

MACARTHUR BOULEVARD BIKEWAY SEGMENT 3 MANDATORY REFERRAL NO. 2022012

Description

Montgomery County Department of Transportation (MCDOT) is proposing pedestrian and bicycle safety improvements along the approximately two-mile corridor of MacArthur Boulevard between Oberlin Avenue and the DC Line in Bethesda, Maryland. The proposed improvements are Segment III of improvements to the MacArthur Boulevard Bikeway and will include construction of an 8-foot-wide sidepath to tie into the existing pedestrian and bicycle network at the project limits.

No. MR2022012

Completed: 01-27-2022

MCPB

Item No. 4

February 3, 2022

Montgomery County

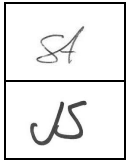
Planning Board

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Planning Staff



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LOCATION

MacArthur Boulevard between Oberlin Drive
and the DC Line

MASTER PLAN

1990 Bethesda/Chevy Chase Master Plan,
2018 Bicycle Master Plan, 2018 Master Plan of
Highways and Transitways

APPLICANT

Montgomery County Department of
Transportation

ACCEPTANCE DATE

December 13, 2021

REVIEW BASIS

20-302 of the Land Use Article
(Mandatory Referral)



Summary:

- Montgomery County Department of Transportation to construct sidepath and buffer improvements along MacArthur Boulevard between Oberlin Drive and the DC line.
- Forest Conservation exemption #42014043E was confirmed on December 22, 2015 as a linear county road project per Section 22A-9.
- Staff recommends Approval of the Mandatory Referral with comments.

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SECTION 1: RECOMMENDATIONS AND CONDITIONS

MANDATORY REFERRAL REVIEW

This proposal for the construction of pedestrian and bicycle improvements is required to undergo the Mandatory Referral review process under the Montgomery County Planning Department's Uniform Standards for Mandatory Referral Review. State law requires all federal, state, and local governments and public utilities to submit proposed projects for a Mandatory Referral review by the Commission. The law requires the Planning Board to review and approve the proposed location, character, grade and extent of any road, park, public way or ground, public (including federal) building or structure, or public utility (whether publicly or privately owned) prior to the project being located, constructed or authorized. This review is typically performed in context with the relevant master plans, guidelines, and policies in effect.

Planning staff acknowledges that the implementation of master plan transportation recommendations is a challenge faced by the Applicant in developing design plans to convert desired master plan recommendations into engineering design drawings. The design process up to 30/35 percent design typically brings clarity with considerably more detail than considered during a master plan, and issues such as environmental impacts, historic impacts, and construction costs may introduce new factors that need to be weighed in developing a final design solution. It is the intention of the Board that the Mandatory Referral process aids in this process to develop an optimal or at least an improved design solution.

MANDATORY REFERRAL – 35 PERCENT DESIGN PLANS

Staff recommends approval of the MacArthur Boulevard Bikeway Segment 3 project 35 percent design plans (MR2022012) with the following comments.

1. Widen Shoulders and Street Buffer

Widen shoulders to a width of 4 feet to serve as a bikeable shoulder along the whole length of the project and provide an adequate 6-foot-wide minimum street buffer between the road and the sidepath. These changes would result in a cross section that is 3 feet wider.

2. Posted/Target Speed and Related Design Elements

Reduce the MacArthur Blvd posted speed to 25 mph, as it is classified as a Neighborhood Connector under the Planning Board approved Complete Streets Design Guide. In addition, the design elements of the road should be adjusted to this lower speed, including high-visibility and raised crosswalks.

3. Pedestrian Refuge – Oberlin Avenue to Clara Barton Parkway Ramp

Provide a pedestrian refuge on the south side of MacArthur Boulevard between Oberlin Avenue and the ramp to the Clara Barton Parkway.

4. Sidepath Elevation at Driveways

Where the sidepath crosses driveways, maintain the sidepath's elevation across the driveway. If necessary, the sidepath should be pulled away from the roadway at driveways.

5. High Visibility Crosswalks

Provide high-visibility raised crosswalks, with median refuge where feasible, for crossing MacArthur Blvd to improve connections with residential communities and/or between bus stop pairs at the following four intersections:

- Mohican Road
- Access to Mohican Swim Club
- Walhonding Road
- Maryland Avenue

6. MacArthur Boulevard/Sangamore Road/Madaket Road intersection

Provide a high-visibility crosswalk on the eastbound leg of MacArthur Boulevard at Sangamore Road/Madaket Road. Also, provide separate accessible ramps on the southeast corner for the crosswalks crossing MacArthur Boulevard and Madaket Road. Pedestrian corner refuge area improvements are also needed on the southeast corner to accommodate current and future use, as this intersection will provide a major connection for bicyclists and pedestrians between the MacArthur Boulevard sidepath, the future American Legion bridge connection, and the Little Falls Stream Valley and Capital Crescent Trails. There is also concern about the multi-stage crossing required for bicyclists and pedestrians to cross on the westbound leg, so intersection modifications should be explored by the Montgomery County Department of Transportation in the future at this intersection.

7. Wayfinding for Connecting Park Trails

Incorporate additional wayfinding signage for trail users, highlighting the connection to both Little Falls Stream Valley Trail and the Capital Crescent Trail.

8. Environmental Impact – Need for Additional Information

Please provide further information regarding the current approach in limiting environmental impacts specifically related to slopes, forest, and endangered species. What procedures or measures will be implemented?

9. Future Coordination for Advanced Design Phases of the Project

The Applicant should continue to coordinate with M-NCPPC staff during the development of 65 percent, Semi-Final, and Final design plans to help this agency continue to monitor the progress of this design project.

SECTION 2: PROJECT DESCRIPTION

VICINITY

The project design limits are MacArthur Boulevard in Bethesda, Maryland between Oberlin Drive and the DC/Montgomery County line. The project limits are displayed below in Figure 1.

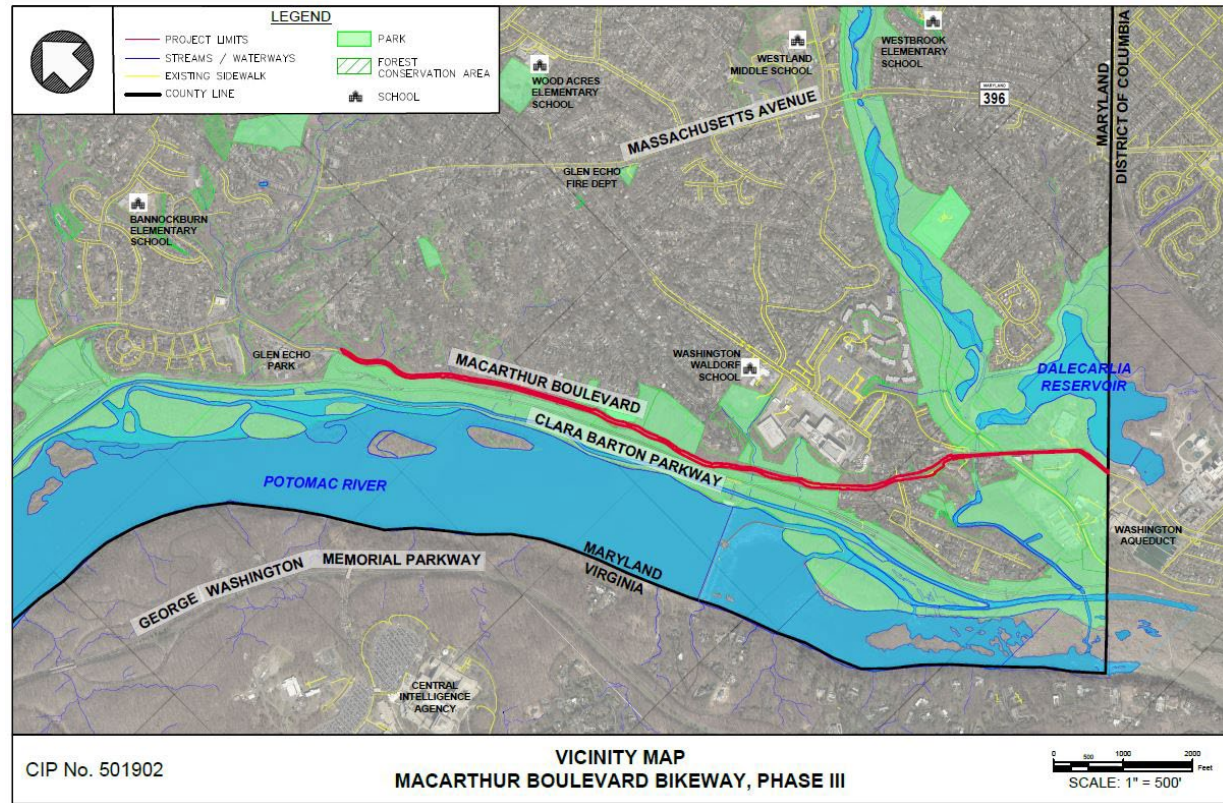


Figure 1 – Vicinity map

DESIGN PROJECT

The preliminary design plans for the project propose upgrading the existing sidepath to include a minimum five-foot-wide grass buffer between the 8-foot-wide sidepath and the travel lanes on MacArthur Boulevard. The facility alignment was chosen to minimize impacts to environmentally sensitive areas and the historic aqueducts that run through the corridor.

This project is the final segment of the MacArthur Boulevard Bikeway project to go through the Mandatory Referral process. Segment 2 was constructed in 2014, Segment 1 was reviewed as a Mandatory Referral in 2020 and is currently not scheduled for construction. The current project, which includes full design and construction cost funding, is identified in the approved Montgomery County FY21-FY26 Capital Improvement Program as Project No. M500718 with a planning, design and

construction budget of \$18.9 million. It should be noted that in the FY23 Recommended Capital Budget recently released by the County Executive, the budget has increased to \$21.08 million with construction anticipated during FY25.

The final design for this project is scheduled to be completed in Spring 2023. Construction is anticipated to begin in Summer 2024 and be complete in Fall 2025. The time between design and construction will be used for property acquisition and utility relocation, as necessary.

This project proposes to introduce a consistent 5-foot grass buffer and design and maintain a consistent 8-foot-wide sidepath, and to widen the roadway wherever feasible to be a consistent 26-foot pavement width, essentially adding a three-foot wide shoulder to each side of the existing 20-foot pavement width. The study limits are 2.2 miles long on MacArthur Boulevard between Oberlin Avenue and the DC line.

EXISTING CONDITIONS

MacArthur Boulevard is a two-lane, two-way roadway with narrow to no shoulders on the south side and no shoulders along the north side along most of its length within this 2.2-mile section that connects multiple residential neighborhoods in Bethesda, with a posted speed limit of 30 mph. The roadway lane widths meet the existing approved Montgomery County Department of Transportation (MCDOT) design standard for a Primary Residential Road - Open Section. There is an existing sidepath along the project corridor that continues beyond both ends of the project limits although there are a few short sections where this existing sidepath effectively becomes a shoulder.

The roadway is heavily used by pedestrians and bicyclists, including large numbers of recreational bicyclists who tend to prefer to bicycle on the road. Figures 2 through 8 show some typical images along the corridor.



Figure 2 – Looking Eastbound near Oberlin Avenue/Clara Barton Parkway ramp



Figure 3 – Looking Eastbound near Mohican Road with guiderail between sidepath and road



Figure 4 – Looking Eastbound near Walhonding Road



Figure 5 – Looking Eastbound near Maryland Avenue

At Maryland Avenue, as shown above in Figure 5, there is a heavy vehicle bypass lane on the southeast side of the intersection. This results in a very wide intersection area, and as a result, a very long angled crosswalk on the south side of MacArthur Boulevard across Maryland Avenue.



Figure 6 – Looking Eastbound between Maryland Avenue and Sangamore Road

Approaching Sangamore Road from the north, Figure 6 shows a narrow section of MacArthur Boulevard. To the right of the guiderail, there is a steep dropoff into the woods, and the existing sidepath is located at a lower elevation relative to the road surface. The sidepath rises as it approaches Sangamore Road, and this is the steepest section of the existing sidepath with a grade of approximately 20 percent.



Figure 7 – Looking Eastbound near Windward Place



Figure 8 – Looking Eastbound near Exxon Station

DESIGN ISSUE – SUBSURFACE AQUEDUCT FACILITIES

The most challenging obstacle to providing improved bicycle and pedestrian facilities along MacArthur Boulevard is the presence of two water distribution aqueduct lines running directly underneath the existing highway right-of-way. The northern aqueduct was constructed in 1859 and generally runs under the westbound travel lane. The southern aqueduct was constructed in 1921 and generally runs under the proposed sidepath alignment on the south side of MacArthur Boulevard. The Applicant had to work very closely with the US Army Corps of Engineer to ensure that vehicle loading and design elements would not impact the structural integrity of these two facilities. This has resulted in a very constrained project from the perspective of establishing desirable width facilities for shoulders, buffers, and the sidepath width. In most cases, this design is proposing minimum widths. This also affected road improvement measures, including the need to maintain an existing heavy vehicle bypass lane at Maryland Avenue, the ability to provide guiderail, and other structural improvements for the sidepath alignment.

DESIGN ISSUE – SIDEPATH WIDTH

The Applicant considered widening the proposed sidepath width from 8 feet to 10 feet in September 2021. A memo detailing this evaluation is provided as Attachment B. The intent of all sidepath projects by MCDOT is to meet AASHTO standards, wherever possible. The memo identifies some property impacts that would occur with a widening to a 10-foot-wide sidepath, environmental impacts,

permitting, aqueduct impacts, and construction cost impacts. The recommendation of the MCDOT memo is to maintain the 8-foot-width due to all of the above factors. The other two parts of this sidepath (existing Segment 2 and proposed Segment 1) have 8-foot-wide sidepaths, and there is certainly a recognition that the constraints along this corridor are quite challenging.

DESIGN ISSUE – STEEP GRADE SIDEPATH SECTION WEST OF SANGAMORE ROAD

There is a short section of the sidepath to the west of Sangamore Road where the existing grade is close to 20 percent. The project included the development of alternative concepts to provide conformance with the Americans with Disabilities (ADA) act to reduce this steep slope. Options considered and rejected (largely due to opposition from the US Army Corps of Engineers) included a switchback ramp layout and an elevated wooden boardwalk structure. The current concept, shown in Attachment C, was developed to redesign the sidepath to limit the grade to 12 percent. While not in compliance with ADA, it represents a significant improvement.

SECTION 4: 35% DESIGN PLANS FINDINGS AND ANALYSIS

The primary purpose of the proposed facility is to improve connectivity and safety for both pedestrians and bicyclists using MacArthur Boulevard. Upgrading the shared-use 8-foot-wide sidepath facility parallel to MacArthur Boulevard will improve the safety for users along the corridor and reduce the potential for crashes by minimizing conflict points with vehicles. The facility will improve the level of comfort for users of all ages and abilities by providing a dedicated facility with horizontal separation from the roadway in the form of a proposed grass buffer with a minimum width of 5 feet between the roadway and the proposed facility. The proposed facility will connect to existing shared use facilities on MacArthur Boulevard north of Oberlin Avenue and south into the District of Columbia.

DESIGN ELEMENTS - TRANSPORTATION

ROADWAY DESIGN

MacArthur Boulevard is classified as a Neighborhood Connector with a 25-mph target speed under the Planning Board-approved Complete Streets Design Guide. The road currently has a 30-mph posted speed along its length.

The travel lanes on MacArthur Boulevard are typically 11-feet-wide. Per the Complete Streets Design Guide, 10.5-foot-wide travel lanes are specified for a Neighborhood Connector street.

SHOULDER DESIGN

The design proposes to add 3-foot-wide shoulders on each side of MacArthur Boulevard. This is one-foot short of meeting AASHTO minimum standards for bikeable shoulders. Four feet is also the minimum shoulder width identified in the Complete Streets Design Guide and in the Bicycle Master Plan.

BUFFER DESIGN

The design proposes to add 5-foot-wide buffers along most of MacArthur Boulevard (at three_ pinch points the buffer is effectively eliminated), and this is one-foot short of meeting AASHTO minimum standards for adequate buffers between bicycle/pedestrian facilities and travel lanes and minimum requirements in the Bicycle Master Plan. Six feet is also the minimum buffer width identified in the Complete Streets Design Guide.

POTENTIAL IMPACTS TO PARKLAND

The project will be adjacent to four properties owned by the Maryland-National Capital Park and Planning Commission (M-NCPPC). One small property south of Oberlin Avenue is not anticipated to be impacted by construction activities. Three properties south of Walhonding Road are on the opposite side of MacArthur Boulevard from the proposed bikeway and are not anticipated to be impacted.

The project corridor is also adjacent to the dedicated right of way for Clara Barton Parkway, which is owned by the National Park Service. No permanent impacts are anticipated to these properties. A temporary construction easement may be required.

While the corridor does not directly impact any M-NCPPC parkland, Montgomery Parks believes that the connection between the Little Falls Stream Valley Trail/Capital Crescent Trail and the MacArthur Boulevard Bikeway is a very important connection that needs improvement. With long-term plans from the Maryland State Highway Administration to construct a trail bridge adjacent to the American Legion Bridge as part of the OpLanes (Managed Lanes) project, this would be one of the few interstate connections for bicycles and pedestrians across the Potomac River in this area) and has the potential to significantly increase bicycle and pedestrian use along MacArthur Boulevard. With that in mind, improvements in safety and wayfinding are needed to improve the connection between the MacArthur Boulevard sidepath and the Little Falls Stream Valley and Capital Crescent Trails. Two issues have been identified:

1. The current design of the MacArthur Boulevard/Sangamore Road/Madaket Road intersection has some vision zero concerns. The movement from northbound MacArthur Boulevard to Sangamore Road is essentially a slight right using a channelized turn bay. This is a practice that the County is trying to minimize to the extent possible. Because of this geometry bicyclists and pedestrians trying to cross MacArthur Boulevard from the Capital Crescent Trail and from the east side of Sangamore Road, must cross two crosswalks, first the right turn slip lane which is yield controlled (see Figure 9), and the second at a signalized crosswalk on MacArthur

Boulevard at Sangamore Road (see Figures 10 and 11). The corner on the south side of MacArthur Boulevard has limited pedestrian/bicycle refuge space at the intersection corner, and this is a safety concern.

2. The connections between MacArthur Boulevard and the Little Falls Stream Valley and Capital Crescent Trails is currently not signed along MacArthur Boulevard. The addition of wayfinding signage at the intersection of MacArthur Boulevard and Sangamore Road should be considered by this project.



