

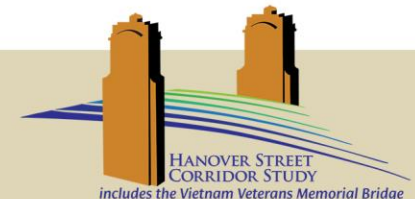
HANOVER STREET CORRIDOR STUDY

includes the Vietnam Veterans Memorial Bridge



Public Information Meeting

Tuesday, April 10, 2018



Tonight's Presentation

- Study Overview
- Project Goals
- Process & Schedule
- Work Completed to Date
- Guiding Principles
- Corridor Recommendations
- Corridor Cost Estimates
- Next Steps



Study Overview

- **Purpose:** Identify improvements to the Vietnam Veterans Memorial Bridge and Hanover Street corridor to address accessibility, connectivity, and safety for multiple modes:
 - Bicycle
 - Pedestrian
 - Transit
 - Automobiles
 - Freight
- **Funding:** USDOT \$1.1 MM TIGER Grant and a \$700,000 match from Baltimore City
- **Study Limits:** Wells Street to Reedbird Avenue (a distance of 1.4 miles)



CATHERINE E. PUGH
MAYOR



DEPARTMENT OF TRANSPORTATION
BALTIMORE CITY

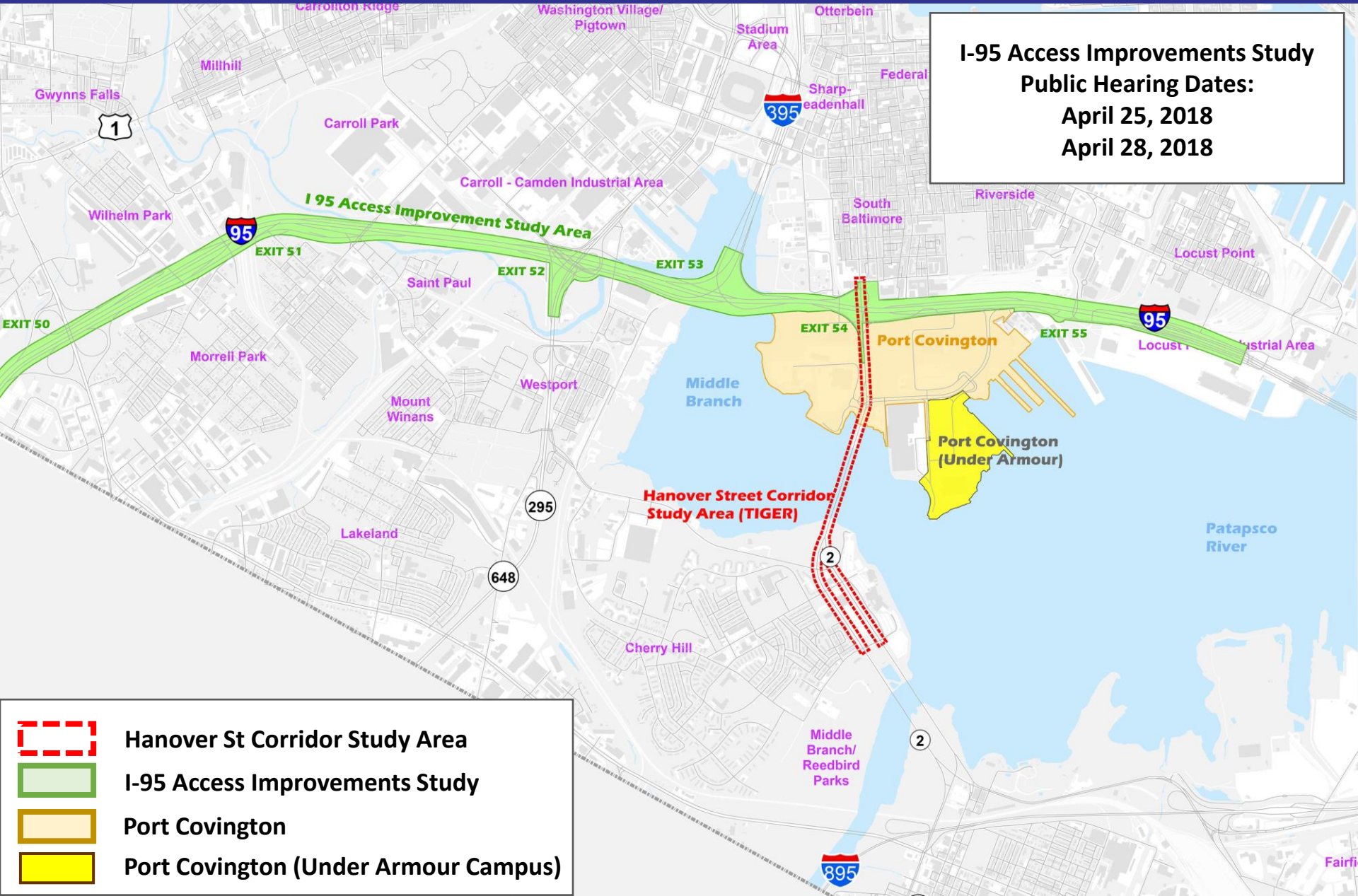
Adjacent Projects





I-95 Access Improvements Study

Public Hearing Dates:

