# Summary of Havre de Grace In-Town Bicycle Design Development Under the MDOT Bikeways Program Grant

The City of Havre de Grace's comprehensive plan envisions a bikeways network consisting of three elements, the "Old town/Downtown Loop", the North Park Loop, and the Old Town/New Town Bikeway as shown in Figure 1. These routes are designated in the comprehensive plan as conceptual with more detailed review needed for design and implementation. This memorandum summarizes efforts to design an on-street bicycle network within the portion of Havre de Grace east of US 40.

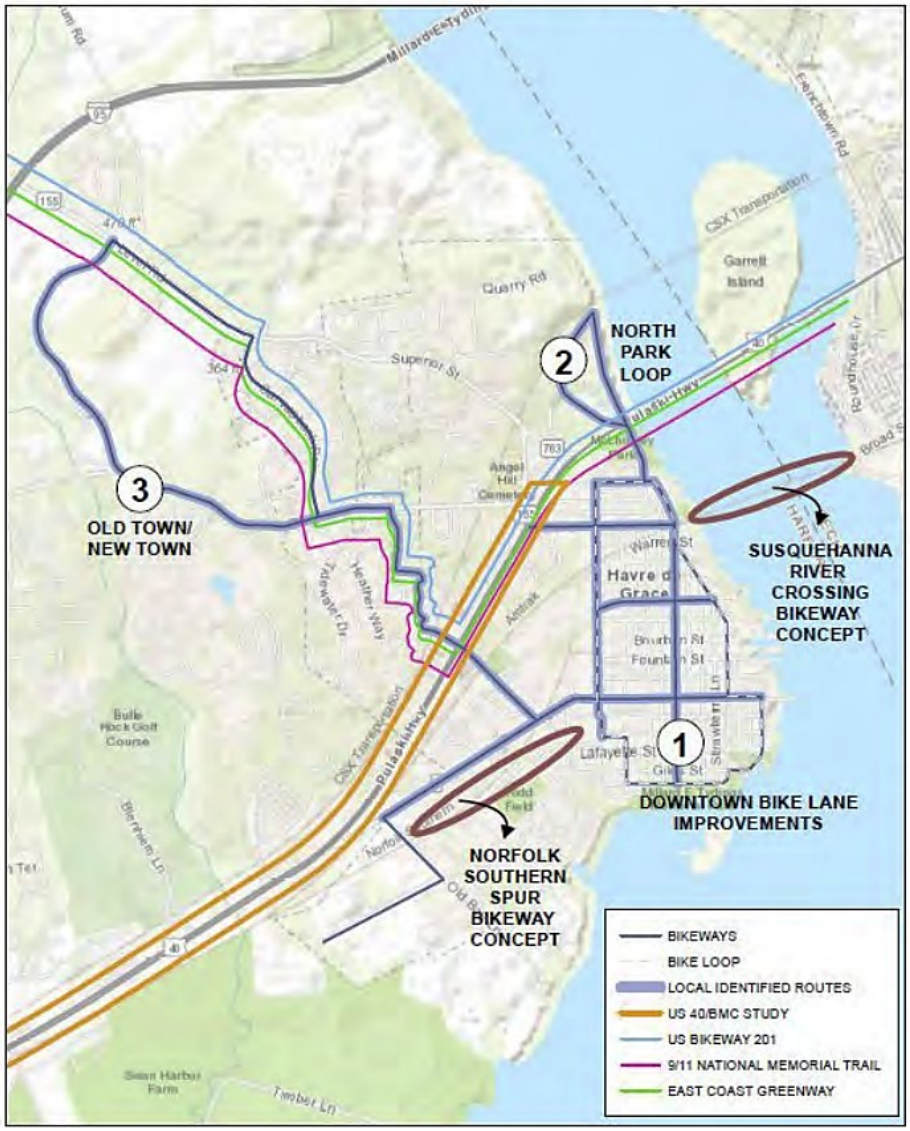



*Figure 1. Bicycle Network as Proposed in the City's 2024 Comprehensive Plan*

To refine the comprehensive plan routes, the City directed that project designs should minimize potentially adverse impact to residents and visitors such as reductions in on-street parking, right of way acquisition, and construction that moves curb lines and affects drainage. Priority was given to three projects:

- a safe bicycle connection from the Bloomsbury/Seneca Avenue communities to downtown using an alignment parallel to the Norfolk Southern industrial spur from the Amtrak corridor to Juniata Street.

- low stress, "straight line" connectivity between key locations in town (for example, parks/trails at the north end of Havre de Grace to parks/trails at the south; and from the Havre de Grace High School football stadium and the STAR Center to Market Street).

