Montgomery Planning

MR #2024003 – REDLAND ROAD BRIDGE OVER MILL CREEK

Description

Mandatory Referral review for the replacement of a bridge on Redland Road over Mill Creek. New bridge will be wider and longer to accommodate improved hydrology and a future sidepath on the north side of the structure.

MR2024003
Prepared October 5, 2023

MCPB Item No. 5
October 12, 2023

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LOCATION:

Redland Road at Mill Creek

MASTER PLAN

Shady Grove Sector Plan Minor Master Plan Amendment

APPLICANT

Montgomery County Department of Transportation

ACCEPTANCE DATE

August 24, 2023

REVIEW BASIS

Md. Land Use Article, Section 20-301, et seq.

Summary

- Staff recommends transmittal of comments to the Montgomery County Department of Transportation.
- The Planning Board review of a Mandatory Referral is advisory.

CONTENTS

SECTION 1 – RECOMMENDATIONS

Staff recommends transmitting the following comments to the Montgomery County Department of Transportation:

1. Develop a cross section for the Redland Road bridge that captures the entire master planned vision for the proposed 45 feet 8 inch wide bridge clearance, with the following improvements:
    - a 12-foot wide sidepath on the west side, composed of a 1.5-foot wide buffer from the bridge parapet, an 8-foot-wide sidepath, and a 2.5-foot wide buffer with a protective railing,
    - narrow shoulders less than two feet in width,
    - two 10.5 feet wide travel lanes,
    - a 9-foot wide sidewalk on the east side, composed of a 1.5-foot wide buffer from the bridge parapet, a 5-foot wide sidewalk, and a 2.5-foot wide buffer with a protective railing.
2. Assess whether the existing 35-mph posted speed limit should be reduced, given that the target speed for this road is 30 mph.
2. Construction plans must be submitted to the M-NCPPC Department of Parks for review as part of the Park Construction Permit process to ensure that all work is performed in accordance with M-NCPPC standard details, specifications, and policies. No work on parkland may occur until an approved Park Construction Permit is issued for the project.
3. Any approved Commission parkland such as Mill Creek Stream Valley Park and Rock Creek Regional Park to be added to the Montgomery County Department of Transportation Road right-of-way (ROW) will be transferred to the County, as appropriate, via perpetual easement. The Commission must be paid the fair market value of the perpetual easement.
4. MCDOT must continue to coordinate with M-NCPPC on the design of the required in-stream structures in Mill Creek to ensure that a stable stream setting is provided.
5. Montgomery Parks tree mitigation will be fulfilled through the on-site planting of a diverse tree, shrub, and herbaceous palette approved by Montgomery Parks.

SECTION 2 - INTRODUCTION

The Montgomery County Department of Transportation's (MCDOT's) project to construct a new bridge (M-0056) along Redland Road over Mill Creek is located between Briardale Road and Overhill Road. This project is within the Mill Creek Stream Valley Park and Rock Creek Regional Park. This project will replace the entire bridge and will increase the roadway width to accommodate two traffic lanes, one in each direction, along with shoulders next to each traffic lane. The shoulders are sized such that they

can be converted to a future sidepath on the west side of the road. The bridge opening will be widened to accommodate larger stormflows and reduce erosive forces downstream. The construction will include stream stabilization structures upstream and downstream of the bridge in Mill Creek. A map of the project location is provided in Figure 1.