April 25, 2018

April 28, 2018



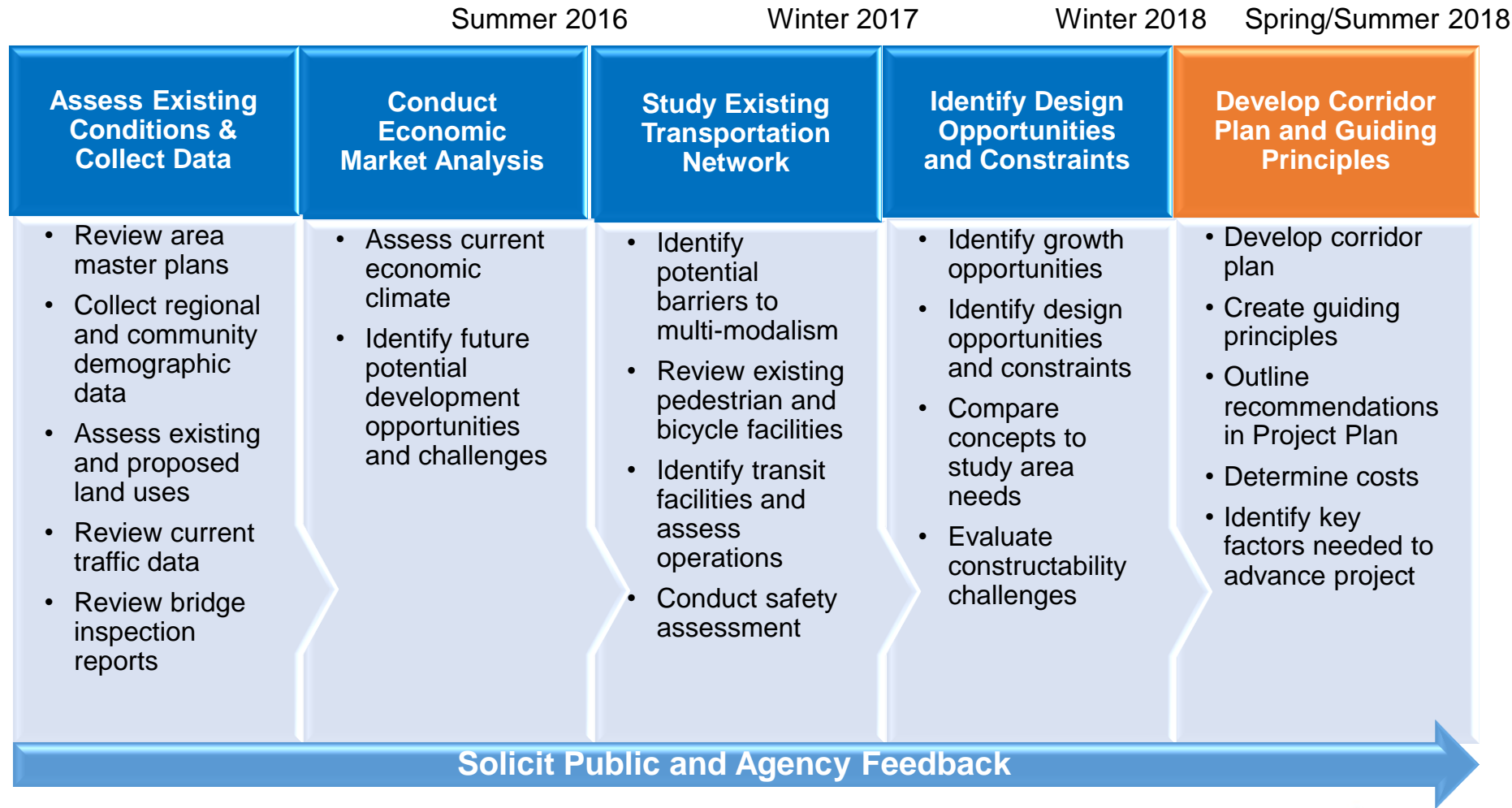
-  Hanover St Corridor Study Area
-  I-95 Access Improvements Study
-  Port Covington
-  Port Covington (Under Armour Campus)

Project Goals

At the end of this process, the team will produce a PLAN to upgrade and enhance the Hanover Street corridor and Vietnam Veterans Memorial bridge by:

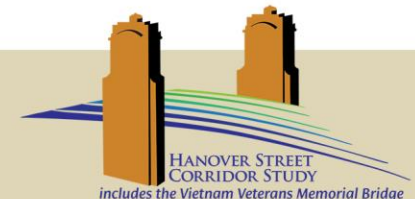
- Providing the surrounding communities with safe and reliable access to key quality of life resources
- Maintaining a critical link between existing and planned bicycle and pedestrian trails
- Improving access for local and regional motorists and freight to and from the Port of Baltimore
- Promoting better connectivity between local bus and light rail services

