FAIRFAX COUNTY PLANNING COMMISSION ENVIRONMENT COMMITTEE THURSDAY, JUNE 27, 2019

PRESENT: James R. Hart, Commissioner At-Large, Chairman Mary Cortina, Commissioner At-Large, Vice Chair Ellen J. Hurley, Braddock District John C. Ulfelder, Dranesville District Walter C. Clarke, Mount Vernon District Tim Sargeant, At-Large John Carter, Hunter Mill District

ABSENT: Donté Tanner, Sully District

 OTHERS: Joseph Gorney, Planning Division (PD), Department of Planning and Zoning (DPZ)
 Hugh Whitehead, Stormwater Management, DPWES
 Laura Beaty, Fairfax County Tree Commission, Providence District
 Catherine Ledec, Fairfax County Tree Commission, Mount Vernon
 Norbert Pink, Sierra Club
 Teresa Wang, Senior Deputy Clerk, Planning Commission

ATTACHMENTS:

- A. PowerPoint Presentation: Natural Landscaping at County Facilities Plan Amendment, Creating Natural Communities, dated June 27, 2019
- B. Draft Policy Plan Amendment Text, Natural Landscaping, dated June 27, 2019
- C. Natural Landscaping Tour Materials from Saturday, June 22, 2019

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Chairman James R. Hart called the meeting to order at 7:33 p.m. in the Board Conference Room of the Fairfax County Government Center, 12000 Government Center Parkway, Fairfax, Virginia, 22035.

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Joe Gorney, Planning Division, Department of Planning and Zoning, provided a presentation of Creating Natural Communities, a copy of which is included in Attachment A, which covered the following topics:

- Tree roots, trunks, and branches;
- Soil components and layers;
- · Typical development scenarios and development impacts;
- · Species sensitivity to disturbance;
- Herbaceous roots;
- Native plants;
- Tree care challenges;
- Subsoiling techniques;

Environment Committee

- Site considerations; and
- Natural communities.

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Mr. Gorney; Hugh Whitehead, Stormwater Management, Department of Public Works and Environmental Services; and multiple Committee members discussed the following issues:

- The types of drawings submitted to the Commission during the application process;
- Reasons why the vegetation or tree species planted on a site differed from what was depicted in the drawings approved during the application process;
- The development of a natural landscaping checklist or guideline for the Planning Commission during the approval process to ensure successful landscaping designs;
- The impact of development on the soil and the importance of rebuilding the soil prior to the installation of plants and trees;
- Potential hazards that would be incurred during the maintenance for natural landscaping;
- Site design issues related to preserving naturally occurring features that would assist with maintaining tree preservation areas;
- The lack of information related to tree preservation deviations noted on plans submitted during the approval process;
- The usage of native plants in the County's urban areas;
- Suggested language for a development condition to address replacement of dead plantings during special exception or special permit amendments; and
- The main reasons why plants or trees did not survive.

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Mr. Gorney and multiple Committee members discussed the Committee's next steps, which included the following:

- Stakeholders meeting would be scheduled prior to the next Committee meeting; and
- A subsequent Committee meeting scheduled for September 26, 2019.

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Mr. Gorney updated the Committee members on the proposed Coastal Resource Management Guidance Amendment. He advised that staff was clarifying the proposed language to address concerns raised by the Wetlands Board.

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Environment Committee

June 27, 2019

The meeting was adjourned at 9:10 p.m. James R. Hart, Chairman

An audio recording of this meeting is available in the Planning Commission Office, 12000 Government Center Parkway, Suite 552, Fairfax, Virginia 22035.

Minutes by: Teresa Wang

Approved: September 26, 2019

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Jacob Caporaletti, Clerk to the Fairfax County Planning Commission

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Typical Development Scenario

- The fertile topsoil is removed; possibly stockpiled
 - The fungal network is destroyed
 - Soll organisms die
- The land is graded
- * The remaining subsoil is compacted
- Debris may be buried
- Stockpiled soil is spread on the subsoil
- · Small planting areas are created
- An amended planting hole is dug for each plant







· Pollutants: heavy metals

Source: Dr. Susan Day, VT

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The Result

· Soils

- Little organic matter; little life
- · ("Zombie" soil it's sort of alive, but not really)
- Compaction
 - · Limited pore spaces for air and water movement * Roots cannot penetrate

Trees

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- · Roots search for air and water
 - · Surface roots heaving sidewalks; roots grow b/w compacted soll & sod
 - · Plunging or shortened roots
 - + Little capillary water; urban heat island effect
- Poor root anchorage
- Stunted growth Crown dieback
- Slow decline
- Lowered life expectancy
- · Premature death





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Why Native (Local) Plants?

