



Executive Director's Recommendation

Commission Meeting: October 1, 2020

PROJECT Pentagon Reservation Stormwater Management Design and Security Upgrades Pentagon Reservation 1 Pentagon Access Road Arlington, Virginia	NCPC FILE NUMBER 8215
SUBMITTED BY United States Department of Defense Washington Headquarters Services	NCPC MAP FILE NUMBER 1.62(38.00)45201
REVIEW AUTHORITY Federal Projects in the Environs per 40 U.S.C. § 8722(b)(1)	APPLICANT'S REQUEST Approval of comments on concept plans
	PROPOSED ACTION Approve comments on concept plans
	ACTION ITEM TYPE Staff Presentation

PROJECT SUMMARY

The Washington Headquarters Services (WHS) has submitted six projects as part of the Pentagon Reservation Stormwater Management Design and Security Upgrades. Five of the six projects will reduce the Pentagon site's discharge of three pollutants (total nitrogen, total phosphorus, and sediment (total suspended solids)) in stormwater runoff. This is part of the Chesapeake Bay Total Maximum Daily Load (TMDL) program. The Pentagon's Municipal Separate Storm Sewer System (MS4) permit requires WHS to comply with the Chesapeake Bay TMDL by reducing pollutant loads. WHS must achieve 40% and 100% of the reductions by 2023 and 2028, respectively. The projects are expected to remove approximately 190 parking spaces. A sixth project focuses on security and safety upgrades.

KEY INFORMATION

- The Commission approved the Pentagon Reservation Master Plan in 2016.
- The stormwater management projects throughout the installation were included in the 2016 master plan.
- The installation is advancing these proposals to help it meet the Municipal Separate Storm Sewer System (MS4) permit requirement to comply with the Chesapeake Bay Total Maximum Daily Load (TMDL) by reducing pollutants discharged into the water system, including nitrogen, total phosphorus and sediment.
- The Pentagon Reservation must reduce TMDL pollutants 40% by 2023 and 100% by 2028.

RECOMMENDATION

The Commission:

Supports the Washington Headquarters Services effort to incorporate stormwater bioretention facilities that will further reduce total nitrogen, total phosphorus, and sediment discharges into the Potomac River in Projects 1 through 5.

Notes there will be an overall reduction of 190 parking spaces on the Pentagon Reservation due to the installation of these stormwater best management practices.

Recommends the applicant explore using understory and small trees, instead of shrubs, in the proposed tree boxes with Project 3 to help provide shade.

Notes Project 6 includes proposed safety and security improvements and the replacement of existing temporary security measures.

Supports replacing temporary security measures with permanent infrastructure, particularly when other components like trees and landscaping can also be integrated.

Finds the Project 6 concept design is still not a very welcoming pedestrian experience for visitors and employees as it will be located between two new perimeter security elements, a new eight-foot-tall fence on one side and bollards and cable rail system on the other. Therefore, staff **requests** the applicant explain why the fence line needs to be at this location and why it cannot be relocated closer to the Pentagon or combined with the bollard/cable rail system. This explanation should include how the project aligns with the master plan and the location of perimeter security needed for buildings, vehicles, and pedestrians in addition to existing constraints on the site (such as grade changes).

Requests that if existing constraints on the site prevent significant changes to the proposed Project 6 design, the Washington Headquarters Services further refine the design by exploring additional refinements including:

- Reducing the monotony of the 1200-foot-long fence with planting strips /low shrubs and repeating fence posts/pillars.
- Widening the entrances to Corridors 2 and 3.
- Reducing the scale of the large stone clad bollards at the employee entrance gates.
- Adding additional landscaping including trees given the size of the proposed planting areas.
- Improving the pedestrian realm with the incorporation of other pedestrian friendly items could improve the experience such as public art.

PROJECT REVIEW TIMELINE

Previous actions	June 2016 – Approved the Revised Pentagon Reservation Master Plan
-------------------------	--

Remaining actions
(anticipated)

- Approval of preliminary site development plans (fall/winter 2020)
 - Approval of final site development plans (fall/winter 2020)
-

PROJECT ANALYSIS

Executive Summary

Overall, staff supports the Washington Headquarters Services goal to meet its obligation to reduce the overall Total Maximum Daily Load for pollutants into the Chesapeake Bay watershed. This is a requirement under the Pentagon Reservation's MS4 permit and the projects are included in the Commission approved Pentagon Reservation Master Plan. In particular, the removal of parking to allow for new plantings and pervious area is beneficial. Staff also supports WHS efforts to develop permanent security elements to replace temporary security on the installation. The concept design is a positive step, though further justification is requested about the alignment of the fence and additional refinements could be incorporated to further improve the project. The staff recommendations are listed in more detail below.

Analysis

The Washington Headquarters Services submitted concept designs for stormwater management facilities and security upgrades at the Pentagon Reservation. This proposal consists of six projects including five stormwater management projects and one safety/security project. They are as follows:

- Project 1: North Parking Bioretention
- Project 2: Old East Loading Dock
- Project 3: Tree Boxes
- Project 4: Corridor 5 Parking Lot
- Project 5: South Secure - TMDL
- Project 6: South Secure - Security and Safety

Projects 1 to 5 – Stormwater Management Facilities

Staff supports this WHS project to expand the number of stormwater management facilities at the Pentagon. The number of stormwater management facilities will increase from 13 to 33, and the number of tree boxes will increase from 14 to 41. Stormwater management facilities were selected for larger drainage areas to treat surface runoff from parking lots. Tree boxes were selected for smaller drainage areas. The location of the tree boxes were selected based on the proximity to existing inlets (catch basins), existing utilities, space constraints, drainage areas, and impact to existing parking spaces. Tree boxes are proposed along the edge of existing parking lots upstream of the nearest existing inlet (catch basin) or other storm drain structures to maximize the surface runoff and treat the first flush and safely convey the overflow downstream to the existing storm

drain system. The proposed best management practices (BMPs) are designed per the Virginia Department of Environmental Quality's Stormwater BMP Clearinghouse specifications.

The proposed projects will be beneficial to the Pentagon Reservation as well as the regional watershed. Further, there will be an overall reduction of 190 parking spaces due to the installation of the projects. Therefore, staff recommends the **Commission supports the effort to incorporate stormwater best management practices that will further reduce total nitrogen, total phosphorus and sediment discharges into the Potomac River in projects 1 through 5.** In terms of the project design, the proposed plantings in the tree boxes included in Project 3 could be further explored to accommodate trees in lieu of smaller shrubs, which have been proposed as possible plantings in these boxes. Understory or canopy tree species have been proposed in the other planted areas in Projects 1, 4 and 5. While this may be space dependent, small trees could provide additional shade in various parts of the installation. As such, staff recommends the **Commission recommend the applicant explore using understory and small trees, instead of shrubs, in the proposed tree boxes with Project 3 to help provide shade.**

Project 6 – Security and Safety Project

Project 6 includes proposed safety and security improvements. Staff is generally supportive of the Pentagon's ongoing work to create permanent security facilities that will replace the temporary line of planters placed along this sidewalk on the installation. These existing planters are primarily a vehicular security element. This security project consists of enhanced perimeter security for a 1200-foot stretch of sidewalk bordering North Rotary Road, which is part of a one-way loop road separating the two parking areas. The sidewalk serves as a busy drop off/pick up point and major pedestrian thoroughfare between the National 9/11 Pentagon Memorial, the Pentagon Transit Center, the South Parking lot, and the Pentagon.

The proposed perimeter security treatment would consist of a mixture of elements, including an alternating cable rail fence system with plinths and bollards. An eight-foot-tall fence along the northern side of the sidewalk would provide additional perimeter security prohibiting unauthorized access by pedestrians while the bollards would prohibit vehicular access. The width of the adjacent travel, queuing, and drop-off lanes would be reduced to encourage slower vehicle speeds and allow for an increase to the existing sidewalk width of 2.75 feet. Staff was initially concerned the introduction of the cable rail system would negatively impact vehicular circulation by restricting pedestrian movements and thereby effectively reducing the amount of passenger pick up and drop off areas. Upon consultation with the applicant, staff now understands the length of drop off area will be increased and the cable rail system will be set back from the curb by 3 feet, allowing vehicle doors to open freely. This will continue allowing passengers to disembark from vehicles along this entire area. The drop off area will increase from an existing 582 linear feet to a proposed 798 linear feet. Staff is satisfied the vehicular circulation will not be negatively impacted.

