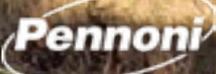
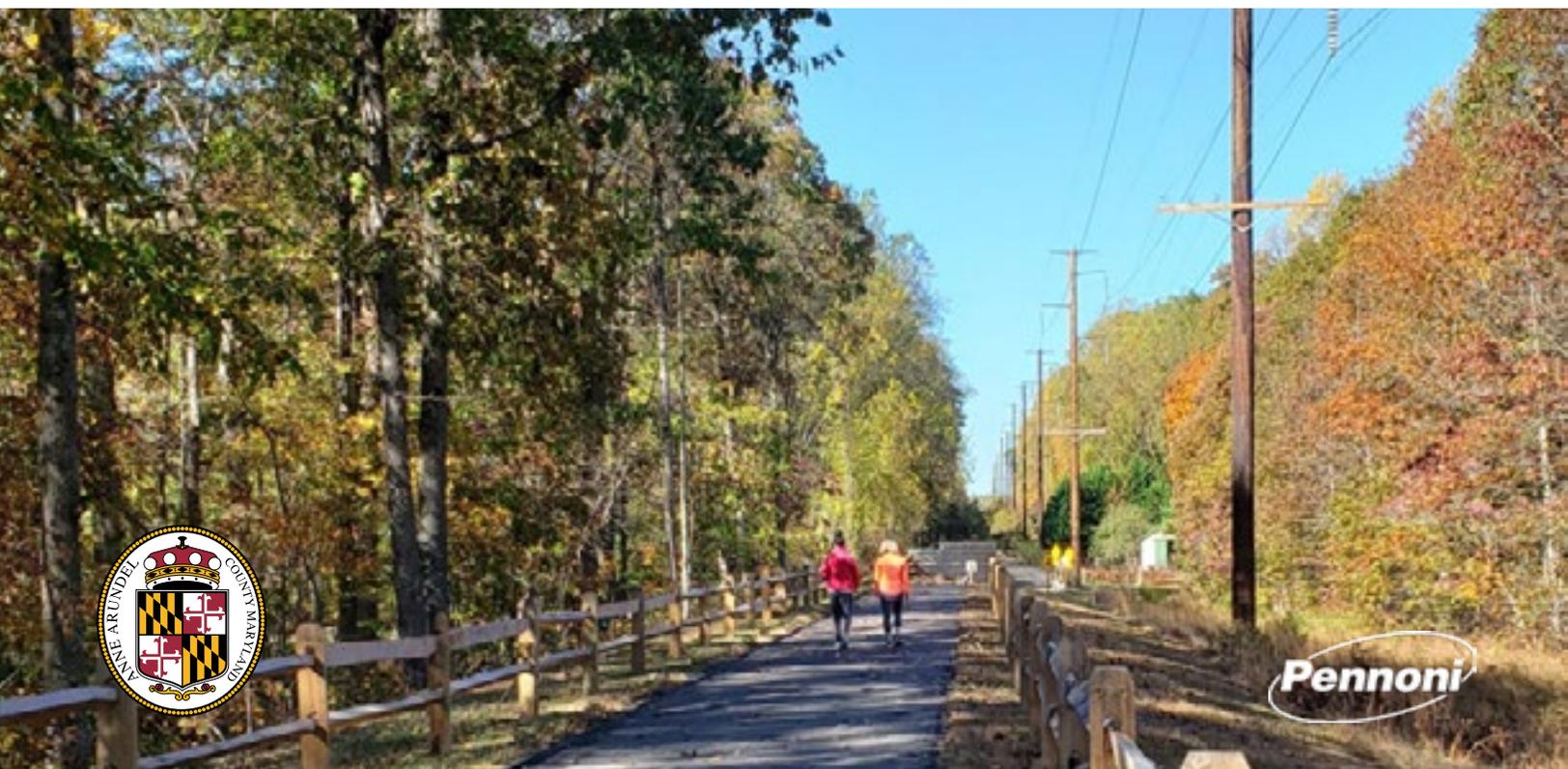


Anne Arundel County Trail Spurs and Connectors Study

March 2024 Draft



Executive Summary

As Anne Arundel County has grown and developed, the County planned, designed, and constructed a trail network that covers large portions of the County and links together areas of North, East, and West County. This trail network is used by County residents for recreation and as a mode of alternative transportation. The trail network has continued to grow and expand as phases of planned trails are built out. A number of projects to extend this network are currently in the design and construction stages. This network includes the Baltimore and Annapolis (B&A) Trail, BWI Trail, Broadneck Peninsula Trail, South Shore Trail, and the Washington Baltimore & Annapolis (WB&A) Trail. Future trails that are still in the planning stages include the Light Rail Trail, South County Trails, the Patapsco Greenway Trail, and the Marley Neck Trail.

Pennonni was asked by the County to review the trail network for the purpose of expanding access to the County's trail systems by County residents and visitors. The specific goal of this study was to extend or connect existing trails with parks, other trails, schools and community hubs, and other public facilities and commercial centers. The study required that the consult accomplish the following tasks:

1. Review various County plans with an eye towards recommendations for trail expansions and the overall development of the trail system.
2. Conduct a desktop review of the County trail system, including the existing, designed, and planned trails. Include in the desktop review the surrounding neighborhoods and facilities so that potential connections can be identified.
3. Develop and recommend a prioritized list of up to 25 trail connections and/or extensions.
4. Conduct an initial site assessment of the proposed connections/extensions and develop a concept plan and cost estimate for each extension/connection.
5. Provide a written report documenting the findings.

Pennonni has worked through these requirements and developed the prioritized list of trails. Trails were initially prioritized through a GIS analysis that examined the proximity of the potential trail spur to existing County recreation facilities, County schools, other County facilities, and neighborhoods. 24 trail spurs were selected and then concept plans were prepared for these trails. Pennonni visited the 24 sites as part of the concept planning phase to identify potential constraints that might limit trail development, and to consider alternative alignments. Pennonni then finalized the concept plans and prepared cost estimates for the trails.

Based on the concept design, and the cost estimates, the trails were reprioritized to account for items like cost, right-of-way acquisition, and other significant constraints. A final prioritized list of trails is included in the Summary/Conclusions section of this report.

Discussions with the County during the preparation of the study emphasized the recreational aspect of this study. Connections between existing and future trails and County parks and schools are the primary focus of this study. Connections between commercial centers and transportation hubs were not the focus of this study.

Project Team

- Pennonni
- Anne Arundel County Department of Public Works
- Anne Arundel County Department of Recreation and Parks

Photos

All photos were taken by the authors, unless otherwise noted.

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1

Task 1: Planning Context and Spatial Analysis

County-wide Planning Context

The following section gives a general overview of the Anne Arundel County-wide plans that provide planning context at the county level and how they relate to the *Trail Spurs and Connectors Study*. During the development of this study, Anne Arundel County-wide plans underwent a comprehensive review for policies and recommendations, particularly with regard to trail spurs. This comprehensive review helped inform both the list of trail spurs that were examined as well as the design of the trail spurs ranking criteria system itself.

Land Preservation, Parks, and Recreation Plan (LPPRP)

In 2022, the Anne Arundel County Council adopted the current update to the *Land Preservation, Parks, and Recreation Plan* (LPPRP). This plan acts as a countywide master plan for land preservation, recreational programming, park acquisition, and facility development.

The development of the LPPRP was guided by a comprehensive community engagement process, in which three themes emerged:

1. Waterfront access and environmental programming: Protection of the bay and its shoreline and promoting public access for boating, fishing, swimming, and fun.
2. Connection of parks and local destinations, improve access and convenience.
3. Expansion of public open space inventory.

These three themes guide the LPPRP and its recommendations. These themes also align with the purpose of this study. The *Trail Spurs and Connectors Study* aims to connect Anne Arundel County's local trails with one another and with key community destinations, ultimately increasing park access and expanding public park space, and even potentially providing environmental programming.



Anne Arundel County 2022 Land Preservation, Parks & Recreation Plan



COUNTY COUNCIL OF ANNE ARUNDEL COUNTY, MARYLAND
Ordinance 59-22 - Adopted July 5, 2022

Additionally, this *Trail Spurs and Connectors Study* will be utilizing a technical scoring process that will emulate many of the similar processes that the LPPRP's Proximity Analysis and Equity Analyses incorporated. The Proximity Analysis is a geospatial analysis that reveals gaps in the service area of all parks as well as parks with specific amenities. The intent of the Proximity Analysis is "to generally determine where the public can readily access these amenities and where they cannot" (2022 LPPRP Guidelines). As per the State Guidelines, the

Proximity Analysis utilized a 0.5-mile buffer for suburban County Council Districts 1-6 and a 5-mile buffer for parks in the more rural County Council District 7. This *Trail Spurs and Connectors Study* considers the proximity of nearby destinations, and the ability of the development of trail spurs to increase access to those key destinations, in making its recommendations.

The Equity Analysis combined demographic and environmental health data from a variety of sources and maps onto Maryland census block groups in order to identify disparities in park access and quality. It does this by evaluating the number of children, senior residents, density, race of residents, linguistic isolation, and the average income of the subject park site's Census Tract Block Group. The analysis creates an overall equity score, which is a combined weighted score of all of the input data. The *Trail Spurs and Connectors Study* utilizes the LPPRP's equity score in determining whether development of each trail spur will increase equitable access across County communities, especially historically underserved communities.

Walk and Roll Anne Arundel!

Walk and Roll Anne Arundel! is the 2023 update of the County's Pedestrian and Bicycle Master Plan (PBMP), previously updated in 2013. The overall purpose of the plan is to identify improvements which increase the potential for safe walking and bicycling. Specifically, the goals established in *Walk and Roll Anne Arundel!* include:

- Prioritizing a safe and comfortable walking and rolling network between essential destinations through the County. Essential destinations are defined as:
 - Job centers
 - Shopping centers
 - Schools (K-12), community colleges, colleges, and universities

- Hospitals and health care clinics
- Libraries
- Parks
- Residential areas
- Transit stops and stations.
- Ensuring that vulnerable people have access to active transportation infrastructure
- Recommending infrastructure proven to reduce pedestrian crashes
- Identifying policy recommendations to promote the construction of safe, accessible, and direct walking and rolling infrastructure



These goals directly align with the purposes of this study. Many of the metrics that are being considered in the *Trail Spurs and Connectors Study's* evaluation system attempts to fulfill the goals laid out in *Walk*



Source: Anne Arundel County

and Roll Anne Arundell, such as weighting those potential trail spurs close to essential destinations, trail spurs that would ensure that vulnerable people have access to active transportation infrastructure, and promotion of infrastructure that would increase pedestrian safety. The development of trail spurs that rank highly in this study's evaluation system would increase access to safe alternatives to driving automobiles and separate cyclists and pedestrians from automobiles, thus decreasing opportunities for conflict between the two groups.

Many of the recommendations in *Walk and Roll Anne Arundell!* focuses on on-road bicycle and pedestrian transportation, but the plan also addresses off-road trails and connections to parks, encouraging the integration of parks and open spaces into a larger bicycle and pedestrian accessible network. Moreover, *Walk and Roll Anne Arundell!* proposes the development of 248.5 miles of shared-use paths. Shared-use paths are generally paved, off-road facilities designed for travel by a variety of non-motorized users, such as cyclists, pedestrians, skaters, wheelchair users, and other users. Thus, many of the proposals to create shared-use lanes throughout the County have informed this study's examination of the development of trail spurs in the County.



Plan 2040



Plan2040 is the County's General Development Plan, guiding the vision for how the county should grow and evolve over the next 20 years. Adopted in 2020, it was the result of extensive community outreach with dozens of public forums and thousands of individual comments, and has three main themes: Green, Smart, and Equitable. *Plan2040* reflects ongoing trends that are reshaping the county, such as increased commuting to Washington, DC and Howard County and fewer trips to Baltimore City, recurring concerns about infrastructure supporting continued population and job growth, and an effort to address racial and socioeconomic inequity and provide economic and social opportunities to all County residents.

Plan2040 identifies several challenges that may be addressed, including making the area more resilient to climate change, investing in more transportation choices, encouraging transit-oriented development, and providing better access to the waterfront and park system. It identifies areas that will

experience limited development, such as agricultural areas and the peninsulas, as well as targeted locations for redevelopment and revitalization, all of which will require further investments in pedestrian and bicycle infrastructure.

The County adopted these specific goals through *Plan2040* to resolve transportation-related challenges:

- Goal NE3: Expand, enhance, and continue to protect the County's greenways, open space, and rural areas, including the Priority Preservation Area (PPA);
- Goal BE4: Support quality of life and economic vitality in County Peninsula Policy Areas, while preserving environmentally sensitive areas;
- Goal BE7: Promote vibrant, high-quality development in Town Centers that provides opportunities to live, work, learn, and play without daily use of a car;
- Goal BE9: Provide a high-quality mix of employment, residential, commercial and service uses near existing or funded transit stations;
- Goal BE10: Relieve traffic congestion and improve mobility options and safety in the Critical Corridor Policy Areas;

- Goal BE15: Provide a well-maintained multimodal transportation network that is safe, efficient, environmentally sensitive, and provides practical and reliable transportation choices and connections for all users;
- Goal BE16: Increase the County's resilience to future changes in climate and reduce emissions of greenhouse gases;
- Goal HC8: Provide a diverse range of accessible public recreational facilities to serve the needs of all County residents; and
- Goal HE1: Promote economic development that supports smart growth and provides opportunities for all County residents.

This set of air quality, environmental, and traffic congestion goals aligns directly with the purpose of this *Trail Spurs and Connectors Study*. With the goal of further developing Anne Arundel County's trail network, this study will facilitate alternatives to motorized transportation. By developing a more comprehensive alternative transportation network, as well as providing vital first and last mile connection to public transit, these trails will be crucial in accomplishing the goals established in *Plan2040*.

Plan2040 also emphasizes Anne Arundel County residents "desire for more public parks and increased access to recreational trails." By encouraging the development of the County's trail system, the *Trail Spurs and Connectors Study* will help to increase access for County residents to more recreational trails and public parks. The goals and policies that *Plan2040* emphasizes align with the purpose of this study, especially this study's purpose to utilize equity and geography analyses to prioritize the development and connection of trails which can provide better access to County residents and support underserved areas.



SEPARATED BIKE LANE
Source: www.pedbikeimages.com

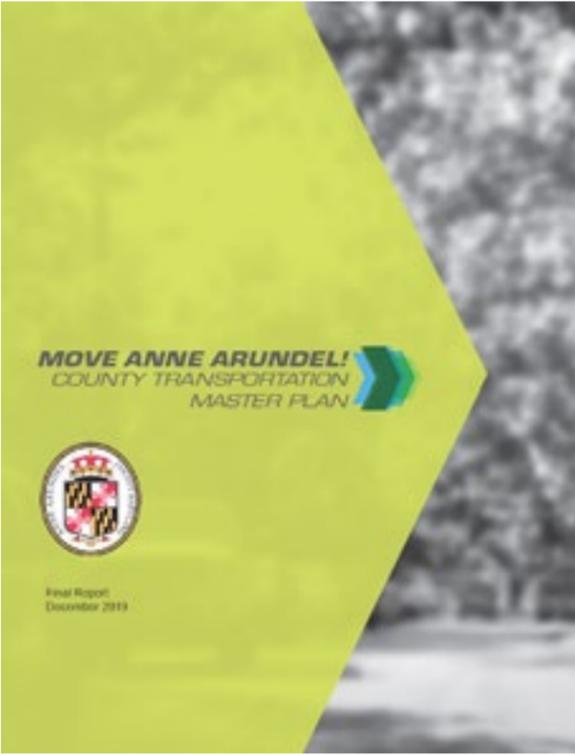
Move Anne Arundel!

Move Anne Arundel!, published in December of 2019, is the County's Transportation Functional Master Plan, intended to guide the County's future transportation policies, strategies, and investments. Move Anne Arundel!'s recommendations are grouped into five modal themes:

- Making communities more walkable
- Building a low-stress bicycle network
- Upgrading County corridors and strengthening community cores
- Improving regional corridors to make commutes more reliable
- Advancing a new model of transit services

Although the Move Anne Arundel! plan does not specifically examine any particular trail spur, its various recommendations under the above five themes do relate to trail spurs by advocating for the improvement of connections and safety to the County's overall mobility network. For example, Move Anne Arundel!'s recommendation to complete "last mile" connections from trails to "key community destinations" speaks directly to the need for spur trails to be completed and connected to the larger mobility network to provide vital connection. During the development of the Trail Spurs and Connectors Study, Move Anne Arundel! was consulted to determine whether any of its specific policy recommendations aligned with the potential development of each of the examined spur trails.

To arrive at a list of priority investments, Move Anne Arundel! developed a technical scoring process tied to its vision, goals, and objectives. The recommended investment priorities were based on the judgement of county staff relative to historically available local and state funding projected forward over twenty years from publishing year (2019). During the development of this Trail Spurs and Connectors Study, Move Anne



Arundel!'s technical scoring process (on following page) was examined to help inform this Trail Spurs and Connectors Study's own criteria for developing a technical scoring system to prioritize County spur segments.

Regional Plans and Small Area Plans (SAPs)

Plan2040 sets up a process to prepare community-level comprehensive plans for nine regions within Anne Arundel County. The region planning process recognizes the variety of needs in different areas of the County and provides more opportunity for residents to participate in planning for the future of their communities. The region plans will align with the goals and policies of Plan2040 and build on the small area plans prepared between 1998 to 2004. Each region plan is expected to include action strategies to address elements specific to each region, such as parks and open space, agriculture, sea level rise, mobility, equity, and accessibility. Preparation of the region plans will be staggered over time based on the schedule adopted in Plan2040.

but none of the plans are complete as of the writing of this plan. As the region plans are developed, they will include further recommendations for recreation, parks, and trails that will inform future planning in the County. Because the region plans are not yet finished, the recommendations from the previous 16 small area plans were reviewed as part of this study. Many of the SAP recommendations were fulfilled through the 2006, 2013, and 2017 LPPRPs. Almost all of the SAPs called for enhanced recreational opportunities for people of all ages and backgrounds. Many of the SAPs discussed the need for the development of more hiker, biker, and equestrian trails along with the development of parks for active and passive recreational uses. These are all goals that this study aims to accomplish in its purpose.

Anne Arundel County has begun the process of creating regional plans for nine regions,

Bicycle and Pedestrian Network Projects

Priority bicycle and pedestrian projects build on the tier-based recommendations of the 2013 Pedestrian and Bicycle Master Plan Update; however, only shared use path projects were scored due to uncertainty in the feasibility of certain cycle-track and on street routes.

People Served - 15% of total score			
» Population			
Access to Opportunity - 20% of total score			
» Employment	» K-12	» Higher Education	» Technical Schools
Access to Services - 20% of total score			
» Doctors	» Hospitals	» Social Services	» Groceries
Access to Transit - 15% of total score			
» Bus	» Light Rail	» MARC	» Park & Ride
Access to Retail - 15% of total score			
» Shopping			
Access to Recreation - 15% of total score			
» Parks	» Trails	» Recreational Centers	

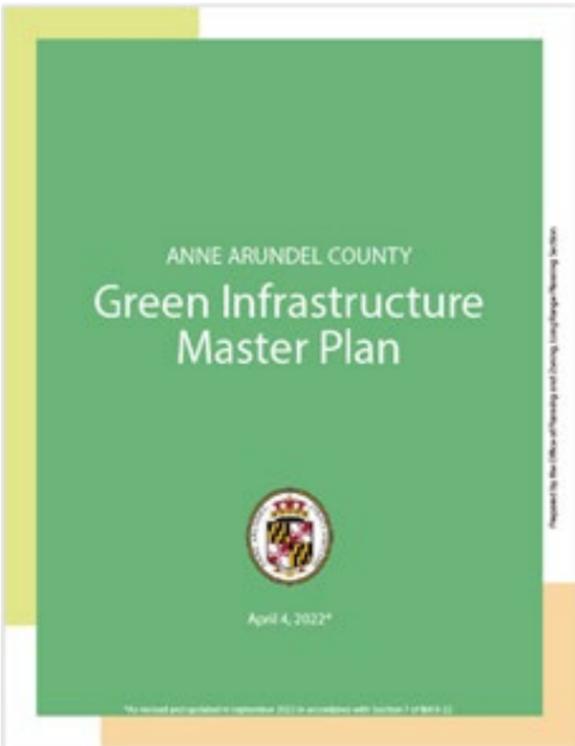
TECHNICAL SCORING CHART DEVELOPED FOR THE MOVE ANNE ARUNDEL! PLAN

Green Infrastructure Master Plan

The *Green Infrastructure Plan*, adopted in 2022, updates the *Greenways Master Plan*, originally adopted in 2002, which established the County’s Greenways Network and a series of related goals and action items. “Green Infrastructure” is a more inclusive term that includes large natural areas, pocket parks, rain gardens, and other green spaces, and is used to steer this plan since “greenways” are commonly interpreted as linear protected areas, typically along a river.

The updated *Green Infrastructure Plan* makes use of data, technology, and analysis to interconnect environmental ecosystems with active and passive recreational sites, corridors, scenic areas, and historic and cultural resources in order to meet challenges related to land use conflicts, and human health and well-being. The lands identified in the Green Infrastructure Network help protect water quality and air quality, provide habitat for plants and wildlife, create opportunities for recreation, and support mitigation of, and adaptation to, climate change.

This study consulted the work of the *Green Infrastructure Plan* and the *Greenways Master Plan* in order to create better opportunities for recreation and increase overall access to trails. The prioritization of the development of examined spur trails in this study considered whether developing a spur trail would increase connectivity to the County’s green infrastructure as identified in these plans.

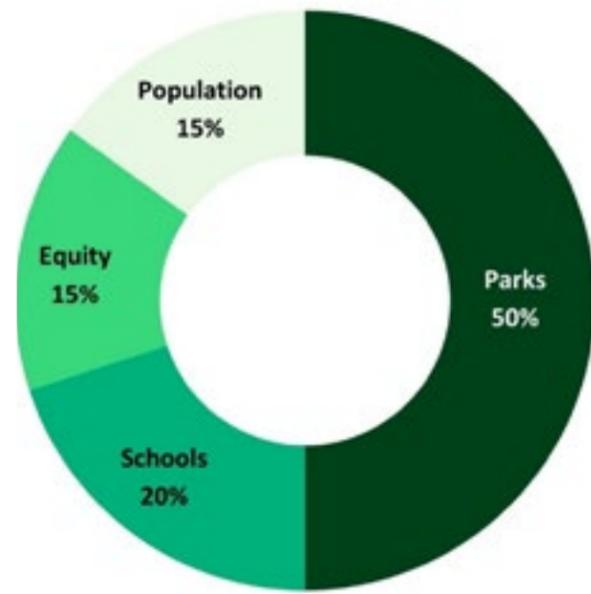


Spatial and Data Analysis

The next section introduces and discusses the spatial analysis that was conducted to calculate a priority ranking list for each of the trail spurs and connections that were considered in this study. The individual trail spurs and connections under examination were derived from direct recommendations from the County, relevant County-wide plans, existing trail master plans, and plans for County projects that are currently in design. Each trail spur and connection under consideration was assigned a total score based on methodology that was created for this study, and then the trail spurs and connections were ranked according to their total score. This section will conclude by presenting that ranked list.

Methodology

The ranking criteria system for trail spurs and connections that was developed for this study leans on the technical scoring process used in the 2013 *Pedestrian and Bicycle Master Plan Update*, and later reused in *Move Anne Arundell*, as a foundation. The *Trail Spurs and Connectors Study*’s ranking criteria system methodology uses many of the same categories and percentage weights that was previously used. However, the updated methodology used in this study includes Equity as a factor, utilizing the Equity scores from the County’s 2022 *Land Preservation, Parks and Recreation Plan*, to ensure that future planning and development of trail spurs and connections meets the County’s goals of ensuring equity for all residents.



A ½ mile buffer was created around all spurs and connections. Features that fell within this buffer were summarized and those counts were used to calculate the overall score for each spur. An overall score was then calculated for each spur to create a ranked list for future consideration in planning and design.

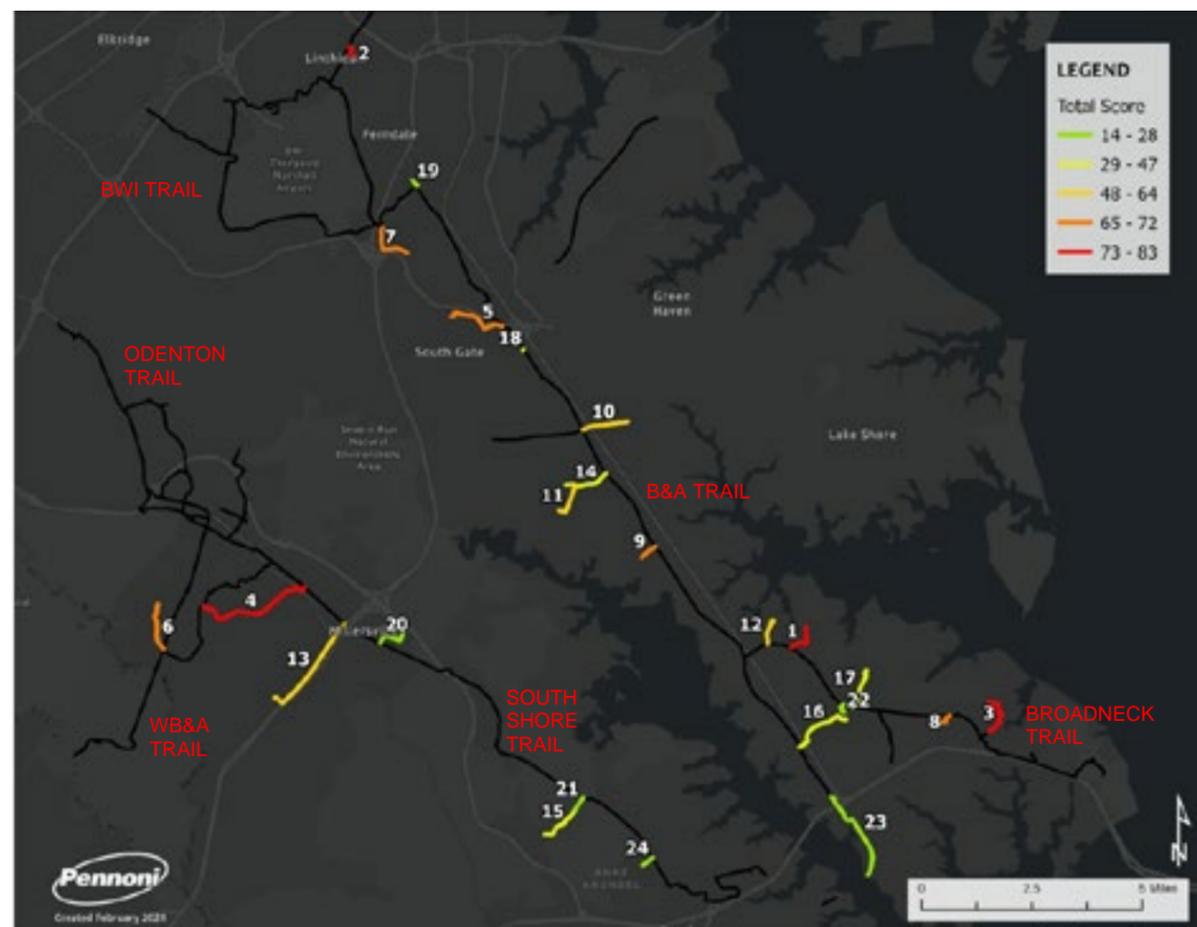
Following the initial analysis, the trail rankings were adjusted to account for items discovered during the planning stage. The following factors were considered in adjusting the rankings: Right-of-way requirements, Cost, Status of the Mainline

Trail, and Other significant issues. The initial rankings of the spurs were increased based on the these factors. The score of the spurs was increased if any of the factors apply to the project. This had the effect of adjusting the ranking of the trail spurs based on the planning, feasibility analysis, and the ease of construction. These factors are more fully described in later chapters.

The top 24 trail sections are in the following table and map.

Rank	Trail Spur Name	Total Score
1	Broadneck Trail to Belvedere Elementary Spur	83
2	BWI Trail to Linthicum Elementary/ Park Spur	81
3	Broadneck Trail to Cape St Claire Elementary Spur	79
4	South Shore Trail to Dairy Farm Spur	75
5	Baltimore and Annapolis (B&A) Trail to Baltimore Washington Medical Center Spur	72
6	Washington, Baltimore and Annapolis (WB&A) Trail to Piney Orchard Community Center Spur	72
7	BWI Trail to Corkran Middle School Spur	72
8	Broadneck Trail to Windsor Farm Elementary Spur	69
9	Baltimore and Annapolis (B&A) Trail to Severna Park High School Spur	68
10	Baltimore and Annapolis (B&A) Trail to Lake Waterford Park Spur	64
11	Baltimore and Annapolis (B&A) Trail to Severna Park Middle School (via Kinder Farm Spur) Spur	56
12	Broadneck Trail to Twin Oaks Park and Magothy River Middle School Spur	53
13	South Shore Trail to Waugh Chapel Village Center Spur	50
14	Baltimore and Annapolis (B&A) Trail to Kinder Farm Park Spur	47
15	South Shore Trail to Generals Highway Corridor Park Spur	45
16	Baltimore and Annapolis (B&A) Trail to Arnold Park Spur	43
17	Broadneck Trail to Broadneck Elementary Spur	42
18	Baltimore and Annapolis (B&A) Trail to Future Marley Creek Park Spur	29
19	Baltimore and Annapolis (B&A) Trail to Cromwell Park & Ride/Light Rail Station Spur	28
20	South Shore Trail to Millersville Elementary and Millersville Park Spur	28
21	South Shore Trail to Waterworks Park Spur	28
22	Broadneck Trail to Arnold Park Spur	27
23	Baltimore and Annapolis (B&A) Trail to Annapolis Spur	23
24	South Shore Trail to Rolling Knolls Elementary Spur	14

THE FULL RANKED LIST OF TRAIL SPURS.



THE RANKED TRAIL SPURS DISPLAYED ON A MAP OF ANNE ARUNDEL COUNTY.

Data Sources

To the right is a list of the data sources used for all the individual components of the scoring. Pennoni used the most up-to-date version of the datasets available.

Data	Source	Year
Population	US Census Bureau	2020
Equity	MD Department of Natural Resources	2023
Schools	Anne Arundel County	2021
Parks	Anne Arundel County	2021

2

Task 2: Concept Plans and Individual Trail Analysis & Design

List of Trails Spurs

Baltimore and Annapolis (B&A) Trail to Annapolis Spur	22
Baltimore and Annapolis (B&A) Trail to Arnold Park Spur	36
Baltimore and Annapolis (B&A) Trail to Baltimore Washington Medical Center Spur	48
Baltimore and Annapolis (B&A) Trail to Cromwell Park & Ride Light Rail Station Spur	60
Baltimore and Annapolis (B&A) Trail to Future Marley Creek Park Spur	64
Baltimore and Annapolis (B&A) Trail to Kinder Farm Park Spur	68
Baltimore and Annapolis (B&A) Trail to Lake Waterford Park Spur	78
Baltimore and Annapolis (B&A) Trail to Severna Park High School Spur	90
Baltimore and Annapolis (B&A) Trail to Severna Park Middle School via Kinder Farm Spur	94
Broadneck Trail to Arnold Park Spur	102
Broadneck Trail to Belvedere Elementary School Spur	108
Broadneck Trail to Broadneck Elementary School Spur	122
Broadneck Trail to Cape St. Claire Elementary School Spur	130
Broadneck Trail to Magothy River Middle School Spur	136
Broadneck Trail to Windsor Farm Elementary School Spur	142
BWI Trail to Corkran Middle School Spur	146
BWI Trail to Linthicum Elementary School and Linthicum Park Spur	154
South Shore Trail to Dairy Farm Spur	160
South Shore Trail to Generals Highway Corridor Park Spur	166
South Shore Trail to Millersville Elementary School and Millersville Park Spur	172
South Shore Trail to Rolling Knolls Elementary School Spur	178
South Shore Trail to Waterworks Park Spur	182
South Shore Trail to Waugh Chapel Village Center Spur	188
Washington, Baltimore and Annapolis (WB&A) Trail to Piney Orchard Community Center Spur	216

Concept Plans

Overview

Basis of Design

The concept plans for the trail spurs are based on the use of current aerial photography from the State of MD and County GIS information. Site visits were made to each of the spurs to conduct an initial assessment of the spur alignment. No topographic or boundary surveys were performed at this time. No wetland or forest stand delineation reports were performed. These studies will have to be completed as part of any detailed design.

The typical section used for these concepts is a 10' wide asphalt trail. In some cases, typically in areas with lower traffic volumes and speeds, or areas where there is an established on road route, on road trails were utilized. Where possible, existing pavements were utilized in order to minimize additional impervious surfaces. This was also done to limit clearing and grading of vegetated areas. In some cases, the existing pavement would be removed and replaced with a trail, as in the case of a curbed roadway with a wide shoulder. In some cases, the roadway would be widened slightly and a guardrail added in order to create the trail. Typical concept sections for the trails are provided in this report. AASHTO recommendations for trails were generally used to develop the concept plans.

A concept plan was developed for each of the 24 trail spurs evaluated, and a narrative was prepared that outlines the proposed spur, potential opportunities and constraints associated with the spur, alternative alignments that were considered, and potential impacts created by the spur. Representative photographs have been provided showing the project sites and illustrating some of the constraints. Finally, a cost estimate has been prepared for each spur.

Basis of Cost Estimates

Cost estimates for the trail concepts were prepared using recent bid prices received by the County for other trails and park projects, and recent trail and project cost estimates. Pennoni also looked at the average cost of several recent trails that we have designed, some of which are under construction, to develop a linear foot cost for comparison purposes. See Appendix A for linear foot costs and calculations.

Various assumptions were made for the hard construction costs on the project since this was a concept planning effort with very little design information available at this stage. The estimates would be finalized as the projects proceeded through a more detailed feasibility study/ schematic design and construction documents. Assumptions for the costs are provided in Appendix B.

Cost estimates are provided in Appendix C. Cost estimates include the "hard construction costs" based on the quantities shown in the concepts. The following items were added to the hard costs:

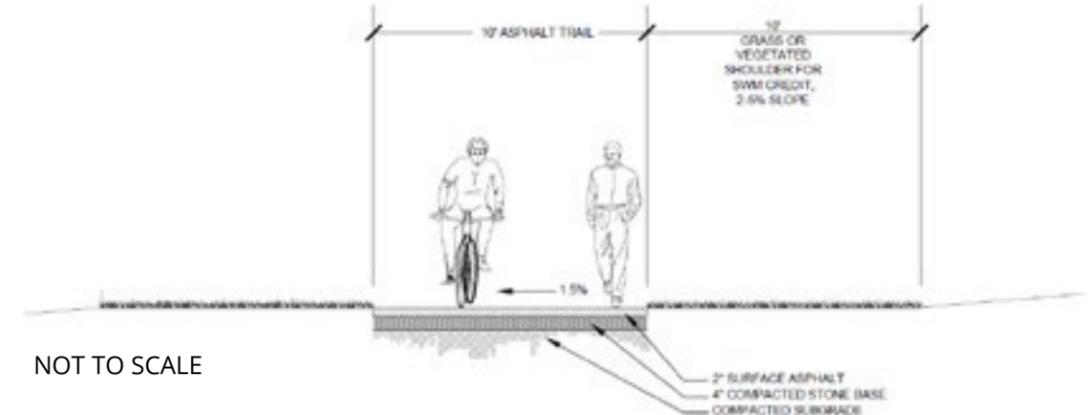
1. Mobilization/General Requirements – use 20 percent of total hard costs.
2. General Contractor Markup – 8 percent of total of General Requirements plus the hard costs.
3. Design Contingency – 30 percent of the total of hard costs plus general requirements plus general contractor markup. This level of contingency is consistent with the concept level of design.

The following items were not included in the costs:

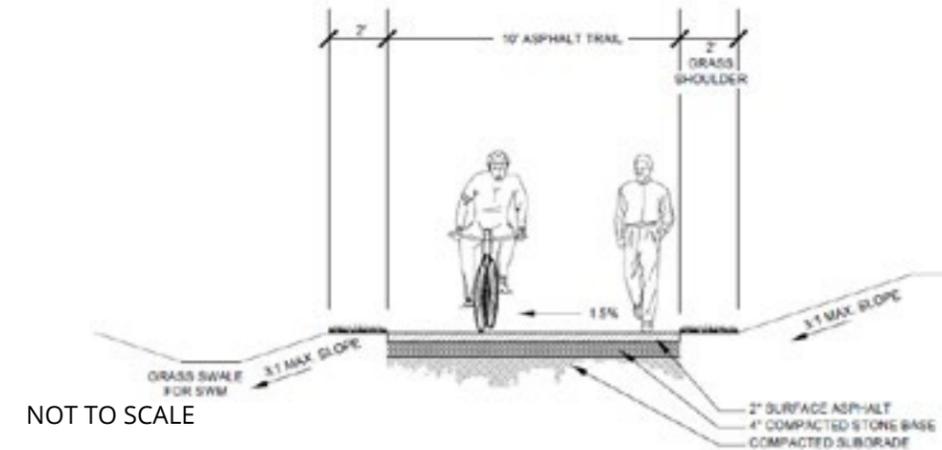
1. Design and Permitting Costs
2. Unforeseen circumstances such as rock, hazardous materials, etc.

Typical Trail Sections

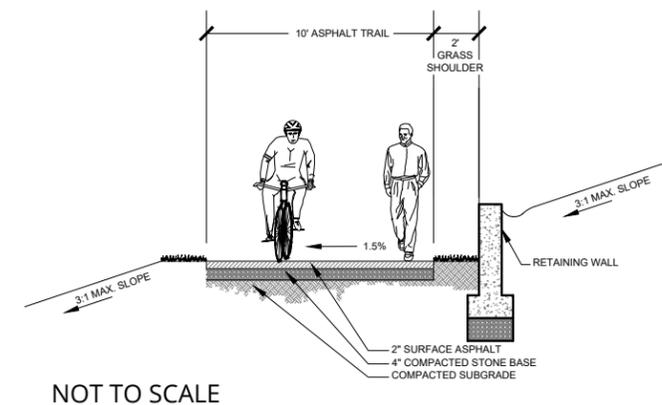
10' Trail with Grass or Vegetated Shoulder



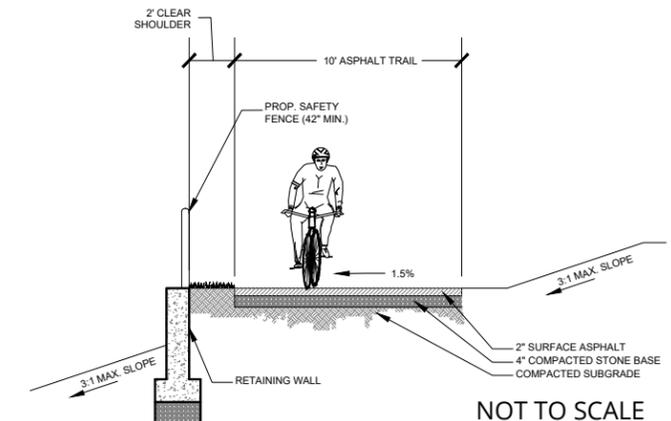
10' Trail with Swale



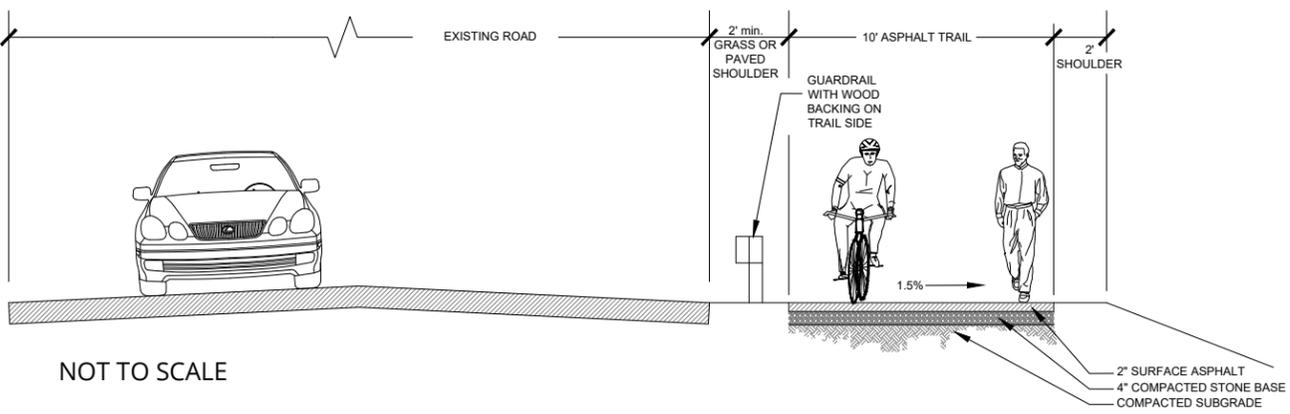
10' Trail 3:1 Slope Below and Retaining Wall Above



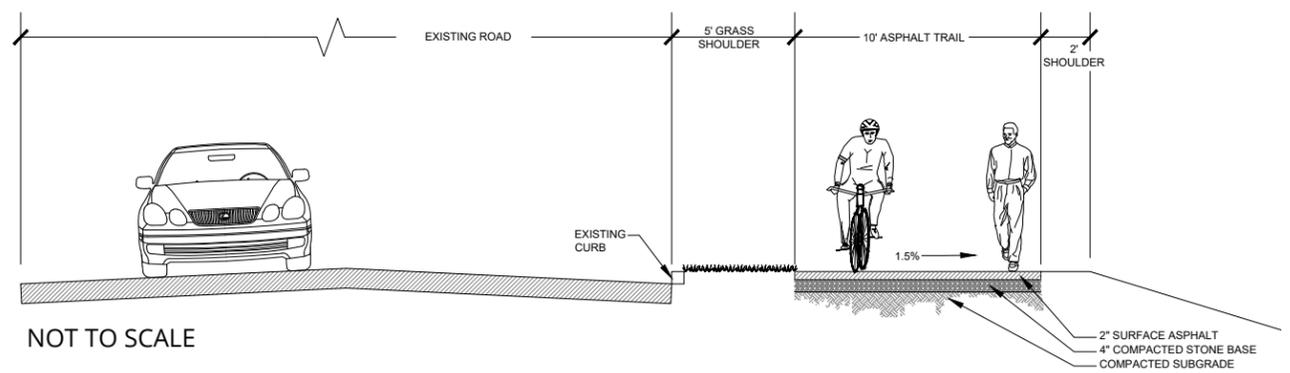
10' Trail with 3:1 Slope Above and Retaining Wall Below



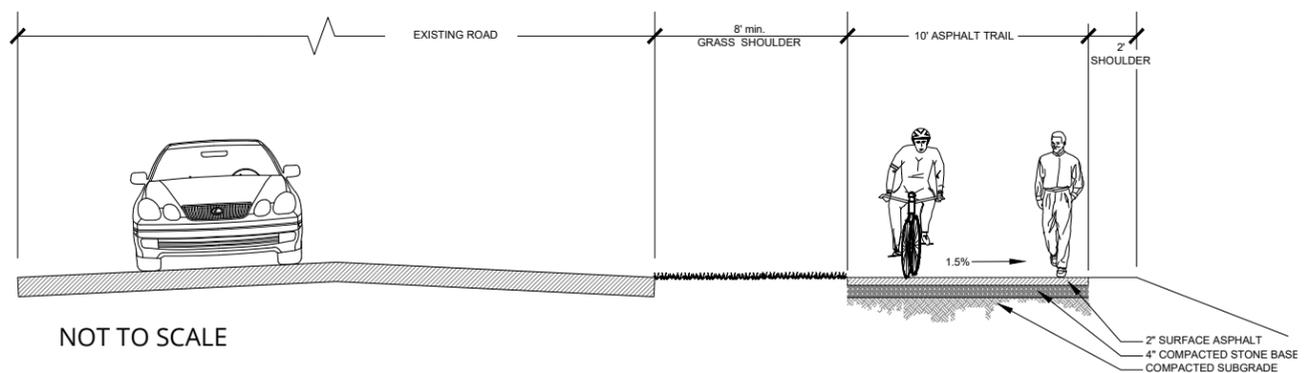
10' Trail Adjacent to Open Section Road with Space Limitations



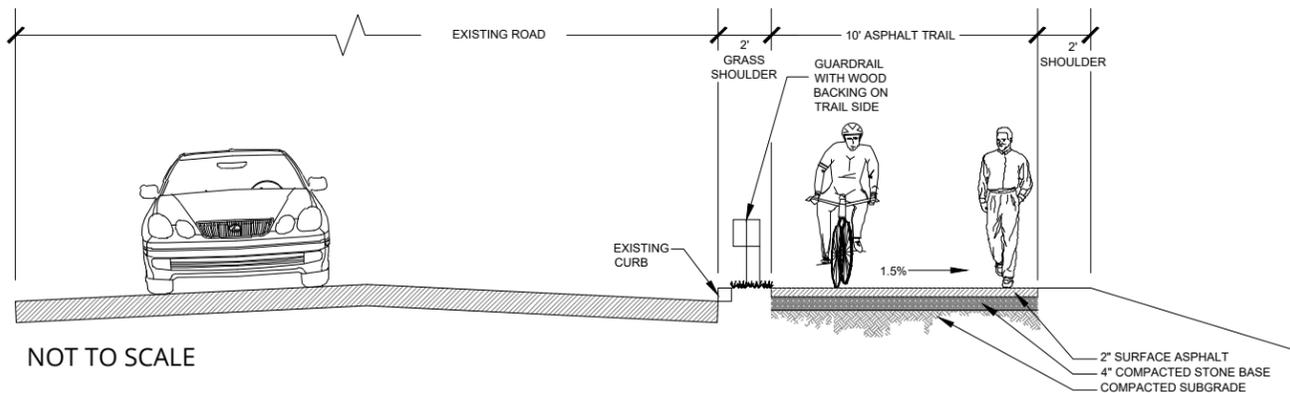
10' Trail Adjacent to Curbed Road



10' Trail Adjacent to Open Section Road



10' Trail Adjacent to Curbed Road



Baltimore and Annapolis Trail to Annapolis Spur

This trail spur connects the Jonas and Anne Catharine Green Park on the Severn River to the parking area at the southern terminus of the Baltimore and Annapolis (B&A) Trail in Annapolis. The new trail portion of this spur is approximately 738 lf in length. The spur would also include the existing on road trail along Ritchie Highway, MD Route 450. No trail improvements along MD 450 were considered primarily due to the fact that this road is already an established bike route with some signage and markings. The improvements necessary to extend a dedicated bike trail nearly a mile from Jonas Green Park to the trail parking area would be extensive and would require the acquisition of right-of-way from dozens of properties as well as significant grading and retaining wall

construction. No alternate alignments were examined for this spur.