This memorandum summarizes the three project elements which emerged from the City's initial guidance:

- The "low-stress" straight line connectivity was proposed to be designed and installed as a quick-build project: along Juniata Street between and Superior Street and Revolution Street (with traffic calming proposed further south to reach Tydings Park); and along Pennington Avenue between Juniata Street and Union Avenue. Detailed plans were drawn up and vetted with SHA for general consistency with good bicycle design practice, and specifically as to the intersection of Juniata Street at Otsego Street and at Revolution Street. A full plan set for both projects has been provided to the City under separate cover. A specification book to be used for "quick-build" procurement and installation was also prepared and provided for the City.

- An initial investigation for creating a bikeway parallel to the Norfolk Southern industrial spur was determined likely to be too costly and impactful until such time as the industrial spur was formally abandoned. **Appendix #1** summarizes the evaluation of the NS industrial spur. as an alternative, it was proposed that Revolution Street be considered for a "road diet" that would remove the center two-way left turn lane and replace it with one or more bicycle facilities. Even though the concept development was to be funded by the Bikeways grant, SHA District 4 staff indicated that they were not prepared to consider a buffered bike lane consideration and that funds would be better used on City-owned roads. The City determined to place Revolution Street on hold to focus on the potential quick-build projects.

- A general typology of bicycle facilities that could be applied to other City streets along with notes on key issues to be addressed on those streets if the City determined to advance those facilities. **Appendix #2** provides that typology and key issues.

# APPENDIX #1

# NORFOLK SOUTHERN SPUR & REVOLUTION STREET

In 2023 on behalf of Harford County, and the cities of Aberdeen and Havre de Grace, the Baltimore Metropolitan Council developed a concept plan for a 10' asphalt bikeway along US 40 between the Aberdeen MARC Station and Otsego Street in Havre de Grace. Options were considered on the east and west sides of US 40 as well as a combined option on the west side of US 40 between Aberdeen and Lewis Lane in Havre de Grace, where it would transition to the east side through to Otsego Street. This memorandum explores two alternative (or additional) concepts for the segment between Old Post Road and downtown Havre de Grace to connect with the proposed downtown bicycle network.

**Alternative A – Old Post Road/Revolution Street**

Old Post Road, which is known as Revolution Street from Bay Boulevard eastward to downtown, has a 52' right of way which includes a 38' paved travel way from curb to curb. Per SHA files, the road carries approximately 10,000 vehicles per day with an even directional split. Several industrial buildings are on the south side of Old Post Road, although most have access to rear entrances via Old Bay Lane which minimizes truck traffic on Old Post Road. Frequent residential and commercial driveways are present east of Old Bay Lane through Union Avenue. Continuous sidewalk is present on the south side Old Bay Lane through Union Avenue; sidewalks are present on the north side only from Battery Avenue to Union Avenue.

From US 40 at Old Post Road, Alternative A crosses the bridge over Amtrak and then remains on Old Post Road/Revolution Street until Union Avenue where bicyclists enter the grid network of low-volume, low-stress streets. Further evaluation and consultation with SHA and adjacent property owners is necessary to determine the appropriate cross section for Revolution Street, as well as the most appropriate means of achieving separation from traffic.[1] Two potential cross sections are below.

[1] Further analysis of the Revolution Street alternatives was deferred in consultation with SHA staff who raised concerns about the appropriate treatments along Revolution Street with the high volume of residential and commercial driveways. Project efforts were refocused on Juniata Street to demonstrate "proof of concept" for a high-quality bicycle facility in Havre de Grace.