- Coevolution "native" plants are part of a community of organisms (microbes, fungi, insects, & vertebrates) that share an evolutionary history
 - Exotic implies from another country
 - Non-native not a local
 - Insects can detoxify the chemicals in the native plant leaves; insects become food for baby birds (no baby birds, no adult birds)
 - As a general rule, Exotic (and many non-natives) = Sterile (i.e., a "food desert")
 - Timing (all seasons) bird migrations, insects hatching, pollination (crops)
- Habitat network of patches
- Plants pump sugars into the soil and store it in their leaves, feeding organisms
 above & below ground
- Native grasses build soils through constant root growth, adding large amounts of carbon
- · However, ...
 - <u>All selected plants should be chosen based on their suitability to the site conditions (esp.</u> urban effects), whether native or non-native
 - · Choose a diverse plant palette
 - Habitat can be created with shrubs & perennials (cover the soil in layers)
- Note: Sometimes a plant outside of its native range can still perform most of its evolutionary role in a new ecosystem





ts	Plant	Woody
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Common Name	Plant Genus	Butterfly/moth species supported
Oak	Quercus	534
Black cherry	Prunus	456
Willow	Salts	455
Birch	Betula	413
Poplar	Populus	368
Crabnpple	Malus	311
Blueberry	Vaccinium	266
Maple	Acer	285
Elm	Ulmus	213
Pine	Pinus	203
Hickory	Carya	200
Hawthorn	Crateogus	159
Spruce	Pices	158
Alder	Alnus	156
Basswood	Tilie	150
Ash	Fratinus	150
Rose	Rosa	139
Filbert	Corylus	131
Walcut	Jugians	130
Beech	Fagus	126
Chestruit	Castarias	136

Herbaceous	Plants
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Common Name	Plant Genue	Butterflyimoth species supported
Goldenrod	Solidago	115
Asters	Autor	112
Sunform	Heliarithus	73
Joe pye. Bonesat	Expetodum	42
Morning glory	lpomose .	39
Sedges	Certax	36
Haneyauckie	Lorsioene	36
Lupine	Luginus	33
Violets	Viole	29
Oeraniuma	Gerenitam	23
Block-eyed susan	Rudbeckin	17
iria	bia .	17
Evening primities	Osnothers	18
Milweed	Asciopian	12
Verbena	Verbenn	11
Beardlongue	Penatemon	8
Phice	Phips	8
Bee beim	Monenda	7
Veronica	Vectorilos	6
Little bluestern	Bishizachyrkum	
Cardinal Sover	Lobelia	4

http://www.bringingnatureflome.net

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Mulch Grass Tree Care Challenges Prune · Wait at least a year · Cut dead and crossing/rubbing branches · Remove grass from under/around trees · Grass hijacks the water and nutrients · 90% fewer roots under sod · Mulch the leaves; top dress the lawn

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Tree Care Challenges

Time to Establish – ~1 year/1 inch of caliper (diameter)

Propagation issues

- Unnatural environment for roots
- · Poor root system plunging; girdling
- May be planted too deep in pot
- · Stock left in hot parking lot after delivery
- · Water, Water, Water (before & after planting)
 - · Daily for 2 weeks;
 - · Every other day for 2 months

 Weekly until established (two+ seasons) · Planting depth

- · Where are the root flare and the first lateral structural root? · Roots can handle prolonged moisture; the trunk cannot
- Mulch
 - · 3/3/3 Method & donuts (yes)

- Voicanoes(no)

Topping (aka: tree-butchering/mutilation) (no)

