

Montgomery Lane Bike Lanes (CIP Project No. 500119), Mandatory Referral No. MR2019023

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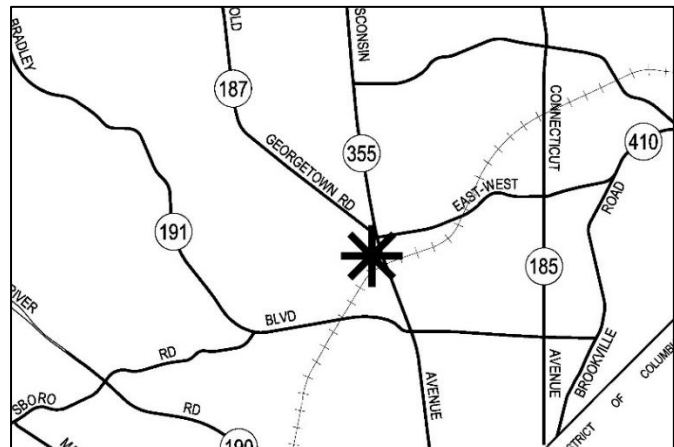
JS Jason Sartori, Chief, FP&P, jason.sartori@montgomeryplanning.org, 301-495-2172

Completed: 09/10/2019

DESCRIPTION

Construction of 0.3-mile-long two-way separated bike lanes along the south side of Montgomery Lane and Montgomery Avenue between Woodmont Avenue and Pearl Street.

- Applicant: Montgomery County Department of Transportation
- Bethesda Downtown Master Plan Area
- Filing Date: July 1, 2019. 60-day review extended by consent of MCDOT



Staff Recommendation: Approval to Transmit Comments

MANDATORY REFERRAL REVIEW

This proposal for the construction of two-way separated bike lanes requires 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.

The applicant agreed to a Planning Department staff suggested extension to the 60-day window for review and comment. The original 60-day window extended to August 30, 2019. This was increased 20 days to September 19, 2019.

RECOMMENDATIONS

Staff recommends **Approval to transmit** the following comments to the Montgomery County Department of Transportation:

1. Consider constructing protected intersections as described in the Bicycle Master Plan at all intersections.

If MCDOT determines that protected intersections are not feasible, construct the following:

- a. At the western leg of the intersections of Montgomery Lane/Montgomery Avenue with East Lane, Wisconsin Avenue, Waverly Street, and Pearl Street, shift the pedestrian crossing west to provide forward queuing space for bicyclists. This change improves visibility for all road users and creates preferred perpendicular pedestrian crossings at these locations.
- b. Provide two-stage turn queue boxes at all intersections where they are currently not designed.
2. At all locations where floating transit island are provided (East Lane, Pearl Street), consider installing:
 - a. Raised pedestrian crossings between the floating transit island and the sidewalk to allow transit users to cross the separated bike lanes at a continuous elevation and encourage bicyclists to slow down and yield to transit users crossing the bikeway.
 - b. Tactile directional indicators that inform pedestrians where the edge of the sidewalk is located and direct them to the preferred crossing location.
 - c. Lean rails along the back of the floating bus stops to define the space and prevent conflict between bicyclists and transit users.
 - d. Pavement markings that indicate bicyclists should yield to pedestrians.
3. Continue coordinating with the Commission on People with Disabilities on floating bus stop design.
4. Consider the use of right-turn-on-red restrictions at all traffic signals along the bikeway.
5. Provide signs that state that southbound bicyclists at intersecting streets can turn right onto the separated bike lanes on Montgomery Lane.
6. Improve the ability of eastbound bicyclists to continue traveling past Pearl Street by altering the proposed curb extension at the southeast corner of Montgomery Avenue and Pearl Street.
7. Provide the following pedestrian improvements:
 - a. At the intersection of East Lane and Montgomery Lane, add a crosswalk on the east legs and install perpendicular curb ramps at the northeast corners.
 - b. At 4550 Montgomery Avenue, provide an ADA-compliant pedestrian clear zone across the parking garage driveway.
 - c. At the intersection of Pearl Street and Montgomery Avenue, add a crosswalk on the east leg and install curb ramps on the northeast and southeast corners.
8. Existing street trees should be protected during construction and any changes to existing curbs, including construction of new curb ramps, should allow for water infiltration to maintain tree health.

PROPOSAL

Project Description

The Montgomery County Department of Transportation (MCDOT) proposes to construct a 0.3-mile two-way separated bike lane along Montgomery Lane and Montgomery Avenue between Woodmont Avenue and Pearl Street in downtown Bethesda. The western project limit connects to a planned two-way separated bike lane on Woodmont Avenue that will ultimately connect north to the National Institutes of Health and south to the Capital Crescent Trail. The eastern project limit will connect to a bikeway on Pearl Street that extends north to Jones Bridge Road and extends south to the Capital Crescent Trail. The proposed bikeway is adjacent to commercial, office, and mixed-use residential/commercial properties and provides comfortable, low-stress east-west bicycle connectivity for people of all ages and bicycling abilities.



Figure 1: Project Extents

Within the project area, Montgomery Lane and Montgomery Avenue are classified as a Business District Streets. They travel one-way eastbound with a speed limit of 25 miles per hour. Currently, Montgomery Lane has four travel lanes between Woodmont Avenue and Wisconsin Avenue. Between Wisconsin Avenue and Pearl Street, Montgomery Avenue has three travel lanes. The proposed design is to be constructed between the existing roadway curbs by narrowing the existing travel lanes and converting one travel lane to the bikeway.

Status and Phasing

The bikeway will be constructed in three segments. The first segment is under construction between Wisconsin Avenue and Waverly Street as part of the Avocet Tower Development project at 7359 Wisconsin Avenue (Figure 2). The project received site plan approval from the Planning Board in June 2019 and is anticipated to be complete in Spring 2021. The second and third segments of the project are currently in the 30 percent design phase and are fully funded for construction under Capital Improvement Program #500119. The segment between Woodmont Avenue and Wisconsin Avenue will likely begin construction second, as this segment provides value independent of the rest of the project. The segment between Waverly Street and Pearl Street will be constructed last, as this segment provides little value without the other two segments. An interim condition for the intersection of Montgomery Lane and Wisconsin Avenue is included in this Mandatory Referral's supplementary materials.

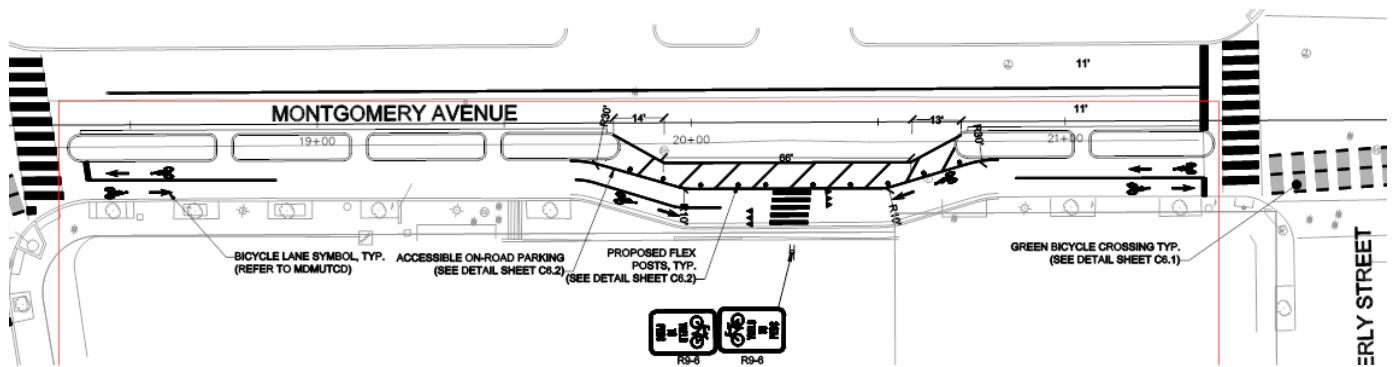


Figure 2: Separated bike lane and lay-by to be constructed by Avocet Tower project

Separated Bike Lane Design

Overview

The proposed two-way separated bike lanes will be located on the south side of Montgomery Lane and Montgomery Avenue between Woodmont Avenue and Pearl Street. They are proposed to be constructed at street-level. Generally, the bikeway is ten-feet wide with a curbed buffer that varies between six and eight feet wide. The bikeway narrows to eight feet for a short distance as it passes behind the bus stop at East Lane. Cross-sections are shown in the attached project plan documents.

Floating Bus Stops

There are two bus stops in the project area that will be upgraded to floating bus stops as part of this project (see Figure 3 for the floating bus stop at Pearl Street). Floating bus stops (Figure 4) eliminate the conflict between bicyclists traveling in the road

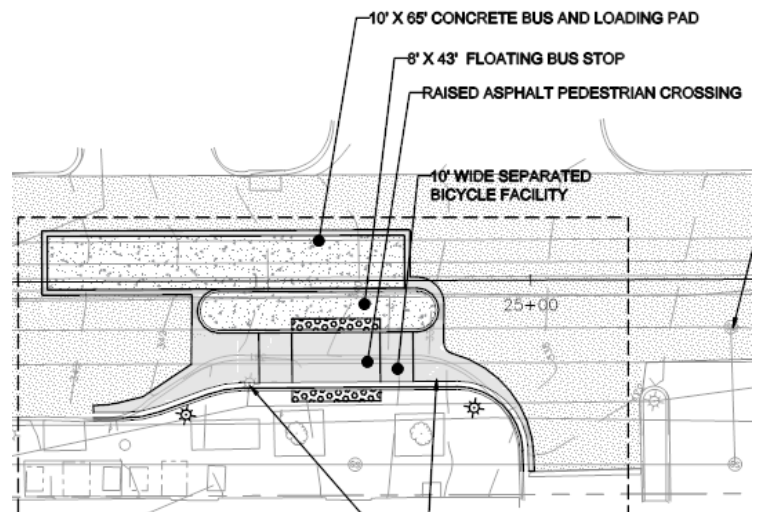


Figure 3: Floating bus stop at Pearl Street

and buses that must pull to the side of the road to load and unload passengers by routing the bikeway behind the bus stop.