Figure 9 – Looking Westbound – Slip Lane onto Sangamore Road



Figure 10 – Looking Eastbound – SE Corner of MacArthur Boulevard at Sangamore Road/Madaket Road

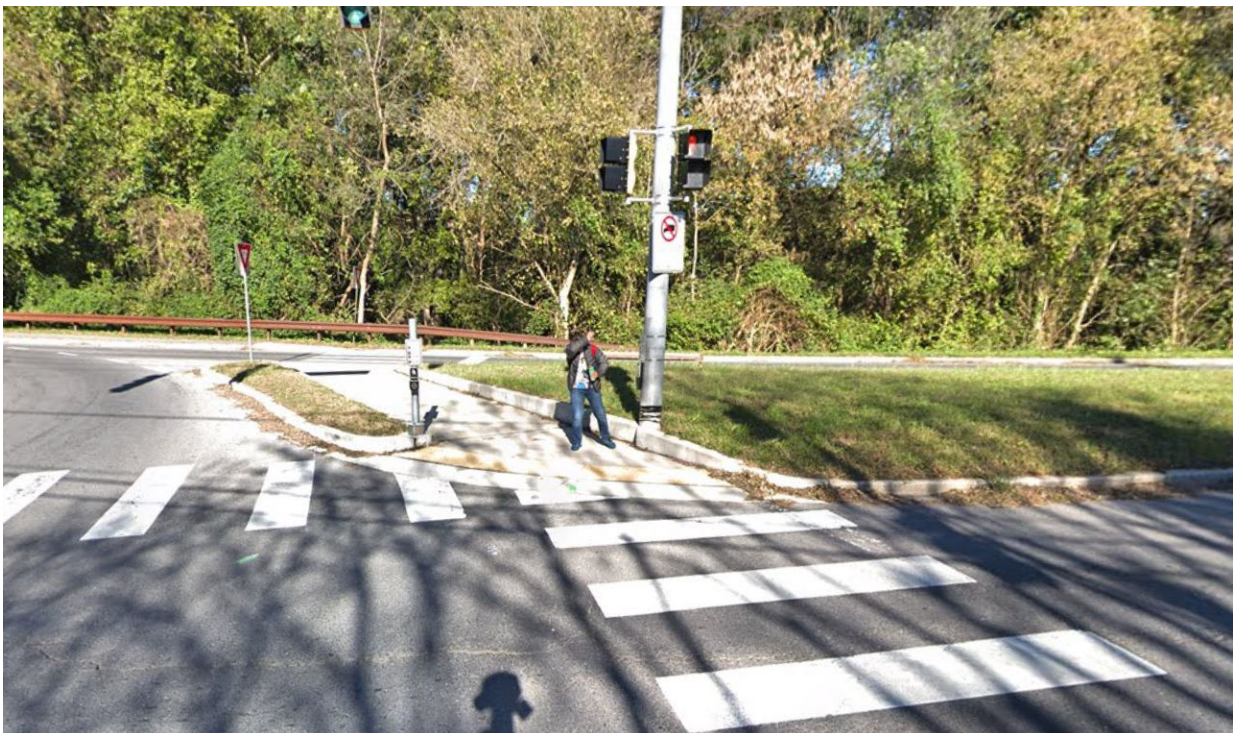


Figure 11 – Looking Northbound – Crosswalk of MacArthur Boulevard at Sangamore Road/Madaket Road

ENVIRONMENTAL REVIEW

ENVIRONMENTAL GUIDELINES

Associated with the previously approved Segments of the MacArthur Boulevard Bikeway, a Natural Resource Inventory/Forest Stand Delineation (NRI/FSD), designated No. 42014043E, was approved for the study area on December 22, 2015. The plan was submitted in conjunction with a request for a Forest Conservation Plan exemption and described the existing man-made and natural features of the site including an analysis of forest and an inventory of individual significant and mature trees measuring 24-inches or greater in diameter-at-breast height (DBH). The Applicant also conducted additional field surveys in order to confirm these resources for the purposes of a Joint Permit Application (JPA) with the Maryland Department of the Environment (MDE) and the United States Army Corps of Engineers (USACE).

As shown on the approved NRI/FSD (See Attachment D) indicates that, the project area contains 16,210 square feet (0.37 acres) of forest, across numerous forest stands, along the entire 7.7 miles of the project area, however the current Segment is limited to 2.2 miles as described elsewhere in this report. In addition to forest, the approved NRI/FSD also identified many species of specimen and significant trees. As shown on the plan and discussed in the supplemental documents, there are also areas of steep slopes and highly erodible soils associated with the area of the project. These sensitive environmental features were highly influential in the scope of the project; specifically, the determination to limit the shared use path to 8 feet wide, rather than 10 feet, was made in order to reduce impacts to slopes and roadside trees and other factors. The Applicant was able to avoid impact to an additional 2.67-acres with the proposal as submitted.

The project area falls within the Lower Rock Creek Watershed, a Use I watershed, however there are no streams, stream buffers, or wetlands onsite. The project area is associated with two historic aqueducts which run parallel to the project corridor under MacArthur Boulevard. The project area also includes populations of *Phacelia ovillei* which is listed as a globally rare species per the Maryland Department of Natural Resources. Protection has been provided for this species as part of previous phase approvals and will continue to be part of the project requirements with this Application.

Planning environmental staff have concerns overall and would like further information (than submitted for the Mandatory Referral) from the Applicant regarding the current approach in limiting environmental impacts specifically related to slopes, forest, and endangered species.

FOREST CONSERVATION

Following the submittal of a Forest Conservation Exemption request, approved by staff on December 22, 2015, this Application is subject to Chapter 22A Forest Conservation Law but is exempt from the requirement to submit a Forest Conservation Plan per 22A-5(E) because the project is a county highway construction activity that is subject to Section 22A-9 of the County Code. Per Section 22A-9, the

construction proposed in this Application should minimize forest removal, land disturbance, 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 land disturbance to avoid the cutting or clearing of trees and other woody plants.

In line with the above guidance from the County Code, the Forest Conservation Exemption memo also includes the requirement for tree protection measures to contain and limit the disturbance as well as measures to protect rare species found within the area. Required Forest Conservation inspections will confirm these features and allow for adjustments as needed. As such, this Application meets the requirements of the Montgomery County Code, Chapter 22A Forest Conservation Law.

STORMWATER MANAGEMENT

The Project must comply with the requirements of Chapter 19 of the Montgomery County Code. Although this project is to be completed in phases, the Applicant has received approval of a Stormwater Management Concept/Site Development Stormwater Management Plan for the entire project area. This approval was granted by the Montgomery County Department of Permitting Services on September 21, 2016. The plan requested, and was granted, a full stormwater management waiver due to site constraints. A detailed review of the stormwater computations will occur at the time of detailed stormwater management plan review. Additionally, an engineered sediment control plan is required, and adequate stabilization of steep slopes will need to be addressed during the detailed plan stage. With this approval, the Applicant will meet all applicable requirements of Chapter 19 of the Montgomery County Code.

HISTORIC PRESERVATION

In late 2021 and early 2022, The Historic Preservation Staff reviewed the proposal to evaluate potential impacts to designated historic sites and districts. Historic Preservation Staff determined the entire project area falls within the C&O Canal National Register Historic District and two historic aqueducts are running parallel to the project corridor under MacArthur Boulevard.

Additionally, Historic Preservation Staff identified four County-designated historic sites in the project area:

- Baltzley Castle (#35/29-1), 5415 Mohican Road – located on the north side of MacArthur Blvd., opposite from the proposed bikeway.
- R.A. Charles Castle (#35/29-2), 5417 & 5419 Mohican Road – located on the north side of MacArthur Blvd., opposite from the proposed bikeway.
- Sycamore Store (#35/155), 7025 MacArthur Blvd – located on the north side of MacArthur Blvd., opposite from the proposed bikeway. The proposed drainage and sidewalk connection will not impact the property.

- Bonfield's Garage (#35/47), 6124 MacArthur Blvd – proposed path improvements and drainage along property frontage, outside the boundaries of the property designation.

After evaluating the work proposed, Historic Preservation Staff determined the work will not impact any Nationally or County-designated historic resources; therefore, a Historic Area Work Permit will not be required.

MASTER PLAN CONFORMANCE

The MacArthur Boulevard Bikeway Segment 3 design project is subject to two functional master plans: the 2018 Bicycle Master Plan and the 2018 Master Plan of Highways and Transitways.

The 2018 Bicycle Master Plan includes the following recommendation for MacArthur Boulevard:

BIKEWAY	FROM	TO	FACILITY TYPE	BIKEWAY TYPE
MacArthur Blvd	I-495	DC Line	Separated Bikeway and Bikeable Shoulders	Sidepath and Bikeable Shoulders

The 2018 Master Plan of Highways and Transitways and the 1990 Bethesda/Chevy Chase Master Plan classifies MacArthur Boulevard from the Capital Beltway to the DC line as a two-lane Arterial with a master plan right-of-way of 80 feet. The project complies with both these conditions.

The project is in conformance with the three plans it is subject to: the 1990 Bethesda/Chevy Chase Master Plan, the 2018 Bicycle Master Plan and the 2018 Master Plan of Highways and Transitways.

SECTION 5: COMMUNITY OUTREACH

The Applicant held public meetings in 2015 during the Segment 1 Facility Planning work effort. As the project progresses, a public hearing is planned prior to the completion of final design (scheduled for December 2022) to present the design to the public and elicit public outreach.

SECTION 6: CONCLUSION

Based on information provided by the Applicant, Staff recommends approval of the Mandatory Referral with comments listed on pages 3 and 4 of this report to be transmitted to the Montgomery County Department of Transportation. The Applicant is requested to reply in writing to the Planning Board, addressing all comments.

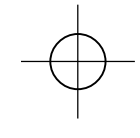
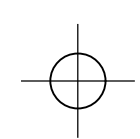
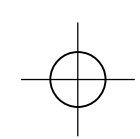
ATTACHMENTS

Attachment A: 35 Percent Design Plans

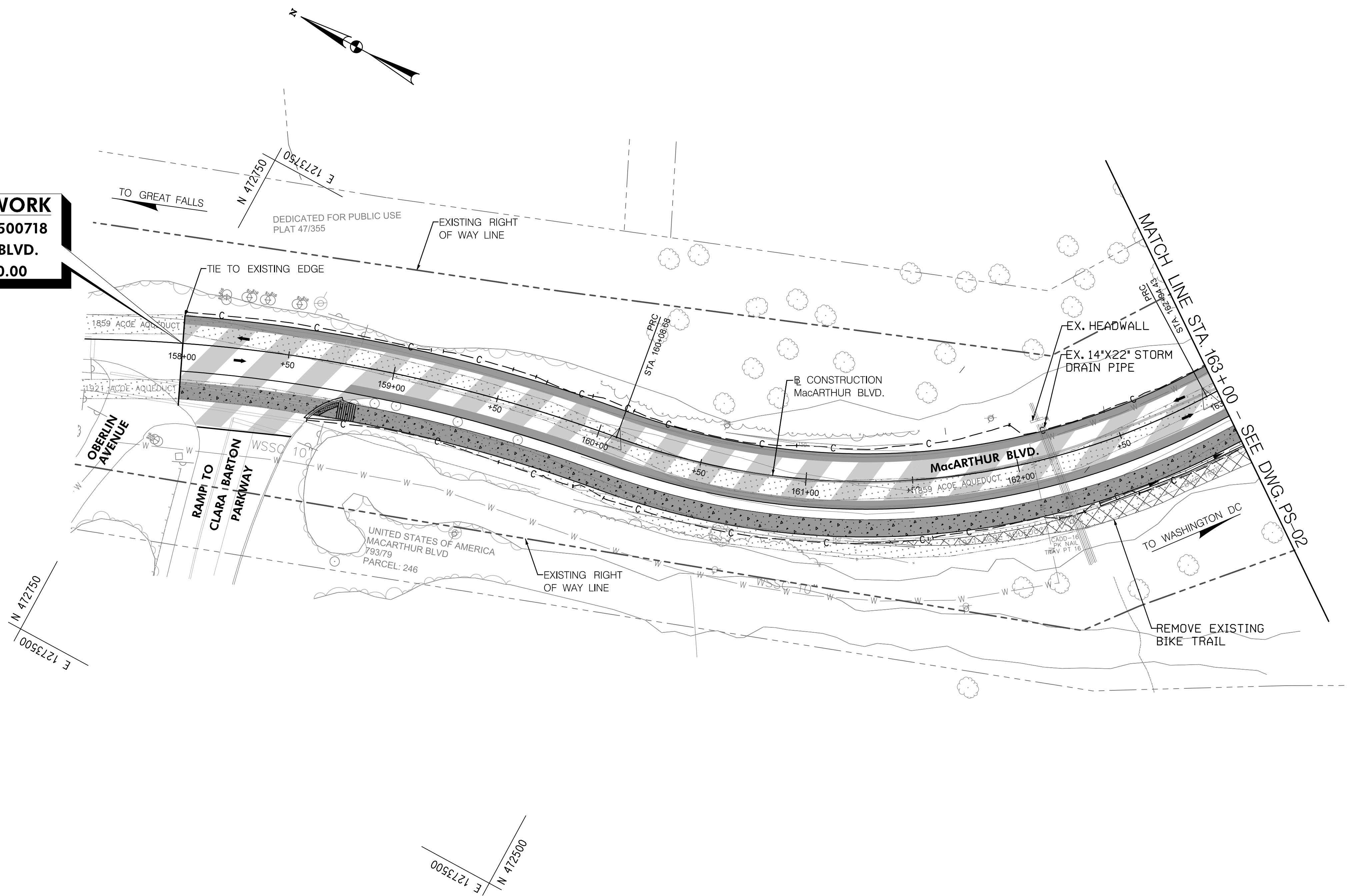
Attachment B: Trail Width Memo

Attachment C: Revised Plan for Section west of Sangamore Road

Attachment D: Forest Conservation Exemption



LIMIT OF WORK
PROJECT NO. 500718
MacARTHUR BLVD.
STA. 158 + 00.00

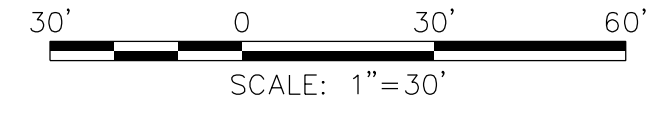


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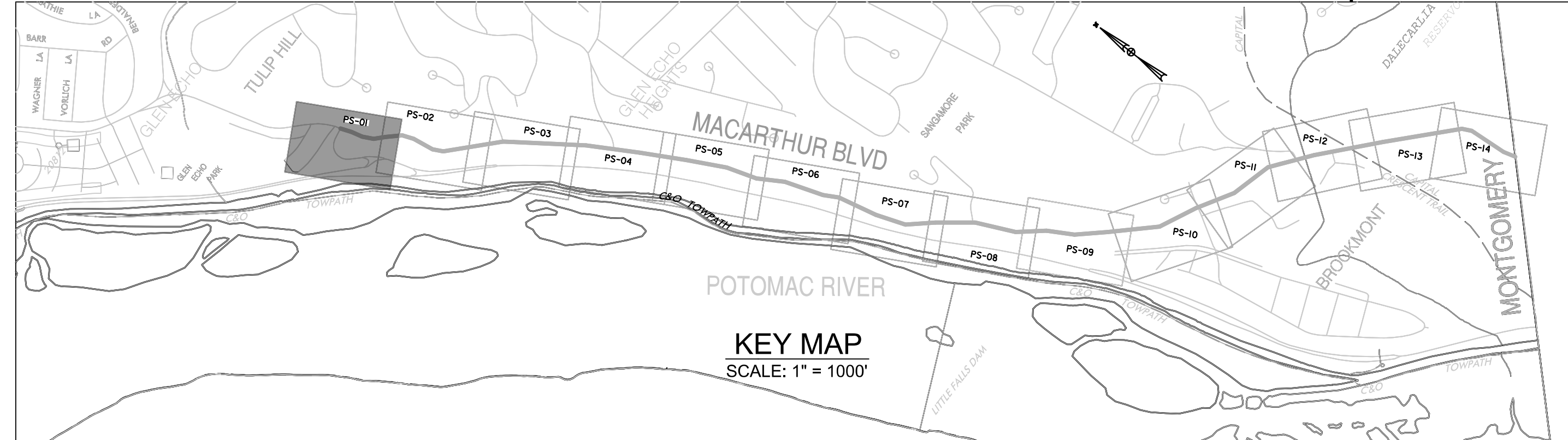
LEGEND:

TRAFFIC BARRIER W BEAM	
LIMIT OF DISTURBANCE	
PROPOSED BIKE TRAIL	
PROPOSED CONCRETE BIKE TRAIL	
GRIND AND RESURFACE	
FULL DEPTH PAVEMENT	
REMOVAL OF EX. PAVEMENT	
EXISTING AQUEDUCT	

35% SUBMITTAL
NOT FOR CONSTRUCTION

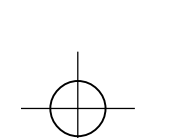
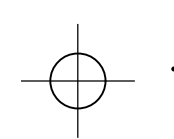
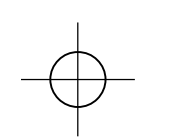


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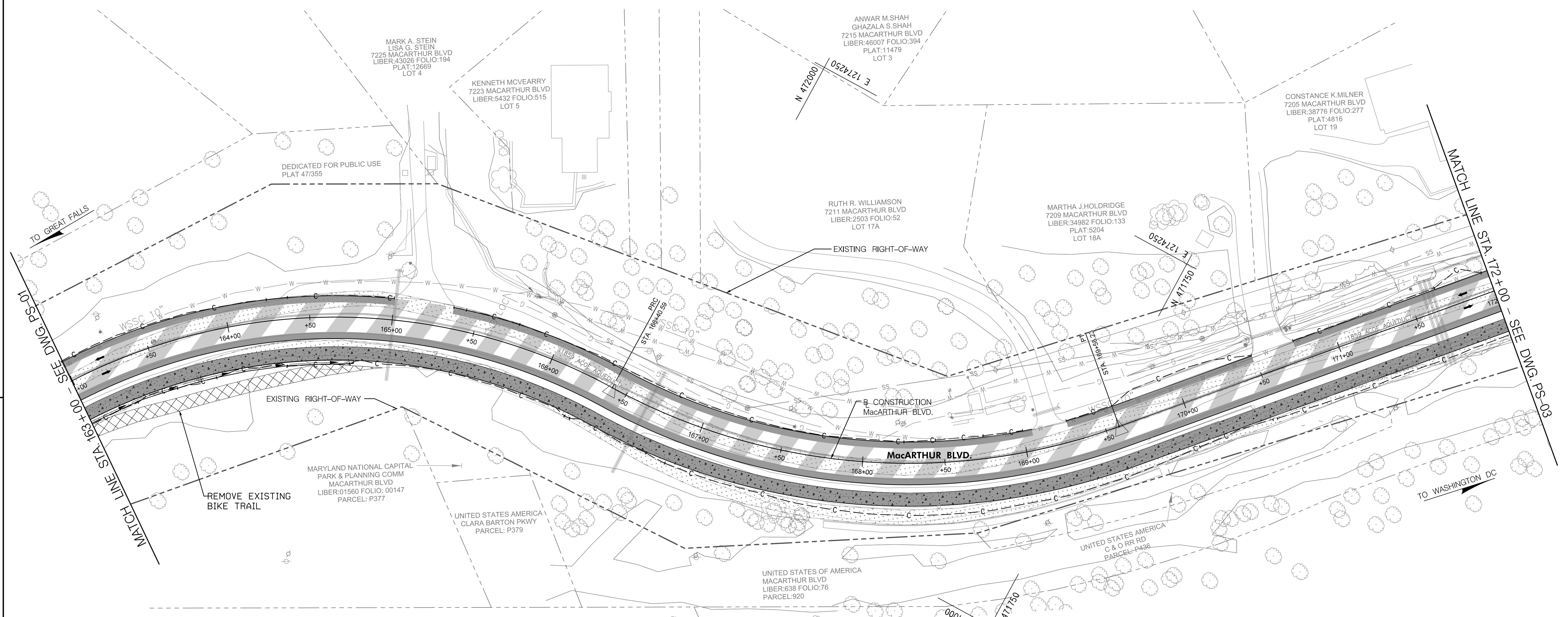


MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION ROCKVILLE, MARYLAND				ROADWAY PLAN	
RECOMMENDED FOR APPROVAL				MacARTHUR BLVD. BIKEWAY IMPROVEMENTS SEGMENT 3	
Chief, Transportation Planning and Design Section				FROM OBERLIN AVENUE TO D.C. LINE	
APPROVED				FACILITY PLANNING PHASE II	
Chief, Division of Transportation Engineering				SCALE : AS SHOWN	
Designed by: HA/DLT/SHN				DATE : JANUARY 2017	
Drawn by: KH/DW/ES				Project No. : 500718	
Checked by: SHN				SHEET 8 of 54	
NO.	REVISION	DATE	BY		

BY: jhoffman



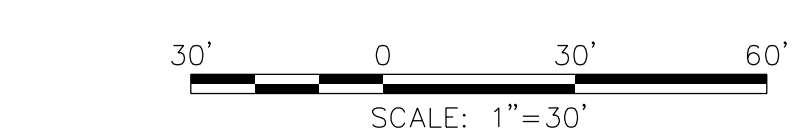
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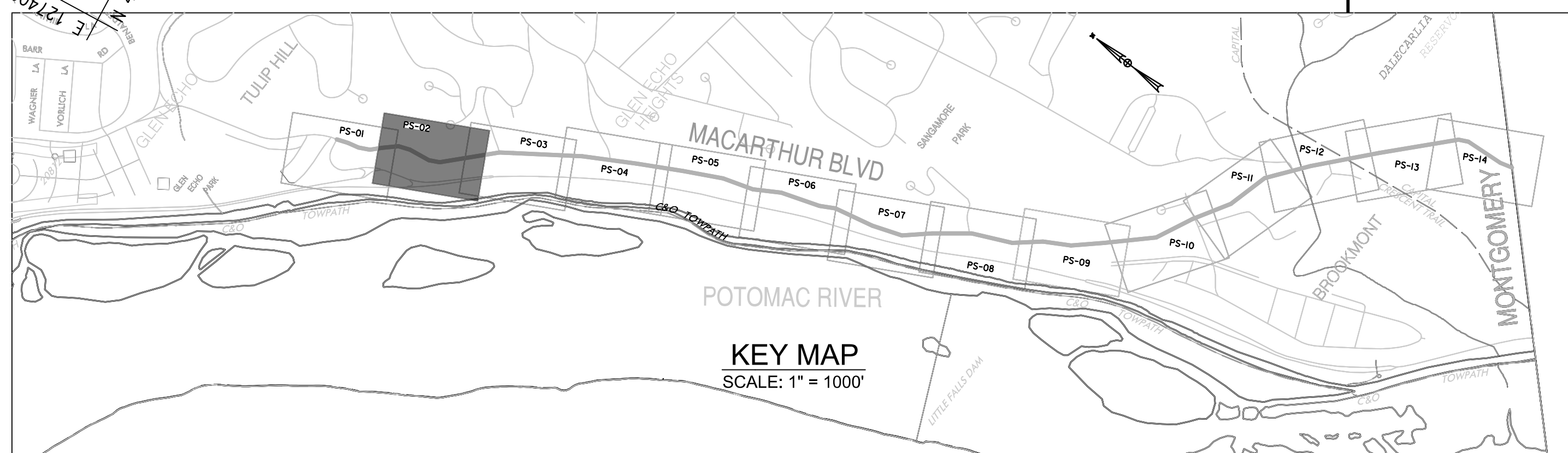
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LEGEND:	
TRAFFIC BARRIER W BEAM	
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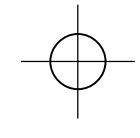
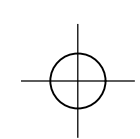
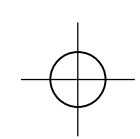
35% SUBMITTAL
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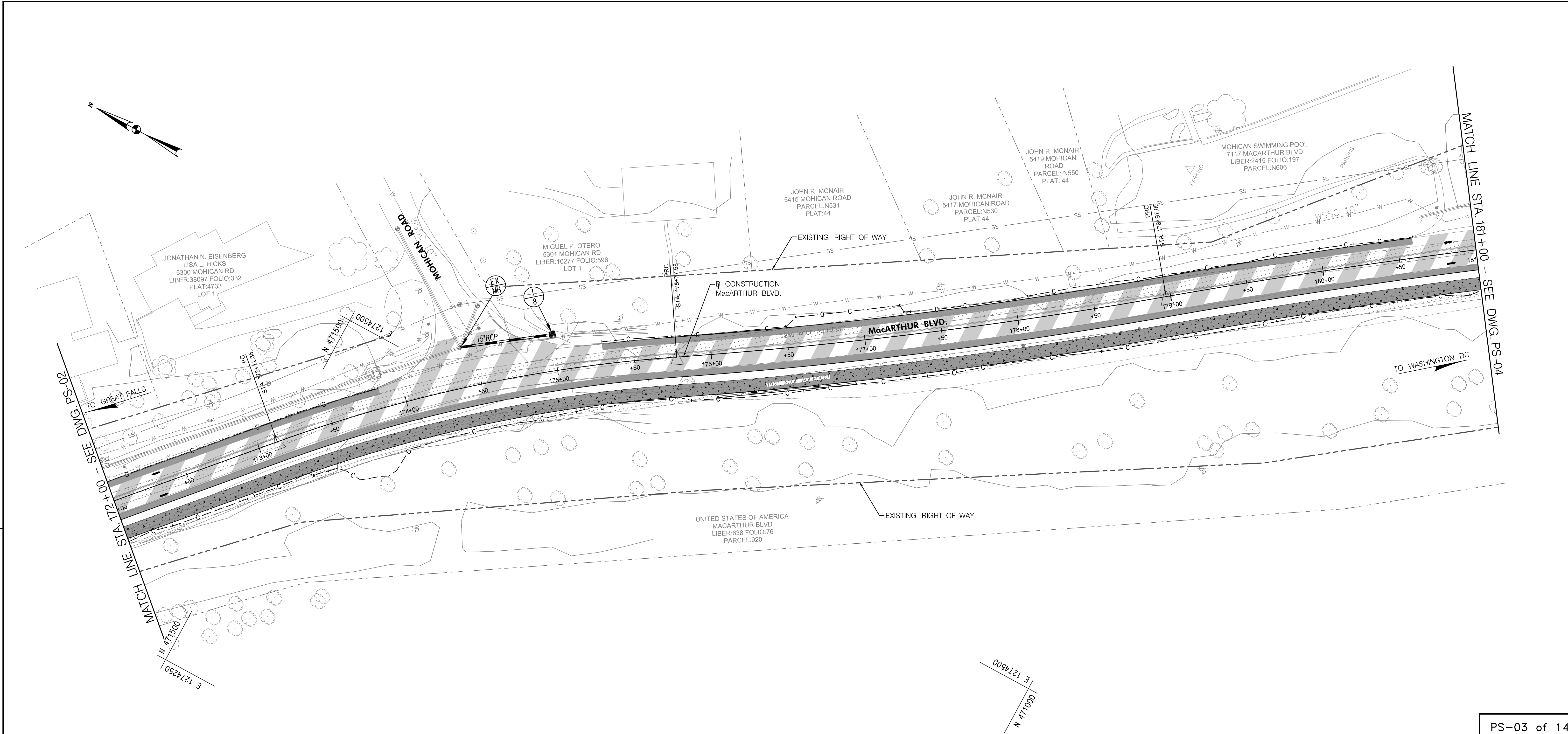
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MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION ROCKVILLE, MARYLAND				ROADWAY PLAN	
RECOMMENDED FOR APPROVAL				MacARTHUR BLVD. BIKEWAY IMPROVEMENTS SEGMENT 3	
Chief, Transportation Planning and Design Section				FROM OBERLIN AVENUE TO D.C. LINE	
APPROVED				FACILITY PLANNING PHASE II	
Chief, Division of Transportation Engineering				SCALE : AS SHOWN	
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BY: jhoffman



LEGEND:

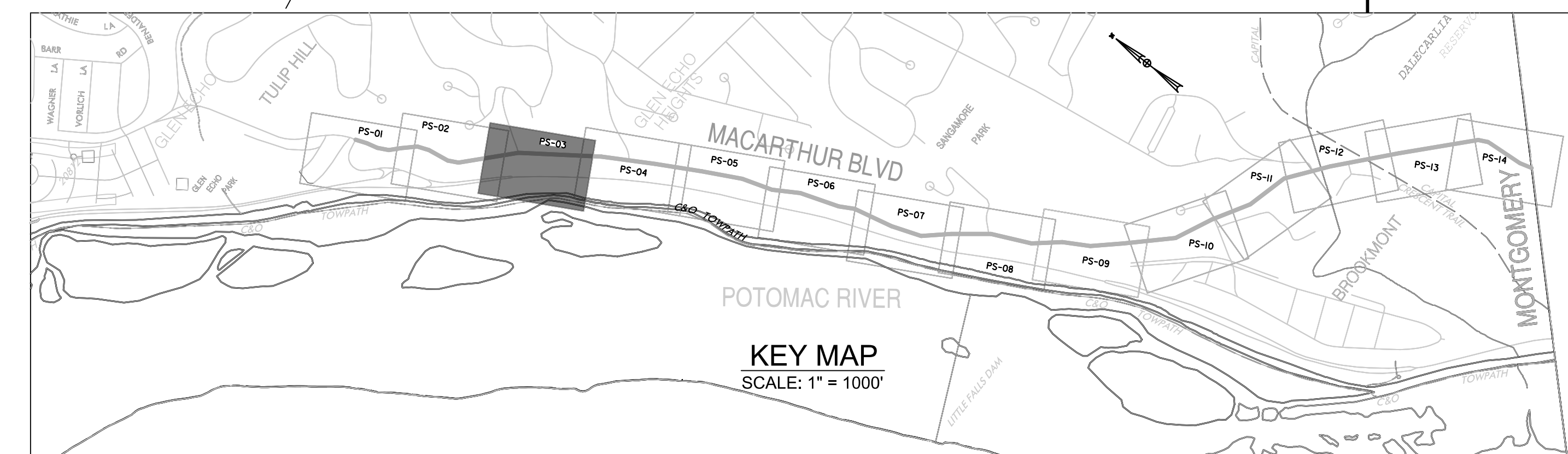
- TRAFFIC BARRIER W BEAM
- LIMIT OF DISTURBANCE
- PROPOSED BIKE TRAIL
- PROPOSED CONCRETE BIKE TRAIL
- GRIND AND RESURFACE
- FULL DEPTH PAVEMENT
- REMOVAL OF EX. PAVEMENT
- EXISTING AQUEDUCT

**35% SUBMITTAL
NOT FOR CONSTRUCTION**

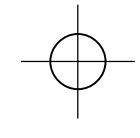
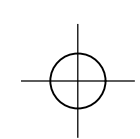
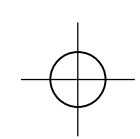
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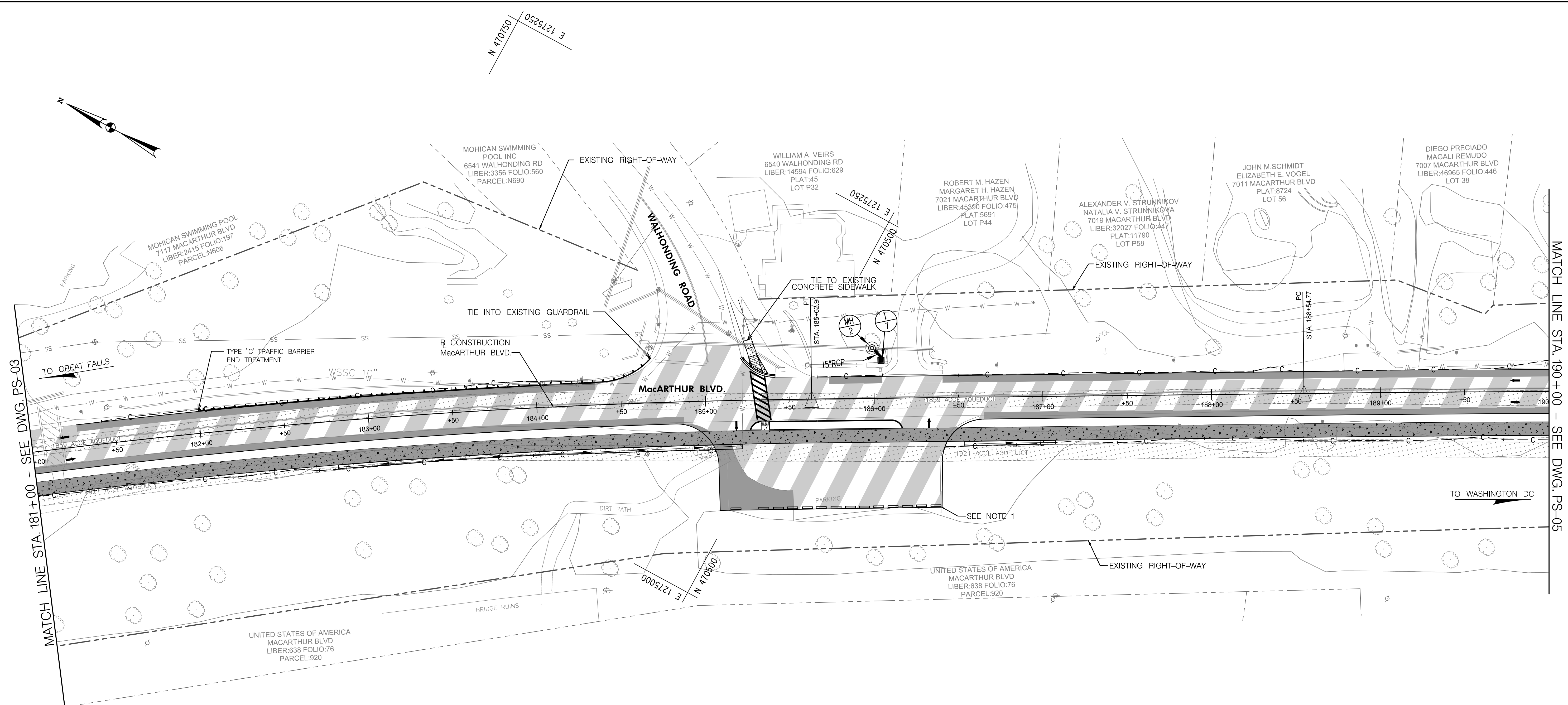
SABRA, WANG & ASSOCIATES, INC.
7055 SAMUEL MORSE DRIVE
SUITE 100
COLUMBIA, MD 21046
(443) 741-3500
WWW.SABRA-WANG.COM



MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION ROCKVILLE, MARYLAND				ROADWAY PLAN	
RECOMMENDED FOR APPROVAL				MacARTHUR BLVD. BIKEWAY IMPROVEMENTS SEGMENT 3	
Chief, Transportation Planning and Design Section				FROM OBERLIN AVENUE TO D.C. LINE	
APPROVED				FACILITY PLANNING PHASE II	
Chief, Division of Transportation Engineering				SCALE : AS SHOWN	
Designed by: HA/DLT/SHN				DATE : JANUARY 2017	
Drawn by: KH/DW/ES				Project No. : 50071R	
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NO.	REVISION	DATE	BY		



BY: jhoffman



NOTE 1

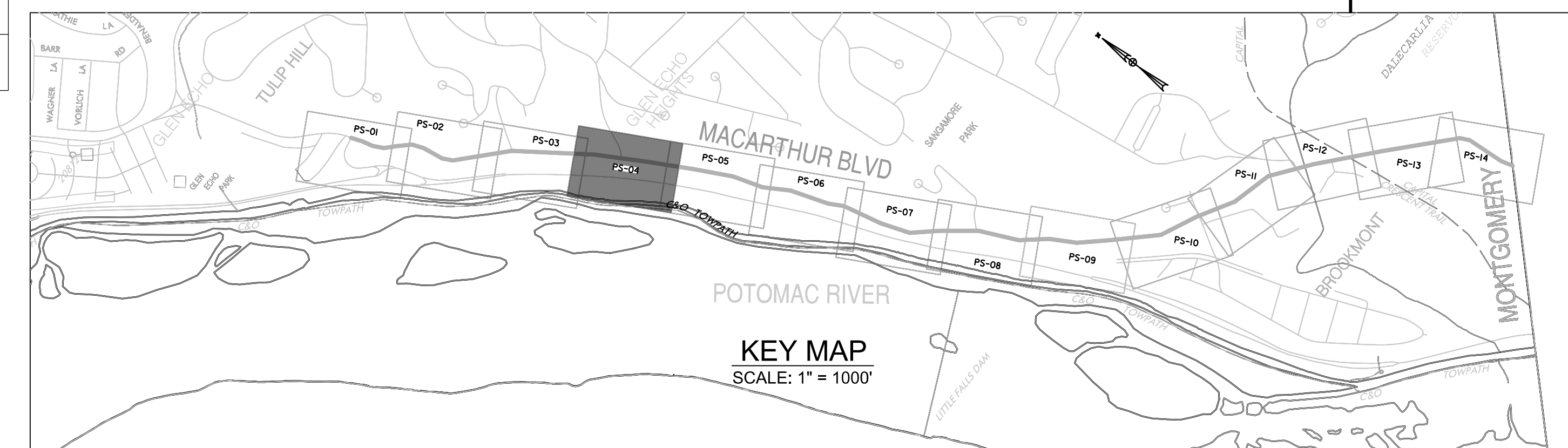
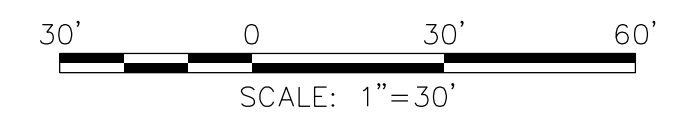
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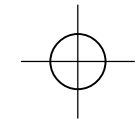
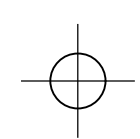
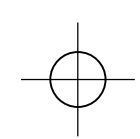
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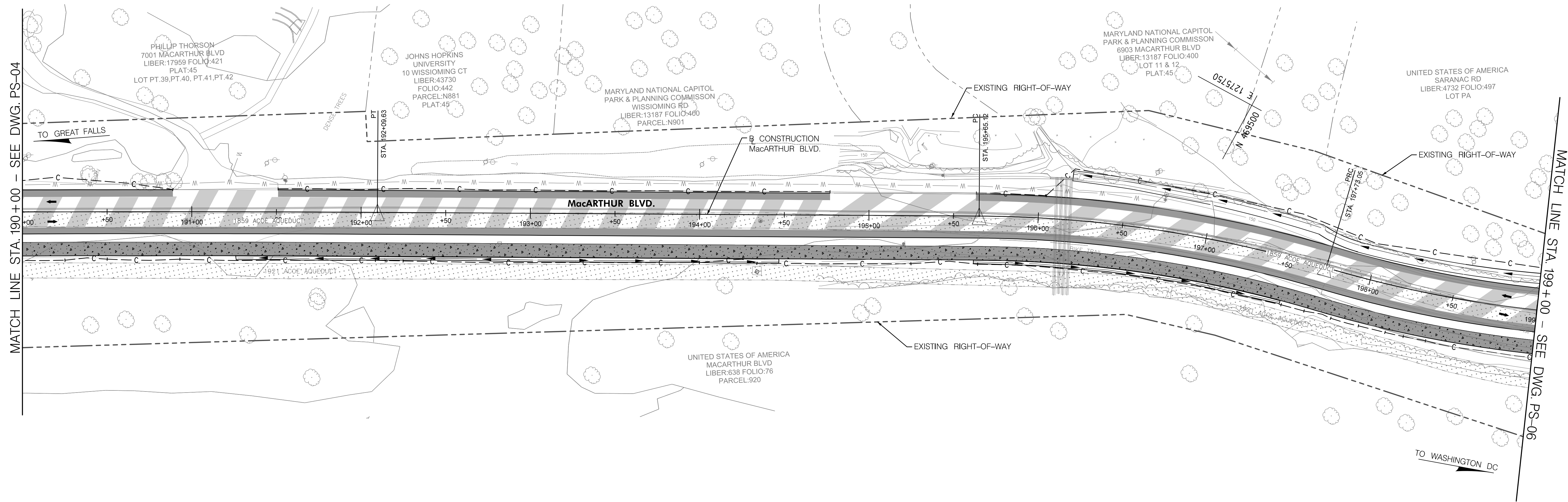
SABRA, WANG & ASSOCIATES, INC.
7055 SAMUEL MORSE DRIVE
SUITE 100
COLUMBIA, MD 21046
(443) 741-3500
WWW.SABRA-WANG.COM



