

MD355 Over Little Bennett Creek Bridge Replacement (SHA Project No. MO4275180), Mandatory Referral No. MR2018025

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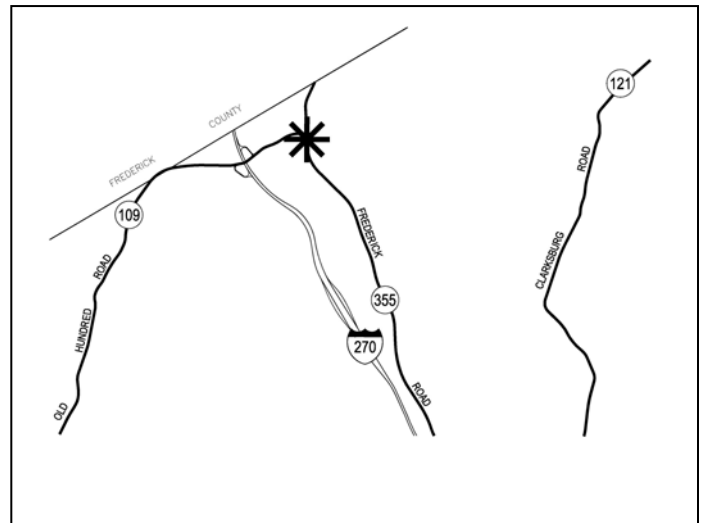
Completed: 05/31/2018

Description

Mandatory Referral MR2018025: MD355 Over Little Bennett Creek Bridge Replacement
Construction of a temporary and new bridge for MD 355 over Little Bennett Creek in Hyattstown.
Master Plan: 1994 Clarksburg Master Plan and Hyattstown Special Study Area.

Applicant: Maryland Department of Transportation State Highway Administration.

Filing Date: April 13, 2018.



Summary

The Maryland Department of Transportation State Highway Administration proposes to replace the existing bridge for Frederick Road (MD 355) over Little Bennett Creek just south of Hyattstown. The improvements will involve the construction of a wider and longer bridge and significant stream restoration work on Little Bennett Creek. To minimize traffic impacts, a temporary bridge and detour roadway will be constructed immediately to the west of existing MD 355 to carry MD 355 traffic during construction of the new bridge. This project is SHA Project No. MO4275180; state and federal funds will be used for the project. The project limits are as follows:

- Frederick Road (MD 355) between Groghan Road and Old Hundred Road (MD 109)

The site vicinity/project location and proposed design project location map are displayed in Figures 1 and 2 on the following pages. The project includes the following improvements:

- Replacement of the existing 40-foot-wide, 44-foot long bridge with a 43 foot-wide, 116-foot long bridge structure, provision of two 11-foot-wide travel lanes (one per direction), a west shoulder ranging from nine to 10.5 feet, and an east shoulder ranging from six to seven foot eight inches, and

- Construction of a 1,030-foot long, 26-foot wide temporary two-lane bridge/detour road (no shoulders/pedestrian or bicycle facilities) to be located to the west of existing MD 355 between Old Hundred Road and Groghan Road. This temporary bridge/road will be removed and the area remediated once the new bridge and road work are constructed on existing MD 355.

Issues

- Submittal/Approval of Park Construction Permit (Item 6 Attachment A – Parks Staff Report)
- Minimization of impacts to parkland and environmental resources.
- Rationale for maintenance of traffic plan – decision to construct temporary bridge/detour road.
- Provision of adequate space for bicycle/pedestrian sidepath (per the 2005 Countywide Bikeways Functional Master Plan) on west side of proposed bridge where the current design only provides a nine-foot-wide shoulder.
- Provision of adequate shoulder width for future sidepath (per the 2005 Countywide Bikeways Functional Master Plan) along the west side of MD 355 between the proposed bridge structure and Groghan Road.