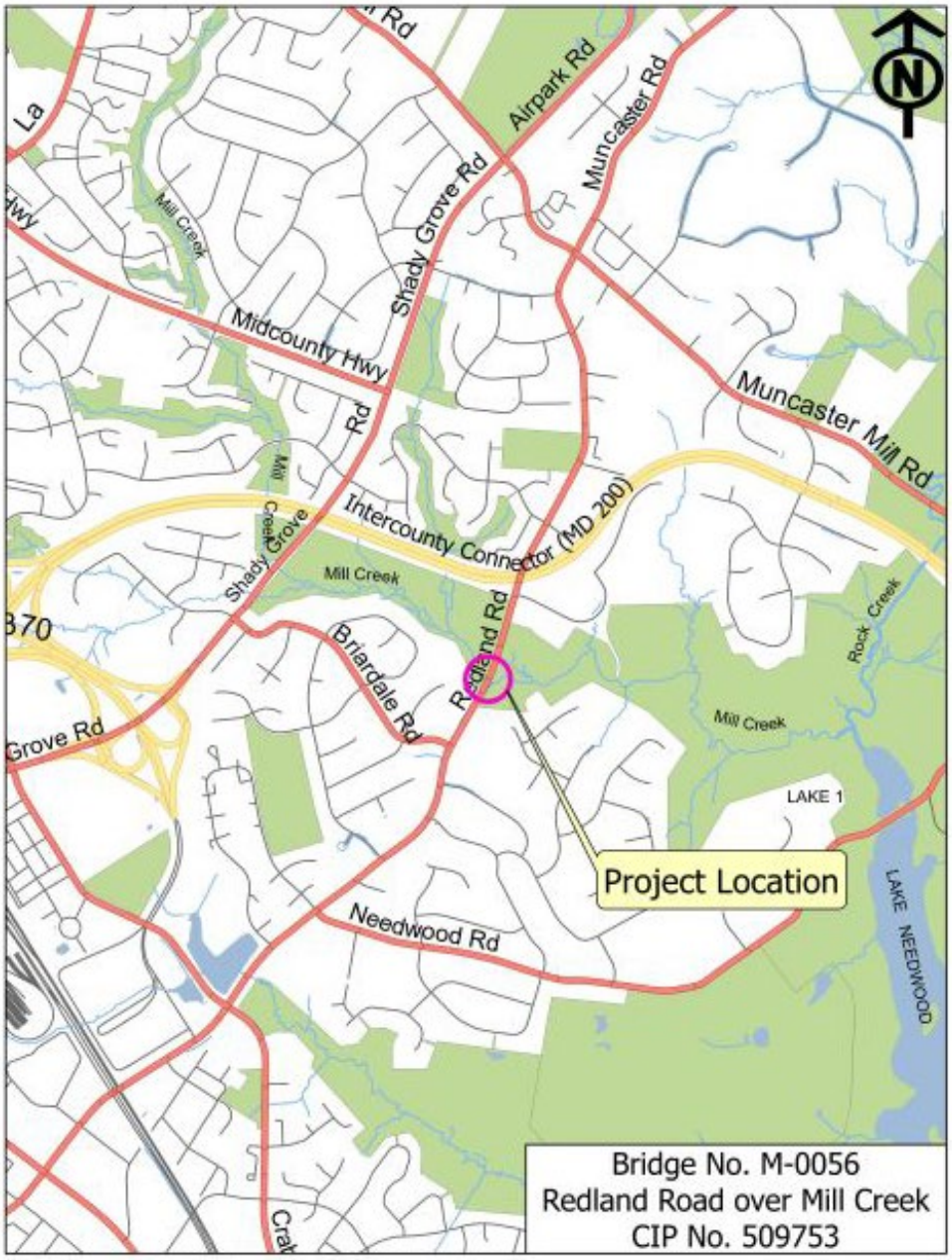

Figure 1: Redland Road Bridge Project Location Map

SECTION 3 – PROJECT DESCRIPTION

Project Description

MCDOT currently owns and maintains the existing Redland Road Bridge over Mill Creek. Its responsibility regarding this bridge is to provide a safe, reliable bridge structure and road surface to adequately convey the current and future traffic volumes along the bridge and storm events below the bridge. Because the current Redland Road bridge is structurally deteriorating and undersized for hydraulic capacity, MCDOT is proposing to replace the bridge with a new structure. This project will not change the functional classification of Redland Road or impact traffic capacity at its completion.

The existing Redland Road bridge consists of an approximately 24-foot 5-inch-wide concrete slab bridge constructed circa 1930. The bridge carries two traffic lanes, one in each direction without any shoulders or pedestrian / bicycle accommodation. A 2019 inspection report notes that the concrete bridge railing is in poor condition, with large missing balusters, numerous concrete spalls, and exposed reinforcing steel. This poses a potential safety hazard and does not meet current FHWA Manual for Assessing Safety Hardware (MASH) safety and traffic barrier standards. There is also moderate to severe erosion of the embankments, which includes failure of the slope protection of the southwest side of the bridge. Additional measures must be taken to reduce the impacts of erosion on the structure and the stream, and to confirm that the bridge opening can convey a 25-year storm event as required in the MCDOT Drainage Design Criteria Manual. A photo of the existing bridge is shown below in Figure 2.

Figure 2: Existing Redland Road Bridge over Mill Creek

Due to the extent of the current deterioration, MCDOT has determined that the existing structure can no longer be repaired to keep the bridge in service and meet current FHWA MASH collision guidelines. In addition, the bridge width is substandard and below the width required to accommodate master plan recommendations along this section of Redland Road. MCDOT plans to replace this bridge with a new 33-foot-long by 48-foot-wide prestressed concrete bridge.

BRIDGE PROPOSED CROSS SECTION

The bridge will be designed with a 48-foot-wide superstructure and with a roadway clearance of 45 feet eight inches as shown below in Figure . Initially, it will accommodate two traffic lanes, one in each direction, along with shoulders next to each traffic lane (the interim cross section). In the future, once a sidepath and sidewalk are constructed on Redland Road approaching the bridge, the shoulders can be converted to accommodate a sidepath and sidewalk (the ultimate cross section). Additionally, the clear opening/span of the bridge will be sized to pass the applicable design storm event for the roadway classification.

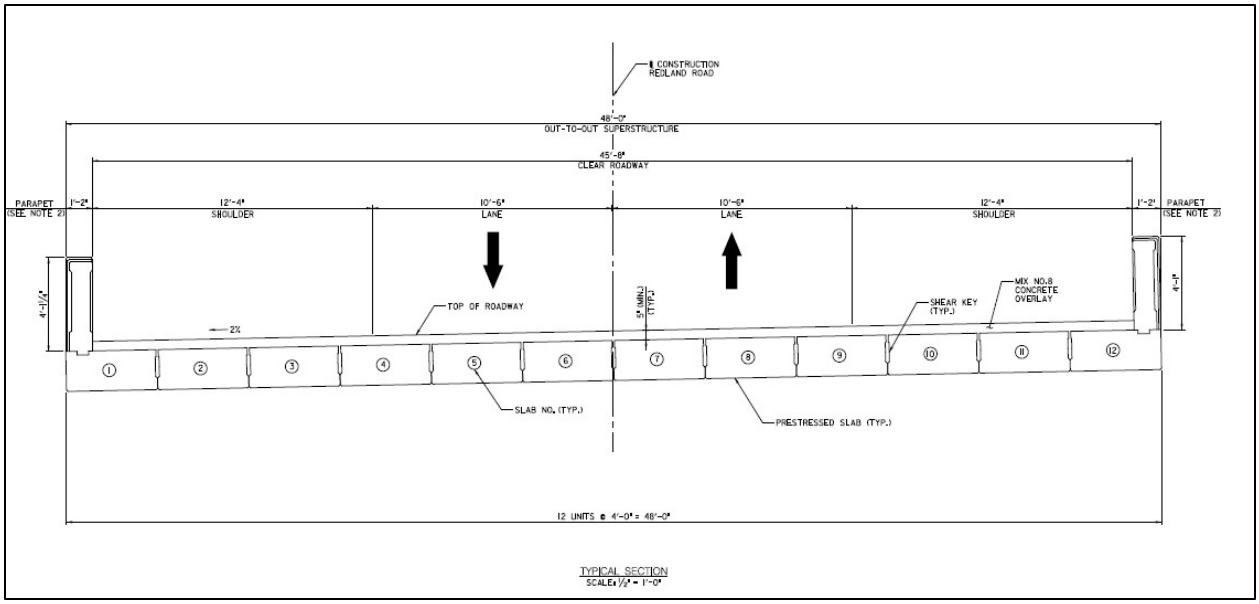

Figure 3: Proposed Bridge Interim Cross Section

A plan view drawing was submitted as part of the review submission and this is shown below in Figure 4. This improvement will impact a 304-foot-long section of Redland Road, including the approaches to the proposed bridge and the 33-foot-long proposed bridge.