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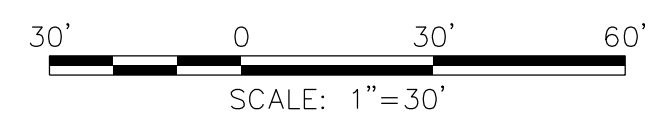
BY: jhoffman



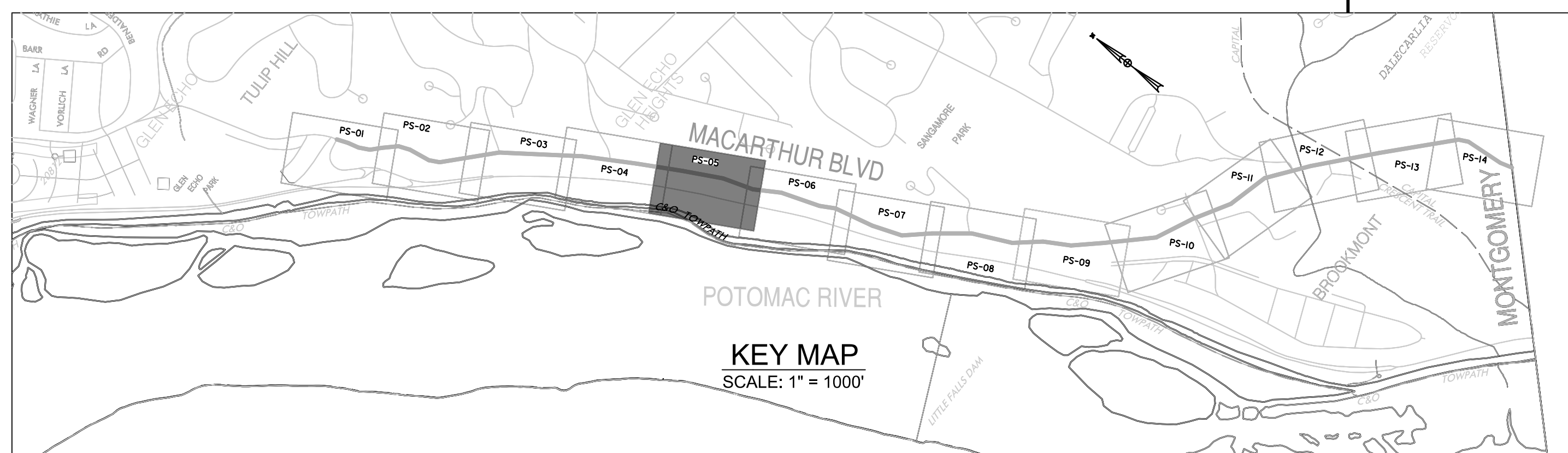
PS 05 OF 14

LEGEND:	
TRAFFIC BARRIER W BEAM	
LIMIT OF DISTURBANCE	
PROPOSED BIKE TRAIL	
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GRIND AND RESURFACE	
FULL DEPTH PAVEMENT	
REMOVAL OF EX. PAVEMENT	
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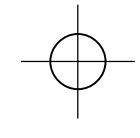
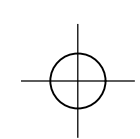
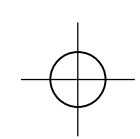
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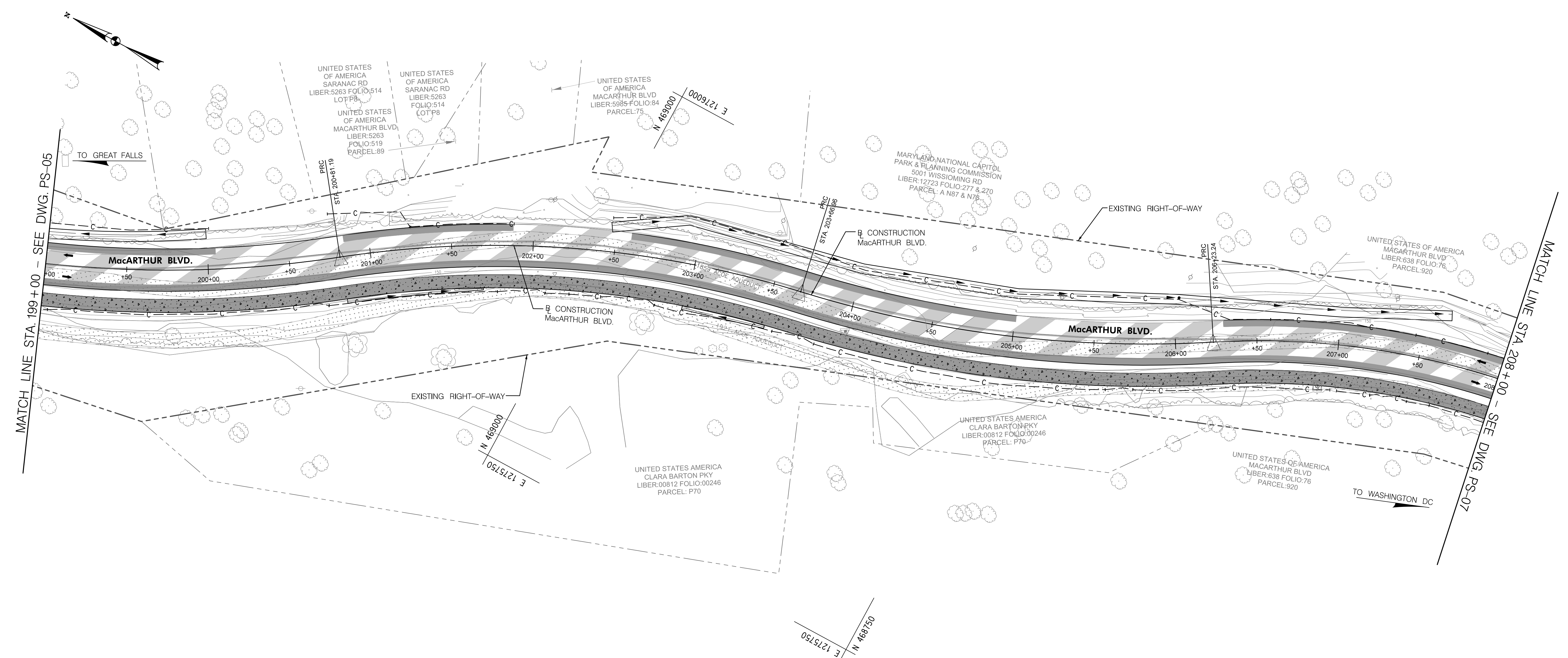
SABRA, WANG & ASSOCIATES, INC.
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SUITE 100
COLUMBIA, MD 21046
(443) 741-3500
WWW.SABRA-WANG.COM



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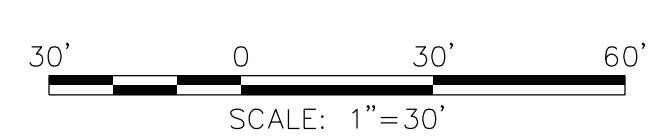
BY: jhoffman



PS-06 of 14

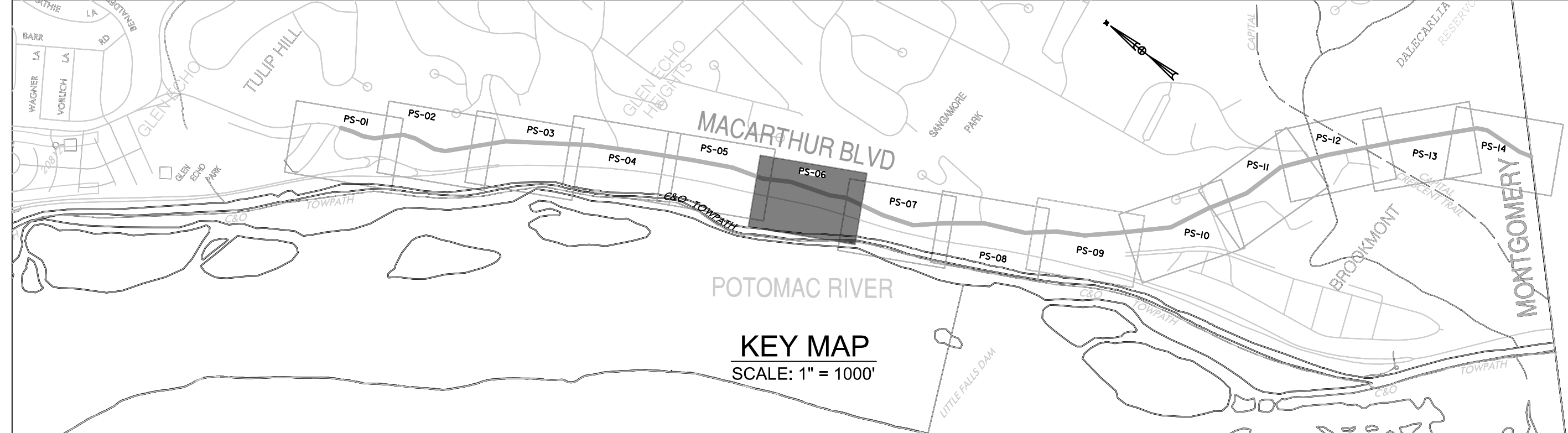
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TRAFFIC BARRIER W BEAM	
LIMIT OF DISTURBANCE	
PROPOSED BIKE TRAIL	
PROPOSED CONCRETE BIKE TRAIL	
GRIND AND RESURFACE	
FULL DEPTH PAVEMENT	
REMOVAL OF EX. PAVEMENT	
EXISTING AQUEDUCT	

35% SUBMITTAL
NOT FOR CONSTRUCTION





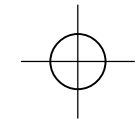
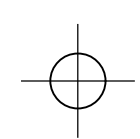
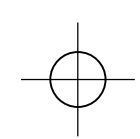
SABRA, WANG & ASSOCIATES, INC.
7055 SAMUEL MORSE DRIVE
SUITE 100
COLUMBIA, MD 21046
(443) 741-3500
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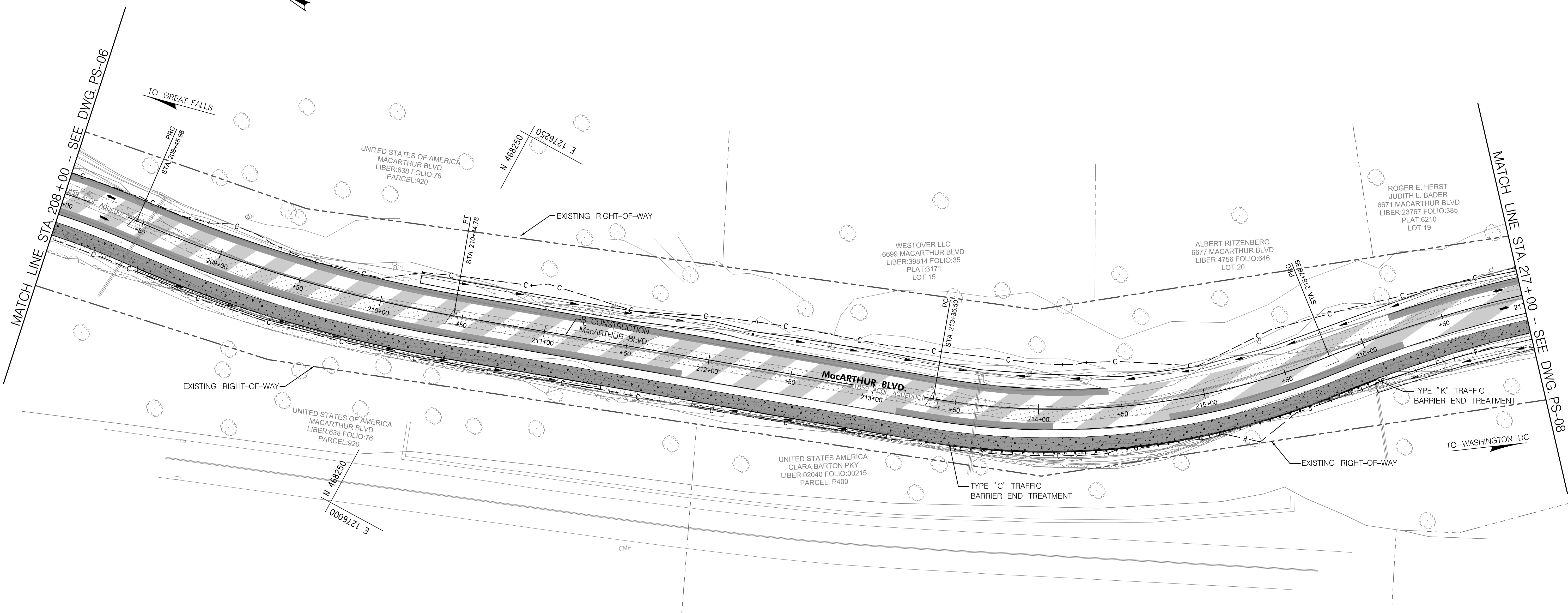
KEY MAP
SCALE: 1" = 1000'

MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION ROCKVILLE, MARYLAND			
RECOMMENDED FOR APPROVAL			
Chief, Transportation Planning and Design Section		Date	
APPROVED			
Chief, Division of Transportation Engineering		Date	
Designed by: HA/DLT/SHN	Drawn by: KH/DW/ES	Checked by: SHN	
NO.	REVISION	DATE	BY

ROADWAY PLAN
MacARTHUR BLVD.
BIKEWAY IMPROVEMENTS
SEGMENT 3
FROM OBERLIN AVENUE TO D.C. LINE
FACILITY PLANNING PHASE II
SCALE : AS SHOWN
DATE : JANUARY 2017
Project No. : 50071R
SHEET 13 of 54



BY: jhoffman



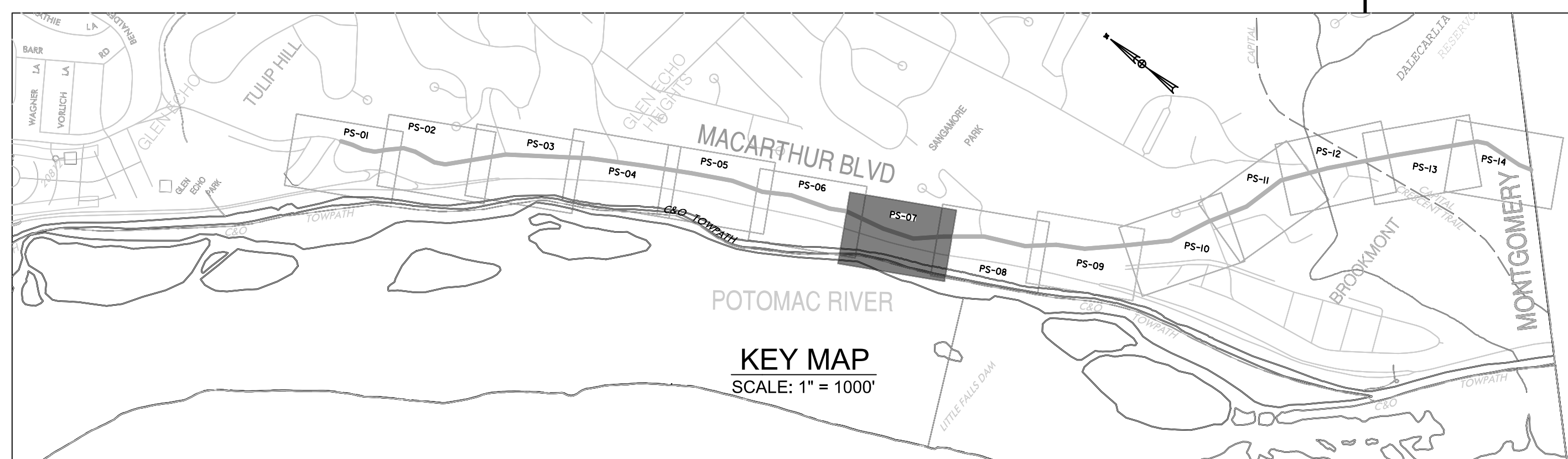
LEGEND:	
TRAFFIC BARRIER W BEAM	
LIMIT OF DISTURBANCE	
PROPOSED BIKE TRAIL	
PROPOSED CONCRETE BIKE TRAIL	
GRIND AND RESURFACE	
FULL DEPTH PAVEMENT	
REMOVAL OF EX. PAVEMENT	
EXISTING AQUEDUCT	

35% SUBMITTAL
NOT FOR CONSTRUCTION

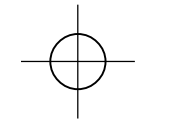
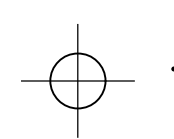
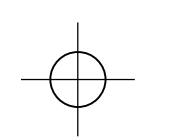