Figure 1: Project Limits and Site Vicinity

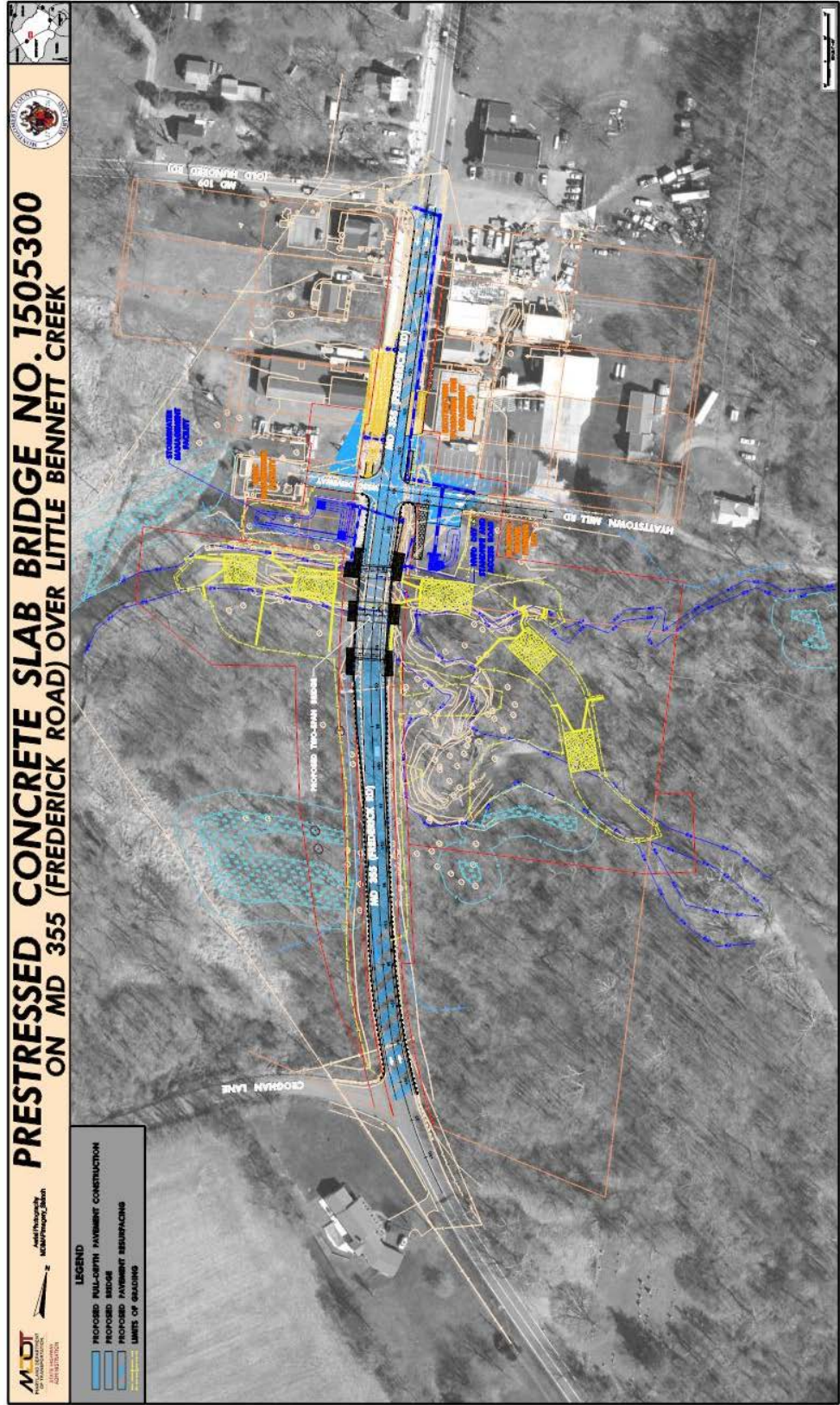


Figure 2: Proposed Design Project

Recommendations

We recommend that the Board approve this project with the following modifications transmitted to the Maryland Department of Transportation State Highway Administration:

1. Obtain a Park Construction Permit from Montgomery County Department of Parks prior to commencement of any construction activities on parkland.
2. Design all stormdrain and stormwater facility outfalls proposed on parkland to Parks' environmental standards.
3. Per the 2005 Countywide Bikeways Functional Master Plan, upgrade the proposed 9 – 10.5-foot-wide shoulder on the west side of MD 355 between Hyattstown Mill Road and the south end of the proposed bridge to a 12-foot-wide (8-foot clear) sidepath by shifting the road centerline. A 12-foot-wide sidepath would have an effective width of 8 feet, as bicyclists tend to shy away from walls and curbs by about 2 feet.
4. The proposed design does not currently include an accommodation for a future sidepath on MD 355 to the south of the proposed bridge consistent with the 2005 Countywide Bikeways Functional Master Plan. With the construction of the temporary detour road and temporary bridge, the entire west side of existing MD 355 between the existing and detour roads will be disturbed. Current plans call for remediation back to existing conditions. Staff is requesting that an 18-foot wide (minimum) graded shoulder area be provided along the west side of MD 355 between the new bridge and Groghan Road to allow for the future construction of a 10-foot wide sidepath and a six-foot wide grass buffer between the sidepath and the road edge. In addition, the outside edge of the sidepath should be a minimum of two feet from the embankment edge.

EXISTING CONDITIONS

Frederick Road (MD 355) is a two-lane, undivided roadway that travels in an east-west direction. Within the project limits, it is classified as an Arterial according to the Master Plan of Highways and Transitways within Montgomery County. The travel lanes are 11 feet wide with variable width paved shoulders north of the existing bridge in Hyattstown and with one-foot wide paved shoulders from the bridge south to Groghan Road. The section between Groghan Road and the existing bridge over Little Bennett Creek is a fill section with steep slopes and a guardrail on both sides of the road. The posted speed limit is 30 MPH, increasing to 40 MPH to the south of Groghan Road. South of the bridge, the roadway is an open-section design (no curbs) with no pedestrian facilities or bicycle accommodations. Currently, this road carries approximately 9,000 vehicles per day (two-way flow). During the morning and evening peak hours, the hourly traffic flows on this road reach between 850 and 1,000 vehicles per hour (two-way flow).

Land uses along Frederick Road within the project limits include commercial, residential, industrial and public facilities in downtown Hyattstown to the north, and park-land and residential uses to the south. Figure 3 illustrates the surrounding land use.