Vegetation in planting strips along the 1200-foot-long sidewalk will include canopy trees with small clusters of at-grade plantings. Staff believes this will soften the visibility of the security barriers and enhance the pedestrian experience along with a proposed 12.5-foot-wide sidewalk.

The proposal also includes structural soil under the sidewalk at the planting strips which would allow for the planting of canopy trees, providing shade along the sidewalk.

The primary pedestrian entry points along this long sidewalk would receive special treatment to establish "intuitive wayfinding." Specifically, a set of stone plinths would prominently mark the entry gates along the sidewalk to Pentagon entrances at Corridors 2 and 3. This would help to guide pedestrians to these building entrances. The stone plinths would replicate the end unit anchors of the cable rail segments. Bollards are also placed at crosswalks for maximum pedestrian porosity. The corridor currently includes three existing raised crosswalks (two of which are associated with the building entries), two existing at-grade crosswalks and two new crosswalks that will be installed with the reconfiguration of Fern Street. Approximately 12- to 14-foot-tall pedestrian-scaled lighting posts along the fence line would provide direct sidewalk lighting.

In general, staff supports replacing temporary security measures with more permanent infrastructure, particularly when other components like trees and landscaping can also be integrated. Staff acknowledges that this proposal is an improvement from the existing condition, however staff finds this is still not a welcoming pedestrian experience for visitors and employees. The 1,200-foot-long, straight walkway will now be located between two perimeter security elements, a new eight-foot-tall fence on one side and bollards and cable rail system on the other. Placing the security measures on either side of the pedestrian route along a long sidewalk is not very inviting even with the addition of trees. To fully understand the rationale for placing these elements so closely together, staff believes further information is necessary. In particular staff would like to understand how this project aligns with the installation master plan, where the pedestrian and vehicular perimeter security lines are for the Pentagon at this location and what other constraints are guiding this design. Overall, **staff finds this concept design is still not a welcoming pedestrian experience for visitors and employees as it will be located between two new perimeter security elements, a new eight-foot-tall fence on one side and bollards and cable rail system on the other.** Therefore, staff requests the applicant **explain why the fence line needs to be at this location and why it cannot be relocated closer to the Pentagon or combined with the bollard/cable rail system. This explanation should include how the project aligns with the master plan and the location of perimeter security needed for buildings, vehicles, and pedestrians in addition to existing constraints on the site (such as grade changes).**

Regarding the proposed design staff recommends the Commission **request that if existing constraints on the site prevent significant changes to the proposed design, Washington Headquarters Services further refine the design for Project 6 by exploring additional refinements including:**

- **Reducing the monotony of the 1200-foot-long fence with planting strips /low shrubs and repeating fence posts/pillars.**
- **Widening the entrances to Corridors 2 and 3.**
- **Reducing the scale of the large stone clad bollards at the employee entrance gates.**
- **Adding additional landscaping including trees given the size of the proposed planting areas.**

- **Improving the pedestrian realm with the incorporation of other pedestrian friendly items could improve the experience such as public art.**

CONFORMANCE TO EXISTING PLANS, POLICIES AND RELATED GUIDANCE

Comprehensive Plan for the National Capital

This proposal is not inconsistent with policies contained within the Federal Environment, Historic Preservation, Workplace, and Visitor's Elements of the Comprehensive Plan for the National Capital.

National Historic Preservation Act

The WHS has initiated consultation with the Virginia Department of Historic Resources and will conclude this consultation before the project is submitted to the Commission for final approval. The project is located in the environs, and therefore NCPC does not have a Section 106 responsibility.

National Environmental Policy Act

The WHS will develop a record of environmental consideration for this project and will provide documentation when the project is submitted to the Commission for final approval. NCPC does not have a NEPA responsibility for projects in the environs.

CONSULTATION

U.S. Commission of Fine Arts

The Commission of Fine Arts reviewed and approved the concept design for the project at its September 17, 2020 meeting.

ONLINE REFERENCE

The following supporting documents for this project are available online at www.ncpc.gov:

- Submission Package

POWERPOINT (ATTACHED)

Stormwater Total Maximum Daily Load Compliance Engineering Design and Security Upgrades

1 Pentagon Access Road, Arlington Virginia

Approval of Comments on Concept Plans

United States Department of Defense

Project Summary

Commission Meeting Date: October 1, 2020

NCPC Review Authority: 40 U.S.C. § 8722(b)(1)

Applicant Request: Approval of Comments on Concept Plans

Session: Consent Calendar

NCPC Review Officer: Carlton Hart

NCPC File Number: 8215

Project Summary:

Washington Headquarters Services (WHS) has submitted multiple projects as part of the Pentagon Reservation Stormwater Total Maximum Daily Load (TMDL) Compliance Engineering Design and Security Upgrades. These six (6) projects will reduce the Pentagon site's discharge of three pollutants in stormwater runoff as part of the Chesapeake Bay Total Maximum Daily Load (TMDL) program. The Chesapeake Bay TMDL was established in 2010 by the U.S. Environmental Protection Agency to improve the Bay's water quality and set a limit on the amount of pollutants that can enter the Bay. The Pentagon's Municipal Separate Storm Sewer System (MS4) permit requires WHS to comply with the Chesapeake Bay TMDL by reducing pollutant loads for total nitrogen, total phosphorus, and sediment (total suspended solids) in stormwater discharges. WHS must achieve 40% and 100% of the reductions by 2023 and 2028, respectively. To meet these reductions, WHS developed five TMDL projects, which include stormwater management practices and related improvements to existing infrastructure. The projects are expected to remove a net of approximately 190 parking spaces. A sixth adjacent project focuses on security and safety upgrades.

Project Summary

There are 6 projects included with this project and they are as follows:

Project 1: North Parking Bioretention

Project 2: Old East Loading Dock

Project 3: Tree Boxes

Project 4: Corridor 5 Parking Lot

Project 5: South Secure - TMDL

Project 6: South Secure - Security and Safety

Projects 1-5 are TMDL projects, which include the installation of 21 bioretention facilities and 27 tree boxes in multiple parking areas around the Pentagon Reservation. These engineering plans focus on reducing pollutant loads entering local waterways from surface runoff. A variety of BMPs were originally evaluated during a 2019 TMDL compliance study. BMPs were evaluated based on drainage areas, the existing storm drain system, flow patterns, ease of maintenance, site constraints, utility impacts, cost, and existing BMPs on the Pentagon Reservation.

Bioretention facilities were selected for larger drainage areas to treat surface runoff from parking lots. Tree boxes were also selected for smaller drainage areas. The location of the tree boxes were selected based on the proximity to existing inlets (catch basins), existing utilities, space constraints, drainage areas, and impact to existing parking spaces. Tree boxes are proposed along the edge of existing parking lots upstream of the nearest existing inlet (catch basin) or other storm drain structures to maximize the surface runoff and treat the first flush and safely convey the overflow downstream to the existing storm drain system. The proposed BMPs are designed per the Virginia Department of Environmental Quality's Stormwater BMP Clearinghouse specifications. The Pentagon currently has 13 bioretention facilities and 14 tree boxes, which treat runoff from existing pervious and impervious surfaces.

Project 6 is a security and safety project that is being included with these upgrades.

Site Location



Location Map

Project 1 – North Parking Bioretention - Existing

Project 1 is located at the North Parking Lot bounded by Route 110 (Richmond Highway) to the west and south and Boundary Channel Drive to the east. The parking lot currently contains 2,130 regular parking spaces used by Pentagon employees.

The parking lot's existing surface consists of asphalt and concrete. The parking lot's existing storm drain system consists of grate inlets located along the center and west ends of the east-west oriented parking rows and two main storm drain lines. The system discharges to Boundary Channel and the Pentagon Lagoon, and then to the Potomac River. The outfall to Boundary Channel is under tidal influence from the Potomac River.

The drainage area for the existing storm drain system is approximately 9.74 acres, including 8.68 acres and 1.06 acres of impervious and pervious surface area, respectively.



Project 1 – North Parking Bioretention - Proposed

Project 1 would install 14 bioretention areas at the inlets in the center of the parking lot. The installation would remove 224 regular parking spaces, leaving 1,906 remaining spaces. The installation would also remove 0.79 acres of impervious surface from the parking lot.