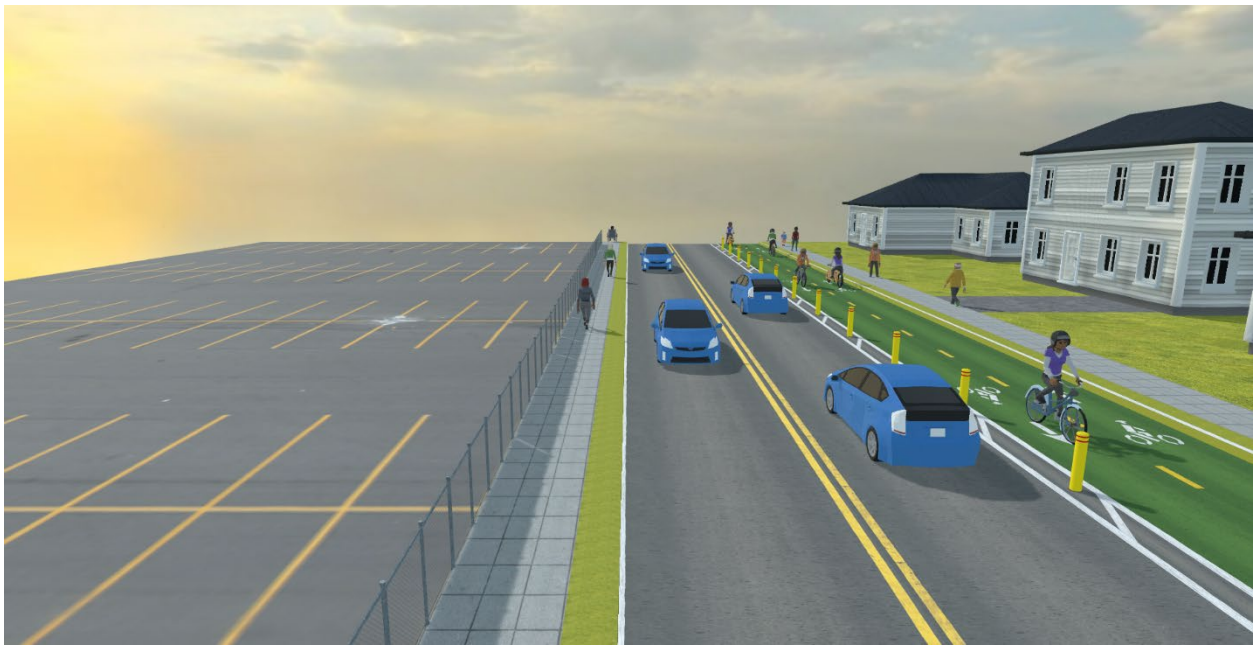


*Figure 1 Revolution Street looking towards downtown from approximately Battery Drive (Two-Way Cycle Track)*

*Figure 2. Revolution Street looking towards downtown from approximately Battery Drive (Bi-Directional Bike Lanes)*

**Alternative B – Norfolk Southern Spur**

From US 40 at Old Post Road, Alternative B would generally follow the alignment of the Norfolk Southern railroad spur into Havre de Grace; however, every effort would be made to avoid any interaction with Norfolk Southern except where the line otherwise crosses a public road at-grade. Norfolk Southern has a very firm hand in approving or overseeing anything in or affecting its right of way. Additional information can be found in Norfolk Southern's Public Projects Manual.