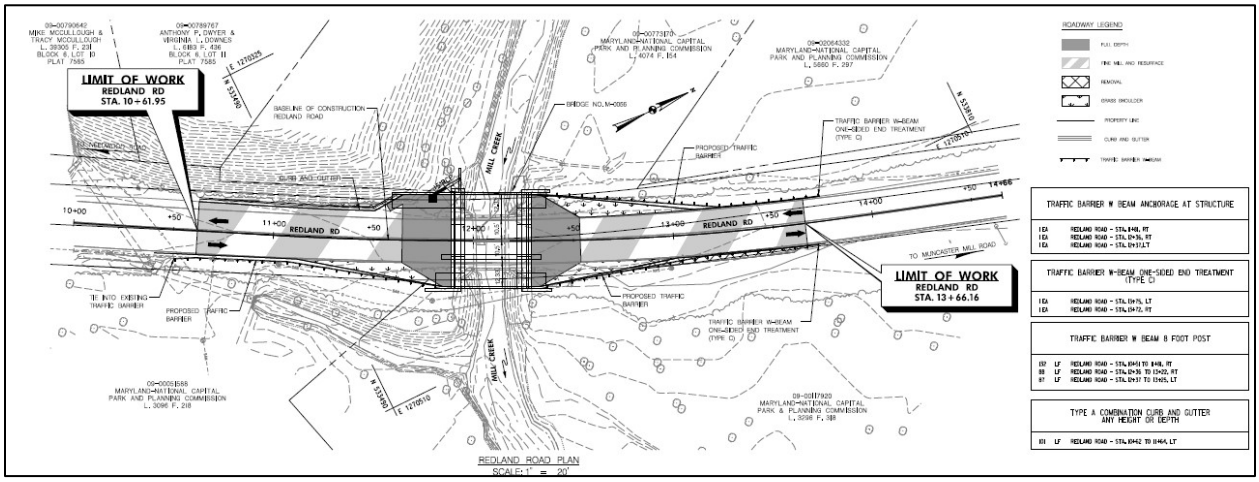

Figure 4: Plan View of Proposed Bridge Design

Existing Roadway

Redland Road within the project area is primarily a two-way, two-lane, open section arterial roadway that runs in a north-south direction. The posted speed limit is 35 mph. The average annual daily traffic (AADT) on Redland Road in 2017 was approximately 12,400 vehicles per day north of the Intercounty Connector. Updated counts conducted in 2020 during the COVID pandemic showed a significant drop

in traffic volumes to under 10,000 vehicles per day, though recent traffic counts are not available to show whether traffic volumes have rebounded since 2020. The right-of-way along Redland Road varies considerably, but it is approximately 40-feet-wide at Mill Creek and widens out to 60 to 65 feet to the north and the south of Park property. Travel lane widths are typically 11-feet-wide, with minimal existing shoulders.

Surrounding Land Use

Within the site vicinity, the surrounding land use, as shown below in Figure 5, is parkland immediately adjacent to the proposed bridge structure, a church property to the north, Candlewood Elementary School to the south, and residential neighborhoods to both the north and south.

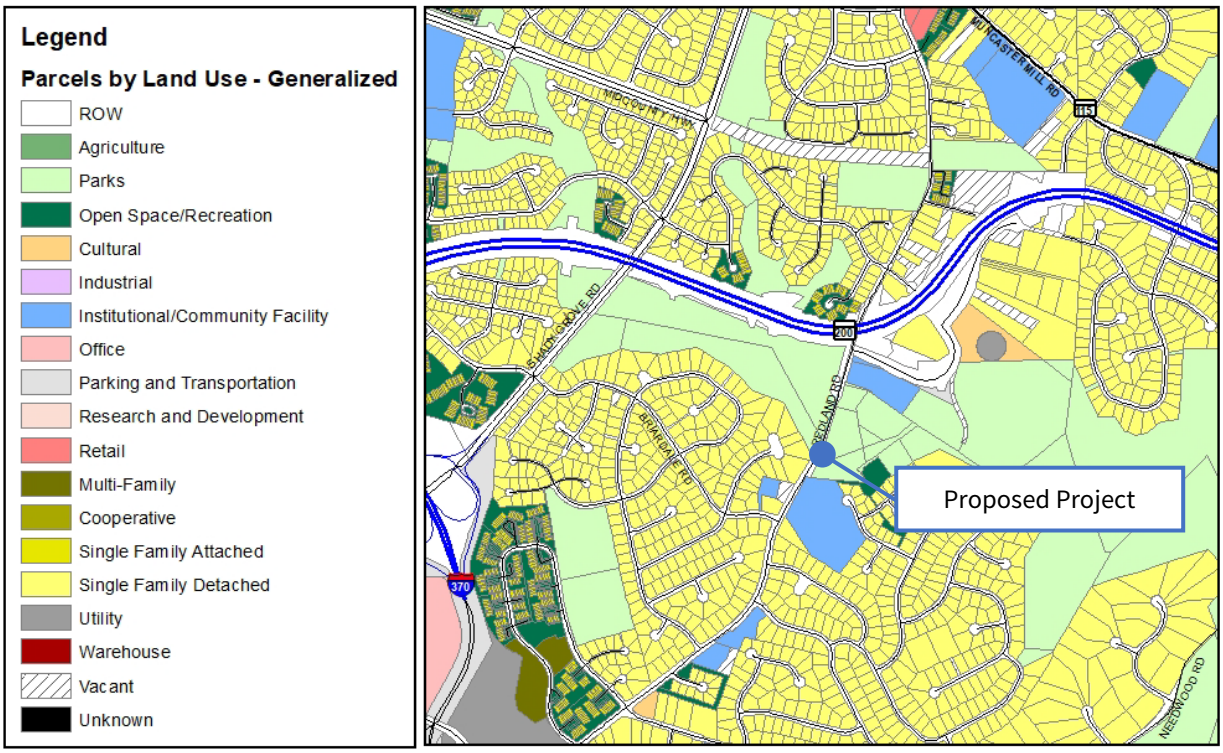

Figure 5: Existing Land Use

SECTION 4 – MANDATORY REFERRAL AUTHORITY AND PROCESS

Mandatory Referral review is guided by the Montgomery Planning Mandatory Referral Review Uniform Standards (December 2022), and the authority granted through the Maryland Land Use Article, Section 20-301, et.seq. As set forth in Sections 20-301 and 20-302, the Montgomery County Planning Board has jurisdiction over mandatory referral projects presented by the federal government, State of Maryland, Montgomery County government, Montgomery County Board of Education, and public utilities, among others, for:

(1) acquiring or selling land;
(2) locating, constructing or authorizing a road, park, public way or ground, public building or structure, or public utility; or
(3) changing the use of or widening, narrowing, extending, relocating, vacating or abandoning any of the previously mentioned facilities.

