



District Department of Transportation

Shepherd Branch Trail Feasibility Study and Basis of Design Report

E Street, SE to S Capitol St, SW

August 2020

Submitted by

T'OOLE
DESIGN

Contents

1.0	Introduction	3
2.0	Purpose.....	3
3.0	Project Description.....	4
4.0	Codes, Manuals, Drawings, and Construction Specifications.....	5
5.0	Survey/Mapping	6
6.0	Right-of-Way	6
7.0	Hazardous Materials	6
8.0	Shared Use Path Physical Characteristics.....	7
9.0	Shared Use Path Amenities	10
10.0	Intersection Design	11
11.0	Safety and Security	11
12.0	Structures	12
13.0	Maintenance.....	12
14.0	Design Exceptions and Design Waivers	12
15.0	Drainage and Stormwater Management	12
16.0	Utilities	13
17.0	Streetcar Coordination	13
18.0	Opinion of Probable Construction Cost.....	14

Appendix A: Environmental Forms

Appendix B: Pedestrian Bridge Structures Report

Appendix C: Opinion of Probable Construction Cost

Appendix D: 20% Design Plans for Shepherd Branch Trail

Appendix E: Right-of-Way Plans

Appendix F: Phase II Environmental Site Assessment Report for CSX Rail Corridor

Appendix G: Appraisal Report for a Portion of the Shepherd’s Branch Railroad Corridor

1.0 Introduction

The Shepherd Branch Trail was envisioned in 2004 as a component of the DC Streetcar Project, which proposes light rail facilities along the existing CSX Transportation (CSXT) Shepherd Branch rail corridor that roughly parallels the east side of the Anacostia Freeway from C Street SE to Joint Base Anacostia-Bolling. The rail corridor was most recently used to deliver chemicals to the DC Water Blue Plains Advanced Wastewater Treatment Plant, but CSXT discontinued service along the corridor in 2001. The Shepherd Branch Trail would parallel the future streetcar line along this corridor extending from the Joint Base Anacostia-Bolling (and South Capitol Trail) to C Street SE (two blocks south of East Capitol Street SE.)

Since 2004, the plans for the corridor have undergone several iterations of development, and the trail is currently a part of the 37-mile Expanded DC Streetcar network. As a part of the Streetcar project, streetcar tracks have been installed from South Capitol Street SE to Suitland Parkway, and final (not for construction) plans have been prepared for the section of streetcar from Suitland Parkway to Howard Road. Although the streetcar alignment has been constructed from South Capitol Street SE to Suitland Parkway, it did not include construction of the trail. Similarly, although the section from Suitland Parkway to Howard Road shows a proposed trail, some element of the trail (width, shy distances, etc.) differ from the design developed as part of this project. Finally, although the trail is envisioned to extend to C Street SE, this 20% design and feasibility study only evaluates the trail to E Street SE based on coordination with DDOT and CSX.

2.0 Basis of Design

The purpose of this report is to outline the framework and basis used for preparing the Preliminary (20%) Design Plans, as well as provide important information that should be considered to advance this project through the next phases of design and construction. The design basis outlined in this report is dependent on a number of factors, including but not limited to:

- DDOT policy and standards;
- AASHTO and FHWA policy and standards;
- WMATA policy and standards;
- Non-standard project elements or design requirements;
- Design Assumptions;
- Site Constraints;
- Possible design exceptions or waivers.

The information included in this report has been developed based on available data and current codes and standards. Additional items may be identified in subsequent phases of design. In addition, by the time this project will be built, the codes and standards governing this design may have been updated, and may result in changes to the design. Other than the forthcoming AASHTO Guide for the Development of Bicycle Facilities, this report does not attempt to take future design standards into account.

3.0 Project Information

Purpose and Need

This project is needed because the existing roadway network between C Street SE and South Capitol Street SE limits safe and comfortable access for bicyclists and pedestrians to the surrounding multimodal network. The purpose of this project is to reuse an inactive CSX rail corridor to provide safe and comfortable bicyclist and pedestrian access east of I-295 between E Street SE and South Capitol Street SE to serve as a connection between neighborhoods, transit centers, and the overall multimodal network.

Project Description

As shown in Figure 1, the Shepherd Branch Trail is planned to run parallel to the existing CSX Transportation (CSXT) Shepherd Branch rail corridor, which roughly parallels the east side of the Anacostia Freeway from C Street SE to Joint Base Anacostia-Bolling/South Capitol Street.

