LONG BRIDGE PROJECT
Connecting North and South Through our Nation's Capital

Appendix C:

Project Correspondence

LONG BRIDGE PROJECT
Connecting North and South Through our Nation's Capital

Appendix C – Project Correspondence

This appendix contains correspondence regarding the Long Bridge Project.

Alternatives and Alternatives Development Process Correspondence

- Letter from CSX Transportation regarding comments on the preparation of the Environmental Impact Statement for proposed modification of Long Bridge, July 3, 2017.
- Letter from the United States Coast Guard regarding their review of the bridge Project Initiation Request, July 18, 2017.
- Letter from the Commonwealth of Virginia's Department of Rail and Public Transportation regarding comments on the Long Bridge NEPA Study Level 2 Screening Results, September 19, 2017.
- Letter from Arlington County's Division of Transportation regarding the ongoing Environmental Impact Statement for the Long Bridge Project, January 12, 2018.
- Letter from the District of Columbia Water and Sewer Authority (DC Water) regarding comments on the proposed alternatives for the Long Bridge Project Environmental Impact Statement, January 12, 2018.
- Letter from Virginia Railway Express regarding the Long Bridge Public Meeting, January 12, 2018.
- Letter from the Commonwealth of Virginia's Department of Rail and Public Transportation regarding comments on the Long Bridge Study Draft EIS Action Alternatives, January 16, 2018.
- Letter from CSX Transportation regarding comments on the two Proposed Action Alternatives for Long Bridge, January 16, 2018.
- Letter from the Virginia Department of Historic Resources containing comments on the alternatives to be evaluated in the Draft Environmental Impact Statement, January 16, 2018.
- Letter from the National Capital Planning Commission regarding the Long Bridge Study Alternatives Screening Evaluation, January 17, 2018.
- Letter from the Department of Defense – Washington Headquarters Services regarding the Long Bridge Study and the East Utilities Plant, May 25, 2018.

Maryland Avenue SW Clearance to L'Enfant Interlocking Correspondence

- Letter from Amtrak regarding track center spacing in the Long Bridge Project, August 7, 2018.
- Letter from Virginia Railway Express regarding track center spacing in the Long Bridge Project, August 9, 2018.
- Letter from the Commonwealth of Virginia's Department of Rail and Public Transportation regarding the engineering feasibility analysis conducted by DDOT, August 10, 2018.

LONG BRIDGE PROJECT
Connecting North and South Through our Nation's Capital

Bike – Pedestrian Crossing Correspondence

- Letter from the Rails-to-Trails Conservancy comments regarding the proposed bike-pedestrian crossing in the Environmental Impact Statement for the Long Bridge Project, January 16, 2018.
- Letter from the Southwest Business Improvement District regarding the proposed bike-pedestrian crossing, January 1, 2018.
- Letter from the Arlington County Pedestrian Advisory Committee (PAC) regarding the bike-pedestrian bridge as part of the Long Bridge Project, January 12, 2018.
- Letter from the Washington Area Bicyclist Association regarding comments on Environmental Impact Statement for the Long Bridge Project, January 12, 2018.
- Letter from Councilmember David Grosso regarding the proposed bike-pedestrian crossing, January 16, 2018.

Section 7 Consultation

- Search report from The Center for Conservation Biology Mapping Portal regarding VA Eagle Nest Locator, November 27, 2017.
- Letter from the United States Department of the Interior – Fish and Wildlife Service Chesapeake Bay Ecological Services Field Office regarding the list of threated and endangered species that may occur in the project location, and/or may be affected by the proposed project, November 27, 2017.
- Letter from the United States Department of the Interior – Fish and Wildlife Service Chesapeake Bay Ecological Services Field Office regarding the list of threated and endangered species that may occur in the project location, and/or may be affected by the proposed project, November 27, 2017.
- Letter from Coastal Resources Inc. Ecological Consultants to the District Department of Energy and Environment regarding the request for current species and habitat information for the Long Bridge Project, December 4, 2017.
- Letter from Coastal Resources Inc. Ecological Consultants to the National Marine Fisheries Service – Northeastern Regional Office regarding a request for project review – Long Bridge Project Arlington County, VA and Washington, DC, December 4, 2017.
- Letter from the United States Department of the Interior – Fish and Wildlife Service regarding the completion of the online project review process for the Long Bridge Project, December 5, 2017.
- Email from Brian D. Hopper at National Oceanic and Atmospheric Association - Fisheries regarding information about threatened or endangered species within the Long Bridge Project Study Area, December 27, 2017.
- Letter from the Commonwealth of Virginia – Department of Conservation and Recreation regarding natural heritage resources within the project area, December 29, 2017.
- Search report from the Commonwealth of Virginia Department of Game and Inland Fisheries regarding fish and wildlife information, November 20, 2018.

- Letter from the Federal Railroad Administration to the National Oceanic and Atmospheric Administration's National Marine Fisheries Service regarding Endangered Species Act concurrence for Atlantic and shortnose sturgeon for the Long Bridge Project, September 3, 2019.

Section 404 Consultation Correspondence

- Letter from the Department of the Army, U.S. Army Corps of Engineers - Baltimore District, regarding the preliminary determination of the presence or indications of the approximate location(s) of waters of the United States in the Project study area, March 19, 2019.

[CSX]

500 Water Street
Jacksonville, FL 32202
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Quintin C. Kendall
Vice President
State Relations & Public Funding

July 3, 2017

Anna Chamberlin, AICP
Long Bridge Project
55 M Street, SE
Suite 400
Washington, DC 20003-3515

Amanda Murphy
Environmental Protection Specialist
Federal Railroad Administration
1200 New Jersey Avenue, SE
Washington, DC 20590

Dear Ms. Chamberlin and Ms. Murphy:

CSX Transportation, Inc. ("CSXT") submits the following comments for consideration during the process of preparing an Environmental Impact Statement ("EIS") for the proposed modification of Long Bridge (the "Project"). CSXT provides these comments in its capacity as the owner of Long Bridge and the operator of the freight rail network of which the bridge is an essential element.

The capacity of the current, two-track, CSXT-owned bridge is sufficient to meet the needs of CSXT's freight customers, including anticipated needs through the year 2040. CSXT understands that other entities—including Amtrak, the Virginia Railway Express, the Maryland Area Regional Commuter service (which does not currently use the bridge), and other freight rail companies—have expressed a desire to operate a significantly increased number of trains over a Long Bridge-area crossing in the years to come. CSXT has not agreed to such an expansion of non-CSXT use of Long Bridge. However, we provide comments in order that FRA and DDOT can understand CSXT's concerns with certain concepts under the Level 2 screening criteria, which are independent of issues that may be associated with non-CSXT rail use of Long Bridge.

Seven concepts for the Project remain under consideration. These concepts consist of concepts with three tracks (concepts 3 and 3A), four tracks (concepts 5 and 5A), and five tracks (concepts 8 and 8A); concepts that include a bicycle and pedestrian pathway parallel to the tracks (concepts 3A, 5A, and 8A); and the no-build concept (concept 1).[1] In this letter, we comment on

[1] We understand that modification of the Long Bridge crossing to support electrically-powered locomotives is not under consideration. CSXT supports the exclusion of electrification from the Project. Electrification would create new and unnecessary hazards that would threaten the safety of CSXT maintenance crews and others.

certain of the remaining concepts, evaluating them in light of the draft Level 2 screening criteria that the Federal Railroad Administration ("FRA") and District Department of Transportation ("DDOT") provided to the public on May 16, 2017[2]; the Level 1 screening criteria[3]; and the Project's stated purpose and need[4].

Our comments are guided by four core principles critical to all proposed passenger service projects on the CSXT network, which we have described at greater length in our prior comments: **safety, capacity, liability** and **compensation**. In light of these core principles, concepts should be screened out and removed from future consideration if they would not permit CSXT to continue to use Long Bridge and the associated corridor to meet the present and future demands of its freight network in a safe and efficient manner. Likewise, no concept should be carried forward that would impair CSXT's current and future use of its rail network, or its right to manage its network as it deems appropriate.

I. Three-Track Concepts Would Not Satisfy the Operations Efficiency, Constructability, and Cost-Efficiency Screening Criteria.

A. *Operational Challenges Would Limit the Benefits of a Three-Track Configuration.*

A three-track configuration—that is, concept 3 or 3A—would not satisfy the "railroad operations efficiency" Level 2 screening criterion, since a three-track configuration would have limited potential to improve the capacity, resiliency and redundancy of the current Long Bridge. This is in large part because issues on one track frequently and unavoidably affect adjacent tracks. These issues, some of which are noted below, are substantially mitigated or eliminated altogether in a four-track configuration.

- **Routine maintenance.** In a standard parallel track configuration, in which track centers are fifteen feet apart, maintenance work on one track affects adjacent tracks. In accordance with federal regulations and CSXT rules, worker safety measures must be implemented not only on the track that is subject to maintenance, but also on any adjacent tracks. When work is undertaken on the middle track, the entire three-track configuration is impacted, resulting in delays on all tracks.

- **Emergencies.** When a train is experiencing an emergency, for the general safety of all trains in the area, CSXT rules do not permit other trains to pass on adjacent CSXT tracks until it is confirmed that the train in emergency status has not inadvertently obstructed or damaged the adjacent tracks, bridges, or other structures. When trains are initially allowed to pass, they must do so at restricted speeds, not to exceed 15 MPH. Furthermore, depending on the type of emergency situation, trains passing

[2] The draft Level 2 screening criteria are: Constructability, railroad operations efficiency and effectiveness, cost (order of magnitude), preliminary environmental effects considerations, and safety.

[3] The Level 1 screening criteria are: Railroad capacity, network connectivity, and resiliency/redundancy.

[4] *See* 81 Fed. Reg. 59036, 59037 (August 26, 2016).

over the affected section of track may be stopped or restricted until the track, bridge, and right-of-way are inspected by track and/or bridge inspectors to ensure that trains may pass safely through the area. Accordingly, in a three-track configuration, an emergency on the middle track would hinder operations on both exterior tracks, affecting the very busy corridor both north and south of this area.

- **Derailments.** Even a minor derailment has the potential to halt traffic on all tracks in a three-track configuration. In the wake of a derailment, trains on adjacent tracks are not allowed to pass until the individual in charge of the derailment response approves the resumption of traffic.

- **Oversize shipments.** CSXT rules limit movement of trains on adjacent tracks when one train is carrying an oversize shipment. Such shipments are wider than other shipments, and may make use of the physical space that would normally be used by trains passing on adjacent tracks. A train carrying an oversize shipment thus may prevent other trains from using adjacent tracks, or from operating on adjacent tracks at normal speeds. Common examples of oversize shipments are large electrical power grid equipment such as transformers and turbines, and large pieces of defense equipment. Depending on the width of the oversize shipment, trains on adjacent tracks may need to be stopped or passed at slow speeds, typically 10 MPH.

The impact of delays resulting from the above-identified issues would be felt up and down the rail lines extending north and south of Long Bridge. Delays at the bridge could result in trains backed up a significant distance, likely impacting populated areas, including Crystal City to the south and Anacostia to the north. Passenger trains would also be affected, delaying inbound and outbound traffic into Washington Union Station.

Ramifications of delays of passenger train service are intuitive, but potential disruption to CSXT freight service has recently taken on a much greater importance. Over the past months, CSXT has fundamentally altered its system-wide operating plan, implementing a precision railroading model in which trains operate subject to strict schedules. In a precision railroading environment, delays—even minor ones—can have far-reaching consequences, disrupting freight activity for a significant period of time and resulting in major losses in efficiency.

The operational concerns discussed above would apply to all feasible three-track configurations, including configurations that make use of multiple, separate structures crossing the Potomac River. Even though the use of separate structures might mitigate some of the operational concerns in the portion of the crossing that is directly over the Potomac River (since the separation between tracks might reduce the impact of parallel tracks on each other), the separation between tracks would end after landfall on the northern and southern ends of the bridge, and at those locations the operational issues discussed above would manifest themselves. Unless exceptional separation were maintained in these on-land areas—a costly approach that would have significant impact on adjoining property—the operational challenges discussed above would affect all three-track configurations.

B. *A Three-Track Concept Would Be Difficult to Construct, Given the Need for Uninterrupted Bridge Traffic During Construction.*

During any construction activities, at least two tracks will be needed for the current level of freight and passenger rail traffic, since no practical substitute exists for the current bridge and a shutdown of freight and passenger rail traffic is not an option. At least two tracks are needed not only for the Potomac River crossing, but also for all additional crossings, including the George Washington Parkway, Interstate 395, Ohio Drive SW, the Washington Channel, and Maine Avenue SW. A three-track configuration that consists of an additional, one-track bridge plus modification or replacement of the current, two-track bridge would pose unacceptable challenges during construction. Work on or modification of either track of the current bridge would require shut-down of traffic on the other track, leaving only one track in service—the new, separate bridge—which would be insufficient to support CSXT's traffic, let alone that of Long Bridge's other users. Unless three new tracks were placed on an entirely new structure or on multiple new structures—an approach that would not be cost-effective or feasible in light of track-alignment requirements—constructability concerns would render the three-track concepts 3 and 3A unworkable.

C. *A Three-Track Crossing Would Not Be Cost Efficient.*

The current Long Bridge is a two-track bottleneck between four-track segments of rail, and a three-track configuration would not eliminate that bottleneck. Trains would still need to stop and be held at the north and south ends of the bridge, where four-track traffic would need to be condensed to three tracks, creating backups, as discussed above.

Modifying or upgrading Long Bridge would be a major undertaking, requiring the cooperation of many parties and a significant financial investment. The effort and cost involved should be justified by major operational improvement. It would be a lost opportunity and an unwise use of resources to modify the bridge in a way that fails to eliminate the current bottleneck.

D. *Environmental Impact May Not Justify Preference for a Three-Track Concept Over a Concept with a Larger Number of Tracks.*

CSXT does not believe that a consideration of environmental impact provides a justification for selecting a three-track concept over a four-track one. Although it is difficult to evaluate environmental impact without defining the specifics of a design, the potential impact associated with construction of a three-track crossing might resemble that associated with a four-track crossing. Based on information currently available, CSXT doubts that the time needed for construction, the potential impact on aquatic life, or the potential impact on terrestrial habitat would necessarily differ in any material way as between the three- and four-track concepts.

II. A Five-Track Crossing Would Be Unworkable.

A. It May Be Impossible to Connect a Fifth Track to the Existing Four-Track Network North of Long Bridge.

A five-track concept—that is, concept 8 or 8A—could not be implemented in a useful way for Long Bridge. To the north of the current bridge, tracks enter a four-track tunnel near the Mandarin Oriental hotel, leading freight traffic to the Virginia Avenue Tunnel. Widening the relevant network of tunnels would be an enormous task, and we do not understand such a widening project to be under current consideration.

To make use of a five-track crossing without widening the Mandarin Oriental Hotel tunnels to five tracks, a combination of track turnouts and/or crossovers and signaling equipment would need to be constructed between the hotel tunnels and Long Bridge. The short distance between the tunnels and Long Bridge is insufficient to permit the turnouts, crossovers, and/or signal equipment needed for a fifth track. Also, bridges (Interstate 395, Ohio Drive SW, Washington Channel, Maine Avenue SW) and limitations on track alignment (*e.g.*, curves) would preclude placement of the turnouts and crossovers for a fifth track. (A turnout or crossover partly or entirely on the bridge itself would present safety and other concerns and might not be permitted by FRA.) Therefore, CSXT believes it would not be possible to construct or operate a five-track configuration over Long Bridge and between Long Bridge and the Mandarin Oriental Hotel tunnel.

B. A Five-Track Crossing Would Not Be Cost-Efficient.

Even if it were somehow possible to connect a five-track bridge to the four-track corridor to the north, serious cost-efficiency concerns would be raised by such an approach. It is expensive to build an additional track on a bridge. Widening the Long Bridge corridor on Long Bridge but not on both sides would not be cost-efficient. Given the practical impossibility of extending five-track traffic to the bridge's north (discussed above), cost-efficiency concerns would weigh heavily against further consideration of concepts 8 and 8A.

III. A Pedestrian Pathway or Bikeway Would Raise Safety Concerns.

Safety is a foundational principle for CSXT, as well as for FRA and DDOT. *See, e.g.*, FRA Procedures for Considering Environmental Impacts, 64 Fed. Reg. 28,545, 28,550 (May 26, 1999) (providing that "public safety" should be considered as part of EIS process). Any design that would pose significant safety concerns and thereby create greater liability exposure for CSXT should be eliminated from consideration. CSXT believes that including a pedestrian pathway or bikeway in close proximity to a rail bridge—as may be contemplated in concepts 3A, 5A and 8A—would raise serious and unnecessary safety concerns.

CSXT's Safety Guidelines, which constitute the Company's policy, restrict the use of pedestrian paths and bikeways near railroad tracks. *See* Attachment A (excerpt of Safety Guidelines). The Company does not permit pathways running parallel to rail tracks within CSXT's rights of way. Additionally, in an effort to reduce proximity between pedestrians/cyclists and rail traffic, CSXT does not permit pedestrian-rail grade crossings except

where highway-rail grade crossings already exist, and the Company requires that three at-grade crossings be closed for every new one opened.

A variety of risks are created by a pedestrian pathway/bikeway in close proximity to a rail line. Some of these risks affect all potential pathway users—even cautious, law-abiding members of the community. One such risk is that of derailment, since a derailment could impact users of a pathway near the affected track section. Although CSXT and other rail operators have gone to great lengths to reduce the risk of derailment, these incidents still occur. Another risk potentially affecting all users is that of falling objects; there is potential for heavy freight to come detached, putting pathway users at risk.

A pathway in close proximity to rail lines could also increase trespassing, which is the leading cause of rail-related deaths in the United States. A pathway would put more people, primarily runners and bikers, close to active tracks. It would also necessarily provide unfettered access for trespassing —for example by people searching for selfies, people under the influence of alcohol or drugs, daredevils, and others. Trespassers not only put themselves at great risk, but may also endanger a train's crew and passengers by throwing objects at trains (an activity known as "rocking") or engaging in other activities that could distract engineers, affect rail integrity or otherwise impact train operations. A pathway would also create a greater potential risk of terrorism. Providing increased opportunities for trespassing and other illegal activity is inconsistent with FRA, law enforcement, and railroad programs and policies. Therefore, despite the positive intentions underlying a bike or pedestrian path, CSXT believes that concepts 3A, 5A and 8A should be rejected.

However, CSXT appreciates the interest in enhancing the National Park Service National Capital Region Paved Trails network, and is prepared to work with interested parties in exploring viable alternatives to concepts 3A, 5A and 8A to accommodate connections on or about the existing Long Bridge to the pedestrian and bicycle network and recreational facilities. Such alternatives must be designed consistent with railroad operating plans and must contemplate safety and liability issues associated with locating pedestrians and bikers in proximity of an active rail line.

Thank you for your consideration. We would be happy to discuss these comments at your convenience.

Sincerely,

Quintin Kendall

Attachment

Public Road Crossing Openings and Closures

Key Points

- **Both federal and state government policies discourage the creation of new highway-rail grade crossings. To enhance highway-rail grade crossing safety, CSXT endorses the United States Department of Transportation's goal of reducing the number of at-grade crossings through consolidation, elimination, grade separation and restriction of the number of new crossings installed.**
- **Grade separated structures are the best alternative to add new roads or additional highway capacity.**
- **CSXT and state and federal agencies have worked with many communities to develop and implement projects that improve highway traffic flow without the creation of new highway-rail grade crossings.**
- **CSXT, the Federal Railroad Administration (FRA), and state agencies encourage communities to consider all alternatives before planning to create new grade crossings and encourage closure of existing grade crossings where possible.**
- **CSXT may provide incentive payments for crossing closures.**
- **To comply with and in support of the federal initiative to reduce crossings, CSXT requires the community to identify three comparable active grade crossings to be closed for each new grade crossing.**

Overview

CSXT understands the importance of highway-rail grade crossings and their relevance to such priorities as economic development, emergency vehicle access and other growth opportunities in the communities through which we operate. Because of the safety concerns associated with highway-rail grade crossings, however, every effort must be made to obtain alternative access or additional capacity using grade separations, or by other roads leading to existing crossings.

Crossing Closure Incentive Program

Eliminating crossings is a goal of CSXT, states and the Federal Railroad Administration (FRA). Likewise, the Federal Highway Administration (FHWA) Railroad-Highway Grade Crossing Handbook acknowledges that the first alternative that should always be considered for a highway-rail at-grade crossing is elimination. Elimination of a crossing provides the highest level of crossing safety because the point of intersection between highway and railroad is removed. Closing adjacent crossings simplifies the design, installation and operation of highway-rail grade crossing warning systems. To help ensure the success of this effort, CSXT may provide incentive payments for the closure of public crossings.

Considerations for Crossing Openings and Closures

The addition of any grade crossing brings the potential for incidents involving trains and motor vehicles. For this reason, both federal and state government policies discourage the creation of new grade crossings. CSXT, other railroads, the United States Department of Transportation and most states encourage communities to carefully consider all alternatives, including grade separations (crossings that go over or under railroad tracks), as opposed to the creation of new at-grade crossings. The cost of a grade separation should not outweigh the enhanced safety it would provide for motorists.

CSXT, the FRA and other railroads actively participate in programs such as Operation Lifesaver, an initiative dedicated to educating the public on the importance of practicing safe driving procedures at grade crossings. For more information about crossing safety, visit: http://www.beyondourrails.org/safety

Before agreeing to the establishment of a new crossing, CSXT expects communities to engage in a study with the purpose of identifying existing redundant public crossings for closure. To comply with and in support of the federal initiative to reduce grade crossings, CSXT requires that the community identify the closure of three or more comparable active public at-grade crossings.

Policies and Procedures to Guide New Crossing Requests:

The project sponsor requesting a new crossing or seeking to convert a private crossing to a public crossing will be asked to prepare a written request, presenting the following information:

1. A description of the proposed highway project, including proposed passive or active traffic control devices, and the need for preemption and/or interconnection with traffic signals, together with a scale drawing or sketch of the proposed highway and vicinity.

2. Expected Annual Average Daily Traffic (AADT) and proposed vehicular speed limit, photographs, aerial map.

3. A detailed explanation of the necessity of the crossing.

4. Identify at-grade crossings to be closed. Include their vehicular speed limit, AADT, and traffic type.

5. The terms on which the project sponsor proposes that the crossing shall be constructed and subsequently maintained.

6. The determination by the highway or regulatory authority of the need for passive or active traffic control devices and other safety treatments (i.e., signage, roadway medians, etc.), as selected by the highway authority consistent with applicable federal and state MUTCD guidelines and requirements.

7. A plan to satisfy any appropriate regulatory authority's requirements, procedures and approval. The project sponsor should coordinate with all applicable agencies (state, county, city, etc.) to ensure proper procedures are followed.

8. Provide CSXT authorization to incur costs for its Preliminary Engineering to review the crossing request (whether or not is approved), design and construction expenses, and for the ongoing maintenance of the crossing surface and related grade crossing warning devices.

CSXT will review the request for a new crossing and inform the project sponsor whether or not the new crossing is approved. CSXT may deny a new crossing request due to safety or operational concerns.

Bicycle/Pedestrian Pathways and Multi-Use Trails

Key Points

- **Private or public parallel bicycle/pedestrian pathways and trails are not permitted on CSXT property.**
- **Bicycle/pedestrian pathways and trails cannot cross tracks at grade outside of existing highway easements.**
- **The highway agency's design must include additional safety measures for at-grade pathways and trails within existing highway easements.**
- **CSXT prefers grade separated bicycle/pedestrian pathways and multi-use trails.**
- **CSXT will oppose condemnation proceedings aimed at recreational use of trackside property.**

Overview

CSXT recognizes that communities often wish to establish recreational pathways and trails in the proximity of active railroad lines. While CSXT will work with communities to accommodate such requests, it is critical for project sponsors to recognize that CSXT requirements must be met and safety precautions taken to protect the public and CSXT employees. In addition, certain requests, such as pathway crossings at grade outside of existing highway easements, will not be permitted.

CSXT Policy on Pathways and Trails Parallel to CSXT Property

At CSXT safety is paramount. CSXT's policy is not to permit private or public parallel bicycle/pedestrian paths that come within the railroad's right-of-way. CSXT will insist upon safety measures such as fencing and signage where such pathways or parks are established parallel to the railroad's right-of-way. The cost of installing, inspection and future maintenance are the responsibility of the trail sponsor or agency. CSXT will oppose any attempt to establish recreational usage of CSXT property through condemnation. Regardless of construction of pathways and trails, CSXT reserves the right to use CSXT right of way for operational necessities.

Pathways and Trails Crossing CSXT Tracks and Right-of-Way

Bicycle/pedestrian pathways and trails cannot cross tracks at grade outside of existing highway easements. Grade separated pathway and trail crossings are preferred in all cases, and required when outside of an existing highway easement. Pathways and trails under existing railroad structures are discouraged and will only be allowed under special circumstances. Pathways and trails over and under the railroad track shall have protective fencing.

Bicycle/pedestrian pathways and trails crossing at-grade within a highway easement must have appropriate signs and warning systems as determined by the responsible highway and/or regulatory agency.

All expenses associated with the design, installation and maintenance of the pathway/trail, including the costs of signs, crossing surfaces and warning systems associated with an at-grade crossing, will be paid by the project sponsor.

CSXT prosecutes trespassers and every precaution must be taken to ensure that the public remains clear of CSXT's property.

U.S. Department of Homeland Security

United States Coast Guard

Commander
United States Coast Guard
Fifth Coast Guard District

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16593
18 JUL 2017

Ms. Amanda Murphy
Office of Railroad Policy & Development
Federal Railroad Administration
1200 New Jersey Avenue, SE
Washington, DC 20590

Dear Ms. Murphy:

Coast Guard review of your bridge Project Initiation Request (PIR), as provided in letter dated June 14, 2017, is complete.

Based on the documentation provided and our research, the Coast Guard has established a bridge permitting project for the proposed Long Road Bridge across the Potomac River, at position (38° 52.04N 77° 02.1W), at Washington, DC.

The attached Bridge Permit Application Guide (BPAG) should be used in preparing a Navigation Impact Report (NIR) and Coast Guard Bridge Permit Application (CGBPA) as described below:

a. Navigation Impact Report (NIR): A Navigation Impact Report (NIR), as outlined in appendix A in the BPAG, should be submitted early in the project scoping and planning phase in order for the Coast Guard to provide a preliminary navigation clearance determination (PNCD). A PNCD provides the preliminary navigational clearances (vertical and horizontal) to be used in the development of alternatives within the project planning and environmental review processes. A PNCD is not binding, does not constitute an approval or final agency action, and normally expires three (3) years from the date of the correspondence in which the determination is provided.

b. Coast Guard Bridge Permit Application (CGBPA): A complete Coast Guard Bridge Permit Application (CGBPA) should be submitted at least 180 days prior to the date in which a Coast Guard Bridge Permit or Permit Amendment is needed.

Mr. Mickey Sanders, at the above listed address or telephone number, has been assigned as the Coast Guard's Bridge Permit project officer. Please maintain frequent and regular contact with the project officer to ensure efficient and effective project administration.

Sincerely,

HAL R. PITTS
Bridge Program Manager
By direction of the Commander
Fifth Coast Guard District

Encl: (1) Bridge Permit Application Guide, COMDTPUB P16195.3D and BPAG Applicant Template (located at http://www.dco.uscg.mil/Our-Organization/Assistant-Commandant-for-Prevention-Policy-CG-5P/Marine-Transportation-Systems-CG-5PW/Office-of-Bridge-Programs/)

Copy: CG Sector Maryland National Capital Region, Waterways Management
U. S. Army Corps of Engineers, Philadelphia District

COMMONWEALTH of VIRGINIA

Jennifer L. Mitchell
Director

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September 19, 2017

Ms. Anna Chamberlin
Manager, Project Review
Planning and Sustainability Division
District Department of Transportation
55 M Street SE, Suite 400
Washington, DC 20003

Dear Ms. Chamberlin,

DRPT's comments regarding the Long Bridge NEPA Study Level 2 screening results are below:

Level 2 Screening Criteria-
DRPT supports the need for redundant infrastructure as outlined in the Draft Long Bridge Purpose & Need chapter, but is concerned that the way in which it is implemented in Step 2 of the Level 2 screening may exclude variations of the two 4-track alternatives carried forward should difficulties be encountered as engineering and further analysis progresses. DRPT suggests that DDOT reconsider the requirement for two physically separate structures as a Level 2 screening criterion.

Thank you again for this opportunity to provide comments- DRPT looks forward to continuing collaboration with FRA, DDOT and other stakeholders as the Long Bridge NEPA study moves into the development of the Draft EIS.

Best regards,

Randy Selleck

Rail Planning Project Manager

Cc: Cheryl Openshaw, DRPT Deputy Director
Emily Stock, DRPT Manager of Rail Planning

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January 12, 2018

Anna Chamberlin, AICP
Long Bridge Project
55 M Street, SE
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Washington, DC 20003-3515

Re: Long Bridge Project

Dear Ms. Chamberlin,

I am writing to provide comments on behalf of Arlington County's Division of Transportation, regarding the ongoing Environmental Impact Statement (EIS) for the Long Bridge Project.

As the only intercity rail connection between the District of Columbia and Virginia, Long Bridge is among the Washington region's most important infrastructure features. Because the potential reconstruction and expansion of this crucial bridge is a once-per-century opportunity to improve cross-Potomac multimodal transportation, Arlington is vitally interested in planning and constructing the best possible project. We thank you for taking the lead in this years-long effort, and for giving us the opportunity to comment.

Arlington enthusiastically supports expanding cross-Potomac rail capacity. The more freight that can be carried via rail, and the more passengers who travel via Amtrak or commuter rail, the more environmentally sustainable and freer from congestion our region will become. The Long Bridge Project's proposed remaining alternatives, resulting in four through tracks across the river, seem appropriate to this purpose.

Additionally, Arlington strongly supports incorporating a cross-Potomac bicycle/pedestrian connection as part of the Long Bridge Project. Long Bridge occupies an ideal strategic location for such a connection, and bicycle/pedestrian trips are growing in importance as part of our region's transportation network.

However, Arlington has two specific concerns regarding how the existing draft study treats such a potential bicycle/pedestrian connection:

1. Although a bicycle/pedestrian connection is highly desirable at this location, we are concerned that given the inherent challenges of implementing any new Potomac crossing, such a connection may not be practical unless it is fully planned and funded as part of a larger multimodal effort. We would therefore dispute separating out the bicycle/pedestrian component of Long Bridge planning from the rail component.

To illustrate the point, it was difficult for the region and federal government to secure $250 million to rehabilitate Memorial Bridge, a span that carries 68,000 motor vehicles per day. Although a stand-alone, purpose-built bicycle and pedestrian bridge would likely be significantly less expensive, it would nevertheless face severe funding challenges.

2. Although a bicycle/pedestrian connection from the District of Columbia to Mount Vernon Trail would be beneficial on its own merits, we are concerned that current proposed alternatives for that connection stop short of crossing the George Washington Parkway.

   As with all transportation modes, the network effect is vitally important to bicycle/pedestrian travel; the larger the network of connections accessible, the more useful any single facility is for transportation purposes. Continuing the bicycle/pedestrian connection across the parkway—as the rail connection is already planned to do—is vital to the efficient functioning of the regional bicycle/pedestrian network.

   A direct link from Crystal City and Long Bridge Park to the Mount Vernon Trail is an essential missing component of the region's transportation network. It would accommodate growth in Crystal City and Pentagon City, relieve overcrowding on Mount Vernon Trail, make trip planning more rational, complete the design of Long Bridge Park, and tie together the regional trail network. This connection would be made at a location on the parkway where a new crossing would be least aesthetically intrusive.

We appreciate the fact that one project cannot be all things to all people, and that increasing rail capacity is the primary goal of this project. To that end, Arlington supported ruling out early planning alternatives for Long Bridge that included automobile and streetcar lanes. However, we feel it remains appropriate to include a bicycle/pedestrian component that crosses the river and connects to (or anticipates a connection to) Arlington's Long Bridge Park. Such a connection would help to build out the regional trail network envisioned in NPS planning documents, accommodate growth in major activity centers, and promote the broad transportation, environmental, and recreational goals of Arlington, the District of Columbia, and the region. This project is one of very few realistic opportunities in which planning and funding mechanisms could be aligned to meet that need. Further information supporting our position is contained in Attachment 1.

We are grateful for the District Department of Transportation's (DDOT) ongoing commitment to sustainable multimodal transportation. We thank you and your team for your excellent work on this project over many years, and greatly value the opportunity to participate in this important process.

We look forward to working with you to further refine and advance this crucial project. Please do not hesitate to let me know how Arlington can be most helpful going forward. If you have questions or need to coordinate this issue, please also feel free to contact Arlington Regional Transportation Planner Dan Malouff (703-228-7989 and dmalouff@arlingtonva.us), and/or

Arlington Bicycle and Pedestrian Planner David Patton (703-228-3633 and dpatton@arlingtonva.us).

Sincerely yours,

Dennis M. Leach, AICP
Director of Transportation

Attachment 1

Regional support for a DC-to-Crystal City bicycle/pedestrian connection:

Greatly improved rail capacity will be one significant result of this project. But for a project whose costs will likely reach or exceed nine figures, it's appropriate to advance broader recommendations from adopted regional plans. Many make a compelling case for improved bike/ped connections between Arlington and the river, and across the Potomac:

NPS's National Capital Region Paved Trail Plan calls not only for better bike/ped connections across the river and between the river and Long Bridge Park, but also for highlighting Long Bridge Park as a regional trailhead. This can best be realized with direct bridge connections.

FHWA's (Eastern Federal Lands) 14th St. Bridge Corridor Draft EIS (unadopted) recognized the importance of connecting Long Bridge Park and the Mt. Vernon Trail even without a new river crossing.

14th Street Bridge Corridor Draft EIS, Appendix N

Arlington County's Long Bridge Park Master Plan and Public Open Space Master Plan both emphasize a direct Long Bridge Park – Mt. Vernon Trail connection. The Long Bridge Park aquatic center accommodates this extension of the park's esplanade feature.

National examples suggest a shared facility is practical:

Long Bridge guidelines calling for 25' clearance between active rail lines and bicycle/pedestrian facilities are overly restrictive, compared to other locations in the US. Safe physical separation between trains and bicyclists/pedestrians is crucial, but achievable through good design. Among the most significant examples are the Big River Crossing on the Union Pacific over the Mississippi River between Memphis and West Memphis, and CSX's rail-with-trail facility over the Potomac River at Harpers Ferry National Historical Park.

Union Pacific in TN & AR (left), and CSX in WV (right)

DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY | 5000 OVERLOOK AVENUE, SW | WASHINGTON, DC 20032

January 12, 2018

Ms. Amanda Murphy
Environmental Protection Specialist
Office of Railroad Policy and Development
Federal Railroad Administration
1200 New Jersey Ave., SE
Mail Stop 20
Washington, DC 20590

RE: Long Bridge Project Proposed Alternatives
DC Water Comments

Dear Ms. Murphy:

The District of Columbia Water and Sewer Authority (DC Water) appreciates the opportunity to provide comments on proposed alternatives for the Long Bridge Project Environmental Impact Statement (EIS) presented on December 14, 2017. The following comments are provided:

1. Protection of Existing Water and Sewer Infrastructure

DC Water currently maintains critical water and sewer infrastructure in the Long Bridge Project Study Area (Study Area). Of particular concern are the Potomac Force Mains. These parallel 6-foot and 8-foot diameter pipelines, constructed in the 1960s, serve a large number of customers in the western portion of the District of Columbia, as well as suburban customers in Montgomery County, Maryland, and Fairfax and Loudoun Counties, Virginia. The pipelines run roughly parallel along the western shoreline of East and West Potomac Park through the Study Area, as shown in Figure 1. Additional DC Water infrastructure is present throughout the Study Area, particularly in the urbanized portion of the Study Area east of Washington Channel. The Long Bridge Project EIS should consider how existing water and sewer infrastructure will be protected and access will be maintained for inspection, repair, and replacement, both during and after construction. For general planning coordination with DC Water, please contact Mark Babbitt, Supervisor, Interagency Planning and Permitting, at mark.babbitt@dcwater.com or 202-787-2534.

2. Coordination with DC Clean Rivers Project Potomac River Tunnel

DC Water is in the process of implementing its Combined Sewer System Long Term Control Plan (LTCP), also known as the DC Clean Rivers Project. The purpose of this project is to control combined sewer overflows (CSOs) into the District's waterways, which occur when the existing combined sewer system's capacity is exceeded during storm events. The project is required by the 2005 Federal Consent Decree entered into by DC Water, the District of Columbia, the U.S. Department of Justice, and the U.S. Environmental Protection Agency, as modified in January 2016.

The Potomac River Tunnel (PRT) Project, currently in the planning phase, is the portion of the DC Clean Rivers Project which will provide control for CSOs along the Potomac River, which are generally between the Lincoln Memorial and Georgetown. The PRT will consist of a storage/conveyance tunnel and supporting infrastructure, including diversion facilities connecting to existing sewers, drop shafts, overflow structures, and ventilation control facilities. DC Water, as co-lead agency with the National Park Service, is currently preparing an Environmental Assessment for the PRT project.

The PRT will convey flows captured from the Potomac River CSOs via gravity to the existing Blue Plains Tunnel and Blue Plains Advanced Wastewater Treatment Plant, generally via an alignment parallel to the eastern shoreline of the Potomac River. In the area of the 14th Street Bridges (including the Long Bridge), the PRT must avoid the deep foundations of each of the five existing bridges. Based on preliminary review of record drawings provided by each of the bridge owners, Figure 1 shows potential alignments being considered for the PRT as it passes through the Study Area. Figure 2 includes a cross section showing the PRT potential alignments relative to the existing Long Bridge deep foundations, based on drawings provided by CSX in April 2015. All alternatives included in the Long Bridge Project EIS should consider how any proposed foundations will be coordinated with the potential PRT alignments, potentially including providing piers and piles aligned with those beneath the existing bridges upstream. This includes the bike-pedestrian crossing, which at the meeting was presented as a possible separate project. The vertical alignment of the PRT is largely driven by the elevation of the existing Blue Plains Tunnel downstream, the existing WMATA Blue/Orange/Silver Line Tunnels upstream, and the need to maintain positive slope for gravity flow. As such, the vertical alignment of the PRT will be substantially as shown in Figure 3. The proposed Long Bridge Project and bike-pedestrian crossing alternatives presented in the December 14, 2017 meeting warrant close and early technical coordination with DC Water to determine any possible impacts prior to completing both projects' NEPA coordination.

DC Water looks forward to coordinating with the Federal Railway Administration and the District Department of Transportation regarding its existing and proposed infrastructure within the Long Bridge Project EIS Study Area. If you have any questions or need additional information, please do not hesitate to contact me at moussa.wone@dcwater.com or by phone at (202) 787-4729.

Sincerely,

Moussa Wone, Ph.D., PE
Design Manager, DC Clean Rivers Project

c: Joel Gorder, National Park Service
Mark Babbitt, DC Water
Carlton Ray, Director, DC Clean Rivers
John Cassidy, DC Clean Rivers
Brandon Flora, DC Clean Rivers

Attachments: Figure 1 – PRT Alignments
Figure 2 – PRT Sections
Figure 3 – PRT Profile

Figure 1 – Conceptual Alternative Tunnel Alignments 14th Street Bridges (incl. WMATA and CSX)

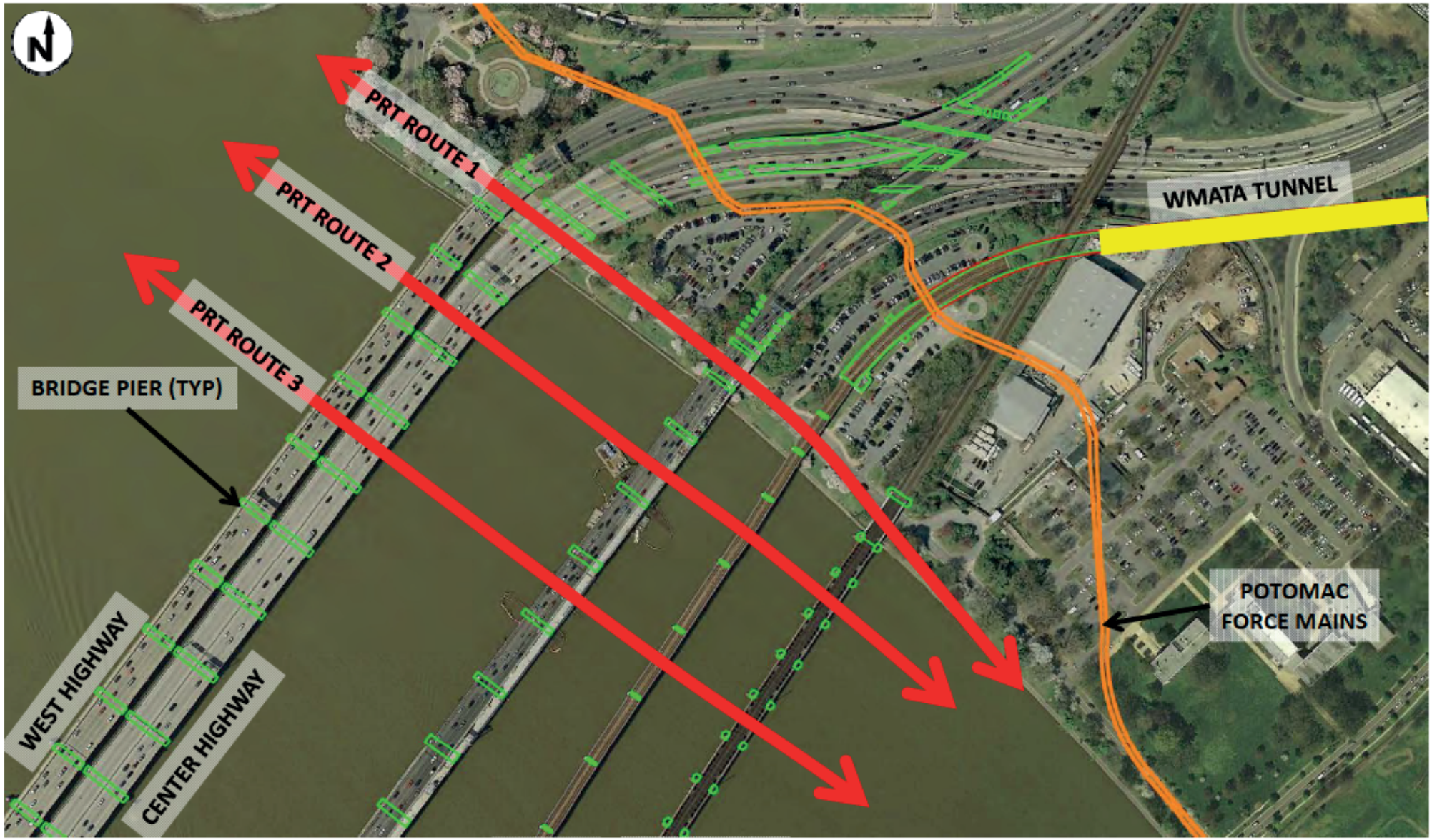
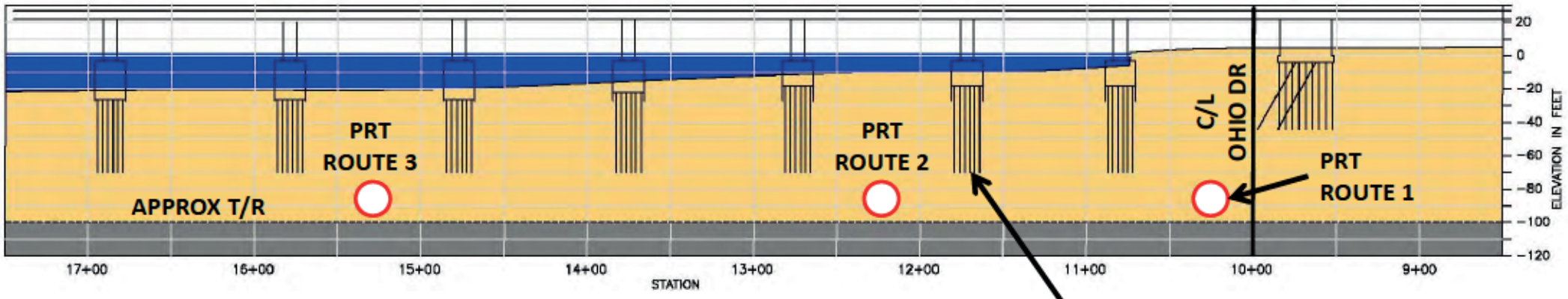
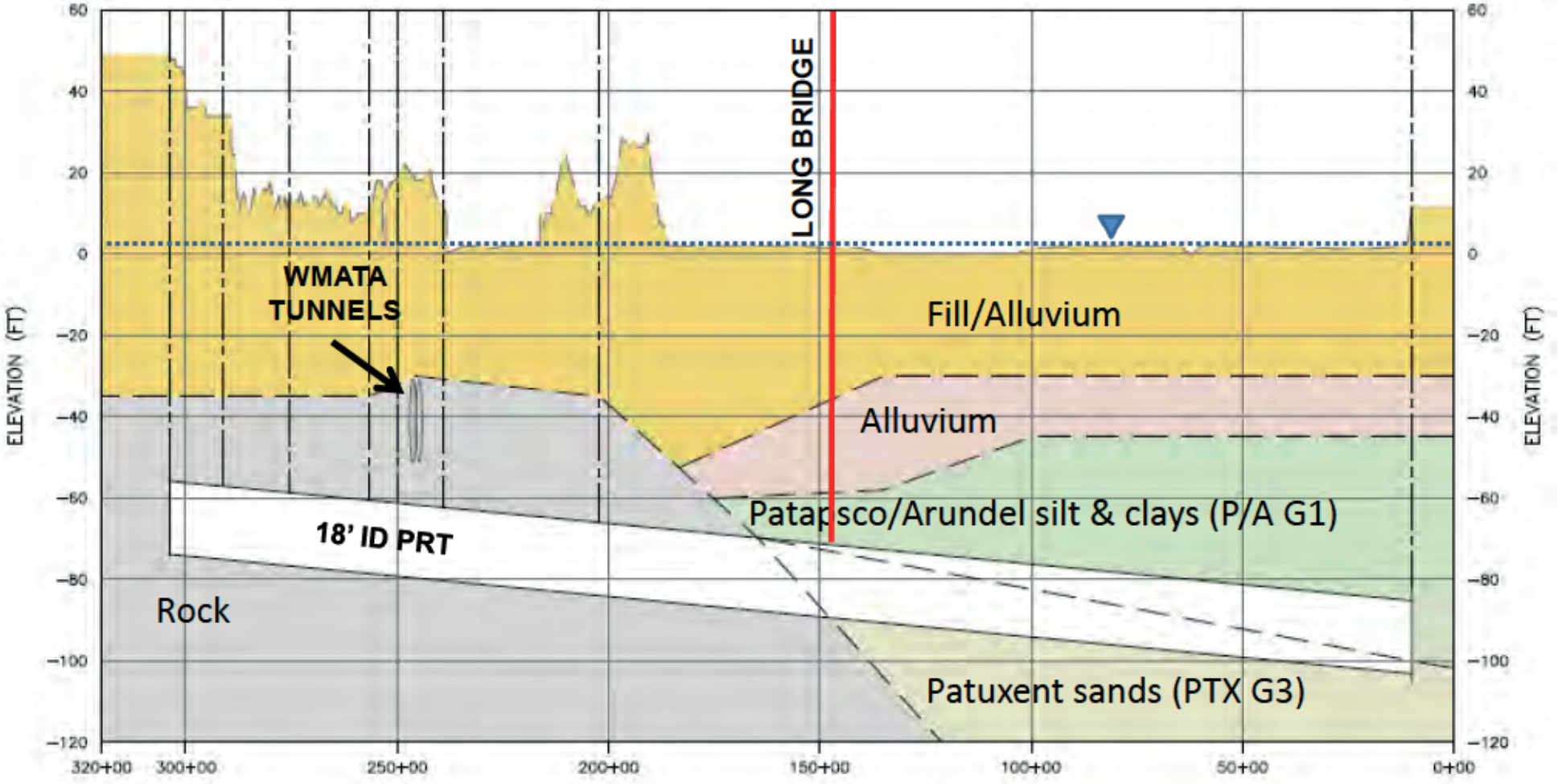


Figure 2 – Conceptual Alternative Tunnel Sections
14th Street Bridges – CSX (Long Bridge)



- Original bridge dates back to c. 1809
- Has been rebuilt/multiple times; other piers may exist

Figure 3 – Conceptual Tunnel Profile



dc clean RIVERS PROJECT

VIRGINIA RAILWAY EXPRESS

January 12, 2018

Via ELECTRONIC MAIL

Anna Chamberlin, AICP
Manager, Project Review
Planning and Sustainability Division
District Department of Transportation
55 M Street SE, Suite 400
Washington DC 20003

Amanda Murphy
Environmental Protection Specialist
Office of Railroad Policy and Development
Federal Railroad Administration
1200 New Jersey Avenue SE
Washington DC 20590

Re: Long Bridge Environmental Impact Statement
Section 106 Public Meeting—Proposed Alternatives

Dear Ms. Chamberlin and Ms. Murphy:

The Virginia Railway Express (VRE) operates the majority of the trains crossing the Long Bridge across the Potomac River, so the practicality and timeliness of plans for the bridge's expansion is of vital importance to the commuters using our service, now and in the future.

We have reviewed with interest the materials distributed at the Section 106 public meeting regarding proposed alternatives on December 14, 2017, and offer the following comments:

1. The project purpose and need identified on Slide 6 of the PowerPoint presentation succinctly describes the primary motivations for Long Bridge expansion:
    - Railroad capacity;
    - Network connectivity; and
    - Railroad resiliency and redundancy.

    Addressing these three elements is necessary to provide sufficient infrastructure for safe and reliable operation of the present volume of CSX Transportation, Amtrak, and VRE trains and to provide for growth in the future.

2. We concur with the two proposed Action Alternatives for the Draft EIS identified on Slides 14 and 19 of the PowerPoint presentation:
    - Action Alternative A: A new two-track bridge upstream of the existing bridge while retaining the existing bridge; and
    - Action Alternative B: A new two-track bridge upstream of the existing bridge while replacing the existing bridge.

    The proposed Action Alternatives are the best of the nine concepts considered with respect to addressing the project purpose and need while providing options that are safely constructible under traffic with little or no impact on adjacent National Park Service and Department of Defense facilities.

3. The CSXT RF&P Subdivision is a strategic transportation corridor of national significance. The railroad bridge or bridges that emerge from this EIS will be heavily trafficked by CSXT, Amtrak and VRE trains. We are seriously concerned about the safety and security implications of the bike-pedestrian crossing opportunities illustrated on Slide 22, in particular those "attached" to a railroad bridge (Option 1) or sandwiched between the new and existing bridges (Option 2). In this day and age, we need to be realistic about maintaining separation between trains and people and, in doing so, reduce rather than exacerbate the threat of damage or injuries. VRE understands the interest by others of a bridge crossing to serve bike-pedestrian traffic and would encourage such efforts only consider options that are sufficiently separated from trains. VRE would be available as a resource in these efforts, if desired.

Thank you for including VRE in the Long Bridge environmental process as a member of the project management team. We applaud project progress to-date and look forward to continuing to help advance implementation of these urgently needed improvements to the District's, Virginia's, and the nation's passenger and freight railroad network.

Sincerely,

Doug Allen
Chief Executive Officer

cc: C. Gullakson, CSXT
J. Lisska, CSXT
R. Marcus, CSXT
J. Mitchell, DRPT
R. Dalton, VRE
T. Hickey, VRE
O. Gonzalez, VRE

COMMONWEALTH of VIRGINIA

Jennifer L. Mitchell
Director

DEPARTMENT OF RAIL AND PUBLIC TRANSPORTATION
600 EAST MAIN STREET, SUITE 2102
RICHMOND, VA 23219-2416

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FAX (804) 225-3752
Virginia Relay Center
800-828-1120 (TDD)

January 16, 2018

Ms. Anna Chamberlin
Manager, Project Review
Planning and Sustainability Division
District Department of Transportation
55 M Street SE, Suite 400
Washington, DC 20003

Dear Ms. Chamberlin,

DRPT's comments on the Long Bridge Study Draft EIS Action Alternatives as presented to the public on December 14, 2017 are as follows:

Bicycle/Pedestrian Accommodations-
DRPT would like to emphasize that the primary focus of the Long Bridge Study is increasing rail capacity across the Potomac River between the District and Virginia. It is DRPT's understanding that a bicycle/pedestrian connection across the Potomac is not part of the project purpose and need, but that the feasibility of such a crossing will be explored. We continue to have significant concerns regarding the safety and constructability of any combined-mode structure.

Alternatives Selected for Analysis in Draft EIS-
DRPT supports the following two build alternatives selected for further analysis in the Draft EIS document:

- New 2-track bridge upstream of existing bridge, retain existing bridge
- New 2-track bridge upstream of existing bridge, replace existing bridge

Thank you for this opportunity to provide comments- DRPT looks forward to continuing collaboration with FRA, DDOT and other stakeholders as the development of the Draft EIS moves forward.

Best regards,

Randy Selleck

Rail Planning Project Manager

Cc: Cheryl Openshaw, DRPT Deputy Director
Michael McLaughlin, DRPT Chief of Rail
Emily Stock, DRPT Manager of Rail Planning

CSX CORPORATION

Suite 560, National Place
1331 Pennsylvania Avenue, N.W.
Washington, D.C. 20004
(202) 783-8124

January 16, 2018

Amanda Murphy
Environmental Protection Specialist
Federal Railroad Administration
1200 New Jersey Avenue, SE
Washington, DC 20590

Anna Chamberlin, AICP
Long Bridge Project
55 M Street, SE
Suite 400
Washington, DC 20003-3515

Dear Ms. Murphy and Ms. Chamberlain:

CSXT Transportation, Inc. ("CSXT") submits the following comments for your consideration in regard to the two Proposed Action Alternatives for Long Bridge presented by the Federal Railroad Administration ("FRA") and District Department of Transportation ("DDOT") at the December 14, 2017 public meeting. The Proposed Action Alternatives provide for a new two-track bridge to be constructed upstream of the existing bridge, resulting in a four-track crossing. Action Alternative A provides for the current Long Bridge to be retained, while Action Alternative B provides for the current Long Bridge to be replaced with a new bridge. CSXT believes either Action Alternative could potentially be acceptable to the Company, as could the No Action Alternative—which remains under consideration—provided care is taken to preserve safety and not to impair current freight operations.

As CSXT has repeatedly emphasized, the current Long Bridge is sufficient for the Company's needs, and neither replacing the current bridge nor supplementing it with an additional bridge are current priorities for the Company. If FRA and DDOT select an Action Alternative for the Long Bridge Corridor, CSXT's priority will be to ensure that any modifications made to the Long Bridge Corridor are implemented without negative impacts on the Company's operations. The current Long Bridge, which is owned and

maintained by CSXT[1], plays a critical role within CSXT's rail network. While the Company would consider proposals that would involve supplementing and/or replacing the current bridge, the Company will not accept any modifications to the current Long Bridge or associated infrastructure that present safety issues, impose costs on CSXT, or involve the risk of delays or interruptions in CSXT's freight traffic.

A note on a possible bicycle and pedestrian pathway is appropriate. In the presentation made on December 14, 2017, FRA and DDOT stated that they were exploring opportunities for a bicycle and pedestrian crossing over the Potomac River in the general vicinity of the Long Bridge crossing, and that such a crossing "could potentially be feasible with either of the Proposed Action Alternatives." The December 14, 2017 presentation indicates that FRA and DDOT are considering a possible bicycle-pedestrian crossing either (1) attached to the upstream side of the proposed new bridge, (2) upstream of and separate from the proposed new bridge, or (3) at a different location, separated from both the existing and proposed new bridge locations. While CSXT understands that adding a bicycle and pedestrian pathway over the Potomac is a priority for many members of the public and CSXT has no inherent objections to the construction of a bicycle and pedestrian pathway, the Company would object to such a pathway if it were to be constructed in proximity to freight rail traffic. As we have discussed at greater length in our prior comments, a pathway in close proximity to freight rail would present numerous, unnecessary risks. [*See July 3, 2017 letter from Quintin Kendall.*] We believe any Potomac River pedestrian or bicycle crossing should be constructed a significant distance away from any tracks that would carry freight rail traffic.

We appreciate the opportunity to provide comments on the Proposed Action Alternatives. The comments provided in this letter are limited in scope, and CSXT may have additional comments related to the Proposed Alternatives at a later time. Please feel free to contact me at your convenience if you would like to discuss these matters.

Sincerely,

Anne C. Reinke

Vice President, Government Relations

---

[1] Ownership and maintenance of any new structures would require further discussion, in part because the design of any new structure could be impacted by maintenance strategies.

COMMONWEALTH of VIRGINIA

Department of Historic Resources

Molly Joseph Ward
Secretary of Natural Resources

2801 Kensington Avenue, Richmond, Virginia 23221

Julie V. Langan
Director

Tel: (804) 367-2323
Fax: (804) 367-2391
www.dhr.virginia.gov

January 16, 2018

Ms. Amanda Murphy, Environmental Protection Specialist
Federal Railroad Administration
1200 New Jersey Avenue SE
Mail Stop-20
Washington, DC 20590

Re: Long Bridge Project
Arlington County, Virginia
DHR Project No. 2016-0932

Dear Ms. Murphy:

On December 12, 2017, the Virginia Department of Historic Resources (DHR) participated in a tele-conference regarding the above referenced project. Alternatives to be evaluated in the draft Environmental Impact Statement were presented. The Federal Railroad Administration (FRA) has requested comments by January 16, 2018.

We appreciate the FRA's offering the opportunity to comment on the alternatives presented in the Level 2 Screening is premature. We understand that work is proceeding on a revised Area of Potential Effects (APE). We also understand that the preferred alternative will not be selected until the assessment of effects pursuant to Section 106 is complete. At this time DHR does not have any preliminary comments to offer. FRA appears to be proceeding to consider alternatives that will effectively fulfill the project's Purpose and Need.

We look forward to continued consultation with the FRA and the other consulting parties as the project progresses. If you have any questions concerning our comments, or if we may provide any further assistance, please do not hesitate to contact me (for archaeology) at (804) 482-6088 or Adrienne Birge-Wilson (for architectural issues) at (804) 482-6092.

Sincerely,

Ethel R Eaton

Ethel R. Eaton, Ph.D., Senior Policy Analyst
Review and Compliance Division

Western Region Office
962 Kime Lane
Salem, VA 24153
Tel: (540) 387-5443
Fax: (540) 387-5446

Northern Region Office
5357 Main Street
PO Box 519
Stephens City, VA 22655
Tel: (540) 868-7029
Fax: (540) 868-7033

Eastern Region Office
2801 Kensington Avenue
Richmond, VA 23221
Tel: (804) 367-2323
Fax: (804) 367-2391

National Capital Planning Commission
401 9th Street, NW North Lobby, Suite 500 Washington, DC 20004 Tel 202.482.7200 Fax 202.482.7272 www.ncpc.gov

IN REPLY REFER TO:
NCPC FILE No. 7819

January 17, 2018

Ms. Amanda Murphy
Federal Railroad Administration
Office of Railroad Policy and Development
1200 New Jersey Avenue, SE, MS-20
Washington, DC 20590

Re: Long Bridge Study – Screening Evaluation Comments

Dear Ms. Murphy:

Thank you for the opportunity to provide additional comments as part of the Long Bridge Study's alternatives screening evaluation. We understand that Phase I of the Long Bridge Study developed a preliminary operations plan, collected data and evaluated future capacity needs, and identified eight conceptual crossing alternatives. As part of the study's on-going Phase II study, the Federal Railroad Administration (FRA) and District Department of Transportation (DDOT) have developed a Purpose and Needs Statement and selected two of the Phase 1 alternatives to carry into a future Environmental Impact Statement (Phase III) study.

Previously, NCPC submitted a Scoping Comment letter (dated October 14, 2016) with a number of comments related to NCPC's review authority, review process, and Commission plans and policies that are relevant to the project. The following comments should be considered within the context of the previous letter.

- The highly-sensitive, unique project setting across the Potomac River, with important "gateway" views into the City and along the river itself, should be appropriately acknowledged in the study's Purpose and Needs Statement. We note that the current statement focuses only on railway capacity, resiliency, and redundancy.
- The proposed pedestrian and bicycle connection across the river should be reimagined as part of the study process to maximize utility and enhance the experience for users from both sides of the river. Future connections should be considered to enable convenient access between Crystal City, Mount Vernon Trail, East Potomac Park, and locations near Maine Avenue and new Southwest Waterfront development.
- The future Long Bridge design should be developed with consideration of other existing and planned future bridges across the Potomac River. We note that the current study alignments do not consider the future Long Bridge design.

- All improvements developed as part of the Long Bridge study should accommodate future depression of the train tracks and construction of Maryland Avenue between 14th Street and 9th Street, NW, as well as planned capacity improvements to L'Enfant Station.
- Recognizing the interrelationship between the L'Enfant Station and Long Bridge Projects, the two projects should be well coordinated; decisions on one project should not preclude the ability to meet the planning and development goals of the other project.

We appreciate the opportunity to participate in the Long Bridge Study, and look forward to our continued involvement in the future. If you have any questions regarding our comments, please contact Michael Weil at 202.482.7253 or michael.weil@ncpc.gov.

Sincerely,

Diane Sullivan, Director
Urban Design and Plan Review Division

cc: Anna Chamberlain, DDOT
Frederick Lindstrom, US Commission of Fine Arts
Peter May, National Park Service
Mr. Andrew Lewis, District of Columbia State Historic Preservation Office
Elizabeth Miller, National Capital Planning Commission

DEPARTMENT OF DEFENSE
WASHINGTON HEADQUARTERS SERVICES
1155 DEFENSE PENTAGON
WASHINGTON, D.C. 20301-1155

FACILITIES SERVICES
DIRECTORATE

May 25, 2018

Ms Jamie Rennert
Director, Office of Program Delivery
Federal Railroad Administration
US Department of Transportation
1200 New Jersey Ave, SE
Washington, DC 20590Mr.

Subject: Long Bridge Study at East Utilities Plant

The purpose of this letter is to provide information requested by your office on the various options to improve the Long Bridge railroad facility.

Washington Headquarters Services is the successor organization to the Department of the Navy for the facility in East Potomac Park. All future correspondence should be sent to the point of contact listed at the end of this memorandum. We appreciate your time and the information provided and we look forward to continuing to work with you as your project moves forward.

We have reviewed the information provided by Ms. Amanda Murphy, your point of contact for this project, specifically the potential to move the western fence line closer to the existing infrastructure and buildings of our facility. We have studied this proposal using the following Federal Uniform Facility Criteria (UFC), specifically:

- Unified Facilities Criteria 4-010-01 DoD Minimum Antiterrorism Standards for Buildings
- Unified Facilities Criteria 4-020-01 DoD Security Engineering Facilities Planning Manual
- Unified Facilities Criteria 4-301-01 Structural Engineering

We conclude that the requirements for our facility under the above UFCs precludes movement of the fence line closer to our facility.

Please continue to forward any future project information to Robert Naill (contact information below). He will coordinate any necessary reviews with the appropriate Washington Headquarters Services staff and will provide any comments or concerns back to you for your action or review.

We look forward to continued collaboration on this project and the improved conditions that it will bring to the area. For all future correspondence please continue to contact Robert Naill at 202-685- 4898 or robert.e.naill2.civ@mail.mil.

Sincerely,

Sajeel S. Ahmed
Director

NATIONAL RAILROAD PASSENGER CORPORATION
VP & Chief Engineer's Office
2955 Market Street, 4S-014, Philadelphia, PA 19104

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 verrelr@amtrak.com or 215-349-1907.

Sincerely,

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

cc: Michael McLaughlin, DRPT

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,

Rich Dalton
Deputy Chief Executive Officer
Virginia Railway Express

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

COMMONWEALTH of VIRGINIA

Jennifer L. Mitchell
Director

DEPARTMENT OF RAIL AND PUBLIC TRANSPORTATION
600 EAST MAIN STREET, SUITE 2102
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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.

We greatly appreciate our continued partnership with CSX to improve freight and passenger rail service in the Commonwealth.

Sincerely,

Jennifer Mitchell

Director, Virginia Department of Rail and Public Transportation

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

rails-to-trails conservancy

National Headquarters
2121 Ward Court, NW, 5th Floor
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fax 202.223.9257

www.railstotrails.org

Ms Anna Chamberlin
Manager, Project Review
District Department of Transportation
55 M Street SE, Suite 400
Washington DC 20003-3515

Re: Comments on Environmental Impact Statement for the Long Bridge Project

Ms. Chamberlin,

I am pleased to submit comments on behalf of Rails-to-Trails Conservancy and our 3,390 members and supporters in Arlington County and Washington, D.C. The Long Bridge Project provides a once-in-a-century opportunity to expand and improve non-motorized access across the Potomac River, close gaps in our region's world-class trail network, and to develop a bicycle and pedestrian bridge that could join the ranks of burgeoning and iconic multi-modal river crossings in the U.S. We are grateful for the opportunity to provide these thoughts and suggestions for your consideration.

With a grassroots community more than 1 million strong, Rails-to-Trails Conservancy serves as the national voice for 31,000 miles of rail-trails and multi-use trails, and more than 8,000 miles of potential trails waiting to be built, with a goal of creating more walkable, bikeable communities in America. As a co-founding member of the Capital Trails Coalition, we work together with local agencies, organizations and private citizens working to complete a regional trail network of more than 685 miles. Imperative to the Coalition's vision for a safe, interconnected trail network is a complete bicycle and pedestrian connection from D.C. to Arlington County's Long Bridge Park esplanade. We are concerned that the current design alternatives do not fully realize this critical connection.

The Washington Area Bicyclist Association (WABA) submitted detailed comments that underscore the importance of this project's inclusion of a seamless bicycle and pedestrian connection from the Anacostia Riverwalk Trail on the D.C. side to Long Bridge Park on the Arlington County side. We wholeheartedly agree with their comments and recommendations. In summary:

- Make the Long Bridge bicycle and pedestrian connection continue across the George Washington Memorial Parkway to connect to Long Bridge Park,
- Make the Long Bridge bicycle and pedestrian trail connect directly to Maine Avenue, instead of requiring an indirect, congested connection across the Washington Channel,
- Leave space for a future trail connection across Maine Ave. to Maryland Ave. and Hancock Park, and
- Build the bicycle and pedestrian infrastructure simultaneously with the rail span, not as a separate project.

WABA also outlines planning documents and efforts that support these recommendations and/or connecting elements, including the MoveDC Plan (2014), Arlington County Capital Improvements Plan (2017-2026), National Park Service Paved Trails Plan (2016), the Anacostia Waterfront Initiative. Each of these approved plans or major initiatives support an integrated bicycle-pedestrian crossing as part of the Long Bridge Project. A streamlined and coordinated approach to planning and development of a trail component will not only

bring these various plans to life, it will also bring cost savings and help prevent environmental harm from a second construction mobilization in and along the river.

As part of our organization's vision and mission, we advocate for the co-use of active railroad corridors with mutli-use trails and refer to these facilities as "rails-with-trails". There are more than 300 rails-with-trails across the country, including D.C.'s own Met Branch Trail which runs immediately adjacent to another heavily used CSX, Amtrak and MARC commuter rail corridor. Additionally, there are several successful examples of bridges combining major freight rail lines with bicycle and pedestrian trails, and two that rival the scale of a future Long Bridge: the Steel Bridge in Portland, OR and the Harahan Bridge/Big River Crossing in Memphis, TN (photos attached).

The Steel Bridge, built in 1912, is one of the most multi-modal bridges in the U.S., containing facilities for freight rail (Union Pacific), light rail, cars, bicyclists and pedestrians. In 2001, the rail-with-trail portion of the bridge – a 220-foot long and 8-foot wide cantilevered walkway was constructed as part of a larger riverfront development initiative. A 2014 report published by the City of Portland revealed that the Steel Bridge received more than 1.6 million bicycle trips annually.

Originally known as "the Great Bridge" and built in the late 1800s as the first crossing of the Mississippi River south of Ohio, the Harahan Bridge was later redeveloped for rail use in 1917. In cooperation with Union Pacific Railroad, a walkway was recently completed in 2016 within a former roadway section of the nearly 5,000-foot long bridge. Now called "the Big River Crossing", this rail-with-trail bridge is the longest pedestrian crossing on the Mississippi River and a crown jewel of the greater Memphis region. (www.bigrivercrossing.com).

These examples highlight the successful incorporation of non-motorized facilities adjacent – and attached – to historic rail bridges at expansive river crossings. Incorporating a rail-with-trail on the Long Bridge is, like the Steel Bridge and Big River Crossing, a once-in-a-century opportunity, one that we implore you to plan for and implement. The Long Bridge could easily become a nexus of our regional trail network, connecting commercial districts like the Wharf, historic landmarks on the Mall, active transportation and recreation opportunities along the Anacostia and Potomac Rivers, and regional park systems. A seamless, complete rail-with-trail connection as part of the Long Bridge Project is a chance to create the best, most connected Potomac River crossing for millions of our region's residents and tourists.

Thank you for the opportunity to comment and for your consideration of these recommendations.

Respectfully,

Keith Laughlin
President, Rails-to-Trails Conservancy

Steel River Bridge, Portland, OR

Big River Crossing, Memphis, TN

SWBID
SOUTHWEST BUSINESS IMPROVEMENT DISTRICT

January 16, 2017

Anna Chamberlin
Long Bridge Project Manager
District Department of Transportation
55 M Street SE
Washington, DC 20003

Ms. Chamberlin:

On behalf of the Southwest Business Improvement District (SWBID), I would like to encourage DDOT to support a multimodal Long Bridge that includes a bicycle and pedestrian trail that will create a simpler and safer connection between Southwest Washington, DC and Northern Virginia. Strong connections to Northern Virginia are essential to Southwest businesses and employers. Similarly, Southwest residents recognize the importance of the employment, shopping, and recreational opportunities across the river.

The SWBID and our partners, including DDOT, have done a tremendous amount of work to make Southwest DC a true hub for multimodal transportation. There is a new cycle track on Maine Ave SW, a new neighborhood shuttle bus, new regional water taxi service, and a new bike/ped connection under construction at Banneker Circle. Despite these improvements, current connections to Northern Virginia are extremely challenging and cumbersome for bicyclists and pedestrians.

We urge DDOT to:

- Make the Long Bridge bicycle and pedestrian trail connect directly to Maine Avenue, instead of requiring an indirect, congested connection across the Washington Channel, as called for in the District's MoveDC plan and State Rail Plan;
- Make the Long Bridge bicycle and pedestrian connection continue across the George Washington Parkway to connect to the Long Bridge Park's multi-use esplanade across the George Washington Parkway to the Mount Vernon Trail, as called for in Arlington County's Long Bridge Park Master Plan;
- Leave space for a future trail connection across Maine Ave to Maryland Ave and Hancock Park; and
- Build the bicycle and pedestrian infrastructure simultaneously with the rail span, not as a separate project.

We recognize the vital importance of the Long Bridge project for passenger and freight rail, as well as its potential to transform the region's trail network, so we look forward its prompt completion.

Thank you for your consideration.

Sincerely,

Steve Moore
Executive Director
Southwest Business Improvement District

ARLINGTON
VIRGINIA

PEDESTRIAN ADVISORY COMMITTEE

2100 Clarendon Boulevard, Suite 900, Arlington, VA 22201
TEL 703-228-3633 Commissions.ArlingtonVa.US/Pedestrian-Advisory-Committee-2

January 12, 2018

Mr. Mark Schwartz
Arlington County Manager
2100 Clarendon Boulevard
Arlington, Virginia 22201
Via e-mail: mschwartz@arlingtonva.us

Dear Mr. Schwartz:

The Arlington Pedestrian Advisory Committee (PAC) urges the County to act now to encourage the Long Bridge Project to include attached bike-ped bridge as part of the Long Bridge Project in its review of alternatives. Such a bike-ped pathway should cover both the "missing link" from the north end of Long Bridge Park over the George Washington Parkway to the Mount Vernon Trail and a bike-ped bridge over the Potomac to the District. Plans for this bridge have been included not only in numerous County planning documents, but also in the National Park Service, National Capital Region Paved Trail Study.