The Planning Board must review such projects and transmit comments on the proposed location, character, grade and extent of the activity to the project applicant.

As described in the Uniform Standards, the Planning Board considers all relevant land use and planning aspects of the proposal including, but not limited to, the following:

(1) whether the proposal is consistent with the County's General Plan, functional plans, the approved and adopted area master plan or sector plan and any associated design guidelines, and any other public plans, guidance documents, or programs for the area;
(2) whether the proposal is consistent with the intent and the requirements of the zone in which it is located;
(3) whether the nature of the proposed site and development, including but not limited to its size, shape, scale, height, arrangement, design of structure(s), massing, setback(s), site layout, and location(s) of parking is compatible with the surrounding neighborhood and properties;
(4) whether the locations of buildings and structures, open spaces, landscaping, recreation facilities, and pedestrian and vehicular circulation systems are adequate, safe, and efficient;
(5) whether the proposal has an approved NRI/FSD and a preliminary SWM Concept Plan, and meets the requirements of the Forest Conservation law (Chapters 19 and 22A of the Montgomery County Code);
(6) whether a Preliminary or a Final Water Quality Plan has been reviewed by the Planning Board if the project is located in a Special Protection Area. In addition, for a Water Quality Plan on public property, the Board must determine if the plan meets any additional applicable standards for Special Protection Areas;
(7) whether or not the site would be needed for park use if the proposal is for disposition of a surplus public school or other publicly-owned property; and
(8) whether alternatives or mitigation measures have been considered for the project if the proposal is inconsistent with the General Plan or other plans and policies for the area, or has

discernible negative impacts on the surrounding neighborhood, the transportation network, the environment, historic resources (including burial sites), or other resources.

SECTION 5 – MANDATORY REFERRAL ANALYSIS AND FINDINGS

Master Plan Consistency

The Redland Road bridge over Mill Creek is located within the boundaries of the 2021 Shady Grove Sector Plan Minor Master Plan Amendment.

Roadway Master Plan: Redland Road between Needwood Road and Muncaster Mill Road is classified in the Master Plan of Highways and Transitways as an Area Connector with a 70-foot-wide master planned right of way and a target speed of 30 mph; however, the road currently has a posted speed limit of 35 mph.

Bicycle Master Plan: Redland Road between Needwood Road and Muncaster Mill Road has a planned sidepath proposed on the west side of Redland Road as shown below in Figure 6. The 2021 *Shady Grove Sector Plan Minor Master Plan Amendment* confirmed this sidepath recommendation and eliminated a previous recommendation for a bicycle shoulder along the east side of this section of Redland Road.

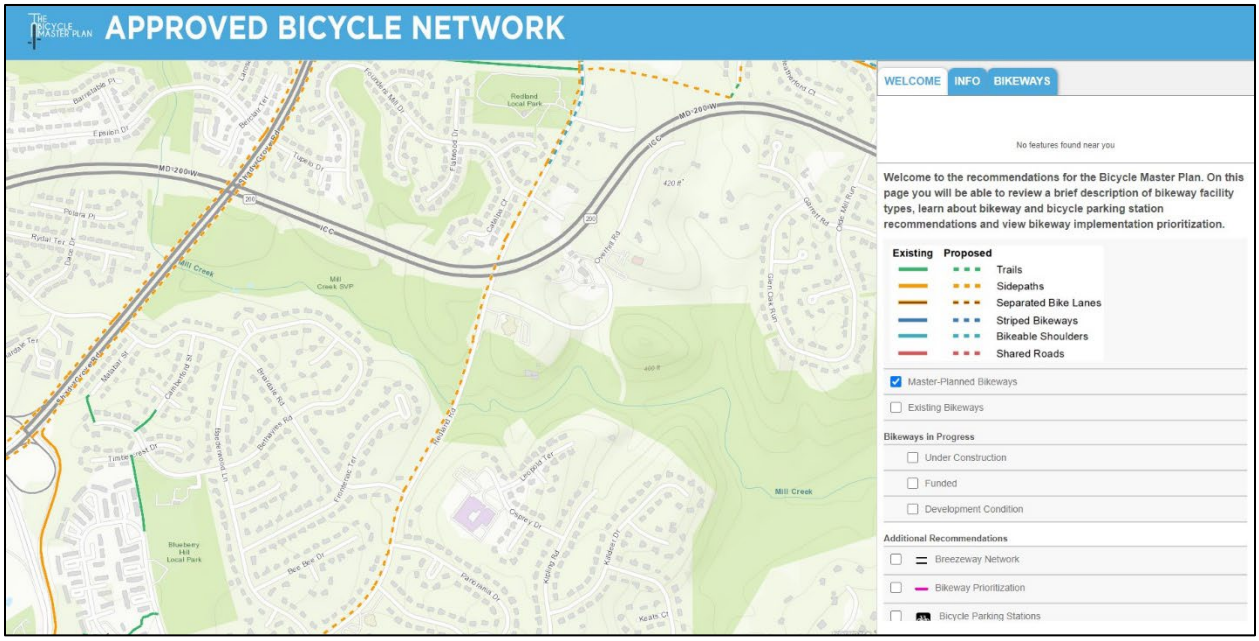

Figure 6: Bicycle Master Plan Bikeway Recommendations for Redland Road Area

Sidewalk Master Plan Recommendations: *The Shady Grove Sector Plan Minor Master Plan Amendment* proposed the following sidewalk recommendations for this section of Redland Road:

- Provide a sidewalk connection between Overhill Road and Briardale Road, which is currently missing.
- In locations where sidewalks cannot be implemented on both sides of the road, provide adequately marked crossings with pavement markings and compliant pedestrian-crossing signage, where appropriate.

The interim cross section is not fully consistent with the *Bicycle Master Plan* and the *Shady Grove Sector Plan Minor Master Plan Amendment*, as it does not include a sidepath or sidewalk. However, the bridge will provide space to add the sidepath and sidewalk at a later date, when there are connecting facilities.

Transportation Best Practices

COMPLETE STREETS DESIGN GUIDE

The typical cross section for an Area Connector in the Complete Streets Design Guide is shown below in Figure 7.