The table below summarizes the drainage area for each proposed bioretention area. The bioretention areas are estimated to reduce pollutants by the following:

- TN: 117.55 lb/yr (41.8% of 2028 goal)
- TP: 10.46 lb/yr (24.5% of 2028 goal)
- TSS: 7,707 lb/yr (19.7% of 2028 goal)



Project 1 – North Parking Bioretention - Proposed

Each bioretention area, curb to curb, would be 67 feet long and 37 feet wide. The filter media would be 56 feet long and 26 feet wide. The top surface area of the filter media of each bioretention would be 1,456 square feet.

The central portion of each bioretention island would be planted with a diversity of hardy, perennial natives that can receive occasional snow loads in winter without damage. Each bioretention would include two medium sized, native trees with woody shrub understory to help define the opposing corners of each bioretention area and add much needed shade to the parking lot. All vegetation selected will be salt tolerant and heat resilient as well as tolerant to fluctuating soil moisture.



Detailed illustration of proposed bioretention area



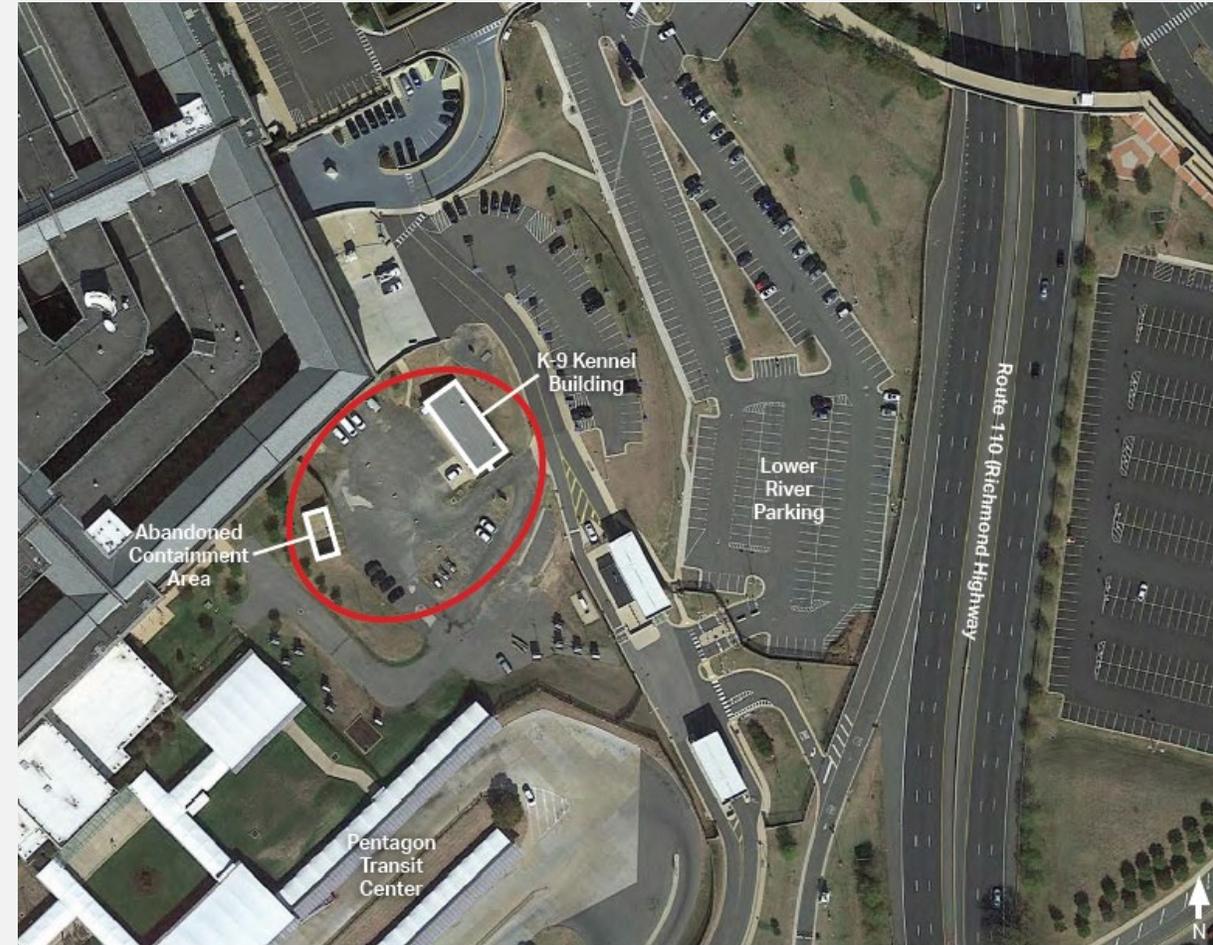
Simulated view of proposed bioretention areas looking northwest with Court House and Rosslyn in the background



Simulated birdseye view of proposed bioretention areas looking northwest

Project 2 – Old East Loading Dock

Project 2 is located at the Old East Loading Dock, situated north of the Pentagon Transit Center. The project area contains a temporary K-9 kennel building and an abandoned containment area consisting of a concrete pad surrounded by a retaining wall. The project area is also used for equipment storage. The project area does not contain designated (striped) parking spaces except for two spaces (including one handicap space) in front of the K-9 kennel building.



Project 2 – Old East Loading Dock - Proposed

Project 2 would:

- Demolish the existing K-9 kennel building and replace the area with managed turf
- Demolish the existing abandoned containment area and replace with managed turf
- Install a new bioretention facility
- Replace three existing inlets with storm drain manholes
- Install a new retaining wall

These changes would remove 0.21 acres of impervious surface.

Managed turf bordered by a curb and gutter system would surround the bioretention area. The top surface area of the bioretention area would occupy 2,780 square feet.

The shape of the bioretention area accounts for multiple site constraints, including existing 16-inch and 8-inch water lines (Washington Aqueduct) located to the north and west, and the WMATA Zone of Influence (ZOI) located to the south of the proposed bioretention area. The proposed bioretention layout and the new retaining wall are designed to keep the water ponding elevation a minimum of 10 feet away from any existing underground utilities.



Project 3 – Tree Boxes - Existing

Project 3 is located in several parking lots to the northeast, east, and south of the Pentagon. The parking lots to the northeast and east of the Pentagon are used by Pentagon employees and visitors and currently contain the following number of parking spaces:

- Executive Visitor/Motorcycle Parking: 79 car spaces and 50 motorcycle spaces
- North Secure Parking: 647 car spaces
- Lower River Parking: 250 car spaces and 10 motorcycle spaces
- Connector Road Parking: 253 car spaces (8 handicap spaces) and 14 motorcycle spaces

The parking lots' existing surface consists of asphalt with a concrete curb and gutter. The existing storm drain system for the parking lots consists of curb and grate inlets that discharge eventually to the Potomac River. The table below summarizes the drainage area for each parking lot's existing storm drain system.

The Pentagon currently has 14 tree boxes, which are regularly maintained, throughout the site.



Project 3 – Tree Boxes - Proposed

Project 3 would install an additional 25 tree boxes. The installation would only impact the number of parking spaces in the Fern Street Commuter Lot, where two spaces would be removed. The tree boxes are estimated to reduce pollutants by the following:

- TN: 37.26 lb/yr (12.85% of 2028 goal)
- TP: 4.84 lb/yr (10.83% of 2028 goal)
- TSS: 4,712.43 lb/yr (11.90% of 2028 goal)

Each tree box would drain and treat stormwater runoff from a portion of each parking lot. The drainage area for each tree box would range from 0.04 to 0.69 acres. The impervious surface area in each drainage area would range from 0.04 to 0.57 acres. The pervious surface area in each drainage area would range from 0 to 0.26 acres. The table below summarizes the total number of proposed tree boxes and the tree boxes' cumulative drainage area by parking lot.