The PAC supports the proposed bike-ped bridges because:

- They will provide a key new passage way for bikes and pedestrians to access the District of Columbia, and for DC users to access Arlington, Crystal City, and Northern Virginia.
- The Long Bridge Park to Mount Vernon Trail bike-ped bridge is a key "missing trail link" in our region. Completing "missing links" in the regional trail network provides large increases in connectivity, with relatively small investments in infrastructure.
- By providing alternative paths, they will reduce congestion on heavily used sections of the Mount Vernon Trail, thus reducing conflict and travel time for all users. They may also reduce congestion and conflict through the Crystal City Connector and the connection between Four Mile Run Trail and the Mount Vernon Trail.
- A new pathway over the Potomac would relieve congestion and conflict on the existing bike-ped path on the north side of the 14th Street Bridge.
- The Long Bridge Park to Mount Vernon Trail bike-ped bridge will be an important access point for pedestrians and cyclists to the new aquatics center in the park. Developing the bike-ped bridge in conjunction with the construction of the new aquatics center will create efficiencies and cost savings.

Coordination of these bike-ped bridges with each other and with the rest of the Long Bridge Project is critical. Including the bike-ped bridge in the Project will help ensure that the planning, design, and construction of the entire bike-ped connection is completed in a logical, efficient, and cost-effective manner. Please work with our regional and Federal partners to include an attached bike-ped bridge as part of the preferred alternative, and include plans for the bridge to include the "missing trail link" between Long Bridge Park and the Mount Vernon Trail.

Sincerely,

Pamela Van Hine
Chair, Pedestrian Advisory Committee

[redacted]

January 12, 2018

Ms. Anna Chamberlin
Manager, Project Review
District Department of Transportation
55 M Street SE, Suite 400
Washington DC 20003-3515

Re: Comments on Environmental Impact Statement for the Long Bridge Project

Ms. Chamberlin,

I am pleased to submit comments on behalf of the Washington Area Bicyclist Association (WABA) and our 6,500 regional members. The Long Bridge Project presents an unparalleled opportunity to expand non-motorized access across the Potomac River, close gaps in the regional trail network, and move our region towards more sustainable transportation modes.

WABA is a member of the Capital Trails Coalition, a group of agencies, organizations, and private citizens working to complete the regional paved trail network. The bicycle and pedestrian connection associated with Long Bridge is an important connection in the Coalition's trails network map.

In our October 2016 comments for this project, we urged DDOT to expand the project scope to include a trail span. We are encouraged that DDOT has retained this trail connection as an option as part of the environmental impact statement process. However, we are concerned that the proposed alternatives, as currently designed, do not fully meet the needs of such an important connection.

Connections to Long Bridge Park

The bike and pedestrian alternatives, as currently shown, connect to the Mount Vernon Trail on the east side of the George Washington Parkway. This trail provides indirect connections to Crystal City, the Pentagon and the airport.

The Long Bridge bicycle and pedestrian connection should also continue across the George Washington Parkway to connect to the Long Bridge Park and thereby Crystal City, just a few hundred yards away. Arlington County's Long Bridge Park Master Plan calls for a connection from the park's multi-use esplanade across the George Washington Parkway to the Mount Vernon Trail. The county recently awarded the contract to construct a new aquatics center and extend the esplanade to the George Washington Parkway adjacent to the planned new Long Bridge. There is great interest in creating this final planned connection.

It would be an inefficient use of regional resources to build one connection from Long Bridge Park to the Mount Vernon Trail and another connection from the Long Bridge to the Mount Vernon Trail in such close proximity to each other. DDOT needs to work with Arlington County and National Park Service to develop a solution and funding agreement to incorporate these needs into one project.

Crossing the Washington Channel

DDOT's MoveDC plan recommends creating a continuous multi-use trail from the Virginia line to Maine Avenue as part of the Long Bridge replacement. This alignment would follow the Long Bridge alignment, allowing direct connections from Arlington's trails to the Anacostia Riverwalk Trail and the growing Southwest Waterfront. Yet this study proposes a trail that merely terminates at Ohio Drive in East Potomac Park. While the proposal does add a new non-motorized Potomac River crossing, it leaves the existing connectivity, trail congestion, and user conflict issues across the Washington Channel unsolved.

To reach Maine Ave, a trail user crossing the Potomac on either of the proposed alignments would reach Ohio Drive and face a familiar decision; take East Basin Drive or the Case Bridge (I-395) sidewalk. East Basin Drive already carries thousands of trail users each day from the 14th Street bridge towards 15th Street on narrow sidewalks often brimming with tourists. While the National Park Service has identified a road diet and protected bike lane as a possible improvement, it will remain a bottleneck as bicycling mode share continues to grow in the region.

The Case Bridge sidewalk technically offers a connection to Maine Ave, but the bridge's narrow sidewalk and switchback ramps are inadequate for large volumes of trail users. Instead of requiring an indirect, congested or outdated connection across the Washington Channel, the Long Bridge project's trail should connect directly to Maine Ave as originally proposed.

One Project

It is essential that the bicycle and pedestrian crossing be built simultaneously with the rail span, not as a separate project. Bundling of related projects will provide cost savings. Duplicating construction activities in an environmentally sensitive project area would cause increased and unnecessary stress on the environment versus doing all of the construction activity at one time. This is to say nothing of the risk that a non-motorized bridge for pedestrians and bicyclists would not be built for many years, if at all, if not included in the current project.

We urge the project team to design the Long Bridge in accordance with regional plans so that the terminus of the span will cross the George Washington Memorial Parkway and connect with Long Bridge Park on the Virginia side, and extend to Maine Ave. on the DC side.

The following plans support integration of the bike-pedestrian crossing, and support the scope of the trail from Maine Ave in DC all the way to the Esplanade:

- MoveDC Plan (2014)
    - A multi-use trail alongside the Long Bridge connecting to Maine Ave is listed as a Tier 1 priority. A further bike lane connection along Maryland Ave SW to 9th St. SW is listed as a Tier 3 priority. Both segments fall within the scope of the study area.
- Arlington Long Bridge Park Esplanade expansion
    - In its 2017-2026 Capital Improvements Plan Arlington County has committed to an extensive expansion of park amenities at Long Bridge Park. This plan includes an extension of the Esplanade Trail towards the eastern boundary of the park. The County intends to begin study of a connection across the George Washington Parkway to the Mount Vernon Trail in partnership with the National Park Service.
- National Park Service Paved Trail Plan (2016)
    - Capital Project Recommendation N2.1 proposes a CSX bridge connector to link Long Bridge Park, the Mount Vernon Trail, Ohio Drive, and the Rock Creek Park Trail on the east side of the Potomac River.
    - The Paved Trail Plan includes dozens of recommendations for capital trail projects to fill gaps and improve access to trails on each side of the Potomac River. With expanded access, these trails will see increased use and require high capacity river crossings.
- DDOT Anacostia Waterfront Initiative & Anacostia River Trail
    - DC's Anacostia River Trail, once a bold vision, is now a reality, stretching for more than 15 miles on the banks of the Anacostia River in DC. Though the majority of the planned trail mileage has been completed on the east and west riverbanks, new segments will open alongside the Wharf, the DC United Stadium, and the Douglass Bridge to make direct connections from Ohio Drive and destinations along the Anacostia. A link from this trail to Virginia via the Long Bridge would increase the utility of the River Trail, create a new commuter route from Virginia to employment centers in southwest and southeast DC, and coax drivers off of the congested I-395 and I-695 highways.

Incorporating the trail into the rail bridge project allows for a design that creates the ideal connections across the George Washington Parkway to Long Bridge Park and across the Washington Channel to Maine Ave. without compromise.

Respectfully submitted,

Tamara Evans
Advocacy Director

COUNCIL OF THE DISTRICT OF COLUMBIA
THE JOHN A. WILSON BUILDING
1350 PENNSYLVANIA AVENUE, NW
WASHINGTON, D.C. 20004

David Grosso
Councilmember At-Large
Chairperson, Committee on Education

Committee Member
Health
Human Services
Judiciary and Public Safety

January 16, 2018

Jeffrey Marootian, Director
District Department of Transportation
55 M Street SE, Suite 400
Washington, DC 20003

Director Marootian,

I am pleased to see that DDOT is continuing to advance on plans to increase rail capacity on the Long Bridge. This essential connection between the District and Virginia carries freight and passenger rail for CSX, Amtrak, and VRE. Its two tracks are insufficient and this project will increase capacity for all of these services.

This project also provides an incredible opportunity to make it easier to bicycle across the Potomac River. However, I'm concerned that the currently proposed plans do not provide a strong enough connection between important commercial and residential corridors.

The rail tracks cross over George Washington Parkway, the Washington Channel, and I-395 for a good reason: these are substantial barriers. These are also difficult for bicyclists to cross. The bicycle paths should connect from Long Bridge Park in Arlington to Maine Avenue SW or even Maryland Avenue SW at L'Enfant Plaza to ensure that residents and commuters have a safe and convenient way to travel through the region.

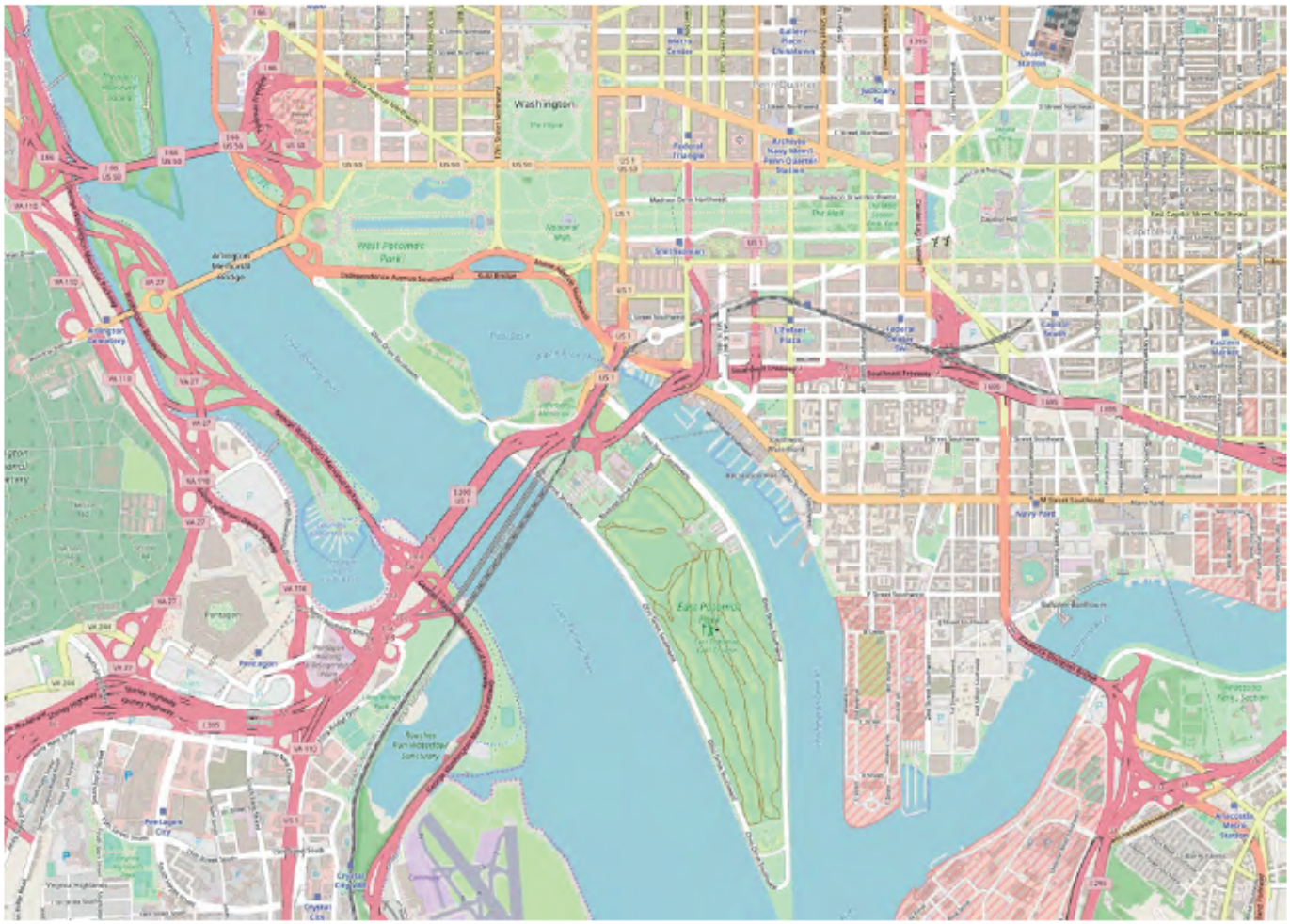
For any questions, please contact my Chief of Staff, Tony Goodman by phone at 202-724-8105 or by email at tgoodman@dccouncil.us.

Sincerely,

David Grosso
Council of the District of Columbia
Chairperson, Committee on Education

cc: Councilmember Mary Cheh, Chair of the Committee on Transportation and the Environment

CCB Mapping Portal



Layers: VA Eagle Nest Locator

Map Center [longitude, latitude]: [-77.03085422515869, 38.877954430458104]

Map Link:
http://www.ccbbirds.org/maps/#layer=VA+Eagle+Nest+Locator&zoom=15&lat=38.877954430458104&lng=-77.03085422515869&legend=legend_tab_7c321b7e-e523-11e4-aaa0-0e0c41326911&base=Street+Map+%28OSM%29

Report Generated On: 11/27/2017

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Chesapeake Bay Ecological Services Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401-7307
Phone: (410) 573-4599 Fax: (410) 266-9127
http://www.fws.gov/chesapeakebay/
http://www.fws.gov/chesapeakebay/endsppweb/ProjectReview/Index.html

In Reply Refer To:
Consultation Code: 05E2CB00-2018-SLI-0267
Event Code: 05E2CB00-2018-E-00610
Project Name: Long Bridge Project

November 27, 2017

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. This species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having

similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Wetlands

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Chesapeake Bay Ecological Services Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401-7307
(410) 573-4599

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following office, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
(804) 693-6694

Project Summary

Consultation Code: 05E2CB00-2018-SLI-0267

Event Code: 05E2CB00-2018-E-00610

Project Name: Long Bridge Project

Project Type: BRIDGE CONSTRUCTION / MAINTENANCE

Project Description: The Federal Railroad Administration is preparing a NEPA EIS jointly with the district Department of Transportation for improvements on the Long Bridge over the Potomac River. The work includes the replacement or reconstruction of the existing Long Bridge and the addition of bike-pedestrian bridges that will connect to existing path/trail/lanes. The general project area is defined as a 1,200-foot wide corridor centered on the existing set of rail lines between the Virginia Railway Express Crystal City Station in Arlington, VA and the L'Enfant Interlocking near 3rd Street SW in Washington, DC, for a distance of approximately 1.8 miles

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/38.87700148511907N77.03666262315014W

Counties: District of Columbia, DC | Arlington, VA

Endangered Species Act Species

There is a total of 0 threatened, endangered, or candidate species on this species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Wetlands

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
Phone: (804) 693-6694 Fax: (804) 693-9032
http://www.fws.gov/northeast/virginiafield/

In Reply Refer To:
Consultation Code: 05E2VA00-2018-SLI-0707
Event Code: 05E2VA00-2018-E-01658
Project Name: Long Bridge Project

November 27, 2017

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). Any activity proposed on National Wildlife Refuge lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to

utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
(804) 693-6694

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following office, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

Chesapeake Bay Ecological Services Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401-7307
(410) 573-4599

Project Summary

Consultation Code: 05E2VA00-2018-SLI-0707

Event Code: 05E2VA00-2018-E-01658

Project Name: Long Bridge Project

Project Type: BRIDGE CONSTRUCTION / MAINTENANCE

Project Description: The Federal Railroad Administration is preparing a NEPA EIS jointly with the district Department of Transportation for improvements on the Long Bridge over the Potomac River. The work includes the replacement or reconstruction of the existing Long Bridge and the addition of bike-pedestrian bridges that will connect to existing path/trail/lanes. The general project area is defined as a 1,200-foot wide corridor centered on the existing set of rail lines between the Virginia Railway Express Crystal City Station in Arlington, VA and the L'Enfant Interlocking near 3rd Street SW in Washington, DC, for a distance of approximately 1.8 miles

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/38.87700148511907N77.03666262315014W

Counties: District of Columbia, DC | Arlington, VA

Endangered Species Act Species

There is a total of 0 threatened, endangered, or candidate species on this species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

COASTAL RESOURCES INC.
Ecological Consultants

December 4, 2017

Mr. Bryan King
Associate Director
Department of Energy and Environment
District of Columbia
1200 First Street, NE
Washington, DC 20002

Re: Request for Current Species and Habitat Information for the Long Bridge Project

Dear Mr. King:

The Federal Railroad Administration (FRA) is preparing a National Environmental Policy Act (NEPA) Environmental Impact Statement jointly with the District Department of Transportation (DDOT) for improvements on the Long Bridge over the Potomac River. The work includes the replacement or reconstruction of the existing Long Bridge and the addition of bike-pedestrian bridges that will connect to existing paths/trails/lanes. The general project area is defined as a 1,000-foot wide corridor centered on the existing set of rail lines between the Virginia Railway Express RO Interlocking in Arlington, VA and LE Interlocking in Washington, DC (the Long Bridge Corridor), for a distance of approximately 1.8 miles. However, the section of the project area that is over the Potomac River has a 4,000 foot wide corridor centered on the existing set of rail lines to address the potential for scour and deposition to affect habitat for sensitive species (Attachment 1).

We are requesting information from your office regarding the potential occurrence of any species of concern and/or ecologically sensitive communities that may occur near the project area, as identified on the attached map. Please contact me at seans@cri.biz or 443-837-2285 if you need any additional information to aid in your project review. Thank you very much for your consideration.

Sincerely,

Coastal Resources, Inc.

Sean Sipple
Senior Environmental Scientist

Enclosures: Attachment 1 – Vicinity Map

25 Old Solomons Island Road, Annapolis, MD 21401
410-956-9000 (FAX) 410-956-0566

Long Bridge Project
Arlington County, VA
Washington, DC

November 2017

Vicinity Map

Legend

Study Area

N

1 inch= 2,000 ft

0 1,000 2,000 4,000 Feet

COASTAL RESOURCES INC.
Ecological Consultants

December 4, 2017

Ms. Mary Colligan
National Marine Fisheries Service
Northeast Regional Office
Protected Resources Division
55 Great Republic Drive
Gloucester, MA 01930

RE: Request for Project Review - Long Bridge Project
Arlington County, VA and Washington, DC

Dear Ms. Colligan:

The Federal Railroad Administration (FRA) is preparing a National Environmental Policy Act (NEPA) Environmental Impact Statement (EIS) jointly with the District Department of Transportation (DDOT) for improvements on the Long Bridge over the Potomac River. The work includes the replacement or reconstruction of the existing Long Bridge and the addition of bike-pedestrian bridges that will connect to existing paths/trails/lanes. The general project area is defined as a 1,000-foot wide corridor centered on the existing set of rail lines between the Virginia Railway Express RO Interlocking in Arlington, VA and the LE Interlocking in Washington, DC (the Long Bridge Corridor), for a distance of approximately 1.8 miles. However, the section of the project area that is over the Potomac River has a 4,000 foot wide corridor centered on the existing set of rail lines to address the potential for scour and deposition to affect habitat for listed species (Attachment 1).

We are requesting information from your office regarding the potential occurrence of rare, threatened, or endangered species within the project study area. If you have any questions or concerns regarding this letter, feel free to contact me at seans@cri.biz or 443-837-2285.

Sincerely,

Coastal Resources, Inc.

Sean Sipple
Senior Environmental Scientist

Enclosure: Attachment 1 – Vicinity Map

25 Old Solomons Island Road, Annapolis, MD 21401
410-956-9000 (FAX) 410-956-0566

Long Bridge Project
Arlington County, VA
Washington, DC

November 2017

Vicinity Map

Legend

Study Area

N

1 inch= 2,000 ft

0 1,000 2,000 4,000
Feet

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Virginia Field Office
6669 Short Lane
Gloucester, VA 23061

Date: December 5, 2017

Self-Certification Letter

Project Name: The Long Bridge Project

Dear Applicant:

Thank you for using the U.S. Fish and Wildlife Service (Service) Virginia Ecological Services online project review process. By printing this letter in conjunction with your project review package, you are certifying that you have completed the online project review process for the project named above in accordance with all instructions provided, using the best available information to reach your conclusions. This letter, and the enclosed project review package, completes the review of your project in accordance with the Endangered Species Act of 1973 (16 U.S.C. . 1531-1544, 87 Stat. 884), as amended (ESA), and the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c, 54 Stat. 250), as amended (Eagle Act). This letter also provides information for your project review under the National Environmental Policy Act of 1969 (P.L. 91-190, 42 U.S.C. 4321-4347, 83 Stat. 852), as amended. A copy of this letter and the project review package must be submitted to this office for this certification to be valid. This letter and the project review package will be maintained in our records.

The species conclusions table in the enclosed project review package summarizes your ESA and Eagle Act conclusions. These conclusions resulted in:

- "no effect" determinations for proposed/listed species and/or proposed/designated critical habitat; and/or
- "may affect, not likely to adversely affect" determinations for proposed/listed species and/or proposed/designated critical habitat; and/or
- "may affect, likely to adversely affect" determination for the Northern long-eared bat (*Myotis septentrionalis*) and relying on the findings of the January 5, 2016 Programmatic Biological Opinion for the Final 4(d) Rule on the Northern long-eared bat; and/or
- "no Eagle Act permit required" determinations for eagles.

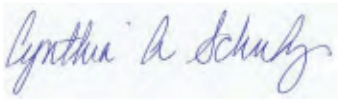
We certify that use of the online project review process in strict accordance with the instructions provided as documented in the enclosed project review package results in reaching the appropriate determinations. Therefore, we concur with the "no effect" or "not likely to adversely affect" determinations for proposed and listed species and proposed and designated critical habitat; the "may affect" determination for Northern long-eared bat; and/or the "no Eagle Act permit required" determinations for eagles. Additional coordination with this office is not needed.

Candidate species are not legally protected pursuant to the ESA. However, the Service encourages consideration of these species by avoiding adverse impacts to them. Please contact this office for additional coordination if your project action area contains candidate species.

Should project plans change or if additional information on the distribution of proposed or listed species, proposed or designated critical habitat, or bald eagles becomes available, this determination may be reconsidered. This certification letter is valid for 1 year.

Information about the online project review process including instructions and use, species information, and other information regarding project reviews within Virginia is available at our website http://www.fws.gov/northeast/virginiafield/endspecies/project_reviews.html. If you have any questions, please contact Troy Andersen of this office at (804) 824-2428.

Sincerely,



Cindy Schulz
Field Supervisor
Virginia Ecological Services

Enclosures - project review package

From: Brian D Hopper - NOAA Federal
To: Sean Sipple
Cc: William Barnhill - NOAA Federal
Subject: ESA technical assistance - Long Bridge Project
Date: Wednesday, December 27, 2017 11:33:23 AM

Hi Sean

Your email and attached letter dated December 4, 2017, regarding the improvements to the Long Bridge over the Potomac River, requested information about threatened or endangered species within the project study area.

Atlantic and shortnose sturgeon are present in the Potomac River. The New York Bight, Chesapeake Bay, South Atlantic, and Carolina DPSs of Atlantic sturgeon are endangered; the Gulf of Maine DPS is threatened. Individuals originating from any of these DPSs could occur in the project area. Shortnose sturgeon are endangered throughout their range. In addition, the Potomac River has been designated as critical habitat for the Chesapeake Bay DPS of Atlantic sturgeon.

As project plans develop, we recommend you consider the following project best management practices and avoidance / minimization measures for all of the proposed project's activities that might affect sturgeon.

• For activities that increase levels of suspended sediment, consider the use of silt management and / or soil erosion best practices (i.e., silt curtains and / or cofferdams).

• For any impacts to habitat or conditions that temporarily render affected water bodies unsuitable for the above-mentioned species, consider the use of timing restrictions for in-water work.

• For pile driving or other activities that may affect underwater noise levels, consider the use of cushion blocks and other noise attenuating tools to avoid reaching noise levels that will cause injury or behavioral disturbance to sturgeon.

Organism	Injury*	Behavioral Modification
Sturgeon	206 dB re 1 μPa_{Peak} and 187 dB_{cSEL}	150 dB re 1μPa_{RMS}

If DDOT determines that there will be no exposure to listed species or critical habitat from any project activities, and there are no effects to listed species or critical habitat then consultation will not be necessary. For additional guidance on the section 7 consultation process, technical resources and species information, please visit our website – http://www.greateratlantic.fisheries.noaa.gov/protected/section7/.

DDOT will be responsible for determining whether the proposed action may affect listed species or designated critical habitat. If it is determined that the proposed action may affect a listed species or critical habitat, you should submit your determination of effects, along with justification and a request for concurrence to the attention of the Section 7 Coordinator, NMFS, Greater Atlantic Regional Fisheries Office, Protected Resources Division, 55 Great

Republic Drive, Gloucester, MA 01930. After reviewing this information, we would then be able to conduct a consultation under section 7 of the ESA.

Please contact me (410-573-4592 or brian.d.hopper@noaa.gov), should you have any questions regarding these comments. NMFS' Habitat Conservation Division (HCD) is responsible for overseeing issues related to Essential Fish Habitat (EFH) designated under the Magnuson-Stevens Fishery Conservation and Management Act and other NOAA trust resources under the Fish and Wildlife Coordination Act. If you have any questions regarding EFH, please contact Kristy Beard (410-573-4542; Kristy.Beard@noaa.gov).

Regards,
-Brian

--
Brian D. Hopper
Protected Resources Division
NOAA Fisheries
Greater Atlantic Regional Fisheries Office
177 Admiral Cochrane Dr.
Annapolis, MD 21401
(410) 573-4592
Brian.D.Hopper@noaa.gov
http://www.greateratlantic.fisheries.noaa.gov/

Virginia Department of Game and Inland Fisheries

11/20/2017 12:51:02 PM

Fish and Wildlife Information Service

VaFWIS Search Report Compiled on 11/20/2017, 12:51:02 PM

Help

Known or likely to occur within a 3 mile radius ar ound point 38.8716054 -77.0413714 in 013 Arlington County , 510 Alexandria City , VA

View Map of Site Location

577 Known or Likely Species ordered by Status Concern for Conservation

BOVA Code	Status *	Tier**	Common Name	Scientific Name
010032	FESE	Ib	Sturgeon, Atlantic	Acipenser oxyrinchus
050022	FTST	Ia	Bat, northern long-eared	Myotis septentrionalis
050020	SE	Ia	Bat, little brown	Myotis lucifugus lucifugus
050027	SE	Ia	Bat, tri-colored	Perimyotis subflavus
060006	SE	Ib	Floater, brook	Alasmidonta varicosa
030062	ST	Ia	Turtle, wood	Glyptemys insculpta
040293	ST	Ia	Shrike, loggerhead	Lanius ludovicianus
100155	ST	Ia	Skipper, Appalachian grizzled	Pyrgus wyandot
040292	ST		Shrike, migrant loggerhead	Lanius ludovicianus migrans
030063	CC	IIIa	Turtle, spotted	Clemmys guttata
030012	CC	IVa	Rattlesnake, timber	Crotalus horridus
040040		Ia	Ibis, glossy	Plegadis falcinellus
100248		Ia	Fritillary, regal	Speyeria idalia idalia
040213		Ic	Owl, northern saw-whet	Aegolius acadicus
040052		IIa	Duck, American black	Anas rubripes
040036		IIa	Night-heron, yellow-crowned	Nyctanassa violacea violacea
040181		IIa	Tern, common	Sterna hirundo
040320		IIa	Warbler, cerulean	Setophaga cerulea
040140		IIa	Woodcock, American	Scolopax minor
040203		IIb	Cuckoo, black-billed	Coccyzus erythropthalmus
040105		IIb	Rail, king	Rallus elegans
040304		IIc	Warbler, Swainson's	Limnothlypis swainsonii
070020		IIc	Amphipod, Pizzini's	Stygobromus pizzinii
100154		IIc	Butterfly, Persius duskywing	Erynnis persius persius
010131		IIIa	Eel, American	Anguilla rostrata
030068		IIIa	Turtle, woodland box	Terrapene carolina carolina
040037		IIIa	Bittern, least	Ixobrychus exilis exilis

040100		IIIa	Bobwhite, northern	Colinus virginianus
040202		IIIa	Cuckoo, yellow-billed	Coccyzus americanus
040094		IIIa	Harrier, northern	Circus cyaneus
040035		IIIa	Night-heron, black-crowned	Nycticorax nycticorax hoactii
040204		IIIa	Owl, barn	Tyto alba pratincola
040180		IIIa	Tern, Forster's	Sterna forsteri
040333		IIIa	Warbler, Kentucky	Geothlypis formosa
040215		IIIa	Whip-poor-will, Eastern	Antrostomus vociferus
060145		IIIa	Rainbow, Notched	Villosa constricta
100079		IIIa	Butterfly, monarch	Danaus plexippus
040220		IIIb	Kingfisher, belted	Ceryle alcyon
100150		IIIc	Butterfly, mottled duskywing	Erynnis martialis
010038		IVa	Herring, alewife	Alosa pseudoharengus
010045		IVa	Herring, blueback	Alosa aestivalis
010040		IVa	Shad, American	Alosa sapidissima
020069		IVa	Salamander, eastern mud	Pseudotriton montanus montanus
030045		IVa	Ribbonsnake, common	Thamnophis sauritus sauritus
030017		IVa	Scarletsnake, northern	Cemophora coccinea copei
030033		IVa	Snake, queen	Regina septemvittata
040272		IVa	Catbird, gray	Dumetella carolinensis
040337		IVa	Chat, yellow-breasted	Icteria virens virens
040142		IVa	Dowitcher, short-billed	Limnodromus griseus
040154		IVa	Dunlin	Calidris alpina hudsonia
040173		IVa	Gull, laughing	Leucophaeus atricilla
040229		IVa	Kingbird, eastern	Tyrannus tyrannus
040344		IVa	Meadowlark, eastern	Sturnella magna
040054		IVa	Pintail, northern	Anas acuta acuta
040107		IVa	Rail, Virginia	Rallus limicola
040065		IVa	Scaup, greater	Aythya marila
040391		IVa	Sparrow, field	Spizella pusilla
040378		IVa	Sparrow, grasshopper	Ammodramus savannarum pratensis
040273		IVa	Thrasher, brown	Toxostoma rufum
040375		IVa	Towhee, eastern	Pipilo erythrophthalmus
040302		IVa	Warbler, black-and-white	Mniotilta varia
040269		IVa	Wren, marsh	Cistothorus palustris
050029		IVa	Bat, eastern red	Lasiurus borealis borealis
050030		IVa	Bat, hoary	Lasiurus cinereus cinereus
050025		IVa	Bat, silver-haired	Lasionycteris noctivagans
060137		IVa	Creeper	Strophitus undulatus

030050		IVb	Turtle, snapping	Chelydra serpentina
040221		IVb	Flicker, northern	Colaptes auratus
040028		IVb	Heron, green	Butorides virescens
040243		IVb	Pewee, eastern wood	Contopus virens
040217		IVb	Swift, chimney	Chaetura pelagica
040277		IVb	Thrush, wood	Hylocichla mustelina
040340		IVb	Warbler, Canada	Cardellina canadensis
010207		IVc	Logperch	Percina caprodes
020061		IVc	Spadefoot, eastern	Scaphiopus holbrookii
030024		IVc	Snake, eastern hog-nosed	Heterodon platirhinos
040248		IVc	Swallow, northern rough-winged	Stelgidopteryx serripennis
100223		IVc	Butterfly, frosted elfin	Callophrys irus
010188			Bass, largemouth	Micropterus salmoides
010186			Bass, smallmouth	Micropterus dolomieu
010168			Bass, striped	Morone saxatilis
010183			Bluegill	Lepomis macrochirus
010123			Bullhead, brown	Ameiurus nebulosus
010122			Bullhead, yellow	Ameiurus natalis
010062			Carp, common	Cyprinus carpio
010125			Catfish, channel	Ictalurus punctatus
010120			Catfish, white	Ameiurus catus
010103			Chub, creek	Semotilus atromaculatus
010067			Chub, river	Nocomis micropogon
010106			Chubsucker, creek	Erimyzon oblongus
010190			Crappie, black	Pomoxis nigromaculatus
010189			Crappie, white	Pomoxis annularis
010101			Dace, blacknose	Rhinichthys atratulus
010366			Dace, rosyside	Clinostomus funduloides
010211			Darter, stripeback	Percina notogramma
010397			Darter, tessellated	Etheostoma olmstedi
010033			Gar, longnose	Lepisosteus osseus
010059			Goldfish	Carassius auratus
010143			Killifish, banded	Fundulus diaphanus
010002			Lamprey, sea	Petromyzon marinus
010129			Madtom, margined	Noturus insignis
010099			Minnow, bluntnose	Pimephales notatus
010408			Minnow, eastern silvery	Hybognathus regius
010144			Mummichog	Fundulus heteroclitus
010163			Perch, pirate	Aphredoderus sayanus sayanus
010166			Perch, white	Morone americana
010206			Perch, yellow	Perca flavescens

010056			Pickerel, chain	Esox niger
010182			Pumpkinseed	Lepomis gibbosus
010374			Quillback	Carpiodes cyprinus
010116			Redhorse, shorthead	Moxostoma macrolepidotum
010041			Shad, gizzard	Dorosoma cepedianum
010072			Shiner, comely	Notropis amoenus
010080			Shiner, common	Luxilus cornutus
010068			Shiner, golden	Notemigonus crysoleucas
010073			Shiner, satinfin	Cyprinella analostana
010091			Shiner, spotfin	Cyprinella spiloptera
010082			Shiner, spottail	Notropis hudsonius
010086			Shiner, swallowtail	Notropis procne
010458			Snakehead, northern	Channa argus
010108			Sucker, northern hog	Hypentelium nigricans
010105			Sucker, white	Catostomus commersonii
010178			Sunfish, bluespotted	Enneacanthus gloriosus
010181			Sunfish, green	Lepomis cyanellus
010180			Sunfish, redbreast	Lepomis auritus
010177			Warmouth	Lepomis gulosus
020004			Bullfrog, American	Lithobates catesbeianus
020016			Frog, Coastal Plains leopard	Lithobates sphenocephalus utricularius
020012			Frog, eastern cricket	Acris crepitans
020008			Frog, green	Lithobates clamitans
020013			Frog, pickerel	Lithobates palustris
020018			Frog, upland chorus	Pseudacris feriarum
020019			Frog, wood	Lithobates sylvaticus
020065			Newt, red-spotted	Notophthalmus viridescens viridescens
020071			Peeper, spring	Pseudacris crucifer
020043			Salamander, eastern red-backed	Plethodon cinereus
020029			Salamander, four-toed	Hemidactylium scutatum
020035			Salamander, marbled	Ambystoma opacum
020038			Salamander, northern dusky	Desmognathus fuscus
020070			Salamander, northern red	Pseudotriton ruber ruber
020053			Salamander, northern two-lined	Eurycea bislineata
020049			Salamander, spotted	Ambystoma maculatum
020051			Salamander, three-lined	Eurycea guttolineata
020080			Salamander, white-spotted slimy	Plethodon cylindraceus
020059			Toad, eastern American	Anaxyrus americanus americanus

020062			Toad, Fowler's	Anaxyrus fowleri
020006			Treefrog, Cope's gray	Hyla chrysoscelis
020009			Treefrog, green	Hyla cinerea
030041			Brownsnake, northern	Storeria dekayi dekayi
030059			Cooter, eastern river	Pseudemys concinna concinna
030057			Cooter, northern red-bellied	Pseudemys rubriventris
030016			Copperhead, northern	Agkistrodon contortrix mokasen
030022			Cornsnake, red	Pantherophis guttatus
030049			Earthsnake, eastern smooth	Virginia valeriae valeriae
030044			Gartersnake, eastern	Thamnophis sirtalis sirtalis
030078			Gecko, Mediterranean	Hemidactylus turcicus
030038			Greensnake, northern rough	Opheodrys aestivus aestivus
030026			Kingsnake, eastern	Lampropeltis getula
030027			Kingsnake, mole	Lampropeltis calligaster rhombomaculata
030002			Lizard, eastern fence	Sceloporus undulatus
030029			Milksnake, eastern	Lampropeltis triangulum
030018			Racer, northern black	Coluber constrictor constrictor
030008			Racerunner, eastern six-lined	Aspidoscelis sexlineata sexlineata
030023			Ratsnake, eastern	Pantherophis alleghaniensis
030006			Skink, broad-headed	Plestiodon laticeps
030004			Skink, common five-lined	Plestiodon fasciatus
030007			Skink, little brown	Scincella lateralis
030005			Skink, southeastern five-lined	Plestiodon inexpectatus
030077			Slider, red-eared	Trachemys scripta elegans
030042			Snake, northern red-bellied	Storeria occipitomaculata occipitomaculata
030020			Snake, northern ring-necked	Diadophis punctatus edwardsii
030052			Turtle, eastern musk	Sternotherus odoratus
030060			Turtle, eastern painted	Chrysemys picta picta
030051			Turtle, southeastern mud	Kinosternon subrubrum subrubrum
030034			Watersnake, northern	Nerodia sipedon sipedon
030019			Wormsnake, eastern	Carphophis amoenus amoenus
040038			Bittern, American	Botaurus lentiginosus
040350			Blackbird, Brewer's	Euphagus cyanocephalus
040346			Blackbird, red-winged	Agelaius phoeniceus
040282			Bluebird, eastern	Sialia sialis
040343			Bobolink	Dolichonyx oryzivorus
040361			Bunting, indigo	Passerina cyanea
040363			Bunting, painted	Passerina ciris ciris

040401			Bunting, snow	Plectrophenax nivalis nivalis
040064			Canvasback	Aythya valisineria
040357			Cardinal, northern	Cardinalis cardinalis
040259			Chickadee, boreal	Poecile hudsonicus
040258			Chickadee, Carolina	Poecile carolinensis
040214			Chuck-will's-widow	Antrostomus carolinensis
040113			Coot, American	Fulica americana
040024			Cormorant, double-crested	Phalacrocorax auritus
040353			Cowbird, brown-headed	Molothrus ater
040264			Creeper, brown	Certhia americana
040373			Crossbill, white-winged	Loxia leucoptera
040255			Crow, American	Corvus brachyrhynchos
040256			Crow, fish	Corvus ossifragus
040128			Curlew, long-billed	Numenius americanus
040364			Dickcissel	Spiza americana
040200			Dove, common ground	Columbina passerina
040198			Dove, mourning	Zenaida macroura carolinensis
040069			Duck, long-tailed	Clangula hyemalis
040063			Duck, ring-necked	Aythya collaris
040076			Duck, ruddy	Oxyura jamaicensis
040061			Duck, wood	Aix sponsa
040093			Eagle, bald	Haliaeetus leucocephalus
040032			Egret, great	Ardea alba egretta
040367			Finch, house	Haemorhous mexicanus
040366			Finch, purple	Haemorhous purpureus
040239			Flycatcher, Acadian	Empidonax virescens
040234			Flycatcher, great crested	Myiarchus crinitus
040240			Flycatcher, willow	Empidonax traillii
040284			Gnatcatcher, blue-gray	Polioptila caerulea
040122			Golden-plover, American	Pluvialis dominica
040371			Goldfinch, American	Spinus tristis
040047			Goose, barnacle	Branta leucopsis
040045			Goose, Canada	Branta canadensis
040049			Goose, lesser snow	Chen caerulescens caerulescens
040410			Goose, snow	Chen caerulescens
040351			Grackle, boat-tailed	Quiscalus major
040352			Grackle, common	Quiscalus quiscula
040006			Grebe, eared	Podiceps nigricollis
040008			Grebe, pied-billed	Podilymbus podiceps
040360			Grosbeak, blue	Guiraca caerulea caerulea

040365			Grosbeak, evening	Coccothraustes vespertinus
040368			Grosbeak, pine	Pinicola enucleator
040358			Grosbeak, rose-breasted	Pheucticus ludovicianus
040172			Gull, black-headed	Chroicocephalus ridibundus
040169			Gull, California	Larus californicus
040174			Gull, Franklin's	Leucophaeus pipixcan
040165			Gull, great black-backed	Larus marinus
040167			Gull, herring	Larus argentatus
040164			Gull, Iceland	Larus glaucoides
040166			Gull, lesser black-backed	Larus fuscus
040171			Gull, mew	Larus canus
040170			Gull, ring-billed	Larus delawarensis
040168			Gull, Thayer's	Larus thayeri
040086			Hawk, Cooper's	Accipiter cooperii
040088			Hawk, red-shouldered	Buteo lineatus lineatus
040087			Hawk, red-tailed	Buteo jamaicensis
040090			Hawk, rough-legged	Buteo lagopus johannis
040085			Hawk, sharp-shinned	Accipiter striatus velox
040027			Heron, great blue	Ardea herodias herodias
040218			Hummingbird, ruby-throated	Archilochus colubris
040252			Jay, blue	Cyanocitta cristata
040387			Junco, dark-eyed	Junco hyemalis
040098			Kestrel, American	Falco sparverius sparverius
040119			Killdeer	Charadrius vociferus
040232			Kingbird, Cassin's	Tyrannus vociferans
040285			Kinglet, golden-crowned	Regulus satrapa
040286			Kinglet, ruby-crowned	Regulus calendula
040082			Kite, swallow-tailed	Elanoides forficatus forficatus
040177			Kittiwake, black-legged	Rissa tridactyla
040245			Lark, horned	Eremophila alpestris
040253			Magpie, black-billed	Pica hudsonia
040051			Mallard	Anas platyrhynchos
040251			Martin, purple	Progne subis
040078			Merganser, common	Mergus merganser americanus
040079			Merganser, red-breasted	Mergus serrator serrator
040271			Mockingbird, northern	Mimus polyglottos
040112			Moorhen, common	Gallinula chloropus cachinnans
040194			Murre, thick-billed	Uria lomvia
040216			Nighthawk, common	Chordeiles minor
040262			Nuthatch, red-breasted	Sitta canadensis
040261			Nuthatch, white-breasted	Sitta carolinensis

040348			Oriole, Baltimore	Icterus galbula
040347			Oriole, orchard	Icterus spurius
040095			Osprey	Pandion haliaetus carolinensis
040330			Ovenbird	Seiurus aurocapilla
040209			Owl, barred	Strix varia
040206			Owl, great horned	Bubo virginianus
040211			Owl, short-eared	Asio flammeus
040312			Parula, northern	Setophaga americana
040138			Phalarope, red	Phalaropus fulicarius
040136			Phalarope, Wilson's	Phalaropus tricolor
040236			Phoebe, eastern	Sayornis phoebe
040197			Pigeon, rock	Columba livia
040287			Pipit, American	Anthus rubescens
040254			Raven, common	Corvus corax
040062			Redhead	Aythya americana
040369			Redpoll, common	Acanthis flammea
040341			Redstart, American	Setophaga ruticilla
040275			Robin, American	Turdus migratorius
040158			Ruff	Philomachus pugnax
040151			Sandpiper, Baird's	Calidris bairdii
040155			Sandpiper, curlew	Calidris ferruginea
040146			Sandpiper, semipalmated	Calidris pusilla
040132			Sandpiper, solitary	Tringa solitaria
040134			Sandpiper, spotted	Actitis macularia
040156			Sandpiper, stilt	Calidris himantopus
040129			Sandpiper, upland	Bartramia longicauda
040225			Sapsucker, yellow-bellied	Sphyrapicus varius
040066			Scaup, lesser	Aythya affinis
040075			Scoter, black	Melanitta nigra americana
040205			Screech-owl, eastern	Megascops asio
040060			Shoveler, northern	Anas clypeata
040370			Siskin, pine	Spinus pinus
040141			Snipe, Wilson's	Gallinago delicata
040108			Sora	Porzana carolina
040388			Sparrow, American tree	Spizella arborea
040386			Sparrow, black-throated	Amphispiza bilineata
040389			Sparrow, chipping	Spizella passerina
040395			Sparrow, fox	Passerella iliaca
040392			Sparrow, Harris'	Zonotrichia querula
040342			Sparrow, house	Passer domesticus

040377			Sparrow, savannah	Passerculus sandwichensis
040398			Sparrow, song	Melospiza melodia
040397			Sparrow, swamp	Melospiza georgiana
040383			Sparrow, vesper	Pooecetes gramineus
040393			Sparrow, white-crowned	Zonotrichia leucophrys
040394			Sparrow, white-throated	Zonotrichia albicollis
040294			Starling, European	Sturnus vulgaris
040249			Swallow, barn	Hirundo rustica
040043			Swan, mute	Cygnus olor
040355			Tanager, scarlet	Piranga olivacea
040356			Tanager, summer	Piranga rubra
040354			Tanager, western	Piranga ludoviciana
040057			Teal, blue-winged	Anas discors orphna
040056			Teal, green-winged	Anas crecca carolinensis
040189			Tern, Caspian	Sterna caspia
040280			Thrush, gray-cheeked	Catharus minimus
040278			Thrush, hermit	Catharus guttatus
040260			Titmouse, tufted	Baeolophus bicolor
040281			Veery	Catharus fuscescens
040299			Vireo, red-eyed	Vireo olivaceus
040301			Vireo, warbling	Vireo gilvus gilvus
040295			Vireo, white-eyed	Vireo griseus
040297			Vireo, yellow-throated	Vireo flavifrons
040081			Vulture, black	Coragyps atratus
040080			Vulture, turkey	Cathartes aura
040316			Warbler, black-throated blue	Setophaga caerulescens
040319			Warbler, black-throated green	Setophaga virens
040325			Warbler, blackpoll	Setophaga striata
040307			Warbler, blue-winged	Vermivora cyanoptera
040323			Warbler, chestnut-sided	Setophaga pensylvanica
040338			Warbler, hooded	Setophaga citrina
040314			Warbler, magnolia	Setophaga magnolia
040311			Warbler, Nashville	Oreothlypis ruficapilla
040329			Warbler, palm	Setophaga palmarum
040326			Warbler, pine	Setophaga pinus
040328			Warbler, prairie	Setophaga discolor
040303			Warbler, prothonotary	Protonotaria citrea
040305			Warbler, worm-eating	Helmitheros vermivorus
040313			Warbler, yellow	Setophaga petechia
040317			Warbler, yellow-rumped	Setophaga coronata
040332			Waterthrush, Louisiana	Parkesia motacilla

040331			Waterthrush, northern	Parkesia noveboracensis
040289			Waxwing, Bohemian	Bombycilla garrulus
040290			Waxwing, cedar	Bombycilla cedrorum
040059			Wigeon, American	Anas americana
040227			Woodpecker, downy	Picoides pubescens medianus
040226			Woodpecker, hairy	Picoides villosus
040222			Woodpecker, pileated	Dryocopus pileatus
040223			Woodpecker, red-bellied	Melanerpes carolinus
040224			Woodpecker, red-headed	Melanerpes erythrocephalus
040268			Wren, Carolina	Thryothorus ludovicianus
040265			Wren, house	Troglodytes aedon
040266			Wren, winter	Troglodytes troglodytes
040131			Yellowlegs, lesser	Tringa flavipes
040336			Yellowthroat, common	Geothlypis trichas
050028			Bat, big brown	Eptesicus fuscus fuscus
050033			Bat, evening	Nycticeius humeralis humeralis
050069			Beaver, American	Castor canadensis
050051			Bobcat	Lynx rufus rufus
050055			Chipmunk, Fisher's eastern	Tamias striatus fisheri
050103			Cottontail, eastern	Sylvilagus floridanus mallurus
050125			Coyote	Canis latrans
050108			Deer, white-tailed	Odocoileus virginianus
050050			Fox, common gray	Urocyon cinereoargenteus cinereoargenteus
050049			Fox, red	Vulpes vulpes fulva
050085			Lemming, Stone's southern bog	Synaptomys cooperi stonei
050042			Mink, common	Neovison vison mink
050017			Mole, eastern	Scalopus aquaticus aquaticus
050019			Mole, star-nosed	Condylura cristata cristata
050074			Mouse, common white-footed	Peromyscus leucopus leucopus
050072			Mouse, deer	Peromyscus maniculatus nubiterrae
050071			Mouse, eastern harvest	Reithrodontomys humulis virginianus
050098			Mouse, house	Mus musculus musculus
050099			Mouse, meadow jumping	Zapus hudsonius americanus
050073			Mouse, northern white-footed	Peromyscus leucopus noveboracensis
050124			Mouse, prairie deer	Peromyscus maniculatus bairdii
050093			Muskrat, large-toothed	Ondatra zibethicus macrodon
050001			Opossum, Virginia	Didelphis virginiana virginiana

050045			Otter, northern river	Lontra canadensis lataxina
050038			Raccoon	Procyon lotor lotor
050094			Rat, black	Rattus rattus rattus
050078			Rat, marsh rice	Oryzomys palustris palustris
050095			Rat, Norway	Rattus norvegicus norvegicus
050013			Shrew, Kirtland's short-tailed	Blarina brevicauda kirtlandi
050015			Shrew, least	Cryptotis parva parva
050010			Shrew, pygmy	Sorex hoyi winnemana
050007			Shrew, southeastern	Sorex longirostris longirostris
050047			Skunk, striped	Mephitis mephitis nigra
050048			Skunk, striped	Mephitis mephitis mephitis
050063			Squirrel, eastern fox	Sciurus niger vulpinus
050057			Squirrel, eastern gray	Sciurus carolinensis carolinensis
050058			Squirrel, northern gray	Sciurus carolinensis pennsylvanicus
050065			Squirrel, southern flying	Glaucomys volans volans
050059			Squirrel, talkative red	Tamiasciurus hudsonicus loquax
050087			vole, common Gapper's red-backed	Clethrionomys gapperi gapperi
050083			Vole, dark meadow	Microtus pennsylvanicus nigrans
050082			Vole, meadow	Microtus pennsylvanicus pennsylvanicus
050091			Vole, pine	Microtus pinetorum scalopsoides
050040			Weasel, least	Mustela nivalis allegheniensis
050041			Weasel, long-tailed	Mustela frenata noveboracensis
050054			Woodchuck	Marmota monax monax
060012			Floater, eastern	Pyganodon cataracta
060025			Mussel, eastern elliptio	Elliptio complanata
060095			Snail, European physa	Physella acuta
070099			Crayfish	Fallicambarus uhleri
070102			Crayfish, Common	Cambarus bartonii bartonii
070095			Crayfish, devil	Cambarus diogenes diogenes
070126			Crayfish, Digger	Fallicambarus fodiens
070094			Crayfish, no common name	Cambarus acuminatus
070120			Crayfish, White River	Procambarus acutus
080208			Damselfly, big bluet	Enallagma durum
080112			Damselfly, blue-fronted dancer	Argia apicalis
080114			Damselfly, blue-tipped dancer	Argia tibialis
080100			Damselfly, Eastern forktail	Ischnura verticalis

080096			Damselfly, ebony jewelwing	Calopteryx maculata
080116			Damselfly, familiar bluet	Enallagma civile
080099			Damselfly, fragile forktail	Ischnura posita
080196			Damselfly, great spreadwing	Archilestes grandis
080122			Damselfly, orange bluet	Enallagma signatum
080173			Damselfly, powdered dancer	Argia moesta
080120			Damselfly, stream bluet	Enallagma exsulans
080095			Damselfly, Violet dancer	Argia fumipennis violacea
080170			Dragonfly, black saddlebags	Tramea lacerata
080177			Dragonfly, black-shouldered spinyleg	Dromogomphus spinosus
080091			Dragonfly, blue dasher	Pachydiplax longipennis
080089			Dragonfly, common baskettail	Epitheca cynosura
080130			Dragonfly, common green darner	Anax junius
080090			Dragonfly, common whitetail	Libellula lydia
080135			Dragonfly, Cyrano darner	Nasiaeschna pentacantha
080138			Dragonfly, dragonhunter	Hagenius brevistylus
080167			Dragonfly, Eastern amberwing	Perithemis tenera
080092			Dragonfly, Eastern pondhawk	Erythemis simplicicollis
080151			Dragonfly, halloween pennant	Celithemis eponina
080136			Dragonfly, lancet clubtail	Gomphus exilis
080178			Dragonfly, Needham's skimmer	Libellula needhami
080163			Dragonfly, painted skimmer	Libellula semifasciata
080210			Dragonfly, prince baskettail	Epitheca princeps
080029			Dragonfly, Shadow darner	Aeshna umbrosa
080161			Dragonfly, slaty skimmer	Libellula incesta
080158			Dragonfly, spangled skimmer	Libellula cyanea
080212			Dragonfly, spot-winged glider	Pantala hymenea
080094			Dragonfly, swamp darner	Epiaeschna heros
080143			Dragonfly, Swift River Cruiser; Illinois River Cruiser	Macromia illinoiensis
080015			Dragonfly, twelve-spotted skimmer	Libellula pulchella
080077			Dragonfly, unicorn clubtail	Arigomphus villosipes
080166			Dragonfly, wandering glider	Pantala flavescens
080162			Dragonfly, widow skimmer	Libellula luctuosa
080093			Great Blue Skimmer	Libellula vibrans
100043			Armyworm	Pseudaletia unipuncta
100041			Borer, European corn	Ostrinia nubilatis
100220			Butterfly, American copper	Lycaena phlaeas
100262			Butterfly, American lady	Vanessa virginiensis
100245			Butterfly, American snout	Libytheana carinenta
100241			Butterfly, Appalachian azure	Celastrina neglectamajor

100274			Butterfly, Appalachian brown	Satyrodes appalachia
100254			Butterfly, Baltimore checkerspot	Euphydryas phaeton
100092			Butterfly, black swallowtail	Papilio polyxenes asterius
100196			Butterfly, Brazilian skipper	Calpodes ethlius
100137			Butterfly, brown elfin	Callophrys augustinus
100205			Butterfly, cabbage white	Pieris rapae
100167			Butterfly, carus skipper	Polites carus
100206			Butterfly, checkered white	Pontia protodice
100159			Butterfly, clouded skipper	Lerema accius
100094			Butterfly, clouded sulphur	Colias philodice
100213			Butterfly, cloudless sulphur	Phoebis sennae eubule
100165			Butterfly, cobweb skipper	Hesperia metea
100265			Butterfly, common buckeye	Junonia coenia
100156			Butterfly, common checkered-skipper	Pyrgus communis
100157			Butterfly, common sootywing	Pholisora catullus
100277			Butterfly, common wood-nymph	Cercyonis pegala
100144			Butterfly, confused cloudywing	Thorybes confusis
100230			Butterfly, coral hairstreak	Satyrium titus
100168			Butterfly, crossline skipper	Polites origenes
100177			Butterfly, Delaware skipper	Anatrytone logan
100184			Butterfly, Dion skipper	Euphyes dion
100147			Butterfly, dreamy duskywing	Erynnis icelus
100185			Butterfly, Dun skipper	Euphyes vestris
100188			Butterfly, dusted skipper	Atrytonopsis hianna
100258			Butterfly, eastern comma	Polygonia comma
100225			Butterfly, eastern pine elfin	Callophrys niphon
100238			Butterfly, eastern tailed-blue	Everes comyntas
100093			Butterfly, eastern tiger swallowtail	Papilio glaucus
100231			Butterfly, Edwards' hairstreak	Satyrium edwardsii
100161			Butterfly, European skipper	Thymelicus lineola
100209			Butterfly, falcate orangetip	Anthocharis midea
100162			Butterfly, fiery skipper	Hylephila phyleus
100201			Butterfly, giant swallowtail	Papilio cresphontes
100139			Butterfly, golden-banded skipper	Autochton cellus
100228			Butterfly, gray hairstreak	Strymon melinus
100249			Butterfly, great spangled fritillary	Speyeria cybele
100270			Butterfly, hackberry emperor	Asterocampa celtis
100219			Butterfly, harvester	Feniseca tarquinius
100145			Butterfly, Hayhurst's scallopwing	Staphylus hayhurstii
100224			Butterfly, Henry's elfin	Callophrys henrici
100141			Butterfly, hoary edge	Achalarus lyciades

100178			Butterfly, Hobomok skipper	Poanes hobomok
100149			Butterfly, Horace's duskywing	Erynnis horatius
100148			Butterfly, Juvenal's duskywing	Erynnis juvenalis
100160			Butterfly, least skipper	Ancyloxypha numitor
100163			Butterfly, Leonard's skipper	Hesperia leonardus
100175			Butterfly, little glassywing	Pompeius verna
100279			Butterfly, little wood-satyr	Megisto cymela
100217			Butterfly, little yellow	Eurema lisa
100252			Butterfly, meadow fritillary	Boloria bellona
100090			Butterfly, mourning cloak	Nymphalis antiopa
100173			Butterfly, northern broken dash	Wallengrenia egeremet
100143			Butterfly, northern cloudywing	Thorybes pylades
100272			Butterfly, northern pearly-eye	Enodia anthedon
100197			Butterfly, Ocola skipper	Panoquina ocola
100236			Butterfly, olive juniper hairstreak	Callophrys gryneus gryneus
100211			Butterfly, orange sulphur	Colias eurytheme
100263			Butterfly, painted lady	Vanessa cardui
100257			Butterfly, pearl crescent	Phyciodes tharos
100359			Butterfly, Peck's skipper	Polites peckius
100200			Butterfly, pipevine swallowtail	Battus philenor
100259			Butterfly, question mark	Polygonia interrogationis
100264			Butterfly, red admiral	Vanessa atalanta
100235			Butterfly, red-banded hairstreak	Calycopis cecrops
100268			Butterfly, red-spotted purple	Limenitis arthemis astyanax
100174			Butterfly, sachem	Atalopedes campestris
100082			Butterfly, silver-spotted skipper	Epargyreus clarus
100255			Butterfly, silvery checkerspot	Chlosyne nycteis
100146			Butterfly, sleepy duskywing	Erynnis brizo
100216			Butterfly, sleepy orange	Eurema nicippe
100142			Butterfly, southern cloudywing	Thorybes bathyllus
100226			Butterfly, southern hairstreak	Satyrium favonius
100202			Butterfly, spicebush swallowtail	Papilio troilus
100239			Butterfly, spring azure	Celastrina ladon
100234			Butterfly, striped hairstreak	Satyrium liparops
100158			Butterfly, swarthy skipper	Nastra lherminier
100269			Butterfly, tawny emperor	Asterocampa clyton
100169			Butterfly, tawny-edged skipper	Polites themistocles
100247			Butterfly, variegated fritillary	Euptoieta claudia
100266			Butterfly, viceroy	Limenitis archippus
100267			Butterfly, white admiral	Limenitis arthemis arthemis

100227			Butterfly, white M hairstreak	Parrhasius m-album
100153			Butterfly, wild indigo duskywing	Erynnis baptisiae
100180			Butterfly, Zabulon skipper	Poanes zabulon
100204			Butterfly, zebra swallowtail	Eurytides marcellus
100026			Deerfly	Chrysops vittatus vittatus
100042			Earworm, corn	Heliathis zea
100030			Gnat	Culicoides arboricola
100031			Gnat	Culicoides hinmani
100032			Gnat	Culicoides guttipennis
100033			Gnat	Culicoides footei
100015			Gnat	Culicoides villosipennis
100016			Gnat	Culicoides stellifer
100017			Gnat	Culicoides snowi
100020			Gnat	Culicoides nanus
100290			Moth, buck	Hemileuca maia
100100			Moth, catalpa sphinx	Ceratomia catalpae
100040			Moth, codling	Cydia pomonella
100296			Moth, Five-spotted hawk	Manduca quinquemaculata
100047			Moth, gypsy	Lymantria dispar
100312			Moth, hummingbird clearwing	Hemaris thysbe
100095			Moth, Luna	Actias luna
100289			Moth, pinkstriped oakworm	Anisota virginiensis
100098			Moth, Polyphemus	Antheraea polyphemus
100284			Moth, regal	Citheronia regalis
100286			Moth, rosy maple	Dryocampa rubicunda
100310			Moth, small-eyed sphinx	Paonias myops
100101			Moth, snowberry clearwing	Hemeris diffinis
100307			Moth, Southern pine sphinx	Lapara coniferarum
100287			Moth, spiny oakworm	Anisota stigma
100317			Moth, Virginia-creeper sphinx	Darapsa myron
100300			Moth, waved shinx	Ceratomia undulosa
100294			Moth, whitelined sphinx	Hyles lineata
100193			Roadside-skipper, common	Amblyscirtes vialis
110230			Tick, American dog	Dermacentor variabilis
110232			Tick, brown dog	Rhipicephalus sanguineus
110228			Tick, lone star	Amblyomma americanum
110231			Tick, rabbit	Haemaphysalis leporispalustris
110229			Tick, winter	Dermacentor albipictus

*FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FP=Federal Proposed; FC=Federal Candidate; CC=Collection Concern

**I=VA Wildlife Action Plan - Tier I - Critical Conservation Need;
II=VA Wildlife Action Plan - Tier II - Very High Conservation Need;
III=VA Wildlife Action Plan - Tier III - High Conservation Need;
IV=VA Wildlife Action Plan - Tier IV - Moderate Conservation Need
Virginia Widlife Action Plan Conservation Opportunity Ranking:
a - On the ground management strategies/actions exist and can be feasibly implemented.;
b - On the ground actions or research needs have been identified but cannot feasibly be implemented at this time.;
c - No on the ground actions or research needs have been identified or all identified conservation opportunities have been exhausted.

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U.S. Department
of Transportation

**Federal Railroad
Administration**

1200 New Jersey Avenue, SE
Washington, DC 20590

September 3, 2019

Jennifer Anderson
NOAA'S National Marine Fisheries Service
Protected Resources Division
55 Great Republic Drive
Gloucester, MA 01930

**Re: ESA Concurrence for Atlantic and Shortnose Sturgeon
Long Bridge Project
Arlington County, VA; District of Columbia**

Dear Ms. Anderson:

This letter updates the Federal Railroad Administration's (FRA's) previous request for Endangered Species Act (ESA) concurrence from the National Marine Fisheries Service (NMFS) for the Long Bridge Project (the Project) in Arlington County, Virginia and the District of Columbia (**Attachment 1 – Vicinity Map**). The NMFS's comments on the FRA's original request dated July 9, 2019 are addressed in this letter. The effects analysis is expanded and the critical habitat is clarified in accordance with information provided by the NMFS. Also, additional project-specific details are provided.

The biological assessment was completed based on information contained in your January 2, 2018 project review email (**Attachment 2**) referencing the potential presence of endangered Atlantic sturgeon (Acipenser oxyrinchus oxyrinchus) and endangered shortnose sturgeon (A. brevirostrum) within the Action Area. Shortnose sturgeon were protected in accordance with Section 1(c) of the Endangered Species Preservation Act of October 15, 1966 (80 Stat. 926: 16 U.S.C. 668aa(c)). Five distinct population segments (DPS) of Atlantic sturgeon were listed by Final Rule dated April 6, 2012 under 16 U.S.C. 1531-1543 (50 CFR 223 and 224). We have made the determination that the proposed activity may affect, but is not likely to adversely affect, the five DPS of Atlantic or shortnose sturgeon. We have also made the determination that the action may affect, but not adversely affect, Atlantic sturgeon critical habitat established by Final Rule dated September 18, 2017 (50 CFR 226). Our supporting analysis is provided below.

Proposed Project

The Preferred Alternative for the Project consists of constructing a new two-track railroad bridge across the Potomac River, upstream of the existing Long Bridge. The existing two-track bridge is owned, operated, and maintained by CSX Transportation (CSXT). The existing bridge would be retained and remain in use. The two bridges combined would provide four-track capacity across the river. The existing

bridge serves CSXT freight trains, as well as passenger trains for Virginia Railway Express (VRE) and Amtrak. The bridge is composed of 22 approach spans with a double-span swing span over the channel. The total length of the bridge is 2,529 feet between abutments.

The proposed bridge would be essentially identical to the existing bridge in size and type. The upstream bridge would run parallel to the existing Long Bridge and the existing WMATA Yellow Line Bridge, between the two existing structures. Over the navigation channels, the proposed bridge would be a fixed span, with no ability to move or open for marine traffic. This fixed span condition would be similar to the adjacent bridges. The new bridge would also mimic the existing bridge in the placement of 22 in-water support piers that would be in line with the piers of the existing railroad bridge.

To mitigate for potential project-related impacts to properties under Section 4(f) of the United States Department of Transportation Act of 1966, the Federal Railroad Administration considered bike-pedestrian crossing options to connect Long Bridge Park, the Mount Vernon Trail, and East Potomac Park. A standalone bike-pedestrian bridge running parallel and just upstream of the new railroad bridge is proposed. This new bike-pedestrian bridge would also have 22 piers in line with the railroad bridge piers.

The attached Structures Study Report (**Attachment 3**) and Conceptual Engineering Plans (**Attachment 4**) provide additional details.

Project Purpose

The purpose of the proposed project is to provide additional long-term railroad capacity and to improve the reliability of railroad service through the Long Bridge Corridor. Currently, there is insufficient capacity, resiliency, and redundancy to accommodate the projected demand in future railroad services. The Project is needed to address these issues and to ensure the Long Bridge Corridor continues to serve as a critical link connecting the local, regional, and national transportation network.

Project Schedule

The project setup date is scheduled for April 4, 2022. Construction would proceed shortly after awarding of the contract. It is anticipated that the in-water construction would take two (2) years and overall project completion would take five (5) years. Construction for the new bike-pedestrian bridge would begin immediately following completion of the railroad construction and would take an additional two (2) years, with the majority of construction being in-water. The total combined duration for the railroad construction and bike-pedestrian bridge construction would be seven (7) years.

Applicable Time of Year Restrictions

No specific time-of-year restrictions on in-stream construction work to avoid potential impacts to anadromous fish species, including sturgeon, were identified during coordination with the appropriate regulatory agencies. However, the Protected Resources Division of the National Oceanic and Atmospheric Administration (NOAA) Fisheries, Greater Atlantic Regional Fisheries Office indicated in an email dated January 2, 2019 that if the project will result in habitat modifications or temporarily render the Potomac River unsuitable for sturgeon, time of year restrictions for in-water work should be implemented. While no specific time of year restriction dates were provided in the NOAA Fisheries correspondence, the most likely period when sturgeon would pass through the Action Area would be during spawning runs of these species. Additional coordination with the District Department of Energy

and Environment (DOEE) and NMFS will occur in later phases of design to confirm potential construction restrictions.

Description of the Action Area

The Action Area is defined as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action" (50 CFR 402.02). The National Oceanic and Atmospheric Administration (NOAA) Fisheries S*ection 7 Program Technical Guidance* (NOAA 2016) provides technical assistance for determining the project Action Area. For this project, the Action Area includes approximately 2,000 feet upstream and downstream to address the potential for scour and sediment deposition to sturgeon habitat (**Attachment 5**). The Action Area also captures vessel traffic to ferry workers and supplies to and from the work site, as well as spud barges to be used during new bridge construction. These limits also cover the removal of excavated bottom sediments from cofferdams and drilled shafts during bridge construction. All removed sediments would be taken to an approved upland disposal site. The Action Area also extends approximately 500 feet around the upland limits of the project (**Attachment 5**).

Habitat within the Action Area

The navigation channel is approximately 11 feet in depth at the shallowest point and reaches depths of up to 23 feet (**Attachment 6** - Figure 2.1 in Appendix D of the Long Bridge Project EIS). The bottom substrate grades up from the channel to both shorelines where water depths are approximately three feet. Submerged aquatic vegetation (SAV) beds are also present within the Action Area in Roaches Run and two SAV beds are present in the Potomac River. Tidal wetland habitat is sparse within the Action Area. Small areas of tidal emergent, shrub-scrub, and forested wetlands were mapped in the southern portion of the Action Area.

No existing data on the benthic macroinvertebrate community within the Action Area were available. The nearest monitoring site is in the Potomac River approximately 7.4 miles downstream of the Action Area. This tidal station was sampled annually for the last 10 years and was rated as Degraded or Severely Degraded (Llanso et al. 2015). It is likely that the Action Area supports a benthic macroinvertebrate community and opportunistic feeding and foraging by sturgeon may take place in the area. It is also likely that the existing bridge piers support a small macroinvertebrate community.

Water chemistry information indicate that dissolved oxygen (DO) remains generally above 5 mg/L, water temperatures are below 30°C, and salinity ranges from 0 to 0.5 parts per thousand (DOEE 2016). These fall within designated Critical Habitat for Atlantic sturgeon.

NMFS Listed Species in the Action Area

Shortnose Sturgeon

Based on habitat conditions, including water depths, substrates, and salinities within the Action Area, immature and adult shortnose sturgeon may be present during most months of the year. However, within the freshwater tidal conditions present in the Project Action Area, it is most likely that reproductive adults would be present during winter and on spring spawning runs. Shortnose sturgeon typically spawn within channel habitats with firm bottom substrates (e.g., gravel, rubble, boulders) at the farthest upstream location to which they have access (NMFS 1998). Therefore, spawning may occur within rocky substrate below Little Falls upstream of the Action Area, requiring reproductive adults to pass through the Action

Area to access suitable spawning habitat. Overwintering sturgeon typically occur within deeper river channels within freshwater tidal rivers or near the freshwater/saltwater interface (Dadswell 1979, O'Herron et al. 1993, Bain 1997, Kynard et al. 2009). As noted above, the Action Area lies within the freshwater tidal portion of the Potomac River, and the navigation channel within the river is up to 23 feet deep, providing suitable overwintering habitat for shortnose sturgeon. Mud substrate foraging habitat for shortnose sturgeon also exists within the Action Area. Shortnose sturgeon are considered to be benthic omnivores, feeding on insects, crustaceans, and mollusks (NMFS 1998). Therefore, it is possible that shortnose sturgeon of all ages could be present within suitable foraging habitat within the Action Area during much of the year.

In all life-history phases, shortnose sturgeon in the Chesapeake Bay/Delaware River populations occur at least part of the year in freshwater reaches or the freshwater/saltwater interface of tidal rivers (Dadswell et al. 1984, Kynard 1997, NMFS 1998, Brundage & O'Herron 2009). However, data collected between 1996 and 2012, as part of a sturgeon tagging program initiated by the Maryland Fishery Resources Office (MFRO) and U.S. Fish and Wildlife Service (USFWS), included adult shortnose sturgeon captures in the more saline lower Chesapeake Bay and mouth of the Potomac River. Within the Potomac River, two telemetry-tagged adult female shortnose sturgeon, tracked between 2005 and 2007, remained primarily within a freshwater/saltwater reach of the river for foraging and winter habitat (Kynard et al. 2009). Recently, few captures of shortnose sturgeon have occurred within the Potomac River. In a Potomac River shortnose sturgeon netting study initiated in 2004 by the NPS, USGS, and the USFWS, one adult female shortnose sturgeon was captured and fitted with a radio transmitter in 2005 just above Indian Head, MD, off of Craney Island (Kynard et al. 2006). On April 10, 2006, it was tracked to Chain Bridge below Little Falls, having passed through the Action Area (Breece 2006). Other shortnose sturgeon were radio tagged and tracked during the project, but none were recorded within or near the Action Area. Therefore, even though suitable habitat exists within the Action Area for foraging, overwintering, and migration, evidence suggests that shortnose sturgeon would primarily be present during winter and early spring.