As a part of the DC Streetcar project, engineering has been completed for the streetcar and trail between South Capitol Street SE and Good Hope Road SE, a length of approximately one (1) mile. The portion of the streetcar alignment between South Capitol Street SE and Suitland Parkway, SE has advanced through construction, however the trail was not constructed alongside the streetcar tracks as part of that original construction. This project completes a 20% design of the trail along

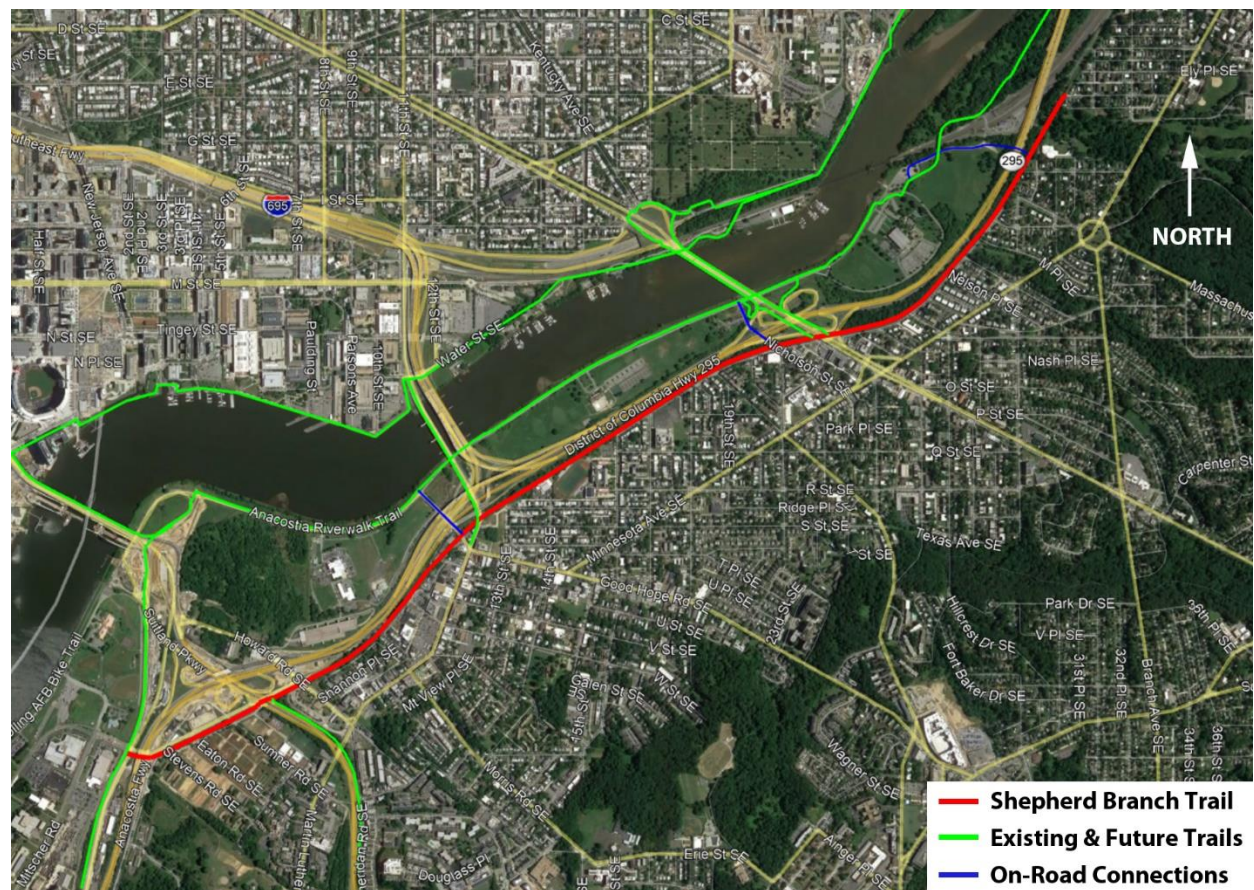


Figure 1: Shepherd Branch Trail Project Area

the constructed portion of the streetcar tracks, develops a unified design for the trail throughout the remainder of the project limits and provides connections to adjacent roadways and trails where appropriate.

The project will extend the trail southward to connect to the South Capitol Street Trail at Firth Sterling Avenue. The total length of the trail is just over three (3) miles. As shown in Figure 1 below, the Shepherd Branch Trail is envisioned to provide connections to existing and proposed trails throughout the area, and will serve as an important link to the overall trail network from neighborhoods south of the I-295 corridor.

4.0 Codes, Manuals, Drawings, and Construction Specifications

The following codes, manuals, standard drawings, and construction specifications were used to guide the development of the Concept Plans.

