they are today, but do so in a sustainable way⁵.

Cost Breakdown

Section between lots M and MM(~6250 Sq. Ft.)

Drip Irrigation System Cost: \$2,621.25-\$3,954.38

Drip Irrigation System Labor: No changing costs

Drip Irrigation System Materials and Supplies: \$467.50-\$537.50

Total: \$0.50-\$0.72 per Sq. Ft. of land = \$3,125.00-\$4,491.89³

The winnings of this project will fund the materials and supplies that are the building blocks of this life-long project on campus. Initial costs may seem larger, but the long term gain of drip irrigation must be taken into account. For example: a 50,000 Sq. Ft. area uses 32" of water per year when sprinkler irrigated, meaning it needs 997,353 gallons per year, which nearly 149,600 gallons of that water will be wasted. This will cost roughly \$2,666.00 yearly in just water costs. Drip irrigation estimated water savings could be between \$400.00 - \$1,333.00 per year, cutting this price in half each year. Within a few years, the cost deficit will disappear and the savings will begin².

Conclusion

Drip irrigation is a relatively inexpensive and easy solution to make Lewis University a more beautiful and an even more eco-friendly campus. The current means of watering plant life at Lewis is wasteful and can actually compromise the integrity of plants since automatic sprinklers deliver a powerful spray which can damage flora. Drip irrigation

will first and foremost help conserve water and it will ensure that the water is administered evenly to the plant life, which will allow them to grow better. Other benefits deal with better usage of fertilizer, more weed control, decreasing energy costs, and a decrease in pest damage. These measures can inspire anyone who visits Lewis University's campus to begin to water their gardens more efficiently, which will lead to less water usage beyond Lewis. Since Lewis University was honored as a green college, and it is known for its vast collection of plant life, let's keep Lewis green and nourish the plant life in a more beneficial, conservative way.

References

1. "Drip Irrigation - DripWorks Drip Irrigation Systems & Supplies." Drip Irrigation - DripWorks Drip Irrigation Systems & Supplies. N.p., n.d. Web. 8 Mar. 2016.
2. DRIP IRRIGATION VS. ROTORS/SPRINKLERS (n.d.): n. pag. NETAFIM. Web. 10 Mar. 2016.
3. "Homewyse Calculator: Cost to Install Drip Irrigation System." Homewyse. N.p., n.d. Web. 10 Mar. 2016.
4. Lamm, Dr. Freddie R. ADVANTAGES AND DISADVANTAGES OF SUBSURFACE DRIP IRRIGATION (n.d.): n. pag. K-State. Kansas State University, 2002. Web. 8 Mar. 2016.
5. When Installing Your Water-Saving, Drip Irrigation, and System, It's Essential To Plan Ahead!. "Planning Your Drip Irrigation System." (n.d.): n. pag. Drip Irrigation. Web. 9 Mar. 2016.