

Appendix B5:

Maryland Avenue SW to L'Enfant Interlocking Clearance Assessment

Long Bridge Project Environmental Impact Statement (EIS)

Maryland Avenue SW to L'Enfant Interlocking Clearance Assessment

September 6, 2018





U.S. Department of Transportation Federal Railroad Administration



Long Bridge Project EIS Maryland Avenue SW to L'Enfant Interlocking Clearance Assessment

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1.0 Executive Summary

The Federal Railroad Administration (FRA), jointly with the District Department of Transportation (DDOT), is preparing an Environmental Impact Statement (EIS) in accordance with the National Environmental Policy Act (NEPA) for the Long Bridge Project (Project).¹ The Project consists of proposed improvements to the Long Bridge and related railroad infrastructure located between the RO Interlocking near Long Bridge Park in Arlington, Virginia, and the L'Enfant (LE) Interlocking near 10th Street SW in the District (collectively, the Long Bridge Corridor, as shown on the Location Map in **Appendix A** of this report).

The existing two-track Long Bridge Corridor is owned and operated by CSX Transportation (CSXT), a Class I freight railroad, and serves freight (CSXT), intercity passenger (Amtrak), and commuter rail (VRE). Maryland Area Regional Commuter (MARC) rail, which currently terminates at Union Station in the District, has plans to expand into the corridor. Norfolk Southern, also a Class I freight railroad, has trackage rights on the Long Bridge, but does not currently exercise those rights. CSXT, Amtrak, VRE, MARC, and Norfolk Southern are railroad stakeholders of the Project.

Throughout the southern limits of the Long Bridge Corridor, 15 feet track spacing is being proposed with 9 feet or greater lateral clearance to structures to meet minimum design standards as defined by the corridor owner and operator, CSXT. Between Maine Avenue SW and L'Enfant Interlocking, several bridges and retaining walls present significant obstacles to meeting these standards and would require extensive structural modifications to the bridges, buildings, and walls with major impacts to local roads, business, and public and private properties.

The purpose of this report is to provide an assessment of the existing and proposed horizontal within this segment of the project to determine the feasibility of various four-track alignment options between the north end of Maine Avenue and L'Enfant Interlocking using the Plate-H clearance envelope (See **Figure 1-2**). The placement of the tracks for each option are referenced with respect to the four spans under the Maryland Avenue SW overbuild as identified in **Figure 1-1**.

The existing conditions and five options evaluated are as follows:

- Existing Conditions two mainline tracks spaced at 13 feet on center in Span 3.
- **Option 1** four tracks spaced at 15 feet on center with two each in Span 2 and 3.
- **Option 2** four tracks at 13 feet on center with one track in Span 2 and three tracks in Span 3.
- **Option 3** two tracks spaced at 12.5 feet in Span 2 and two tracks spaced at 15 feet in Span 3.
- **Option 4** one track each in Span 1 and 2 with two tracks spaced at 15 feet in Span 3.
- **Option 5** two tracks spaced at 13 feet in Span 2 and two tracks spaced at 15 feet in Span 3.

Lateral clearance assessments along with potential structural implications were assessed at Maryland Avenue SW, 12th Street SW, 12th Street Expressway, and L'Enfant Plaza.

¹ Note that "RO" is the proper name of this interlocking. It is not an acronym.

Long Bridge Project Draft EIS



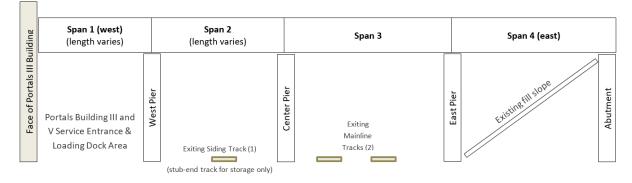


Figure 1-1 | Existing Maryland Avenue Bridge (looking north)

During the completion of this analysis, multiple meetings were held with CSXT, Amtrak, VRE, and the Virginia Division of Rail & Public Transportation (DRPT) to discuss the assessment approach and initial results. During these discussions, CSXT requested their minimum 15 feet track spacing design standard be maintained for freight tracks. However, CSXT, Amtrak, VRE, and DRPT operators all agreed and requested the analysis to evaluate 13 feet spacing for passenger tracks. In addition, CSXT, Amtrak, and VRE all indicated that a minimum of 8.5 feet lateral clearance should be maintained.

The clearance assessment report and summary matrix discuss the analysis of the five options that the have been evaluated. Challenges include the construction durations, impacts to adjacent structures, and the escalated project cost that would result from each of the other four options in the report and matrix. Based on the five design options for the Maryland Avenue area, Option 2 (13-feet track spacing and a minimum of 8.5-feet horizontal clearances) meets the project's requirements to fit four tracks underneath and adjacent to existing buildings, occupied buildings, and retaining walls with minimal or no significant obstacles. The Option 2 dimensions outlined in the report have been identified as the minimum acceptable geometry by current operators and support letters have been received from Amtrak, VRE, and DRPT, which are included in the attached Report appendix. Additionally, proceeding with any other option than Option 2 presents a significant risk to public finance for the project.

Additional support information to advance the design exception request for Option 2 track spacing and minimum horizontal clearances over this segment of the project is detailed below:

- Reference Section 2.6 Horizontal Geometry of the Project Basis of Design (BOD) Report.
- Applying BOD criteria and implementing Option 1 would result in extensive impacts to railroad operations, adjacent property owners, and adjacent public and private transportation and utility infrastructure resulting in construction costs and durations well beyond the scope of this project, which would most likely result in a termination of the project as currently envisioned.
- Option 2 provides track spacing and clearances that meet existing conditions and result in no structural modifications required for the bridges or walls from Maryland Ave SW through the L'Enfant Interlocking segment of the project.
- Benefits of exception include significantly reduced impacts and costs while meeting the Project's Purpose and Need criteria within available funding thresholds.
- Graphical representation of each option are provided in the plan sheets as an appendix to the report



• Order-of-Magnitude cost savings between Option 1 and 2 for structural modifications to bridges and walls is estimated at \$250,000,000 and is provided in **Table 1-1**. This high-level planning estimate is for comparison purposes only without any detailed engineering completed or property owner input received and has been prepared using an analogous estimating method comparing square foot costs and percentages of past projects to determine an estimated order-of-magnitude cost. Due to the lack of design at this stage, care should be taken to properly understand the potential variability of these costs.

Table 1-1 provides a summary of the track spacing, lateral clearances, and impacts associated with each option and the subsequent sections of this report to follow describe the existing conditions and proposed impacts in more detail. Conceptual plans are located in **Appendix B** of this report to further depict the existing and proposed conditions for the various options. Based on maintaining the minimum 13 feet track spacing and 8.5 feet lateral clearance thresholds, Options 3 and 4 fall below these criterion as shown in **Table 1-1**.



Table 1-1 Clearance Assessment Matrix

Configuration	Number of tracks in each span below MD Avenue SW Overbuild Bridge (see diagram this sheet)		d Track Spacing				General Notes	Construction Duration for Structural	Order of Magnitude Estimate	
Config	Span 1	Span 2	Span 3	Freight (ft)	Passenger (ft)	Freight (ft)	Passenger (ft)		Components (only) (see Note 1)	(for structural improvements) (see note 2)
Existing Condition	0	1	2	1	13	8	.5	Existing track conditions	NA	NA
Option 1	0	2	2	1	15	9.	.0	 Track spacing and lateral clearance at preferred minimums for all operators Relocate approximately 720 ft. length of west and center piers along MD Avenue SW Replace approximately 720 ft. of MD Ave bridge superstructure spans on each side of piers being relocated Closes Maryland Avenue SW (private road) for approximately 6 months Maryland Avenue SW (private road) lane closures for approximately 30 months Replace 12th St SW bridge & 12th St Expressway bridge using phased construction one lane at a time Replace approximately 200 ft. of retaining walls from MD Avenue SW to L'Enfant Significant access impacts to 25+ businesses along street frontage, many without alternate public access Relocate approximately 75 ft. of retaining wall at Portals V Extended road closures and mobility impacts for all users on MD Ave SW, 12th St SW, 12th St Expressway Anticipated major multi-year mobility impacts to surrounding street networks for all users Major impacts to rail operations during construction 	66 months	\$250M
Option 2	0	1	3	1	13	8	.5	 Track spacing and lateral clearance acceptable to passenger operators. No impacts to Maryland Avenue SW, 12th St SW bridge or 12th St Expressway bridge No access limitations to businesses along street frontage Minor impact to Portals V property at retaining wall No anticipated surrounding street network impacts No impacts to rail operations during construction 	0 months	\$0
Option 3	0	2	2	15	12.5	9.0	8.0	 Track spacing and lateral clearance undesirable to all operators Relocate approximately 490 ft. length of west and center piers along MD Avenue SW Replace approximately 490 ft. of MD Ave bridge superstructure spans on each side of piers being relocated Replace 12th St SW bridge using phased construction one lane at a time Replace approximately 100 ft. of retaining walls from MD Avenue SW to L'Enfant Significant access impacts to 12+ businesses along street frontage, many without alternate public access Relocate approximately 75 ft. of retaining wall at Portals V Extended road closures and mobility impacts for all users on MD Ave SW & 12th St SW Anticipated multi-year mobility impacts to surrounding street networks for all users Impacts 4.200 SE of Portal V parking lot & service entrances 	50 months	\$110M

Impacts 4,200 SF of Portal V parking lot & service entrances	
Moderate impacts to rail operations during construction	
*Does not meet minimum 13 ft. spacing or 8.5 ft. clearance	

Note 1: Construction duration is estimated for completion of structural work exclusive to the Maryland Avenue SW overbuild, 12th Street SW bridge, 12th Street SW Expressway bridge, and retaining walls only, which in some cases requires extensive sequencing of track, roadway, and bridge activities take place sequentially rather than in parallel to minimize combined traffic network impacts with multiple road closures.

Note 2: The order-of-magnitude cost estimates for the structural improvements are for comparison purposes only without any detailed engineering completed or property owner input received and has been prepared using an analogous estimating method comparing square foot costs and percentages of past projects to determine an estimated order-of-magnitude cost. Due to the lack of design at this stage, care should be taken to properly understand the potential variability of these costs for a selected option.

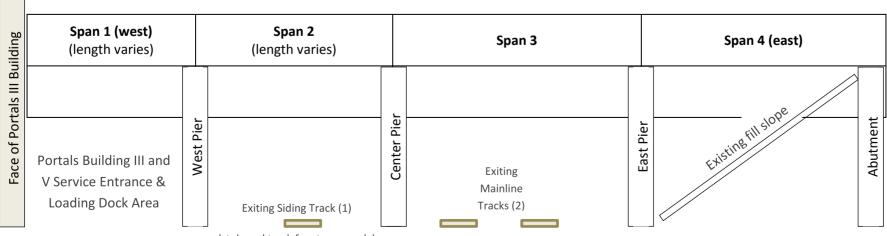
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Maryland Avenue SW to L'Enfant Interlocking Clearance Assessment



Table 1-1 Clearance Assessment Matrix

Configuration	Number of tracks in each span below MD Avenue SW Overbuild Bridge (see diagram this sheet)		each span below MD Avenue SW Overbuild Bridge			Lateral Clearance		General Notes	Construction Duration for Structural	Order of Magnitude Estimate
Confi	Span 1	Span 2	Span 3	Freight (ft)	Passenger (ft)	Freight (ft)	Passenger (ft)		Components (only) (see Note 1)	(for structural improvements) (see note 2)
Option 4	1	1	2	15	NA	9.0	7.25	 Track lateral clearance undesirable to all operators Relocate approximately 400 ft. length of west piers along MD Avenue SW Replace approximately 400 ft. of MD Ave superstructure spans on each side of west pier being relocated Replace 12th St SW bridge & 12th St Expressway bridge using phased construction one lane at a time Replace approximately 200 ft. of retaining walls from MD Avenue SW to L'Enfant Significant access impacts to 12+ businesses along street frontage, many without alternate public access Relocate approximately 100 ft. of retaining wall at Portals V Extended road closures and mobility impacts for all users on MD Ave SW & 12th St SW Anticipated multi-year mobility impacts to surrounding street networks for all users Operates passenger trains below new Portal V terrace Impacts 13,200 SF of Portal V parking lot, requires alternative Portals III and V service road, reconstructs 4,500 SF of Portal V residence entrance, reconstructs Portals III foundation and walls Moderate impacts to rail operations during construction 	48 months	\$100M
Option 5	0	2	2	15	13	9.0	8.5	 Track spacing and lateral clearance acceptable to passenger operators Relocate approximately 700 ft. length of west and center piers Replace approximately 700 ft. of the superstructure spans on each side of the pier segment being relocated Maryland Avenue SW (private road) lane closures for approximately 36 months Replace 12th St SW bridge using phased construction one lane at a time Replace approximately 100 ft. of retaining walls from MD Avenue SW to 12th ST Expressway Significant access impacts to 12+ businesses along street frontage, many without alternate public access Relocate approximately 75 ft. of retaining wall at Portals V Extended road closures and mobility impacts for all users on MD Ave SW & 12th St SW Anticipated major multi-year mobility impacts to surrounding street networks for all users Major ROW impacts Portal III & Portals V buildings, service entrance & docks Significant impacts to Portal V new service entrance and relocation of new terrace support columns Moderate impacts to rail operations during construction 	40 months	\$140M



(stub-end track for storage only)

Existing Maryland Ave SW Bridge Elevation View (looking north) (track direction is south to north)

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Maryland Avenue SW to L'Enfant Interlocking Clearance Assessment



2.0 Existing Conditions

Between Maryland Avenue SW and L'Enfant Interlocking (the "segment"), three tracks exist: Tracks 2, 3, and 4, numbered from east to west. Track 4 is a stub-ended track that terminates at the south end of the Maryland Avenue SW structure, and is used for Virginia Railway Express (VRE) equipment storage. The evaluated segment of railroad passes beneath overhead bridges at Maryland Avenue SW, 12th Street SW, 12th Street Expressway, and L'Enfant Plaza and over an undergrade bridge at 9th Street SW. Retaining walls are also in place to support the embankments along both sides of the tracks between 12th Street SW and the L'Enfant Plaza bridge. The retaining wall on the west side of the corridor continues north of the L'Enfant Plaza bridge ending at 9th Street SW. There is a 140-foot long gabion wall on the east side of the corridor, north of L'Enfant Plaza. Each of the structures to be assessed are described below.

2.1. Maryland Avenue SW

The Maryland Avenue SW bridge is the largest and most significant of the structures in the segment, having four spans extending over the railroad (see **Figure 1-1**) and is approximately 670-feet in length that runs parallel with the railroad. The structure carries two lanes of traffic from 12th Street SW south towards the Mandarin Oriental Hotel and Portals V development, where there is a landscaped traffic circle. Both the traffic lanes and circle are surrounded by parking along the perimeter to serve adjacent properties. There is a landscaped plaza located between the traffic lanes and brick-paved sidewalks and pedestrian access are maintained throughout the surface of the structure.

The bridge is central to The Portals development, which surrounds the traffic circle and the length of the structure. Multiple buildings have storefronts and main entrances along the Maryland Avenue SW bridge, including the Mandarin Oriental Hotel, the United States Department of Agriculture, and several other significant buildings. A new mixed-use building development called Portals V is under construction at the southwest corner of the Maryland Avenue SW traffic circle, where it will also have its main entrance.

Above the railroad track area, the roads, sidewalks, plazas, and planters are built up on the bridge superstructure which is composed of a combination of reinforced concrete slab beam flooring and steel girders. The majority of the superstructure in spans 2 and 3 consists of slab beams that span transversely above the tracks and are simply-supported on reinforced concrete pier bents. Nearest the 12th Street SW bridge, continuous steel girders span the tracks to make up a trapezoidal shape, with an approximate length of 37-feet parallel to the railroad tracks. Outside of the track area, in spans 1 and 4, the bridge superstructure is comprised of steel girder framing with a reinforced concrete deck.

Beneath the Maryland Avenue SW bridge, three tracks traverse the structure. Tracks 2 and Track 3 pass under span 3, and Track 4 (storage track) is located under span 2 until it terminates at the south end of the Maryland Avenue SW bridge (see **Figure 2-3**). Crashwalls extend parallel to the tracks, protecting the pier columns from potential train impacts. The governing lateral railroad clearances span transversely between the pier crashwalls. This lateral clearance is evaluated in subsequent sections of this document.

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Figure 2-2 | Maryland Avenue SW Looking Northwest

2.2. 12th Street SW

The bridge at 12th Street SW spans the railroad at the northern terminus of Maryland Avenue SW. The bridge carries three lanes of vehicular traffic with a sidewalk on both sides. Additionally, the bridge provides turning access onto Maryland Avenue SW where it adjoins with the Maryland Avenue SW bridge.

The roadway is supported on steel girders composite with the reinforced concrete deck. The two-span continuous structure is supported on concrete abutments and a center concrete pier located between tracks 3 and 4. Each of the substructure units is generally parallel to the tracks.

Consistent with Maryland Avenue SW, Track 2 and Track 3 pass beneath the east span and Track 4 (storage track) beneath the west span. A crashwall is provided around the center pier for protection from train impacts. The limiting lateral clearance between existing walls for additional tracks will be measured between the abutment faces and the pier crashwall.

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Figure 2-4 | 12th Street SW Looking South



2.3. 12th Street Expressway

The 12th Street Expressway passes over the railroad and D Street SW on a two-span, simply-supported steel girder bridge with a composite deck. The bridge also contains a curved section that leads the roadway to a ramp down to 12th Street SW. A sidewalk and center island median are provided, although pedestrian access does not exist.

The bridge carrying the 12th Street Expressway varies from the preceding bridges in that all three tracks cross beneath a single span, with no piers obstructing the existing clearance envelope. The concrete bridge pier is integrated with the retaining wall along the east side of the tracks. At this bridge, the limiting lateral clearance will be determined between the concrete abutment face and the concrete pier.

Figure 2-5 | 12th Street Expressway Looking South





2.4. L'Enfant Plaza

L'Enfant Plaza crosses the railroad corridor on a single span, simply-supported prestressed adjacent (butted) box beam bridge. The bridge includes two 29-foot-wide sidewalks, two travel lanes, two parking lanes, and a 40-ft median. The fascia of the bridge includes 8.25 feet wide architectural parapets on each side for an overall bridge width of 166.5 feet.

The span over the railroad is supported on an abutment to the west and on a pier to the east. The structure continues southeast as a viaduct structure with a combination of simply-supported and continuous span segments. All three existing tracks cross beneath a single span, with no piers obstructing the existing clearance envelope. A concrete bridge pier is integrated with the retaining wall along the east side of the tracks. At this bridge, the limiting lateral clearance is measured between the concrete abutment face and the concrete pier. The span is approximately 83 feet, however, due to the skew and the stepped face of the abutment, the lateral through clearance for the railroad is 62 feet.

A Washington Metropolitan Area Transit Authority (WMATA) tunnel crosses under the railroad within the limits of L'Enfant Plaza. No impacts to the tunnel are anticipated.



Figure 2-6 | L'Enfant Plaza Looking South

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2.5. 9th Street SW

The 9th Street SW bridge carries the CSXT corridor over the 9th Street Expressway. It is a single-span deck girder structure consisting of 21 parallel steel girders with a steel plate deck and a 53.75-foot span. The ballasted deck is approximately 54 feet wide.