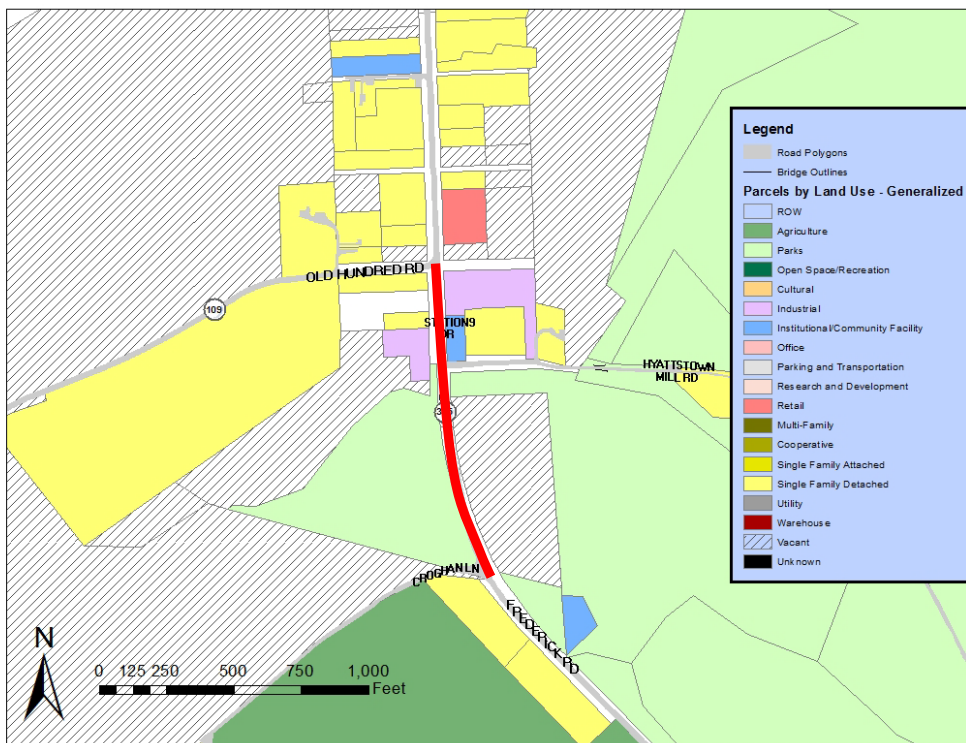


Figure 3. Generalized Land Use

PROPOSED IMPROVEMENTS/NARRATIVE

The Maryland Department of Transportation State Highway Administration (MDOT SHA) is proposing a bridge replacement project on MD 355 (Frederick Road) over Little Bennett Creek in Montgomery County, Maryland. The improvements are necessary due to the structure being structurally deficient with significant deterioration of the bridge deck, concrete beams and abutments. The bridge has significant undermining of the abutments due to scour and the current stream alignment is currently eroding the roadway side slopes of MD 355 at two locations, one at the bridge south abutment and another approximately 200 feet to the south of the bridge. Grout bags have been installed on several occasions to shore up the bridge abutments to prevent further undermining.

The scope of work includes replacing the existing 40-foot span concrete T-beam bridge built in 1925 with a two-span structure. The proposed bridge will be a pre-stressed concrete slab with two 55-foot spans providing a total bridge length of 116 feet. Most of the increased span length will be added to the south (away from Hyattstown) to better align the channel opening with the stream flow and the existing floodplain. Further, MDOT SHA is proposing to reprofile the bridge due to flooding concerns and lack of positive drainage on the bridge. The roadway will be raised a maximum of 23 inches at the bridge site. This, combined with the increased span length, will prevent a 50-yr. storm from overtopping the bridge and roadway. The roadway to the northwest of the bridge has incurred major damage from erosion in the past due to overtopping.

The existing roadway widths of 11-foot wide lanes and one-foot wide shoulders (total 24-foot wide clear roadway) will be widened to 11-foot lanes, with a nine-foot wide (minimum) shoulder being provided on the west side of the bridge to accommodate a future bike path (eight-foot wide sidepath with one-foot wide gutter pan assumed by MDOT). A five-foot-wide shoulder will be provided on the east side of the bridge, reserving space for a future sidewalk.

For maintenance of traffic purposes, MDOT SHA is proposing to install a temporary roadway and temporary bridge to the west of the existing structure. This will prevent the need for a detour or temporary signal and will allow for two lanes of traffic to be maintained at all times during construction. Preventing a detour is necessary due to the close location of the Hyattstown Fire Station at the corner of MD 355 and Hyattstown Mill Road. Additionally, MD 355 is a detour route for I-270, especially during vehicular incidents. Pedestrian and bicycle traffic will be maintained at all time (consistent with existing provisions) through the project site. Access to the park and playground facilities adjacent to the project site will be maintained.

Embankment work is being proposed in addition to the roadway and bridge work. The stream is currently eroding the existing southeast wing wall from behind. To address this concern, MDOT SHA is planning to extend the southeast wing wall approximately 50 feet farther than the other wingwalls to prevent the stream from erosion in the future. Further, the stream is eroding the roadway embankment approximately 200 feet south of the existing bridge and is currently flowing under the existing trees. The roadway embankment is being held together by the exposed tree roots. MDOT SHA is reconstructing the

stream to divert the flow away from the roadway embankment and hopefully deposit sediments back under the trees over time and help prevent further embankment erosion.

To address the project purpose and need, MDOT SHA anticipates needing right-of- way from the Little Bennett Regional Park, a 3,700-acre park owned by the Maryland- National Capital Park and Planning Commission (M-NCPPC). The anticipated right-of-way needs include approximately 11,300 square feet (0.26 acre) of fee simple for the new bridge and side slopes, 31,000 square feet (0.7 acre) of perpetual easement for stormwater management, side slopes, and repaving of the Little Bennett Park playground parking lot, and 48,000 square feet (1.1 acres) of temporary easement for the temporary roadway and bridge.

MDOT SHA has been in discussion with Park and Planning staff over the last two years regarding this project. Several field and office meetings have been held with M-NCPPC staff and resource agencies including the Maryland Department of Natural Resources and the Army Corps of Engineers to discuss the project and its impacts on Little Bennett Creek. Based on those discussions, MDOT SHA has committed to mitigating impacts to the Little Bennett Regional Park by completing a stream relocation and restoration project along Little Bennett Creek. This mitigation work will involve an additional 158,500 square feet (3.7 acres) of temporary construction easement from M-NCPPC.

Table 1 - Approximate Right-of-Way Needs

Purpose	Park	ROW Needs
Bridge and Roadway Needs	Little Bennett Regional Park (3,700 acres)	11,300 square feet (0.26 acre); fee simple 31,000 square feet (0.7 acre) perpetual easement 48,000 square feet (1.1 acres) temporary construction easement
Stream Relocation and Restoration Needs	Little Bennett Regional Park (3,700 acres)	158,500 square feet (3.7 acres) temporary construction easement

The general scope of work for the mitigation portion includes approximately 750 feet of stream reconstruction and re-alignment, 500 feet upstream from the structure to 250 feet downstream of the existing bridge structure. The reconstruction of the stream will consist of a series of cross vanes and rifles and pools that will help stabilize the stream through a portion where the stream drops approximately three vertical feet. Additionally, tree root wad structures and other stone structures and roots left in the ground by trees that will be removed will be used to aid the stream

in moving to and maintaining the new alignment. Portions of the old stream bed will be backfilled or re-graded to better handle flood events where the stream will overflow its normal banks and to stabilize trees close to the road that are currently severely undermined by the existing stream alignment. Additional grading will be performed to allow the stream to flow through the southern span of the proposed bridge.

Approximately 100 trees will need to be removed for the roadway and bridge portion of the project and approximately 136 trees will need to be removed for the stream relocation and restoration portion. MDOT SHA is committed to protecting significant trees as much as possible and to mitigating the loss of the trees by replanting either on-site or at a location suitable to M-NCPPC. It should be noted that access to the Little Bennett Regional Park including the playground will remain open during construction.