Figure 4: An example of a floating bus stop

Accessible On-street Parking

There are two locations between Wisconsin Avenue and Pearl Street along the bikeway that provide accessible on-street parking for accessing the businesses in the area by people with disabilities: in front of the Avocet Tower and 4550 Montgomery Avenue (see Figure 5). The parking areas are a minimum eight feet wide with a five-foot buffer between the parking lane and the bikeway to facilitate safe vehicle ingress and egress. The buffer between the parking and the bikeway consists of flexposts spaced ten feet apart, which provide sufficient space for people using mobility devices to exit a vehicle on the passenger side, traverse the buffer and the bikeway, and access the ramps that connect to the sidewalk.

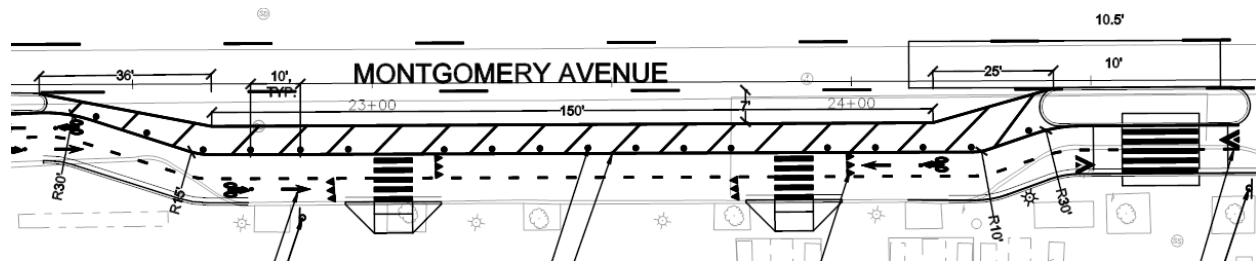


Figure 5: Accessible On-street Parking in front of 4550 Montgomery Avenue

Intersections

At the intersection of Montgomery Lane and Woodmont Avenue, the Montgomery Avenue / Montgomery Lane bikeway connects to the planned two-way separated bike lanes on Woodmont Avenue. The design of this intersection (Figure 6) is being coordinated with both projects.

At the western leg of the intersection of Montgomery Lane and Wisconsin Avenue, the project proposes to remove the “free right” and repurposes the space for the separated bike lane (Figure 7: "Free Right" from Montgomery Lane to southbound Wisconsin Avenue to be removed). This design will improve safety for all road users by reducing the speed of right turning traffic and improving visibility.

At the intersection of Montgomery Avenue and Pearl Street, a two-stage queue box is provided on the south leg of the intersection to help bicyclists travel north (Figure 8). Curb extensions are provided on both the southeast and southwest corners to reduce pedestrian crossing distance.



Figure 6: Rendering of Woodmont Avenue and Montgomery Lane Bikeway Intersection

Analysis

Master Plan Conformance

The project is in substantial conformance with the May 2017 Bethesda Downtown Plan, the November 2018 Bicycle Master Plan, and the 2018 Master Plan of Highways and Transitways.

The Bethesda Downtown Plan discusses two approaches for reconfiguring the East-West Highway/Montgomery Lane/Avenue one-way couplet:

“Consider reconfiguration of the East-West Highway (MD 410)/Montgomery Lane/Old Georgetown Road (MD 187)/Woodmont Avenue one-way pair into a two-way street system. Conversion of these one-way streets to two-way operation would slow vehicular traffic, improve bicycle accommodation (by virtue of slower vehicular traffic) and enliven the street for pedestrians. This operational change would also increase visibility to commercial establishments along the one-way segment and provide new opportunities for placemaking. From a traffic operation perspective, this change would also make car travel less confusing and more easily navigable.

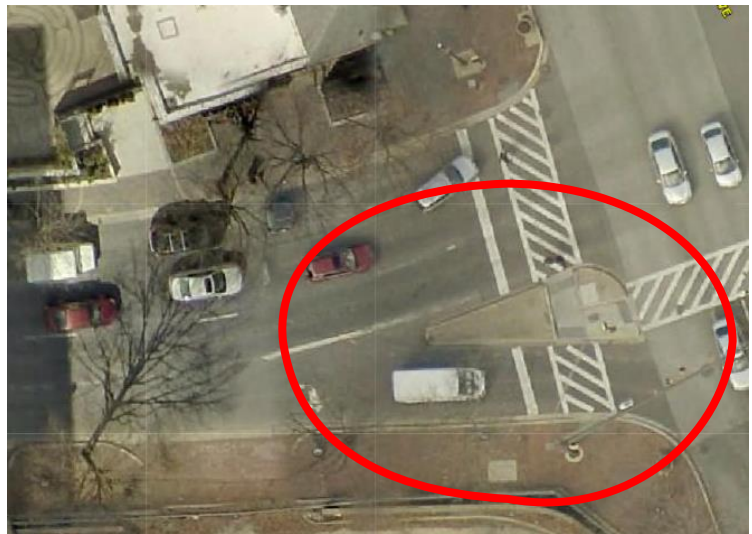


Figure 7: "Free Right" from Montgomery Lane to southbound Wisconsin Avenue to be removed

Alternatively: Reconfigure the East-West Highway (MD 410)/Montgomery Lane/Old Georgetown Road (MD 187)/Woodmont Avenue one-way pair using a “road diet” approach. A road diet is a technique by which an existing roadway is reconfigured to accommodate bicycle facilities, wider sidewalks, etc. by repurposing a travel lane. The future configuration should include two travel lanes, an on-street parking lane and a bike lane. Consideration should be given to the provision of a two-way bike lane.” (Bethesda Downtown Plan, page 36)



Figure 8: Two-Stage Queue Box

The Bicycle Master Plan recommends two-way separated bike lanes on the south side of Montgomery Lane from Woodmont Avenue to Wisconsin Avenue and two-way separated bike lanes on the south side of Montgomery Avenue from Wisconsin Avenue to East-West Highway.

This project is in conformance with the “alternative” approach in the Bethesda Downtown Plan and with the Bicycle Master Plan by repurposing an existing travel lane as a two-way separated bike lane.

Environmental Guidelines

The project is entirely within the existing public right-of-way. The project is 0.52 acres or 22,651.2 square feet. Under Section 22A-4 of the Forest Conservation Law, project disturbing less than 40,000 square feet are not subject to the law. Therefore, this project is exempt from submitting a Forest Conservation Plan and/or an exemption. The project received approval for its stormwater concept in March 2019.

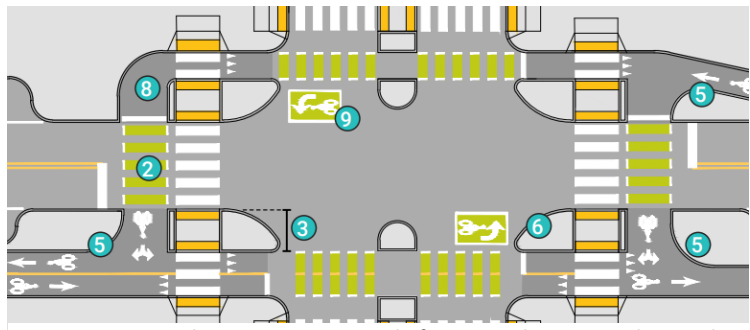


Figure 9: Protected Intersection Example from Bicycle Master Plan Facility Design Toolkit

RECOMMENDATIONS

1. **Construct protected intersections as recommended in the Bicycle Master Plan at all intersections.**

As mentioned previously, the Bicycle Master Plan recommends protected intersections at any location where separated bike lanes “cross major highways, arterial roads, business district streets or other high-volume streets.” As all streets that intersect this project fall into one of

these street types, the project should be modified to provide protected intersections at each intersection.

Protected intersections are a feature of separated bike lanes, not an add-on, that extend the low-stress bicycling experience through the intersection by physically separating bicyclists and motor vehicles, making it easier for all road users to see each other, and prioritizing bicyclist and pedestrian right-of-way. Without protected intersections, separated bike lanes are incomplete.

The original design for this project included protected intersections, but those features were removed over concerns about heavy vehicle turning movements and the small size of the curb islands that would be required. Staff recommends these protected intersection features be reinstated in the design.

While staff strongly recommends protected intersections, if MCDOT finds that protected intersections are not feasible, these treatments should be constructed:

- a. **At the western leg of the intersection of Montgomery Lane/Avenue with East Lane, Wisconsin Avenue, Waverly Street, and Pearl Street, shift the pedestrian crossing west to provide forward queuing space for bicyclists.**

Rather than queuing behind the pedestrian crosswalk, the bicyclist stop bar should be in front of it, as shown with a red circle in Figure 10. This change improves visibility for all road users by moving bicyclists further ahead of motor vehicles and creates right angle pedestrian crossings at these locations.

Forward queuing space gives bicyclists a head start on motor vehicles when traffic signals turn green and – depending on the distance between the motor vehicle stop bar and the bicyclist stop bar – may make bicycling more safe by allowing bicyclists to pass through the intersection before turning vehicles enter it.

- b. **Provide two-stage turn queue boxes at all intersections where they are currently not designed.**

At the intersections of East Lane, Wisconsin Ave and Waverly Street, it is unclear how bicyclists are supposed to exit the bikeway and travel north. Two-stage turn queue boxes are a type of treatment that can facilitate this movement and should be installed at these locations.