Figure 2-7 | 9th Street SW Undergrade Bridge Looking South

2.6. Retaining Walls

Extending along both sides of the railroad, the adjacent embankments are supported by retaining walls between 12th Street SW and L'Enfant Plaza, interrupted only at the 12th Street Expressway bridge substructures. North of L'Enfant Plaza, a wall supports the adjacent embankment on the west side of the corridor only. The walls are constructed of concrete and are capped with stone masonry blocks in some locations. The walls generally align with the faces of the bridge abutments at 12th Street SW and L'Enfant Plaza.

Along the west side of the track alignment, the walls generally only support earth embankment; however, along the east side of the track alignment, the wall supports D Street SW and a sidewalk. Also, between 12th Street Expressway and L'Enfant Plaza, along the east side of the track alignment, the retaining wall is shaped in a sawtooth configuration and includes a concrete staircase up to L'Enfant Plaza. Lateral clearances are measured transversely between the retaining walls on each side of the tracks.





Figure 2-8 Retaining Walls Looking North from L'Enfant Plaza



3.0 Option 1 Lateral Clearance: 15-foot Track Spacing

3.1. Lateral Clearance Assessment

For the proposed track alignments with 15-foot track spacing, Track 1 and Track 2 will pass beneath span 3 (the east span of Maryland Avenue SW), and Track 3 and Track 4 will pass beneath span 2 (the west span). This concept is similar at 12th Street SW, with two tracks passing beneath each of the two spans. At the 12th Street Expressway bridge and L'Enfant Plaza, the proposed configuration is similar to existing, with all tracks passing beneath a single span, but the alignment is widened out to accommodate four tracks spaced at 15 feet.

Existing lateral clearances have been measured and compared to the clearance necessary to fit 15-foot track spacings. The required clearances are based on 15-foot track spacing, with 9-foot minimum from centerline of track to the nearest obstruction in accordance with CSXT design standards. Additional clearance is required in some locations to account for train tilt due to superelevation and carbody inswing/outswing from track curvature. The dimensions for each of the assessed bridges are described as follows:

	Total Clearance	Left Clearance (West)	Track Spacing	Right Clearance (East)
Span 2 (Existing)	28'-6" typical	10'-11" min.	None	11'-0" min.
Span 2 (Proposed)	36'-0" typical	10'-0" min.	15'-0"	9'-7" min.
Span 3 (Existing)	43'-6" typical	12'-5" min.	13'-0"	8'-6" min.
Span 3 (Proposed)	36'-0" typical	9'-0" min.	15'-0"	10'-4" min.

Table 3-1 Maryland Avenue SW Lateral Clearances

Table 3-2 12th Street SW Lateral Clearances

	Total Clearance	Left Clearance (West)	Track Spacing	Right Clearance (East)
West Span (Existing)	26'-1" min.	16'-0" min.		9'-11" min.
West Span (Proposed)	34'-3" min.	9'-11" min.	15'-0"	9'-9" min.
East Span (Existing)	43'-6" typical	23'-6" min.	13'-0"	11'-2" min.
East Span (Proposed)	40'-6" typical	9'-0"	15'-0"	16'-1" min.

Table 3-3 12th Street Expressway Lateral Clearances

	Total Clearance	Left Clearance (West)	Track Spacing		Right Clearance (East)	
Single Span (Existing)	59'-9" typical	17'-5" min.	14'-0"	13'-0"		10'-9"
Single Span (Proposed)	63'-3" min.	9'-6"	15'-0"	15'-0"	15'-0"	10'-4" min.



Table 3-4 L'Enfant Plaza Lateral Clearances

	Total Clearance	Left Clearance (West)	Track Spacing		Right Clearance (East)	
Single Span (Existing)	62'-8" min.	22'-0" min.	14'-0"	13'-0"		13'-8" min.
Single Span (Proposed)	62'-8" min.	8'-10"	15'-0"	15'-0"	15'-0"	8'-7" min.

Each of the overhead bridges, except L'Enfant Plaza, contains insufficient lateral clearances in their existing configurations to allow 15-foot track spacing. As a result, the bridges at Maryland Avenue SW, 12th Street SW, and 12th Street Expressway require modifications to increase the existing clearances.

3.2. Required Structural Modifications

To accommodate 15-foot track spacing and 9-foot lateral clearance between Maryland Avenue SW and L'Enfant Interlocking, significant structural changes and bridge reconstruction are necessary. The required structural modifications are described in the following sections.

3.2.1. Maryland Avenue SW

At the Maryland Avenue SW bridge, span 2 (the existing west span) has inadequate lateral clearance between the pier crash walls to fit two tracks spaced at 15 feet. The least invasive solution to modifying the clearance is to relocate the existing middle pier between proposed Track 2 and Track 3. By shifting the pier location 7.5 feet to the east, two track alignments can be made to fit through span 2 and two tracks through span 3, for a total of four tracks. Due to the configuration of the superstructure within the concrete plank beams area, relocating the bridge piers requires the superstructure of both adjacent spans to be removed and replaced to span to the new pier location. This has significant implications to the Maryland Avenue SW plaza and roadway. All the southbound lanes and one lane of the traffic circle would be temporarily closed to replace the superstructure, and the plaza would have to be demolished and rebuilt upon completion.

Additionally, at the northwest corner of the structure, the end four columns and crashwall are skewed towards the tracks (to the east). To fit the proposed tracks, the piers must be moved to the west and rotated parallel to the tracks. The superstructure at this area consists of continuous steel girders and the relocation of the northwest piers would require a detailed structural analysis to determine if the existing superstructure could be field modified or if replacement is necessary. This would likely require full replacement of the concrete bridge deck to modify the reinforcing steel layouts to accommodate the new location for negative bending over the piers. To accommodate this work, it is anticipated that all lanes in each direction must be closed during construction. The plazas would have to be completely removed in this area and rebuilt after construction of the superstructure is completed.

3.2.2. 12th Street SW

To accommodate the proposed 15-foot track spacing at 12th Street SW, the existing bridge pier requires relocation. A relocation of 8.67 feet to the east results in sufficient clearance for the proposed Track 3 and 4 alignments in the west span. A detailed structural analysis can be performed on the two-span continuous girders to determine if the existing superstructure can remain with modification; however, the proposed pier location would be near the existing girder splices. This significantly complicates



reconstructing the existing steel girders for reuse as the splice area would be supporting bearing loads and carrying increased negative moments. Similar to Maryland Avenue SW, this will likely require a full replacement of the concrete bridge deck to modify the reinforcing steel layouts to accommodate the new location for negative bending over the piers. As such, the existing superstructure will likely require replacement and it is anticipated that access to Maryland Avenue SW would be eliminated for an extended period of time to perform this work.

3.2.3. 12th Street Expressway

At the 12th Street Expressway, the three existing tracks pass under a single span of the bridge. This span has insufficient clearance to fit four proposed tracks at 15-foot spacing and 9-foot desired lateral clearance. To increase the clearance, the west abutment requires relocation further west, at a distance up to 10-feet away. As a result of relocating the substructure units and lengthening the structure, the entire superstructure must be replaced for the span over the track area.

3.2.4. L'Enfant Plaza

No modification of the L'Enfant Plaza overhead bridge is proposed. The existing span can accommodate 8.83 feet lateral clearances with four tangent tracks at 15-foot track centers. Although slightly under the target 9-foot clearance, it is believed the existing bridge can remain.

3.2.5. 9th Street SW

While 9th Street SW is beyond the limits of this project, to accommodate the increased track centers, the east side of the 9th Street SW bridge requires widening. Modifications to lengthen the abutment and add deck-girders would be required to widen the ballasted deck approximately 6 feet.

In addition to lengthening the abutment, modified wingwalls are required, which will impact the adjacent General Services Building parking lot. It is believed that the existing roadway profile under the bridge does not require modification.

3.2.6. Retaining Walls

The retaining walls require reconfiguration to provide the required clearances for the proposed track alignments. While the overall wall-to-wall clearance is sufficient for 15-foot track spacings, the locations of the walls are governed by the track alignments and the proposed abutment and pier configurations. As such, the two retaining walls along the west side of the track alignment between 12th Street SW and L'Enfant Plaza (interrupted at 12th Street Expressway) require relocation to accommodate the new track alignments and necessitate the complete removal of the existing walls and construction of new ones in the proposed location.

Similarly, the wider track spacing may require modifications to the existing 7th Street SW wingwall at the southeast corner of the bridge (geographic location is southwest). The track centers begin to widen from the existing 13 feet and will require lengthening or raising this wingwall. No changes to the 7th Street SW undergrade bridge are anticipated.



3.3. Structural Staging Considerations

As a result of widening throughout the segment to achieve horizontal clearances for the 15-foot track centers, each of the structures require some significant modifications. An approximate construction duration of sixty-six months is anticipated to complete the necessary structural modifications between Maryland Avenue SW and L'Enfant Plaza. Construction is expected to maintain two-track railroad operations, ensure railroad safety and protection of the traveling public, and minimize impacts to roadways and adjacent properties as much as possible. The expected staging of the structural work is described in the following section and corresponds to the overall track construction staging.

During construction for Option 1, extended duration lane closures and track outages are necessary; however, two tracks may be maintained during construction with the exception of overnight track tie-in work and overhead activities such as girder erection. Several construction stages will necessitate the closure of Maryland Avenue SW to vehicular access entirely. A Critical Path Method (CPM) construction schedule is included in **Appendix C** of this report and a summary of the major work activities is provided below.

3.3.1. Relocate West Retaining Wall and West Abutment at 12th Street Expressway

Significant Roadway and Railroad Outages

- 24 months phased reconstruction of 12th Street Expressway bridge to relocate west abutment further west and lengthen superstructure span
- Maintain two through lanes and one turning lane on 12th Street Expressway during construction
- 6 months 12th Street Expressway ramp closed
- Minimum 12 months Track 4 out of service (existing Tracks 2 and 3 in service)

Replace 12th Street Expressway

- 1. Close portion of bridge and divert traffic to alternate lanes
- 2. Remove segment of bridge superstructure
- 3. Remove existing Track 4 from service (service remains on Tracks 2 and 3)
- 4. Demolish portion of west abutment and retaining wall between 12th St Expressway and L'Enfant Plaza
- 5. Construct new abutment and retaining wall segments
- 6. Construct new bridge superstructure span segment over tracks
- 7. Repeat phases until completion, reopen bridge to traffic

3.3.2. Relocate Segments of Maryland Avenue SW Center and West Piers

Significant Roadway and Railroad Outages

- 24 months phased reconstruction of 12th Street SW to relocate abutment and pier
- 9-12 months Maryland Avenue SW closed to traffic for north end pier/superstructure work
- 6-9 months existing Track 4 out of service (existing Tracks 2 and 3 in service)
- 6 months existing Track 3 out of service (existing Tracks 2 and 4 in service)
- Note Track 4 becomes temporary mainline



Relocate Northwest Pier at Maryland Avenue SW

- 1. Close portion 12th Street SW and Maryland Avenue SW to traffic (pedestrian access to remain on Maryland Avenue SW south of work area)
- 2. Remove portion of 12th Street SW bridge superstructure, both spans (reuse not feasible)
- 3. Remove bridge superstructure over north end of Maryland Avenue SW (reuse not feasible)
- 4. Remove existing Track 4 from service (service to remain on existing Tracks 2 and 3)
- 5. Demolish northwest portion of pier at Maryland Avenue SW
- 6. Construct new, realigned northwest pier and superstructure at Maryland Avenue SW
- 7. Restore service to existing Track 4 and remove service from existing Track 3

Relocate Middle Pier at Maryland Avenue SW and 12th Street SW

- 1. Demolish middle pier at north end of Maryland Avenue SW and pier at 12th Street SW
- 2. Construct new piers in proposed locations for both bridges
- 3. Restore service to all existing tracks
- 4. Reconstruct bridge superstructures
- 5. Reopen portion of 12th Street SW and Maryland Avenue SW to vehicles and pedestrians

3.3.3. Structural Stage 3 – Relocate Middle Pier at Maryland Avenue SW

Significant Roadway and Railroad Outages

- 12-18 months Maryland Avenue SW southbound lanes closed to traffic and pedestrians
- 24-30 months existing Track 3 out of service (existing Tracks 2 and 4 in service)

Relocate Middle Pier along Maryland Avenue SW

- 1. Modify northbound lanes of Maryland Avenue SW for bidirectional traffic
- 2. Close Maryland Avenue SW southbound lanes to traffic and pedestrians
- 3. Remove existing superstructure over tracks between traffic circle and 12th Street SW
- 4. Remove existing Track 3 from service
- 5. Remove existing middle pier between traffic circle and 12th Street SW
- 6. Construct new middle pier in proposed location
- 7. Reconstruct bridge superstructure
- 8. Reopen southbound lanes of Maryland Avenue SW to vehicles and pedestrians

Relocate Middle Pier beneath Traffic Circle at Maryland Avenue SW

- 1. Reduce traffic circle to one lane of traffic access
- 2. Remove existing superstructure over tracks within traffic circle
- 3. Remove remainder of existing middle pier
- 4. Construct new middle pier in proposed location
- 5. Reconstruct bridge superstructure
- 6. Reopen second lane of Maryland Avenue SW on traffic circle for vehicles and pedestrians

Repeat above steps for additional phases of bridge replacement while minimizing railroad and roadway lane closures and associated transportation network impacts.

As discussed in the conceptual staging sequences above, the proposed bridge and retaining wall modifications require multiple stages with varying impacts to railroad operations, vehicular traffic, and pedestrian access. The reconstruction of the 12th Street Expressway and the retaining walls requires



12th Street Expressway to be reduced down to a single lane at times. At 12th Street SW and Maryland Avenue SW, various stages require temporary lane adjustments, reconfigurations, and complete closures. Access to the properties along Maryland Avenue SW and the traffic circle will be significantly reduced during several stages of construction for as long as 12 months.

3.4. Right-of-Way Impacts Assessment

Additional right-of-way is required to achieve the 15-foot track center option. Approximate limits of additional right-of-way are shown in **Table 3-5**.

Side of Alignment	Between	Length (*)	Width (**)	Owner
West (Left)	Maine Avenue SW and Maryland Avenue SW	175	10	Portals V
East (Right)	Maine Avenue SW and Maryland Avenue SW	50	10	Portals V
West (Left)	12 th Street SW and 12 th Street Expressway	365	10	DDOT
West (Left)	12 th Street Expressway and L'Enfant Plaza	60	10	USA
East (Right)	9 th Street SW to 7 th Street SW	160	10	USA

 Table 3-5
 Approximate Limits of Additional Right-of-Way

(*) – Length Measured Along Tracks (in feet)

(**) – Width Measured Perpendicular to Tracks (in feet)



4.0 Option 2 Lateral Clearance: 13-Foot Track Spacing

4.1. Lateral Clearance Assessment

The track alignment with 13-foot track spacing was conceptualized to minimize impacts and reconstruction requirements to the existing bridges and retaining walls, and provide 8.5-foot minimum lateral clearance. The configuration includes Tracks 1, 2, and 3 located in span 3 and Track 4 located in span 2. The existing and proposed lateral track clearances are summarized in **Table 4-1**, **Table 4-2**, and **Table 4-3**.

	Total Clearance	Left Clearance Track Spacing I (West)		Right Clearance (East)	
Span 2 (Existing)	28'-6" typical	10'-11" min.	None	None	11'-0" min.
Span 2 (Proposed)	28'-6" typical	8'-11" min.	13'-0"	None	13'-6" min.
Span 3 (Existing)	43'-6" typical	12'-5" min.	13'-0"	None	8'-6" min.
Span 3 (Proposed)	43'-6" typical	8'-6" min.	13'-0"	13'-0"	8'-6" min.

Table 4-1 Maryland Avenue SW Lateral Clearances

Table 4-2 12th Street SW Lateral Clearances

	Total Clearance			Right Clearance (East)	
West Span (Existing)	26'-1" min.	16'-0" min.	None	None	9'-11" min.
West Span (Proposed)	26'-1" min.	17'-11" min.	13'-0"	None	8'-6" min.
East Span (Existing)	43'-6" typical	23'-6" min.	13'-0"	None	11'-2" min.
East Span (Proposed)	43'-6" typical	9'-8" min.	13'-0"	13'-0"	13'-1" min.

Table 4-3 12th Street Expressway Lateral Clearances

	Total Clearance	Left Clearance (West)	Track Spacing		Right Clearance (East)	
Single Span (Existing)	59'-9" typical	17'-5" min.	14'-0"	13'-0"		10'-9"
Single Span (Proposed)	59'-9" typical	9'-5" min.	13'-0"	13'-0"	13'-0"	10'-11"

4.2. Required Structural Modifications

The proposed 13-foot track spacings fit within the existing lateral clearances at all locations between Maryland Avenue SW and L'Enfant Interlocking. There is no structural work anticipated and therefore the construction duration is 0 months. There is some work that would be required to the retaining wall along the Portals V property, however, that work will be completed outside of the current track operations and is not included in the construction duration.



4.3. Right-of-Way Impacts Assessment

For the 13-foot track spacing concept, the proposed right-of-way matches the existing conditions at all but one location. Along the west side of the alignment, just south of the Maryland Avenue SW bridge, the Portals V wall will be impacted and may require modifications to accommodate Track 4. This small area of right-of-way is needed for the proposed track alignment. Beyond this location, no further assessment is required between Maryland Avenue SW and L'Enfant Interlocking.

Table 4-4 Approximate Limits of Additional Right-of-Way

Side of Alignment	Between	Length (in feet)	Width (in feet)	Owner
West	Maine Avenue SW and Maryland Avenue SW	200	10	Portals V



5.0 Option 3 Lateral Clearance: 15-Foot Track Spacing for Tracks 1 & 2, 12.5-Foot Track Spacing for Tracks 3 & 4

5.1. Lateral Clearance Assessment

For Option 3, the proposed track alignment includes providing two tracks at 15-foot freight track spacing with 9-foot horizontal clearance in Span 3 and two tracks at 12.5-foot passenger track spacing with 8.0-foot horizontal clearance in Span 2. Both the track spacing and lateral clearance falls below the baseline minimums of 13-foot spacing and 8.5-foot clearance established by operators. There is also a significant amount of structural work anticipated for this option, including extensive pier relocation, superstructure replacement and modifications, and reconstructing a retaining wall. The construction duration is estimated to be 50 months. Plan sheets depicting clearance results as well as estimated construction schedules are provided in the Appendix to this report. Although the freight spacing meets CSXT's criteria, both the passenger track spacing and horizontal clearance are less than minimum thresholds and therefore no further analysis of this option is discussed in this report.

6.0 Option 4 Lateral Clearance: 15-Foot Track Spacing for Tracks 1 & 2, Varied Spacing & Clearance for Tracks 3 & 4

For Option 4, the proposed track alignment includes providing two tracks at 15-foot freight track spacing with 9-foot horizontal clearance in Span 3 and one track in Span 2 and one track in Span 1 with as little as 7.25-foot horizontal clearance. Similar to Option 3, both the track spacing and lateral clearance falls below the baseline minimums of 13-foot spacing and 8.5-foot clearance established by operators. There is again a significant amount of structural work anticipated for this option, including pier replacement, superstructure replacement, retaining wall reconstruction, and relocation of the Portals service entrance. The construction duration is estimated to be 49 months. Plan sheets depicting clearance results as well as estimated construction schedules are provided in the Appendix to this report. Although the freight spacing meets CSXT's criteria, both the passenger track spacing and horizontal clearance are undesirable and therefore further vetting of this option has been eliminated.