Atlantic Sturgeon

The Chesapeake Bay DPS includes all anadromous Atlantic sturgeon that are spawned in the watersheds that drain into the Chesapeake Bay and into coastal waters from the Delaware - Maryland border on Fenwick Island to Cape Henry, VA; Susquehanna, Potomac, James, York, Rappahannock, and Nottoway Rivers (ASSRT 2007). However, adult and sub adult individuals from any of the five DPSs may be present within the action area. The most likely life stages of Atlantic sturgeon to be present within the project Action Area would be reproductive adults migrating through the area to reach suitable spawning habitat at Little Falls and possibly early juvenile fish migrating between spawning areas and the freshwater/saltwater interface in the lower Potomac River. However, subadult Atlantic sturgeon could possibly be present within the Action Area as well.

Pre-spawning adults begin migrations in April in the Chesapeake Bay (Smith 1985, Smith & Clugston 1997). Therefore, reproductive adults would most likely be moving through the Action Area within the deeper navigation channel in April and May. Following spawning, adults would move back downriver to overwintering areas. In winter, Atlantic sturgeon typically occur in deeper waters in the offshore marine environment (NMFS 2007). Numerous captures of adult wild Atlantic sturgeon have occurred within the Potomac River (Mangold 2007, Mangold personal communication). However, no captures of Atlantic Sturgeon have occurred upstream of Indian Head, which is more than 20 river miles downstream from the Long Bridge Study Area (USFWS 2013). Only seven hatchery-reared Atlantic sturgeon were caught

within the Potomac River, all downriver of Cobb Island except for one capture off Colonial Beach and one near the mouth of Mattawoman Creek (Mangold 2007). Atlantic sturgeon are bottom feeders, consuming a wide variety of benthic prey. Prey items reported in the diet of Atlantic sturgeon include crustaceans, mollusks, amphipods, polychaete and oligochaete worms, insect larva, fish, and gastropods (NMFS 2007, Guilbard et al. 2007). Foraging habitat of juvenile and subadult Atlantic sturgeon is typically within the freshwater/saltwater interface of tidal rivers (NMFS 2007). So, while foraging habitat occurs within the Action Area, adults would only potentially be using it during migrations to and from potential spawning habitat upstream of the Action Area and early juvenile sturgeon moving out of the freshwater tidal reach into the upper Bay estuary.

On August 17, 2017, NOAA Fisheries designated critical habitat for the five listed distinct population segments (DPSs) of Atlantic sturgeon found in U.S. waters (Gulf of Maine, New York Bight, and Chesapeake Bay DPSs: 81 FR 35701; Carolina and South Atlantic DPSs: 81 FR 36078). The action proposed for this project would occur in an area designated as critical habitat for the Atlantic sturgeon Chesapeake Bay DPS.

The critical habitat rules identified four essential physical and biological features necessary for the conservation of the species. The term "physical or biological features" is defined as the features that support the life-history needs of the species, including, but not limited to, water characteristics, soil type, geological features, sites, prey, vegetation, symbiotic species or other features. The four essential physical and biological features are:

1. Hard bottom substrate (e.g., rock, cobble, gravel, limestone, boulder, etc.) in low salinity waters (i.e., 0.0 to 0.5 parts per thousand range) for settlement of fertilized eggs, refuge, growth, and development of early life stages;
2. Aquatic habitat with a gradual downstream salinity gradient of 0.5 to 30 parts per thousand and soft substrate (e.g., sand, mud) downstream of spawning sites for juvenile foraging and physiological development;
3. Water of appropriate depth and absent physical barriers to passage (e.g., locks, dams, reservoirs, gear, etc.) between the river mouth and spawning sites necessary to support: (1) Unimpeded movement of adults to and from spawning sites; (2) seasonal and physiologically dependent movement of juvenile Atlantic sturgeon to appropriate salinity zones within the river estuary; and (3) staging, resting, or holding of subadults or spawning condition adults. Water depths in main river channels must also be deep enough (e.g., ≥1.2 m) to ensure continuous flow in the main channel at all times when any sturgeon life stage would be in the river; and
4. Water, especially in the bottom meter of the water column, with the temperature, salinity, and oxygen values that, combined, support: (1) spawning; (2) annual and interannual adult, subadult, larval, and juvenile survival; and (3) larval, juvenile, and subadult growth, development, and recruitment (e.g., 13°C to 26°C for spawning habitat and no more than 30°C for juvenile rearing habitat, and 6 mg/L dissolved oxygen for juvenile rearing habitat).

Foraging habitat and water quality attributes appear suitable for some life stages of Atlantic sturgeon, and spawning habitat occurs upstream of the Action Area. However, as noted above, Atlantic sturgeon are unlikely to be present within the Action Area based on historic occurrences within the Potomac River.

Effects Determination

Habitat Modification

Direct Effects - The proposed bridge replacement project would result in the permanent disturbance of bottom sediments for the installation of 22 new bridge piers within the Potomac River. Each finished bridge pier would be approximately 8 feet by 42 feet in size, resulting in a permanent displacement of bottom substrate of approximately 7,392 square feet. The potential bike-pedestrian bridge would also have 22 in-water piers that would be approximately 6 feet in diameter. This would add another approximately 622 square feet of permanent impact to suitable sturgeon foraging habitat. Much of this displaced bottom substrate is suitable foraging habitat for shortnose and Atlantic sturgeon. Therefore, this would represent a worse case impact of approximately 8,014 square feet (0.18 acre) of suitable sturgeon foraging habitat. The Potomac River in this location is over 2,200 feet wide and the Action Area contains over 200 acres of suitable sturgeon foraging habitat. Therefore, the suitable foraging area permanently removed would be approximately 0.09 percent of the total Action Area, which is a relatively small area within the river, and plenty of foraging habitat would still be available to sturgeon. Therefore, the permanent impacts to sturgeon habitat would be localized, too small to be meaningfully measured or detected, and would be considered insignificant.

The project would also involve the temporary installation of finger piers and a spud barge during construction. To install the shafts that would anchor each pier to the river bottom, the area surrounding the pier locations would be dewatered. The construction of each pier would involve installation of sheet piles to create enclosed cofferdams. Because bridge piers would be constructed in dry conditions, the installation of the cofferdams and subsequent removal of sediment within the cofferdam would result in mortality to benthic invertebrates, and potentially fish, as well as temporary habitat loss while dewatered. Temporary habitat loss resulting from the construction would total 31,358 square feet in the Potomac River. The dewatering would also result in a localized loss of prey for sturgeon. Following construction and removal of cofferdams and temporary piers, the bottom substrate would be expected to recover to pre-construction conditions. Therefore, the potential effects to sturgeon habitat would be localized, short term, and discountable.

The Action Area mostly lacks vegetated wetlands, except for three tidal wetlands in the southern portion associated with Roaches Run Waterfowl Sanctuary. SAV beds are also present within the Action Area in Roaches Run and two SAV beds are present in the Potomac River. The SAV beds within the Potomac River total approximately 12 acres. There are no anticipated permanent or temporary impacts to wetlands from the construction. However, permanent and temporary impacts to SAV would occur from the construction of the new bridge. Permanent impacts to SAV totaling 1,750 square feet would occur from the placement of a new pier along the northern shoreline of the Potomac River. Additional temporary impacts to approximately 10,820 square feet of SAV would be required for installation of the finger piers along the northern shoreline of the river just upstream from Long Bridge. Following removal of the finger piers post construction, the substrate would be expected to once again become suitable for SAV colonization. The amount of permanent impact to SAV would be only 0.3 percent relative to the quantity of SAV within the Action Area and, therefore, would be insignificant.

Although there would be permanent loss of some SAV and benthic habitat and organisms from the proposed bridge project, this area (0.2 acre) is small relative to the size of the Action Area within the

Potomac River (>200 acres). Any sturgeon opportunistically foraging in the Action Area would reasonably be able to move to other areas within the same reach of the Potomac River where benthic organisms have not been removed or shaded. Also, once constructed, the 22 new in-water piers to support the new rail line and 22 smaller piers to support the bike-pedestrian bridge would provide aquatic invertebrate attachment sites, generating new foraging habitat for sturgeon. Therefore, effects on the availability of prey resources would be localized, too small to be meaningfully measured or detected, and may even be beneficial. The effects are therefore, insignificant.

Indirect Effects – Potential indirect effects to sturgeon habitat could occur from the displacement of sediments upstream or downstream from the immediate construction area. The disturbance of sediments for pile driving activities for bridge piers typically results in total suspended sediment concentrations of approximately 5.0 to 10.0 mg/L above background levels within approximately 300 feet of the pile driving location (FHWA 2012). Therefore, only minor sediment releases would occur during pile driving. Additionally, turbidity curtains would be used around all pile driving activities to further reduce any potential sediment releases from the construction site. Permanent indirect impacts could occur to sturgeon foraging habitat from potential scour around the new bridge piers, though this would likely be very minor and localized. Therefore, the alteration of sturgeon foraging habitat would be localized and insignificant.

In addition to minor permanent and temporary SAV impacts, the new bridge span would result in potential shading impacts to SAV totaling approximately 1,900 square feet. The shading from the additional two-track bridge spans may also reduce the potential spread of adjacent beds. Shading effects of the new bridge may reduce photosynthesis in the area, which forms the basis of benthic food chains, and may reduce the forage base in the shaded area. However, the relative area of effect is again small compared to the overall area of SAV and other foraging habitat in the Action Area. Therefore, the potential effects to sturgeon would be localized and insignificant.

Suspended Sediment

Pile driving and removal have the potential to re-suspend bottom sediments in the vicinity of the construction activity. Resuspension of sediments can have a range of impacts to fish depending on the species and life stages. Lethal levels of total suspended solids (TSS) vary widely among species; one study, which included a representative of tolerant and sensitive species (white perch (*Morone americana*), spot (*Leiostomus xanthurus*), silversides (Atherinidae), bay anchovies (*Anchoa mitchilli*) and menhaden (*Brevoortia* spp.)) found that the tolerance of adult fish for suspended solids ranged from 580 mg/L to 24,500 mg/L (Sherk et al. 1975; NOAA Fisheries 2003). Common impacts to fishes can be classified as biological/physiological or behavioral. Among the biological/physiological impacts are: abrasion of gill membranes resulting in a reduction in the ability to absorb oxygen, decrease in dissolved oxygen concentrations in the surrounding waters and effects on growth rate. Behavioral responses by fishes to increased suspended sediment concentrations include impairment of feeding, impaired ability to locate predators and reduced breeding activity. Increased TSS can inhibit migratory movements as well. Fish, however, are mobile and generally avoid unsuitable conditions in the environment, such as large increases in suspended sediment and noise (Clarke and Wilber 2000). The effects of habitat avoidance are not expected to have widespread consequences for the ecology of the fish community based on their ability to move from the impacted area.

Burton (1993) indicated that concentrations of suspended solids can reach thousands of milligrams per liter before an acute reaction is observed. Lethal effects were demonstrated between concentrations of 580 mg/L for sensitive species and 700,000 mg/L for more tolerant species. Lethal effects were not observed until suspended sediment concentrations exceeded 750 mg/L, at which point 100 percent mortality was observed for bluefish, Atlantic menhaden and white perch. More tolerant species exhibited 50 percent mortality at concentrations above 2,500 mg/L, including silversides (2,500 mg/L), spot (20,340 mg/L), cunner (28,000 mg/L) and mummichog (39,000 mg/L).

While there are no studies on the effects of resuspended sediments on either the shortnose or Atlantic sturgeon, they are routinely encountered in turbid waters (Dadswell et al. 1984) and as such are thought to be highly tolerant of suspended sediment at the levels that are generated by marine construction activities (NOAA Fisheries 2011a). In fact, sturgeon feed on invertebrates that occur both on and within the bottom substrate, and have evolved to tolerate high concentrations of suspended sediment.

The act of feeding by sturgeon itself may lead to substantial resuspension of sediments. In a study of Atlantic sturgeon feeding patterns in the Bay of Fundy, sturgeon feeding activity has been linked to significant quantities of clay and silt becoming redistributed (Pearson et al. 2007). Within the area studied, these researchers estimated as much as 1,220 m^3 of sediment was resuspended during the six weeks during which peak sturgeon feeding activity occurred. NOAA Fisheries has also concluded that the effect of suspended sediment concentrations in the range of 10 mg/L to 350 mg/L from dredging, pile driving and other construction activities for a marina project in the Haverstraw Bay region would be insignificant to shortnose sturgeon (NOAA Fisheries 2011b). Citing the literature, concentrations of TSS that are expected to show adverse impacts to fish would be 580 mg/L for the most sensitive species, with 1,000 mg/L being more typical.

Currently, there are little data on the effect of turbidity and suspended sediments on the sturgeon. Sedimentation from construction activities is most likely to affect sturgeon by increasing turbidity in the action area and inhibiting normal behaviors such as migration, resting, and foraging. Dissolved oxygen (DO) may be reduced in areas where increased turbidity occurs. Because mobile juveniles, sub adults and adults will be in the action area, temporary effects to DO will not create adverse effects because the fish can move out of zones where increased turbidity is temporarily lowering DO.

To reduce turbidity from potential sediment releases during construction of the new bridge piers, work would be conducted behind cofferdams. This would allow pile driving of the pier supports in the dry avoiding releases of sediment that can occur if pile driving were to occur in-water. Installation of the sheet piles for the cofferdam can create minor sediment releases, but these will be installed using a vibratory hammer, which minimizes the disturbance to the bottom sediments. Likewise, the 22 six-foot diameter steel shafts that will support the bike-pedestrian bridge will be installed in the wet using a vibratory hammer. This will also result in minor sediment releases into the river. The total suspended sediment levels expected for pile driving (5.0 to 10.0 mg/L) are below those shown to have adverse effect on fish (580.0 mg/L for the most sensitive species, with 1,000.0 mg/L more typical; see summary of scientific literature in Burton 1993) and benthic communities (390.0 mg/L (EPA 1986)). Therefore, we expect any sturgeon encountering an area of increased turbidity to either swim through it or around it, as the area is sufficiently wide, without experiencing adverse effects. Also, as noted above, turbidity curtains would be used during this installation to contain any sediment releases. The expected sediment releases from these activities, therefore, are anticipated to be low, localized, and would occur over a short time frame necessary to construct the cofferdams and install the temporary piers. Consequently, the effects on

sturgeon of suspended sediment from the Long Bridge and bike-pedestrian bridge construction would be extremely unlikely and, therefore, discountable.

Noise

Pile driving can impact fish as a result of pressure waves and sound waves. Pressure waves can kill or seriously injure fish by rupturing their swim bladders. The acoustic effects of pile driving can affect the hearing, swim bladders, and tissue of fish. In addition, pressure and sound waves can cause behavioral effects through displacement of individuals and avoidance from the vicinity of pile driving activities.

The bridge will be composed of 22 approach spans, with substructures comprised of reinforced concrete piers in the river and abutments on shore at the north and south ends of the bridge. To reduce turbidity from potential sediment releases during construction of the new bridge piers, the contractor would perform work behind cofferdams. Installation of the sheet piles for the cofferdam is typically installed using a vibratory hammer, which has lower sound levels than an impact hammer. The cofferdams would allow pile driving of the pier supports in the dry, minimizing the noise impacts caused driving those piles. Construction of the 22 6-foot-diameter steel shafts for the bike-pedestrian bridge piers would be done in the wet. Construction would also involve installing temporary finger piers and a spud barge in the wet. The spud barge would utilize two, 36-inch diameter spuds that would be dropped from a crane to penetrate the bottom and would not necessitate the use of a hammer. The finger piers would be built with three piles per support. The south side of the Action Area would extend approximately 100 feet out and require 18 24-inch diameter steel piles and the north side would extend approximately 300 feet out, requiring 60 24-inch-diameter steel piles. These piles would likely be installed using an impact hammer. The depth of pile driving will be dependent upon the depth of the water and the depth to pile refusal. The duration of driving of each pile would also vary with these variables. To mitigate the noise effects of pile driving, the project would start pile driving with several light taps to allow mobile fish to move away from the area. This soft start technique would involve a low-energy start-up (e.g., hammer operated at 50% capacity) over a period of 15 to 40 minutes to allow fish to leave the area. The use of cushion blocks would also be explored to further reduce noise and pressure wave effects.

Project-specific pile driving information, estimated sound levels, and distances to sturgeon injury and behavioral effects are presented in **Tables 1 and 2**. This information was obtained from the NMFS Greater Atlantic Regional Fisheries Office (GARFO) acoustics tool for proposed 24-inch steel sheets for the cofferdam construction and 24-inch steel piles for the temporary finger piers. For the bike-pedestrian bridge piers, two representative cast in steel shell sizes were used, as the GARFO acoustic tool did not show a 72-inch pipe example. The examples used are for a slightly smaller and larger steel pipe for comparison.

Exposure to underwater noise levels of 206 dBPeak and 150 dBsSEL can result in injury to sturgeon. These noise levels refer to the maximum instantaneous sound pressure in water and the single strike sound exposure level expressed in decibels. These injurious pressure levels are not expected to harm sturgeon during installation of the cofferdams for the main railroad bridge piers because the sheets will be installed using a vibratory hammer. Injurious pressure levels are also not expected during installation of the bike-pedestrian bridge piers or the temporary finger pier piles because of the initial use of the soft start pile driving technique, described above, that should warn sturgeon to move away from this zone before the higher levels are reached during full impact pile driving. Also, if during the drilling of test piles, it is determined that sound or pressure waves greatly exceed acceptable levels, cushion blocks would be used to further reduce potential fish impacts.

Table 1. Proxy-based estimates for underwater noise.

Type of Pile	Hammer Type	Estimated Peak Noise Level (dB_{Peak})	Estimated Pressure Level (dB_{RMS})	Estimated Single Strike Sound Exposure Level (dB_{sSEL})
24" AZ Steel Sheet	Vibratory	182	165	165
24" Steel Pipe	Impact	203	189	178
60" CISS Steel Pipe	Cushioned Impact	199	184	174
96" CISS Steel Pipe	Cushioned Impact	209	194	184

Table 2. Estimated distances to sturgeon injury and behavioral thresholds.

Type of Pile	Hammer Type	Distance (ft) to 206dB_{Peak} (injury)	Distance (ft) to sSEL of 150 dB (surrogate for 187 dBcSEL injury)	Distance (ft) to Behavioral Disturbance Threshold (150 dB_{RMS})
24" AZ Steel Sheet	Vibratory	NA	40.0	40.0
24" Steel Pipe	Impact	NA	103.3	140.0
60" CISS Steel Pipe	Cushioned Impact	NA	58.0	78.0
96" CISS Steel Pipe	Cushioned Impact	16.0	78.0	98.0

In addition to the sound exposure criteria related to the energy received from a single pile strike, the potential for injury exists for multiple exposures to noise over a period of time. This cumulative sound exposure is accounted for by the cSEL threshold. It represents the cumulative sound energy over a specific time, such as the length of time to install a pile. When it is not possible to accurately calculate the distance to the 187 dB_{cSEL}, the distance to the 150 dB_{sSEL} is calculated. This 150 dB_{sSEL} is the threshold at which sturgeon would suffer injury from a single strike sound wave exposure. Thus, to avoid injury to sturgeon, the maximum distance must be calculated to where the sound energy is attenuated to 150 dB_{sSEL}. For this project, the distance to the 150 dB_{sSEL} isopleth ranges from 230 to 339 feet (depending on the pile type). Therefore, to be exposed to potentially injurious levels of noise during installation of the piles, a sturgeon would need to be within 230 to 339 feet of the pile being driven to be exposed to this noise for any prolonged time period. This is extremely unlikely to occur as sturgeon would be expected to modify their behavior and move away from the area upon exposure to underwater noise levels of 150 dB_{RMS} (the sound pressure threshold for causing behavioral effects to sturgeon). Given that sturgeon would be exposed to levels of noise that cause behavioral modification (at 295 to 459 ft, depending on the

pile) before being exposed to injurious levels of noise (at 230 to 339 ft), sturgeon would be expected to move away from the sound source and never be exposed to potentially injurious levels of underwater noise. If any sturgeon are within 339 feet of the pile at the time pile driving commences, injury to sturgeon is still not expected to occur. This is because the cSEL injury threshold is cumulative (requiring prolonged exposure to the noise at that level). Sturgeon would be expected to leave the area in a matter of seconds once pile driving commences. The initiation of daily pile driving with a soft start technique referenced above should also give any sturgeon in the area time to move out of the range of any injurious sound waves. Therefore, no injury to sturgeon is anticipated.

As noted above, behavioral effects, such as avoidance or disruption of foraging activities, may occur to sturgeon exposed to noise above 150 dB_{RMS}. Noise levels are expected to be below 150 d_{BRMS} at distances beyond approximately 295 to 459 feet from the pile being installed (depending on the pile type). Should sturgeon move into the Action Area where the 150 dB_{RMS} isopleth extends, as described above, it is likely that sturgeon would modify their behavior to immediately move away from the ensonified area and out of the project Action Area. If any movements away from the ensonified area do occur, it is extremely unlikely that these movements would affect essential sturgeon behaviors (e.g., spawning, foraging, resting, and migration), as the area is not a spawning or overwintering area, and the Potomac River is sufficiently large to allow sturgeon to avoid the ensonified area while continuing to forage and migrate. Given that sturgeon would only need to move short distances to avoid disturbing levels of noise, any effects cannot be meaningfully measured or detected. Therefore, effects are localized and insignificant.

Increased Vessel Traffic

During project construction, a small incremental increase in vessel traffic in the Potomac River would occur (i.e., barges, support vessels, etc.). The approximate size and type of vessel (i.e., deep draft, cargo, barge etc.), travel routes, and number of trips is currently unknown. Sturgeon may be injured or killed as a result of being struck by boat hulls or by propellers. The factors relevant to determining the risk to these species from vessel strikes vary, but may be related to the size and speed of the vessels, navigational clearance (i.e., depth of water and draft of the vessel) in the area where the vessel is operating, and the behavior of individuals in the area (e.g., foraging, migrating, overwintering, etc.). There is a posted speed limit within the Potomac River upstream of the Arlington Memorial Bridge of 6 statute miles per hour. This lies upstream of the project Action Area; however, only recreation and a few commercial boats are able to navigate beneath the 18-foot vertical clearance of the existing Long Bridge. Therefore, the majority of vessel traffic within the Action Area is expected to be slow moving, minimizing potential collisions with sturgeon.

We have considered the likelihood that a temporary increase in vessel traffic associated with the in-water construction activities would increase the risk of interactions between listed species and vessels in the Action Area, in addition to the baseline conditions. The use of a barge and tugs would create a small, localized, temporary increase in related vessel traffic. Upon completion of the proposed action, the barge and tug traffic would be replaced by recreational vessel traffic. Given the existing volume of recreational vessel traffic in the immediate area and the total number of vessels operating in the Potomac River, the anticipated increase in traffic associated with this project is too small to be meaningfully measured or detected. Based on this information, we believe the effects of vessel traffic on sturgeon resulting from the in-water construction and disposal activities are localized and insignificant.

Effects to Proposed Critical Habitat

New bridge piers and bridge abutments would permanently disturb bottom substrate, thus reducing available foraging habitat for adult shortnose or Atlantic sturgeon and disturbing Critical Habitat for Atlantic sturgeon. As noted under Habitat Modification above, 7,392 square feet of bottom substrate would be permanently disturbed by the 22 in-water piers proposed for the new railroad bridge, and 622 square feet would be permanently disturbed by installation of 22 piers for the bike-pedestrian bridge. This would represent 8,014 square feet (0.18 acre) of Atlantic sturgeon Critical Habitat impact as well. This area of permanently removed Critical Habitat foraging area is relatively small in the overall extent of the undisturbed adjacent area of the river (over 200 acres within the Action Area), and sufficient foraging habitat would still be available to sturgeon. Therefore, the permanent impacts to sturgeon and Atlantic sturgeon Critical Habitat would be considered localized and insignificant.

The Potomac River critical habitat unit contains all four of the listed physical features (referred to as physical or biological features (PBF); however, the action area only contains three PBFs: PBF 2, 3, and 4, as PBF 1 is not present because the salinity level present in the action area exceeds that identified in PBF 1 (0-0.5 ppt).

Once critical habitat is designated, section 7(a)(2) of the ESA requires that a federal action not destroy or adversely modify the critical habitat. We have analyzed the potential impacts of the proposed action on this designated critical habitat, inclusive of the three PBFs present in the Potomac River action area that have been deemed essential to the conservation of the species and which may require special management considerations or protections. For each PBF, we identify those activities that may affect the PBF. For each feature that may be affected by the action, we then determine whether any effects to the feature are adverse, insignificant, discountable, or entirely beneficial. In making this determination, we consider the action's potential to affect how each PBF supports Atlantic sturgeon's conservation needs in the action area. Part of this analysis is consideration of whether the action will have effects on the ability of Atlantic sturgeon to access the feature, temporarily or permanently, and consideration of the effect of the action on the action area's ability to develop the feature over time. We have determined that the effects to these PBFs from the proposed action will be insignificant or discountable for the following reasons.

- PBF 1 –
  The Potomac River portion of the action area is characterized by soft sediments in mesohaline waters; therefore, spawning habitat, with hard bottom habitat and salinities between 0 and 0.5 ppt is not present. Based on this information, there will be no adverse effects to PBF 1.

- PBF 2 –
  The project has the potential to impact soft bottom substrates within transitional salinity zones between the river mouth and spawning sites suitable for juvenile foraging and physiological development; however, these impacts are limited to a maximum area of approximately 0.72 acre from the temporary finger pier and another 0.18 acre of permanent impact from the bridge footprint and the bike-pedestrian bridge (piles and shaded area), which represents approximately 0.45 percent of the action area. This is a very small portion of the action area, with only 0.09 percent (overall 0.18-acre bridge and bike-pedestrian bridge footprint including piles and shaded area) being affected permanently. The temporarily affected portion of the action area would be able to recover over time and would still be able to support juvenile foraging and physiological

development of Atlantic sturgeon after the construction of the bridge. Additionally, due to the expanse of the feature within the action area and the tidal nature of the waterbody, the project does not have the potential to impact salinity gradients. Based on the fact that this area is not known to support aggregating sturgeon, and sturgeon are likely to migrate through and opportunistically forage, the effects of a 0.09 percent permanent loss and 0.36 percent temporary impact to ubiquitous soft-sediment habitat on juvenile foraging or physiological development will be so small that they cannot be meaningfully measured, evaluated, or detected. Therefore, any effects on the value of PBF 2 in the action area to the conservation of the species are insignificant.

- PBF 3 –
  The action area will maintain water of appropriate depth and no permanent physical barriers to passage will result from construction activities, nor will any temporary impediments to passage occur (i.e., turbidity, sound, vessel traffic) between the river mouth and spawning sites. Additionally, no shifts in salinity that may represent an impediment to passage, as a result of the project will occur. The action area is located within a tidal portion of the Potomac River with mesohaline waters, thus tidal flux plays a large role in the variability in the system. The construction of a new bridge adjacent to the existing bridge will not permanently alter salinity patterns in the action area.

  The Potomac River at the bridge location is less than 0.5 mile in width with the greatest depths reaching up to 23 feet. The bridge itself is a pile supported structure allowing free passage of fish of all applicable life stages through the action area. The installation of a temporary finger pier could occupy approximately 0.36 percent of the river at the bridge site; however, this would not substantially alter velocities in the remaining width of the river and would allow free passage of fish throughout the remaining open portions of the river. Performance standards for the contract will include water clarity criteria and will ensure that underwater noise generated by construction activities will not prevent movements of the Atlantic sturgeon. Additionally, turbidity related to the project is under levels shown to elicit a response in sturgeon, and all vessel traffic will be temporary and does not represent an impediment to passage. Therefore, it is extremely unlikely that the effects of the action will impede the movement of adults to and from spawning sites or interfere with the seasonal and physiologically dependent movement of juvenile Atlantic sturgeon to appropriate salinity zones within the river estuary or impede the staging, resting, or holding of subadults or spawning condition adults in the present or future. Therefore, the effects to the value of PBF 3 to the conservation of the species are discountable.

- PBF 4 –
  The project does not have the potential to cause permanent impacts to temperature and dissolved oxygen levels within the action area between the river mouth and potential spawning sites. The action also does not have the potential to impact temperature, salinity and dissolved oxygen levels that would affect annual and inter-annual adult, subadult, larval, and juvenile survival; and larval, juvenile, and subadult growth, development, and recruitment. No permanent impacts to salinity, dissolved oxygen, or temperature are anticipated to result from any aspect of the construction of the bridge, or vessel traffic related to the project. Because in-water activities will only have minor effects on overall depth within the action area, the action will not alter temperature regimes as a result of depth changes. Vessel traffic effects are extremely unlikely.

For DO, the only pathway for the proposed dredging to impact levels is through increased suspended sediments and turbidity. Sediments suspended during pile driving may have minor, temporary, localized effects on DO levels, but we expect sediment to settle out of the water column within several hours before effects would impact the value of the feature for any life stage of Atlantic sturgeon. Because the effects of the action to water quality are sporadic and intermittent, the action will not affect the ability of the feature to develop over time. To summarize, we expect the effects of the action on the value of PBF 4 to the conservation of the species to be too small to be meaningfully measured or detected, and are therefore, insignificant.

Based on the analysis of anticipated effects resulting from the proposed action in conjunction with the proposed avoidance and minimization measures to be employed, it is concluded that the action May Affect - Not Likely to Adversely Affect - the designated critical habitat for the Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) within the action area. Numerous best management practices and avoidance and minimization measures, as discussed previously, will be implemented based on the best available information in order to avoid and minimize effects of the project on the species and its critical habitat. Based on the best available scientific information, it is anticipated that the proposed action would result in discountable and insignificant effects to the Atlantic sturgeon critical habitat and that no destruction or adverse modification to its critical habitat will occur.

Conclusions

Based on the analysis, we have determined that the construction of the Long Bridge Project may affect, but is not likely to adversely affect shortnose and Atlantic sturgeon and Atlantic sturgeon Critical Habitat. Additional impact minimization techniques will be investigated as the project moves into more detailed design phases, further reducing potential effects on shortnose and Atlantic sturgeon and Atlantic sturgeon Critical Habitat within the Action Area. We certify that we have used the best scientific and commercial data available to complete this analysis. We request your concurrence with this determination.

Sincerely,

Marlys Osterhues
Chief, Environment and Project Engineering Division
Office of Railroad Policy and Development

Attachments:
Attachment 1 – Vicinity Map
Attachment 2: Project Review Email
Attachment 3: Structures Study Report
Attachment 4: Conceptual Engineering Plans
Attachment 5: RTE Species Action Area
Attachment 6: Potomac River Depths and Navigation Channel

cc: Anna Chamberlain, DDOT

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Attachment 1: Vicinity Map

Attachment 2: Project Review Email

From:	Brian D Hopper - NOAA Federal
To:	Sean Sipple
Cc:	William Barnhill - NOAA Federal
Subject:	ESA technical assistance - Long Bridge Project
Date:	Wednesday, December 27, 2017 11:33:23 AM

Hi Sean

Your email and attached letter dated December 4, 2017, regarding the improvements to the Long Bridge over the Potomac River, requested information about threatened or endangered species within the project study area.

Atlantic and shortnose sturgeon are present in the Potomac River. The New York Bight, Chesapeake Bay, South Atlantic, and Carolina DPSs of Atlantic sturgeon are endangered; the Gulf of Maine DPS is threatened. Individuals originating from any of these DPSs could occur in the project area. Shortnose sturgeon are endangered throughout their range. In addition, the Potomac River has been designated as critical habitat for the Chesapeake Bay DPS of Atlantic sturgeon.

As project plans develop, we recommend you consider the following project best management practices and avoidance / minimization measures for all of the proposed project's activities that might affect sturgeon.

• For activities that increase levels of suspended sediment, consider the use of silt management and / or soil erosion best practices (i.e., silt curtains and / or cofferdams).

• For any impacts to habitat or conditions that temporarily render affected water bodies unsuitable for the above-mentioned species, consider the use of timing restrictions for in-water work.

• For pile driving or other activities that may affect underwater noise levels, consider the use of cushion blocks and other noise attenuating tools to avoid reaching noise levels that will cause injury or behavioral disturbance to sturgeon.

Organism	Injury*	Behavioral Modification
Sturgeon	206 dB re 1 μPa_{Peak} and 187 dB_{cSEL}	150 dB re 1μPa_{RMS}

If DDOT determines that there will be no exposure to listed species or critical habitat from any project activities, and there are no effects to listed species or critical habitat then consultation will not be necessary. For additional guidance on the section 7 consultation process, technical resources and species information, please visit our website – http://www.greateratlantic.fisheries.noaa.gov/protected/section7/.

DDOT will be responsible for determining whether the proposed action may affect listed species or designated critical habitat. If it is determined that the proposed action may affect a listed species or critical habitat, you should submit your determination of effects, along with justification and a request for concurrence to the attention of the Section 7 Coordinator, NMFS, Greater Atlantic Regional Fisheries Office, Protected Resources Division, 55 Great

Republic Drive, Gloucester, MA 01930. After reviewing this information, we would then be able to conduct a consultation under section 7 of the ESA.

Please contact me (410-573-4592 or brian.d.hopper@noaa.gov), should you have any questions regarding these comments. NMFS' Habitat Conservation Division (HCD) is responsible for overseeing issues related to Essential Fish Habitat (EFH) designated under the Magnuson-Stevens Fishery Conservation and Management Act and other NOAA trust resources under the Fish and Wildlife Coordination Act. If you have any questions regarding EFH, please contact Kristy Beard (410-573-4542; Kristy.Beard@noaa.gov).

Regards,
-Brian

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Long Bridge Project

Environmental Impact Statement (EIS)

Long Bridge Structures Study Report

March 8, 2019

District Department of Transportation

U.S. Department of Transportation
Federal Railroad Administration

Long Bridge Project EIS

Long Bridge Structures Study Report

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Appendix

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). The Project consists of achieving four-track capacity over the Potomac River and related railroad infrastructure improvements 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 of Columbia (collectively, the Long Bridge Corridor).

As part of the Project, a new two-track railroad bridge is proposed across the Potomac River, upstream from the existing Long Bridge. The existing two-track bridge is owned, operated, and maintained by CSX Transportation (CSXT). The existing bridge will either remain in use or be replaced on approximately its existing alignment to provide four-track capacity between the two bridges. The bridges will continue to serve CSXT freight trains, as well as commuter and intercity passenger service for Virginia Railway Express (VRE) and Amtrak. Norfolk Southern (NS) has operational rights on the Long Bridge Corridor but currently does not operate freight traffic at this location.

The purpose of this report is to evaluate conceptual design options and provide justification for the proposed new railroad bridge type in support of the EIS. Selection of the recommended bridge type considers factors such as vertical and horizontal clearances; structure geometry; bridge component fabrication, erection, and delivery; constructability; redundancy; accessibility for future maintenance and inspection; and aesthetics. This report does not serve as a Type, Size & Location (TS&L) Report, but is intended to narrow the number of bridge type options for the evaluation of impacts in the EIS and will be used as a foundation for developing a TS&L Report in future project phases.

This report provides background information on the existing bridge configuration, as well as evaluation of the proposed bridge location and configuration for the proposed structure types. The scope of this report is only intended for the bridge crossing the Potomac River and does not evaluate the other bridge structures affected by the overall Project. This report is developed based upon the criteria set forth by the *Long Bridge Project Basis of Design: Technical Criteria for Concept and Preliminary Engineering*.

Two primary structure types are evaluated as part of this study. These include a steel deck girder bridge and a steel through girder bridge. Each of these structure types offer various advantages and disadvantages for the proposed span arrangements, and evaluation of each structure type is provided.

2.0 Background and Existing Conditions

2.1. Bridge History[1]

The existing Long Bridge was initially constructed in 1903 by the Baltimore and Potomac Railroad (which was controlled by the Pennsylvania Railroad) and opened in 1904. The bridge ownership changed several times before CSXT acquired ownership in 1999. The bridge comprised eleven through truss approach spans and a double-span through truss swing span over the channel[2]. Of the eleven approach spans, ten of them were originally in service at the Pennsylvania Railroad's Lower Trenton Bridge across the Delaware River in Trenton, New Jersey. These truss spans were dismantled in New Jersey, moved to the Long Bridge site, and reconstructed on the new bridge piers. It is likely that the Long Bridge span arrangements were dictated by the spans that were available at the time for reuse. Only the swing-span and the northernmost[3] span were constructed new for the Long Bridge in 1903.

In approximately 1942, the through truss approach spans were replaced with through girder spans. For the modified span arrangement, new piers were built typically halfway between each of the original piers, and the span lengths were cut in half. This allowed the bridge to carry heavier loads than the original bridge, as demanded by war efforts during World War II. The new piers were built wider than the original ones to support catenary structures for railroad electrification. The electrification has since been deactivated and the steel catenary structures have been removed. The movable span has not opened since 1969, and it is currently unable to open due to the removal of the operator house in the 1970s[4].

2.2. Existing Bridge Configuration

The existing bridge carries two tracks across the Potomac River, serving CSXT freight trains, as well as passenger trains for VRE and Amtrak. The bridge is composed of twenty-two approach spans with a double-span swing span over the channel. The total length of the bridge is 2,529 feet between abutments.

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[1] More detailed history of the bridge is available through various sources and has been described in previous documents associated with the Long Bridge Project. For this report, only relevant historical information is described.

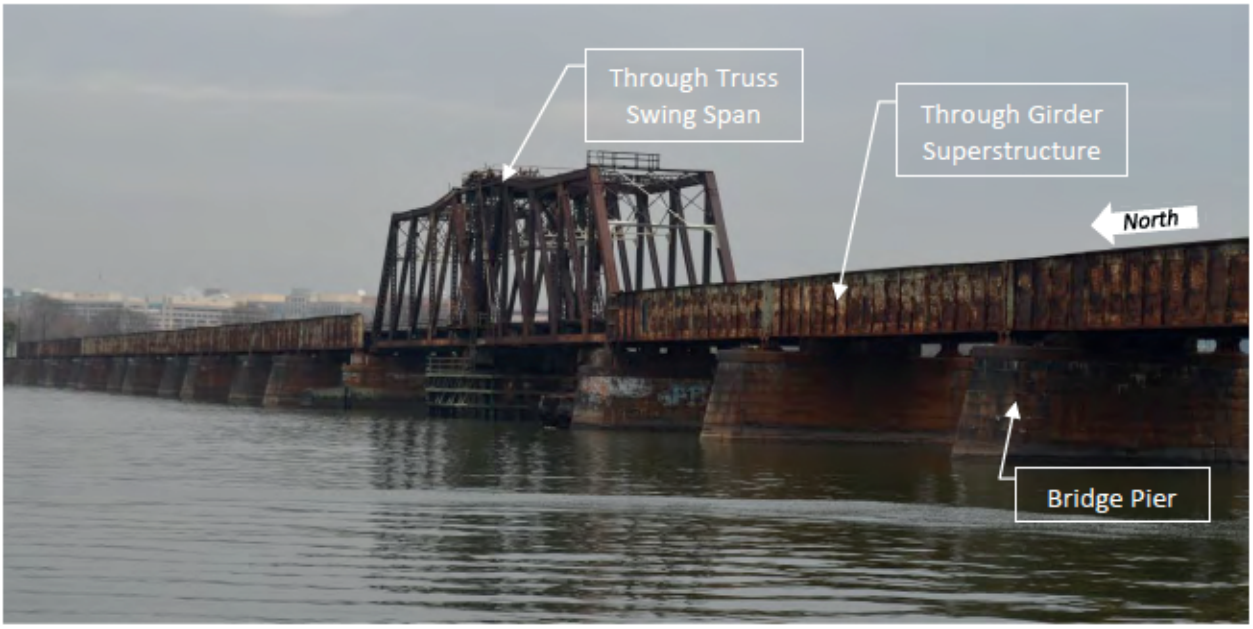
[2] "Channel spans" refer to the two spans that make up the existing swing span, which crosses the navigation channel. "Approach spans" refer to all spans between the south abutment and the swing span and between the north abutment and the swing span. Similar span descriptions are applicable to the proposed structure in this report.

[3] The existing railroad line is referenced as a north-south alignment with RO Interlocking at the southern end of the Project and L'Enfant Interlocking at the northern end. References throughout this study are made to north, south, east, and west in accordance with this track alignment, not cardinal directions.

[4] "Title 33 – Navigation and Navigable Waters: Part 203 – Bridge Regulations: Potomac River at Washington, D.C." 27 Federal Register 7411 (July 28, 1962).

Figure 2-1 | Typical Approach Spans

Figure 2-2 | Swing Span over Channel



The bridge configuration is the same as it has been since the span modifications were made in 1942. The existing bridge span lengths are as follows:

Table 2-1 | Existing Bridge Span Lengths[5]

Spans 1-4	Spans 5-8	Spans 9-10 (Channels)	Spans 11-18	Spans 19-22	Span 23	Span 24
85'-1 ½"	108'-1 ½"	140'-3"	108'-1 ½"	101'-9"	92'-0"	111'-6"

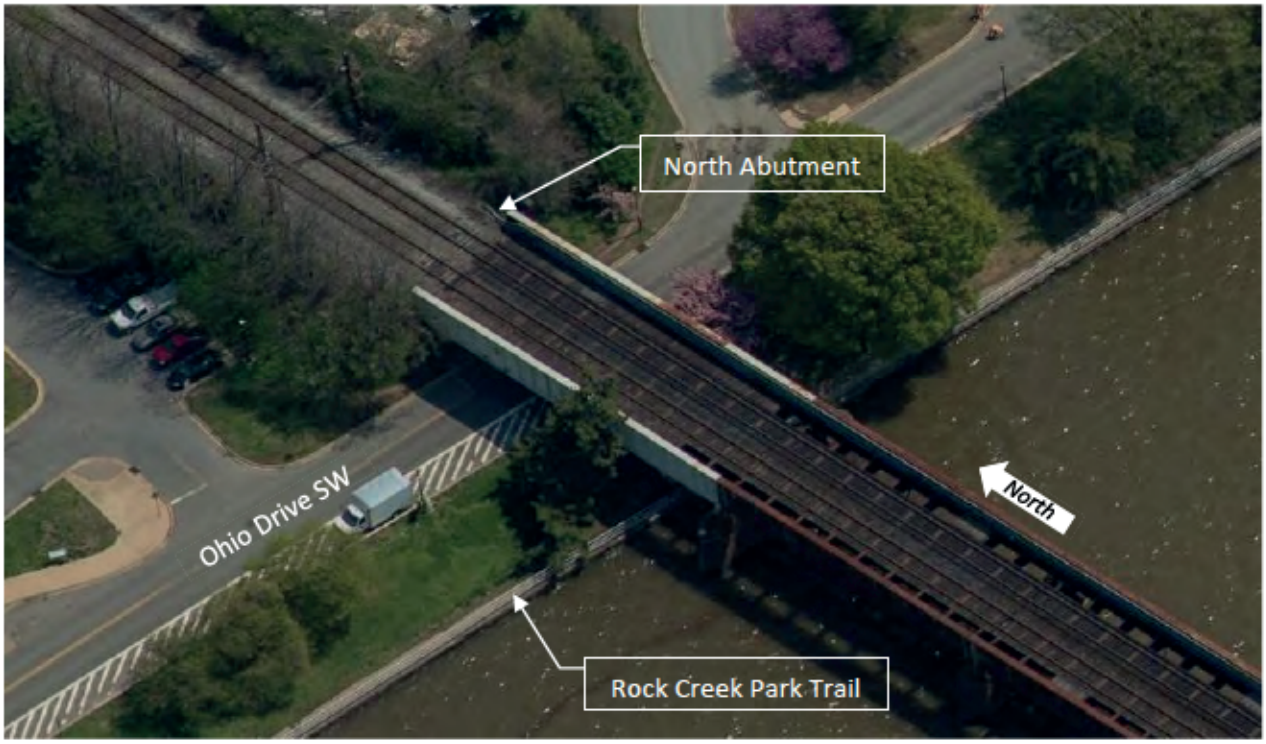
At the south end of the bridge, the Mount Vernon Trail passes beneath Span 1. The south abutment and first pier are located on land in this area. At the north end of the bridge, Ohio Drive SW and the Rock Creek Park Trail pass beneath Span 24. Here, only the north abutment is located on land. Both the north and south abutments, as well as each of the existing land piers are located within the 100-year flood zone[6]. All the remaining twenty-two piers are located in the Potomac River.

Figure 2-3 | South End over Mount Vernon Trail

[5] For this study, the existing spans are numbered in the direction of increasing track stationing, from south to north.

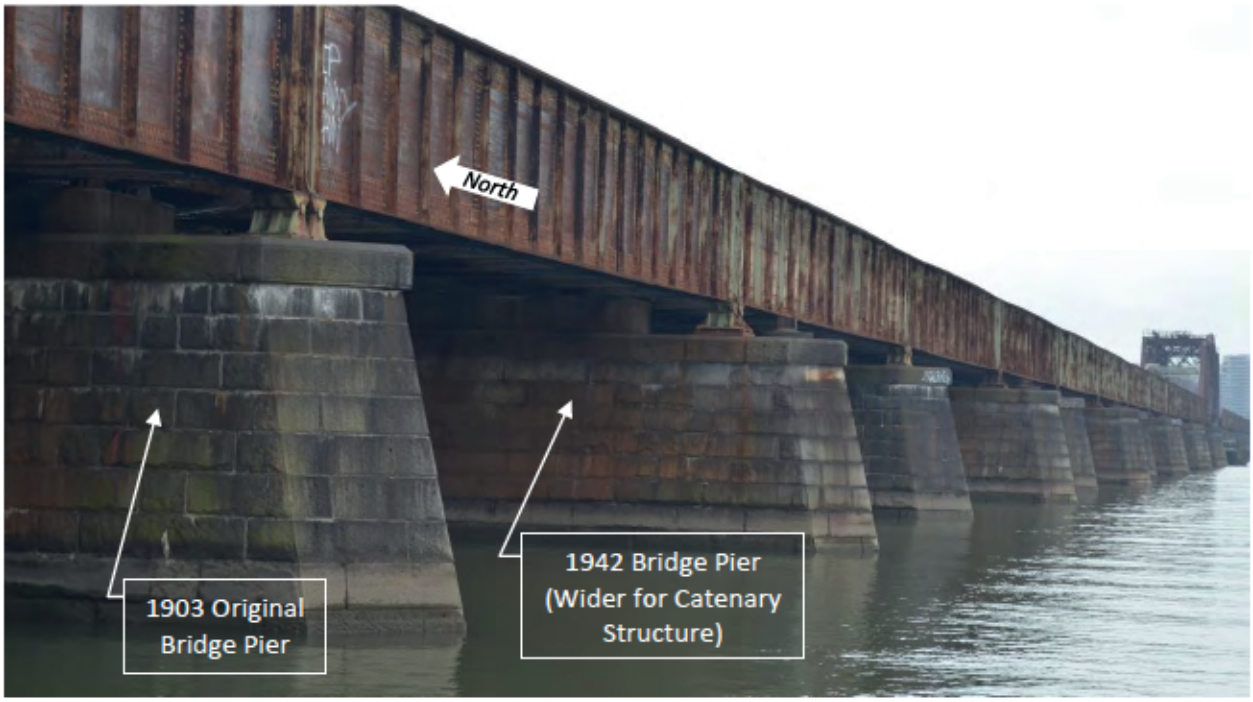
[6] National Flood Insurance Program, Flood Insurance Rate Map Panel 0081C (Map Numbers 51013C0081C for south end of bridge and 1100010018C for north end of bridge).

Figure 2-4 | North End over Ohio Drive SW and Rock Creek Park Trail



The original piers from 1903 are composed of stone masonry and filled with mass concrete. The piers are topped with a granite coping. The typical piers are supported on unreinforced concrete pile caps with timber piles, and the pivot pier is supported on a solid concrete pneumatic caisson founded on rock. Additionally, the swing span end piers are supported on spread footings. The piers built in 1942 were constructed with stone masonry backed with reinforced concrete and supported on steel piles. As discussed above, the piers built in 1942 are wider than those built in 1903 to carry catenary structures. The result is a staggered pier configuration of alternating widths.

Figure 2-5 | Original 1903 Piers Staggered with Newer 1942 Piers

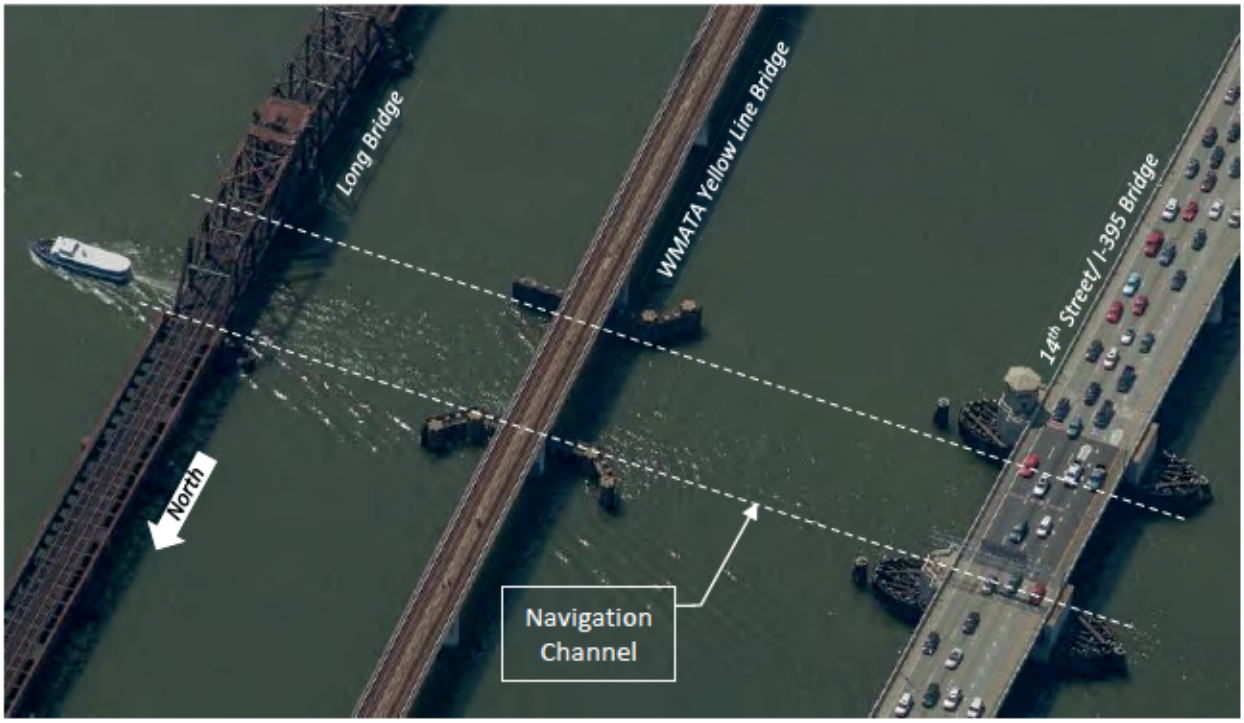


The existing abutments were constructed in 1903 and are composed of granite masonry blocks with rubble backing material. They carry the loads from the bridge superstructure, in addition to the lateral pressure from the soil and tracks directly behind them. The stacked masonry abutment stems and wingwalls are supported on timber piles.

There are twenty-two approach spans in total, eight to the south of the swing spans and fourteen to the north of the swing spans. All of the approach spans are open-deck (no solid deck or ballast beneath the tracks) through girder structures, with two tracks supported on stringers and floorbeams between the two through girders. In addition, a two-span through truss is supported on a pivot pier over the main navigation channel and originally served as a swing span to open the bridge for marine traffic in the navigation channel. The swing span structure is open-deck as well.

Since the two-span through truss pivots at the center, there are two separate channel spans separated by the pivot pier. Each of the channels provide a nominal clearance of 100 feet between the fender systems for marine traffic on the river. The north channel span (Span 10) is in line with the adjacent upstream bridges and serves as the navigation channel. The south channel span is of equal length as the north channel span, but it does not serve as an official navigation channel.

Figure 2-6 | Navigation Channel Span Arrangement of Long Bridge and Upstream Bridges[7]



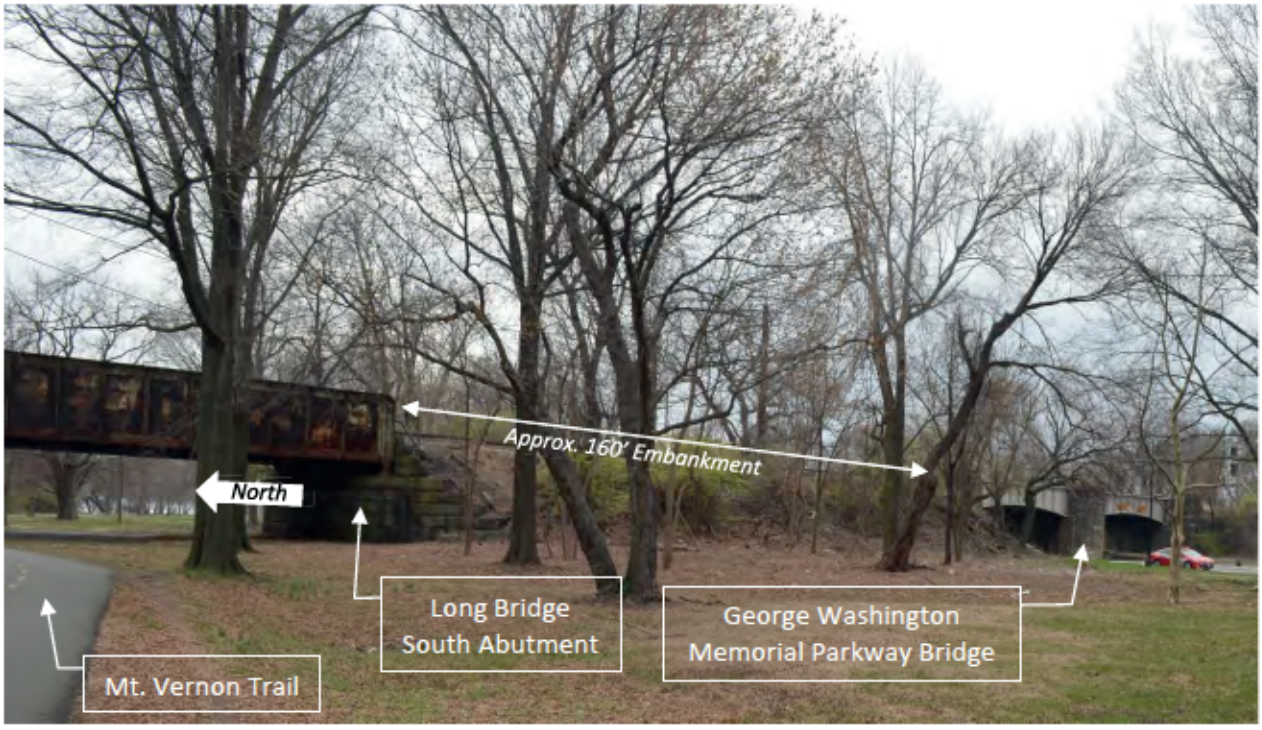
The swing span has not opened since 1969 and the Long Bridge is now considered a fixed bridge, with no ability to open for vessels taller than the maximum navigation clearance. This condition is similar at the nearest upstream bridges, including the Washington Metropolitan Area Transit Authority (WMATA) Yellow Line Bridge and the 14th Street/I-395 Highway Bridge.

The nearest structure, the WMATA Yellow Line Bridge (opened in 1983), is located approximately 175 feet west of the existing Long Bridge, measured between outside faces of the bridge superstructures. The narrowest distance between the two bridges is located at the navigation channel, measuring approximately 115 feet between the fendering systems.

At the south termination of the bridge, the track is carried on a short length of embankment before reaching a two-span, 122-foot deck girder bridge over the George Washington Memorial Parkway. The length of track carried on embankment between the Long Bridge and the George Washington Memorial Parkway bridge is approximately 160 feet.

[7] The Sanborn Map Company, Inc. Accessed from https://oblique.sanborn.com/dcocto_new/?ll=38.874418,-77.040253. Accessed May 2, 2018.

Figure 2-7 | Track Embankment beyond South Abutment



3.0 Proposed Long Bridge Configurations

3.1. Bridge Arrangements

The proposed track configurations include four total tracks across the Potomac River. For the proposed configurations, two Action Alternatives have been deemed feasible through the Level 1 and Level 2 Concept Screenings (refer to the **Alternatives Development Report**):

1. **Action Alternative A**: Construct a new two-track bridge upstream and maintain the existing two-track bridge.
2. **Action Alternative B**: Construct a new two-track bridge upstream and replace the existing structure with a new two-track downstream bridge (on same alignment as existing).

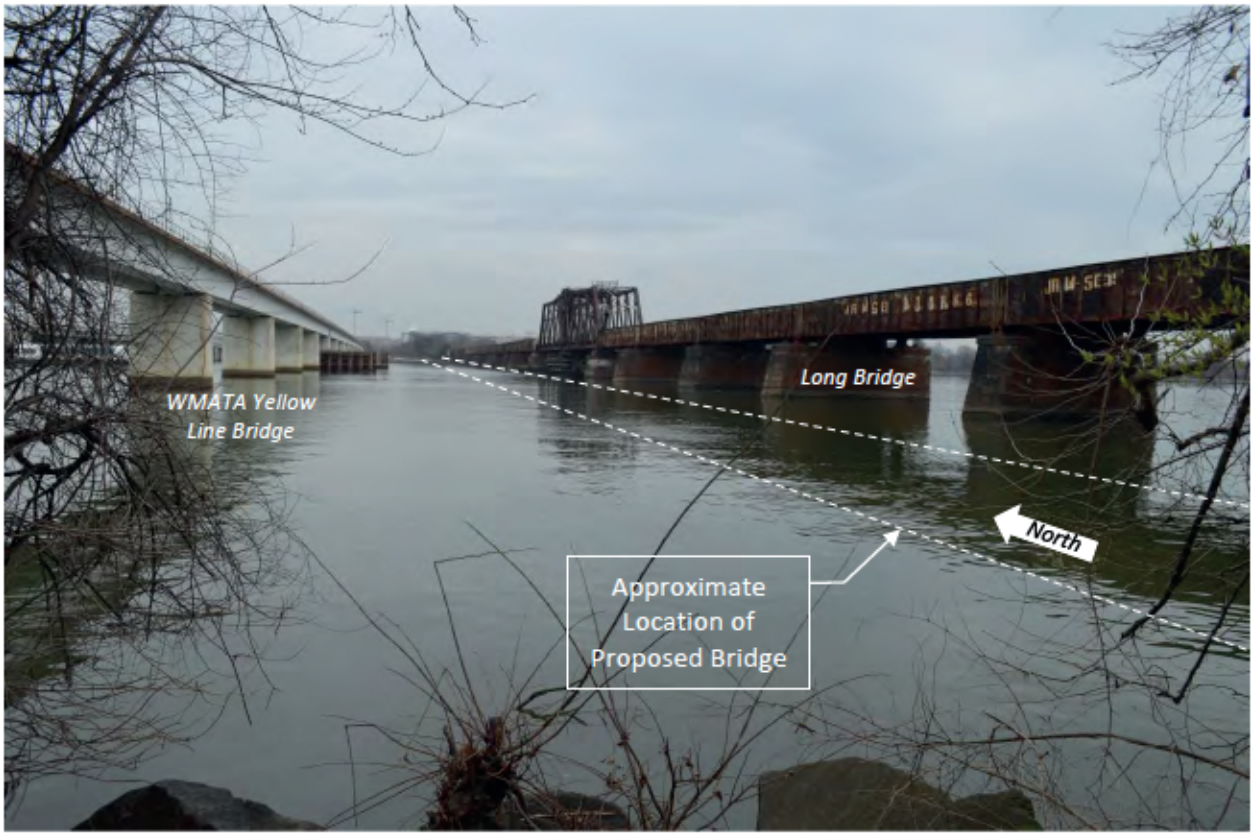
For both alternatives, the new bridges would be essentially identical to each other in type and size. Also, for each alternative, a new bridge is proposed upstream from the existing Long Bridge. Therefore, for the purpose of this study, only a single new two-track upstream structure is evaluated[8]. The upstream configuration will run parallel to the existing Long Bridge and the existing WMATA Yellow Line bridge, between the two existing structures. Over the navigation channels, a fixed span is proposed for the new bridge, with no ability to move or open for marine traffic. This fixed span condition would be similar to the adjacent upstream bridges.

The lateral offset of the proposed upstream bridge from the existing bridge will be developed during Conceptual Engineering. The offset will be driven by horizontal track alignments as well as necessary clearances from the existing Long Bridge structure and foundations. Sufficient lateral clearances between the proposed bridge and the adjacent WMATA bridge will be provided to avoid direct conflict with the proposed and existing bridge foundations and avoid damages due to vibrations resulting from the construction activities. The proposed bridge design will comply with the WMATA *Adjacent Construction Project Manual*. The lateral clearance will need to be sufficient for access during construction, inspection, and future maintenance.

The final pier locations will be developed upon selection of the Preferred Alternative as replacing the existing Long Bridge provides additional flexibility in pier locations for both bridges where retaining the existing bridge does not. channel clearances, pier locations, and navigational requirements are further discussed in the Project's Navigation Study Report completed in June 2018.

[8] For Action Alternative A, repairs or modifications to the existing bridge are not evaluated in this report. Based on discussions with CSXT and other stakeholders, it is expected that the existing structure does not require any major changes as part of this project. For Action Alternative B, it is assumed that constructability and other considerations for the new downstream bridge would be similar to the new upstream bridge. Therefore, for Action Alternative B, no additional discussion of the proposed downstream bridge is provided in this report.

Figure 3-1 | Approximate Location of Proposed Upstream Bridge (looking north)



3.2. Span Lengths and Pier Locations

For Action Alternative A, the locations of the new bridge piers in the Potomac River are proposed to remain in the same relative arrangement as the existing Long Bridge with nearly identical span lengths. Modifying the pier locations would create a staggered configuration between the existing bridge and the new upstream bridge, resulting in obstructions to marine traffic and hydraulic flow of the river. The vulnerability of all piers to scour will be assessed during later phases of design. Therefore, it is assumed that, except for some small adjustments for optimization, the proposed span arrangement will match that of the existing bridge. In addition, the proposed bridge abutments are also assumed to remain in the same configuration as existing for this study. The proposed span lengths are as follows:

Table 3-1 | Proposed Bridge Span Lengths

[9]Spans 1-4	Spans 5-8	Spans 9-10 (Channels)[10]	Spans 11-19	Spans 20-23	Span 24
85'-0"	108'-0"	140'-0"	108'-0"	100'-0"	108'-0"

If Action Alternative B is selected, and the existing bridge is replaced with a new bridge, the span lengths for both new bridges could be optimized, although the spans for both bridges would remain identical to each other. Further investigation into span optimization will be made during preliminary design.

Because the new bridge will be fixed over the channel, a large pivot pier is no longer needed. As such, the main channel pier will likely be smaller than the existing large pivot pier. All spans of the new bridge will be simply supported at the piers and abutments in accordance with the CSXT Undergrade Bridge Criteria[11].

To meet the longitudinal loads and seismic requirements of the modern design codes, foundation and pier sizes of the proposed structures will be larger than the ones supporting the existing structure. To maintain or improve the width of the existing navigable channel, a span longer than 140 feet may be necessary over the navigation channel. This may be needed due to wider piers and wider fender systems. If this navigation channel span length increases, the immediate adjacent spans (to the north and to the south) will have to be shortened to avoid repetitive staggering of existing and proposed piers. The north channel span will cross the navigation channel, in line with the existing upstream bridges.

3.2.1. Additional Considerations

The District of Columbia Water and Sewer Authority (DC Water) is in the process of implementing its Combined Sewer System Long Term Control Plan (LTCP). As part of the LTCP, a Potomac River Tunnel (PRT) is planned, with its alignment passing beneath the northern end of the Long Bridge in the river[12]. The precise alignment is yet to be determined, but it assumes the existing Long Bridge to be in place. This is further reason to match the proposed pier locations with the existing bridge piers, ensuring clearance of the PRT.

As discussed, this study assumes the proposed pier and abutment locations will match existing. However, consideration may be made during design phases to lengthen the span over the navigation channel (see above). In addition, at the southern terminus of the existing bridge, the track is carried on a short segment of embankment before crossing the George Washington Memorial Parkway bridge (see **Figure 2-7**). In the approximate location of the new upstream bridge south abutment, no embankment currently exists. It may be feasible to continue the Long Bridge beyond the existing abutment location and extend the bridge across George Washington Memorial Parkway. In this case, the proposed

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[9] For this study, the proposed spans are numbered in the direction of increasing track stationing, from south to north.
[10] While two spans of similar length will exist, the official navigation channel will exist under Span 10 only, similar to the existing bridge.
[11] Undergrade Bridge Criteria. July 2017. *CSXT Public Project Information Manual*, pp.87.
[12] Wone, Moussa. January 12, 2018. *Long Bridge Project Proposed Alternatives DC Water Comments.*

abutment would be on the south side of the parkway and the overall bridge length would be extended by several spans. This concept may be explored further during later phases of design.

3.3. Bridge Clearances

3.3.1. Train Equipment Clearances

On the new bridge, 15-foot track spacing is proposed. In addition, 9 feet of minimum horizontal clearance is required between centerline of track and the nearest obstruction[13]. Therefore, at a minimum, the lateral clearance between obstructions on tangent track is 33 feet. In areas of track curvature, additional horizontal clearance may be needed to accommodate the superelevated train car envelope. At all locations, vertical clearances on the bridge will be made to handle Plate H equipment (double-stacked intermodal containers). For the main structure types considered, discussed in following sections, no overhead obstructions are expected. Additionally, the design will not preclude the potential future installation of overhead contact systems (refer to **Section 7.2**)[14]. Refer to the **Appendix** for typical sections of the bridge.

3.3.2. Navigation Channel Clearances

According to NOAA Nautical Chart US12285, the vertical clearance beneath the existing swing span over the navigation channel is 18 feet measured from mean high water (MHW) to bottom of steel. The new bridge is proposed to provide a vertical clearance over the navigation channel that exceeds existing conditions.

The existing nominal channel clearance, measured between the fender systems is 100 feet. The proposed navigation channel will be located in the same location as existing and is proposed to match or, if practical, improve the existing clearance.

3.3.3. Roadway and Trail Clearances

At the north end of the bridge, Span 24 crosses Ohio Drive SW[15] and the Rock Creek Park Trail. A vertical clearance sign posted on the existing bridge above the road indicates a clearance of 12.5 feet. The DDOT Design and Engineering Manual indicates that the minimum vertical clearance for overhead structures over roadways is 14.5 feet[16]. The new bridge is proposed to meet or exceed the DDOT minimum for this span over Ohio Drive SW.

At the south end of the bridge, Span 1 passes over the Mount Vernon Trail, which is operated by the National Park Service (NPS). Further clarification is required to determine the preferred minimum vertical clearance over the trail, but it is assumed for this study that the proposed vertical clearance will

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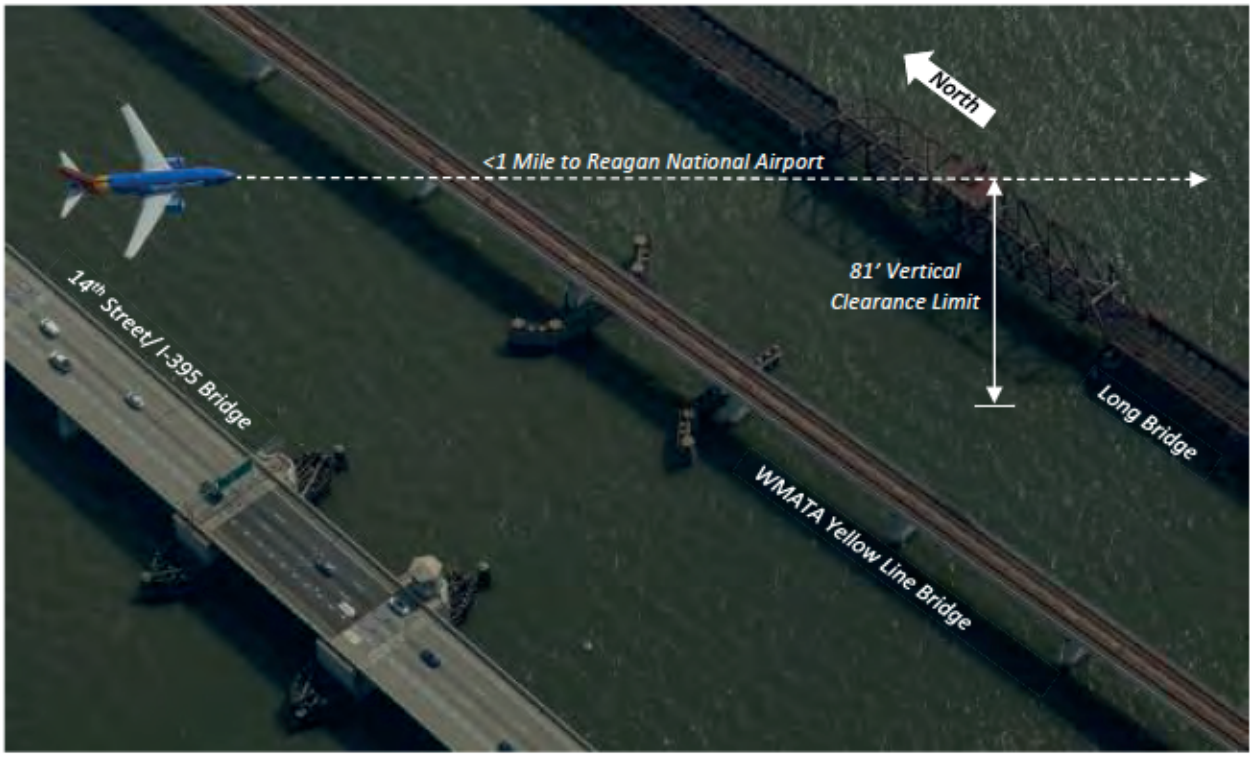
[13] Undergrade Bridge Criteria. July 2017. *CSXT Public Project Information Manual*, pp.83-84.
[14] Note that CSXT will not allow any overhead electrification structures to be constructed over the tracks envisioned to be operated primarily by freight trains, nor will it allow overhead electrification structures on any track that it owns and maintains.
[15] Note that there are two segments of Ohio Drive SW within the project limits. This report is only referring to the segment that passes under Span 24 of the Long Bridge. The other Ohio Drive SW crossing is further north, station ahead, and is not discussed as part of this report.
[16] Bridge Geometrics. June 2017. *DDOT Design and Engineering Manual*, pp.13-3.

meet or improve the existing condition. The existing bridge over the George Washington Memorial Parkway is posted as low as 12'-5" and up to 13'-11". If Action Alternative B is selected in which the existing Long Bridge is replaced, then the vertical clearance for the new bridge over the George Washington Memorial Parkway is anticipated to be improved to 14'-6". If Action Alternative A is selected, the existing bridge will remain and the new bridge west will meet or exceed the maximum existing vertical clearance. The existing fascia girders of current bridge have visible impact damage from over-height vehicles and any clearance improvements would be beneficial in reducing the likelihood of impact from over-height vehicles.

3.3.4. Overhead Aviation Clearances

The Long Bridge site is less than a mile from Ronald Reagan Washington National Airport (DCA). A common flight path for plane landings passes directly over the existing and proposed bridges. Given the proximity to DCA, the Federal Aviation Administration (FAA) has stringent vertical clearance limits for all structures and any construction equipment. At the Long Bridge site, the upper limit of this vertical clearance is measured 81 feet above mean sea level[17]. The proposed bridge structure and any construction equipment are prohibited from breaching the clearance limit at any time.

Figure 3-2 | Bridge Relative Proximity to Airplane Flight Paths[18]



[17] Schwenke, Erik N (Metropolitan Washington Airports Authority). "Re: Long Bridge Project EIS Scoping." Message to Amanda Murphy (FRA). 06 October 2016. E-mail.
[18] The Sanborn Map Company, Inc. Accessed from https://oblique.sanborn.com/dcocto_new/?ll=38.874115,-77.039939. Accessed May 1, 2018.