Process & Schedule



Work Completed to Date

- Ongoing Public Outreach
- Collected Existing Conditions Data
- Conducted Economic Market Analysis
- Analyzed Existing Transportation Network
- Identified Design Opportunities and Constraints
- Developed Corridor Plan and Guiding Principles



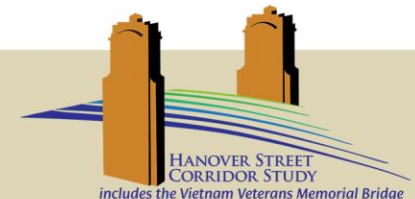
Guiding Principles



Guiding Principles

The Guiding Principles for the Hanover Street Corridor Study will:

- Inform the selection of corridor options
- Serve to guide the design-related elements along the Hanover Street corridor
- Establish a framework and serve as a guide for the City of Baltimore to take a proactive approach for future phases of design and construction



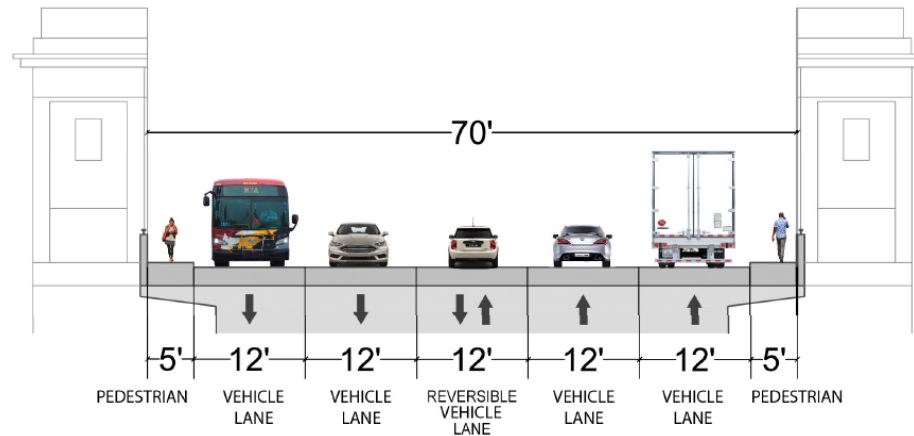
Guiding Principles

1. Historic and cultural context of the Vietnam Veterans Memorial Bridge
2. Community Revitalization
3. Safety
4. Connectivity
5. Accessibility

Short-Term Bridge Maintenance Work

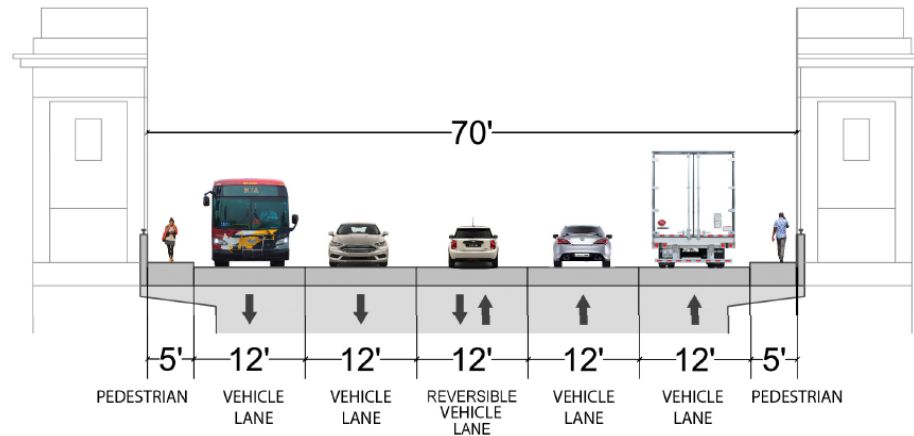


Short-Term Bridge Maintenance Work



- Deck investigation
 - The deck investigation will consist of cores, Ground Penetrating Radar (GPR), analysis, and report recommendations
 - DOT will choose the best option for interim repairs
- Schedule
 - Cores and GPR will take place in May 2018
 - Testing of materials will take place in June 2018
 - Analysis and report recommendations will be due at the end of July 2018

