



Project Summary:

Project 2014-07; Block 200: Replace Second Bank Block Hazardous Walkways and Repair Underground Drains (PEPC 53272)

This project will replace existing brick and bluestone walkways and repair the drainage system of the Second Bank Block. The majority of the Park's walkways were constructed or renovated between 1950 and 1976. The walkways and storm sewers were constructed without proper subgrade preparation and base. As a result the drainage piping has settled, separating joints, causing blockages and settlement on the surface above. The walkways have also experienced settling due to the poor drainage and inadequate base. The uneven sidewalks create a serious trip hazard, especially to the older visitors who make up approximately 25% of all visitors to the park.

Replacement of pavement includes 5700 SF of bluestone and 8100 SF of brick walkways in various locations within the block. The existing walkway surfaces will be removed and the bed of sand or mortar mix will be excavated. A concrete pad with a stone sub-base will be installed to provide a stable base, which will support the new brick pavers or bluestone. Typical excavation depths for the walkway replacement will be 17-inches for the bluestone pavers and 11-inches for brick paver areas.

The paved walkway on the west side of the Second Bank has both significant pavement heave due to tree roots, and drainage problems as a result of these tree plantings that negatively impact the Bank as a cultural resource, and create hazardous conditions in the walkway. The leaf, bark and fruit from the London planetrees continually clog gutters and surface drains; the inaccessibility of the roof gutters without large-high reach equipment as well as the unpredictability of surface flow from rain events, coupled with the tree litter, are a challenge for resource protection of both the Bank and the adjacent American Philosophical Society buildings. Root heave from the water-loving trees has created pavement heave, which results in an uneven and rippling brick surface for walkers. To correct both the resource protection and life/safety issues, this project has included regrading, installing new drainpipe and drains, and the installation of a new concrete walkway subbase for the east and west walkways. This work will also affect the viability of the existing trees.

Park and contractor staff conducted research on the type of vegetation planted in the tree pits on both east and west sides of the Second Bank during its construction in between 1804-1820s. Historic illustration show generic canopy trees that cannot be identified in terms of specific locations or species. The London planetrees currently on side were planted in 1966 as part of the current design. The park and contractor staff consulted with arborists from the Morris Arboretum on the long-term solutions to the problems caused by the existing trees. Although expanded tree pits were discussed, they were dismissed as an option because they were only a temporary solution. In addition, the expanded tree pits were not part of the 1960s landscape design, thus creating an impact there.

Because of the extensive rehabilitation of the west walkway and the moderate rehabilitation measures for the west walkway, the anticipated damage and destabilization to the trees would

require that they be removed and replaced. They will be removed and replaced on both sides to preserve the symmetry of the design.

After reviewing a number of options, the Park, with the aid of our contractors, selected Skyline, a variety of honey locust (*Gledisia tricanthos*) as the replacement tree. Honey locust is a mid-canopy native tree that appears in the nursery catalogs of John Bartram (1699–1777), the well-known early Philadelphia botanist. It is a popular native street tree that dates to the historic period of the Second Bank; its broad habit resembles that of trees similar to the London plaine tree, though at a smaller mature height. Importantly, the honey locust has small leaves that do not mat in drains, reduced pollen, and no fruit litter to interfere with the drains. It has a deeper root system than the existing trees, with tap roots up to 20' deep, so it will not have the same potential to cause pavement heave as the existing trees.

The drainage work includes replacement of 1,145 LF of sewer and installation of yard drains. The sewers and yard drains will mostly be replaced in-kind, however, some will be relocated to avoid masonry walls or mature trees. All proposed sewer alignments are shown on the attached drawings. Typical depths of excavation for the sewers will average 3 to 5 feet.

In addition to the walkways and drainage work, the existing amphitheater (see Figure 2) will be demolished and the area filled, re-graded and seeded.