7.0 Option 5 Lateral Clearance: 15-Foot Track Spacing for Tracks 1 & 2, 13-Foot Track Spacing for Tracks 3 & 4

7.1. Lateral Clearance Assessment

For Option 5, two separate track spacings have been evaluated, 15-foot spacing for freight and 13-foot spacing for passenger. The 15-foot track alignment includes Tracks 1 and 2 passing beneath span 3 (the east span) of Maryland Avenue SW and continuing through the east span of 12th Street SW towards L'Enfant Plaza. Tracks 3 and 4 will maintain 13-foot track centers, passing beneath span 2 (the west span) of Maryland Avenue SW and continuing through the west span of 12th Street SW.

The existing lateral clearances are measured and compared to the clearance necessary to fit the proposed 13-foot and 15-foot track spacings. To meet minimum lateral clearance requirements for CSXT, VRE and Amtrak, the proposed alignments for Track 1 and Track 2 will primarily be used for freight traffic while the proposed alignments for Track 3 and Track 4 will primarily be use for passenger traffic. The required clearances are based on: the freight tracks having a 15-foot track spacing and 9-foot minimum from centerline of track to the nearest obstruction in accordance with CSXT design standards; and the passenger tracks having a 13-foot track spacing in accordance with Amtrak and VRE preferences along with 8'-6" minimum from centerline of track to the nearest obstruction. Additional clearance is required in some locations to account for train tilt due to superelevation and car body inswing/outswing from track curvature, which has been accounted for in assessing available minimum clearances in this report. The dimensions for each of the assessed bridges are described as follows:

	Total Clearance (min.)	Left Clearance (West)	Track Spacing	Right Clearance (East)
Span 2 (Existing)	19'-6"	9'-3" min.	None	10'-3" min.
Span 2 (Proposed)	30'-0"	8'-6" min.	13'-0"	8'-6" min.
Span 3 (Existing)	43'-0"	21'-6" min.	13'-0"	8'-6" min.
Span 3 (Proposed)	33'-0"	9'-0" min.	15'-0"	9'-0" min.

 Table 5-1
 Maryland Avenue SW Lateral Clearances

Table 5-2 12th Street SW Lateral Clearances

	Total Clearance (min.)	Left Clearance (West)	Track Spacing	Right Clearance (East)
West Span (Existing)	24'-6"	14'-6" min.	None	10'-0" min.
West Span (Proposed)	23'-9"	1'-7" min.	15'-0"	8'6" min.
East Span (Existing)	48-9"	24'-3" min.	13'-0"	11'-6" min.
East Span (Proposed)	48'-9"	20'-3" min.	15'-0"	13'-6" min.



Table 7-3 12th Street Expressway Lateral Clearances

	Total Clearance (min.)	Left Clearance (West)	Track Spacing	Right Clearance (East)
Single Span (Existing)	58'-9"	22'-0" min.	13'-0"	10'-9"
Single Span (Proposed)	68'-6"	8'-6"	15'-0"	9'-0" min.

Table 5-4 L'Enfant Plaza Lateral Clearances

	Total Clearance	Left Clearance (West)	Track Spacing	Right Clearance (East)
Single Span (Existing)	47'-6"	28'-9" min.	13'-0"	18'-9" min.
Single Span (Proposed)	66'-3"	11'-6"	15'-0"	9'-9" min.

Each of the overhead bridges, except L'Enfant Plaza, contain insufficient lateral clearances in their existing configurations to allow the minimum track spacing. As a result, the bridges at Maryland Avenue SW, 12th Street SW, and 12th Street Expressway require modifications to increase the existing clearances and establish minimum track spacing.

7.2. Required Structural Modifications

To accommodate 15-foot freight track spacing with 9-feet later clearance and 13-foot passenger track spacing with 8.5-feet later clearance between Maryland Avenue SW and L'Enfant Interlocking, significant structural changes and bridge reconstruction are necessary. The required structural modifications are described in the following sections.

7.2.1. Maryland Avenue SW

At the Maryland Avenue SW bridge, the existing spans have inadequate lateral clearance between the pier crash walls to fit two tracks spaced at 13 feet in Span 2. The proposed solution to achieve the desired clearance is to relocate 700 to 800 feet of the existing piers under the bridge. The majority of the work is to relocate Pier 1 further west, towards the Portals development, by approximately 3-feet, with some additional relocation required at pier 2. The relocation of the bridge piers will require reconstruction of the superstructure spans on each side of the proposed piers, however, it is assumed that Span 1 or the westernmost span under the traffic circle can be left in place with approximately 20 feet of the concrete deck superstructure removed to allow the ends of the steel beams to be modified to accommodate pier relocation. The simple span concrete superstructure that makes up span 2 will require full replacement with longer beams.

The pier and superstructure work has significant implications to the Maryland Avenue SW plaza and roadway and will require the southbound lanes and one lane of the traffic circle be temporarily closed for 12-24 months. The plaza will have to be demolished and rebuilt upon completion.

Additionally, at the northwest corner of Maryland Avenue SW, the end columns and crashwall are skewed to the east, as noted in other options. To accommodate the proposed tracks, the piers must be



moved to the west and aligned with the remainder of the new pier locations further south so they will be parallel to the tracks. The superstructure at this end is comprised of a continuous steel girder superstructure over three spans. The relocation of the northwest pier requires a detailed structural analysis to determine if the existing superstructure could be field modified to handle the modified design loading. This would as a minimum, likely require full replacement of the concrete bridge deck to modify the reinforcing steel layouts to accommodate the new location of negative bending over the piers. To accommodate this work, it is anticipated that all lanes in each direction must be closed during construction and this work would be completed using accelerated bridge construction. The plazas would have to be completely removed in this area and rebuilt after construction of the superstructure is completed.

7.2.2. 12th Street SW

The existing west bridge abutment requires relocation further to the west to accommodate the track spacing. A relocation of 8.67 feet results in sufficient clearance for the proposed track alignments. The girders are two-span continuous over the center pier. A detailed structural analysis can be performed to determine if the existing superstructure may remain with modification; however, the proposed pier location would be near the existing steel girder splices, and significant steel strengthening will be required as a minimum. This significantly complicates reconstructing the existing steel girders for reuse as the splice area would support bearing loads and carry increased negative moment. Similar to Maryland Avenue SW, this will likely require full replacement of the concrete bridge deck to modify the reinforcing steel layouts to accommodate the new location for negative bending over the piers. As such, the existing superstructure will more than likely require replacement, thus resulting in potentially higher loading and reconstruction of the east abutment. It is anticipated that access to Maryland Avenue SW would be eliminated for an extended period of time to perform this work.

7.2.3. 12th Street Expressway

At the 12th Street Expressway, all the existing tracks pass under a single span of the bridge. This span has insufficient clearance to fit the proposed 13-foot and 15-foot track spacings. To increase the clearance, the west abutment must be relocated further west. As a result of relocating the substructure units, the entire superstructure must be replaced for the span over the track area.

7.2.4. L'Enfant Plaza

No modification of the L'Enfant Plaza overhead bridge is proposed. The existing span can accommodate 8.83 feet lateral clearances with four tangent tracks at 15-foot track centers. Although slightly under the target 9-foot clearance, it is believed the existing bridge can remain.

7.2.5. Retaining Walls

In addition to modifying the bridges, the retaining walls need to be reconfigured and moved further west to accommodate the required alignments and clearances. The portions of the retaining walls along the west side of the track alignment from Maryland Avenue SW through 12th Street SW and 12th Street Expressway must be relocated. The relocation will necessitate removal of portions of the existing walls and construction of new ones in the new locations. The anticipated removal and reconstruction of these retaining walls is approximately 100-feet in length.



Similarly, the proposed track spacing require modifications to the existing retaining walls at Portals V. The anticipated relocation of the retaining walls within this area is approximately 75-feet in length.

7.3. Structural Staging Considerations

As a result of clearance widening throughout the track alignment, each of the structures require some significant modifications. An approximate construction duration of 40 months is anticipated to complete the structural modifications between Maryland Avenue SW and L'Enfant Plaza. During this time, extended duration lane closures and track outages are necessary; however, two tracks may be maintained during construction with the exception of overnight track tie-in work. Several construction stages will necessitate the closure of 12th Street SW and Maryland Avenue SW to vehicular access entirely.

The construction stages required are very similar to Option 1 for the 15-foot track centers, with the exception that a majority of the pier replacement is along Pier 1, which is further west of Tracks 1 and 2. However, the work is adjacent to the Portals III and Portals V developments and will include impacts to the supporting columns for the new Portals V building terrace.

7.4. Right-of-Way Impacts Assessment

Additional right-of-way is required to achieve the 13-foot and 15-foot track center option. Approximate limits of additional right-of-way are shown in **Table 4-5**.

Side of Alignment	Between	Length (*)	Width (**)	Owner
West (Left)	Maine Avenue SW and Maryland Avenue SW	175	15	Portals V
West(Left)	Maryland Avenue SW	700	10	Portals III
East (Right)	Maine Avenue SW and Maryland Avenue SW	50	10	Portals V
West (Left)	12 th Street SW and 12 th Street Expressway	375	10	DDOT
West (Left)	12 th Street Expressway and L'Enfant Plaza	60	10	USA
East (Right)	9 th Street SW to 7 th Street SW	160	10	USA

 Table 7-5
 Approximate Limits of Additional Right-of-Way

(*) – Length Measured Along Tracks (in feet)

(**) - Width Measured Perpendicular to Tracks (in feet)



8.0 Vertical Clearance Assessment

A recent clearance improvement project increased vertical clearances through the project area to permit operation of Plate H equipment (double-stacked intermodal containers, see **Figure 1-2**)) on existing Track 2 and Track 3 only (span 3), which was primarily achieved by lowering the track. The minimum clearance of 21.14 feet will be used. All four tracks will be made capable of accommodating Plate H equipment.

9.0 Additional Considerations

9.1. Drainage

An existing CSXT-owned drainage system was installed as part of the recent clearance improvement project, which increased vertical clearances through the project area to permit operation of Plate H equipment (double-stacked intermodal containers). As part of that project, a new collector system was installed to bring water from the cut section to a city sewer located between 14th Street SW and Maryland Avenue SW, near the intersection of Maine Avenue SW. In order to increase the number of tracks in the cut section to four, this system will have to be modified to accommodate the new track centers. Although the design would be different for each option, both the 13-foot and 15-foot track centers will require similar modifications of this storm sewer system. The drainage system does not appear to be a differentiator between the two track-center options; once a track spacing is selected, this element will be further evaluated.

9.2. Communication and Signal Facilities

The overall four-track alignment for the Long Bridge requires reconfiguration of the existing L'Enfant (LE) Interlocking. Both track-center options will require a similar modification, and these are not seen as differentiators between the two options. The existing signal locations can remain (northbound home signals south of Maryland Avenue SW and southbound home signals north of 9th Street SW), but the signals will have to be relocated to accommodate the greater number of tracks. If required, additional space appears to be available within the right-of-way on the east side of the corridor, north of and under L'Enfant Plaza.

Existing signal and communications lines running through the corridor may need to be relocated for either option.



Long Bridge Project

Environmental Impact Statement (EIS)

Maryland Avenue SW to L'Enfant Interlocking Clearance Assessment

Appendix A - Location Map





September 2018

Location Map



Long Bridge Project

Environmental Impact Statement (EIS)

Maryland Avenue SW to L'Enfant Interlocking Clearance Assessment

Appendix B - Clearance Assessment Plans

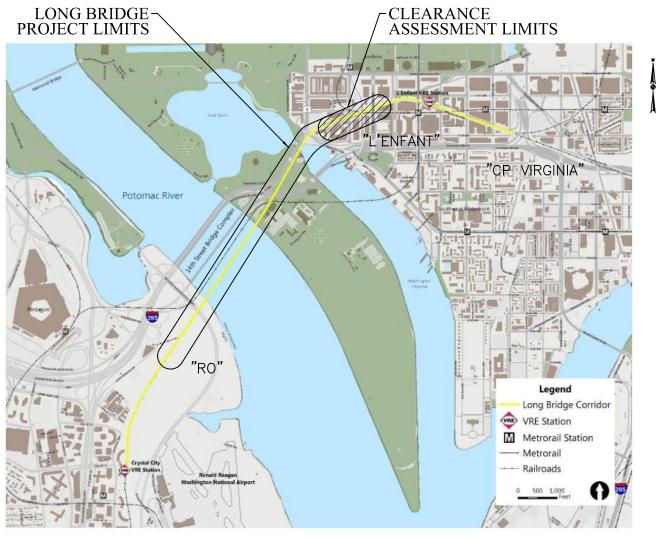
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- OPTION 3 PLAN OPTION 4 PLAN -5
- **OPTION 5 PLAN** 6
- TYPICAL SECTIONS MARYLAND AVENUE SW TYPICAL SECTIONS 12TH STREET SW TYPICAL SECTIONS 12TH STREET EXPRESSWAY 8 ğ