Short-Term Bridge Maintenance Work



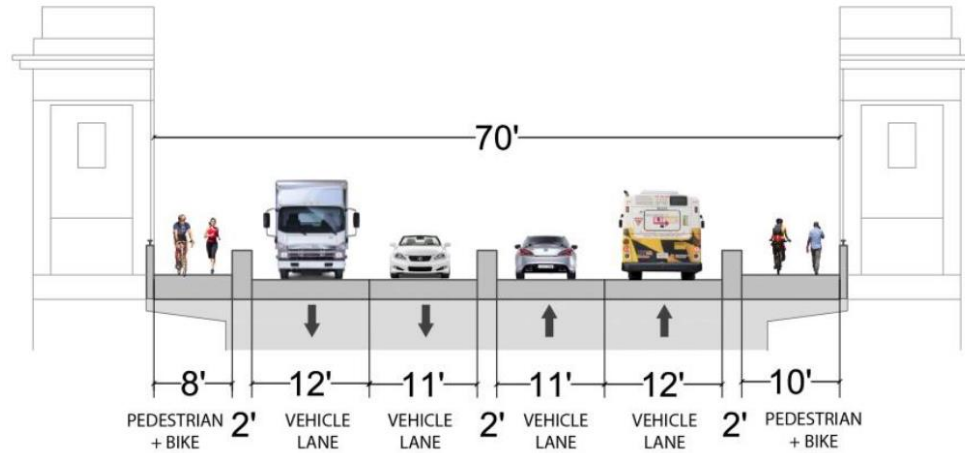
- Deck repairs and asphalt overlay
 - Spot bridge deck repairs as needed
 - Place asphalt overlay to improve the riding surface
 - Estimated cost: \$400,000
- Schedule
 - Anticipate the overlay to start early summer 2018
 - Due to traffic concerns, work will take place at night and on weekends

Bridge Options Evaluated



Bridge Options Evaluated

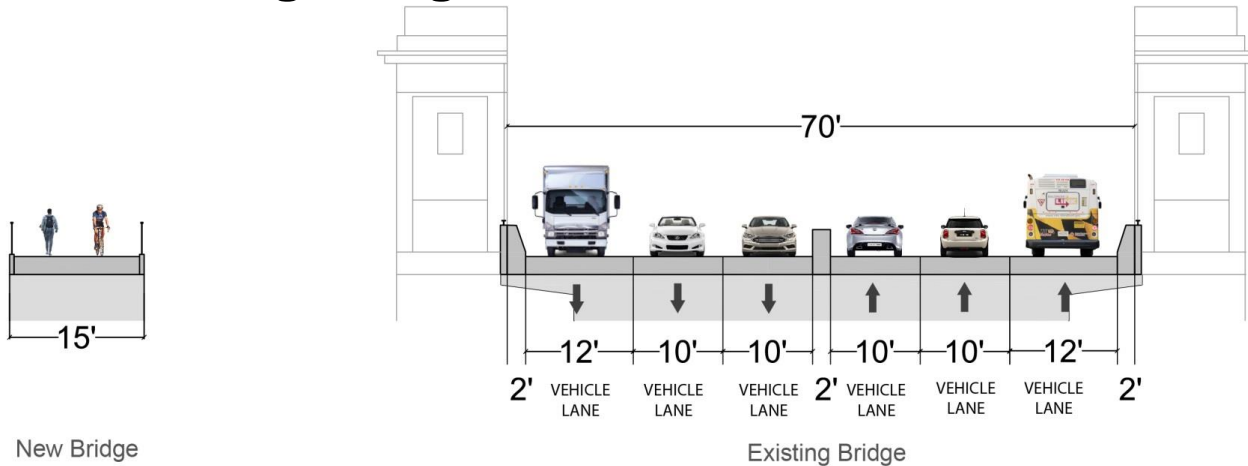
Option 3: Four-Lane Section



- Replacement of Bridge Deck – Full Depth including Precast Planks
 - Includes replacement of movable span steel grid deck
 - Includes bicycle and pedestrian paths, replacing outside barriers, installing new barriers between vehicular traffic and pedestrians and bicyclists, and installing new lighting
- Methodology
 - Used existing plan sets to derive quantities
 - Cost estimate based upon primary work items
- Cost Estimate
 - Used recent construction costs for similar work
 - Identified contingencies and project soft costs
 - **Total cost (2018 \$): \$30.0 million (no rehabilitation of the moveable span) – Option 3A**
 - **Total cost (2018 \$): \$50.0 million (fix the moveable span in the closed position) – Option 3B**
 - **Total cost (2018 \$): \$70.0 million (full rehabilitation of the moveable span) – Option 3C**

Bridge Options Evaluated

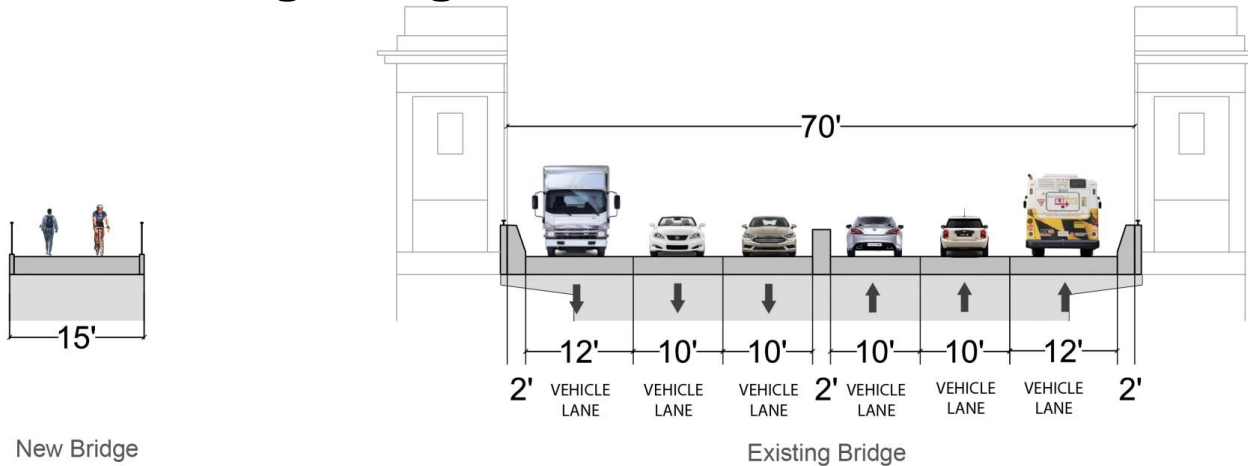
Option 4: Separate Pedestrian / Bicycle Bridge and General Rehabilitation of the Existing Bridge to Accommodate Six Travel Lanes