Opportunities

- 1. Existing established on road alignment along MD 450
- 2. Crosswalks in place along this route

Constraints

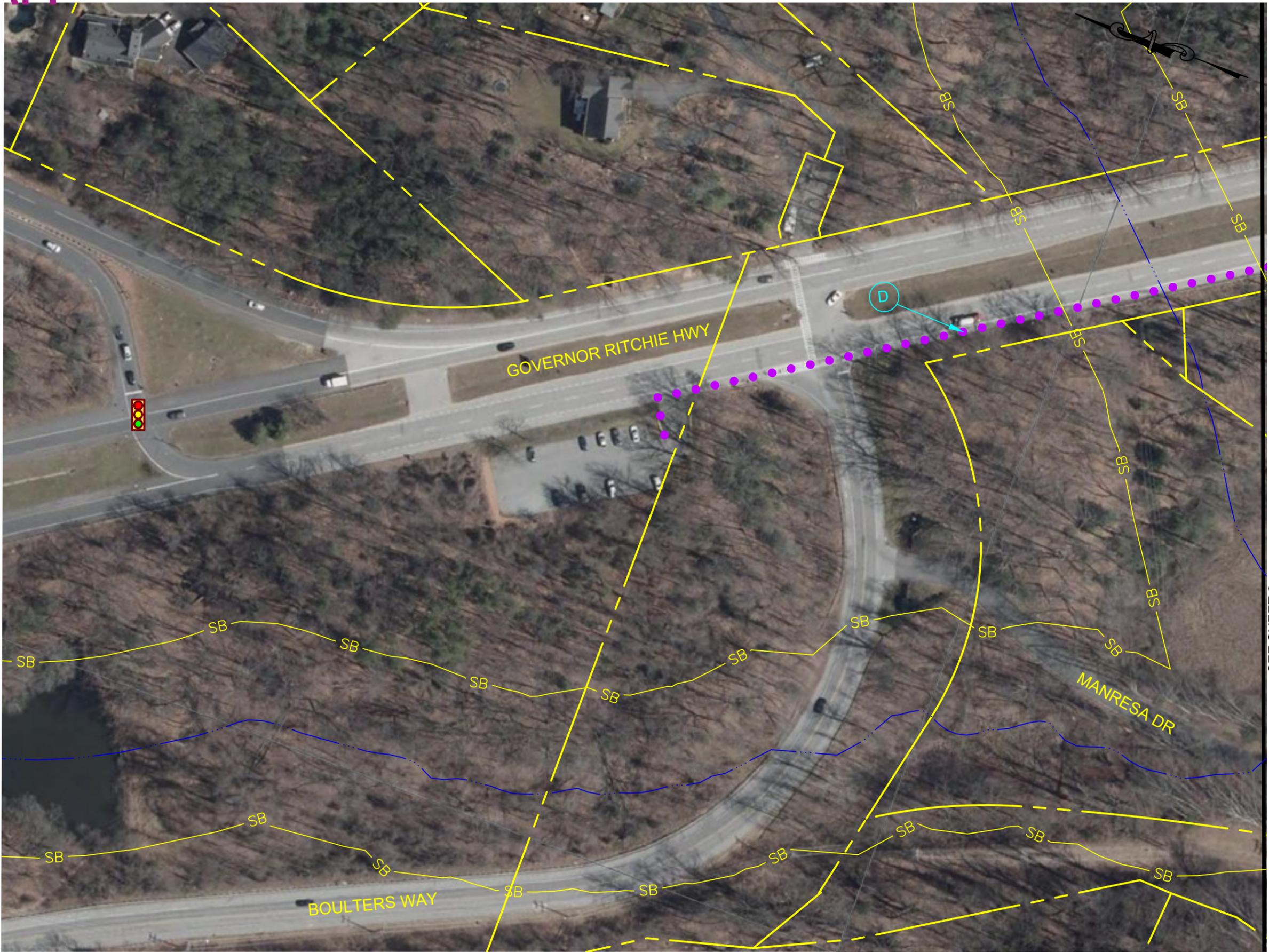
- A. Slopes
- B. Chesapeake Bay Critical Area
- C. Existing drainage impacts
- D. On road trail

The spur includes a 10' wide asphalt trail on land currently owned by the County. The majority of this spur would consist of the existing on road trail. The proposed trail construction will have grading impacts as it traverses a slope from MD 450 down to the park. Drainage improvements in the form of a culvert or small bridge will also be needed where the trail crosses an existing drainage swale.

gardens, microbioretention facilities, or infiltration devices. This alignment will have minimal utility impacts. It is very likely that this alignment can be accomplished with less than 20,000 sf of forest clearing, in which case, the project will be exempt from forest conservation requirements. It does not appear that there will be any environmental impacts associated with this trail, but the trail will be located in the Chesapeake Bay Critical Area, requiring some additional approvals, as well as additional landscaping. The total estimated cost for this spur is \$229,570.85.

Stormwater management for this spur would likely be comprised of non rooftop disconnect credits as well as small rain





LEGEND

- TRAIL
- ON ROAD TRAIL
- CROSSWALK
- TRAFFIC SIGNAL
- STREAM
- PROPERTY BOUNDARY

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

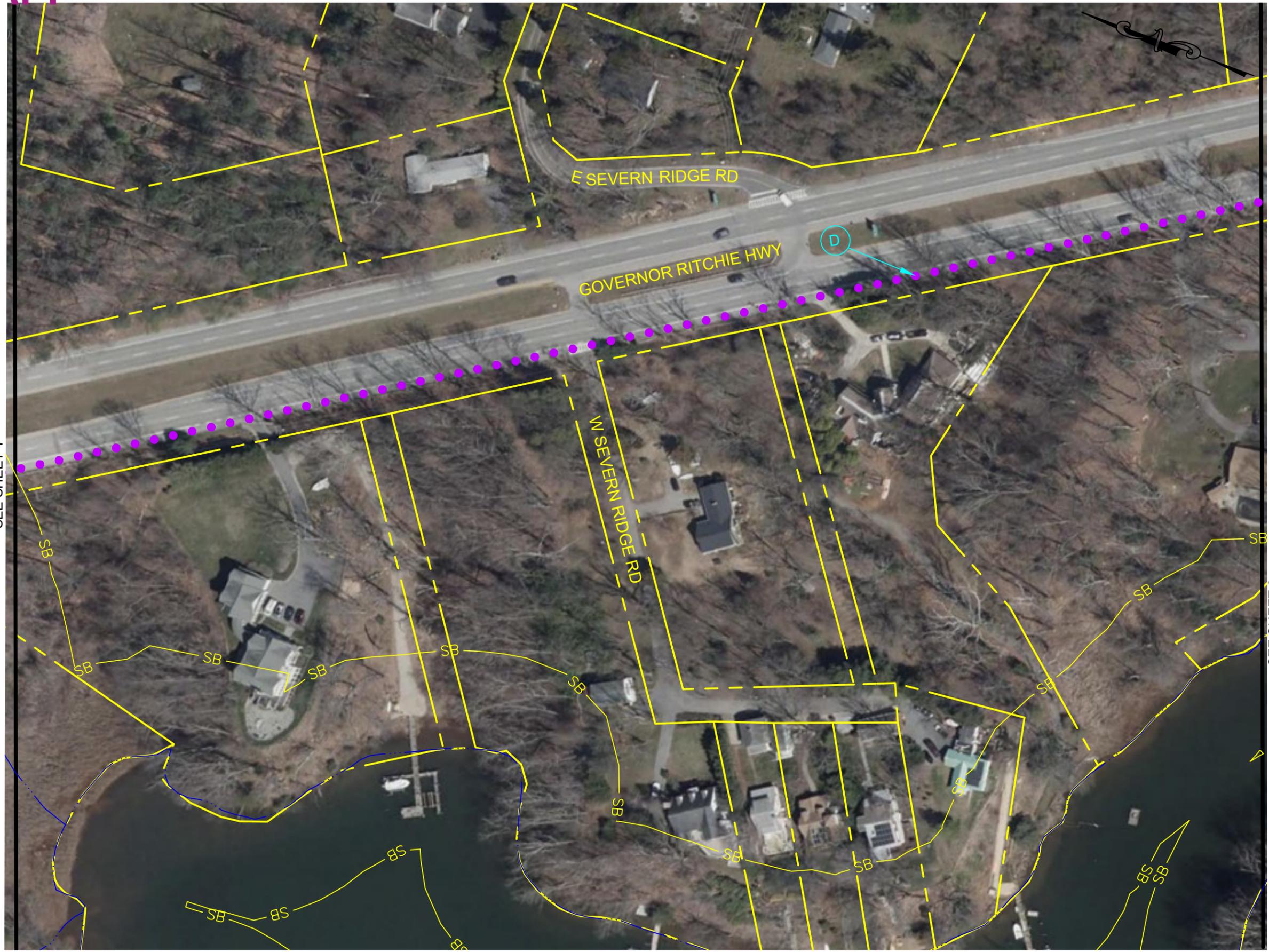
- A. STEEP SLOPES
- B. CHESAPEAKE BAY CRITICAL AREA
- C. EXISTING DRAINAGE IMPACTS
- D. ON ROAD TRAIL

SEE SHEET 2



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B&A TRAIL TO ANNAPOLIS



SEE SHEET 1

LEGEND

- TRAIL 
- ON ROAD TRAIL 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

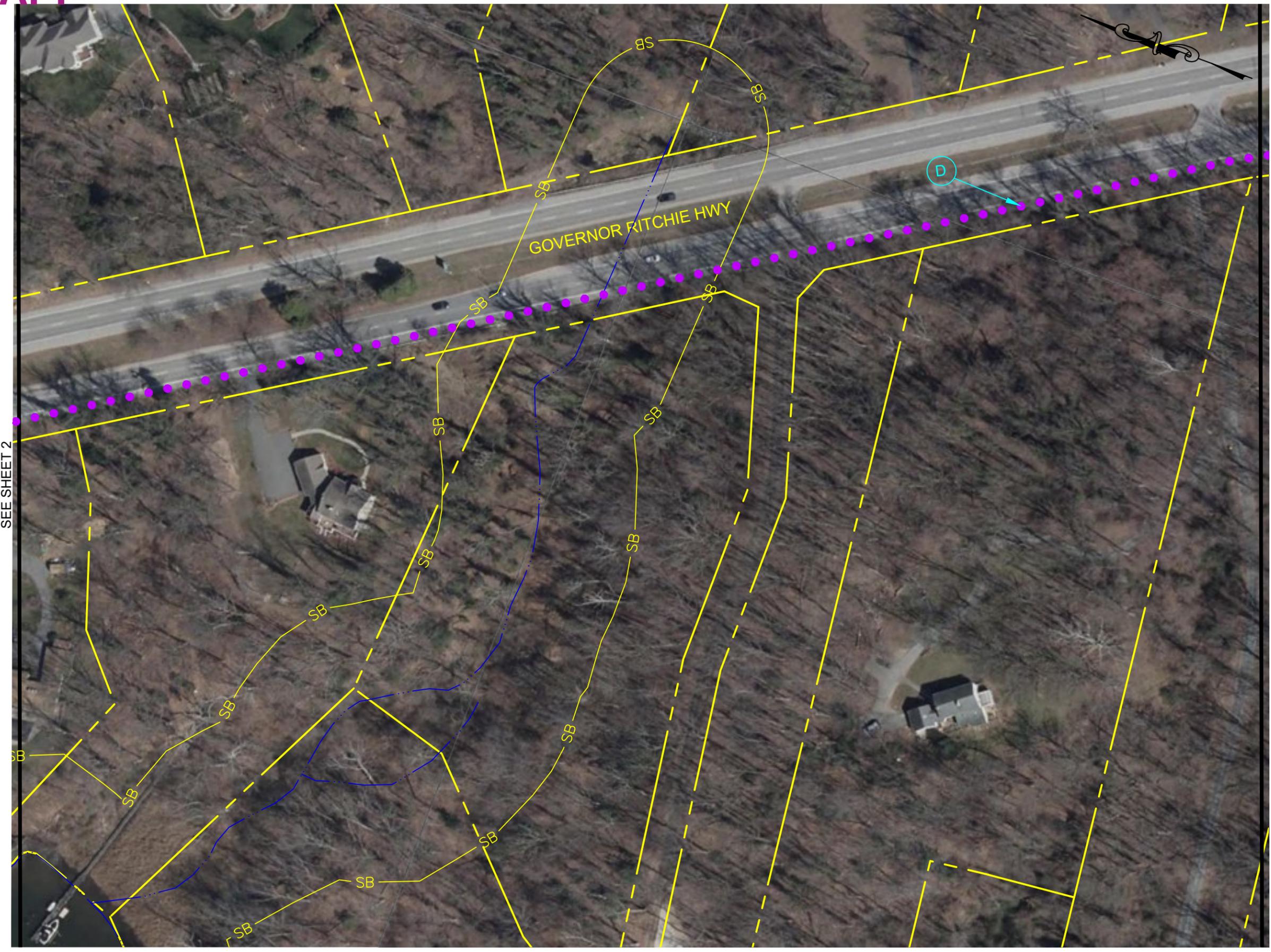
CONSTRAINTS

- A. STEEP SLOPES
- B. CHESAPEAKE BAY CRITICAL AREA
- C. EXISTING DRAINAGE IMPACTS
- D. ON ROAD TRAIL



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B&A TRAIL TO ANNAPOLIS



LEGEND

- TRAIL 
- ON ROAD TRAIL 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. STEEP SLOPES
- B. CHESAPEAKE BAY CRITICAL AREA
- C. EXISTING DRAINAGE IMPACTS
- D. ON ROAD TRAIL

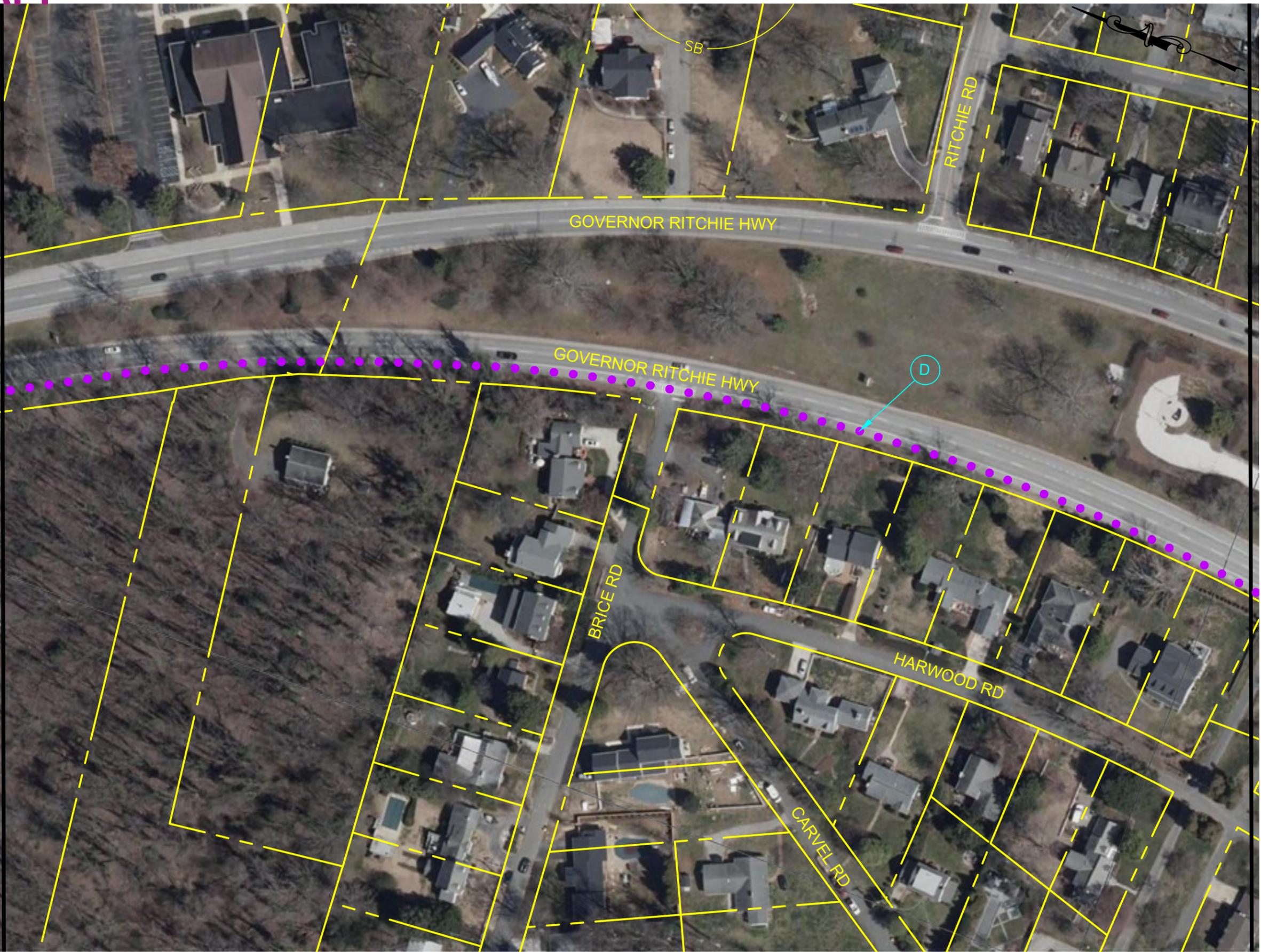
SEE SHEET 2

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B&A TRAIL TO ANNAPOLIS



LEGEND

- TRAIL 
- ON ROAD TRAIL 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

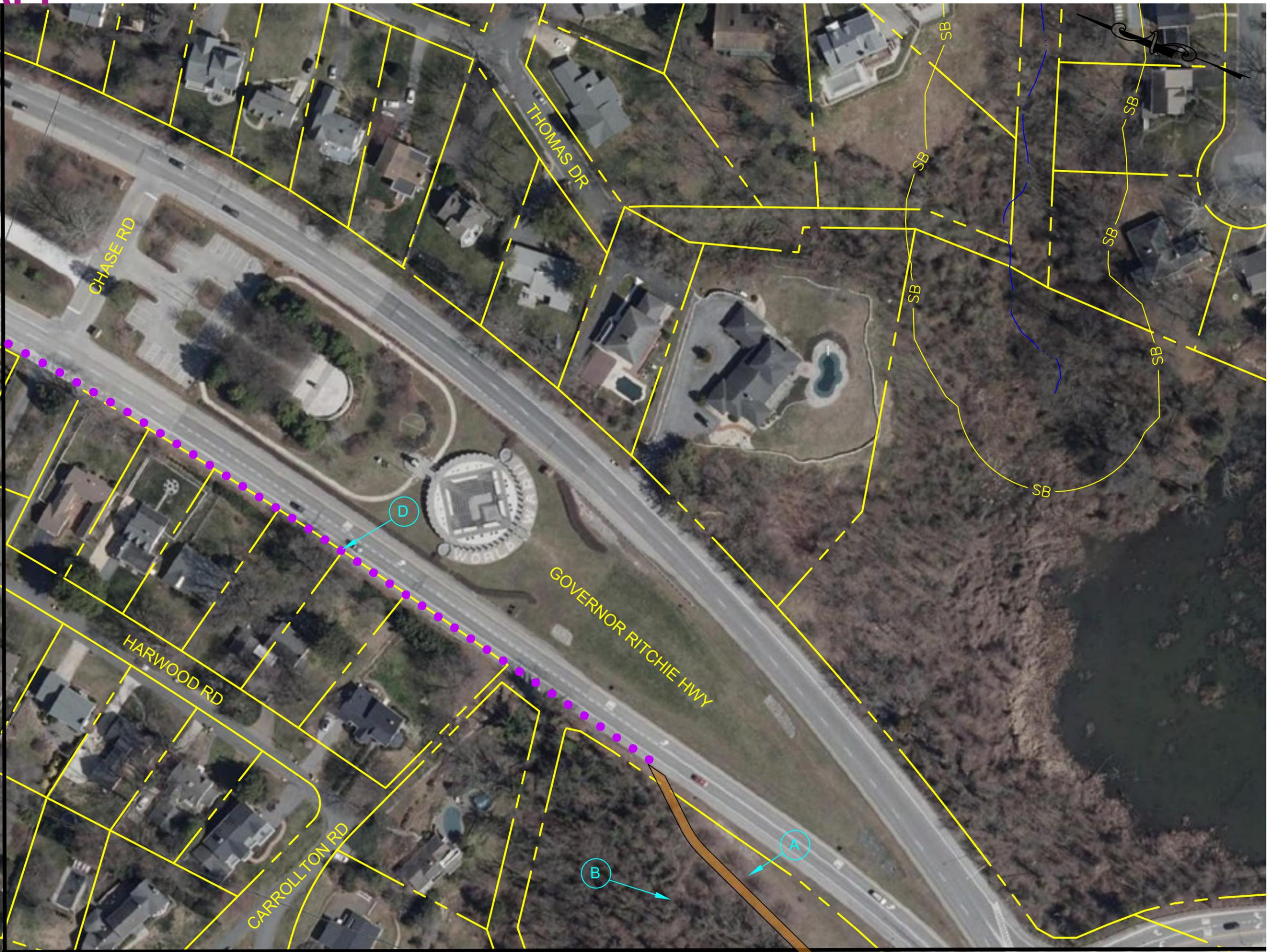
- A. STEEP SLOPES
- B. CHESAPEAKE BAY CRITICAL AREA
- C. EXISTING DRAINAGE IMPACTS
- D. ON ROAD TRAIL

SEE SHEET 3

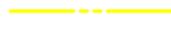
SEE SHEET 5



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LEGEND

- TRAIL 
- ON ROAD TRAIL 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. STEEP SLOPES
- B. CHESAPEAKE BAY CRITICAL AREA
- C. EXISTING DRAINAGE IMPACTS
- D. ON ROAD TRAIL

SEE SHEET 4

SEE SHEET 6



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LEGEND

- TRAIL 
- ON ROAD TRAIL 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. STEEP SLOPES
- B. CHESAPEAKE BAY CRITICAL AREA
- C. EXISTING DRAINAGE IMPACTS
- D. ON ROAD TRAIL



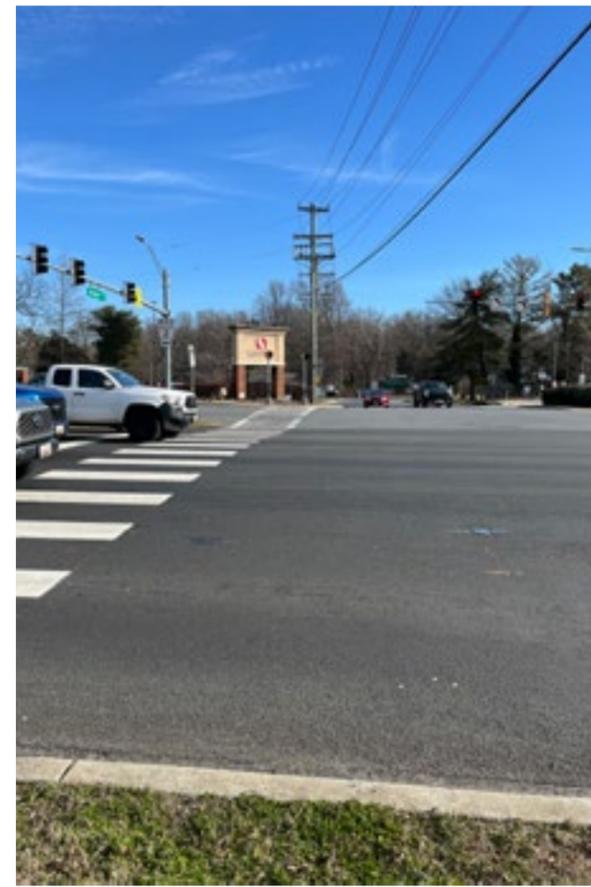
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Baltimore and Annapolis Trail to Arnold Park Spur

This trail spur connects Arnold Park to the Baltimore and Annapolis (B&A) Trail. The new trail portion of this spur is approximately 768 lf in length. The spur would also include on road improvements along Church Road and Jones Station Road. The spur runs from the existing Baltimore and Annapolis Trail to Arnold Road, across Ritchie Highway, to the intersection of Arnold Road and Church Road/Baltimore-Annapolis Blvd. The spur then follows Church Road to Jones Station Road, where it continues south for a short distance on Jones Station Road to the pedestrian entrance into Arnold Park. No trail improvements along Church Road were considered due to the large number of properties that would have to be acquired,

the existing utilities present on the road, the fact that an existing sidewalk already exists along the north side of the road, and the fact that this road is already an established bike route with some signage, markings, and traffic calming. No alternate alignments were examined for this spur.

The crossing of Ritchie Highway would be very similar to what was recently installed further north at Ritchie Highway and Jones Station Road, where a trail spur was constructed to provide a connection between the Broadneck Trail and the Baltimore and Annapolis Trail. That spur also leads to an on road trail through an existing neighborhood.



Opportunities

- 1. Existing established on road alignment along Church Road
- 2. Existing connection from Arnold Park to Jones Station Road

Constraints

- A. Easement / right-of-way needed from owners
- B. Crossing of a high volume road
- C. Potential utility impacts
- D. On road trail

The spur includes a 10' wide asphalt trail, with multiple crosswalks and associated concrete ramps. Construction of the trail from the B&A trail to Arnold Road will require the acquisition of right-of-way. The existing sidewalk along the north side of Arnold Road will be removed and replaced with a 10'

asphalt trail. In some areas this will be less than 5' from the road. The crossing of Ritchie Highway is already set up for pedestrian crossing, but additional modifications may be required. On road improvements will be needed for Church Road in the form of additional signage, striping and possibly additional traffic calming.

Stormwater management for this spur would likely be comprised of non rooftop disconnect credits as well as small rain gardens, microbioretention facilities, or infiltration devices. This alignment will have significant utility impacts along Arnold Road, east of Ritchie Highway. At least three utility poles would have to be moved for this trail. It is very likely that this alignment can be accomplished with less than 20,000 sf of forest clearing, in which case, the project will be exempt from forest conservation requirements. No environmental impacts are associated with this trail. The total estimated cost for this spur is \$595,324.08.





LEGEND

- TRAIL
- ON ROAD TRAIL
- CROSSWALK
- TRAFFIC SIGNAL
- STREAM
- PROPERTY BOUNDARY

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. NEED EASEMENT/RIGHT-OF-WAY
- B. CROSSING OF HIGH VOLUME ROAD - SIGNAL IMPROVEMENTS
- C. UTILITY CONFLICTS
- D. ON ROAD TRAIL



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B&A TRAIL TO ARNOLD PARK



LEGEND

- TRAIL
- ON ROAD TRAIL
- CROSSWALK
- TRAFFIC SIGNAL
- STREAM
- PROPERTY BOUNDARY

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

- CONSTRAINTS**
- A. NEED EASEMENT/RIGHT-OF-WAY
 - B. CROSSING OF HIGH VOLUME ROAD - SIGNAL IMPROVEMENTS
 - C. UTILITY CONFLICTS
 - D. ON ROAD TRAIL

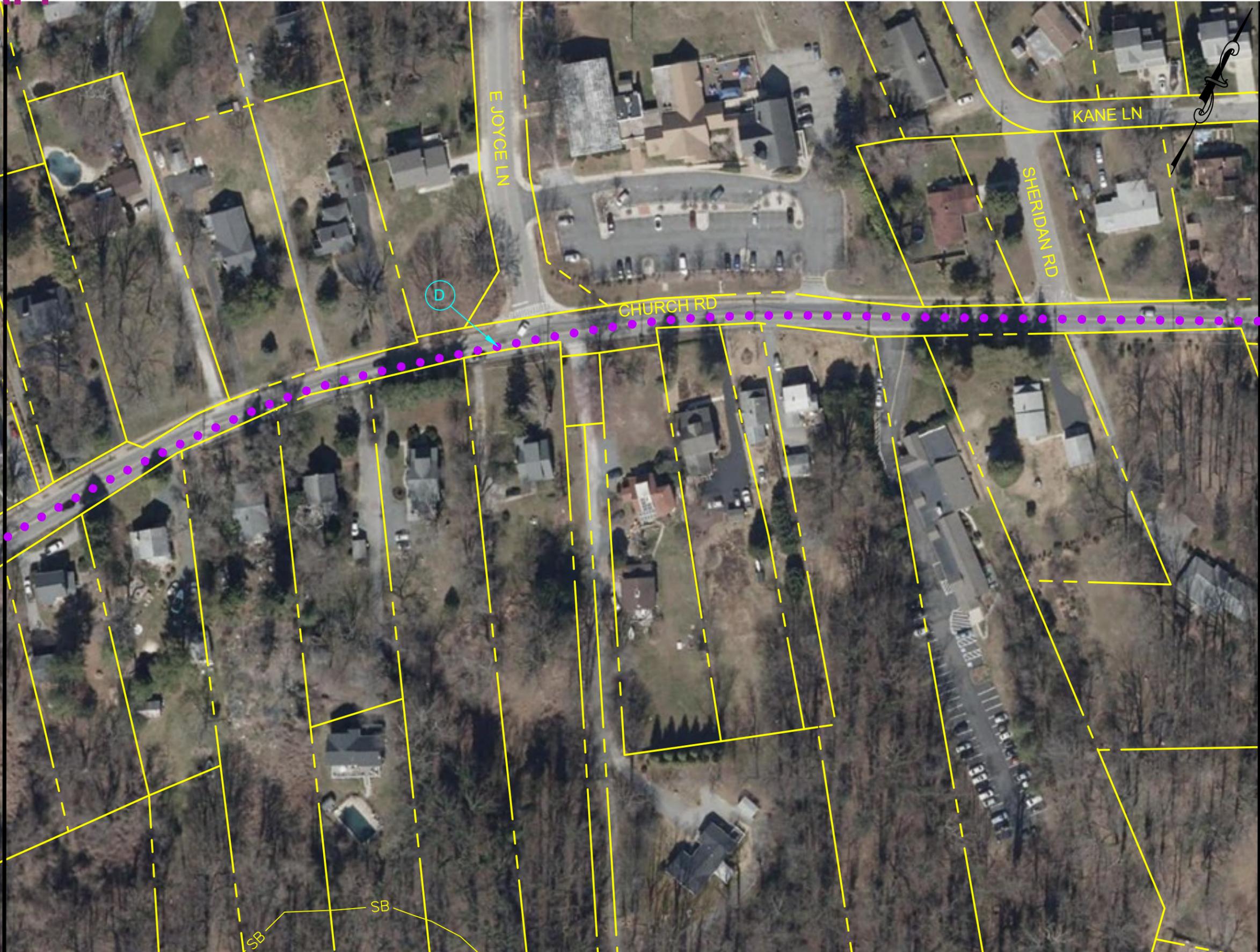


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SEE SHEET 3

B&A TRAIL TO ARNOLD PARK



LEGEND

- TRAIL 
- ON ROAD TRAIL 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

- CONSTRAINTS**
- A. NEED EASEMENT/RIGHT-OF-WAY
 - B. CROSSING OF HIGH VOLUME ROAD - SIGNAL IMPROVEMENTS
 - C. UTILITY CONFLICTS
 - D. ON ROAD TRAIL

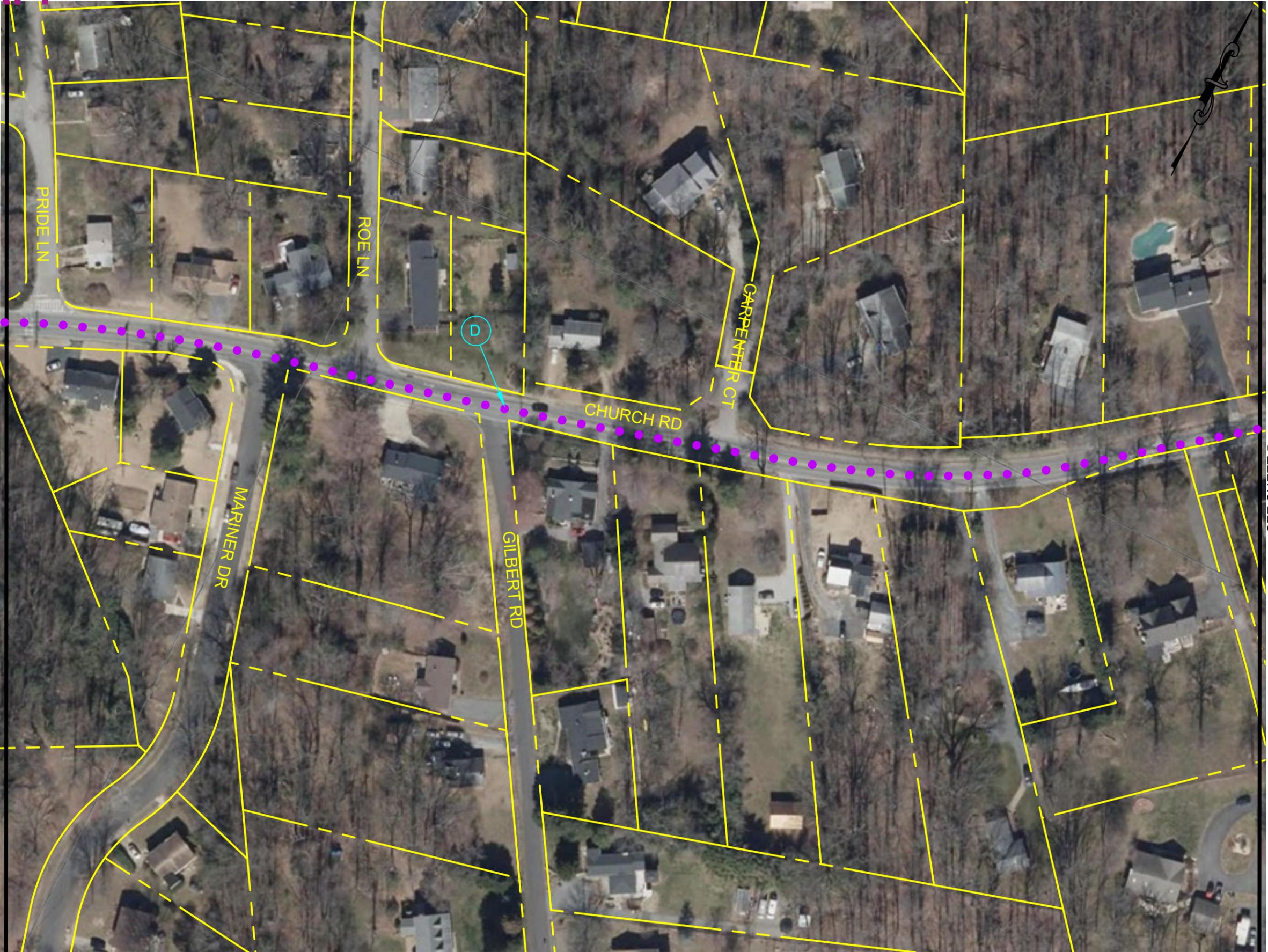
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SEE SHEET 4



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B&A TRAIL TO ARNOLD PARK



LEGEND

- TRAIL
- ON ROAD TRAIL
- CROSSWALK
- TRAFFIC SIGNAL
- STREAM
- PROPERTY BOUNDARY

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. NEED EASEMENT/RIGHT-OF-WAY
- B. CROSSING OF HIGH VOLUME ROAD - SIGNAL IMPROVEMENTS
- C. UTILITY CONFLICTS
- D. ON ROAD TRAIL

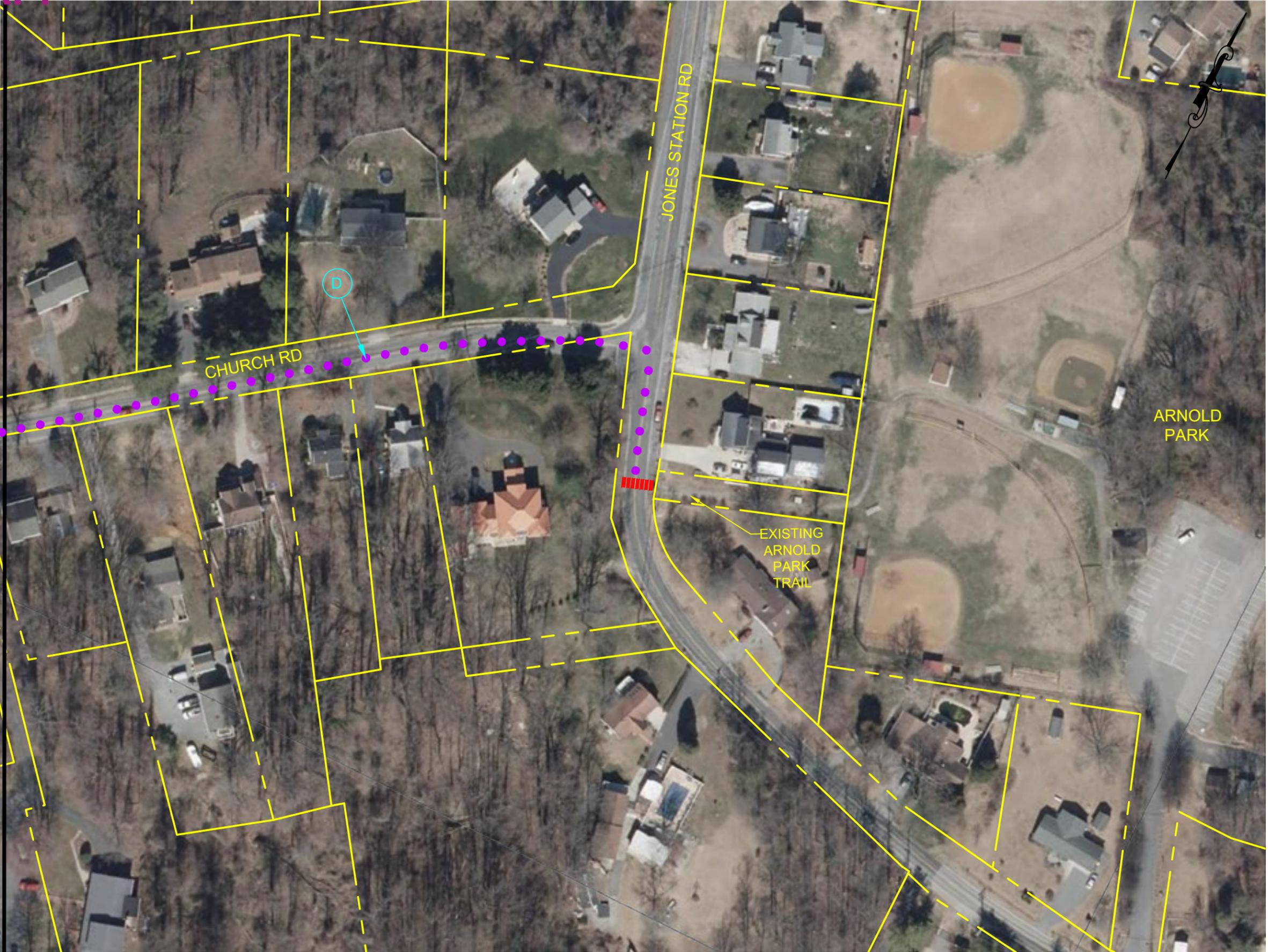


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SEE SHEET 3

SEE SHEET 5

B&A TRAIL TO ARNOLD PARK



SEE SHEET 4

LEGEND

- TRAIL 
- ON ROAD TRAIL 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. NEED EASEMENT/RIGHT-OF-WAY
- B. CROSSING OF HIGH VOLUME ROAD - SIGNAL IMPROVEMENTS
- C. UTILITY CONFLICTS
- D. ON ROAD TRAIL



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B&A TRAIL TO ARNOLD PARK

Baltimore and Annapolis Trail to Baltimore Washington Medical Center Spur

This trail spur connects the Baltimore Washington Medical Center on Hospital Drive to the Baltimore and Annapolis (B&A) Trail in Glen Burnie. The spur is approximately 6,540 lf in length, and runs from the Baltimore Washington Medical Center, east along Hospital Drive to Foxspring Drive where it will run along the existing BGE Right-of-Way to the MD State 100 Right-of-Way. It will then run east along the MD State 100 Right-of-Way to connect to the existing B&A Trail near the existing B&A Trail bridge over Route 100. Easements and/or agreements would be needed from BG&E and MDOT, as well as private property owners. The area where the trail would run is generally level, other than the MD State Right-of-Way. No alternate alignments were studied for this spur.

Opportunities

- 1. Existing sidewalk alignment to follow along much of this route
- 2. Occurs largely in open areas, limited clearing and limited forest conservation impacts.
- 3. Limited utility impacts
- 4. Existing crosswalks and traffic signal exist at Hospital Drive and Oakwood Road.

Constraints

- A. Stream buffer
- B. Steep slopes
- C. Right-of-way / easements required from property owners, BGE, and MDOT
- D. Tree clearing
- E. Existing retaining wall
- F. Existing utilities

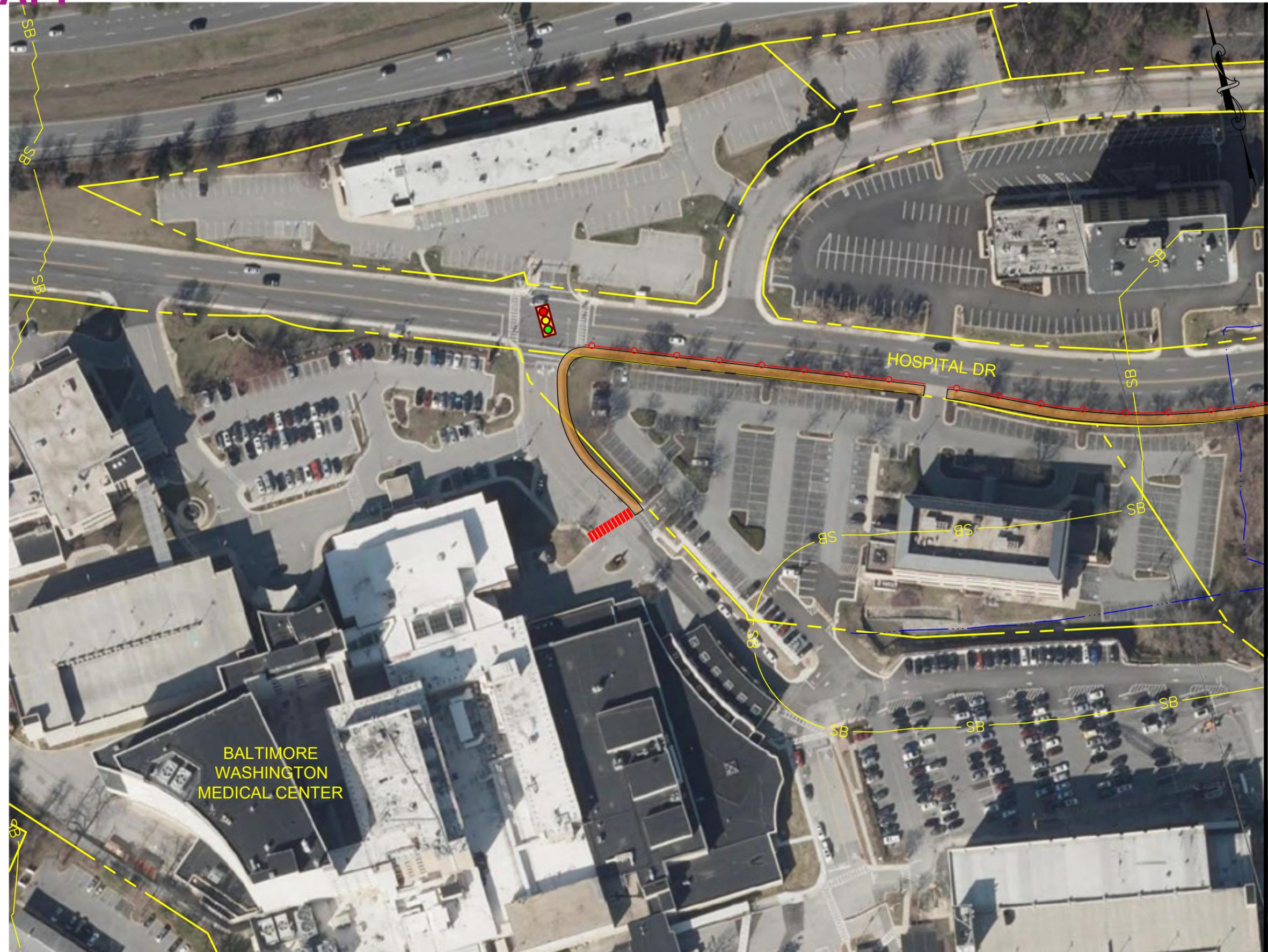


The spur will include a 10' wide asphalt trail. Installation of the trail will include the removal of the existing concrete sidewalks and replacement with an asphalt trail. In some areas, this widening may need to happen towards the road due to steep slopes on the other side of the existing sidewalk. Widening of the trail towards the road may also involve the removal and relocation of the curb and gutter closer to the travel lane. There appears to be sufficient roadway width to accommodate this adjustment. The trail where it crosses Marley Creek may need to run along the road as the sidewalk is already against the road and there is an existing guardrail and steep slopes immediately beyond the sidewalk. Alternatively, the trail could be pushed out onto the slope

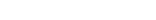
requiring additional grading and a retaining wall. A timber backed guardrail may also be required in some areas due to the proximity of the road to the trail. New crosswalks will be needed in some road crossings.