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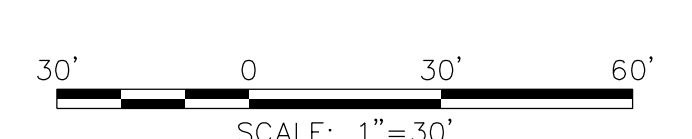
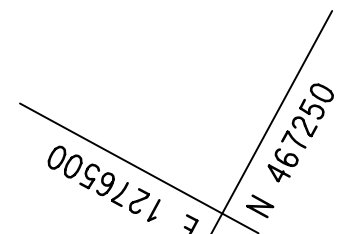
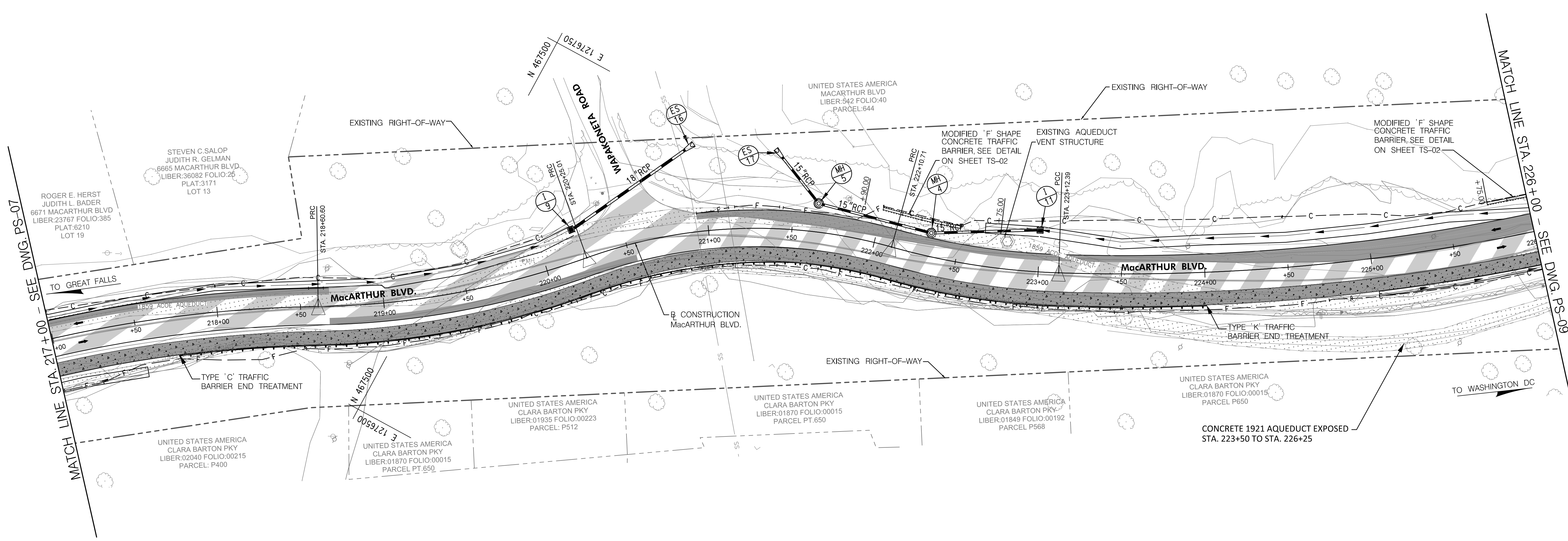
30' 0 30' 60'
SCALE: 1" = 30'



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BY: jhoffman



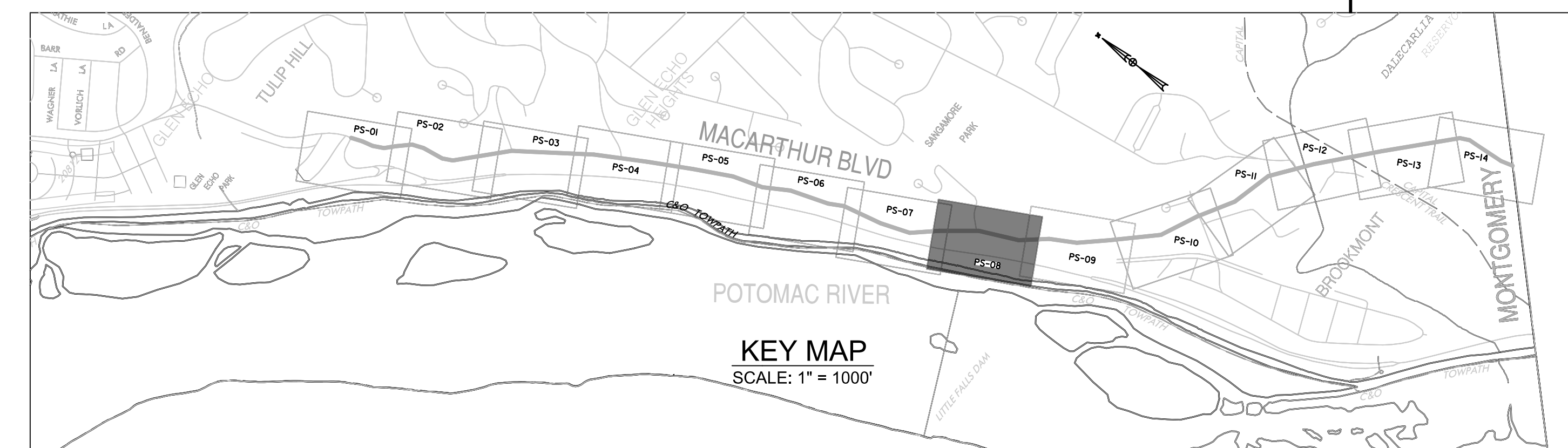
LEGEND:

- TRAFFIC BARRIER W BEAM
- LIMIT OF DISTURBANCE
- PROPOSED BIKE TRAIL
- PROPOSED CONCRETE BIKE TRAIL
- GRIND AND RESURFACE
- FULL DEPTH PAVEMENT
- REMOVAL OF EX. PAVEMENT
- EXISTING AQUEDUCT

**35% SUBMITTAL
NOT FOR CONSTRUCTION**

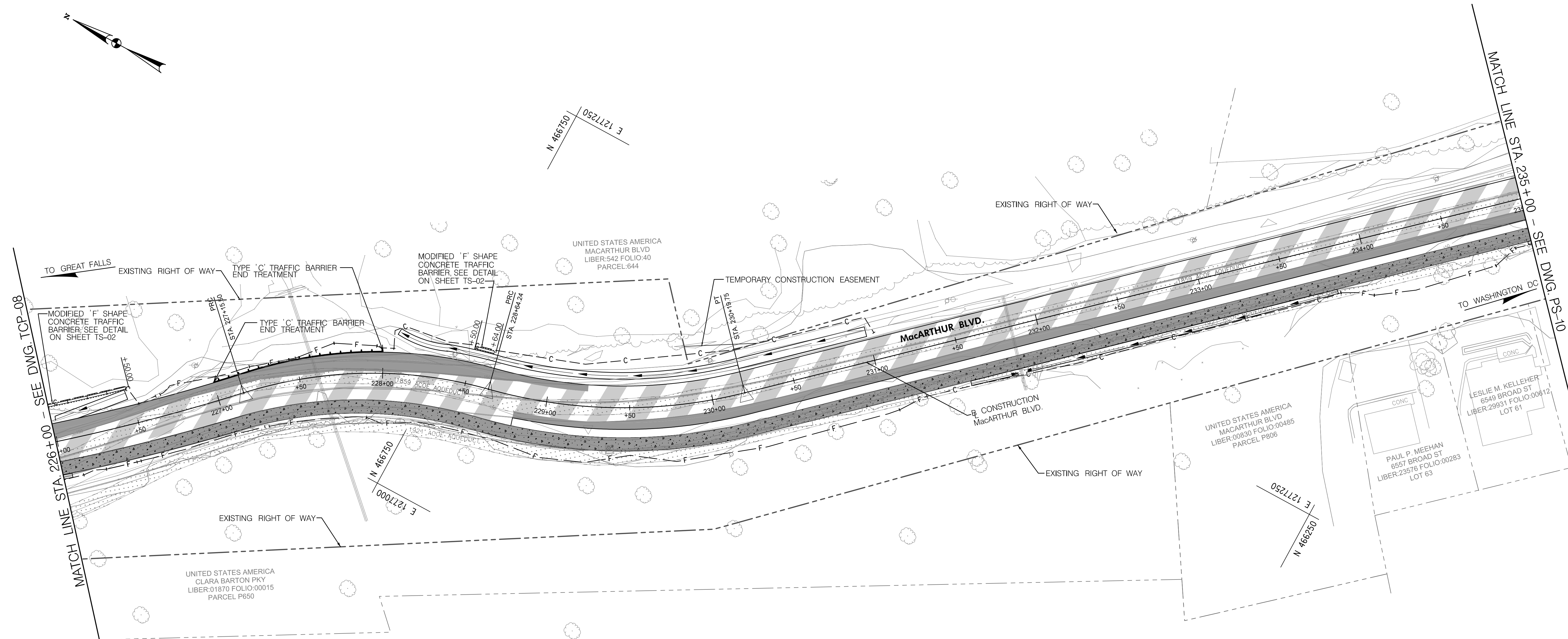


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MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION ROCKVILLE, MARYLAND				ROADWAY PLAN	
RECOMMENDED FOR APPROVAL				MacARTHUR BLVD. BIKEWAY IMPROVEMENTS SEGMENT 3	
Chief, Transportation Planning and Design Section				FROM OBERLIN AVENUE TO D.C. LINE	
APPROVED				FACILITY PLANNING PHASE II	
Chief, Division of Transportation Engineering				SCALE : AS SHOWN	
Designed by: HA/DLT/SHN				DATE : JANUARY 2017	
Drawn by: KH/DW/ES				Project No. : 500718	
Checked by: SHN				SHEET 15 of 54	
NO.	REVISION	DATE	BY		

BY: jhoffman



TEMPORARY CONSTRUCTION EASEMENT		
STA. 229 + 87.47, 34.24' LT. TO	STA. 230 + 34.92, 26.85' LT.	233 SF

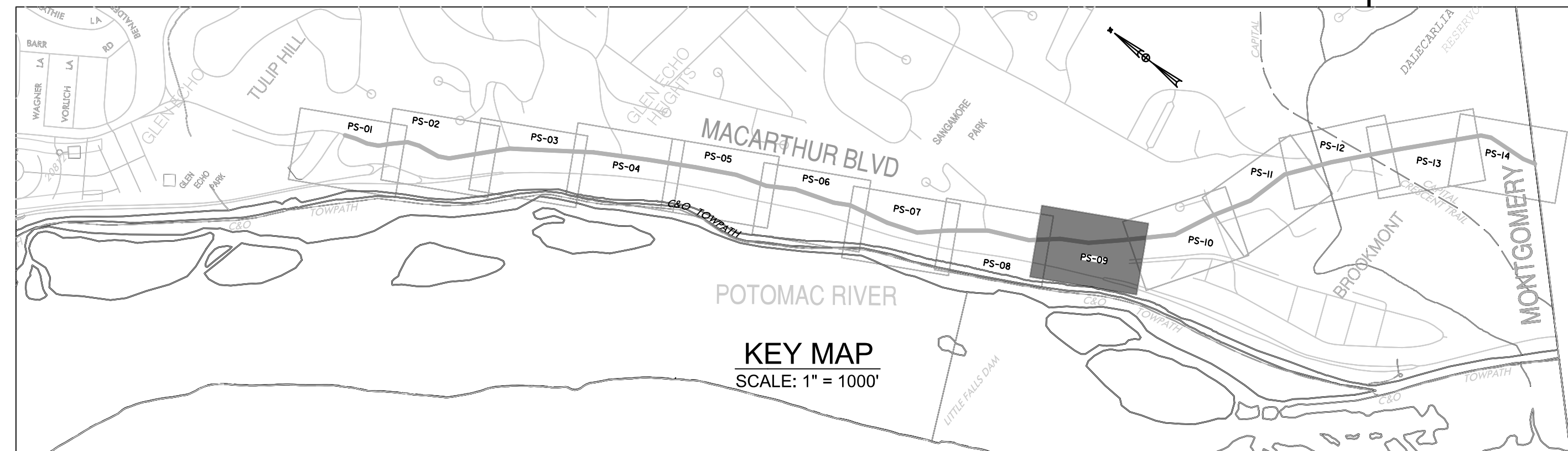
LEGEND:	
TRAFFIC BARRIER W BEAM	
LIMIT OF DISTURBANCE	
PROPOSED BIKE TRAIL	
PROPOSED CONCRETE BIKE TRAIL	
GRIND AND RESURFACE	
FULL DEPTH PAVEMENT	
REMOVAL OF EX. PAVEMENT	
EXISTING AQUEDUCT	

35% SUBMITTAL
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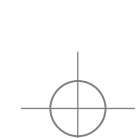


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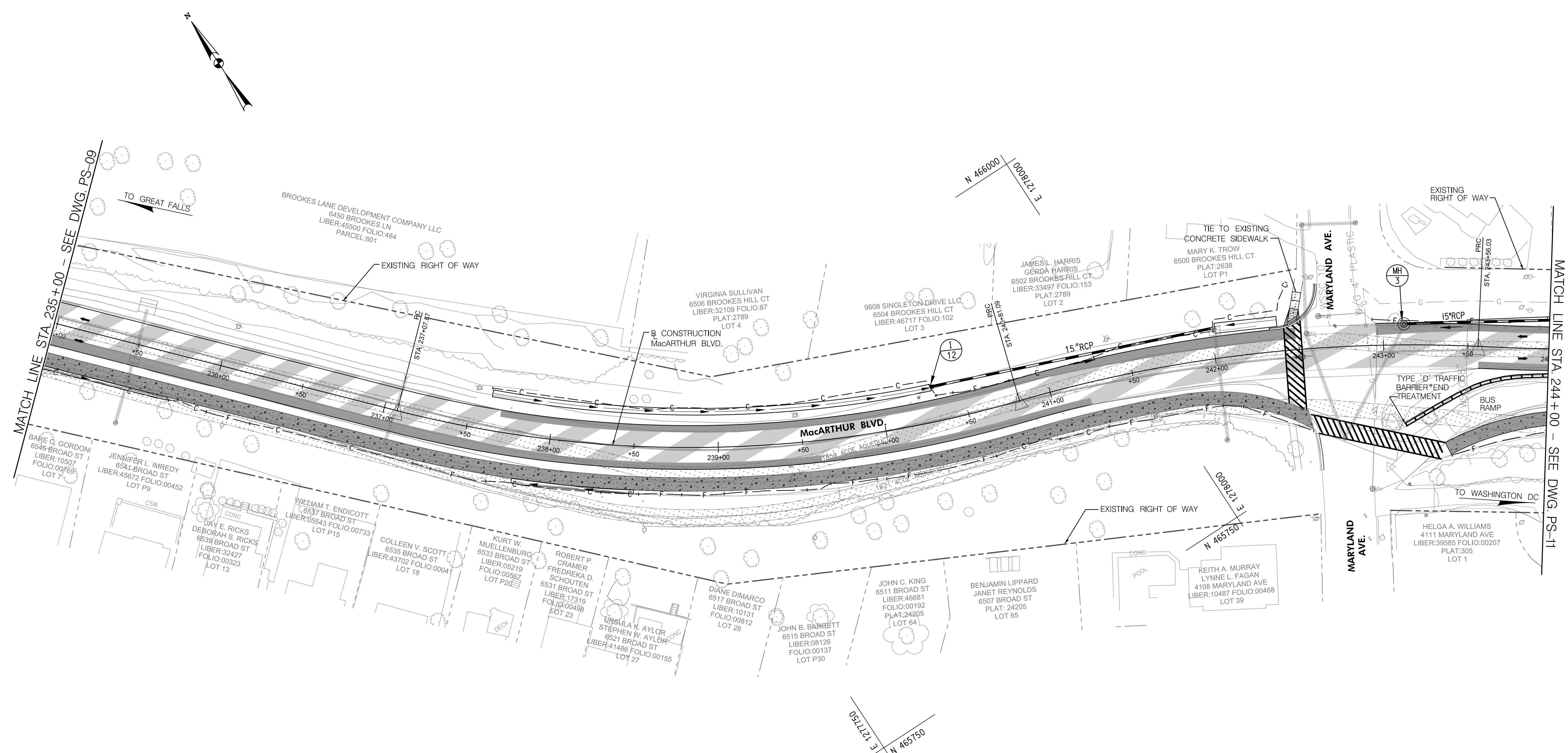
30' 0 30' 60'
SCALE: 1" = 30'



MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION ROCKVILLE, MARYLAND			
RECOMMENDED FOR APPROVAL			
Chief, Transportation Planning and Design Section		Date	
APPROVED			
Chief, Division of Transportation Engineering		Date	
Designed by: HA/DLT/SHN	Drawn by: JKH/DW/ES	Checked by: SHN	
NO.	REVISION	DATE	BY
MacARTHUR BLVD. BIKEWAY IMPROVEMENTS SEGMENT 3 FROM OBERLIN AVENUE TO D.C. LINE FACILITY PLANNING PHASE II SCALE: AS SHOWN DATE: JANUARY 2017			
Project No.: 500718		SHEET 16 of 54	



BY: jhoffman



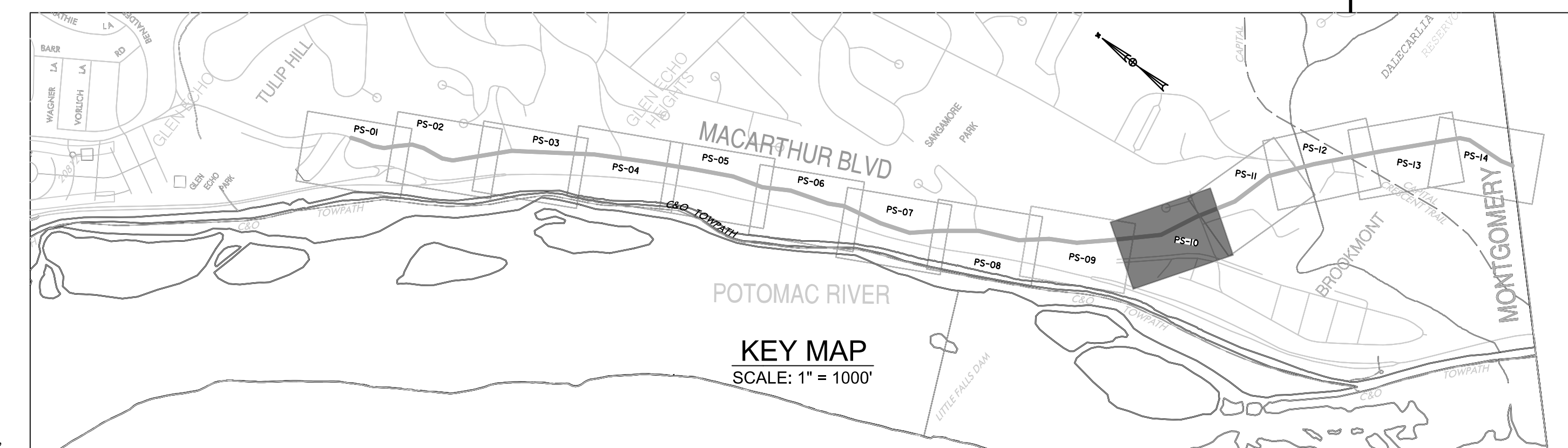
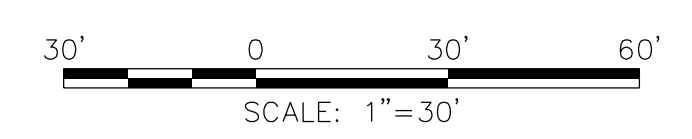
PS-10 of 14