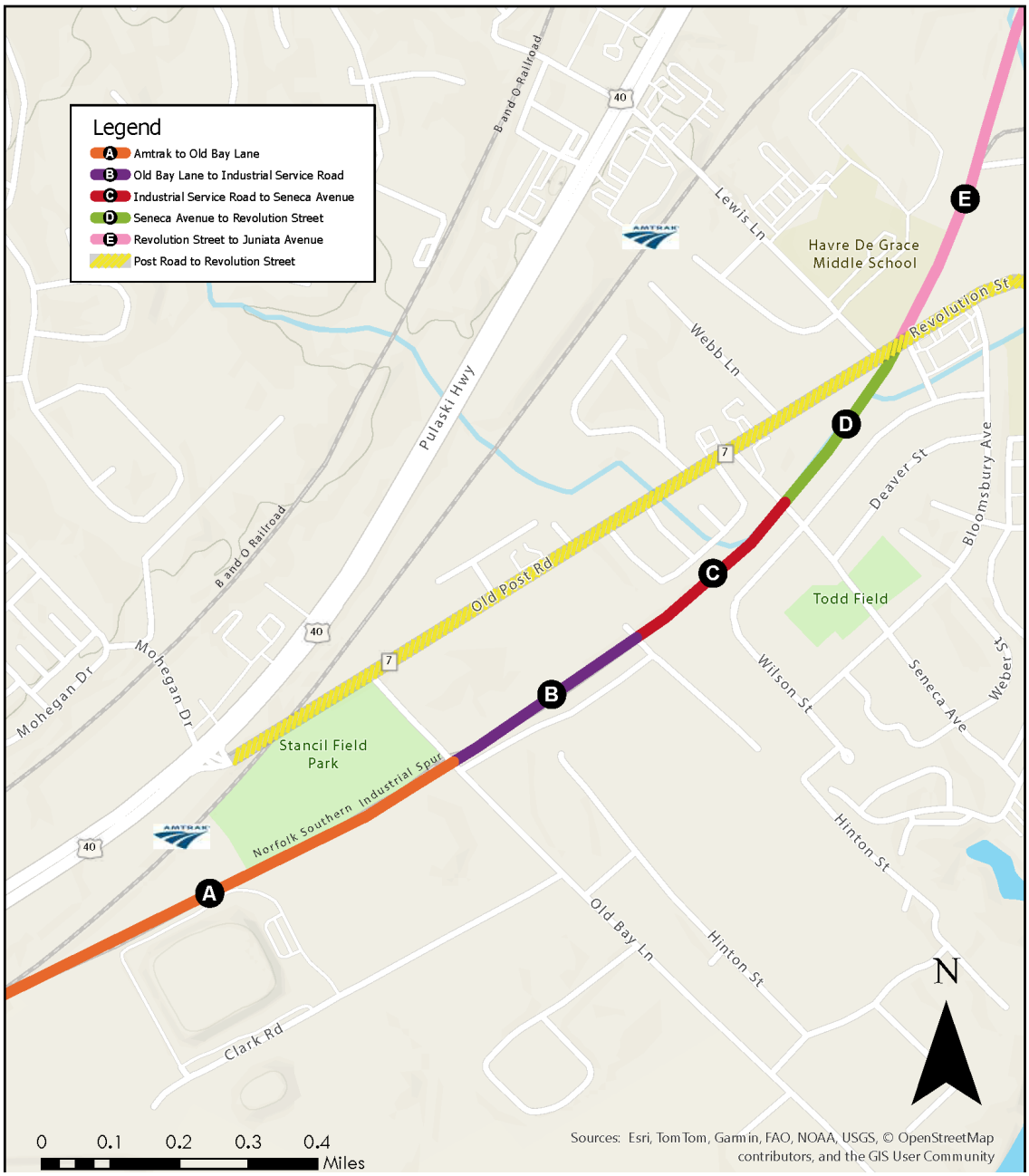



*Figure 3. Segments of Potential Bikeway Along Norfolk Southern Rail Spur*

**Segment A: US 40/Amtrak to Old Bay Lane**

From US 40 at Old Post Road, Alternative B crosses the bridge over Amtrak and then turns onto Old Bay Lane. Consideration should be given to the high traffic volumes entering and exiting the parking lot for Stancil Park Little League just east of Old Post Road. It is possible that a short segment of shared use path could be built on the south side of Old Bay Lane on property owned by Solway; however, the grade coming from the bridge over Amtrak may be too steep. Further analysis is required.

*Figure 4a.- Looking north on Revolution Street at Old Bay Lane. Stancil Park Little League Fields are to the right.*

*Figure 4b. Looking East on Old Bay Lane. Solway owns the property to the left.*

**Segment B: Old Bay Lane to Industrial Service Drive**

This segment could be viable as a low-stress on-street bikeway using the service drive between the Maryland National Guard property and Norfolk Southern; however, the National Guard property only extends approximately 950' from Old Bay Lane. The remaining 500' is owned by Solway.

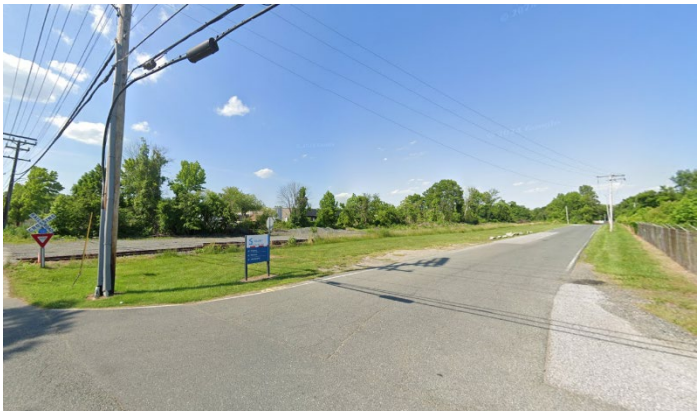


*Figure 5a. Service Drive from Old Bay Lane looking south.*

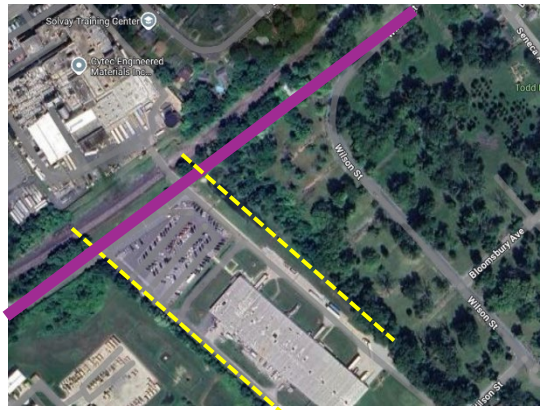



*Figure 5b. The Solway property would need to be crossed to make a connection to the Wilson Street properties.*

**Segment C: Industrial Service Drive to Seneca Avenue**

North of the industrial service drive at Solway, a wide-open space between the Norfolk Southern property line and the bed of Wilson Street to Seneca Avenue. When the master plan is developed for the Wilson Street properties, the city should require inclusion of shared use pathway in this space.


*Figure 6. Wilson Street looking south. Norfolk Southern is behind the tree line to the right.*

**Segment D – Seneca Avenue to Revolution Street**

A shared use pathway north of Seneca Avenue along Norfolk Southern is infeasible. West of the tracks is an unnamed stream channel that spans approximately 60' from centerline (approximately 40' from NS property line). East of the tracks, the shared use pathway would need to run in the backyard of approximately ten residences. The properties are only ~90' deep and there is little room between the functionally used backyard space and the Norfolk Southern property. The most practical alternative would be to continue on-street on Wilson Street to Bloomsbury Avenue or to return to Revolution Street to access the school campus and downtown.