3.4. Track Profiles

The vertical clearances beneath the bridge are restricted at the navigation channel, Ohio Drive SW, the Rock Creek Park Trail, and the Mount Vernon Trail. In order to meet the proposed vertical clearances over each of these facilities, the track profile of the new bridge will be higher than existing. The increase in profile is a result of several considerations:

- The existing bridge is an open-deck structure, and the proposed bridge is a ballasted deck structure (see **Section 4.0** for discussion of necessity for ballasted deck). This requires the new bridge to have a solid deck, in addition to twelve inches minimum of ballast. These added depths result in increased track profiles.
- The addition of ballast and the solid deck increases loading on the span, and this requires deeper girders to carry the load.
- Modern live load requirements of CSXT demand significantly deeper girders than the existing bridge (see **Section 4.0** for discussion of the loading requirements).
- The proposed clearances and proposed structure types over the George Washington Memorial Parkway (next crossing south of Long Bridge) and I-395 (next crossing north of Long Bridge) affect the track profile along the north and south approaches of the new Long Bridge. The requirements at each approach result in overall track profile raises.

For each of the structure types considered in this study, the effects of the structure depth are discussed in the following sections. During later phases of design, track and bridge construction staging will be further developed to address changes in track profiles during construction and in final condition.

4.0 Structure Types Considered

Two main structures types for the proposed bridge are considered in this study, including a steel through girder bridge and a steel deck girder bridge. These are common structure types for railroad bridges in the United States and are the two standard types used by CSXT. In addition, these structure types are considerably more cost effective than other structure types. The shallow depth of the structure over the navigation channel precludes the use of concrete girders at this location. For uniformity, only steel girders are proposed, but concrete girders could be utilized where the depth of the structure is not limited by vertical clearance. Additionally, a concrete superstructure would require deeper and heavier girders, resulting in significantly larger substructures and foundations. The result would be an uneconomical structure.

The deck girder and through girder bridge types are investigated for the approach spans as well as the channel spans. It is expected that all of the approach spans will be of a similar structure type, either all deck girders or all through girders, unless vertical clearance requirements over the roadway network require through girder construction for a specific span. The main navigation channel span structure type may deviate from the approach spans. Each of these considerations are discussed in the following sections.

For assessing the structure types in this study, CSXT Undergrade Bridge Criteria, as specified in the Public Project Information Manual, are followed. These criteria include several specific considerations that have significant implications on the structural design, including[19]:

- Live loads shall consider Cooper E-90 loading[20].
- Bridges shall be designed with non-composite interaction between the superstructure and concrete deck[21].
- Dead load shall consider weight of one foot of ballast plus an additional two feet of future ballast below the tie.
- Bridge decks shall include a ballast walkway on the outsides of the clearance envelope.
- Exterior walkways shall be equipped with a 72-inch-tall parapet wall.
- Concrete deck overhang shall not exceed 18 inches from centerline of girder to edge of deck.
- For through girder bridges, no intermediate girder is permitted between the tracks.

Regardless of the superstructure type selected for design, the bridge is expected to carry ballasted tracks on top of a closed deck system. An open deck bridge is not considered for this study since it will not meet the requirements of CSXT standards and may preclude the use of future high-speed trains. In

[19] The criteria listed is taken directly from various sections of the CSXT Public Project Information Manual, Appendix for Undergrade Bridge Criteria.
[20] Cooper live loading is the standard basic live load used for railroad bridge design. The American Railway Engineering and Maintenance-of-Way Association (AREMA) typically uses Cooper E-80 loading and is common industry-wide for most United States railroads. The Cooper E-90 loading preferred by CSXT is greater than the typical E-80 loading by a factor of 90/80 = 1.125. The increased loading results in larger structural members.
[21] Non-composite means that the steel girders of the bridge are not fixed to the concrete deck, thereby eliminating the ability of the steel and concrete to share superimposed loads. This design approach results in larger and deeper bridge girders.

addition, the bridge is expected to allow for maintenance access and emergency passenger egress either through ballasted walkways or structure-mounted walkways on the bridge. The details and locations of the walkways will be determined during design. The two evaluated structure types are discussed in the following sections, followed by a comparison of advantages and disadvantages of each.

4.1. Steel Deck Girder Bridge

The first structure type considered in this study is a steel deck girder bridge. For this type, the superstructure is composed of a reinforced concrete deck carried on multiple longitudinal steel plate girders. In accordance with the CSXT Undergrade Bridge Criteria, the steel beams and concrete deck are designed as non-composite and includes a 72-inch-tall concrete parapet on each side of the bridge. Steel cross frames and bracing are expected to be integrated into the bridge to provide stability and resistance to lateral loading.

The load path from the tracks is through the ballast to the concrete deck, then directly to the girders, and finally to the substructures. This load path allows multiple girders to share the load from each track. As such, an optimal configuration of the bridge superstructure may include six girders per span.

Typically, deck girders are preferred in locations where vertical clearance is not a concern, as they provide a redundant structure. For this design type, the top of the girder can support the deck, thereby eliminating the need for a floor system (as is required by a through girder bridge). Where the track profile is limited, the deck girder option presents difficulties in providing sufficient vertical clearance beneath the bridge and through girder systems shall be considered. For the new Long Bridge structure, there is sufficient vertical clearance for deck girder construction over the river spans, but the track profiles need to be higher across the bridge and along the north and south approaches. Through girder construction is anticipated for specific land spans to provide sufficient vertical clearance over Ohio Drive SW and the Rock Creek Park Trail.

The CSXT design criteria limits the concrete deck overhang to 18 inches, measured from centerline of fascia girder to the edge of concrete. Evaluation should be made during preliminary design to waive this criterion, as the superstructure could be made more efficient with larger overhangs. Refer to the **Appendix** for typical sections of the steel deck girder bridge concept.

4.2. Steel Through Girder Bridge

The second type of structure evaluated in this study is a steel through girder bridge. This structure type comprises two longitudinal deep fascia girders with closely spaced transverse floorbeams spanning to the girders. A steel deck plate is supported on the floorbeams and functions to carry the ballasted tracks. Additionally, tapered floorbeam brackets, or knee braces, are anticipated to resist lateral loading applied to the girders. These brackets infringe on the space between the girder and the track, requiring the bridge to be widened to provide sufficient clearance.

For this design type, the load from the tracks is carried through the ballast to the steel plate, then to the floorbeams, to the through girders, then to the substructures. Each of the two girders would essentially carry all loading from a single track. As such, the through girders are very deep for the proposed span lengths.

The advantage of a through girder bridge is the shallow depth of the structure beneath the tracks. Because the main load carrying members are placed on the outside of the tracks, the only members governing the floor system depth are the floorbeams. However, this also makes the through girder bridge less economical than deck girders due to the considerable amount of steel and labor needed for the floorbeams and deck plates. To minimize the length of the floorbeams, the walkway could be mounted along the outer side of the fascia girders. Refer to the **Appendix** for typical sections of the steel through girder bridge concept.

4.3. Previously Studied Structure Types

A previous Long Bridge Study[22], performed in January 2015, presented four other structure types: tied arch bridge, through arch bridge, extradosed/cable-stayed bridge, and a deck arch bridge. Each of these structure types would be considered signature bridges, with construction costs expected to be greater than a deck girder or through girder bridge.

A detailed evaluation of the structure types proposed during the previous Long Bridge Study is not part of this report. However, each of those structure types can be dismissed for being impractical or infeasible for this project, for both approach spans and channel spans, as described in the following sections.

4.3.1. Tied Arch Bridge and Through Arch Bridge

The tied arch bridge and the through arch bridge concepts previously presented had conceptual structure depths of 57'-6" and 62'-6", respectively, measured from bottom of tie-girder to top of the arch. Including the vertical clearance of the channel, both structure types would exceed the FAA clearance limits during construction during the erection process and given these are only concept structure depths, possibly also in final condition. In addition, these structure types would be cost-prohibitive due to their complex design and major constructability challenges.

4.3.2. Extradosed/Cable-Stayed Bridge

The extradosed/cable-stayed bridge concept that was previously presented is technically impractical and presents significant structural challenges. The modern design and loading requirements would result in major fatigue concerns in the cables, which is a reason that this structure type is very uncommon in the United States for railroad crossings. This structure type would also have a height that exceeds the FAA clearance limits. Like the tie arch and through arch types, the extradosed/cable-stayed concept would be significantly costly when compared to the deck girder and through girder types.

4.3.3. Deck Arch Bridge

A deck arch bridge is infeasible due to the required height of the structure. The arch ribs would require the top of deck to be much higher than existing, resulting in a track profile that is not feasible. Similar to the other bridge types previously presented, this bridge type would be very costly and would require a significantly longer construction schedule, making it impractical for this project.

[22] Refer to the "Long Bridge Study", particularly Appendix G: Engineering Plans, from January 2015, as submitted to DDOT.

4.4. Other Structure Types

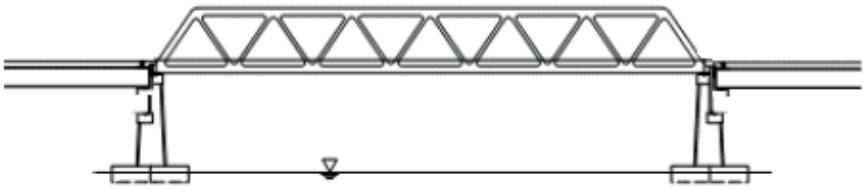
As discussed above, the deck girder and through girder bridge types are preferred by CSXT and are the typical structure types used for railroad bridge design in the United States. These structures are significantly more cost-effective than signature-type or complex structure spans. Two additional bridge types were initially considered for the proposed structures, but each have significant limitations. These bridge types include a through truss bridge and a delta frame bridge. Both are described in the following sections but are not further evaluated in this report due to the limitations of their design and construction for this project, as well as cost implications.

4.4.1. Through Truss Bridge

The simplest and most common alternative span type for railroad loading is the through truss bridge. This structure type comprises multiple steel members that connect together to form triangular openings. A single truss is provided on each side of the bridge, with transverse floorbeams supporting the track structure. Additionally, transverse struts span between the tops of each truss, providing lateral strength and stability.

A truss bridge is advantageous because it can be composed of efficiently sized steel members to carry heavy loads over long span lengths. Most railroad entities are very familiar with trusses with regard to inspection, maintenance, and repair work. In addition, a truss can incorporate a shallow floor system that would essentially match that of the through girder bridge option. This bridge type would have the ability to eliminate the central pier between the two channel spans, resulting in a single, longer span. Alternatively, in the approach spans, piers could be eliminated due to the ability of the truss to span longer lengths.

Figure 4-1 | Through Truss Bridge Concept



Several drawbacks to a truss bridge exist for this project. A truss is only economical for long spans. As such, it would only be practical for spanning over the channel or in the approaches if piers are eliminated to lengthen the spans. Trusses in the approach spans would have a significant impact on the aesthetics of the bridge and the surrounding environment. Also, while a truss over the channel would be similar in appearance to the existing bridge, it may still be undesirable from an aesthetic perspective.

Another disadvantage of this bridge type is that members of the truss are fracture critical[23] and trusses are not as redundant as other systems such as the deck girder bridge.

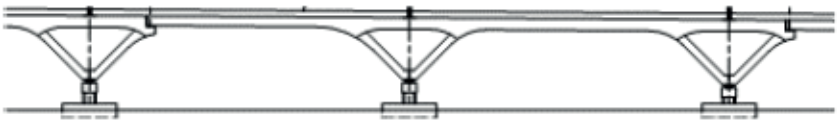
[23] The term "fracture critical", as used throughout this document, refers to steel members in tension whose failure would be expected to result in collapse of the bridge span. In general, structures with fewer main load-carrying members are more susceptible to being fracture critical. A span with more than two main load-carrying members

In terms of constructability, the truss would have to be stick built over the channel with the use of small cranes. The stick building method will a require long-term closure of the navigation channel. Another construction method could consist of assembling the truss on the shore line and moving it along the track alignment to its final location. Regardless of construction methods, the overhead FAA clearance will limit the size of cranes and may complicate the ability to construct a truss span. The overall structure height of the through truss would be greater than the through girder or deck girder options.

4.4.2. Delta Frame Bridge

A delta frame bridge would deviate significantly from the deck girder or through girder span types. This structure type comprises triangular shaped steel frames with girders spanning between them. The triangular shapes form a delta frame that would be supported on shallow height concrete piers.

Figure 4-2 | Delta Frame Bridge Concept



This bridge type may be able to span longer lengths than the deck girder bridge with shallower girders. Since the delta shapes impose on the clear span between piers, it would be required to modify the span arrangements from existing to a more efficient layout.

Several challenges with the delta frame bridge seem to make the structure type infeasible for this project. First, the track vertical profile would have to be raised significantly to make the delta shape appealing. Second, the lower portions of the steel superstructure would be more readily accessible to the public, which has serious safety and security concerns. Third, the vertical clearance at the navigation channel would require the span length to be increased due to the delta shape at the piers. Lastly, the delta shape is likely to present hydraulic issues during high water conditions.

has greater structural redundancy than a span with only two load-carrying members. Fracture critical spans require additional material testing and fabrication costs, additional steel to provide internal redundancy, and increased life-cycle costs due to more stringent inspection requirements.

5.0 Structure Type Comparison

The deck girder bridge and the through girder bridge are the most appropriate structure types that accommodate this project, and therefore are the recommended options for further evaluation. Advantages and disadvantages exist for both the deck girder and the through girder structure types considered. In particular, variations in the geometry, fabricability, constructability, and aesthetics for the two types may influence the final structure selection.

5.1. Structure Geometry

The following table lists approximate geometric information (based on conceptual-level design) for both the deck girder bridge type and the through girder bridge type, and dimensions are provided for the typical approach spans and the channel spans. These dimensions may be refined during later phases of design. Note that the through girder depths are significantly larger than the existing bridge due to widened track spacing, increased design live loading, and increased dead load due to the ballasted track (existing is open-deck).

Table 5-1 | Approximate Dimensions of Evaluated Structure Types

		Girder Depth	Visible Depth[24]	Floor System Depth[25]	Superstructure Width[26]	Pier Width
Approach Spans	Deck Girder	7'-6"	14'-6"	8'-6"	36'-0"	42'-0"
	Through Girder	11'-6"	11'-6"	4'-9"	41'-0"	48'-0"
	**Existing*	*10'-6 ½"*	*10'-6 ½"*	*4'-11 ½"*	*36'-6"*	*60'-0" (±)*
Channel Spans	Deck Girder	10'-0"	17'-0"	11'-0"	36'-0"	42-0"
	Through Girder	17-0"	17'-0"	4'-9"	41'-0"	48'-0"

**Existing structure depths provided for approach spans for comparison. Existing channel span is a through truss and is not comparable to proposed spans.*

In order to provide the required vertical clearances over the Potomac River, the bottom of girder elevations must be held to specific elevations. Therefore, as the floor system depth increases, the track profile elevations also must be raised. It is prudent to keep the track profile as close to existing as possible to avoid unnecessarily steep track grades from the approaches leading up to the river bridge. Therefore, it is also ideal to minimize the floor system depth as much as possible. During Conceptual

[24] Visible Depth is measured from top to bottom of superstructure. This is the resulting depth of superstructure that is visible in elevation view of the bridge to an outside viewer. For the deck girder option, this is measured from top of parapet to bottom of girder. For the through girder option, this is measured from top to bottom of the girder.

[25] Floor System Depth is measured from top of deck to bottom of steel girder. This is the structural depth that varies between bridge types and design criteria in meeting vertical clearance over the Mean High Water (MHW) elevation and adjusting the track profile elevations. The depth of stone ballast, timber ties, and steel rails are all constants.

[26] Superstructure Width is the minimum possible dimension on tangent track, measured out-to-out of the superstructure.

Design, the allowable floor system depth will be determined based on vertical clearances and track profiles.

Because the deck girder bridge option comprises deeper longitudinal girders beneath the tracks, this structure type has a deeper floor system depth (measured from top of deck to bottom of steel superstructure). The result is a track profile with higher elevations. Limitations in track profile grades may cause design challenges for the deck girder option. This will be further evaluated during design.

On the other hand, the steel through girder bridge utilizes deep longitudinal girders on the outside of the track envelope (one girder on each side). For the through girder bridge, the floorbeams dictate the floor system depth, and the result is a shallower system. This allows the track profile to be lower, more closely matching existing conditions. The lower profile may result in minor cost savings due to slightly reduced embankment fill, shorter abutment heights, and shorter retaining walls in the approaches. These cost differences will need to be compared with differences in steel fabrication and erection costs as well as increased superstructure and pier widths as outlined in **Table 5-1** above.

At the northernmost span (Span 24) of the proposed bridge, the vertical clearance over Ohio Drive SW is proposed to be improved from existing conditions. For this span, and any other spans over roadways and trails, the through girder may prove advantageous. Even if the typical approach spans are deck girder spans, through girders can still be used over the roadways to improve the track profile, while maintaining sufficient vertical clearances.

The superstructure width varies between the deck girder and through girder options. For the deck girder option, the width is primarily dictated by the track spacing and the horizontal clearance to the inside face of the concrete parapet. The through girder superstructure width is similarly determined, but the width is increased slightly to provide clearance for the knee braces.

5.2. Structure Fabricability and Material Transportability

The conceptual deck girder bridge is not expected to face any fabrication or transportation issues for either the approach spans or the channel spans. The plate depths and thicknesses are within common limits and could be handled and manufactured by a typical steel shop.

The steel plate girders for the through girder approach spans are reaching the size of the largest girders fabricated regularly by steel fabricators and transported by truck. For the through girder channel spans, however, the girders are nearly 17'-0" deep. This presents several fabrication and transportation challenges. The depth of the web exceeds the maximum size of the plates commonly produced by steel mills. Splicing the web longitudinally either by field bolting or shop welding will be required. Welds of this type may be manageable but are undesirable. To keep the thickness of the web plate reasonable and the weight manageable, longitudinal stiffeners will be required to prevent buckling. In addition, the handing of girders this size would be challenging to handle in the shop and even more challenging to handle in the field due to the 81-foot FAA clearance.

5.3. Constructability

Constructability is an important consideration for selection of structure type for the proposed bridge. Environmental protection rules, physical site constraints, and site accessibility limit the size of the bridge members and the type of construction equipment that can be mobilized. The proposed bridge is located

between the existing Long Bridge and the upstream WMATA Yellow Line bridge, resulting in limited horizontal clearance for construction activities.

The navigation channel must remain open during most of the construction. It is anticipated that only temporary restrictions of the use of the navigation channel will be required during delivery of large equipment or material, installation of the channel span steel superstructure, and installation of the protection system for the piers adjacent to the channel. Long-term restrictions to marine traffic will only be required in the area of the proposed approach spans for safe construction operations. It is also important to note that recreational and non-motorized vessels use the approach spans extensively and access for these uses will need to be maintained during construction.

Typically, the use of large cranes is required for installing deep foundations, placing rebar cages, lifting girders, and moving other heavy materials. As discussed above in **Section 3.3**, the FAA has established clearances requirements that limit the length of the boom of the cranes. The characteristics of 80-foot boom cranes may not meet the typical requirements for installation of deep foundation and erection of steel girders. It will also be difficult to maneuver a barge-mounted crane of the size required under the existing span.

In addition, shipping in materials on the Potomac River is limited by the vertical clearance of the existing navigation channel at the existing Long Bridge, as the existing bridge is to remain in service at all times. Material barged in cannot exceed the vertical clearance and may be required, in some instances, to be brought into place from landside access points.

Other means and method of construction may be considered during the design of the structure, including the following:

- Crane with telescoping booms if the FAA limit can be increased during short windows or under certain wind conditions.
- Temporary trestles and finger piers to optimize placement of the cranes and reduction of their reach.
- Rolling gantry supported on temporary piles in the water.
- Incrementally-launched bridge spans.

Temporary closures or diversions of the Mount Vernon Trail may be required during installation of the proposed superstructure in the area. Similarly, temporary closures of the Rock Creek Park Trail and Ohio Drive SW are expected.

5.3.1. Deck Girder Bridge Constructability

For the deck girder bridge type, constructability is not a major concern. The superstructures of this type of bridge are erected span by span, girders after girders. Cross frames and lateral bracing would then be attached. Temporary forms would be installed and the concrete deck poured in place. To accelerate the construction of the deck, full depth precast panels should be evaluated. They could be delivered by the rolling gantry if this equipment was used for earlier construction phases.

The proposed 7'-6" deep and 10'-0" deep plate girders can be delivered to the site by trucks in their final vertical position and erected with one of the methods discussed in **Section 5.3**. Vertical clearance beneath the existing Long Bridge is sufficient for final delivery on barges as well. Compared to the

through girder, this deck girder option with its multiple line of beams reduces the weight of the crane picks.

5.3.2. Through Girder Bridge Constructability

The through girder bridge option faces greater constructability challenges than the deck girder option. The 11'-6" deep approach span plate girders reach the limit of sizes that can be transported by truck or delivered by barge under the existing Long Bridge. Due to their size and weight, erection by crane under the FAA overhead clearance limit is not practical. The 17'-0" deep channel through girders cannot be delivered by truck or barge in a single piece, and their handling in the field seems infeasible under the FAA vertical clearance.

The channel through girders will not fit beneath the existing bridge vertical clearance in the navigation channel and would have to be transported in a lay-down position. Transporting the girders on their side is not preferred due to the potential to induce undesirable lateral-torsional loads during handling. As such, it is likely that these deep girders would have to be assembled on the shoreline and delivered to their final location with a rolling gantry.

Installation of the large number of floorbeams and deck plates is labor intensive. The deck plate has to be bolted or welded to the tops of the floorbeams throughout the bridge. This work requires temporary work platforms beneath the span for access to the underside of the bridge.

5.4. Aesthetics

Given the location of the bridge and its proximity to major landmarks and trails, the aesthetics of the proposed bridge should be considered in the design. The main difference between the two structure types in terms of aesthetics is the visible structure depth. For the deck girder design, roughly half the depth is the steel girder and the other half is the concrete deck and parapet wall (refer to the **Appendix** for detail). For the through girder bridge, the entire visible depth is steel. The concrete deck and parapet of the deck girder option may be cast with a decorative form liner to economically give an aesthetic finish to the parapet. The through girders can be painted to enhance the bridge appearance, however the operating railroad often do not paint their steel bridges. The final details on aesthetics will be determined in future design phases after a Project Sponsor, construction funding sources, and corridor ownership are identified.

The visible depths, as listed in **Table 5-1**, vary between the approach spans and the channel spans for both evaluated structure types. For the deck girder design, the bottom of the channel span would sit lower in elevation than the approaches, while the top of the channel span would be uniform with the approaches. This is because the channel span is deeper, and the extra depth is made up beneath the deck. On the contrary, the top of the channel span for the through girder option would sit higher in elevation than the approaches, while the bottom of the channel span would be uniform with the approaches.

Both evaluated structure types would be viewed as traditional railroad bridges in appearance. These would not have any signature spans that would be greatly stand out among the surrounding bridges.

5.5. Additional Considerations

Several factors shall be considered when comparing the deck girder bridge option with the through girder bridge option. These considerations include load path, structural and internal redundancy, accessibility for inspection and maintenance, and life-cycle costs.

Efficient load path and structural redundancy are desirable properties of bridge construction to ensure safety. In the extreme event of structural failure of one of the main load carrying members, a redundant structure is able to redistribute the loads and avoid catastrophic failure. Multi-girder bridges, such as the deck girder option, are the most recognized redundant system and none of their girders are classified fracture critical. The through girder option, on the other hand, is a non-redundant structure because the failure of a single girder would result in failure of the span. The through girders would be classified as fracture critical members. Therefore, deck girder construction would provide an additional level of redundancy in the event of a marine vessel or debris inadvertently striking the bridge, when compared to through girders.

Accessibility to all parts of the bridge is another important consideration. Bridges require routine inspections throughout their service life, so it is important to provide ease of access for inspectors. Fracture critical members have more stringent inspection requirements than non-fracture critical members. Additionally, over the life of the bridge, maintenance, repairs, repainting, and component replacement are very likely. The deck girder bridge allows for simple access to all components of the bridge due to relatively wide spacing between the girders. The through girder bridge contains closely spaced floorbeams which make access for inspection, maintenance, and repairs more difficult. In addition, the steel deck plates and knee braces of the through girder bridge are very difficult to access for inspection and maintenance. As such, the resulting life-cycle costs are greater for the through girder option.

6.0 Substructure and Foundation Types Considered

Regardless of the selected superstructure type, the proposed bridge substructures and foundations are likely to be similar.

6.1. Piers and Abutments

The substructures will comprise reinforced concrete piers in the river and abutments on shore at the north and south ends of the bridge. The piers may be constructed as solid walls. Their height is too small to consider the use of hammerhead-type piers. A two-column bent pier may be another feasible solution. However, the adjacent upstream bridge piers are all solid wall types to handle ice flows on the river, so the solid wall type is most likely for the new Long Bridge. The proposed bridge abutments are expected to be of solid cantilever wall construction. Additional evaluation for potential aesthetic improvements to the substructures can be performed during future design efforts.

6.2. Foundations

To support the piers and abutments, two basic types of foundations are expected. These basic foundation types include spread footings and deep foundations. Based on the construction of the existing bridge, which includes a combination of both spread footings and deep foundations, it is possible that the proposed bridge will similarly have a combination of the two foundation types. However, in most locations, deep foundations are expected. As a part of the Project, a geotechnical investigation is being performed. Scour and hydraulic analyses, which may influence the foundation type, will be produced during later engineering design phases. Refined recommendations of foundation type will be provided during later phases of design.

Construction of the proposed bridge foundations will require coordination with existing utilities in the river, as well as proposed utility projects. The original bridge drawings for the existing bridge show submarine cables running parallel to the existing structure. The installation of new foundations will require identification, location, and avoidance or relocation of any existing submarine cables.

Additionally, historical reports suggest that the foundations for previously demolished upstream bridge have been removed in their entirety[27]. However, verification should be made during later design phases to confirm that no obstructions exist in the footprints of any proposed foundations. If any obstructions do exist, they may be removed, or the proposed footings could be relocated or designed to incorporate the obstructions.

6.2.1. Spread Footings

Spread footings are shallow, solid reinforced concrete foundations that sit directly on stable riverbed surface layers. This type of footing is wider than the bridge pier, allowing the loads from above to be spread out over a large area to provide stability. Spread footings require favorable ground conditions that can provide sufficient factors of safety for the given loads. It is unlikely that spread footings will be feasible for the river piers due to subsurface soil conditions, but further geotechnical investigation is

[27] Washington DC Chapter of National Railway Historical Society. Accessed from http://www.dcnrhs.org/learn/washington-d-c-railroad-history/history-of-the-long-bridge. Accessed May 9, 2018.

needed to determine the most economical type of foundation. If spread footings are used in the river, the top of footing would need to be located below the scour elevation.

The construction of spread footings in the river would likely require deeper excavation and a larger footprint during construction. Temporary cofferdams would be needed surrounding the proposed footing in order to allow construction work to occur below the river waterline. Cofferdams create a watertight enclosure to hold back water and would be constructed wider than the proposed footings to provide worker access. Since these cofferdams may be large in footprint, interference with the navigation channel and the proposed Potomac River Tunnel may occur, as described in **Section 3.2.1.** This interference may limit the ability to use spread footings at certain pier locations.

6.2.2. Deep Foundations

Deep foundations incorporate vertical elements, such as piles or caissons, to transfer loads from the pier or abutment down to specific subsurface layers. The vertical elements would likely extend much deeper than the spread footings, but they require minimal footprints to construct. Cofferdams would likely not be required if deep foundations are used, thus minimizing impacts to the navigation channel or any existing utilities in the river. Overhead clearances may limit the use of certain types of piles, but accommodations can be made during design phases to ensure efficient installation of deep foundations.

The use of precast elements for the foundation and the piers shall be investigated during the preliminary design phase. Additionally, acceptable construction means and methods shall be evaluated during the early phase of the Project.

7.0 Additional Considerations

7.1. Bike-Pedestrian Crossing

Separate studies associated with the Project evaluated the engineering feasibility of a bike-pedestrian river crossing. These options include the following:

- Option 1A: Bike-pedestrian crossing located on the upstream side of the new upstream rail bridge over the Potomac River with shared superstructures and substructures.
- Option 1B: Bike-pedestrian crossing located on the upstream side of the new upstream rail bridge over the Potomac River with a separate superstructure on shared substructures.

Two additional options (Options 2 and 3) include a separate bike-pedestrian structure located either upstream or downstream of the rail bridge. These two options are not discussed in this report as they are independent structures of the existing and proposed rail bridges.

The studies have determined that no bike-pedestrian crossing will be connected to the new railroad bridge, and therefore this aspect is not a consideration for the bridge type.

7.2. Future Electrification on Bridge

As part of the Project, considerations are being made to potential future installation (as a separate project along the corridor) of electrification through an Overhead Contact System (OCS). The inclusion of OCS is not a part of this study but should be considered for the design. It should be noted that CSXT has expressed that overhead electrification structures will not be permitted over the tracks envisioned to be operated primarily by freight trains, nor will CSXT allow overhead electrification structures on any track that it owns and maintains. Considering future ownership and operations of individual tracks have not been established for the Project, implications of this potential future installation of OCS is discussed below.

Installation of OCS structures could be accommodated in two ways: support catenary poles on the bridge piers or support them on cantilevered brackets on the steel girders. Pier-mounted OCS would require the proposed bridge piers to be wide enough to allow for steel baseplates and catenary poles outside of the proposed superstructure. In this configuration, the OCS would be carried on a steel frame outside the train clearance envelope, and the steel frame would be supported on the bridge piers. This is typically the preferred method to support OCS facilities on bridges.

The other concept, which could accommodate catenary poles on the steel deck girders, would require the girders to be designed with the possible future OCS loads included. In this configuration, the poles would be supported on steel brackets aligning with the bridge cross frames, cantilevered off the sides of the bridge girders. This concept would likely not be feasible with the through girder option.

To not preclude the future installation of OCS structures, either the proposed bridge piers would be sufficiently wide to accommodate the steel frames and base plates, or the steel girders would be designed to handle OCS loading. In both cases, the structure would be over-designed to a certain extent until OCS is added, if ever. Additionally, further consideration will be made during later phases of design to ensure the vertical clearances on the proposed bridge provide sufficient space for future OCS wires.

8.0 Conclusions

This report serves to provide the information needed to make an informed decision on bridge type and arrangement. The proposed location of the new bridge is upstream from the existing Long Bridge, with the precise location to be determined during Conceptual Design. This location will be as close to the existing bridge as feasible, while providing sufficient clearance between the existing and new bridges for construction and future maintenance access.

The span configurations of the new bridge are expected to match the existing bridge configuration. In addition, the proposed navigation channel will match the existing clearances. The new superstructure will accommodate 15-foot track spacing with a minimum of 9-foot lateral clearance from centerline of tracks to the nearest obstructions.

For the proposed bridge, two primary structure types were recommended and evaluated. These include a steel deck girder bridge and a steel through girder bridge. Both structure types offer advantages and disadvantages, particularly for the channel spans where the structural depths are greater. A summary matrix comparing the two structure types follows in **Section 9.0**.

At the proposed bridge channel spans, the deck girder bridge type is feasible, but the through girder bridge reaches toward the upper limits of feasibility due to the necessary size of the steel plate girders.

9.0 Structure Type Summary Matrix

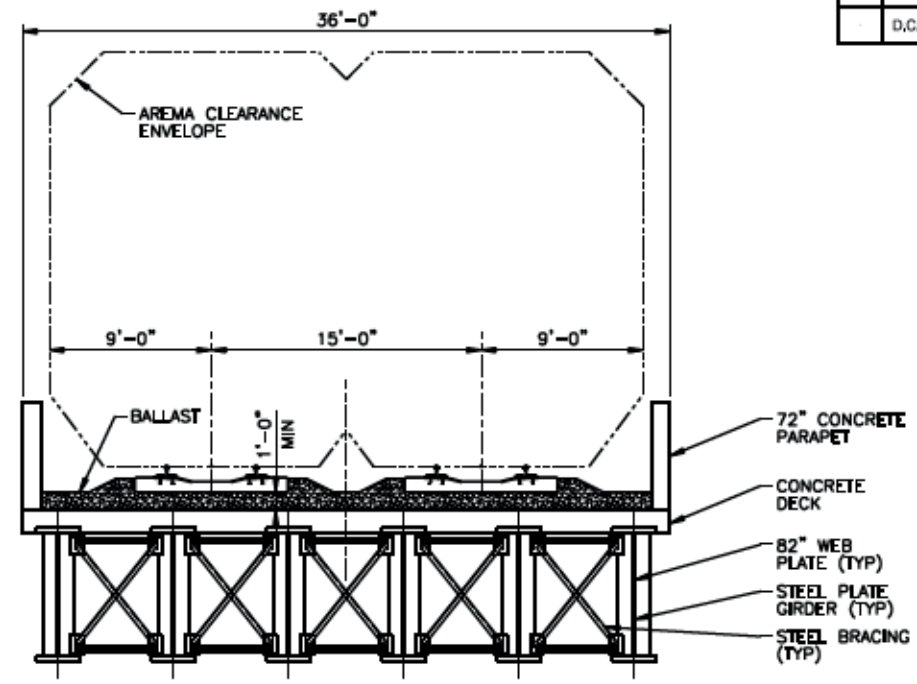
Table 9-1 | Structure Type Summary Matrix

	Steel Deck Girder Bridge	Steel Through Girder Bridge
Structure Geometry	• Approximate floor system depth = 11'-0" (from top of deck to bottom of girder) • Raised track profile required • Reasonably sized structural members • Girder depth (approaches) = 7'-6" • Girder depth (channel) = 11'-6"	• Approximate structural depth = 4'-9" (from top of deck to bottom of girder) • Track profile can be closer to existing • Extremely deep and heavy girders for the channel spans • Girder depth (approaches) = 10'-0" • Girder depth (channel) = 17'-0"
Fabricability	• Conventional fabrication, steel plate sizes within common limits	• Complex fabrication, steel plate sizes exceed common limits
Constructability	• Typical shipping of materials • Girders can be delivered to site by river • Telescopic boom crane may be able to lift girders • Rolling gantry may be required • Need to construct concrete deck in place • Temporary closures of navigation channel to erect girders, long-term closures of approach span areas of river	• Difficult to ship girders due to size • Girders too deep to deliver by river • Extensive on-site fabrication and welding • Very large crane sizes for lifting steel girders will not be able to operate under the FAA requirements • Large rolling gantry required • No concrete deck needed, but steel deck plate must be welded to floorbeams • Temporary closures of navigation channel to erect girders and floorbeams, long-term closures of approach span areas of river
Aesthetics	• Well-proportioned steel and concrete member for approach spans and channel spans • Tall concrete parapets required per CSXT criteria, possible opportunity for aesthetic treatments	• Very deep steel girders for channel span, but in proportion to the approach spans • No concrete parapets required
Redundancy	• Redundant structure due to multiple girders per track	• Non-redundant structure due to single girder per track
Accessibility	• Larger clearances for inspection and maintenance of superstructure	• Very narrow access between floorbeams for inspection and maintenance

APPENDIX

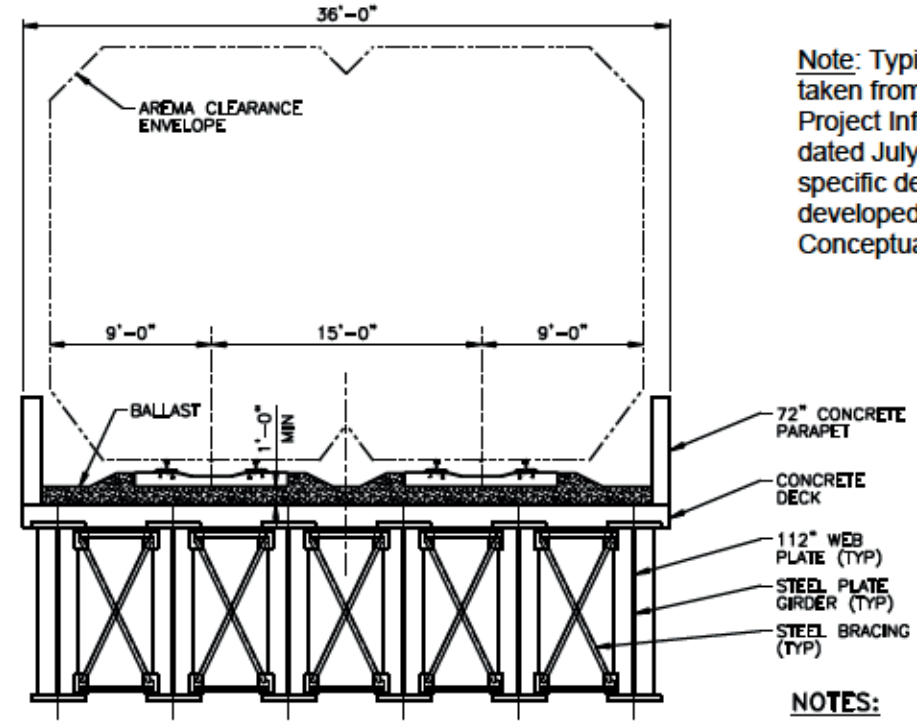
Long Bridge Girder Type Typical Sections

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	D.C.		S-401	



TYPICAL SECTION - DECK GIRDER APPROACH SPAN

N.T.S.



TYPICAL SECTION - DECK GIRDER CHANNEL SPAN

N.T.S.

Note: Typical sections are taken from the CSXT Public Project Information Manual dated July 2017. Project specific details will be further developed during the Conceptual Engineering.

NOTES:

1. DIMENSIONS AND MEMBER SIZES SHOWN ARE APPROXIMATE.
2. AREMA CLEARANCE ENVELOPE IS SHOWN FOR TANGENT TRACK WITHOUT CURVE CORRECTIONS.

DRAFT - WORK IN PROGRESS

NO.	DESCRIPTION	NAME	DATE

REVISIONS

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
LONG BRIDGE STRUCTURES
SUMMARY REPORT

LONG BRIDGE
DECK GIRDER OPTION
TYPICAL SECTION

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY MJR
DRAWN BY JJR
PROJECT MGR.

DIVISION CHIEF

DATE JUNE 15, 2018

FILE

SHEET 1 OF 2

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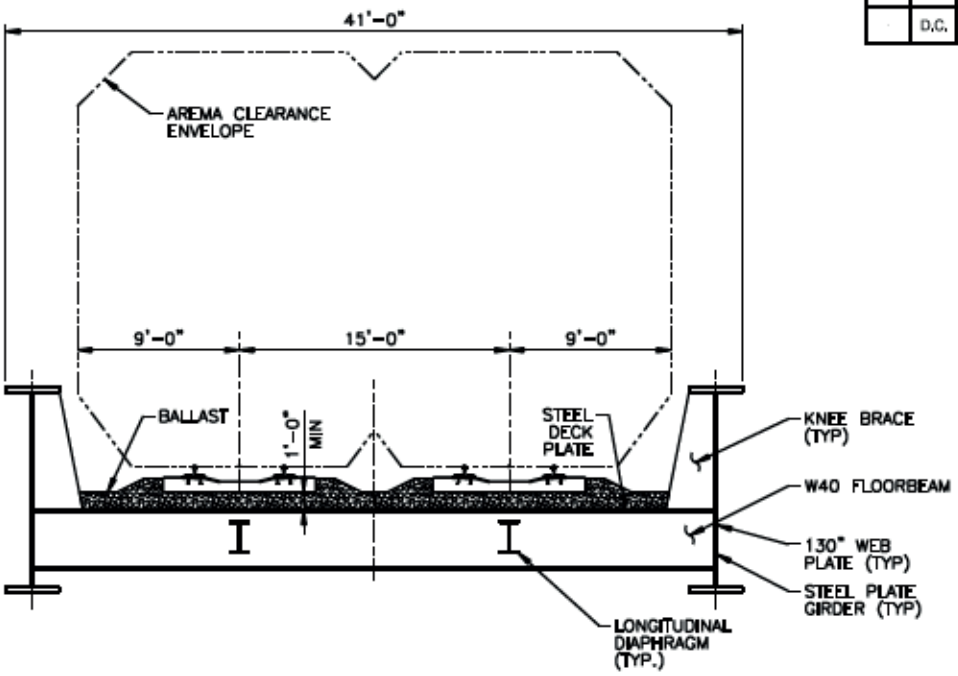
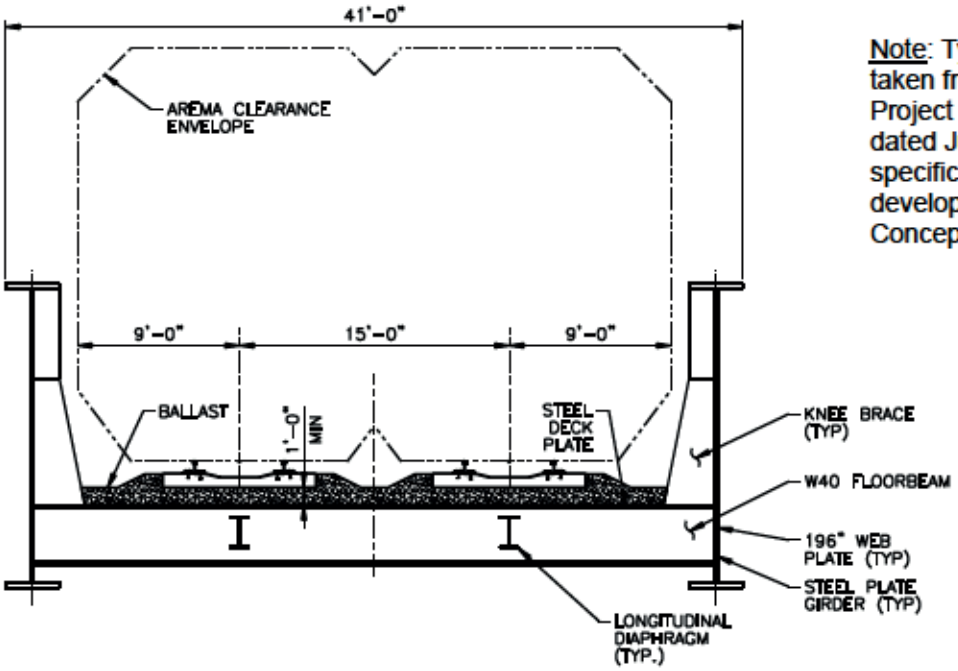
REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	D.C.		S-102	



TYPICAL SECTION - THROUGH GIRDER APPROACH SPAN

N.T.S.



TYPICAL SECTION - THROUGH GIRDER CHANNEL SPAN

N.T.S.

Note: Typical sections are taken from the CSXT Public Project Information Manual dated July 2017. Project specific details will be further developed during the Conceptual Engineering.

NOTES:

1. DIMENSIONS AND MEMBER SIZES SHOWN ARE APPROXIMATE.
2. AREMA CLEARANCE ENVELOPE IS SHOWN FOR TANGENT TRACK WITHOUT CURVE CORRECTIONS.

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vhb

HNTB

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D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
LONG BRIDGE STRUCTURES
SUMMARY REPORT

PROJECT ENG. ____
DESIGNED BY HNTB
CHECKED BY MJR
DRAWN BY JJR
PROJECT MGR. ____

LONG BRIDGE
THROUGH GIRDER OPTION
TYPICAL SECTION

DIVISION CHIEF

DATE JUNE 15, 2018

FILE ____

SHEET 2 OF 2

Attachment 4: Conceptual Engineering Plans

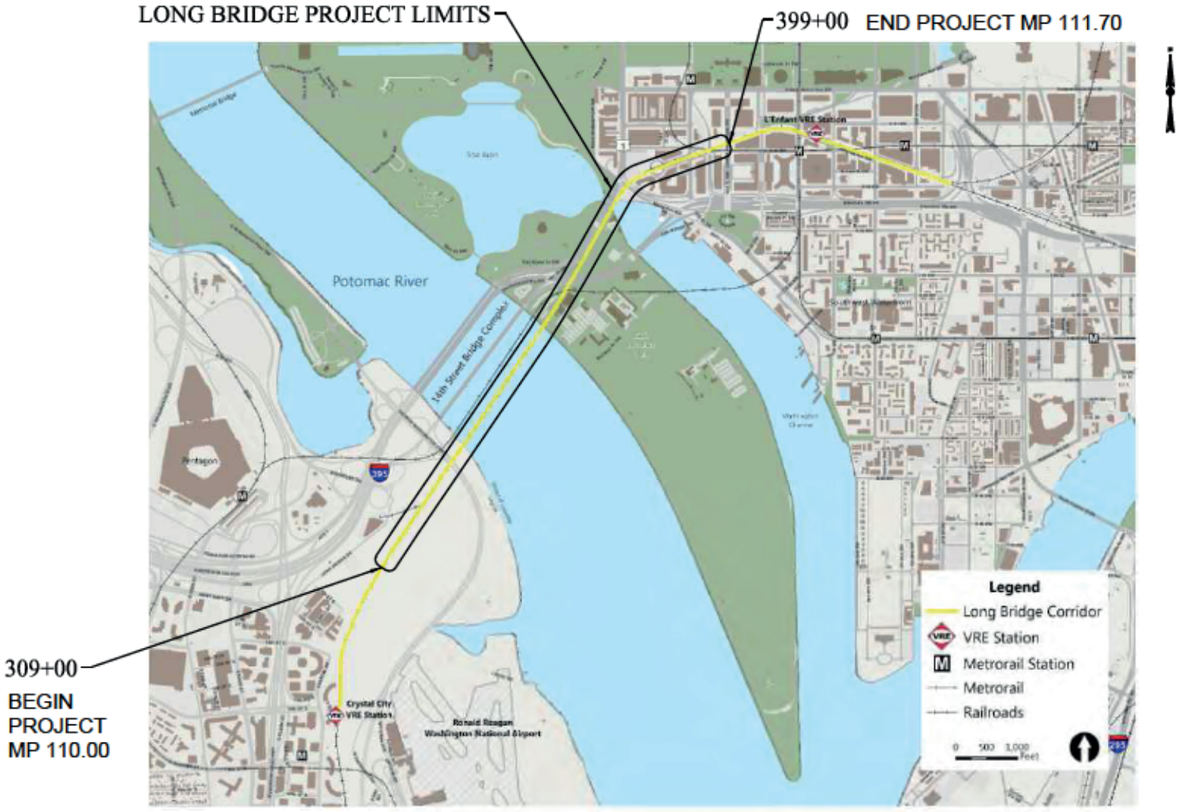
REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		G-001	72

DISTRICT OF COLUMBIA

DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED

CONCEPTUAL ENGINEERING OF LONG BRIDGE CORRIDOR TRACK ALIGNMENTS AND BIKE-PEDESTRIAN CONNECTION



KEY MAP

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
COVER SHEET

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJS
PROJECT MGR.

DIVISION CHIEF

DATE MARCH 22, 2019

FILE

SHEET 1 OF 72

vhb HNTB

NO.	DESCRIPTION	NAME	DATE

REVISIONS

Thursday, March 21, 2019 AT 12:43 PM
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G-001
kmccondless

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		G-002	72

DRAWING LIST

SHEET NUMBER	DRAWING NUMBER	DRAWING TITLE
1	G-001	COVER SHEET
2	G-002	DRAWING INDEX
3	G-003	KEY PLAN
4	T-111	FUTURE NO-BUILD (1 OF 9)
5	T-112	FUTURE NO-BUILD (2 OF 9)
6	T-113	FUTURE NO-BUILD (3 OF 9)
7	T-114	FUTURE NO-BUILD (4 OF 9)
8	T-115	FUTURE NO-BUILD (5 OF 9)
9	T-116	FUTURE NO-BUILD (6 OF 9)
10	T-117	FUTURE NO-BUILD (7 OF 9)
11	T-118	FUTURE NO-BUILD (8 OF 9)
12	T-119	FUTURE NO-BUILD (9 OF 9)
13	T-121	TRACK ALIGNMENT (1 OF 9)
14	T-122	TRACK ALIGNMENT (2 OF 9)
15	T-123A	TRACK ALIGNMENT (3 OF 9) – ACTION ALTERNATIVE A ONLY
16	T-124A	TRACK ALIGNMENT (4 OF 9) – ACTION ALTERNATIVE A ONLY
17	T-125A	TRACK ALIGNMENT (5 OF 9) – ACTION ALTERNATIVE A ONLY
18	T-126A	TRACK ALIGNMENT (6 OF 9) – ACTION ALTERNATIVE A ONLY
19	T-127	TRACK ALIGNMENT (7 OF 9)
20	T-128	TRACK ALIGNMENT (8 OF 9)
21	T-129	TRACK ALIGNMENT (9 OF 9)
22	T-123B	TRACK ALIGNMENT (1 OF 4) – ACTION ALTERNATIVE B ONLY
23	T-124B	TRACK ALIGNMENT (2 OF 4) – ACTION ALTERNATIVE B ONLY
24	T-125B	TRACK ALIGNMENT (3 OF 4) – ACTION ALTERNATIVE B ONLY
25	T-126B	TRACK ALIGNMENT (4 OF 4) – ACTION ALTERNATIVE B ONLY
26	T-211	TRACK PROFILE GRADE LINE (1 OF 8)
27	T-212	TRACK PROFILE GRADE LINE (2 OF 8)
28	T-213	TRACK PROFILE GRADE LINE (3 OF 8)
29	T-214	TRACK PROFILE GRADE LINE (4 OF 8)
30	T-215	TRACK PROFILE GRADE LINE (5 OF 8)
31	T-216	TRACK PROFILE GRADE LINE (6 OF 8)
32	T-217	TRACK PROFILE GRADE LINE (7 OF 8)
33	T-218	TRACK PROFILE GRADE LINE (8 OF 8)
34	T-301	TYPICAL SECTIONS (1 OF 19)
35	T-302	TYPICAL SECTIONS (2 OF 19)
36	T-303	TYPICAL SECTIONS (3 OF 19)
37	T-304	TYPICAL SECTIONS (4 OF 19)
38	T-305	TYPICAL SECTIONS (5 OF 19)
39	T-306	TYPICAL SECTIONS (6 OF 19)
40	T-307	TYPICAL SECTIONS (7 OF 19)
41	T-308	TYPICAL SECTIONS (8 OF 19)
42	T-309	TYPICAL SECTIONS (9 OF 19)
43	T-310	TYPICAL SECTIONS (10 OF 19)
44	T-311	TYPICAL SECTIONS (11 OF 19)
45	T-312	TYPICAL SECTIONS (12 OF 19)
46	T-313	TYPICAL SECTIONS (13 OF 19)
47	T-314	TYPICAL SECTIONS (14 OF 19)
48	T-315	TYPICAL SECTIONS (15 OF 19)
49	T-316	TYPICAL SECTIONS (16 OF 19)
50	T-317	TYPICAL SECTIONS (17 OF 19)
51	T-318	TYPICAL SECTIONS (18 OF 19)
52	T-319	TYPICAL SECTIONS (19 OF 19)
53	T-811	PHASING DIAGRAM – EXISTING/FUTURE NO-BUILD
54	T-812	PHASING DIAGRAM – PHASE A, PREWORK/STAGE 1
55	T-813	PHASING DIAGRAM – PHASE A, STAGE 2/3
56	T-814	PHASING DIAGRAM – PHASE A, STAGE 4/5
57	T-815	PHASING DIAGRAM – PHASE A, STAGE 6/PHASE B PREWORK
58	T-816	PHASING DIAGRAM – PHASE B, STAGE 1/2
59	T-817	PHASING DIAGRAM – PHASE B, STAGE 3/4
60	T-818	PHASING DIAGRAM – PHASE B, STAGE 5/6
61	T-819A	PHASING DIAGRAM – ACTION ALTERNATIVE A, STAGE 1/2
62	T-820A	PHASING DIAGRAM – ACTION ALTERNATIVE A, STAGE 3/FINAL
63	T-819B	PHASING DIAGRAM – ACTION ALTERNATIVE B, STAGE 1/2
64	T-820B	PHASING DIAGRAM – ACTION ALTERNATIVE B, STAGE 3/FINAL
65	B-121	BIKE-PEDESTRIAN PLAN (1 OF 3)
66	B-122	BIKE-PEDESTRIAN PLAN (2 OF 3)
67	B-123	BIKE-PEDESTRIAN PLAN (3 OF 3)
68	B-211	BIKE-PEDESTRIAN PROFILE (1 OF 3)
69	B-212	BIKE-PEDESTRIAN PROFILE (2 OF 3)
70	B-213	BIKE-PEDESTRIAN PROFILE (3 OF 3)
71	B-301	BIKE-PEDESTRIAN SECTION (1 OF 2)
72	B-302	BIKE-PEDESTRIAN SECTION (2 OF 2)

NOTES:

1. ACTION ALTERNATIVE A INCLUDES CONSTRUCTION OF A NEW TWO-TRACK BRIDGE UPSTREAM OF THE EXISTING LONG BRIDGE. THE EXISTING TWO-TRACK LONG BRIDGE WOULD BE RETAINED TO CREATE A FOUR-TRACK CROSSING.
2. ACTION ALTERNATIVE B INCLUDES A NEW TWO-TRACK BRIDGE CONSTRUCTED UPSTREAM OF THE EXISTING BRIDGE AND THE REPLACEMENT OF THE EXISTING BRIDGE WITH A NEW TWO-TRACK BRIDGE, CREATING A FOUR-TRACK CROSSING.
3. DESIGN IS BASED ON PROJECT AERIAL MAPPING, DISTRICT-PROVIDED AERIAL LIDAR, DISTRICT-PROVIDED RIGHT-OF-WAY GIS FILES, AND AS-BUILT DRAWINGS IN PDF FORMAT. FINAL DESIGN REQUIRES ADDITIONAL SURVEY, RIGHT-OF-WAY RESEARCH, AND MAPPING.
4. THE PROJECT LIMITS ARE BETWEEN THE "RO" INTERLOCKING NEAR LONG BRIDGE PARK IN ARLINGTON, VA AND THE "L'ENFANT NORTH" (LE) INTERLOCKING NEAR 9TH STREET SW IN THE DISTRICT OF COLUMBIA.
5. THESE DRAWINGS DEPICT THE ALIGNMENT, PROFILES, TYPICAL SECTIONS, AND CONSTRUCTION PHASING FOR TWO ACTION ALTERNATIVES AND THE FUTURE NO-BUILD ALIGNMENTS BETWEEN "RO" INTERLOCKING AND "LE NORTH" INTERLOCKING.
6. DETAILS FOR A BIKE-PEDESTRIAN BRIDGE ACROSS THE MAIN RIVER ARE BEING DEVELOPED IN PARALLEL WITH THE CONCEPTUAL ENGINEERING PLANS FOR THE RAILROAD CORRIDOR AND ARE ATTACHED TO THIS PLAN SET. THE PREFERRED ALTERNATIVE FOR THE BIKE-PEDESTRIAN BRIDGE IS AN UPSTREAM INDEPENDENT CROSSING.

CE PLANS - FINAL
May 10, 2019

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NO	DESCRIPTION	NAME	DATE

REVISIONS

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
INDEX SHEET

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJS
PROJECT MGR.

DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 2 OF 72

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
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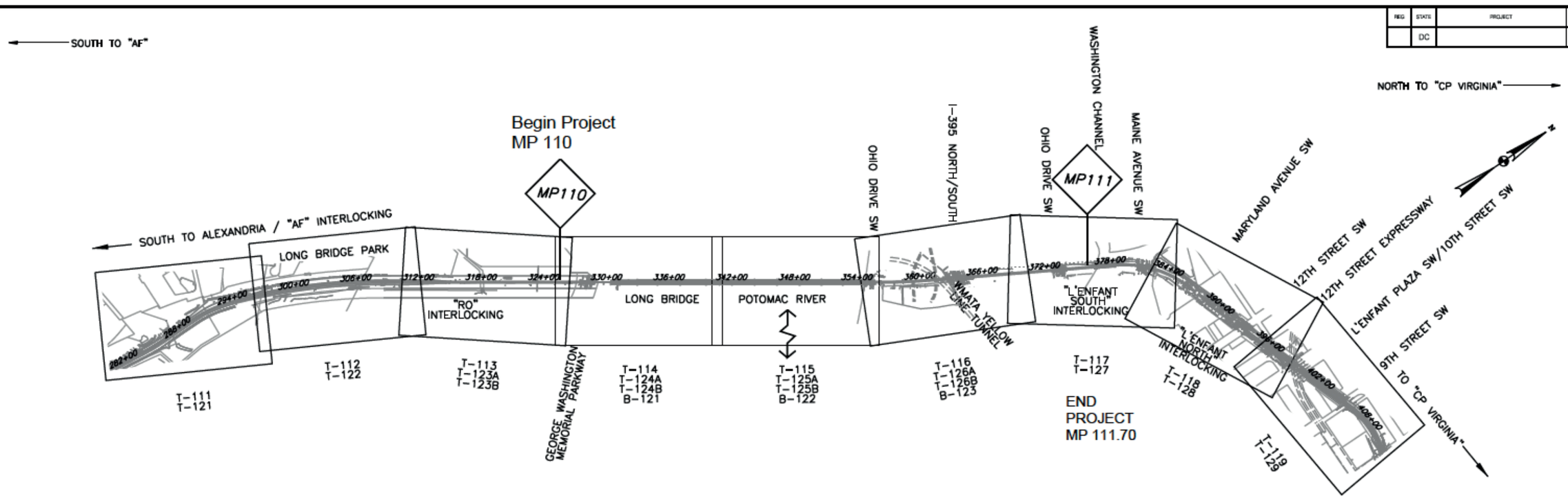

LONG BRIDGE UNDERGRADE BRIDGE IMPACTS	MINIMUM VERTICAL CLEARANCE		
	EXISTING	PROPOSED	DIFFERENCE
GEORGE WASHINGTON MEMORIAL PARKWAY	12'-5"	14'-6"	2'-1" INCREASE
OHIO DRIVE SW	12'-6"	14'-6"	2'-0" INCREASE
I-395	13'-10	16'-0"	2'-2" INCREASE
OHIO DRIVE SW	12'-6"	12'-6"	MATCH EXISTING
MAINE AVENUE SW	14'-0"	14'-0"	MATCH EXISTING

500 0 500 1000
SCALE: 1" = 500'

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
KEY PLAN

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY RDH
DRAWN BY DJS
PROJECT MGR.

DIVISION CHIEF

DATE MARCH 22, 2019
FILE
SHEET 3 OF 72

vhb HNTB

NO	DESCRIPTION	NAME	DATE

REVISIONS

Thursday, March 21, 2019 AT 12:43 PM
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kmccondless

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	VA		T-111	72

SOUTH TO "AF"

NORTH TO "CP VIRGINIA"

TRACKS 1 TO 4						
				$V_{F(MPH)}$ =	45	$V_{P(MPH)}$ = 50
Ls =	279.00'			$JR_{(F)}$ =	4.37	$JR_{(P)}$ = 2.03
Dc =	4°00'00"	Ea =	4.250"	$E_{u(F)}$ =	1.420"	$E_{u(P)}$ = 2.750"
Ls =	248.00'			$JR_{(F)}$ =	11.04	$JR_{(P)}$ = 3.32
Dc =	1°00'09"	Ea =	0.500"	$E_{u(F)}$ =	0.921"	$E_{u(P)}$ = 1.254"
Ls =	124.00'			$JR_{(F)}$ =	2.99	$JR_{(P)}$ = 1.98

TRACKS 1 TO 4					
Dc =	1°30'00"	Ea =	0.750"	Ls =	155.00'
$V_{F(MPH)}$ =	45	E_u =	1.376"	JR =	2.50
$V_{P(MPH)}$ =	50	E_u =	1.875"	JR =	1.65

CRYSTAL DRIVE

15TH STREET S.

PARCEL #34020239

PARCEL #34020238

PARCEL #34020237

PARCEL #34020PED

PARCEL #34020PEE

PARCEL #34020240

PARCEL #34024348

PARCEL #34024350

PARCEL #34024349

MOW TRACK
TRACK 3
TRACK 2
TRACK 1
TRACK 0

296+00
294+00
292+00
290+00
288+00
286+00
284+00
282+00

SEE NOTE 1

SEE NOTE 3

15'-0" TC TYP.

MATCH EXISTING

MATCH LINE - SEE SHEET T-112

LEGEND:
- PROPOSED BRIDGE
- PROPOSED RETAINING WALL
- CENTERLINE OF TRACK AT END OF CONSTRUCTION PHASE
- CENTERLINE OF EXISTING TRACK
- PROPOSED RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY

MP### MILE POST

NOTE:
1. TRACK ALIGNMENT SOUTH OF "RO" INTERLOCKING ASSUMED TO BE BUILT BEFORE THE LONG BRIDGE PROJECT BY VA DRPT DC2RVA PROJECT AND VA DRPT AF-RO 4TH TRACK PROJECT. TANGENT LENGTH FOR FUTURE "RO" INTERLOCKING TO BE PROVIDED AS FUTURE EXISTING CONDITION.
2. FORMAL LONG BRIDGE PROJECT LIMITS END AT "RO" INTERLOCKING. FUTURE COORDINATION WITH THE VA DRPT DC2RVA AND FASTLANE AF-RO 4TH TRACK PROJECT IS REQUIRED.
3. FOR CONTINUATION SEE VA DRPT DC2RVA PROJECT ALIGNMENT (BY OTHERS).

0 50 100
SCALE: 1" = 50'-0"

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
FUTURE NO-BUILD (1 OF 9)

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJS
PROJECT MGR.

DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 4 OF 72

vhb HNTB

NO.	DESCRIPTION	NAME	DATE

REVISIONS

Friday, March 22, 2019 AT 11:29 AM
11:29 AM
T-111
kmccondless

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	VA		T-112	72

SOUTH TO "AF"

NORTH TO "CP VIRGINIA"

6TH STREET SOUTH

LONG BRIDGE PARK

PARCEL #34024350

AVIATION EASEMENT DB 3044 PG 419

"RO" INTERLOCKING

PARCEL #34024348

MOW TRACK
TRACK 3
TRACK 2
TRACK 1
TRACK 0

298+00
300+00
302+00
304+00
306+00
308+00
310+00

Lc=1233.57
Dc=1°07'30"
Lc=1158.25
Dc=1°09'10"
Lc=1144.44
Dc=1°09'10"
Lc=1130.48
Dc=1°09'10"
Lc=1116.37
Dc=1°09'10"

13'-5"
11'-4"

EXISTING RETAINING WALL (TO REMAIN)

PROPOSED SIGNAL BRIDGE (SEE NOTE 1)

PROPOSED #10 TURNOUT

#10

Ls=124.00'

15'-0" TIC TYP.

MATCH EXISTING

MATCH LINE – SEE SHEET T-111

MATCH LINE – SEE SHEET T-113

SEE NOTE 2

TRACKS 1 TO 4						
				$V_{F(MPH)}$ =	45	$V_{P(MPH)}$ =	50
Ls =	279.00'			$JR_{(F)}$ =	4.37	$JR_{(P)}$ =	2.03
Dc =	4°00'00"	Ea =	4.250"	$E_{u(F)}$ =	1.420"	$E_{u(P)}$ =	2.750"
Ls =	248.00'			$JR_{(F)}$ =	11.04	$JR_{(P)}$ =	3.32
Dc =	1°00'09"	Ea =	0.500"	$E_{u(E)}$ =	0.921"	$E_{u(P)}$ =	1.254"
Ls =	124.00'			$JR_{(F)}$ =	2.99	$JR_{(P)}$ =	1.98

PARCEL #34024349

DRPT PROJECT (SEE NOTE 3)

LONG BRIDGE PROJECT STA. 309+00

ROACHES RUN

NOTE:

1. LOCATION OF "RO" NORTHBOUND HOME SIGNAL IN FINAL LOCATION AT END OF FUTURE NO-BUILD CONSTRUCTION.
2. TRACK ALIGNMENT SOUTH OF "RO" INTERLOCKING ASSUMED TO BE BUILT BEFORE THE LONG BRIDGE PROJECT BY VA DRPT DC2RVA PROJECT AND VA DRPT AF-RO 4TH TRACK PROJECT. TANGENT LENGTH FOR FUTURE "RO" INTERLOCKING TO BE PROVIDED AS FUTURE EXISTING CONDITION.
3. FORMAL LONG BRIDGE PROJECT LIMITS END AT "RO" INTERLOCKING. FUTURE COORDINATION WITH THE VA DRPT DC2RVA AND FASTLANE AF-RO 4TH TRACK PROJECT IS REQUIRED.

0 50 100
SCALE: 1" = 50'-0"

LEGEND:

- PROPOSED BRIDGE
- PROPOSED RETAINING WALL
- CENTERLINE OF TRACK AT END OF CONSTRUCTION PHASE
- CENTERLINE OF EXISTING TRACK
- PROPOSED RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY

MP### MILE POST

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
FUTURE NO-BUILD (2 OF 9)

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY RDH
DRAWN BY DJS
PROJECT MGR.

DIVISION CHIEF

DATE MARCH 22, 2019

FILE

SHEET 5 OF 72

vhb HNTB

NO.	DESCRIPTION	NAME	DATE

REVISIONS

12:48 PM Thursday, March 21, 2019 AT 12:48 PM

T-112 kmccondless

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	VA		T-113	72

SOUTH TO "AF"

NORTH TO "CP VIRGINIA"

LONG BRIDGE DRIVE

LONG BRIDGE PARK

FUTURE LONG BRIDGE PARK DESIGN
(UNDER CONSTRUCTION)

PARCEL #34024350

PARCEL #34024351

PARCEL #34024348

PARCEL #34024349

"RO" INTERLOCKING

BEGIN
PROJECT
MP 110

MP110

MATCH LINE – SEE SHEET T-112

MATCH LINE – SEE SHEET T-114

15'-0" TC TYP.

TRACK 3

TRACK 2

TRACK 1

TRACK 0

312+00

314+00

316+00

318+00

320+00

322+00

324+00

PROPOSED #15 TURNOUTS

TRACK NAMES CHANGE

EXISTING TURNOUTS
(TO BE REMOVED)

EXISTING CROSSOVER
(TO REMAIN)

EXISTING CROSSOVER
(TO REMAIN)

13'-0"

STORM PIPE

EXISTING CULVERT

ASSUMED FUTURE 4-TRACK
CONFIGURATION BY VA DRPT DC2RVA
PROJECT AND VA DRPT AF-RO 4TH
TRACK PROJECT (TO BE COORDINATED)

ROACHES RUN

0 50 100
SCALE: 1" = 50'-0"

LEGEND:

- PROPOSED BRIDGE
- PROPOSED RETAINING WALL
- CENTERLINE OF TRACK AT END OF CONSTRUCTION PHASE
- CENTERLINE OF EXISTING TRACK
- PROPOSED RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY

MP### MILE POST

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
FUTURE NO-BUILD (3 OF 9)

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY RDH
DRAWN BY DJS
PROJECT MGR.

DIVISION CHIEF

DATE MARCH 22, 2019

FILE

SHEET 6 OF 72

vhb HNTB

NO	DESCRIPTION	NAME	DATE

REVISIONS

12:49 PM Thursday, March 21, 2019 AT 12:49 PM

T-113 kmccondless

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	VA		T-114	72

SOUTH TO "AF"

NORTH TO "CP VIRGINIA"

GEORGE WASHINGTON MEMORIAL PARKWAY

LONG BRIDGE PARK

WMATA METRO YELLOW LINE

"RO" INTERLOCKING

PARCEL # 34024351

326+00 328+00 330+00 TRACK 3 TRACK 2 332+00 334+00 336+00 338+00 340+00

120

12'-3"

MATCH LINE – SEE SHEET T-113

MATCH LINE – SEE SHEET T-115

PARCEL # 34024348

PARCEL # 34024349

MOUNT VERNON TRAIL

ASSUMED ROW LIMITS 10' OFF EMBANKMENT

POTOMAC RIVER

LEGEND:

- PROPOSED BRIDGE
- PROPOSED RETAINING WALL
- CENTERLINE OF TRACK AT END OF CONSTRUCTION PHASE
- CENTERLINE OF EXISTING TRACK
- PROPOSED RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY

MP### MILE POST

0 50 100
SCALE: 1" = 50'-0"

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
FUTURE NO-BUILD (4 OF 9)

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJS
PROJECT MGR.

DIVISION CHIEF

DATE MARCH 22, 2019

FILE:

SHEET 7 OF 72

vhb HNTB

NO	DESCRIPTION	NAME	DATE

REVISIONS

T-114
kmccondless
Thursday, March 21, 2019 AT 12:49 PM

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-115	72

SOUTH TO "AF"

NORTH TO "CP VIRGINIA"

WMATA METRO YELLOW LINE

342+00 344+00 346+00 348+00 350+00 352+00 354+00

TRACK 3
TRACK 2

12'-3"

MATCH LINE - SEE SHEET T-114

MATCH LINE - SEE SHEET T-116

POTOMAC RIVER

OHIO DRIVE SW

0 50 100
SCALE: 1" = 50'-0"

LEGEND:

- PROPOSED BRIDGE
- PROPOSED RETAINING WALL
- CENTERLINE OF TRACK AT END OF CONSTRUCTION PHASE
- CENTERLINE OF EXISTING TRACK
- PROPOSED RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY

MP### MILE POST

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
FUTURE NO-BUILD (5 OF 9)

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJS
PROJECT MGR.

DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 8 OF 72

vhb HNTB

NO	DESCRIPTION	NAME	DATE

REVISIONS

12:49 PM
Thursday, March 21, 2019 AT 12:49 PM
T-115
kmccondless

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-116	72

SOUTH TO "AF"

NORTH TO "CP VIRGINIA"

MATCH LINE – SEE SHEET T-115

MATCH LINE – SEE SHEET T-117

OHIO DRIVE SW

PROPERTY ID: PAR 03160005

WMATA METRO YELLOW LINE

CLOSED SANITARY SEWER (NOT IN-SERVICE)

RELOCATED SANITARY SEWER

I-395 NORTH

I-395 SOUTH

14TH STREET SW/ROUTE 1

356+00

358+00

TRACK 3

TRACK 2

360+00

362+00

364+00

366+00

368+00

ASSUMED ROW LIMITS 10' OFF EMBANKMENT

25'-10" TO FENCE

13'-9"

NPS SERVICE CENTER

DOD FACILITY

PROPERTY ID: PAR 03160005

NPS

LEGEND:

- PROPOSED BRIDGE
- PROPOSED RETAINING WALL
- CENTERLINE OF TRACK AT END OF CONSTRUCTION PHASE
- CENTERLINE OF EXISTING TRACK
- PROPOSED RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY

MP### MILE POST

0 50 100

SCALE: 1" = 50'-0"

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
FUTURE NO-BUILD (6 OF 9)

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJS
PROJECT MGR.

DIVISION CHIEF

DATE MARCH 22, 2019

FILE:

SHEET 9 OF 72

vhb HNTB

NO	DESCRIPTION	NAME	DATE

REVISIONS

T-116
kmccondless
Thursday, March 21, 2019 AT 12:50 PM
12:50 PM

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-117	72

SOUTH TO "AF"

NORTH TO "CP VIRGINIA"

MATCH LINE – SEE SHEET T-116

MATCH LINE – SEE SHEET T-118

E. BASIN DRIVE SW

PROPERTY ID: PAR 03160005

OHIO DRIVE SW

PROPERTY ID: RES 0020000

14TH ST. SW/ROUTE 1

PROPERTY ID: 0268 0807

PROPERTY ID: 0231 0802

MP111

370+00

372+00

374+00

376+00

378+00

380+00

382+00

TRACK 3

TRACK 2

13'-4"

ASSUMED ROW LIMITS 10' OFF EMBANKMENT

ASSUMED ROW LIMITS

NPS

PROPERTY ID: PAR 03160005

WASHINGTON CHANNEL

WASHINGTON MARINA PARKING

PROPERTY ID: 0268 0812

PROPERTY ID: 0268 0813

MAINE AVE. SW

OHIO DRIVE SW

ASSUMED ROW LIMITS 10' OFF EMBANKMENT

LEGEND:

- PROPOSED BRIDGE
- PROPOSED RETAINING WALL
- CENTERLINE OF TRACK AT END OF CONSTRUCTION PHASE
- CENTERLINE OF EXISTING TRACK
- PROPOSED RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY

MP### MILE POST

0 50 100

SCALE: 1" = 50'-0"

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
FUTURE NO-BUILD (7 OF 9)

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY EDH
DRAWN BY DJB
PROJECT MGR.