Staking

· If planted well, don't need · Will ultimately choke a tree

No Tree Left Behind · Protect the Soil & the CRZ · 1.5 feet radius/1 inch trunk diameter (general rule of thumb); limit disturbance · But, ... tree survivability dependent on many factors · Protect groups of trees & intact soils . The most mature trees are not always the best ones to preserve or plant Select appropriate species and assemblages Mimic natural communities · Plant multiple lavers - the below ground root lavering reflects the above ground laver - Allow time for plants to grow in and complex soll network to develop Improve the soils 05 14 2013 Amend the Area (not merely individual planting holes) · Aerate - rip; till; air excavation; radial trenching, to 18-24 inches deep · Mulch groups of plants (emutates natural forest ground cover) Conserves molisture Moderates soil temperature · Adds organic matter as it decays · Creates favorable envi ent for soil microorganisms that facilitate root function Increase soil volume · Planting width · Connections to other pervious areas - Pervious pavement Consider the location of utilities 16 15

Subsoiling Technique

- Remove rubble
- · Apply 4 inches of compost
- · Use backhoe to dig to a depth of 24 inches; scoop; drop to break up clods. (Creates veins of compost deep in profile).
- · Apply 4 inches of reserved topsoil
- Till to depth of 8 inches



Source: Dr. Susan D. Day, Dept. of Forest Resources & Environmental Conservation, Virginia Tech

Site Considerations

- Reduce road/lane widths; reduce turning lane lengths; consider whether turning lanes needed
- · Build on already degraded areas
- Conservation easements for stormwater credit replant with seedlings
- Underground lattice structure (suspended pavements)
 - · Porous pavers above
 - · Un-compacted soil throughout underground lattice

Plant Rescues

 Plants indigenous to Middle Atlantic, (but allow for consultation w/ UFMD)





- Native vegetation forms symbiotic communities above and below ground.
- Native plants coevolved with each other, insects, fungi, bacteria, & vertebrates; and most non-natives cannot support life or participate in those communities.
- Native systems with intact soils provide tremendous ecosystem services and should be protected and restored.



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Attachment B

Handout for Planning Commission Environment Committee—March June 247, 2019

<u>Draft Policy Plan Amendment Text—Natural Landscaping—Public Facilities</u> <u>Possible Revisions for Internal Staff Consideration</u> (Edits reflect changes to the November 20, 2018 BOS authorization handout draft)

ADD: Fairfax County Comprehensive Plan, 2017 Edition, Policy Plan, Public Facilities, as amended through July 25, 2017, page 4:

Objective 6: Design, retrofit and maintain public facilities and sites in an environmentally-sensitive manner.

- Policy a. Apply, within the design of public facilities and their associated sites, and in consideration of the factors including costs, health, safety/security, and the broader context of facility and site needs (e.g., recreational uses), low impact development (LID) practices and natural landscaping methods where feasible to minimize resource consumption, reduce stormwater runoff, and decrease life-cycle maintenance requirements, increase the habitat value of each site, and increase soil and plant health.
- Policy b. Where opportunities arise in consideration of the factors identified in Policy a above, Consider retrofitting and maintaining existing facilities and sites with natural landscaping and LID methods/practices.
- Policy c. Ensure that natural landscaping and LID practices are monitored and maintained such that they will remain viable over time.
- Policy d. Apply green building practices within the design of public facilities.
- ADD: Fairfax County Comprehensive Plan, 2017 Edition, Policy Plan, Glossary, as amended through March 20, 2018, page 11:

NATURAL LANDSCAPING: A landscaping approach through which the aesthetic and ecological functions of landscapes installed in the built environment can be are improved, and through which natural areas can beare restored, by preserving and recreating land and water features and native plant communities. Sustainable landscapes are formed which by protecting and restoreing natural ecosystem components: maximizeing the use of native plants; removeing invasive plant species.; reducing areas of unnecessary turf grass; reduceing or eliminatinge-and chemical synthetic inputs; improveprotecting, createing, and maintaining healthy soils; and retaining rainstorm water on-site. In natural areas, only locally native plant species are used to provide the greatest possible ecological benefits. In built landscapes, most of the plant cover should isbe composed of native plant species that support wildlife and improve environmental conditions, although non-invasive non-native exotic plants may be selectively used where appropriate.