2. **At all locations where floating transit island are provided (East Lane, Pearl Street), consider installing:**

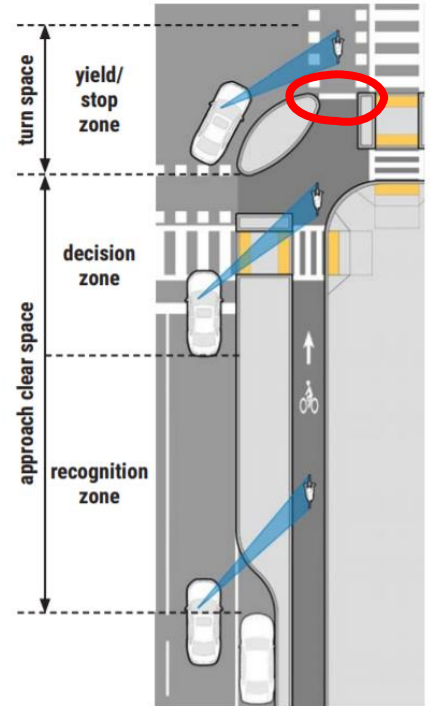


Figure 10: Forward Bicycle Queuing Visibility Benefits from MassDOT Separated Bike Lane Planning & Design Guide

- a. **Raised pedestrian crossings between the floating transit island and the sidewalk to allow transit users to cross the separated bike lanes at a continuous elevation and encourage bicyclists to slow down and yield to transit users crossing the bikeway.**

A raised bikeway, where bicyclists ramp up to sidewalk-level, reinforces that bicyclists are passing through pedestrian space and must yield.

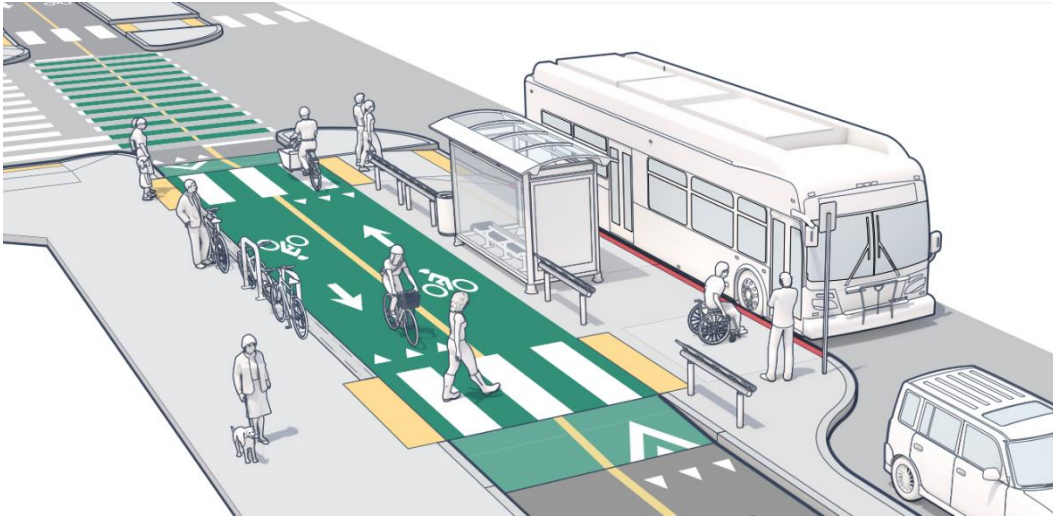


Figure 11: Floating bus stop with raised pedestrian crossings from AC Transit Multimodal Corridor Guidelines

- b. **Tactile directional indicators that inform pedestrians where the edge of the sidewalk is located and direct them to the preferred crossing location.**

While the curb between the sidewalk and the bikeway provides a detectable edge that helps those with low or no vision navigate safely and remain on the sidewalk, raising the bikeway along floating bus stops removes this detectable edge. Half domes are a common tactile treatment on ramps in the United States to warn those with low or no vision that they are approaching a decision point or conflict; they do not provide guidance as to the safe direction of travel. To provide more directional information to those with low or no vision, jurisdictions in Japan, Australia, and parts of Europe install tactile directional indicators.

Installing tactile directional indicators along the flush sidewalk edge (Figure 12) allows those with low or no vision to follow the direction of the tactile indicators with either a cane, their feet or other means to access the designated crossings.

Additionally, tactile directional indicators are often installed perpendicular to a designated bus stop or crossing to direct people to the designated crossing, like the example in Figure 13.



Figure 12: Tactile Directional Indicators from AC Transit Multimodal Corridor Guidelines (Delft, Netherlands)

- c. **Lean rails along the back of the floating bus stops to define the space and prevent conflict between bicyclists and transit users.**

Lean rails are shown in Figure 11 along the back of the bus stop. They channel transit users to designated bikeway crossings while also providing those waiting for the bus a place to lean against.

- d. **Pavement markings that indicate bicyclists should yield to pedestrians.**

3. **Continue coordinating with the Commission on People with Disabilities on floating bus stop design.**

While floating bus stops eliminate conflicts between bicyclists and buses, as well as improve transit operations by allowing buses to stop in the travel lane, they create new conflict points between bicyclists and transit users who must cross the bikeway to get to the transit stop. MCDOT has been working closely with members of the community, particularly the Commission on People with Disabilities, to construct floating bus stops as part of several projects in the County in a way that prioritizes transit users and promotes bicyclist yielding, mitigating the conflicts. The Commission on People with Disabilities continues to have concerns with floating bus stops and staff strongly supports continued coordination around the design of these bus stops.



Figure 13: Perpendicular Tactile Directional Indicators

4. **Consider the use of right-turn-on-red restrictions at all traffic signals along the bikeway.**

Two-way separated bike lanes are often preferable to two one-way separated bike lanes because they require less space, but they create a situation where motorists do not expect bicyclists traveling in the opposite direction of traffic. To mitigate this conflict, right-turn-on-red restrictions should be applied at East Lane, Waverly Street, and Pearl Street.

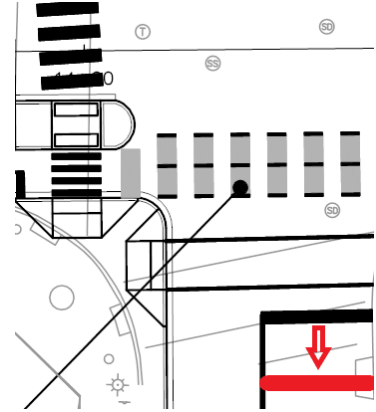


Figure 14: Recessed Stop Bar on East Lane

It may also be helpful to reinforce the right-turn-on-red restriction by moving the vehicular stop bar on intersecting streets further back, as shown at East Lane in red in Figure 14. Recessing the stop bar would likely have the additional benefit of improving the ability for larger vehicles to safely navigate the protected intersection treatments proposed in Recommendation #1 at these locations by allowing a wider effective turning radius, as shown in Figure 15.

5. **Provide signs stating that southbound bicyclists at intersecting streets can turn right onto the separated bike lanes on Montgomery Lane.**

Currently, there are right-turn prohibitions on southbound streets that intersect Montgomery Lane and Montgomery Avenue. This is appropriate as these streets are currently one-way streets in the eastbound direction for motor vehicles and bicycles. When the bikeway is constructed, bicycle travel will become two-way along these roads, so the intersections should be signed appropriately to indicate that right turns for bicyclists into the bikeway are permissible.

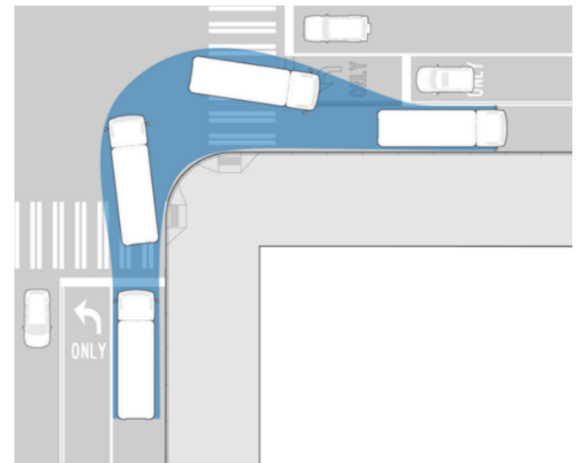


Figure 15: Heavy Vehicle Accommodated with Recessed Stop Bar from Seattle Right-of-Way Improvement Manual

6. **Improve the ability of eastbound bicyclists to continue traveling past Pearl Street by altering the proposed curb extension at the southeast corner of Montgomery Avenue and Pearl Street.**

While many bicyclists will choose to continue north along Pearl Street and utilize the two-stage queue box as designed, others will want to continue east on Montgomery Avenue toward East-West Highway. This movement needs to be accommodated.

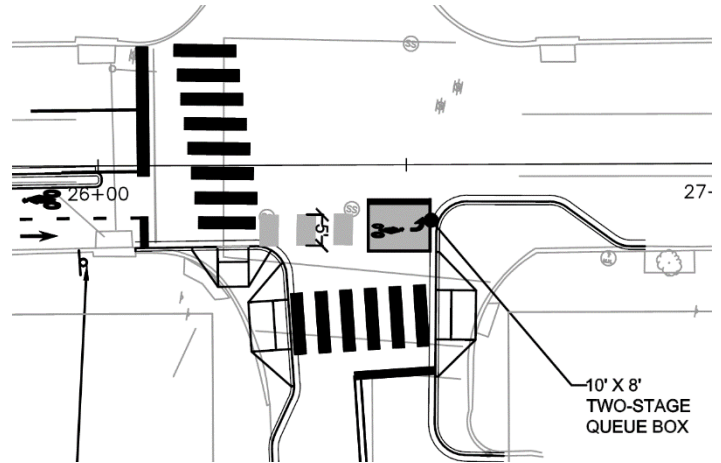


Figure 16: Two-Stage Queue Box at Pearl Street



Figure 17: Transition from Separated Bike Lane to Shared Roadway

One idea is to design a treatment similar to the one in Figure 17 from the Planning Department’s Bicycle Facility Design Toolkit. This treatment allows eastbound bicyclists to transition into a lane shared with traffic *after* passing through the intersection, rather than *in* the intersection as currently designed. Transitioning after the intersection is preferable from a safety standpoint because the bicyclist can establish themselves in the travel lane with no motor vehicles behind them.