DIVISION CHIEF

DATE MARCH 22, 2019

FILE

SHEET 10 OF 72

vhb HNTB

NO	DESCRIPTION	NAME	DATE

REVISIONS

T-117
kmccondless
Thursday, March 21, 2019 AT 12:50 PM
12:50 PM

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-118	72

SOUTH TO "AF"

NORTH TO "CP VIRGINIA"

MATCH LINE – SEE SHEET T-117

MATCH LINE – SEE SHEET T-119

PROPERTY ID: 0267 0043

THE PORTALS

PROPERTY ID: 0267 0804

THE PORTALS

PROPERTY ID: 0268 0812

STUB END TRACK

EXISTING 24" STORM SEWER

THE PORTALS

PROPERTY ID: 0267 0042

D STREET SW

PROPERTY ID: 0326 0805

EXISTING PIERS

PROPERTY ID: RES 01970000

RAMP

384+00

386+00

388+00

390+00

392+00

394+00

396+00

TRACK 4 (VRE STORAGE TRACK)

TRACK 3

TRACK 2

MARYLAND AVE. SW

D STREET SW

12TH STREET SW

PROPERTY ID: 0299 0831

MANDARIN ORIENTAL

THE PORTALS

PROPERTY ID: 0299 0832

PROPERTY ID: 0299 0024

PROPERTY ID: 0327 0839

PROPERTY ID: 0327 0840

LEGEND:

- PROPOSED BRIDGE
- PROPOSED RETAINING WALL
- CENTERLINE OF TRACK AT END OF CONSTRUCTION PHASE
- CENTERLINE OF EXISTING TRACK
- PROPOSED RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY

MP### MILE POST

0 50 100

SCALE: 1" = 50'-0"

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
FUTURE NO-BUILD (8 OF 9)

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJS
PROJECT MGR.

DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 11 OF 72

HNTB

NO	DESCRIPTION	NAME	DATE

REVISIONS

T-118
kmccondless
Thursday, March 21, 2019 AT 12:51 PM
12:51 PM

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-119	72

SOUTH TO "AF"

NORTH TO "CP VIRGINIA"

MATCH LINE – SEE SHEET T-118

12TH ST. EXPRESSWAY

WMATA

LONG BRIDGE PROJECT

VRE PROJECT

STA. 399+00

LENFANT PLAZA/10TH STREET SW

PROPERTY ID: RES 112A0000

PROPERTY ID: 0352 0823

PROPERTY ID: 0385 0830

PROPERTY ID: 0385 0832

PROPOSED TURNOUT #15

STATION TRACK

TRACK 4

TRACK 3

TRACK 2

404+00

406+00

408+00

410+00

402+00

400+00

398+00

#15

14'-0"

13'-0"

SEE NOTE 2

SEE NOTE 3

EXISTING CROSSOVERS (TO REMAIN)

PROPERTY ID: 0386 0802

PROPERTY ID: 0386 0805

PROPERTY ID: 0386 0001

PROPERTY ID: 0352 0821

PROPERTY ID: 0353 0044

PROPERTY ID: RES 112A0000

C STREET SW

HANCOCK PARK

PROPERTY ID: RES 01130000

L'ENFANT STATION

SIGNAL BRIDGE (BUILT IN FUTURE NO-BUILT)

9TH STREET SW

PROPERTY ID: 0410 0802

PROPERTY ID: 0434 0812

D STREET SW

N

0 50 100

SCALE: 1" = 50'-0"

NOTES:

1. FORMAL LONG BRIDGE PROJECT LIMITS END SOUTH OF "LE NORTH" INTERLOCKING. ALIGNMENT TO THE NORTH TO BE COORDINATED WITH FUTURE L'ENFANT STATION 4TH TRACK PROJECT.
2. "L'ENFANT NORTH" INTERLOCKING CONFIGURATION IS ASSUMED FOR CONSTRUCTION STAGING PURPOSES ONLY. ACTUAL INTERLOCKINGS TO BE DETERMINED AT LATER PHASE IN COORDINATION WITH OTHER ACTIVE PROJECTS.
3. FOR CONTINUATION SEE L'ENFANT STATION 4TH TRACK ALIGNMENT (BY OTHERS).

LEGEND:

- PROPOSED BRIDGE
- PROPOSED RETAINING WALL
- CENTERLINE OF TRACK AT END OF CONSTRUCTION PHASE
- CENTERLINE OF EXISTING TRACK
- PROPOSED RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY

MP### MILE POST

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
FUTURE NO-BUILD (9 OF 9)

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY RDH
DRAWN BY DJS
PROJECT MGR.

DIVISION CHIEF

DATE MARCH 22, 2019

FILE

SHEET 10 OF 72

vhb HNTB

NO.	DESCRIPTION	NAME	DATE

REVISIONS

T-119
kmccondless
12:51 PM
Thursday, March 21, 2019 AT 12:51 PM

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	VA		T-121	72

SOUTH TO "AF"

NORTH TO "CP VIRGINIA"

TRACKS 1 TO 4						
				$V_{F(MPH)}$ =	45	$V_{P(MPH)}$ = 50
Ls =	279.00'			$JR_{(F)}$ =	4.37	$JR_{(P)}$ = 2.03
Dc =	4°00'00"	Ea =	4.250"	$E_{u(F)}$ =	1.420"	$E_{u(P)}$ = 2.750"
Ls =	248.00'			$JR_{(F)}$ =	11.04	$JR_{(P)}$ = 3.32
Dc =	1°00'09"	Ea =	0.500"	$E_{u(F)}$ =	0.921"	$E_{u(P)}$ = 1.254"
Ls =	124.00'			$JR_{(F)}$ =	2.99	$JR_{(P)}$ = 1.98

TRACKS 1 TO 4					
Dc =	1°30'00"	Ea =	0.750"	Ls =	155.00'
$V_{F(MPH)}$ =	45	E_u =	1.376"	JR =	2.50
$V_{P(MPH)}$ =	50	E_u =	1.875"	JR =	1.65

CRYSTAL DRIVE

15TH STREET S.

PARCEL #34020239

PARCEL #34020238

PARCEL #34020237

PARCEL #34020PED

PARCEL #34020PEE

PARCEL #34020240

PARCEL #34024348

PARCEL #34024349

PARCEL #34024350

TRACK 4 (FORMER TRACK 3)

TRACK 3 (FORMER TRACK 2)

TRACK 2 (FORMER TRACK 1)

TRACK 1 (FORMER TRACK 0)

MOW TRACK

282+00

284+00

286+00

288+00

290+00

292+00

294+00

296+00

LOD

SEE NOTE 1

SEE NOTE 3

15'-0" TC TYP.

MATCH LINE - SEE SHEETT T-122

NOTES:

1. TRACK ALIGNMENT SOUTH OF "RO" INTERLOCKING ASSUMED TO BE BUILT BEFORE THE LONG BRIDGE PROJECT BY VA DRPT DC2RVA PROJECT AND VA DRPT AF-RO 4TH TRACK PROJECT. TANGENT LENGTH FOR FUTURE "RO" INTERLOCKING TO BE PROVIDED AS FUTURE EXISTING CONDITION.
2. FORMAL LONG BRIDGE PROJECT LIMITS END AT "RO" INTERLOCKING. FUTURE COORDINATION WITH THE VA DRPT DC2RVA AND FASTLANE AF-RO 4TH TRACK PROJECT IS REQUIRED.
3. FOR CONTINUATION SEE VA DRPT DC2RVA PROJECT ALIGNMENT (BY OTHERS).

LEGEND:

- PROPOSED BRIDGE
- PROPOSED RETAINING WALL
- CENTERLINE OF TRACK AT END OF CONSTRUCTION PHASE
- CENTERLINE OF EXISTING TRACK
- PROPOSED RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY
- LOD — PROPOSED LIMIT OF DISTURBANCE (ACTION ALTERNATIVE A ONLY)

MP### MILE POST

0 50 100
SCALE: 1" = 50'-0"

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
TRACK ALIGNMENT (1 OF 9)

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJS
PROJECT MGR.

DIVISION CHIEF

DATE MARCH 22, 2019

FILE:

SHEET 13 OF 72

vhb HNTB

NO	DESCRIPTION	NAME	DATE

REVISIONS

Friday, March 22, 2019 AT 11:30 AM

T-121 kmccondless

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	VA		T-122	72

SOUTH TO "AF"

NORTH TO "CP VIRGINIA"

6TH STREET SOUTH

LONG BRIDGE PARK

PARCEL #34024350

"RO" INTERLOCKING

PARCEL #34024348

MOW TRACK
TRACK 4 (FORMER TRACK 3)
TRACK 3 (FORMER TRACK 2)
TRACK 2 (FORMER TRACK 1)
TRACK 1 (FORMER TRACK 0)

298+00 300+00 302+00 304+00 306+00 308+00 310+00

13'-6"

11'-4"

EXISTING RETAINING WALL (TO REMAIN)

SIGNAL BRIDGE (BUILT IN FUTURE NO-BUILD) SEE NOTE 1

15'-0" TC TYP.

MATCH EXISTING (SEE NOTE 1)

LOD

SEE NOTE 2

MATCH LINE - SEE SHEET T-121

MATCH LINE - SEE SHEET T-123A OR T-123B

PARCEL #34024349

DRPT PROJECT (SEE NOTE 3)

LONG BRIDGE PROJECT STA. 309+00

ROACHES RUN

TRACKS 1 TO 4

				$V_{F(MPH)}$ =	45	$V_{P(MPH)}$ = 50
Ls =	279.00'			$JR_{(F)}$ =	4.37	$JR_{(P)}$ = 2.03
Dc =	4°00'00"	Ea =	4.250"	$E_{u(F)}$ =	1.420"	$E_{u(P)}$ = 2.750"
Ls =	248.00'			$JR_{(F)}$ =	11.04	$JR_{(P)}$ = 3.32
Dc =	1°00'09"	Ea =	0.500"	$E_{u(F)}$ =	0.921"	$E_{u(P)}$ = 1.254"
Ls =	124.00'			$JR_{(F)}$ =	2.99	$JR_{(P)}$ = 1.98

NOTES:

1. MATCH ASSUMED FUTURE 4-TRACK CONFIGURATION OF VA DRPT DC2RVA PROJECT. "RO" NORTHBOUND HOME SIGNAL BUILT AT END OF FUTURE NO-BUILD.
2. TRACK ALIGNMENT SOUTH OF "RO" INTERLOCKING ASSUMED TO BE BUILT BEFORE THE LONG BRIDGE PROJECT BY VA DRPT DC2RVA PROJECT AND VA DRPT AF-RO 4TH TRACK PROJECT. TANGENT LENGTH FOR FUTURE "RO" INTERLOCKING TO BE PROVIDED AS FUTURE EXISTING CONDITION.
3. FORMAL LONG BRIDGE PROJECT LIMITS END AT "RO" INTERLOCKING. FUTURE COORDINATION WITH THE VA DRPT DC2RVA AND FASTLANE AF-RO 4TH TRACK PROJECT IS REQUIRED.

0 50 100
SCALE: 1" = 50'-0"

LEGEND:

- PROPOSED BRIDGE
- PROPOSED RETAINING WALL
- CENTERLINE OF TRACK AT END OF CONSTRUCTION PHASE
- CENTERLINE OF EXISTING TRACK
- PROPOSED RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY
- LOD — PROPOSED LIMIT OF DISTURBANCE (ACTION ALTERNATIVE A ONLY)

MP### MILE POST

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
TRACK ALIGNMENT (2 OF 9)

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY RDH
DRAWN BY DJS
PROJECT MGR.
DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 14 OF 72

vhb HNTB

NO.	DESCRIPTION	NAME	DATE
	REVISIONS		

12:53 PM Thursday, March 21, 2019 AT 12:53 PM

T-122 kmccondless

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	VA		T-123A	72

SOUTH TO "AF"

NORTH TO "CP VIRGINIA"

LONG BRIDGE DRIVE

LONG BRIDGE PARK

FUTURE LONG BRIDGE PARK DESIGN
(UNDER CONSTRUCTION)

BEGIN PROJECT MP 110

MP110

PARCEL #34024350

"RO" INTERLOCKING

PARCEL #34024351

PARCEL #34024348

MATCH LINE – SEE SHEET T-122

MATCH LINE – SEE SHEET T-124A

EXISTING RETAINING WALL (TO REMAIN)

12'-3"

15'-0" TC TYP.

TRACK 4

TRACK 3

TRACK 2

TRACK 1

312+00

314+00

316+00

318+00

320+00

322+00

324+00

EXISTING CROSSOVER (TO REMAIN IN ACTION ALTERNATIVE A)

MATCH EXISTING

STORM PIPE

EXISTING CULVERT

PARCEL #34024349

ROACHES RUN

TRACK 1					
Dc =	0°05'30"	Ea =	0.250"	Ls =	62.00'
$V_{F(MPH)}$ =	45	E_u =	-0.120"	JR =	-11.48
$V_{P(MPH)}$ =	50	E_u =	-0.090"	JR =	-13.78

TRACK 1					
Dc =	0°04'30"	Ea =	0.250"	Ls =	62.00'
$V_{F(MPH)}$ =	45	E_u =	-0.144"	JR =	-9.57
$V_{P(MPH)}$ =	50	E_u =	-0.119"	JR =	-10.42

LEGEND:

- PROPOSED BRIDGE
- PROPOSED RETAINING WALL
- CENTERLINE OF TRACK AT END OF CONSTRUCTION PHASE
- CENTERLINE OF EXISTING TRACK
- PROPOSED RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY
- LOD – PROPOSED LIMIT OF DISTURBANCE (ACTION ALTERNATIVE A ONLY)

MP### MILE POST

0 50 100
SCALE: 1" = 50'-0"

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
TRACK ALIGNMENT (3 OF 9)
ACTION ALTERNATIVE A ONLY

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJS
PROJECT MGR.

DIVISION CHIEF

DATE MARCH 22, 2019

FILE

SHEET 15 OF 72

vhb HNTB

NO.	DESCRIPTION	NAME	DATE

REVISIONS

Friday, March 22, 2019 AT 11:30 AM

T-123A kmccondless

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	VA		T-124A	72

SOUTH TO "AF"

NORTH TO "CP VIRGINIA"

TRACKS 3 & 4					
Dc =	1°51'00"	Ea =	2.000"	Ls =	124.00'
$V_{F(MPH)}$ =	50	E_u =	1.238"	JR =	2.00
$V_{P(MPH)}$ =	50	E_u =	1.238"	JR =	2.00

TRACKS 3 & 4					
Dc =	1°51'00"	Ea =	2.000"	Ls =	124.00'
$V_{F(MPH)}$ =	50	E_u =	1.238"	JR =	2.00
$V_{P(MPH)}$ =	50	E_u =	1.238"	JR =	2.00

GEORGE WASHINGTON MEMORIAL PARKWAY

ROW EASEMENT NEEDED FOR PROPOSED BRIDGE

WMATA METRO YELLOW LINE

LONG BRIDGE PARK

"RO" INTERLOCKING

PROPOSED ROW FROM LONG BRIDGE PARK

PROPOSED RETAINING WALL

PARCEL # 34024351

PROP. 2-TK BRIDGE

PROPOSED BIKE-PEDESTRIAN BRIDGE (SEE SHEETS B-121 THROUGH B-302 FOR DETAILS)

PROPOSED FENDER SYSTEM TO BE DEVELOPED IN PRELIMINARY ENGINEERING

97'-0"

TRACK 4

TRACK 3

TRACK 2

TRACK 1

PROPOSED PIER (TYP)

PROPOSED 2-TRACK RIVER BRIDGE

15'-0"

59'-3"

64'-3"

17'-3"

115'-0"

326+00 328+00 330+00 332+00 334+00 336+00 338+00 340+00

EXISTING CROSSOVER (TO REMAIN IN ACTION ALTERNATIVE A)

PROPOSED SIGNAL BRIDGE

EXISTING THROUGH GIRDER BRIDGE (TO REMAIN)

EXISTING LONG BRIDGE (TO REMAIN)

PARCEL # 34024348

PARCEL # 34024349

MOUNT VERNON TRAIL

ASSUMED ROW LIMITS 10' OFF EMBANKMENT

HOME SIGNAL CONSTRUCTED UNDER AF-RO 4TH TRACK PROJECT (FINAL LOCATION TO BE DETERMINED)

POTOMAC RIVER

MATCH LINE - SEE SHEET T-123A

MATCH LINE - SEE SHEET T-125A

LEGEND:

- PROPOSED BRIDGE
- PROPOSED RETAINING WALL
- CENTERLINE OF TRACK AT END OF CONSTRUCTION PHASE
- CENTERLINE OF EXISTING TRACK
- PROPOSED RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY
- LOD — PROPOSED LIMIT OF DISTURBANCE (ACTION ALTERNATIVE A ONLY)

MP### MILE POST

0 50 100

SCALE: 1" = 50'-0"

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
TRACK ALIGNMENT (4 OF 9)
ACTION ALTERNATIVE A ONLY

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY RDH
DRAWN BY DJS
PROJECT MGR.

DIVISION CHIEF

DATE MARCH 22, 2019

FILE

SHEET 16 OF 72

vhb HNTB

NO	DESCRIPTION	NAME	DATE

REVISIONS

Friday, March 22, 2019 AT 11:49 AM

T-124A kmcocondless

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-125A	72

SOUTH TO "AF"

NORTH TO "CP VIRGINIA"

WMATA METRO YELLOW LINE

ROW EASEMENT NEEDED FOR PROPOSED BRIDGE

PROPOSED FENDER SYSTEM TO BE DEVELOPED IN PRELIMINARY ENGINEERING

PROPOSED BIKE-PEDESTRIAN BRIDGE (SEE SHEETS B-121 THROUGH B-302 FOR DETAILS)

TRACK 4

TRACK 3

TRACK 2

TRACK 1

PROPOSED PIER (TYP)

PROPOSED 2-TRACK RIVER BRIDGE

EXISTING LONG BRIDGE (TO REMAIN)

342+00 344+00 346+00 348+00 350+00 352+00 354+00

64'-3"

38'-2"

15'-0"

115'-0"

12'-2"

MATCH LINE - SEE SHEET T-124A

MATCH LINE - SEE SHEET T-126A

POTOMAC RIVER

OHIO DRIVE SW

0 50 100

SCALE: 1" = 50'-0"

LEGEND:

- PROPOSED BRIDGE
- PROPOSED RETAINING WALL
- CENTERLINE OF TRACK AT END OF CONSTRUCTION PHASE
- CENTERLINE OF EXISTING TRACK
- PROPOSED RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY
- LOD – PROPOSED LIMIT OF DISTURBANCE (ACTION ALTERNATIVE A ONLY)

MP### MILE POST

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
TRACK ALIGNMENT (5 OF 9)
ACTION ALTERNATIVE A ONLY

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY RDH
DRAWN BY DJS
PROJECT MGR.

DIVISION CHIEF

DATE MARCH 22, 2019

FILE

SHEET 17 OF 72

vhb HNTB

NO.	DESCRIPTION	NAME	DATE

REVISIONS

Friday, March 22, 2019 AT 11:31 AM

T-125A kmccondless

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-126A	72

SOUTH TO "AF"

NORTH TO "CP VIRGINIA"

MATCH LINE – SEE SHEET T-125A

MATCH LINE – SEE SHEET T-127

OHIO DRIVE SW

PROPERTY ID: PAR 03160005

WMATA METRO YELLOW LINE

PROPOSED BIKE-PEDESTRIAN BRIDGE (SEE SHEETS B-121 THROUGH B-302 FOR DETAILS)

CLOSED SANITARY SEWER (NOT IN-SERVICE)

EXISTING SANITARY SEWER

I-395 NORTH

I-395 SOUTH

PROPOSED 2-TRACK BRIDGE

PROPOSED RETAINING WALL

PROPOSED 2-TRACK RIVER BRIDGE

MATCH EXISTING

356+00

358+00

360+00

362+00

364+00

TEMP. SHEETING

366+00

368+00

14TH STREET SW/ROUTE 1

TRACK 4

TRACK 3

TRACK 2

TRACK 1

15'-0"

16'-9" TO FENCE

ASSUMED ROW LIMITS 10' OFF EMBANKMENT

TEMPORARY CONSTRUCTION EASEMENT NEEDED WITHIN DOD FACILITY. ALL WORK CONSTRUCTED OUTSIDE OF FENCING.

EXISTING THROUGH GIRDER BRIDGE (TO BE REMOVED)

NPS SERVICE CENTER

DOD FACILITY

PROPERTY ID: PAR 03160005

NPS

TRACKS 3 & 4					
Dc =	1°04'30"	Ea =	0.500"	Ls =	124.00'
$V_{F(MPH)}$ =	50	E_u =	1.381"	JR =	1.80
$V_{P(MPH)}$ =	50	E_u =	1.381"	JR =	1.80

TRACKS 3 & 4					
Dc =	2°00'35"	Ea =	2.000"	Ls =	124.00'
$V_{F(MPH)}$ =	50	E_u =	1.517"	JR =	1.63
$V_{P(MPH)}$ =	50	E_u =	1.517"	JR =	1.63

TRACKS 3 & 4					
Dc =	2°19'10"	Ea =	2.500"	Ls =	155.00'
$V_{F(MPH)}$ =	50	E_u =	1.559"	JR =	1.99
$V_{P(MPH)}$ =	50	E_u =	1.559"	JR =	1.99

TRACK 1 & 2					
Dc =	0°49'00"	Ea =	0.500"	Ls =	124.00'
$V_{F(MPH)}$ =	25	E_u =	-0.143"	JR =	-34.69
$V_{P(MPH)}$ =	50	E_u =	0.929"	JR =	2.67

LEGEND:

- PROPOSED BRIDGE
- PROPOSED RETAINING WALL
- CENTERLINE OF TRACK AT END OF CONSTRUCTION PHASE
- CENTERLINE OF EXISTING TRACK
- PROPOSED RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY
- LOD – PROPOSED LIMIT OF DISTURBANCE (ACTION ALTERNATIVE A ONLY)
- MP### – MILE POST

0 50 100

SCALE: 1" = 50'-0"

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
TRACK ALIGNMENT (6 OF 9)
ACTION ALTERNATIVE A ONLY

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJS
PROJECT MGR.

DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 18 OF 72

vhb HNTB

NO	DESCRIPTION	NAME	DATE
	REVISIONS		

11:31 AM Friday, March 22, 2019 AT 11:31 AM

T-126A kmccandless

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-127	72

SOUTH TO "AF"

NORTH TO "CP VIRGINIA"

MATCH LINE – SEE SHEET T-126A OR T-126B

MATCH LINE – SEE SHEET T-128

PROPERTY ID: PAR 03160005

E. BASIN DRIVE SW

OHIO DRIVE SW

PROPERTY ID: RES 0020000

14TH ST. SW/ROUTE 1

PROPERTY ID: 0268 0807

PROPERTY ID: 0231 0802

"L'ENFANT SOUTH" INTERLOCKING – SEE NOTE 2

MP111

TEMPORARY RAMP CLOSURES DURING CONSTRUCTION (POSSIBLE REALIGNMENT NEEDED)

PROPOSED SIGNAL BRIDGE

EXISTING DECK GIRDER BRIDGE (TO BE REMOVED)

EXISTING THROUGH GIRDER BRIDGE (TO BE REMOVED)

PROPOSED 4-TRACK BRIDGE

PROPOSED RETAINING WALL

PROPOSED RETAINING WALL SEE NOTE 1

15'-0" TC TYP.

TRACK 4

TRACK 3

TRACK 2

TRACK 1

370+00

372+00

374+00

376+00

378+00

380+00

382+00

PROPOSED SIGNAL EQUIPMENT

PROPOSED RETAINING WALL

PROPOSED 4-TRACK BRIDGE

ASSUMED ROW LIMITS 10' OFF EMBANKMENT

ASSUMED ROW LIMITS

EXISTING PEDESTRIAN BRIDGE (TO BE RELOCATED)

WASHINGTON MARINA PARKING

PROPOSED PEDESTRIAN BRIDGE

PROPERTY ID: 0268 0812

PROPERTY ID: 0268 0813

NPS

PROPERTY ID: PAR 03160005

WASHINGTON CHANNEL

MAINE AVE. SW

OHIO DRIVE SW

TRACKS 3 & 4					
Dc =	2°19'10"	Ea =	2.500"	Ls =	155.00'
$V_{F(MPH)}$ =	50	E_u =	1.559"	JR =	1.99
$V_{P(MPH)}$ =	50	E_u =	1.559"	JR =	1.99

TRACK 3							
				$V_{F(MPH)}$ =	25	$V_{P(MPH)}$ =	30
Ls =	155.00'			$JR_{(F)}$ =	4.48	$JR_{(P)}$ =	2.03
Dc =	6°01'25"	Ea =	1.250"	$E_{u(F)}$ =	1.385"	$E_{u(P)}$ =	2.545"
Ls =	155.00'			$JR_{(F)}$ =	100.00	$JR_{(P)}$ =	14.76
Dc =	8°10'00"	Ea =	2.250"	$E_{u(F)}$ =	1.323"	$E_{u(P)}$ =	2.895"
Ls =	155.00'			$JR_{(F)}$ =	4.69	$JR_{(P)}$ =	1.78

TRACK 4					
Dc =	6°10'00"	Ea =	1.000"	Ls =	155.00'
$V_{F(MPH)}$ =	25	E_u =	1.698"	JR =	3.65
$V_{P(MPH)}$ =	30	E_u =	2.885"	JR =	1.79

TRACK 1 & 2					
Dc =	0°49'00"	Ea =	0.500"	Ls =	124.00'
$V_{F(MPH)}$ =	25	E_u =	-0.143"	JR =	-26.01
$V_{P(MPH)}$ =	50	E_u =	0.929"	JR =	2.67

TRACK 1							
				$V_{F(MPH)}$ =	25	$V_{P(MPH)}$ =	30
Ls =	155.00'			$JR_{(F)}$ =	5.02	$JR_{(P)}$ =	2.22
Dc =	5°40'45"	Ea =	1.250"	$E_{u(F)}$ =	1.235"	$E_{u(P)}$ =	2.328"
Ls =	155.00'			$JR_{(F)}$ =	38.51	$JR_{(P)}$ =	7.69
Dc =	8°20'00"	Ea =	2.250"	$E_{u(F)}$ =	1.396"	$E_{u(P)}$ =	3.000"
Ls =	155.00'			$JR_{(F)}$ =	4.44	$JR_{(P)}$ =	1.72

TRACK 2							
				$V_{F(MPH)}$ =	25	$V_{P(MPH)}$ =	30
Ls =	155.00'			$JR_{(F)}$ =	4.38	$JR_{(P)}$ =	1.99
Dc =	6°05'45"	Ea =	1.250"	$E_{u(F)}$ =	1.417"	$E_{u(P)}$ =	2.590"
Ls =	155.00'			$JR_{(F)}$ =	116.98	$JR_{(P)}$ =	14.16
Dc =	8°15'40"	Ea =	2.250"	$E_{u(F)}$ =	1.364"	$E_{u(P)}$ =	2.955"
Ls =	155.00'			$JR_{(F)}$ =	4.55	$JR_{(P)}$ =	1.75

LEGEND:

- PROPOSED BRIDGE
- PROPOSED RETAINING WALL
- CENTERLINE OF TRACK AT END OF CONSTRUCTION PHASE
- CENTERLINE OF EXISTING TRACK
- PROPOSED RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY
- LOD – PROPOSED LIMIT OF DISTURBANCE (ACTION ALTERNATIVE A ONLY)
- MP### MILE POST

NOTES:

1. RETAINING WALL IS ON DISTRICT PROPERTY; LIMITS OF RAILROAD EASEMENT NOT KNOWN.
2. "L'ENFANT NORTH" INTERLOCKING AND "L'ENFANT SOUTH" INTERLOCKING CONFIGURATION IS ASSUMED FOR CONSTRUCTION STAGING PURPOSES ONLY. ACTUAL INTERLOCKINGS TO BE DETERMINED AT LATER PHASE IN COORDINATION WITH OTHER ACTIVE PROJECTS.

0 50 100

SCALE: 1" = 50'-0"

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
TRACK ALIGNMENT (7 OF 9)

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJS
PROJECT MGR.
DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 19 OF 72

vhb HNTB

NO	DESCRIPTION	NAME	DATE

REVISIONS

T-127
kmccondless
Friday, March 22, 2019 AT 11:33 AM
11:33 AM

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-128	72

SOUTH TO "AF"

NORTH TO "CP VIRGINIA"

MATCH LINE – SEE SHEET T-127

MATCH LINE – SEE SHEET T-129

PROPERTY ID: 0267 0043

THE PORTALS

PROPERTY ID: 0267 0804

PORTAL V BUILDING SEE NOTE 2

THE PORTALS

PROPOSED RETAINING WALL

MODIFIED ACCESS ROAD (PED. ONLY)

PROP. ROW/EASEMENT

EXISTING RETAINING WALL

EXISTING RETAINING WALL (TO BE REMOVED)

PROPERTY ID: 0268 0812

THE PORTALS

PROPERTY ID: 0267 0042

EXISTING 24" STORM SEWER (TO BE RELOCATED)

EXISTING PIERS

D STREET SW

PROPERTY ID: 0326 0805

PROPERTY ID: RES 01970000

RAMP

EXISTING RETAINING WALL

TRACK 4

TRACK 3

TRACK 2

TRACK 1

384+00

386+00

388+00

390+00

392+00

394+00

396+00

TRACK 4					
Dc =	3°15'00"	Ea =	0.500"	Ls =	62.00'
$V_{F(MPH)}$ =	25	E_u =	0.922"	JR =	2.69
$V_{P(MPH)}$ =	30	E_u =	1.548"	JR =	1.34

TRACK 4					
Dc =	3°15'00"	Ea =	0.500"	Ls =	62.00'
$V_{F(MPH)}$ =	25	E_u =	0.922"	JR =	2.69
$V_{P(MPH)}$ =	30	E_u =	1.548"	JR =	1.34

PROPOSED RIGHT-OF-WAY SEE NOTE 1

PROPOSED CRASH WALL

PROPOSED SIGNAL BRIDGE

EXISTING RETAINING WALL (STRENGTHEN CRASH WALL)

7'-11" ACTUAL

7'-6" COMP.

MARYLAND AVE. SW

CRASHWALL IMPROVEMENT UNDER OVERBUILD

14'-0"

14'-0"

7'-6" MIN.

PROPERTY ID: 0299 0831

MANDARIN ORIENTAL

THE PORTALS

PROPERTY ID: 0299 0832

PROPERTY ID: 0299 0024

12TH STREET SW

D STREET SW

PROPERTY ID: 0327 0839

PROPERTY ID: 0327 0840

LEGEND:

- PROPOSED BRIDGE
- PROPOSED RETAINING WALL
- CENTERLINE OF TRACK AT END OF CONSTRUCTION PHASE
- CENTERLINE OF EXISTING TRACK
- PROPOSED RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY
- PROPOSED LIMIT OF DISTURBANCE (ACTION ALTERNATIVE A ONLY)
- MP### MILE POST

NOTES:

1. TRIANGULAR SHAPE PROPERTY IS PRIVATELY OWNED.
2. LIMITS OF UNDER-CONSTRUCTION PORTAL V BUILDING SHOWN.

SCALE: 1" = 50'-0"

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
TRACK ALIGNMENT (8 OF 9)

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJB
PROJECT MGR.

DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 20 OF 72

vhb HNTB

NO	DESCRIPTION	NAME	DATE
	REVISIONS		

Friday, March 22, 2019 AT 11:34 AM

T-128 kmccondless

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-429	72

SOUTH TO "AF"

NORTH TO "CP VIRGINIA"

MATCH LINE – SEE SHEET T-128

MATCH LINE – SEE SHEET T-129

12TH ST. EXPRESSWAY

WMATA

LENFANT PLAZA/10TH STREET SW

END PROJECT MP 111.70

LONG BRIDGE PROJECT STA. 399+00

VRE PROJECT (SEE NOTE 1)

PROPERTY ID: RES 11240000

PROPERTY ID: 0352 0823

PROPERTY ID: 0385 0830

PROPERTY ID: 0385 0832

EXISTING RETAINING WALL

MATCH EXISTING

TRACK 4

TRACK 3

TRACK 2

TRACK 1

398+00

400+00

402+00

404+00

406+00

408+00

410+00

PROPERTY ID: 0386 0802

PROPERTY ID: 0386 0805

EXISTING CROSSOVER (TO REMAIN)

"L'ENFANT NORTH" INTERLOCKING (BY OTHERS) – SEE NOTE 2

PROPERTY ID: 0386 0001

9TH STREET SW

PROPERTY ID: 0410 0802

PROPERTY ID: 0434 0812

D STREET SW

PROPERTY ID: RES 112A0000

C STREET SW

HANCOCK PARK

PROPERTY ID: RES 01130000

L'ENFANT STATION

SIGNAL BRIDGE (BUILT IN FUTURE NO-BUILT)

SEE NOTE 3

PROPERTY ID: 0352 0821

PROPERTY ID: 0353 0044

LEGEND:

- PROPOSED BRIDGE
- PROPOSED RETAINING WALL
- CENTERLINE OF TRACK AT END OF CONSTRUCTION PHASE
- CENTERLINE OF EXISTING TRACK
- PROPOSED RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY
- LOD – PROPOSED LIMIT OF DISTURBANCE (ACTION ALTERNATIVE A ONLY)
- MP### – MILE POST

NOTES:

1. FORMAL LONG BRIDGE PROJECT LIMITS END SOUTH OF "LE NORTH" INTERLOCKING. ALIGNMENT TO THE NORTH TO BE COORDINATED WITH FUTURE L'ENFANT STATION 4TH TRACK PROJECT.
2. "L'ENFANT NORTH" INTERLOCKING AND "L'ENFANT SOUTH" INTERLOCKING CONFIGURATION IS ASSUMED FOR CONSTRUCTION STAGING PURPOSES ONLY. ACTUAL INTERLOCKINGS TO BE DETERMINED AT LATER PHASE IN COORDINATION WITH OTHER ACTIVE PROJECTS.
3. FOR CONTINUATION SEE L'ENFANT STATION 4TH TRACK ALIGNMENT (BY OTHERS).

0 50 100

SCALE: 1" = 50'-0"

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
TRACK ALIGNMENT (9 OF 9)

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJS
PROJECT MGR.

DIVISION CHIEF

DATE MARCH 22, 2019

FILE

SHEET 91 OF 72

vhb HNTB

NO	DESCRIPTION	NAME	DATE

REVISIONS

T-129
kmccondless
Thursday, March 21, 2019 AT 12:59 PM
12:59 PM

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	VA		T-123B	72

SOUTH TO "AF"

NORTH TO "CP VIRGINIA"

LONG BRIDGE DRIVE

LONG BRIDGE PARK

FUTURE LONG BRIDGE PARK DESIGN
(UNDER CONSTRUCTION)

BEGIN
PROJECT
MP 110

MP110

PARCEL #34024350

"RO" INTERLOCKING

PARCEL #34024351

PARCEL #34024348

MATCH LINE - SEE SHEET T-122

MATCH LINE - SEE SHEET T-124B

12'-3"

EXISTING RETAINING WALL
(TO REMAIN)

13'-6"

15'-0" TC TYP.

MOW TRACK

TRACK 4

TRACK 3

TRACK 2

TRACK 1

312+00

314+00

316+00

318+00

320+00

322+00

324+00

EXISTING CROSSOVER
(TO BE REPLACED)

STORM PIPE

EXISTING
CULVERT

PARCEL #34024349

ROACHES RUN

0 50 100
SCALE: 1" = 50'-0"

LEGEND:

- PROPOSED BRIDGE
- PROPOSED RETAINING WALL
- CENTERLINE OF TRACK AT END OF CONSTRUCTION PHASE
- CENTERLINE OF EXISTING TRACK
- PROPOSED RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY
- LOD – PROPOSED LIMIT OF DISTURBANCE (ACTION ALTERNATIVE A ONLY)

MP### MILE POST

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
TRACK ALIGNMENT (1 OF 4)
ACTION ALTERNATIVE B ONLY

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJS
PROJECT MGR.

DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 32 OF 72

vhb HNTB

NO.	DESCRIPTION	NAME	DATE

REVISIONS

Friday, March 22, 2019 AT 11:38 AM
T-123B kmccondless

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	VA		T-124B	72

SOUTH TO "AF"

NORTH TO "CP VIRGINIA"

TRACKS 3 & 4					
Dc =	1°51'00"	Ea =	2.000"	Ls =	124.00'
$V_{F(MPH)}$ =	50	E_u =	1.238"	JR =	2.00
$V_{P(MPH)}$ =	50	E_u =	1.238"	JR =	2.00

TRACKS 3 & 4					
Dc =	1°51'00"	Ea =	2.000"	Ls =	124.00'
$V_{F(MPH)}$ =	50	E_u =	1.238"	JR =	2.00
$V_{P(MPH)}$ =	50	E_u =	1.238"	JR =	2.00

GEORGE WASHINGTON MEMORIAL PARKWAY

LONG BRIDGE PARK

"RO" INTERLOCKING

WMATA METRO YELLOW LINE

PROPOSED ROW FROM LONG BRIDGE PARK

PROPOSED RETAINING WALL

PARCEL # 34024351

PROP. 2-TK BRIDGE

PROPOSED BIKE-PEDESTRIAN BRIDGE (SEE SHEETS B-121 THROUGH B-302 FOR DETAILS)

PROPOSED FENDER SYSTEM TO BE DEVELOPED IN PRELIMINARY ENGINEERING

97'-0"

TRACK 4

TRACK 3

TRACK 2

TRACK 1

PROPOSED PIER (TYP)

PROPOSED 2-TRACK RIVER BRIDGE

155'-0"

58'-3"

64'-3"

120'-3"

326+00

328+00

330+00

332+00

334+00

336+00

338+00

340+00

EXISTING CROSSOVER (TO BE REPLACED)

PROPOSED SIGNAL BRIDGE

PROPOSED WING WALL

PROPOSED 2-TRACK BRIDGE

EXISTING THROUGH GIRDER BRIDGE (TO BE REMOVED)

EXISTING LONG BRIDGE (TO BE REMOVED)

PROPOSED 2-TRACK RIVER BRIDGE

PARCEL # 34024348

PARCEL # 34024349

MOUNT VERNON TRAIL

ASSUMED ROW LIMITS 10' OFF EMBANKMENT

ROW EASEMENT NEEDED FOR PROPOSED BRIDGE(S)

HOME SIGNAL CONSTRUCTED UNDER AF-RO 4TH TRACK PROJECT (FINAL LOCATION TO BE DETERMINED)

POTOMAC RIVER

MATCH LINE – SEE SHEET T-123B

MATCH LINE – SEE SHEET T-125B

LEGEND:

- PROPOSED BRIDGE
- PROPOSED RETAINING WALL
- CENTERLINE OF TRACK AT END OF CONSTRUCTION PHASE
- CENTERLINE OF EXISTING TRACK
- PROPOSED RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY
- LOD – PROPOSED LIMIT OF DISTURBANCE (ACTION ALTERNATIVE A ONLY)

MP### MILE POST

0 50 100

SCALE: 1" = 50'-0"

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
TRACK ALIGNMENT (2 OF 4)
ACTION ALTERNATIVE B ONLY

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJS
PROJECT MGR.
DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 23 OF 72

vhb HNTB

NO	DESCRIPTION	NAME	DATE
	REVISIONS		

Friday, March 22, 2019 AT 11:49 AM

T-1248 kmccandless

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-125B	72

SOUTH TO "AF"

NORTH TO "CP VIRGINIA"

WMATA METRO YELLOW LINE

ROW EASEMENT NEEDED FOR PROPOSED BRIDGE(S)

PROPOSED FENDER SYSTEM TO BE DEVELOPED IN PRELIMINARY ENGINEERING

PROPOSED BIKE-PEDESTRIAN BRIDGE (SEE SHEETS B-121 THROUGH B-302 FOR DETAILS)

TRACK 4

TRACK 3

TRACK 2

TRACK 1

PROPOSED PIER (TYP)

PROPOSED 2-TRACK RIVER BRIDGE

EXISTING LONG BRIDGE (TO BE REMOVED)

342+00 344+00 346+00 348+00 350+00 352+00 354+00

120'-3"

38'-2"

64'-3"

15'-0"

15'-0"

MATCH LINE - SEE SHEET T-124B

MATCH LINE - SEE SHEET T-126B

POTOMAC RIVER

OHIO DRIVE SW

0 50 100
SCALE: 1" = 50'-0"

LEGEND:

- PROPOSED BRIDGE
- PROPOSED RETAINING WALL
- CENTERLINE OF TRACK AT END OF CONSTRUCTION PHASE
- CENTERLINE OF EXISTING TRACK
- PROPOSED RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY
- LOD — PROPOSED LIMIT OF DISTURBANCE (ACTION ALTERNATIVE A ONLY)

MP### MILE POST

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
TRACK ALIGNMENT (3 OF 4)
ACTION ALTERNATIVE B ONLY

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJS
PROJECT MGR.
DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 24 OF 72

vhb HNTB

NO	DESCRIPTION	NAME	DATE

REVISIONS

T-125B kmccondless Friday, March 22, 2019 AT 11:32 AM 11:32 AM

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-128B	72

SOUTH TO "AF"

NORTH TO "CP VIRGINIA"

MATCH LINE – SEE SHEET T-125B

MATCH LINE – SEE SHEET T-127

OHIO DRIVE SW

PROPERTY ID: PAR 03160005

WMATA METRO YELLOW LINE

PROPOSED BIKE-PEDESTRIAN BRIDGE (SEE SHEETS B-121 THROUGH B-302 FOR DETAILS)

ABUT. (TYP.)

PROPOSED RETAINING WALL

PROPOSED 2-TRACK RIVER BRIDGE

PROPOSED 2-TRACK RIVER BRIDGE ABUT. (TYP.)

CLOSED SANITARY SEWER (NOT IN-SERVICE)

RELOCATED SANITARY SEWER

PROPOSED 2-TRACK BRIDGE

I-395 NORTH

I-395 SOUTH

14TH STREET SW/ROUTE 1

PROPOSED 2-TRACK BRIDGE

PROPOSED RETAINING WALL

TRACK 4

TRACK 3

TRACK 2

TRACK 1

15'-0"

15'-0"

356+00

358+00

360+00

362+00

364+00

366+00

368+00

TEMP. SHEETING

PROPOSED RETAINING WALL

ASSUMED ROW LIMITS 10' OFF EMBANKMENT

TEMPORARY CONSTRUCTION EASEMENT NEEDED WITHIN DOD FACILITY. ALL WORK CONSTRUCTED OUTSIDE OF FENCING.

16'-9" TO FENCE

EXISTING THROUGH GIRDER BRIDGE (TO BE REMOVED)

PROPOSED 2-TRACK BRIDGE

PROPOSED RETAINING WALL

NPS SERVICE CENTER

DOD FACILITY

PROPERTY ID: PAR 03160005

NPS

TRACKS 3 & 4					
Dc =	1°04'30"	Ea =	0.500"	Ls =	124.00'
$V_{F(MPH)}$ =	50	E_u =	1.381"	JR =	1.80
$V_{P(MPH)}$ =	50	E_u =	1.381"	JR =	1.80

TRACKS 3 & 4					
Dc =	2°00'35"	Ea =	2.000"	Ls =	124.00'
$V_{F(MPH)}$ =	50	E_u =	1.517"	JR =	1.63
$V_{P(MPH)}$ =	50	E_u =	1.517"	JR =	1.63

TRACKS 3 & 4					
Dc =	2°19'10"	Ea =	2.500"	Ls =	155.00'
$V_{F(MPH)}$ =	50	E_u =	1.559"	JR =	1.99
$V_{P(MPH)}$ =	50	E_u =	1.559"	JR =	1.99

TRACK 1 & 2					
Dc =	0°57'08"	Ea =	0.500"	Ls =	124.00'
$V_{F(MPH)}$ =	25	E_u =	1.235"	JR =	5.02
$V_{P(MPH)}$ =	50	E_u =	1.166"	JR =	2.13

TRACK 1 & 2					
Dc =	0°57'08"	Ea =	0.500"	Ls =	124.00'
$V_{F(MPH)}$ =	25	E_u =	1.235"	JR =	5.02
$V_{P(MPH)}$ =	50	E_u =	1.166"	JR =	2.13

LEGEND:

- PROPOSED BRIDGE
- PROPOSED RETAINING WALL
- CENTERLINE OF TRACK AT END OF CONSTRUCTION PHASE
- CENTERLINE OF EXISTING TRACK
- PROPOSED RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY
- LOD – PROPOSED LIMIT OF DISTURBANCE (ACTION ALTERNATIVE A ONLY)
- MP### MILE POST

0 50 100

SCALE: 1" = 50'-0"

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
TRACK ALIGNMENT (4 OF 4)
ACTION ALTERNATIVE B ONLY

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJS
PROJECT MGR.

DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 25 OF 72

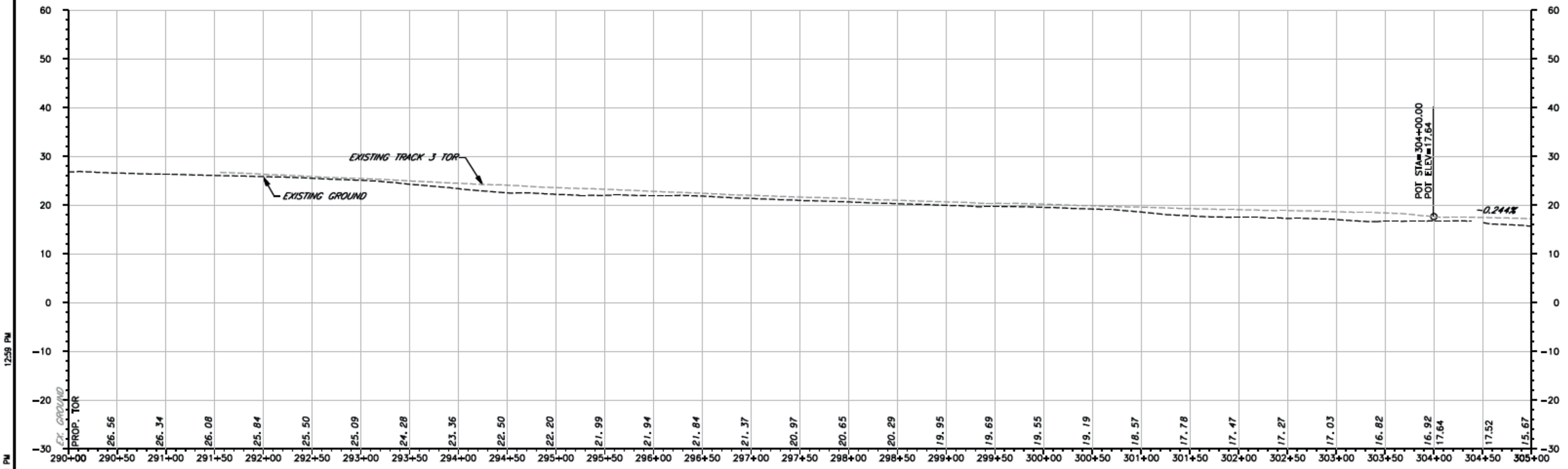
vhb HNTB

NO	DESCRIPTION	NAME	DATE
	REVISIONS		

Friday, March 22, 2019 AT 11:33 AM

T-1268 kmccondless

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	VA		T-211	72



DESIGN SPEED (SEE NOTE 2)
ALL TRACKS:
FREIGHT SPEED = 45 MPH
PASSENGER SPEED = 50 MPH

ACTION ALTERNATIVE A & B
PROFILE STA. 290+00 TO 305+00

NOTE:
1. PGL SHOWN ALONG TRACK 4; PROFILES FOR EACH TRACK TO BE INCLUDED IN PRELIMINARY ENGINEERING.
2. SPEED IMPOVEMENTS PLANNED AS PART OF VA DRPT DC2RVA PROJECT AND AF-RO 4TH TRACK PROJECT.

HORZ: 50 25 0 50 100 SCALE IN FEET
VERT: 10 5 0 10 20 SCALE IN FEET

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
TRACK PROFILE GRADE LINE (1 OF 8)

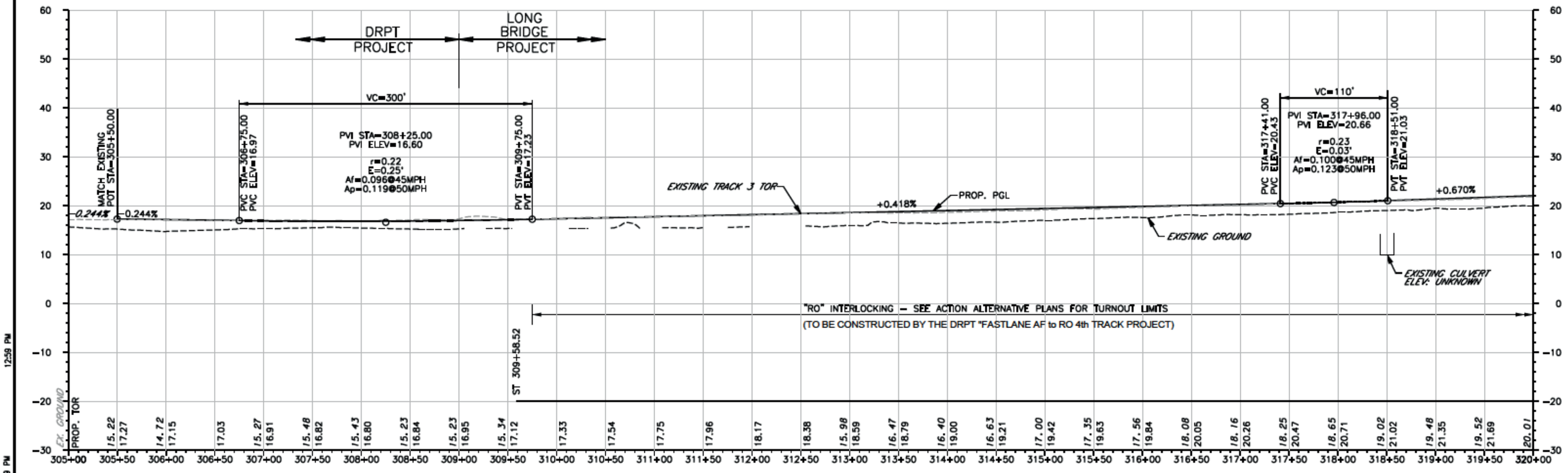
PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJS
PROJECT MGR.
DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 26 OF 72

vhb HNTB

NO	DESCRIPTION	NAME	DATE
	REVISIONS		

Thursday, March 21, 2019 AT 12:59 PM
12:59 PM
T-211
kmccandless

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	VA		T-212	72



DESIGN SPEED (SEE NOTE 2)
ALL TRACKS:
FREIGHT SPEED = 45 MPH
PASSENGER SPEED = 50 MPH

ACTION ALTERNATIVE A & B
PROFILE STA. 305+00 TO 320+00

NOTE:
1. PGL SHOWN ALONG TRACK 4; PROFILES FOR EACH TRACK TO BE INCLUDED IN PRELIMINARY ENGINEERING.
2. SPEED IMPOVEMENTS PLANNED AS PART OF VA DRPT DC2RVA PROJECT AND AF-RO 4TH TRACK PROJECT.

HORZ: 50 25 0 50 100 SCALE IN FEET
VERT: 10 5 0 10 20 SCALE IN FEET

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
TRACK PROFILE GRADE LINE (2 OF 8)

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY RDH
DRAWN BY DJB
PROJECT MGR.
DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 37 OF 72

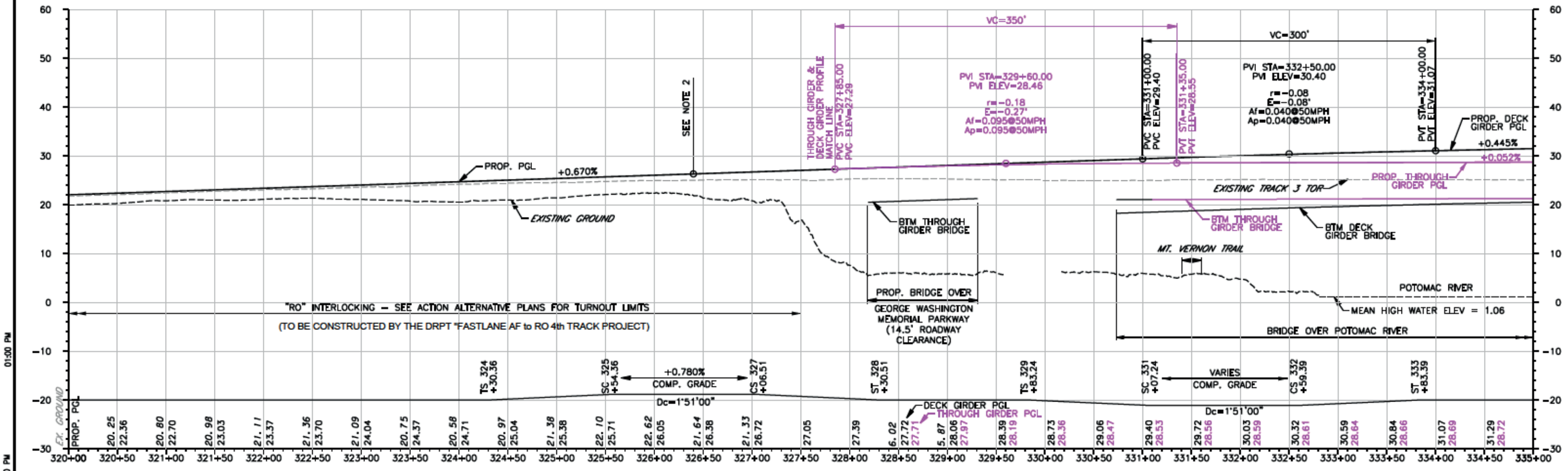
vhb HNTB

NO	DESCRIPTION	NAME	DATE

REVISIONS

12:59 PM Thursday, March 21, 2019 AT 12:59 PM T-212 kmccondless

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	VA		T-213	72



DESIGN SPEED
ALL TRACKS:
FREIGHT SPEED = 50 MPH
PASSENGER SPEED = 50 MPH

TRACKS 1 & 2 OVER POTOMAC RIVER FOR ACTION ALTERNATIVE A ONLY:
FREIGHT SPEED = 25 MPH
PASSENGER SPEED = 45 MPH

ACTION ALTERNATIVE A & B
PROFILE STA. 320+00 TO 335+00

NOTE:
1. PGL SHOWN ALONG TRACK 4; PROFILES FOR EACH TRACK TO BE INCLUDED IN PRELIMINARY ENGINEERING.
2. END OF INTERLOCKING FOR TRACKS 1 & 2. BEGIN TRANSITION TO EXISTING PROFILE FOR ACTION ALTERNATIVE A.

HORZ: 50 25 0 50 100 SCALE IN FEET
VERT: 10 5 0 10 20 SCALE IN FEET

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
TRACK PROFILE GRADE LINE (3 OF 8)

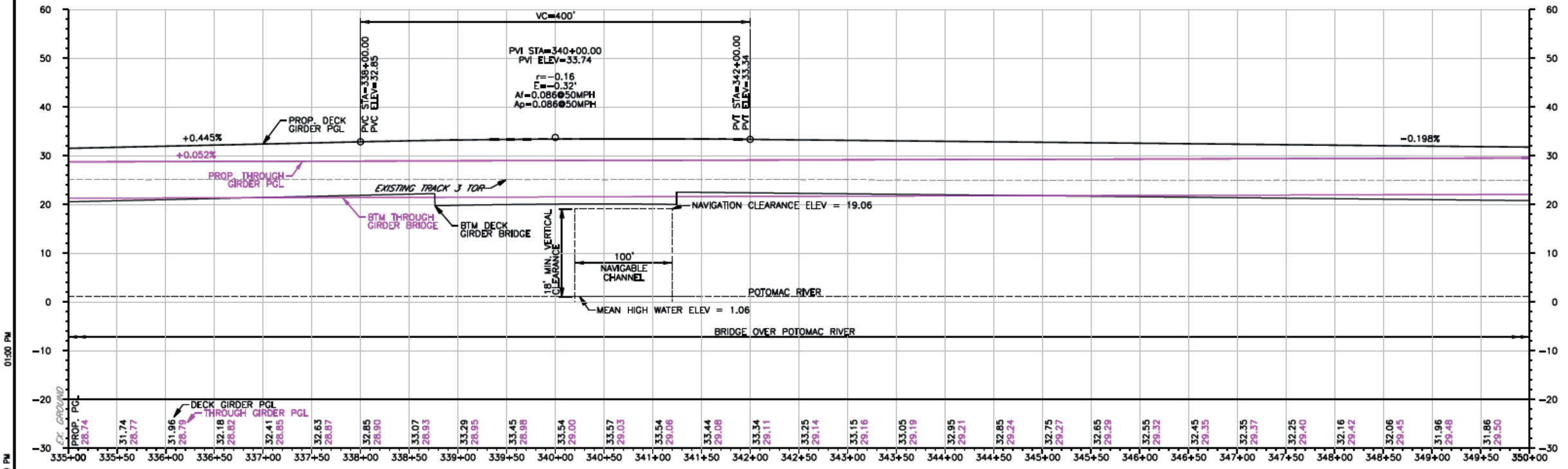
PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJS
PROJECT MGR.
DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 26 OF 72

vhb HNTB

NO	DESCRIPTION	NAME	DATE
	REVISIONS		

01:00 PM Thursday, March 21, 2019 AT 01:00 PM T-213 kmccondless

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	VA		T-214	72



DESIGN SPEED
ALL TRACKS:
FREIGHT SPEED = 50 MPH
PASSENGER SPEED = 50 MPH

TRACKS 1 & 2 OVER POTOMAC RIVER FOR ACTION ALTERNATIVE A ONLY:
FREIGHT SPEED = 25 MPH
PASSENGER SPEED = 45 MPH

ACTION ALTERNATIVE A & B
PROFILE STA. 335+00 TO 350+00

NOTE:
1. PGL SHOWN ALONG TRACK 4; PROFILES FOR EACH TRACK TO BE INCLUDED IN PRELIMINARY ENGINEERING.

HORZ: 50 25 0 50 100 SCALE IN FEET
VERT: 10 5 0 10 20 SCALE IN FEET

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
TRACK PROFILE GRADE LINE (4 OF 8)

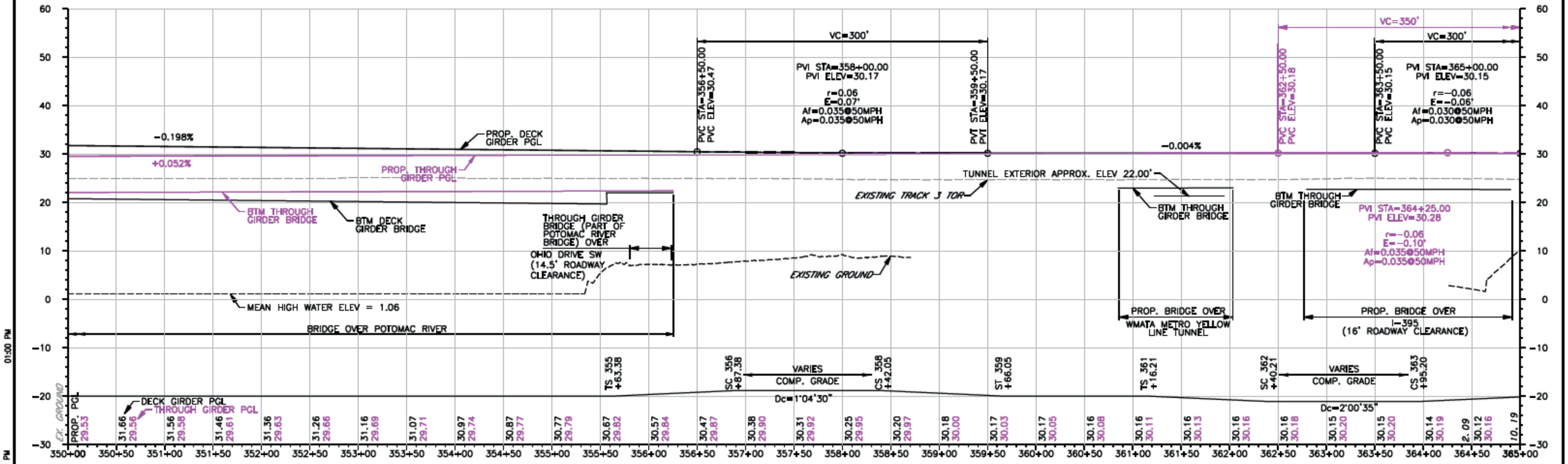
PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY RDH
DRAWN BY DJS
PROJECT MGR.
DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 29 OF 72

vhb HNTB

NO	DESCRIPTION	NAME	DATE
	REVISIONS		

01:00 PM Thursday, March 21, 2019 AT 01:00 PM
T-214 kmccondless

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-215	72



DESIGN SPEED
ALL TRACKS:
FREIGHT SPEED = 50 MPH
PASSENGER SPEED = 50 MPH

TRACKS 1 & 2 OVER POTOMAC RIVER FOR ACTION ALTERNATIVE A ONLY:
FREIGHT SPEED = 25 MPH
PASSENGER SPEED = 45 MPH

ACTION ALTERNATIVE A & B
PROFILE STA. 350+00 TO 365+00

NOTE:
1. PGL SHOWN ALONG TRACK 4; PROFILES FOR EACH TRACK TO BE INCLUDED IN PRELIMINARY ENGINEERING.

HORZ: 50 25 0 50 100 SCALE IN FEET
VERT: 10 5 0 10 20 SCALE IN FEET

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
TRACK PROFILE GRADE LINE (5 OF 8)

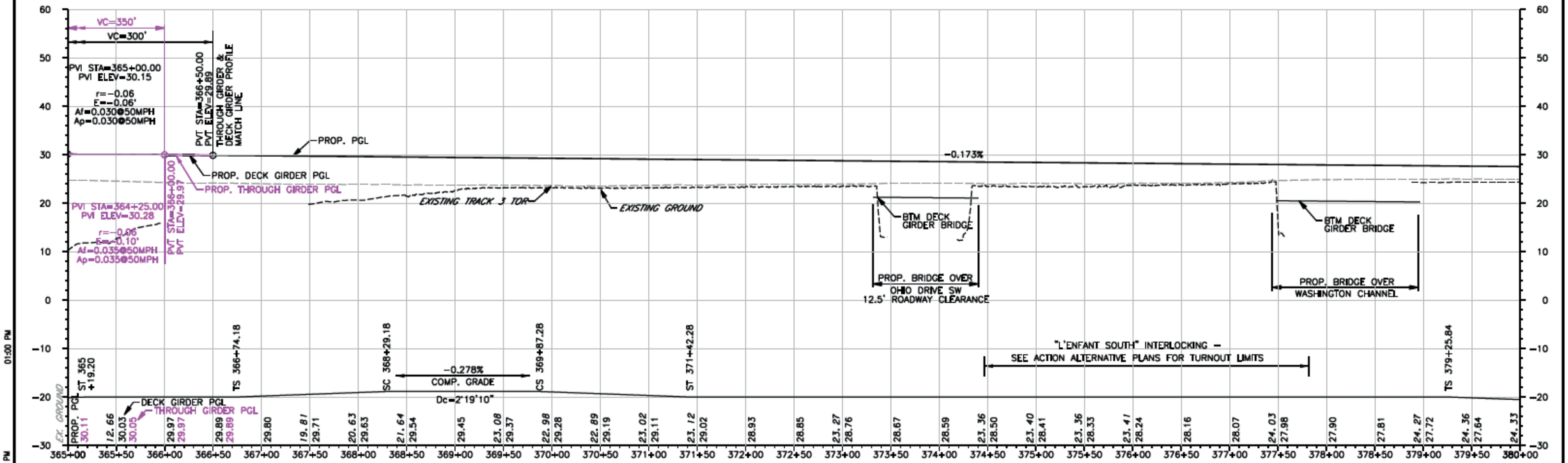
PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJS
PROJECT MGR.
DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 30 OF 72

vhb HNTB

NO	DESCRIPTION	NAME	DATE
	REVISIONS		

Thursday, March 21, 2019 AT 01:00 PM
01:00 PM
T-215
kmccondless

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-216	72



DESIGN SPEED
ALL TRACKS:
FREIGHT SPEED = 50 MPH
PASSENGER SPEED = 50 MPH

TRACKS 1 & 2 OVER POTOMAC RIVER FOR ACTION ALTERNATIVE A ONLY:
FREIGHT SPEED = 25 MPH
PASSENGER SPEED = 45 MPH

ACTION ALTERNATIVE A & B
PROFILE STA. 365+00 TO 380+00

NOTE:
1. PGL SHOWN ALONG TRACK 4; PROFILES FOR EACH TRACK TO BE INCLUDED IN PRELIMINARY ENGINEERING.

HORZ: 50 25 0 50 100 SCALE IN FEET
VERT: 10 5 0 10 20 SCALE IN FEET

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
TRACK PROFILE GRADE LINE (6 OF 8)

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY RDH
DRAWN BY DJS
PROJECT MGR.
DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 31 OF 72

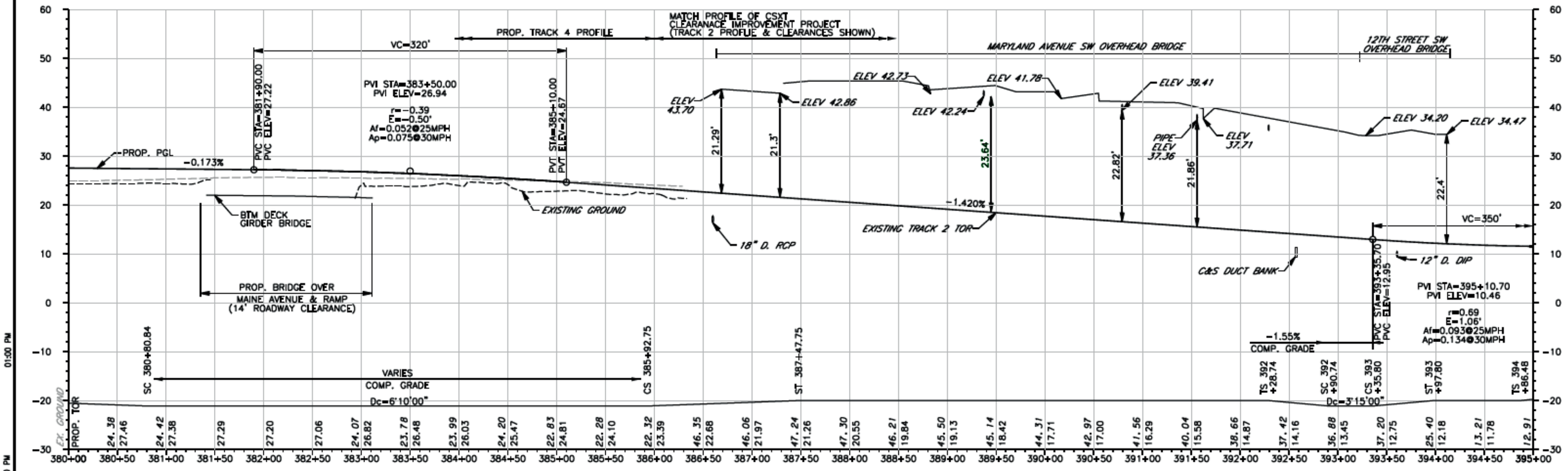
vhb HNTB

NO	DESCRIPTION	NAME	DATE

REVISIONS

01:00 PM Thursday, March 21, 2019 AT 01:00 PM T-216 kmccondless

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-217	72



DESIGN SPEED
ALL TRACKS:
FREIGHT SPEED = 25 MPH
PASSENGER SPEED = 30 MPH

ACTION ALTERNATIVE A & B
PROFILE STA. 380+00 TO 395+00

NOTE:
1. PGL SHOWN ALONG TRACK 4/2; PROFILES FOR EACH TRACK TO BE INCLUDED IN PRELIMINARY ENGINEERING.

HORZ: 50 25 0 50 100 SCALE IN FEET
VERT: 10 5 0 10 20 SCALE IN FEET

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
TRACK PROFILE GRADE LINE (7 OF 8)

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY RDH
DRAWN BY DJS
PROJECT MGR.
DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 32 OF 72

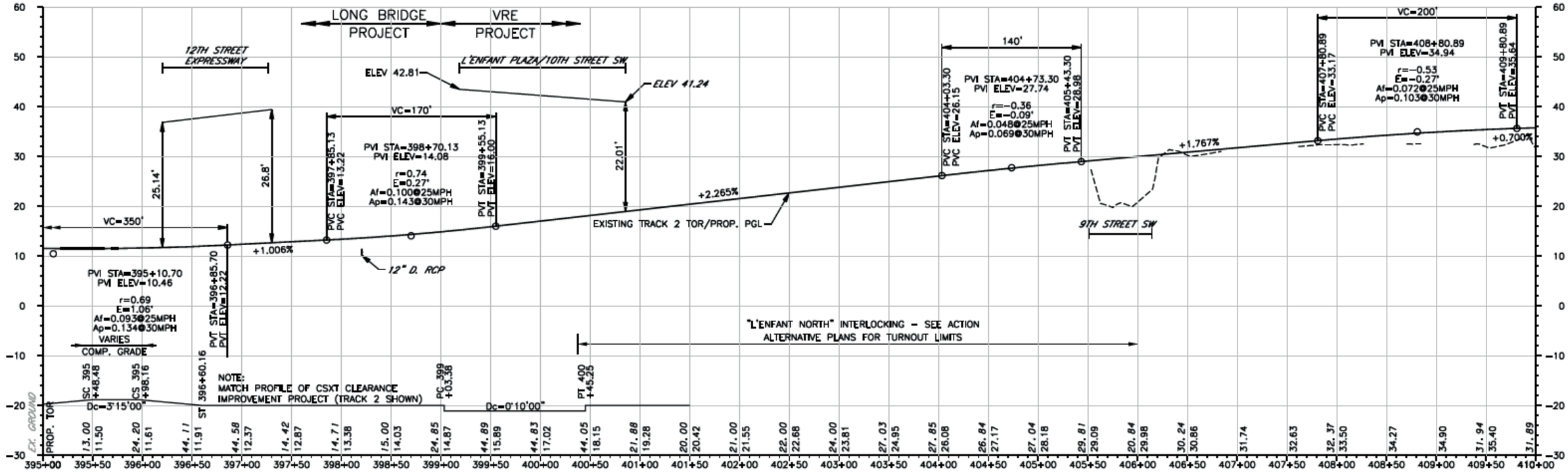
vhb HNTB

NO	DESCRIPTION	NAME	DATE

REVISIONS

01:00 PM Thursday, March 21, 2019 AT 01:00 PM
T-217 kmccondless

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-218	72



DESIGN SPEED
ALL TRACKS:
FREIGHT SPEED = 25 MPH
PASSENGER SPEED = 30 MPH

ACTION ALTERNATIVE A & B
PROFILE STA. 395+00 TO 410+00

NOTE:
1. PGL SHOWN ALONG TRACK 2; PROFILES FOR EACH TRACK TO BE INCLUDED IN PRELIMINARY ENGINEERING.