Attachment C

MERRIFIELD CENTER, FAIRFAX-FALLS CHURCH COMMUNITY SERVICES BOARD

8221 Willow Oaks Corporate Drive Fairfax, VA 22031



PROJECT DESCRIPTION

A 200,000 SF Human Services Building and a 230,000 SF parking garage with 712 parking spaces. This new facility consolidated 8 existing sites to house a complex program of mental health services in a state-of-the-art, community-based, out-patient facility for the Fairfax-Falls Church Community Services Board. Building program highlights include:

- 24/7 emergency service with separate entry for emergency vehicles at lower level
- Mobile Crisis Unit
- Peer Resources Center
- Pharmacy and Medication Clinic
- Primary Health Care Clinic and Dental Clinic
- Behavioral Health Outpatient & Case Management
- Youth and Family Outpatient Services
- Intellectual Disabilities Services

DESIGN

Healing Design Approach:

- The landscape and hardscape geometry and materials complement the building facade.
- Landscape design with various walking paths and gardens are an integral part of the therapeutic healing environment.

Sustainable Design Features:

- Use of sustainable materials with high recycled content; low-emitting materials; regional materials; and Forest Stewardship Council (FSC)-certified wood.
- Green stormwater features, including rain gardens; a vegetated swale; an infiltration trench; porous pavers; porous concrete; grass pavers; and two green roofs.
- Daylight harvesting and lighting control system with occupancy sensors.

Attachment C

- White, highly-reflective membrane roof to reduce the urban heat island effect.
- Vegetated open space using native and drought-resistant plants.

IMPLEMENTATION

- Landscape Design: Rhodeside and Harwell, Inc. (Alexandria, VA) developed detailed hardscape and planting designs and details.
- Timeline:
 - Fall 2014 Original landscaping was installed as part of the County construction project. Landscaping was not fully complete at substantial completion/occupancy due to timing of the installation and issues with plant availability.
 - Spring 2015 Warranty and maintenance work was contracted to a new landscape vendor.
 - Spring-Summer 2017 Significant plant and tree replacement was required as part of the construction bond release process, which was completed in Fall 2017.

MAINTENANCE

- The majority of the site is maintained by the Facilities Management Division (FMD).
- Low Impact Development (LID) areas and the two green roofs are maintained by the Maintenance and Stormwater Management Division (MSMD).

OBSERVATIONS

- The landscaping was designed in 2010-2011 and was intended to provide therapeutic opportunities. However, some features were seen as overly detailed and complex. A part of a DPWES internal pilot project to reduce landscape costs, the design was reevaluated with minor design changes, which were implemented in March 2014.
- Issues with the original installation were never completely resolved due to timing and contractual issues with the original subcontractor.
- Availability of specified plants has been a problem.
- "Right plant, right place" Many plants on the north side of the building may have failed due to poor plant selection for heavy wet shade.
- Other factors may have contributed to inhospitable growing conditions, including heat buildup; reflected light; heat island effect (in which hardscapes continue to give off heat at night); rain runoff; construction subsoils; and small planting holes.
- Were soils properly selected, i.e. clean (weed free) and of the proper mix?
- Installation techniques and oversite: Could poor soils and compaction be partly to blame for poor plant survival?
- Maintenance: Generally the areas that are maintained by MSMD still have the intended plant materials and look better. Other areas may have had less maintenance.
- Establishment: There is very little lawn. As a result, the project has more planting beds to maintain in the establishment period. Increased maintenance in the first two or three growing seasons might minimize significant maintenance later.





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OAKTON COMMUNITY LIBRARY 10304 Lynnhaven Place Oakton VA 22124





PROJECT DESCRIPTION

Opened in September 2007, the Oakton Community Library is certified with a Silver Rating under the Leadership in Energy and Environmental Design (LEED) program, sponsored by the U.S. Green Building Council. The 17,304 SF facility serves as a community gathering place and provides programs and materials for all ages. It houses a circulating collection of approximately 85,000 items, 12 computer work stations, and a free wireless network, provides views of the changing seasons and local wildlife, and features natural lighting from oversized windows and a raised clerestory. In 2008 this location was certified by the National Wildlife Federation as a Backyard Habitat. Outdoor seating was purchased by The Friends of Oakton Library and extends the library space into the outdoors.