DISTRICT OF COLUMBIA **DEPARTMENT OF TRANSPORTATION**

PLANS OF PROPOSED

LONG BRIDGE PROJECT EIS MARYLAND AVENUE SW TO L'ENFANT INTERLOCKING CLEARANCE ASSESSMENT

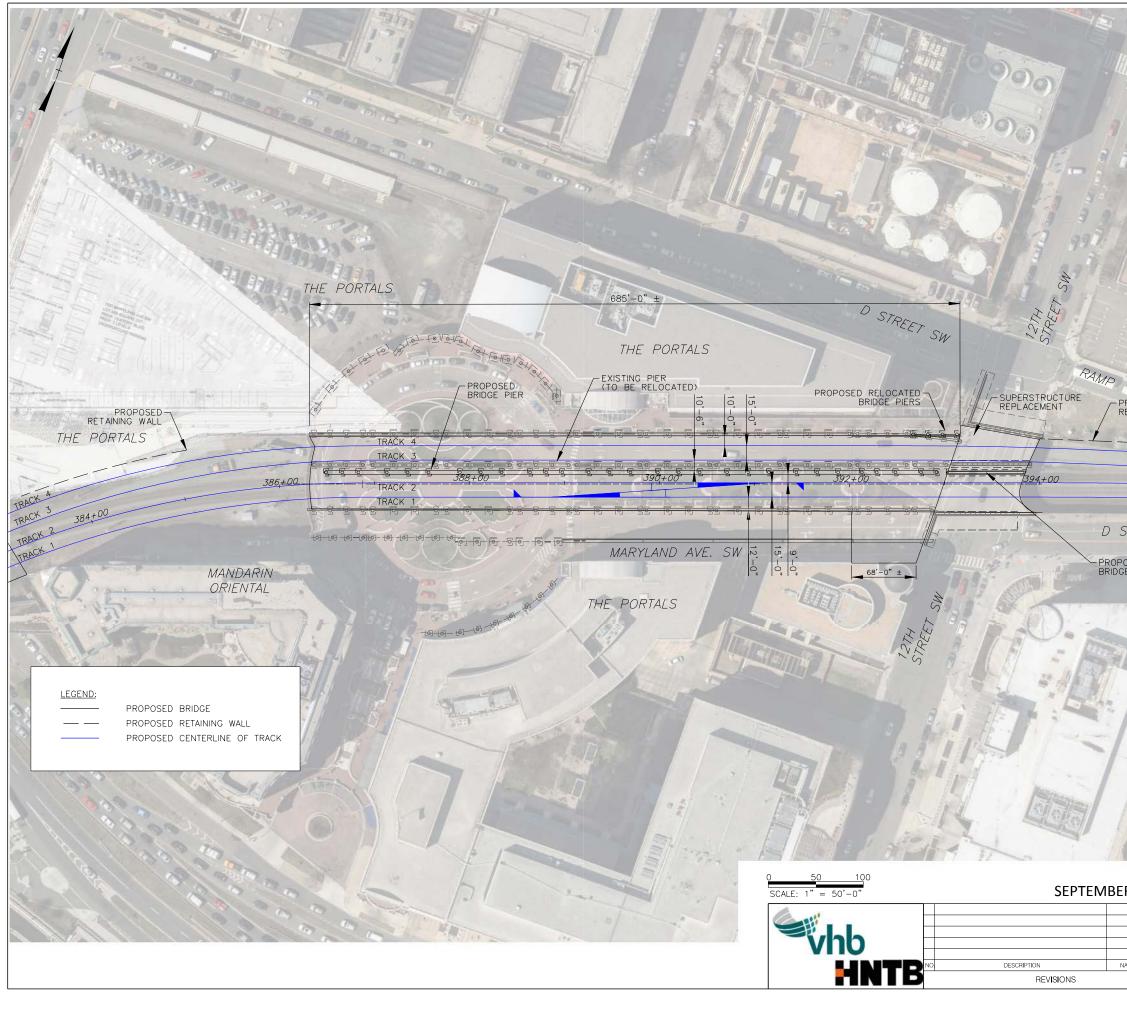


KEY MAP

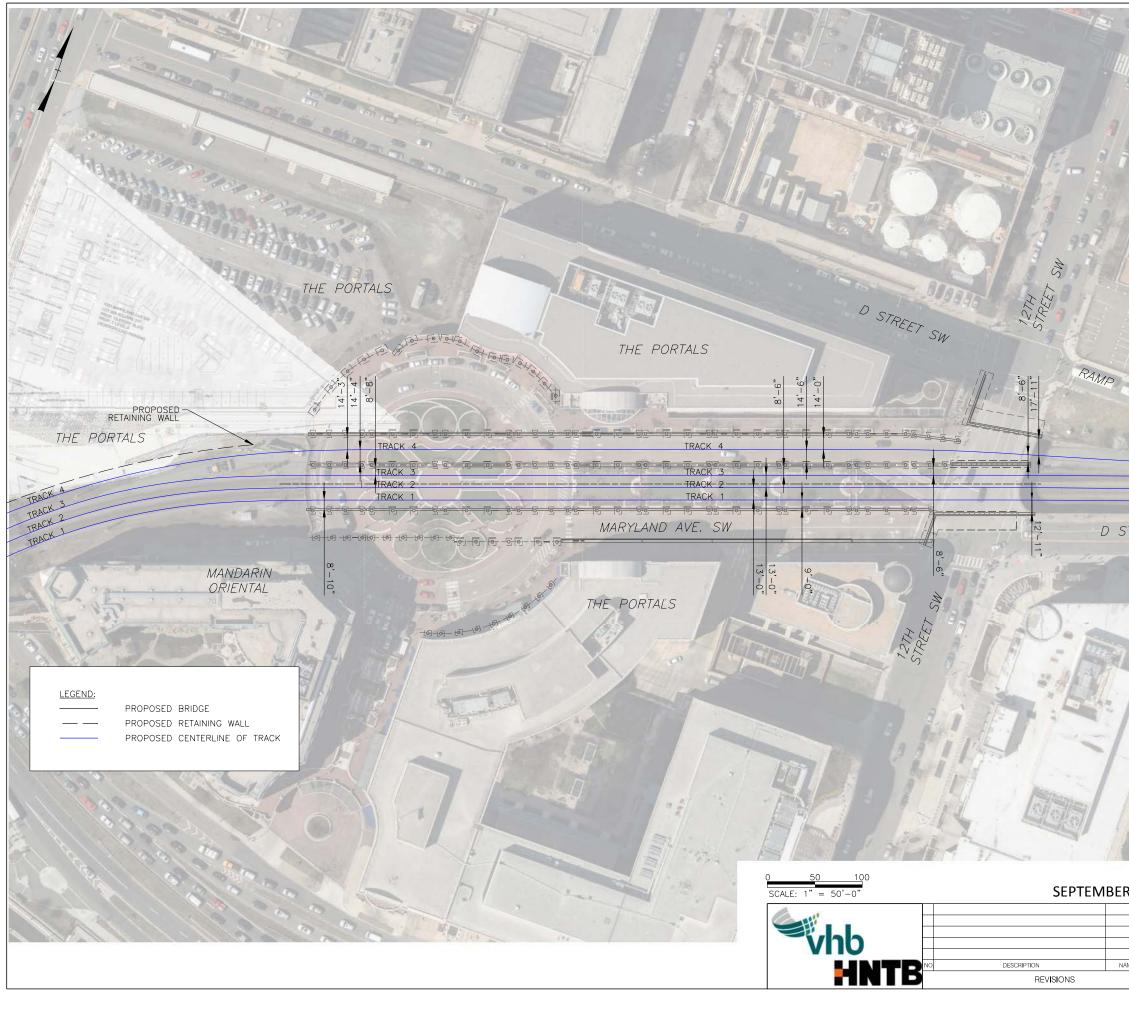




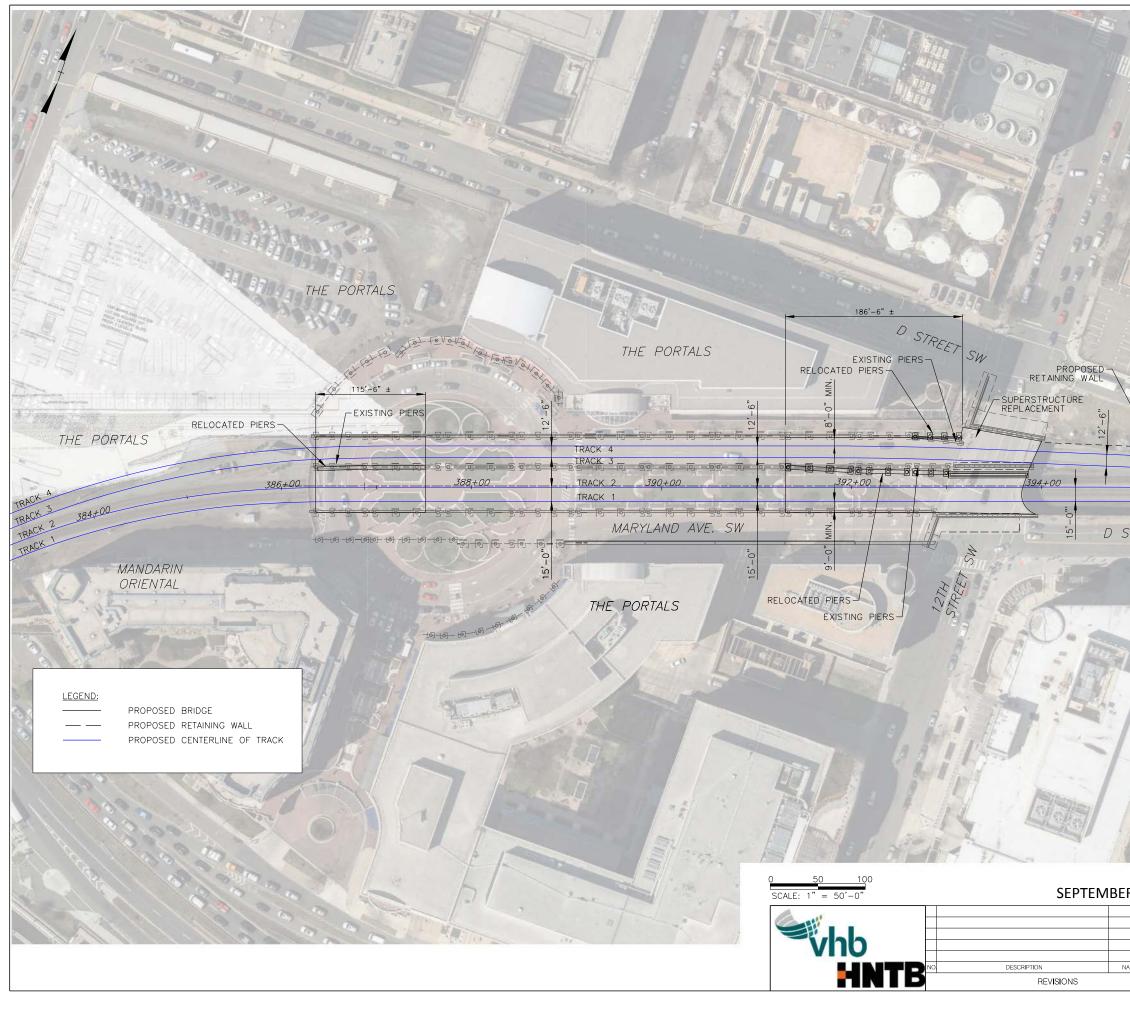
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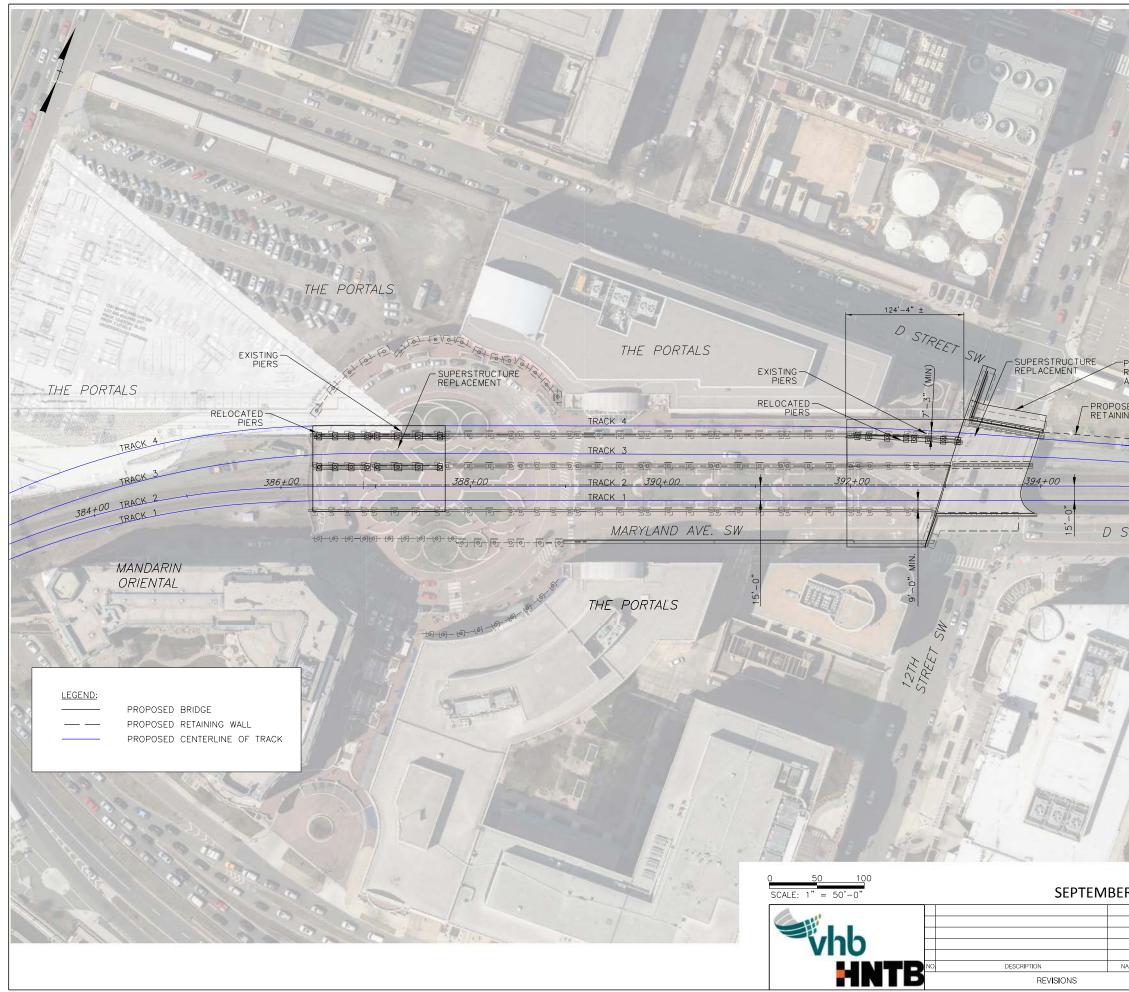
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EXISTING DSED RELOCAT	PIER			STREET SW			1
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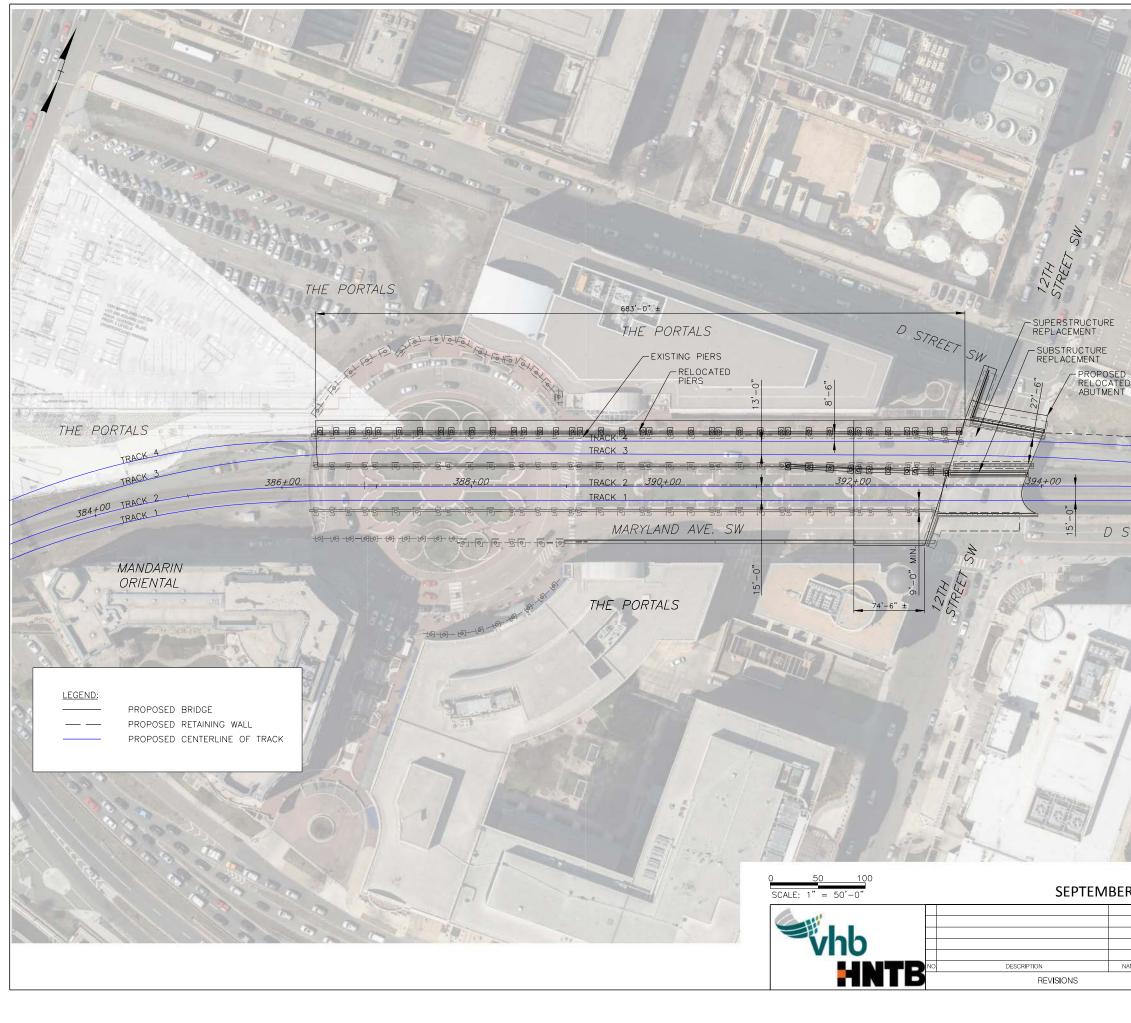
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R 6, 2018	LONG BRDIG MARYLAND AVE INTERLOCKING CLE	NUE	ТО	L'ENFANT	PROJECT E DESIGNED CHECKED DRAWN BY PROJECT M	BY BY / /GR	
AME DATE	OPTIO	N 2	PL#	AN	DIVIS	ION CH	=r



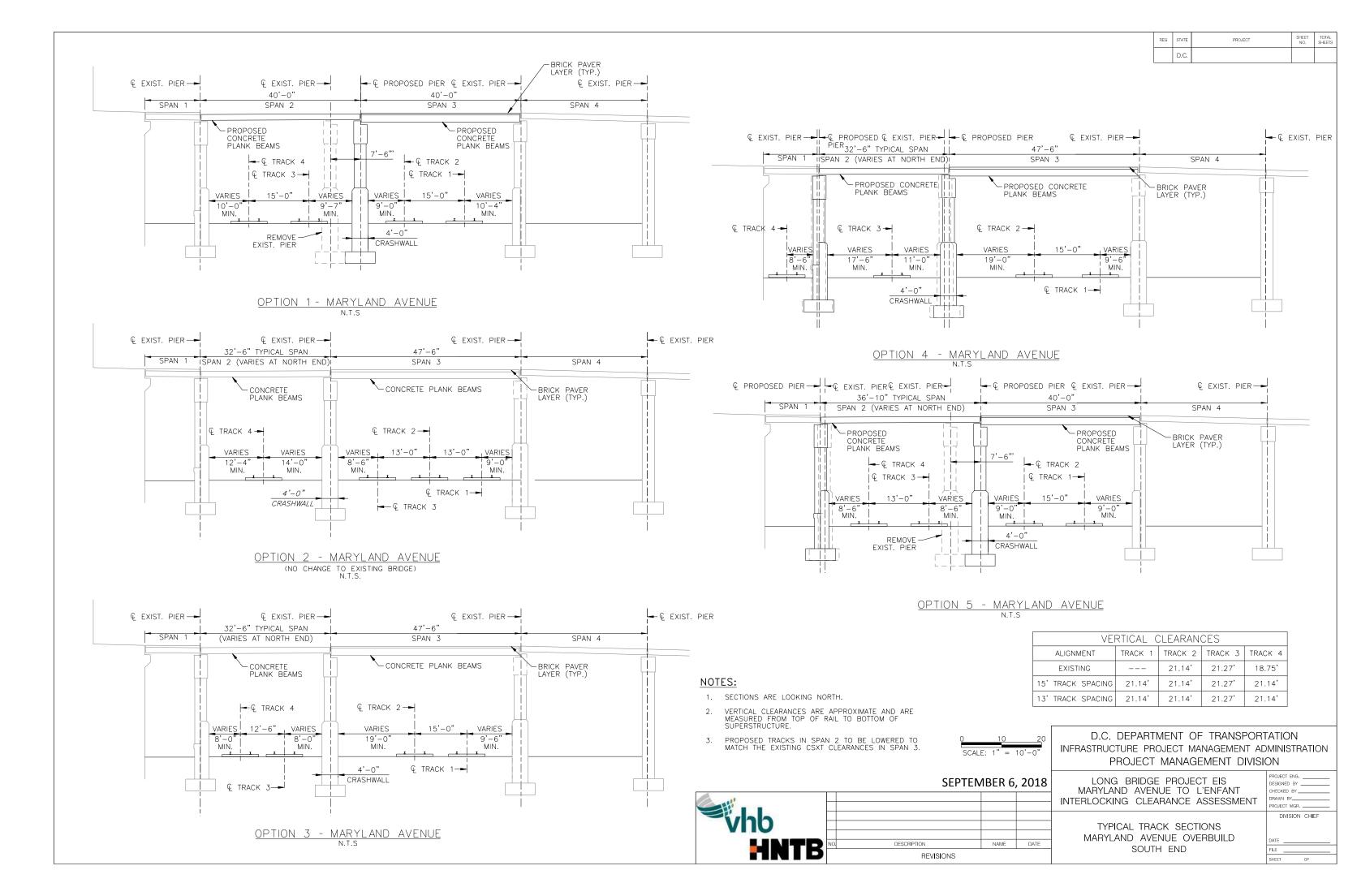
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	9	3	10	PROP	OSED	125
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R 6, 2018	LONG BRIDO			IECT EIS	PROJECT ENG DESIGNED BY	
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	INTERLOCKING CLI	EARA	AINCE		PROJECT MGR.	
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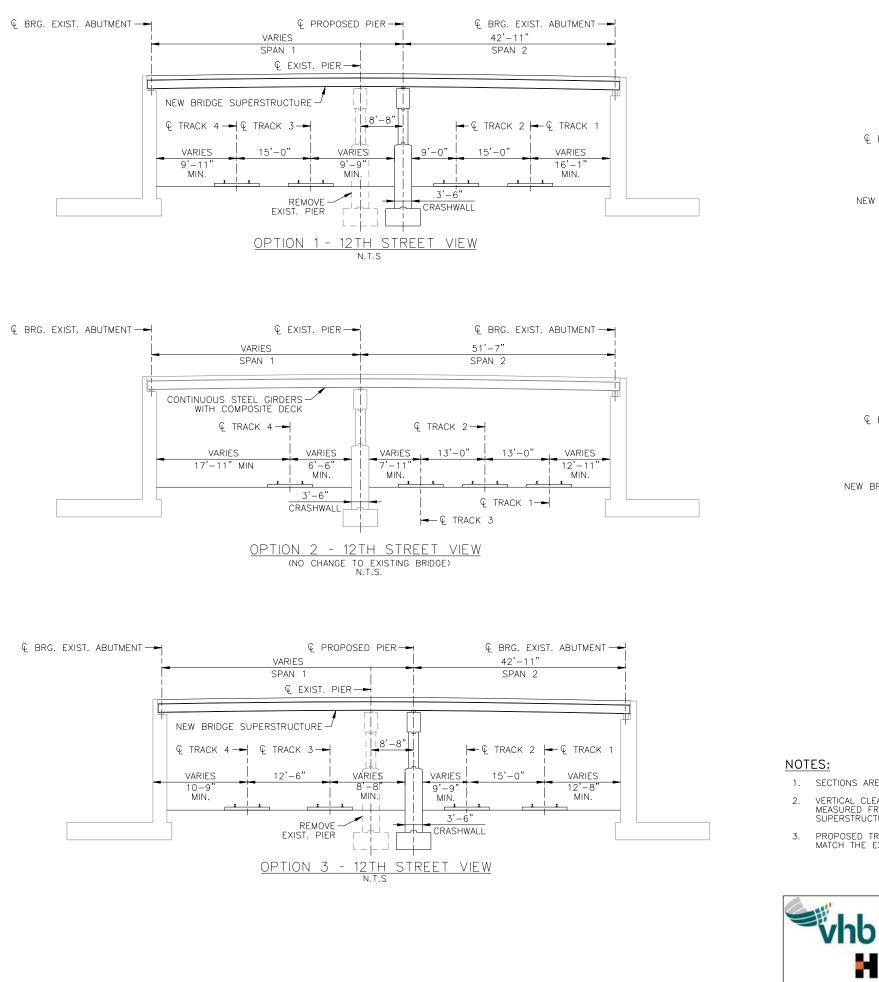