- DDOT Design and Engineering Manual, 2017
- DDOT Standard Drawings, 2015
- DDOT Standard Specifications for Highways and Structures, 2013
- DDOT Public Realm Design Manual, 2012
- DDOT Bicycle Facility Design Guide, 2005
- DDOT Green Infrastructure Standards (2014)
- DDOT Right of Way Policies and Procedures Manual, 2011
- DDOT V8 CAD Standard Manual, 2005
- DDOT V8 CAD Manual and DDOT Workspace Installation
- DDOT Anacostia Waterfront Transportation Architecture Design Guidelines
- DDOT Environmental Policy and Process Manual, 2012
- DDOT DC Streetcar Design Criteria, 2019
- District of Columbia Work Zone Safety and Mobility Policy, 2007
- District of Columbia Erosion and Sediment Control Standards and Specifications, 2003
- District of Columbia Stormwater Management Guidebook, 2013
- DC Water Project Design Manuals, 2018
- AASHTO Guide for the Development of Bicycle Facilities, 2012 & Forthcoming Update
- AASHTO Manual on Subsurface Investigations, 1st Edition
- AASHTO Signals, 51st Edition with Interim Revisions
- AASHTO Roadside Design Guide, 4th Edition, 2011 with 2015 errata
- AASHTO A Policy on Geometric Design of Highway and Streets, 2018
- FHWA Manual on Uniform Traffic Control Devices, 2009

- FHWA, Best Management Practices for Erosion and Sediment Control, Report No. FHWA-FPL 94-005
- NACTO Urban Bikeway Design Guide
- ADA Standards for Accessible Design, including the 2011 Public Rights of Way Accessibility Guidelines (PROWAG)
- DOEE 2013 Rule on Stormwater Management and Soil Erosion and Sediment Control
- DOEE 2020 Stormwater Management Guidebook

5.0 Survey/Mapping

The topographic survey was prepared in accordance with DDOT MicroStation CAD standards. The horizontal datum is the Maryland Coordinate System, NAD83/2007. The vertical datum is the District of Columbia Engineer's datum, NAVD88.

The consultant used topographic surveys prepared by the DC Streetcar project for the trail segment from South Capitol Street SE to Good Hope Road, the Pennsylvania Avenue SE /Minnesota Avenue SE project survey, and the South Capitol Street Segment 3 – Suitland Parkway survey, and supplemented that information with additional topographic surveys to extend the project to the northern limit at C Street SE. Survey was also prepared for connections to the adjacent road network at intersecting streets.

6.0 Right-of-Way

Right-of-way impacts for the shared use path are limited to the inactive CSX corridor properties, and two properties of the estates of Marcia A. Saunders and Margaret A. Patch, respectively. Potomac Electric Power Company (PEPCO) has utility easements within this CSX corridor which will need to be coordinated with PEPCO. Similarly, the Washington Metropolitan Area Transit Authority (WMATA) has a surface easement near Howard Road that will need to be coordinated with WMATA. See Appendix E for Right-of-Way plans. Once detailed grading is developed as part of the next phase of project development, the need for temporary construction easements may be identified along some of the adjacent parcels that parallel the corridor. As shown on plan sheets PS-09 and PS-10 of the 20% plans, the path alignment can be constructed within the existing CSX corridor; however, if the shared use path is constructed during or after the DDOT Streetcar project, some portions of the shared use path will extend beyond the existing right-of-way lines. As demonstrated on the streetcar project's plans (Project DCKA-2010-C-0145), it is expected that the streetcar project will be responsible for right-of-way acquisition of these additional portions of right-of-way.

7.0 Environmental Considerations

Hazardous Materials

Hazardous waste, underground storage tanks, and leaking underground storage tanks have been identified adjacent to the project corridor, particularly within the southern portion of the study area. One leaking underground storage tank is located within 65-feet of the former railroad line. Similarly, as the alignment follows an inactive railroad right-of-way it is plausible that the soil

within the project area may contain contaminants. Hazardous waste sites are noted in the map included in Appendix A.

Additionally, Phase I and Phase II Environmental Site Investigations (ESAs) were performed by Tidewater, Inc. in 2013 and 2014 respectively. The ESAs identified four specific areas of concern along the project corridor between Suitland Parkway, SE and Pennsylvania Avenue, SE. Conclusions and recommendations from the ESAs should be incorporated into future phases of the project, as appropriate. See Appendix F for the Phase II report.

As noted in the Phase II report, existing ballast, soil samples, and groundwater include a variety of contaminants that “could likely require special handling and/or disposal.” The project design specifically attempted to avoid disturbing soils to avoid potential contaminants, which may complicate stormwater goals for the project. The proposed asphalt trail is expected to provide an effective barrier to prevent direct contact with surface soils and railroad track ballast, consistent with the Phase II recommendations. Ultimately additional soil sampling and characterization of contaminants will be required in the next phase of the project.