HORZ: 50 25 0 50 100 SCALE IN FEET
VERT: 10 5 0 10 20 SCALE IN FEET

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
TRACK PROFILE GRADE LINE (8 OF 8)

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY RDH
DRAWN BY DJS
PROJECT MGR.
DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 33 OF 72

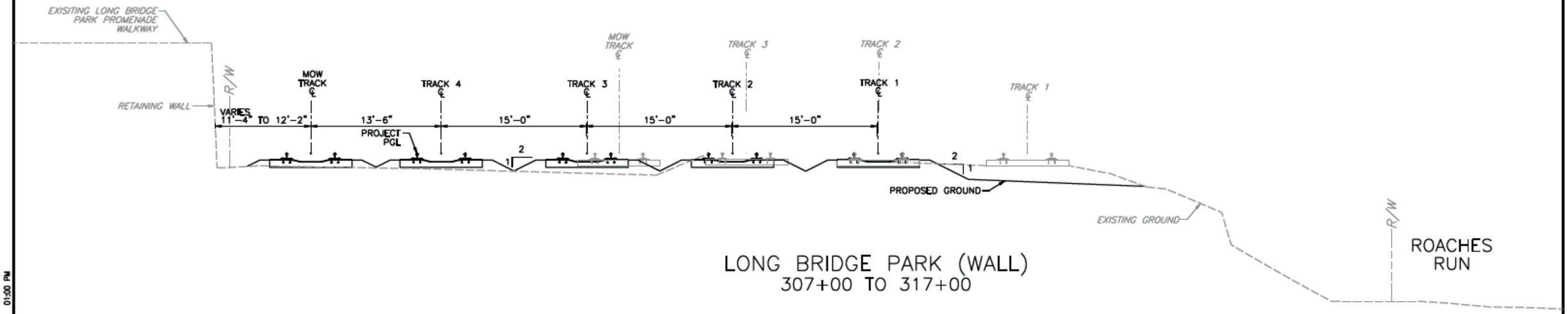
vhb HNTB

NO.	DESCRIPTION	NAME	DATE

REVISIONS

01:00 PM Thursday, March 21, 2019 AT 01:00 PM T-218 kmccondless

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	VA		T-301	72



LONG BRIDGE PARK (WALL)
307+00 TO 317+00

NOTES:
1. PROPOSED ALIGNMENT IS DRIVEN BY PROJECT BY OTHERS. FUTURE COORDINATION IS NECESSARY.

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
TYPICAL SECTIONS (1 OF 19)

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJS
PROJECT MGR.
DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 34 OF 72

vhb HNTB

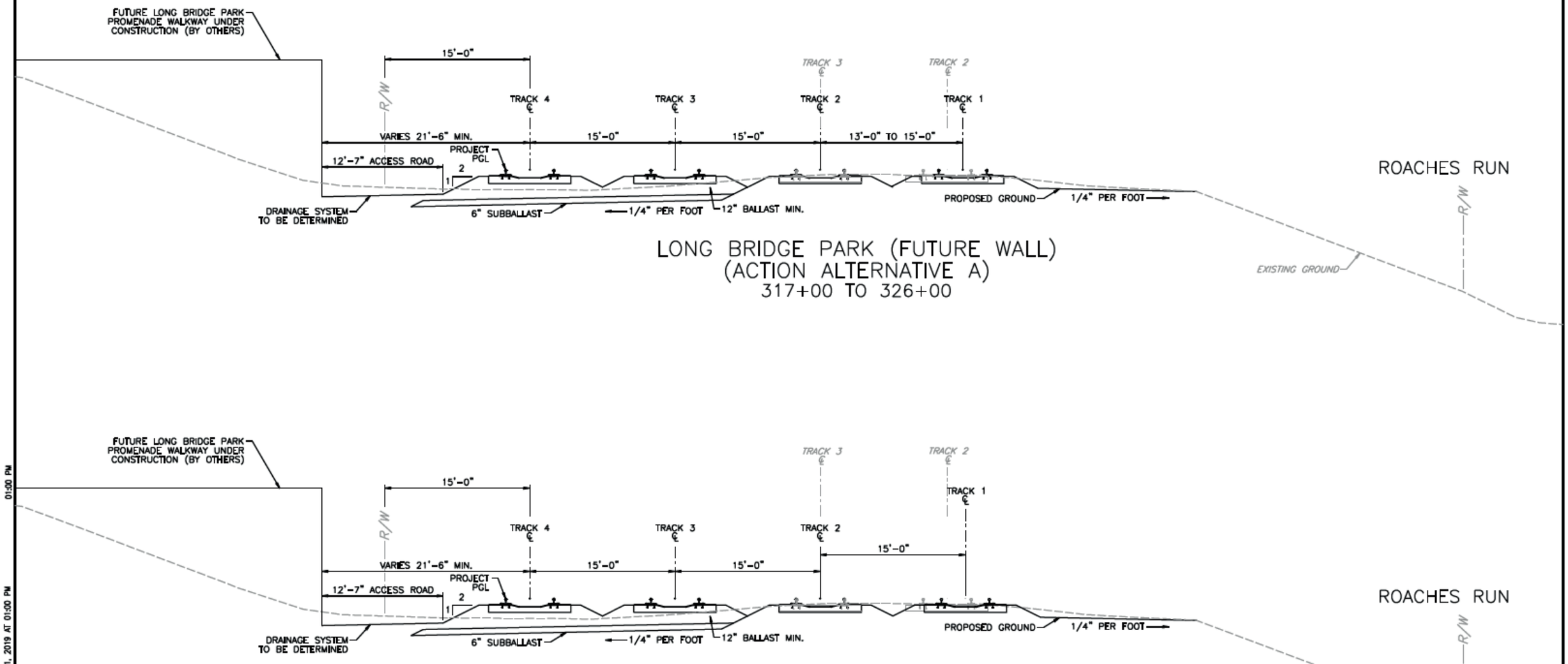
NO	DESCRIPTION	NAME	DATE

REVISIONS

0 5 10
SCALE: 1" = 10'-0"

T-301
kmccondless
Thursday, March 21, 2019 AT 01:00 PM
01:00 PM

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	VA		T-302	72



LONG BRIDGE PARK (FUTURE WALL)
(ACTION ALTERNATIVE A)
317+00 TO 326+00

LONG BRIDGE PARK (FUTURE WALL)
(ACTION ALTERNATIVE B)
317+00 TO 326+00

01:00 PM Thursday, March 21, 2019 AT 01:00 PM

T-302 kimcondless

0 5 10
SCALE: 1" = 10'-0"

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
TYPICAL SECTIONS (2 OF 19)

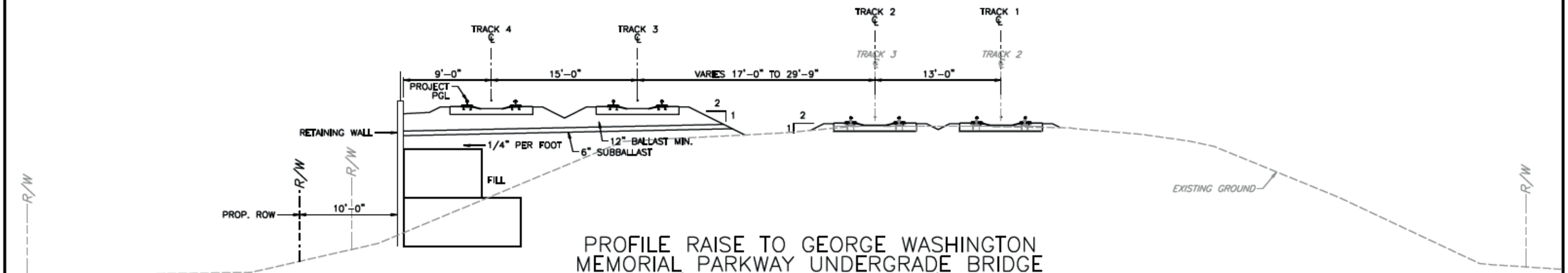
PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY RDH
DRAWN BY DJS
PROJECT MGR.
DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 35 OF 72

vhb HNTB

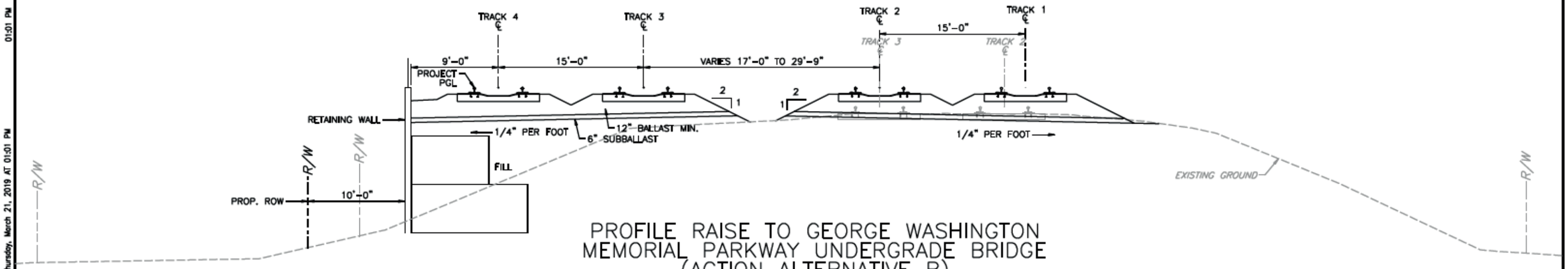
NO	DESCRIPTION	NAME	DATE

REVISIONS

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	VA		T-303	72



PROFILE RAISE TO GEORGE WASHINGTON MEMORIAL PARKWAY UNDERGRADE BRIDGE (ACTION ALTERNATIVE A)
326+00 TO 328+00



PROFILE RAISE TO GEORGE WASHINGTON MEMORIAL PARKWAY UNDERGRADE BRIDGE (ACTION ALTERNATIVE B)
326+00 TO 328+00

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
TYPICAL SECTIONS (3 OF 19)

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY RDH
DRAWN BY DJS
PROJECT MGR.
DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 30 OF 72

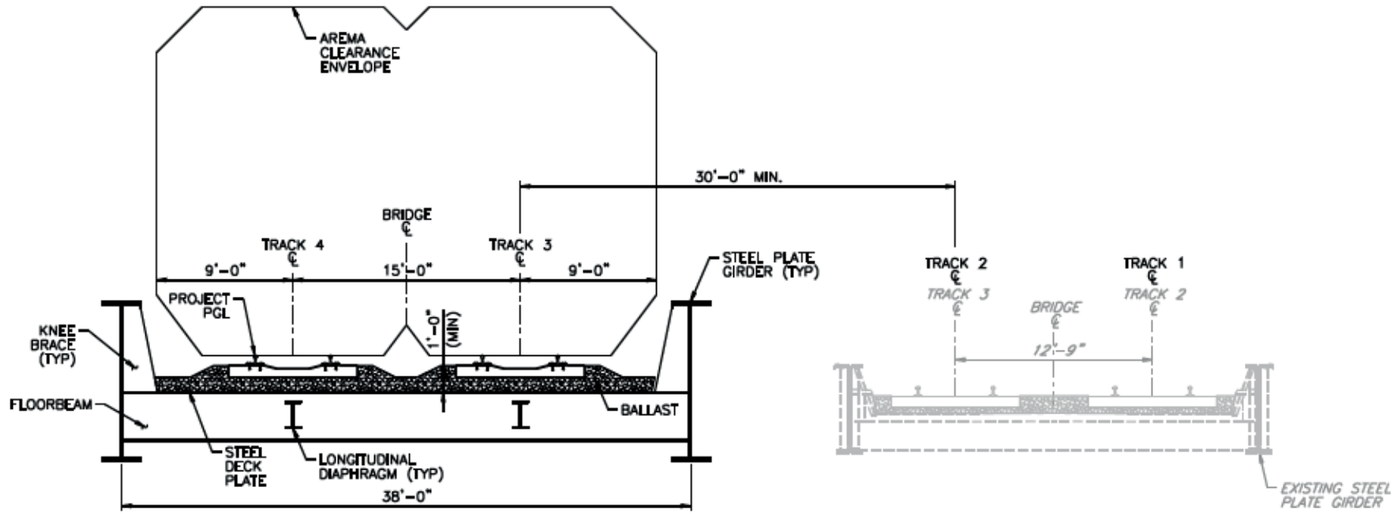
vhb HNTB

NO	DESCRIPTION	NAME	DATE
	REVISIONS		

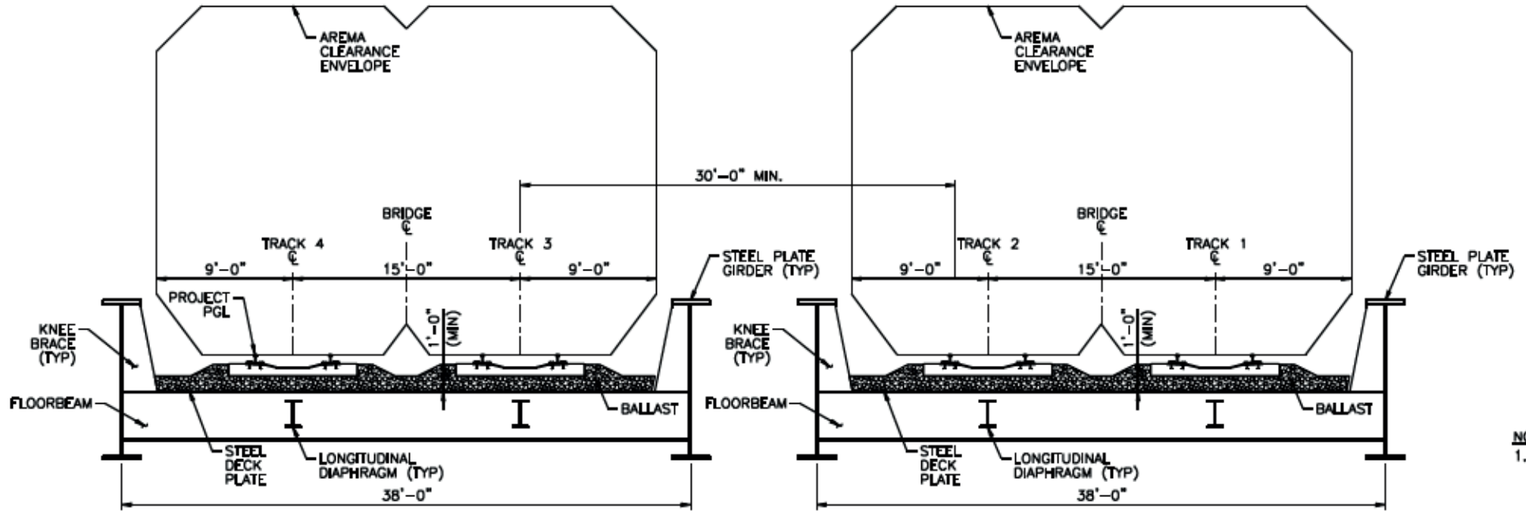
SCALE: 1" = 10'-0"

T-303
kmcondless
Thursday, March 21, 2019 AT 01:01 PM

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	VA		T-304	72



GEORGE WASHINGTON MEMORIAL PARKWAY UNDERGRADE BRIDGE (ACTION ALTERNATIVE A) 328+00 TO 329+25



GEORGE WASHINGTON MEMORIAL PARKWAY UNDERGRADE BRIDGE (ACTION ALTERNATIVE B) 328+00 TO 329+25

NOTES:
1. AREMA CLEARANCE ENVELOPE IS SHOWN FOR TANGENT TRACK WITHOUT CURVE CORRECTIONS.

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
TYPICAL SECTIONS (4 OF 19)

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY RDH
DRAWN BY DJS
PROJECT MGR.
DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 37 OF 72

vhb HNTB

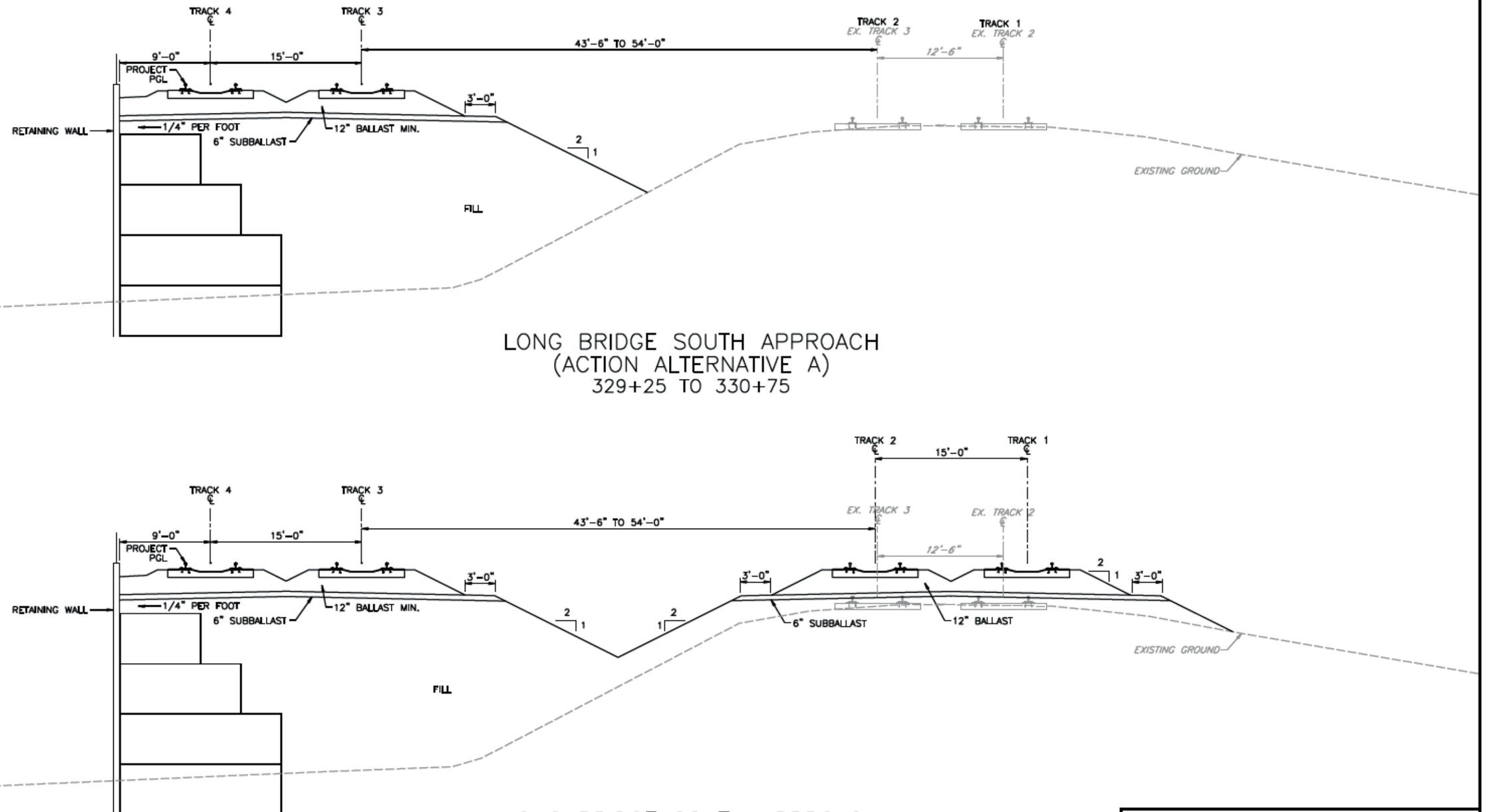
NO	DESCRIPTION	NAME	DATE

REVISIONS

SCALE: 1" = 10'-0"

01:01 PM Thursday, March 21, 2019 AT 01:01 PM T-304 kmccondless

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-305	72



LONG BRIDGE SOUTH APPROACH
(ACTION ALTERNATIVE A)
329+25 TO 330+75

LONG BRIDGE SOUTH APPROACH
(ACTION ALTERNATIVE B)
329+25 TO 330+75

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
TYPICAL SECTIONS (5 OF 19)

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY RDH
DRAWN BY DJS
PROJECT MGR.
DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 39 OF 72

vhb
HNTB

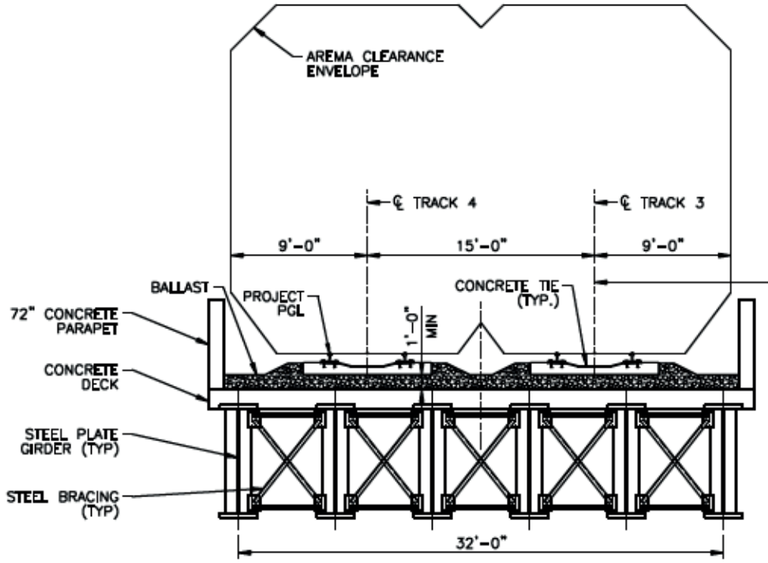
NO	DESCRIPTION	NAME	DATE

REVISIONS

0 5 10
SCALE: 1" = 10'-0"

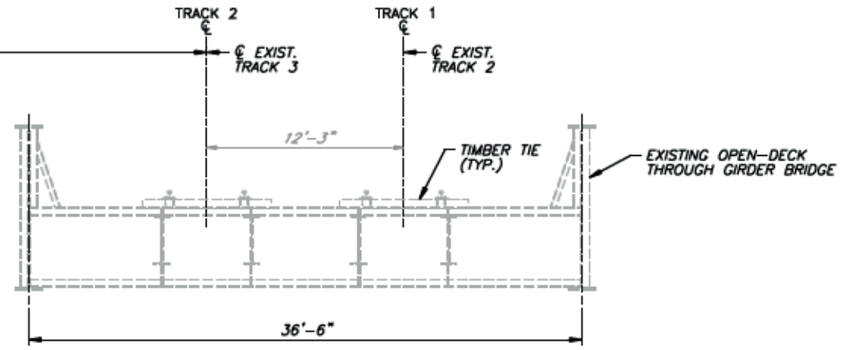
01:01 PM
Thursday, March 21, 2019 AT 01:01 PM
T-305
kmccondless

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-306	72

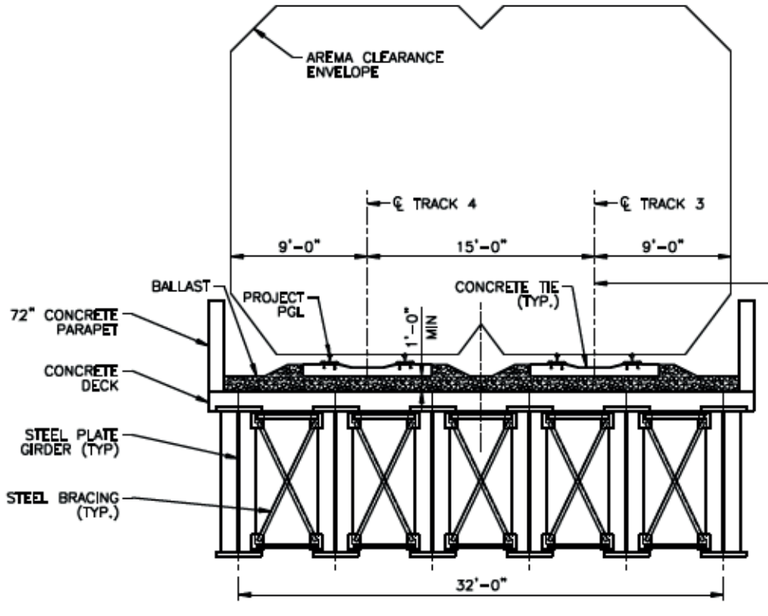


64'-3"

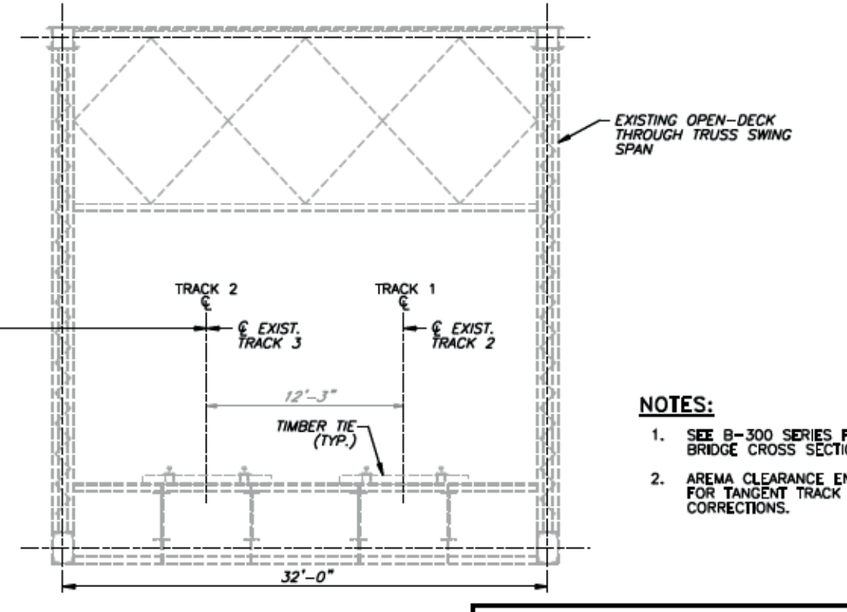
APPROACH SPAN



POTOMAC RIVER BRIDGE
APPROACH SPAN
DECK GIRDER OPTION
(ACTION ALTERNATIVE A)
330+75 TO 338+50
341+50 TO 357+00



64'-3"



POTOMAC RIVER BRIDGE
CHANNEL SPAN
DECK GIRDER OPTION
(ACTION ALTERNATIVE A)
338+50 TO 341+50

NOTES:

1. SEE B-300 SERIES FOR BIKE-PEDESTRIAN BRIDGE CROSS SECTIONS.
2. AREMA CLEARANCE ENVELOPE IS SHOWN FOR TANGENT TRACK WITHOUT CURVE CORRECTIONS.

SCALE: 1" = 10'-0"

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
TYPICAL SECTIONS (6 OF 19)

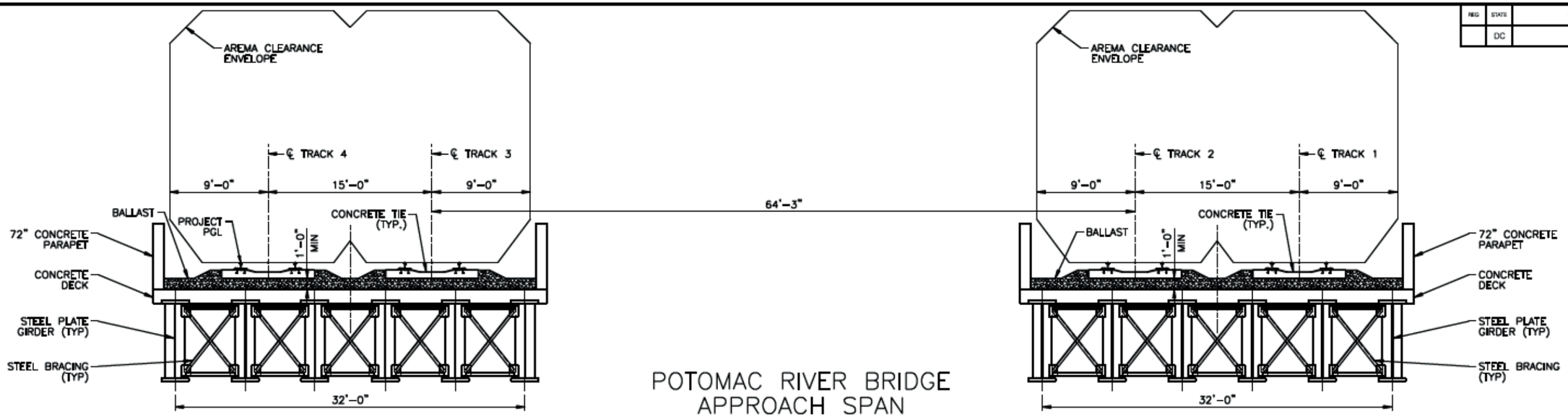
PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJS
PROJECT MGR.
DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 39 OF 72

vhb HNTB

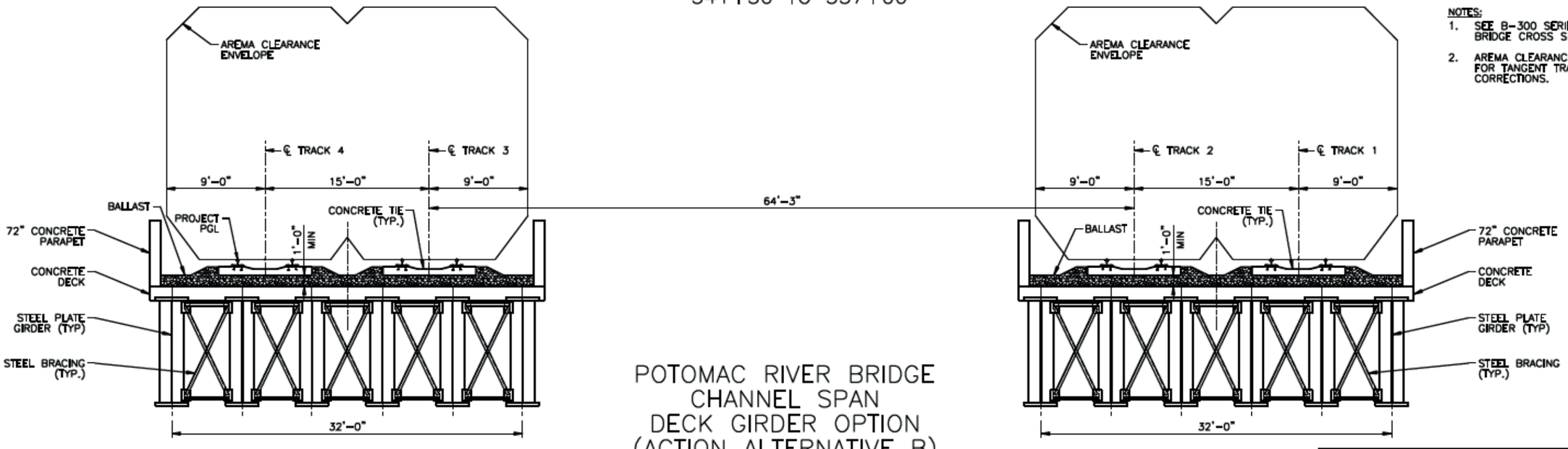
NO	DESCRIPTION	NAME	DATE
	REVISIONS		

01:01 PM Thursday, March 21, 2019 AT 01:01 PM
T-306 kmccondless

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-307	72



POTOMAC RIVER BRIDGE
APPROACH SPAN
DECK GIRDER OPTION
(ACTION ALTERNATIVE B)
330+75 TO 338+50
341+50 TO 357+00



POTOMAC RIVER BRIDGE
CHANNEL SPAN
DECK GIRDER OPTION
(ACTION ALTERNATIVE B)
338+50 TO 341+50

NOTES:
1. SEE B-300 SERIES FOR BIKE-PEDESTRIAN BRIDGE CROSS SECTIONS.
2. AREMA CLEARANCE ENVELOPE IS SHOWN FOR TANGENT TRACK WITHOUT CURVE CORRECTIONS.

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
TYPICAL SECTIONS (7 OF 19)

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY RDH
DRAWN BY DJS
PROJECT MGR.
DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 40 OF 72

vhb HNTB

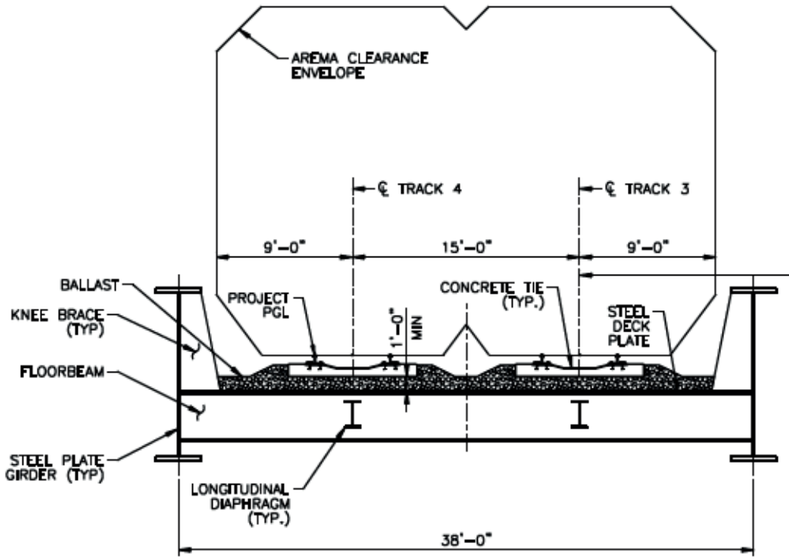
NO	DESCRIPTION	NAME	DATE

REVISIONS

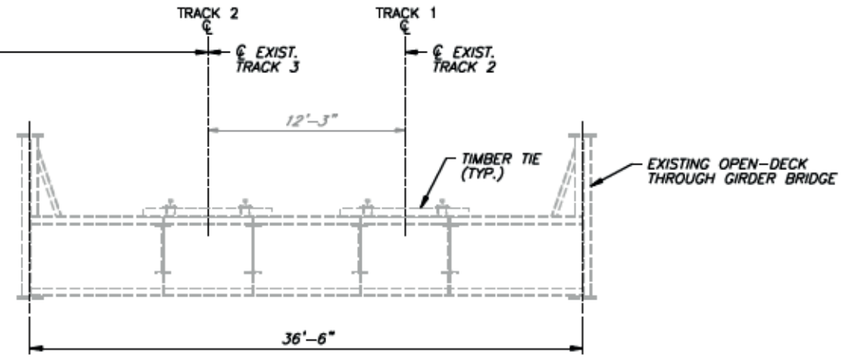
0 5 10
SCALE: 1" = 10'-0"

T-307
kmccondless
Thursday, March 21, 2019 AT 01:02 PM
01:02 PM

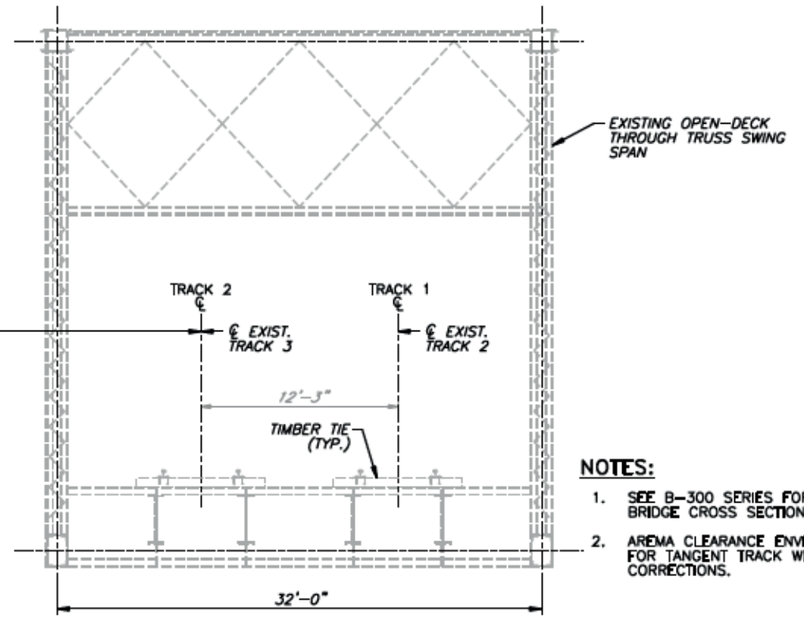
REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-308	72

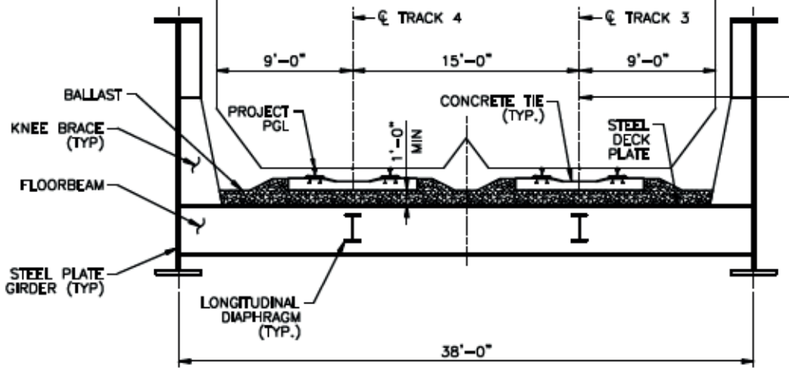


64'-3"



POTOMAC RIVER BRIDGE
APPROACH SPAN
THROUGH GIRDER OPTION
(ACTION ALTERNATIVE A)
330+75 TO 338+50
341+50 TO 357+00





64'-3"

POTOMAC RIVER BRIDGE
CHANNEL SPAN
THROUGH GIRDER OPTION
(ACTION ALTERNATIVE A)
338+50 TO 341+50

NOTES:

1. SEE B-300 SERIES FOR BIKE-PEDESTRIAN BRIDGE CROSS SECTIONS.
2. AREMA CLEARANCE ENVELOPE IS SHOWN FOR TANGENT TRACK WITHOUT CURVE CORRECTIONS.

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
TYPICAL SECTIONS (8 OF 19)

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJS
PROJECT MGR.
DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 41 OF 72

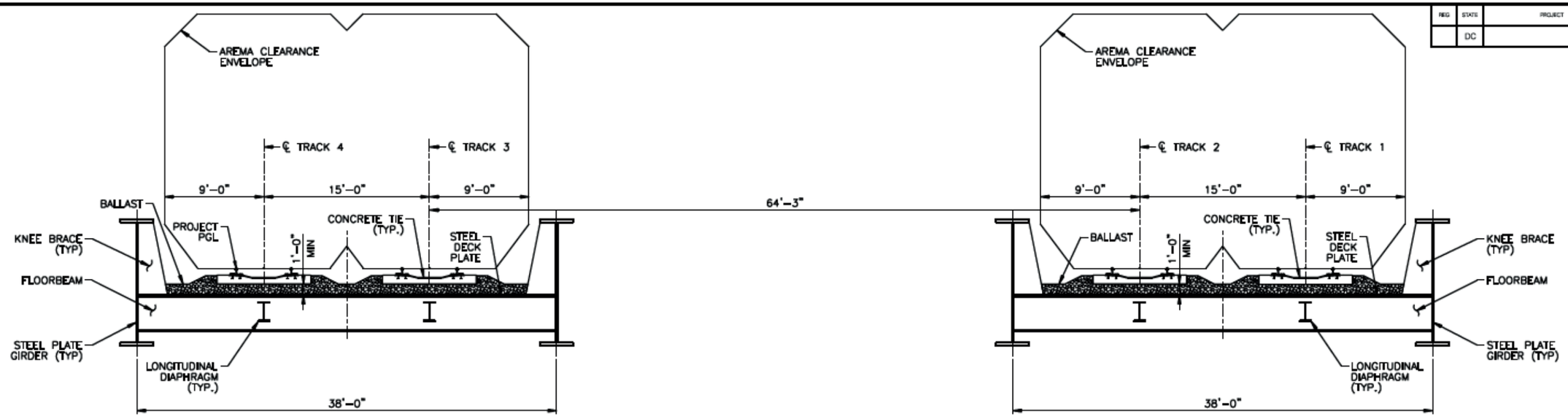
vhb HNTB

NO	DESCRIPTION	NAME	DATE
	REVISIONS		

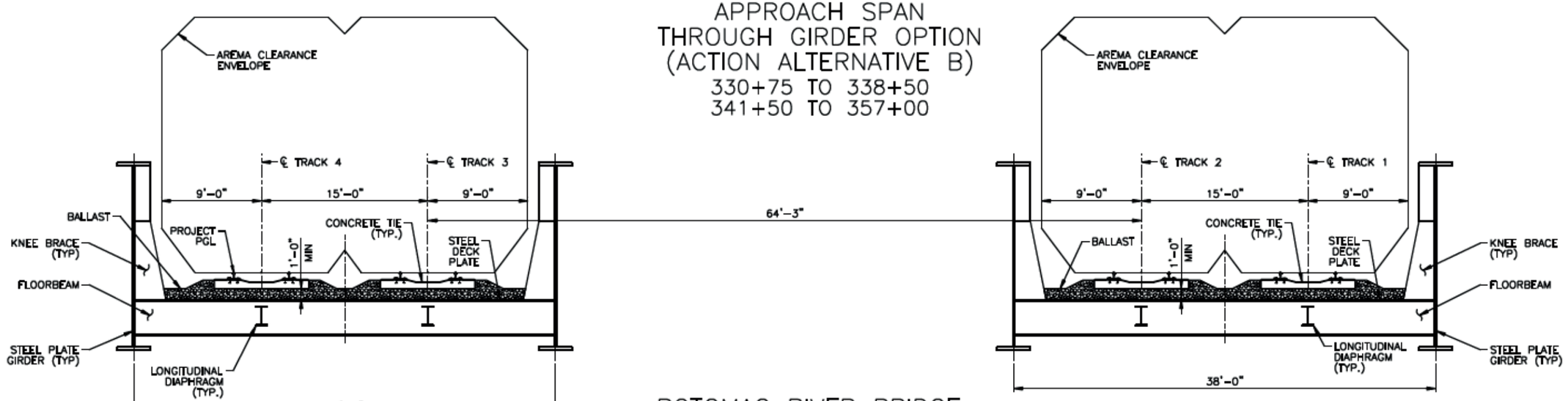
0 5 10
SCALE: 1" = 10'-0"

01:02 PM Thursday, March 21, 2019 AT 01:02 PM
T-308 kmccondless

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-309	72



POTOMAC RIVER BRIDGE
APPROACH SPAN
THROUGH GIRDER OPTION
(ACTION ALTERNATIVE B)
330+75 TO 338+50
341+50 TO 357+00



POTOMAC RIVER BRIDGE
CHANNEL SPAN
THROUGH GIRDER OPTION
(ACTION ALTERNATIVE B)
338+50 TO 341+50

NOTES:

1. SEE B-300 SERIES FOR BIKE-PEDESTRIAN BRIDGE CROSS SECTIONS.
2. AREMA CLEARANCE ENVELOPE IS SHOWN FOR TANGENT TRACK WITHOUT CURVE CORRECTIONS.

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
TYPICAL SECTIONS (9 OF 19)

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY RDH
DRAWN BY DJB
PROJECT MGR.
DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 42 OF 72

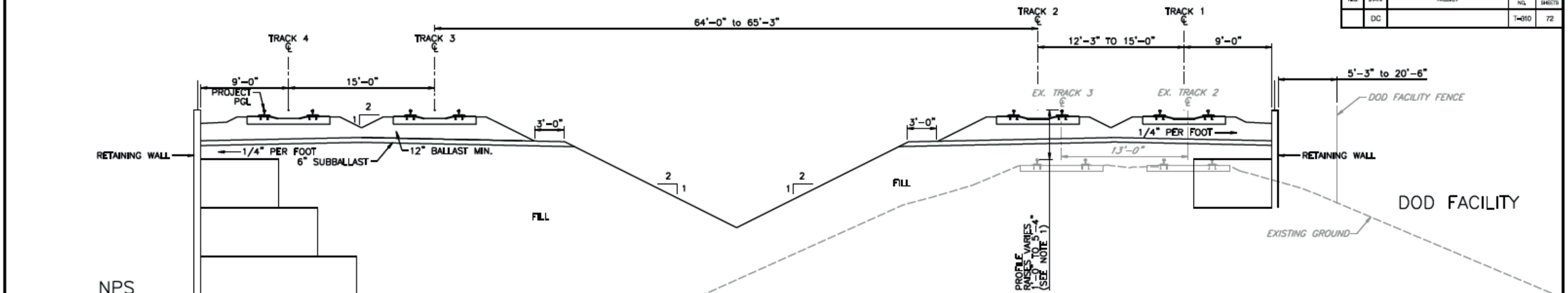
vhb HNTB

NO	DESCRIPTION	NAME	DATE
	REVISIONS		

SCALE: 1" = 10'-0"

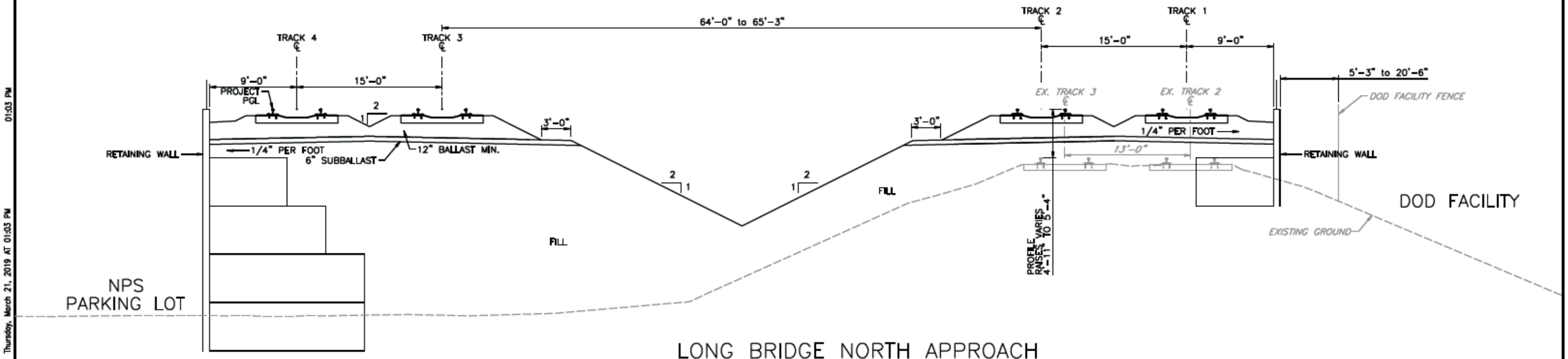
01:02 PM Thursday, March 21, 2019 AT 01:02 PM
T-309 kmccondless

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-310	72



LONG BRIDGE NORTH APPROACH
(ACTION ALTERNATIVE A)
357+00 TO 361+00
362+50 TO 363+00

NOTES:
1. ACTION ALTERNATIVE A BEGINS TO TIE INTO EXISTING TRACK ALIGNMENT AND PROFILE.



LONG BRIDGE NORTH APPROACH
(ACTION ALTERNATIVE B)
357+00 TO 361+00
362+50 TO 363+00

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
TYPICAL SECTIONS (10 OF 19)

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJS
PROJECT MGR.
DIVISION CHIEF
DATE MARCH 22, 2019
FILE:
SHEET 43 OF 72

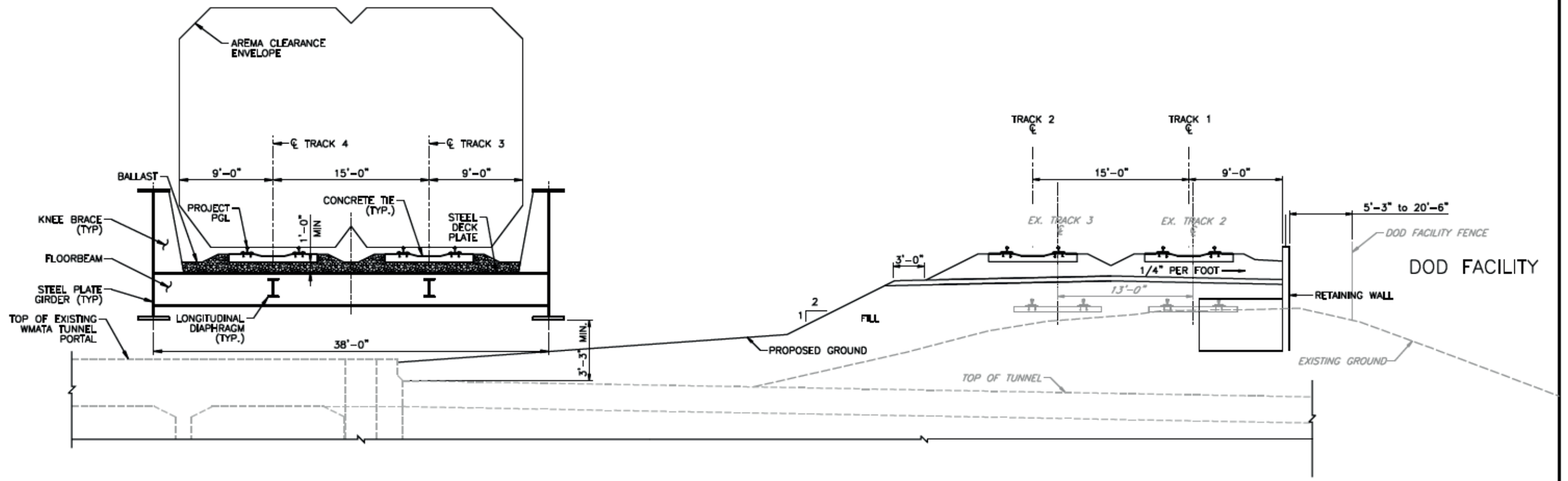
vhb HNTB

NO	DESCRIPTION	NAME	DATE
	REVISIONS		

SCALE: 1" = 10'-0"

01:03 PM Thursday, March 21, 2019 AT 01:03 PM
T-310 kmccondless

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-311	72



WMATA TUNNEL UNDERGRADE BRIDGE
361+00 TO 362+50

NOTES:
1. AREMA CLEARANCE ENVELOPE IS SHOWN FOR TANGENT TRACK WITHOUT CURVE CORRECTIONS.

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
TYPICAL SECTIONS (11 OF 19)

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJS
PROJECT MGR.
DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 44 OF 72

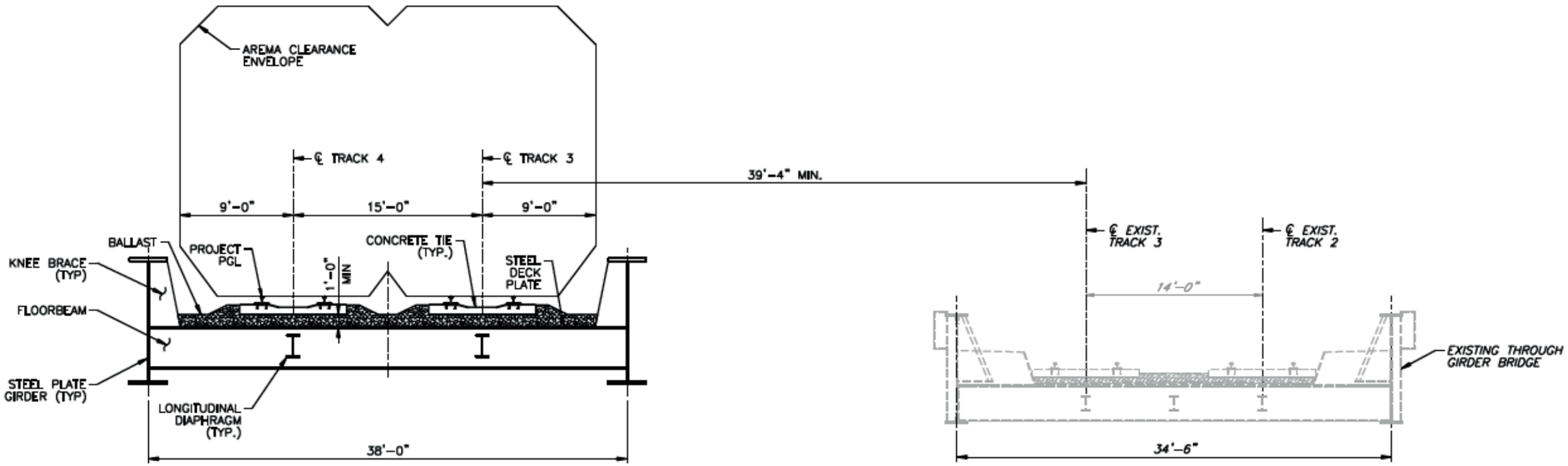
NO	DESCRIPTION	NAME	DATE

REVISIONS

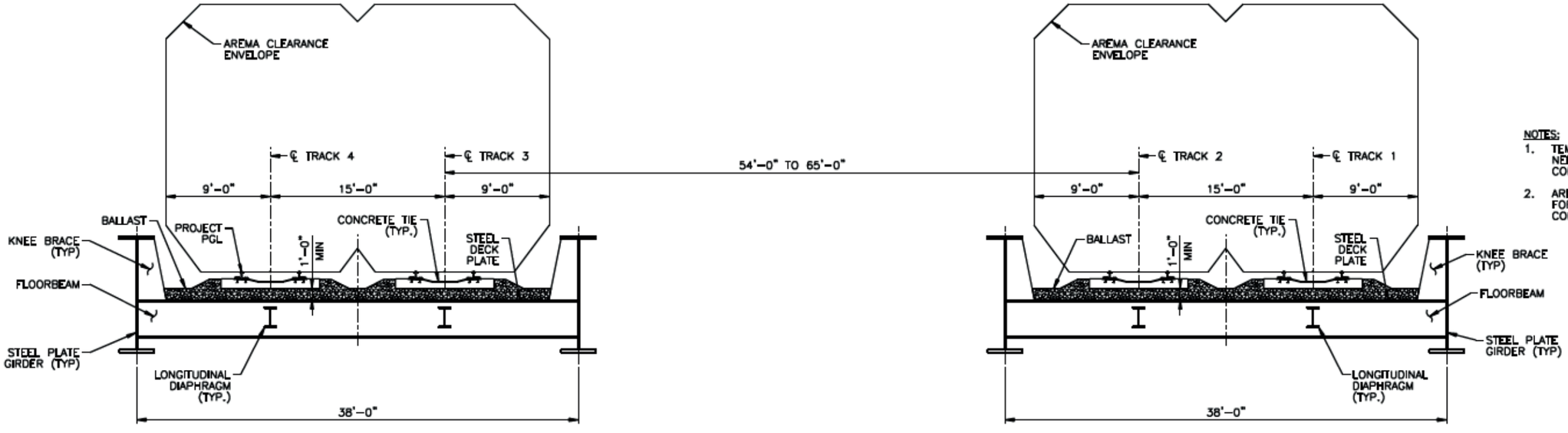
SCALE: 1" = 10'-0"

T-311
kmccondless
Thursday, March 21, 2019 AT 01:03 PM

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-312	72



I-395 UNDERGRADE BRIDGE
INITIAL CONDITION
363+00 TO 365+00



I-395 UNDERGRADE BRIDGE
FINAL CONDITION
363+00 TO 365+00

NOTES:

1. TEMPORARY CONSTRUCTION EASEMENT NEEDED WITHIN DOD FACILITY TO CONSTRUCT I-395 UG SOUTH ABUTMENT.
2. AREMA CLEARANCE ENVELOPE IS SHOWN FOR TANGENT TRACK WITHOUT CURVE CORRECTIONS.

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
TYPICAL SECTIONS (12 OF 19)

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY RDH
DRAWN BY DJS
PROJECT MGR.

DIVISION CHIEF

DATE MARCH 22, 2019

FILE

SHEET 45 OF 72

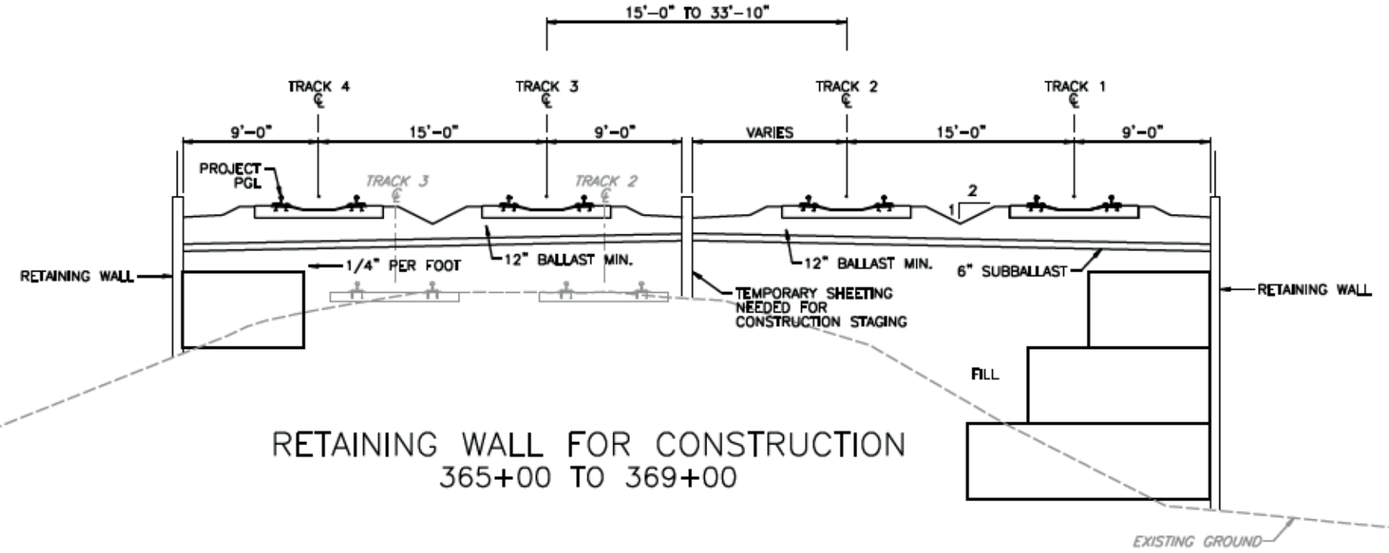
vhb HNTB

NO	DESCRIPTION	NAME	DATE
	REVISIONS		

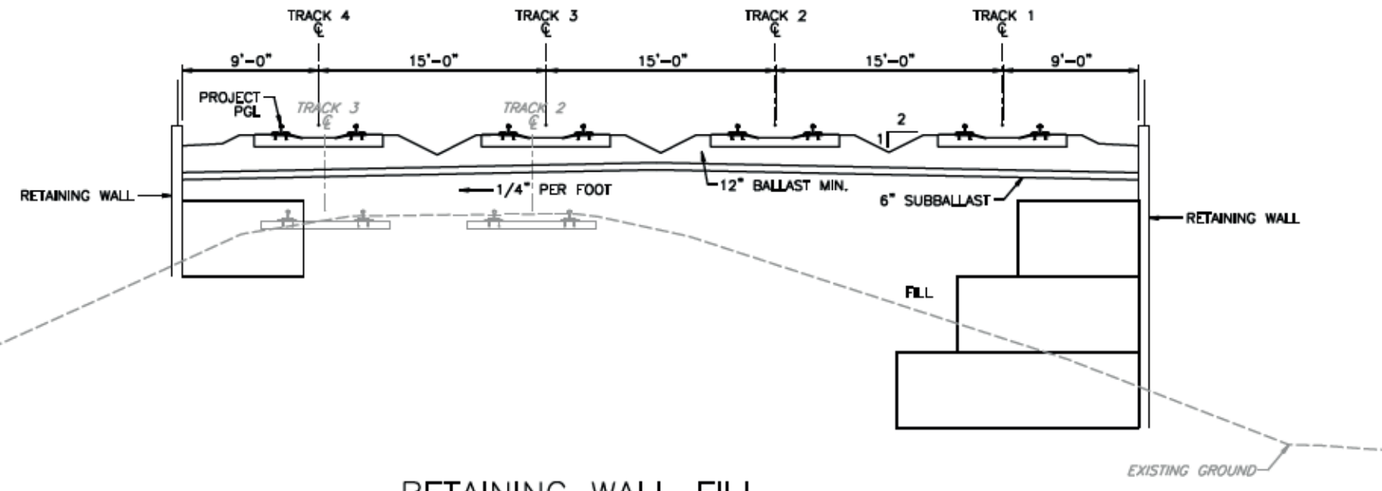
SCALE: 1" = 10'-0"

T-312 kmccondless Thursday, March 21, 2019 AT 01:04 PM 01:04 PM

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-313	72



RETAINING WALL FOR CONSTRUCTION
365+00 TO 369+00



RETAINING WALL FILL
369+00 TO 373+25
374+50 TO 377+50

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
TYPICAL SECTIONS (13 OF 19)

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY RDH
DRAWN BY DJS
PROJECT MGR.
DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 46 OF 72

vhb HNTB

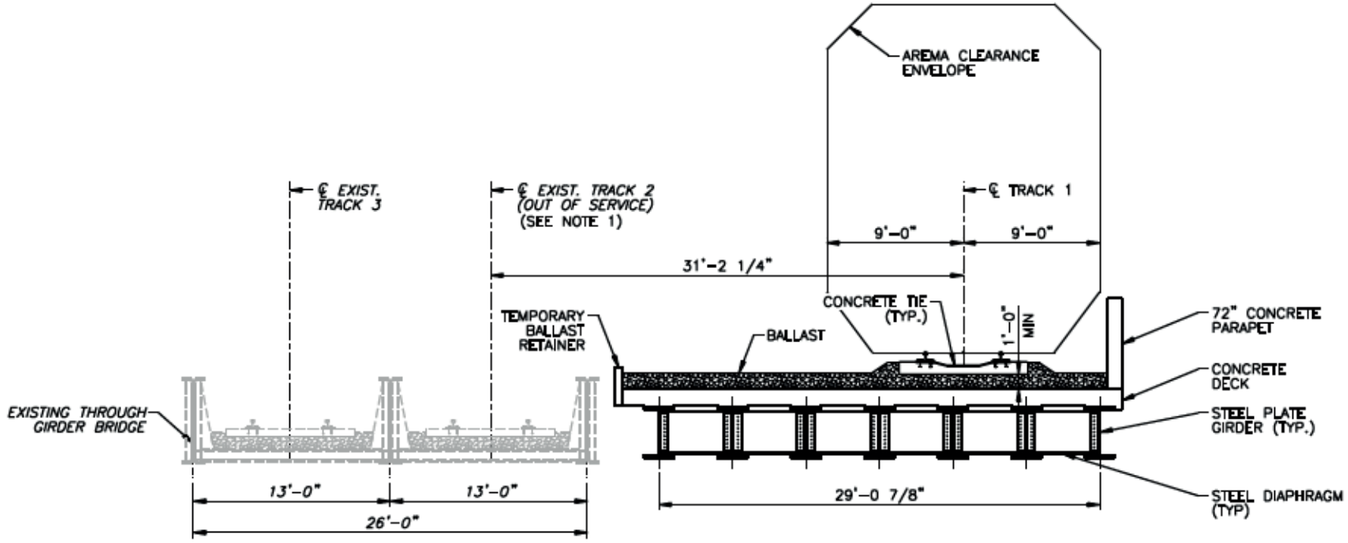
NO	DESCRIPTION	NAME	DATE

REVISIONS

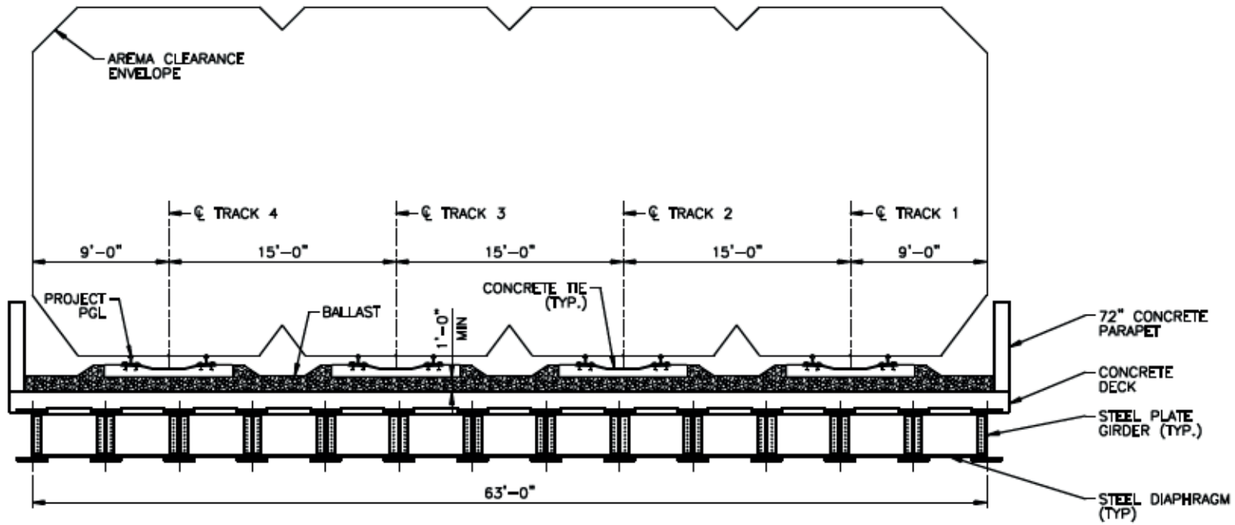
SCALE: 1" = 10'-0"

01:04 PM
Thursday, March 21, 2019 AT 01:04 PM
T-313
kmcconidless

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-314	72



OHIO DRIVE SW UNDERGRADE BRIDGE
INITIAL CONDITION
373+25 TO 374+50



OHIO DRIVE SW UNDERGRADE BRIDGE
FINAL CONDITION
373+25 TO 374+50

NOTES:

1. EXISTING BRIDGE DEMOLITION AND NEW BRIDGE WIDENING WILL BE STAGED TO PROVIDE TWO TRACKS DURING CONSTRUCTION.
2. AREMA CLEARANCE ENVELOPE IS SHOWN FOR TANGENT TRACK WITHOUT CURVE CORRECTIONS.

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
TYPICAL SECTIONS (14 OF 19)

PROJECT ENG. ____
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJS
PROJECT MGR. ____
DIVISION CHIEF
DATE MARCH 22, 2019
FILE ____
SHEET 47 OF 72

vhb HNTB

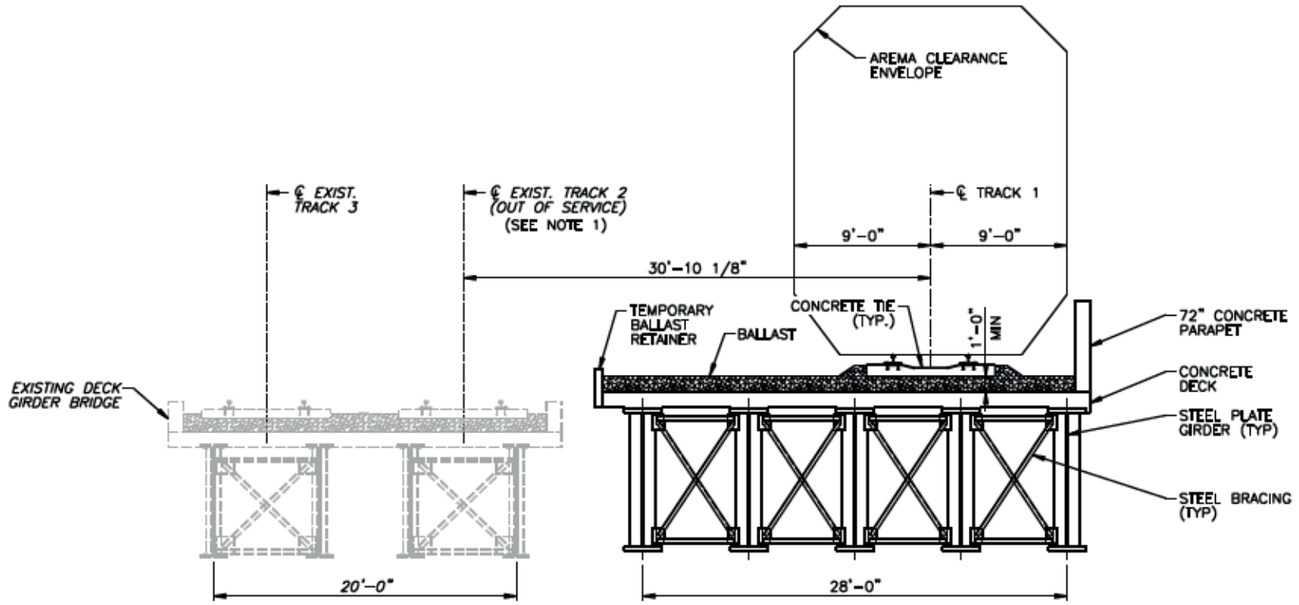
NO	DESCRIPTION	NAME	DATE

REVISIONS

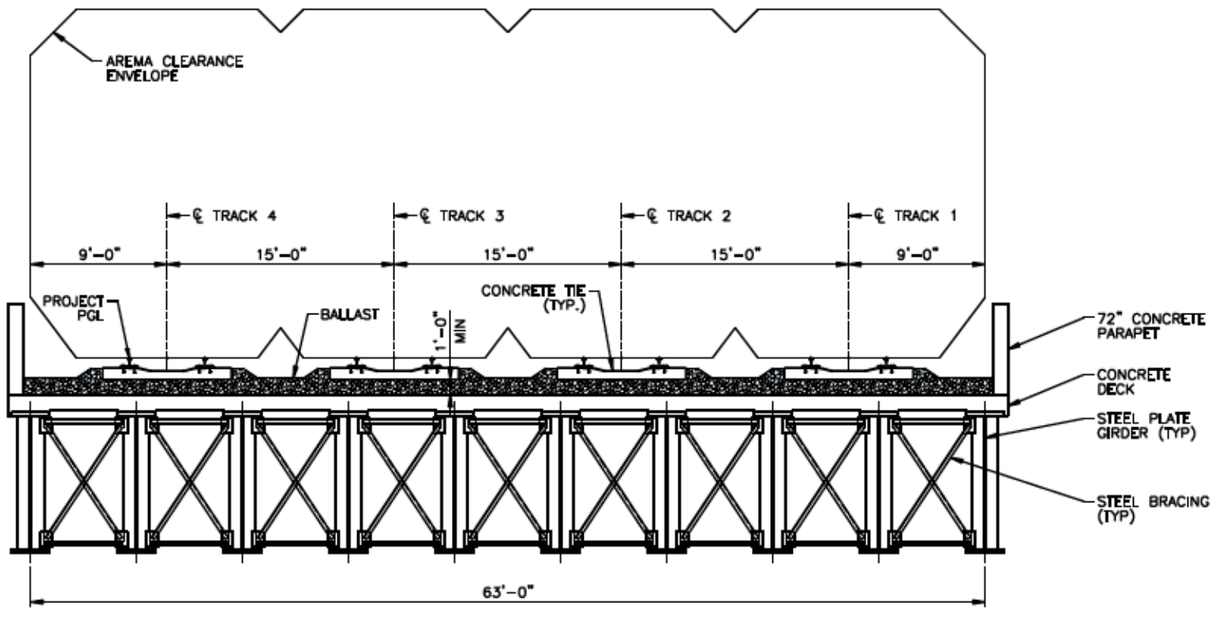
SCALE: 1" = 10'-0" (0, 5, 10)

T-314
kmccandless
Thursday, March 21, 2019 AT 01:04 PM
01:04 PM

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-315	72



WASHINGTON CHANNEL UNDERGRADE BRIDGE INITIAL CONDITION 377+50 TO 379+00



WASHINGTON CHANNEL UNDERGRADE BRIDGE FINAL CONDITION 377+50 TO 379+00

NOTES:

1. EXISTING BRIDGE DEMOLITION AND NEW BRIDGE WIDENING WILL BE STAGED TO PROVIDE TWO TRACKS DURING CONSTRUCTION.
2. AREMA CLEARANCE ENVELOPE IS SHOWN FOR TANGENT TRACK WITHOUT CURVE CORRECTIONS.