Stormwater management for this spur will likely be comprised of non rooftop disconnect credits as well as small rain gardens, microbioretention facilities, or infiltration devices. This alignment will have minimal utility impacts. It is likely that this alignment can be accomplished with less than 20,000 sf of forest clearing, in which case, the project would be exempt from forest conservation requirements. Stream buffer impacts are anticipated with this project. The estimated cost of this project is \$2,021,313.53.





LEGEND

- TRAIL 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 
- GUARDRAIL 

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. STREAM BUFFER IMPACTS
- B. STEEP SLOPES
- C. NEED EASEMENT / RIGHT-OF-WAY
- D. TREE CLEARING
- E. EXISTING RETAINING WALL
- F. UTILITY IMPACTS

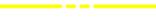
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LEGEND

- TRAIL 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 
- GUARDRAIL 

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. STREAM BUFFER IMPACTS
- B. STEEP SLOPES
- C. NEED EASEMENT / RIGHT-OF-WAY
- D. TREE CLEARING
- E. EXISTING RETAINING WALL
- F. UTILITY IMPACTS

SEE SHEET 3

SEE SHEET 1



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LEGEND

- TRAIL 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 
- GUARDRAIL 

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

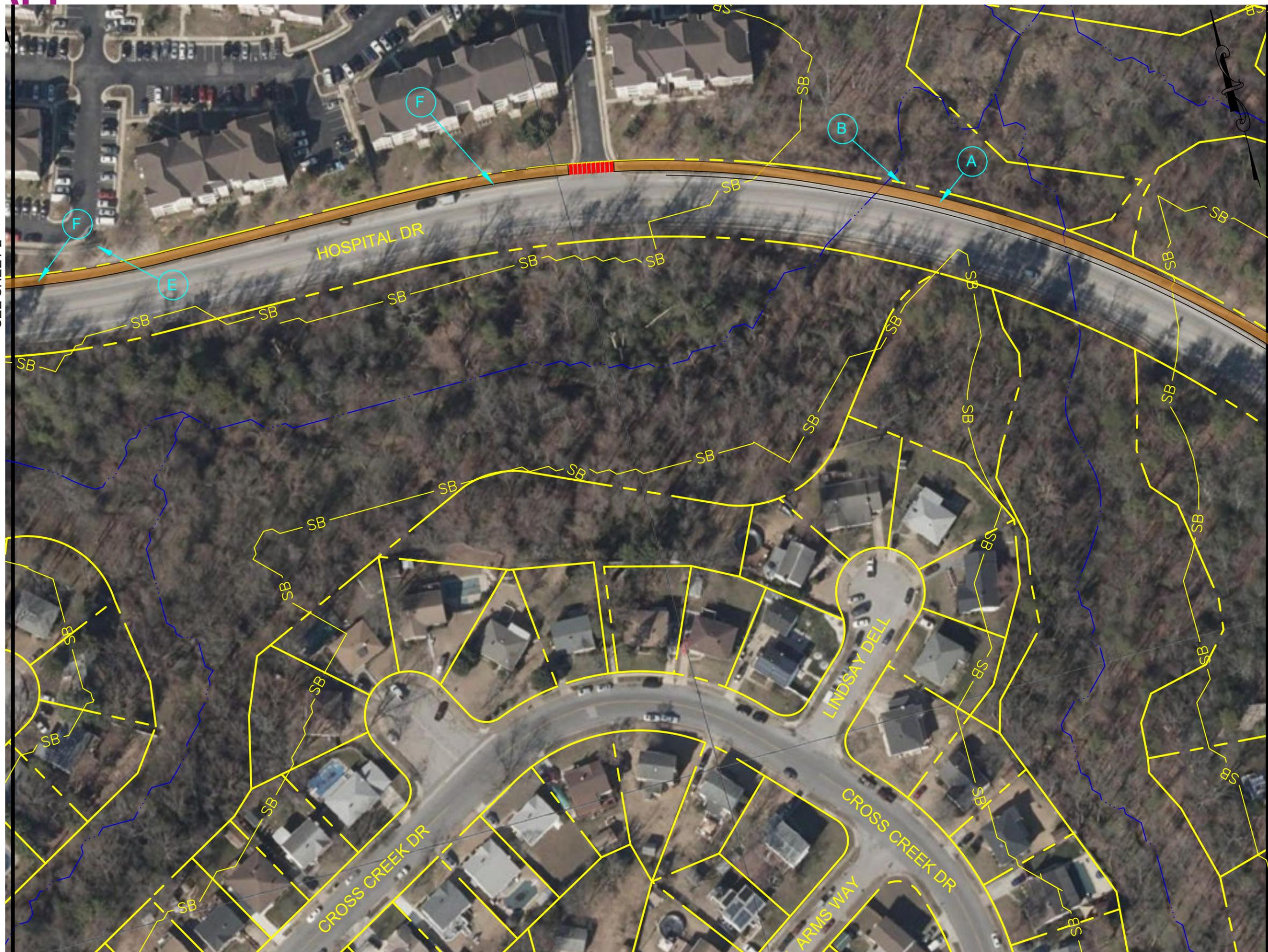
CONSTRAINTS

- A. STREAM BUFFER IMPACTS
- B. STEEP SLOPES
- C. NEED EASEMENT / RIGHT-OF-WAY
- D. TREE CLEARING
- E. EXISTING RETAINING WALL
- F. UTILITY IMPACTS

SEE SHEET 4



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LEGEND

- TRAIL 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 
- GUARDRAIL 

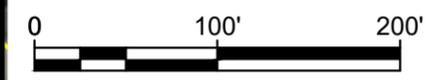
NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

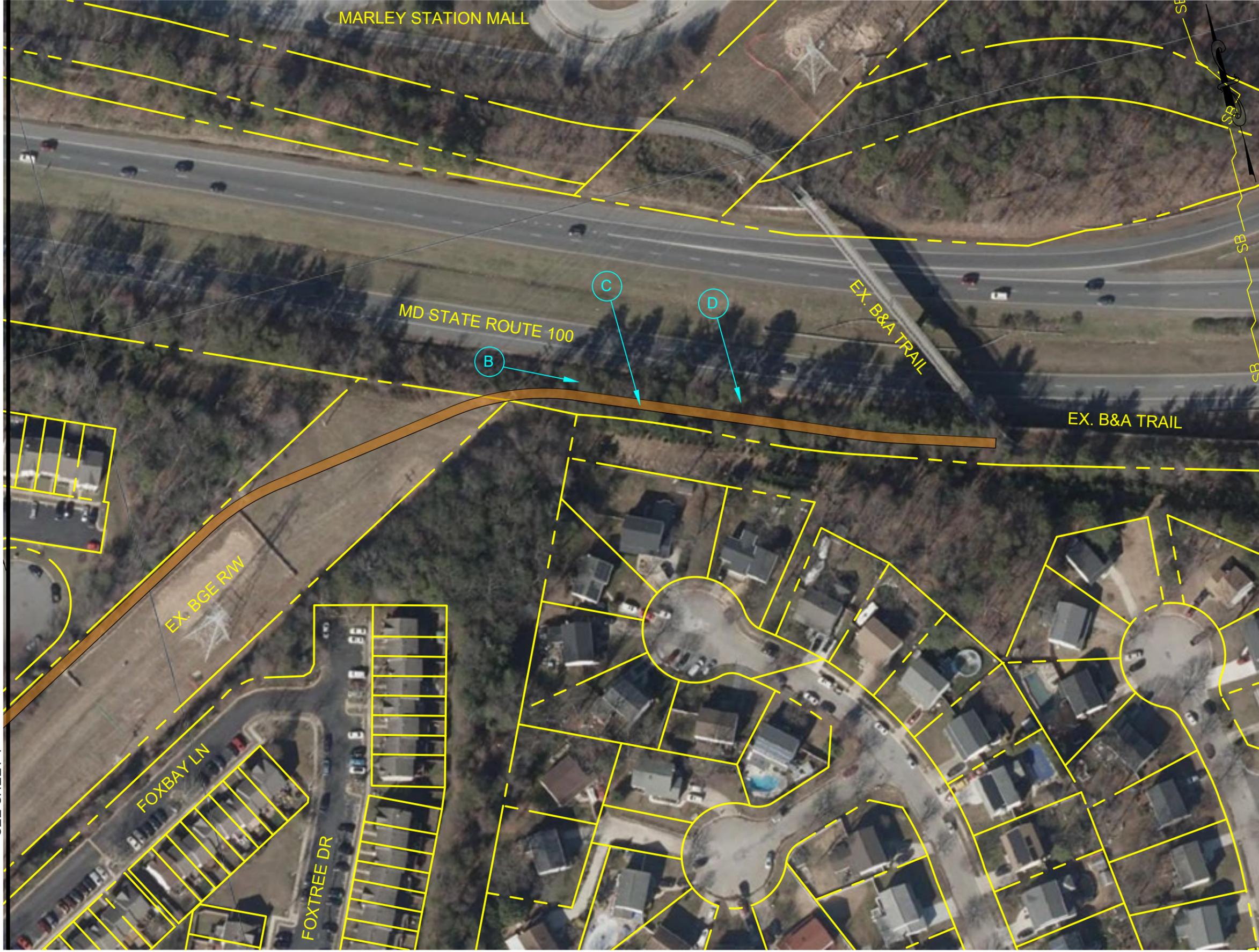
- A. STREAM BUFFER IMPACTS
- B. STEEP SLOPES
- C. NEED EASEMENT / RIGHT-OF-WAY
- D. TREE CLEARING
- E. EXISTING RETAINING WALL
- F. UTILITY IMPACTS

SEE SHEET 5



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LEGEND

- TRAIL 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 
- GUARDRAIL 

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. STREAM BUFFER IMPACTS
- B. STEEP SLOPES
- C. NEED EASEMENT / RIGHT-OF-WAY
- D. TREE CLEARING
- E. EXISTING RETAINING WALL
- F. UTILITY IMPACTS



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SEE SHEET 4

Baltimore and Annapolis Trail to Cromwell Park & Ride Light Rail Station Spur

This trail spur connects the Cromwell Park & Ride on Baltimore Annapolis Boulevard (MD 648) to the Baltimore and Annapolis (B&A) Trail in Glen Burnie. The spur is approximately 608 lf in length, and runs from the Cromwell Park & Ride, southeast along Baltimore Annapolis Boulevard crossing Dorsey Road and running southwest along Dorsey Road to connect to the existing B&A Trail. No alternate alignments were studied for this spur.

Opportunities

- 1. Existing sidewalk alignment to follow

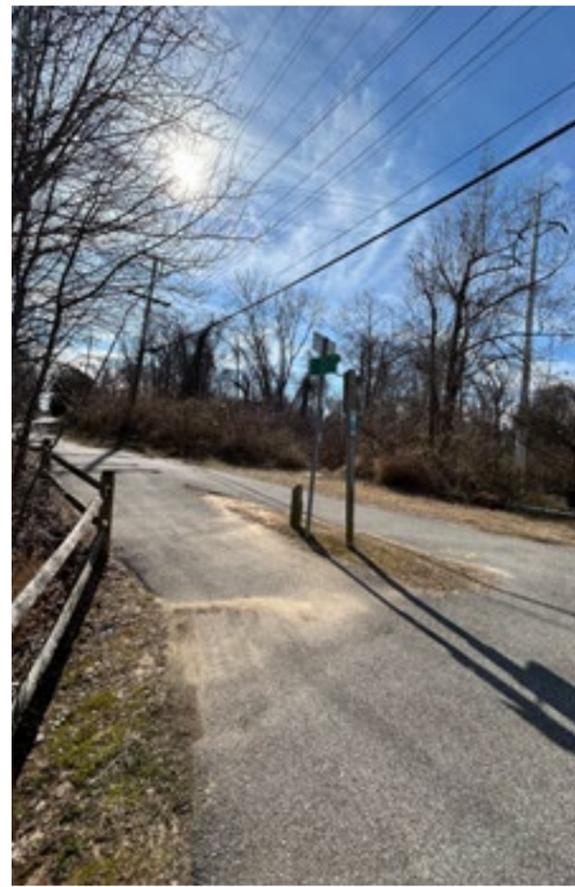
- 2. Occurs in open areas, no clearing and no forest conservation impacts
- 3. Existing crosswalks and traffic signal exist at Baltimore Annapolis Boulevard and Dorsey Road

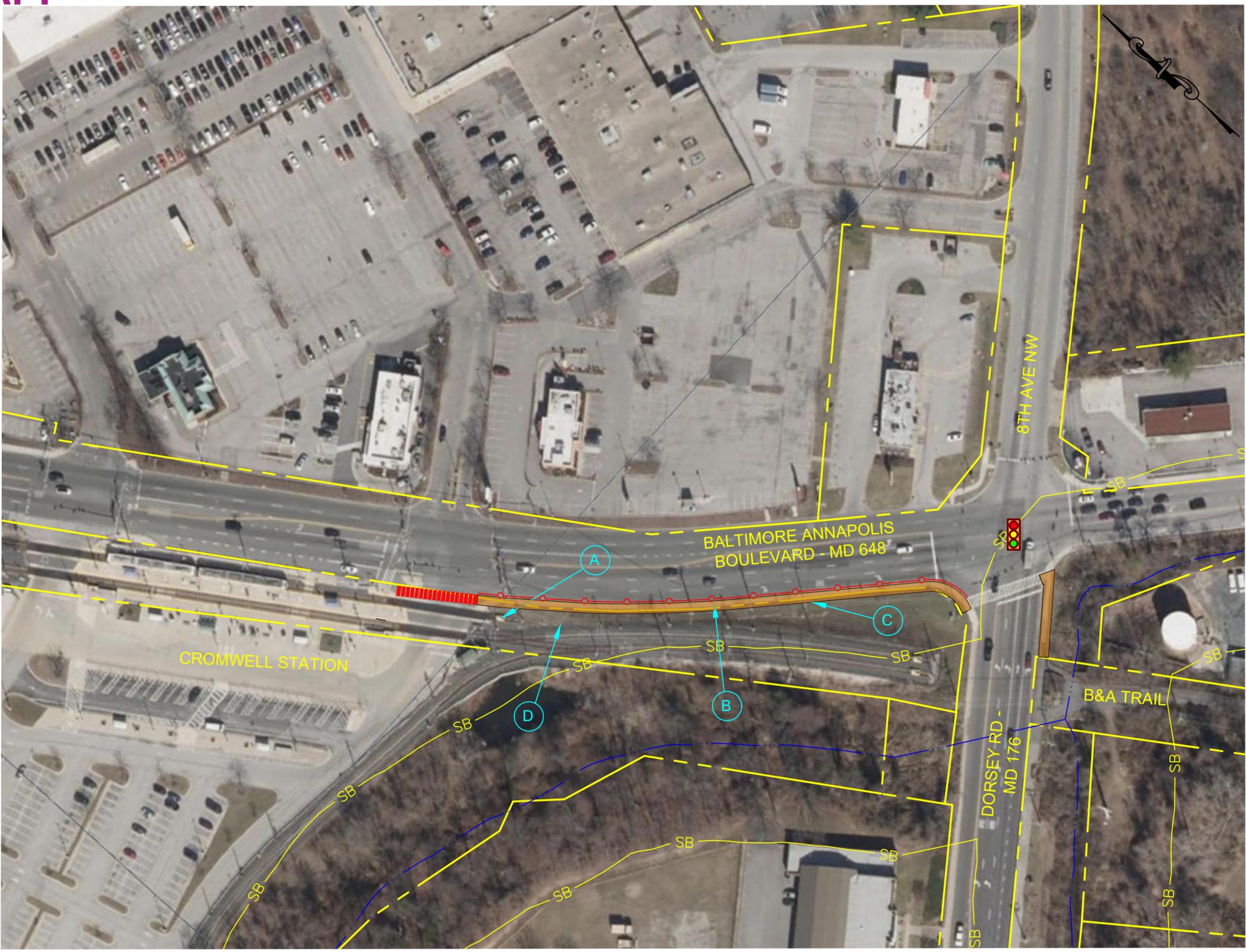
Constraints

- A. Existing traffic signal equipment would need to be relocated to widen the trail
- B. Existing utilities
- C. Slopes
- D. Easement needed from Mass Transit Administration

The spur includes a 10' wide asphalt trail. The existing sidewalks will be removed to allow the installation of the trail. Due to the proximity of the trail to the sidewalk, a timber backed guardrail would have to be installed along the trail to provide protection for the trail users. The trail construction would stop at the southern side of the Cromwell Station entrance onto Baltimore and Annapolis Blvd; from here trail users would utilize the existing pavement/sidewalks to access the station.

Stormwater management for this spur will likely be comprised of non rooftop disconnect credits as well as small rain gardens, microbio retention facilities, or infiltration devices. This alignment would have some utility impacts. It is likely that this alignment can be accomplished with less than 20,000 sf of forest clearing, in which case, the project would be exempt from forest conservation requirements. No environmental impacts are anticipated with this project, but there may be stream buffer impacts requiring a County modification approval. The estimated cost of this project is \$389,775.11.





LEGEND

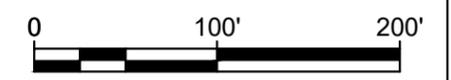
- TRAIL
- CROSSWALK
- TRAFFIC SIGNAL
- STREAM
- PROPERTY BOUNDARY
- GUARDRAIL

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. EXISTING TRAFFIC SIGNAL EQUIPMENT
- B. EASEMENT NEEDED
- A. EXISTING TRAFFIC SIGNAL EQUIPMENT WOULD NEED TO BE RELOCATED TO WIDEN THE TRAIL
- B. EXISTING UTILITIES
- C. SLOPES
- D. EASEMENT NEEDED FROM MASS TRANSIT ADMINISTRATION



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B&A TRAIL TO CROMWELL PARK & RIDE / LIGHT RAIL STATION

Baltimore and Annapolis Trail to Future Marley Creek Park Spur

This trail spur connects the future Marley Creek Park to the Baltimore and Annapolis (B&A) Trail in Glen Burnie. The spur is approximately 1,625 lf in length and runs from the future Marley Creek Park at Mall Road to the existing B&A Trail. The future park parcel is owned by Anne Arundel County. No alternate alignments were examined for this spur.

Opportunities

- 1. County-owned parcel
- 2. Limited utility impacts

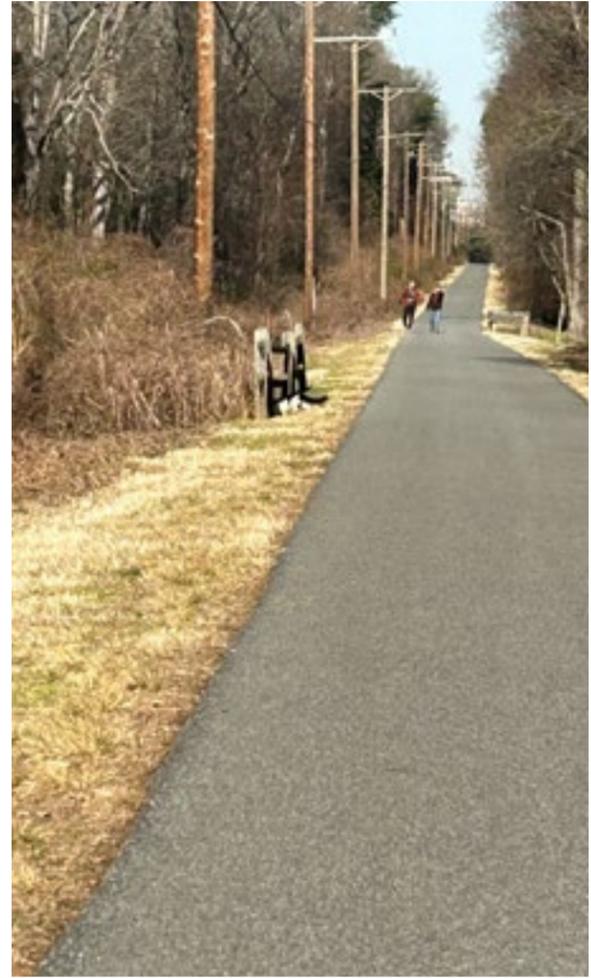
Constraints

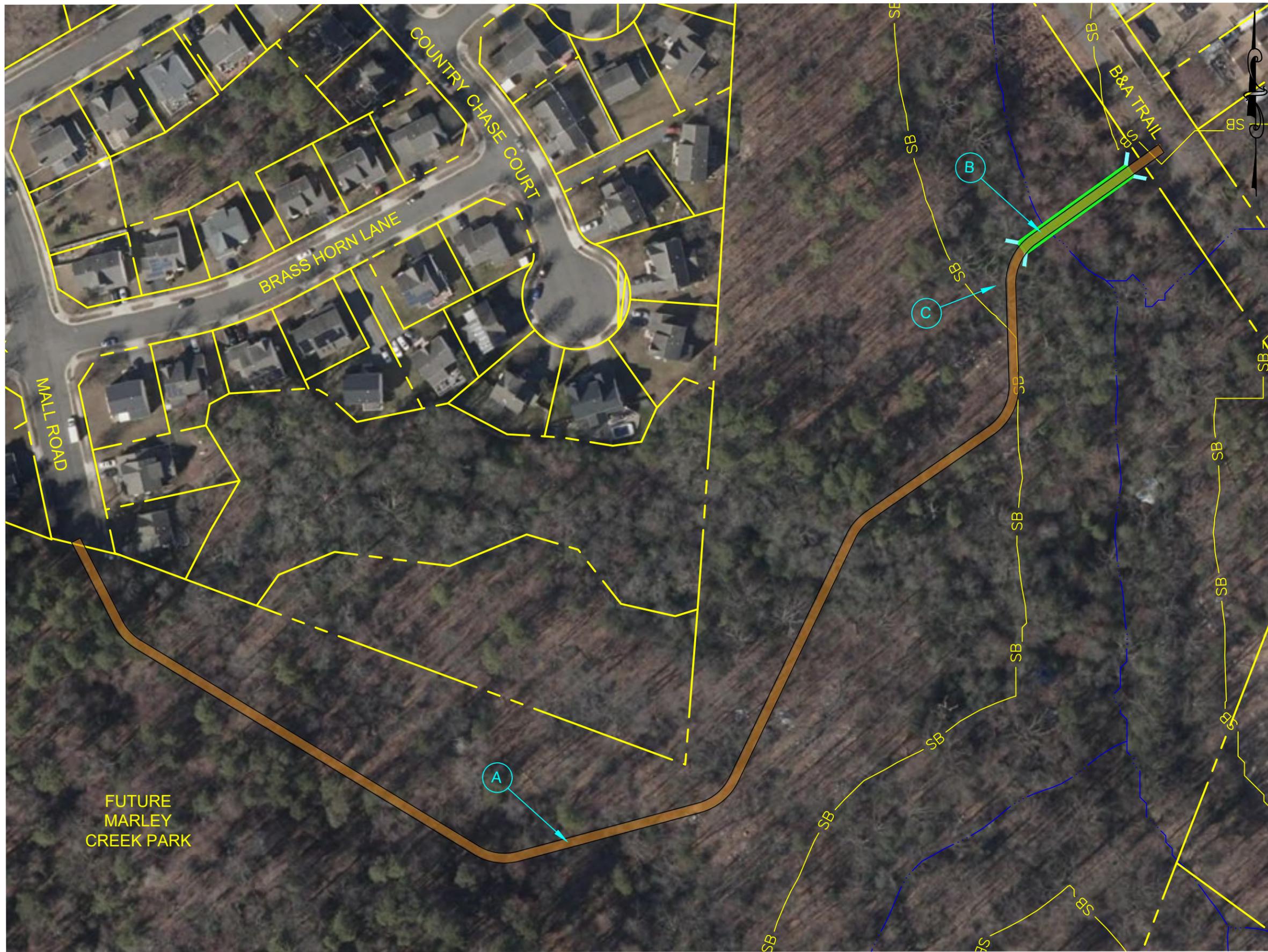
- A. Tree clearing
- B. Stream crossing
- C. Stream / wetland and buffer impacts

The spur includes a 10' wide asphalt trail. A stream crossing or boardwalk will be required and will involve wetland and/or stream and buffer impacts. As park design for this site progresses, it will need to accommodate the trail design. The concept layout that has been prepared has taken into account the park concept plans prepared by Pennoni for this site under the Unused Parks study.

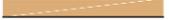
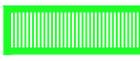
Stormwater management for this spur will likely be comprised of non rooftop disconnect credits as well as small rain

gardens, microbioretention facilities, or infiltration devices. This alignment should have no utility impacts. It is unlikely that this alignment can be accomplished with less than 20,000 sf of forest clearing; compliance with County forest conservation requirements will be required, but this should be able to be accomplished by forest retention easements on this parcel. Environmental impacts are anticipated with this project as wetlands are likely present on the park parcel. A stream is present on the parcel. The estimated cost for this project is \$1,147,079.23.





LEGEND

- TRAIL 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 
- RETAINING WALL 
- PROPOSED BOARDWALK OR PEDESTRIAN BRIDGE 

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. TREE CLEARING
- B. STREAM CROSSING
- C. STREAM AND STREAM BUFFER IMPACTS



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Baltimore and Annapolis Trail to Kinder Farm Park Spur

This trail spur connects Kinder Farm Park to the Baltimore and Annapolis (B&A) Trail running from the B&A trail headquarters west along the south side of Earleigh Heights Connector to Jumpers Hole Road in Severna Park. The spur is approximately 3,143 lf in length. The spur crosses Jumpers Hole Road, and Kinder Road, and then runs along Kinder Road to a point where it connects to the existing trails in Kinder Farm Park. Generally, the trail runs in existing County right-of-way.

The alternate spur is approximately 3,455 lf in length and runs from the existing trail at Kinder Farm Park to Jumpers Hole Road, then runs along the east side of Jumpers Hole Road north to an HOA open space. From there it would turn east through a forested area in the HOA open space, and then out to Earleigh Heights Connector. The trail

would run along the north side of Earleigh Heights Connector to the existing B&A Trail. This alternate would create a more natural feel for its users but is a less direct route to Kinder Farm Park.

Opportunities

- 1. Immediately adjacent to Baltimore Annapolis Trail Park
- 2. Available County R/W

Constraints

- A. Open section road, drainage ditch
- B. Existing drainage channel
- C. Need easement from HOA parcel
- D. Need easement from business
- E. Existing traffic signal equipment

The spur includes a 10' wide asphalt trail, with multiple crosswalks and associated ramps. From the B&A Trail parking lot to W. Earleigh Heights Road, the trail replaces an existing concrete sidewalk. This section of the trail should be able to be constructed within the existing County right-of-way. From W. Earleigh Heights Road to Pineview Avenue, the trail runs along the existing wide asphalt shoulder. The shoulder can be widened and a timber backed guardrail installed along the shoulder to protect trail users. Utilizing the existing shoulder will limit clearing, environmental impacts, and acquisition of additional right-of-way. Small retaining walls may also be needed to limit grading along a potential wetland area. From Pineview Avenue to Jumpers Hole Road, the existing concrete ditch will be replaced with a storm drain and curb and gutter will be installed to allow the trail to be installed where the existing shoulder is present. An alternate to constructing this entire trail at once would be to add additional signage and striping for bikes along the portions of Earleigh Heights Connector that are open section and have a

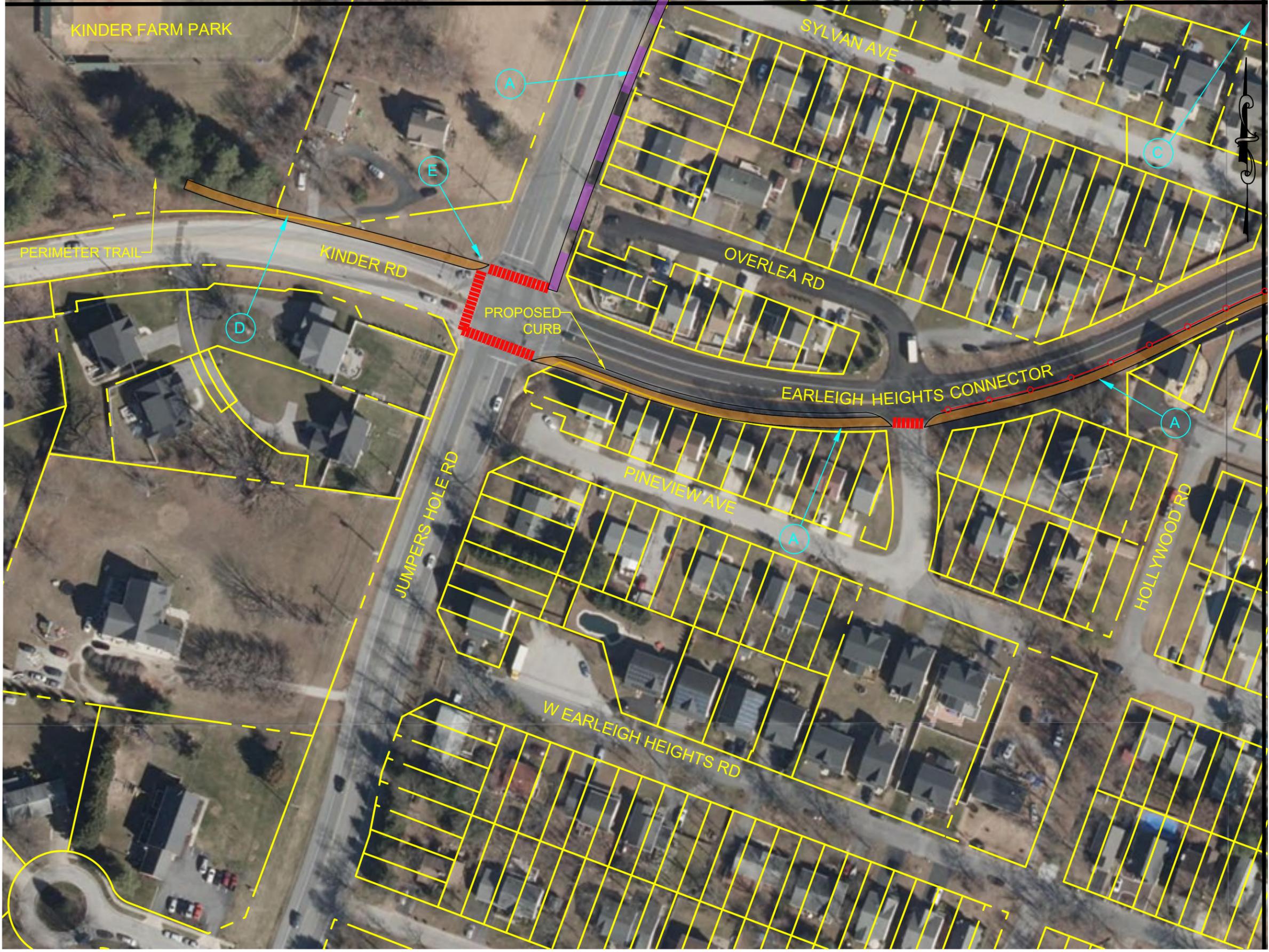
wide shoulder. Stormwater management for this spur will likely be comprised of non rooftop disconnect credits as well as small rain gardens, microbioretention facilities, or infiltration devices. As Earleigh Heights Connector is an open section road west of W. Earleigh Heights Road, there will be some drainage improvements required, primarily near the intersection of Jones Station Road where an existing concrete ditch would need to be replaced with a closed storm drain system in order to install the trail. This alignment will have some minimal utility impacts. It is very likely that this alignment (although not the alternate) can be accomplished with less than 20,000 sf of forest clearing, in which case, the project should be exempt from forest conservation requirements. The HOA parcel in the alternate scenario appears to be partially encumbered by a forest conservation easement. Some environmental impacts are anticipated with this project. The estimated cost of this spur is \$1,705,371.41.



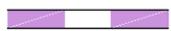
SEE SHEET 4

FOCUS TRAILS

FOCUS TRAILS



LEGEND

- TRAIL 
- TRAIL ALTERNATE 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 
- GUARDRAIL 
- RETAINING WALL 

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

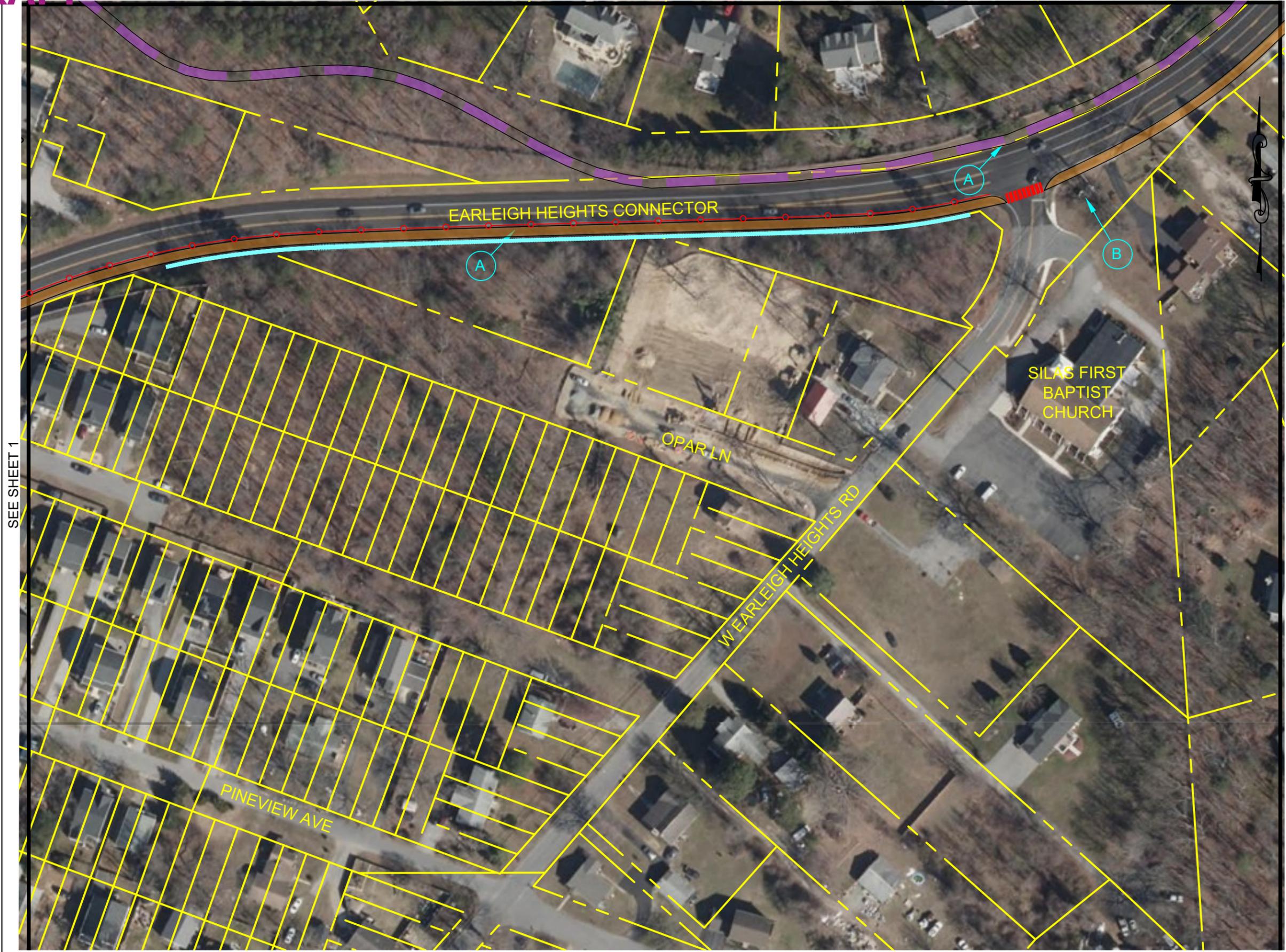
- A. OPEN SECTION ROAD, DRAINAGE DITCH
- B. EXISTING DRAINAGE CHANNEL
- C. NEED EASEMENT FROM HOA PARCEL
- D. NEED EASEMENT FROM PROPERTY OWNER
- E. EXISTING TRAFFIC SIGNAL EQUIPMENT

SEE SHEET 2



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B&A TRAIL TO KINDER FARM PARK



LEGEND

- TRAIL 
- TRAIL ALTERNATE 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 
- GUARDRAIL 
- RETAINING WALL 

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

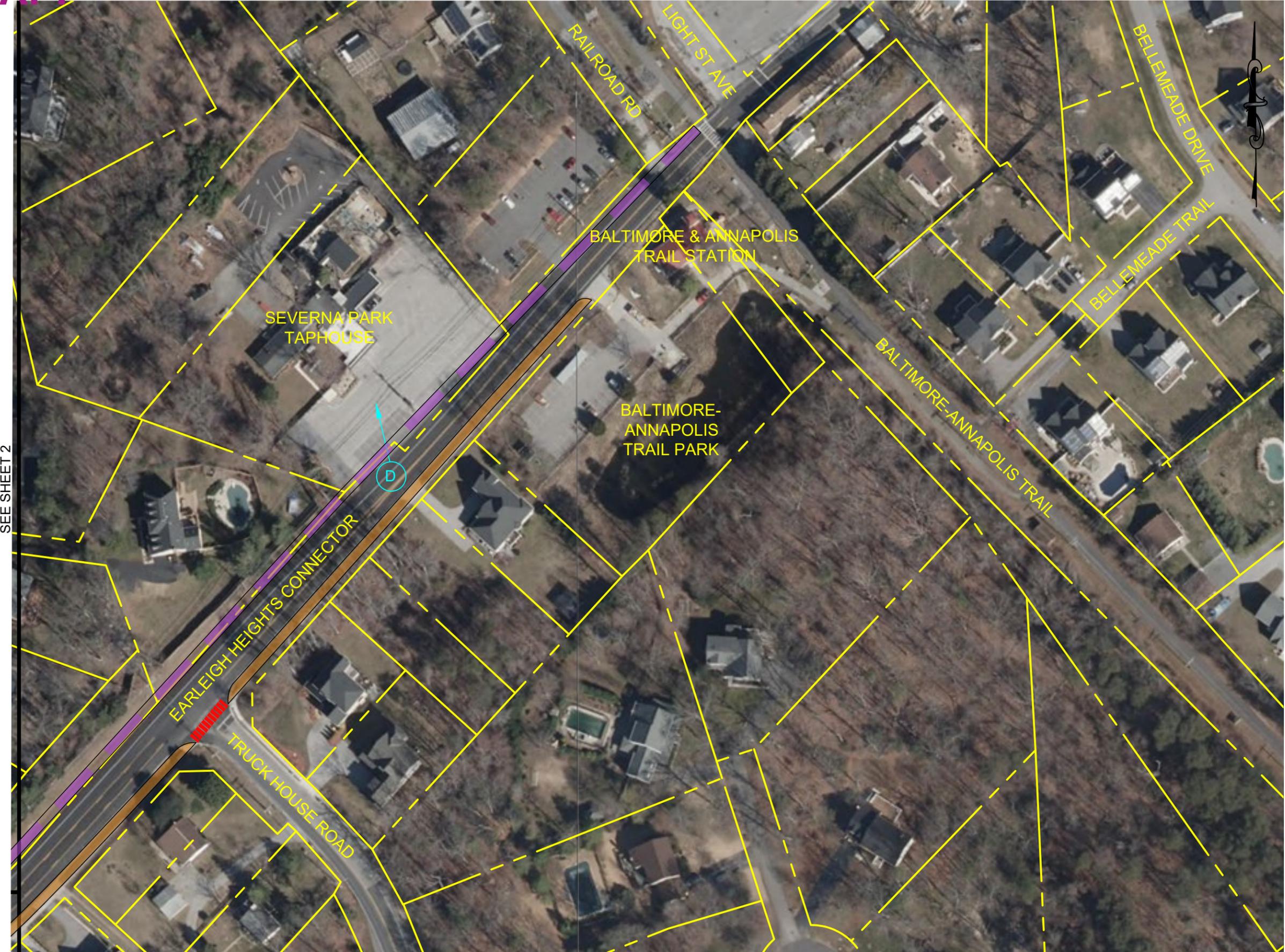
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- B. EXISTING DRAINAGE CHANNEL
- C. NEED EASEMENT FROM HOA PARCEL
- D. NEED EASEMENT FROM PROPERTY OWNER
- E. EXISTING TRAFFIC SIGNAL EQUIPMENT



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SEE SHEET 3



LEGEND

- TRAIL 
- TRAIL ALTERNATE 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 
- GUARDRAIL 
- RETAINING WALL 

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

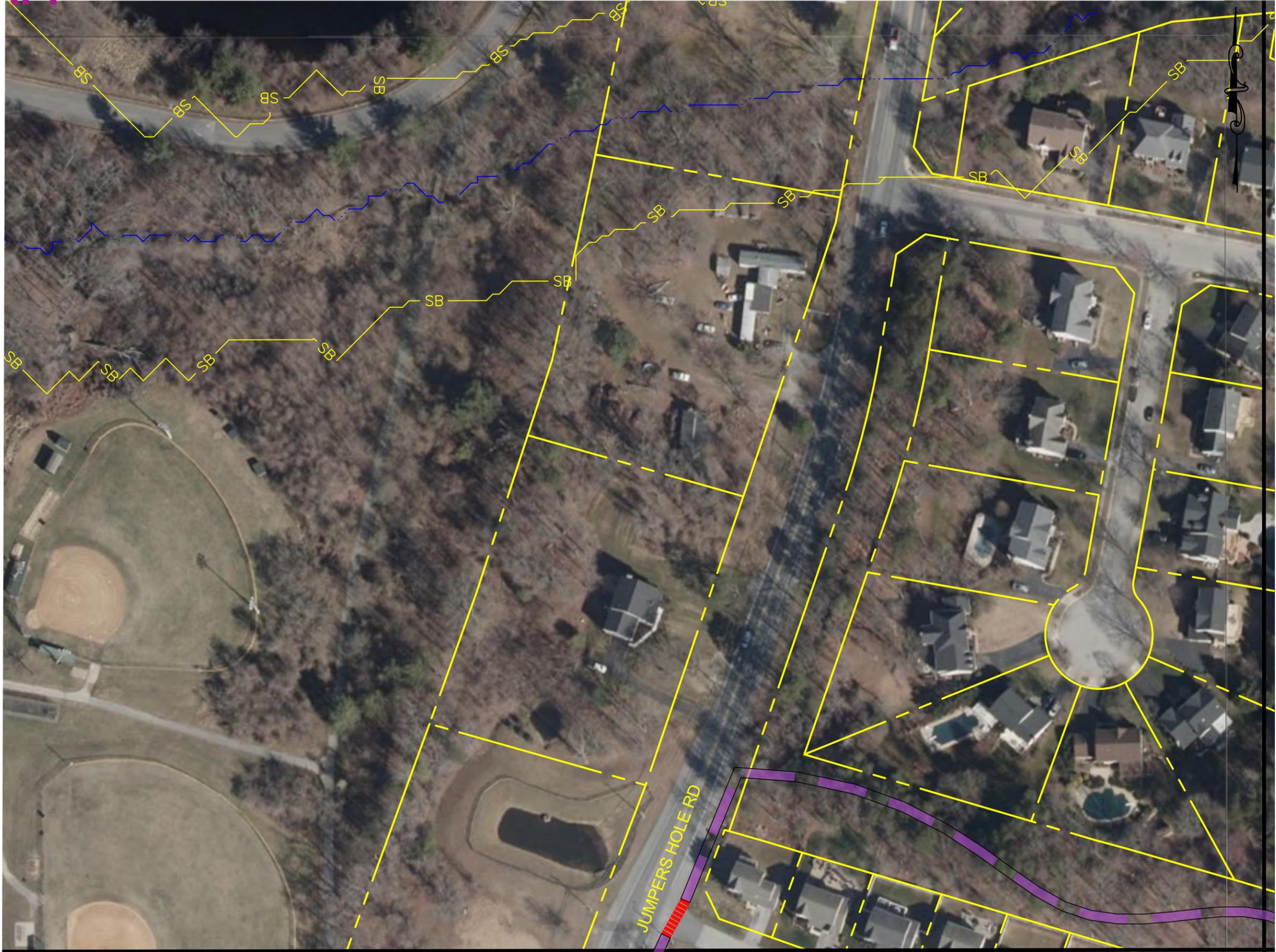
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- B. EXISTING DRAINAGE CHANNEL
- C. NEED EASEMENT FROM HOA PARCEL
- D. NEED EASEMENT FROM PROPERTY OWNER
- E. EXISTING TRAFFIC SIGNAL EQUIPMENT



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B&A TRAIL TO KINDER FARM PARK



LEGEND

- TRAIL
- TRAIL ALTERNATE
- CROSSWALK
- TRAFFIC SIGNAL
- STREAM
- PROPERTY BOUNDARY
- GUARDRAIL
- RETAINING WALL

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. OPEN SECTION ROAD, DRAINAGE DITCH
- B. EXISTING DRAINAGE CHANNEL
- C. NEED EASEMENT FROM HOA PARCEL
- D. NEED EASEMENT FROM PROPERTY OWNER
- E. EXISTING TRAFFIC SIGNAL EQUIPMENT

SEE SHEET 2



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SEE SHEET 1

B&A TRAIL TO KINDER FARM PARK

Baltimore and Annapolis Trail to Lake Waterford Park Spur

This trail spur connects Lake Waterford Park to the Baltimore and Annapolis (B&A) Trail in Pasadena. The spur is approximately 5,468 lf in length, and runs from the existing Lake Waterford Park, west down the north side of Pasadena Road, and then across Ritchie Highway (MD Route 2), where it would continue for a short distance along East West Highway, and then connect to the existing Baltimore and Annapolis Trail on the north side of East West Highway.

An alternate route was examined on the south side of Pasadena Road, where the trail would replace a recently installed concrete sidewalk. However, in addition to right-of-way acquisition, the alignment would have had significant utility impacts along the entire length. Utility impacts can be minimized on the north side of Pasadena Road. The crossing of the intersection of

Ritchie Highway (MD Route 2) was also studied closely. The selected crossing point appears to be the least complicated as it avoids significant drainage structures and streams located at the southwest corner Pasadena Road and Ritchie Highway.