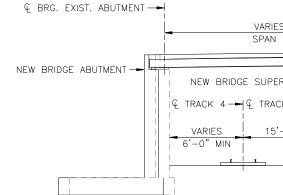
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	PROJ	IECT	MANA	AGEMENT DIVISION		
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R 6, 2018	MARYLAND AVE	NUE	ТО		CHECKED BY DRAWN BY	
		NUE	ТО		CHECKED BY	
K 6, 2018	MARYLAND AVE INTERLOCKING CLE	NUE EARA	to Ance	denfant Assessment	CHECKED BY DRAWN BY PROJECT MGR	
A 6, 2018	MARYLAND AVEI	NUE EARA	to Ance	denfant ASSESSMENT AN	CHECKED BY DRAWN BY PROJECT MGR	



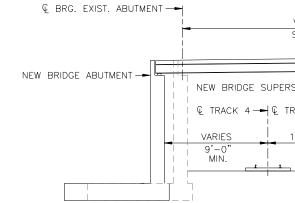
		REG	STATE	PROJECT		SHEET NO.	TOTAL SHEETS
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STREET SV			SUP	STREET SW	Т	RACK	2,
STREET SV	V		SUP	STREET SW	Т	RACK	2,
STREET SV	V		SUP	STREET SW	Т	RACK	2,
STREET SV	V		SUP	STREET SW	Т	RACK	2,
STREET SV	V		SUP	STREET SW	Т	RACK	2,
STREET SV	V		SUP	STREET SW	Т	RACK	2,
STREET SV			SUP	STREET SW	Т	RACK	2,
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STREET SV	V		SUP	STREET SW	Т	RACK	2,
STREET SV	V		SUP	STREET SW		RACK	2,
STREET SV	V		SUP	STREET SW	Т	RACK	2,
STREET SV	D.C. DEP	ARTMI	SUP REP	STREET SW ERSTRUCTURE LACEMENT	I	RACK	2,
STREET SV	LC. DEP INFRASTRUCTURE	ARTMI = PROJ	SUP REP	STREET SW	I	RACK	2,
	LC. DEP INFRASTRUCTURE PROJ	ARTMII = PROJ	SUP REP	STREET SW ERSTRUCTURE LACEMENT	T T DN STRATIO	RACK RACK	2,
STREET SV	LONG BRIDG MARYLAND AVE	ARTMI PROJ ECT N GE PF NUE	ENT ECT IANA ROJ TO	STREET SW ERSTRUCTURE LACEMENT OF TRANSPORTATION MANAGEMENT ADMINE GEMENT DIVISION ECT EIS L'ENFANT	T T T T T T T T T T T T T T T T T T T	RACK RACK	2,
	LONG BRIDG	ARTMI PROJ ECT N GE PF NUE	ENT ECT IANA ROJ TO	STREET SW ERSTRUCTURE LACEMENT OF TRANSPORTATION MANAGEMENT ADMINE GEMENT DIVISION ECT EIS L'ENFANT	T T T T T T T T T T T T T T T T T T T	RACK RACK Na	2,
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R 6, 2018	LONG BRIDG MARYLAND AVE	ARTMI PROJ ECT M GE PF NUE CARAN	SUPP REP	STREET SW ERSTRUCTURE LACEMENT OF TRANSPORTATION GEMENT DIVISION ECT EIS L'ENFANT ASSESSMENT	T T T T T T T T T T T T T T T T T T T	RACK RACK	
	D.C. DEP INFRASTRUCTURE PROJ LONG BRIDG MARYLAND AVE INTERLOCKING CLE	ARTMI PROJ ECT M GE PF NUE CARAN	SUPP REP	STREET SW ERSTRUCTURE LACEMENT OF TRANSPORTATION GEMENT DIVISION ECT EIS L'ENFANT ASSESSMENT	T T T T T T T T T T T T T T T T T T T	RACK RACK	







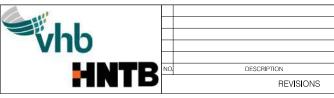
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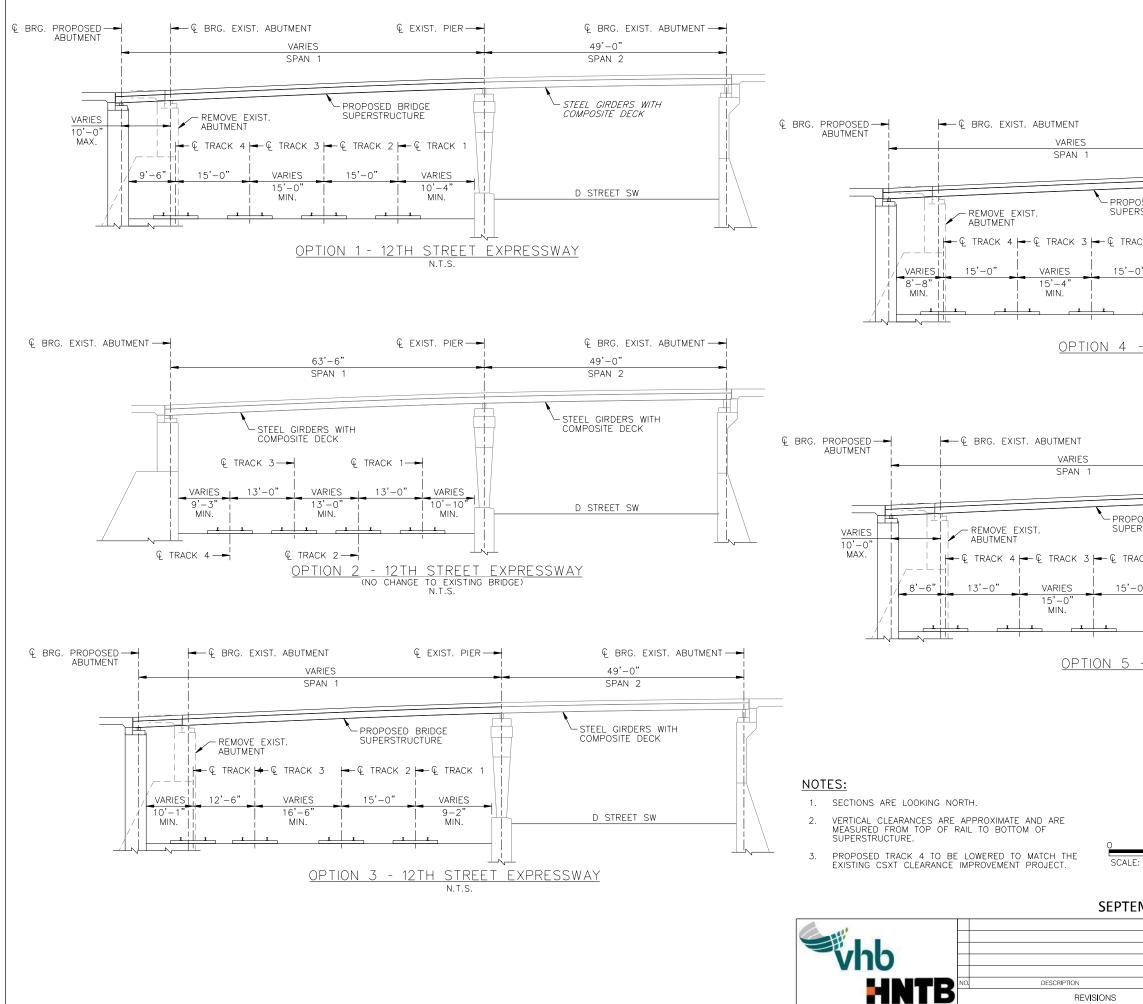
1. SECTIONS ARE LOOKING NORTH.

- VERTICAL CLEARANCES ARE APPROXIMATE AND ARE MEASURED FROM TOP OF RAIL TO BOTTOM OF SUPERSTRUCTURE.
- PROPOSED TRACKS IN SPAN 2 TO BE LOWERED TO MATCH THE EXISTING CSXT CLEARANCES IN SPAN 3.

SEPT



		REG STATE	PR	OJECT	SHEET NO.	TOTAL SHEETS
		D.C.				
Ç EXIST. PIER →	ſ	BRG FYIST	. ABUTMENT	_ 		
-	-	-7"	. ABUTWENT	-		
ARIES PAN 1		-/ N 2		-		
UPERSTRUCTURE -/ []						
TRACK 3-	€ TRACK 2-					
15'-0" VARIES	VARIES	15'-0"	VARIES			
5'-6"	18'-5"		13'-8"	-		
MIN. 	MIN.		MIN.			
3'−6" CRASHWALL	<u>م</u> 'و	RACK 1				
OPTION 4 - 12TH	<u>H STREET VIEW</u>					
N. I						
& PROPOSED F	ç	BRG. EXIST	. ABUTMENT			
VARIES		42'-11"				
SPAN 1		SPAPN 2				
€ EXIST. PIER—►						
/ r*1						
TRACK 3-	<u>8'-8"</u> - -⊊⊺	RACK 2 🛏	-€ TRACK 1			
		,"	VARIES			
1.3'-0" VADIECI				-		
14'-3"	9'-9"		13'-6"			
	9'-9" MIN.		MIN.			
14'-3" MIN. REMOVE	9'-9" MIN. 3'-6"					
	9'-9" MIN.					
REMOVE	9'-9" MIN. 3'-6" CRASHWALL					
	9'-9" MIN. 3'-6" CRASHWALL					
14'-3" MIN. REMOVE EXIST. PIER U	9'-9" MIN. 3'-6" CRASHWALL					
14'-3" MIN. REMOVE EXIST. PIER U	9'-9" MIN. 3'-6" CRASHWALL					
14'-3" MIN. REMOVE EXIST. PIER U	2 STREET SW S.		MIN.			
14'-3" MIN. REMOVE EXIST. PIER U	2 STREET SW .s.		MIN.		TDACK	
14'-3" MIN. REMOVE EXIST. PIER U	P STREET SW ALIGNMENT	TRACK 1	MIN. CLEARAN TRACK 2	TRACK 3		_
14'-3" MIN. 1 REMOVE EXIST. PIER L	2 STREET SW ALIGNMENT EXISTING	TRACK 1	CLEARAN TRACK 2 22.40'	TRACK 3 22.42'	19.25	,
14'-3" MIN. REMOVE EXIST. PIER U	P	TRACK 1	MIN. CLEARAN TRACK 2 22.40' 22.40'	TRACK 3 22.42' 22.42'	19.25 22.40	3
14'-3" MIN. 1 REMOVE EXIST. PIER L	2 STREET SW ALIGNMENT EXISTING	TRACK 1	CLEARAN TRACK 2 22.40'	TRACK 3 22.42'	19.25	3
14'-3" MIN. REMOVE EXIST. PIER L OPTION 5	P	TRACK 1	MIN. CLEARAN TRACK 2 22.40' 22.40'	TRACK 3 22.42' 22.42'	19.25 22.40	3
14'-3" MIN. REMOVE EXIST. PIER OPTION 5 - 12 N.T	P	TRACK 1 22.40' 22.40' 22.40'	MIN. CLEARAN TRACK 2 22.40' 22.40' 22.40'	TRACK 3 22.42' 22.42' 22.42'	19.25 22.40 22.40	3
0 10 20	9'-9'' MIN. 3'-6'' CRASHWALL CRASHWALL STREET SW S.	TRACK 1 ; 22.40' ; 22.40'	MIN. CLEARAN TRACK 2 22.40' 22.40' 22.40' CLEARAN	TRACK 3 22.42' 22.42' 22.42' SPORTA	19.25 22.40 22.40	,
14'-3" MIN. REMOVE EXIST. PIER OPTION 5 - 12 N.T	P	TRACK 1 22.40' 22.40' TMENT 0 ROJECT 1	MIN. CLEARAN TRACK 2 22.40' 22.40' 22.40' CLEARAN	TRACK 3 22.42' 22.42' 22.42' SPORTA ⁻ SNT ADMI	19.25 22.40 22.40	,
0 10 20 SCALE: 1" = 10'-0"	9'-9'' MIN. 3'-6'' CRASHWALL 2 STREET SW 2.S.	TRACK 1 22.40' 22.40' RTMENT 0 ROJECT N T MANA	MIN. CLEARAN TRACK 2 22.40' 22.40' 22.40' 22.40' CF TRANS MANAGEME GEMENT	TRACK 3 22.42' 22.42' 22.42' 22.42' SPORTATION INT ADMI DIVISION	19.25 22.40 22.40	,
0 10 20 SCALE: 1" = 10'-0"	P	TRACK 1 22.40' 22.40' 22.40' TMENT 0 ROJECT 1 T MANA GE PROJ	MIN. CLEARAN TRACK 2 22.40' 22.40' 22.40' CF TRANS MANAGEME GEMENT ECT EIS	TRACK 3 22.42' 22.42' 22.42' SPORTA ^T SPORTA ^T DIVISION	19.25 22.40 22.40	,
0 10 20 SCALE: 1" = 10'-0"	9'-9'' MIN. 3'-6'' CRASHWALL 2 STREET SW 2.S.	TRACK 1 22.40' 22.40' 22.40' ROJECT I ROJECT I T MANA GE PROJ ENUE TO	CLEARAN TRACK 2 22.40' 22.40' 22.40' 22.40' CF TRANS MANAGEME GEMENT GEMENT	TRACK 3 22.42' 22.42' 22.42' SPORTA SPORTA SPORTA INT ADMI DIVISION	19.25 22.40 22.40 FION NISTRATI	,
0 10 20 SCALE: 1" = 10'-0"	9'-9" MIN. 3'-6" CRASHWALL 2 STREET SW .s. VE ALIGNMENT EXISTING 15' TRACK SPACING 13' TRACK SPACING ISC. DEPAF INFRASTRUCTURE F PROJEC LONG BRID MARYLAND AVI	TRACK 1 22.40' 22.40' 22.40' ROJECT I ROJECT I T MANA GE PROJ ENUE TO	CLEARAN TRACK 2 22.40' 22.40' 22.40' 22.40' CF TRANS MANAGEME GEMENT GEMENT	TRACK 3 22.42' 22.42' 22.42' SPORTA SPORTA SPORTA INT ADMI DIVISION	19.25 22.40 22.40 ION NISTRATI J JECT ENG IGNED BY CKED BY	, , , , , , , , , , , , , , , , , , ,
0 10 20 SCALE: 1" = 10'-0"	9'-9" MIN. 3'-6" CRASHWALL CRASHWALA CR	TRACK 1 22.40' 22.40' ROJECT I TMENT (ROJECT I T MANA GE PROJ ENUE TO EARANCE	MIN. CLEARAN TRACK 2 22.40' 22.40' 22.40' 22.40' CF TRANS MANAGEME GEMENT CF EIS L'ENFANT ASSESSW	TRACK 3 22.42' 22.42' 22.42' SPORTA SPORTA SPORTA INT ADMI DIVISION	19.25 22.40 22.40 ION NISTRATI J JECT ENG IGNED BY JECT MGR	, , , , , , , , , , , , , , , , , , ,
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		REG STATE	F	PROJECT	SHEET NO.	TOTAL SHEETS
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€ EXIST. PIER—		È BRG. EXI	ST. ABUTME	INT —		
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		SPAN 2				
DPOSED BRIDGE		GIRDERS	WITH			
PERSTRUCTURE		OSITE DEC				
_				l i		
RACK 2 - C TRACK 1						
,				- I		
9'-2"		CTDEET SW				
MIN.		STREET SW		— ! \	\	
					\	
				/		
	<u>EXPRESSWAY</u>					
N.T.S.						
		6 000 EV				
€ EXIST. PIER—	▶		IST. ABUTMI	<u>-</u> NI — -		
		49'-0" SPAN 2				
		SFAN Z				
	i i					
OPOSED BRIDGE		L GIRDERS				
OPOSED BRIDGE PERSTRUCTURE		L GIRDERS POSITE DEC				
PERSTRUCTURE						
PERSTRUCTURE						
PERSTRUCTURE IRACK 2 - & TRACK 1 0" - VARIES - 9'-2"		POSITE DEC	κ			
PERSTRUCTURE			κ			
PERSTRUCTURE IRACK 2 - & TRACK 1 -0" VARIES 9'-2"		POSITE DEC	κ			
PERSTRUCTURE IRACK 2 - & TRACK 1 -0" VARIES 9'-2"		POSITE DEC	κ			
PERSTRUCTURE IRACK 2 - & TRACK 1 -0" - VARIES - 9'-2" MIN. 		STREET SV	κ			
PERSTRUCTURE		STREET SV	κ			
PERSTRUCTURE IRACK 2 - & TRACK 1 -0" - VARIES - 9'-2" MIN. 		STREET SV	κ			
PERSTRUCTURE IRACK 2 - & TRACK 1 -0" - VARIES - 9'-2" MIN. 		STREET SV	κ			
PERSTRUCTURE IRACK 2 - & TRACK 1 -0" - VARIES - 9'-2" MIN. 	COMF		v			7
PERSTRUCTURE "RACK 2 - & TRACK 1 '-0" VARIES 9'-2" MIN. 5 - 12TH STREE		<u>street</u> sv		CES	TRACK 4	
PERSTRUCTURE IRACK 2 - & TRACK 1 5'-0" - VARIES 9'-2" MIN. 5 - 12TH STREE		STREET SV	V CLEARAN TRACK 2	CES TRACK 3	TRACK 4	
PERSTRUCTURE IRACK 2 - & TRACK 1 5'-0" - VARIES 9'-2" MIN. 5 - 12TH STREE	COMP COMP	STREET SV	CLEARAN TRACK 2 22.01'	CES TRACK 3 21.54'	21.02'	
PERSTRUCTURE IRACK 2 - & TRACK 1 5'-0" - VARIES 9'-2" MIN. 5 - 12TH STREE	COMP COMP	STREET SV 	CLEARAN TRACK 2 22.01' 22.01'	CES TRACK 3 21.54' 21.54'	21.02' 21.54'	
PERSTRUCTURE IRACK 2 - & TRACK 1 5'-0" - VARIES 9'-2" MIN. 5 - 12TH STREE	COMP COMP	STREET SV	CLEARAN TRACK 2 22.01'	CES TRACK 3 21.54'	21.02'	
PERSTRUCTURE IRACK 2 - & TRACK 1 5'-0" - VARIES 9'-2" MIN. 5 - 12TH STREE	COMP COMP	STREET SV 	CLEARAN TRACK 2 22.01' 22.01'	CES TRACK 3 21.54' 21.54'	21.02' 21.54'	
PERSTRUCTURE IRACK 2 - & TRACK 1 5'-0" VARIES 9'-2" MIN. 5 - 12 TH STREE N.T.S.	COMP COMP	STREET SV	CLEARAN TRACK 2 22.01' 22.01' 22.01'	CES TRACK 3 21.54' 21.54' 21.54'	21.02' 21.54' 21.54'	
PERSTRUCTURE IRACK 2 - & TRACK 1 	COMP COMP	STREET SV	CLEARAN TRACK 2 22.01' 22.01' 22.01' OF TRAN	CES TRACK 3 21.54' 21.54' 21.54' SPORTA	21.02' 21.54' 21.54'	
PERSTRUCTURE IRACK 2 - & TRACK 1 5'-0" VARIES 9'-2" MIN. 5 - 12 TH STREE N.T.S.	COMP COMP COMP COMP COMP COMP COMP COMP	STREET SV STREET SV ROJECT I ROJECT I	CLEARAN TRACK 2 22.01' 22.01' 22.01' OF TRAN	CES TRACK 3 21.54' 21.54' 21.54' SPORTA ENT ADMI	21.02' 21.54' 21.54' TION	
PERSTRUCTURE IRACK 2 - & TRACK 1 3'-0" VARIES 9'-2" MIN. 5 - 12TH STREE N.T.S.	COMP COMP D COMP D C C C C C C C C C C C C C C C C C C	STREET SV STREET SV RTICAL (TRACK 1 21.54' 21.54' TMENT (ROJECT 1 T MANA	CLEARAN TRACK 2 22.01' 22.01' 22.01' OF TRAN MANAGEM GEMENT	CES TRACK 3 21.54' 21.54' 21.54' SPORTA ENT ADMI DIVISION	21.02' 21.54' 21.54' TION	
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Long Bridge Project

Environmental Impact Statement (EIS)

Maryland Avenue SW to L'Enfant Interlocking Clearance Assessment

Appendix C - CPM Construction Schedules



Summary of Options

The schedules for Options 1, 3, 4, and 5 are provided in this appendix and are based on the following assumptions:

- **Option 1:** Providing 15 ft freight / 15 ft passenger track spacing with 9 ft freight / 9 ft passenger lateral clearance for a **60-month** construction duration.
- **Option 2:** Providing 13 ft freight / 13 ft passenger track spacing with 8.5 ft freight / 9 ft passenger lateral clearance for a **0-month** construction duration (no schedule included).
- **Option 3:** Providing 15 ft freight / 12.5 ft passenger track spacing with 9 ft freight / 8 ft passenger lateral clearance for a **50-month** construction duration.
- **Option 4:** Providing 15 ft freight / NA ft passenger track spacing with 9 ft freight / 7.25 ft passenger lateral clearance for a **49-month** construction duration.
- **Option 5:** Providing 15 ft freight/ 13 ft passenger track spacing with 9 ft freight / 8.5 ft passenger lateral clearance for a **40-month** construction duration.
 - There is potential that additional work will be needed in Option 5 due to increased span lengths and loading, but it cannot be determined prior to additional engineering and final design.