7. **Provide the following pedestrian improvements:**
 - a. **At the intersection of East Lane and Montgomery Lane, add a crosswalk on the east legs and install perpendicular curb ramps at the northeast corners.**
 - b. **At 4550 Montgomery Avenue, provide an ADA-compliant pedestrian clear zone across the parking garage driveway.**
 - c. **At the intersection of Pearl Street and Montgomery Avenue, add a crosswalk on the east leg and install curb ramps on the northeast and southeast corners.**
8. **Existing street trees should be protected during construction and any changes to existing curbs, including construction of new curb ramps, should allow for water infiltration to maintain tree health.**

PUBLIC OUTREACH

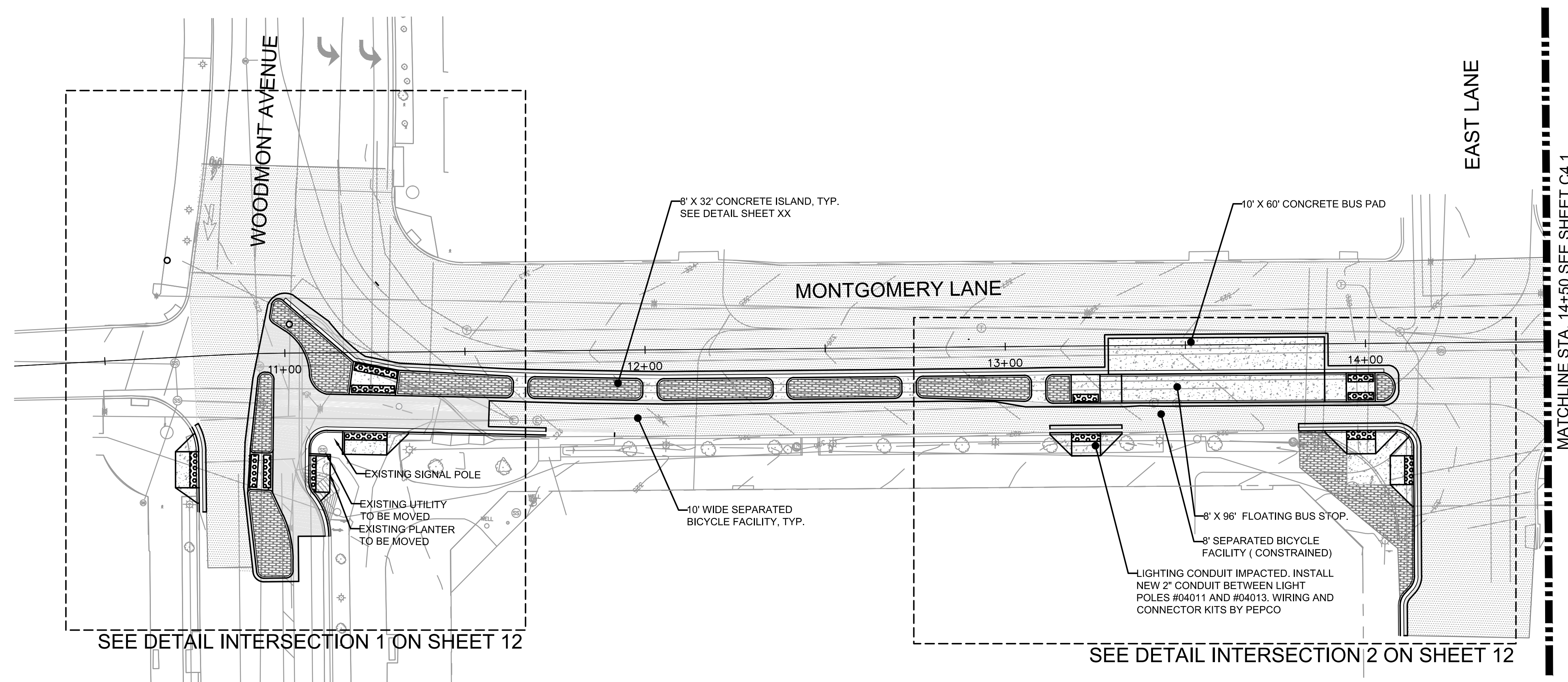
A public meeting was held for this project on October 9, 2018. All public meeting presentation materials are available on MCDOT's website here: <https://www.montgomerycountymd.gov/dot-dte/Resources/Files/Bethesda%20Bikeways%20Public%20Meeting.pdf>.

CONCLUSION

Based on information provided by the Applicant, Staff recommends approval of the Mandatory Referral with comments listed at the front of this report to be transmitted to the Montgomery County Department of Transportation.

ATTACHMENT

- a. Project plan documents.



- LEGEND
- PROPOSED CURB AND GUTTER
 - PROPOSED CONCRETE
 - PROPOSED BRICK PAVERS
 - PROPOSED DETECTABLE WARNING SURFACE
 - PROPOSED MILL AND OVERLAY
 - PROPOSED FULL DEPTH ASPHALT PAVEMENT
 - EXISTING RIGHT OF WAY LINE
 - PROPOSED SAW CUT



TOOLE
DESIGN

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NO.	REVISION	DATE	BY

MONTGOMERY COUNTY
DEPARTMENT OF TRANSPORTATION
ROCKVILLE, MARYLAND

RECOMMENDED FOR APPROVAL

Chief, Transportation Planning and Design Section _____ Date _____
APPROVED

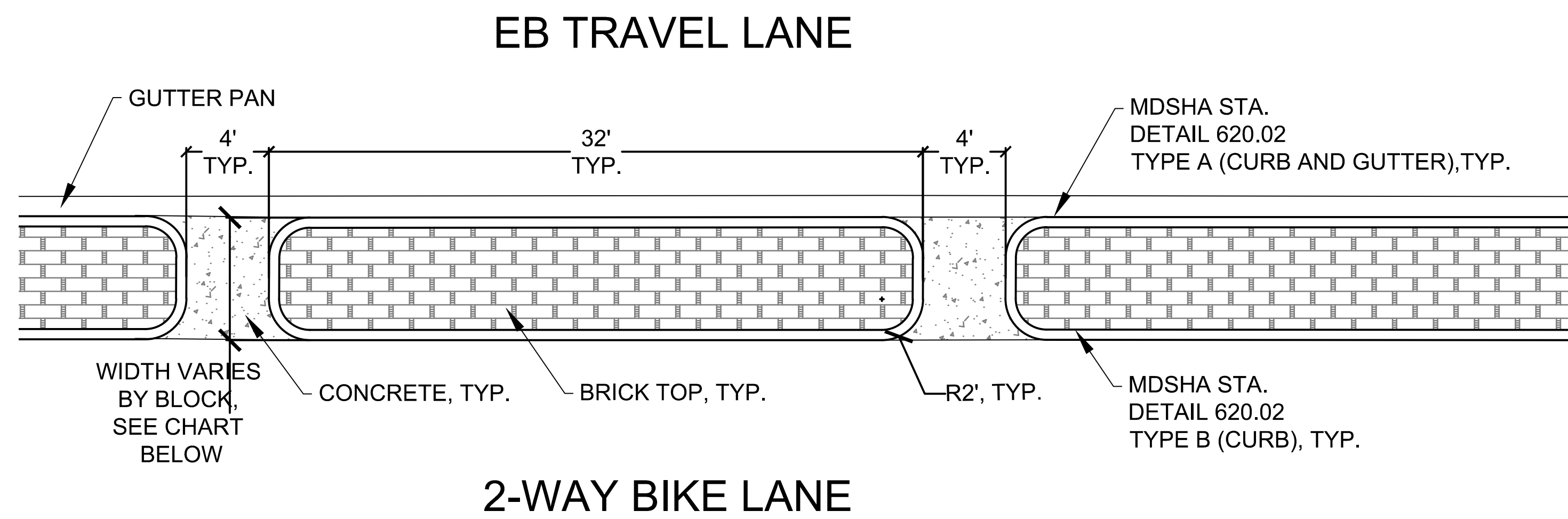
Chief, Division of Transportation Engineering _____ Date _____

DESIGNED BY LB DRAWN BY SE CHECKED BY JAC

MONTGOMERY COUNTY
DEPARTMENT OF TRANSPORTATION
DIVISION OF TRANSPORTATION ENGINEERING
MONTGOMERY LANE / MONTGOMERY AVE
TWO-WAY SEPARATED BIKE LANES
WOODMONT AVE TO PEARL STREET
BETHESDA, MD
ROADWAY PLANS

SCALE _____ DATE 02/01/19

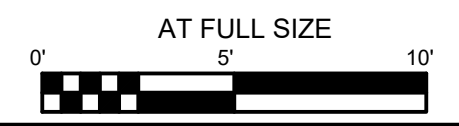
DWG. **C4.0** SHEET NO. 07 OF 26



BLOCK	TYPICAL CONCRETE ISLAND WIDTH
WOODMONT AVE TO EAST LN	6'
EAST LN TO WISCONSIN AVE	4.5'
WISCONSIN AVE TO WAVERLY ST	7.4'
WAVERLY ST TO PEARL ST	2.3'