Figure 7: Area Connector Typical Cross Section[1]

Per the Complete Streets Design Guide, an Area Connector street should have the following default design standards:

- Target Speed: 25 mph
- Travel lanes: 10.5 feet default
- Bicycle Facilities: Sidepath on one side of the street 10 feet default, 8 feet min or Bike lanes 6 feet default, 5 feet minimum
- Sidewalk: 6 feet minimum
- Sidepath: 10 feet default, 8 feet minimum

[1] Graphic displayed is the "Neighborhood Connector" street type typical cross section. With an upcoming revision to the Complete Streets Design Guide, the "Area Connector" street type will have the same cross sectional elements as a "Neighborhood Connector" street.

While the travel lanes are designed consistent with the CSDG street type, the use of wide shoulders is inconsistent with this street type. It is anticipated that the ultimate cross section proposed by MCDOT will convert the shoulders to a sidepath, but there are no plans to include a sidewalk on the bridge.

Recommendation: Develop across section for the Redland Road bridge that captures the entire master planned vision for the proposed 45 feet 8 inch wide bridge clearance, with the following improvements:

- **a 12-foot wide sidepath on the west side, composed of a 1.5-foot wide buffer from the bridge parapet, an 8-foot-wide sidepath, and a 2.5-foot wide buffer with a protective railing,**
- **narrow shoulders less than two feet in width,**
- **two 10.5-foot wide travel lanes,**
- **a 9-foot wide sidewalk on the east side, composed of a 1.5-foot wide buffer from the bridge parapet, a 5-foot wide sidewalk, and a 2.5-foot wide buffer with a protective railing.**

This is illustrated below in Figure 8.

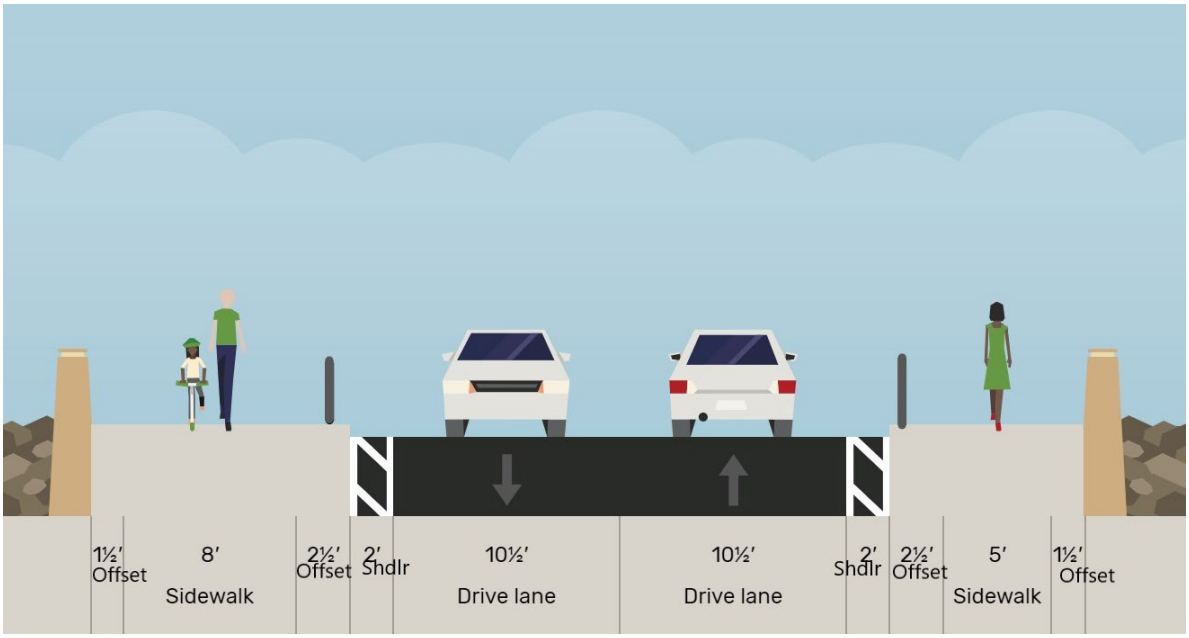

Figure 8: Recommended Bridge Cross Section with Master Plan Vision

While the *Shady Grove Sector Plan Minor Master Plan Amendment* recommends a target speed of 30 mph and the Complete Streets Design Guide (CSDG) recommends a 25-mph target speed for Redland Road, this project is not proposing to change the posted speed limit (35 mph), and the use of wide shoulders is very unlikely to help reduce travels speeds along this section of Redland Road.

Recommendation: Assess whether the proposed improvements allow for the reduction in the current posted speed limit from 35 mph to 30 mph.

DETOUR STUDY

A traffic detour study was submitted by the Montgomery County Department of Transportation evaluating peak hour traffic conditions during the construction of the proposed project (anticipated to take 3 months – typically during the summer). While under construction, Redland Road would be closed to through traffic, and detour signage would be posted. The proposed detour route is shown below in Figure and would divert through traffic to use Crabbs Branch Way from the south to access Shady Grove Road. From the north, traffic on Muncaster Mill Road would be divert to Shady Grove Road to access Crabbs Branch Way. A traffic analysis with recommendations were developed by a transportation consultant to handle these diverted traffic flows during construction. The traffic detour route and recommendations appear sound and logical and should minimize the potential for any undue neighborhood traffic impacts.