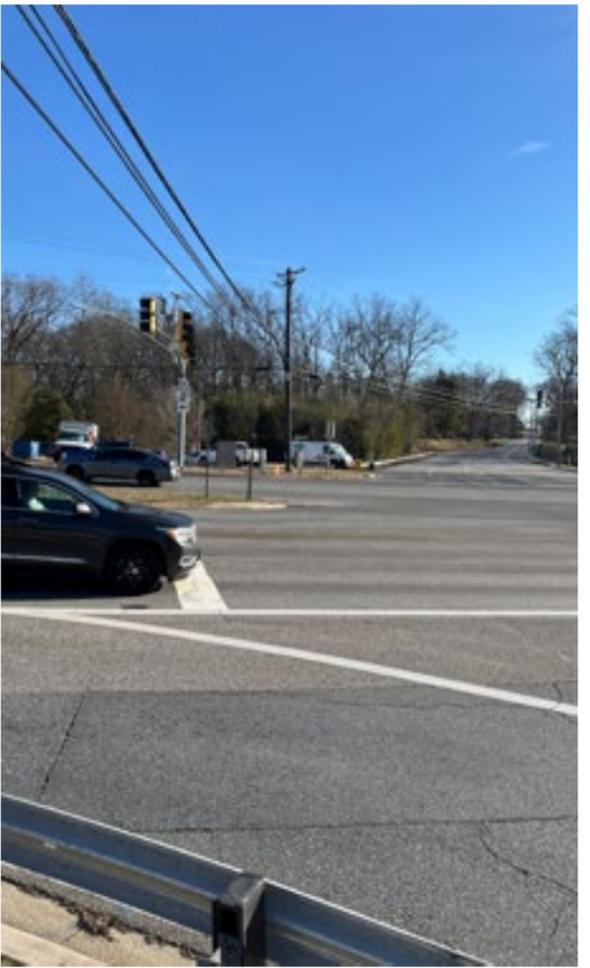
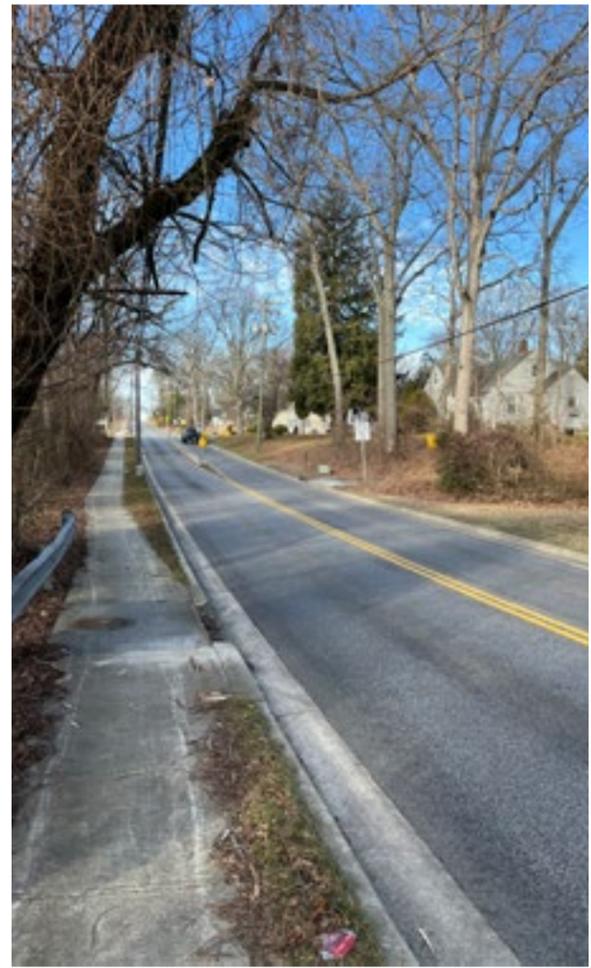
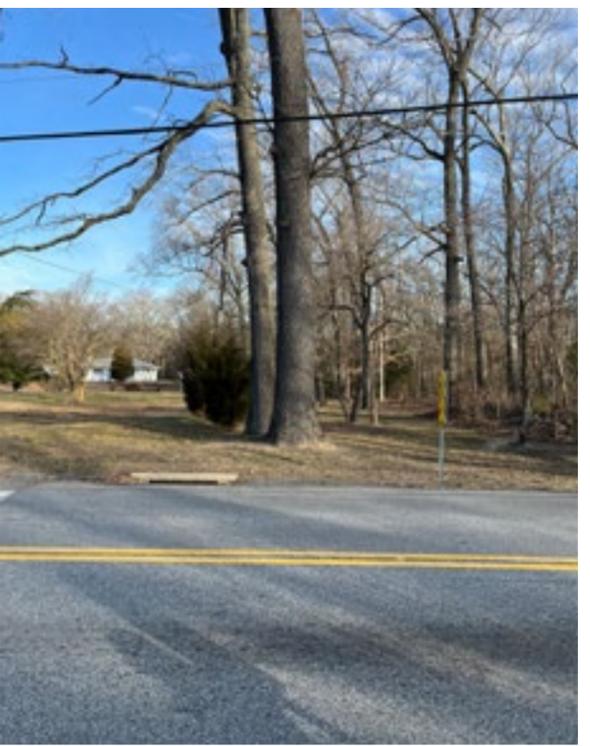
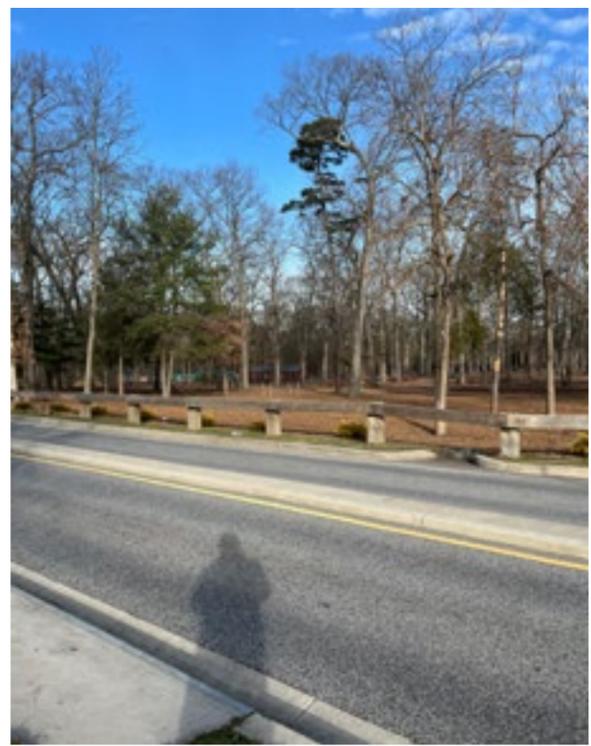
Constraints

- A. R/W acquisition from property owners will be required
- B. Steep slopes
- C. Potential stream and stream buffer impacts
- D. Potential utility impacts
- E. Existing drainage impacts
- F. Crossing of high volume roadway – MD Route 2

The spur includes a 10' wide asphalt trail, with multiple crosswalks and associated concrete ramps. The trail will require the acquisition of right-of-way from multiple property owners. The trail will be installed a minimum of 8' from the existing edge of pavement since the northern side of this road is an open section roadway. Some significant grading and retaining walls will be required at several locations along this route due to slopes along the roadway.

Stormwater management for this spur will likely be comprised of non rooftop disconnect

credits as well as small rain gardens, microbio retention facilities, or infiltration devices. This alignment will have minimal utility impacts, but some significant utility impacts are anticipated at the intersection of Ritchie Highway and East West Highway. It is very likely that this alignment can be accomplished with less than 20,000 sf of forest clearing, in which case, the project will be exempt from forest conservation requirements. Stream and stream buffer impacts are anticipated with this project at several locations. The total estimated cost for this spur is \$2,258,161.03





LEGEND

- TRAIL 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 
- RETAINING WALL 

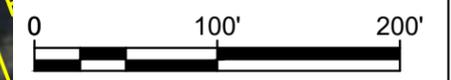
NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. R/W ACQUISITION FROM PROPERTY OWNERS WILL BE REQUIRED
- B. STEEP SLOPES
- C. POTENTIAL STREAM AND STREAM BUFFER IMPACTS
- D. POTENTIAL UTILITY IMPACTS
- E. EXISTING DRAINAGE IMPACTS
- F. CROSSING OF HIGH VOLUME ROADWAY - MD ROUTE 2

SEE SHEET 2



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LEGEND

- TRAIL 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 
- RETAINING WALL 

NOTES

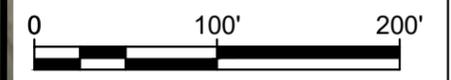
1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. R/W ACQUISITION FROM PROPERTY OWNERS WILL BE REQUIRED
- B. STEEP SLOPES
- C. POTENTIAL STREAM AND STREAM BUFFER IMPACTS
- D. POTENTIAL UTILITY IMPACTS
- E. EXISTING DRAINAGE IMPACTS
- F. CROSSING OF HIGH VOLUME ROADWAY - MD ROUTE 2

SEE SHEET 1

SEE SHEET 3

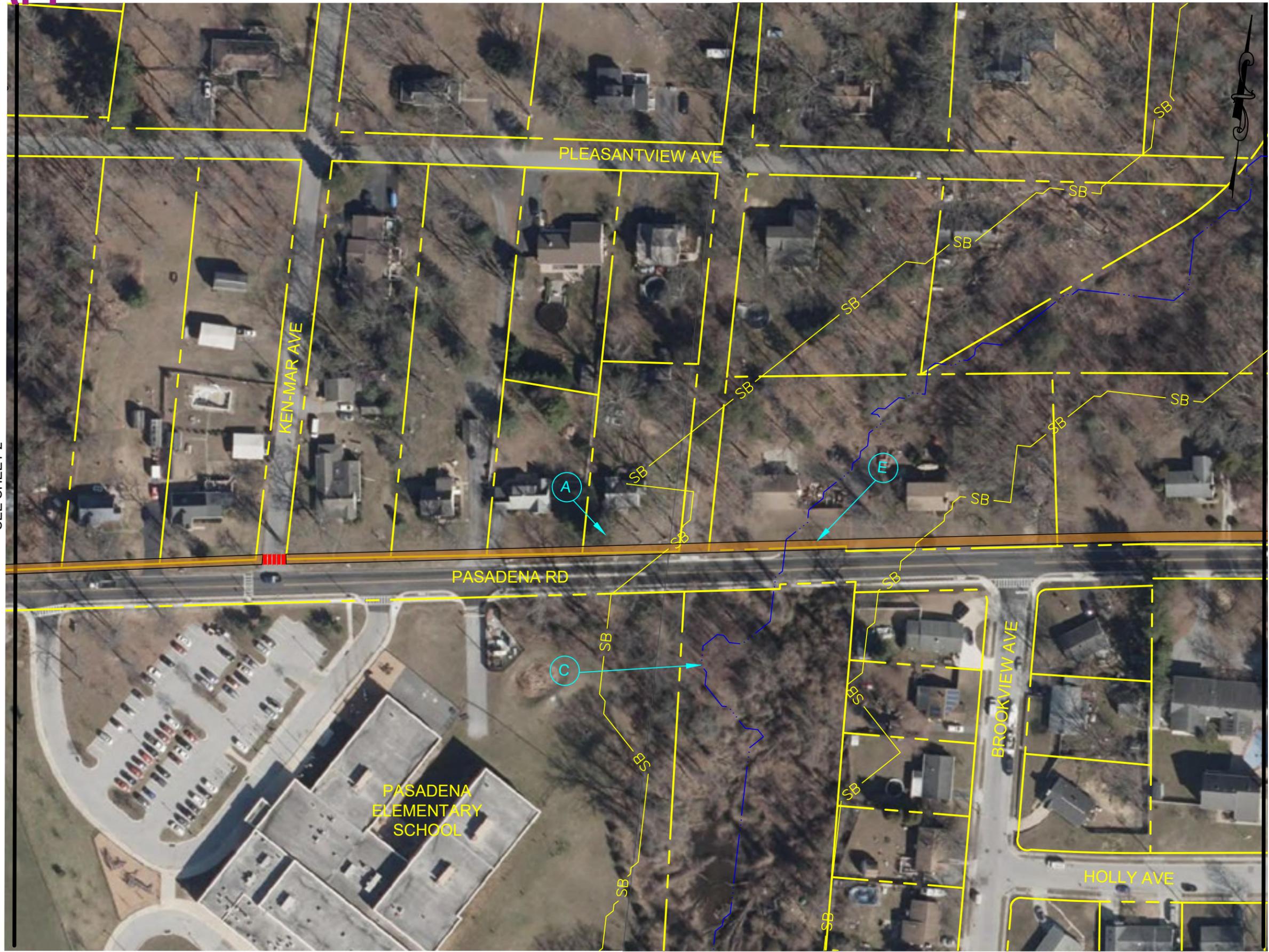


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B&A TRAIL TO LAKE WATERFORD PARK

SEE SHEET 2

SEE SHEET 4



LEGEND

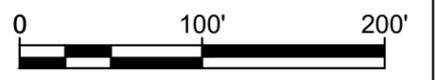
- TRAIL 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 
- RETAINING WALL 

NOTES

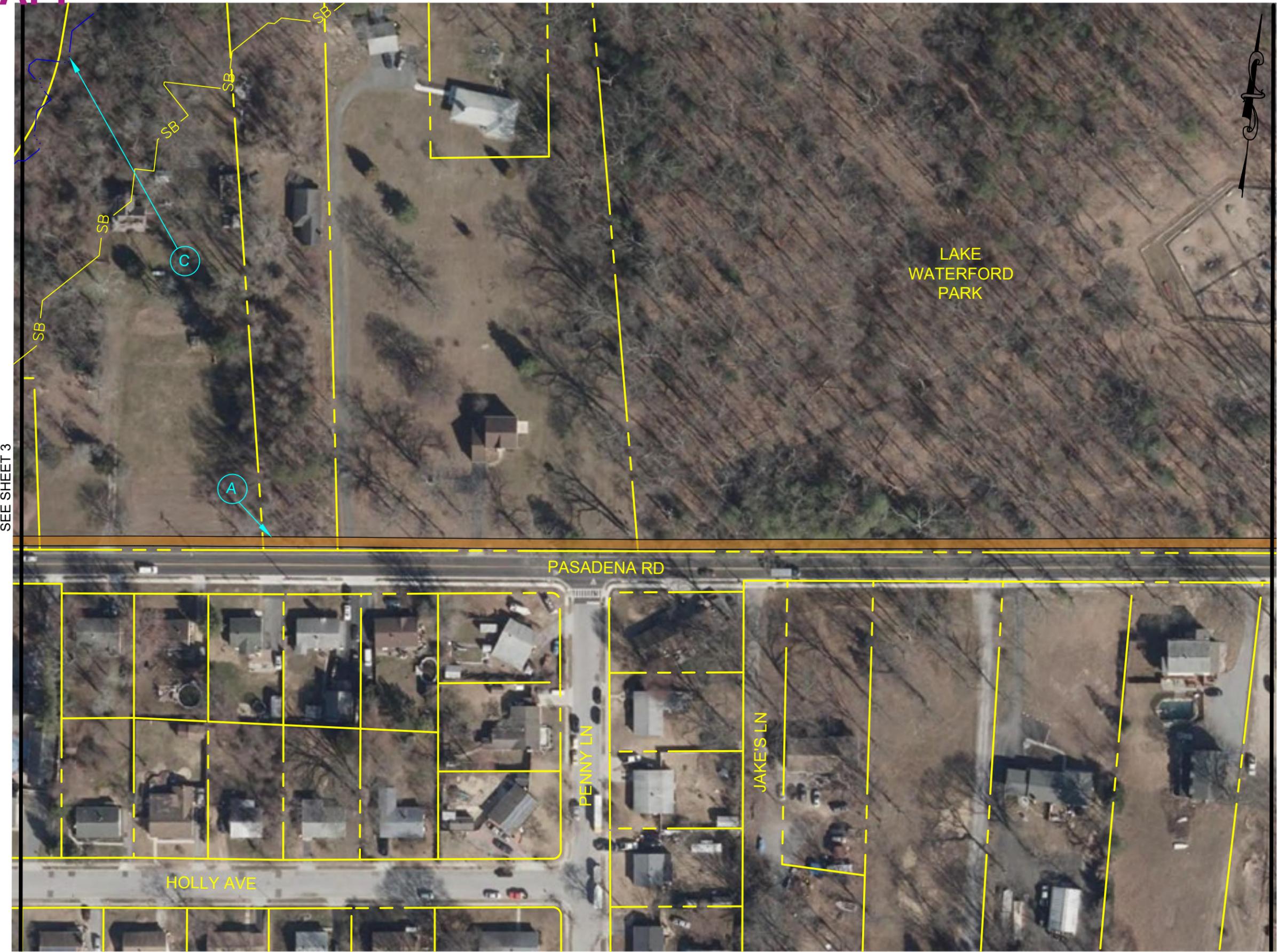
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CONSTRAINTS

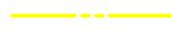
- A. R/W ACQUISITION FROM PROPERTY OWNERS WILL BE REQUIRED
- B. STEEP SLOPES
- C. POTENTIAL STREAM AND STREAM BUFFER IMPACTS
- D. POTENTIAL UTILITY IMPACTS
- E. EXISTING DRAINAGE IMPACTS
- F. CROSSING OF HIGH VOLUME ROADWAY - MD ROUTE 2



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LEGEND

- TRAIL 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 
- RETAINING WALL 

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. R/W ACQUISITION FROM PROPERTY OWNERS WILL BE REQUIRED
- B. STEEP SLOPES
- C. POTENTIAL STREAM AND STREAM BUFFER IMPACTS
- D. POTENTIAL UTILITY IMPACTS
- E. EXISTING DRAINAGE IMPACTS
- F. CROSSING OF HIGH VOLUME ROADWAY - MD ROUTE 2

SEE SHEET 3

SEE SHEET 5



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SEE SHEET 4

LEGEND

- TRAIL 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 
- RETAINING WALL 

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. RW ACQUISITION FROM PROPERTY OWNERS WILL BE REQUIRED
- B. STEEP SLOPES
- C. POTENTIAL STREAM AND STREAM BUFFER IMPACTS
- D. POTENTIAL UTILITY IMPACTS
- E. EXISTING DRAINAGE IMPACTS
- F. CROSSING OF HIGH VOLUME ROADWAY - MD ROUTE 2



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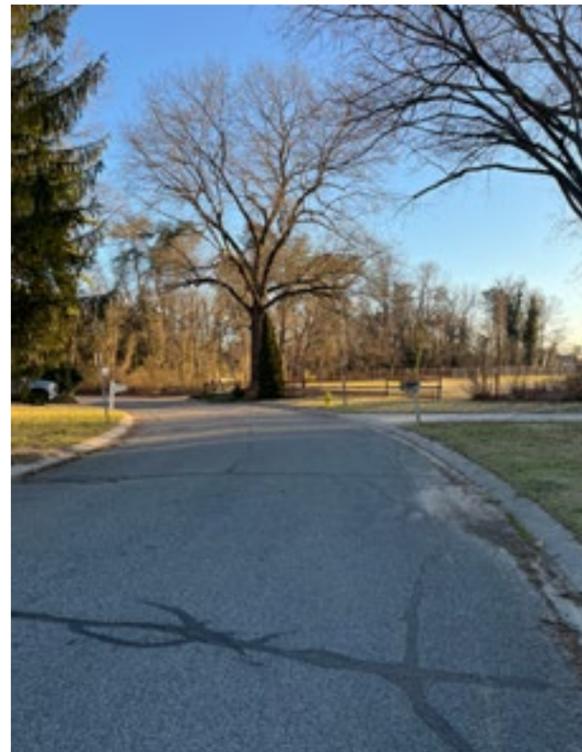
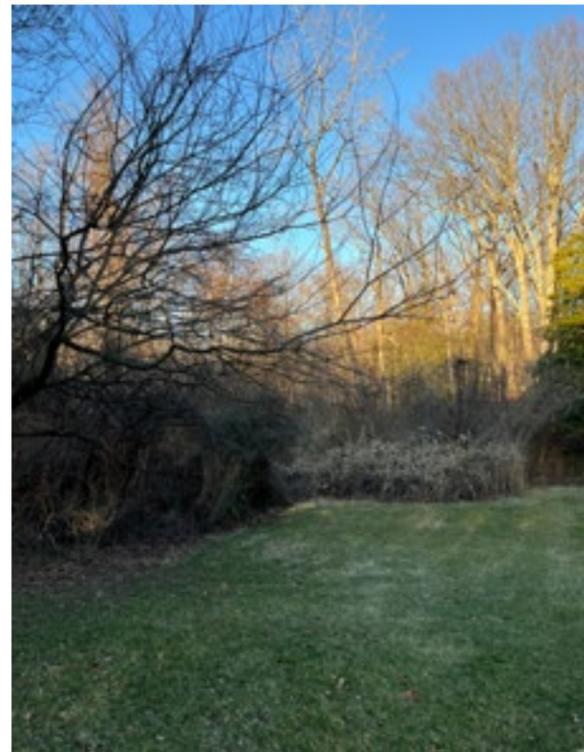
B&A TRAIL TO LAKE WATERFORD PARK

Baltimore and Annapolis Trail to Severna Park High School Spur

This trail spur connects Severna Park High School to the Baltimore and Annapolis (B&A) Trail in Severna Park. The spur is approximately 1,140 lf in length, and runs from Severna Park High School, through Cool Pond Park, down Thomas Way, and over to the existing B&A Trail. Cool Pond Park is a County property, but a portion of this property appears to be used by Severna Park High School for the high school softball and baseball fields. It is not clear if there is an existing easement for this use and if permission from the Board of Education would be needed to construct a trail around the existing ball fields. The area where the trail is proposed is generally level, other than the portions between Thomas Way and the B&A Trail. Portions of the trail alignment are located within existing stream buffers. The trail runs along existing Thomas Way for 400 lf; no improvements other than signage

would be made in this area. Due to the low volume of traffic on this dead end street, having the trail alignment share the roadway is an acceptable solution. The alternative would be to acquire right-of-way from the properties on either side of the street to construct a 10' trail.

An alternative to this trail was examined that would run from the B&A trail along either the north or south side of Robinson Road. It was determined that this alignment would be too difficult to design and construct due to the right-of-way that would be needed and the utilities that would have to be relocated. Right-of-way would be needed from 7-16 property owners, depending on the side of the road that was selected, and utilities would have to be relocated on either side of the road, no matter which side of the road was selected.



Opportunities

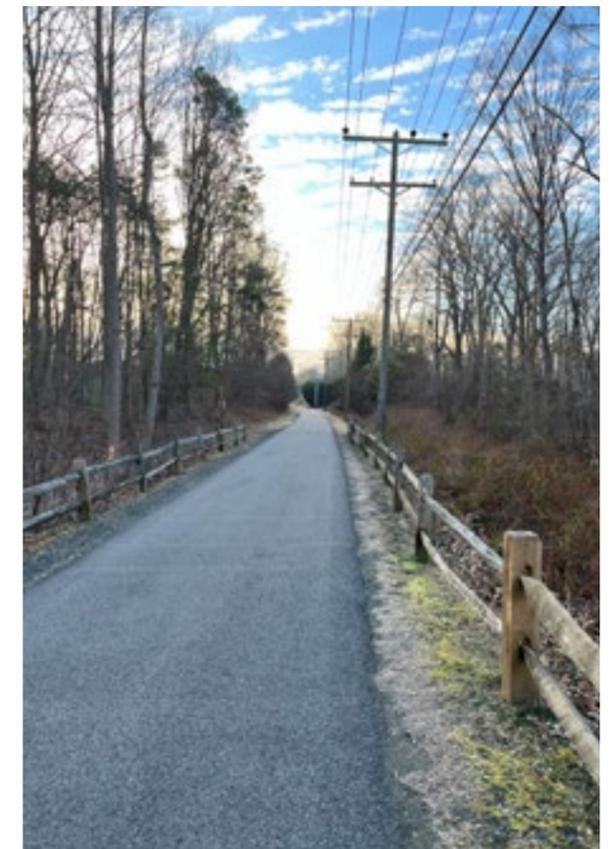
1. Immediately adjacent to existing trail
2. Occurs largely in open areas, limited clearing and limited forest conservation impacts
3. Limited utility impacts

Constraints

- A. Potential easement needed from Board of Education
- B. On road trail
- C. Impacts to existing stream buffer
- D. Directional signage needed
- E. Relocation of existing ballfield components needed

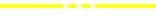
The spur includes a 10' wide asphalt trail where the trail crosses through the school property. The spur then follows Thomas Way before transitioning back to a 10' wide trail where it connects back to the existing B&A trail. The trail will be lined with a split rail fence to separate it from the existing ballfields and the adjacent houses.

Stormwater management for this spur will likely be comprised of non rooftop disconnect credits as well as small rain gardens, microbioretention facilities, or infiltration devices. This alignment will have minimal utility impacts. It is very likely that this alignment can be accomplished with less than 20,000 sf of forest clearing, in which case, the project should be exempt from forest conservation requirements. Stream buffer impacts are anticipated with this project, but it does not appear that any wetland impacts would occur. The estimated cost of this spur is \$513,358.56.





LEGEND

- TRAIL 
- ON ROAD TRAIL 
- STREAM 
- PROPERTY BOUNDARY 

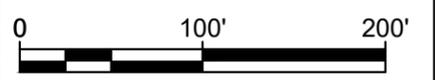
NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. POTENTIAL EASEMENT NEEDED FROM BOARD OF EDUCATION
- B. ON ROAD TRAIL
- C. IMPACTS TO EXISTING STEAM BUFFER
- D. DIRECTIONAL SIGNAGE NEEDED
- E. RELOCATION OF EXISTING BALLFIELD COMPONENTS NEEDED

SEE SHEET 1



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B&A TRAIL TO SEVERNA PARK HIGH SCHOOL

Baltimore and Annapolis Trail to Severna Park Middle School Spur (via Kinder Farm Spur)

This trail spur connects Severna Park Middle School to the Baltimore and Annapolis (B&A) Trail via the Kinder Farm spur (see separate spur included in this study) in Severna Park. The spur is approximately 2,275 lf in length, and runs from Severna Park Middle School, along the west side of Jumpers Hole Road, to Kinder Farm Park. The Kinder Farm Park spur provides the connection to the B&A Trail, likely along Earleigh Heights Road. The area where the trail will run is in an open area on the west side of Jumpers Hole Road that is existing County right-of-way. Jumpers Hole Road falls into a valley in the middle of this alignment, but the steeper slopes appear to not be much over 5 percent. No alternate alignments were examined for this spur.

Opportunities

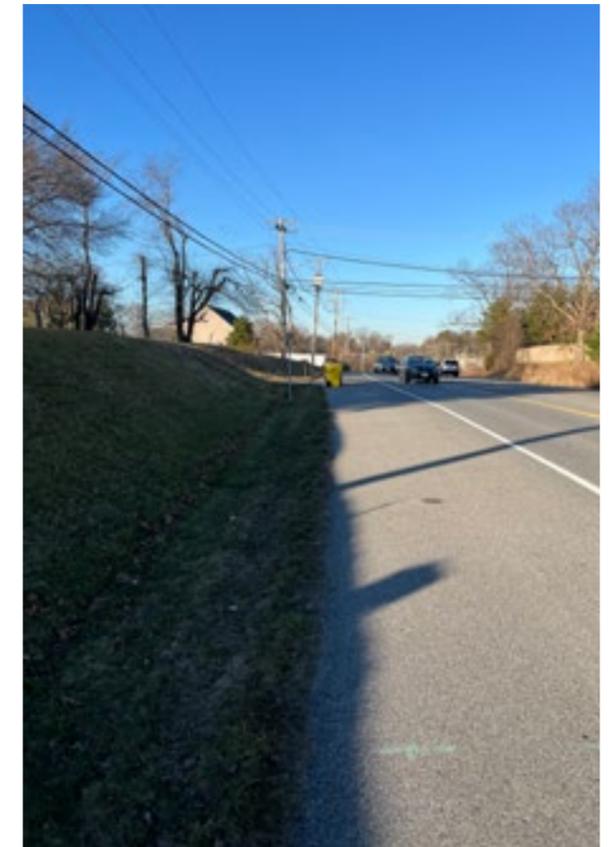
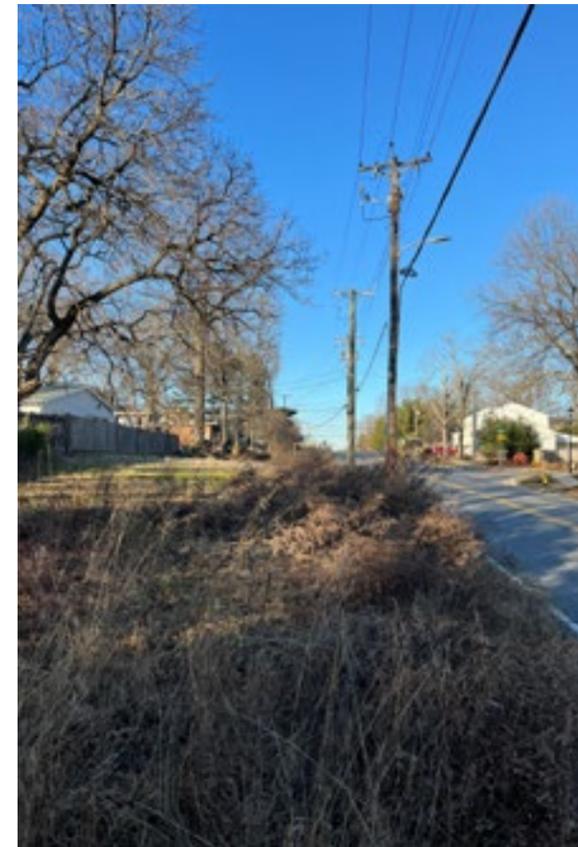
1. Occurs almost exclusively within County R/W
2. Occurs largely in open areas, limited clearing and limited forest conservation impacts.
3. Limited utility impacts

Constraints

- A. Drainage improvements needed
- B. Steep bank and potential grading impacts
- C. Easement/right-of-way needed
- D. Potential utility impacts
- E. Driveway crossing

The spur includes a 10' wide asphalt trail running in the open area on the west side of Jumpers Hole Road. Connections to the existing neighborhoods will be provided and a Rapid Rectangular Flashing Beacon (RRFB) pedestrian signal would be provided at Yorkshire Drive to allow trail users to cross Jumpers Hole Road. Pedestrian signals will also be provided at the intersection of Jumpers Hole Road and Earleigh Heights Road/Kinder Road. Some significant grading will be required at the northern end of this trail to accommodate a steep bank along the road. Grading can be reduced with the addition of a timber backed guardrail for approximately 375 lf that allows the existing shoulder to be utilized for a portion of the trail.

Stormwater management for this spur will likely be comprised of non rooftop disconnect credits as well as small rain gardens, microbioretention facilities, or infiltration devices. This alignment has minimal utility impacts as there is sufficient room to accommodate the trail and the existing overhead utilities. It is very likely that this alignment can be accomplished with less than 20,000 sf of forest clearing, in which case, the project should be exempt from forest conservation requirements. It does not appear that any environmental impacts would occur with this spur. The estimated cost for this spur is \$1,096,417.30.





LEGEND

- TRAIL 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. DRAINAGE IMPROVEMENTS NEEDED
- B. STEEP BANK AND POTENTIAL GRADING IMPACTS
- C. EASEMENT/RIGHT-OF-WAY NEEDED
- D. POTENTIAL UTILITY IMPACTS
- E. DRIVEWAY CROSSING

SEE SHEET 2



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B&A TRAIL TO SEVERNA PARK MIDDLE SCHOOL VIA KINDER FARM SPUR



LEGEND

- TRAIL 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. DRAINAGE IMPROVEMENTS NEEDED
- B. STEEP BANK AND POTENTIAL GRADING IMPACTS
- C. EASEMENT/RIGHT-OF-WAY NEEDED
- D. POTENTIAL UTILITY IMPACTS
- E. DRIVEWAY CROSSING

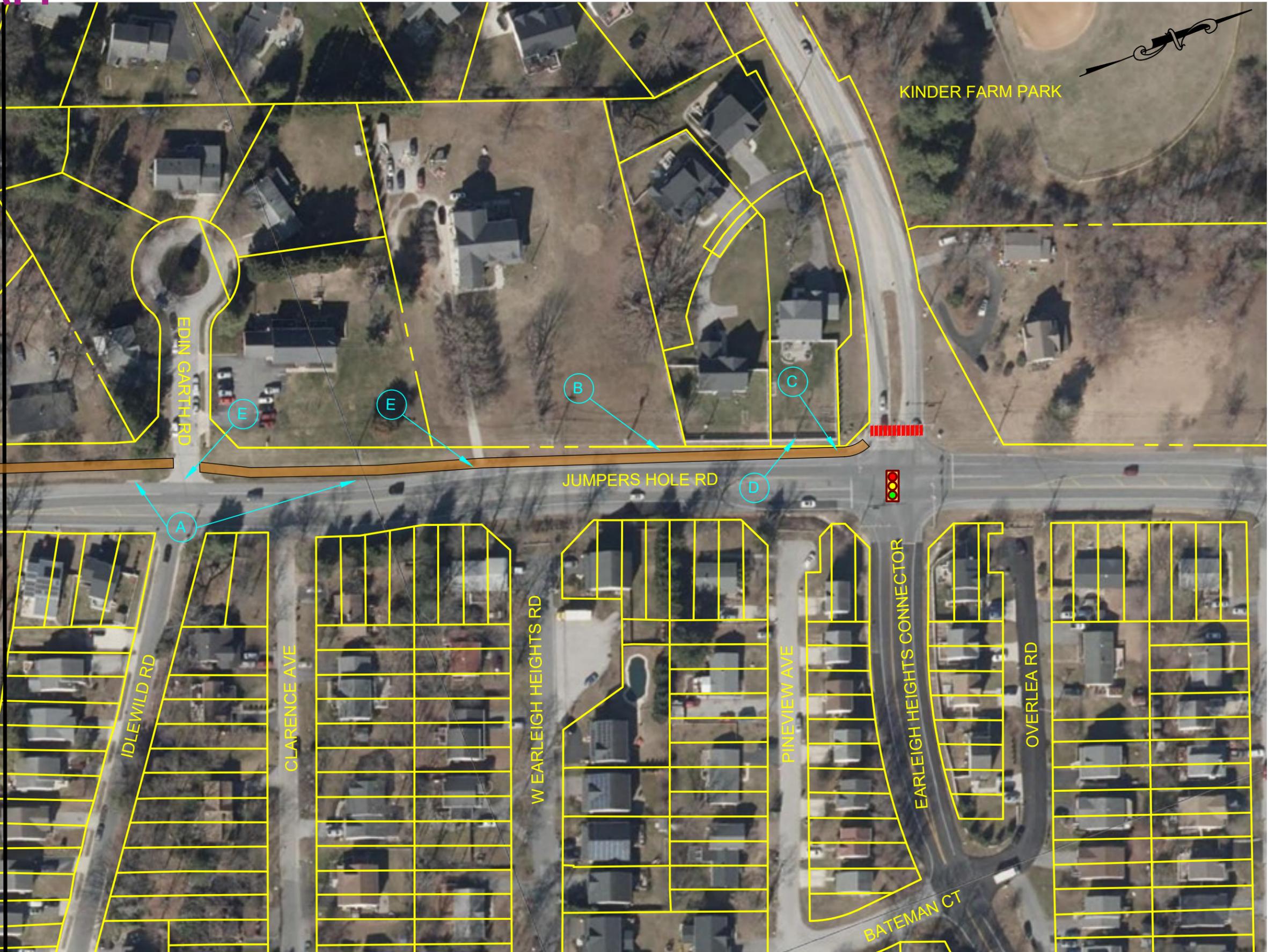
SEE SHEET 1

SEE SHEET 3

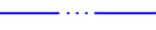


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B&A TRAIL TO SEVERNA PARK MIDDLE SCHOOL VIA KINDER FARM SPUR



LEGEND

- TRAIL 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. DRAINAGE IMPROVEMENTS NEEDED
- B. STEEP BANK AND POTENTIAL GRADING IMPACTS
- C. EASEMENT/RIGHT-OF-WAY NEEDED
- D. POTENTIAL UTILITY IMPACTS
- E. DRIVEWAY CROSSING

SEE SHEET 2



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B&A TRAIL TO SEVERNA PARK MIDDLE SCHOOL VIA KINDER FARM SPUR

Broadneck Trail to Arnold Park Spur

This trail spur connects Arnold Park to the Broadneck Peninsula Trail in Arnold. The spur is approximately 1,075 lf in length, and runs from a trail connection within Arnold Park, out of the park north to College Parkway, and then west along College Parkway where it crosses Shore Acres Road. From there the trail crosses College Parkway to connect to the Broadneck Peninsula Trail.

An alternative route for this spur along Jones Station Road and Shore Acres Road was studied. This route is currently an open section road with variable width shoulders. Development of a trail along this route would

require the acquisition of right of way from a significant number of property owners, significant road improvements and would impact overhead utilities.

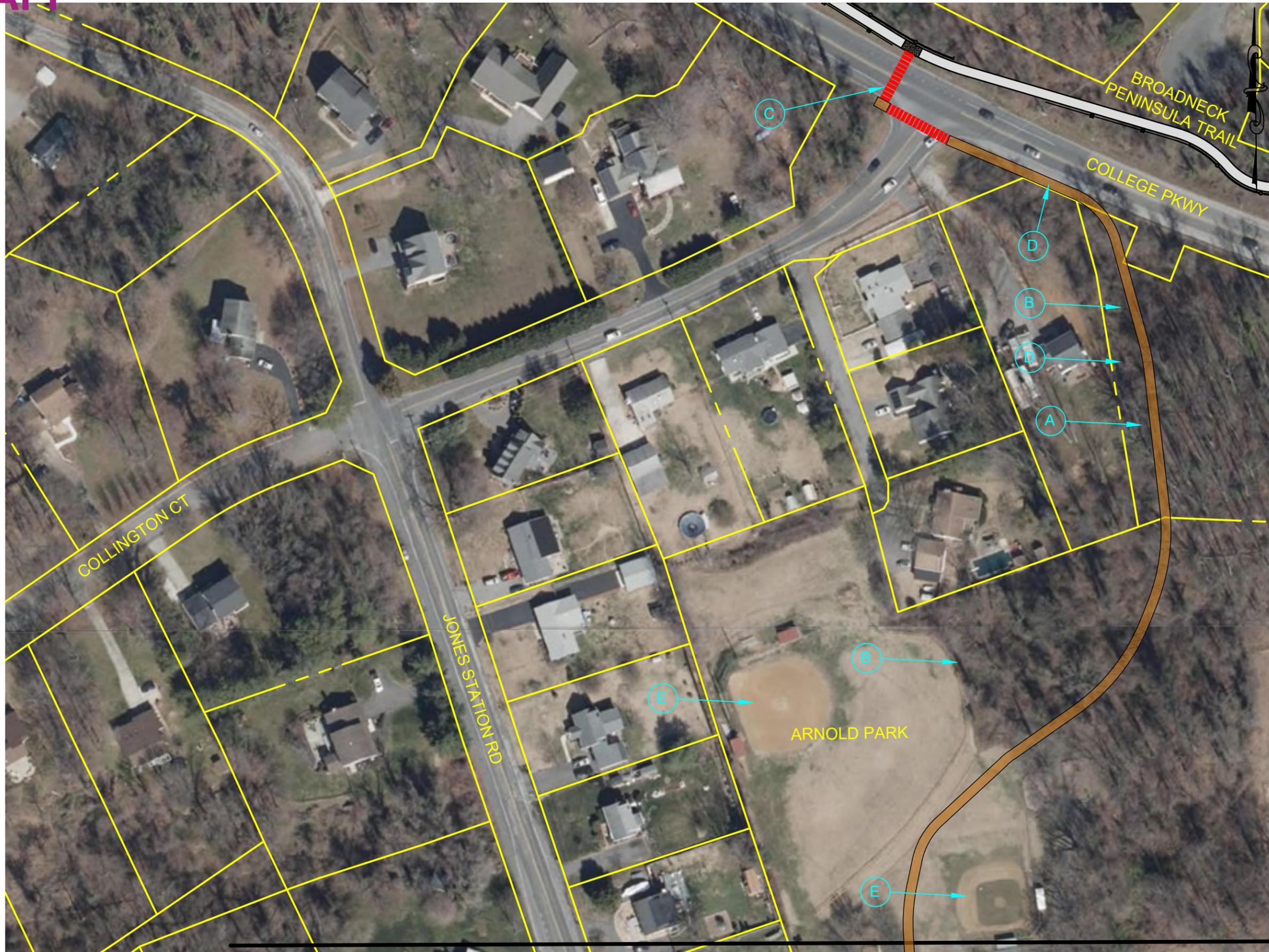
Constraints

- A. Right of Way will need to be acquired
- B. Steep slopes
- C. Forest clearing
- D. Crossing of College Parkway
- E. Existing ballfields

The spur includes a 10' wide asphalt trail, with two crosswalks and associated concrete ramps. The trail will require the acquisition of right-of-way to get out to College Parkway, and then likely along the south side of College Parkway. Significant grading and clearing will be required where the trail goes out to College Parkway. The crossing of College Parkway will require the addition of pedestrian RRFB signals to alert traffic to the presence of pedestrians. These will be similar to the signals installed at the Broadneck Park entrance.

Stormwater management for this spur would likely be comprised of non rooftop disconnect credits as well as small rain gardens, microbioretention facilities, or infiltration devices. This alignment will have minimal utility impacts. It is very likely that this alignment will result in more than 20,000 sf of forest clearing; therefore, compliance with the forest conservation requirements will be needed. The total estimated cost for this spur is \$477,219.60.





LEGEND

TRAIL	
CROSSWALK	
STREAM	
PROPERTY BOUNDARY	
BROADNECK TRAIL	

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. TREE CLEARING
- B. STEEP SLOPES
- C. CROSSING OF COLLEGE PARKWAY
- D. EASEMENT/RIGHT-OF-WAY NEEDED
- E. EXISTING BALLFIELDS



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SEE SHEET 2

BROADNECK TRAIL TO ARNOLD PARK

SEE SHEET 1

FOCUS TRAILS

FOCUS TRAILS



LEGEND

- TRAIL 
- CROSSWALK 
- STREAM 
- PROPERTY BOUNDARY 
- BROADNECK TRAIL 

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. TREE CLEARING
- B. STEEP SLOPES
- C. CROSSING OF COLLEGE PARKWAY
- D. EASEMENT/RIGHT-OF-WAY NEEDED
- E. EXISTING BALLFIELDS



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Broadneck Trail to Belvedere Elementary School Spur

This trail spur connects Belvedere Elementary School to the Broadneck Peninsula Trail in Arnold. The spur is approximately 3,645 lf in length, and runs from a trail connection at the Anne Arundel County Parks and Recreation parking lot in front of Belvedere Elementary School, south down Mago Vista Drive, and then west to the intersection of College Parkway and Jones Station Road.

An alternative alignment would send the trail east from the intersection of Mago Vista Road and Jones Station Road to the intersection of College Parkway and Jones Station Road. Though this route would connect the trail to some additional existing neighborhoods, this route is less plausible due to property that would have to be acquired and utility relocations that would be needed.

Opportunities

- 1. County owns much of the necessary right-of-way

Constraints

- A. R/w is very close to road in some areas
- B. Steep slopes
- C. Potential stream and stream buffer impacts – Mill Creek
- D. Existing on street parking would be eliminated
- E. Potential utility pole impacts
- F. Existing drainage impacts

The spur includes a 10' wide asphalt trail, with five crosswalks and associated concrete ramps. The trail can largely occur within the existing County right-of-way. However, along Mago Vista the trail will eliminate existing on street parking to minimize the need for additional right-of-way acquisition. This could be contentious. The trail will be installed in place of the existing sidewalk, and the existing curb will be removed and reinstalled closer to the travel lane, eliminating the on street parking. Additional right-of-way or easements may be needed in some areas. Significant grading and retaining walls will need to be installed where the trail crosses Mill Creek.

Stormwater management for this spur would likely be comprised of non rooftop disconnect credits as well as small rain gardens, microbioretention facilities, or infiltration devices. This alignment will have some utility impacts. It is very likely that this alignment can be accomplished with less than 20,000 sf of forest clearing, in which case, the project will be exempt from forest conservation requirements. Stream and stream buffer impacts are anticipated with this project where the project crosses Mill Creek at Jones Station Road. The total estimated cost for this spur is \$1,582,541.06.