CONCRETE ISLAND DETAIL

- LEGEND**
- PROPOSED CURB AND GUTTER
 - PROPOSED CONCRETE
 - PROPOSED BRICK PAVERS
 - PROPOSED DETECTABLE WARNING SURFACE
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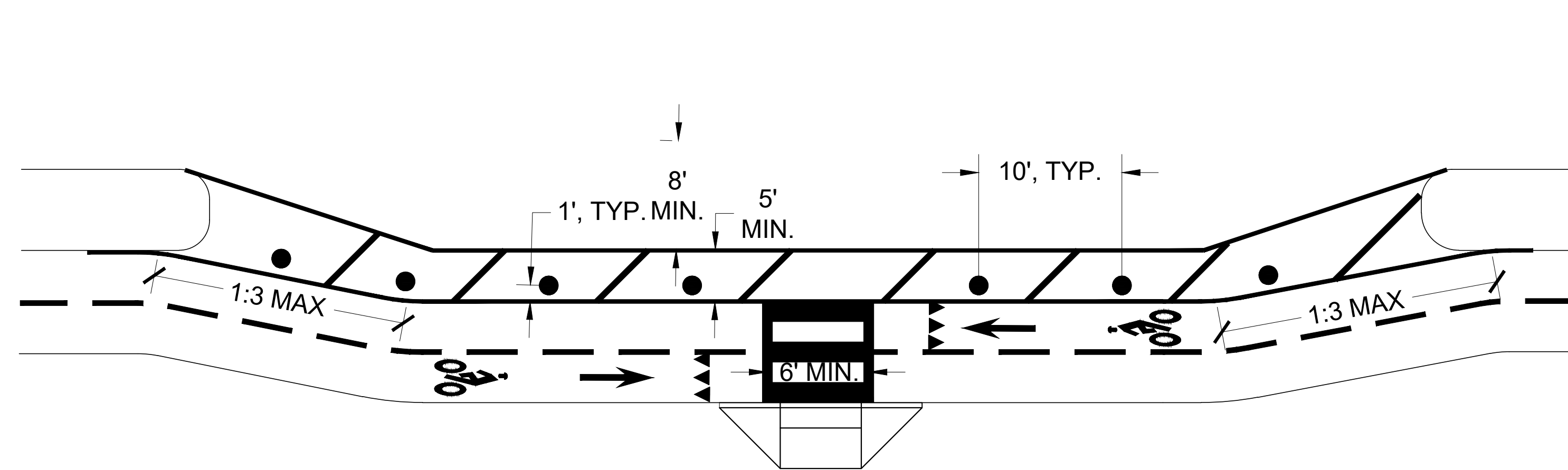
Chief, Division of Transportation Engineering _____ Date _____

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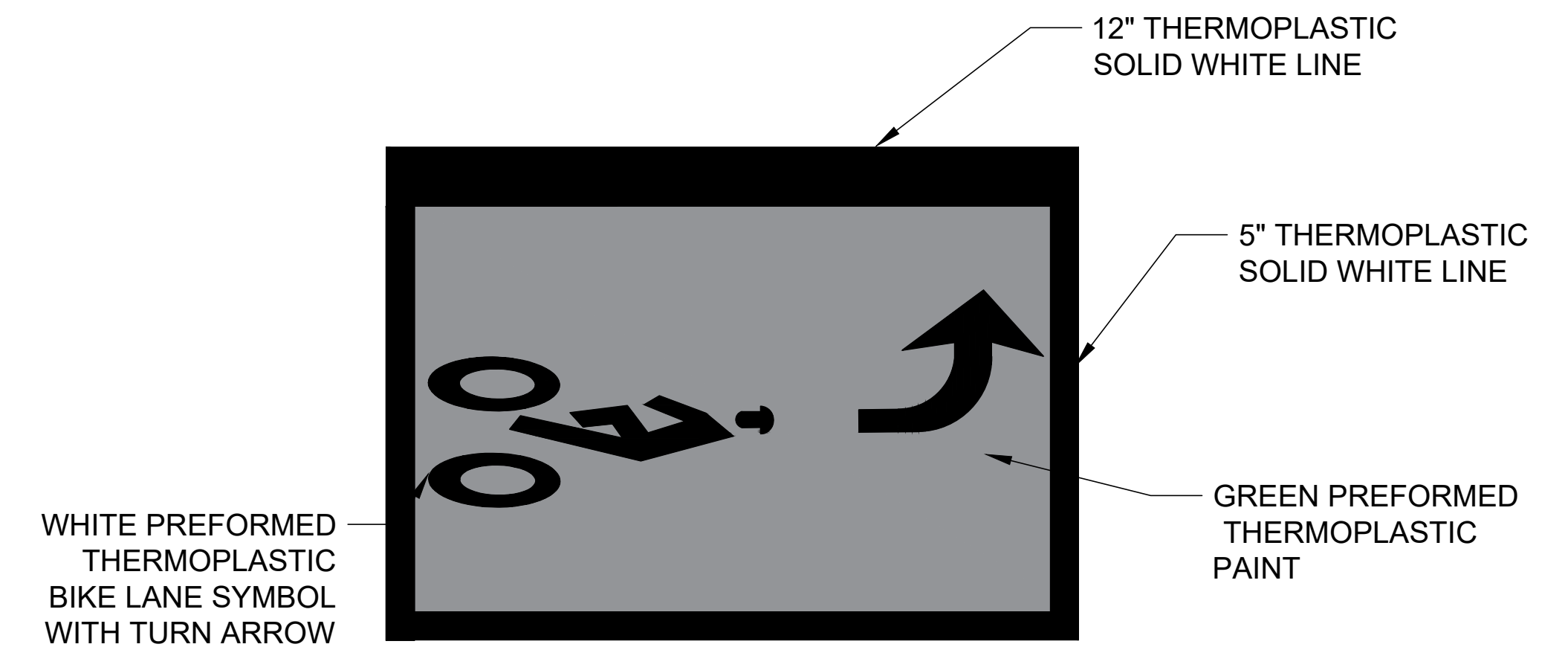
MONTGOMERY COUNTY
DEPARTMENT OF TRANSPORTATION
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MONTGOMERY LANE / MONTGOMERY AVE
TWO-WAY SEPARATED BIKE LANES
WOODMONT AVE TO PEARL STREET
BETHESDA, MD
DETAIL SHEET

SCALE _____ DATE 02/01/19

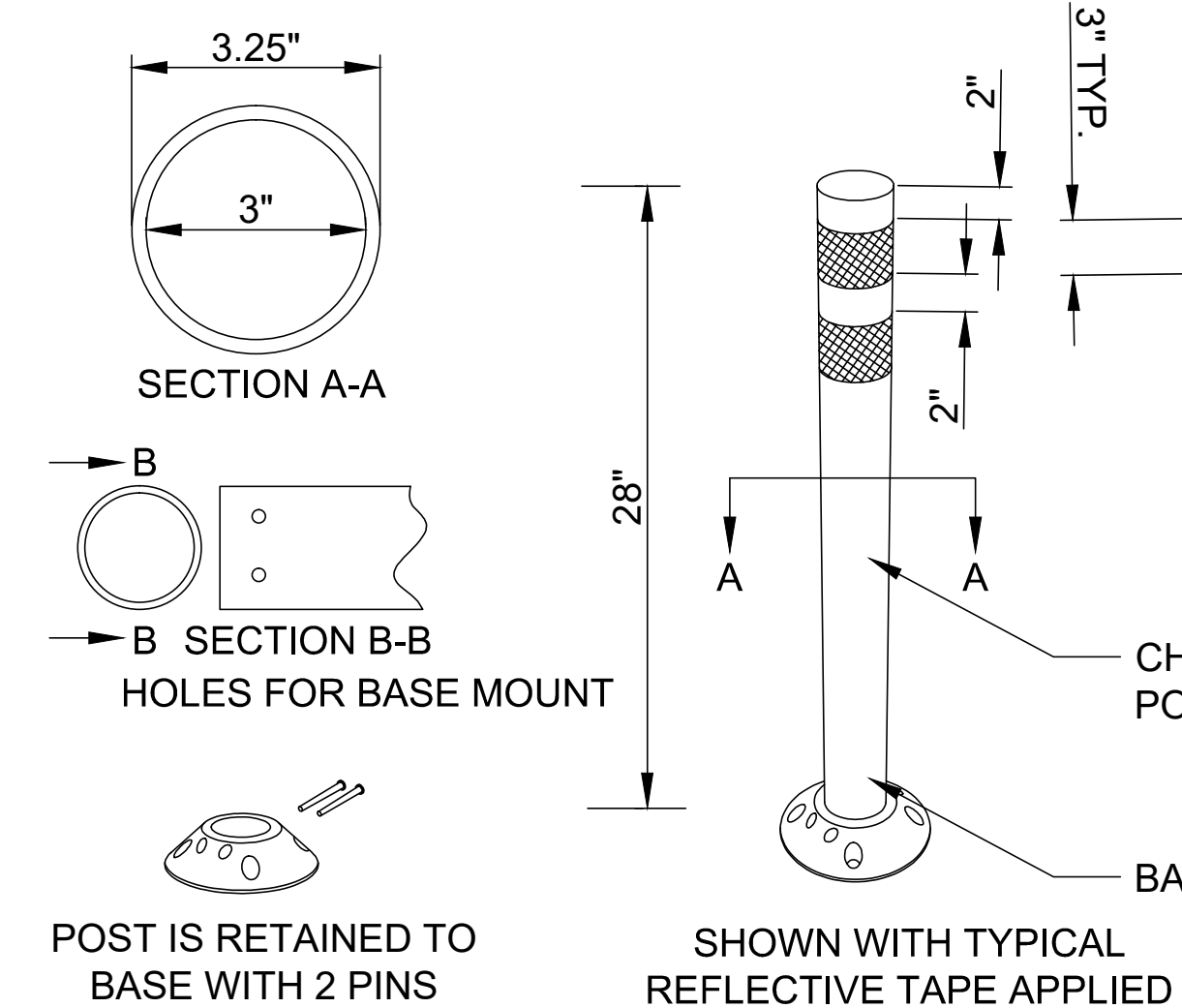
DWG. **C4.4** SHEET NO. ____ OF 26



ACCESSIBLE ON-STREET MOTOR VEHICLE PARKING (MID-BLOCK)
N.T.S.