AMT Engineering has prepared the DDOT Project Development & Environmental Evaluation Form (Form I) and the Environmental Inventory/NEPA Classification Memo Report. For more information see Appendix A.

Agency Coordination

As noted in the Appendix A Environmental Forms, the project will be partly within the Anacostia Historic District, along the Fort Circle Historic District and nearby the Saint Elizabeth’s Hospital Historic District. The project will run adjacent and near to several structures with apparent ages in excess of 50 years. The project also runs adjacent to National Park Service (NPS) park space (Anacostia Park) but does not encroach into NPS property. Wetlands were not observed within the project area but were not specifically delineated. During the next phase of the project, coordination with NPS, FHWA, Washington DC Historic Preservation Office (HPO) should occur to identify specific recommendations for educational / historical signs and markers along the corridor, to discuss relevant site testing and recovery at archeological sites, and confirm NEPA documentation necessary to advance the project development. Although wetlands areas were not observed in the project area, the next phase of the project must formally review if any wetlands areas exist within the project area, and if identified may require a U.S. Army Corps of Engineers (USACE) Section 404 permit or Department of Energy and Environment (DOEE) letter of authorization for activities in a wetland that are not under USACE jurisdiction.

8.0 Shared Use Path Physical Characteristics

Width and Buffers

As depicted in Figure 2, the minimum width of a shared use path accommodating traffic in two directions is 10-feet with 2-foot shoulders on each side. In cases of obstructions or low bicycle and pedestrian volumes, an eight-foot minimum width can be utilized. However, wider trails (11’ to 14’ wide) are recommended for locations that are anticipated to serve a high percentage of pedestrians and a high user volume (i.e. more than 300 users in the peak hour.) Developing an anticipated volume of bicycle users was not part of this study; however, based on the connectivity of the trail to residential, commercial, and community land uses, access to transit (including

streetcar, bus, and subway), and connectivity to the Anacostia Riverwalk Trail, Suitland Parkway Trail, and South Capitol Street Trail for recreational and transportation uses, a 12-foot wide trail was selected to accommodate side-by-side bicycling and providing sufficient space for passing by pedestrians and bicyclists. Per AASHTO and the MUTCD, a minimum of 2-feet of separation is required between the edge of a shared use path and post-mounted signs, landscape plantings, bridge abutments, or other adjacent obstacles; the proposed design accounts for this separation.

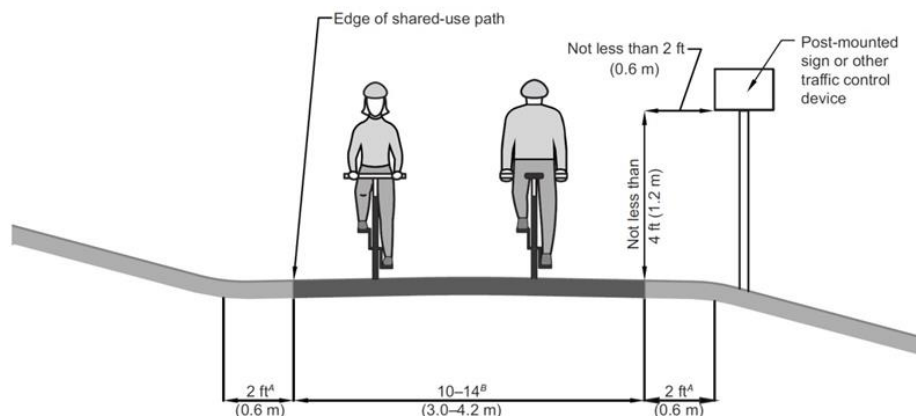


Figure 2: Typical Cross Section of Two-Way, Shared Use Path on Independent Right-of-Way (Figure 5-2, AASHTO Guide for the Development of Bicycle Facilities, 2012)

Vertical Clearance

A minimum vertical clearance of 10-feet is desirable for adequate vertical shy distances per AASHTO. Access by emergency, patrol, and/or maintenance vehicles must also be considered when establishing the design clearance of structure on a shared use path and as such may be greater than 10 feet. The fences on the proposed bridge have been designed to accommodate the minimum vertical clearances, and all other roadway underpasses where the trail will be located will accommodate this minimum requirement.

Design Speed and Geometry

Other elements of the geometric design of the shared use path should be based on design speeds for the average bicyclist. Elements such as sight distance, horizontal curve radii, vertical curve length, and grades must be designed to adequately accommodate a user operating at the design speed. A design speed of 18 mph is adequate for most paths, but special consideration should be given to the terrain where hilly conditions are encountered. The draft AASHTO Bike Guide recommends a design speed of 15 mph for trails with context similar to the Shepherd Branch Trail. The trail is generally straight in alignment; as such, the 15 mph design speed is accommodated.