LEGEND

- TRAIL 
- TRAIL ALTERNATE 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 
- BROADNECK TRAIL 
- RETAINING WALL 

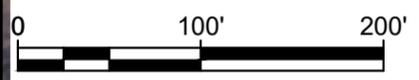
NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

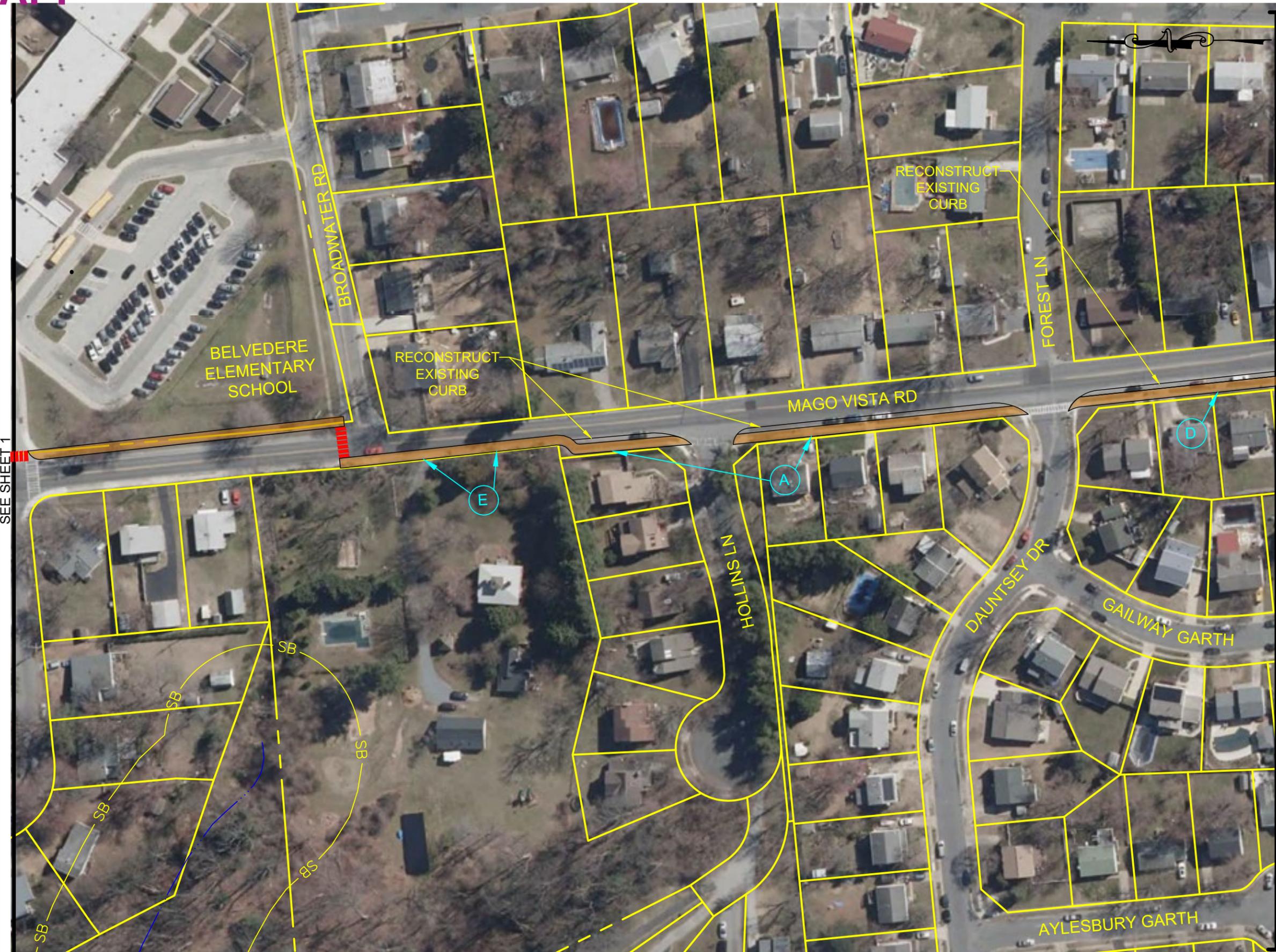
- A. R/W IS VERY CLOSE TO ROAD IN SOME AREAS
- B. STEEP SLOPES
- C. POTENTIAL STREAM AND STREAM BUFFER IMPACTS - MILL CREEK
- D. EXISTING ON STREET PARKING WOULD BE ELIMINATED
- E. POTENTIAL UTILITY POLE IMPACTS
- F. EXISTING DRAINAGE IMPACTS

SEE SHEET 2

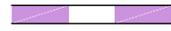


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BROADNECK TRAIL TO BELVEDERE ELEMENTARY SCHOOL



LEGEND

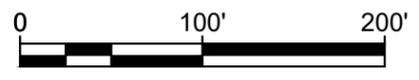
- TRAIL 
- TRAIL ALTERNATE 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 
- BROADNECK TRAIL 
- RETAINING WALL 

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. R/W IS VERY CLOSE TO ROAD IN SOME AREAS
- B. STEEP SLOPES
- C. POTENTIAL STREAM AND STREAM BUFFER IMPACTS - MILL CREEK
- D. EXISTING ON STREET PARKING WOULD BE ELIMINATED
- E. POTENTIAL UTILITY POLE IMPACTS
- F. EXISTING DRAINAGE IMPACTS



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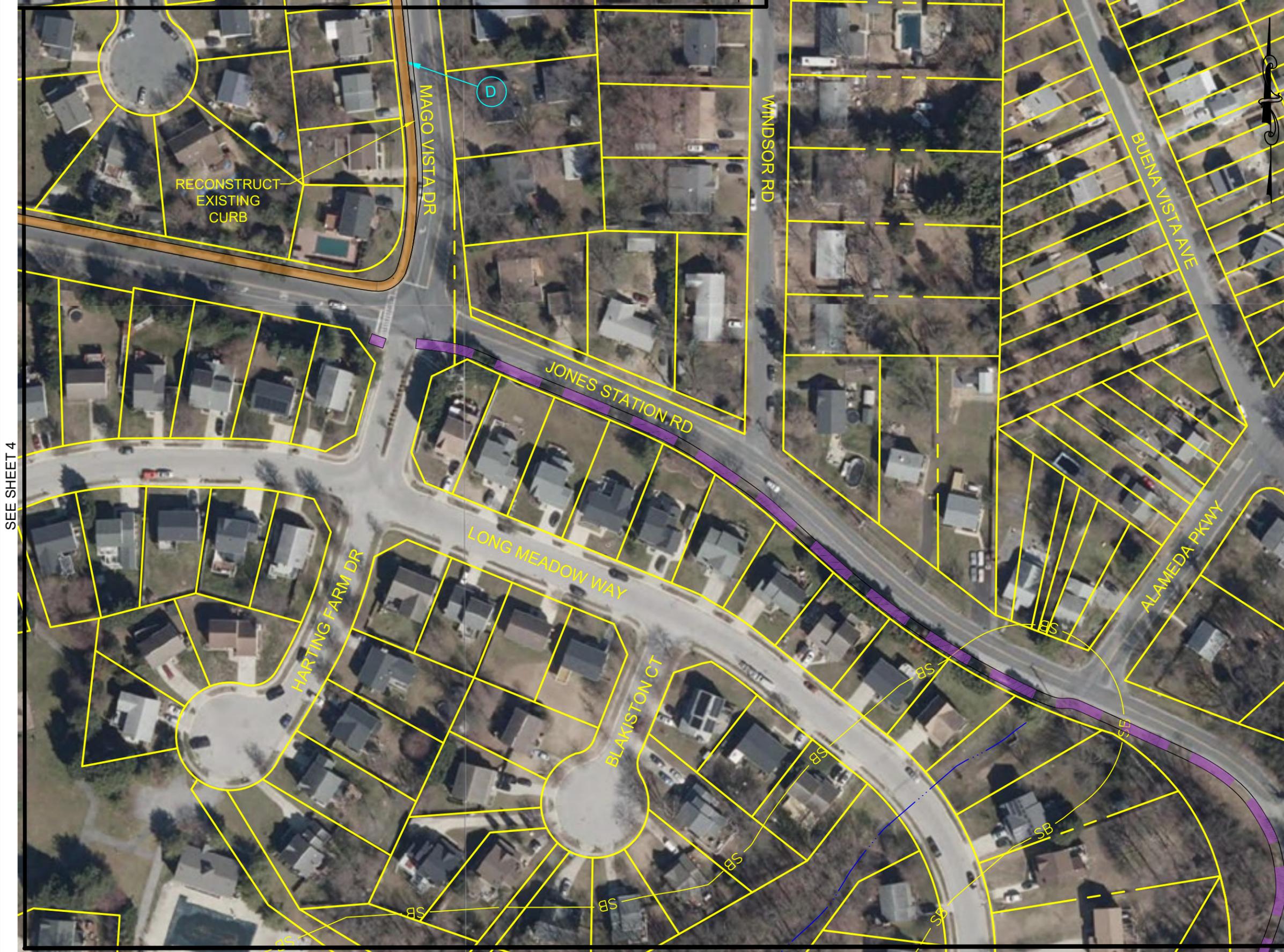
SEE SHEET 1

SEE SHEET 4

SEE SHEET 3

BROADNECK TRAIL TO BELVEDERE ELEMENTARY SCHOOL

SEE SHEET 2



SEE SHEET 4

SEE SHEET 5

LEGEND

TRAIL	
TRAIL ALTERNATE	
CROSSWALK	
TRAFFIC SIGNAL	
STREAM	
PROPERTY BOUNDARY	
BROADNECK TRAIL	
RETAINING WALL	

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

- CONSTRAINTS**
- A. RW IS VERY CLOSE TO ROAD IN SOME AREAS
 - B. STEEP SLOPES
 - C. POTENTIAL STREAM AND STREAM BUFFER IMPACTS - MILL CREEK
 - D. EXISTING ON STREET PARKING WOULD BE ELIMINATED
 - E. POTENTIAL UTILITY POLE IMPACTS
 - F. EXISTING DRAINAGE IMPACTS

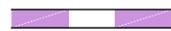


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BROADNECK TRAIL TO BELVEDERE ELEMENTARY SCHOOL

SEE SHEET 2

LEGEND

- TRAIL 
- TRAIL ALTERNATE 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 
- BROADNECK TRAIL 
- RETAINING WALL 

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. R/W IS VERY CLOSE TO ROAD IN SOME AREAS
- B. STEEP SLOPES
- C. POTENTIAL STREAM AND STREAM BUFFER IMPACTS - MILL CREEK
- D. EXISTING ON STREET PARKING WOULD BE ELIMINATED
- E. POTENTIAL UTILITY POLE IMPACTS
- F. EXISTING DRAINAGE IMPACTS



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SEE SHEET 3

FOCUS TRAILS

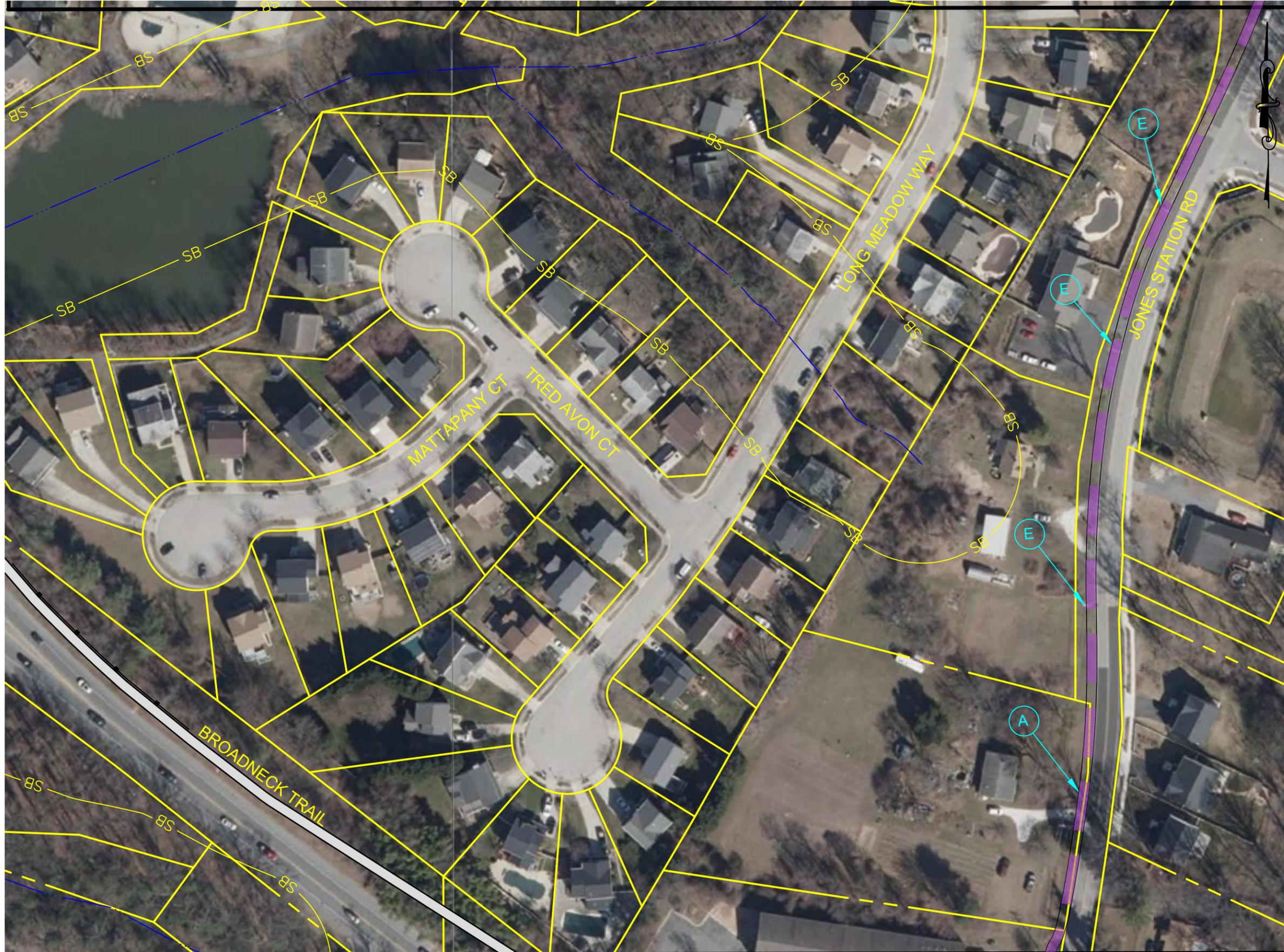
FOCUS TRAILS

SEE SHEET 3

SEE SHEET 6

FOCUS TRAILS

FOCUS TRAILS



LEGEND

- TRAIL 
- TRAIL ALTERNATE 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 
- BROADNECK TRAIL 
- RETAINING WALL 

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. RW IS VERY CLOSE TO ROAD IN SOME AREAS
- B. STEEP SLOPES
- C. POTENTIAL STREAM AND STREAM BUFFER IMPACTS - MILL CREEK
- D. EXISTING ON STREET PARKING WOULD BE ELIMINATED
- E. POTENTIAL UTILITY POLE IMPACTS
- F. EXISTING DRAINAGE IMPACTS



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BROADNECK TRAIL TO BELVEDERE ELEMENTARY SCHOOL

SEE SHEET 5

FOCUS TRAILS

FOCUS TRAILS



LEGEND

- TRAIL
- TRAIL ALTERNATE
- CROSSWALK
- TRAFFIC SIGNAL
- STREAM
- PROPERTY BOUNDARY
- BROADNECK TRAIL
- RETAINING WALL

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. R/W IS VERY CLOSE TO ROAD IN SOME AREAS
- B. STEEP SLOPES
- C. POTENTIAL STREAM AND STREAM BUFFER IMPACTS - MILL CREEK
- D. EXISTING ON STREET PARKING WOULD BE ELIMINATED
- E. POTENTIAL UTILITY POLE IMPACTS
- F. EXISTING DRAINAGE IMPACTS



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BROADNECK TRAIL TO BELVEDERE ELEMENTARY SCHOOL

Broadneck Trail to Broadneck Elementary School Spur

This trail spur connects Broadneck Elementary School to the Broadneck Peninsula Trail in Arnold. The trail is approximately 3,550 lf in length, and runs from the southwestern Broadneck Elementary School parking lot, west along Shore Acres Road, and out to the intersection of College Parkway and Shore Acres Road where it connects to the Broadneck Peninsula Trail, currently under construction.

An alternate to a portion of this spur is proposed that would have the trail leave Shore Acres Road and run through the woods on the Board of Education property that is south of the elementary school.

Opportunities

- 1. Serves as a connector for multiple neighborhoods near Broadneck Elementary
- 2. Existing pavement in Shore Acres Road

Constraints

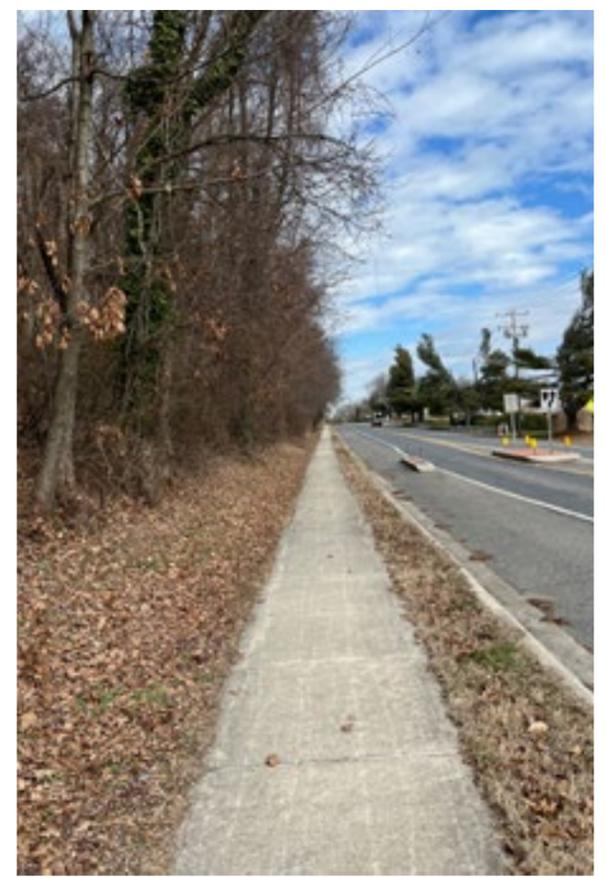
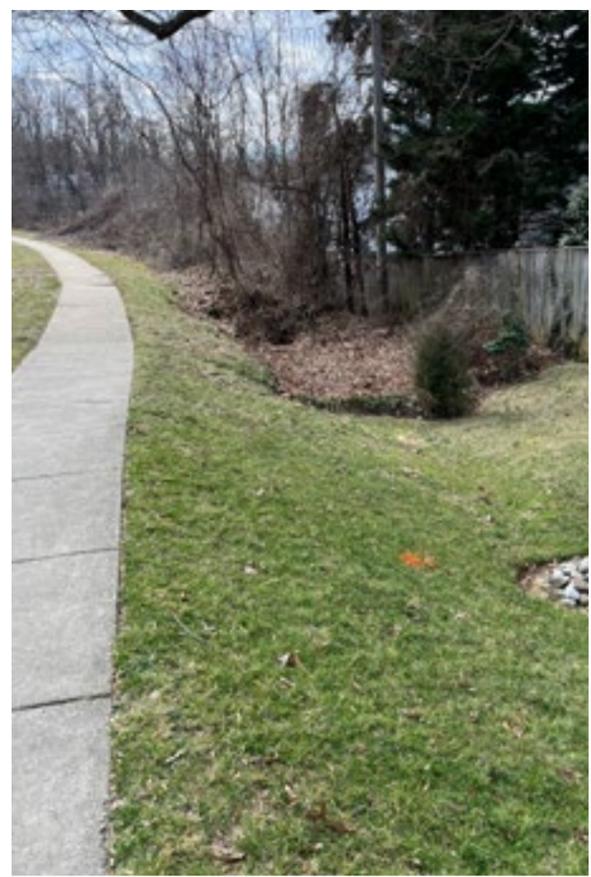
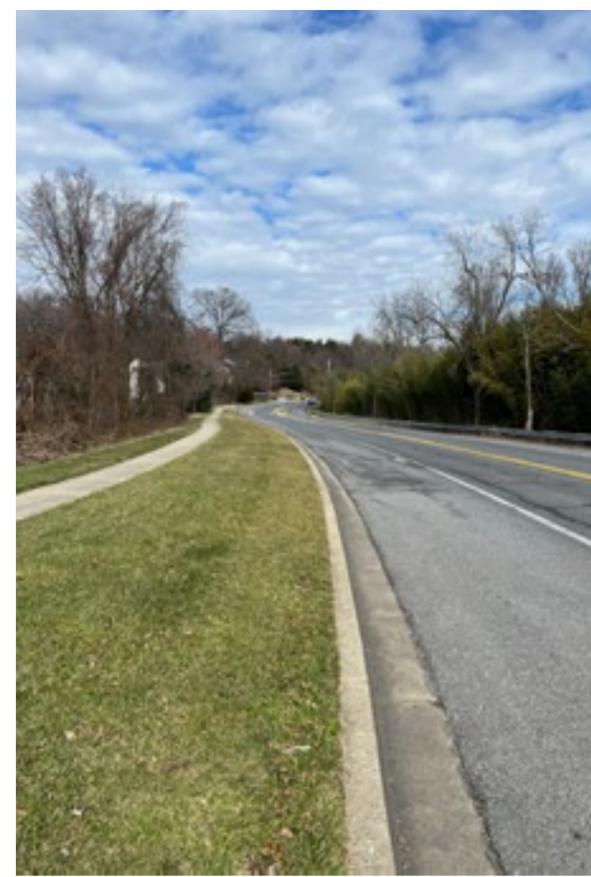
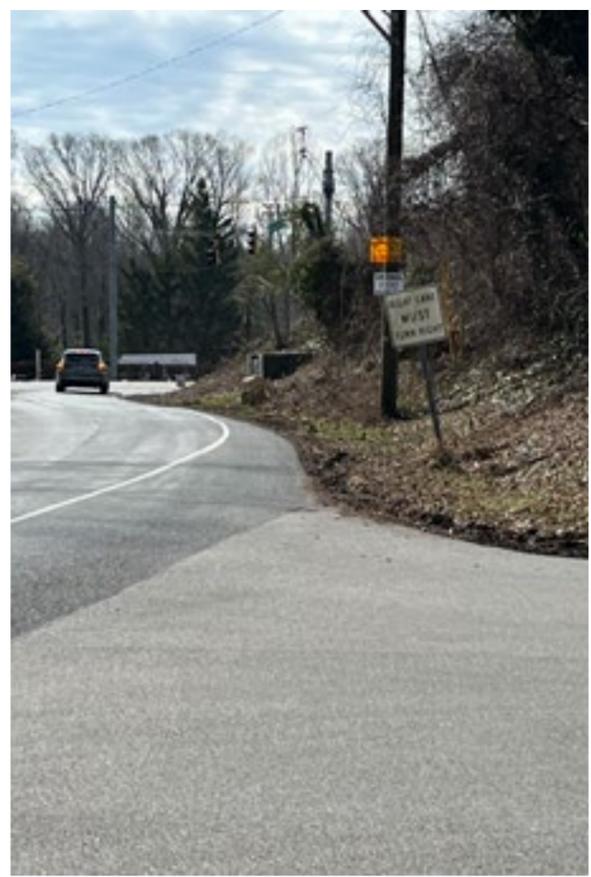
- A. Steep slopes
- B. Storm drain reconfiguration required
- C. Potential utility conflict
- D. R/W is very close to road in some areas

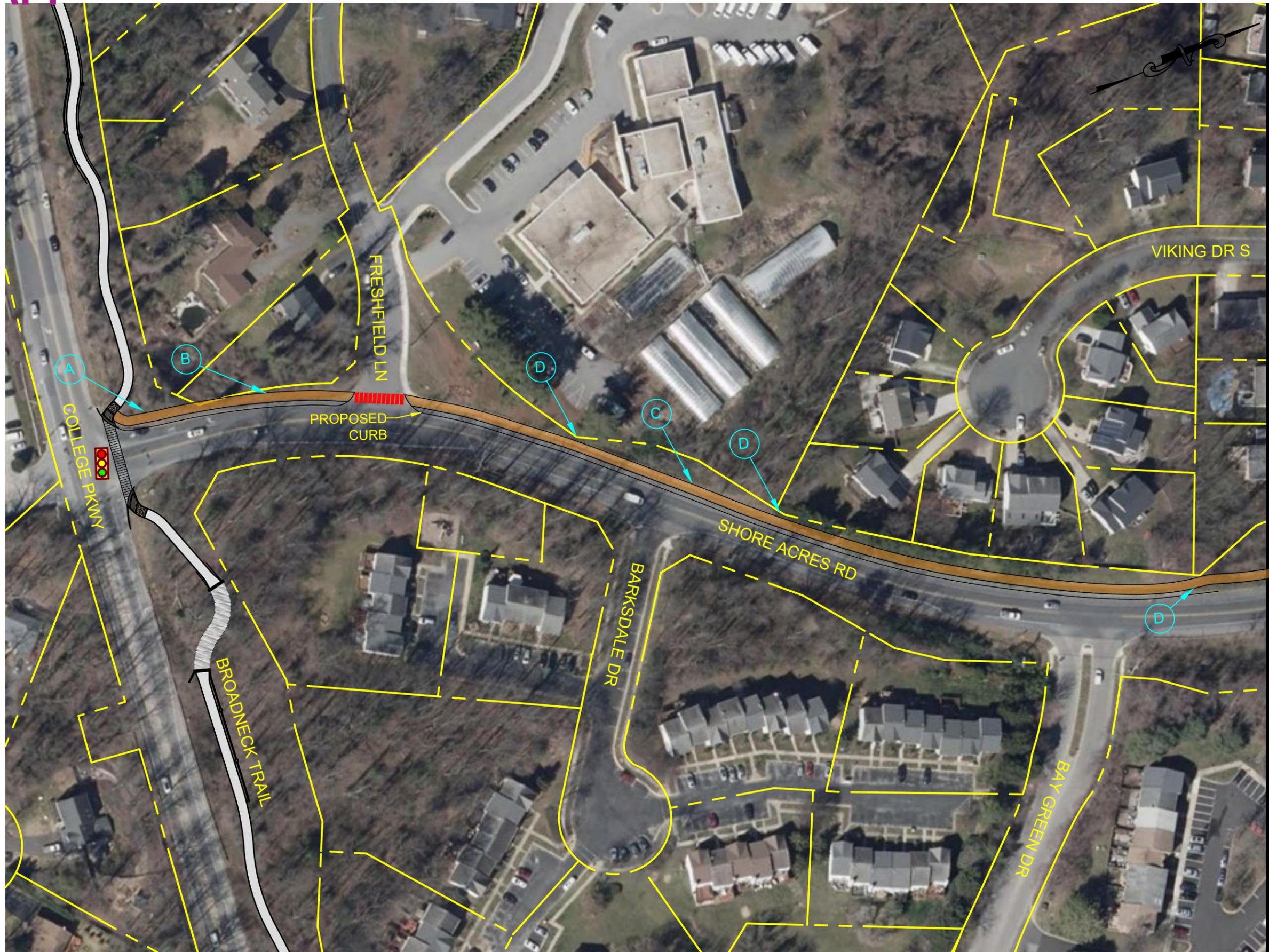
The spur includes a 10' wide asphalt trail, with two crosswalks and associated concrete ramps. The trail is largely within the existing County right-of-way, although there are several areas where additional right-of-way may be required. Additionally, permission from the Board of Education would be needed to construct the alternate trail.

In order to avoid existing slopes, reduce clearing, and minimize additional impervious area, this trail will be largely constructed within the existing roadway. There is a significant amount of unused pavement within the shoulder of Shore Acres Road, that when combined with the existing sidewalk, could provide the area needed for the trail. Utilizing this method of construction will require reconstruction of some of the curb and gutter along this spur, but will result in nearly the same amount of impervious area

that exists today, and will significantly reduce the need for property acquisition, and offsite clearing and grading.

Stormwater management for this trail would be accomplished by small microbioretention facilities or swales alongside the trail, and non-rooftop disconnect credits where possible. Drainage improvements along Shore Acres Road would be required in some areas to accommodate the trail. Generally utility conflicts are minimal, but there is a BGE transformer near College Parkway that would need to be relocated or worked around. Clearing for this project would likely be less than 20,000 sf so no additional forest conservation would be required. No environmental impacts are anticipated with this project. The estimated cost of this spur is \$1,582,541.06.





LEGEND

- TRAIL 
- TRAIL ALTERNATE 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 
- BROADNECK TRAIL 

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

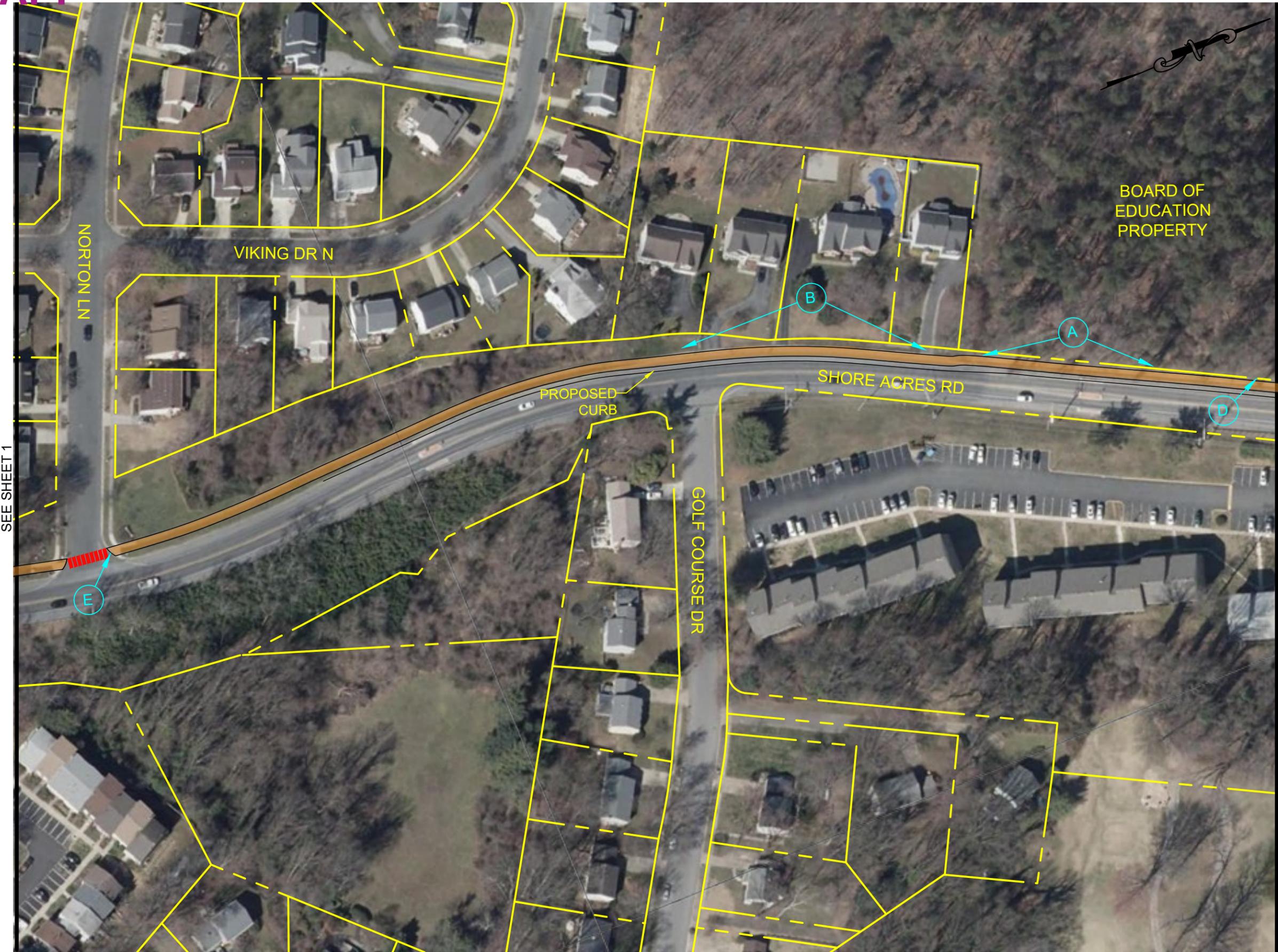
- A. STEEP SLOPES
- B. STORM DRAIN RECONFIGURATION REQUIRED
- C. POTENTIAL UTILITY CONFLICT
- D. R/W IS VERY CLOSE TO ROAD IN SOME AREAS

SEE SHEET 2



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BROADNECK TRAIL TO BROADNECK ELEMENTARY SCHOOL



LEGEND

TRAIL	
TRAIL ALTERNATE	
CROSSWALK	
TRAFFIC SIGNAL	
STREAM	
PROPERTY BOUNDARY	
BROADNECK TRAIL	

NOTES

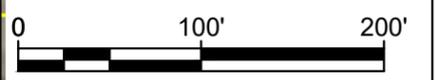
1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. STEEP SLOPES
- B. STORM DRAIN RECONFIGURATION REQUIRED
- C. POTENTIAL UTILITY CONFLICT
- D. R/W IS VERY CLOSE TO ROAD IN SOME AREAS

SEE SHEET 1

SEE SHEET 3



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BROADNECK TRAIL TO BROADNECK ELEMENTARY SCHOOL



LEGEND

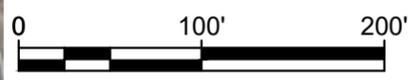
- TRAIL 
- TRAIL ALTERNATE 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 
- BROADNECK TRAIL 

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. STEEP SLOPES
- B. STORM DRAIN RECONFIGURATION REQUIRED
- C. POTENTIAL UTILITY CONFLICT
- D. R/W IS VERY CLOSE TO ROAD IN SOME AREAS



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SEE SHEET 2

BROADNECK TRAIL TO BROADNECK ELEMENTARY SCHOOL

Broadneck Trail to Cape Saint Claire Elementary School Spur

This trail spur connects Cape Saint Claire Elementary School on Blue Ridge Road to the Broadneck Peninsula Trail in Annapolis. The spur is approximately 2,234 lf in length, and runs from Cape Saint Claire Elementary School, through Goshen Farm, down Radoff Road, and out to Cape Saint Claire Road, where it connects to the existing Broadneck Peninsula Trail that runs on the west side of Cape St. Claire Road. Both properties are owned by the Board of Education, and the Goshen Farm Preservation Society has a lease on the southern property. Easements and/or agreements would be needed from these groups. The area where the trail would run is generally level, other than portions of the existing driveway to Goshen Farm. Portions of the trail alignment are located in the Chesapeake Bay Critical Area.

An alternative alignment of this spur was

briefly examined. The alternate would run from the intersection of Cape St. Claire Road and Hilltop Drive, where the Broadneck Peninsula Trail terminates, up Hilltop Drive to Blue Ridge Drive, and then along Blue Ridge Drive to the elementary school. This alternate would involve numerous property acquisitions from existing homes, as well as utility impacts, and is not a practical alternative when compared to the spur that has been proposed.

Opportunities

1. Immediately adjacent to Goshen Farm
2. Already existing trail and driveway alignment to follow
3. Occurs largely in open areas, limited clearing and limited forest conservation impacts.
4. Limited utility impacts

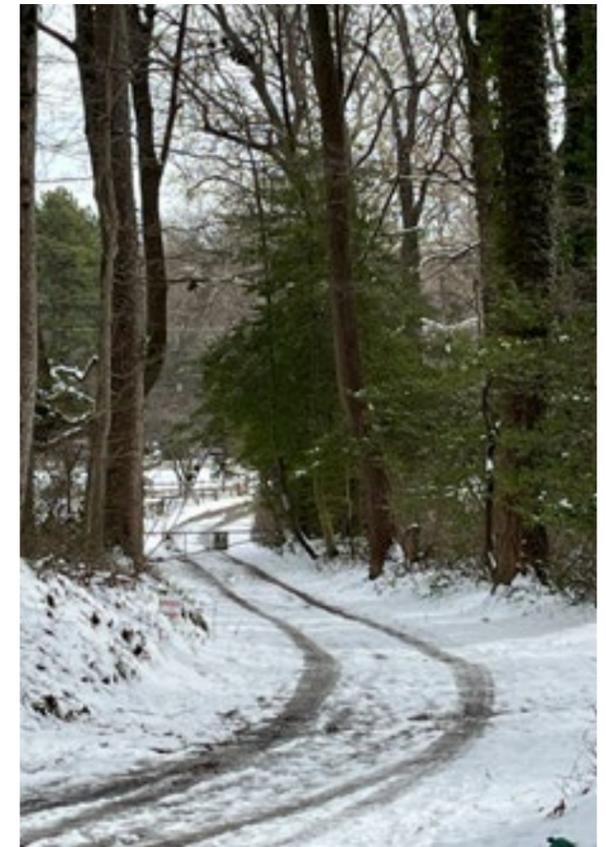
Constraints

- A. Steep slopes
- B. R/R belongs to Board of Education and Goshen Farm; easement will be needed
- C. Existing goshen farm gate is a possible obstruction
- D. Directional signage needed
- E. Will need a barrier at entrance to limit vehicular access
- F. Regrading of driveway will be needed to maintain 5 percent slope

The spur includes a 10' wide asphalt trail where the trail crosses through the school property and into Goshen Farm, and then transitions to a 12' wide asphalt driveway where it follows the current Goshen Farm driveway (Radoff Road). The trail and driveway share the same space. Due to the

volume of traffic on this driveway, it is not anticipated that a shared driveway/trail will be an issue. The spur follows the historical Goshen Farm/Radoff property driveway where it cross the elementary school athletic fields. The trail is lined with shade tree plantings and a split rail fence. Breaks occur periodically in the fence to allow access to both sides of the trail.

Stormwater management for this spur is likely going to be comprised of non rooftop disconnect credits as well as small rain gardens, microbioretention facilities, or infiltration devices. This alignment will have minimal utility impacts. It is very likely that this alignment can be accomplished with less than 20,000 sf of forest clearing, in which case, the project would be exempt from forest conservation requirements. No environmental impacts are anticipated with this project. The total estimated cost of this spur is \$737,201.09.





LEGEND

- TRAIL
- PROPERTY BOUNDARY
- PROPOSED TREE

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. STEEP SLOPES
- B. R/W BELONGS TO BOARD OF EDUCATION AND GOSHEN FARM; EASEMENT WILL BE NEEDED
- C. EXISTING GOSHEN FARM GATE IS A POSSIBLE OBSTRUCTION
- D. DIRECTIONAL SIGNAGE NEEDED
- E. WILL NEED A BARRIER AT ENTRANCE TO LIMIT VEHICULAR ACCESS
- F. REGRADING OF DRIVEWAY WILL BE NEEDED TO MAINTAIN 5% SLOPE

SEE SHEET 2



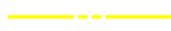
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BROADNECK TRAIL TO CAPE ST CLAIRE ELEMENTARY SCHOOL



SEE SHEET 1

LEGEND

- TRAIL 
- PROPERTY BOUNDARY 
- PROPOSED TREE 

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. STEEP SLOPES
- B. R/W BELONGS TO BOARD OF EDUCATION AND GOSHEN FARM; EASEMENT WILL BE NEEDED
- C. EXISTING GOSHEN FARM GATE IS A POSSIBLE OBSTRUCTION
- D. DIRECTIONAL SIGNAGE NEEDED
- E. WILL NEED A BARRIER AT ENTRANCE TO LIMIT VEHICULAR ACCESS
- F. REGRADING OF DRIVEWAY WILL BE NEEDED TO MAINTAIN 5% SLOPE



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BROADNECK TRAIL TO CAPE ST CLARE ELEMENTARY SCHOOL

Broadneck Trail to Magothy River Middle School Spur

This trail spur connects Magothy River Middle School and Twin Oaks Park to the Broadneck Peninsula Trail in Arnold. The spur is approximately 1,430 lf in length, and runs from the front parking lot of Magothy River Middle School, south along Peninsula Farm Road, and out to the intersection of College Parkway and Peninsula Farm Road where it connects to the existing Broadneck Peninsula Trail. The trail runs on the east side of Peninsula Farm Road and crosses the road at the entrance to the school to make the connection to Twin Oaks Park. The properties affected are owned by a private commercial entity and the Board of Education. Easements or right-of-way are needed from both.

An alternate located on the west side of Peninsula Farm Road north of Cresston Road was examined. This would connect directly to Twin Oaks Park, but would potentially

involve coordinating an easement over an existing residential driveway that appears to be located in the County right-of-way. The driveway runs parallel to Peninsula Farm Road north of Cresston Road and appears to serve 150 and 152 Cresston Road. 150 Cresston Road also appears to have a separate driveways off of Cresston Road. Due to the potential driveway conflict and the need to cross Peninsula Farm Road multiple times, this alternate was not examined further.

Opportunities

- 1. County owns majority of necessary right-of-way
- 2. Immediately adjacent to county park

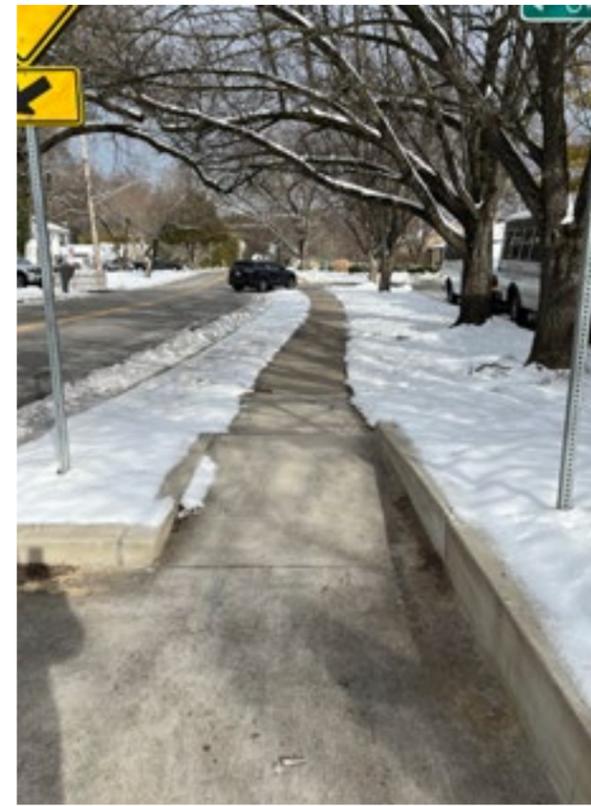
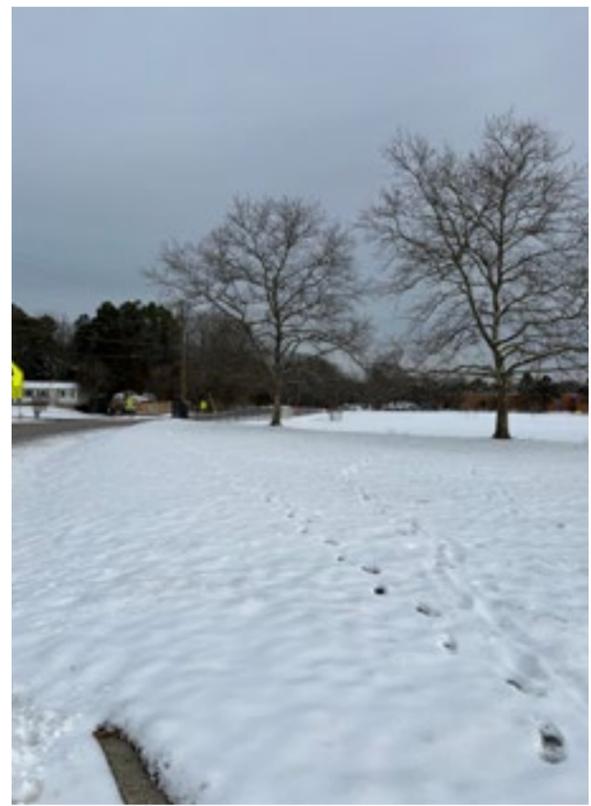
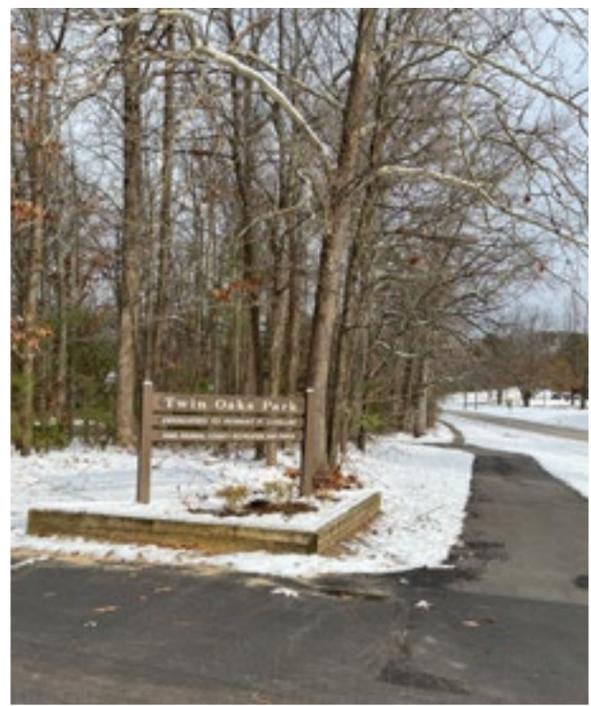
Constraints

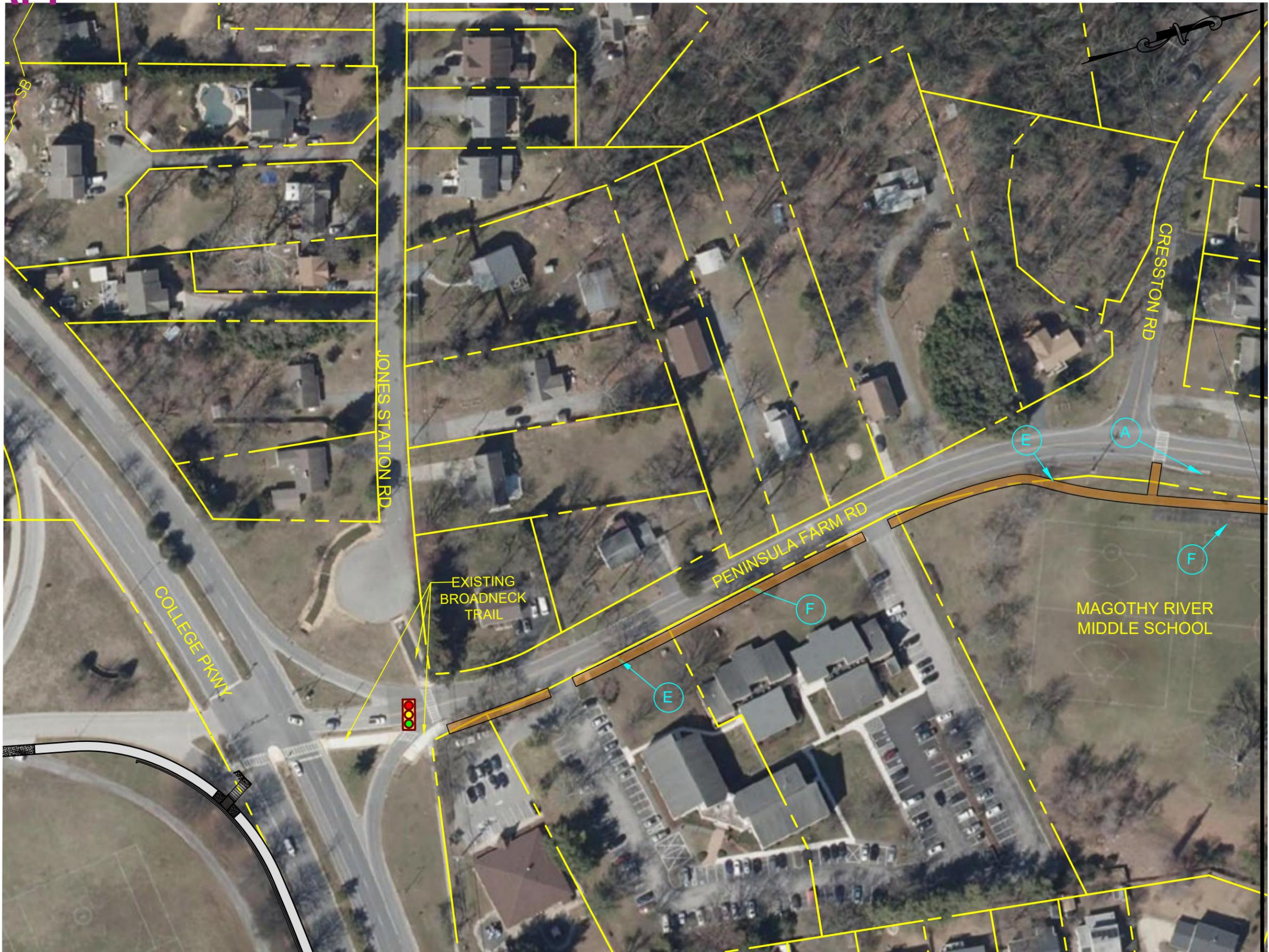
- A. Steep slopes/ existing swale/ drainage issues

- B. Culvert needed at entrance ditch
- C. Potential conflict with fire hydrant at entrance
- D. Potential easement for existing homeowner's driveway
- E. Need R/W from property owners
- F. Potential utility and utility pole conflict

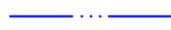
The spur includes a 10' wide asphalt trail, with a crosswalk and associated concrete ramps. A culvert will be required on the school property to cross an existing drainage ditch. The trail follows the edge of the existing athletic fields on the property and involves the addition of split rail fence to separate the trail from the athletic fields.