- Requires United States Coast Guard Approval to Fix Movable Span of Existing Bridge in the Closed Position
- Replacement of Bridge Deck – Full Depth including Precast Planks
 - Includes structural modifications to fix existing movable span in closed position
 - Includes concrete filled steel grating of existing movable span
 - Includes six travel lanes, replacing outside barriers, installing new barriers between opposing vehicular traffic, and installing new lighting
- Construction of New Parallel Pedestrian / Bicycle Bridge
 - Connecting Middle Branch Park to West Covington Park, west of the existing bridge
 - Assumes a fixed channel span
 - Serves bicyclists and pedestrians only

Bridge Options Evaluated

Option 4: Separate Pedestrian / Bicycle Bridge and General Rehabilitation of the Existing Bridge to Accommodate Six Travel Lanes



- Methodology
 - Used existing site information to derive bridge length
 - Cost estimate based upon industry recognized “square foot” costs for similar work
- Cost Estimate
 - Identified contingencies and project soft costs
 - **Pedestrian / bicycle bridge cost (2018 \$): \$20.0 million**
 - **Existing bridge rehabilitation cost (2018 \$): \$50.0 million**
 - **Total cost (2018 \$): \$70.0 million**

Bridge Options Evaluated

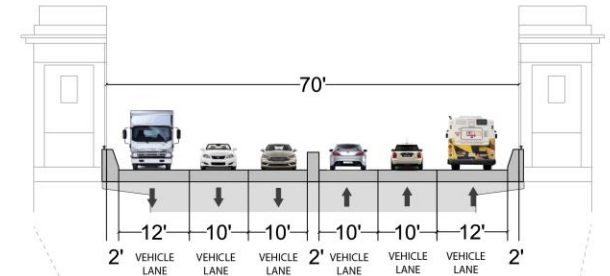
Option 4: Separate Pedestrian / Bicycle Bridge and General Rehabilitation of the Existing Bridge to Accommodate Six Travel Lanes



Pedestrian and Bicycle Bridge

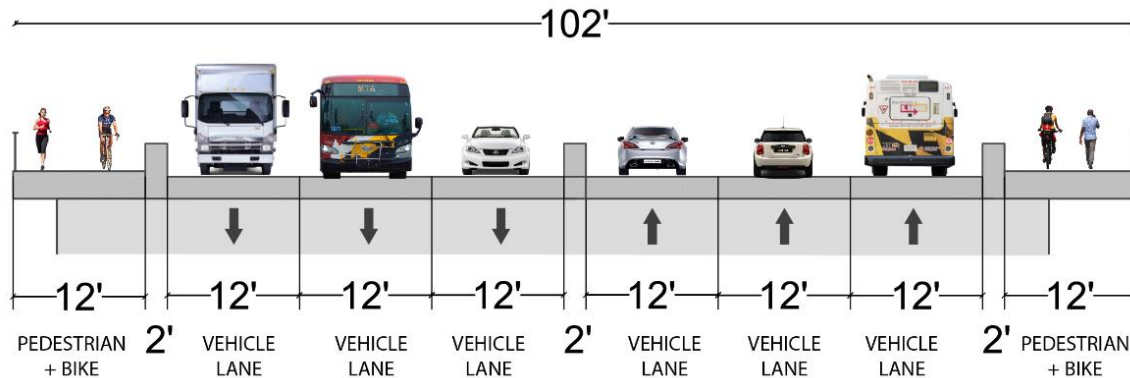


Reconfigured Existing Bridge



Bridge Options Evaluated

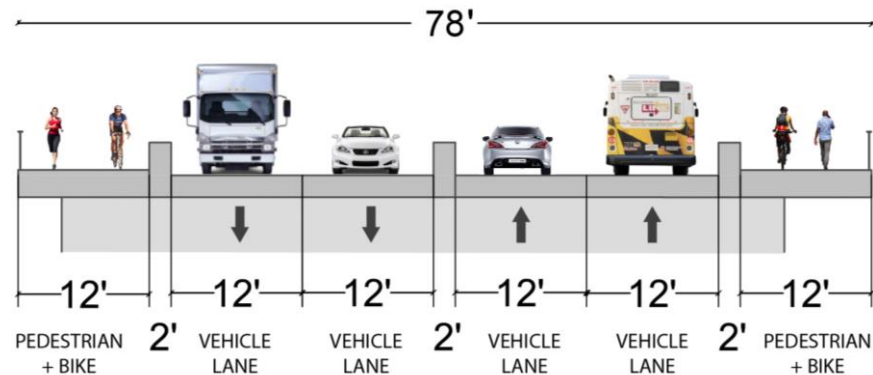
Option 5: New Six-Lane Bridge and Demolition of Existing Bridge