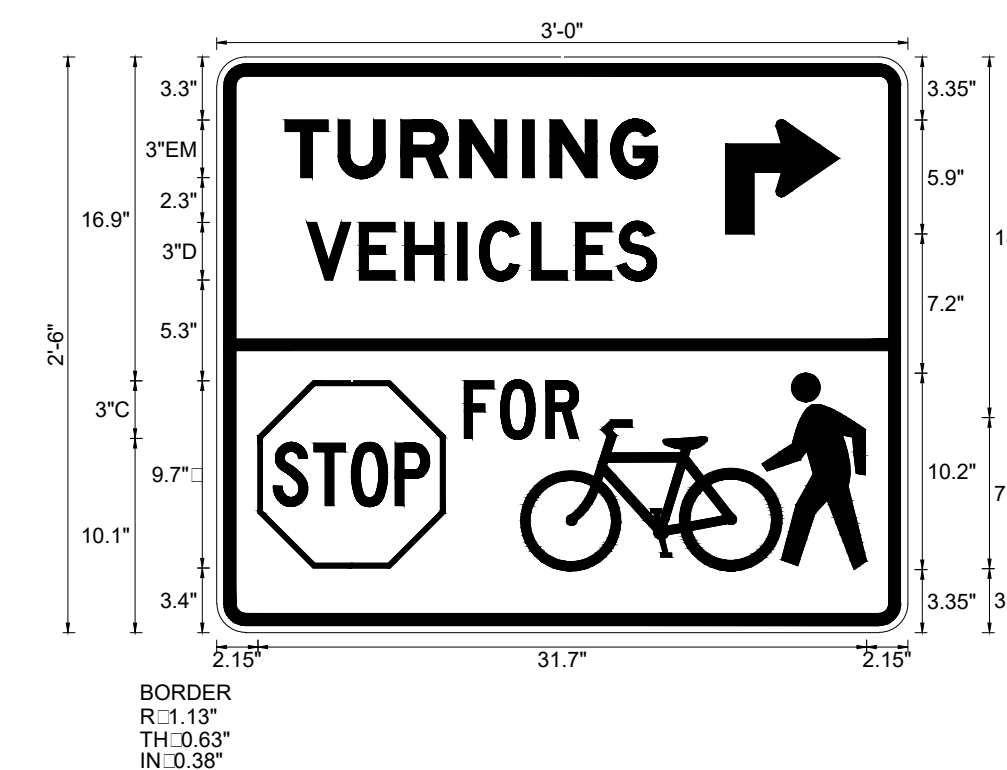


TWO-STAGE QUEUE BOX
N.T.S.



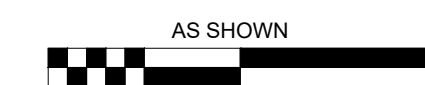
- NOTES:
1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
 2. DIMENSIONS, MATERIALS, AND ATTACHMENTS MAY VARY BETWEEN MANUFACTURERS.
 3. COLOR OF POST SHALL MATCH COLOR OF APPLICABLE EDGE LINE.
 4. SUGGESTED MANUFACTURERS INCLUDE: FILTRONA EXTRUSIONS, SAFE-HIT, CARSONITE COMPOSITES, QWICK KURB, BENT MANUFACTURING, & IMPACT RECOVERY SYSTEMS.

28" WHITE FLEXIBLE CHANNELIZER POST DETAIL
N.T.S.



SIGN NUMBER	R10-15R MOD
WIDTH x HGHT.	3'-0" x 2'-6"
BORDER WIDTH	0.63"
CORNER RADIUS	1.13"
MOUNTING	Ground
BACKGROUND	TYPE: Reflective COLOR: White/Yellow
LEGEND/BORDER	TYPE: Reflective COLOR: Black/Black

R10-15R MOD - "TURNING VEHICLES, STOP FOR BIKES AND PEDS" SIGN
N.T.S.



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Chief, Transportation Planning and Design Section _____ Date _____
APPROVED

Chief, Division of Transportation Engineering _____ Date _____

DESIGNED BY LB DRAWN BY SE CHECKED BY JAC

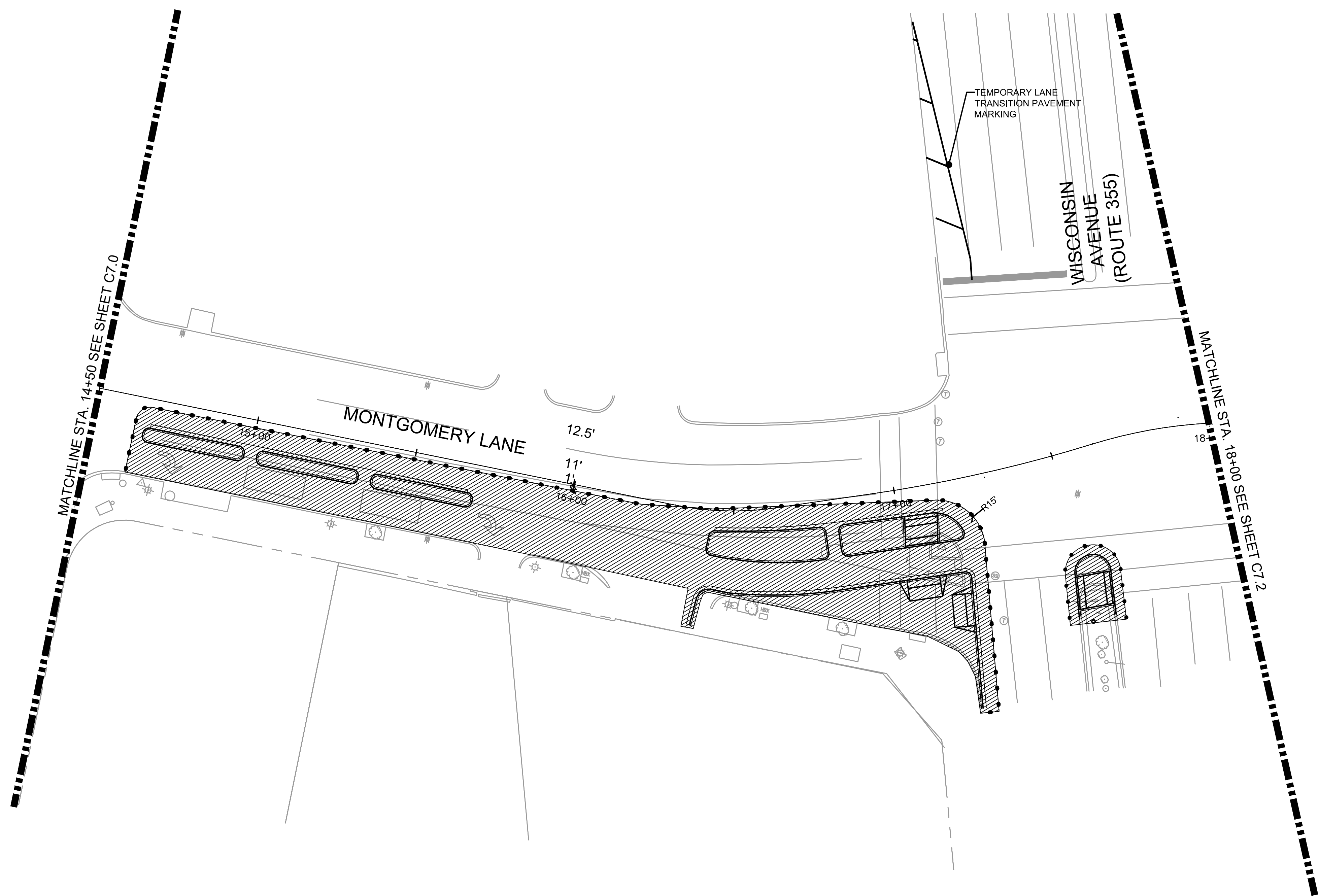
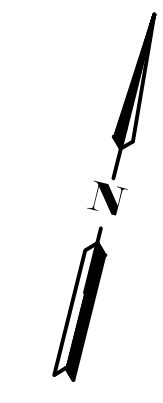
MONTGOMERY COUNTY
DEPARTMENT OF TRANSPORTATION
DIVISION OF TRANSPORTATION ENGINEERING

MONTGOMERY LANE / MONTGOMERY AVE
TWO-WAY SEPARATED BIKE LANES
WOODMONT AVE TO PEARL STREET
BETHESDA, MD

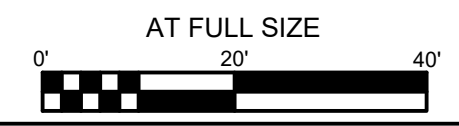
SIGNING AND
MARKING DETAILS

SCALE _____ DATE 02/01/19

DWG. C6.2 SHEET NO. 18 OF 26



- LEGEND
- CHANNELIZING DEVICES
 - ▨ WORK ZONE
 - ▩ COMPLETED WORK



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OF TRANSPORTATION
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GAITHERSBURG, MARYLAND
CONTACT: PATRICIA SHEPHERD, AICP

CIVIL ENGINEER:
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8484 GEORGIA AVENUE,
SUITE 800
SILVER SPRING, MARYLAND 20910
TEL: (301) 927-1900
FAX: (301) 927-2800
CONTACT: LAURA BARNA, P.E.