*Figure 7. Residences abut the Norfolk Southern property north of Seneca Avenue along Wilson Street*

*Figure 8. A stream runs along the west side of Norfolk Southern north of Seneca Avenue until it is piped underground approaching Revolution Street*

**Segment E – Revolution Street to Juniata Street**

This segment would run from Revolution Street through the Havre de Grace School campus to Juniata Street. West of Revolution Street, the rail spur is located on land owned by the City and leased to Norfolk Southern. It is unclear how Norfolk Southern's required setbacks would apply in this situation; however, Evonik (NS' commercial customer along the spur) is apparently transitioning away from production at its industrial facility and soon the spur could be abandoned through the Surface Transportation Board.

*Figure 9. Looking southeast along the Norfolk Southern corridor. The stream enters a pipe under the tracks and Revolution Street is approximately where the yellow circle is shown.*

*Figure 10. Looking northwest along the Norfolk Southern corridor. Most of the property to the right is owned by Solway. To the left is Havre de Grace Middle and High Schools.*

# APPENDIX #2

# DOWNTOWN ON-STREET BICYCLE FACILITIES TYPOLOGY & NOTES PER ROADWAY SEGMENT

A full network of bikeways is hierarchical and involves varying roadway treatments that provide an increasing level of comfort for bicyclists of all ages and abilities. While connectivity's goal is to ensure destinations can be accessed using the bicycling network and the reduction of gaps or missing links; comfort focuses on conditions to reduce stress, anxiety or concerns about a rider's safety while riding.

The quality of the network depends on assumptions, goals, and decisions made during a planning process. To remain within the right of way, ensure context sensitive design to adjacent land uses, and provide for the safety of all roadway users, two categories of facilities are proposed for the portion of Havre de Grace east of US 40: **Separated** and **Supporting.**

Figure 1 indicates facility types recommended for Havre de Grace.

## Separated Bicycle Facilities

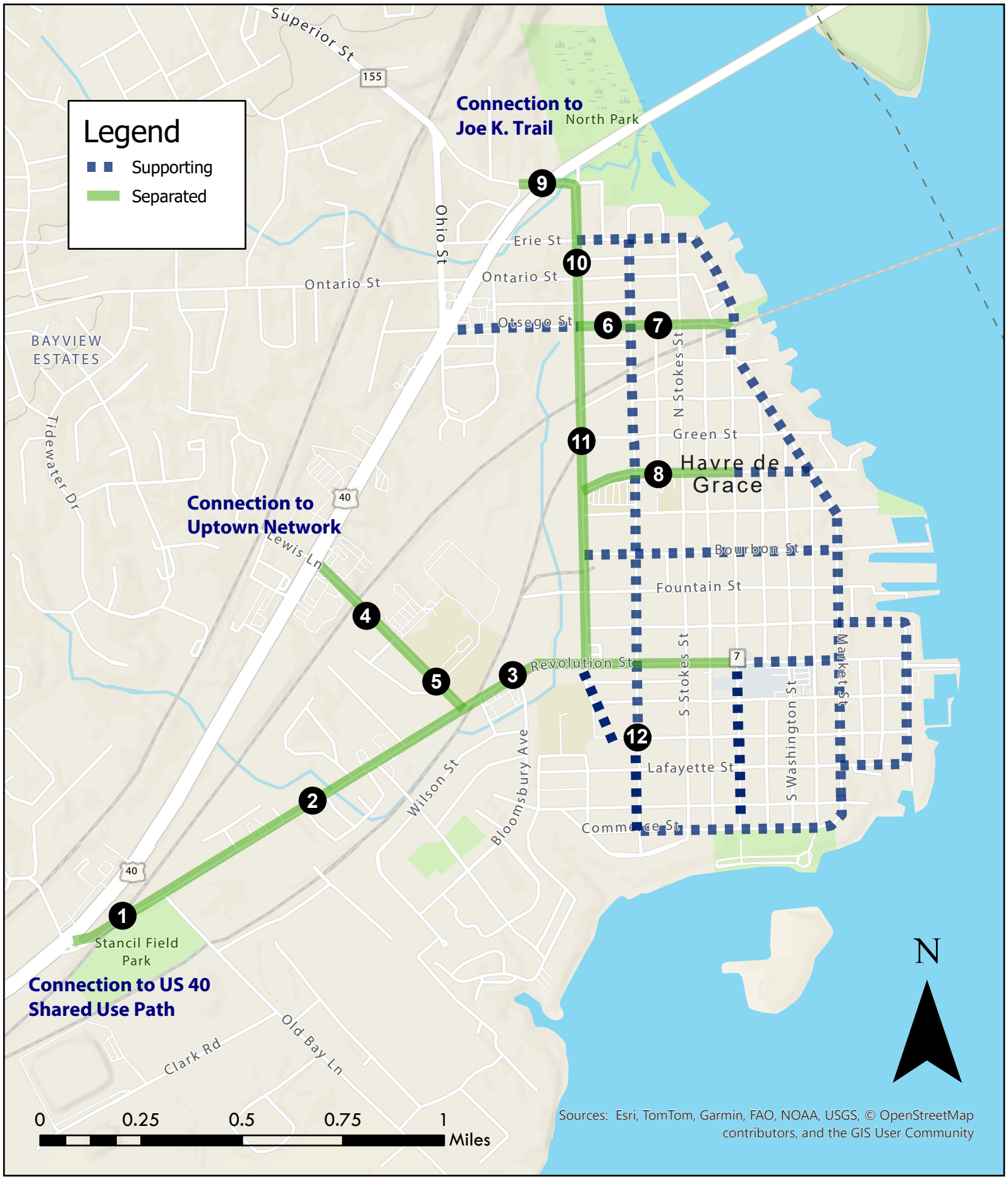
Separated facilities are typically at least 5' wide and include lateral separation between bicyclists and vehicles of 2' or more. In the best form, physical barriers such as planters, bollards, or flex posts provide the most protection possible to riders. Separated facilities can either be single laned and designed to flow with the direction of traffic or bidirectional to function more as a shared use path.