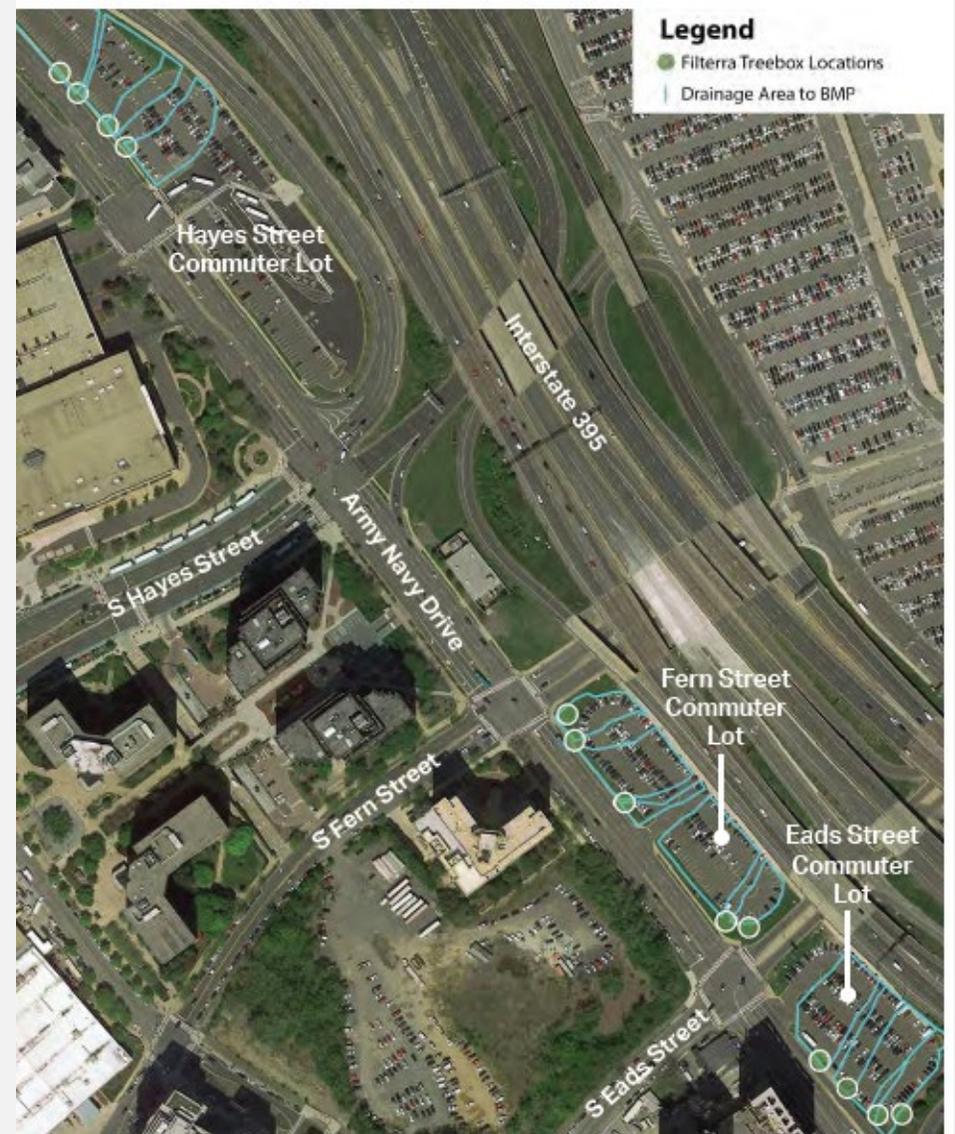


Project 3 – Tree Boxes – Proposed (continued)

Project 3 would install an additional 25 tree boxes. The installation would only impact the number of parking spaces in the Fern Street Commuter Lot, where two spaces would be removed. The tree boxes are estimated to reduce pollutants by the following:

- TN: 37.26 lb/yr (12.85% of 2028 goal)
- TP: 4.84 lb/yr (10.83% of 2028 goal)
- TSS: 4,712.43 lb/yr (11.90% of 2028 goal)

Each tree box would drain and treat stormwater runoff from a portion of each parking lot. The drainage area for each tree box would range from 0.04 to 0.69 acres. The impervious surface area in each drainage area would range from 0.04 to 0.57 acres. The pervious surface area in each drainage area would range from 0.04 to 0.26 acres. The table below summarizes the total number of proposed tree boxes and the tree boxes' cumulative drainage area by parking lot.



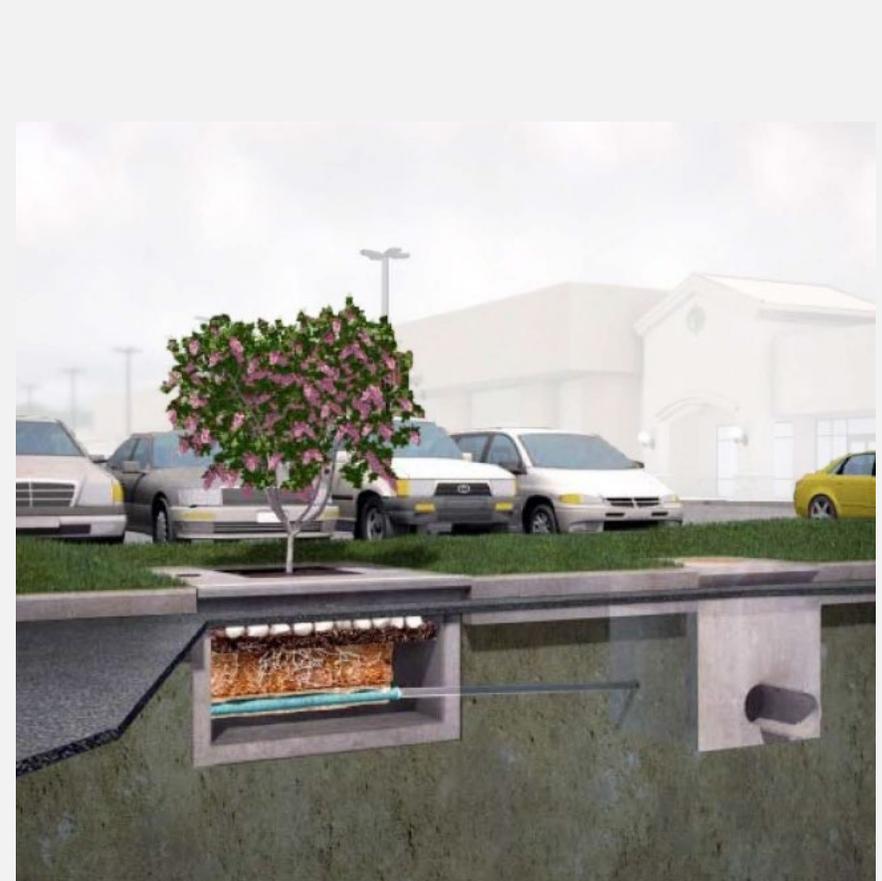
Project 3 – Tree Boxes – Proposed (continued)

Tree box inlets can be implemented with existing curb and gutter storm drain systems and do not interfere with parking once constructed.

Open pit tree boxes with ground plantings were considered, but were dismissed due to increased maintenance needs and the potential for pedestrians to trample the ground plantings.

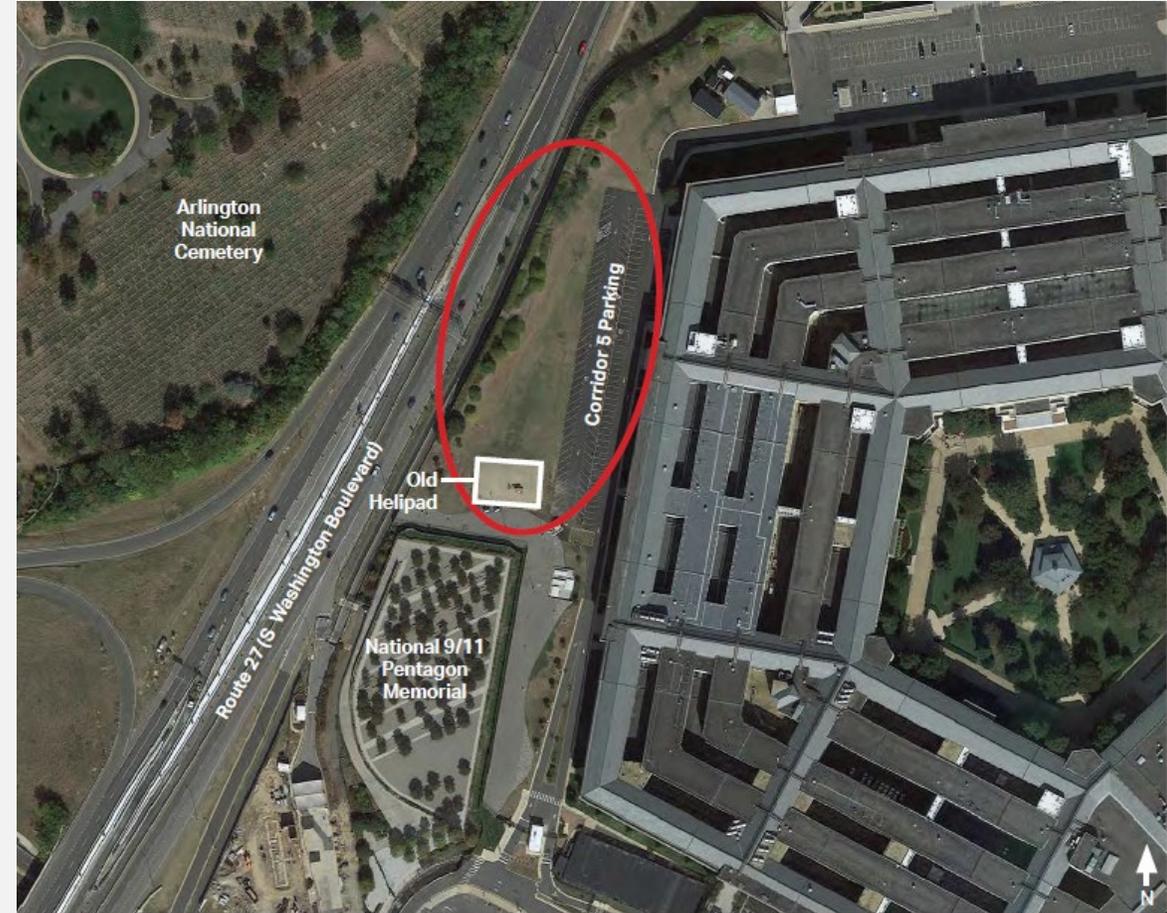
Soil volume constraints, along with the need for salt tolerance and heat resiliency, limit the tree species that are appropriate for these conditions. Existing tree boxes on the Reservation are planted with *Amelanchier* (Serviceberry) and *Myrica* (Bayberry). Additions being considered include *Gleditsia triacanthos* (Honeylocust) and *Crataegus phaenopyrum* (Washington Hawthorn).