Section 4(f) implementing regulations found under 23 CFR 774.3 allow the Federal Highway Administration (FHWA) to determine that certain transportation uses of Section 4(f) land will have only minor impacts on the protected resource (publicly-owned public parks, recreation areas, wildlife and waterfowl refuges and historic sites). With respect to publicly-owned public parks, recreation areas and wildlife and waterfowl refuges, a finding of de minimis impact may occur if a transportation project does not "adversely affect the activities, features and attributes" which qualify the resource for protection under Section 4(f). When this is the case, the finding of FHWA requires written concurrence from the official(s) with jurisdiction over the resource. In addition, opportunity for public review and comment on the finding is required. MDOT SHA has committed to mitigating impacts to Little Bennett Regional Park by completing the stream relocation and restoration project as well as reforestation and believes the net impact to the Park will be minor or de minimis.

The permanent impacts of this project will not impair the activities, features, and attributes important to the Little Bennett Regional Park, MDOT SHA will request that M-NCPPC and FHWA concur with a de minimis impact finding for permanent use of the resource. In addition to the permanent impacts, the temporary roadway and bridge as well as the stream relocation and restoration will occur on a temporary basis as the land will remain M-NCPPC property. Given that these improvements would occur by temporary occupancy only, the requirements of Section 4(f) would not apply in this instance based on the following criteria:

- The duration of impacts will be temporary, i.e. less than the time needed for construction of the project;
- There will be no change in ownership of the land;
- The scope of work is minor, i.e. both the nature and the magnitude of the changes to the Section 4(f) property is minimal;
- There are no anticipated permanent adverse physical impacts, nor will there be interference with the properties activities, features, or attributes of the property, on either a temporary or permanent basis;
- The land being used will be fully restored, i.e. the property will be returned to a condition which is at least as good as that which existed prior to the project; and

- There is documented agreement of the officials with jurisdiction over the Section 4(f) resource regarding the above conditions.

Public Outreach

No public outreach activities were conducted by MDOT SHA for this project, since all lanes will be maintained during construction. As part of the NEPA de minimis process, the project was publicized by MDOT SHA with a two-week public comment period during which no comments were received. Properties adjacent to the project, from which MDOT SHA is acquiring temporary construction easements, have been contacted, to include the Fire Station, WSSC, two private property owners, and utility owners in the area.

Overview of Proposed Design

The roadway plan is provided in Figures 4 and 5. More detailed plan sheets are included in Appendix A of this report.