## Separated Bicycle Facilities

Supporting facilities do not have physical barriers and use modest enhancements to make the route more bicycle friendly by slowing traffic. Speed bumps (with passage for bicyclists), lane narrowing, signs and markings are typical treatments for supporting facilities. Supporting facilities are sometimes referred to as bicycle boulevards, or shared lane routes.

Examples of separated and supporting bicycle facilities are shown below.

# City of Havre de Grace Recommended Downtown Bikeway Network



# Separated Bicycle Facilities

### One-Way Separated Bike Lane

One-way separated bike lanes are physically separated from adjacent travel lanes with a vertical element, such as a curb, flex posts, or on-street parking. One-way separated bike lanes, especially those with a physical curb, have been shown to reduce injury risk and increase bicycle ridership due to their greater actual and perceived safety and comfort.

### Two-Way Separated Bikes Lanes

Two-way separated bike lanes are physically separated from adjacent travel lanes using elements such as a curb, flex posts, or on-street parking. They may be located on one side of a street or both sides. Care should be taken at intersections and driveways which intersect two-way separated bike lanes due to the two-way operation of bicycles in these locations. Crash patterns consistently show contra-flow movement of bicyclists are a main factor in crashes due to motorists failing to yield or look for approaching bicyclists.


### Buffered Bike Lane

Buffered bike lanes are conventional bicycle lanes paired with a designated buffer space separating the bicycle lane from the adjacent motor vehicle travel lane and/or parking lane. A buffered bike lane is allowed as per MUTCD guidelines for buffered preferential lanes. Encourages bicyclists to ride outside of the door zone when buffer is between parked cars and bike lane. Provides a greater space for bicycling without making the bike lane appear so wide that it might be mistaken for a travel lane or a parking lane.

# Supporting Bicycle Facilities

**Bicycle Boulevard**

Bicycle boulevards are streets with low motorized traffic volumes and speeds, designated and designed to give bicycle travel priority. Bicycle Boulevards use 1. signs, 2. pavement markings, 3. speed management measures, and 4. volume management measures to discourage through trips by motor vehicles and create safe, convenient bicycle crossings of busy arterial streets.


**Shared Lanes**

Shared Lane Markings (SLMs), or "sharrows," are road markings used to indicate a shared lane environment for bicycles and automobiles. Among other benefits shared lane markings reinforce the legitimacy of bicycle traffic on the street, recommend proper bicyclist positioning, and may be configured to offer directional and wayfinding guidance. The shared lane marking is a pavement marking with a variety of uses to support a complete bikeway network.

While sharrows are generally no longer recommended as appropriate bicycle facilities, their use on low-speed roads to enhance visibility is sometimes an acceptable treatment.

