



## **Thomas Jefferson University Lubert Plaza – Philadelphia, PA Methodology for Landscape Performance Benefits**

### **Environmental**

- ***Increased pervious area by 570% over former site***

Pervious and impervious surfaces before and after construction of the park were compared. The previous 1.8 acre site contained 93% impervious surfaces and the Lubert Plaza design reduced the impervious surfaces to 60% of the total site area. The area of the new building plus hardscaping was subtracted from the total site area to determine the total area of pervious surface. The pervious surface included planting beds, tree wells, and turf areas. . Compared with the total site area (adjusted to remove public right of way), the new design has approximately 40% pervious cover compared with the previous site's 7% pervious cover.

- ***Captures and reuses up to 17,700 gallons of air conditioning condensate for irrigation***

An underground cistern, located at the southeast corner of the site, provides approximately 17,700 gallons or 2365 cubic feet of storage. Pipes carrying stormwater and air conditioner condensate leading from the roof of the adjacent building are connected to the cistern. The volume was computed based upon data provided in the contract documents related to the cistern's dimensions and storage capacity. The cistern is comprised of plastic Atlantis Matrix Rain Tank modules with the perimeter wrapped in a non-woven geotextile and then a geomembrane. A weir assembly directs stormwater overflow to the City's combined sewer system. Irrigation demands beyond the amount provided by the cistern are supplied by Philadelphia's potable water system.

It should be noted that there was no apparent significant savings by using the cistern. Our analysis showed that it is far less expensive to purchase city water than to construct and maintain a cistern whose payback was in excess of 50 years at which time, and likely before, the system would need to be renovated/repared. Rough calculations indicated that water saved was \$300 per year and the installation cost of the cistern system was \$26,000.

- ***Captures and detains up to 1.25" of stormwater runoff from the Hamilton building***

The cisterns can store up to 17,700 gallons or approximately 2,366 cubic feet of water generated by the Hamilton building's roof runoff and/or air conditioner condensate. The volume was computed based upon data provided in the contract documents related to the cistern's dimensions and storage capacity. Roof leaders are connected directly to the cistern. With a building footprint of 22,387 sq. ft., up to 1.27" of the precipitation falling onto the roof can be captured within the cistern.

### **Social**

- ***Improved mood of visitors to the plaza***



## LANDSCAPE ARCHITECTURE FOUNDATION

A survey was developed to understand how people experience and respond to Lubert Plaza in order to understand its social impact. The survey was based on measures developed by Cooper-Marcus and Barnes (1995); Sherman, Varni, Ulrich and Malcarne (2005) and others. The survey questionnaire included 6 questions related to demographics; and 16 questions related to experience. The survey was administered by the LAF Fellow; LAF Intern, and 3 Temple University MLA students on June 26<sup>th</sup> 2011 between 11:30a.m. – 2:30 p.m. It was a convenience survey in that potential respondents were approached in the plaza and asked if they would be willing to take five minutes to fill out the survey. 163 respondents filled out the questionnaires. Those who agreed filled out a form and returned it to the administrators. The responses were entered into SPSS (Statistical Program for Social Sciences) and analyzed. Some questions were related to the impact of the plaza (if any) on mood/emotional state; activities engaged in while in the plaza; and contribution of the plaza to satisfaction with TJU as a study/work environment and perception of the plaza's ability to improve the environment through storm water retention.

### Limitations—

1. Convenience survey meant that it is possible that only people who already felt positively about the plaza would take the time to respond.
2. Survey conducted only once—during lunch hour. Evening and weekend users may have different experience and preferences.
3. Good weather may have influenced experience and perception.

A large majority, 87.7%, of respondents indicated that they felt more positive as a result of spending time in the plaza.

- ***Improved ability to cope with work/school stress***

Another survey question asked about the plaza experience relative to coping with the daily stresses of work and school. Over half, 63.2% ,of respondents indicated that they felt more able to cope with educational/occupational demands as a result of spending time in the plaza.

- ***Increased satisfaction with Thomas Jefferson University as a workplace/university***

A survey question asked whether the presence of Lubert Plaza increased overall satisfaction with Thomas Jefferson Hospital as a workplace/university. 42.5% respondents answered “probably yes” and 37.7% answered “definitely yes”. The strongest support was from students who made up 49% of the “definitely yes” group and staff who accounted for 42.9% of the “definitely yes” group.

- ***Increased overall satisfaction with the city environment***

Another question asked whether the plaza increased overall satisfaction with the city environment. A majority of respondents indicated that the plaza is linked to satisfaction with the city. 42.7% answered “probably yes” and 48.0% answered “definitely yes” to this question.