LEGEND:	
TRAFFIC BARRIER W BEAM	
LIMIT OF DISTURBANCE	
PROPOSED BIKE TRAIL	
PROPOSED CONCRETE BIKE TRAIL	
GRIND AND RESURFACE	
FULL DEPTH PAVEMENT	
REMOVAL OF EX. PAVEMENT	
EXISTING AQUEDUCT	

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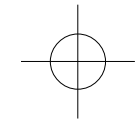
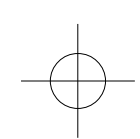
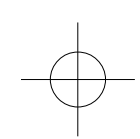


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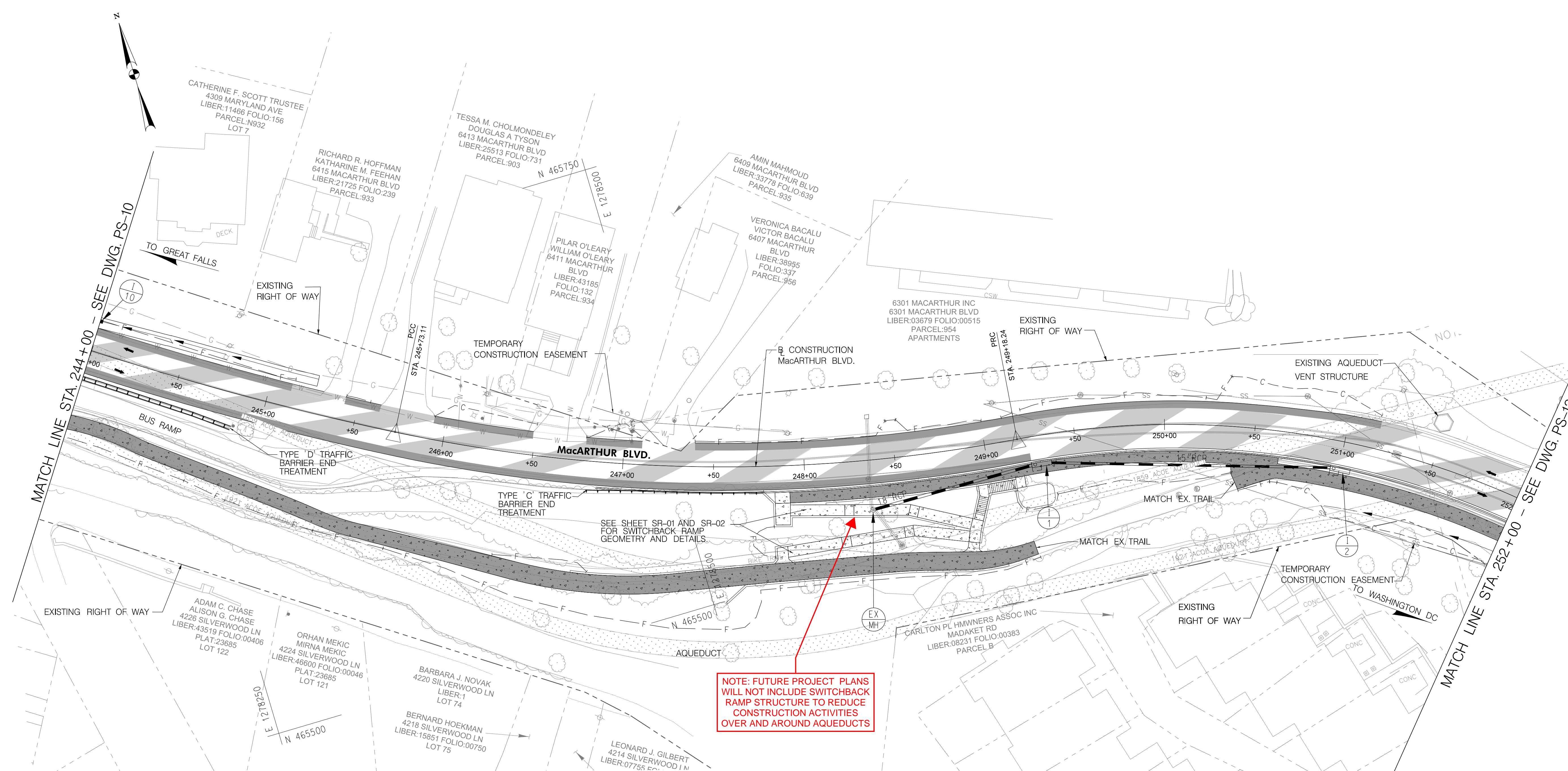


MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION ROCKVILLE, MARYLAND				ROADWAY PLAN	
RECOMMENDED FOR APPROVAL				MacARTHUR BLVD. BIKEWAY IMPROVEMENTS SEGMENT 3	
Chief, Transportation Planning and Design Section				FROM OBERLIN AVENUE TO D.C. LINE	
APPROVED				FACILITY PLANNING PHASE II	
Chief, Division of Transportation Engineering				SCALE : AS SHOWN	
Designed by: HA/DLT/SHN				DATE : JANUARY 2017	
Drawn by: JKH/DW/ES				Project No. : 50071R	
Checked by: SHN				SHEET 17 of 54	
NO.	REVISION	DATE	BY		

PLOTTED: Thursday, January 12, 2017 AT 01:45 PM
FILE: R:\2008\187 MCDPW #650452010 Engineering Service_URS\Task 2 MacArthur Blvd\DWG\HIGHWAY\Retaining Wall Elimination Study\PHI Sheets-AECOM\PHD-0010_MACA.dgn



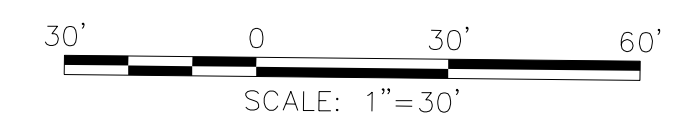
BY: jhoffman



NOTE: FUTURE PROJECT PLANS WILL NOT INCLUDE SWITCHBACK RAMP STRUCTURE TO REDUCE CONSTRUCTION ACTIVITIES OVER AND AROUND AQUEDUCTS

LEGEND:	
TRAFFIC BARRIER W BEAM	
LIMIT OF DISTURBANCE	
PROPOSED BIKE TRAIL	
PROPOSED CONCRETE BIKE TRAIL	
GRIND AND RESURFACE	
FULL DEPTH PAVEMENT	
REMOVAL OF EX. PAVEMENT	
EXISTING AQUEDUCT	

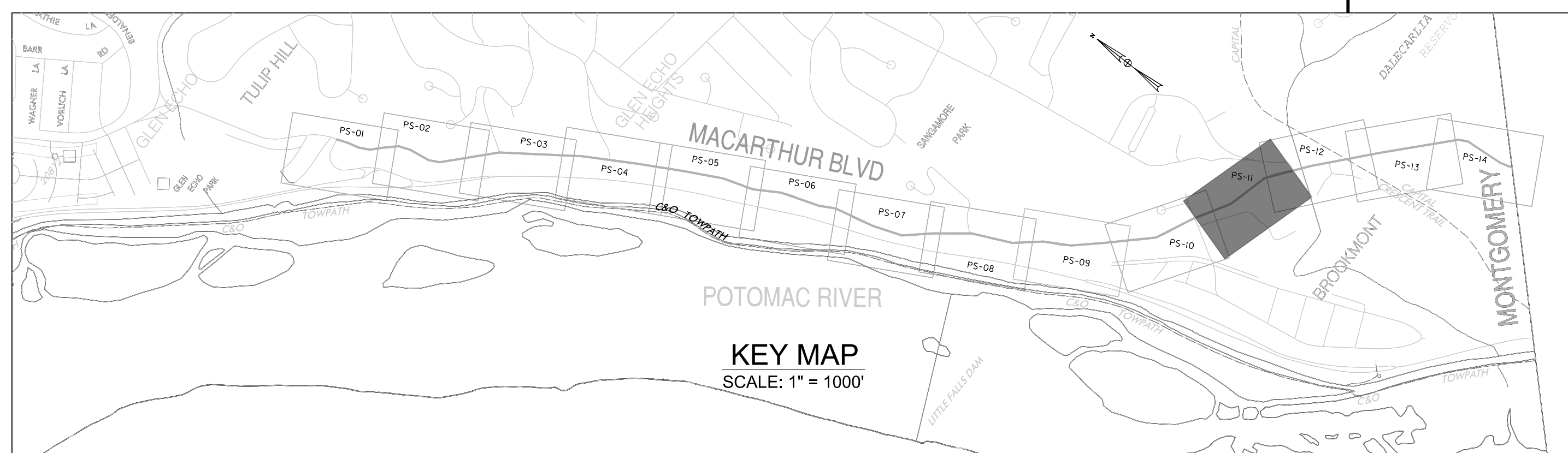
TEMPORARY CONSTRUCTION EASEMENT		
STA. 246+80.51, 30.00' LT. TO STA. 247+22.00, 11.00' LT.		309 SF
STA. 251+21.43, 44.36' RT. TO STA. 251+99.70, 40.68' RT.		474 SF



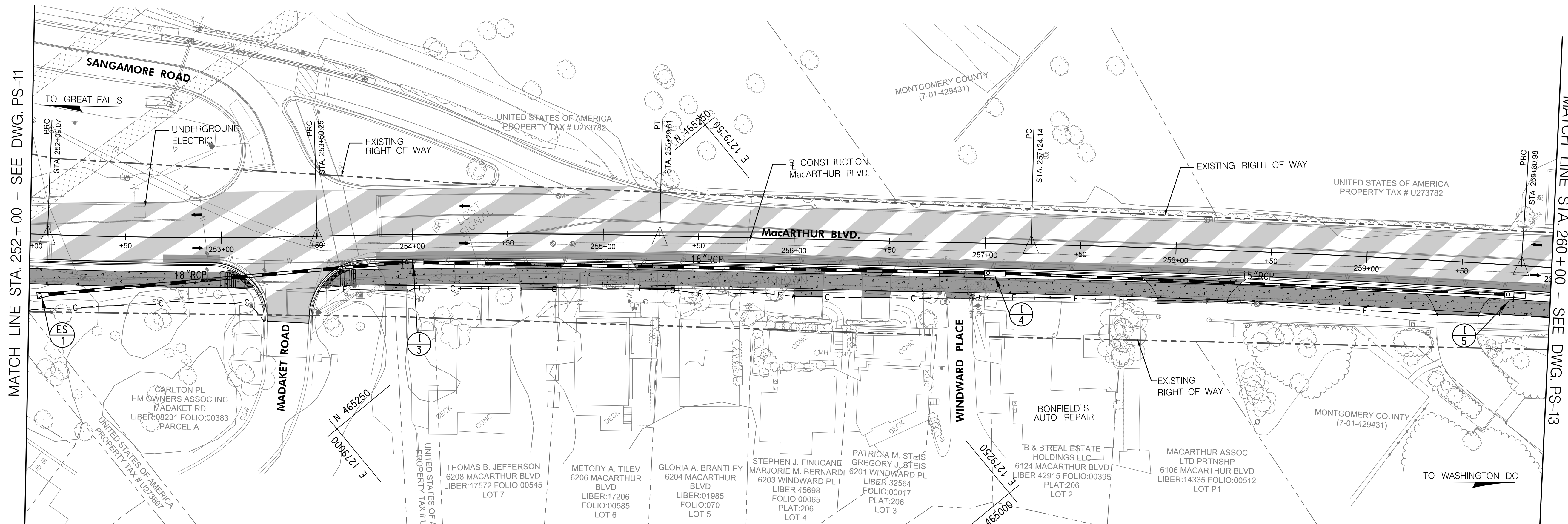
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MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION ROCKVILLE, MARYLAND				ROADWAY PLAN	
RECOMMENDED FOR APPROVAL				MacARTHUR BLVD. BIKEWAY IMPROVEMENTS SEGMENT 3	
Chief, Transportation Planning and Design Section				FROM OBERLIN AVENUE TO D.C. LINE	
APPROVED				FACILITY PLANNING PHASE II	
Chief, Division of Transportation Engineering				SCALE : AS SHOWN	
Designed by: HA/DLT/SHN				DATE : JANUARY 2017	
Drawn by: JKH/DW/ES				Project No. : 50071R	
Checked by: SHN				SHEET 18 of 54	
NO.	REVISION	DATE	BY		

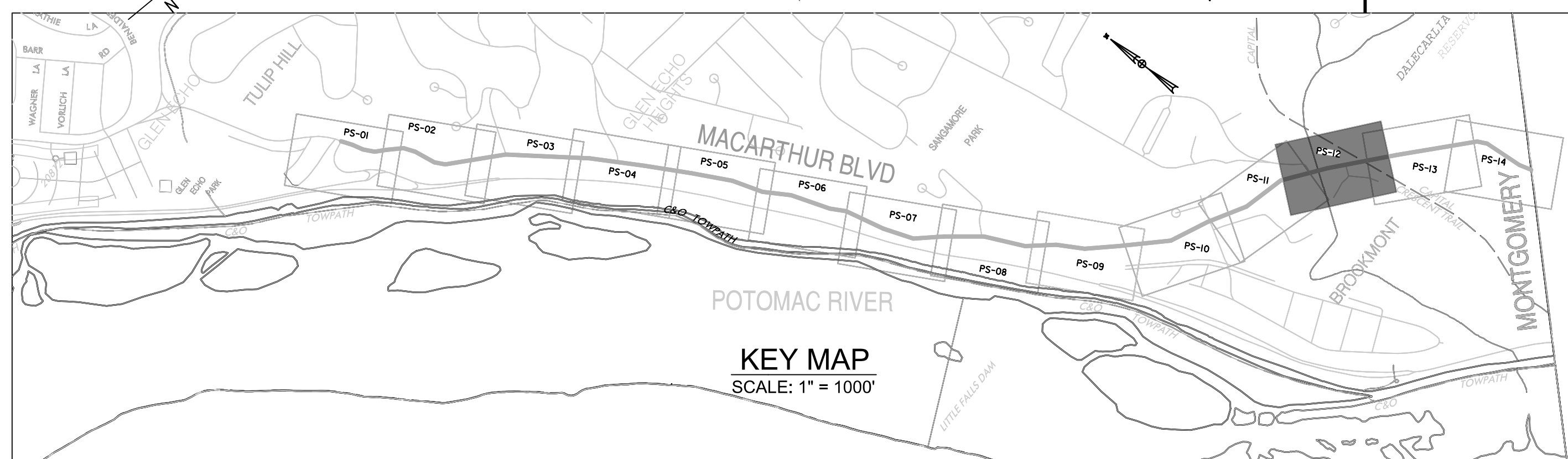


PS-12 of 14

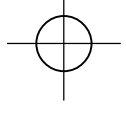
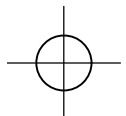
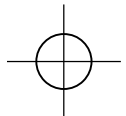
LEGEND:	
TRAFFIC BARRIER W BEAM	
LIMIT OF DISTURBANCE	
PROPOSED BIKE TRAIL	
PROPOSED CONCRETE BIKE TRAIL	
GRIND AND RESURFACE	
FULL DEPTH PAVEMENT	
REMOVAL OF EX. PAVEMENT	
EXISTING AQUEDUCT	

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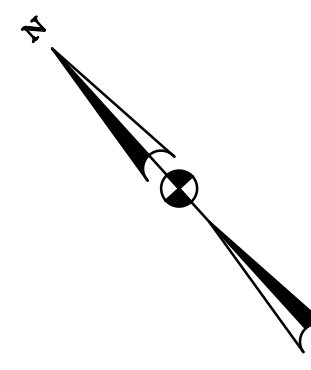
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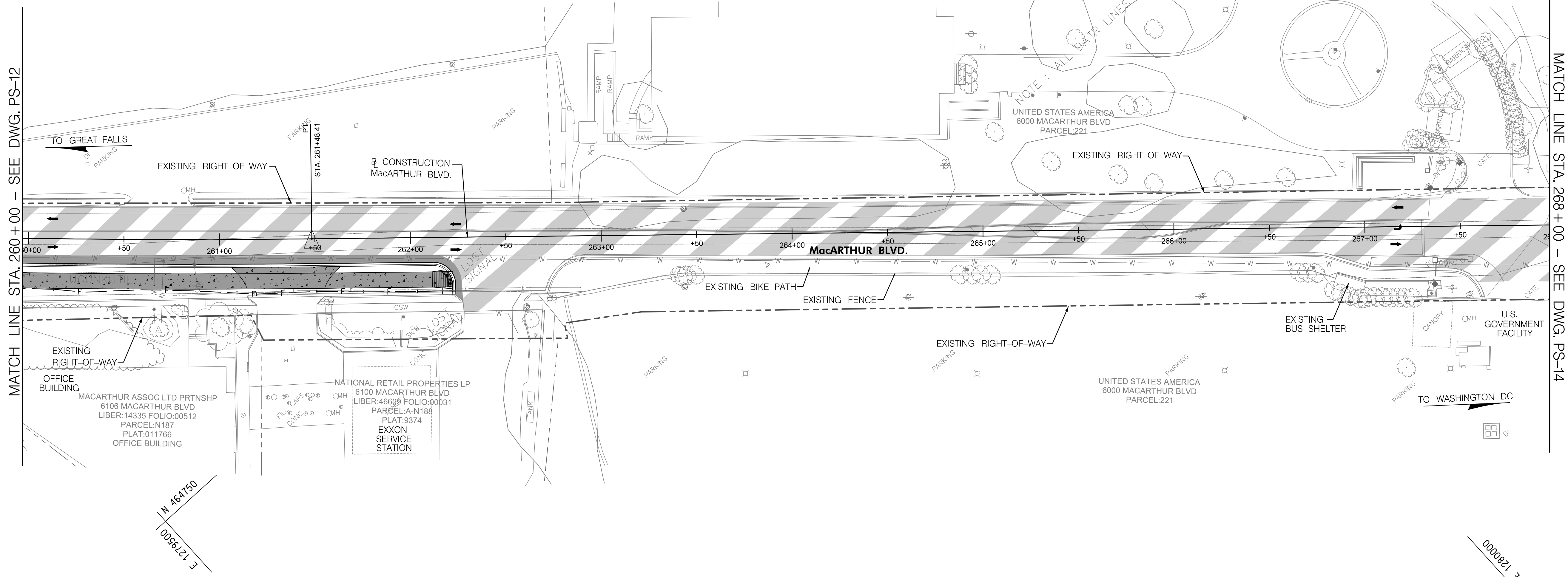
MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION ROCKVILLE, MARYLAND				ROADWAY PLAN	
RECOMMENDED FOR APPROVAL				MacARTHUR BLVD. BIKEWAY IMPROVEMENTS SEGMENT 3	
Chief, Transportation Planning and Design Section				FROM OBERLIN AVENUE TO D.C. LINE	
APPROVED				FACILITY PLANNING PHASE II	
Chief, Division of Transportation Engineering				SCALE : AS SHOWN	
Designed by: HA/DLT/SHN				DATE : JANUARY 2017	
Drawn by: KH/DW/ES				Project No. : 50071R	
Checked by: SHN				SHEET 19 of 54	
NO.	REVISION	DATE	BY		