- Construction of a New “Signature Crossing”
 - Assumes a movable channel span
 - Includes demolition of the existing bridge
- Methodology
 - Used existing site information to derive bridge length
 - Cost estimate based upon industry recognized “square foot” costs for similar work
 - Used relatively high unit costs for “signature” portion of bridge
- Cost Estimate
 - Used standard contingencies
 - Identified project soft costs
 - **New bridge cost (2018 \$): \$230.0 million**
 - **Demolition of existing bridge cost (2018 \$): \$15.0 million**
 - **Total cost (2018 \$): \$245.0 million**

Bridge Options Evaluated

Option 6: New Four-Lane Bridge and Demolition of Existing Bridge



- Construction of a New “Signature Crossing”
 - Assumes a movable channel span
 - Includes demolition of the existing bridge
- Methodology
 - Used existing site information to derive bridge length
 - Cost estimate based upon industry recognized “square foot” costs for similar work
 - Used relatively high unit costs for “signature” portion of bridge
- Cost Estimate
 - Used standard contingencies
 - Identified project soft costs
 - **New bridge cost (2018 \$): \$180.0 million**
 - **Demolition of existing bridge cost (2018 \$): \$15.0 million**
 - **Total cost (2018 \$): \$195.0 million**

Summary of Bridge Options Evaluated

Bridge Options Evaluated			
Option	Description	Rehabilitation or Replacement	Total Cost (2018 \$)
3	Four-Lane Section with 8 to 10 Foot Barrier Separated Pedestrian / Bicycle Paths	Rehabilitation	\$30.0 M to \$70.0 M
4	Separate Pedestrian / Bicycle Bridge and General Rehabilitation of the Existing Bridge to Accommodate Six Travel Lanes with No Pedestrian or Bicycle Accommodations	Rehabilitation	\$70.0 M
5	New Six-Lane Bridge with 12 Foot Barrier Separated Pedestrian / Bicycle Paths and Demolition of Existing Bridge	Replacement	\$245.0 M
6	New Four-Lane Bridge with 12 Foot Barrier Separated Pedestrian / Bicycle Paths and Demolition of Existing Bridge	Replacement	\$195.0 M

Urban Design Concepts



Bus Stop and Bicycle Enhancements



- Enhanced pedestrian space – bus shelter and bench
- Dedicated bicycle facility



Bicycle Enhancements and Traffic Calming



- Dedicated bicycle facility
- Enhanced landscaping



Public Recreation Space Under Bridge



- Enhanced public recreation space (previously unused)
- Public art displays



Public Recreation Space



- Enhanced public recreation space (previously unused)
- Pedestrian lighting
- Pedestrian stairway connection to/from bridge