0 5 10
SCALE: 1" = 10'-0"

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
TYPICAL SECTIONS (15 OF 19)

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY RDH
DRAWN BY DJB
PROJECT MGR.
DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 46 OF 72

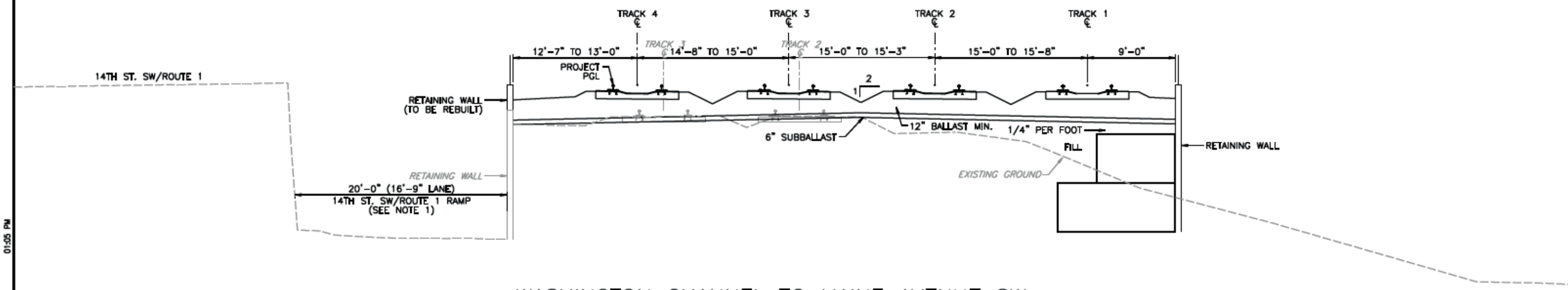
vhb HNTB

NO	DESCRIPTION	NAME	DATE

REVISIONS

01:05 PM Thursday, March 21, 2019 AT 01:05 PM
T-315 kmccondless

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-316	72



WASHINGTON CHANNEL TO MAINE AVENUE SW
379+00 TO 381+35

NOTES:

1. TEMPORARY RAMP CLOSURES DURING CONSTRUCTION. POSSIBLE REALIGNMENT NEEDED.

SCALE: 1" = 10'-0"

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
TYPICAL SECTIONS (16 OF 19)

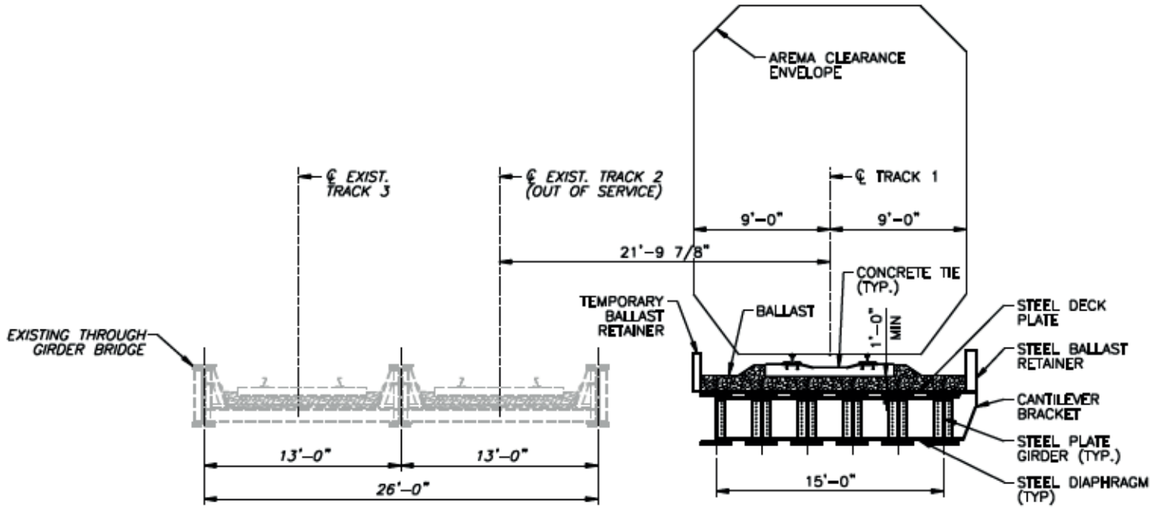
PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJS
PROJECT MGR.
DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 49 OF 72

NO	DESCRIPTION	NAME	DATE
	REVISIONS		

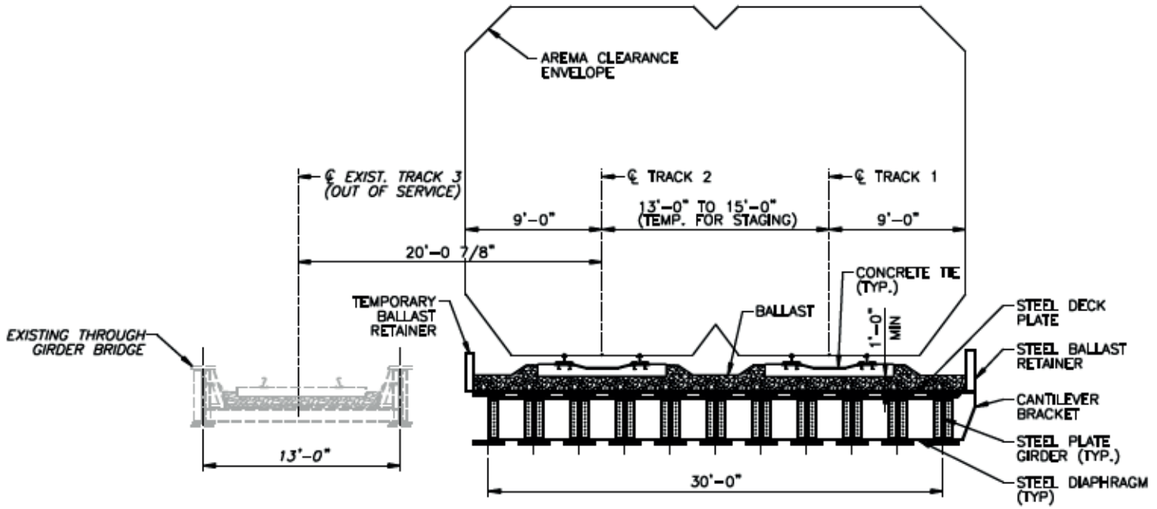
vhb HNTB

01:05 PM Thursday, March 21, 2019 AT 01:05 PM
T-316 kmccondless

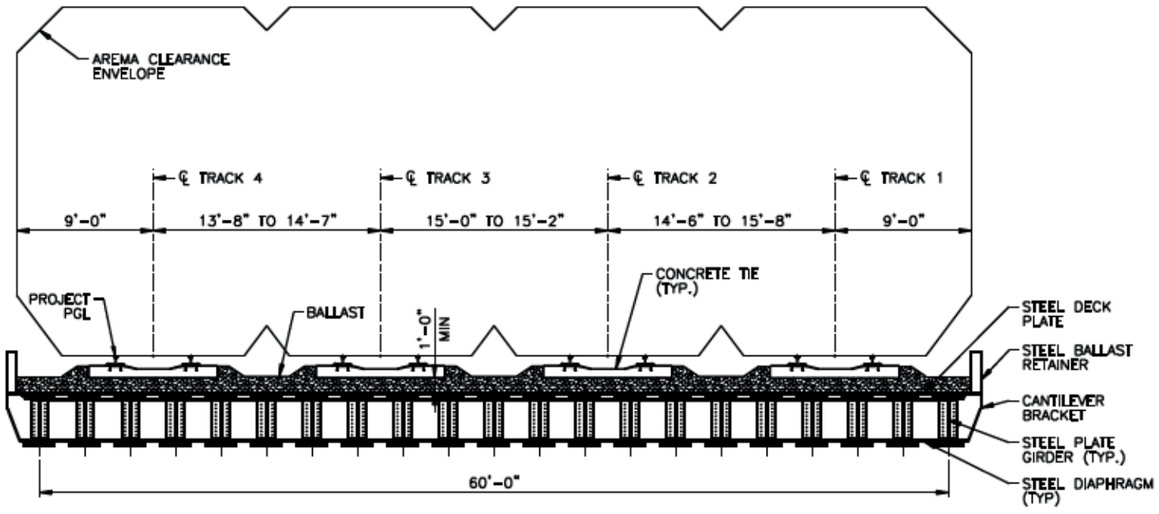
REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-317	72



INITIAL CONDITION



INTERMEDIATE CONDITION



FINAL CONDITION

NOTES:
1. VERTICAL ROADWAY CLEARANCE BELOW BRIDGE MATCHES EXISTING OF 14'.
2. AREMA CLEARANCE ENVELOPE IS SHOWN FOR TANGENT TRACK WITHOUT CURVE CORRECTIONS.

MAINE AVENUE SW UNDERGRADE BRIDGE
381+35 TO 383+00

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
TYPICAL SECTIONS (17 OF 19)

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJS
PROJECT MGR.
DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 50 OF 72

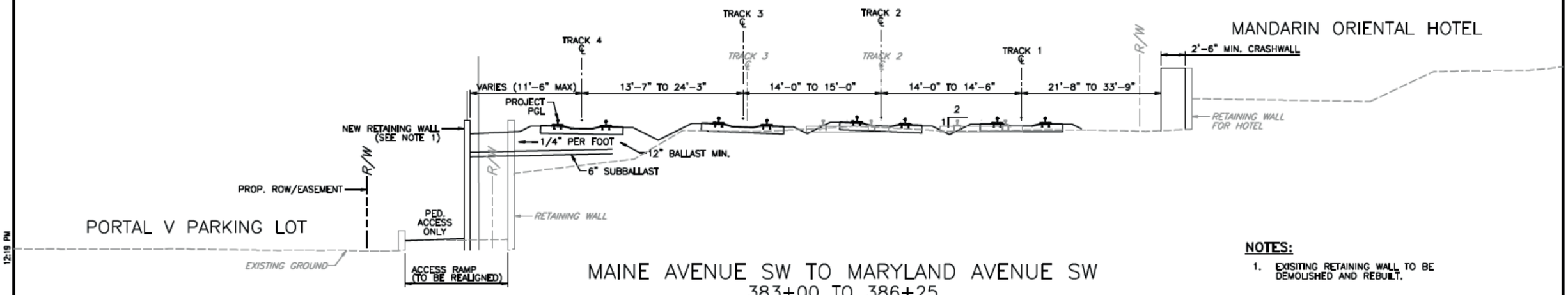
NO	DESCRIPTION	NAME	DATE

REVISIONS

SCALE: 1" = 10'-0"

01:06 PM
Thursday, March 21, 2019 AT 01:06 PM
T-317
kmccondless

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-318	72



MAINE AVENUE SW TO MARYLAND AVENUE SW
383+00 TO 386+25

NOTES:

1. EXISITING RETAINING WALL TO BE DEMOLISHED AND REBUILT.

SCALE: 1" = 10'-0"

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
TYPICAL SECTIONS (18 OF 19)

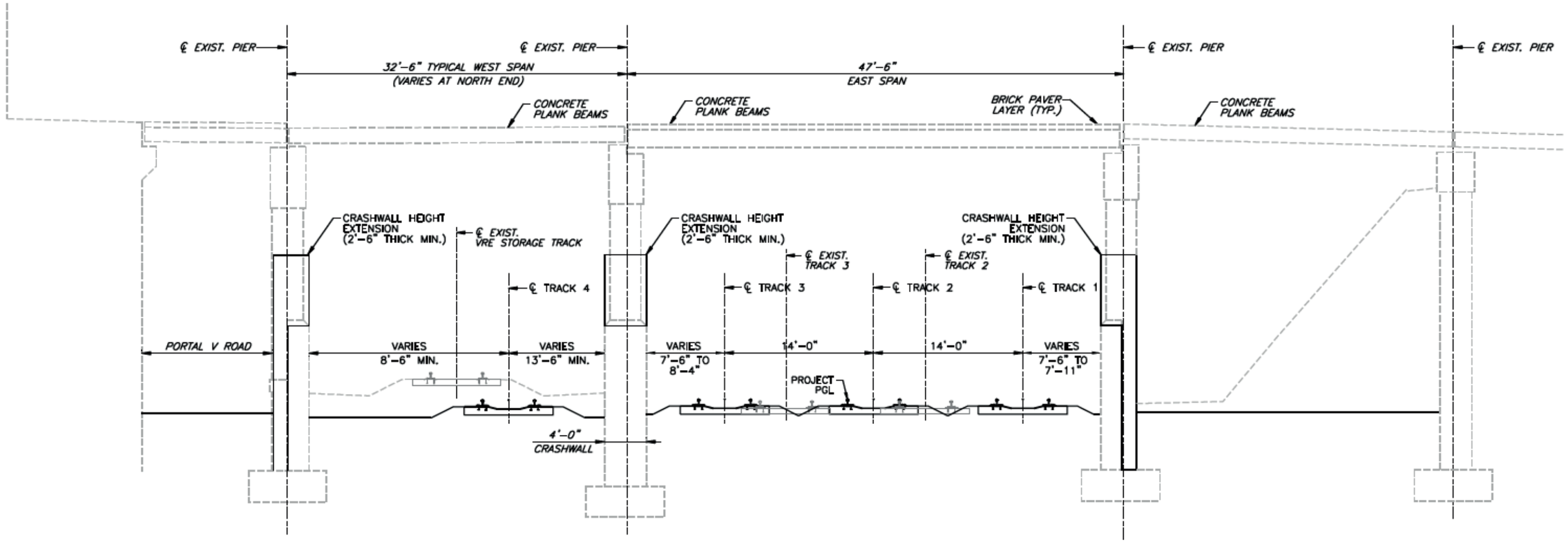
PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY RDH
DRAWN BY DJS
PROJECT MGR.
DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 51 OF 72

NO	DESCRIPTION	NAME	DATE

REVISIONS

12:19 PM
Friday, March 22, 2019 AT 12:19 PM
T-318
kmcondless

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-319	72



MARYLAND AVENUE SW OVERHEAD BRIDGE
386+25 TO 393+00

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
TYPICAL SECTIONS (19 OF 19)

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJS
PROJECT MGR.

DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 52 OF 72

vhb HNTB

NO	DESCRIPTION	NAME	DATE

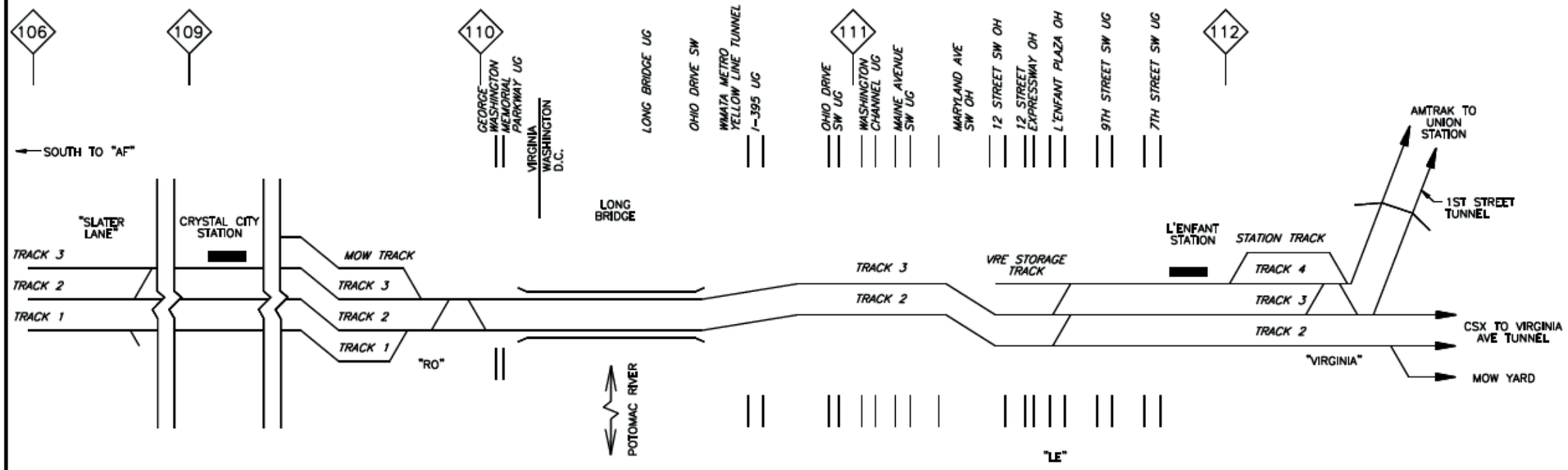
REVISIONS

SCALE: 1" = 10'-0"

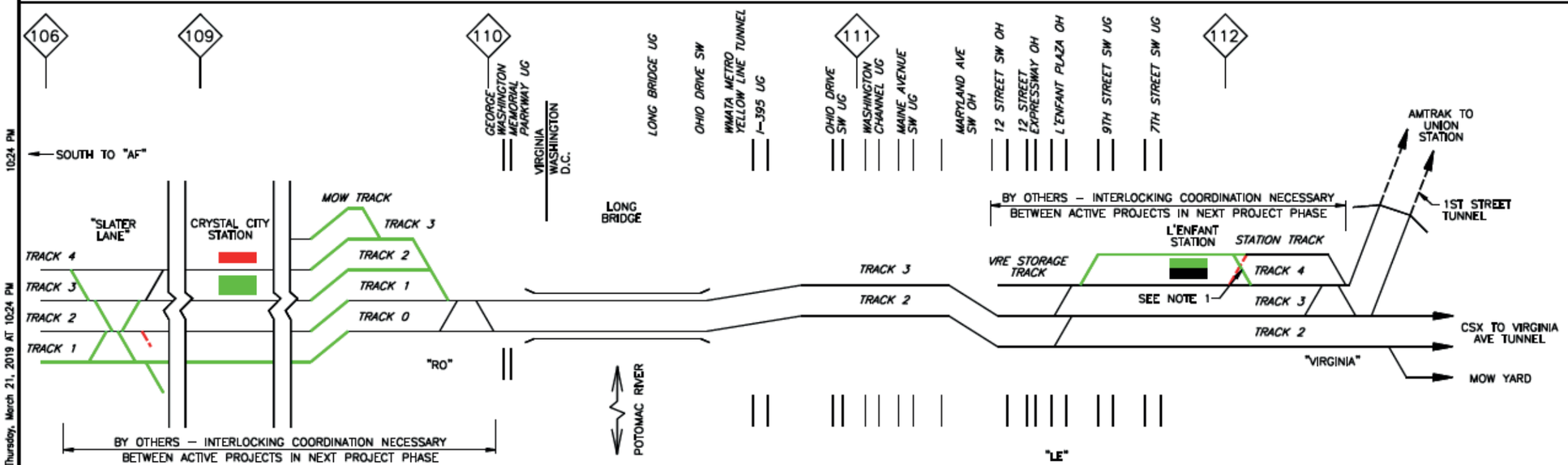
01:07 PM
Thursday, March 21, 2019 AT 01:07 PM
T-319
kmcondless

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-811	72

EXISTING CONDITION



FUTURE NO-BUILD



ASSUMPTIONS

1. L'ENFANT STATION PROJECT COMPLETE WITH ASSUMED CONFIGURATION. PROPOSED INTERLOCKINGS OUTSIDE OF PROJECT LIMITS SHOWN FOR CONSTRUCTION STAGING ONLY. DESIGN TO BE COORDINATED AT LATER PHASE.
2. VA DRPT DC2RVA 4TH TRACK PROJECT AND VA DRPT AF–RO 4TH TRACK PROJECT IS COMPLETE WITH THE FOLLOWING DESIGN DECISIONS:
   - –BUILD ALTERNATIVE 1B CHOSEN FOR FUTURE "RO" CONFIGURATION
   - –"RO" NORTHBOUND HOME SIGNAL PLACED AT FINAL LOCATION
   - –TRACK SHIFTS FOR FUTURE "RO" INTERLOCKING TO BE PROVIDED AT END OF FUTURE NO–BUILD
   - –"SLATER LANE" INTERLOCKING DESIGNED AS SHOWN (BASED ON MOST UP–TO–DATE PLANS AT TIME OF SUBMISSION)
3. UTILITIES HAVE BEEN RELOCATED AS AN EARLY ACTION ITEM.

NOTES:

1. FORMAL LONG BRIDGE PROJECT LIMITS END AT "RO" INTERLOCKING TO THE SOUTH. FUTURE COORDINATION WITH THE VA DRPT DC2RVA 4TH TRACK PROJECT IS REQUIRED.
2. FORMAL LONG BRIDGE PROJECT LIMITS END AT "LE NORTH" INTERLOCKING TO THE NORTH. FUTURE COORDINATION WITH THE VRE L'ENFANT STATION 4TH TRACK PROJECT IS REQUIRED.

CONSTRUCTION LEGEND

- EXISTING TRACK
- RAISE AND SURFACE
- CONSTRUCT NEW
- TRACK TO BE SHIFTED
- AS SHIFTED
- REMOVE
- TRACK COMPLETED IN EARLIER PHASE
- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- STRUCTURE COMPLETED IN EARLIER PHASE

CE PLANS - FINAL
May 10, 2019

NO	DESCRIPTION	NAME	DATE
	REVISIONS		

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

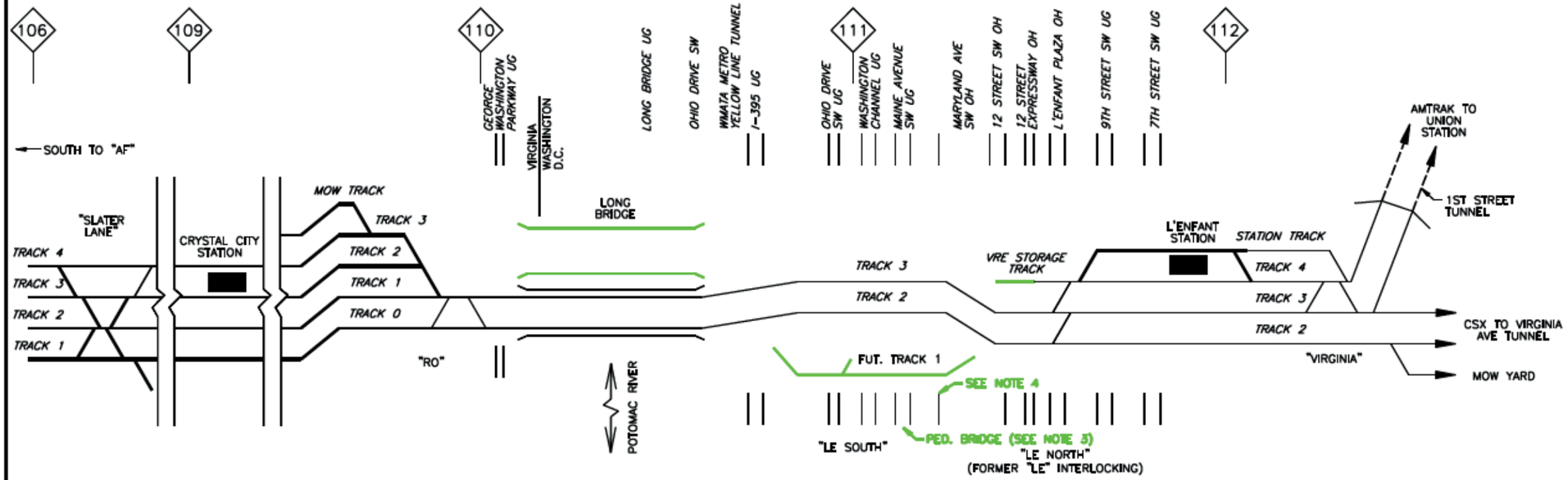
LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
PHASING DIAGRAM –
EXISTING/FUTURE NO–BUILD

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJS
PROJECT MGR.
DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 53 OF 72

T-811 dseery
Thursday, March 21, 2019 AT 10:24 PM

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-812	72



PHASE A
PREWORK

CONSTRUCTION WORK

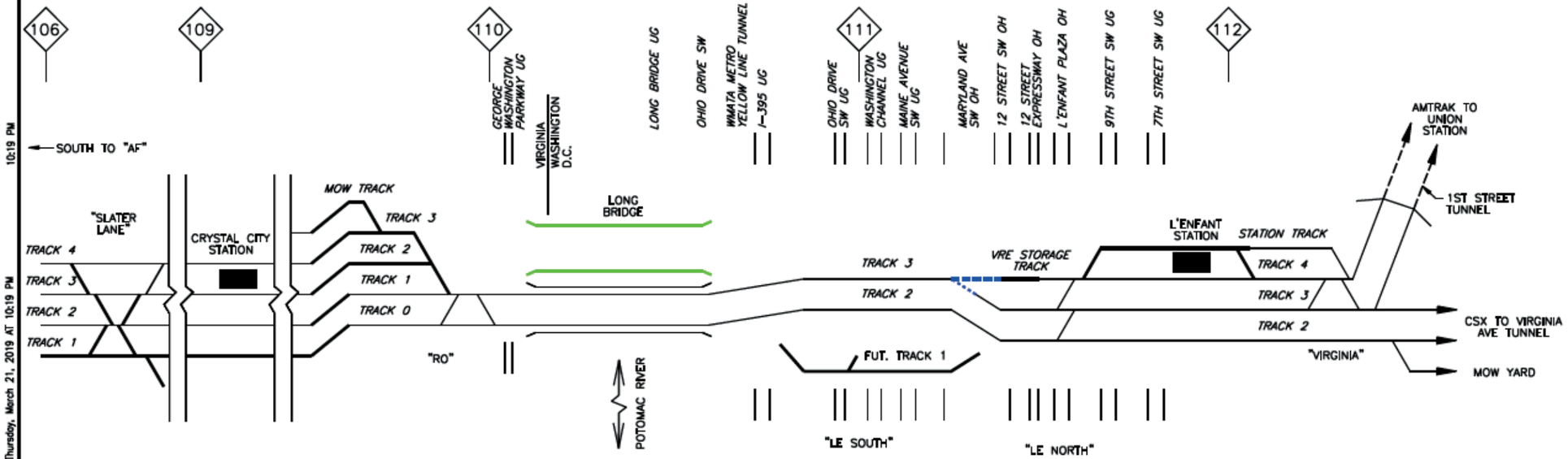
1. BUILD FUT. TK 1 FROM I-395 TO MARYLAND AVENUE SW (CONSTRUCT OHIO DRIVE SW, WASHINGTON CHANNEL, MAINE AVENUE SW AND RETAINING WALLS TO SUPPORT TK 1).
2. BUILD "LE SOUTH" 12A SWITCH.
3. DEMOLISH PED. BRIDGE.
4. CONSTRUCT PED. BRIDGE AFTER MAINE AVENUE SW BRIDGE IS BUILT.
5. REMOVE VRE STORAGE TK. RECONFIGURE TRACK DRAINAGE SYSTEM.
6. LOWER WEST BAY TK PROFILE AND REBUILD TO PLATE H CLEARANCE.
7. INSTALL NEW C&S EQUIPMENT.
8. BUILD UP CRASHWALLS UNDER MARYLAND AVENUE SW.
9. BEGIN CONSTRUCTION OF NEW WEST RAIL BRIDGE OVER THE POTOMAC RIVER.

OPERATIONS NOTES

EXISTING OPERATIONS EXCEPT CLOSURE OF STORAGE TRACK FOUL TIME AS NEEDED

DURATION

16.5 MONTHS



PHASE A
STAGE 1

CONSTRUCTION WORK

1. CONNECT EX. TK 3 TO WEST BAY TK.

OPERATIONS NOTES

TRACK 3 OUT-OF-SERVICE "RO" TO "VIRGINIA"

NO ACCESS TO L'ENFANT STATION (STATION TRACK AND TRACK 4 OUT-OF-SERVICE)

DURATION

ONE NIGHT

CONSTRUCTION LEGEND

- EXISTING TRACK
- RAISE AND SURFACE
- CONSTRUCT NEW
- TRACK TO BE SHIFTED
- AS SHIFTED
- REMOVE
- TRACK COMPLETED IN EARLIER PHASE
- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- STRUCTURE COMPLETED IN EARLIER PHASE

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
PHASING DIAGRAM –
PHASE A, PREWORK/STAGE 1

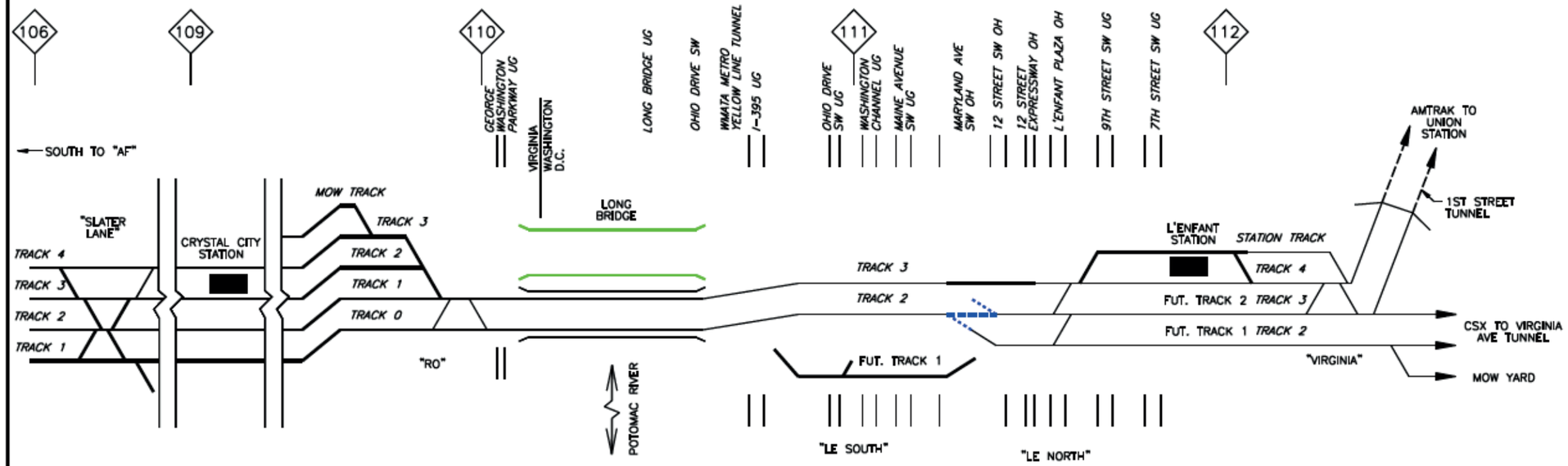
PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJS
PROJECT MGR.
DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 54 OF 72

vhb HNTB

NO	DESCRIPTION	NAME	DATE
	REVISIONS		

10:19 PM Thursday, March 21, 2019 AT 10:19 PM
T-812 dseery

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-813	72



PHASE A STAGE 2

CONSTRUCTION WORK

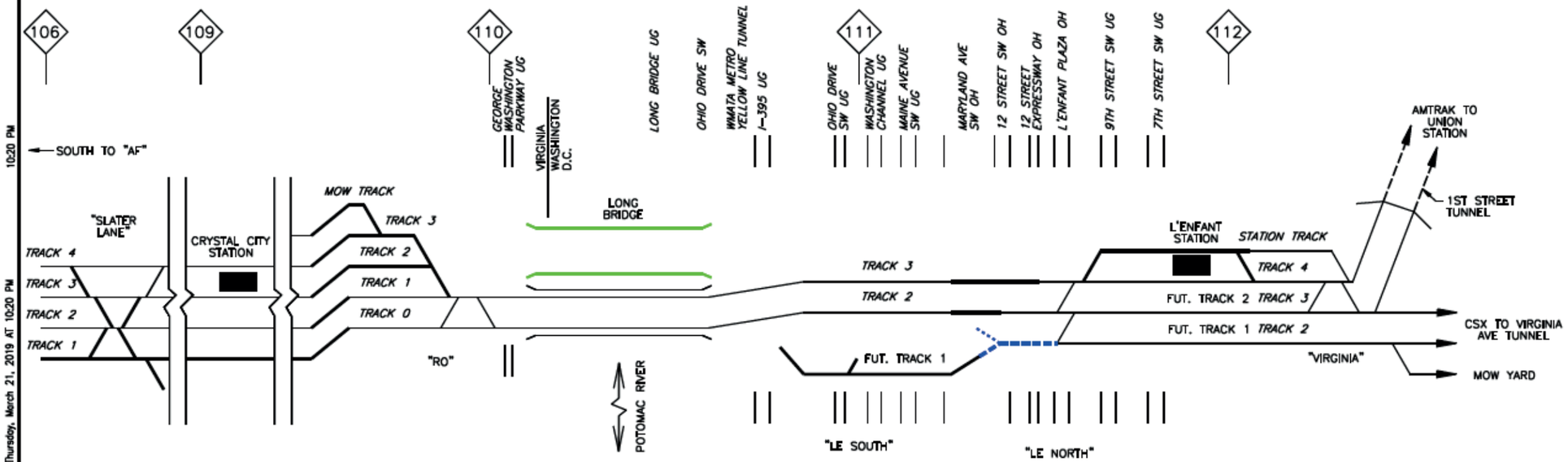
1. CONNECT EX. TK 2 TO EX. TK 3.

OPERATIONS NOTES

TRACK 2 OUT-OF-SERVICE NORTH OF "RO"
FUT. TRACK 2 OUT-OF-SERVICE "LE NORTH" TO "VIRGINIA"
CSXT SINGLE TRACK TO VIRGINIA AVENUE TUNNEL

DURATION

ONE NIGHT



PHASE A STAGE 3

CONSTRUCTION WORK

1. CONNECT FUT. TK 1 TO FINAL ALIGNMENT.

OPERATIONS NOTES

FUT. TRACK 1 OUT-OF-SERVICE
CSXT SINGLE TRACK TO VIRGINIA AVENUE TUNNEL

DURATION

1 DAY

CONSTRUCTION LEGEND

- EXISTING TRACK
- RAISE AND SURFACE
- CONSTRUCT NEW
- TRACK TO BE SHIFTED
- AS SHIFTED
- REMOVE
- TRACK COMPLETED IN EARLIER PHASE
- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- STRUCTURE COMPLETED IN EARLIER PHASE

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
PHASING DIAGRAM –
PHASE A, STAGE 2/3

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJS
PROJECT MGR.
DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 55 OF 72

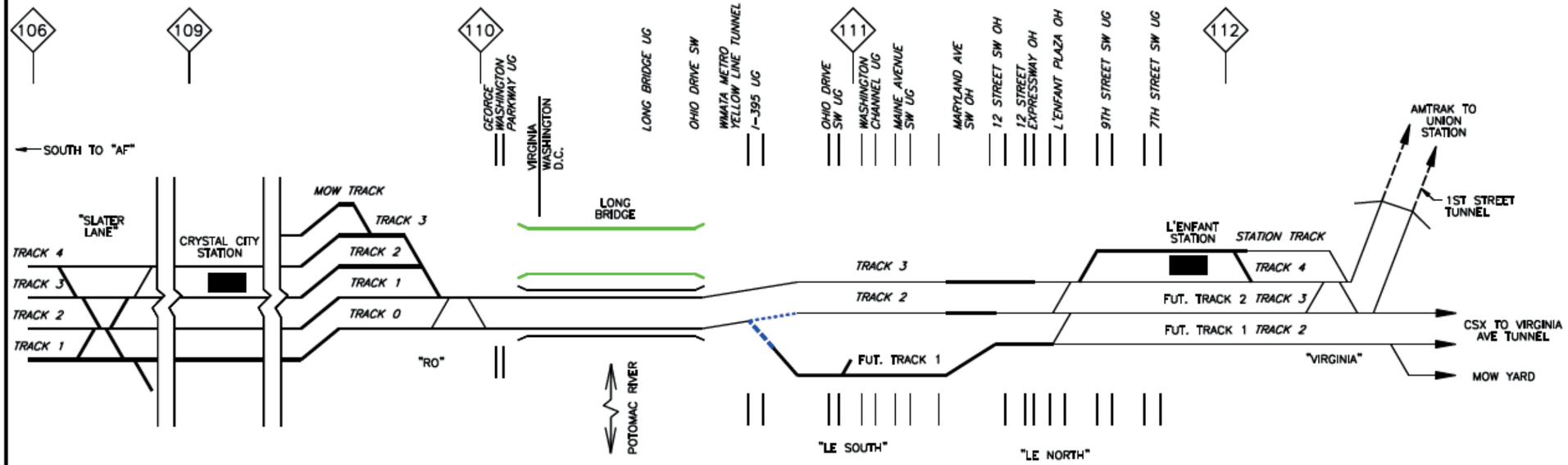
NO	DESCRIPTION	NAME	DATE

REVISIONS

vhb HNTB

10:20 PM Thursday, March 21, 2019 AT 10:20 PM
T-813
dseery

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-814	72



PHASE A STAGE 4

CONSTRUCTION WORK

1. CONNECT/SHIFT FUT. TK 1 INTO SERVICE NORTH OF I-395.

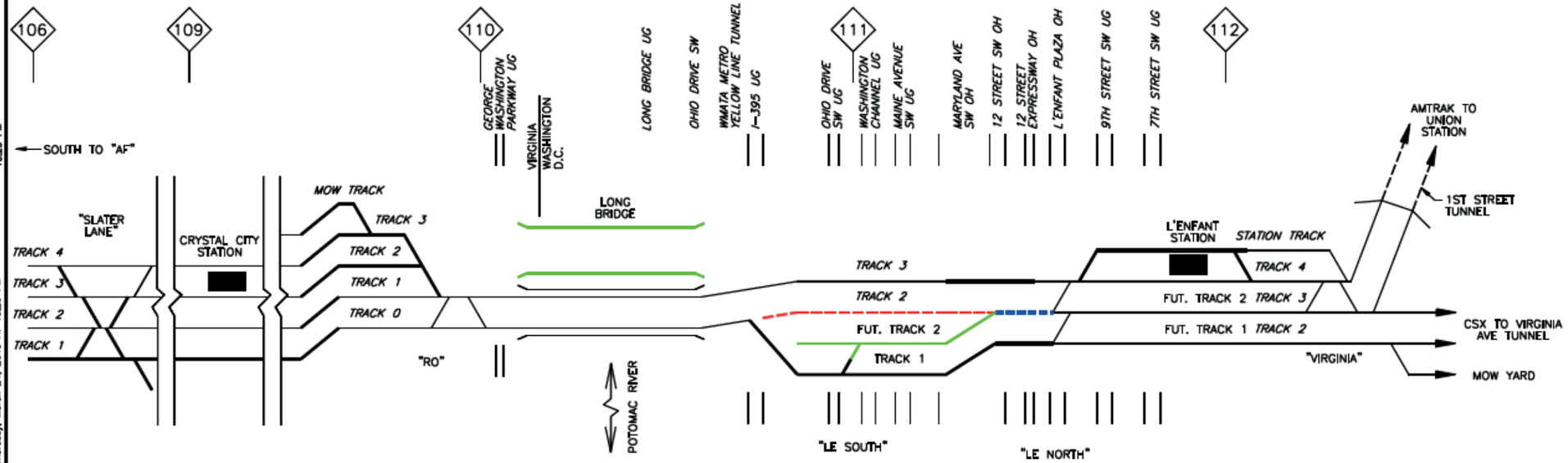
OPERATIONS NOTES

TRACK 2 OUT-OF-SERVICE NORTH OF "RO"

CSXT SINGLE TRACK TO VIRGINIA AVENUE TUNNEL

DURATION

ONE NIGHT



PHASE A STAGE 5

CONSTRUCTION WORK

1. REMOVE EX. TK 2 FROM I-395 TO MAINE AVENUE SW AND REMOVE MAINE AVENUE BRIDGE UNDER EX. TK 2.
2. CONSTRUCT OHIO DRIVE SW, WASHINGTON CHANNEL, AND MAINE AVENUE SW TO SUPPORT FUT. TK 2. BUILD FUT. TK 2 FROM I-395 TO MAINE AVENUE SW.
3. CONNECT AND SHIFT FUT. TK 2 FROM MAINE AVENUE SW TO "LE NORTH."
4. BUILD "LE SOUTH" 12B SWITCH.
5. BUILD BRIDGES OVER WMATA TUNNEL AND I-395 OFFLINE.
6. BUILD WEST GEORGE WASHINGTON MEMORIAL PARKWAY BRIDGE.

OPERATIONS NOTES

NORMAL OPERATIONS

DURATION

21.5 MONTHS

CONSTRUCTION LEGEND

- EXISTING TRACK
- RAISE AND SURFACE
- CONSTRUCT NEW
- TRACK TO BE SHIFTED
- AS SHIFTED
- REMOVE
- TRACK COMPLETED IN EARLIER PHASE
- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- STRUCTURE COMPLETED IN EARLIER PHASE

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
PHASING DIAGRAM –
PHASE A, STAGE 4/5

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJS
PROJECT MGR.
DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 66 OF 72

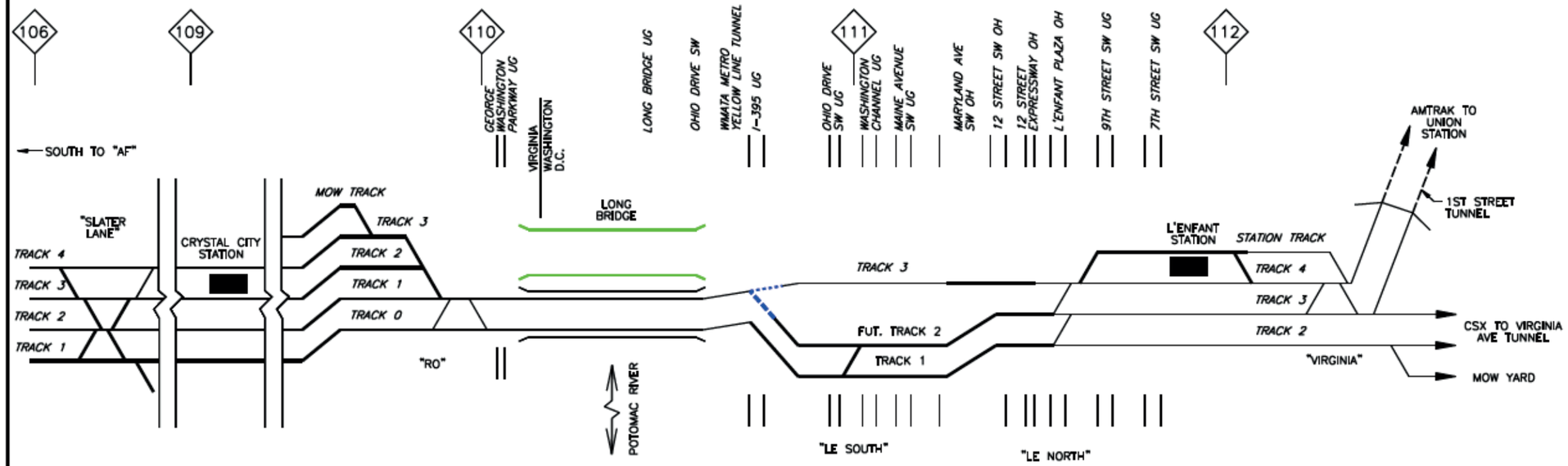
NO	DESCRIPTION	NAME	DATE

REVISIONS

vhb HNTB

10:20 PM Thursday, March 21, 2019 AT 10:20 PM
T-814 dseery

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-815	72



PHASE A
STAGE 6

CONSTRUCTION WORK

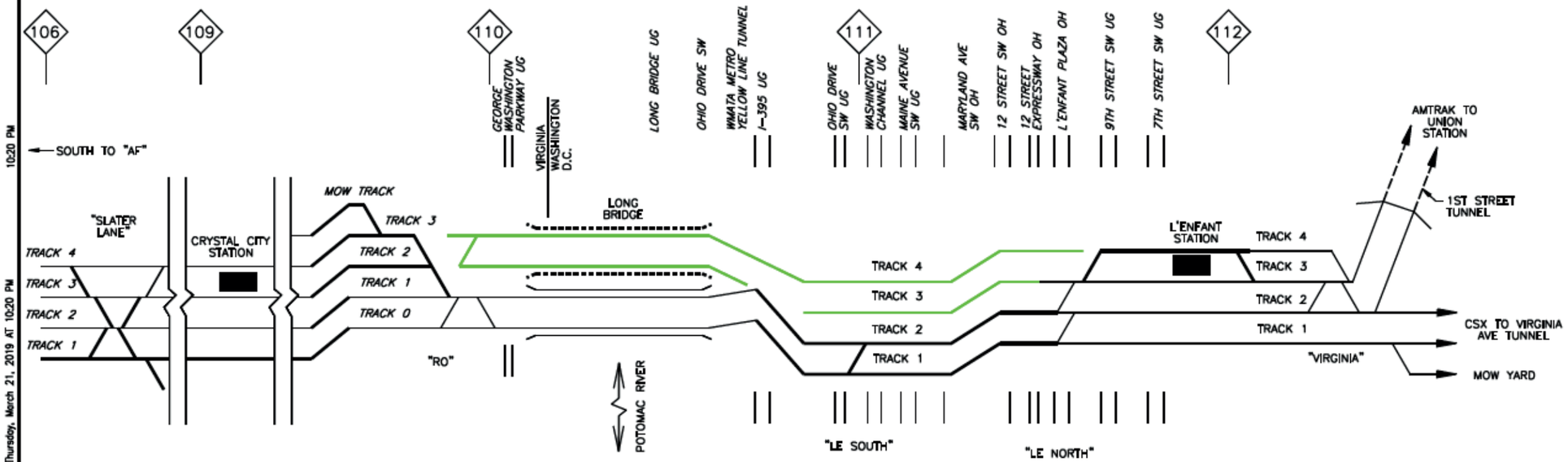
1. CONNECT SHIFT FUT. TK 2 INTO SERVICE NORTH OF I-395.

OPERATIONS NOTES

TRACK 3 OUT-OF-SERVICE "RO" TO "LE SOUTH"

DURATION

ONE NIGHT



PHASE B
PREWORK

CONSTRUCTION WORK

1. REMOVE EX. TK 3 FROM I-395 TO MAINE AVENUE SW. REMOVE REMAINING STRUCTURES OF OHIO DRIVE SW, WASHINGTON CHANNEL, AND MAINE AVENUE SW. BUILD FUT. TK 3 & 4 STRUCTURES AND TRACK OVER SAME LIMITS INCLUDING RETAINING WALLS.
2. CONSTRUCT ALL WEST RETAINING WALLS "RO" TO "LE SOUTH."
3. FINISH CONSTRUCTION OF NEW WEST RAIL BRIDGE OVER THE POTOMAC.
4. CONSTRUCT FUT. TK 3 & 4 FROM "RO" TO "LE NORTH."
5. BUILD "RO" 34 CROSSOVER.

OPERATIONS NOTES

NORMAL OPERATIONS

DURATION

18 MONTHS

CONSTRUCTION LEGEND

- EXISTING TRACK
- RAISE AND SURFACE
- CONSTRUCT NEW
- TRACK TO BE SHIFTED
- AS SHIFTED
- REMOVE
- TRACK COMPLETED IN EARLIER PHASE
- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- STRUCTURE COMPLETED IN EARLIER PHASE

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
PHASING DIAGRAM –
PHASE A, STAGE 6/PHASE B PREWORK

PROJECT ENG. ____
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJS
PROJECT MGR. ____
DIVISION CHIEF
DATE MARCH 22, 2019
FILE ____
SHEET 57 OF 72

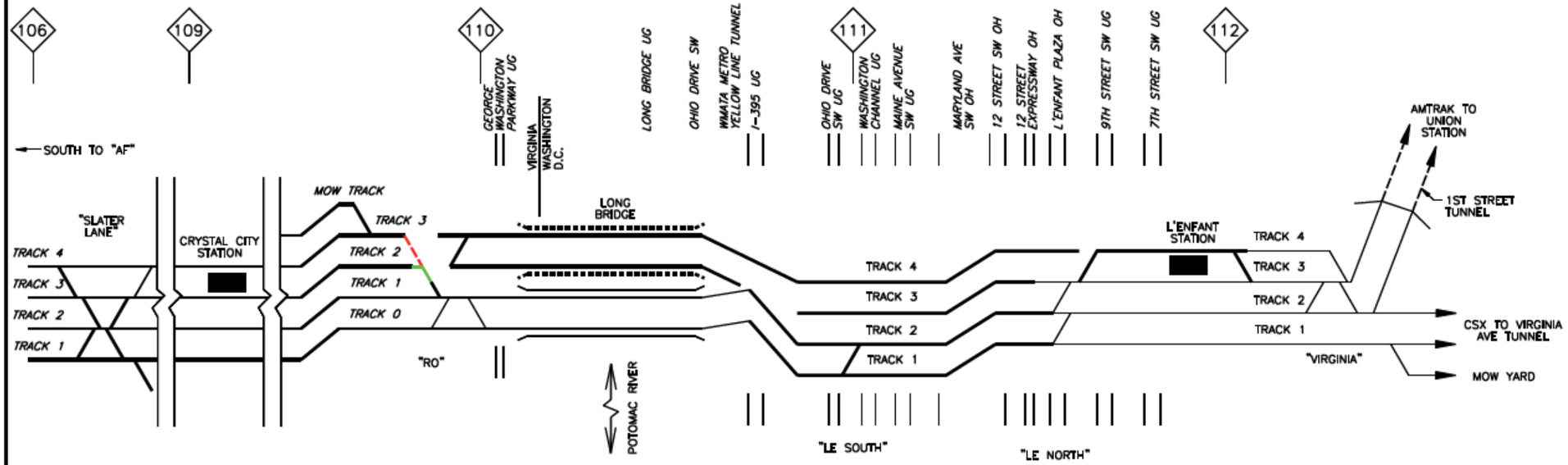
vhb HNTB

NO	DESCRIPTION	NAME	DATE

REVISIONS

Thursday, March 21, 2019 AT 10:20 PM
T-815
dseery

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-816	72



PHASE B STAGE 1

CONSTRUCTION WORK

1. REMOVE EX. TK 3 "RO" SWITCH.
2. BUILD RETURN CURVE TO EX. TK 2.

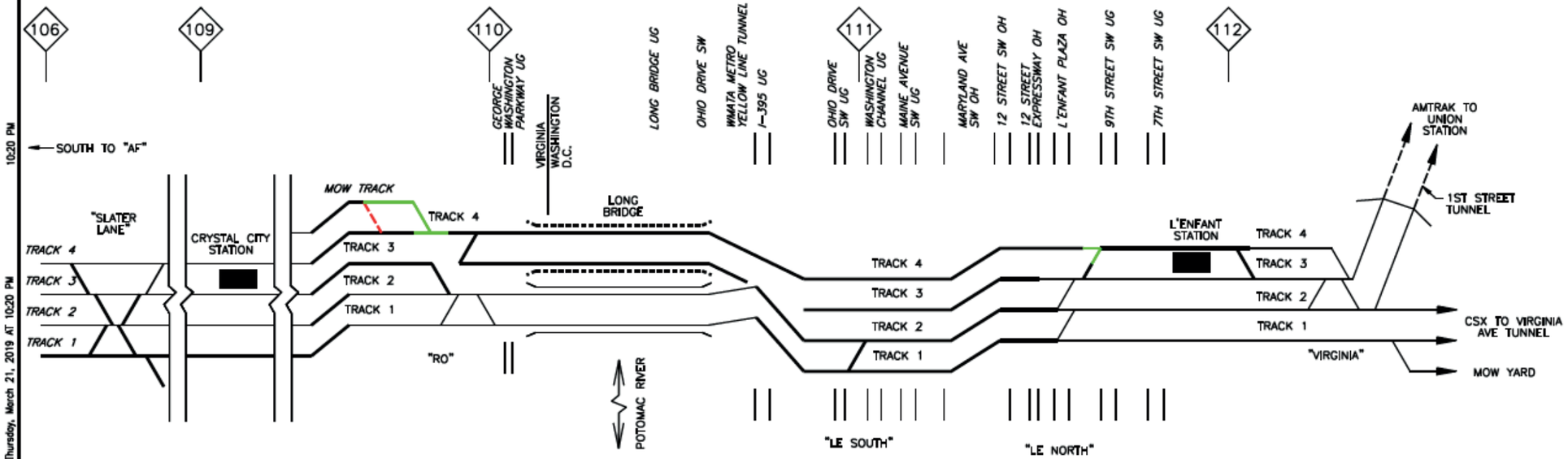
OPERATIONS NOTES

EXT. TRACK 3 & 4 OUT-OF-SERVICE "SLATERS LANE" TO "LE NORTH"

NO ACCESS TO CRYSTAL CITY STATION

DURATION

ONE 55-HOUR WEEKEND OUTAGE



PHASE B STAGE 2

CONSTRUCTION WORK

1. BUILD TK 4 AT "RO" AND RELOCATE MOW TRACK TURNOUT.
2. BUILD TK 4 AT "LE NORTH".
3. CONSTRUCT 34 CROSSOVER.

OPERATIONS NOTES

TRACK 4 OUT-OF-SERVICE "SLATERS LANE" TO "VIRGINIA"

SINGLE TRACK ACCESS TO CRYSTAL CITY STATION

SINGLE TRACK ACCESS TO L'ENFANT STATION

DURATION

THREE 55-HOUR WEEKEND OUTAGE

CONSTRUCTION LEGEND

- EXISTING TRACK
- RAISE AND SURFACE
- CONSTRUCT NEW
- TRACK TO BE SHIFTED
- AS SHIFTED
- REMOVE
- TRACK COMPLETED IN EARLIER PHASE
- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- STRUCTURE COMPLETED IN EARLIER PHASE

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
PHASING DIAGRAM –
PHASE B, STAGE 1/2

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJS
PROJECT MGR.
DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 55 OF 72

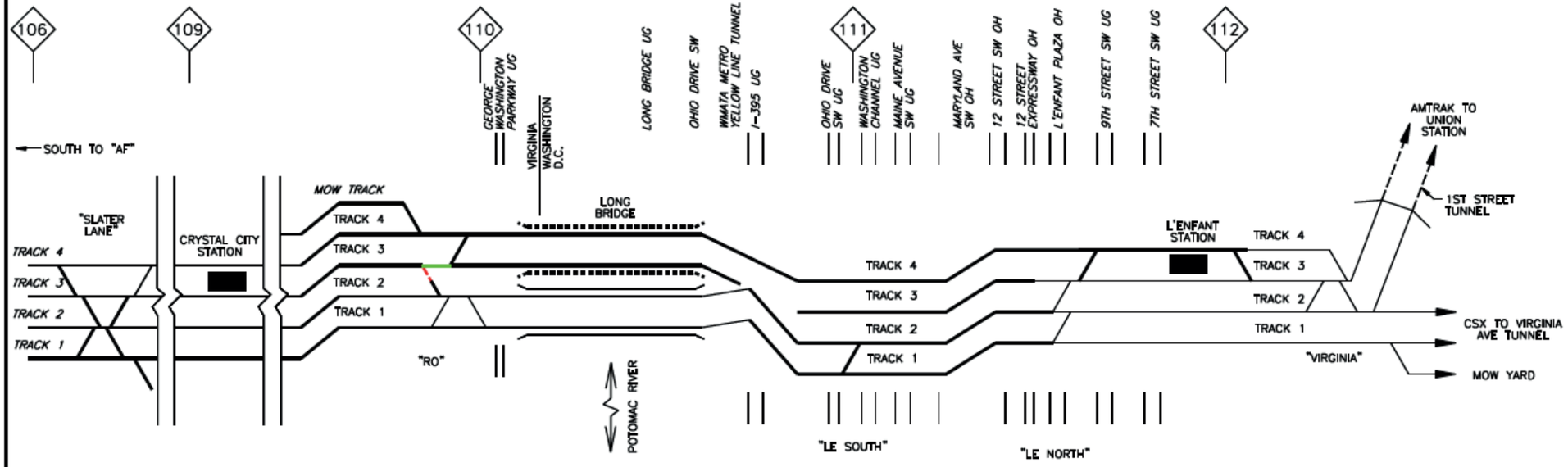
NO	DESCRIPTION	NAME	DATE

REVISIONS

vhb HNTB

10:20 PM Thursday, March 21, 2019 AT 10:20 PM
T-816 dseery

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-817	72



PHASE B
STAGE 3

CONSTRUCTION WORK

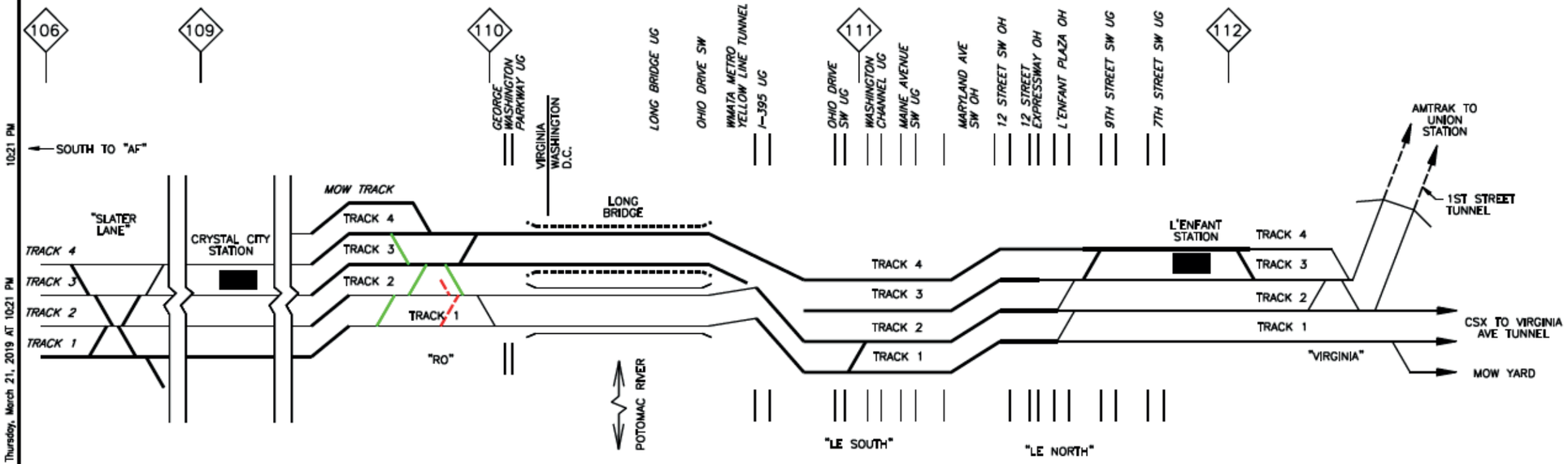
1. CONNECT TK 3 AT "RO."

OPERATIONS NOTES

TRACK 3 OUT-OF-SERVICE "SLATERS LANE" TO "RO"
SINGLE TRACK ACCESS TO CRYSTAL CITY STATION

DURATION

ONE 55-HOUR WEEKEND OUTAGES



PHASE B
STAGE 4

CONSTRUCTION WORK

1. REMOVE EX. "RO" TURNOUT.
2. REMOVE "RO" 12 CROSSOVER ONE SWITCH PER OUTAGE.
3. INSTALL REMAINING "RO" CROSSOVERS ONE SWITCH PER OUTAGE.

OPERATIONS NOTES

TWO TRACKS IN SERVICE EACH OUTAGE

DURATION

ELEVEN 55-HOUR WEEKEND OUTAGES

CONSTRUCTION LEGEND

- EXISTING TRACK
- RAISE AND SURFACE
- CONSTRUCT NEW
- TRACK TO BE SHIFTED
- AS SHIFTED
- REMOVE
- TRACK COMPLETED IN EARLIER PHASE
- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- STRUCTURE COMPLETED IN EARLIER PHASE

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
PHASING DIAGRAM –
PHASE B, STAGE 3/4

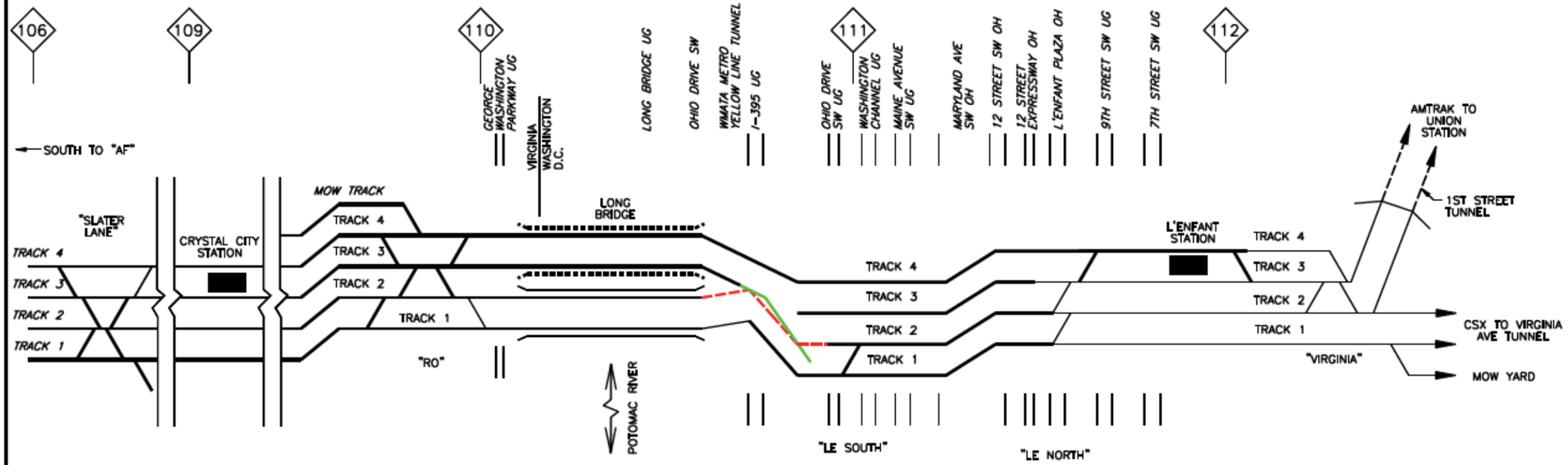
PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJB
PROJECT MGR.
DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 59 OF 72

NO	DESCRIPTION	NAME	DATE

REVISIONS

Thursday, March 21, 2019 AT 10:21 PM
10:21 PM
T-817
dseery

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-818	72



PHASE B
STAGE 5

CONSTRUCTION WORK

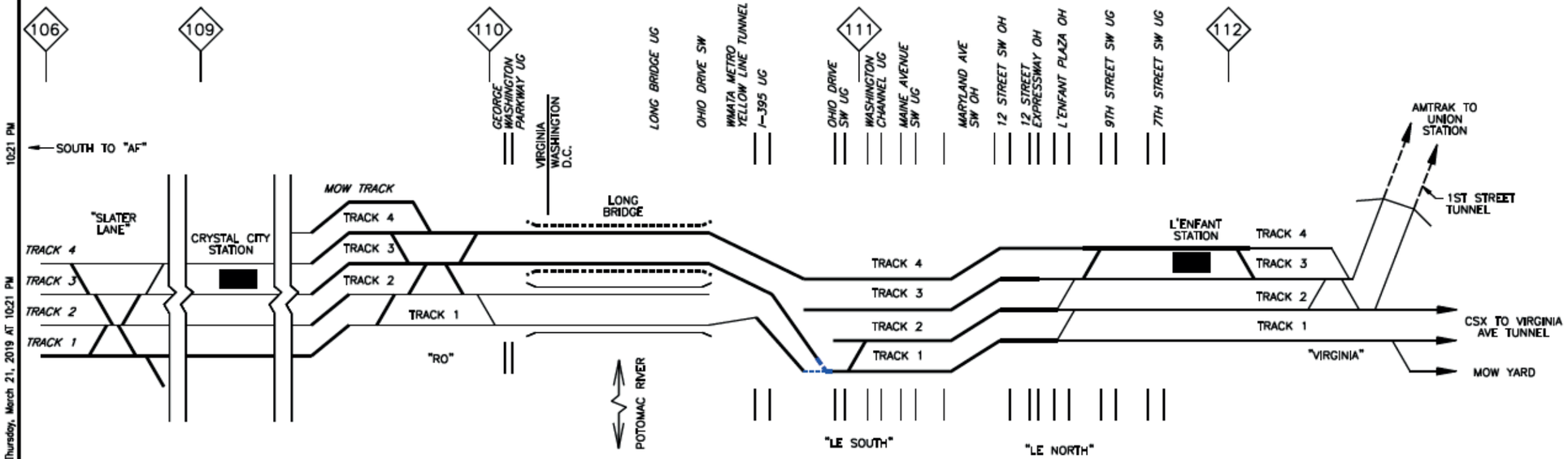
1. REMOVE TK3/2.
2. CONSTRUCT TEMPORARY TK 3 OVER I-395 WITH TEMPORARY SHEETING AND NEW ROADBED.

OPERATIONS NOTES

NORMAL OPERATIONS

DURATION

THREE WEEKS



PHASE B
STAGE 6

CONSTRUCTION WORK

1. CONNECT SHIFT TRACK 3 TO TRACK 1.

OPERATIONS NOTES

TRACKS 1, 2 & 3 OUT-OF-SERVICE "RO" TO "VIRGINIA"

DURATION

ONE NIGHT

CONSTRUCTION LEGEND

- EXISTING TRACK
- RAISE AND SURFACE
- CONSTRUCT NEW
- TRACK TO BE SHIFTED
- AS SHIFTED
- REMOVE
- TRACK COMPLETED IN EARLIER PHASE
- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- STRUCTURE COMPLETED IN EARLIER PHASE

CE PLANS - FINAL
May 10, 2019

NO	DESCRIPTION	NAME	DATE
	REVISIONS		

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

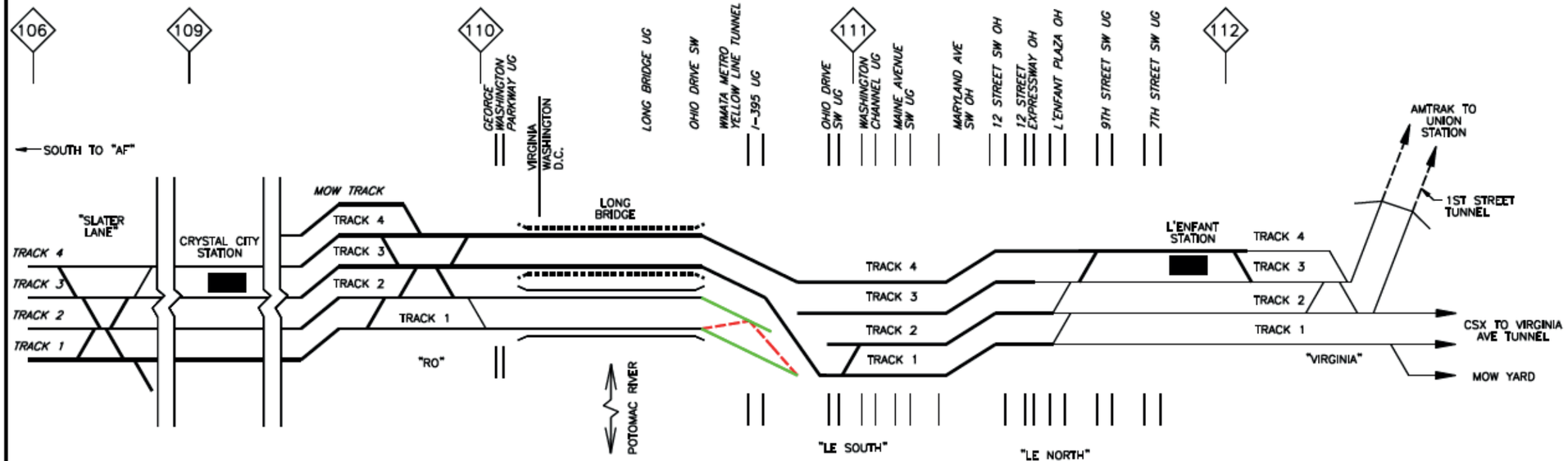
LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
PHASING DIAGRAM –
PHASE B, STAGE 5/6

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJS
PROJECT MGR.
DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 60 OF 72

Thursday, March 21, 2019 AT 10:21 PM
T-818
dseery

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-819A	72



PHASE C: ACTION ALTERNATIVE A STAGE 1

CONSTRUCTION WORK

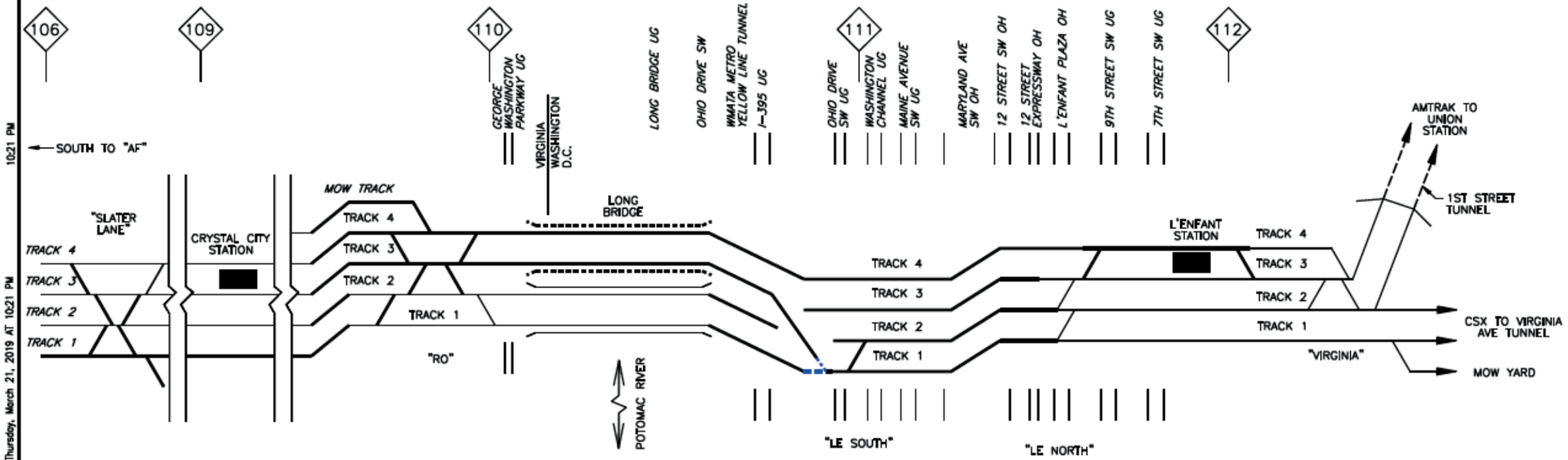
1. DEMO I-395 EAST BRIDGE. CONSTRUCT NEW BRIDGE.
2. REMOVE TRACK 1; BUILD RETAINING WALLS, NEW ROADBED AND OFFLINE PORTIONS OF TRACK 1 AND 2.