BY: jhoffman



N 464750
E 1280000



N 464750
E 1279500

N 464250
E 1280000

LEGEND:

- TRAFFIC BARRIER W BEAM
- LIMIT OF DISTURBANCE
- PROPOSED BIKE TRAIL
- PROPOSED CONCRETE BIKE TRAIL
- GRIND AND RESURFACE
- FULL DEPTH PAVEMENT
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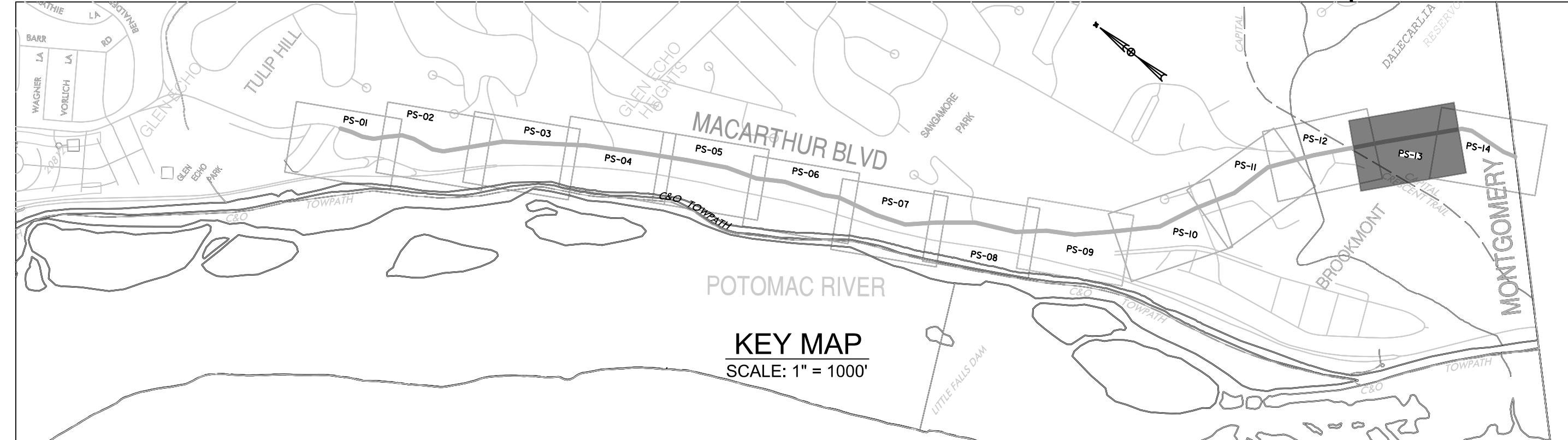
30' 0 30' 60'
SCALE: 1" = 30'



SABRA, WANG & ASSOCIATES, INC.
7055 SAMUEL MORSE DRIVE
SUITE 100
COLUMBIA, MD 21046
(443) 741-3500
WWW.SABRA-WANG.COM

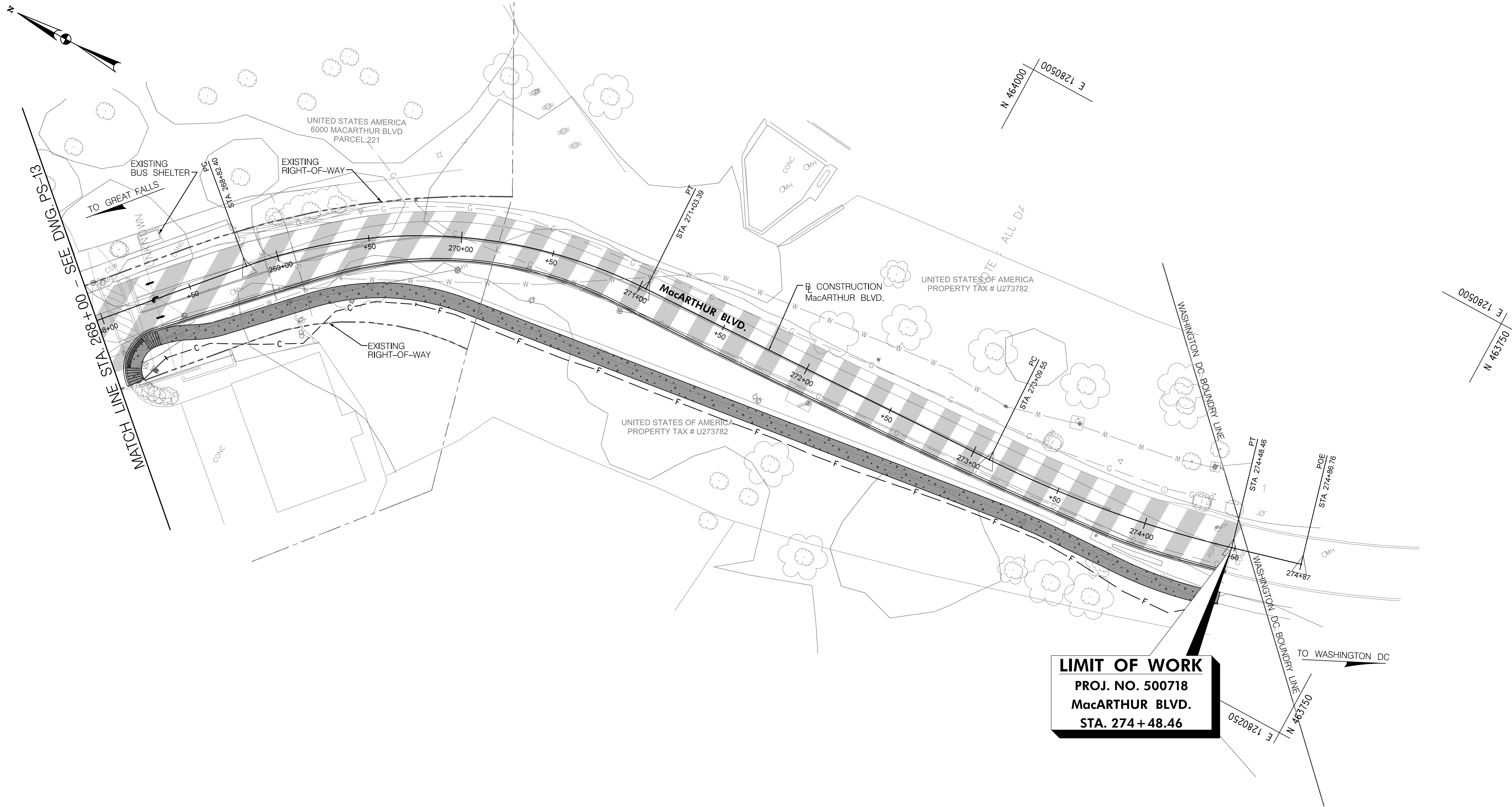
35% SUBMITTAL
NOT FOR CONSTRUCTION

PS-13 of 14



KEY MAP
SCALE: 1" = 1000'

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LIMIT OF WORK
PROJ. NO. 500718
MacARTHUR BLVD.
STA. 274 + 48.46

PS-14 of 14

LEGEND:

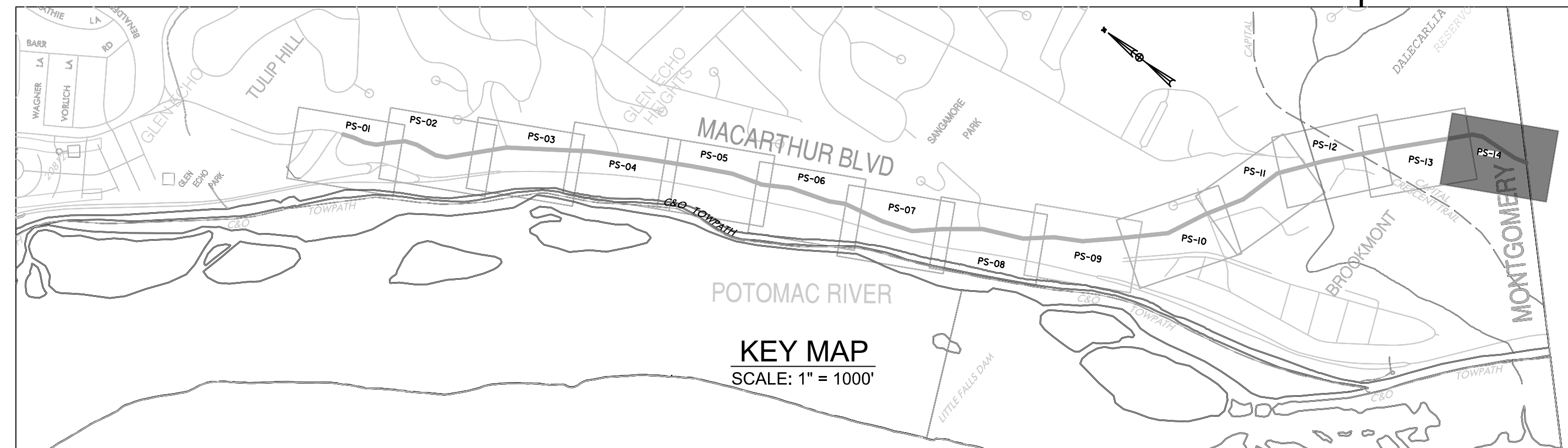
- TRAFFIC BARRIER W BEAM
- LIMIT OF DISTURBANCE
- PROPOSED BIKE TRAIL
- PROPOSED CONCRETE BIKE TRAIL
- GRIND AND RESURFACE
- FULL DEPTH PAVEMENT
- REMOVAL OF EX. PAVEMENT
- EXISTING AQUEDUCT

**35% SUBMITTAL
NOT FOR CONSTRUCTION**

30' 0 30' 60'
SCALE: 1" = 30'

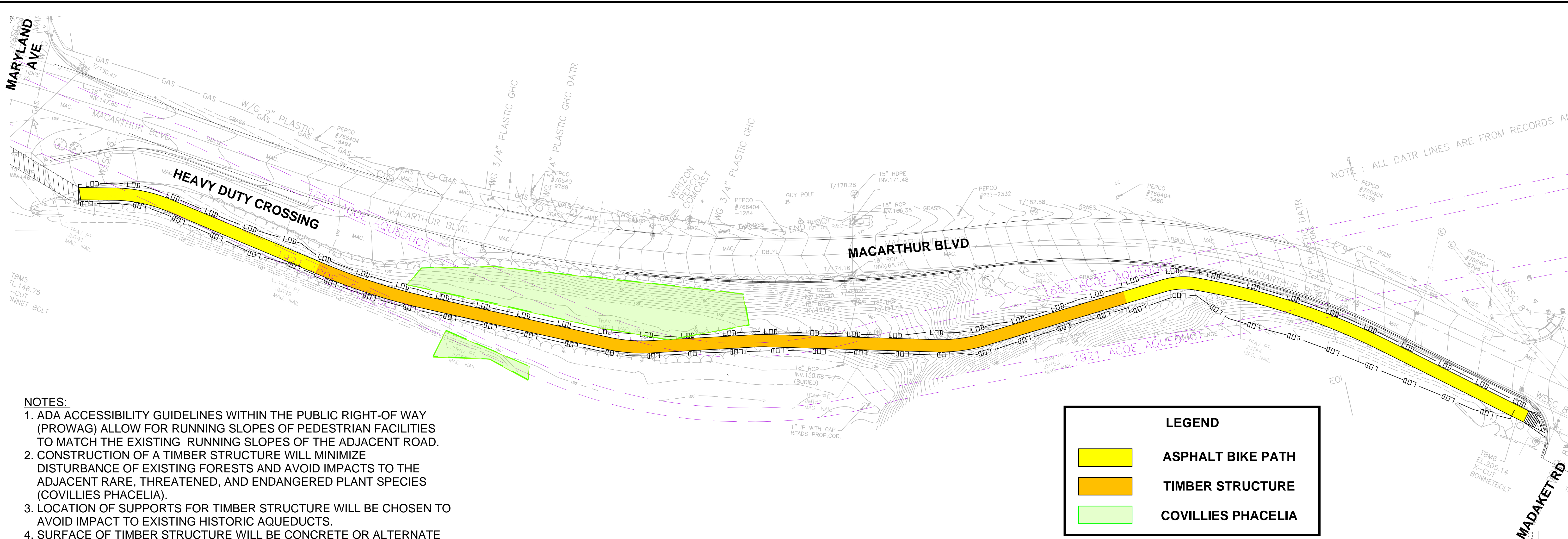


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KEY MAP
SCALE: 1" = 1000'

MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION ROCKVILLE, MARYLAND				ROADWAY PLAN	
RECOMMENDED FOR APPROVAL				MacARTHUR BLVD. BIKEWAY IMPROVEMENTS SEGMENT 3	
Chief, Transportation Planning and Design Section				FROM OBERLIN AVENUE TO D.C. LINE	
APPROVED				FACILITY PLANNING PHASE II	
Chief, Division of Transportation Engineering				SCALE : AS SHOWN	
Designed by: HA/DLT/SHN				DATE : JANUARY 2017	
Drawn by: KH/DW/ES				Project No. : 500718	
Checked by: SHN				SHEET 21 of 54	
NO.	REVISION	DATE	BY		



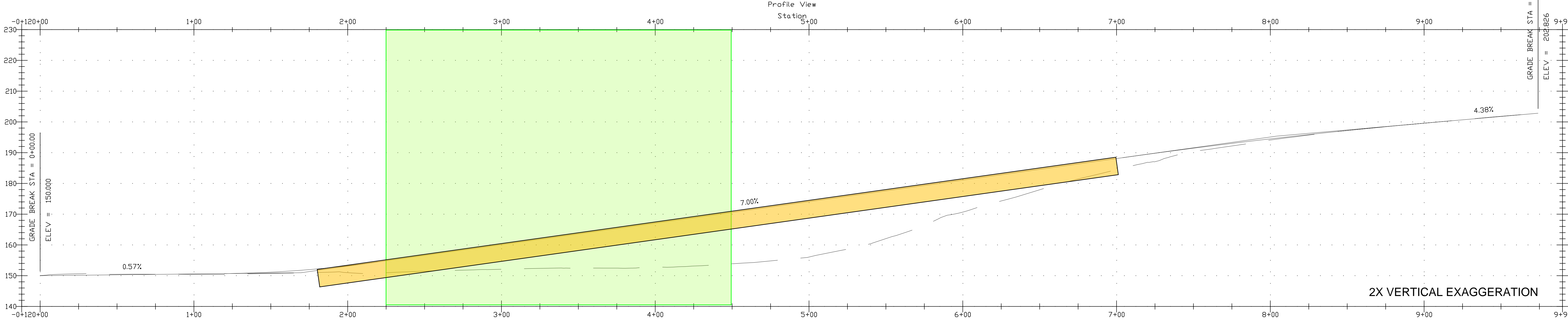
- NOTES:
1. ADA ACCESSIBILITY GUIDELINES WITHIN THE PUBLIC RIGHT-OF-WAY (PROWAG) ALLOW FOR RUNNING SLOPES OF PEDESTRIAN FACILITIES TO MATCH THE EXISTING RUNNING SLOPES OF THE ADJACENT ROAD.
 2. CONSTRUCTION OF A TIMBER STRUCTURE WILL MINIMIZE DISTURBANCE OF EXISTING FORESTS AND AVOID IMPACTS TO THE ADJACENT RARE, THREATENED, AND ENDANGERED PLANT SPECIES (COVILLIES PHACELIA).
 3. LOCATION OF SUPPORTS FOR TIMBER STRUCTURE WILL BE CHOSEN TO AVOID IMPACT TO EXISTING HISTORIC AQUEDUCTS.
 4. SURFACE OF TIMBER STRUCTURE WILL BE CONCRETE OR ALTERNATE NON-SLIP SURFACE.

LEGEND

ASPHALT BIKE PATH

TIMBER STRUCTURE

COVILLIES PHACELIA



DRAFT
NOT FOR CONSTRUCTION

MONTGOMERY COUNTY
DEPARTMENT OF TRANSPORTATION
GAITHERSBURG, MARYLAND

RECOMMENDED FOR APPROVAL

Chief, Design Section
APPROVED

Chief, Division of Transportation Engineering

Designed by: ADH Drawn by: ADH Checked by: JJR

MR-01
TRAIL LAYOUT CONCEPT
MACARTHUR BOULEVARD
BIKEWAY PHASE III

DATE: NOVEMBER 2021

SCALE: 1"=30'

CIP No. : 502109

SHEET 1 of 1



Pedestrian bridge on Johns Hopkins University campus constructed within Forest Conservation Easement with minimal disturbance.

source: RK&K



Rendering of an elevated bikeway structure through a forest in Belgium.

source: <https://www.designboom.com/architecture/cycling-through-trees-limburg-belgium-09-23-2019/>

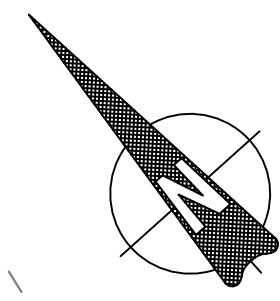
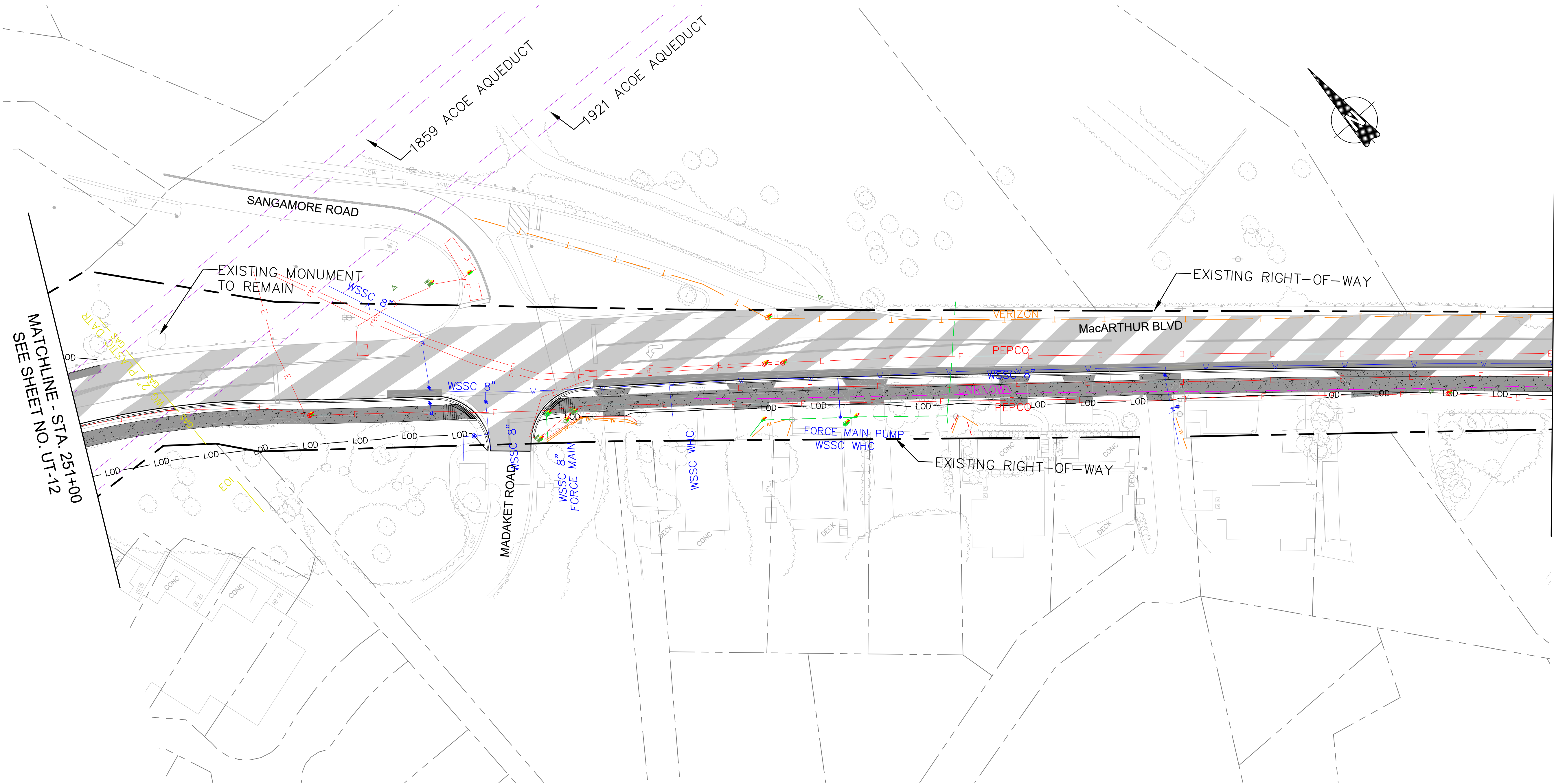


MATCHLINE - STA. 244+00
SEE SHEET NO. UT-12

LEGEND	
	PROPOSED FULL DEPTH PAVEMENT
	PROPOSED MILL AND OVERLAY
	PROPOSED PAVEMENT REMOVAL
	PROPOSED ASPHALT PATH/TRAIL-IMPERVIOUS
	PROPOSED CONCRETE PATH
	LIMIT OF DISTURBANCE


- NOTES:
1. ALL DATR LINES ARE PLOTTED FROM RECORD AND HAVE NOT BEEN LOCATED IN THE FIELD.
 2. ALL INFORMATION SHOWN HEREON REFLECTS 35% PRELIMINARY PLANS COMPLETED BY SABRA, WANG, AND ASSOCIATES INC. DATED JANUARY 2017.