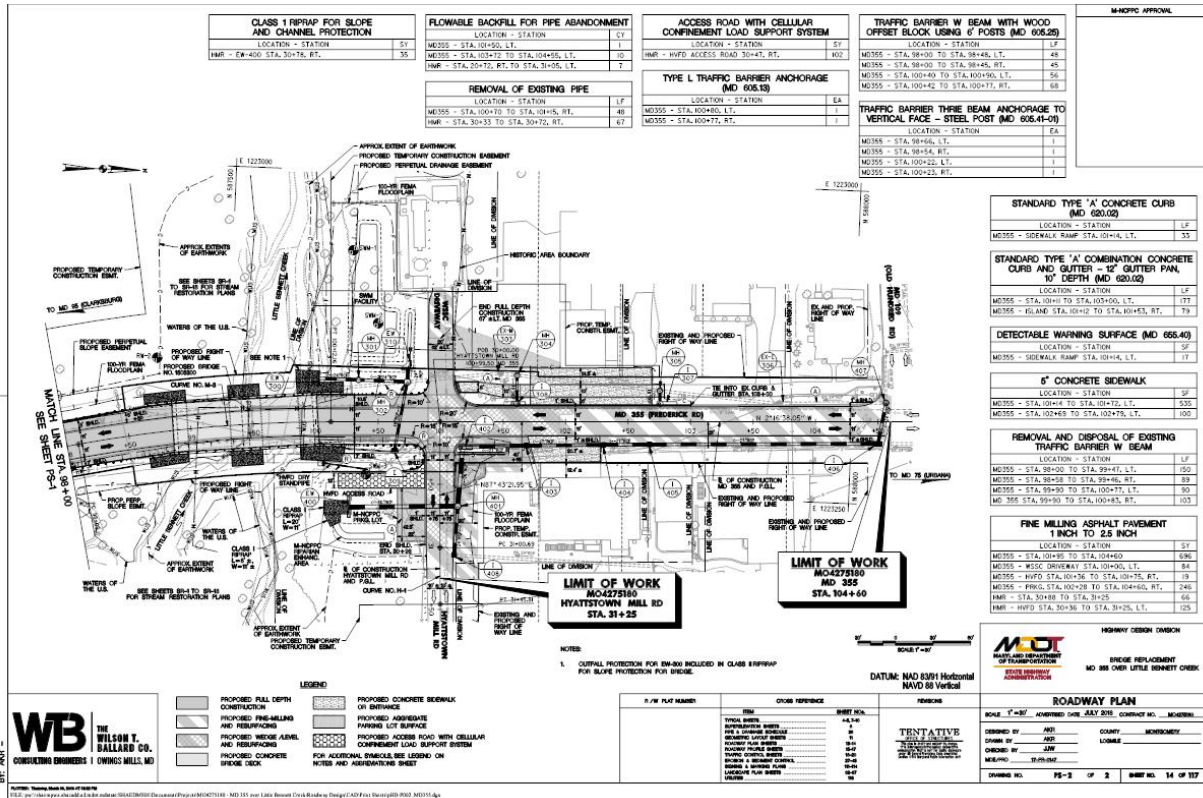


Figure 4: Roadway Plan - Sheet 1

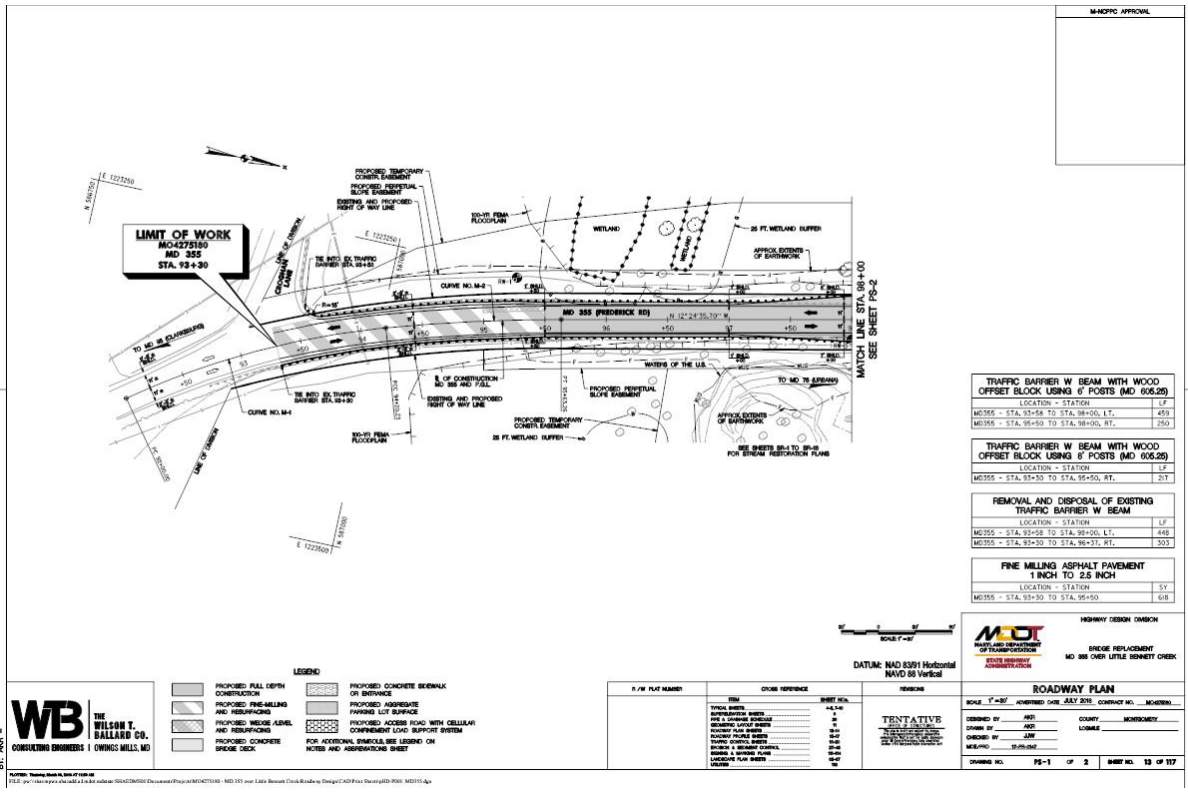


Figure 5: Roadway Plan - Sheet 2

Maintenance of Traffic and Selection of Temporary Road/Bridge Option

MDOT SHA, after a detailed traffic study/three potential maintenance of traffic scenarios, selected Option 3 (maintain all travel lanes), detour on a temporary road, as the best solution. The Maintenance of Traffic Alternative Analysis is provided with this staff report as Attachment B. Staff concurs with this decision, as a detour requiring use of I-270 was long and would have required significant physical and operation improvements to perform acceptably. The selected alternative requires the construction of a temporary detour road and temporary bridge over Little Bennett Creek and Park property. The maintenance of traffic plans are shown in Figures 6 through 8. All stages of construction will maintain the Fire Station signal operation (with some modifications). Figure 6 shows Stage 1, which involves the construction of the temporary access road and temporary bridge. Figure 7 shows Stage 2, which involves the demolition of the existing bridge, construction of the new, longer bridge structure, plus the improvement of the existing road between Old Hundred Road and Groghan Road. Figure 8 shows Stage 3, which involves the re-opening of existing MD355 and the removal and remediation of the temporary access road and temporary bridge.

Some of the considerations evaluated in the Maintenance of Traffic Alternatives Analysis included traffic operations/mobility thresholds, environmental impacts, total cost, travel time, construction duration, worker safety/constructability, traffic safety, work zone capacity, and impact to school bus routes, local business, emergency response.