# Downtown Separated Bike Lane Network

| | Street | Road Owner | Current Condition | Proposed Treatment and Notes |
|---|---|---|---|---|
| ❶ | **Old Post Road** from US 40 to Old Bay Lane | State | "Free right" turn lane from US 40 to Revolution Street; 2-lane bi-directional mainline with signal at Old Bay Lane. 40' ROW across the bridge. Speed limit is 30 mph. | Remove free right from US 40 eastbound to Revolution Street to reduce inbound auto speeds; repurpose pavement beginning in 1600 blk to separated bike path through and onto bridge over Amtrak. Bi-directional bike lane with vertical separation on bridge. |
| ❷ | **Revolution St** from Old Bay Ln Ave to N Juniata St | State | The street has a minimum right-of-way of 30 feet and a maximum of 40 feet. The existing condition is a 2-lane bi-directional mainline with a center turning lane. Speed limit is 30 mph. | Remove the center-running turn lane and provide a bi-directional separated bike lane; buffered if possible on further analysis, field review, and community consultation. |
| ❸ | **Revolution St** from N Juniata St to Union Ave | State | The street has a minimum right-of-way of 30 feet and a maximum of 40 feet. The existing condition is a 2-lane bi-directional road with a center turning lane. Speed limit is 30 mph. | Remove the center-running turn lane and provide a bi-directional separated bike lane; buffered if possible on further analysis, field review, and community consultation. |
| ❹ | **Lewis Ln** from US 40 to High School Entrance | City | Two-way bidirectional road with parking along the residential end. Right-of-way is approximately 40 ft. | A two-way cycle track with wayfinding is proposed on the northern curb. This ties in with the "uptown" SUP north west of US 40. Parking impacts are low to minimal. Due to the operational characteristics of cycle tracks, additional study will be needed for intersection operations up to the installation of a bike signals. Coordination with Harford County Public Schools may require coordination with the SHA for study and implementation as bike signals (if necessary) would influence US 40 intersection operations. |
| ❺ | **Lewis Ln** from High School Entrance to Revolution Street | City | Two-way bidirectional road with parking along the residential end. Right-of-way is approximately 40 ft. | At high school entrance, either retain cycle track through to Revolution or widen sidewalk along high school frontage as a shared use path. |
| ❻ | **Otsego Stree**t from Legion Street to N Juniata Street | State | Existing condition is a two-lane bi-directional road. One side has residential and on-street parallel parking. The opposite side has no formal parking. Commercial land uses are at intersections and residential is in between.All homes have access to driveways, rather via rear alley or front loaded driveway. Right-of-way is 35 ft to 36 ft. Road has a transit route. | Bicycle Boulevard with sharrows, traffic calming features (speed humps, bump outs, etc) and wayfinding is probably the most practical, and would be of general benefit to all users. Should be installed post-Susquehanna Bridge replacement. |

| | Street | Road Owner | Current Condition | Proposed Treatment and Notes |
|---|---|---|---|---|
| 7 | **Ostego St** from N Juniata St to St John St | City | Steep two-way road with parallel parking on both sides. Primarily residential. The homes on the southern curb have driveway access via an alleyway (Morrison Ln). The homes along northern edge do not have alley accessed driveways and rely on on-street parking. Parking impact is expected depending on facility type. Right-of-way is approximately 36 ft. | Bicycle Boulevard with sharrows, traffic calming features (speed humps, bump outs, etc) and wayfinding is probably the most practical, and would be of general benefit to all users. |
| 8 | **Pennington Ave** from N Juniata St to St John St | City | The existing condition is a 2-lane bi-directional road with pull-in angled parking. A segment between Centennial Lane and N Freedom Lane has angled parking on one side and parallel parking on the opposite. It's speed limit is 30 mph. The street has a minimum right-of-way of 53 feet and a maximum of 57 feet. | Select one of the two proposed facilitiy types: Buffered (door zone protection) bike lane with parallel parking or parking protected, curb-side bike lane with parellel parking. Bumpouts at library may need removal or adjustment. |
| 9 | **Superior Street** from Park Drive to Juniata Street | State | Transition from MD 155 (35 mph) to MD 763 (30 mph) retains 40' paved travelway width and excessive speed from Ohio Street to Juniata St. | It is recommmended to install countermeasures that slow traffic in transition area such as rumble strips and wide edge lane striping; and installing buffered bike lane east of Ohio Street or Park Drive. Strengthen visual connection and entrance/exit of Joe K. Trail; slow traffic in transition to Juniata Street. |
| 10 | **S Juniata St** from Superior Street to Otsego Street | City | Paved area is 42' with single travel lane in each direction marked parking lane on either side. Parking on west side of road is generally unused. | It is recommended to retain parking on east side of Juniata St and reconfigure cross section to two travel lanes and bi-directional bike lanes. May require adjustment of signal heads at Otsego St. |
| 11 | **S. Juniata St** from Otsego Street to Revolution Street | City | Paved area increases to 46' feet with parking allowed in most areas at all times. Parking lanes are generally unused except during after school events. | Convert to two-way buffered cycle track "signature facility" and install asphalt art at Pennington Avenue to highlight significant pedestrian cross traffic. May require adjustment of signal heads at Revolution St. See plan set. |