Tree boxes are similar to bioretention in that they contain filter media, plants, and mulch, but also contain a small species of tree for additional treatment through biological pollutant uptake.



Project 4 – Corridor 5 Parking Lot - Existing

Project 4 is located at the Corridor 5 Parking Lot on the west side of the Pentagon. Route 27 (S Washington Boulevard) and the National 9/11 Pentagon Memorial are located to the west and south of the project site, respectively. The parking lot currently contains 151 regular parking spaces used by Pentagon officials. An old concrete helipad is located near the southern end of the parking lot.



Project location

Project 4 – Corridor 5 Parking Lot - Existing

Project 4 is located at the Corridor 5 Parking Lot on the west side of the Pentagon. Route 27 (S Washington Boulevard) and the National 9/11 Pentagon Memorial are located to the west and south of the project site, respectively. The parking lot currently contains 151 regular parking spaces used by Pentagon officials. An old concrete helipad is located near the southern end of the parking lot.



Existing view looking south from north of the Corridor 5 Parking Lot

Project 4 – Corridor 5 Parking Lot - Proposed

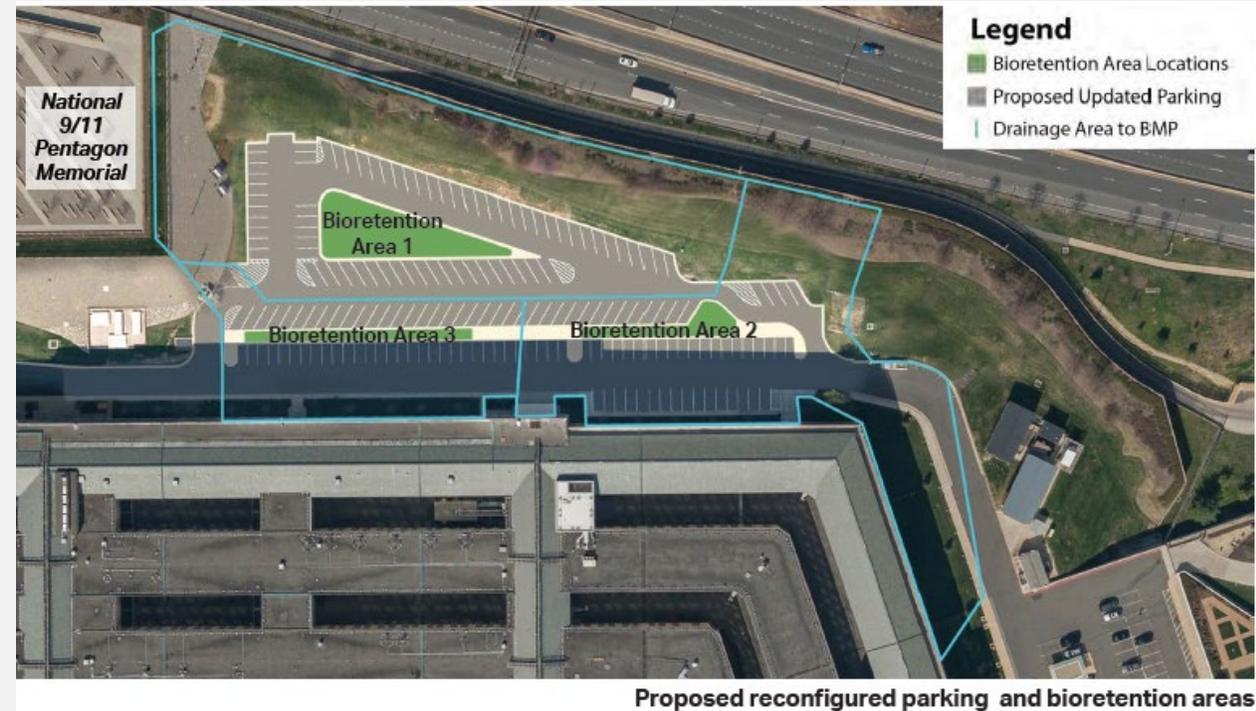
Project 4 would:

- Install three bioretention areas
- Install emergency call boxes and LED lighting
- Install proper asphalt base and regrade parking to ensure proper drainage
- Demolish the old helipad
- Increase parking capacity by 25 spaces for a total of 176 spaces
- Add 0.45 acres of impervious surface to the drainage area

The Corridor 5 Parking Lot would be expanded to the west and south to accommodate the bioretention areas and provide additional parking.

The table to the right summarizes the drainage area for each proposed bioretention area. The project is estimated to reduce pollutants by the following:

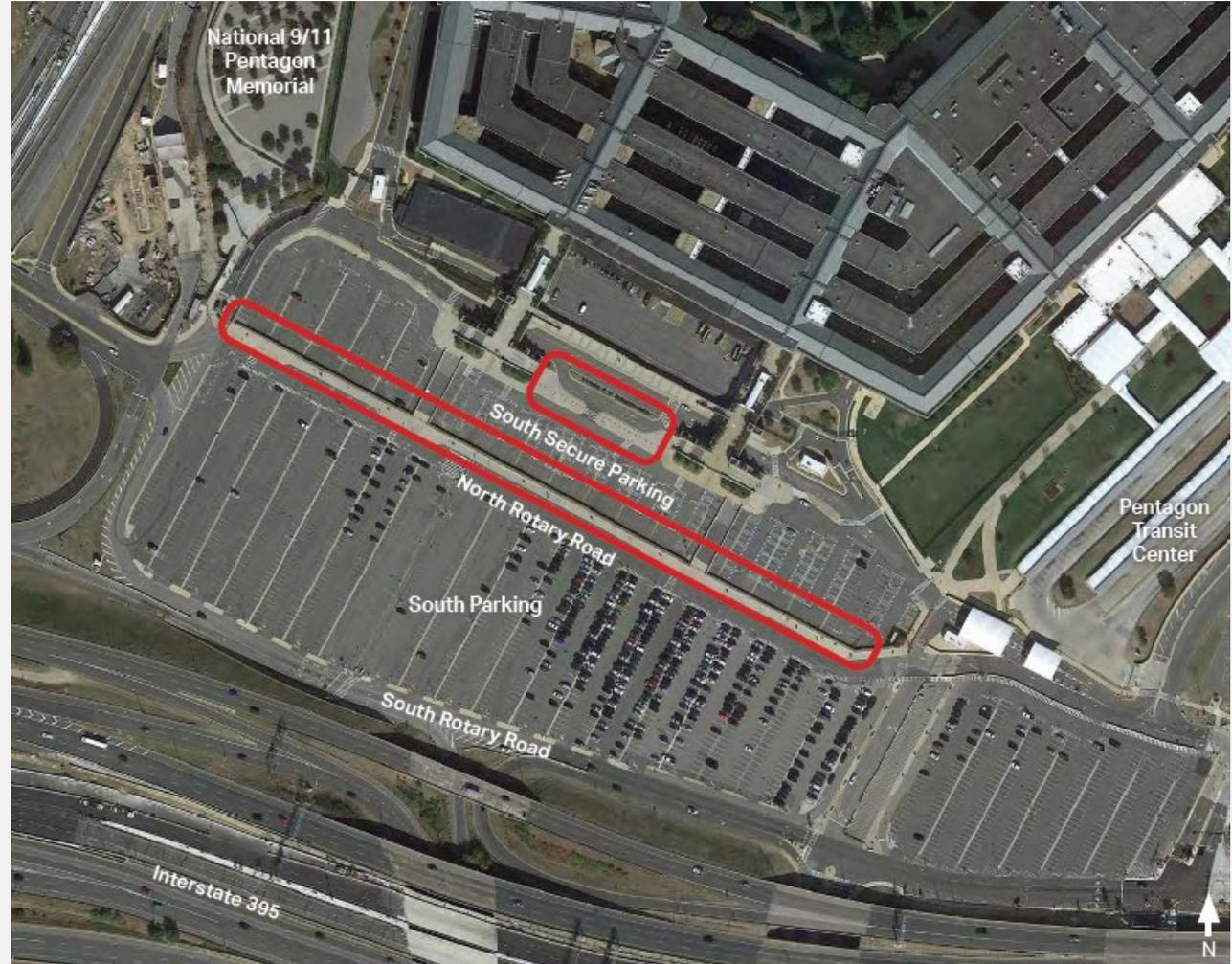
- TN: 42.78 lb/yr (14.54% of 2028 goal)
- TP: 3.34 lb/yr (7.36% of 2028 goal)
- TSS: 1,968.31 lb/yr (4.76% of 2028 goal)