The American Public Works Association selected the building as its Project of the Year in 2008 for the VA/MD/DC region. PSA Dewberry (architecture and interior design), E.E. Reed Construction (contractor) and the Fairfax County Department of Public Works and Environmental Services team received the Award of Excellence for the Best Building for an Institutional Facility under \$20 million from the National Association of Industrial Properties in 2007 for their combined work on this project.

The Oakton Library rain garden and planting beds host a variety of blooms throughout the Spring, Summer, and Fall. The plants are well-established and maintenance is now relatively straightforward. A selection of native plants provides food and habitat for insects and birds throughout the seasons. The rain garden is one of the most successful in the Fairfax County system.

DESIGN

Sustainable Design Features:

- Use of sustainable materials with high recycled content, low-emitting materials, regional materials, and Forest Stewardship Council (FSC)-certified wood.
- Green stormwater features, including a rain garden (bioretention basin); and permeable pavers.
- Daylight harvesting and lighting control system with occupancy sensors.
- Vegetated open space using primarily native and drought-resistant plants.

IMPLEMENTATION TIMELINE

- 2007 Landscape strip with trees is installed.
- 2008 Five Hills Garden Club installs and maintains several planting beds on the property.
 Several years later, responsibility for the beds is transferred to Friends of Oakton Library.
- 2014 The landscape strip is retrofitted with an infiltration trench/underground storage chambers and permeable pavers and planted. However, by early 2015, the plantings are largely failing.
- 2015 The rain garden plantings are replaced with a more successful planting plan. The Friends of Oakton Library help install the rain garden plants in 2015.

MAINTENANCE

- The majority of the site is maintained by the Facilities Management Division (FMD).
- Green stormwater infrastructure areas are maintained by the Maintenance and Stormwater Management Division (MSMD).
- Planting beds outside of the rain garden are maintained by The Friends of Oakton Library, including the bed in front of the library and two beds outside of the large picture windows.

OBSERVATIONS

- It is likely that the 2014 rain garden planting failed, in large part, due to construction delays, which caused a very late Fall planting. The plants probably had little time to establish healthy root systems before the Winter. A few of the plants we see now were planted in 2014.
- The use of high-quality plant material and a good planting strategy contributed significantly to the success of the Spring 2015 planting.
- Plants are now fairly well-established in the rain garden and planting beds. Plant selection for the rain garden was intended to maintain year-round seasonal interest, as well as endure the harsh environment of an urban rain garden. Planting beds around the building include several plant tags, so that people can learn plant names.
- Management of the wooded area to the rear (south) of the library may be necessary in the future, to ensure the health of the desired plants.



Demonstrating Innovation

This area is designed to collect and clean stormwater (rain and melted snow) to improve the quality of streams. Collecting stormwater from the parking lot and roofs reduces the amount of stormwater runoff that could erode streams. Cleaning this stormwater helps protect local streams from harmful pollutants.

Rain Garden (Bioretention Basin)

A rain garden collects and cleans stormwater. The rain garden contains A native plants, mulch, and soil that help collect stormwater; remove harmful pollutants such as fertilizer; and allow the water to soak into the ground. B Storm chambers are located below C a layer of gravel. The layer of gravel helps stormwater soak into the storm chambers which offer a large storage area for the collected stormwater. This underground system slowly releases the water into surrounding soil.

Permeable Pavers D

This parking area is paved with permeable concrete paver stones. Gaps between the pavers are filled with gravel. The spaces between the gravel allows stormwater to pass between the pavers and into the underground bioretention storage area located below the parking lot.

This integrated system of stormwater management practices was dasigned and constructed through a collaborative effort of the following agencies:



The project is dedicated in memory of Jonathan Berry (1979 - 2005).

Green (Vegetated) Roof

B

The green roof is designed to absorb and clean rain and melted snow. On a conventional roof, stormwater travels through gutters and downspouts, collects pollutants, and eventually enters local streams. A Native plants and a layer of soil are installed on top of the nearby concrete storage shed. They help filter out airborne pollutants and absorb stormwater. B A drainage layer, insulation, and waterproof membrane protect the roof.

Project Completed 2005

Oakton Library - Rain Garden - Native Plant List

All images are from the North Creek Nursery website, www.northcreeknurseries.com.