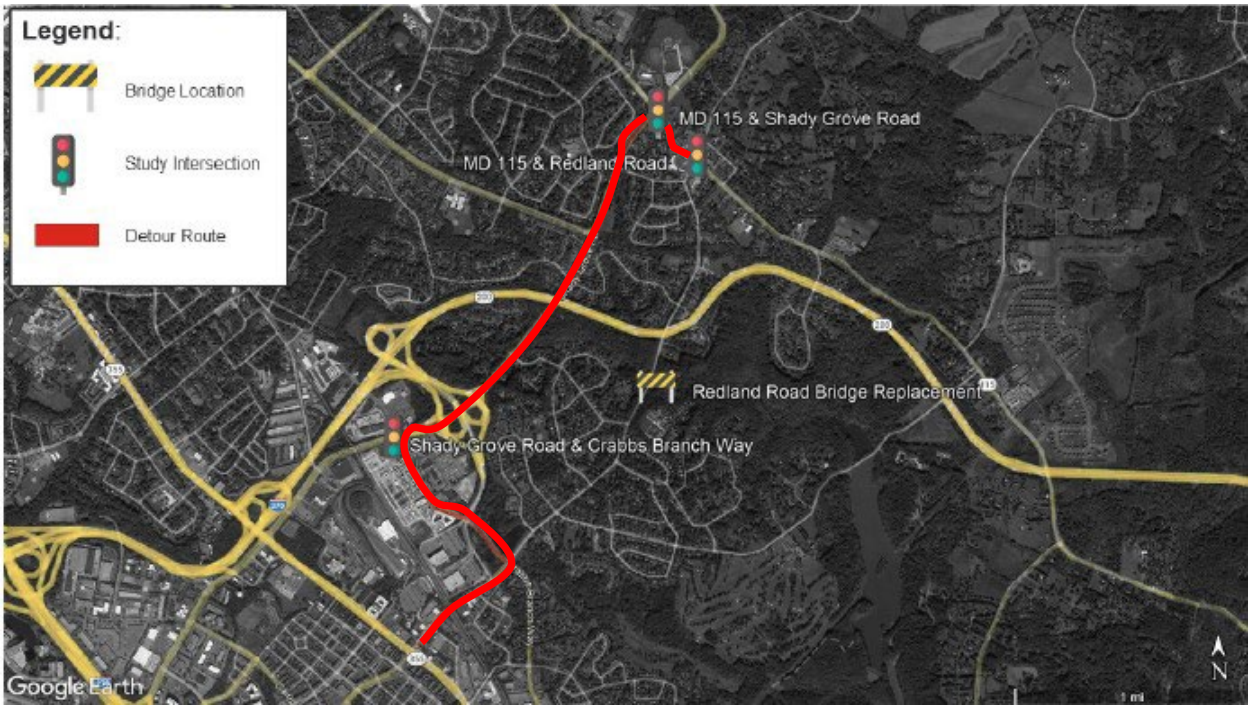

Figure 9: Proposed Detour Route During Construction

Environment

ENVIRONMENTAL GUIDELINES

The Redland Road Bridge crosses Mill Creek in the Upper Rock Creek watershed and includes the replacement of the existing bridge and the addition of shoulders that can be converted to a future sidepath. Most of the project is located in the floodplain and stream valley buffer associated with Mill

Creek. The banks of Mill Creek are forested, with approximately 0.30 acres of forest within the limits of disturbance.

While the Environmental Guidelines are designed to protect environmental features by the restriction of development in stream valley buffers, disturbance is allowed for unavoidable road and utility crossings. In this case, the bridge is replacing an existing bridge and disturbance has been minimized in the addition of the shoulder directly adjacent to the traffic lanes. This allows the proposed project to meet the Environmental Guidelines section IV.A.1.f even though additional disturbance is required for the increased bridge width due to the shoulder and future sidepath.

FOREST CONSERVATION

The proposed project is subject to the Montgomery County Forest Conservation Law (Chapter 22A of the County Code) but on December 16, 2022 received an exemption from Article II from the requirements of preparing a forest conservation plan under Section 22A-5(e). The site is a State or County highway construction activity that is subject to Section 5-103 of the Natural Resources Article of the Maryland Code or Section 22A-9 of the Forest Conservation Law for County Highway Projects, which states:

a) General
    1. This section applies to construction of a highway by the County as part of an approved Capital Improvements Program project.
    2. The construction should minimize forest cutting or clearing and loss of specimen or champion trees to the extent possible while balancing other design, construction, and environmental standards. The constructing agency must make a reasonable effort to minimize the cutting or clearing of trees and other woody plants.
b) If the forest to be cut or cleared for a County highway project equals or exceeds 20,000 square feet, the constructing agency must reforest a suitable area at the rate of one acre of reforestation for each acre of forest cleared.
c) Reforestation for County highway projects must meet the standards in subsections 22A-12(e), (g) and (h).
d) Any mitigation requirement for loss of specimen or champion trees must be based on the size and character of the tree.

The current development plan shows the removal of 12,985 square feet of forest. If the final construction plans show forest removal over 20,000 square feet of forest, this project will be subject to reforestation requirements under 22A-9 and will have to replant an equivalent amount of forest.

The plan proposes to remove one specimen tree, Tulip Poplar Tree 226 at a 30-inch DBH. The confirmed exemption includes a tree save plan that requires mitigation for the removal of the specimen tree. The required mitigation involves the planting of four 2-inch caliper trees.

STORMWATER MANAGEMENT

The Redland Road bridge project received Stormwater Concept design approval from the Department of Permitting Services on January 30, 2023.

Historic Preservation

The Redland Road Bridge over Mill Creek is not listed on either the Montgomery County Master Plan for Historic Preservation or the Locational Atlas and Index of Historic Sites.

A 2003 review by the Maryland Historical Trust determined that the Redland Road Bridge (MIHP No. M: 22-39) was potentially eligible for listing on the National Register of Historic Places. However, a review in the spring of 2023 determined the bridge had significantly deteriorated in the intervening 20 years, with several of the character-defining concrete balusters missing and a general loss of material integrity. The 2023 review determined that the bridge is no longer eligible for listing on the National Register and that the work will have no effect on historic properties. No further historic preservation review is required.

Parks Department Review

PARKLAND AND RESOURCE DESCRIPTION

The proposed bridge construction occurs in the Redland Road right-of-way and on parkland. The project will result in temporary and permanent impacts on the west side of the project within Mill Creek Stream Valley Park and on the east side of the project within Rock Creek Regional Park. Mill Creek Stream Valley Park consists of more than 110 acres, protecting the Mill Creek stream valley with undeveloped open space consisting of riparian and upland forest and floodplain wetlands. This project impacts the northwestern most extent of Rock Creek Regional Park. Rock Creek Regional Park stretches across approximately 1,800 acres and includes the beautiful 75-acre Lake Needwood and the picturesque 55-acre Lake Frank. The impacted parkland within Rock Creek Regional Park is designated as the Needwood North Biodiversity Area; this designation indicates that this area has a high natural resource value. The Needwood North Biodiversity Area consists of high quality mesic and floodplain forest types. There are no active recreation amenities located in the vicinity of the project. Figure 10 shows a photo of the Mill Creek Stream Valley Park upstream of the bridge and Rock Creek Regional Park downstream of the bridge. The Rock Creek Regional Park photo shows streambank degradation which is a result of the stream channelization under the existing bridge. The existing and proposed bridge spans Mill Creek which is confluent to Rock Creek. Mill Creek is designated as a Use Class IV stream which means the stream is classified as a recreational trout waters stream. The Maryland Department of the Environment (MDE) enforces time of Year Restrictions (TOYRs) for Use IV (Recreational Trout Waters) streams that begin March 1 and extend until May 31; this means no instream work can occur during the time of year restriction.