OPERATIONS NOTES

NORMAL OPERATIONS

DURATION

17 MONTHS



PHASE C: ACTION ALTERNATIVE A STAGE 2

CONSTRUCTION WORK

1. RECONNECT TRACK 1 TO EAST BRIDGE SHIFT TRACK 1 TO FINAL ALIGNMENT.

OPERATIONS NOTES

TRACKS 1, 2 & 3 OUT-OF-SERVICE "RO" TO "VIRGINIA"

SINGLE TRACK TO VIRGINIA AVENUE TUNNEL & TO UNION STATION

DURATION

ONE NIGHT

CONSTRUCTION LEGEND

- EXISTING TRACK
- RAISE AND SURFACE
- CONSTRUCT NEW
- TRACK TO BE SHIFTED
- AS SHIFTED
- REMOVE
- TRACK COMPLETED IN EARLIER PHASE
- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- STRUCTURE COMPLETED IN EARLIER PHASE

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
PHASING DIAGRAM –
ACTION ALTERNATIVE A, STAGE 1/2

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJS
PROJECT MGR.
DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 61 OF 72

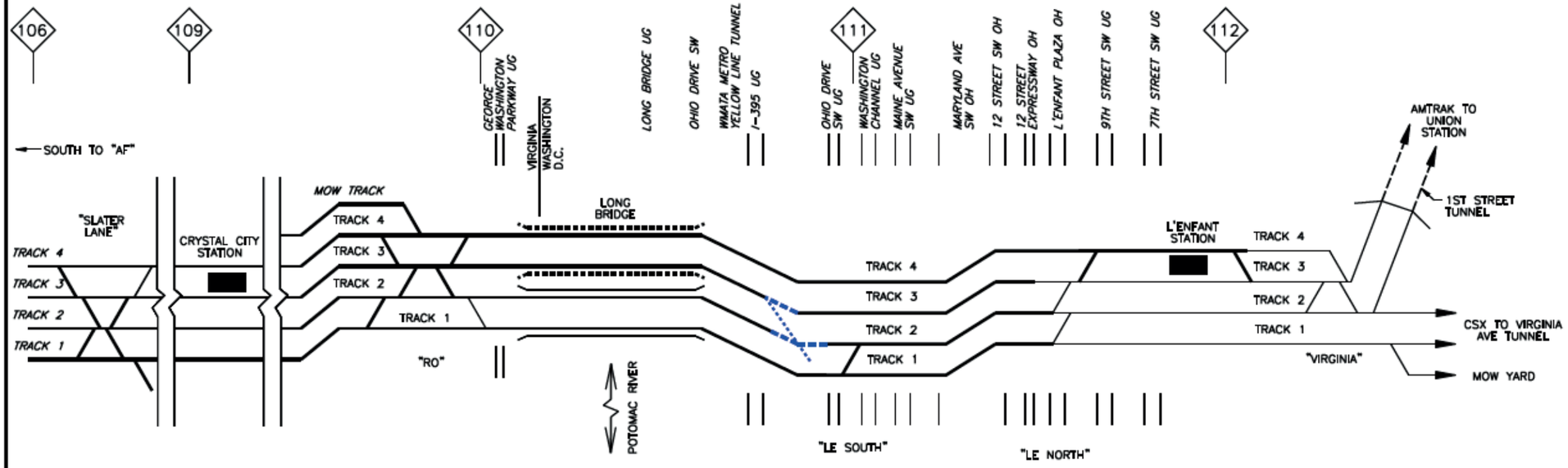
NO	DESCRIPTION	NAME	DATE

REVISIONS

vhb HNTB

10:21 PM Thursday, March 21, 2019 AT 10:21 PM
T-819A dseery

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-820A	72



PHASE C: ACTION ALTERNATIVE A STAGE 3

CONSTRUCTION WORK

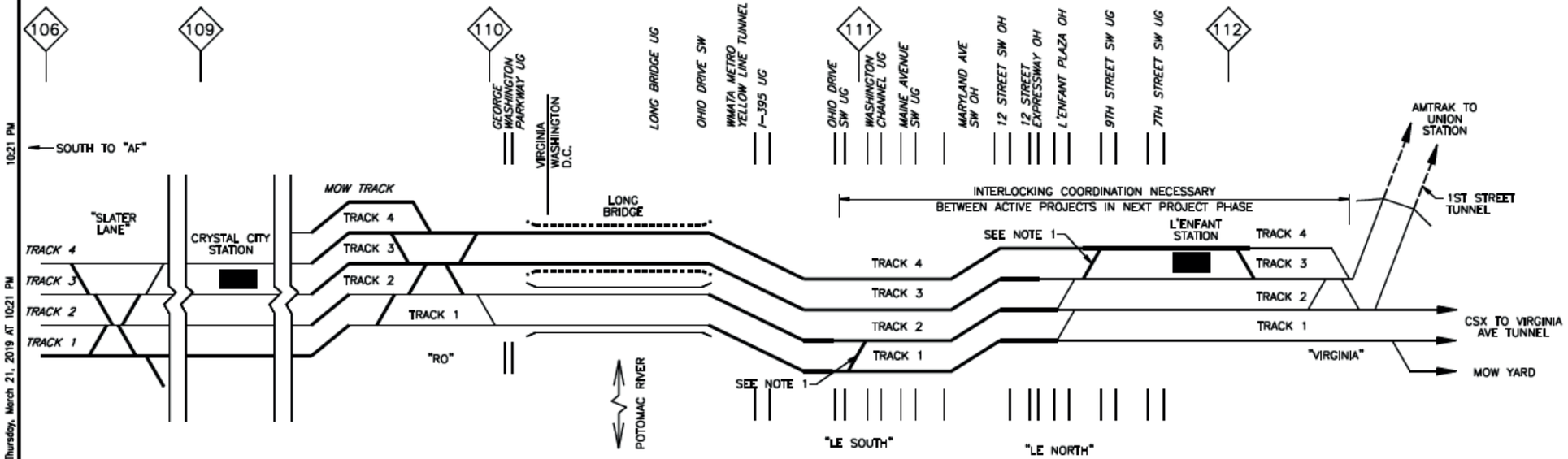
1. CONNECT TRACK 2 & 3 TO FINAL ALIGNMENT.

OPERATIONS NOTES

NORMAL OPERATIONS

DURATION

TWO DAYS



PHASE C: ACTION ALTERNATIVE A FINAL

CONSTRUCTION WORK

1. "L'ENFANT NORTH" INTERLOCKING AND "L'ENFANT SOUTH" INTERLOCKING CONFIGURATION IS ASSUMED FOR CONSTRUCTION STAGING PURPOSES ONLY. ACTUAL INTERLOCKINGS TO BE DETERMINED AT LATER PHASE IN COORDINATION WITH OTHER ACTIVE PROJECTS AND OPERATIONAL NEEDS.

OPERATIONS NOTES

4-TRACK COORIDOR IN SERVICE "RO" TO "VIRGINIA"

DURATION

CONSTRUCTION LEGEND

- EXISTING TRACK
- RAISE AND SURFACE
- CONSTRUCT NEW
- TRACK TO BE SHIFTED
- AS SHIFTED
- REMOVE
- TRACK COMPLETED IN EARLIER PHASE
- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- STRUCTURE COMPLETED IN EARLIER PHASE

CE PLANS - FINAL
May 10, 2019

NO	DESCRIPTION	NAME	DATE

REVISIONS

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

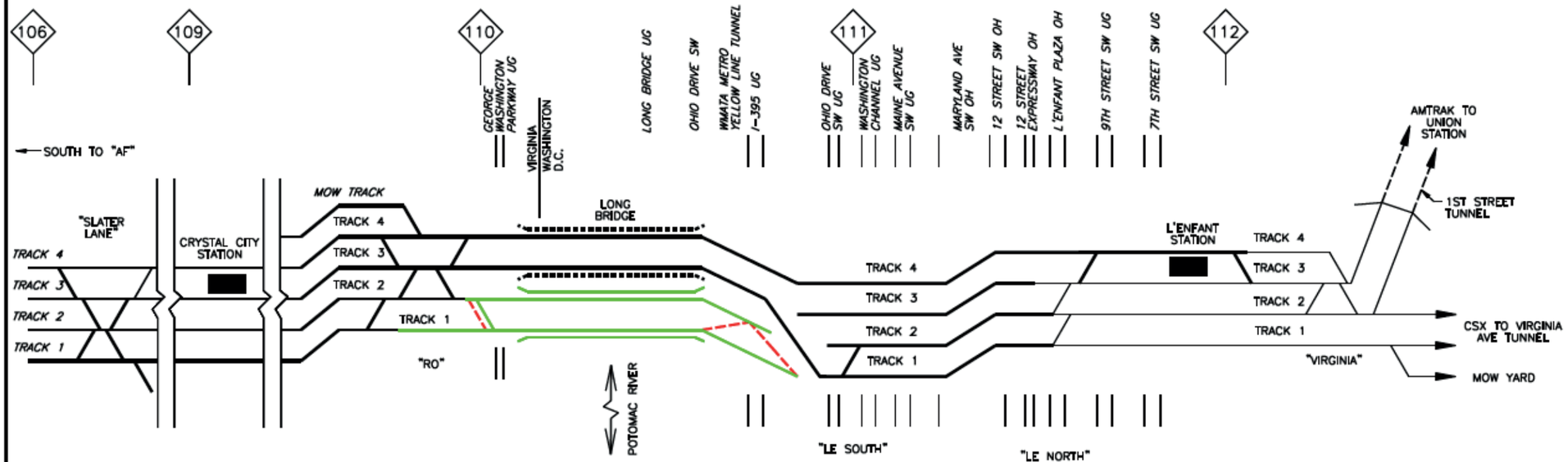
LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
PHASING DIAGRAM –
ACTION ALTERNATIVE A, STAGE 3/FINAL

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJS
PROJECT MGR.
DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 60 OF 72

Thursday, March 21, 2019 AT 10:21 PM
T-820A
dseery

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-8198	72



PHASE C: ACTION ALTERNATIVE B STAGE 1

CONSTRUCTION WORK

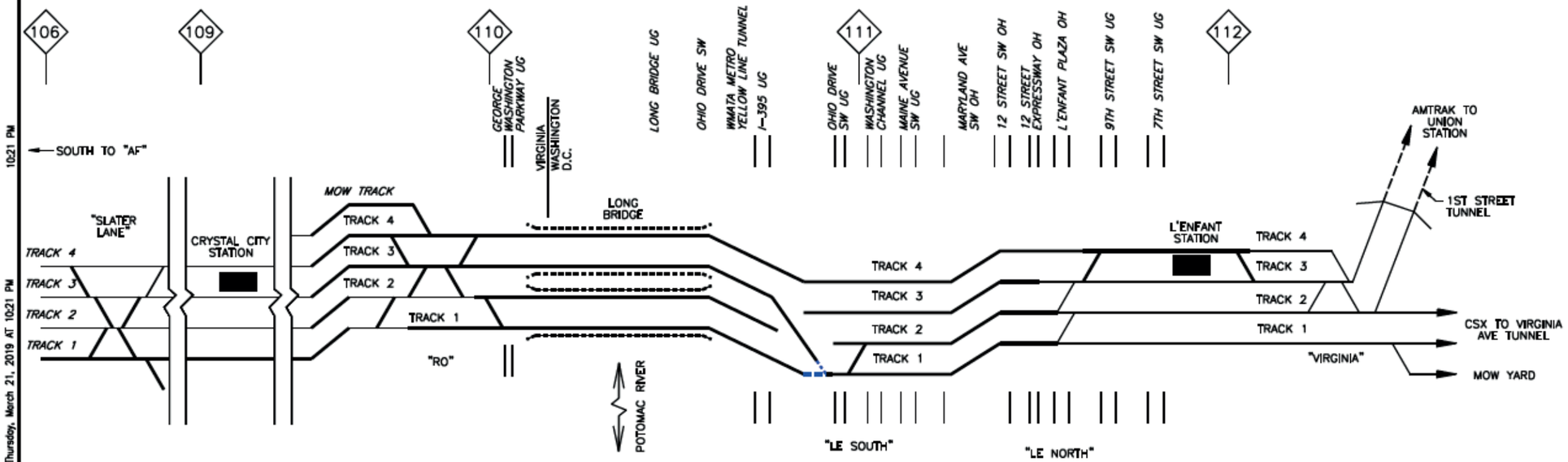
1. DEMO EAST LONG BRIDGE, I-395 EAST BRIDGE, AND GEORGE WASHINGTON MEMORIAL PARKWAY EAST BRIDGE. CONSTRUCT NEW BRIDGES.
2. REMOVE 21 CROSSOVER IN "RO". CONSTRUCT NEW CROSSOVER AT NEW TRACK CENTERS.
3. REMOVE TRACK 1 & 2; BUILD RETAINING WALLS, NEW ROADBED AND OFFLINE PORTIONS OF TRACK 1 AND 2.

OPERATIONS NOTES

NORMAL OPERATIONS

DURATION

36 MONTHS



PHASE C: ACTION ALTERNATIVE B STAGE 2

CONSTRUCTION WORK

1. RECONNECT TRACK 1 TO EAST BRIDGE.

OPERATIONS NOTES

TRACKS 1, 2 & 3 OUT-OF-SERVICE "RO" TO "VIRGINIA"

SINGLE TRACK TO VIRGINIA AVENUE TUNNEL & TO UNION STATION

DURATION

ONE NIGHT

CONSTRUCTION LEGEND

- EXISTING TRACK
- RAISE AND SURFACE
- CONSTRUCT NEW
- TRACK TO BE SHIFTED
- AS SHIFTED
- REMOVE
- TRACK COMPLETED IN EARLIER PHASE
- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- STRUCTURE COMPLETED IN EARLIER PHASE

CE PLANS - FINAL
May 10, 2019

NO	DESCRIPTION	NAME	DATE
	REVISIONS		

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

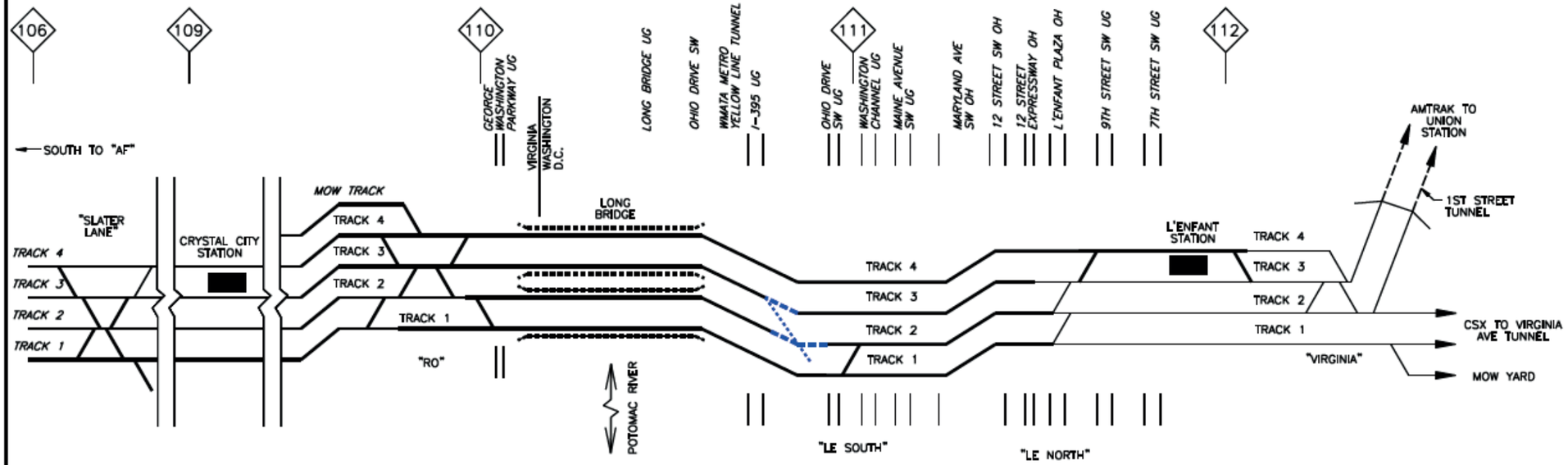
LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
PHASING DIAGRAM –
ACTION ALTERNATIVE B, STAGE 1/2

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJS
PROJECT MGR.
DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 63 OF 72

T-8198 dseery
Thursday, March 21, 2019 AT 10:21 PM

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		T-6208	72



PHASE C: ACTION ALTERNATIVE B STAGE 3

CONSTRUCTION WORK

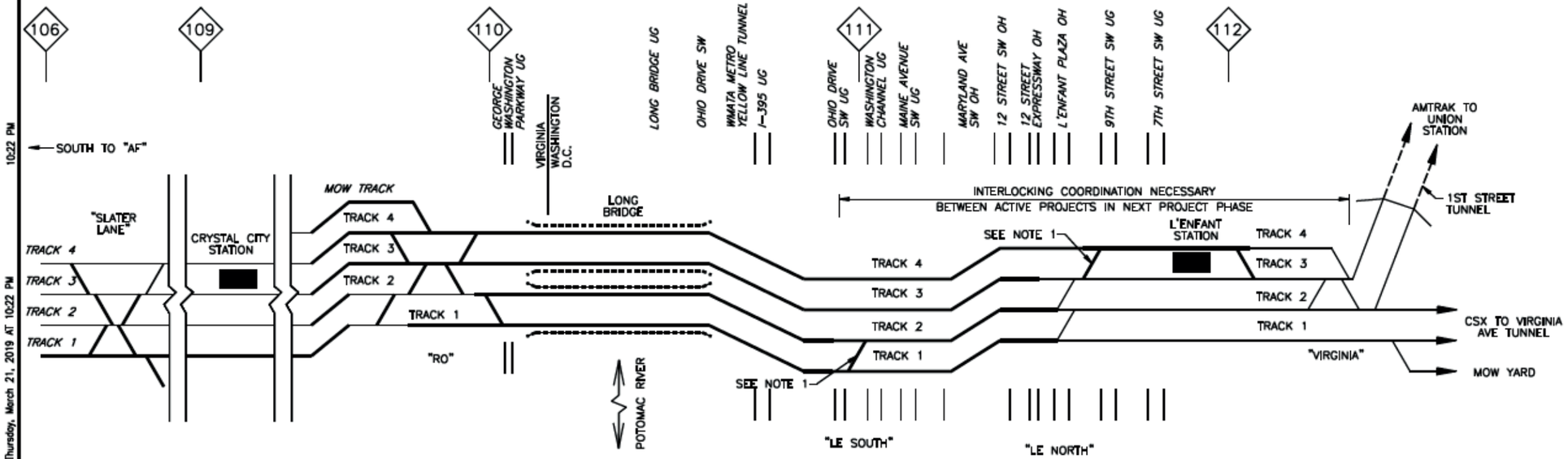
1. CONNECT TRACK 2 & 3 TO FINAL ALIGNMENT.

OPERATIONS NOTES

NORMAL OPERATIONS

DURATION

TWO DAYS



PHASE C: ACTION ALTERNATIVE B FINAL

CONSTRUCTION WORK

1. "L'ENFANT NORTH" INTERLOCKING AND "L'ENFANT SOUTH" INTERLOCKING CONFIGURATION IS ASSUMED FOR CONSTRUCTION STAGING PURPOSES ONLY. ACTUAL INTERLOCKINGS TO BE DETERMINED AT LATER PHASE IN COORDINATION WITH OTHER ACTIVE PROJECTS AND OPERATIONAL NEEDS.

OPERATIONS NOTES

4-TRACK COORIDOR IN SERVICE "RO" TO "VIRGINIA"

DURATION

CONSTRUCTION LEGEND

- EXISTING TRACK
- RAISE AND SURFACE
- CONSTRUCT NEW
- TRACK TO BE SHIFTED
- AS SHIFTED
- REMOVE
- TRACK COMPLETED IN EARLIER PHASE
- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- STRUCTURE COMPLETED IN EARLIER PHASE

CE PLANS - FINAL
May 10, 2019

NO	DESCRIPTION	NAME	DATE
	REVISIONS		

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

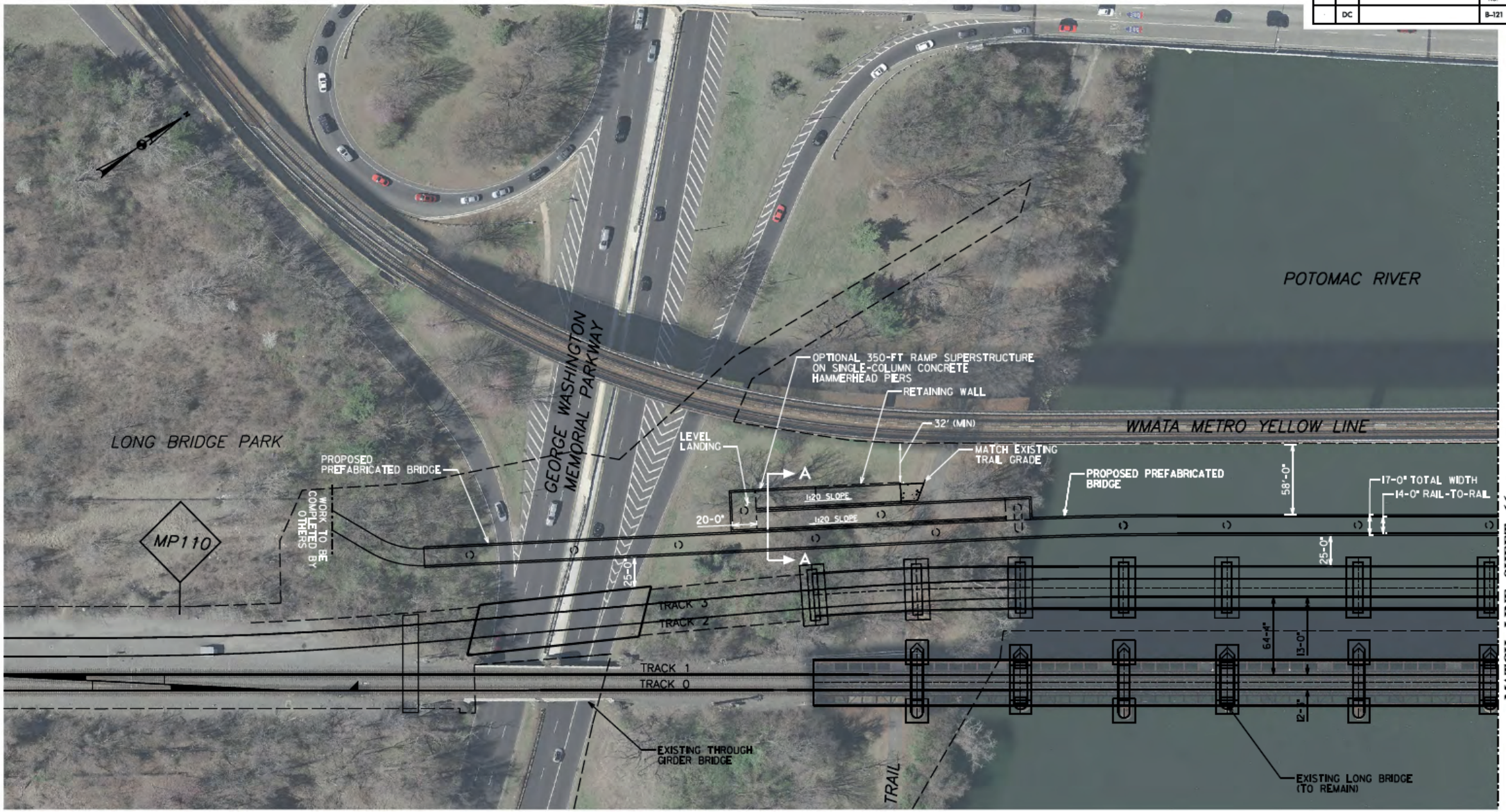
LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
TRACK ALIGNMENTS

"RO" TO "L'ENFANT"
PHASING DIAGRAM –
ACTION ALTERNATIVE B, STAGE 3/FINAL

PROJECT ENG.
DESIGNED BY HNTB
CHECKED BY BDH
DRAWN BY DJS
PROJECT MGR.
DIVISION CHIEF
DATE MARCH 22, 2019
FILE
SHEET 64 OF 72

Thursday, March 21, 2019 AT 10:22 PM
T-6208 dseery

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		B-121	72



BIKE–PEDESTRIAN PLAN

NOTE: SEE SHEETS 71, 72 AND 73 FOR TYPICAL SECTIONS.

40' 0 40' 80'
SCALE: 1"=40'

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
BIKE–PEDESTRIAN CONNECTION

PROJECT ENG. MLF
DESIGNED BY EPL
CHECKED BY EPL
DRAWN BY MLF
PROJECT MGR. MAC

BIKE–PEDESTRIAN CONNECTION
PLAN SHEET (1 OF 3)

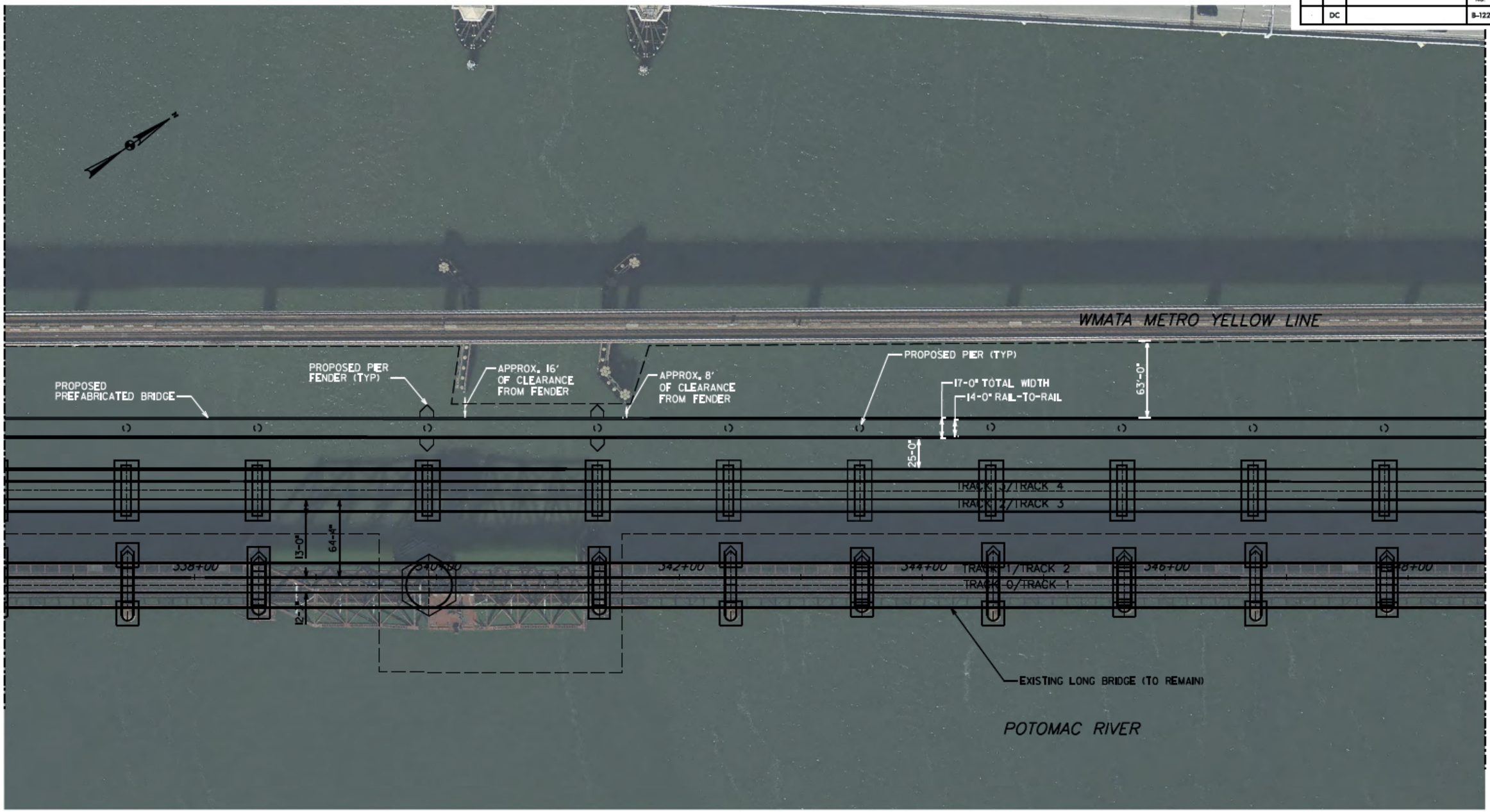
DIVISION CHIEF
DATE MARCH 22, 2019
FILE bike_ped_plan
SHEET 65 OF 72

vhb HNTB

NO	DESCRIPTION	NAME	DATE

REVISIONS

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		B-122	72



BIKE-PEDESTRIAN PLAN

NOTE: SEE SHEETS 71, 72 AND 73 FOR TYPICAL SECTIONS.

40' 0 40' 80'
SCALE 1"=40'

CE PLANS - FINAL
May 10, 2019

vhb HNTB

NO	DESCRIPTION	NAME	DATE
	REVISIONS		

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
BIKE-PEDESTRIAN CONNECTION

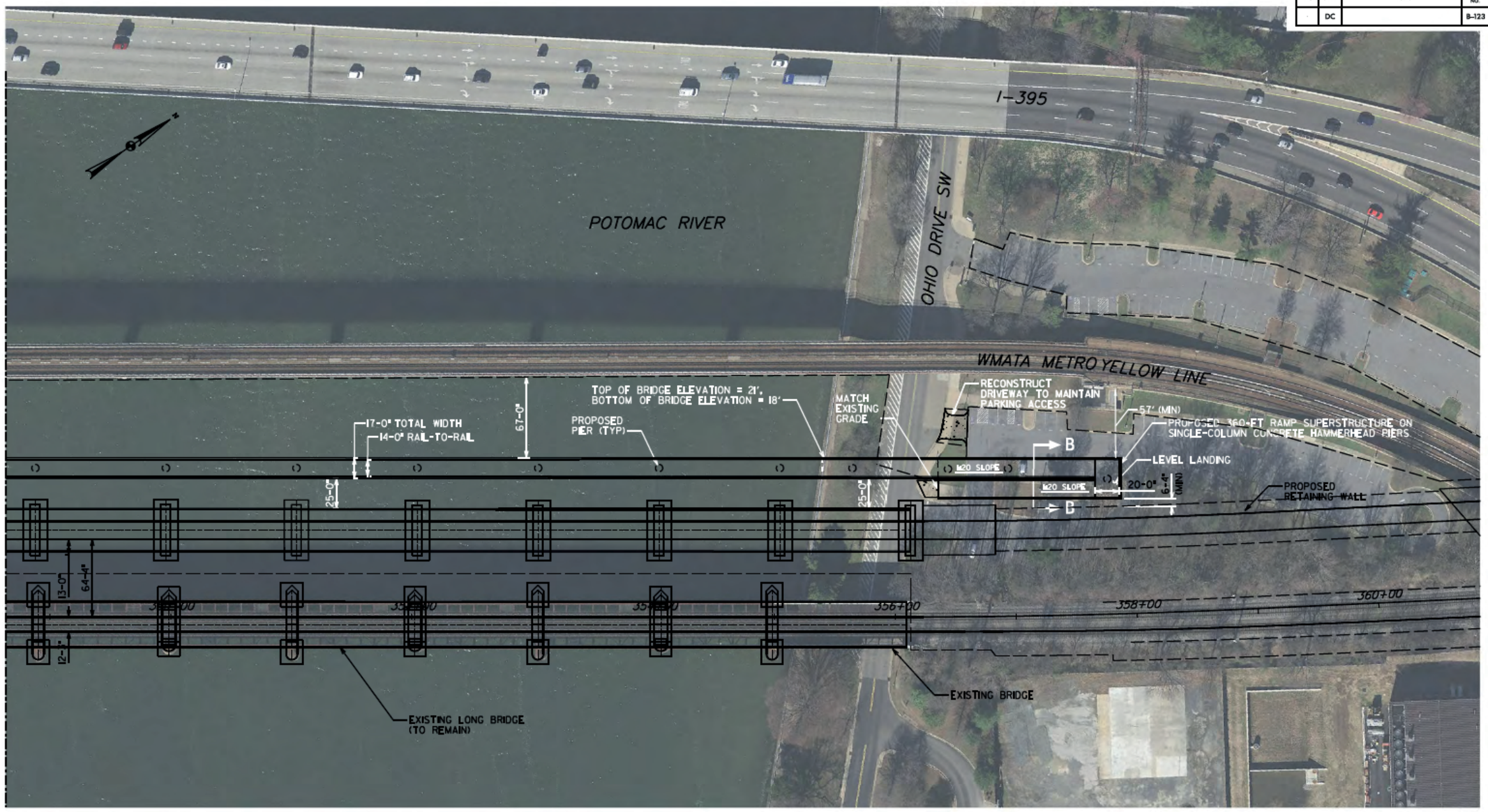
BIKE-PEDESTRIAN CONNECTION
PLAN SHEET (2 OF 3)

PROJECT ENG. MLF
DESIGNED BY EFL
CHECKED BY EFL
DRAWN BY MLF
PROJECT MGR MAC

DIVISION CHIEF

DATE MARCH 22, 2019
FILE bike_ped_plan_sheet2
SHEET 66 OF 72

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		B-123	72



BIKE–PEDESTRIAN PLAN

NOTE: SEE SHEETS 71, 72 AND 73 FOR TYPICAL SECTIONS.

40' 0 40' 80'
SCALE: 1"=40'

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
BIKE–PEDESTRIAN CONNECTION

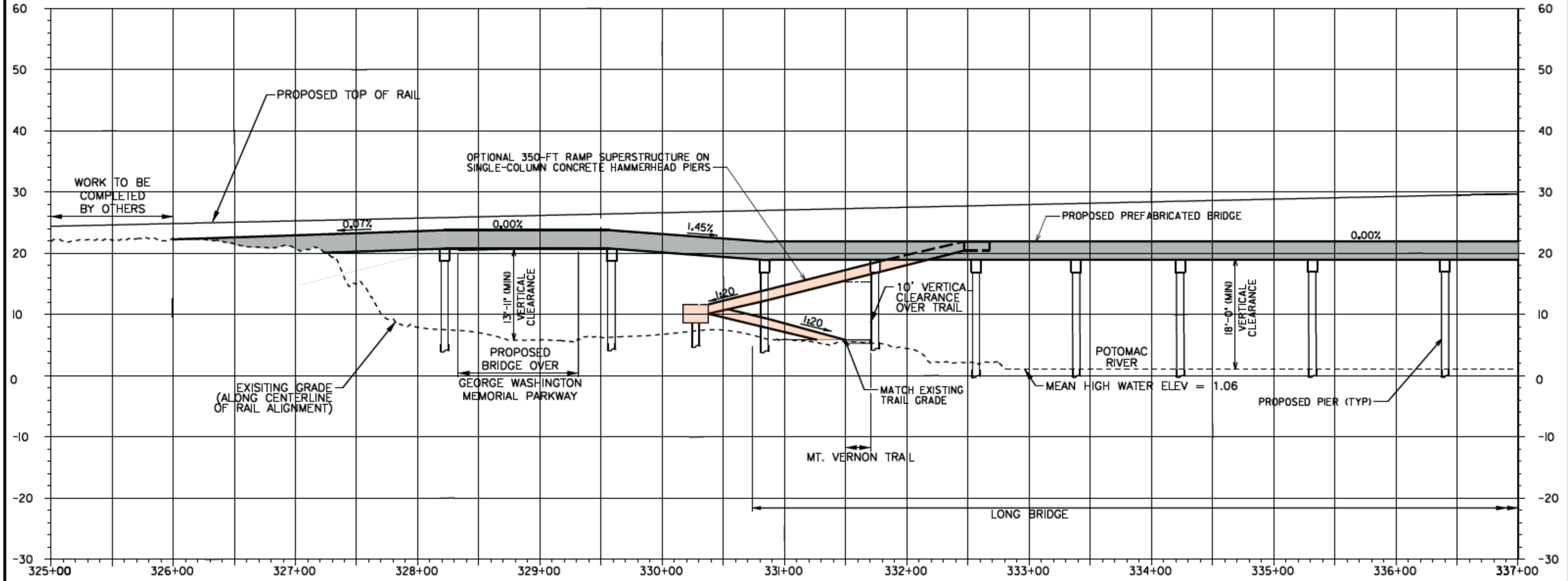
BIKE–PEDESTRIAN CONNECTION
PLAN SHEET (3 OF 3)

PROJECT ENG. MLF
DESIGNED BY BPL
CHECKED BY BPL
DRAWN BY MLF
PROJECT MGR. MAC
DIVISION CHIEF
DATE MARCH 22, 2019
FILE bike Reevaluation
SHEET 67 OF 72

vhb HNTB

NO	DESCRIPTION	NAME	DATE
	REVISIONS		

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		B-211	72



INDEPENDENT UPSTREAM BIKE-PEDESTRIAN PROFILE

(STA 325+00 - 337+00)

SCALE:
HORIZONTAL 1" = 40'-00"
VERTICAL 1" = 8'-00"

NOTES:
1. STATIONING BASED ON RAILROAD ALIGNMENT.
2. BICYCLE RIDERS TO DISMOUNT FOR RAMP ACCESS.

CF PLANS - FINAL
May 10, 2019

vhb HNTB

NO	DESCRIPTION	NAME	DATE
	REVISIONS		

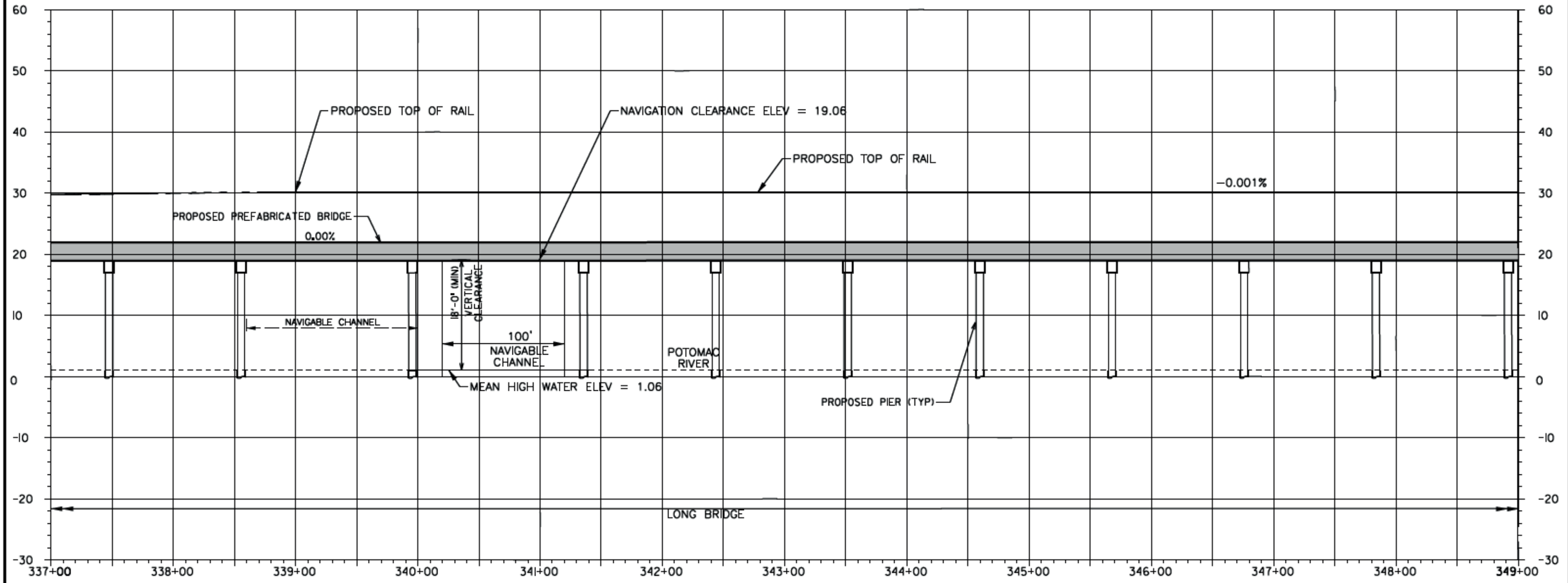
D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
BIKE-PEDESTRIAN CONNECTION

BIKE-PEDESTRIAN CONNECTION
PROFILE (1 OF 3)

PROJECT ENG. MLF
DESIGNED BY BPL
CHECKED BY BPL
DRAWN BY MLF
PROJECT MGR. MAC
DIVISION CHIEF
DATE MARCH 22, 2019
FILE bdr_pro.dgn
SHEET 68 OF 72

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		B-212	72



INDEPENDENT UPSTREAM BIKE-PEDESTRIAN PROFILE

(STA 337+00 - 349+00)

SCALE:
HORIZONTAL 1" = 40'-00"
VERTICAL 1" = 8'-00"

NOTES:
1. STATIONING BASED ON RAILROAD ALIGNMENT.
2. BICYCLE RIDERS TO DISMOUNT FOR RAMP ACCESS.

CE PLANS - FINAL
May 10, 2019

vhb HNTB

NO	DESCRIPTION	NAME	DATE
	REVISIONS		

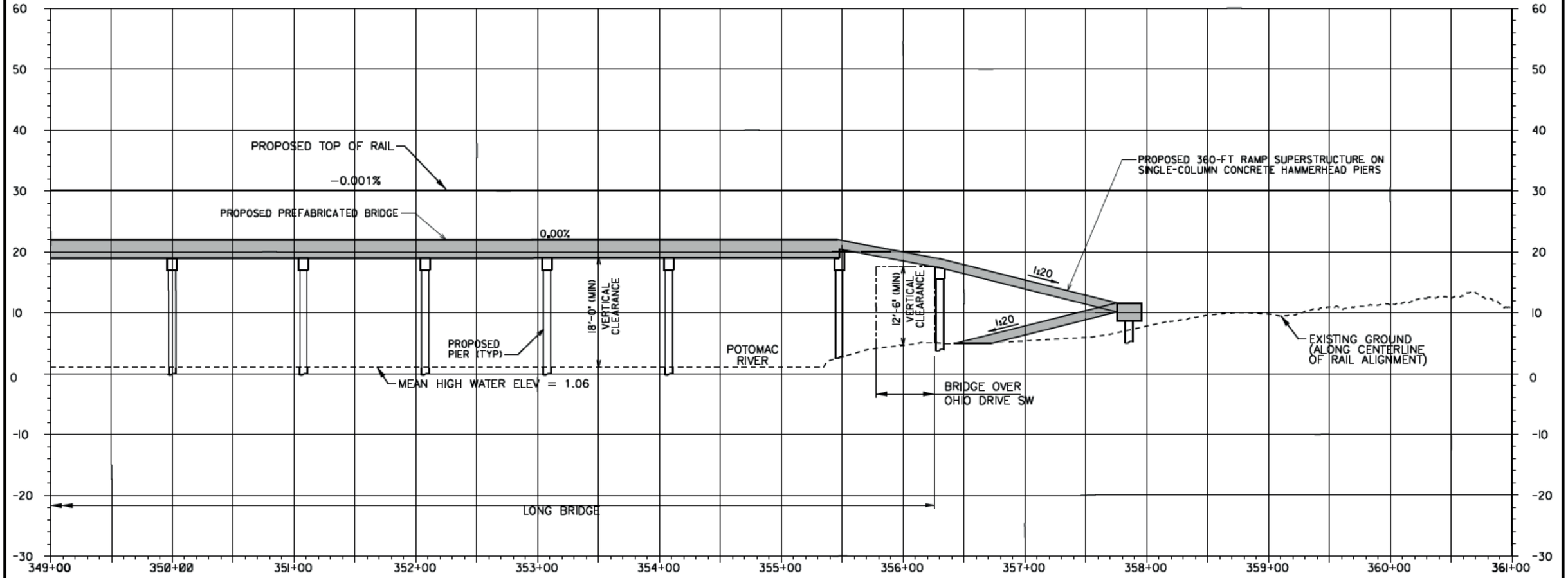
D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
BIKE-PEDESTRIAN CONNECTION

BIKE-PEDESTRIAN CONNECTION
PROFILE (2 OF 3)

PROJECT ENG. MLF
DESIGNED BY BFL
CHECKED BY BFL
DRAWN BY MLF
PROJECT MGR. MAC
DIVISION CHIEF
DATE MARCH 22, 2019
FILE bdr_pro.dgn
SHEET 69 OF 72

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		B-213	72



INDEPENDENT UPSTREAM BIKE-PEDESTRIAN PROFILE

(STA 349+00 - 361+00)

SCALE:
HORIZONTAL 1" = 40'-00"
VERTICAL 1" = 8'-00"

NOTES:
1. STATIONING BASED ON RAILROAD ALIGNMENT.
2. BICYCLE RIDERS TO DISMOUNT FOR RAMP ACCESS.

CE PLANS - FINAL
May 10, 2019

vhb HNTB

NO	DESCRIPTION	NAME	DATE
	REVISIONS		

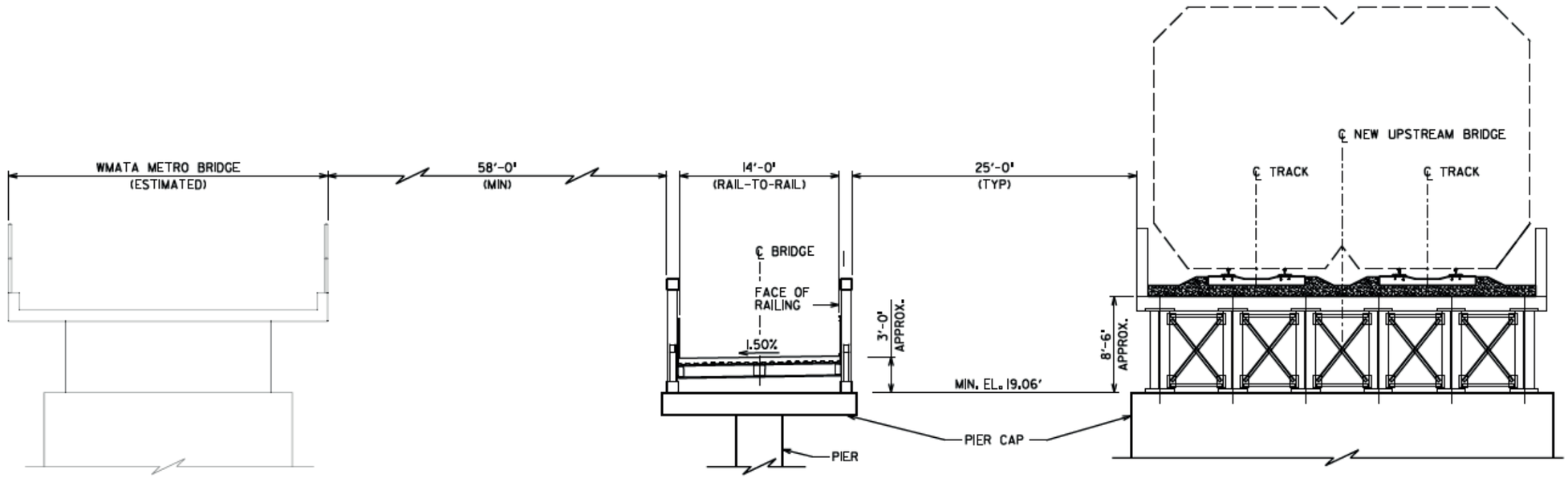
D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
BIKE-PEDESTRIAN CONNECTION

BIKE-PEDESTRIAN CONNECTION
PROFILE (3 OF 3)

PROJECT ENG. MLF
DESIGNED BY BPL
CHECKED BY BPL
DRAWN BY MLF
PROJECT MGR. MAC
DIVISION CHIEF
DATE MARCH 22, 2019
FILE bdr_pro.dgn
SHEET 70 OF 72

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		B-301	72



UPSTREAM INDEPENDENT BIKE-PEDESTRIAN BRIDGE
LOOKING NORTH
SCALE 3/16" = 1'-0"

NOTE: RAILROAD BRIDGE SECTION DEPICTS THE STEEL DECK THROUGH GIRDER APPROACH SPAN OPTION.

CE PLANS - FINAL
May 10, 2019

vhb HNTB

NO	DESCRIPTION	NAME	DATE
	REVISIONS		

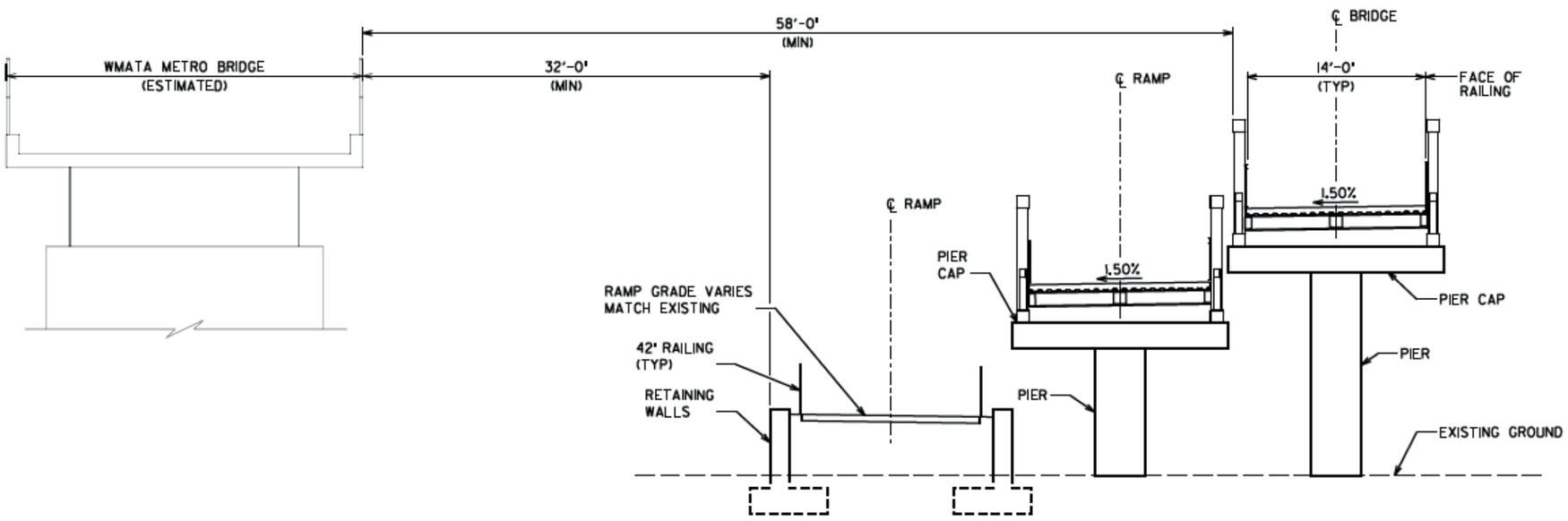
D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
BIKE-PEDESTRIAN CONNECTION

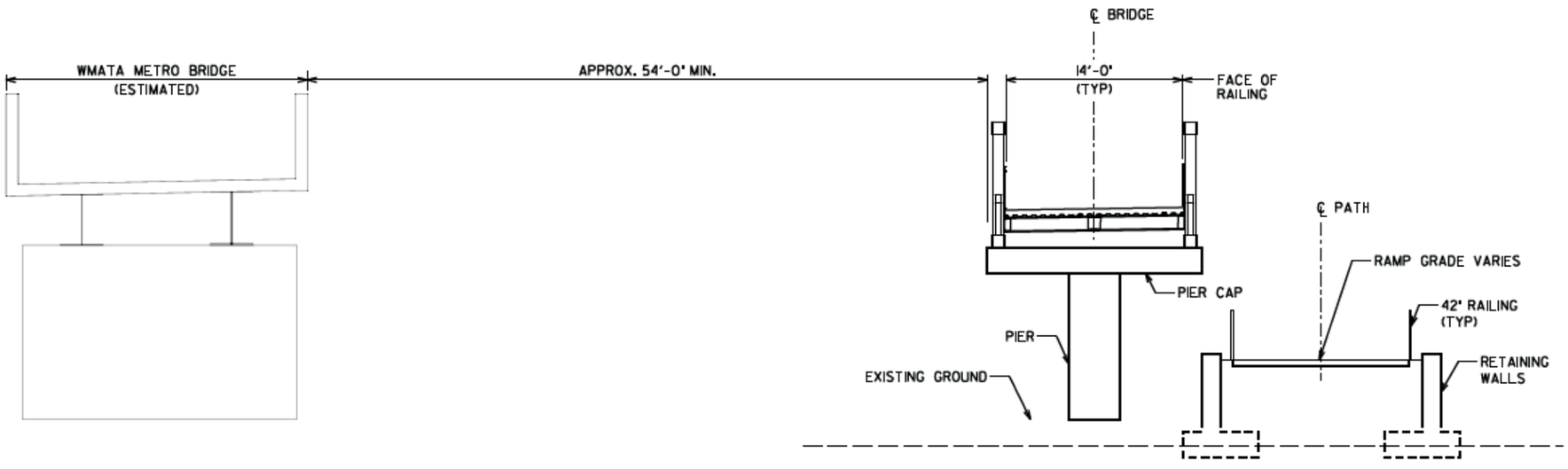
BIKE-PEDESTRIAN CONNECTION
SECTION (1 OF 2)

PROJECT ENG. MLF
DESIGNED BY RPL
CHECKED BY RPL
DRAWN BY MLF
PROJECT MGR. MAC
DIVISION CHIEF
DATE MARCH 22, 2019
FILE typicals.dgn
SHEET 71 OF 72

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
	DC		B-302	72



SECTION A-A
(SOUTH APPROACH - VIRGINIA)
LOOKING NORTH
SCALE 3/16" = 1'-0"



SECTION B-B
(NORTH APPROACH - DISTRICT)
LOOKING NORTH
SCALE 3/16" = 1'-0"

CE PLANS - FINAL
May 10, 2019

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

LONG BRIDGE PROJECT EIS
CONCEPTUAL ENGINEERING PLANS
BIKE-PEDESTRIAN CONNECTION

PROJECT ENG. MLF
DESIGNED BY BPL
CHECKED BY BPL
DRAWN BY MLF
PROJECT MGR. MAC

BIKE-PEDESTRIAN CONNECTION
SECTION (2 OF 2)

DIVISION CHIEF
DATE MARCH 22, 2019
FILE typicals.dgn
SHEET 72 OF 72

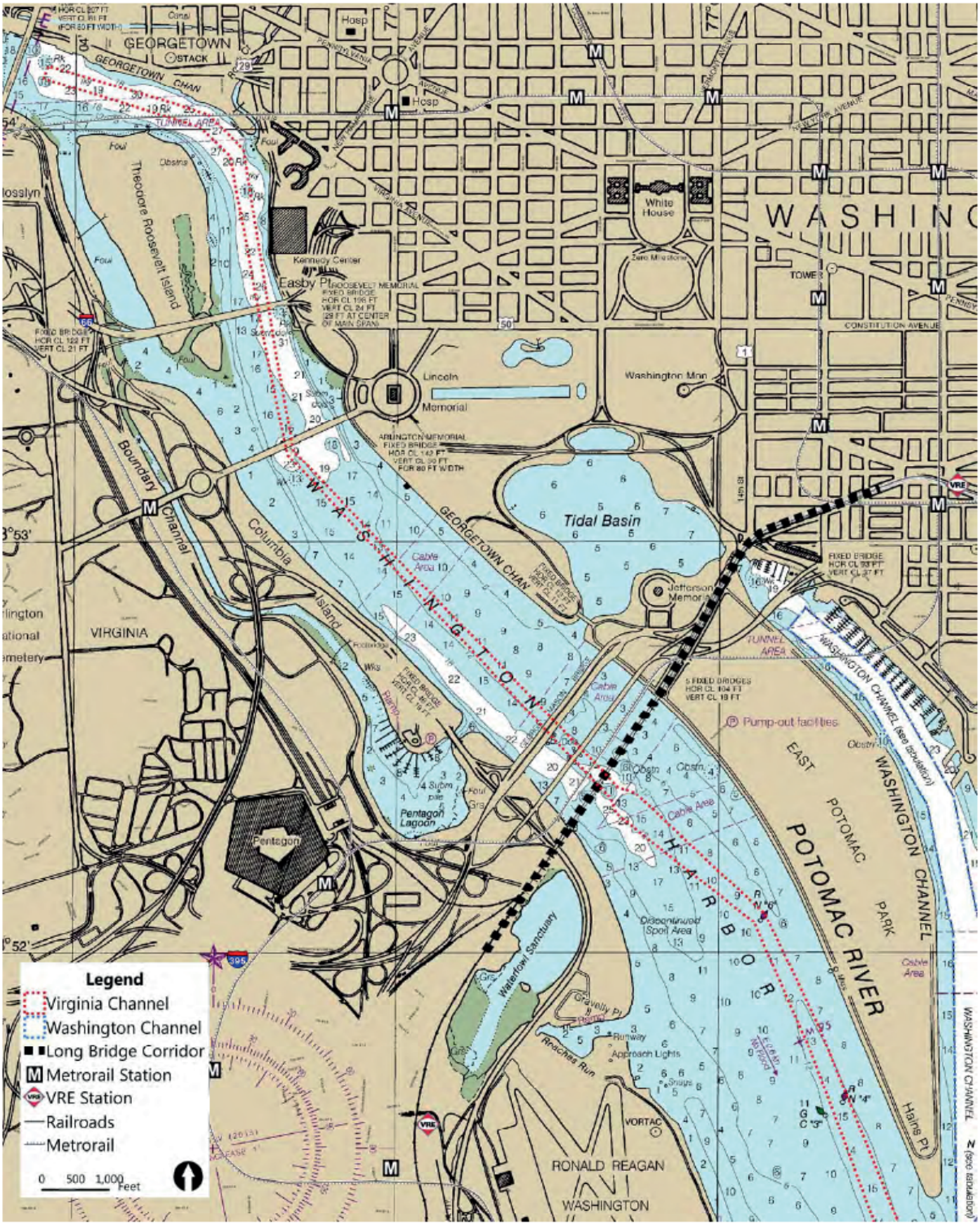
vhb HNTB

NO	DESCRIPTION	NAME	DATE

REVISIONS

Attachment 5: RTE Species Action Area

Attachment 6: Potomac River Depths and Navigation Channel



DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, U.S. ARMY CORPS OF ENGINEERS
2 HOPKINS PLAZA
BALTIMORE, MD 21203

REPLY TO
ATTENTION OF

March 19, 2019

Operations Division

Mr. Michael Johnsen
Supervisory Environmental Protection Specialist
Federal Railroad Administration
1200 New Jersey Avenue, SE
Washington, DC 20590

Dear Mr. Johnsen:

This is in response to your request for requesting a preliminary determination of the presence or indications of the approximate location(s) of waters of the United States, including wetlands for the Long Bridge Project study area located between RO Interlocking near Long Bridge Park in Arlington County, Virginia and L'Enfant Interlocking near 10th Street SW in the District of Columbia.

A field inspection was conducted on February 25, 2019. This preliminary jurisdictional determination finds that there "may be" waters of the United States, including wetlands within the review area as indicated by the approximate location(s) of waters of the United States, including wetlands within the review area on the enclosed maps dated November 2018 and identifies all potential jurisdictional waters and wetlands within the review area. These areas may be regulated by this office pursuant to Section 10 of the Rivers and Harbors Act of 1899 and/or Section 404 of the Clean Water Act.

This preliminary jurisdictional determination is based on the information included on the enclosed Preliminary Jurisdictional Determination Form and is not appealable. If you do not agree with the extent of waters or wetlands and this preliminary JD, you are hereby advised of your option to request and obtain an approved JD from this office at the address above. An approved JD is an official, written Corps determination stating the presence or absence of jurisdictional waters of the United States and identifies the limits of waters of the Unites States on a project site. An approved JD can be relied upon for a period of 5 years and can be appealed through the Corps' administrative appeal process set out at 33 CFR Part 331.

You are reminded that any grading or filling of waters of the United States, including wetlands, is subject to Department of the Army authorization. State and local authorizations may be required to conduct activities in these locations. Wetlands under the jurisdiction of the District of Columbia Department of Energy and Environment (DDOE) may be located on the parcel. You may contact the DDOE for information regarding jurisdiction and permitting requirements. In addition, the Interstate Land Sales Full Disclosure Act may require that prospective buyers be made aware, by the seller, of the Federal authority over any waters of the United States, including wetlands, being purchased.

In future correspondence and permit applications regarding this parcel, please include the file number located in the first paragraph of this letter.

A copy of this letter will be furnished to DDOE for informational purposes. If you have any questions concerning this matter, please contact the undersigned at (410) 962-6082.

Sincerely,

Steven Harman
Project Manager
Maryland Section Northern

ATTACHMENT

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PRELIMINARY JURISDICTIONAL DETERMINATION (JD):

B. NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD:
Federal Railroad Administration
1200 New Jersey Avenue, SE
Washington, DC 205903

C. DISTRICT OFFICE, FILE NAME, AND NUMBER:
Baltimore / CENAB-OP-RM (FRA/LONG BRIDGE PROJECT) 2016-00088

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:
State: District of Columbia
County:
City: Washington
Center coordinates of site: Lat.38 52 32.32"N; Long. -77 02 23.25"W
Universal Transverse Mercator:
Name of nearest water body: Roaches Run, Potomac River and Washington Channel
Identify (estimate) amount of waters in the review area:
Non-wetland waters: WC 1 17.50 acres, WC 2 54.89 acres and WC 3 8.58 acres
Cowardin Class: Riverine
Stream Flow: Perennial
Wetlands: W1 0.70 acres, W2 1.27 acres and W3 1.84 acres
Cowardin Class:
Name of any water bodies on the site that have been identified as Section 10 waters:
Tidal: Roaches Run, Potomac River and Washington Channel
Non-Tidal:

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):
☐ Office (Desk) Determination. Date:
☒ Field Determination. Date(s): February 25, 2019

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this

preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable. This preliminary JD finds that there *"may be"* waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA. Data reviewed for preliminary JD (check all that apply - checked items should be included in case file and, where checked and requested, appropriately reference sources below):

☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: Plans submitted by the Consultant, Coastal Resources dated November 2018.

☐ Data sheets prepared/submitted by or on behalf of the applicant/consultant.

- ☒ Office concurs with data sheets/delineation report.
- ☐ Office does not concur with data sheets/delineation report.

☐ Data sheets prepared by the Corps: .

☐ Corps navigable waters' study: .

☒ U.S. Geological Survey Hydrologic Atlas: Alexandria, VA.

- ☐ USGS NHD data.
- ☐ USGS 8 and 12 digit HUC maps.

☐ U.S. Geological Survey map(s). Cite scale & quad name: .

☒ USDA Natural Resources Conservation Service Soil Survey. Citation: .

☒ National wetlands inventory map(s). Cite name: .

☐ State/Local wetland inventory map(s): .

☐ FEMA/FIRM maps: .

☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)

☒ Photographs: ☐ Aerial (Name & Date): .
or ☒ Other (Name & Date): On-site photos in Delineation Report

☐ Previous determination(s). File no. and date of response letter: .

☐ Other information (please specify): .

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

Signature and date of Steve Harman Regulatory Project Manager	Signature and date of person requesting preliminary JD (REQUIRED, unless obtaining the signature is impracticable)

COASTAL RESOURCES INC.

District Department of Transportation
Long Bridge Project

Appendix A: Wetland Delineation Map

SHEET 1 OF 4

Arlington County, VA
Washington, District of Columbia
November 2018

- Photo Points
- Wetland Test Plot
- Upland Test Plot
- Study Area
- Delineated Palustrine Scrub-Shrub
- Approximated Palustrine Scrub-Shrub
- Delineated Palustrine Forested
- Approximated Palustrine Forested
- Approximated Palustrine Emergent
- Delineated Riverine Tidal
- Approximated Riverine Tidal

1 inch = 200 feet

0 100 200
Feet

COASTAL RESOURCES INC.

District Department of Transportation
Long Bridge Project

Appendix A: Wetland Delineation Map
SHEET 2 OF 4

Arlington County, VA
Washington, District of Columbia
November 2018

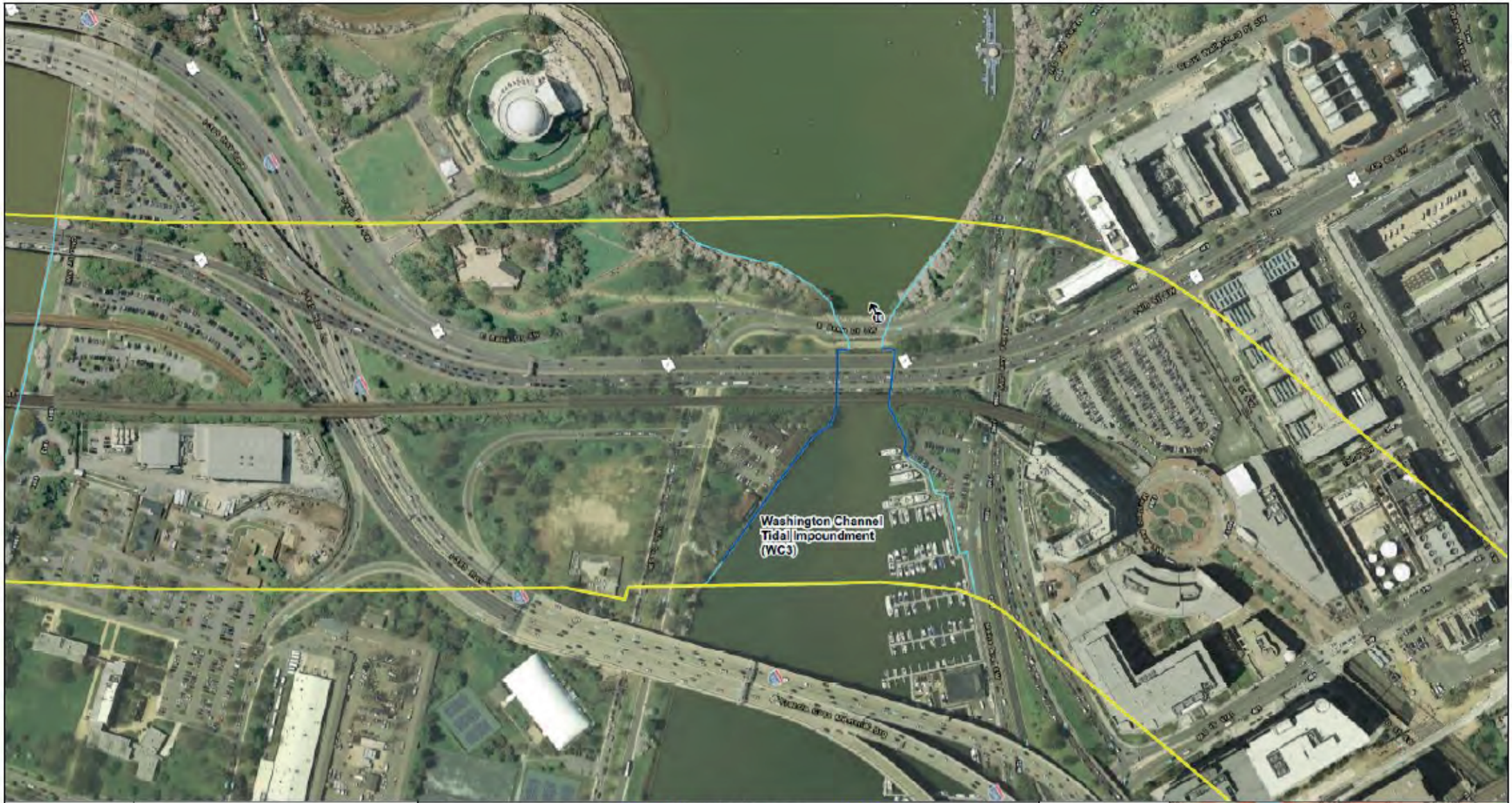
Photo Points
Wetland Test Plot
Upland Test Plot
Study Area

Delineated Palustrine Scrub-Shrub
Approximated Palustrine Scrub-Shrub
Delineated Palustrine Forested
Approximated Palustrine Forested

Approximated Palustrine Emergent
Delineated Riverine Tidal
Approximated Riverine Tidal

1 inch = 250 feet

0 125 250
Feet



COASTAL RESOURCES INC.

District Department of Transportation
Long Bridge Project

Appendix A: Wetland Delineation Map
SHEET 3 OF 4

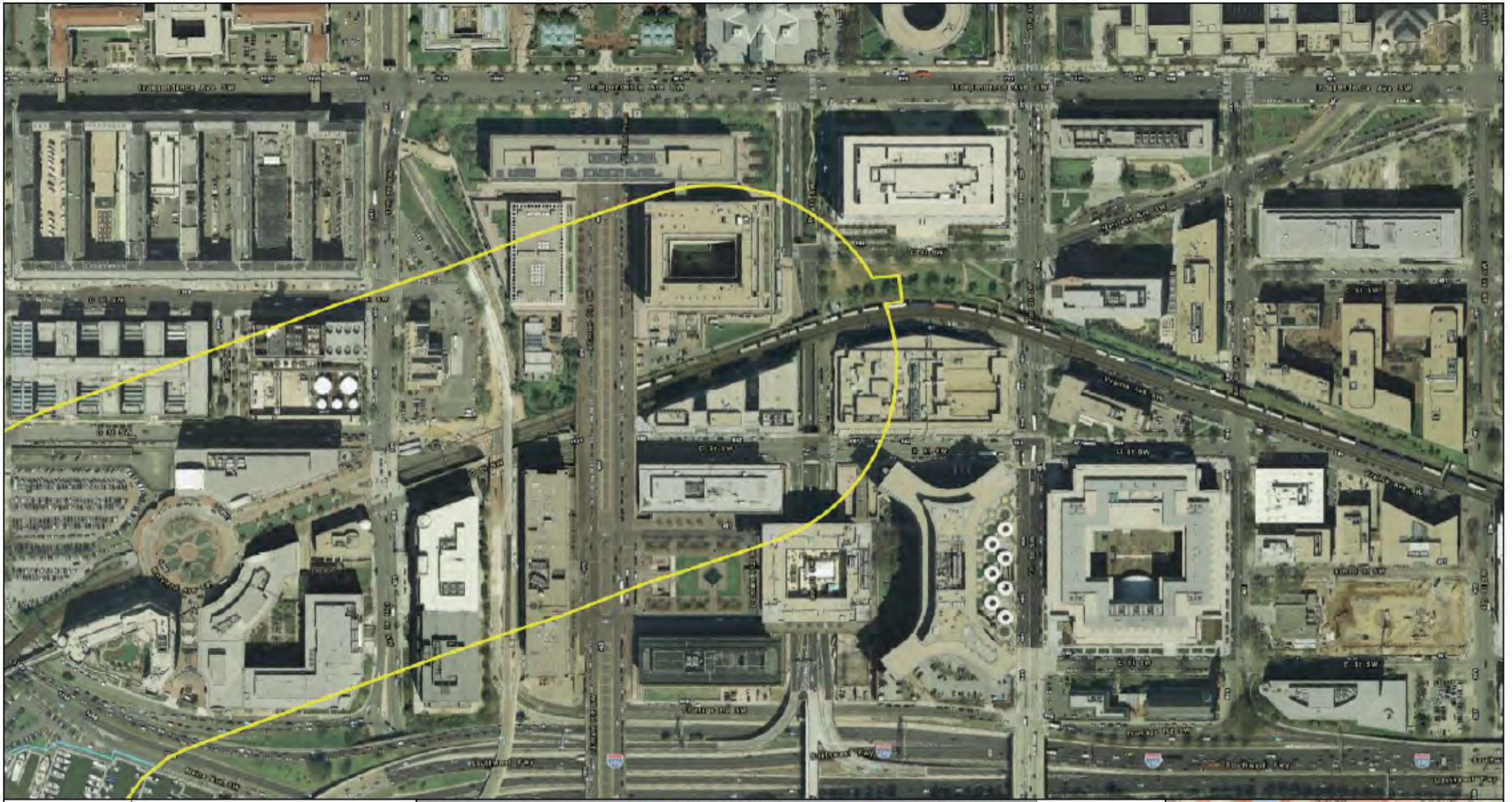
Arlington County, VA
Washington, District of Columbia
November 2018

Photo Points
Wetland Test Plot
Upland Test Plot
Study Area

Delineated Palustrine Scrub-Shrub
Approximated Palustrine Scrub-Shrub
Delineated Palustrine Forested
Approximated Palustrine Forested

Approximated Palustrine Emergent
Delineated Riverine Tidal
Approximated Riverine Tidal

1 inch = 250 feet
0 125 250
Feet



COASTAL RESOURCES INC.

District Department of Transportation
Long Bridge Project

Appendix A: Wetland Delineation Map
SHEET 4 OF 4

Arlington County, VA
Washington, District of Columbia
November 2018