Project 5 – South Secure TMDL - Existing

Project 5 is located at the South Secure Parking Lot, which contains 331 parking spaces used by Pentagon employees and visitors.

The South Parking Lot, located south of the South Secure Parking Lot, contains 1,362 parking spaces used by Pentagon employees and visitors. The South Parking Lot is bordered by North Rotary Road, a sidewalk, and a continuous linear line of planters to the north. The South Parking Lot and these features are at a higher elevation than the South Secure Parking Lot. The planters sit on top of a retaining wall, which is visible from the South Secure Parking Lot.



Project 5 – South Secure TMDL - Existing

The South and South Secure parking lots' existing surface consists of asphalt and concrete. The parking lots' existing storm drain system consists of grate inlets and three main storm drain lines that discharge to the Pentagon Lagoon and Potomac River. The area does not currently contain stormwater management facilities to treat runoff.

The drainage area for the existing storm drain system is approximately 5.80 acres, all of which is impervious surface.



Project 5 – South Secure TMDL - Proposed

Project 5 would implement the following changes in the South Secure Parking Lot:

- Install three bioretention areas
- Install two tree boxes
- Reconfigure the parking between the Corridor 2 and Corridor 3 entrances for better traffic circulation
- Re-stripe and re-design traffic flow

The South Secure Parking Lot currently contains 331 parking spaces (182 regular spaces, 134 handicap spaces, and 15 handicap van spaces). The proposed changes would add 11 regular spaces, add 7 handicap spaces, and remove 7 handicap van spaces, resulting in the parking lot containing 342 parking spaces (i.e., 11 additional spaces than existing conditions). The loss of van handicap spaces would be replaced on the north side of the building.

The existing parking stalls vary from 7- to 9-feet in width and are 18 feet long. The existing drive aisles are two-way and approximately 24 feet wide. The proposed re-striping would retain the existing parking stall width and length and two-way drive aisle width. The re-striping would include 8-foot-wide (minimum) by 18-foot-long parking stalls, 24-foot-wide two-way drive aisles, and 14-foot-wide (minimum) one-way drive aisles.



Proposed bioretention areas and tree box locations
Note: The above site plan does not illustrate the proposed parking re-striping.

Project 5 – South Secure TMDL - Proposed

The bioretention areas would be planted with a diversity of hardy, perennial natives that can receive occasional snow loads in winter without damage. All vegetation selected will be salt tolerant and heat resilient as well as tolerant to fluctuating soil moistures.

The project is estimated to reduce pollutants by the following:

- TN: 72.22 lb/yr (24.48% of 2028 goal)
- TP: 6.92 lb/yr (15.17% of 2028 goal)
- TSS: 4,730.64 lb/yr (11.40% of 2028 goal)



Proposed bioretention areas and tree box locations
Note: The above site plan does not illustrate the proposed parking re-stripping.

Project 5 – South Secure TMDL - Existing



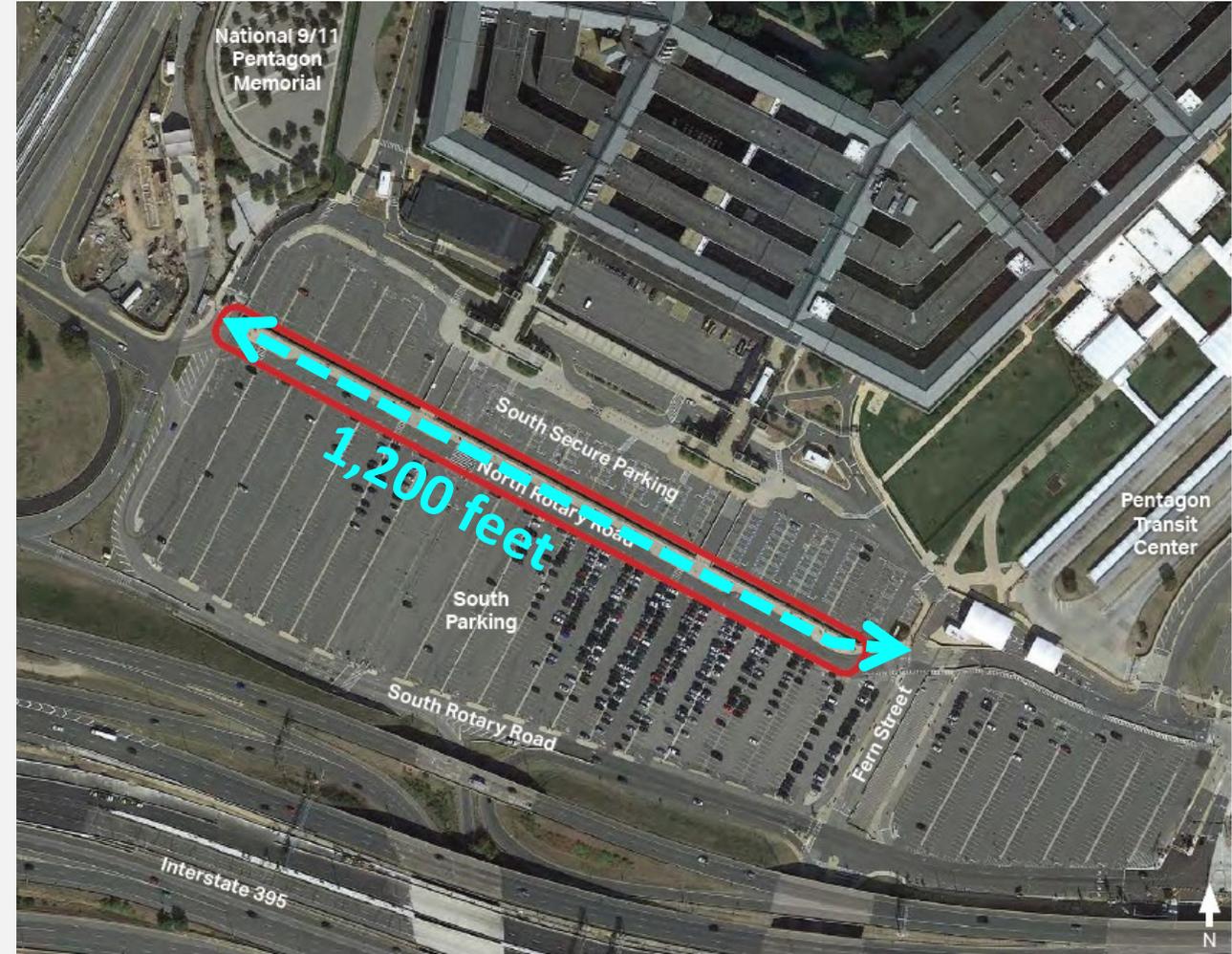
Simulated view looking northwest at proposed bioretention areas