Cross Slopes and Grades

Based on the Proposed Rights-of-Way Accessibility Guidelines (PROWAG) and the AASHTO Bike Guide, cross slopes on shared use paths are recommended between 1% and 2% and should not exceed 2% to maintain ADA compliance. Longitudinal grades should match the roadway grades when installed parallel to a road. Grades on shared use paths in independent corridors should be kept to a minimum especially on long inclines. Grades greater than 5 percent are

undesirable because the ascents are difficult for many path users. Grades on paths in independent rights-of-way should be limited to:

- 5.0 percent maximum for any distance
- 8.3 percent maximum for up to 200 feet
- 10.0 percent maximum for up to 30 feet
- 12.5 percent for up to 10 feet

Additionally, no more than 30 percent of the total path length should have a grade exceeding 8.3 percent. Where grades exceed 5 percent, a resting interval is required at the end of any segment of maximum length as described above. See the AASHTO Bike Guide for additional guidance on grades.

The proposed trail design complies with the accessibility guidance for slopes and grades. Although vertical curves and tangent sections have been proposed for much of the vertical alignment for the shared use path, some areas along the northern portion are shown as graphic grade to match the existing rail bed to avoid significant disturbance of soil that may be contaminated. Graphic grade refers to matching existing elevations rather than designing with curves and tangents. Ultimately the vertical alignment for the shared use path closely follows existing grades throughout the project limits, with steeper slopes only proposed along the bridge ramps to the proposed bridge.

Surface Materials

Surface materials of a shared use path should be provided to enable year-round use of the path and minimize maintenance needs. A change in materials should indicate a change in location from the main circulation corridor to an adjacent secondary corridor or amenity area.

Hard, all weather smooth pavement surfaces are recommended for shared use paths intended for a variety of users (bicyclists, in-line skaters, scooters, pedestrians, and other wheeled users). The primary pathway surface material proposed for the Shepherd Branch Trail is asphalt, which provides a durable all-weather pavement surface.

The shared use path pavement section is anticipated to be a minimum of 4 inches of asphalt on 6 inches of aggregate base; however, it is anticipated that this shared use path may also provide utility access along the corridor. Coordination with any utility owners should occur during the next phase of design to identify the types of service vehicles that may occasionally travel on the path and design the pavement section accordingly.

At trailheads/intersections, concrete is proposed to create a focal area for pathway users and to provide a more stable material in the areas of curb ramps where ADA compliance can be more difficult to achieve in asphalt.

These proposed impervious surfaces are anticipated to also serve as a cap to existing soil contamination that is either known or anticipated along this inactive rail corridor. However, if soil testing reveals that areas are free of contamination, permeable pavements may be considered. These should generally be limited to permeable concrete, asphalt, or epoxy coated aggregate products. Permeable rubberized pavements are not recommended because they are less likely to be suitable to withstand maintenance and utility vehicle loading. Any permeable pavement materials will require maintenance, which will also increase long-term operating costs.

9.0 Shared Use Path Amenities

The proposed project area will provide an inviting natural environment for the future path users. The amenities should accommodate both bicycle and pedestrian users to make their use of the path more accommodating and enjoyable. Amenities may include:

Benches or Picnic Tables: seating is an important component of shared use path design to allow users to stop and rest or enjoy the surroundings. While benches allow users to rest, picnic tables allow users to enjoy a meal or gather with friends.

Water fountains should be considered. If proposed, they must be accessible and should consider models that provide a water source for pets.

Trash/Recycling Receptacles: Trash and recycling cans should be proposed at trailheads and at waysides. Note that maintenance vehicles must be able to easily access the locations, so it may not be appropriate to install receptacles at each wayside.

Bicycle Racks: Bike racks should be considered at trailheads to allow people to bike to the path, park their bike, and then walk or hike. Additional bike racks may also be necessary at nearby metro stops, such as the Anacostia Metro Station. Future ridership should be monitored and additional racks provided as appropriate.

Capital Bikeshare Stations: Bikeshare stations may be appropriate at trailheads, or expansion of existing nearby bikeshare stations provided, to ensure that adequate capacity is available for transit connections and for recreational riders who may not own or have access to a bicycle.

Informational kiosks, maps, and signage: General information about the shared use path should be provided, including a map, amenities, emergency contact information, hours, trailhead identification, etc. Interpretive signage can also be used along the path at key locations to highlight features (e.g. green infrastructure), natural resources, or other site-specific resources. Preliminary wayfinding signage has been shown on the 20% design plans.