Stormwater management for this spur will likely be comprised of non rooftop disconnect credits as well as small rain gardens, microbioretention facilities, or infiltration devices. This alignment will have minimal utility impacts; most utilities should be able to be avoided. This alignment can be accomplished with less than 20,000 sf of forest clearing, in which case, the project should be exempt from forest conservation requirements. No environmental impacts are anticipated with this project. The estimated cost of this spur is \$550,230.41.





LEGEND

- TRAIL 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. STEEP SLOPES/ EXISTING SWALE/ DRAINAGE ISSUES
- B. CULVERT NEEDED AT ENTRANCE DITCH
- C. POTENTIAL CONFLICT AT FIRE HYDRANT AT ENTRANCE
- D. POTENTIAL EASEMENT FOR EXISTING HOMEOWNERS DRIVEWAY
- E. NEED R/W FROM PROPERTY OWNERS
- F. POTENTIAL UTILITY AND UTILITY POLE CONFLICT

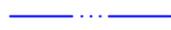
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LEGEND

- TRAIL 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 

NOTES

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CONSTRAINTS

- A. STEEP SLOPES/ EXISTING SWALE/ DRAINAGE ISSUES
- B. CULVERT NEEDED AT ENTRANCE DITCH
- C. POTENTIAL CONFLICT AT FIRE HYDRANT AT ENTRANCE
- D. POTENTIAL EASEMENT FOR EXISTING HOMEOWNERS DRIVEWAY
- E. NEED R/W FROM PROPERTY OWNERS
- F. POTENTIAL UTILITY AND UTILITY POLE CONFLICT



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SEE SHEET 1

BROADNECK TRAIL TO TWIN OAKS PARK AND MAGOTHY RIVER MIDDLE SCHOOL

Trail Spurs and Connectors Study

Broadneck Trail to Windsor Farm Elementary School Spur

This trail spur connects Windsor Farm Elementary School to Broadneck Park and the Broadneck Peninsula Trail in Annapolis. The spur is approximately 1,200 lf in length, and runs from the intersection of the Windsor Farm Elementary School access road and Broadneck Road, east along Broadneck Road, through the Andy Smith Equestrian Center portion of Broadneck Park, and out to the intersection of Broadneck Park Road and College Parkway, across from Green Holly Drive, where it connects to the existing Broadneck Peninsula Trail located on the north side of College Parkway. No alternate alignments were studied for this spur.

Opportunities

- 1. County owns necessary right-of-way
- 2. Immediately adjacent/within county park

- 3. No forest conservation impacts

Constraints

- A. Steep slopes
- B. Potential stream and stream buffer impacts - tributary of Whitehall Creek
- C. Impacts to horse pastures
- D. Several crosswalks and pedestrian signals required
- E. Sidewalk reconfiguration
- F. Impact to caretaker cottage
- G. Potential conflict with traffic signal pole
- H. Potential utility pole conflict
- I. Potential culvert

The spur will include a 10' wide asphalt trail, with two crosswalks and associated concrete ramps. The crosswalk at College Parkway and Broadneck Park Road will require a new pedestrian signal which will be connected to the existing signals at this intersection. The crosswalk at the entrance to Windsor Farm Elementary School will include a Rapid Rectangular Flashing Beacon (RRFB) similar to what has been installed at the eastern entrance of Broadneck Park off of College Parkway. The spur will run alongside the existing driveway to the caretaker's house on Broadneck Park and can share this driveway.

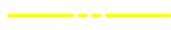
Coordination and signage will be needed to minimize conflicts.

Stormwater management will be provided for this spur, likely in the form of a small microbio-retention facility or a trailside swale. No forest clearing is anticipated with this spur, and the project will therefore be exempt from forest conservation requirements. Tree planting alongside the trail will be included in the scope. The estimated cost of this spur is \$469,452.67.





LEGEND

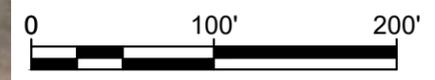
- TRAIL 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. STEEP SLOPES
- B. POTENTIAL STREAM AND STREAM BUFFER IMPACTS - TRIBUTARY OF WHITEHALL CREEK
- C. IMPACTS TO HORSE PASTURES
- D. SEVERAL CROSSWALKS AND PEDESTRIAN SIGNALS REQUIRED
- E. SIDEWALK RECONFIGURATION
- F. IMPACT TO CARETAKER COTTAGE
- G. POTENTIAL CONFLICT WITH TRAFFIC SIGNAL POLE
- H. POTENTIAL UTILITY POLE CONFLICT
- I. POTENTIAL CULVERT



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BROADNECK TRAIL TO WINDSOR FARM ELEMENTARY

BWI Trail to Corkran Middle School Spur

This trail spur connects the BWI Trail and the John Overstreet Connector Trail to Corkran Middle School in Glen Burnie. The trail is approximately 2,800 lf in length, and runs from the intersection of Stewart Ave and Old Stage Road, where the BWI Trail and the John Overstreet Connector Trail meet, west through a forested area in between several neighborhoods, and then out to the rear of Corkran Middle School in the athletic field area. No alternate alignments were studied for this spur.

Opportunities

- 1. Serves as a connector for multiple neighborhoods around Corkran Middle School

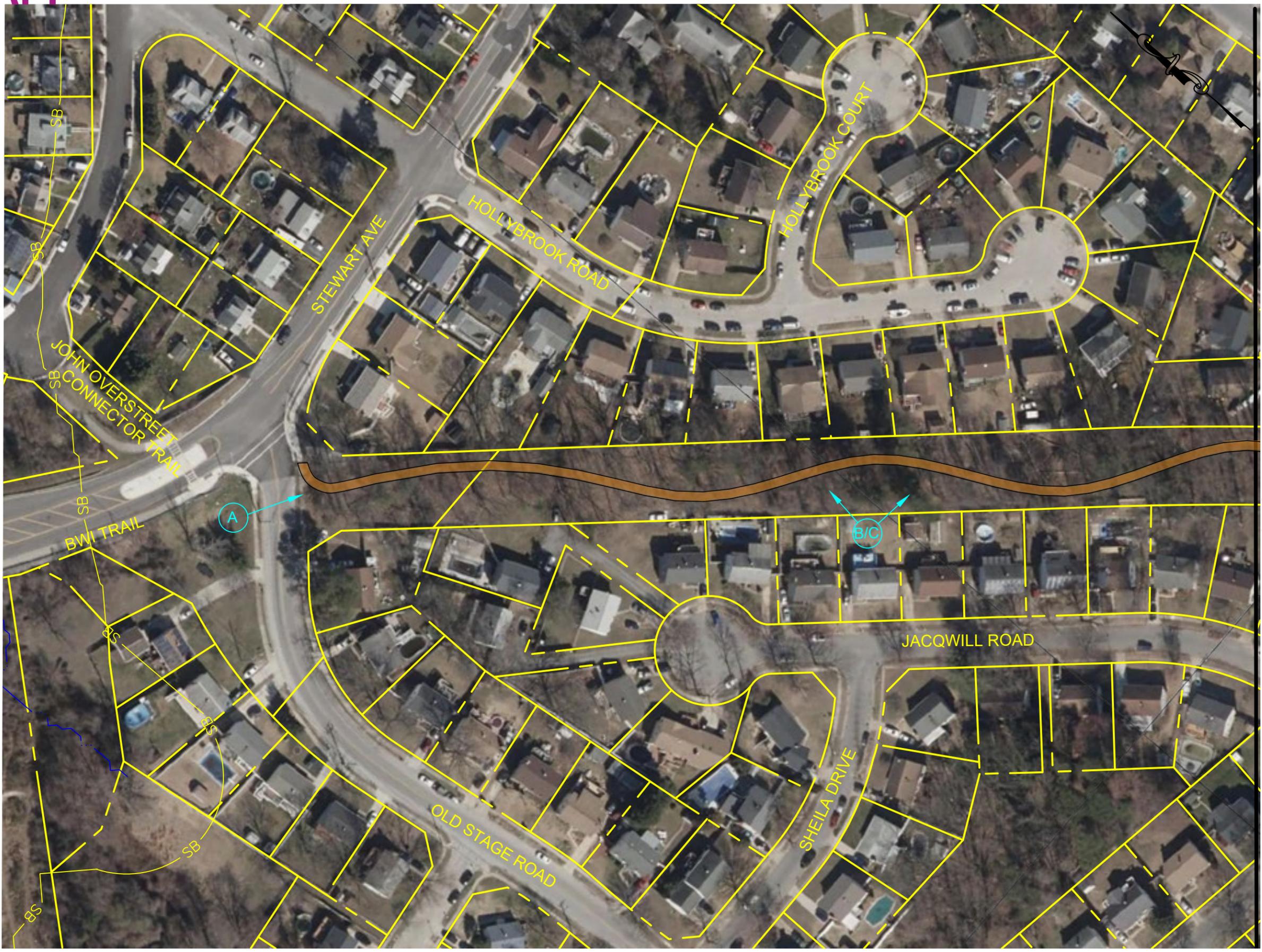
Constraints

- A. Existing open ditch drainage system
- B. Potential opposition from homeowners that back to trail
- C. Forest clearing

The spur includes a 10' wide asphalt trail, with two crosswalks and associated concrete ramps. The spur runs in an abandoned 80' +/- right-of-way behind existing homes. The right-of-way appears to be owned either by MDOT or the County. Most of the homes appear to have existing fencing at the rear of their lots, isolating this area. It is possible that there may be some opposition to a trail running behind the rear of these lots.

Stormwater management for this spur will likely be comprised of non rooftop disconnect credits as well as small rain gardens, microbioretention facilities, or infiltration devices. This alignment should have minimal utility impacts. This alignment would likely involve significant forest impacts. No environmental impacts are anticipated with this project. Drainage improvements will be required at the spur's intersection with Old Stage Road as an existing ditch will need to be reconfigured to accommodate the trail. The estimated cost of this trail is \$917,339.90.





LEGEND

- TRAIL 
- CROSSWALK 
- TRAFFIC SIGNAL 
- PROPERTY BOUNDARY 

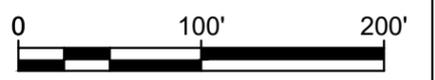
NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. EXISTING OPEN DITCH DRAINAGE SYSTEM
- B. POTENTIAL OPPOSITION FROM HOMEOWNERS THAT BACK TO TRAIL
- C. FOREST CLEARING

SEE SHEET 2



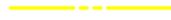
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 Sheet 1 of 3



SEE SHEET 1

SEE SHEET 3

LEGEND

- TRAIL 
- CROSSWALK 
- TRAFFIC SIGNAL 
- PROPERTY BOUNDARY 

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. EXISTING OPEN DITCH DRAINAGE SYSTEM
- B. POTENTIAL OPPOSITION FROM HOMEOWNERS THAT BACK TO TRAIL
- C. FOREST CLEARING



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LEGEND

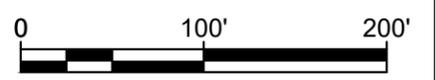
- TRAIL 
- CROSSWALK 
- TRAFFIC SIGNAL 
- PROPERTY BOUNDARY 

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. EXISTING OPEN DITCH DRAINAGE SYSTEM
- B. POTENTIAL OPPOSITION FROM HOMEOWNERS THAT BACK TO TRAIL
- C. FOREST CLEARING



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BWI Trail to Linthicum Elementary School and Linthicum Park Spur

This trail spur connects Linthicum Elementary School and Linthicum Park to the BWI Trail in Linthicum. The spur is approximately 1,752 lf in length, and runs from Linthicum Elementary School, west along School Lane across South Camp Meade Road (MD 170) where it will run north to W Maple Road. It will then run west along the W Maple Road across the railroad crossing to the existing BWI Trail.

An alternate to this spur is proposed that would follow South Camp Meade Road south along the east side of the road and cross at the existing light and crosswalk at Benton Avenue. There is an existing sidewalk connecting to the Linthicum Light Rail Station through the Royal Farms property. The connection crosses the Light Rail tracks and connects across the BWI Trail to the

neighborhood to the west of the station. An easement would be needed to widen the alternate trail in this area.

Opportunities

- 1. Existing sidewalk alignment to follow along most of the proposed route
- 2. Existing crosswalk exists at School Lane and South Camp Meade Road

Constraints

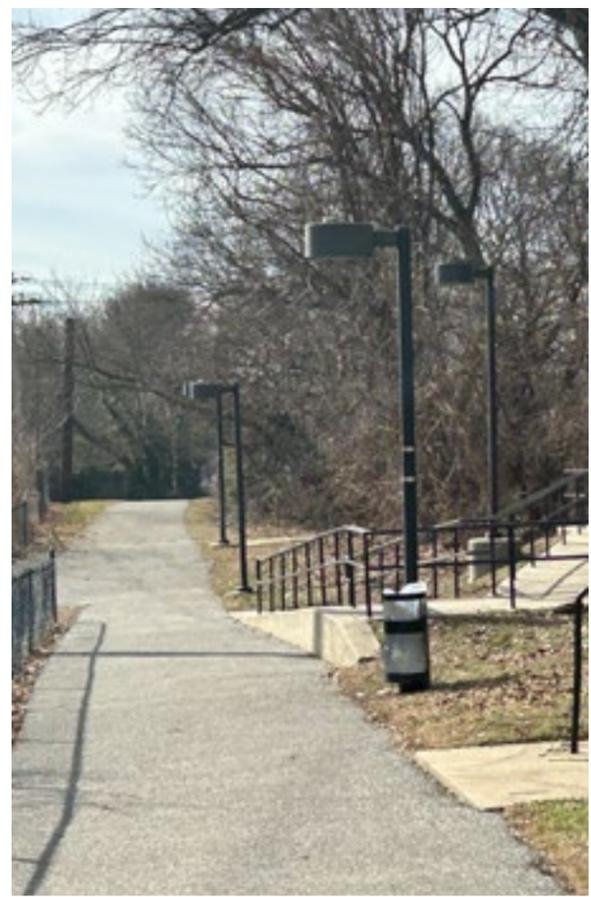
- A. Need multiple easements/rights-of-way
- B. Multiple utility pole relocations
- C. Railroad crossing

The spur includes a 10' wide asphalt trail.

The existing sidewalks will be removed and replaced with an asphalt trail. There is no existing sidewalk along the south side of W Maple Road. A major constraint is the railroad crossing on W Maple Road. This will require special design considerations. There are also utility poles along W Maple Road which would need to be relocated to add a 10' wide trail. Easements would be needed from multiple property owners to widen the existing narrow sidewalk along South Camp Meade Road. The existing sidewalk along South Camp Meade Road has multiple utility poles in the middle of the existing sidewalk. To widen the sidewalk along South Camp Meade Road, small retaining walls may also

be necessary along some properties.

Stormwater management for this spur would likely be comprised of non rooftop disconnect credits as well as small rain gardens, microbioretention facilities, or infiltration devices. This alignment will have utility impacts, requiring pole relocations. It is likely that this alignment can be accomplished with less than 20,000 sf of forest clearing, in which case, the project would be exempt from forest conservation requirements. No environmental impacts are anticipated with this project. The estimated cost of this spur is \$805,157.50.





LEGEND

TRAIL	
TRAIL ALTERNATE	
CROSSWALK	
TRAFFIC SIGNAL	
STREAM	
PROPERTY BOUNDARY	
EXISTING TRAIL	

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. NEED EASEMENT/RIGHT-OF-WAY
- B. UTILITY POLE RELOCATIONS
- C. RAILROAD CROSSING



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SEE SHEET 2

BWI TRAIL TO LINTHICUM ELEMENTARY/PARK

LEGEND

- TRAIL
- TRAIL ALTERNATE
- CROSSWALK
- TRAFFIC SIGNAL
- STREAM
- PROPERTY BOUNDARY
- EXISTING TRAIL

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. NEED EASEMENT/RIGHT-OF-WAY
- B. UTILITY POLE RELOCATIONS
- C. RAILROAD CROSSING



SEE SHEET 1

BWI TRAIL TO LINTHICUM ELEMENTARY/PARK



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South Shore Trail to Dairy Farm Spur

This trail spur connects the Dairy Farm to the South Shore Trail, Phase II in Gambrills. The spur is approximately 2,205 lf in length and runs from Dairy Lane on the Dairy Farm property northeast to the intersection with Annapolis Road (Route 175) and then west along Annapolis Road to the intersection of Dairy Farm Road. The trail will then cross Dairy Farm Road and cross Annapolis Road and run along the north side of Annapolis Road East to Gambrills Road, cross Gambrills Road and follow Gambrills Road north where it will connect to the approved (but not constructed) South Shore Trail Phase II. The Dairy Farm property on both sides of MD 175 is controlled by Anne Arundel County. The property is owned by the federal government and the County has a long-term agreement for the use of the property. Easements would be needed from multiple property owners along Annapolis Road and there are parking lot impacts to two properties along

the north side of Annapolis Road. The area where the trail is proposed is generally level. No alternate alignments were studied for this spur.

Opportunities

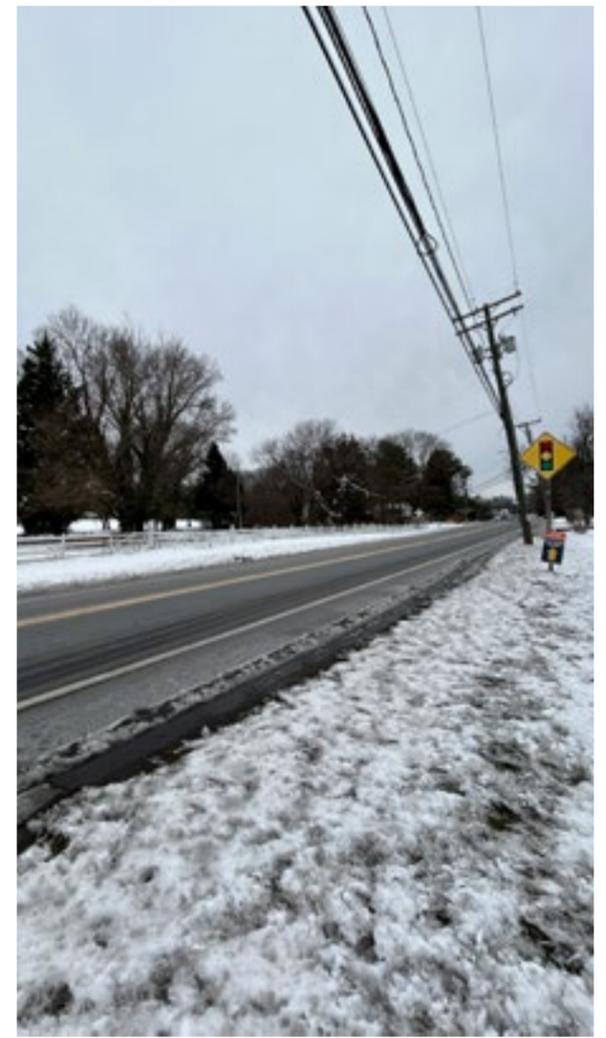
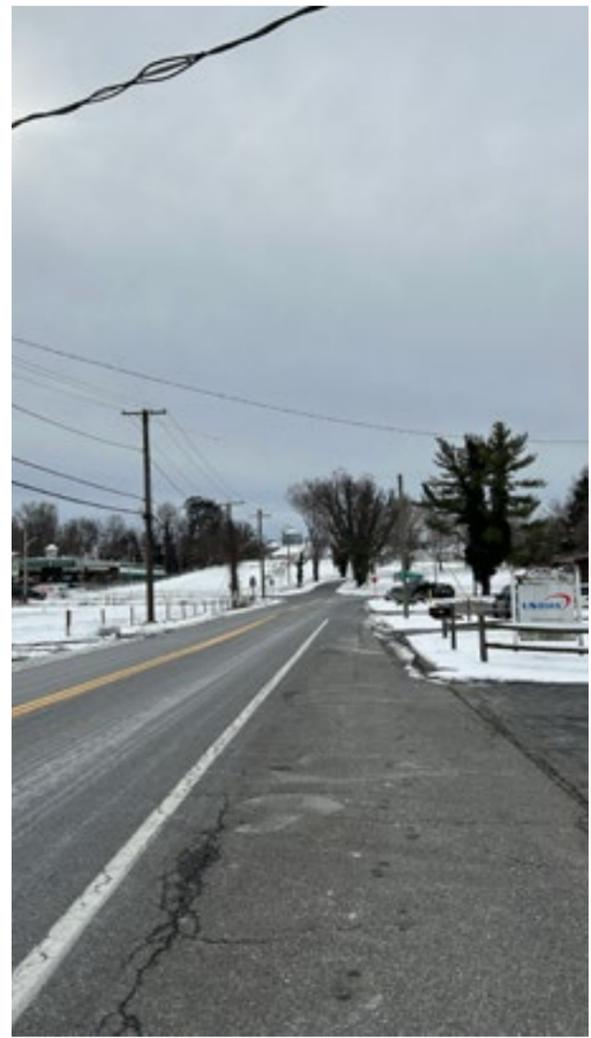
- 1. County controlled parcel
- 2. Limited/no environmental impacts

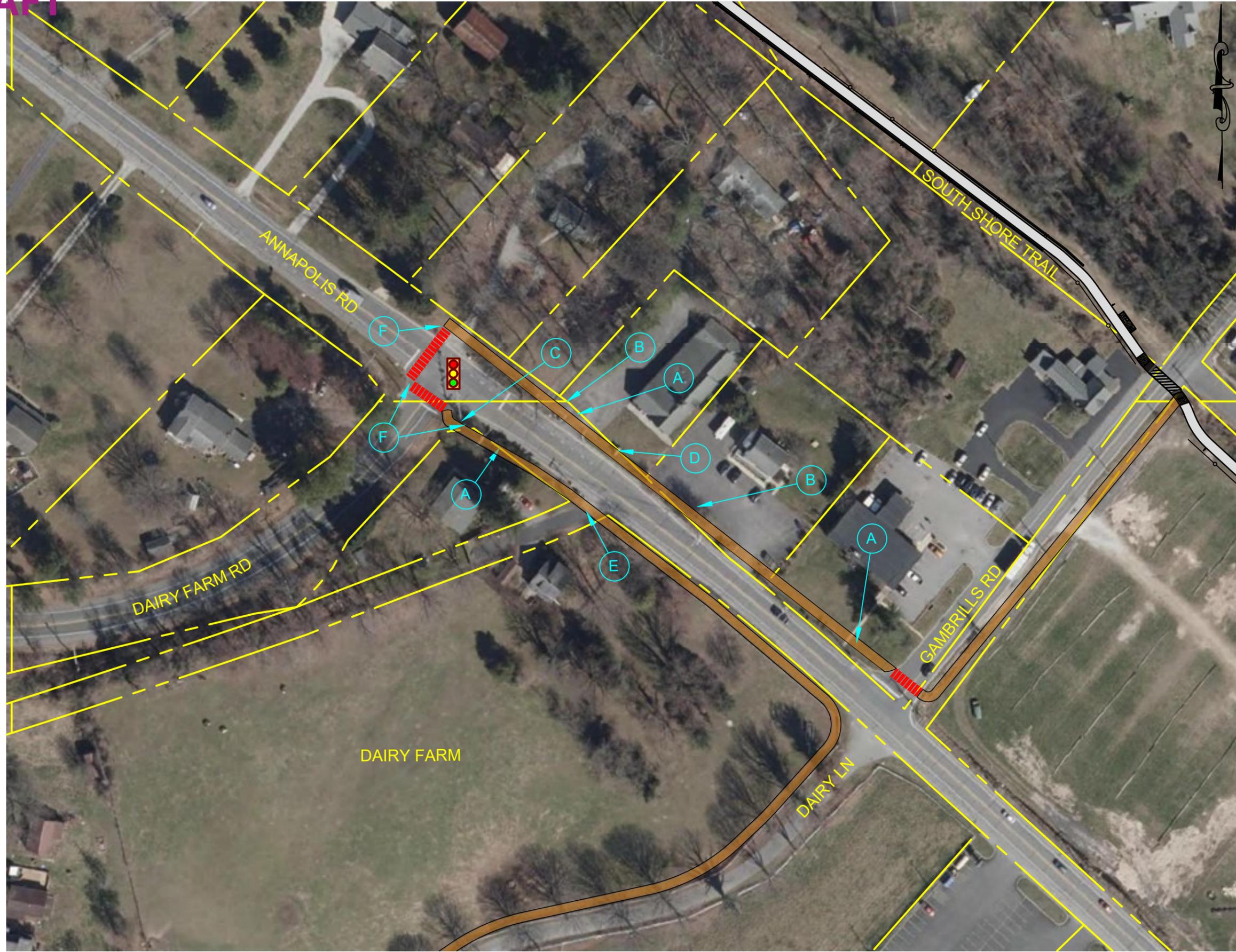
Constraints

- A. Easements needed
- B. Parking lot impacts
- C. Possible traffic signal/utility impacts
- D. Impacts to existing sign
- E. Existing driveway crossing
- F. Pedestrian signals needed at Dairy Farm Road and Annapolis Road

The spur would include a 10' wide asphalt trail, three crosswalks and associated concrete ramps. Right-of-way would need to be acquired along this alignment. At the southeast corner of Dairy Farm Road and Annapolis Road, the curb will be pushed out into the shoulder of Annapolis Road. There are also potential traffic signal/utility impacts in this section of the trail spur. Because this project is located within the right-of-way of MD 175, approvals from MDOT would be required.

Stormwater management for this spur would likely be comprised of non rooftop disconnect credits as well as small rain gardens, microbioretention facilities, or infiltration devices. This alignment would have minimal utility impacts as long as the trail can be pushed into the existing shoulder along MD 175. It is likely that this alignment can be accomplished with less than 20,000 sf of forest clearing, in which case, the project would be exempt from forest conservation requirements. Environmental impacts are not anticipated with this project. The estimated cost of this project is \$754,082.78.





LEGEND

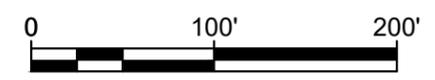
- TRAIL 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 
- SOUTH SHORE TRAIL 

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. NEED EASEMENT
- B. PARKING LOT IMPACTS
- C. POSSIBLE TRAFFIC SIGNAL/UTILITY IMPACTS
- D. IMPACTS TO EXISTING SIGN
- E. EXISTING DRIVEWAY CROSSING
- F. PEDESTRIAN SIGNALS NEEDED



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SEE SHEET 2

SOUTH SHORE TRAIL TO DAIRY FARM

SEE SHEET 1

FOCUS TRAILS

FOCUS TRAILS



LEGEND

TRAIL	
CROSSWALK	
TRAFFIC SIGNAL	
STREAM	
PROPERTY BOUNDARY	
SOUTH SHORE TRAIL	

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

- CONSTRAINTS**
- A. NEED EASEMENT
 - B. PARKING LOT IMPACTS
 - C. POSSIBLE TRAFFIC SIGNAL/UTILITY IMPACTS
 - D. IMPACTS TO EXISTING SIGN
 - E. EXISTING DRIVEWAY CROSSING
 - F. PEDESTRIAN SIGNALS NEEDED



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SOUTH SHORE TRAIL TO DAIRY FARM

South Shore Trail to Generals Highway Corridor Park Spur

This trail spur connects the Generals Highway Corridor Park to the South Shore Trail, Phase IV in Annapolis. The spur is approximately 2,765 lf in length, and runs from a trail that is currently proposed along Crownsville Road along the frontage of the Indian Creek School property. The trail would continue down the east side of Crownsville Road, cross Honeysuckle Lane, continue further down the east side of Crownsville Road and cross Crownsville Road at the park entrance. The trail would then run into the park to connect with the existing trail network present in the park. No alternate alignments were studied for this spur.

Constraints

- A. Easement / right-of-way needed from owners
- B. Tree clearing required
- C. Steep slopes
- D. Existing drainage impacts
- E. Potential utility impacts
- F. Possible sight distance limitations/ crossing of Crownsville Road

The spur includes a 10' wide asphalt trail, with several crosswalks and associated concrete ramps. The trail alignment will require that the County acquire additional right-of-way. Significant grading and retaining walls will need to be installed where the trail runs along the frontage of the Summerhill Park community. Drainage modification will also need to be made here. The trail will be setback a minimum of 8' from the edge of the existing road since this is an open section roadway.

Stormwater management for this spur will likely be comprised of non rooftop disconnect credits as well as small rain gardens, microbioretention facilities, or infiltration devices. This alignment will have minimal utility impacts. It is very likely that this alignment can be accomplished with less than 20,000 sf of forest clearing, in which case, the project will be exempt from forest conservation requirements. No environmental impacts are anticipated with this spur. The total estimated cost for this spur is \$1,313,604.86.





LEGEND

TRAIL	
STREAM	
PROPERTY BOUNDARY	
RETAINING WALL	
CROSSWALK	
SOUTH SHORE TRAIL	

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

- CONSTRAINTS**
- A. EASEMENT / RIGHT-OF-WAY NEEDED FROM PROPERTY OWNER
 - B. TREE CLEARING REQUIRED
 - C. STEEP SLOPES
 - D. DRAINAGE ISSUES
 - E. POTENTIAL UTILITY CONFLICT
 - F. POSSIBLE SIGHT DISTANCE LIMITATION



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LEGEND

- TRAIL
- STREAM
- PROPERTY BOUNDARY
- RETAINING WALL
- CROSSWALK
- SOUTH SHORE TRAIL

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. EASEMENT / RIGHT-OF-WAY NEEDED FROM PROPERTY OWNER
- B. TREE CLEARING REQUIRED
- C. STEEP SLOPES
- D. DRAINAGE ISSUES
- E. POTENTIAL UTILITY CONFLICT
- F. POSSIBLE SIGHT DISTANCE LIMITATION

SEE SHEET 1



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SOUTH SHORE TRAIL TO GENERALS HIGHWAY CORRIDOR PARK

South Shore Trail to Millersville Elementary and Millersville Park Spur

This trail spur connects Millersville Park and Millersville Elementary to the South Shore Trail in Millersville. The spur is approximately 1,360 lf in length and runs from the Millersville Park property on the north side of Millersville Road, where it would cross the road and run west to the Millersville Elementary School property where it will run to the back of the school property to the South Shore Trail. No alternate alignments were studied for this spur.

Opportunities

- 1. County-owned/Board of Education owned parcels

Constraints

- A. Existing forest conservation easement
- B. Steep slopes
- C. Tree clearing
- D. Easement needed Board of Education
- E. Road crossing/Potential sight distance issues
- F. Possible existing SWM facilities
- G. Existing retaining wall
- H. Utility impacts

The spur includes a 10' wide asphalt trail and one crosswalk. Steep slopes exist along the South Shore Trail at the back of the school property and significant grading will be required to make the transition from the existing trail down to the school property. Forest conservation easements also exist on the school property and may be impacted. An easement from the Board of Education would be needed on the school property. Existing SWM facilities may also be impacted on the school property. Millersville Road is classified as a Minor Arterial and is quite narrow east of the school driveway with limited sight distance. Millersville Road also rises slightly near the proposed road crossing which will probably require pedestrian crossing signals

and signs. A Rapid Rectangular Flashing Beacon (RRFB) signal can be used here. Fencing to separate the school from the trail should also be considered.

Stormwater management for this spur will likely be comprised of non rooftop disconnect credits as well as small rain gardens, microbioretention facilities, or infiltration devices. This alignment would have minimal utility impacts. It is likely that this alignment will require more than 20,000 sf of forest clearing, in which case, the project will be required to comply with forest conservation requirements. Additional study and design will be needed to minimize these impacts. The estimated cost of this spur is \$754,527.57.



SEE SHEET 2

FOCUS TRAILS

FOCUS TRAILS



LEGEND

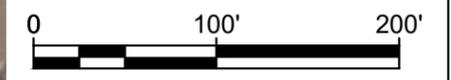
- TRAIL 
- CROSSWALK 
- STREAM 
- PROPERTY BOUNDARY 

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

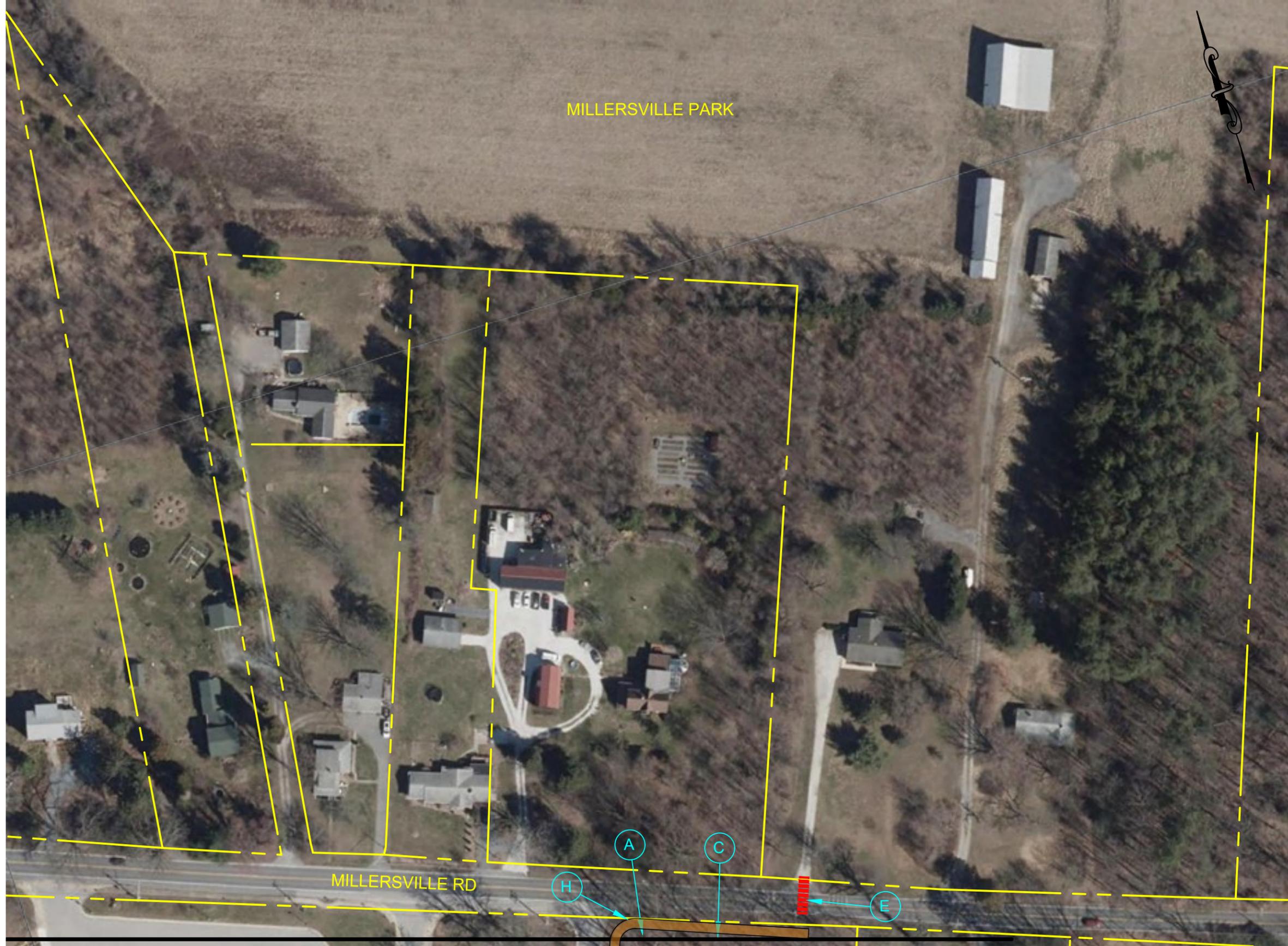
CONSTRAINTS

- A. EXISTING FOREST CONSERVATION EASEMENT
- B. STEEP SLOPES
- C. TREE CLEARING
- D. NEED EASEMENT FROM BOARD OF EDUCATION
- E. CROSSING OF HIGH VOLUME ROAD
- F. EXISTING SWM/STORM DRAIN
- G. EXISTING RETAINING WALL
- H. UTILITY IMPACTS



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SOUTH SHORE TRAIL TO MILLERSVILLE ELEMENTARY SCHOOL AND MILLERSVILLE PARK
 Trail Spurs and Connectors Study



LEGEND

TRAIL	
CROSSWALK	
STREAM	
PROPERTY BOUNDARY	

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

- CONSTRAINTS**
- A. EXISTING FOREST CONSERVATION EASEMENT
 - B. STEEP SLOPES
 - C. TREE CLEARING
 - D. NEED EASEMENT FROM BOARD OF EDUCATION
 - E. CROSSING OF HIGH VOLUME ROAD
 - F. POSSIBLE EXISTING SWM FACILITIES
 - G. EXISTING RETAINING WALL
 - H. UTILITY IMPACTS



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SEE SHEET 1

SOUTH SHORE TRAIL TO MILLERSVILLE ELEMENTARY SCHOOL AND MILLERSVILLE PARK
 Trail Spurs and Connectors Study

South Shore Trail to Rolling Knolls Elementary School Spur

This trail spur connects the Rolling Knolls Elementary School to the South Shore Trail, Phase III in Annapolis. The spur is approximately 1,080 lf in length, and runs from the rear of the elementary school at the fire access road off of MD 178 General's Highway, north along General's Highway to the intersection of Epping Forest Road, where it crosses Generals Highway, and then east along Epping Forest Road, where it connects to the proposed South Shore Trail. The trail involves the acquisition of easements or right-of-way from the Board of Education, and the commercial property at the corner of Epping Forest Road and General's Highway. No alternate alignments were studied for this trail spur.

Opportunities

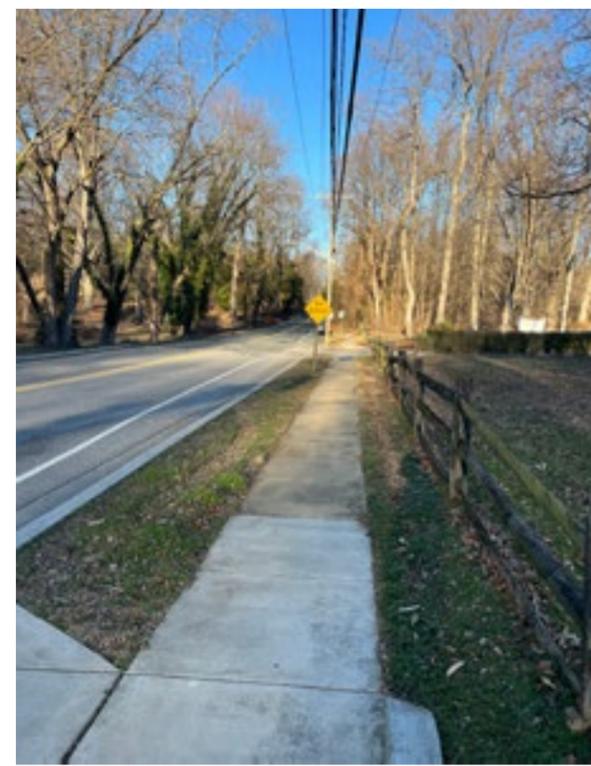
- 1. County owns majority of necessary right-of-way
- 2. Very close to planned South Shore Trail, Phase III
- 3. Limited forest clearing

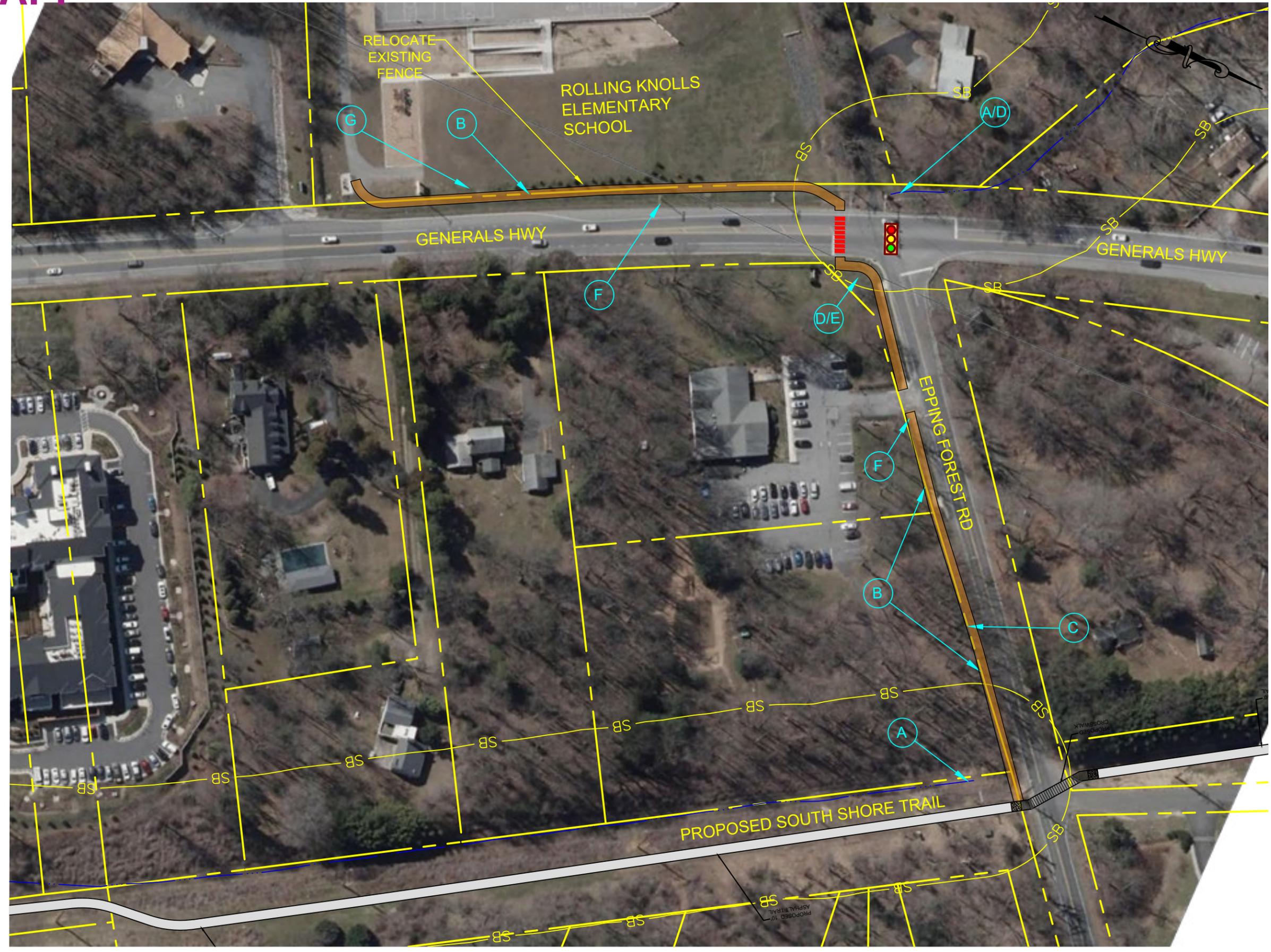
Constraints

- A. Crossing at MD 178, high volume roadway
- B. Drainage swales
- C. Potential utility conflict
- D. Need easement or right of way from property owners
- E. Existing fence
- F. Potential environmental impacts

The spur includes a 10' wide asphalt trail, with a crosswalk and associated concrete ramps. Storm drainage improvements will be needed on both sides of the intersection of Epping Forest Road and General's Highway. The relocation of the fence along the athletic fields of the elementary school will also likely be needed in order to avoid utility impacts. Additional fencing may also be needed to separate the trail from the school fields where the trail turns into the school property and follows the existing fire access road. Pedestrian signal improvements will be required at the existing traffic signal on Generals Highway.

Stormwater management for this spur will likely be comprised of non rooftop disconnect credits as well as small rain gardens, microbioretention facilities, or infiltration devices. This alignment has minimal utility impacts; most utilities should be able to be avoided. This alignment can be accomplished with less than 20,000 sf of forest clearing, in which case, the project should be exempt from forest conservation requirements. Stream buffer impacts are anticipated with this project, and depending on the final design of storm drainage improvements some stream or wetland impacts may be needed. The estimated cost of this trail is \$602,289.04





LEGEND

- TRAIL
- CROSSWALK
- TRAFFIC SIGNAL
- STREAM
- PROPERTY BOUNDARY
- SOUTH SHORE TRAIL

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. POTENTIAL STREAM AND BUFFER IMPACTS
- B. EASEMENT/RIGHT-OF-WAY NEEDED
- C. CLEARING REQUIRED
- D. DRAINAGE ISSUES
- E. SIGNAL MODIFICATIONS/CROSSING OF MD 178
- F. POTENTIAL UTILITY IMPACTS
- G. FENCE IMPACTS



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South Shore Trail to Waterworks Park Spur

This trail spur connects the City of Annapolis Waterworks Park property to the South Shore Trail, Phase IV in Annapolis. The spur is approximately 1,986 lf in length, and runs from a trail that is currently proposed on the County owned Eisenhower Golf Course and the Indian Creek School property. The trail runs across private property to Honeysuckle Lane and then onto property owned by the City of Annapolis, where the existing Waterworks Park trails terminate. This spur also includes the construction of a 30 space parking lot on the Waterworks Park property. The parking would be utilized by both Waterworks Park users

and South Shore Trail users. No alternate alignments were studied for this trail spur.

