



Department Source: Cultural Affairs

To: City Council

From: City Manager & Staff

Council Meeting Date: April 1, 2019

Re: Living green walls research on feasibility and costs

Executive Summary

After City Council's March 4, 2019 meeting, a report was requested regarding the feasibility and costs for a living wall project on the Fifth and Walnut Parking Garage. The Office of Cultural Affairs staff has researched these types of projects in other communities as well as received preliminary cost estimates from companies who specialize in living walls.

Discussion

Background

After a public comment presentation by a citizen at Council's March 4, 2019 meeting, more information was requested to explore the idea for a living wall implemented on the Fifth and Walnut Parking Garage. Across the country, living green walls have increasingly been used to add interest to buildings as well as promote healthier and happier communities. Staff identified three similar communities who have recently completed living wall projects in their cities.

Living Wall Examples

These three cities have comparable climates to Columbia and have recently undertaken living wall projects.

1. Bloomington, Indiana: Monroe County Parking Garage

Five of the parking garage's 8 feet by 6 feet window openings are filled with a variety of plants that bloom in shades of yellow, red, pink, purple, and green. The coordinators of this project chose annual plants, which are removed in the winter and replanted each spring.

Total cost: \$15,000-\$20,000 for the living wall planters and watering system. Cost does not include installation, purchase of plants, or annual maintenance.





2. Fort Collins, Colorado: Urban Green Wall

Fort Collins initiated an active experiment to bring nature to unexpected places in the city. The living wall is part plant, part infrastructure. The year-round vertical installation was constructed to be tested in the challenging conditions of the local climate. The city experimented with different species and maintenance techniques and is currently evaluating what will work best for Fort Collins and future projects.

The wall structure was manufactured by a Colorado company, Perspective Design, and plants supplied by Sempergreen. Total cost for structure, plants, and installation has not been provided to staff for this report.

Timeline: Pre-planted panels were installed in July 2016 and observed through December 2017.

For Collins' Parks Department facilitated the staff time and materials for ongoing maintenance.

Year 1 maintenance costs:

- Labor (102.5 hours): \$2,103.49
- Materials: \$1,606.04
- Total maintenance costs: \$3,285.16

Year 2 maintenance costs:

- Labor (163.6 hours): \$3,327.80
- Materials: \$1,606.04
- Total maintenance costs: \$4,933.84



Images: July 2016 (pre-planted panels installed; August 2016 panel replant after irrigation interruption and lost species)



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Images: December 2016; March 2017



Images: July 2017; September 2017

3. Lincoln, Nebraska: Lumberworks Parking Garage

The City of Lincoln planned for a green wall to be installed to provide environmental as well as aesthetic benefit. The selected plants include species that can survive in winter, including Boston ivy, Virginia creeper, honeysuckle, and other varieties.

Total Cost: \$175,000 - Includes the frame, irrigation system and plants (covered by state stormwater grant funds)



Images: Building rendering of living wall; construction of garage in progress.



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Fifth and Walnut Parking Garage

The City of Columbia's Fifth and Walnut Parking Garage has a number of windows in varying sizes. The dimensions of the three most prominent boxes are as follows:

Window 1: 16ft-8-1/2in X 5ft-5-1/2in

Window 2: 16ft-8-3/8in X 4ft-4-3/8in

Window 3: 16ft-8-3/8in X 4ft-2in



According to the Public Works department, plumbing also exists in the garage on all levels in (necessary for the sprinkler system).

Staff inquired with two different living wall companies, Ambius and LiveWall, to get an idea on costs as it pertains to the Fifth and Walnut Parking Garage.

Ambius

The vine container system Ambius utilizes in parking garage structures is a series of anodized aluminum planters 3 feet in length with a 5 feet high screen onto which the plants climb and grow. The Prudential Plaza in New Jersey provides an example of this type of installation.

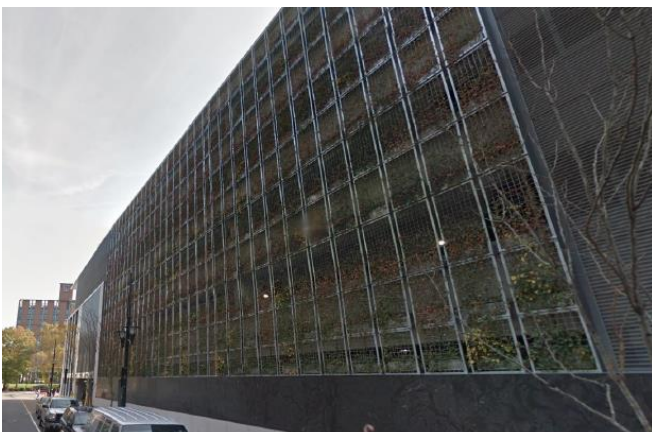


Image: Prudential Plaza, Newark, NJ



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Budgetary cost for Ambius' system based upon past projects averages \$1050.00 per planter pre-tax. Each planter covers 15 square feet resulting in a cost per square foot of \$70.

That price includes full set of fabrication shop drawings, cut sheets, submittal for approval as well as supply and installation of planters, soil, plants, completed drip line irrigation system with irrigation controller, fertilizer injector, freeze/thaw sensor, and onsite performed by Ambius non-union personnel.

Ambius recommends 5 planters per opening of the Fifth and Walnut garage = \$5,250 per window

LiveWall

This company provides structural components for a living wall—including rails, planters, and irrigation components. The costs of a professionally installed system typically range from \$90 - \$140 per square foot.

LiveWall provides the following products for its system: furring strips and Slot Rails with irrigation conduits (RainRails), irrigation main line components, irrigation parts and fittings from valves to the RainRails, wall planters, removable planter inserts (empty). Optional add on features are: Automatic fertilization components, descaling components for hard water treatment.

Plants would have to be purchased separately. Perennials are typically prices at \$10 per square foot, and annuals at \$7 per square foot.



Image: LiveWall system being installed in Bloomington, IN



Based on LiveWall's preliminary pricing, addressing one of each of the three different sized windows on the Fifth and Walnut Parking has an estimated cost of \$14,000, approximately \$70 per square foot (not including the cost of plants, prepping the site, or installation).

Other Considerations

1. Depending on placement in garage, further investigation would be needed on access to current plumbing and proximity to windows. Alterations to current plumbing may be needed to accommodate irrigation system.
2. The higher up a living wall is installed the greater exposure to wind, which requires more constant irrigation so plants don't dry out.
3. Plant selection is important. Perennials would need to be able to endure the winter months. Annuals would require ongoing maintenance to remove in winter and replant in the spring.

Fiscal Impact

Short-Term Impact: None
Long-Term Impact: None

Strategic & Comprehensive Plan Impacts

Strategic Plan Impacts:

Primary Impact: Infrastructure

Comprehensive Plan Impacts:

Primary Impact: Livable and Sustainable Communities, Secondary Impact: Inter-Governmental Cooperation

Legislative History

Date	Action
N/A	N/A

Suggested Council Action

This report is informational only.