Option 1 Lateral Clearance: 15 ft Track Spacing

n 1: All Tracks 15 ft Spacing Name	Planned	Planned	Original		20)22				chedule 1 2023	Layout			2024				2	025			2	026		Connecting	North and So	PRC auth Through 2027	h our
ivanc	Start	Finish	Original Duration	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	2024 Q3		24	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q		Q2	Т
Option 1: All Tracks 15 ft Spacing	04-Apr-22	07-Apr-27	956d	~	~~	~3	~	<u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u></u>	~~	~~	~	21	Q2				~ +	~2	×3		V 1	~~	~				07-Apr-	
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Option 1 Lateral Clearance: 15 ft Track Spacing

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	28-Jul-26	31-Aug-26	25d																		
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	10-Nov-26		3d																		
DECKWORKPHASE3		18-Mar-27	25d																		
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Option 1 Lateral Clearance: 15 ft Track Spacing

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FOOTING CONSTRUCTION PHASE 1	14-Jul-22	27-Jul-22	10d	■ FOOTINGCONS	i i i i	- i - i -																	
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BACKWALL CONSTRUCTION PHASE 1	25-Aug-22	07-Sep-22	10d	BACKWA	LLCONSTR	UCTION	VPH 1																
RETAINING WALL CONSTRUCTION	25-Aug-22	31-Aug-22	5d	C RETAINING	3 WALLCO	ISTRUC	TION																
BACKFILL PHASE 1	08-Sep-22	15-Sep-22	6d	I BACKFI	LL PHASE 1																		
INSTALL BEAMS PHASE 1	16-Sep-22	20-Sep-22	3d	INSTALI	BEAMS PI	I																	
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TRAFFIC PHASE3	03-Aug-23	08-Aug-23	3d				TR	AFFICPH	ASE3														
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PILE INSTALLATION PHASE 3	10-Oct-23	31-Oct-23	15d					🗖 PILI	INSTALL	ATION PH	3												
FOOTING CONSTRUCTION PHASE 3	31-Oct-23	14-Nov-23	10d					FC	OTINGCO	NSTRUCI	IONPH3												
STEMCONSTRUCTION PHASE 3	14-Nov-23	12-Dec-23	20d	· · · · · · · · · · · · · · · · · · ·					STEMCC	NSTRUC	TIONPH:	3											
BACKWALL CONSTRUCTION PHASE 3	12-Dec-23	26-Dec-23	10d						BACKW	ALLCON	STRUCTI	ONPH 3											
	18-Mar-24	25-Mar-24	6d							BACKFI													
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(NewBar) Actual Work Critical Remaining Work Actual Level of Effort Remaining Work Milestone	Page 3 of 3	TASK filter: All Activities



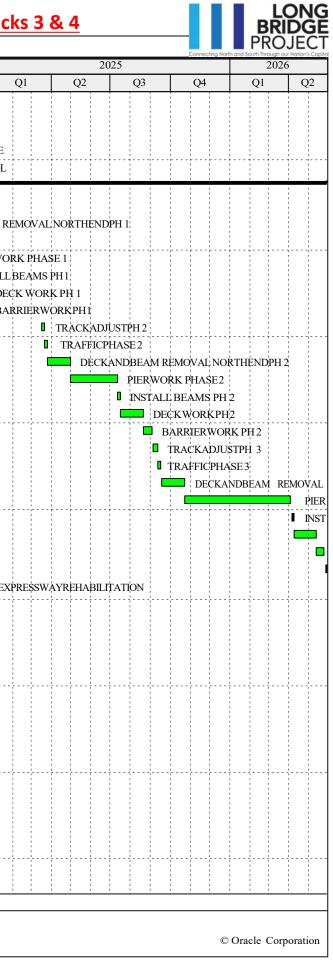
Option 3 Lateral Clearance: 15 ft. Track Spacing for Tracks 1& 2, 12.5 ft. Track Spacing for Tracks 3 & 4

tion 3: 15 Ft Freight, 12.5 Ft Passenger ity Name	Planned	Dlannad	Original		2022		С	lassic Schedu	ale Layout 2023				024			1	2025	Connecting	PRO
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RAILROAD COORDINATION	-	02-Jun-26	800d								. : : :		1 I I I I I		1 1 1	1 I I I I I	1 I I I I I		1 I I I I I
MARYLAND AVE PHASE 1		09-Dec-22	175d				• 09-Dec	:-22,MDOPT3.	PH1 MARYLA	NDAVEPHASE	1								
INSTALL TRAFFIC CONTROL	04-Apr-22	05-Apr-22	2d	I INS	TALL TRAFFI	CONTROL													
TRACK ADJUSTMENTS	04-Apr-22	08-Apr-22	5d	TR.	ACKADJUSTN	1ENTS													
REMOVE STREETSCAPE	06-Apr-22	07-Apr-22	2d	I RE	MOVE STRE	ETSCAPE													
SAWCUT AND REMOVE DECK	07-Apr-22	05-May-22	20d		SAWCUTAN	DREMOVE	DECK												
REMOVE BEAMS	05-May-22	12-May-22	5d		REMOVE B	EAMS													
PIER DEMO	12-May-22	31-May-22	13d	1	PIERDEN	мo													
INSTALL MICROPILES (LOW OVERHEAD)	31-May-22	29-Jun-22	21d		Mici	ROPILÉ (LO	W OVERHEAD	D)											
PILE CAP INSTALLATION	29-Jun-22	07-Jul-22	6d		🛛 PILI	E CAP INSTA	LLATION												
CRASHWALL CONSTRUCTION		03-Aug-22	15d				LLCONSTRUC	TION											
COLUMN CONSTRUCTION		18-Aug-22	11d				CONSTRUCT												
CAP CONSTRUCTION	-	09-Sep-22	15d			; ; ; ;	ONSTRUCTIO												
INSTALLNEW BEAMS		30-Sep-22	15d				STALL NEWB												
 PLACE NEW DECK 		06-Dec-22	45d			n. vp		NEW DECK											
 INSTALL STREETSCAPE 		08-Dec-22	2d					LLSTREETSC	APF										
REMOVE TRAFFIC CONTROL		09-Dec-22	1d				1 1 1	IRAFFICCONT	1 1 1										
MARYLAND AVE PHASE 2		15-Aug-23	177d					i i i	i	15-Aug-23,MD	OPT3 PR MAR	VI ANDAVE PI	TASE'2						
		-								10 / Mg 25,14115				+					
INSTALL TRAFFIC CONTROL		13-Dec-22	2d				- i i i	LL TRAFFICO	i i i										
REMOVE STREETSCAPE		15-Dec-22	2d				1 1 1	OVE STREETS	1 1 1										
TRACK ADJUSTMENTS		20-Dec-22	5d				i i i	KADJUSTMEI	i i i										
SAWCUT AND REMOVE DECK		12-Jan-23	20d						REMOVE DECI										
REMOVE BEAMS	_	19-Jan-23	5d				$a_{i}=a_{i}a_{i}a_{i}a_{i}a_{i}a_{i}a_{i}a_{i}$	REMOVE BEA											
PIER DEMO	_	07-Feb-23	13d					PIERDEMO) OPILE (LOW O										
INSTALL MICROPILES (LOW OVERHEAD)		08-Mar-23	21d						CAP INSTALLA	1 1 1									
PILE CAP INSTALLATION		16-Mar-23	6d						1 I I I										
CRASHWALL CONSTRUCTION	22-Mar-23	12-Apr-23	15d						RASHWALLCO										
COLUMN CONSTRUCTION	12-Apr-23	27-Apr-23	11d						COLUMNCON										
CAP CONSTRUCTION	27-Apr-23	18-May-23	15d						CAP CONS										
INSTALLNEW BEAMS	18-May-23	08-Jun-23	15d						INSTALI	NEWBEAMS									
PLACE NEW DECK	08-Jun-23	10-Aug-23	45d							PLACE NEW D									
INSTALL STREETSCAPE	10-Aug-23	14-Aug-23	2d							INSTALL STRE									
REMOVE TRAFFIC CONTROL	14-Aug-23	15-Aug-23	1d							REM TRAFFIC	CONTROL								
HARYLAND AVE COMPLETE SHUTDOWN	15-Aug-23	22-Jul-24	172d						T				▼ 22-Jul-2	4,MDOPT3.D	R MARYLAI	DAVE COM	PLETĖ SHŲTE	OWN	
INSTALL TRAFFIC CONTROL	15-Aug-23	17-Aug-23	2d							INSTALL TRA	FICCONTROL								
REMOVE STREETSCAPE		21-Aug-23	2d							REMOVE STR	EETSCAPE								
TRACK ADJUSTMENTS	1	24-Aug-23	5d							TRACKADJUS	STMENTS								
SAWCUT AND REMOVE DECK		18-Sep-23	20d								ANDREMOVE	DECK							
REMOVE BEAMS	1	25-Sep-23	20d 5d							REMOV			· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·					
PIER DEMO	1	12-Oct-23	13d							PIERI	1 I I I								
INSTALL MICROPILES (LOW OVERHEAD)		10-Nov-23	21d									W OVERHEAD							
										· · · · ·	PILE CAP INST								
PILE CAP INSTALLATION CDASLIWALL CONSTRUCTION		20-Nov-23	6d									LLCONSTRUCT	ION						
CRASHWALL CONSTRUCTION		15-Dec-23	15d							· · · · · · · · · · · · · · · · · · ·				ÖN					
	10-1v1ar-24	01-Apr-24	11d							<u> </u>		<u> </u>			<u>; ; ; ;</u>			<u> </u>	
(NewBar) Actual Work Actual Level of Effort Remaining Wo	ork 🔶	 Critical Remains Milestone 	auning Work					Page 1 c	of 3			TASI	K filter: All Ac	tivities					© Oracle Corp



Option 3 Lateral Clearance: 15 ft. Track Spacing for Tracks 1& 2, 12.5 ft. Track Spacing for Tracks 3 & 4

3: 15 Ft Freight, 12.5 Ft Passenger ame	Planned	Planned	Original	20)22		Classic S	chedule Lay	out 23				202	24		
	Start	Finish	Duration	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1		Q2	Q3	Q4	4
CAP CONSTRUCTION ()2-Apr-24	22-Apr-24	15d	~-	~		V 1	~~	4 5	<u> </u>			-	NSTRUCTION		
	23-Apr-24	13-May-24	15d										INST	ALL NEW BE	AMS	
PLACE NEW DECK	14-May-24	17-Jul-24	45d												NEW DEC	ECK
	18-Jul-24	19-Jul-24	2d											I INSTAL	L STREE	ETSCA
REMOVE TRAFFIC CONTROL	22-Jul-24	22-Jul-24	1d				· - 							I REM T		
12TH STREET DECK REMOVE AND REPLACE	22-Jul-24	02-Jun-26	346d												<u> </u>	-
	22-Jul-24	25-Jul-24	3d											TRAFF	TCPHAS	SE1
	25-Jul-24	29-Aug-24	25d												ECKAND	
	26-Jul-24	01-Aug-24	5d											TRAC	1	
		12-Nov-24	50d				······································							: : =		PIER
INSTALL BEAMS PHASE 1	12-Nov-24	15-Nov-24	3d												1 1	INST
	15-Nov-24	20-Dec-24	25d												- -	
BARRIER WORK PHASE 1)6-Dec-24	20-Dec-24	10d													
TRACK ADJUST PHASE 2	17-Mar-25	21-Mar-25	5d													
	21-Mar-25	26-Mar-25	3d				· · · · · · · · · · · · · · · · · · ·				·					
DECK AND BEAM REMOVAL NORTHEND PHASE 2 2	6-Mar-25	30-Apr-25	25d													
	01-May-25	11-Jul-25	50d													
INSTALL BEAMS PH ASE 2	11-Jul-25	16-Jul-25	3d													
DECK WORK PHASE2	16-Jul-25	20-Aug-25	25d													
BARRIER WORK PHASE 2	20-Aug-25	03-Sep-25	10d	• • • • • • • • • • • • • • • • • • • •			······				·					
-		11-Sep-25	5d													÷.
	11-Sep-25	-	3d													
-	-	22-Oct-25	25d				1 1 1 1 1 1 1 1 1 1 1 1									
		03-Apr-26	50d													
-		08-Apr-26	3d -													
	•	13-May-26	25d													
-	-	25-May-26	8d													
	•	02-Jun-26	3d													
12TH EXPRESSWAY REHABILITATION	-		412d										-V 21 N	May-24,MDOI	DT3 12E	121
		06-Apr-22	3d										▼ 21-1V	hay-24,MDOI		121
	•	27-Apr-22	15d	TRAFFIC	1 I I I I I											
	28-Apr-22	08-Jun-22	30d			REMOVAL NOF	THENDPH I									
)9-Jun-22	22-Jun-22	10d		SOE INSTALI											
	23-Jun-22	13-Jul-22	10d		1 I I I	TREMOVAL P										
-	23-Jun-22	29-Jun-22	5d			STALLATION PI	(<u>-</u> ()					<u>.</u>			·	
	14-Jul-22	27-Jul-22	10d			G WALLDEMO										
	14-Jul-22	27-Jul-22 20-Jul-22	5d		i i i	INGCONSTRUC										
	28-Jul-22	20-Jui-22 24-Aug-22	20d		1 1 1	ALLPILEINST										÷
			5d		i i i	TEM CONSTR	i i i i									
	28-Jul-22	03-Aug-22		·		WALL FTGCO	{ <u>}</u> }							····	·	
	25-Aug-22	07-Sep-22	10d		1 I I I I I I I I I I I I I I I I I I I	BACKWALLC										
-	25-Aug-22	31-Aug-22	5d			RÉTAINING WA		TION								1
)8-Sep-22	15-Sep-22	6d			BACKFILL P										
	16-Sep-22	20-Sep-22	3d			INSTALL BE										
	21-Sep-22	25-Oct-22	25d	·		DECK Y	{}					; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ;		·	· .	
	26-Oct-22	08-Nov-22	10d				RIERWORKPI	11								-
	J9-INOV-22	11-Nov-22	3d	1	: : :		FICPHASE 2			1 1 1			1.1	. : :	1 1	



Option 3 Lateral Clearance: 15 ft. Track Spacing for Tracks 1& 2, 12.5 ft. Track Spacing for Tracks 3 & 4

Option 3: 15 Ft Freight, 12.5 Ft Passenger							Classic	Schedule L	5						
ctivity Name	Planned Start	Planned Finish	Original Duration		022	01	01		2023	01	01		2024	01	+
	14.22		161	Q2	Q3	Q4	Q1	Q2		Q4	Q1	Q2	Q3	Q4	
DECK AND BEAM REMOVAL NORTHEND PHASE 2			15d					- i - i -	AL NORTHEN	DPH 2					
SOE INSTALLATION PHASE 2		30-Dec-22	20d					ALL ATIONI							
ABUTMENT REMOVAL PHASE 2	02-Jan-23		10d		Į	·····	ABUTM								
PILE INSTALLATION PHASE 2	20-Mar-23	07-Apr-23	15d					PILE IN	STALLATION P	H 2					
■ FOOTING CONSTRUCTION PHASE 2	07-Apr-23	21-Apr-23	10d					FO01	FINGCONSTRU	CTIONPH 2					
STEM CONSTRUCTION PHASE 2	21-Apr-23	19-May-23	20d						TEM CONSTR	UCTIONPH 2					
BACKWALL CONSTRUCTION PHASE 2	19-May-23	02-Jun-23	10d					; ; 二	BACKWALLC	ONSTRUCTIO	NPH 2				
BACKFILL PHASE 2	02-Jun-23	12-Jun-23	6d						BACKFILL I	PHASE 2					
INSTALL BEAMS PHASE 2	12-Jun-23	15-Jun-23	3d						INSTALL BE	AMS PH2					
DECK WORK PHASE2	15-Jun-23	20-Jul-23	25d						DECK	WORK PH 2					
BARRIER WORK PHASE 2	20-Jul-23	03-Aug-23	10d						🗖 BAR	RIERWORKP	H2				
REMOVE TRAFFIC CONTROL	03-Aug-23	08-Aug-23	3d						C REM	OVE TRAFFIC					
TRAFFIC PHASE 3	03-Aug-23	08-Aug-23	3d						TRA	FFICPHASE 3					
DECK AND BEAM REMOVAL NORTHEND PHASE 3	08-Aug-23	29-Aug-23	15d						П Г	ECKANDBEA	M REMOVAL	LNORTHEI	NDPH 3		
SOE INSTALLATION PHASE 3	29-Aug-23	26-Sep-23	20d							SOE INSTA	LL ATIONPH 3	3			
ABUTMENT REMOVAL PHASE 3	26-Sep-23	10-Oct-23	10d							ABUTME	INTREMOVAL	L PH3			
PILE INSTALLATION PH ASE3	10-Oct-23	31-Oct-23	15d							🔲 PILEI	NSTALLATION	NPH3			
FOOTING CONSTRUCTION PHASE 3	31-Oct-23	14-Nov-23	10d							FOC	DTINGCONST	RUCTION	PH3		
STEMCONSTRUCTION PHASE 3	14-Nov-23	12-Dec-23	20d			· · · · · · · · · · · · · · · · · · ·					STEMCONST	IRUCTION	PH3		
BACKWALL CONSTRUCTION PHASE 3	12-Dec-23	26-Dec-23	10d								BACKWAL	LCONSTRU	JCTIONPH 3		
BACKFILL PHASE 3	18-Mar-24	25-Mar-24	6d									1 1 1	L PHASE 3		
INSTALL BEAMS PHASE3	25-Mar-24	28-Mar-24	3d								1 1 1	1 1 1	BEAMS PH3		
DECK WORK PHASE 3	28-Mar-24	02-May-24	25d									DE DE	CK WORK PH	3	
BARRIER WORK PHASE 3	02-May-24	16-May-24	10d -									4 4 4 -	ARRIERWORI		
TRAFFIC PHASE 3	16-May-24	21-May-24	3d									0 T	RAFFICPHASI	Ξ3	1