| Street | Road Owner | Current Condition | Proposed Treatment and Notes |
|---|---|---|---|
| **On-Street Supporting Network** | | | |
| Commerce St from S Adams St to St John St | City | Existing condition is a two-lane road with parking on both sides. Speed limit is 30 mph. Parking is on both sides of the street. | With the level of pedestrian activity, it is probably best to keep bikes away from playground sidewalk. Bicycle Boulevard with sharrows, traffic calming features (speed humps, bump outs, etc) and wayfinding is probably the most practical, and would be of general benefit to all users. |
| Market St from Girard St to Congress Ave | City | The existing condition is a 2-lane bi-directional road with parellel parking on both sides of the street. The speed limit is 30 mph. The street has minimum right-of-way of 34 ft and maxium of 41 ft.<br>Segment of the East Coast Greenway Trail exist as an unmarked route. | While it would be highly desirable to establish Market Street as the northern "premier" bike facility, the residential and commercial parking most likely would take precedence. A bicycle boulevard with traffic calming appears to be the most practical solution and would be of general benefit to all users. |
| St John St from Congress Ave to Warren St | City | Havre de Grace main street. Land use features many shops and local destinations. Parallel parking is on both sides of the street. The streetscape as recently been redone. Right-of-way is between 36 ft and 38 ft.<br>Segment of the East Coast Greenway Trail exist as an unmarked route. | Recommend no action at this time until the downtown streetscape project is complete and parking patterns have settled. |
| Revolution St (Neighborhood) from Union Ave to Market St | City | The street has a minimum right-of-way of 30 feet and a maximum of 40 feet. The existing condition is a 2-lane bi-directional road with a center turning lane. It's speed limit is 20 mph. | While it would be preferrable to continue the bicycle lanes through to the waterfront, a bicycle boulevard with traffic calming appears to be the most practical solution and would be of general benefit to all users. |
| Erie St between Juniata Street and Water Street | City | Neighborhood rd with parking on both sides of street. Speed limit is 30 mph. Right-of-way is 33 ft max and 30 ft min. | Sharrows with wayfinding are recommended. |
| Water St | City | Waterfront road with parking opposite of the water. Residentail properties are opposite to the water. Land use on waterside are a park, parking lot, and the city marina. Right-of-way is approximately 24 ft to 20 ft. | Sharrows with wayfinding are recommended. |
| Bourbon St | City | Road is primarily residential with exception of industry and institutional land uses near N Juniata St. Right-of-way is approximately 32 ft. Segment of the September 11 National Memorial Trail exist as unmarked route. | After evaluating feasbility and conducting stakeholder engagement, select one of the two proposed facilitiy types:<br>- Advisory bike lanes<br>- sharrows with wayfinding |

| Street | Road Owner | Current Condition | Proposed Treatment and Notes |
|---|---|---|---|
| **On-Street Supporting Network** | | | |
| Commerce St from S Juniata St to St John St | City | Large lot single family homes with privacy frontage. Two-way bi-directional road with parking on both sides of the street. Park is water side. The right-of way is wide and variable. The sidewalk was recently constructed along the park edge.<br>Segment of the East Coast Greenway Trail exist as an unmarked route. | Bicycle Boulevard with sharrows, traffic calming features (speed humps, bump outs, etc) and wayfinding |
| Concord St | City | Bidirectional two-lane road with parking on both sides street. land use is mixed. Right-of-way is suffiicent for proposed supporting facility types.<br>Segment of the East Coast Greenway Trail exist as an unmarked route. | Sharrows with wayfinding are recommended. |
| Lafayette St from Market St to Concord St | City | land uses are primarily institutional. Right-of-way is suffiicent for proposed supporting facility types.<br>Segment of the East Coast Greenway Trail exist as an unmarked route. | Sharrows with wayfinding are recommended. |
| Girard St from Market St to Concord St | City | Bidirectional two-lane road with parking on both sides street. land use is mixed. Right-of-way is suffiicent for proposed supporting facility types. | Sharrows with wayfinding are recommended. |
| N Stokes St from Commerce St to Erie St | City | Variable right-of-way residential street. On-street parallel parking. Homes have driveways. | Sharrows with wayfinding are recommended. |
| Ostego St from N Juniata St to St John St | State | Steep two-way road with parallel parking on both sides. Primarily residential. The homes on the southern curb have driveway access via an alleyway (Morrison Ln). The homes along northern edge do not have alley accessed driveways and rely on on-street parking. Parking impact is expected depending on facility type. Right-of-way is approximately 36 ft. | Sharrows with wayfinding are recommended. |
| Union Ave (South) from Revolution St to Commerce St | State | Tree lined two-way bidirectional road with large lot residential land uses. Parallel parking is on both sides of the street. The majority of homes have access to a driveway on adjacent street, via alley way, or is front loaded. Right-of-way is approximately 36 ft.. Segment of the East Coast Greenway Trail exists as an unmarked route. | Sharrows with wayfinding are recommended. |