Allium cernuum (Nodding Onion)



Aster oblongifolius 'Raydon's Favorite'



Coreopsis (Tickseed)



Asclepias tuberosa (Butterfly Weed)



Asclepias syriaca (Common Milkweed)



Physostegia virginiana 'Miss Manners' (Obedient Plant)



Physostegia virginiana 'Pink Manners' (Obedient Plant)



Pycnanthemum flexuosum (Appalachian Mountain Mint)



Solidago odora (Anise-scented Goldenrod)

(OVER)



Packera aurea (Golden Groundsel or Ragwort)



Chamaecrista fisiculata (Partridge Pea)



Panicum 'Cape Breeze' (Switchgrass)



Andropogon virginicus (Broom Sedge)



Baptisia sphaerocarpa 'Screaming Yellow' (Wild Indigo)



Schizachyrium scoparium 'Standing Ovation' (Little Blue Stem)



Eragrostis spectabilis (Purple lovegrass)



Sorghastrum nutans (Indian Grass)

PUBLIC SAFETY HEADQUARTERS GREEN INFRASTRUCTURE

STORMWATER MANAGEMENT PRACTICES



PUBLIC SAFETY HEADQUARTERS (PSHQ) BUILDING (and surrounding areas) 12099 Government Center Parkway Fairfax, VA 22035



PROJECT DESCRIPTION

Nine-story, 274,000 square-foot building that accommodates both Police and Fire and Rescue Department administrative staff to maximize shared resources among first responder agencies that often work together in the field. The project is located on a secure 9.3-acre portion of the Fairfax County Government Center campus, adjacent to the Herrity Building, and includes an 850-stall parking structure. The facility is designed to accommodate more than 700 employees by 2030 and includes space for Police central records, a press room, training rooms, an occupational health center, fire marshal's offices, exhibit areas, and departmental memorials.

DESIGN

Sustainable Design Features:

- Leadership in Energy and Environmental Design (LEED) Gold certification from the U.S. Green Building Council. LEED projects are scored based on points earned in various sustainable design categories: site selection, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, innovation in design, and regional priority credits. With the addition of PSHQ, Fairfax County now has 15 LEED Gold certified and 15 LEED Silver municipal buildings.
- The county's first large facility to use LED lighting throughout.
- Green roofs, permeable pavements, rain gardens, and other green stormwater management features (bio-filtration) work together to slow, filter, absorb, cool, and purify rain water before flowing to a wet pond that controls the release of that water from the site.
- A 25,000-gallon tank harvests some of the runoff and reuses it for on-site irrigation.

- Daylight harvesting sensors take advantage of natural lighting and adjust indoor light levels, depending on the amount of sunlight available.
- Low-flow plumbing fixtures; recycled materials; and low VOC emitting materials, to improve indoor air quality.

Design Approach:

- The landscape and hardscape geometry and materials complement the building facade.
- Walking paths, seating, and security measures were incorporated.
- Home to police and fire memorials, which are prominently displayed in front of the building to honor the men and women who have fallen in the line of duty.

IMPLEMENTATION

 HOK DC – Landscape Architecture Division - developed hardscape and planting designs and details.

MAINTENANCE

- The majority of the site is maintained by the Facilities Management Division (FMD).
- Stormwater management areas, including green roofs and other green stormwater infrastructure, are maintained by the Maintenance and Stormwater Management Division (MSMD).

WARRANTIES & TIMING

- PSHQ Building: Off warranty in Spring 2018.
- Dredged Pond: Under warranty through Fall 2019.
- Herrity Fountain: Construction to start in Fall 2019. Completion expected in Spring 2020.

OBSERVATIONS

- Weeding during appropriate seasons should be factored into routine maintenance.
- Grouping plants for clear design intent and ease of mulching is advised. Grouped plants create less chance for mowers to damage isolated trees and shrubs.
- Grouping plants will help differentiate between desired plants and weeds.
- Mowed lawn can be used to define and frame areas of more naturalized planting beds.
- Soil amendments and decompaction must be addressed after construction materials and equipment have been removed.
- Soil preparation for planting beds is critical. It is often necessary to remove existing soils and roots to minimize the weed seed "reservoir" and to use imported clean topsoil for new plantings.
- Plants should be included that can cover the ground rapidly and outcompete weeds.
- Invasive vines will weaken trees and ultimately kill them and must be removed.

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