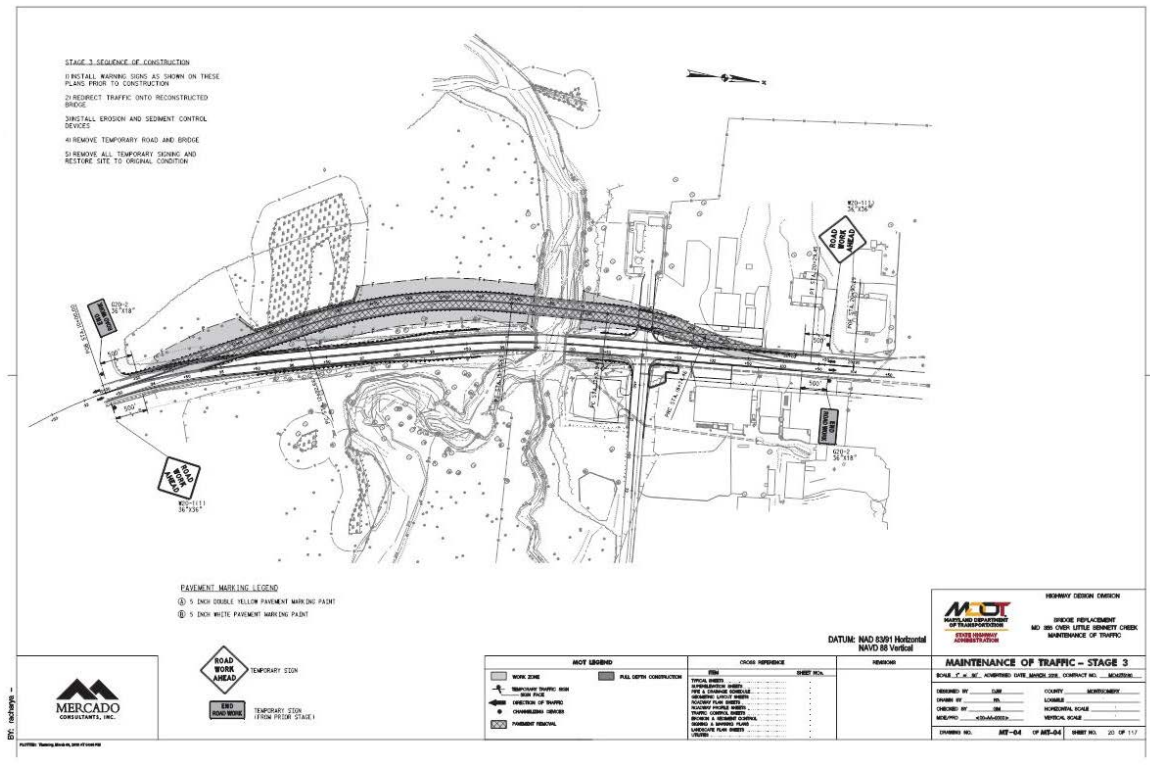


Figure 8: Maintenance of Traffic Plan - Stage 3

Typical Sections

Over the 1,130 feet length of the existing bridge project limits, there are five cross sections presented. The proposed typical sections along MD 355 are generally consistent with the existing typical section; however, the cross sections to the south of the bridge do not provide any top of slope accommodations for a future sidepath on the west side of the road. MDOT SHA’s intent was to restore the existing road to the south of the new bridge back to existing conditions. The first cross section of note is located just north of Groghan Road from Station 93+30 to 95+50 as shown in Figure 9.

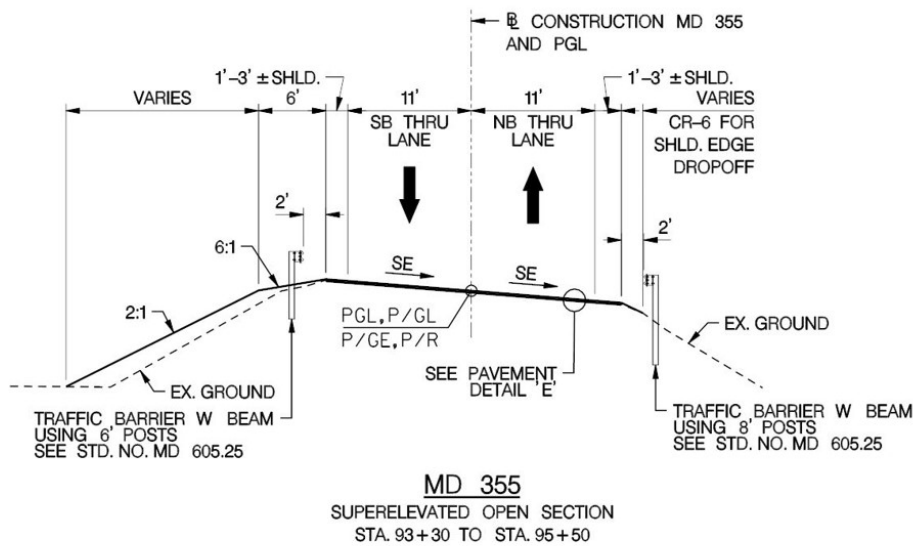


Figure 9: MD 355 Proposed Cross Section Station 93+30 to 95+50

The second cross section occurs between Station 95+50 and 97+00 as shown below in Figure 10. This section contains two 11-foot-wide travel lanes and one-foot wide paved shoulders with guardrail on both sides.

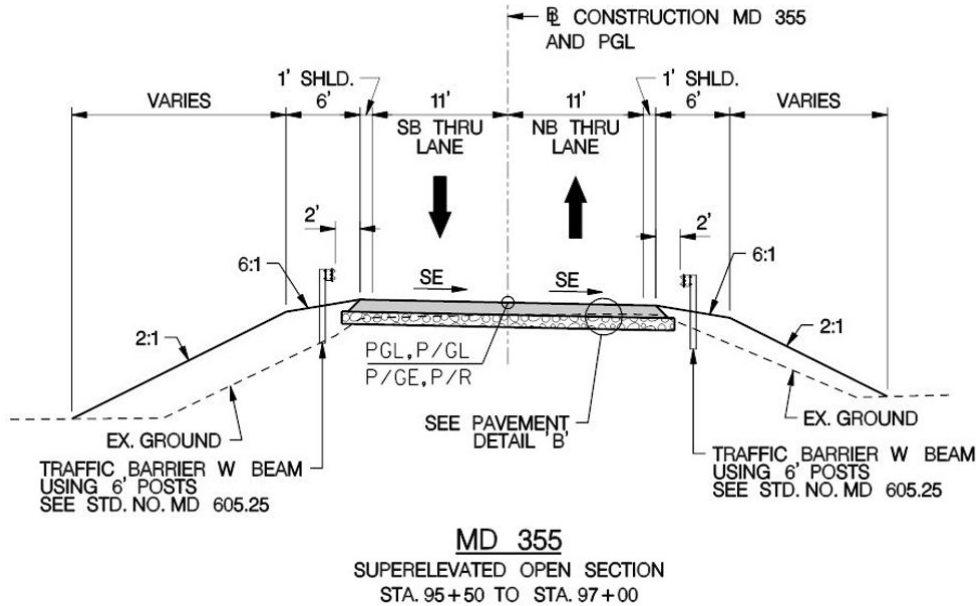


Figure 10: MD 355 Proposed Cross Section - Station 95+50 to 97+00

The third cross section occurs between Station 97+00 and 98+86 as shown below in Figure 11. This section contains two 11-foot-wide travel lanes and variable width paved shoulders with guardrail on both sides. This section meets the proposed bridge structure at Station 98+86.