(NewBar) Actual Work Critical Remaining Work Actual Level of Effort Remaining Work Milestone	Page 3 of 3	TASK filter: All Activities





								Connect	ting Nort	h and Se	Pk suth Thr	(Ο ,	JE(Capito
				20	25						ź	2026		
Q1			Q2			Q3		Q4			Q1		Q	2
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Ontion 3 Lateral Clearance: 15 ft Track Spacing for Tracks 18, 2, NA ft, Track Spacing for Tracks 3.8, 4

Option 4: 15 Ft Freight, Varied Passenger									Class	sic Sche	dule Lay	out																PRC	
tivity Name	Planned	Planned	Original		202	2				510 50110)23					20	24			Ī			2025		Connect	ing North and S	20	026
	Start	Finish	Duration	(Q2	Q3		Q4	Q1		Q2	Q3		Q4	Q1		Q2	Ç	23	Q4		Q1	Q2		23	Q4		Q1	Q
🕞 Option 4: 15 Ft Freight, Varied Passenge	er 04-Apr-22	06-May-26	781d	*		-																					-		
RAILROAD COORDINATION		06-May-26	781d		: :		: : :	<u> </u>	: :							Ċ							: :		: :			: :	÷
MD AVE PIER RELOCATION	04-Apr-22		65d	V		06-Jul-	-22,MDOF	T4.PR	MDAVE	PIER REI	LOCATIO	N																	
INSTALL TRAFFICC ONTROL	04-Apr-22	06-Apr-22	3d	INS		: AFFICO	CONTROL											1 1 1 1 1 1											
INSTALL MICROPILES (LOW OVERHEAD)	-	11-May-22	25d	i i i	- i - i		LOWOVE	: :																					
PILE CAP INSTALLATION	-	25-May-22	15d	++-			STALLAT	+	<u></u>																		· 		
CRASHWALL CONSTRUCTION		15-Jun-22	20d				VALL CON																						
PIERCA PCONSTRUCTION	07-Jun-22		20d				CAP CONS		i i .																				
	16-Jun-22		14d		1 1	1	MNCONS	1 1	1																				
		16-Nov-22	94d	1		COLU.	i i i	i i	i i		ο Μλον	LANDAVE		н 1'		1											1		
MARYLAND AVE DECK PHASE 1								ļ						11 1 															
INSTALL NEW BEARING STIFFNERS		14-Sep-22	50d				INST		1	NGSTIFFI	VERS																		
INSTALL TRAFFIC CONTROL		07-Jul-22	2d				ALL TRAF	1 1	1 1																				
REMOVE STREETSCAPE	08-Jul-22	11-Jul-22	2d				OVE STR	1 I I I I I I I I I I I I I I I I I I I	1																				
SAWCUT AND REMOVE DECK	11-Jul-22	01-Aug-22	15d				AWCUTA	i i	i i	CK																			
REMOVE BEAMS		15-Aug-22	10d	¦			REMOVE	+			·			 			 	 										¦	
ADJUST JOINT AT EXIST DECK	-	22-Aug-22	5d			- i	ADJUST	: :	TEXISTD	ECK																			
PIER DEMO		31-Aug-22	12d				PIERD																						
CUT AND REMOVE BEAM ENDS	-	31-Aug-22	12d	1			CUTA	· · · ·	1	· · ·						ł													
INSTALL NEW BEAMS	01-Sep-22	22-Sep-22	15d				INS INS	TALL NE	EWBEAM	IS								· · ·											
INSTALL EXISTING BEAMS ON NEW CAP	14-Sep-22	19-Oct-22	25d	¦;			} }	INSTAL	LEXISTIN	NGBEAM	IS ONNE	W CAP			 		 	 			 !						¦ 	 	
PLACE NEW DECK	20-Oct-22	10-Nov-22	15d					PLA	CE NEW I	DECK																			
REINSTALL STREETSCAPE	11-Nov-22	14-Nov-22	2d					REI	STALL S	TREETS	CAPE																		
REMOVE TRAFFIC CONTROL	15-Nov-22	16-Nov-22	2d					I REN	MOVE TF	RAFFICCO	ONTROL																		
🔁 MARYLAND AVE DECK PHASE 2	17-Nov-22	13-Apr-23	35d								13-Apr-23	,MDOPT4.	DR MA	RYLANI	DAVE DECK	CPH2													
INSTALL TRAFFIC CONTROL	17-Nov-22	18-Nov-22	2d					I INS	TALL TRA	AFFICCO	NTROL																		
REMOVE STREETSCAPE	21-Nov-22	22-Nov-22	2d					l RE	MOVE S	STREETS	CAPE	L					//	I				· · · · · · · · · · · · · · · · · · ·							
SAWCUT AND REMOVE DECK	22-Nov-22	13-Dec-22	15d						SAWCUT	TANDRE	MOVE DI	ECK																	
REMOVE BEAMS	13-Dec-22	27-Dec-22	10d						REMO	VE BEAN	٨S																		
CUT AND REMOVE BEAM ENDS	27-Dec-22	12-Jan-23	12d						ĊUT.	ANDREN	AOVE BE	AM ENDS																	
adjust joint at exist deck	27-Dec-22	03-Jan-23	5d							STJOINT	ATEXIST	DECK																	
PIER DEMO	27-Dec-22	12-Jan-23	12d				LL	L J 1 1 1 1 1	🗖 PIERD	DEMO		L					J J												
INSTALL NEW BEAMS	12-Jan-23	02-Feb-23	15d							NSTALL	EWBEA	MS																	
PLACE NEW DECK	20-Mar-23	07-Apr-23	15d									W DECK																	
REINSTALL STREETSCAPE		11-Apr-23	2d							1	1	LISTREE	ISCAPE																
REMOVE TRAFFIC CONTROL		13-Apr-23	2d							i i .	i i	TRAFFIC	i i																
MARYLAND AVE SHUTDOWN		27-Jul-23	75d				L			▼		27-J	ul-23,ME	OPT4.SI	MARYLA	ANDAV	E SHUTI	OWN		······································		······						J	
INSTALL TRAFFIC CONTROL	14-Apr-23	17-Apr-23	2d								1	TRAFFIC	1																
REMOVE STREETSCAPE		19-Apr-23	2d							1	1 I I I I I I I I I I I I I I I I I I I	E STREE																	
SAWCUT AND REMOVE DECK		10-May-23	15d							i i	i i	CUTAND	i i																
REMOVE BEAMS		24-May-23	10d									MOVE BE																	
ADJUST JOINT AT EXIST DECK		31-May-23	5d											ISTÉEC	k i														
PIERDEMO		09-Jun-23	12d								1 I I I	PIERDEMO																	
CUT AND REMOVE BEAM ENDS		09-Jun-23	12d									UTANDR		BEAM	NDS														
INSTALLNEW BEAMS		30-Jun-23	12d								1	INSTAL	1		JUD3												1		
PLACE NEW DECK		21-Jul-23	15d									PLA																	
PLACE NEW DECK REINSTALL STREETSCAPE		21-Jul-23 25-Jul-23	13d 2d												SCADE												· <u>+</u>		
	2-7-Jul-23	23-3ui-23	24		1 1		: : :		<u> </u>			KE KE	NOTALL	SIKEE	SCAPE		<u></u>			1 1			1 1	1 1				i i	

Long Bridge Project

Maryland Avenue SE to L'Enfant Interlocking Clearance Assessment Appendix C - Option 4

Option 3 Lateral Clearance: 15 ft. Track Spacing for Tracks 1& 2, NA ft. Track Spacing for Tracks 3 & 4

ion 4: 15 Ft Freight, Varied Passenger	Dlannad	Dlormod	Omini-1		2022		Classic	Schedule La	2		Ī		2024				2025	Conr	secting North and South	PROJ
y Name	Planned Start	Planned Finish	Original Duration	Q2	2022 Q3	Q4	Q1	Q2	2023 Q3	Q4	Q1	Q2	2024 Q3	Q4	Q1	Q2	2025	3 Q	4 Q	2026
REMOVE TRAFFIC CONTROL	26-Jul-23	27-Jul-23	2d	Q2	Q3		QI	Q2		MOVE TRAFFICO		Q2	Q 3	\	Q1	Q2	V	, <u> </u>	+ <u> </u>	1
12 TH STREET DECK REMOVE AND REPLACE		4 06-May-26	378d																+ + +	
TRAFFIC PHASE 1	· · · ·	13-May-24	3d										FRAFFICPHAS	1.01						
DECK AND BEAM REMOVAL NORTHEND PHASE 1		03-Jun-24	15d									1 1 1								
		03-Jul-24	25d										DECKANDE			IDPH I				
SOE INSTALL ATION PHASE 1 ABUTMENT REMOVAL PHASE 1	03-Jul-24 08-Jul-24		10d											STALL ATION						
		12-Aug-24	15d										i i i	TMENTREMO	- i i i					
PILE INSTALLATION PHASE 1														LE INSTALLA						
FOOTING CONSTRUCTION PHASE 1		26-Aug-24	10d											FOOTINGCO	1 1 1	1 1 1				
STEM CONSTRUCTION PHASE 1		23-Sep-24	20d											STÉMCO						
BACKWALL CONSTRUCTION PHASE 1	23-Sep-24		10d												ALLCONSTR	UCTIONPH	1			
BACKFILL PHASE 1	07-Oct-24	15-Oct-24	6d											- i i i	FILL PHASE 1					
INSTALL BEAMS PHASE 1	15-Oct-24	18-Oct-24	3d											- i i i	LL BEAMS P					
DECK WORK PHASE 1			25d												DECKWORKP					
BARRIER WORK PHASE 1		06-Dec-24	10d			· · · · ·					· · · · · · · · · · · · · · · · · · ·			<u> </u>	BARRIERWO	ORKPH1			· · · · · · · · · · · · · · · · · · ·	
TRAFFIC PHASE 2		11-Dec-24	3d												TRAFFICPH	ASE2				
DECK AND BEAM REMOVAL NORTHEND PHASE 2			15d											[DECKAN	DBEAM RE	EMOVAL N	ORTHENDPH	I 2	
SOE INSTALLATION PHASE2		29-Jan-25	20d												SOE	INSTALL AT	TIONPH 2			
ABUTMENT REMOVAL PHASE 2	29-Jan-25	12-Feb-25	10d												🗖 AB	UTMENTRI	EMOVAL P	H2		
PILE INSTALLATION PHASE 2	12-Feb-25	05-Mar-25	15d													PILE INSTA	LLATION P	H2		
FOOTING CONSTRUCTION PHASE 2	17-Mar-25	28-Mar-25	10d												[FOOTIN	IGCONSTR	UCTIONPH 2		
STEM CONSTRUCTION PHASE 2	28-Mar-25	25-Apr-25	20d															RUCTIONPH		
BACKWALL CONSTRUCTION PHASE 2	25-Apr-25	09-May-25	10d													D B/	ACKWALL	CONSTRUCT	IONPH 2	
BACKFILL PHASE 2	09-May-25	19-May-25	6d														BACKFILL			
INSTALL BEAMS PHASE 2	19-May-25	5 22-May-25	3d													1 1 1		EAMSPH2		
DECKWORK PHASE 2	22-May-25	26-Jun-25	25d	- + + + -		·							+-				<u></u> ,,	WORKPH2		+
BARRIER WORK PHASE 2	27-Jun-25	11-Jul-25	10d															RRIERWORK		
REMOVE TRAFFIC CONTROL	11-Jul-25	16-Jul-25	3d															MOVE TRAF		
TRAFFIC PHASE 3	11-Jul-25	16-Jul-25	3d														- i i	AFFICPHAS		
DECK AND BEAM REMOVAL NORTHEND PHASE 3	16-Jul-25	06-Aug-25	15d															1 1 1	EAM REMOV	
SOE INSTALLATION PHASE3		03-Sep-25	20d															<u></u>	TALL ATIONP	T
ABUTMENT REMOVAL PHASE 3		17-Sep-25	10d																MENTREMOV	
PILE INSTALLATION PHASE 3	-	08-Oct-25	15d															· · · · <u>· ·</u> · ·	EINSTALLAT	1 1
FOOTING CONSTRUCTION PHASE 3		22-Oct-25	10d															1.1.1.1.1	FOOTINGCO	
STEM CONSTRUCTION PHASE3		19-Nov-25	20d			····;···;														
BACKWALL CONSTRUCTION PHASE 3		03-Dec-25	10d																BACKV	
BACKFILL PHASE 3		11-Dec-25	6d																BACKF	
INSTALL BEAMS PHASE 3	-	16-Dec-25	3d																INSTAI	
DECK WORK PHASE 3	-	17-Apr-26	25d																	
BARRIER WORK PHASE 3		01-May-26	10d																	
REMOVE TRAFFIC CONTROL PHASE 3		6 06-May-26	3d																	
12TH EXPRESS WORK	04-Apr-22	08-May-24	403d									• 0	8-May-24,MD0	OPT4.12E 12T	HEXPRESS V	ORK:				
TRAFFIC PHASE 1	04-Apr-22	06-Apr-22	3d		FICPHASE 1															
DECK AND BEAM REMOVALNOR THEND PHASE 1	07-Apr-22	27-Apr-22	15d	🗖 DEG	CKANDBEAN	A REMOVAL	NORTHENDPH	1												
SOE INSTALLATION PHASE 1	28-Apr-22	01-Jun-22	25d		SØE INSTA	LLATION PH 1														
ABUTMENT REMOVAL PHASE 1	02-Jun-22	15-Jun-22	10d		ABUTME	NTREMOVAL	PH1													
PILE INSTALLATION PHASE 1	16-Jun-22	06-Jul-22	15d		🗖 PILE I	STALLATION	NPH:1													
(NewBar) Actual Work		Critical Rema	· · · · · · · · · · · · · · · · · · ·					Page 2 of 3												

Long Bridge Project

Maryland Avenue SE to L'Enfant Interlocking Clearance Assessment Appendix C - Option 4



Option 3 Lateral Clearance: 15 ft. Track Spacing for Tracks 1& 2, NA ft. Track Spacing for Tracks 3 & 4

tion 4: 15 Ft Freight, Varied Passenger						Classic Scho	edule Lay	vout									Connectino		JI
ty Name	Planned	Planned	Original	2022			20)23	-			2024	-			2025		20	026
	Start	Finish	Duration	Q2 Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	
RETAINING WALL REMOVAL	16-Jun-22	22-Jun-22	5d	RETAINING	WALLREMOVA	L													
FOOTING CONSTRUCTION PHASE 1	07-Jul-22	20-Jul-22	10d	FOOTIN	GCONSTRUCTIO	ONPH 1													
RETAINING WALL PILES	07-Jul-22	15-Jul-22	7d	🗖 RETAIN	NGWALLPILES		i				<u></u>								
STEM CONSTRUCTION PHASE 1	21-Jul-22	17-Aug-22	20d	STI	EMCONSTRUCT	TIONPH1													
RETAINING WALL FOOTING CONSTRUCTION	21-Jul-22	03-Aug-22	10d	🗖 RETA	INING WALLFOO	DTINGCONSTR	UCTION												
RETAINING WALL CONSTRUCTION	18-Aug-22	08-Sep-22	15d		RETAINING WAI	LCONSTRUCT	TION												
BACKWALL CONSTRUCTION PHASE 1	08-Sep-22	22-Sep-22	10d		BACKWALLC	ONSTRUCTION	VPH 1												
BACKFILL PHASE 1	22-Sep-22	30-Sep-22	6d		BACKFILL PH	IASE 1													
INSTALL BEAMS PHASE 1	30-Sep-22	05-Oct-22	3d		INSTALL BE	AMS PH 1													
DECK WORK PHASE1	05-Oct-22	09-Nov-22	25d		DECKV	WORKPH1													
BARRIER WORK PHASE 1	09-Nov-22	23-Nov-22	10d		BAR	RIERWORKPI	I 1												
TRAFFIC PHASE 2	23-Nov-22	28-Nov-22	3d		TRA	FFICPHASE 2													
DECK AND BEAM REMOVAL NORTHEND PHASE	2 28-Nov-22	19-Dec-22	15d			ECKANDBEA	M REMOV	ALNORTHE	NDPH 2										
SOE INSTALLATION PHASE 2	19-Dec-22	16-Jan-23	20d	· · · · · · · · · · · · · · · · · · ·		SOE INSTAI	L ATIONI	PH2											
ABUTMENT REMOVAL PHASE 2		30-Jan-23	10d			ABUTME	-i -i	i i i											
PILE INSTALLATION PHASE 2		20-Feb-23	15d				1 1												
FOOTING CONSTRUCTION PHASE 2		31-Mar-23	10d				1	ONSTRUCTI	ONPH 2										
STEM CONSTRUCTION PHASE 2		28-Apr-23	20d			i i i	i i	CONSTRUCT	i i i										
BACKWALL CONSTRUCTION PHASE 2		12-May-23	10d			·		KWALLCONS		 рн 2									
BACKFILL PHASE 2	1	22-May-23	6d				- 1	CKFILL PHAS	1 I I I I	112									
INSTALL BEAMS PHASE 2	-	25-May-23	3d				1 1	STALLBEAM											
DECKWORK PHASE 2		23-May-23 29-Jun-23	25d				- E - E - E - E - E - E - E - E - E - E		1 I I I										
		13-Jul-23	10d				- i - i	DECKWOI	i i i										
BARRIER WORK PHASE 2		13-Jul-23						BARRIE											
REMOVE TRAFFIC CONTROL	13-Jul-23		3d						i i i										
TRAFFIC PHASE 3	13-Jul-23	18-Jul-23	3d																
DECK AND BEAM REMOVAL NORTHEND PHASE			15d					1 1 1	1 1 1	REMOVAL N	ORTHENDP	НЗ							
SOE INSTALLATION PHASE 3	-	05-Sep-23	20d							ATIONPH 3									
ABUTMENT REMOVAL PHASE 3		19-Sep-23	10d		· · · · · · · · · · · · · · · · · · ·					TREMOVAL P							·		{·
PILE INSTALLATION PHASE 3	-	10-Oct-23	15d							TALLATION P									
FOOTING CONSTRUCTION PHASE 3		24-Oct-23	10d						i i i	INGCONSTRU									
STEM CONSTRUCTION PHASE 3		21-Nov-23	20d						1 I I I I I	TEMCONSTR		1 I I I I I I I I I I I I I I I I I I I							
BACKWALL CONSTRUCTION PHASE 3		05-Dec-23	10d							BACKWALLC		ONPH 3							
BACKFILL PHASE 3		13-Dec-23	6d		· · · · · · · · · · · · · · · · · · ·			ļļ		BACKFILL P									
INSTALL BEAMS PHASE 3		18-Dec-23	3d							INSTALL BE	EAMS PH3								
DECK WORK PHASE 3	18-Mar-24	19-Apr-24	25d									WORK PH 3							
BARRIER WORK PHASE 3	19-Apr-24	03-May-24	10d								🗖 BAR	RIERWORK	PH3						
REMOVE TRAFFIC CONTROL PHASE3	03-May-24	08-May-24	3d		1 1 1						TRA	FFICPHASE	3						