Figure 10: Mill Creek Stream

PARKLAND IMPACTS

The proposed bridge will be approximately 23 feet wider than the existing bridge in order to accommodate future pedestrian and bicycle facilities. The increased bridge width will require permanent impact on parkland for the bridge structure and temporary impacts on parkland for the construction access. In addition, stream stabilization and habitat improvements will require temporary construction access on parkland upstream and downstream of Redland Road. The project will involve electric, gas, water, and sewer utilities relocation to facilitate the construction of the new bridge. The permanent impact will result in the creation of additional MCDOT right-of-way (through the granting at fair market value of a perpetual easement) consisting of 2,267 square feet in Mill Creek Stream Valley Park and 3,301 square feet in Rock Creek Regional Park.

Tree impacts will consist of the removal of 23 trees required for construction and access. These tree removals will be mitigated by the planting of a diverse mix of native trees (150 1-inch caliper trees, 100 bare root sycamores, and 250 live stakes), shrubs (65 3-gallon shrubs), and herbaceous plugs (1600) within the limits of disturbance (LOD). These plantings will be completed per Parks specifications. The tree plantings described in this section are intended to fulfill Montgomery Parks tree mitigation requirements and any other regulatory tree requirements are separate from these requirements.

MCDOT will include Natural Channel Design instream stabilization and enhancement features (per Parks Standard Details) upstream (approximately 50 feet) and downstream (approximately 300 feet) of the new bridge as shown below in Figure 11. Traditional bridge construction techniques generally reduce the stream width and harden the banks, which accelerate stream flows and increase the erosive force of the water. Montgomery Parks appreciates MCDOT's commitment to improving the stream condition at Mill Creek by building a new bridge with more capacity for the stream and restoring eroded banks downstream of the bridge. The wider stream cross section under the bridge will result in less erosive flows and improved aquatic passage through the bridge. In addition, stream habitat will be improved by the construction of stable riffles and pools that provide varied aquatic

habitat including submerged woody material and fast flowing riffle habitat. The inclusion of the crossvane downstream of the bridge will center the flow of the stream away from the banks and provide grade control to prevent any further incision of the stream channel. An existing WSSC sanitary sewer pipe will be protected from stream bank erosion at the downstream extent of the project through the creation of a stable riffle and bank stabilization. Finally, the flood prone bench will provide capacity for higher storm flows and provide habitat through the establishment of native vegetation.

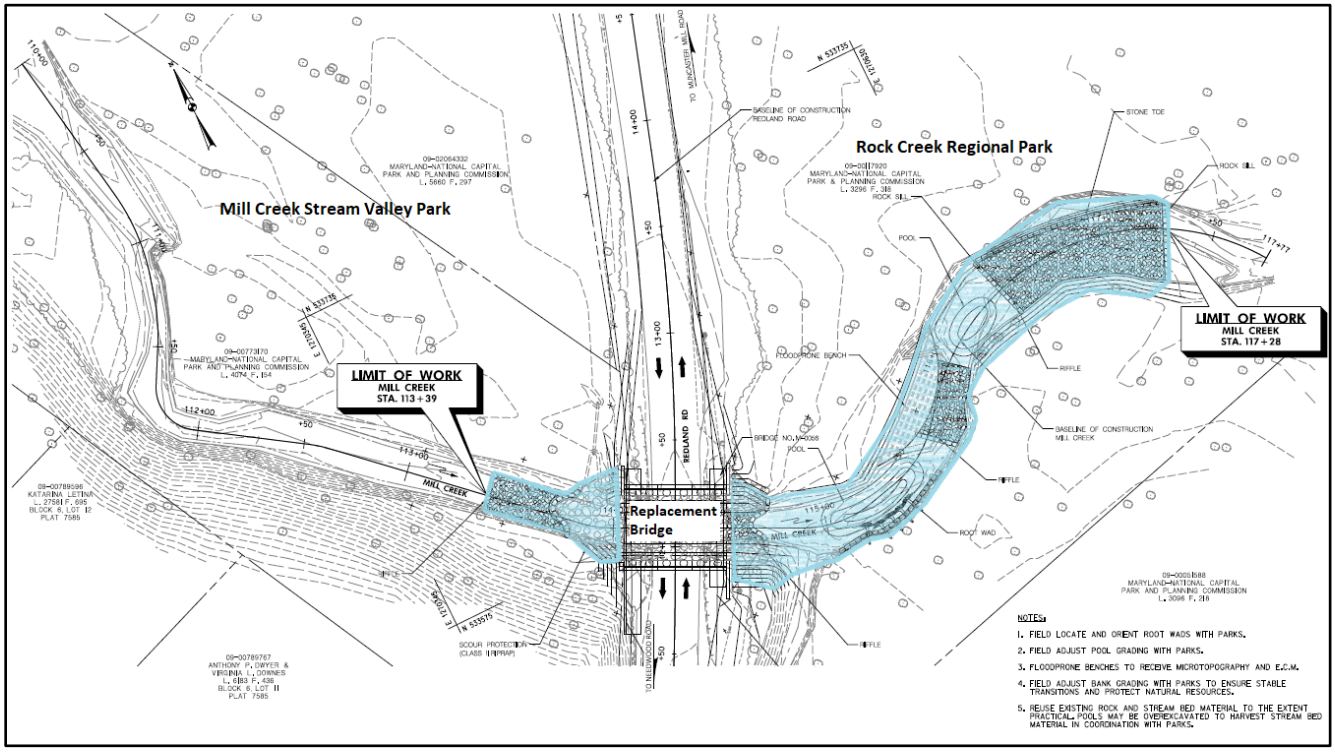

Figure 11: Extent of Stream Work

PARK CONSTRUCTION PERMIT

MCDOT will be required to obtain a Park Construction Permit from Montgomery Parks prior to commencement of any construction activities on parkland. Plans submitted for Park Construction Permit review must include existing topography, utilities, and identify and locate all trees (with size and species) larger than 6 inches DBH and greater within 100 feet of the proposed Limit of Disturbance on park property. During Park Construction Permit Review, park staff will work with MCDOT to minimize impacts to parkland to the greatest extent possible and avoid all critical resources identified. MCDOT will continue to coordinate with M-NCPPC on the design of the required in-stream structures in Mill Creek to ensure that a stable stream setting is provided. Montgomery Parks tree mitigation will be fulfilled through the on-site planting of a diverse tree, shrub, and herbaceous palette approved by Montgomery Parks.