Sculptural Stairway to / from Bridge



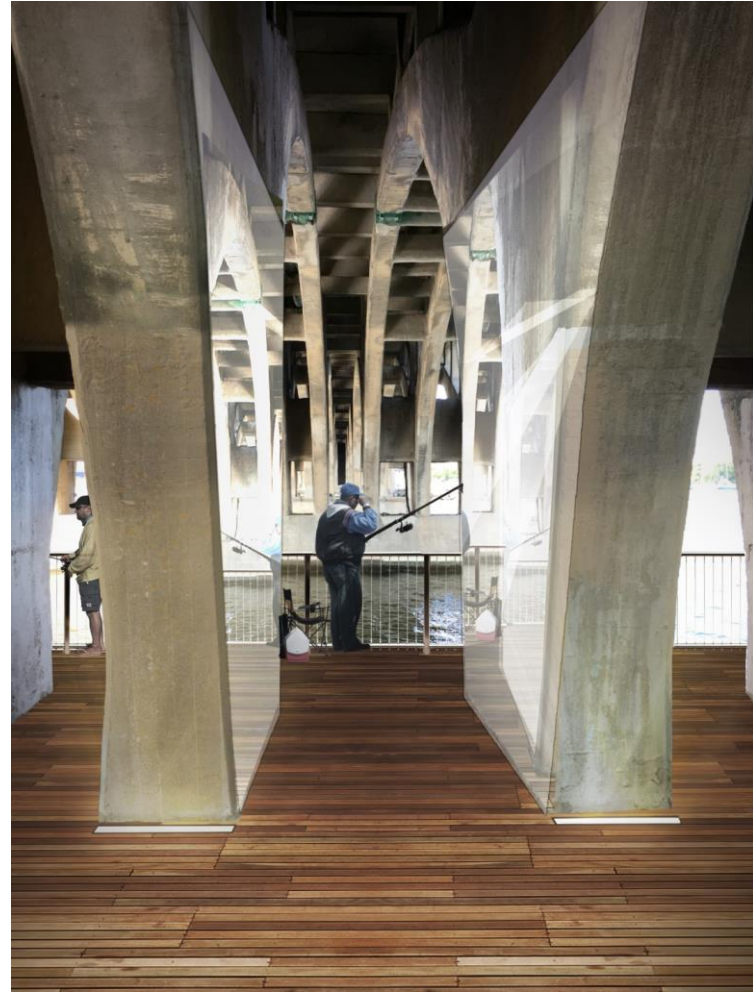
Public Recreation Space Under Bridge



- Enhanced public recreation space
- Pedestrian lighting for enhanced safety
- Cleared vegetation to enhance safety



Public Recreation Space Under Bridge



Safety Enhancements on Bridge



- Barrier between pedestrians and vehicular traffic for enhanced safety
- Pedestrian lighting
- Pedestrian stairway connection to/from bridge



Pedestrian Enhancements



- Enhanced pedestrian crosswalks
- Removed channelized right-turn movements to improve pedestrian safety



Pedestrian Enhancements



- Enhanced pedestrian crosswalks



Corridor Recommendations



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Traffic Background

2040 Traffic Analysis

- The bridge cross section will not have a significant impact on corridor travel time or queueing
- The proposed signalized intersections north of the bridge are the constraints in the corridor
- A six-lane typical section (three lanes in each direction) north of the bridge will be in-place for the future based on the Port Covington Master Plan approved by the City of Baltimore

Corridor Recommendations

Roadway

- Concrete pavement reconstruction north of the bridge to Cromwell Street and south of the bridge to Waterview Avenue
- Clean all existing inlets, pipes, and bridge scuppers and inspect the existing storm drain system
- Upgrade traffic / pedestrian signals as needed
- Remove channelized / free-right turn movements

Corridor Recommendations

Pedestrian and Bicycle

- Upgrade / supplement pedestrian lighting
- Enhance crosswalks
- Clear debris from all sidewalks and stairwell connecting Hanover Street to the Gwynns Falls Trail
- Upgrade sidewalk bump-outs to provide ADA clearance around utility poles and signs
- Bike facility enhancements



Transit

- Enhanced bus stops could include sidewalk access, benches, trash receptacles, and a shelter



Corridor Recommendations

Urban Design

- Bridge architecture and previously unused space creates the opportunity for a unique urban space
- Outdoor art gallery with recreation amenities
- Provide access to the bridge deck with a sculptural staircase



Corridor Recommendations

Urban Design

- Enhanced living shoreline to complement West Covington Park
- Enhanced public recreation space under the bridge

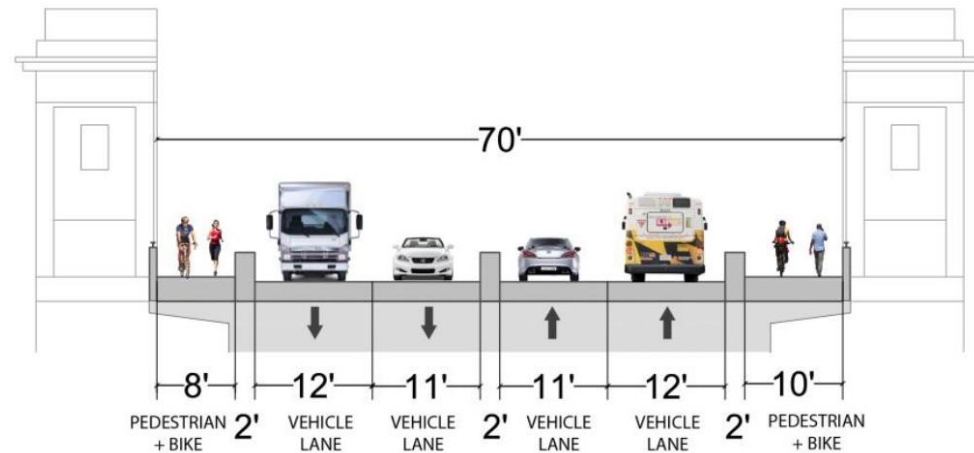


Corridor Recommendations

Bridge Structures

- After City's planned short-term maintenance work
- Recommend the long-term major rehabilitation option "Option 3 – Four Lane Section with Fixed Span in the Closed Position"
- **Total cost (2018 \$): \$50.0 million**