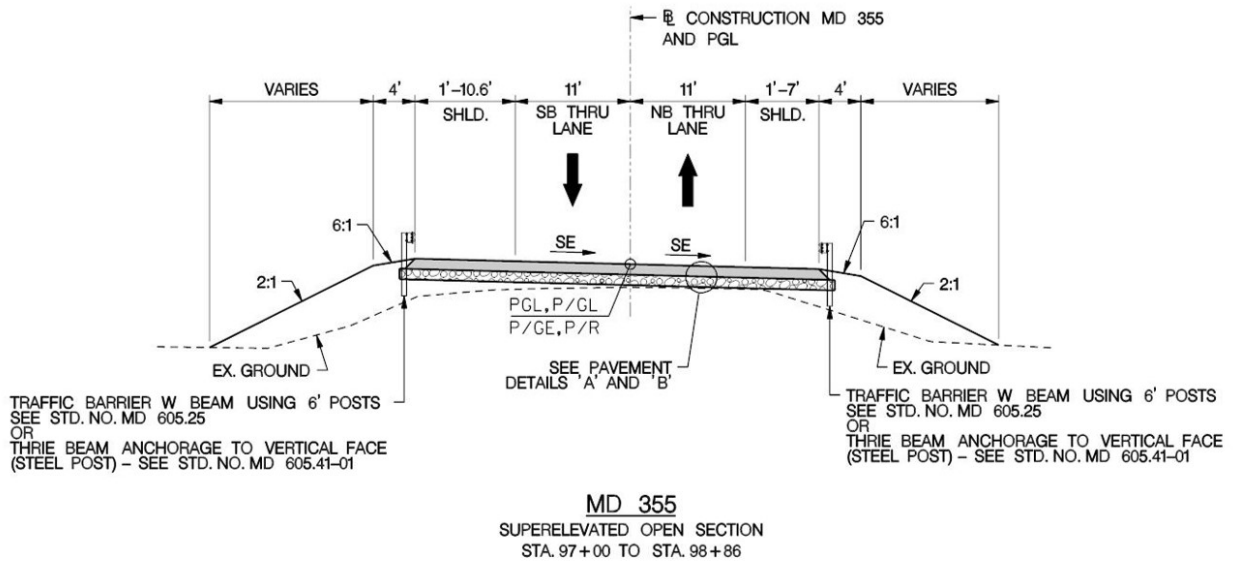


Figure 3: MD 355 Proposed Cross Section - Station 97+00 to 98+86

The bridge cross section, shown below in Figure 12, provides two 11-foot wide travel lanes (one in each direction), and two variable-width shoulders. The reason for the variable widths is due to the curvature of the road across the bridge. The west shoulder would range from 9 to almost 10.5 feet in width, and the east shoulder would range from approximately 6 to almost 8 feet in width.

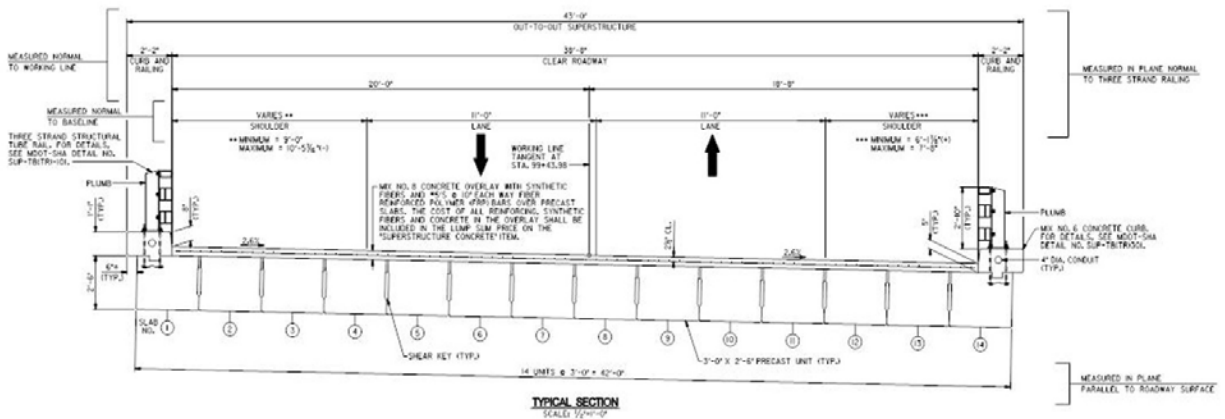


Figure 4: MD 355 Proposed Cross Section - New Bridge - Station 98+60 to 100+00

The fifth cross section occurs between Station 100+90 and 101+72 as shown below in Figure 13. This section contains two 11-foot-wide travel lanes in a closed section design (curb) with an 8-foot-wide shoulder on the east side. On the west side of MD 355, a 10-foot wide sidepath with a six-foot wide buffer will be provided. This sidewalk will extend from Hyattstown Mill Road/WSSC Driveway up to Old Hundred Road (MD 109).

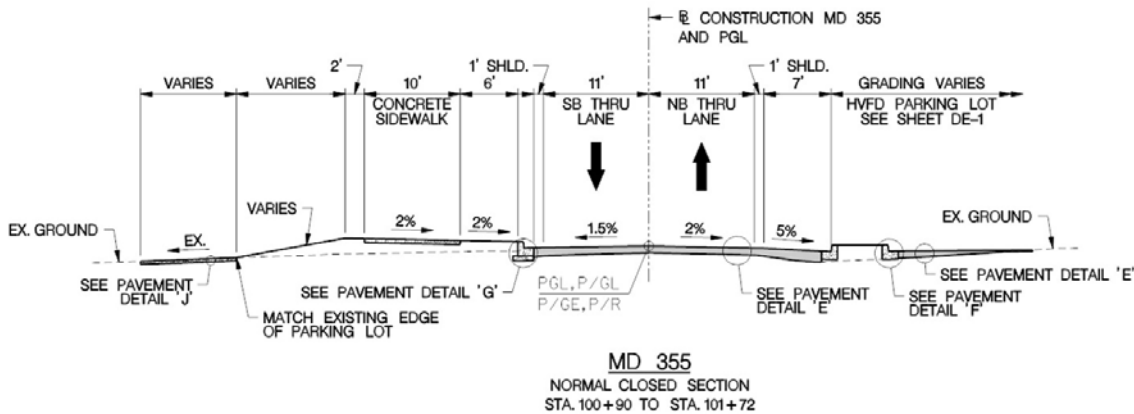


Figure 5: MD 355 Cross Section Station 100+90 to 101+72

Environment

Disturbance for this project takes place on parkland and within the road right-of-way. MDOT SHA has been in discussion with Park staff for over two years with field and office meetings among various agencies. Agreements have been made for the level of disturbance and the type of mitigation to take place for Park impacts and sensitive area disturbance. Therefore, planning staff defers to the Department of Parks on environmental issues for this project.