Trees and Landscaping: Vegetation helps to provide shade and can help to provide a sense of place along a trail, particularly at waysides or near benches where people are likely to stop. Landscaping opportunities should be investigated during the stormwater design development, and in coordination with the adjacent projects, to ensure continuity of the design.

Bicycle/Pedestrian Counters: Bicycle and pedestrian counters should be considered at strategic locations along the trail to provide a visible representation of the trail's value to the community. These counters can also serve as a valuable data source for DDOT to assess bicyclist and pedestrian needs at adjacent intersections and nearby destinations.

The maintenance responsibility for all proposed amenities should be resolved prior to selecting and locating each treatment, as this may affect the type of permitted amenities or its placement in relation to adjacent streets or access points. A maintenance agreement (or MOU) will be required if DDOT is not maintaining the amenity. Similarly, the locations should be identified based on community and stakeholder engagement to ensure the placement will meet the community's needs. The placement will also need to be coordinated with the available right-of-way and streetcar station placement and design.

10.0 Intersection Design

The proposed shared use path alignment is expected to cross Nicholson St SE, Good Hope Rd SE, Howard Rd SE, Suitland Pkwy, Sumner Rd SE, Eaton Rd SE, Stevens Rd. SE, 295 ramp, and S Capitol St SW. Most of these intersections are signalized; as such, users of the shared use path will follow pedestrian crossing signals. Good Hope Rd SE and Nicholson St SE are unsignalized, low-volume streets, so crosswalks and pedestrian crossing signs are proposed at these locations. Similarly, the intersection with Suitland Parkway includes two uncontrolled slip ramps. As part of the next design phase, the Suitland Parkway design should consider providing raised crossings to control motor vehicle speeds at these conflict points.

Some existing vegetation may require trimming or removal, and signing may require relocation, to provide adequate sight distance for motorists to see approaching bicyclists and to bicyclists to be able to see vehicles at these intersections.

Bollards are not recommended at trailheads. Although bollards may prevent vehicles from driving on the path, they present a hazard for bicyclists. In lieu of bollards, concrete medians (see Figure 3) have been proposed along the shared use path centerline approaching intersections. The locations for these medians were selected based on the turning movements of streets and driveways, and identifying where a driver might misinterpret the shared use path as a road or driveway; as such, not every intersection includes these concrete medians.

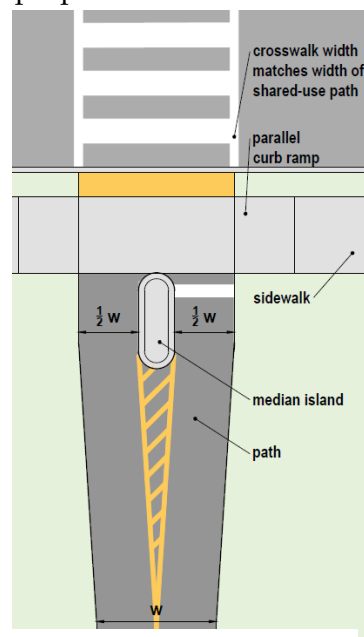


Figure 3: Example Concrete Median at Trail Intersection

11.0 Safety and Security

The trail design should apply the principals of crime prevention through environmental design, and provide additional enhancements designed to discourage undesirable activities within the project area. Enhancements may include:

- Creating inviting trail spaces to increase trail usage and enhance natural surveillance
- Removal of vegetation and use of small-scale landscape plantings to ensure clear sight lines
- Careful selection of locations for trail waysides and site amenities
- Coordination with police and emergency services to provide mile markers, wayfinding and location identification signage, security cameras, and access points for emergency vehicles
- Carefully selecting locations of lighting to prevent blind spots
- Coordination with DDOT and National Park Service staff to develop and implement a routine maintenance schedule

Lighting is recommended along the trail corridor to improve visibility and increase a feeling of personal security. Lighting is also appropriate given that the trail is envisioned to serve a transportation purpose (in addition to a recreational purpose) and as such will need to

accommodate the movement of pedestrians and bicyclists throughout the early morning and the evening. In general, pedestrian-scale lighting characterized by shorter light poles (standards about 15 ft high), lower levels of illumination (except at crossings), and closer spacing (to avoid dark spaces between each figure) is recommended along trails. Lighting design will need to occur during the next phase of the project, as will the necessary community engagement to identify what other security elements may be appropriate along the corridor. The lighting design criteria should comply with DDOT Streetlight Policy and Design Guidelines and the AASHTO Roadway Lighting Design Guide.