Option 3: Four-Lane Section

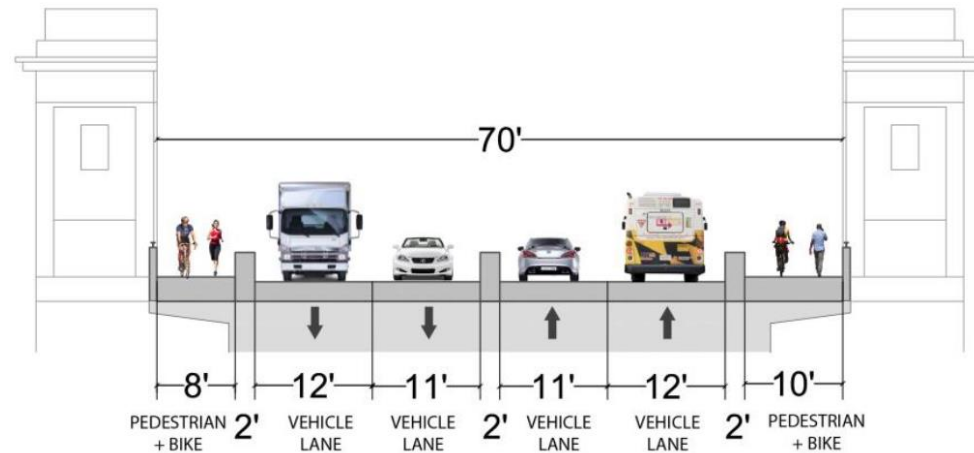


Corridor Recommendations

Bridge Structures

- Specialized engineering work required to verify additional service life
- Permanently fixing the movable span in the closed position would save the City annual maintenance costs
- Approval from the United States Coast Guard will be required to permanently fix the movable span in the closed position

Option 3: Four-Lane Section

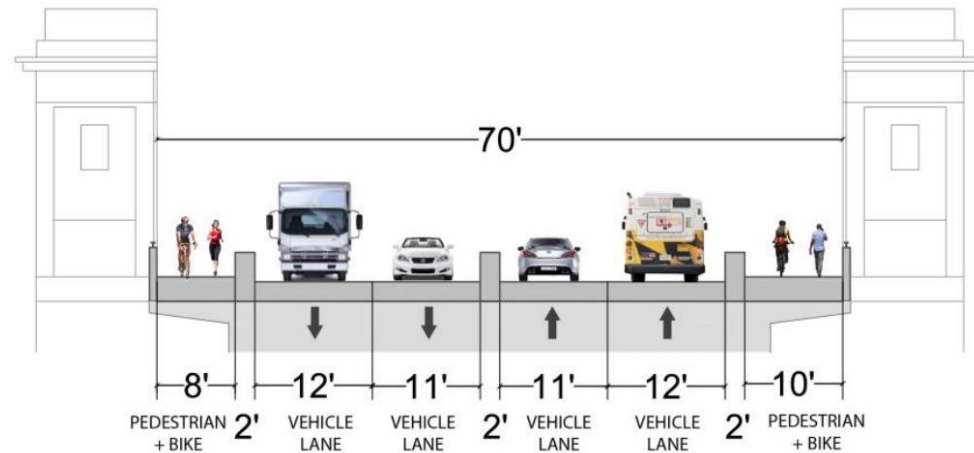


Corridor Recommendations

Bridge Structures

- 2040 traffic analysis – travel times are consistent regardless of the number of lanes on the bridge
- Enhanced pedestrian and bicycle space in each direction (8' and 10') using the existing bridge width

Option 3: Four-Lane Section



Corridor Cost Estimates – Non-Bridge Improvements

- High Option
 - \$26.0 million
- Low Option
 - \$8.0 million
- Both estimates include:
 - Concrete pavement to the first intersection north and south of bridge
 - Stamped brick asphalt crosswalks
 - Detectable warning surface for curb ramps
 - Traffic signal upgrades
 - Bus shelters, benches, bike racks, trash receptacles where needed
 - Stairway replacement on southern side of bridge (leading to Gwynns Falls Trail)

Corridor Cost Estimates – Non-Bridge Improvements

- High estimate includes:
 - Mill and overlay of asphalt
 - Sidewalk replacement (low option replaces less)
 - Additional street trees (low option includes less)
 - Pedestrian lighting
 - Two stair towers on northern side of bridge
 - Urban design improvements – street furniture, recreational elements underneath bridge, Middle Branch Park sitework and amphitheater
 - Vietnam Veterans Memorial Bridge monumental markers at north and south ends of bridge
 - Decorative bridge uplighting

Next Steps

- Continue robust public outreach program
 - May 30, 2018 Public Meeting
- Project Documents
 - Draft Project Report to be posted on BCDOT website by May 30, 2018
 - <http://transportation.baltimorecity.gov/tiger/hanover-st>
 - Comment period: May 30, 2018 – June 30, 2018
 - Final Project Report to be sent to FHWA July 13, 2018

Next Steps

Key Factors to Advance Project

- Structural studies / testing
 - Estimated 6 months from approval to start
- Perform National Environmental Policy Act (NEPA) Study
 - Estimated 18-24 months from approval to start
 - The current study is deliberative and no formal decisions have been made
- Obtain approval to permanently fix the movable bridge span in the closed position from the US Coast Guard
 - Approval to be sought concurrent with the NEPA Study
- Funding opportunities, grants, etc.
 - Transportation Investment Generating Economic Recovery (TIGER) grants
 - Infrastructure For Rebuilding America (INFRA) grants
 - Seek funding assistance from the State

Questions?



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