Option 5: 15 ft Freight, 13 ft Passenger Spacing				Classic Schedule Layout
ivity Name	Planned	Planned	Original	2022 2023 2024 2025 2026
	Start	Finish	Duration	A M J Jul A S Oct N D J F M A M J Jul A S Oct N D J F M A M J Jul A S Oct N D J F M A M J Jul A S Oct N D J F M A M J Jul A S Oct N D J F M A M J Jul A S Oct N D J F M A
Option 5: 15 ft Freight, 13 ft Passenger Spaci	ing 04-Apr-22	27-Mar-26	753d	
RAILROAD COORDINATION		27-Mar-26	753d	
MD AVE PIER RELOCATION	04-Apr-22	31-May-23	228d	▼ 31-May-23,MDOPT5R.PR' MDAVE PIERRELOCATION
INSTALL TRAFFIC CONTROL	04-Apr-22	06-Apr-22	3d	INSTALL TRAFFICCONTROL
INSTALL MICROPILES (LOW OVERHEAD)	-	31-Aug-22	105d	MICROPILE (LOW OVERHEAD)
PILE CAP INSTALLATION	-	14-Sep-22	25d	PILE CAP INSTALLATION
CRASHWALL CONSTRUCTION		16-Nov-22	60d	CRASHWALL CONSTRUCTION
COLUMN CONSTRUCTION		16-Dec-22	42d	COLUMNCONSTRUCTION
PIERCAPCONSTRUCTION		31-May-23	60d	PIERCAP CONSTRUCTION
MARYLAND AVE DECK PHASE 1	06-Apr-23	-	115d	▼ 13-Sep-23,MDOPT5R.BRMARYLANDAVEDECKPH1
INSTALL NEW BEARINGSTIFFNERS	-	14-Jun-23	50d	INSTALL NEW BEARINGSTIFFNERS
INSTALL TRAFFIC CONTROL	1	02-Jun-23	2d	INSTALL TRAFFICCONTROL
REMOVE STREETSCAPE		02-Jun-23	2d 2d	I REMOVE STREETSCAPE
SAWCUT AND REMOVE DECK	05-Jun-23	27-Jun-23	15d	SAWCUTANDREMOVE DECK
INSTALL EXISTING BEAMS ON NEW CAP	14-Jun-23	19-Jul-23	25d	INSTALL EXISTINGBEAMS ONNEW CAP
REMOVE BEAMS	27-Jun-23	1) Jul 23	10d	REMOVE BEAMS
ADJUST JOINT AT EXISTING DECK	11-Jul-23	18-Jul-23	5d	
PIER DEMO	11-Jul-23	27-Jul-23	12d	
CUT AND REMOVE BEAM ENDS	12-Jul-23	27-Jul-23	12d	CUTANDREMOVE BEAM ENDS
INSTALL NEW BEAMS		17-Aug-23	15d	INSTALL NEW BEAMS
PLACE NEW DECK		07-Sep-23	15d	PLACE NEW DECK
REINSTALL STREETSCAPE		11-Sep-23	2d	□ REINSTALL STREETSCAPE
REMOVE TRAFFIC CONTROL		13-Sep-23	2d	I REMOVE TRAFFICCONTROL
MARYLAND AVE DECK PHASE 2		27-Dec-23	62d	▼ 27-Dec-23,MDOPT5R;DR MARYLANDAVE DECK PH 2
INSTALL TRAFFIC CONTROL				
REMOVE STREETSCAPE	14-Sep-23	13-Sep-23	2d 2d	
SAWCUT AND REMOVE DECK	-	19-3ep-23 10-Oct-23	15d	I REMOVE STREETSCAPE SAWCUTANDREMOVE DECK
REMOVE BEAMS		24-Oct-23	10d	REMOVE BEAMS
ADJUST JOINT AT EXISTING DECK	24-Oct-23		5d	□ ADJUSTJOINTATEXISTDECK
PIER DEMO		09-Nov-23	12d	
CUT AND REMOVE BEAM ENDS		09-Nov-23	12d	CUTÁNDŘEMOVE BEÁM ENDS
INSTALLNEW BEAMS		30-Nov-23	12d	INSTALL NEWBEAMS
PLACE NEW DECK		21-Dec-23	15d	PLACE NEW DECK
REINSTALL STREETSCAPE		21-Dec-23 25-Dec-23	2d	PLACE NEW DECK REINSTALL STREETSCAPE
REMOVE TRAFFIC CONTROL		23-Dec-23	2d 2d	REMOVE TRAFFICCONTROL
MARYLAND AVE DECK PHASE 3		02-May-24	34d	© REMOVE TRAFFICCONTROL
INSTALL TRAFFIC CONTROL		29-Dec-23	2d	INSTALL TRAFFICCONTROL
REMOVE STREETSCAPE SAWCUTAND REMOVE DECK		02-Jan-24 23-Jan-24	2d 15d	
SAWCUTAND REMOVE DECK REMOVE BEAMS		23-Jan-24 06-Feb-24	15d 10d	SAWCUTANDRÉMOVE DECK
CUT AND REMOVE BEAM ENDS		22-Feb-24	10d	REMOVE BEAMS
ADJUST JOINT AT EXIST DECK		13-Feb-24	5d	CUTANDREMOYE BEAM ENDS ADJUSTJOINTATEXISTDECK
PIER DEMO		22-Feb-24	12d	PIERDEMO
INSTALL NEW BEAMS		05-Apr-24	12d 15d	PIERDEMIO INSTALL NEWBEAMS
INSTALL NEW BEAMS PLACE NEW DECK		26-Apr-24	15d	INSTALL NEW BEAMS PLACE NEW DECK
REINSTALL STREETSCAPE		30-Apr-24	2d	PLACENEW DELK REINSTALL STREETSCAPE

Option 5 Lateral Clearance: 15 ft. Track Spacing for Tracks 1& 2, 13 ft. Track Spacing for Tracks 3 & 4

on 5- Freight Tracks 15' spacing Passenger 13' spacing Name	Planned	Planned	Original			2	022						Class	10 50	hedule I	202_2										21	024				Î	
	Start	Finish	Duration	M	AN		Jul	A	SC	Dct N	1 D	J	F	M	A M		Jul 1	A S	Oc	t N	D	J	F	M	A		Jul	А	s o	Oct N	D	J
REMOVE TRAFFIC CONTROL	01-May-24	02-May-24	2d			-					-								-	-		-			i	RÉMO	OVE ;					
MARYLAND AVE SHUTDOWN	03-May-24	16-Aug-24	74d			-		-																		_		V 16	6-Aug	-24,M	DOPT	5R.S
INSTALL TRAFFIC CONTROL	03-May-24	06-May-24	2d								-															INST/	ALLT	RAFFI		NTRO	L	
	-	08-May-24	2d																						1	REM	IOVE	STRE	EETSO	CAPE		
	-	29-May-24	15d	+-	+			• • • •															++-			S/		· + -	+			ς
		12-Jun-24	10d								-																REM	OVEE	BEAM	1S		
	12-Jun-24	19-Jun-24	5d																								ADJ	USTIC	DINTA	ATEX	ISTDE	.CK
PIER DEMO	12-Jun-24	28-Jun-24	12d			-					-																PIE	RDEN	мO	-		
CUT AND REMOVE BEAM ENDS	13-Jun-24	28-Jun-24	12d								-																CU	TANE	OREM		BEAM	1 EN
INSTALL NEW BEAMS)1-Jul-24	22-Jul-24	15d	÷-	;	·												·					;;·				- <u></u> -i	. .			EAMS	;
PLACE NEW DECK 2	23-Jul-24	12-Aug-24	15d								-																	⊐ ģi	ACE	NEW	DECK	2
REINSTALL STREETSCAPE	13-Aug-24	14-Aug-24	2d																									Ŕ	EINST	raills	STREE	TSC
	-	16-Aug-24	2d			-					-																				RAFFIC	
12TH STREET DECK REM AND REP	11-Oct-24	27-Mar-26	241d			-																							T		-	_
TRAFFIC PHASE 1	11-Oct-24	16-Oct-24	3d											·						 			++						•••	TR	AFFIC	PH/
	16-Oct-24	20-Nov-24	25d		÷	÷																									DEC	
INSTALL BEAMS PHASE 1		25-Nov-24	3d																			-		1] INS	
	25-Nov-24	30-Dec-24	25d																													DE
	30-Dec-24	13-Jan-25	10d	-							-																				- 1	
	13-Jan-25	16-Jan-25	3d		+																		++·					· -				
		20-Feb-25	25d			i.																								i.		
	20-Feb-25	25-Feb-25	3d																													
	17-Mar-25	18-Apr-25	25d																													
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DECK AND BEAM REMOVAL NORTHEND PHASE 3 0	•	-	25d																													1
	10-Jun-25	12-Jun-25	3d			-					-																			-		
	13-Jun-25	18-Jul-25	25d								-																					
BARRIER WORK PHASE 3	18-Jul-25	30-Jul-25	8d																													
	30-Jul-25	04-Aug-25	3d					• • • • • •		· 				·									++-									• }
ADDITIONAL ABUTMENT	05-Aug-25	27-Mar-26	100d								-																					1
		11-Oct-24	512d	-	i	i	; ;		i			1			i i	-				1		1			i		i i	-		/ 11-C). 	MD
		06-Apr-22	3d		T'R.	AFFIC	ΦΗΔS	F1			-																			-		
	-	27-Apr-22	15d		- i -	i.	i i	i i	: RÊN			¦ R'TH	IENDP	HI																		
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)2-Jun-22	15-Jun-22	10d		-	- i	i i	i i	- i -	EMÓV.	- i	T1																				
	16-Jun-22	06-Jul-22	10d				i i	- i -											-													
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	21-Jul-22	13-Jui-22	20d							1			IONPH	n					-													
RETAINING WALL FOOTING CONSTRUCTION	21-Jul-22	03-Aug-22	10d			-									IRUCTIO	N														-		
	18-Aug-22	03-Aug-22 08-Sep-22	10d 15d												CTION										ł							
)8-Sep-22	22-Sep-22	10d												ONPH 1																	
	22-Sep-22	30-Sep-22	6d		+				!	BACI													++									
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Long Bridge Project

Maryland Avenue SE to L'Enfant Interlocking Clearance Assessment Appendix C - Option 5



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Option 5 Lateral Clearance: 15 ft. Track Spacing for Tracks 1& 2, 13 ft. Track Spacing for Tracks

ption 5- Freight Tracks 15' spacing Passenger 13' spa	cing					Classic	Schedule	Lavout									PRC	JJE
vity Name		Planned	Original	2022			Senedane	2023			2024			202	5	Connecting North c	202	26
		Finish	Duration M	A M J Ju	 Det N I	JFN	I A M	J Jul A S	Oct N D	J F M A	M J Jul A	S Oct N D	JFM	A M J J		t N D	J F M	1 Apr
DECK WORK PHASE 1	05-Oct-22 (09-Nov-22	25d		DE DE	CK WORK PI	I I											
BARRIER WORK PHASE 1	09-Nov-22 2	23-Nov-22	10d		🗖 В	ARRIERWOI	RKPH1											
TRAFFIC PHASE 2	23-Nov-22	28-Nov-22	3d		ВΤ	RAFFICPHAS	SE2											
DECK AND BEAM REMOVAL NORTHEND PHASE	E 2 28-Nov-22 1	19-Dec-22	15d		 	DECKAND	BEAM REN	MOVAL NORTHEN	DPH 2					· · · · · · ·				
SOE INSTALLATION PHASE 2	19-Dec-22	16-Jan-23	20d			SOE IN	STALL ATE	ONPH2										
ABUTMENT REMOVAL PHASE 2	16-Jan-23 3	30-Jan-23	10d			🗖 ABU	TMENTRE	MOVAL PH2										
PILE INSTALLATION PHASE 2	20-Mar-23 (07-Apr-23	15d				🗖 PILE I	NSTALLATION PH	2									
FOOTING CONSTRUCTION PHASE 2	07-Apr-23 2	21-Apr-23	10d				FOC	DTINGCONSTRUCT	IONPH 2									
STEM CONSTRUCTION PHASE 2	21-Apr-23	-	20d		 			STEM CONSTRUC	CTIONPH 2			+						
BACKWALL CONSTRUCTION PHASE 2	19-May-23	-	10d					BACKWALLCOM										
BACKFILL PHASE 2	02-Jun-23		6d					BACKFILL PH										
INSTALL BEAMS PHASE 2	12-Jun-23		3d					INSTALL BEAN	1.1.1									
DECKWORK PHASE 2	15-Jun-23		25d					DECK W	- i i									
BARRIER WORK PHASE 2	20-Jul-23 (10d		 			BARRI		 142				· · · · · · ·				
REMOVE TRAFFIC	03-Aug-23 (3d					i i i i	- i i									
TRAFFIC PHASE3	03-Aug-23 (03-Aug-23 (-	3d 3d						VE TRAFFI ICPHASE 3									
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DECK AND BEAM REMOVAL NORTHEND PHASE	-	-	15d						i i	AM REMOVAL NOR	CIHENDPH 3							
SOE INSTALLATION PHASE 3	29-Aug-23	-	20d		 					LL ATIONPH 3		· · · · · · · · · · · · · · · · · · ·		; 				
ABUTMENT REMOVAL PHASE 3	26-Sep-23		10d						1.	ENTREMOVAL PH3								
PILE INSTALLATION PHASE 3	10-Oct-23		15d							NSTALLATION PH3								
FOOTING CONSTRUCTION PHASE 3	31-Oct-23		10d						1 I I I	DTINGCONSTRUC								
STEM CONSTRUCTION PHASE 3	14-Nov-23		20d							STEMCONSTRUC								
BACKWALL CONSTRUCTION PHASE 3	12-Dec-23		10d		 					BACKWALLCON	NSTRUCTIONPH	3						
BACKFILL PHASE 3	18-Mar-24 2	25-Mar-24	6d								CKFILL PHASE :	1 I I I						
INSTALL BEAMS PHASE 3	25-Mar-24 2	28-Mar-24	3d							INS	STALL BEAMS PI	I3						
DECKWORK PHASE3	28-Mar-24 (02-May-24	25d								DECK WORK	PH 3						
BARRIER WORK PHASE 3	02-May-24	16-May-24	10d								BARRIERW	ORKPH3						
REMOVE TRAFFIC CONTROL PHASE 3	16-May-24	21-May-24	3d								TRAFFICPH	ASE3						
ADDITIONAL PIER, ABUTMENT, DECK	22-May-24	11-Oct-24	100d									ADDITIC	NAL PIER, ABU	ITMENT, DECK				
ADDITIONAL PIER, ABUTMENT, DECK	22-May-24	11-Oct-24	100d									ADDITIC	NAL PER ABU	TMENT, DECK				
(NewBar) Actual Work		Critical Remain	ningWork				Page 3 of 3											

(NewBar)	Actual Work Critical Remaining Work	Page 3 of 3	TASK filter: All Activities
Actual Level of Effort	Remaining Work Milestone		

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Long Bridge Project

Environmental Impact Statement (EIS)

Maryland Avenue SW to L'Enfant Interlocking Clearance Assessment

Appendix D - Operator Support Letters



August 7, 2018

Mr. Tod Echler Chief Engineer CSXT Corporation CSX Transportation Building 500 Water Street Jacksonville, FL 32202

Dear Mr. Echler:

Amtrak supports the construction of a new Potomac River Crossing Bridge linking the District of Columbia and Virginia. Amtrak is working with the Virginia Department of Rail and Public Transportation on this matter. The purpose of this letter is to inform you that Amtrak has no objection to 13 ft. track centers as part of the approaches to the bridge.

If you have any questions, please feel free to contact me at <u>verrelr@amtrak.com</u> or 215-349-1907.

Sincerely,

Raymond Verrele, Jr. Assistant Vice President -Engineering and Design

cc: Michael McLaughlin, DRPT



COMMONWEALTH of VIRGINIA

Jennifer L. Mitchell Director DEPARTMENT OF RAIL AND PUBLIC TRANSPORTATION 600 EAST MAIN STREET, SUITE 2102 RICHMOND, VA 23219-2416 (804) 786-4440 FAX (804) 225-3752 Virginia Relay Center 800-828-1120 (TDD)

August 10, 2018

Mr. Tod Echler Chief Engineer CSXT Corporation CSX Transportation Building 500 Water Street Jacksonville, FL 32202

Dear Mr. Echler,

The Virginia Department of Rail and Public Transportation (DRPT) is a committed partner in the Long Bridge Environmental Impact Statement (EIS) currently being conducted jointly by the Federal Railroad Administration (FRA) and District Department of Transportation (DDOT). The Commonwealth and CSX have each committed \$15 million dollars in funding for the final design of the preferred alternative once the EIS is complete. DRPT is also currently leading other projects in the rail corridor that will help realize the potential of an expanded Long Bridge.

As a good steward of public revenue, DRPT must consider the most cost-efficient method to deliver the largest public benefit to citizens of the Commonwealth, as well as ensure continued safe and efficient freight and passenger rail operations across the Potomac River. DRPT must also consider the opportunity to limit project impacts to adjacent property and existing transportation and utility infrastructure whenever possible to ensure that both the cost and construction schedule are minimized.

DRPT has reviewed the results of an engineering feasibility analysis conducted by DDOT and has concluded that maintaining 15-foot track centers north of the main bridge span over the Potomac will result in significantly higher construction impacts to property and infrastructure adjacent to the rail corridor, resulting in significantly higher project costs and an extended construction schedule. To avoid unnecessary project impacts, DRPT supports the use of 13-foot track centers and asks that CSX consider this exception to their 15-foot track center standard.

The Smartest Distance Between Two Points www.drpt.virginia.gov We greatly appreciate our continued partnership with CSX to improve freight and passenger rail service in the Commonwealth.

Sincerely,

An C. Mitchell

Jennifer Mitchell

Director, Virginia Department of Rail and Public Transportation

Cc: Michael McLaughlin, DRPT Chief of Rail Emily Stock, DRPT Manager of Rail Planning



VIRGINIA RAILWAY EXPRESS

August 9, 2018

Mr. Tod Echler Assistant Vice President, Engineering CSX Transportation, Inc. 500 Water Street Jacksonville, Florida 32202

RE: LONG BRIDGE CORRIDOR IMPROVEMENT PROJECT

Dear Mr. Echler:

The Virginia Railway Express (VRE) is currently engaged in the environmental review and preliminary design of the *Long Bridge Corridor Improvement Project*, in conjunction with CSX Transportation (CSXT), the District Department of Transportation (DDOT), the Virginia Department of Rail and Public Transportation (DRPT), and the National Railroad Passenger Corporation (Amtrak). The Project proposes to add a second bridge across the Potomac River and provide other capacity improvements to the CSXT Baltimore Division RF&P Subdivision between L'Enfant Interlocking in the District of Columbia and RO Interlocking in Arlington County, Virginia, a distance of about 1.4 miles.

The timely completion of the proposed improvements will greatly benefit CSXT, VRE, and Amtrak by adding capacity, resiliency, and redundancy to this operational bottleneck, complementing CSXT's soon-to-be-completed Virginia Avenue Tunnel project. We strongly endorse any steps to expedite implementation and minimize costs without compromising safety. The purpose of this letter is to inform you that VRE has no objections to operating with track centers as close as 13 feet and lateral clearances as close as 8½ feet, should a design exception to that effect be approved by CSXT.

Please feel free to contact me at (703) 838-5439 or RDALTON@VRE.ORG with any questions or concerns.

Sincerely,

MAD \$

Rich Dalton Deputy Chief Executive Officer Virginia Railway Express

cc: R. Marcus, CSXT M. McLaughlin, DRPT R. Verrele, Amtrak A. Chamberlin, DDOT