12.0 Structures

The project includes a bridge over Pennsylvania Ave. A steel truss bridge is recommended, and both two and three-span options were considered. For more information see the Pedestrian Bridge Report provided in Appendix B. The site conditions throughout the remainder of the project area are generally flat. Engineered retaining walls are not anticipated for this project; however, fences or other vertical elements may be required to separate the shared use path from the proposed streetcar tracks and/or adjacent properties. A fence is shown on the streetcar plans (prepared by others) and as such is not included in the trail project.

13.0 Maintenance

Maintenance should be considered in the design of the shared use path. Access for both maintenance vehicles and the utility owners along this alignment must be provided along the length of the shared use path. If vehicles are not permitted, warning signs, barriers, or other treatments should be utilized to physically prevent vehicles from accessing the trail.

A maintenance plan should be developed along with the design of the path to ensure that all proposed amenities and path features are understood and located such that they can be easily accessed and maintained. Given that the path is intended to be used for transportation as well as recreation, consideration for snow clearing should also be included in the maintenance plan.

14.0 Design Exceptions and Design Waivers

Design Exceptions and Design Waivers has not been identified as part of the 20% design effort. However, based on the variety of unknowns associated with the 20% design plans it is possible that design exceptions or waivers may be necessary as the project is developed, utilities and environmental conditions are identified, and project grading is refined.

15.0 Drainage and Stormwater Management

Various archeological, geotechnical, natural, drainage studies and documents have been prepared as a part of the Final Environmental Impact Statement (FEIS) and Supplemental Environmental Impact Statement (SEIS) evaluations for the South Capitol Street Corridor reconstruction project. The Federal Emergency Management Agency (FEMA) has published Flood Insurance Study (FIS) reports and Flood Insurance Rate Maps (FIRM) for Washington, D. C., which includes Anacostia River Floodplain delineations. FIRM Panel 0076C, dated September 27, 2010, shows the 100 and 500-year floodplain limits in the vicinity of the Segment 3 project. The FIRM Panel 0076C exhibits that the Segment 3 project is located within Zone X flood designation, which corresponds to the area of low flood risk.

In general, DDOT requires only stormwater and drainage plans to be submitted at the Preliminary (30%) Design stage; however, new DDOE regulations require that additional drainage analysis be performed during preliminary design in order to identify areas of opportunity for placement of low impact development stormwater management features under the “Maximum Extent Practicable” (MEP) process described in the 2020 District of Columbia Stormwater Management Guidebook (SMG). To meet the requirements of the MEP process, the design team has performed an analysis of existing conditions, and identified preliminary drainage opportunity areas based on available space along the corridor. However, geotechnical evaluation of the soils along the corridor has not been performed to identify opportunities for stormwater infiltration or where soil contaminants may make low impact development stormwater management features impractical. A geotechnical evaluation will be necessary during the next phase of the design of this project in order to confirm opportunity areas identified during the 20% design are feasible based on soil properties. Based on this approach, off-site (i.e. beyond areas of existing contamination) may be necessary to meet the stormwater requirements; however, identification of those potential off-site areas is beyond the scope of this feasibility study and must be completed in conjunction with future site investigations. Additionally, stormwater management requirements continue to evolve. As noted in the DDOE SMG, *“MEP is an iterative standard that evolves over time as urban runoff management knowledge increases. As such, it must be assessed continually and modified to incorporate improved programs, control measures, and BMPs to attain compliance with water quality standards.”* As such, at the time that this project moves forward, the existing stormwater management requirements and MEP process must be reviewed to identify the necessary requirements and processed that will allow the drainage design, review, and approval to progress accordingly.

Finally, close coordination with utility companies must occur throughout future phases of the design in order to minimize utility conflicts/relocations as part of the stormwater design.

16.0 Utilities

A Quality Level C subsurface utility survey has been performed throughout the corridor. Some utility poles are shown to conflict with the proposed shared use path and will need to be relocated as part of the project. During the next design phase of this project, a Level A Subsurface Utility Exploration is required at locations of utility conflict with roadway and drainage features. Coordination with utility companies is critical, and must occur throughout future phases of the design in order to minimize utility conflicts/relocations, and to ensure any planned or ongoing utility projects within the project corridor do not negatively impact the design of the shared use path. Additionally, the plans show some traffic signal poles to be relocated to ensure that pedestrian push buttons are placed in a compliant location. As many of these intersections at the southern end of the project are currently under construction, future signal relocations can be avoided if those poles are installed in the locations shown on the Shepherd Branch Trail plans.

17.0 Other Project Coordination

Streetcar Project

The proposed shared use path will run parallel to the DDOT Anacostia Streetcar project. The design proposed as part of the Shepherd Branch Trail Feasibility Study generally follows the alignment of the shared use path shown on the DDOT Anacostia Streetcar project plans; however, the design deviates in a few key areas.