Simulated view looking west at proposed tree boxes and bioretention areas

Project 6 – South Secure: Security and Safety

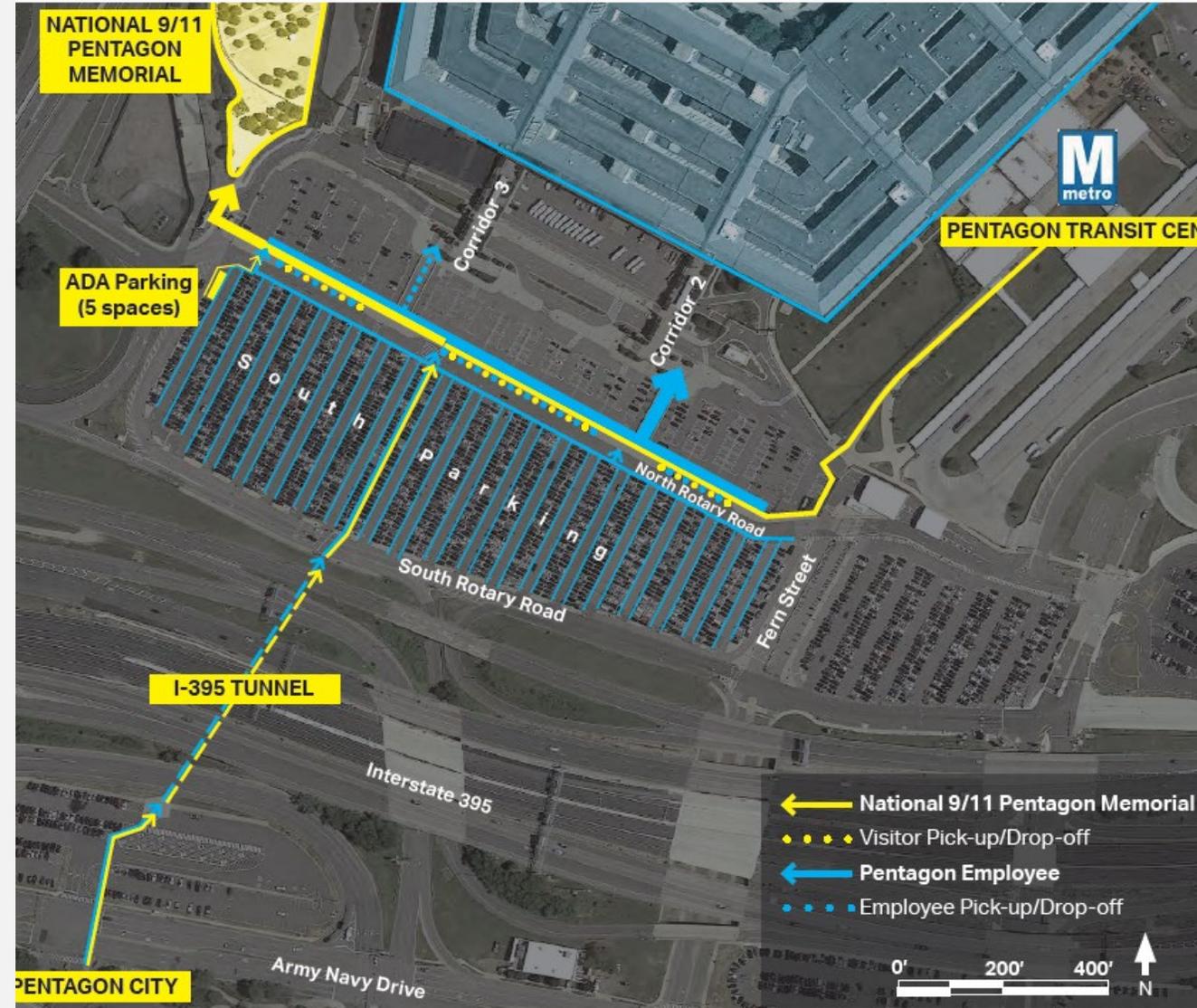
Project 6 is located to the south of the Pentagon between the South Parking Lot and the South Secure Parking area. It consists primarily of enhanced perimeter security for a 1200-foot stretch of sidewalk bordering North Rotary Road, which separates the two parking areas. The sidewalk serves as a busy drop off/pick up point and major pedestrian thoroughfare between the National 9/11 Pentagon Memorial, the Pentagon Transit Center, the South Parking lot, and the Pentagon.



Project location

Project 6 – South Secure: Security and Safety -Existing

Project 6 is located to the south of the Pentagon between the South Parking Lot and the South Secure Parking area. It consists primarily of enhanced perimeter security for a 1200-foot stretch of sidewalk bordering North Rotary Road, which separates the two parking areas. The sidewalk serves as a busy drop off/pick up point and major pedestrian thoroughfare between the National 9/11 Pentagon Memorial, the Pentagon Transit Center, the South Parking lot, and the Pentagon.



Project 6 – South Secure: Security and Safety - Existing



Existing view looking northwest along North Rotary Road (34'-9" total width)



Existing sidewalk and planters (18'-7" total width)

Project 6 – South Secure: Security and Safety - Proposed

Overall Project Layout Axonometric

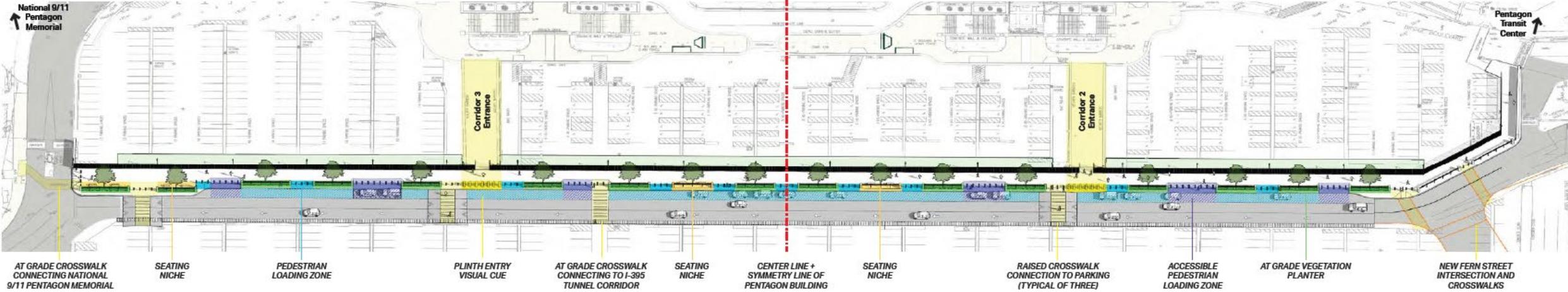
- Entries / Crosswalk
- Seating Niche - Two benches under tree
- Bollard / Pedestrian Loading Zone
- Accessible Pedestrian Loading Zone
Two joined spaces, 5' wide, 40' length
- At-Grade Planters
- Large/Medium Canopy Tree - 54" O.C.T.Y.P.
In planter or tree grate with structural soil zone under pavement



Pentagon Southeast Facade Elevation
Note: Photograph is perspectival with some skewing

Taking design cues from the building facade, utilizing a mix of cable rail fence and bollards, and highlighting entry ramps, the conceptual layout provides a balanced cadence of materials and forms.

Overall, the corridor would include approximately 19 cable rail fence panels (extending +600'); nearly 100 bollards (+400') across 10 loading zones, 8 accessible loading zones, and 6 crosswalks; as well as 14 plinths (+100') and 17 shade trees.



Project 6 – South Secure: Security and Safety - Proposed

Due to the length, the proposed perimeter treatment would consist of a mix of elements, including an alternating cable rail fence system with plinths and bollards. The width of the travel, queuing, and drop-off lanes would be reduced to encourage slower vehicle speeds and increase the existing sidewalk width by 2.75 feet. Vegetation, including canopy trees with small clusters of at-grade plantings, would soften the visibility of the security barriers and enhance the pedestrian experience along a generous 12.5-foot-wide sidewalk. Expanded, at-grade soil volumes would allow for canopy tree shade.