NO.	REVISION	DATE	BY

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ROCKVILLE, MARYLAND

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Chief, Transportation Planning and Design Section _____ Date _____
APPROVED

Chief, Division of Transportation Engineering _____ Date _____

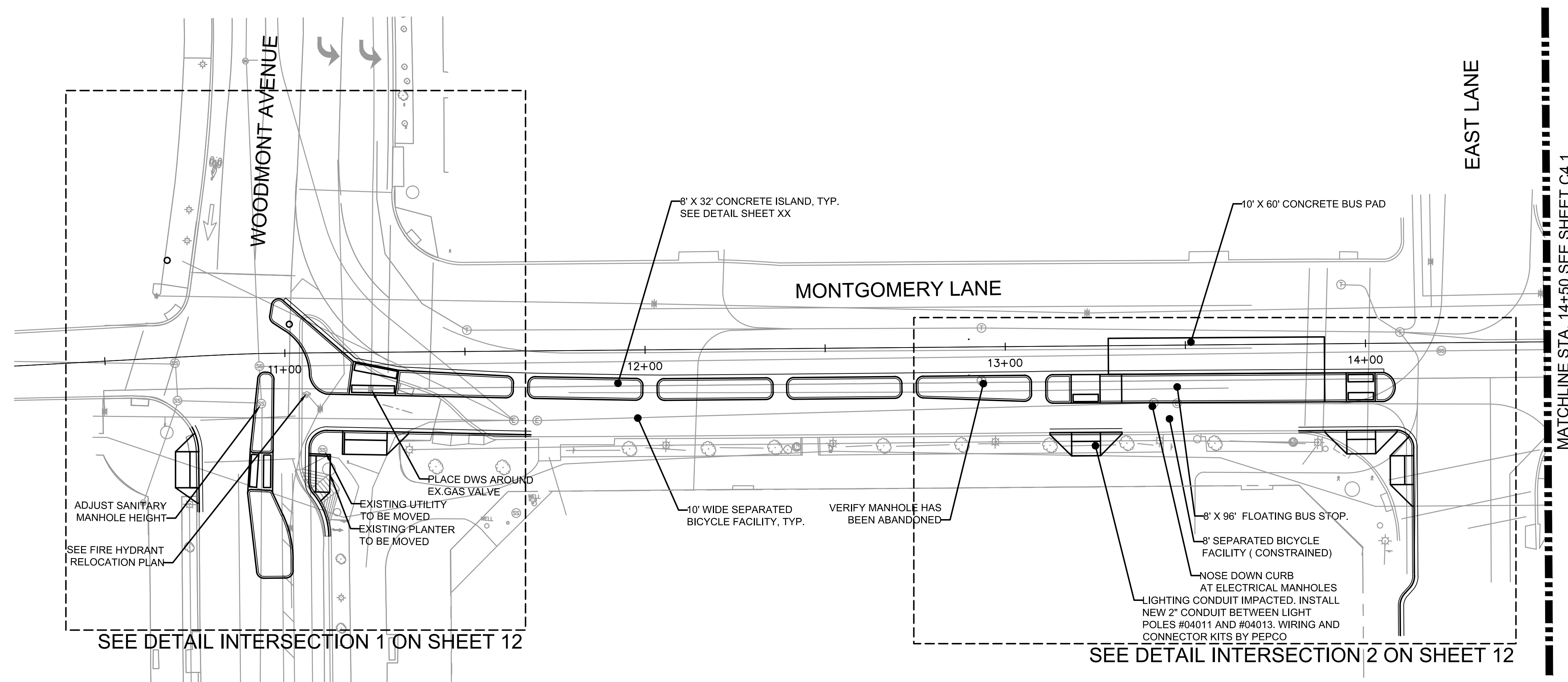
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MONTGOMERY LANE / MONTGOMERY AVE
TWO-WAY SEPARATED BIKE LANES
WOODMONT AVE TO PEARL STREET
BETHESDA, MD
MOT PLANS

SCALE _____ DATE 02/01/19

DWG. C7.1 SHEET NO. 24 OF 26



- LEGEND
- PROPOSED CURB AND GUTTER
 - EXISTING RIGHT OF WAY LINE
 - PROPOSED SAW CUT



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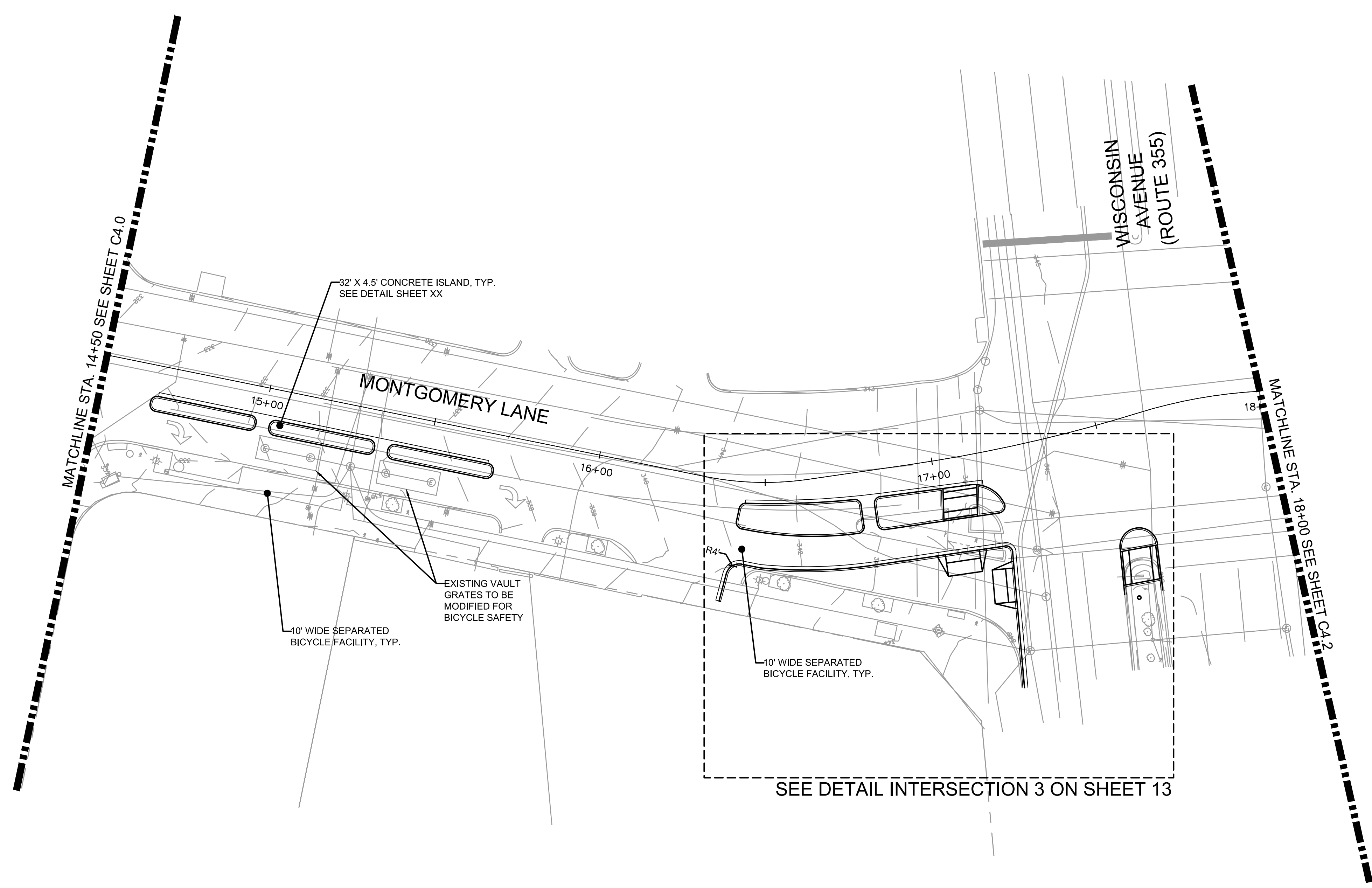
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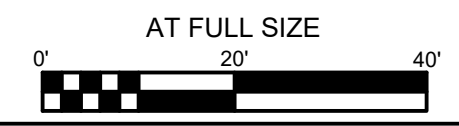
MONTGOMERY LANE / MONTGOMERY AVE
TWO-WAY SEPARATED BIKE LANES
WOODMONT AVE TO PEARL STREET
BETHESDA, MD
UTILITY MAP

SCALE _____ DATE 02/01/19

DWG. **C4.0** SHEET NO. 05 OF 26



- LEGEND
- PROPOSED CURB AND GUTTER
 - EXISTING RIGHT OF WAY LINE
 - PROPOSED SAW CUT



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APPROVED

Chief, Division of Transportation Engineering _____ Date _____

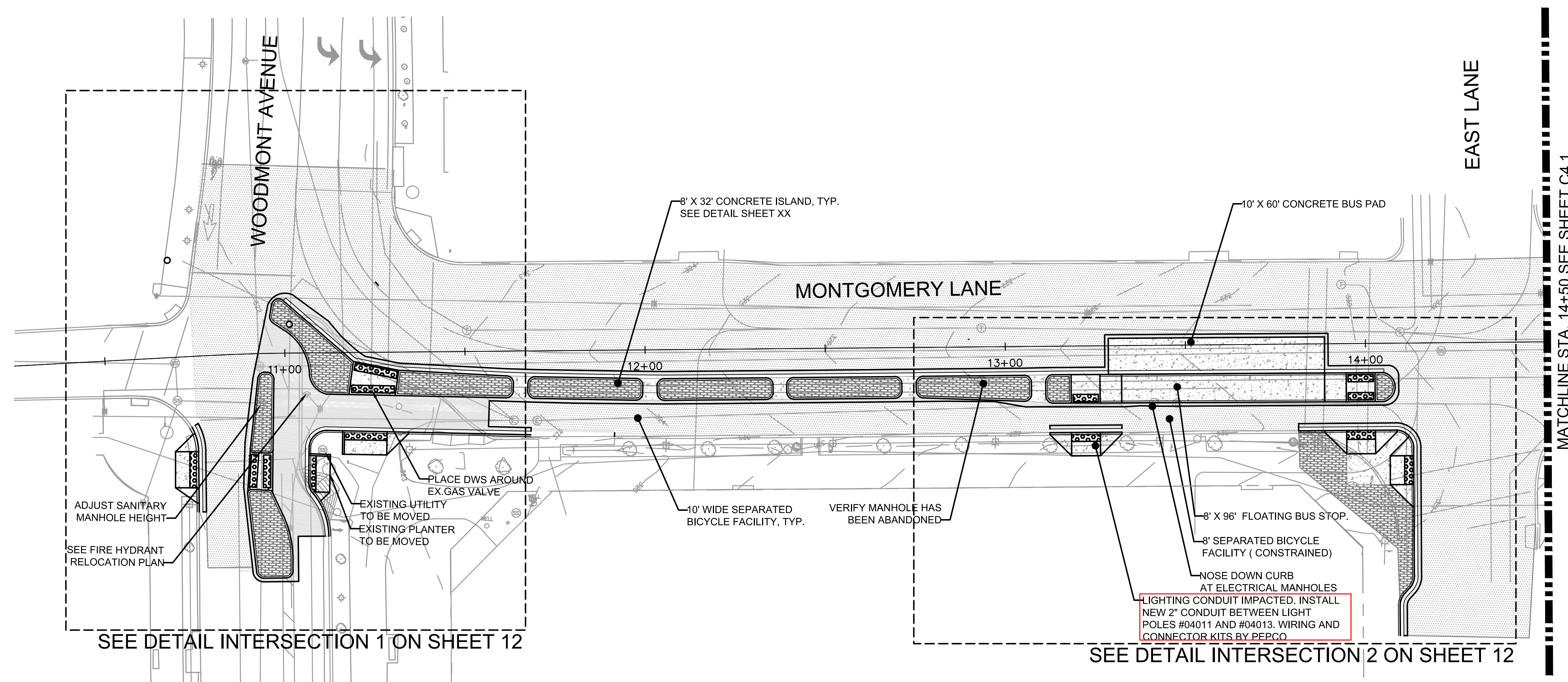
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MONTGOMERY LANE / MONTGOMERY AVE
TWO-WAY SEPARATED BIKE LANES
WOODMONT AVE TO PEARL STREET
BETHESDA, MD
UTILITY MAP