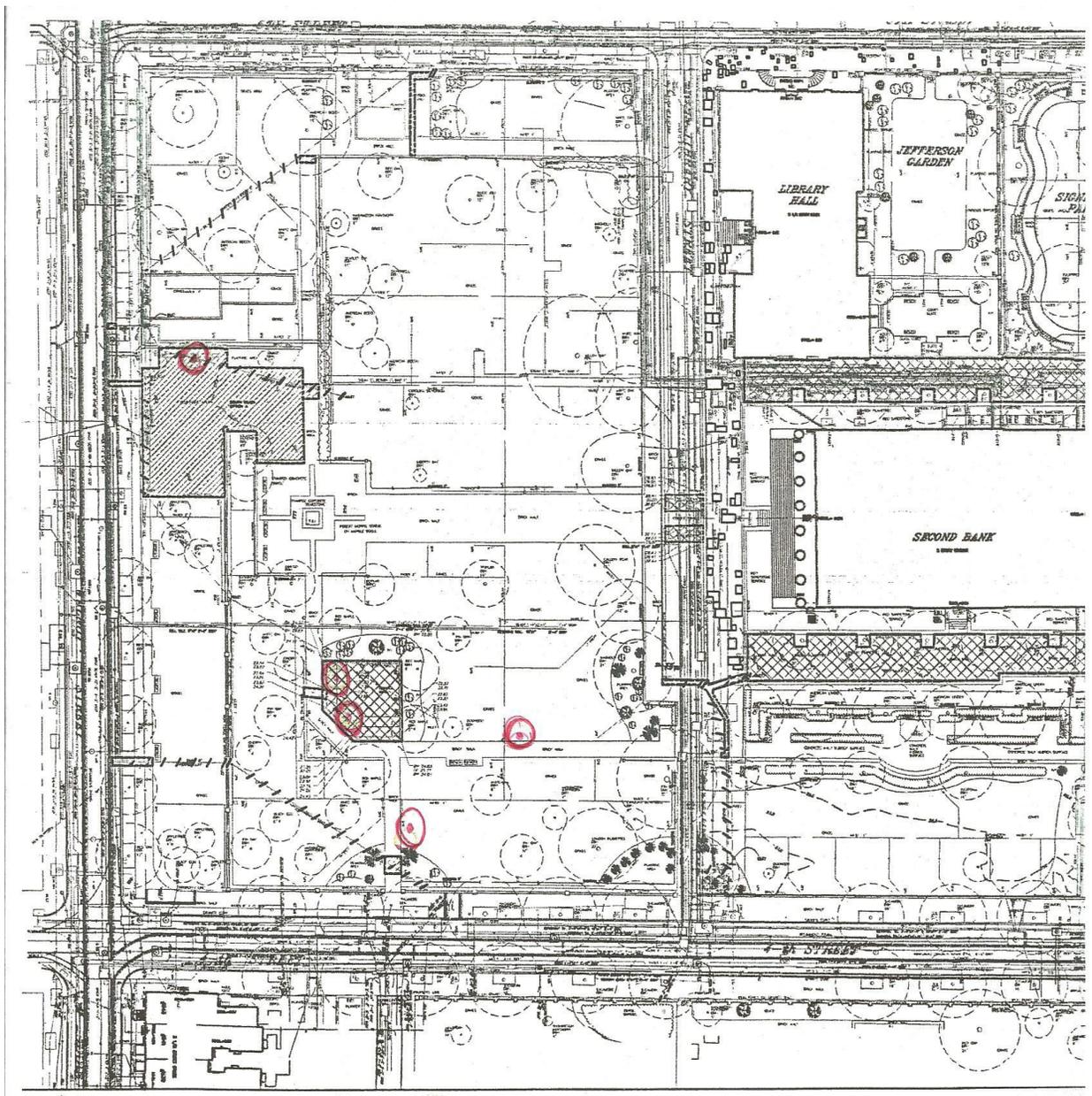
This project is currently being reviewed by the Philadelphia Water Department for compliance with their stormwater regulations. Compliance with these regulations may require the planting of 5 additional native trees within 10-feet of impervious surfaces (proposed locations are shown on Figure 3). If it is determined the additional trees are not necessary they will be deleted from the project scope.



Figure 1: View of amphitheater, looking southwest.



Figure 2: London planetrees, east side of Second Bank building, looking northwest.



Proposed Tree
Planting Locations
Required by
Philadelphia Water
Department
Second Bank Block

JLP
6-17-2014

Figure 3: Propose locations of additional native trees plantings.