Since MDOT SHA is a state agency, the Maryland Forest Service reviews this project for compliance with the Maryland Forest Conservation Act. Therefore, the Planning Board does not act on a forest conservation plan as part of this process.

Historical

The Maryland Historical Trust (MHT) was a consulting party to the proposal under Sec. 106 of the Historic Preservation Act of 1966 (Sec. 106) and Section 4(f) of the Federal Highway Administration Act (Section 4(f)). MHT concurred with the Maryland Department of Transportation State Highway Administration's (MDOT SHA) finding that the proposal will have no adverse effect on any historic resources within the Hyattstown Historic District (Master Plan #10/59) under Sec. 106 (having determined in 2001 that the bridge over Little Bennett Creek was not eligible for listing on the National Register of Historic Places). MHT also concurred with MDOT SHA's request under Section 4(f) that the Federal Highway Administration make a de minimis impact finding on the encroachment of the temporary road on the west side of the current bridge into the boundaries of the Historic District. MHT

submitted a formal concurrence on January 18, 2018. M-NCPPC Historic Preservation Staff has reviewed the proposal and concurs with these determinations.

MASTER PLAN CONSISTENCY

Transportation/Master Plan of Highways and Transitways

The 1994 Clarksburg Master Plan includes a special study area that is centered on the historic village of Hyattstown. The Plan's objectives for the special study area focus on preservation of Hyattstown's historic structures and protection of the village's character. To this end, the Plan makes land use and design recommendations that reinforce Hyattstown's historic status. While acknowledging the need to accommodate traffic on MD 355, the Plan recommends that it not be widened through Hyattstown, instead proposing to close the existing I-270 interchange at MD 109 and create a highway bypass to the east of the village. This bypass, the Plan notes, "minimizes the traffic volumes along Frederick Road," and "limits the need for traffic improvements along MD 355 to the intersections with MD 109 and the bridge over Little Bennett Creek." (p 121) The bypass would extend MD 109 to the east of the MD 109/MD 355 intersection and then north, reconnecting with MD 355 in Frederick County. The intersection of MD 109 and MD 355 is at the southern end of the village and just north of the Little Bennett Creek bridge crossing.

The proposed project will replace a structurally deficient bridge and provide improved passage for bicyclists and pedestrians. It will be wider than the existing bridge, but no changes are proposed to travel lanes. The additional pavement accommodates shoulders that provide space for a future sidepath (to be built by others), which was not contemplated in the 1994 Plan. In addition, the bridge will have a raised profile that will result in substantially less risk of flooding during heavy rains. The project will also facilitate a significant reconstruction and realignment of Little Bennett Creek itself, which will have the considerable positive environmental impact of improving streamflow and stabilizing areas upstream from the bridge, which, in turn, will improve the habitat for aquatic species.

This project is broadly consistent with the 1994 Plan. It does not encourage an increase in traffic volumes and adds pavement only to provide additional bicycle and pedestrian access, both of which are general objectives of the Master Plan. It allows significant environmental improvements to Little Bennett Creek in an area described by the Parks Department as a Best Natural Area and will improve aquatic habitat, also an important objective of the Plan.

The 1994 Clarksburg Master Plan classified Frederick Road (MD 355) between Old Hundred Road (MD 109) and Comus Road as a two-lane (existing and planned lanes) arterial with an 80-foot wide master planned right-of-way. The proposed design is consistent with this classification.

Bicycle Master Planning

The 2005 Countywide Bikeways Functional Master Plan recommends the following improvements:

- Frederick Road (MD 355) between Old Hundred Road (MD 109) and Comus Road – separated bikeway– sidepath on the west side.

- Hyattstown Bypass between Old Hundred Road (MD 109) and Frederick Road (MD 355 north of Hyattstown) – separated bikeway – sidepath (side TBD).

The subject project proposes to construct a sidewalk/sidepath on the west side of MD 355. From north to south the proposal is as follows:

- Between Old Hundred Road and Hyattstown Mill Road a 10-foot wide sidewalk/sidepath.
- Between Hyattstown Mill Road and the south end of the new bridge a shoulder width of between 9 and 10.5-feet on the bridge. This would result in a sidewalk/bikeway with an effective width of between 5 and 6.5 feet, which does not meet the definition of a sidepath.
- Between the south end of the new bridge and Groghan Road there is no provision for a future sidepath. The road section quickly transitions back to existing conditions with narrow one-foot-wide shoulders and guardrail on both sides of the road.

Recommendations

- Hyattstown Mill Road to south end of the new bridge: The proposed bicycle-related improvements are inconsistent with the 2005 Countywide Bikeways Functional Master Plan. The shoulder should be upgraded to an elevated sidepath that is 12 feet wide, which equates to an effective width of 8 feet, since bicyclists tend to shy away from bridge railings and the road by about 2 feet. The minimum acceptable effective width of a sidepath in an environmentally sensitive environment is 8 feet.
- South end of the new bridge to Groghan Road: The proposed design does not currently include an accommodation for a future sidepath on MD 355 to the south of the proposed bridge consistent with the 2005 Countywide Bikeways Functional Master Plan. With the construction of the temporary detour road and temporary bridge, the entire west side of existing MD 355 between the existing and detour roads will be disturbed. Current plans call for remediation back to existing conditions. At a minimum, an 18-foot wide (minimum) graded shoulder area should be provided along the west side of MD 355 between the new bridge and Groghan Road to allow for the future construction of a 10-foot wide sidepath and a six-foot wide grass buffer between the sidepath and the road edge. In addition, the outside edge of the sidepath should be a minimum of two feet from the embankment edge.

IMPACTS TO PARKLAND/PARK CONSTRUCTION PERMIT

Montgomery Parks staff have submitted a separate staff report evaluating the potential impacts to Parkland. This staff report is included as Attachment A.