First, the proposed design includes a 12-foot wide shared use path, whereas the Streetcar design provided space for a 10-foot wide path with frequent retaining walls along the path. The path width should be resolved between the two designs as part of the implementation of these projects. It's expected that if both projects are constructed, the width of the trail will need to be balanced, with 10-foot widths being potentially necessary along the station platforms or retaining walls, but wider widths being possible along other portions of the rail with trail corridor. As discussed earlier in this report, using the minimum allowable width of 10-feet is undesirable given the anticipated volumes and mixes of user types on the trail.

Secondly, the Streetcar plans show a station platform proposed near Good Hope Road. The Streetcar plans show a station located along the northern side of the corridor right-of-way. The Shepherd Branch Trail plans propose changing this design to locate the station on the Southern side of the proposed streetcar tracks. This design would provide pedestrian connectivity to the proposed station platform while reducing the right-of-way impacts shown on the current Streetcar plans. This issue will also need to be resolved between the two designs as part of the implementation of both projects.

South Capitol Street Corridor / Frederick Douglass Memorial Bridge Project

Within the Shepherd Branch Trail project limits, the proposed replacement of the Frederick Douglass Memorial Bridge includes changes to the I-295 on- and off-ramps at Suitland Parkway, as well as the removal of the I-295 on- and off-ramps at Howard Road SE. The 20% Shepherd Branch Trail plans show both the existing conditions and the proposed conditions at these locations, with the assumption that the Shephard Branch Trail project would be built after the completion of the bridge replacement project. It is anticipated that some of the Shephard Branch Trail modifications could be constructed as part of the bridge replacement work, such as the wider widths through the proposed medians at the Suitland Parkway intersection, as that would limit the long-term disturbance of these intersections, modifications to the signal equipment, etc. which can be constructed to accommodate the short-term and long-term recommended conditions.

South Capitol Trail Project

The proposed shared use path will connect at the project's southern terminus to the proposed South Capitol Trail extension. The 20% Shepherd Branch Trail plans show this proposed connection, but the design, scheduling, and construction will need to be coordinated as both projects advance.

Barry Farms Development Project

The proposed Barry Farms Redevelopment proposed new residential development at the southern end of the Shepherd Branch Trail corridor. The redevelopment effort is largely beyond the Shepherd Branch Trail project limits, but does propose minor modification to curblines at Sumner Road that are shown on the proposed trail plans.

18.0 Opinion of Probable Construction Cost

An opinion of probable construction cost was developed for the Shepherd Branch Trail by identifying pay items and establishing quantities based on the 20% construction documents. Preliminary cost opinions included a 30% contingency for the trail and 20% contingency for the

bridge to cover items that are undefined or are typically unknown prior to final design. Unit costs are based on 2019 dollars and were assigned based on historical bid items and the experiences of the estimator. This cost opinion does not include possible easement and right-of-way acquisition, permitting, escalation, or the cost for ongoing maintenance. A property appraisal report from 2016 is included in Appendix G for reference only, but the limits of the appraisal report do exactly match the limits for this project and these appraisal costs are not reflected in our opinion of probable cost. The cost opinion also does not include costs for remediation and/or disposal of contaminated soils, which are known to exist within the project limits. This cost opinion is provided for DDOT's information, and is based on the design professional's recent experience, adjusted for factors known at the time of preparation. Toole Design Group, LLC has no control over the cost of labor and material, competitive bidding, or market conditions; and makes no warranties, expressed or implied, concerning the accuracy of the opinion as compared to actual bids or cost to the Client. The total estimated cost for the Shepherd Branch Trail project is approximately \$15.7 million. The detailed cost calculations are included in Appendix C. Please note that this cost estimate assumes that the project would be constructed as a standalone project; however, given the proximity to other planned construction projects, there are likely to be opportunities to construct portions of this project as part of the Suitland Parkway project, the Anacostia Streetcar project, or other planned projects to allow the costs to be distributed across multiple projects.

APPENDIX A

Environmental Forms

APPENDIX B

Pedestrian Bridge Structures Report

APPENDIX C

Opinion of Probable Construction Cost

APPENDIX D

20% Shepherd Branch Trail Plans

APPENDIX E

RIGHT-OF-WAY PLANS

APPENDIX F

PHASE II ENVIRONMENTAL SITE ASSESSMENT REPORT FOR CSX RAIL CORRIDOR

APPENDIX G

APPRAISAL REPORT FOR A PORTION OF THE SHEPHERD'S BRANCH RAILROAD CORRIDOR