Recommendation: Construction plans must be submitted to the M-NCPPC Department of Parks for review as part of the Park Construction Permit process to ensure that all work is performed in accordance with M-NCPPC standard details, specifications, and policies. No work on parkland may occur until an approved Park Construction Permit is issued for the project.

Recommendation: MCDOT must continue to coordinate with M-NCPPC on the design of the required in-stream structures in Mill Creek to ensure that a stable stream setting is provided.

Recommendation: Montgomery Parks tree mitigation will be fulfilled through the on-site planting of a diverse tree, shrub, and herbaceous palette approved by Montgomery Parks.

RIGHT-OF-WAY

The bridge will require creation of additional MCDOT right-of-way totaling 5,568 square feet consisting of 2,267 square feet in Mill Creek Stream Valley Park and 3,301 square feet in Rock Creek Regional Park. This is shown below in Figure 12.

Recommendation: Any approved Commission parkland such as Mill Creek Stream Valley Park and Rock Creek Regional Park to be added to the Montgomery County Department of Transportation Road ROW will be transferred to the County, as appropriate, via perpetual easement. The Commission must be paid the fair market value of the perpetual easement. Payment for the Perpetual Easement will occur before issuance of the Park Construction Permit.

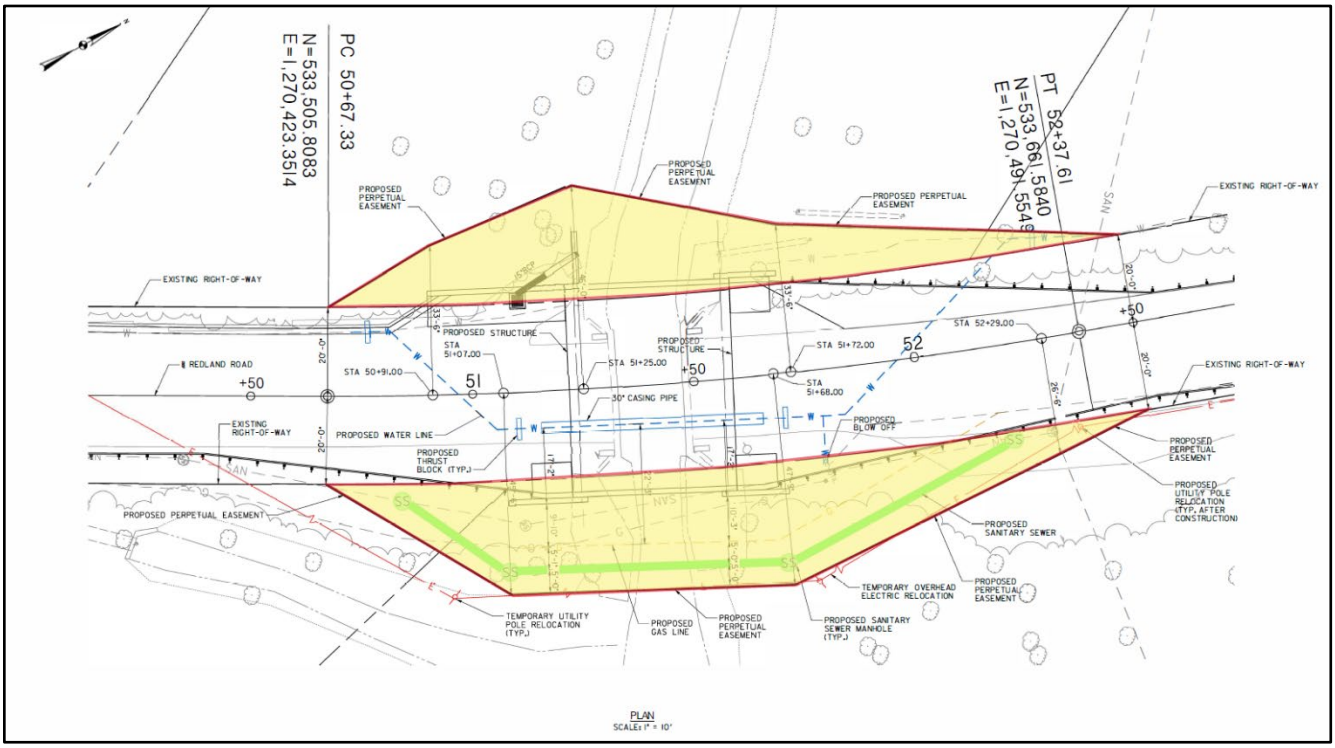

Figure 12: Area of Perpetual Easement for Right-of-Way

SECTION 7 – COMMUNITY OUTREACH

A virtual public hearing was held by the Montgomery County Department of Transportation on June 7, 2023. A copy of the public hearing presentation is included with this staff report as Attachment B. The public hearing transcripts and online testimony are included with this staff report as Attachment C. Many residents expressed concern that the bridge does not accommodate a future sidewalk and that the project does not include a sidewalk connection on the east side of Redland Road (as proposed, only a future sidepath on the west side is assumed).

After staff accepted the Mandatory Referral for review, Montgomery Planning notified local civic and homeowners' associations and other interested parties of this proposal. As of the date of this report, Planning staff have received no comments on this project from the public.

SECTION 8 - CONCLUSION

Planning staff recommends transmittal of the recommendations noted above as comments to the Montgomery County Department of Transportation.

SECTION 9 - ATTACHMENTS

Attachment A: Redland Road Design Plans

Attachment B: June 7, 2023 Public hearing presentation slides

Attachment C: June 7, 2023 Public hearing transcript and online comment summary