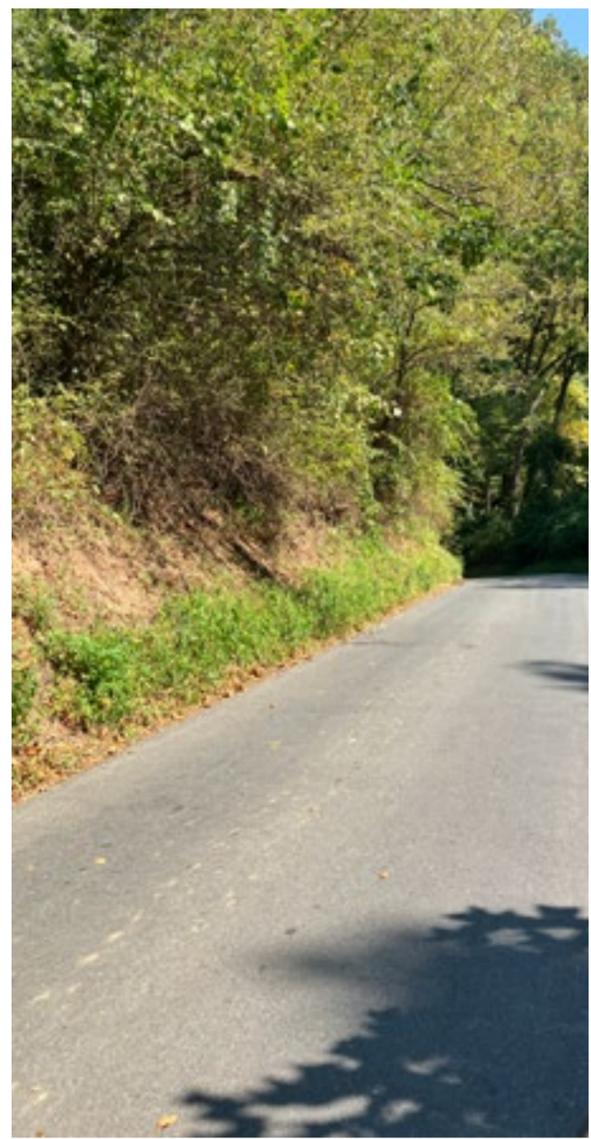
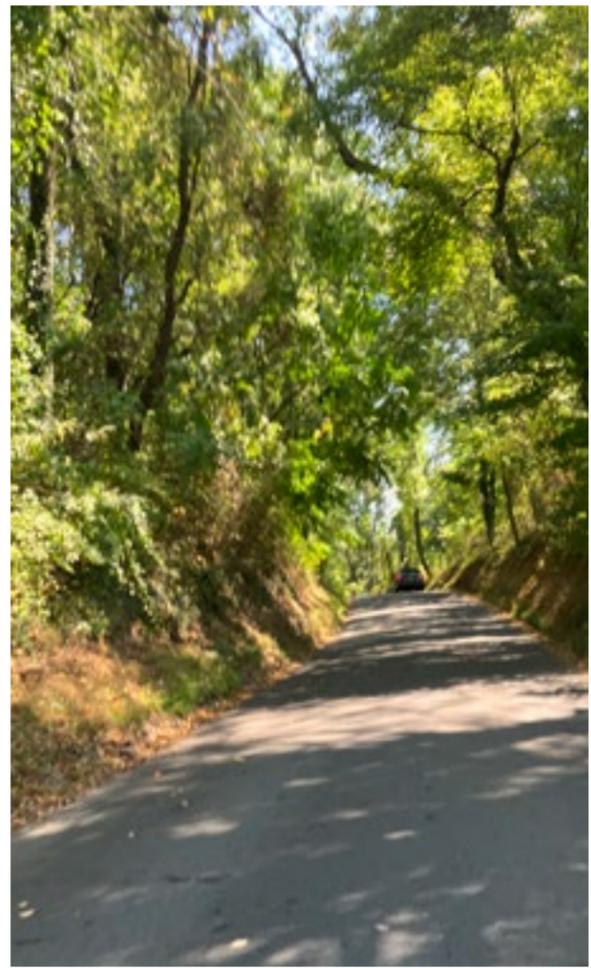
Constraints

- A. Easement / right-of-way needed from owners
- B. Tree clearing required
- C. Steep slopes
- D. Possible sight distance limitations/ crossing of Honeysuckle Lane

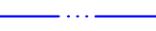
The spur includes a 10' wide asphalt trail, with a crosswalk and associated concrete ramps. The trail alignment will require that the County acquire right-of-way, and agreements from the City of Annapolis. Significant grading and/or retaining walls will be required due to the existing topography

Stormwater management for this spur will likely be comprised of non rooftop

disconnect credits as well as small rain gardens, microbioretention facilities, or infiltration devices. This alignment will have minimal utility impacts. This alignment will result in more than 20,000 sf of forest clearing, and the project will be required to comply with forest conservation requirements. No environmental impacts are anticipated with this spur. The total estimated cost for this spur is \$1,401,905.23.



LEGEND

TRAIL	
STREAM	
PROPERTY BOUNDARY	
SOUTH SHORE TRAIL	

NOTES

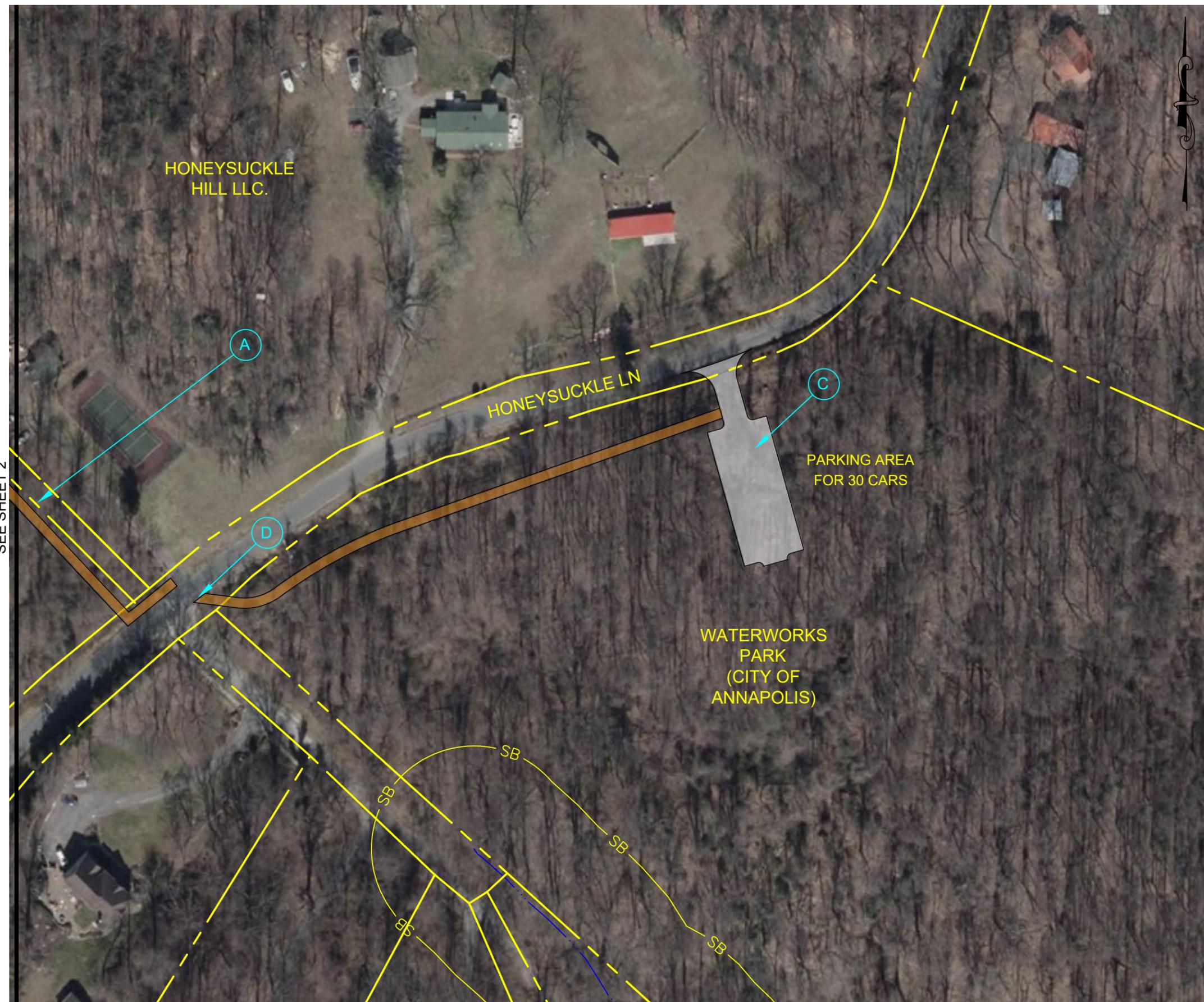
1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. EASEMENT/RIGHT-OF-WAY NEEDED FROM PROPERTY OWNER
- B. STEEP SLOPES
- C. SIGNIFICANT TREE CLEARING REQUIRED
- D. LIMITED SIGHT DISTANCE



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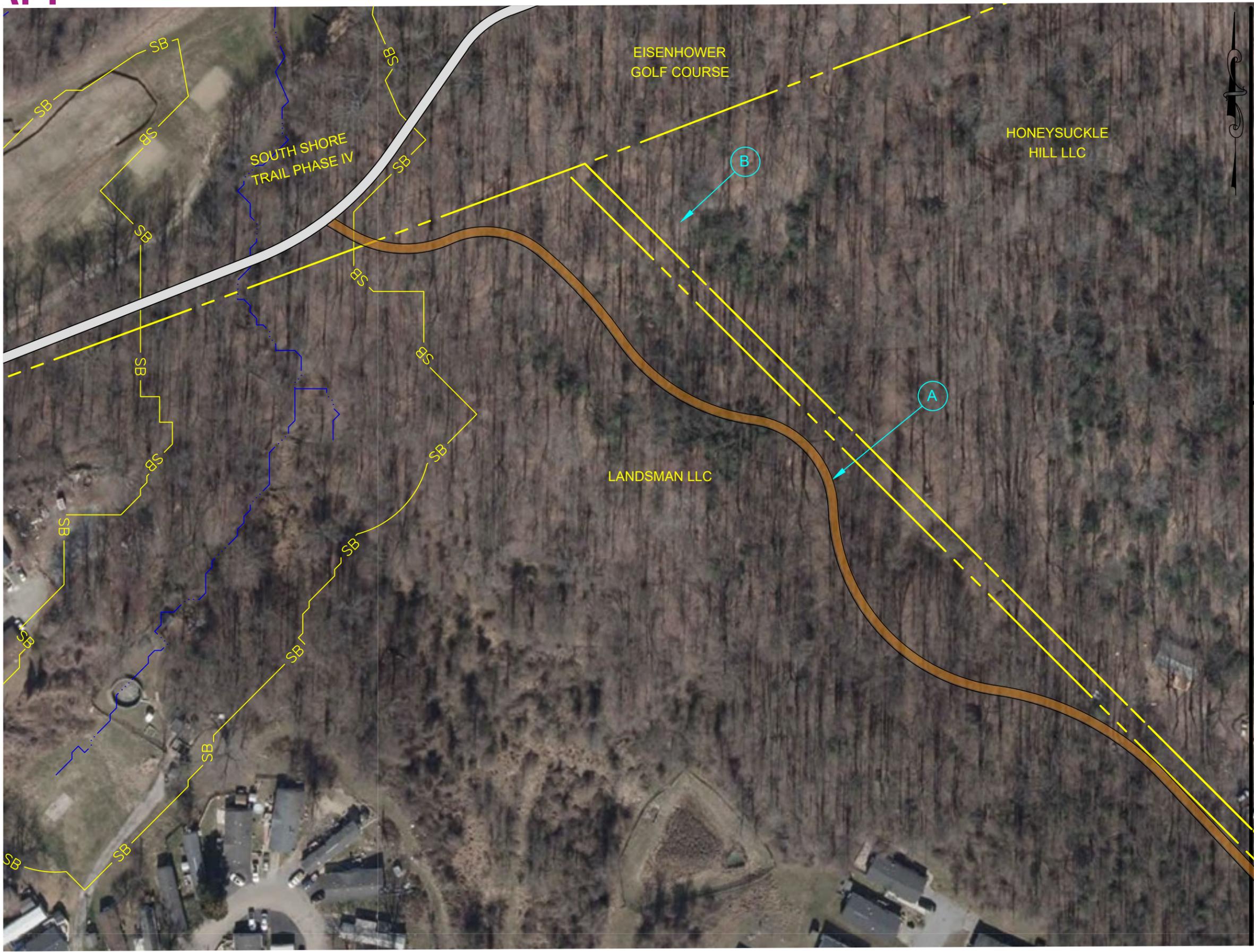
HONEYSUCKLE HILL LLC.

HONEYSUCKLE LN

PARKING AREA FOR 30 CARS

WATERWORKS PARK (CITY OF ANNAPOLIS)

SOUTH SHORE TRAIL TO WATERWORKS PARK



LEGEND

- TRAIL
- STREAM
- PROPERTY BOUNDARY
- SOUTH SHORE TRAIL

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. EASEMENT/RIGHT-OF-WAY NEEDED FROM PROPERTY OWNER
- B. STEEP SLOPES
- C. SIGNIFICANT TREE CLEARING REQUIRED
- D. LIMITED SIGHT DISTANCE

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South Shore Trail to Waugh Chapel Village Center Spur

This trail spur connects the South Shore Trail to Dairy Farm Trail Spur to Waugh Chapel Village Center in Gambrills. The spur is approximately 14,500 lf in length and runs from Dairy Lane west and then along the western perimeter of the Dairy Farm. The trail will then run southwest along the Dairy Farm parcel along the existing treeline, through the trees, across the stream and onto the existing BG&E Right-of-Way. The trail then follows the BG&E Right-of-Way across three streams (one of which appears to have an existing bridge that is used by BG&E) to Waugh Chapel Road. The trail follows Waugh Chapel Road west where it crosses at the intersection with New Market Lane and connects to the Waugh Chapel Village Center. The Dairy Farm property is controlled by Anne Arundel County. The property is owned by the federal government and the County has a long term agreement for the use of the property. Easements would be needed from BG&E. There are areas along the trail with

steep slopes. No alternate alignments were studied for this trail spur.

Opportunities

1. County owned parcel
2. Existing bridge
3. Minimal tree clearing required

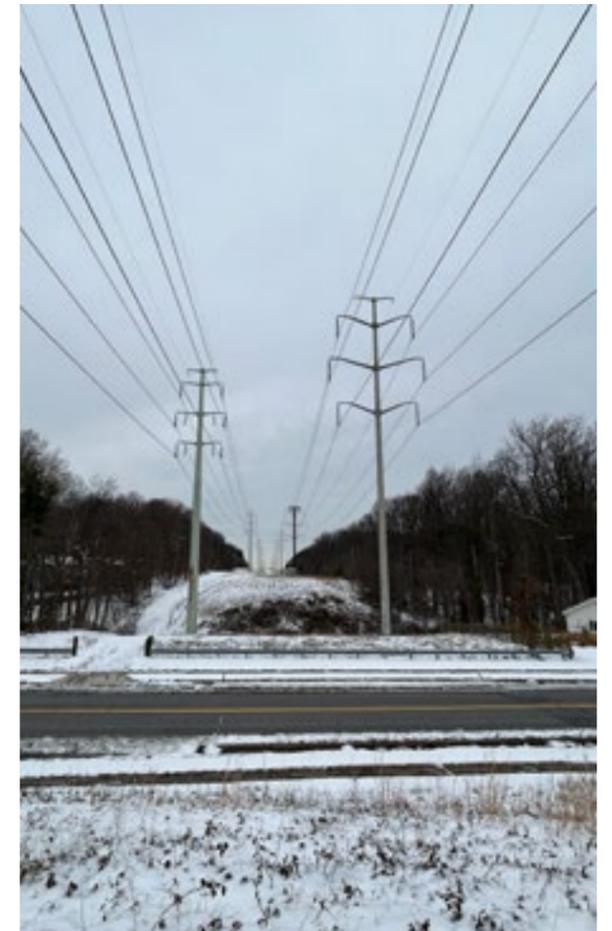
Constraints

- A. Easement / right-of-way needed from BG&E and other property owners
- B. Stream crossing
- C. Stream and stream buffer impacts
- D. Steep slopes
- E. Possible culvert impacts
- F. Hydrant impacts
- G. Tree clearing

The spur includes a 10' wide asphalt trail, three new bridges or boardwalks, rehabilitation of an existing bridge, multiple crosswalks and associated concrete ramps. Steep slopes exist with this alignment and significant grading will be required due to the existing topography.

Stormwater management for this spur will likely be comprised of non rooftop disconnect credits as well as small rain gardens, microbioretention facilities, or infiltration devices. This alignment would have minimal utility impacts, although coordination with BG&E will be required along their right-of-

way. Drainage improvements/modifications along Waugh Chapel Road will likely be required as part of this project. It is likely that this alignment will require close to 20,000 sf of forest clearing, in which case, the project will be required to comply with forest conservation requirements. Additional study and design will be needed to minimize these impacts. Environmental impacts are anticipated for this spur for the stream crossings. These will require state and federal permits in addition to County modifications. This spur is estimated to cost \$5,839,398.86.





LEGEND

- TRAIL
- CROSSWALK
- TRAFFIC SIGNAL
- STREAM
- PROPERTY BOUNDARY
- RETAINING WALL
- BOARDWALK OR PEDESTRIAN BRIDGE

NOTES

1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

CONSTRAINTS

- A. NEED EASEMENT
- B. STREAM CROSSING
- C. STREAM AND STREAM BUFFER IMPACTS
- D. STEEP SLOPES
- E. POSSIBLE CULVERT IMPACTS
- F. HYDRANT IMPACTS
- G. TREE CLEARING



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LEGEND

- TRAIL 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 
- RETAINING WALL 
- BOARDWALK OR PEDESTRIAN BRIDGE 

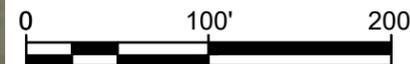
NOTES

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- F. HYDRANT IMPACTS
- G. TREE CLEARING

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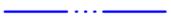
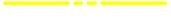
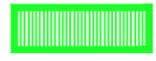
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FOCUS TRAILS

FOCUS TRAILS



LEGEND

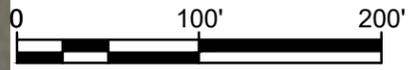
- TRAIL 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 
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NOTES

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- G. TREE CLEARING



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LEGEND

- TRAIL 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 
- RETAINING WALL 
- BOARDWALK OR PEDESTRIAN BRIDGE 

NOTES

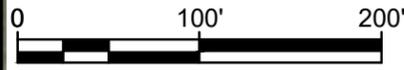
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- G. TREE CLEARING

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LEGEND

- TRAIL 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 
- RETAINING WALL 
- BOARDWALK OR PEDESTRIAN BRIDGE 

NOTES

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SEE SHEET 6

SEE SHEET 5

FOCUS TRAILS

FOCUS TRAILS



SEE SHEET 7

LEGEND

- TRAIL 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 
- RETAINING WALL 
- BOARDWALK OR PEDESTRIAN BRIDGE 

NOTES

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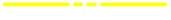
SEE SHEET 6

FOCUS TRAILS

FOCUS TRAILS



LEGEND

- TRAIL 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 
- RETAINING WALL 
- BOARDWALK OR PEDESTRIAN BRIDGE 

NOTES

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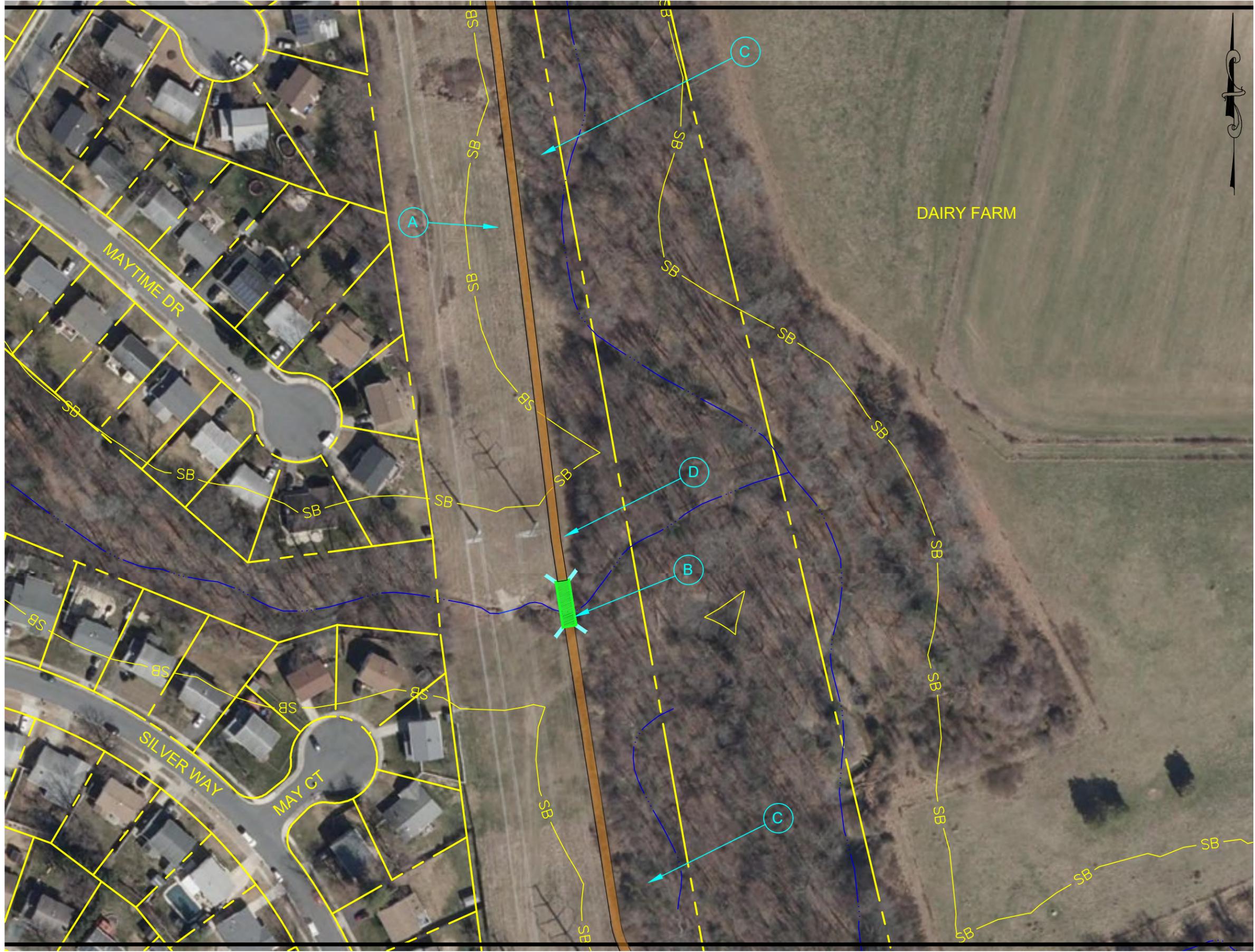


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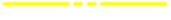
SEE SHEET 8

SEE SHEET 8

SEE SHEET 10



LEGEND

- TRAIL 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 
- RETAINING WALL 
- BOARDWALK OR PEDESTRIAN BRIDGE 

NOTES

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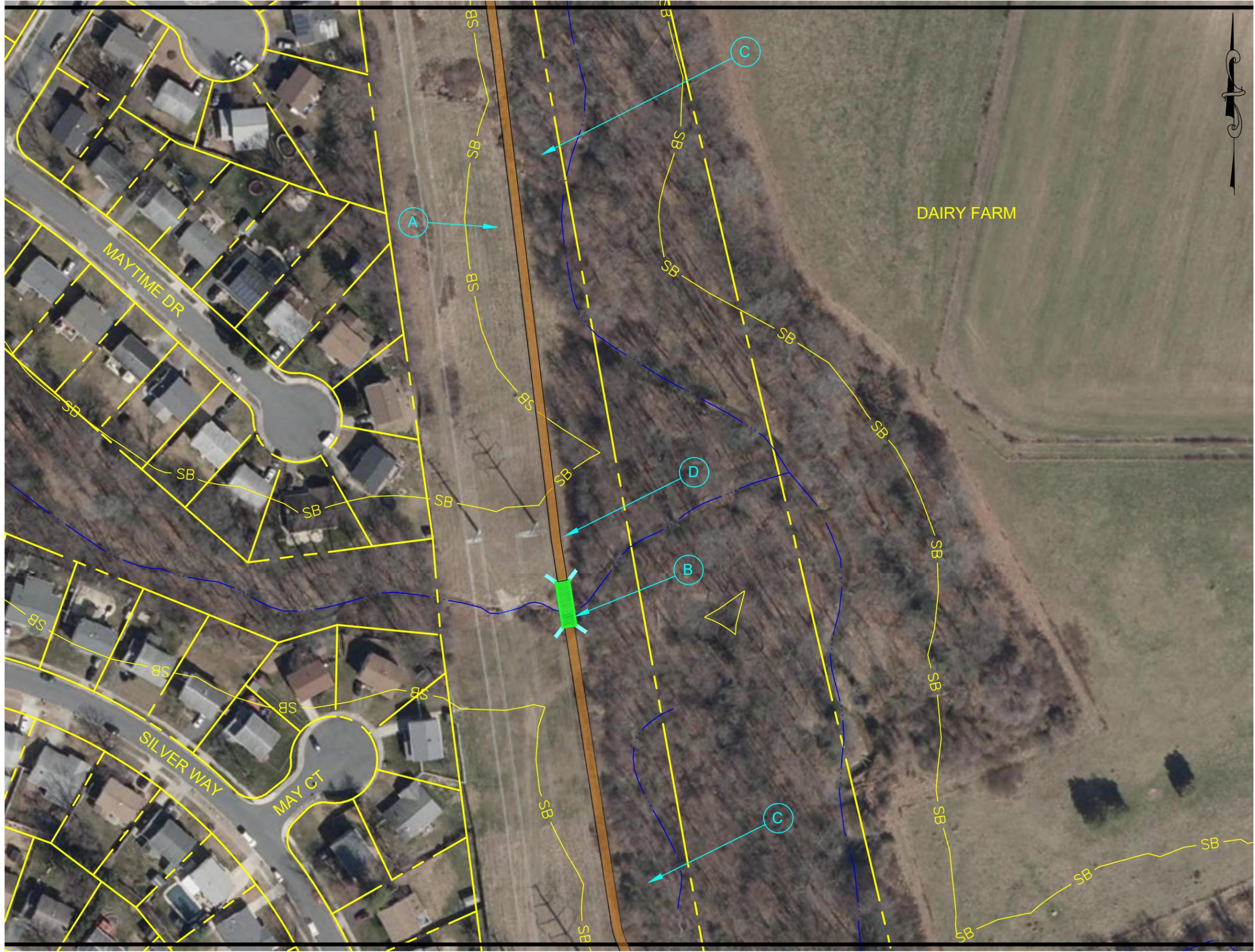
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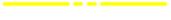
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LEGEND

- TRAIL 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 
- RETAINING WALL 
- BOARDWALK OR PEDESTRIAN BRIDGE 

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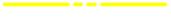


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LEGEND

- TRAIL 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 
- RETAINING WALL 
- BOARDWALK OR PEDESTRIAN BRIDGE 

NOTES

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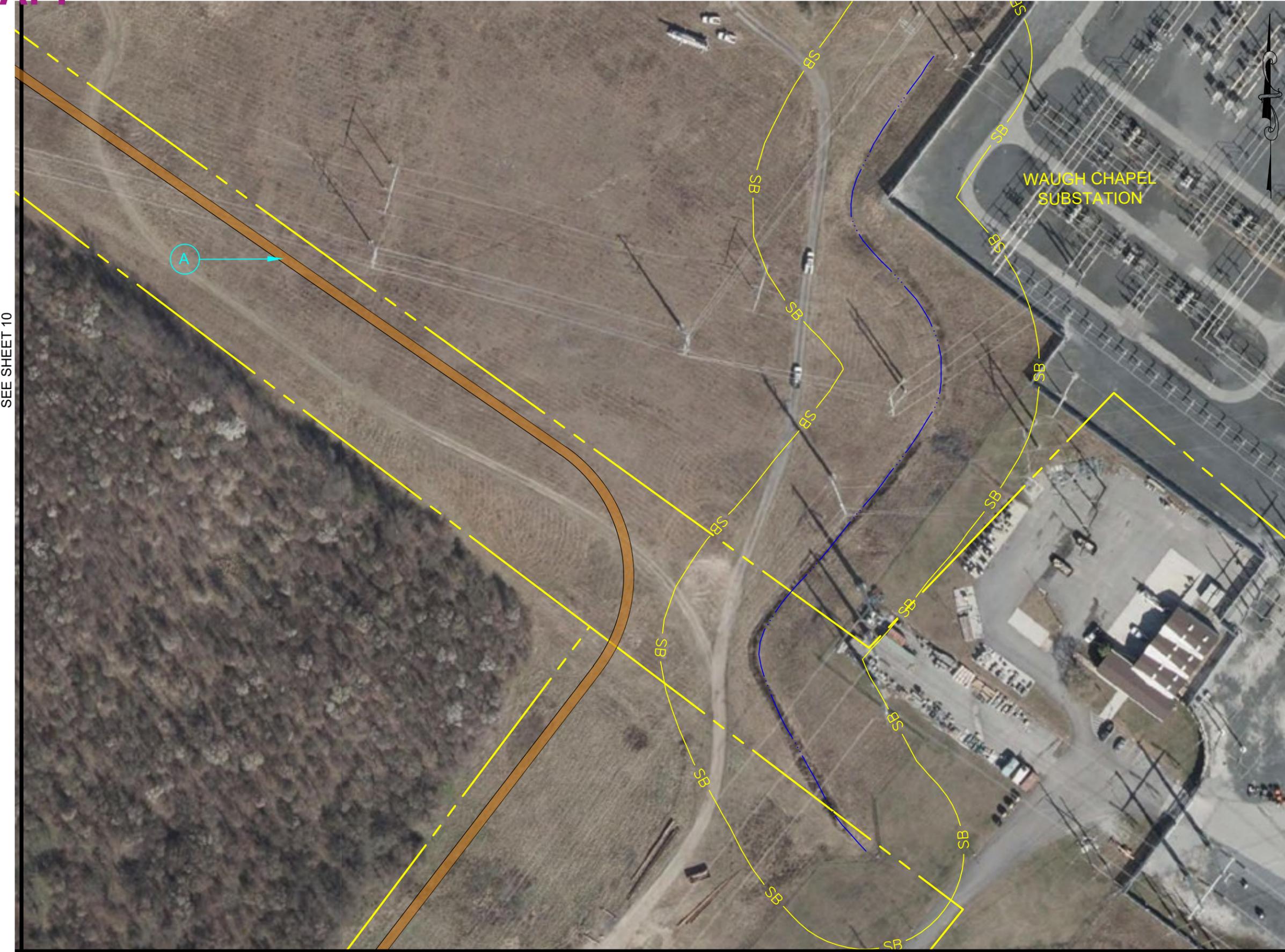
CONSTRAINTS

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- E. POSSIBLE CULVERT IMPACTS
- F. HYDRANT IMPACTS
- G. TREE CLEARING

SEE SHEET 11



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LEGEND

TRAIL	
CROSSWALK	
TRAFFIC SIGNAL	
STREAM	
PROPERTY BOUNDARY	
RETAINING WALL	
BOARDWALK OR PEDESTRIAN BRIDGE	

NOTES

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CONSTRAINTS

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- C. STREAM AND STREAM BUFFER IMPACTS
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- F. HYDRANT IMPACTS
- G. TREE CLEARING



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LEGEND

- TRAIL 
- CROSSWALK 
- TRAFFIC SIGNAL 
- STREAM 
- PROPERTY BOUNDARY 
- RETAINING WALL 
- BOARDWALK OR PEDESTRIAN BRIDGE 

NOTES

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- D. STEEP SLOPES
- E. POSSIBLE CULVERT IMPACTS
- F. HYDRANT IMPACTS
- G. TREE CLEARING



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FOCUS TRAILS

FOCUS TRAILS



LEGEND

TRAIL	
CROSSWALK	
TRAFFIC SIGNAL	
STREAM	
PROPERTY BOUNDARY	
RETAINING WALL	
BOARDWALK OR PEDESTRIAN BRIDGE	

NOTES

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- CONSTRAINTS**
- A. NEED EASEMENT
 - B. STREAM CROSSING
 - C. STREAM AND STREAM BUFFER IMPACTS
 - D. STEEP SLOPES
 - E. POSSIBLE CULVERT IMPACTS
 - F. HYDRANT IMPACTS
 - G. TREE CLEARING



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Washington, Baltimore and Annapolis (WB&A) Trail to Piney Orchard Community Center Spur

This trail spur connects the Piney Orchard Community Center on Stream Valley Drive to the Washington, Baltimore and Annapolis (WB&A) Trail in Odenton. The spur is approximately 2,066 lf in length, and runs from an existing trail/sidewalk that parallels Stream Valley Drive east through the woods to the existing WB&A Trail. The County owns one of the parcels that would be utilized for the trail. A private developer owns the other parcel, which is likely an HOA open space parcel for the Piney Orchard PUD. No alternate alignments were studied for this trail spur.

Opportunities

- 1. County owns much of the necessary right-of-way

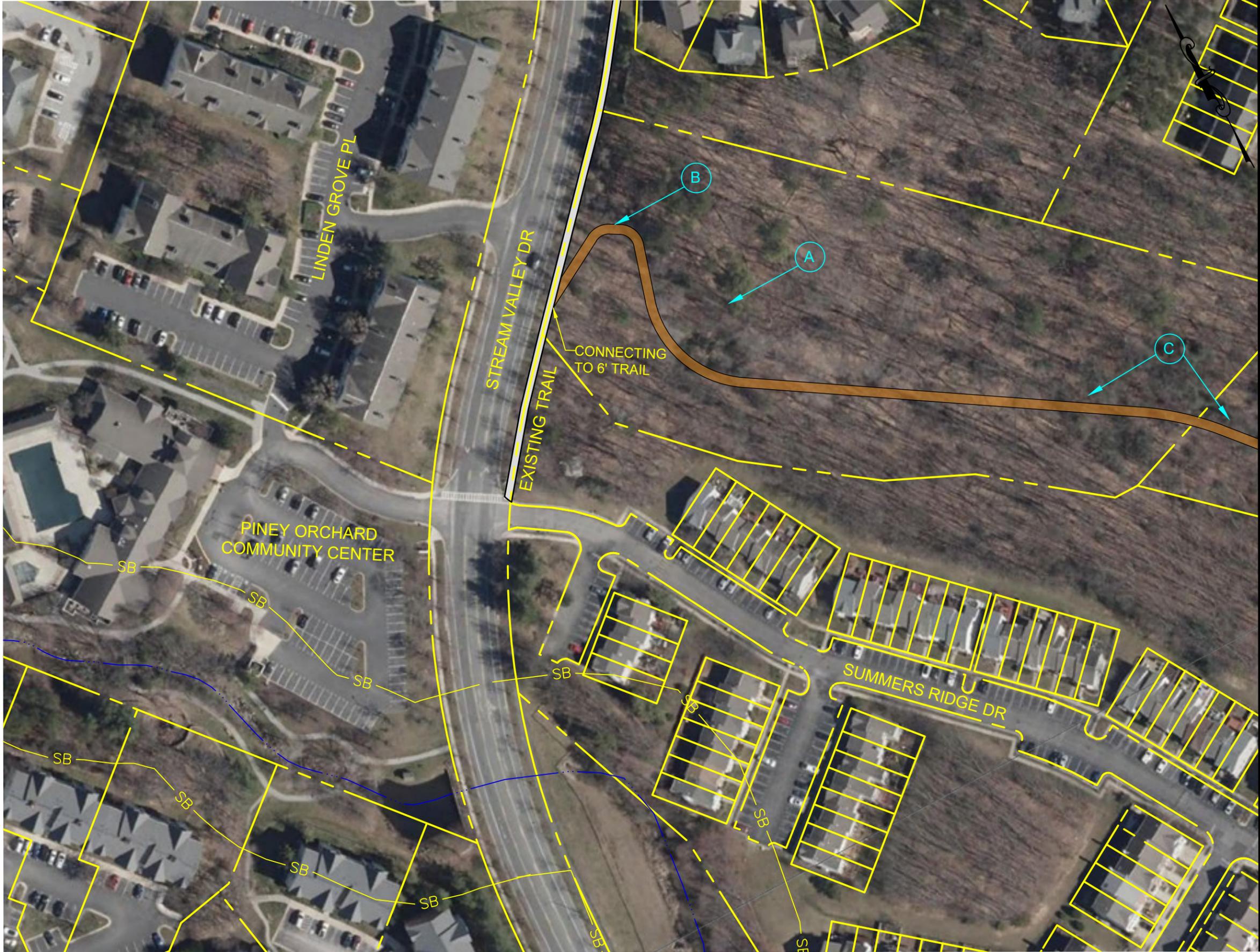
Constraints

- A. Easement / right-of-way needed
- B. Steep slopes
- C. Tree clearing required
- D. Potential stream / wetland and buffer impacts

The spur includes a 10' wide asphalt trail. The trail can largely occur within the existing County right-of-way, but an easement would be required from the HOA open space parcel owned by Constellation Holdings. Significant grading and retaining walls will be required due to the topography. Bridges or boardwalks will be needed where the trail crosses the existing stream valley areas.

Stormwater management for this spur would likely be comprised of non rooftop disconnect credits as well as small rain gardens, microbio retention facilities, or infiltration devices. This alignment will have minimal utility impacts. This alignment will require more than 20,000 sf of forest clearing; the project will be required to comply with forest conservation requirements. Stream and stream buffer impacts and wetland impacts are anticipated with this project. Additional study and design will be needed to minimize these impacts. The total estimated cost for this spur is \$1,475,109.79.





LEGEND

TRAIL	
CROSSWALK	
STREAM	
PROPERTY BOUNDARY	
WASHINGTON BALTIMORE AND ANNAPOLIS TRAIL	
RETAINING WALL	
BOARDWALK OR PEDESTRIAN BRIDGE	

NOTES

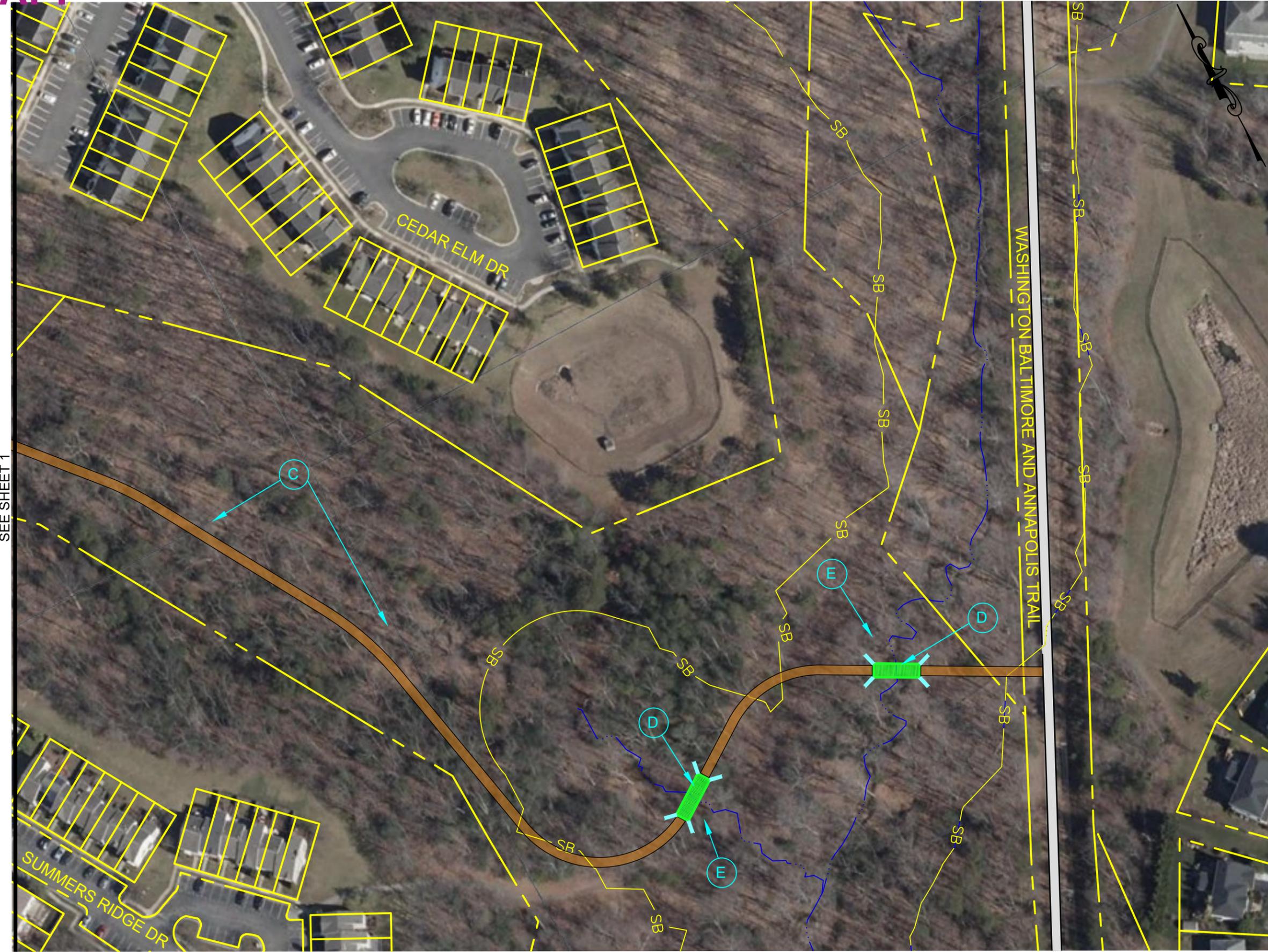
1. BASE MAPS BASED ON AVAILABLE AERIAL PHOTOGRAPHY FROM THE STATE OF MARYLAND (2020) AND COUNTY GIS.

- CONSTRAINTS**
- A. NEED EASEMENT FROM CONSTELLATION HOLDINGS
 - B. STEEP SLOPES
 - C. TREE CLEARING
 - D. STREAM CROSSING
 - E. STREAM AND STREAM BUFFER IMPACTS



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LEGEND

- TRAIL 
- CROSSWALK 
- STREAM 
- PROPERTY BOUNDARY 
- WASHINGTON BALTIMORE AND ANNAPOLIS TRAIL 
- RETAINING WALL 
- BOARDWALK OR PEDESTRIAN BRIDGE 

NOTES

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- A. NEED EASEMENT FROM CONSTELLATION HOLDINGS
- B. STEEP SLOPES
- C. TREE CLEARING
- D. STREAM CROSSING
- E. STREAM AND STREAM BUFFER IMPACTS



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3

Summary and Conclusion

Summary

The County's mainline trail system is an incredible piece of the County recreation infrastructure, connecting large areas of the County and providing County residents many different recreation opportunities, as well as providing a form of alternative transportation. The mainline trail system is like a backbone in the body, critical to the overall structure and function of the person. But the backbone and other large bones only provide an overall framework and structure; other bones, smaller and perhaps less critical to the overall function of the body are needed to make the whole person. Similarly, the mainline trails can only do so much. They are critical, but they can't typically make the smaller connections that really flesh out a trail system. The proposed spurs begin to do that. Instead of connecting areas of the County to each other, they begin to connect places to each other – places where people live, work and play.

As requested in the RFP, Pennoni has reviewed and analyzed the County trail system at a countywide scale and developed a prioritized list of 24 potential trail spurs. We then prepared concept plans and preliminary cost estimates for the 24 spurs. Constraints to the development of the spurs have been examined and alternative alignments for some of the spurs have been considered. The spurs cover various parts of the northern, eastern, and western sections of the County. Spurs range in length from 600 feet to over 2.5 miles. Spurs include traditional 10' asphalt trails as well as on road improvements for some situations.

Following the planning stage, the trail rankings have been adjusted to account for factors encountered during the planning. The following factors were considered in adjusting the rankings: right-of-way

requirements, cost, status of the mainline trail, and other significant issues. The initial rankings of the spurs will be increased based on these factors. These factors are more fully described below.

A. Right of Way Required – Trail spur will be weighted based on what right-of-way or easements may be required based on the concept design.

0 = no right-of-way needed, no adjustment to the ranking

+1 = right-of-way needed from a public entity, i.e. Board of Education. It is assumed that the process for acquiring right-of-way from another public agency is simpler and less costly than acquiring right-of-way from a private entity.

+2 – right-of-way needed from a private property owner

B. Cost – What is the cost of the project? The thinking is that smaller, less expensive projects will be able to be funded and constructed sooner, allowing the County to build out the trail system sooner.

0 = under \$1 million

+1 = \$1-1.5 million

+2 = over \$1.5 million

C. Status of Mainline Trail – What is the status of the trail that will be connected to? Is it already built or under construction or still in the design or planning stages?

0 = existing or under construction

- +1 = under design
- +2 = planned, but not designed

D. Other Significant issues – Are there other significant issues that are anticipated as far as potential opposition from surrounding communities, utility relocations, environmental permitting, etc. that could delay or otherwise impact the project?

- 0 = no significant issues
- +1 = some significant issues
- +2 = major hurdles to overcome

The final prioritized list is provided on the following page.