DRAFT NOT FOR CONSTRUCTION		MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION GAITHERSBURG, MARYLAND				UT-11 UTILITY AND RIGHT OF WAY PLAN MACARTHUR BOULEVARD BIKEWAY PHASE III	
		RECOMMENDED FOR APPROVAL				SCALE: 1"=30'	
		Chief, Design Section		Date		DATE: SEPTEMBER 2021	
		APPROVED					
		Chief, Division of Transportation Engineering		Date			
		Designed by: ADH		Drawn by: ADH		Checked by: JJR	
NO.	REVISION	DATE	BY	CIP No. : 502109		SHEET 11 of 15	



LEGEND	
	PROPOSED FULL DEPTH PAVEMENT
	PROPOSED MILL AND OVERLAY
	PROPOSED PAVEMENT REMOVAL
	PROPOSED ASPHALT PATH/TRAIL-IMPERVIOUS
	PROPOSED CONCRETE PATH
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<div>DRAFT NOT FOR CONSTRUCTION</div>								<div>MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION GAITHERSBURG, MARYLAND</div>				<div>UT-13 UTILITY AND RIGHT OF WAY PLAN MACARTHUR BOULEVARD BIKEWAY PHASE III</div>							
<div></div>								RECOMMENDED FOR APPROVAL				<div><div><div><div>0</div><div>30'</div><div>60'</div></div><div>SCALE: 1"=30'</div></div><div>DATE: SEPTEMBER 2021</div></div>							
								Chief, Design Section _____ Date _____											
								APPROVED											
								Chief, Division of Transportation Engineering _____ Date _____											
NO.				REVISION				DATE				BY				Designed by: <u>ADH</u> Drawn by: <u>ADH</u> Checked by: <u>JJR</u>			
																CIP No. : <u>502109</u>			
																SHEET <u>13</u> of <u>15</u>			



MEMORANDUM

TO: Yasamin Esmaili
DATE: September 24, 2021
FROM: Amanda D. Havener, P.E.
PROJECT: MacArthur Boulevard Bikeway Phase III
JMT JOB NO.: 18-04565-003
RE: Proposed Trail Width

Background:

The proposed concept for the MacArthur Boulevard Bikeway, as shown in the project prospectus dated February 2004, is to upgrade the existing bikeway to an 8-foot wide shared use path with a 5-foot minimum separation between the shared use path and edge of roadway. The project limits for the MacArthur Boulevard Bikeway are between the Old Anglers Inn near Stable Lane to the DC Line, approximately 7.7 miles. The project has been divided into three phases: the limits of Phase III are from Oberlin Lane to the DC Line, approximately 2.2 miles.

Since 2004, AASHTO Standards for shared use paths have been updated to change the recommended minimum width to be 10-feet. (AASHTO Bike Book, 2012) Narrower trail widths as low as 8-foot wide are permitted under certain circumstances including physical or environmental constraints. Montgomery County Planning Board has also recently stated their preference for wider trail widths on shared use facilities to better accommodate passing movements on heavily used facilities.

This memorandum documents the findings of a feasibility study investigating a 10-foot trail width versus the proposed 8-foot trail width. This feasibility study evaluates benefits and challenges associated with trail functionality, property impacts, environmental impacts, permitting, and construction cost.

Trail Functionality:

According to the AASHTO Bike Book, a minimum 10-foot shared use path width is preferred over the 8-foot width because it increases the level of service for both pedestrians and wheeled users, and allows for more comfortable passing movements. However, the proposed width of trail for Phases I and II of the MacArthur Boulevard Bikeway is 8-feet.

Property Impacts:

The majority of the proposed improvements for the bikeway are within the roadway right-of-way, which is owned by the US Army Corps of Engineers (USACE). In most locations, widening the proposed path to 10-feet will not have additional impacts on private property. However, there are several locations where the existing right-of-way is narrow, and widening the width of the proposed



improvements may result in impacts on private properties. These locations are in the following locations (stationing from 35% plan set):

Station	Length	Location
Sta. 159+00 to Sta. 173+00	1,400 LF (0.27 MI)	North of Mohican Road
Sta. 204+00 to Sta. 216+00	1,200 LF (0.23 MI)	North of Wapakoneta Road
Sta. 248+00 to Sta. 253+50	<u>550 LF (0.10 MI)</u>	North of Madaket Road
Total	3,150 LF (0.60 MI)	

Properties with potential impacts are owned by the United States Government Department of the Interior, Maryland-National Capital Park and Planning Commission (M-NCPPC), and the Carlton Place Homeowners Association. Negotiations with these property owners will add significant complexity for the project as well as potential schedule delays.

Environmental Impacts:

Installation of a wider shared use path will increase the Limit of Disturbance (LOD) for the project. The LOD will increase a minimum of 2 feet along the entire project corridor. Given the steep slopes along the corridor, it is assumed that the LOD would increase by up to 10 feet, resulting in an additional area of disturbance with a minimum of 23,232 SF (0.53 acres) and up to 116,160 SF (2.67 acres). This increased LOD will increase the impact of the project on roadside trees, wetlands, waters of the US (WUS), and forests. Rare, threatened, or endangered plant species have also been identified within the project corridor, which would also be impacted by the increased LOD.

Permitting:

The increased project LOD associated with the wider path width will have impacts on necessary permits. The project team is anticipating the need to submit a Joint Permit Application (JPA) for the project to work in and around wetlands and WUS. The increased project LOD will likely translate to increased environmental impacts and mitigation needs. If the environmental impacts stretch beyond 200 LF of stream impacts, the application and review process becomes more complicated and time consuming. This will translate to additional project costs and schedule delays.

The increased impervious area from the wider path will also impact the stormwater management (SWM) and sediment control permit requirements. The project currently has an approved waiver for the SWM Concept based on a net increase in impervious area of 0.01 acres. The additional 2 foot path width along the 2.2 mile project corridor will add 0.53 to 2.67 acres of additional impervious area to the project. This would likely negate the current waiver for SWM requirements. Without the waiver, the project would need to reevaluate the SWM Concept to include design and installation of SWM facilities along the project corridor. This review process with DPS would add significant design and construction costs, as well as schedule delays.

Washington Aqueduct:

The project corridor along MacArthur Boulevard runs above two large historic aqueducts that are owned by USACE. These parallel aqueducts are over 100 years old and provide drinking water for



the Washington DC. Construction activities over and adjacent to these aqueducts are restricted to protect them and avoid disruptions to the water service.

Widening the proposed trail width from 8 feet to 10 feet will result in increased potential for conflicts and impacts to the aqueducts, along with additional construction activities over and around them.

Design and Construction Cost:

A 10-foot wide trail will have additional construction costs than the proposed 8-foot wide trail. Additional trail material, assumed to be asphalt, will be required for the extra 2-foot width along the entire 2.2 mile long project corridor. Also, proposed retaining walls are assumed in 6 locations. The height of one of these walls is expected to increase based on the wider trail width. Based on preliminary cross sections, the retaining wall from Sta. 247+50 to Sta. 249+00 (150 LF) is expected to be approximately 3 feet taller on average. Because of the proximity of this wall to the aqueduct, it is assumed that the footing for this structure will be on piles to minimize impact to the aqueduct during construction.

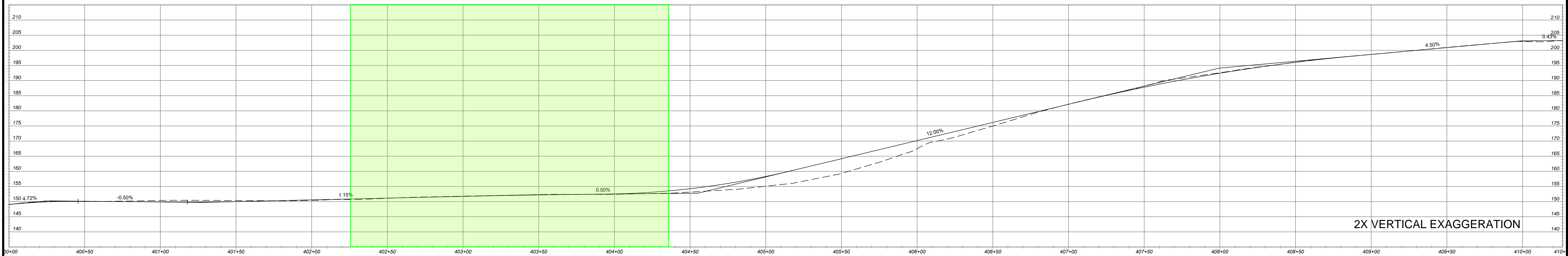
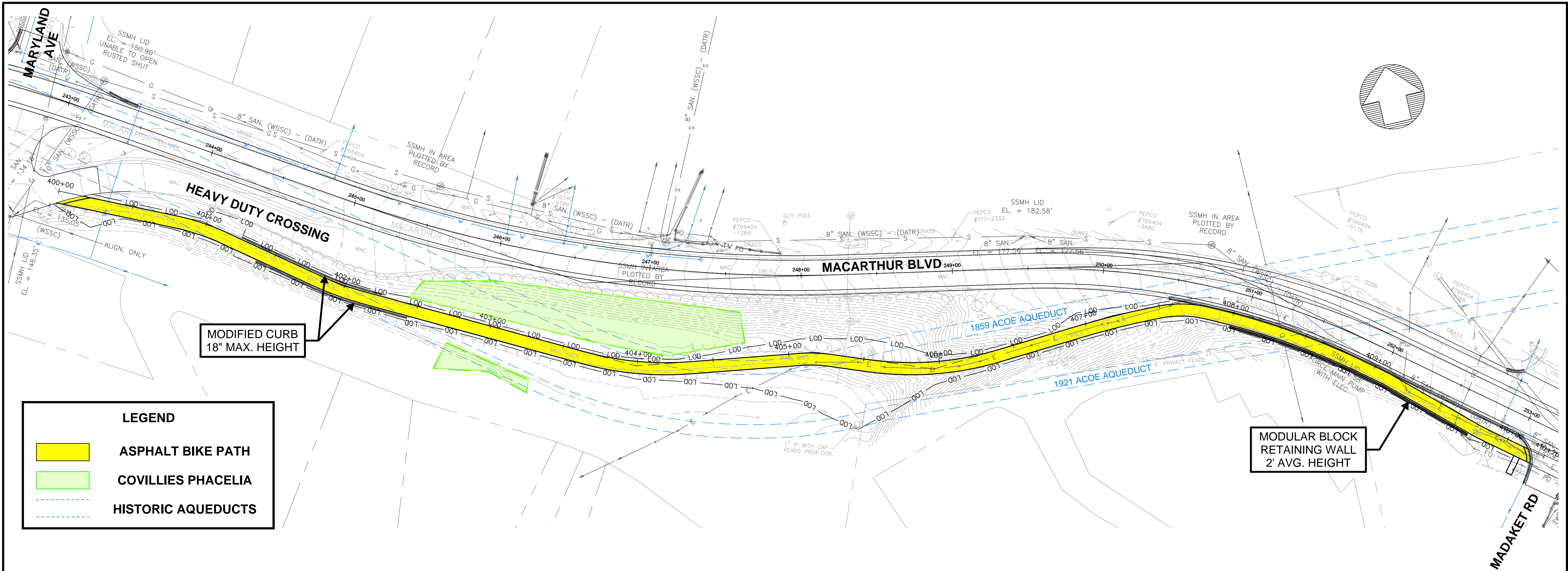
The following cost estimate shows the anticipated additional costs that are expected to be associated with increasing the proposed path width from 8-feet to 10-feet:

Item	Quantity	Unit Price	Cost
4" Asphalt for Trail Base	580 TON	\$100	\$58,000
2" Asphalt for Trail Surface	290 TON	\$125	\$36,250
8" GABC Base	575 SY	\$30	\$17,250
Retaining Wall on Piles	450 SF	\$300	\$135,000
	30% Contingency		\$73,950
Construction SUBTOTAL:			\$320,450.00
	Trail Design (15% of Construction)		\$36,975
	SWM Concept and Design		\$150,000
	30% Contingency		\$56,095
Design SUBTOTAL:			\$243,070.00
TOTAL:			\$563,520.00

Additional costs, including permit fees and right of way acquisition, are not included in this total.

Recommendation:

Based on the existing SWM waiver for this project, the additional potential property and environmental impacts, and to maintain consistency with the proposed width for Phases I and II of this trail, JMT recommends that the width of the trail for MacArthur Boulevard Bikeway Phase III remain as an 8-foot width.



- NOTES:**
- COORDINATION WITH U.S. ARMY CORPS OF ENGINEERS HAS RESULTED IN A REQUEST THAT NO STRUCTURAL FOUNDATIONS BE CONSTRUCTED IN CLOSE PROXIMITY TO EXISTING HISTORIC AQUEDUCT STRUCTURES.
 - PROPOSED DESIGN WILL NEED TO BE REVIEWED AND APPROVED BY U.S. ARMY CORPS OF ENGINEERS PRIOR TO FINAL DESIGN.
 - PROPOSED DESIGN SEEKS TO MINIMIZE PROPOSED DISTURBANCE OF EXISTING FORESTS AND AVOID IMPACTS TO THE ADJACENT RARE, THREATENED, AND ENDANGERED PLANT SPECIES (COVILLIES PHACELIA).
 - EXISTING RUNNING SLOPE OF TRAIL IS APPROXIMATELY 18-20%.
 - PROPOSED RUNNING SLOPE OF TRAIL IS REDUCED TO A MAXIMUM OF 12%.

DRAFT NOT FOR CONSTRUCTION		MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION GAITHERSBURG, MARYLAND		MR-02 REVISED TRAIL LAYOUT CONCEPT MACARTHUR BOULEVARD BIKEWAY PHASE III		
		RECOMMENDED FOR APPROVAL		SCALE: 1"=30'		
		Chief, Design Section APPROVED	Date	Chief, Division of Transportation Engineering APPROVED	Date	
NO.		REVISION	DATE	BY	Designed by: ADH Drawn by: ADH Checked by: JJR	CIP No.: 502109 SHEET 1 of 1



MONTGOMERY COUNTY PLANNING DEPARTMENT
THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION

December 22, 2015

Mr. Bruce E. Johnston, P.E.
MCDOT – Division of Transportation Engineering
100 Edison Park Dr. Fourth Floor
Gaithersburg, MD 20878

Re: MacArthur Boulevard Bikeway Improvements – Segment 3
Forest Conservation Exemption Request and Simplified NRI/FSD Plan No. 42014043E
Action Taken: Confirmed and Approved on 12/22/2015

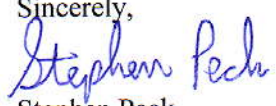
Dear Mr. Bruce Johnston:

On December 15, 2015 the Development Applications and Regulatory Coordination staff of the Montgomery County Planning Department, received a revised Simplified NRI/FSD Plan for Segment 3 of the MacArthur Boulevard Bikeway Improvements. The plan is required as part of a forest conservation exemption request for the improvements to MacArthur Boulevard and bikeway. This Chapter 22A-5(e) exemption request is subject to Chapter 22A-9 for County Highway Projects.

The review of the exemption request is complete. The project is part of the approved Capital Improvement Program and is CIP No. 509337. The revised Simplified NRI/FSD Plan describes the tree and forest protection measures necessary to minimize environmental disturbance. Approximately, 16,120 square feet of forest is to be impacted as part of this project. Forest mitigation requirements are triggered only if forest removal equals or exceeds 20,000 square feet. Two significant size trees are to be cleared and removed. The plan includes tree protection fencing to contain and limit the disturbance. The revised plan includes adjustments in the disturbed area to protect populations of *Phacelia covillei*. The required forest conservation law inspections to be requested by the Applicant are listed on the plan. The revised plan for the project meets the requirements of the Montgomery County Code, Chapter 22A (Forest Conservation Law) including Section 22A-5(e) and Section 22A-9 for County Highway Projects.

Forest Conservation Exemption Request No. 42014043E for MacArthur Boulevard Bikeway Improvements Segment 3 is confirmed. The revised Simplified NRI/FSD Plan submitted for the project is approved.

If, in the future, changes are planned to the confirmed Exemption Request, another forest conservation law compliance review may be required. This project requires forest conservation law inspections, including a preconstruction meeting with the forest conservation inspector. When you are ready to schedule the inspections for this project, please contact the inspector at 301-495-4564.

Sincerely,

Stephen Peck
Senior Planner
Development Applications and Regulatory Coordination
M-NCPPC - Montgomery County Planning Department

CC: Romaine Kesecker, RLA, ASLA