SCALE _____ DATE 02/01/19

DWG. **C4.1** SHEET NO. 06 OF 26



SEE DETAIL INTERSECTION 1 ON SHEET 12

SEE DETAIL INTERSECTION 2 ON SHEET 12

MATCHLINE STA. 14+50 SEE SHEET C4.1

- LEGEND**
- PROPOSED CURB AND GUTTER
 - PROPOSED CONCRETE
 - PROPOSED BRICK PAVERS
 - PROPOSED DETECTABLE WARNING SURFACE
 - PROPOSED MILL AND OVERLAY
 - PROPOSED FULL DEPTH ASPHALT PAVEMENT
 - EXISTING RIGHT OF WAY LINE
 - PROPOSED SAW CUT



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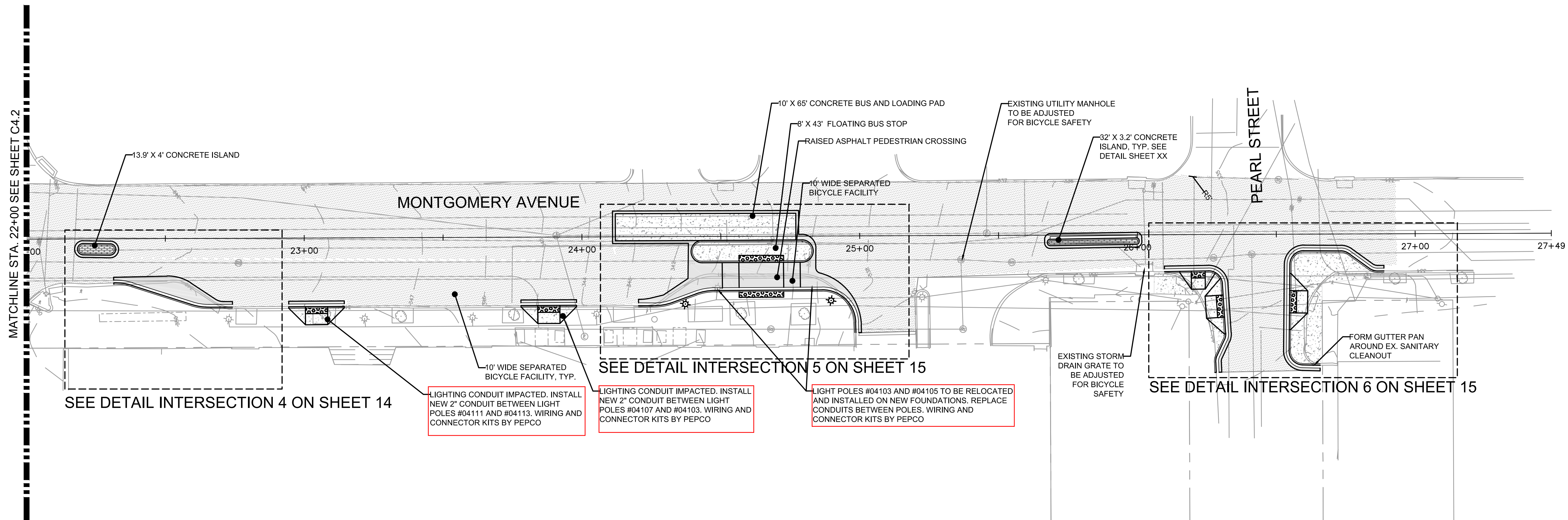
Chief, Division of Transportation Engineering _____ Date _____

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 TWO-WAY SEPARATED BIKE LANES
 WOODMONT AVE TO PEARL STREET
 BETHESDA, MD
 ROADWAY PLANS

SCALE _____ DATE 02/01/19

DWG. C4.0 SHEET NO. 05 OF 26



MATCHLINE STA. 22+00 SEE SHEET C4.2

SEE DETAIL INTERSECTION 4 ON SHEET 14

LIGHTING CONDUIT IMPACTED. INSTALL NEW 2" CONDUIT BETWEEN LIGHT POLES #04111 AND #04113. WIRING AND CONNECTOR KITS BY PEPCO

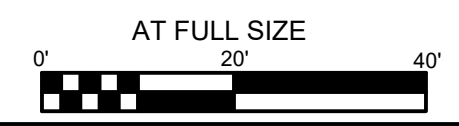
LIGHTING CONDUIT IMPACTED. INSTALL NEW 2" CONDUIT BETWEEN LIGHT POLES #04107 AND #04103. WIRING AND CONNECTOR KITS BY PEPCO

LIGHT POLES #04103 AND #04105 TO BE RELOCATED AND INSTALLED ON NEW FOUNDATIONS. REPLACE CONDUITS BETWEEN POLES. WIRING AND CONNECTOR KITS BY PEPCO

SEE DETAIL INTERSECTION 5 ON SHEET 15

SEE DETAIL INTERSECTION 6 ON SHEET 15

- LEGEND**
- PROPOSED CURB AND GUTTER
 - PROPOSED CONCRETE
 - PROPOSED BRICK PAVERS
 - PROPOSED DETECTABLE WARNING SURFACE
 - PROPOSED MILL AND OVERLAY
 - PROPOSED FULL DEPTH ASPHALT PAVEMENT
 - EXISTING RIGHT OF WAY LINE
 - PROPOSED SAW CUT



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Chief, Division of Transportation Engineering _____ Date _____

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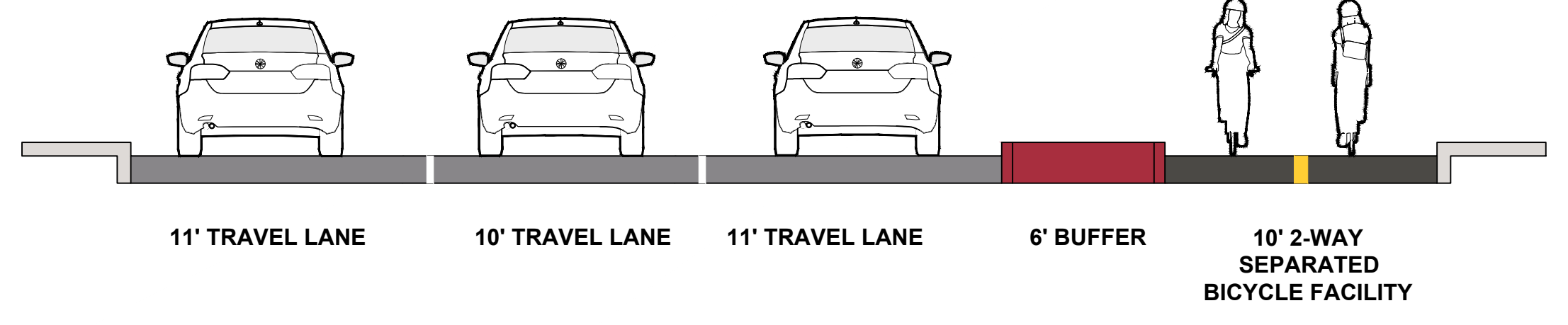
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SCALE _____ DATE 02/01/19

DWG. C4.3 SHEET NO. 08 OF 26



MONTGOMERY LANE TYPICAL SECTION

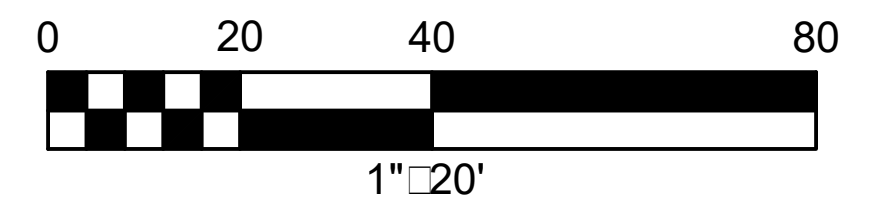


LEGEND

- ROADWAY/ ON-ROAD BIKE LANE
- OFF-ROAD BIKE LANE
- RAISED MEDIAN
- DETECTABLE WARNING
- LANDSCAPED AREA
- SIGNALIZED INTERSECTION
- DIRECTIONAL ARROW

TWO-WAY SEPARATED BIKE LANES - Montgomery Avenue/Montgomery Lane

NOT FOR CONSTRUCTION





MONTGOMERY LN & WOODMONT AVE - Bird's Eye View Looking Northeast

BETHESDA, MD | 2018.10.09

PRELIMINARY CONCEPT – NOT FOR CONSTRUCTION



MONTGOMERY LN & WOODMONT AVE - Perspective View Looking North

BETHESDA, MD | 2018.10.09

PRELIMINARY CONCEPT – NOT FOR CONSTRUCTION



MONTGOMERY LN & WOODMONT AVE - Perspective View Looking West

BETHESDA, MD | 2018.10.09

PRELIMINARY CONCEPT – NOT FOR CONSTRUCTION