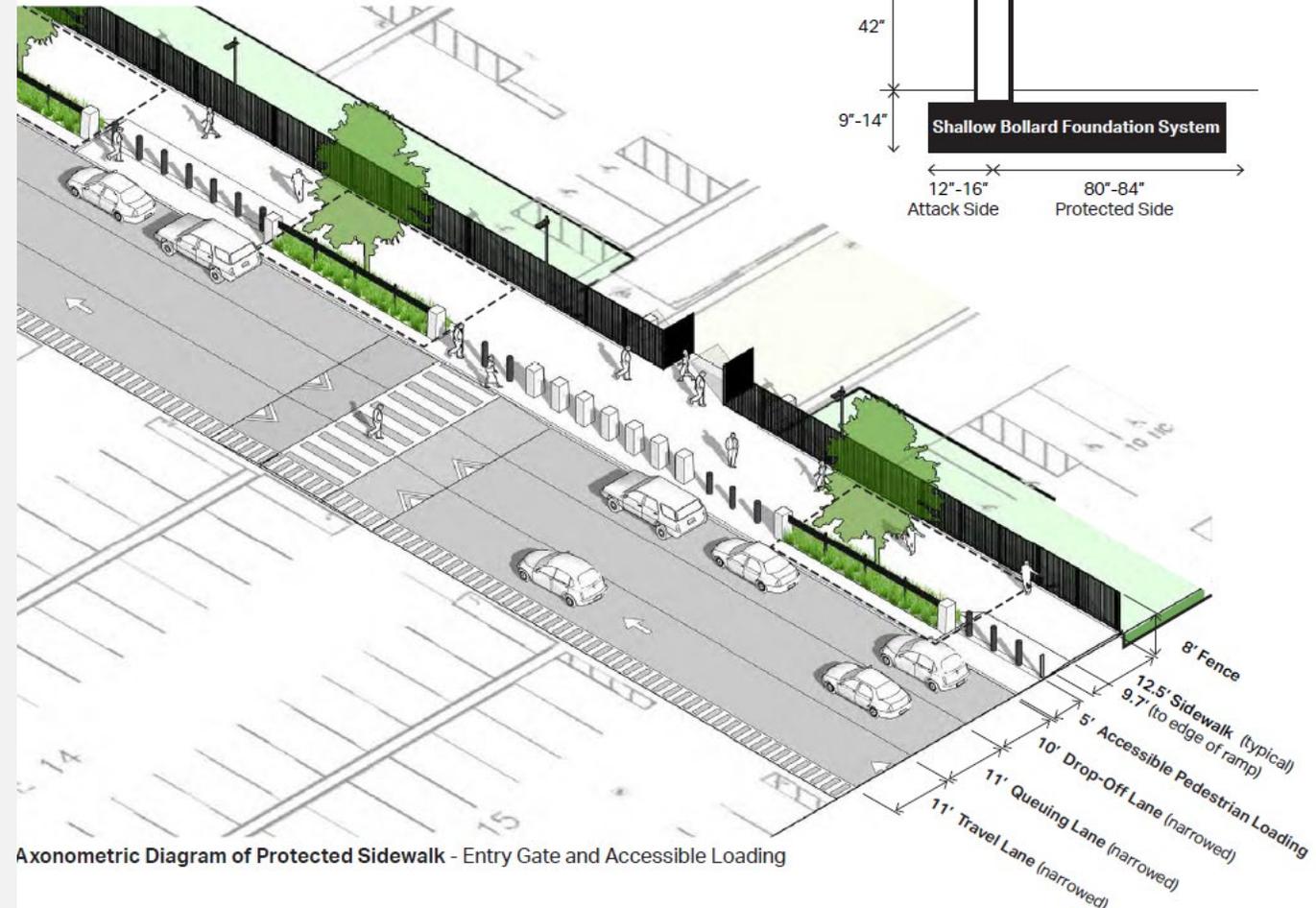
An 8-foot-tall fence along the interior side of the sidewalk would provide additional perimeter security. Approximately 12- to 14-foot-tall pedestrian-scaled lighting posts along the fence line would provide direct sidewalk lighting.



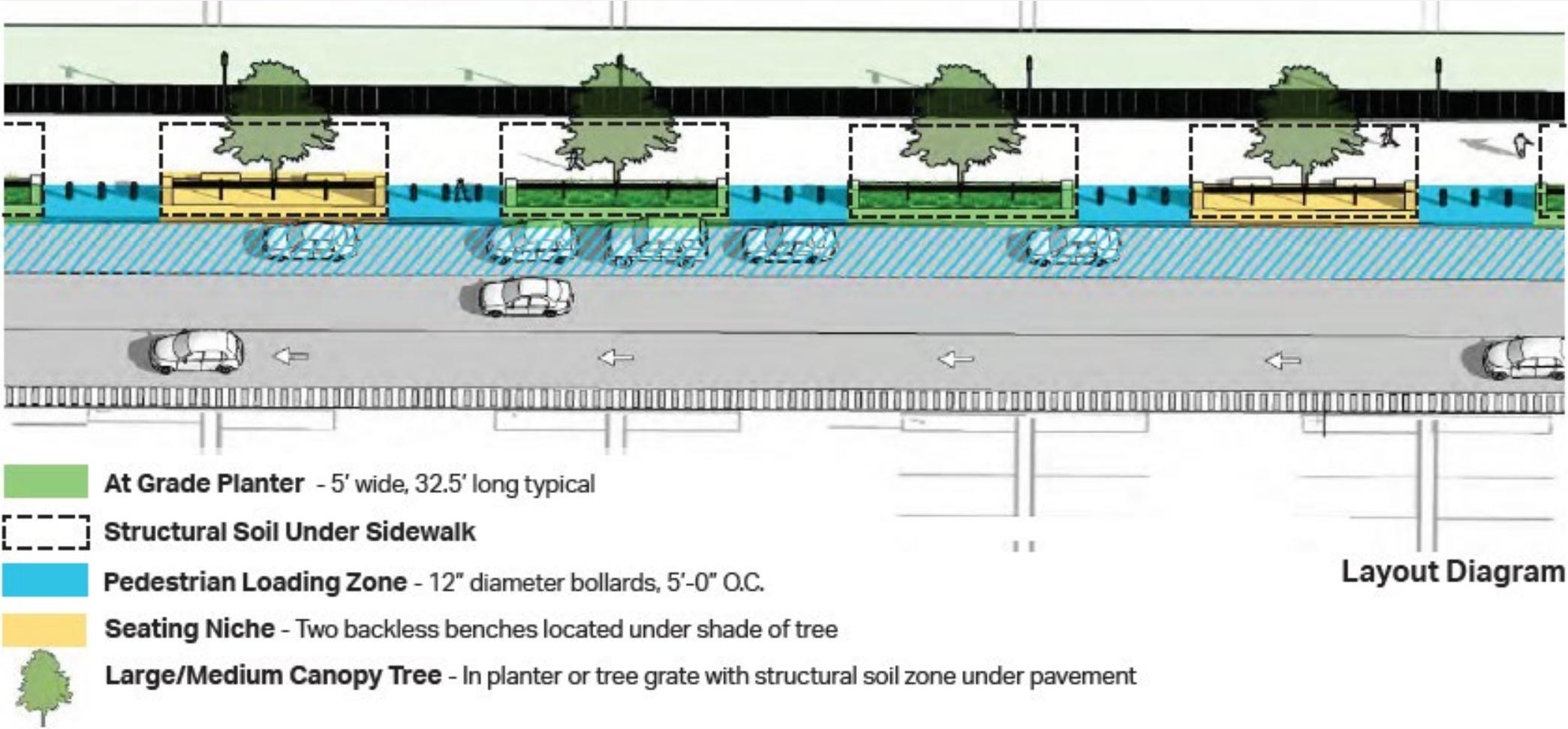
Project 6 – South Secure: Security and Safety - Proposed

The primary entry points would receive special treatment to establish “intuitive wayfinding.” Specifically, a set of stone plinths would prominently mark the entry gates to Corridor 2 and 3 to guide pedestrians to the entrances. The stone plinths would replicate the end unit anchors of the cable rail segments. Bollards are placed at crosswalks for maximum pedestrian porosity. The corridor currently includes three existing raised crosswalks (two of which are associated with the building entries), two existing at-grade crosswalks and two new crosswalks that will be installed with the reconfiguration of Fern Street.

Entry Wayfinding Plinths



Project 6 – South Secure: Security and Safety - Proposed



Project 6 – South Secure: Security and Safety - Proposed



Upon completion of Project 6, the pedestrian experience along the sidewalk will be greatly improved.