Trail Spur Name	Initial Ranking	Adjusted Ranking
Broadneck Trail to Cape St Claire Elementary Spur	3	4
BWI to Linthicum ES Spur	2	5
South Shore Trail to Dairy Farm Spur	4	6
Broadneck Trail to Belvedere Elementary Spur	1	7
Broadneck Trail to Windsor Farm Elementary Spur	8	8
Baltimore and Annapolis (B&A) Trail to Baltimore Washington Medical Center Spur	5	9
BWI Trail to Corkran MS Spur	7	9
Baltimore and Annapolis (B&A) Trail to Severna Park HS Spur	9	9
Washington, Baltimore and Annapolis (WB&A) Trail to Piney Orchard Community Center Spur	6	10
Broadneck Trail to Twin Oaks Park and Magothy River Middle School Spur	12	14
Baltimore and Annapolis (B&A) Trail to Lake Waterford Park Spur	10	15
Baltimore and Annapolis (B&A) Trail to Severna Park MS Spur (via Kinder Farm Spur)	10	15
South Shore Trail to Waugh Village Commercial Spur	13	18
South Shore Trail to Generals Highway Corridor Park Spur	15	19
Baltimore and Annapolis (B&A) Trail to Arnold Park Spur	16	19
Broadneck Trail to Broadneck Elementary Spur	17	19
Baltimore and Annapolis (B&A) Trail to Future Marley Creek Park Spur	18	20
Baltimore and Annapolis (B&A) Trail to Cromwell Park & Ride/ Light Rail Station Spur	19	20
Baltimore and Annapolis (B&A) Trail to Kinder Farm Park Spur	14	21
South Shore Trail to Millersville Elementary and Millersville Park Spur	20	21
Baltimore and Annapolis (B&A) to Annapolis Spur	23	23
Broadneck Trail to Arnold Park Spur	22	24
South Shore Trail to Waterworks Park Spur	21	25
South Shore Trail to Rolling Knolls Elementary Spur	24	27

This study will serve as a road map for future trail development in the County and the methodologies contained herein can be reapplied in the future to continue to expand and “flesh out” the County trail system. This study includes nearly 12.5 miles of trails in 24 spurs that will allow County residents expanded opportunities for recreation and increase connectivity throughout the County.

4 Appendices

Appendix A

Linear Foot Trail Costs

Average linear foot costs for Broadneck Trail Phase III, South Shore Trail Phase II, and South Shore Trail Phase IV without any bridges or boardwalks included.

South Shore Phase II

Total - \$6,286,548 (base bid received from Mulford Construction, Inc.)

- Minus bridge and BW - \$6,286,548 - \$581,630 = \$5,704,918
- Linear Foot - 9799'
- Cost / LF = \$582/lf

South Shore Phase IV (original design)

- Total - \$9,862,733 (estimate by Phoenix Engineering at Schematic Design - June 2021)
- Minus bridge and BW - \$9,862,733 - \$1,470,541 = \$8,392,192
- Linear Foot - 20,473'
- Cost / LF = \$410/lf

Broadneck Phase III

- Total - \$6,676,745 (base bid received from Urban Zink, Inc.)
- Minus bridge and BW - \$6,676,745 - \$1,680,063 = \$4,996,682
- Linear Foot - 14,243'
- Cost / LF = \$351/lf

Appendix B

Assumptions for Hard Construction Costs

1. Clearing/Demo – \$6000/ac
 - A. Assumes light tree and brush clearing, and demo
 - B. no building demo
 - C. based on approximate LOD, trail length x 40'
2. Sediment Control - \$25/lf of approximately 60% of the LOD
 - A. Assumes limited linear controls on the downhill side of a project.
 - B. This would be increased on a case by case basis especially for larger projects and stream/wetland crossings
3. Grading – assume between \$1,000 and \$1,500 per 1,000 sf (msf) of LOD
 - A. This number will vary in the range noted above depending on steepness of topography
 - B. South Shore Trail Phase II - $\$356,519 / 404 \text{ msf} = 882/1000 \text{ sf}$
 - C. South Shore Trail Phase IV - $\$1,418,184/603 \text{ msf} = \$2351/1000 \text{ sf}$
 - D. Broadneck Phase II - $\$1,119,429/509 \text{ msf} = \$2,200/1000 \text{ sf}$
4. 10' asphalt Trail – assume \$40/lf
 - A. 2.5" asphalt
 - B. 4" stone
5. 10' concrete trail – assume \$10/sf, but see ramps below
6. Curb and Gutter - \$15/lf
7. Retaining walls – assume \$104/sf
 - A. Average cost of South Shore Phase 2 bids for retaining wall A was approximately \$103/sf
8. Boardwalk
 - A. Assume \$180/sf for long boardwalk – over 100'
 - B. Assume \$400/sf for boardwalks less than 50' (based on south shore phase 2 bids)
 - C. Assume timber boardwalk structure with 14' clear precast concrete deck and stringers, and wood handrails
9. Crosswalks
 - A. Assume \$3/lf of striping
 - B. Assume continental style crosswalks
10. Ramps – assume \$1500/each
11. Traffic signal
 - A. Assume \$250k per signal
 - B. Assume \$50k for pedestrian signals
 - C. Assume \$10k/existing signal for signal modifications
 - D. Assume \$7k for Rapid Rectangular Flashing Beacon (RRFB)
12. Stormwater – assume \$22/sf of facility
 - A. Each 20,000 sf da will have approximately one 1,200-2,400 sf SWM facility
13. Storm drainage – assume \$120/lf for each 50 lf
 - A. Each 50 lf includes one inlet and 50 lf of 15" HDPE storm drain
14. Utility relocation
 - A. Poles – assume \$10k/pole
 - B. Fire hydrants – \$6k
15. Landscaping
 - A. Assume \$250/shade tree
 - B. Assume shade trees at 50 o.c.
16. Forest Conservation
 - A. Assume \$1.75/sf of forest conservation required.
17. Timber backed Guardrail – use \$90/lf
18. Signs – use \$200/sign
19. Fencing
 - A. Assume \$15/lf for spilt rail
 - B. \$55/ 54" chain-link fence
 - C. \$68/lf for 8' fence

Appendix C

Trail Spurs Ranking

Trail	Initial Ranking	Length (lf)	Estimated Cost	Right-of-Way Required	Cost	Status of Mainline Trail	Other	Adjusted Ranking	Council District
Broadneck Trail to Cape St Claire Elementary Spur	3	2234	\$737,201.09	1	0	0	0	4	5
BWI to Linthicum ES Spur	2	1752	\$805,157.50	2	0	0	1	5	1
South Shore Trail to Dairy Farm Spur	4	2205	\$754,082.78	2	0	0	0	6	5
Broadneck Trail to Belvedere Elementary Spur	1	3635	\$1,582,541.06	2	2	0	2	7	5
Broadneck Trail to Windsor Farm Elementary Spur	8	1156	\$469,452.67	0	0	0	0	8	5
B&A Trail to Baltimore Washington Medical Center Spur	5	6104	\$2,021,313.53	2	2	0	0	9	2
BWI Trail to Corkran MS Spur	7	2832	\$917,339.90	1	0	0	1	9	2
B&A Trail to Severna Park HS Spur	9	1140	\$513,358.56	0	0	0	0	9	5
WB&A Trail to Piney Orchard Community Center Spur	6	2066	\$1,475,109.79	2	1	0	1	10	4
Broadneck Trail to Twin Oaks Park and Magothy River Middle School Spur	12	1485	\$550,230.41	2	0	0	0	14	5
B&A Trail to Lake Waterford Park Spur	10	5468	\$2,258,161.03	2	2	0	1	15	3
B&A Trail to Severna Park MS Spur (via Kinder Farm Spur)	10	2575	\$1,096,417.30	2	1	2	0	15	5
South Shore Trail to Waugh Village Commercial Spur	13	14538	\$5,839,398.86	2	2	0	1	18	4
South Shore Trail to Generals Highway Corridor Park Spur	15	2765	\$1,313,604.86	2	1	1	0	19	6
B&A Trail to Arnold Park Spur	16	768	\$595,324.08	2	0	0	1	19	5
Broadneck Trail to Broadneck Elementary Spur	17	3635	\$1,582,541.06	0	2	0	0	19	5
B&A Trail to Future Marley Creek Park Spur	18	1625	\$1,047,079.23	0	1	0	1	20	2
B&A Trail to Cromwell Park & Ride/ Light Rail Station Spur	19	608	\$389,775.11	1	0	0	0	20	1
B&A Trail to Kinder Farm Park Spur	14	3143	\$1,705,371.41	2	2	2	1	21	5
South Shore Trail to Millersville Elementary and Millersville Park Spur	20	1360	\$754,527.57	1	0	0	0	21	6
B&A to Annapolis Spur	23	738	\$229,570.85	0	0	0	0	23	5
Broadneck Trail to Arnold Park Spur	22	1075	\$477,219.60	2	0	0	0	24	5
South Shore Trail to Waterworks Park Spur	21	1986	\$1,401,905.23	2	1	1	0	25	6
South Shore Trail to Rolling Knolls Elementary Spur	24	1080	\$602,289.04	2	0	1	0	27	6

Appendix D

Cost Estimates



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COST ESTIMATE

Project: Trail Spurs Study

Sheet No. 1

Project No.: AACOX23001

Date: 3/4/2024

Description: Preliminary Trail Costs
B&A Trail to Annapolis

Computed: PJS

Checked by:

Item No.	Item	Unit	Approx. Quantity	Unit Price (\$)	Total Price (\$)
	Clearing/Demo	AC	0.66	\$6,000.00	\$3,960.00
	Sediment Control	LF	1,000	\$25.00	\$25,000.00
	Grading	MSF	29	\$1,200.00	\$34,800.00
	10' Asphalt Trail and Stone Base	LF	740	\$40.00	\$29,600.00
	Concrete ADA Ramps	EA	1	\$1,500.00	\$1,500.00
	Stormwater Management	SF	1,200	\$22.00	\$26,400.00
	Storm Drainage	LF	100	\$120.00	\$12,000.00
	Signage	EA	15	\$200.00	\$3,000.00
	<i>Subtotal</i>				\$136,260.00
	Mobilization (20%)				\$27,252.00
	Contractor Profit (8%)				\$13,080.96
	Design Contingency (30%)				\$52,977.89
	Total				\$229,570.85
	Linear Foot of Trail				738
	Cost per Linear Foot				\$311.07

Notes:

- Does not include design and permitting costs.
- Assumes two small microbioretention/infiltration areas and non rooftop disconnect for SWM.
- Cost per lf does not include on road trail from B&A parking to WWII Memorial. No additional improvements are proposed from B&A parking to WWII Memorial on the west side of MD 450.
- Does not include property acquisition costs.
- Assumes that clearing will be less than 20,000 sf and that project will be exempt from forest conservation requirements.



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COST ESTIMATE

Project: Trail Spurs Study

Sheet No. 1

Project No.: AACOX23001

Date: 3/4/2024

Description: Preliminary Trail Costs
B&A Trail to Arnold Park

Computed: PJS

Checked by:

Item No.	Item	Unit	Approx. Quantity	Unit Price (\$)	Total Price (\$)
	Clearing/Demo	AC	0.70	\$6,000.00	\$4,200.00
	Sediment Control	LF	900	\$25.00	\$22,500.00
	Sidewalk Removal	CY	27	\$135.00	\$3,645.00
	Grading	MSF	30	\$1,000.00	\$30,000.00
	10' Asphalt Trail and Stone Base	LF	768	\$10.00	\$7,680.00
	Concrete ADA Ramps	EA	9	\$1,500.00	\$13,500.00
	Stormwater Management	SF	2,400	\$22.00	\$52,800.00
	Storm Drainage	LF	200	\$120.00	\$24,000.00
	Utility Pole Relocation	EA	3	\$30,000.00	\$90,000.00
	Signage	EA	10	\$200.00	\$2,000.00
	Crosswalks	LF	475	\$3.00	\$1,425.00
	Pedestrian Signals	LS	2	\$50,000.00	\$100,000.00
	Bike Symbol Marking on Church Road	EA	8	\$200.00	\$1,600.00
	<i>Subtotal</i>				\$353,350.00
	Mobilization (20%)				\$70,670.00
	Contractor Markup (8%)				\$33,921.60
	Design Contingency (30%)				\$137,382.48
	Total				\$595,324.08
	Linear Foot of Trail				768
	Cost per Linear Foot				\$775.16

Notes:

- Does not include design and permitting costs.
- Assumes two small microbioretention/infiltration areas and non rooftop disconnect for SWM.
- Does not include property acquisition costs.
- Assumes that clearing will be less than 20,000 sf and that project will be exempt from forest conservation requirements.
- Assumes limited signage and striping improvements along Church Road and no actual trail construction



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COST ESTIMATE

Project: Trail Spurs Study Sheet No. 1
 Project No.: AACOX23001 Date: 3/4/2024
 Description: Preliminary Trail Costs Computed: PJS
 B&A Trail to Baltimore Washington Medical

Checked by:

Item No.	Item	Unit	Approx. Quantity	Unit Price (\$)	Total Price (\$)
	Clearing/Demo	AC	5.60	\$6,000.00	\$33,600.00
	Sediment Control	LF	7,000	\$25.00	\$175,000.00
	Sidewalk Removal	CY	265	\$135.00	\$35,775.00
	Grading	MSF	244	\$1,200.00	\$292,800.00
	10' Asphalt Trail and Stone Base	LF	6,104	\$40.00	\$244,160.00
	Curb and Gutter	LF	720	\$15.00	\$10,800.00
	Concrete ADA Ramps	EA	18	\$1,500.00	\$27,000.00
	Timber Backed Guardrail	LF	845	\$90.00	\$76,050.00
	Stormwater Management	SF	8,400	\$22.00	\$184,800.00
	Storm Drainage	LF	700	\$120.00	\$84,000.00
	Signage	EA	10	\$200.00	\$2,000.00
	Crosswalks	LF	750	\$3.00	\$2,250.00
	Signal Modifications	LS	1	\$10,000.00	\$10,000.00
	Landscaping	EA	86	\$250.00	\$21,500.00
	<i>Subtotal</i>				\$1,199,735.00
	Mobilization (20%)				\$239,947.00
	Contractor Profit (8%)				\$115,174.56
	Design Contingency (30%)				\$466,456.97
	Total				\$2,021,313.53
	Linear Foot of Trail				6,104
	Cost per Linear Foot				\$331.15

Notes:

- Does not include design and permitting costs.
- Assumes seven small microbio retention/infiltration areas and non rooftop disconnect for SWM.
- Assumes that clearing will be less than 20,000 sf and that project will be exempt from forest conservation requirements.
- Assumes timber backed guardrail along Hospital Drive for 845 lf due to proximity of trail to roadway.
- Does not include property acquisition costs.



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COST ESTIMATE

Project: Trail Spurs Study Sheet No. 1
 Project No.: AACOX23001 Date: 3/4/2024
 Description: Preliminary Trail Costs Computed: PJS
 B&A Trail to Cromwell Park & Ride Light Rail

Checked by:

Item No.	Item	Unit	Approx. Quantity	Unit Price (\$)	Total Price (\$)
	Clearing/Demo	AC	0.56	\$6,000.00	\$3,360.00
	Sediment Control	LF	700	\$25.00	\$17,500.00
	Sidewalk Removal	CY	38	\$135.00	\$5,130.00
	Grading	MSF	24	\$1,000.00	\$24,000.00
	10' Asphalt Trail and Stone Base	LF	608	\$40.00	\$24,320.00
	Concrete ADA Ramps	EA	3	\$1,500.00	\$4,500.00
	Split Rail Fence	LF	520	\$15.00	\$7,800.00
	Timber Guardrail	LF	500	\$90.00	\$45,000.00
	Stormwater Management	SF	1,200	\$22.00	\$26,400.00
	Storm Drainage	LF	100	\$120.00	\$12,000.00
	Signage	EA	3	\$200.00	\$600.00
	Crosswalks	LF	246	\$3.00	\$738.00
	Pedestrian Signals	LS	1	\$50,000.00	\$50,000.00
	Modify Ex. Pedestrian Signals	LS	1	\$10,000.00	\$10,000.00
	<i>Subtotal</i>				\$231,348.00
	Mobilization (20%)				\$46,269.60
	Contractor OH & Markup (8%)				\$22,209.41
	Design Contingency (30%)				\$89,948.10
	Total				\$389,775.11
	Linear Foot of Trail				608
	Cost per Linear Foot				\$641.08

Notes:

- Does not include design and permitting costs.
- Assumes two small microbio retention/infiltration areas and non rooftop disconnect for SWM.
- Assumes segmental block wall.



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COST ESTIMATE

Project: Trail Spurs Study Sheet No. 1
 Project No.: AACOX23001 Date: 3/4/2024
 Description: Preliminary Trail Costs Computed: PJS
 B&A Trail to Severna Park Middle School via Kinder Farm Park
 Checked by:

Item No.	Item	Unit	Approx. Quantity	Unit Price (\$)	Total Price (\$)
	Clearing/Demo	AC	2.36	\$6,000.00	\$14,160.00
	Sediment Control	LF	3,000	\$25.00	\$75,000.00
	Grading	MSF	103	\$1,200.00	\$123,600.00
	5' Asphalt Trail and Stone Base	LF	375	\$20.00	\$7,500.00
	10' Asphalt Trail and Stone Base	LF	2,200	\$40.00	\$88,000.00
	Concrete ADA Ramps	EA	4	\$1,500.00	\$6,000.00
	Timber Backed Guardrail	LF	375	\$90.00	\$33,750.00
	Stormwater Management	SF	6,000	\$22.00	\$132,000.00
	Storm Drainage	LF	1,000	\$120.00	\$120,000.00
	Signage	EA	2	\$200.00	\$400.00
	Crosswalks	LF	120	\$3.00	\$360.00
	Pedestrian Signals	LS	1	\$50,000.00	\$50,000.00
	<i>Subtotal</i>				\$650,770.00
	Mobilization (20%)				\$130,154.00
	Contractor Profit (8%)				\$62,473.92
	Design Contingency (30%)				\$253,019.38
	Total				\$1,096,417.30
	Linear Foot of Trail				2,575
	Cost per Linear Foot				\$425.79

Notes:
 1. Does not include design and permitting costs.
 2. Assumes five small microbioretention/infiltration areas and non rooftop disconnect for SWM.
 3. Does not include property acquisition costs.
 4. Assumes that clearing will be less than 20,000 sf and that project will be exempt from forest conservation requirements.
 5. Assumes widening of existing shoulder for approximately 375' immediately south of Kinder Road



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COST ESTIMATE

Project: Trail Spurs Study Sheet No. 1
 Project No.: AACOX23001 Date: 3/4/2024
 Description: Preliminary Trail Costs Computed: PJS
 Broadneck Trail to Arnold Park
 Checked by:

Item No.	Item	Unit	Approx. Quantity	Unit Price (\$)	Total Price (\$)
	Clearing/Demo	AC	0.98	\$6,000.00	\$5,880.00
	Sediment Control	LF	1,500	\$25.00	\$37,500.00
	Grading	MSF	43	\$1,400.00	\$60,200.00
	10' Asphalt Trail and Stone Base	LF	1,075	\$40.00	\$43,000.00
	Concrete ADA Ramps	EA	3	\$1,500.00	\$4,500.00
	Stormwater Management	SF	2,400	\$22.00	\$52,800.00
	Storm Drainage	LF	200	\$120.00	\$24,000.00
	Forest Conservation	SF	23,000	\$1.75	\$40,250.00
	Signage	EA	2	\$200.00	\$400.00
	Crosswalks	LF	240	\$3.00	\$720.00
	Pedestrian Signals (RRFB)	LS	2	\$7,000.00	\$14,000.00
	<i>Subtotal</i>				\$283,250.00
	Mobilization (20%)				\$56,650.00
	Contractor Markup (8%)				\$27,192.00
	Design Contingency (30%)				\$110,127.60
	Total				\$477,219.60
	Linear Foot of Trail				1,075
	Cost per Linear Foot				\$443.93

Notes:
 1. Does not include design and permitting costs.
 2. Assumes two small microbioretention/infiltration areas and non rooftop disconnect for SWM.
 3. Does not include property acquisition costs.



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COST ESTIMATE

Project: Trail Spurs Study Sheet No. 1
 Project No.: AACOX23001 Date: 3/4/2024
 Description: Preliminary Trail Costs Computed: PJS
 Broadneck Trail to Belvedere ES

Checked by:

Item No.	Item	Unit	Approx. Quantity	Unit Price (\$)	Total Price (\$)
	Clearing/Demo	AC	3.00	\$6,000.00	\$18,000.00
	Sediment Control	LF	5,000	\$25.00	\$125,000.00
	Sidewalk Removal	CY	178	\$135.00	\$24,030.00
	Grading	MSF	110	\$1,500.00	\$165,000.00
	10' Asphalt Trail and Stone Base	LF	3,635	\$40.00	\$145,400.00
	Concrete ADA Ramps	EA	13	\$1,500.00	\$19,500.00
	Curb and Gutter	LF	1,100	\$15.00	\$16,500.00
	Stormwater Management	SF	4,800	\$22.00	\$105,600.00
	Storm Drainage	LF	600	\$120.00	\$72,000.00
	Retaining Walls	SF	1,850	\$104.00	\$192,400.00
	Signage	EA	6	\$200.00	\$1,200.00
	Crosswalks	LF	450	\$3.00	\$1,350.00
	Utility Pole Relocation	EA	3	\$10,000.00	\$30,000.00
	Fire Hydrant Relocation	EA	1	\$6,000.00	\$6,000.00
	Chainlink Fencing	LF	315	\$55.00	\$17,325.00
	<i>Subtotal</i>				\$939,305.00
	Mobilization (20%)				\$187,861.00
	Contractor Profit (8%)				\$90,173.28
	Design Contingency (30%)				\$365,201.78
	Total				\$1,582,541.06
	Linear Foot of Trail				3,635
	Cost per Linear Foot				\$435.36

- Notes:
1. Does not include design and permitting costs.
 2. Estimate does not include alternate alignment.
 3. Assumes four small microbio retention/infiltration areas and non rooftop disconnect for SWM.
 4. Assumes segmental block wall, approximately 6' tall, and 310' long.
 5. Does not include property acquisition costs.
 6. Assumes that clearing will be less than 20,000 sf and that project will be exempt from forest conservation requirements.



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COST ESTIMATE

Project: Trail Spurs Study Sheet No. 1
 Project No.: AACOX23001 Date: 3/4/2024
 Description: Preliminary Trail Costs Computed: PJS
 Broadneck Trail to Broadneck ES

Checked by:

Item No.	Item	Unit	Approx. Quantity	Unit Price (\$)	Total Price (\$)
	Clearing/Demo	AC	3.25	\$6,000.00	\$19,500.00
	Sediment Control	LF	5,000	\$25.00	\$125,000.00
	Sidewalk and Pavement Removal	CY	400	\$135.00	\$54,000.00
	Grading	MSF	142	\$1,200.00	\$170,400.00
	10' Asphalt Trail and Stone Base	LF	3,551	\$40.00	\$142,040.00
	Concrete ADA Ramps	EA	5	\$1,500.00	\$7,500.00
	Curb and Gutter	LF	2,835	\$15.00	\$42,525.00
	Stormwater Management	SF	3,600	\$22.00	\$79,200.00
	Storm Drainage	LF	570	\$120.00	\$68,400.00
	Signage	EA	8	\$200.00	\$1,600.00
	Crosswalks	LF	420	\$3.00	\$1,260.00
	Utility Relocation (Transformer)	LS	1	\$30,000.00	\$30,000.00
	<i>Subtotal</i>				\$741,425.00
	Mobilization (20%)				\$148,285.00
	Contractor Markup (8%)				\$71,176.80
	Design Contingency (30%)				\$288,266.04
	Total				\$1,249,152.84
	Linear Foot of Trail				3,551
	Cost per Linear Foot				\$351.77

- Notes:
1. Does not include design and permitting costs.
 2. Estimate does not include alternate alignment.
 3. Assumes three small microbio retention/infiltration areas and non rooftop disconnect for SWM.
 4. Does not include property acquisition costs.
 5. Assumes that clearing will be less than 20,000 sf and that project will be exempt from forest conservation requirements.



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COST ESTIMATE

Project: Trail Spurs Study Sheet No. 1
 Project No.: AACOX23001 Date: 3/4/2024
 Description: Preliminary Trail Costs Computed: PJS
 Broadneck Trail to Cape St. Claire ES
 Checked by:

Item No.	Item	Unit	Approx. Quantity	Unit Price (\$)	Total Price (\$)
	Clearing/Demo	AC	2	\$6,000.00	\$12,300.00
	Sediment Control	LF	3,800	\$25.00	\$95,000.00
	Grading	MSF	89	\$1,100.00	\$97,900.00
	10' Asphalt Trail and Stone Base	LF	1,596	\$40.00	\$63,840.00
	12' Asphalt Driveway (no Stone base)	LF	638	\$40.00	\$25,520.00
	Stormwater Management	SF	3,600	\$22.00	\$79,200.00
	Storm Drainage	LF	300	\$120.00	\$36,000.00
	Landscaping	EA	30	\$250.00	\$7,500.00
	Split Rail Fencing	LF	1,300	\$15.00	\$19,500.00
	Signage	EA	4	\$200.00	\$800.00
	<i>Subtotal</i>				\$437,560.00
	Mobilization (20%)				\$87,512.00
	Contractor Markup (8%)				\$42,005.76
	Design Contingency (30%)				\$170,123.33
	Total				\$737,201.09
	Linear Foot of Trail				2,234
	Cost per Linear Foot				\$329.99

Notes:
 1. Does not include design and permitting costs.
 2. Does not include property acquisition costs.
 3. Assumes existing gravel driveway will serve as base for new trail/driveway.
 4. Assumes three small microbioretention/infiltration areas and non rooftop disconnect for SWM.
 5. Assumes that clearing will be less than 20,000 sf and that project will be exempt from forest conservation requirements.



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COST ESTIMATE

Project: Trail Spurs Study Sheet No. 1
 Project No.: AACOX23001 Date: 3/4/2024
 Description: Preliminary Trail Costs Computed: PJS
 Broadneck Trail to Magothy MS
 Checked by:

Item No.	Item	Unit	Approx. Quantity	Unit Price (\$)	Total Price (\$)
	Clearing/Demo	AC	1.63	\$6,000.00	\$9,780.00
	Sediment Control	LF	1,800	\$25.00	\$45,000.00
	Sidewalk Removal	CY	23	\$135.00	\$3,105.00
	Grading	MSF	60	\$1,000.00	\$60,000.00
	10' Asphalt Trail and Stone Base	LF	1,485	\$40.00	\$59,400.00
	Concrete ADA Ramps	EA	10	\$1,500.00	\$15,000.00
	Stormwater Management	SF	3,600	\$22.00	\$79,200.00
	Storm Drainage	LF	300	\$120.00	\$36,000.00
	Signage	EA	4	\$200.00	\$800.00
	Crosswalks	LF	100	\$3.00	\$300.00
	Shade Trees	EA	18	\$250.00	\$4,500.00
	Split Rail Fencing	LF	900	\$15.00	\$13,500.00
	<i>Subtotal</i>				\$326,585.00
	Mobilization (20%)				\$65,317.00
	Contractor Markup (8%)				\$31,352.16
	Design Contingency (30%)				\$126,976.25
	Total				\$550,230.41
	Linear Foot of Trail				1,485
	Cost per Linear Foot				\$370.53

Notes:
 1. Does not include design and permitting costs.
 2. Estimate does not include alternate alignment.
 3. Assumes three small microbioretention/infiltration areas and non rooftop disconnect for SWM.
 4. Assumes split rail fence and proposed shade trees along middle school fields.
 5. Does not include property acquisition costs.
 6. Assumes that clearing will be less than 20,000 sf and that project will be exempt from forest conservation



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COST ESTIMATE

Project: Trail Spurs Study Sheet No. 1
 Project No.: AACOX23001 Date: 3/4/2024
 Description: Preliminary Trail Costs Computed: PJS
 Broadneck Trail to Windsor Farm ES

Checked by:

Item No.	Item	Unit	Approx. Quantity	Unit Price (\$)	Total Price (\$)
	Clearing/Demo	AC	0.8	\$6,000.00	\$4,800.00
	Sediment Control	LF	2,370	\$25.00	\$59,250.00
	Grading	MSF	35	\$1,300.00	\$45,500.00
	10' Asphalt Trail and Stone Base	LF	1,156	\$40.00	\$46,240.00
	Concrete ADA Ramps	EA	2	\$1,500.00	\$3,000.00
	Stormwater Management	SF	2,400	\$22.00	\$52,800.00
	Storm Drainage	LF	200	\$120.00	\$24,000.00
	Landscaping	EA	30	\$250.00	\$7,500.00
	Pedestrian Signal (RRFB)	EA	2	\$7,000.00	\$14,000.00
	Signal Modification at College Parkway	LS	1	\$10,000.00	\$10,000.00
	Utility Pole Relocation	EA	1	\$10,000.00	\$10,000.00
	Signage	EA	4	\$200.00	\$800.00
	Crosswalks	LF	250	\$3.00	\$750.00
	<i>Subtotal</i>				\$278,640.00
	Mobilization (20%)				\$55,728.00
	Contractor Markup (8%)				\$26,749.44
	Design Contingency (30%)				\$108,335.23
	Total				\$469,452.67
	Linear Foot of Trail				1,156
	Cost per Linear Foot				\$406.10

Notes:
 1. Does not include design and permitting costs.
 2. Assumes two small microbioretention/infiltration areas and non rooftop disconnect for SWM.
 3. Does not include property acquisition costs.
 4. Assumes that clearing will be less than 20,000 sf and that project will be exempt from forest conservation requirements.



V 1.0

COST ESTIMATE

Project: Trail Spurs Study Sheet No. 1
 Project No.: AACOX23001 Date: 3/4/2024
 Description: Preliminary Trail Costs Computed: PJS
 BWI Trail to Corkran MS

Checked by:

Item No.	Item	Unit	Approx. Quantity	Unit Price (\$)	Total Price (\$)
	Clearing/Demo	AC	2.6	\$6,000.00	\$15,600.00
	Sediment Control	LF	3,100	\$25.00	\$77,500.00
	Grading	MSF	113	\$1,000.00	\$113,000.00
	10' Asphalt Trail and Stone Base	LF	2,832	\$40.00	\$113,280.00
	Concrete ADA Ramps	EA	3	\$1,500.00	\$4,500.00
	Stormwater Management	SF	2,400	\$22.00	\$52,800.00
	Storm Drainage	LF	300	\$120.00	\$36,000.00
	Forest Conservation	SF	35,000	\$1.75	\$61,250.00
	Signage	EA	4	\$200.00	\$800.00
	Crosswalks	LF	250	\$3.00	\$750.00
	Split Rail fencing	LF	4,600	\$15.00	\$69,000.00
	<i>Subtotal</i>				\$544,480.00
	Mobilization (20%)				\$108,896.00
	Contractor OH & Markup (8%)				\$52,270.08
	Design Contingency (30%)				\$211,693.82
	Total				\$917,339.90
	Linear Foot of Trail				2,832
	Cost per Linear Foot				\$323.92

Notes:
 1. Does not include design and permitting costs.
 2. Assumes two small microbioretention/infiltration areas and non rooftop disconnect for SWM.
 3. Does not include property acquisition costs.
 4. Assumes that clearing will be less than 20,000 sf and that project will be exempt from forest conservation requirements.



V 1.0

COST ESTIMATE

Project: Trail Spurs Study Sheet No. 1
 Project No.: AACOX23001 Date: 3/4/2024
 Description: Preliminary Trail Costs Computed: PJS
 BWI Trail to Linthicum Elementary and Park
 Checked by:

Item No.	Item	Unit	Approx. Quantity	Unit Price (\$)	Total Price (\$)
	Clearing/Demo	AC	1.61	\$6,000.00	\$9,660.00
	Sediment Control	LF	2,000	\$25.00	\$50,000.00
	Sidewalk Removal	CY	73	\$135.00	\$9,855.00
	Grading	MSF	70	\$1,000.00	\$70,000.00
	10' Asphalt Trail and Stone Base	LF	1,752	\$40.00	\$70,080.00
	Concrete ADA Ramps	EA	9	\$1,500.00	\$13,500.00
	Stormwater Management	SF	4,800	\$22.00	\$105,600.00
	Storm Drainage	LF	400	\$120.00	\$48,000.00
	Signage	EA	6	\$200.00	\$1,200.00
	Pedestrian Signals	LS	2	\$50,000.00	\$100,000.00
	<i>Subtotal</i>				\$477,895.00
	Mobilization (20%)				\$95,579.00
	Contractor Markup (8%)				\$45,877.92
	Design Contingency (30%)				\$185,805.58
	Total				\$805,157.50
	Linear Foot of Trail				1,752
	Cost per Linear Foot				\$459.56

Notes:
 1. Does not include design and permitting costs.
 2. Assumes four small microbioretention/infiltration areas and non rooftop disconnect for SWM.
 3. Does not include anything extraordinary for the rail road crossing, just signage and a concrete ramp.
 4. Does not include property acquisition costs.
 5. Assumes that clearing will be less than 20,000 sf and that project will be exempt from forest conservation requirements.



V 1.0

COST ESTIMATE

Project: Trail Spurs Study Sheet No. 1
 Project No.: AACOX23001 Date: 3/4/2024
 Description: Preliminary Trail Costs Computed: PJS
 South Shore Trail to Dairy Farm Park
 Checked by:

Item No.	Item	Unit	Approx. Quantity	Unit Price (\$)	Total Price (\$)
	Clearing/Demo	AC	2.0	\$6,000.00	\$12,120.00
	Sediment Control	LF	2,500	\$25.00	\$62,500.00
	Grading	MSF	89	\$1,000.00	\$89,000.00
	10' Asphalt Trail and Stone Base	LF	2,205	\$40.00	\$88,200.00
	Concrete ADA Ramps	EA	5	\$1,500.00	\$7,500.00
	Stormwater Management	SF	3,600	\$22.00	\$79,200.00
	Storm Drainage	LF	300	\$120.00	\$36,000.00
	Landscaping Trees	EA	20	\$250.00	\$5,000.00
	Signage	EA	4	\$200.00	\$800.00
	Crosswalks	LF	420	\$3.00	\$1,260.00
	Split Rail Fence	LF	400	\$15.00	\$6,000.00
	Pedestrian Signal	LS	1	\$50,000.00	\$50,000.00
	Signal Modifications	LS	1	\$10,000.00	\$10,000.00
	<i>Subtotal</i>				\$447,580.00
	Mobilization (20%)				\$89,516.00
	Contractor OH & Markup (8%)				\$42,967.68
	Design Contingency (30%)				\$174,019.10
	Total				\$754,082.78
	Linear Foot of Trail				2,205
	Cost per Linear Foot				\$341.99

Notes:
 1. Does not include design and permitting costs.
 2. Assumes three small microbioretention/infiltration areas and non rooftop disconnect for SWM.
 3. Assumes that clearing will be less than 20,000 sf and that project will be exempt from forest conservation requirements.
 4. Does not include property acquisition costs.



V 1.0

COST ESTIMATE

Project: Trail Spurs Study Sheet No. 1
 Project No.: AACOX23001 Date: 3/4/2024
 Description: Preliminary Trail Costs Computed: PJS
 South Shore Trail to Generals Highway
 Corridor Park Checked by:

Item No.	Item	Unit	Approx. Quantity	Unit Price (\$)	Total Price (\$)
	Clearing/Demo	AC	2.54	\$6,000.00	\$15,240.00
	Sediment Control	LF	3,000	\$25.00	\$75,000.00
	Grading	MSF	111	\$1,500.00	\$166,500.00
	10' Asphalt Trail and Stone Base	LF	2,765	\$40.00	\$110,600.00
	Concrete ADA Ramps	EA	4	\$1,500.00	\$6,000.00
	Stormwater Management	SF	6,000	\$22.00	\$132,000.00
	Storm Drainage	LF	600	\$120.00	\$72,000.00
	Retaining Walls	SF	1,800	\$104.00	\$187,200.00
	Signage	EA	3	\$200.00	\$600.00
	Crosswalks	LF	180	\$3.00	\$540.00
	Pedestrian Signals (RRFB)	LS	2	\$7,000.00	\$14,000.00
	<i>Subtotal</i>				\$779,680.00
	Mobilization (20%)				\$155,936.00
	Contractor Markup (8%)				\$74,849.28
	Design Contingency (30%)				\$303,139.58
	Total				\$1,313,604.86
	Linear Foot of Trail				2,765
	Cost per Linear Foot				\$475.08

- Notes:
- Does not include design and permitting costs.
 - Assumes five small microbio retention/infiltration areas and non rooftop disconnect for SWM.
 - Assumes Pedestrian Rapid Rectangular Flashing Beacon (RRFB) Signal.
 - Assumes approximately 300' of 5' tall retaining wall.
 - Does not include property acquisition costs.
 - Assumes that clearing will be less than 20,000 sf and that project will be exempt from forest conservation



V 1.0

COST ESTIMATE

Project: Trail Spurs Study Sheet No. 1
 Project No.: AACOX23001 Date: 3/4/2024
 Description: Preliminary Trail Costs Computed: PJS
 South Shore Trail to Millersville
 Elementary School/Millersville Park Checked by:

Item No.	Item	Unit	Approx. Quantity	Unit Price (\$)	Total Price (\$)
	Clearing/Demo	AC	2.37	\$6,000.00	\$14,220.00
	Sediment Control	LF	1,600	\$25.00	\$40,000.00
	Grading	MSF	55	\$1,500.00	\$82,500.00
	10' Asphalt Trail and Stone Base	LF	1,360	\$40.00	\$54,400.00
	Concrete ADA Ramps	EA	1	\$1,500.00	\$1,500.00
	Stormwater Management	SF	4,800	\$22.00	\$105,600.00
	Storm Drainage	LF	400	\$120.00	\$48,000.00
	Split Rail Fence	LF	1,020	\$15.00	\$15,300.00
	Signage	EA	10	\$200.00	\$2,000.00
	Crosswalks	LF	108	\$3.00	\$324.00
	Pedestrian Signals (RRFB)	LS	2	\$7,000.00	\$14,000.00
	Forest Conservation	SF	40,000	\$1.75	\$70,000.00
	<i>Subtotal</i>				\$447,844.00
	Mobilization (20%)				\$89,568.80
	Contractor Markup (8%)				\$42,993.02
	Design Contingency (30%)				\$174,121.75
	Total				\$754,527.57
	Linear Foot of Trail				1,360
	Cost per Linear Foot				\$554.80

- Notes:
- Does not include design and permitting costs.
 - Assumes five small microbio retention/infiltration areas and non rooftop disconnect for SWM.
 - Assumes Pedestrian Rapid Rectangular Flashing Beacon (RRFB) Signal.
 - Does not include property acquisition costs.



V 1.0

COST ESTIMATE

Project: Trail Spurs Study Sheet No. 1
 Project No.: AACOX23001 Date: 3/4/2024
 Description: Preliminary Trail Costs Computed: PJS
 South Shore Trail to Rolling Knolls ES

Checked by:

Item No.	Item	Unit	Approx. Quantity	Unit Price (\$)	Total Price (\$)
	Clearing/Demo	AC	1.0	\$6,000.00	\$6,000.00
	Sediment Control	LF	1,300	\$25.00	\$32,500.00
	Grading	MSF	43	\$1,000.00	\$43,000.00
	10' Asphalt Trail and Stone Base	LF	1,080	\$40.00	\$43,200.00
	Concrete ADA Ramps	EA	4	\$1,500.00	\$6,000.00
	Stormwater Management	SF	2,400	\$22.00	\$52,800.00
	Storm Drainage	LF	400	\$120.00	\$48,000.00
	Landscaping Trees	EA	50	\$250.00	\$12,500.00
	Signage	EA	4	\$200.00	\$800.00
	Crosswalks	LF	108	\$3.00	\$324.00
	8' Chainlink Fencing	LF	770	\$68.00	\$52,360.00
	Pedestrian Signal	LS	1	\$50,000.00	\$50,000.00
	Signal Modifications	LS	1	\$10,000.00	\$10,000.00
	<i>Subtotal</i>				\$357,484.00
	Mobilization (20%)				\$71,496.80
	Contractor Markup (8%)				\$34,318.46
	Design Contingency (30%)				\$138,989.78
	Total				\$602,289.04
	Linear Foot of Trail				1,080
	Cost per Linear Foot				\$557.68

Notes:
 1. Does not include design and permitting costs.
 2. Assumes two small microbioretention/infiltration areas and non rooftop disconnect for SWM.
 3. Does not include property acquisition costs.
 4. Assumes that clearing will be less than 20,000 sf and that project will be exempt from forest conservation requirements.



V 1.0

COST ESTIMATE

Project: Trail Spurs Study Sheet No. 1
 Project No.: AACOX23001 Date: 3/4/2024
 Description: Preliminary Trail Costs Computed: PJS
 South Shore Trail to Waterworks Park

Checked by:

Item No.	Item	Unit	Approx. Quantity	Unit Price (\$)	Total Price (\$)
	Clearing/Demo	AC	2.65	\$6,000.00	\$15,900.00
	Sediment Control	LF	2,100	\$25.00	\$52,500.00
	Grading	MSF	116	\$1,400.00	\$162,400.00
	10' Asphalt Trail and Stone Base	LF	1,986	\$40.00	\$79,440.00
	Concrete ADA Ramps	EA	2	\$1,500.00	\$3,000.00
	Stormwater Management	SF	7,200	\$22.00	\$158,400.00
	Storm Drainage	LF	400	\$120.00	\$48,000.00
	Forest Conservation	SF	92,800	\$1.75	\$162,400.00
	Signage	EA	4	\$200.00	\$800.00
	Pedestrian Signals (RRFB)	LS	2	\$7,000.00	\$14,000.00
	Asphalt Parking Lot	SY	1,060	\$120.00	\$127,200.00
	Parking Lot Striping	LF	550	\$1.00	\$550.00
	Split Rail Fence	LF	500	\$15.00	\$7,500.00
	<i>Subtotal</i>				\$832,090.00
	Mobilization (20%)				\$166,418.00
	Contractor Markup (8%)				\$79,880.64
	Design Contingency (30%)				\$323,516.59
	Total				\$1,401,905.23
	Linear Foot of Trail				1,986
	Cost per Linear Foot				\$705.89

Notes:
 1. Does not include design and permitting costs.
 2. Assumes six small microbioretention/infiltration areas and non rooftop disconnect for SWM.
 3. Does not include property acquisition costs.



V 1.0

COST ESTIMATE

Project: Trail Spurs Study Sheet No. 1
 Project No.: AACOX23001 Date: 3/4/2024
 Description: Preliminary Trail Costs Computed: PJS
 South Shore Trail to Waugh Chapel Village Center
 Checked by:

Item No.	Item	Unit	Approx. Quantity	Unit Price (\$)	Total Price (\$)
	Clearing/Demo	AC	13.3	\$6,000.00	\$79,800.00
	Sediment Control	LF	10,000	\$25.00	\$250,000.00
	Grading	MSF	582	\$1,000.00	\$582,000.00
	10' Asphalt Trail and Stone Base	LF	14,538	\$40.00	\$581,520.00
	Concrete ADA Ramps	EA	5	\$1,500.00	\$7,500.00
	Stormwater Management	SF	36,000	\$22.00	\$792,000.00
	Storm Drainage	LF	3,000	\$120.00	\$360,000.00
	Landscaping Trees	EA	80	\$250.00	\$20,000.00
	Signage	EA	4	\$200.00	\$800.00
	Crosswalks	LF	770	\$3.00	\$2,310.00
	Pedestrian Bridge/Boardwalk	SF	1,800	\$400.00	\$720,000.00
	Rehab Ex. Bridge	LS	1	\$50,000.00	\$50,000.00
	Signal Modifications	LS	1	\$20,000.00	\$20,000.00
	<i>Subtotal</i>				\$3,465,930.00
	Mobilization (20%)				\$693,186.00
	Contractor OH & Markup (8%)				\$332,729.28
	Design Contingency (30%)				\$1,347,553.58
	Total				\$5,839,398.86
	Linear Foot of Trail				14,538
	Cost per Linear Foot				\$401.66

Notes:
 1. Does not include design and permitting costs.
 2. Assumes thirty small microbioretention/infiltration areas and non rooftop disconnect for SWM.
 3. Assumes less than 20,000 sf of clearing, therefore exempt from forest conservation.
 4. Does not include property acquisition costs.
 5. Assumes existing BGE bridge can be reused and modified.



V 1.0

COST ESTIMATE

Project: Trail Spurs Study Sheet No. 1
 Project No.: AACOX23001 Date: 3/4/2024
 Description: Preliminary Trail Costs Computed: PJS
 WB&A Trail to Piney Orchard Community Center
 Checked by:

Item No.	Item	Unit	Approx. Quantity	Unit Price (\$)	Total Price (\$)
	Clearing/Demo	AC	1.9	\$6,000.00	\$11,400.00
	Sediment Control	LF	2,500	\$25.00	\$62,500.00
	Grading	MSF	83	\$1,300.00	\$107,900.00
	10' Asphalt Trail and Stone Base	LF	2,066	\$40.00	\$82,640.00
	Pedestrian Bridge/Boardwalk	SF	1,000	\$400.00	\$400,000.00
	Stormwater Management	SF	3,600	\$22.00	\$79,200.00
	Storm Drainage	LF	300	\$120.00	\$36,000.00
	Forest Conservation	SF	40,000	\$1.75	\$70,000.00
	Signage	EA	2	\$200.00	\$400.00
	Split Rail Fence	LF	1,700	\$15.00	\$25,500.00
	<i>Subtotal</i>				\$875,540.00
	Mobilization (20%)				\$175,108.00
	Contractor OH & Markup (8%)				\$84,051.84
	Design Contingency (30%)				\$340,409.95
	Total				\$1,475,109.79
	Linear Foot of Trail				2,066
	Cost per Linear Foot				\$713.99

Notes:
 1. Does not include design and permitting costs.
 2. Assumes three small microbioretention/infiltration areas and non rooftop disconnect for SWM.
 3. Assumess that there are existing forest conservation easements that will need to be modified.
 4. Does not include property acquisition costs.

