

Response to Request for Proposals

I-66 EASTBOUND WIDENING INSIDE THE BELTWAY

Fairfax County and Arlington County, Virginia

State Project No.: I-66 EBW (0066-96A-417, P101, R201, C501), UPC 108424
I-66 EDA (0066-96A-493, P101, C501, B686), UPC 110629
Federal Project No.: NHPP-066-1(356)
Contract ID Number: C00108424DB92

VOLUME I: TECHNICAL PROPOSAL



SUBMITTED BY:



IN ASSOCIATION WITH:





Attachment 4.0.1.1 - Technical Proposal Checklist

ATTACHMENT 4.0.1.1

I-66 EASTBOUND WIDENING INSIDE THE BELTWAY

TECHNICAL PROPOSAL CHECKLIST AND CONTENTS

Offerors shall furnish a copy of this Technical Proposal Checklist, with the page references added, with the Technical Proposal.

Technical Proposal Component	Form (if any)	RFP Part 1 Cross Reference	Included within page limit?	Technical Proposal Page Reference
Technical Proposal Checklist and Contents	Attachment 4.0.1.1	Section 4.0.1.1	no	N/A
Acknowledgement of RFP, Revisions, and/or Addenda	Attachment 3.6 (Form C-78-RFP)	Sections 3.6, 4.0.1.1	no	N/A
Letter of Submittal	NA	Sections 4.1		Page 1
Letter of Submittal on Offeror's letterhead	NA	Section 4.1.1	yes	Page 1
Identify the full legal name and address of Offeror	NA	Section 4.1.1	yes	Page 1
Authorized representative's original signature	NA	Section 4.1.1	yes	Page 1
Declaration of intent	NA	Section 4.1.2	yes	Page 1
120 day declaration	NA	Section 4.1.3	yes	Page 1
Point of Contact information	NA	Section 4.1.4	yes	Page 1
Principal Officer information	NA	Section 4.1.5	yes	Page 1
Interim Milestone and Final Completion Date(s)	NA	Section 4.1.6	yes	Page 1
Proposal Payment Agreement or Waiver of Proposal Payment	Attachment 9.3.1 or 9.3.2	Section 4.1.7	no	N/A
Certification Regarding Debarment Forms	Attachment 11.8.6(a) Attachment 11.8.6(b)	Section 4.1.8	no	N/A
Offeror's Qualifications	NA	Section 4.2		Page 2

ATTACHMENT 4.0.1.1

I-66 EASTBOUND WIDENING INSIDE THE BELTWAY

TECHNICAL PROPOSAL CHECKLIST AND CONTENTS

Technical Proposal Component	Form (if any)	RFP Part 1 Cross Reference	Included within page limit?	Technical Proposal Page Reference
Confirmation that the information provided in the SOQ submittal remains true and accurate or indicates that any requested changes were previously approved by VDOT	NA	Section 4.2.1	yes	Page 2
Organizational chart with any updates since the SOQ submittal clearly identified	NA	Section 4.2.2	yes	Page 2
Revised narrative when organizational chart includes updates since the SOQ submittal	NA	Section 4.2.2	yes	Page 2
Design Concept				
Conceptual Roadway Plans and description	NA	Section 4.3		Page 3-22
Conceptual Structural Plans and description	NA	Section 4.3.1	yes	Page 3-13 Pages 59-80
	NA	Section 4.3.2	yes	Page 13-22 Pages 81-96
Project Approach				
Environmental Management	NA	Section 4.4		Page 23-39
Structures	NA	Section 4.4.1	yes	Page 23-27
Quality Assurance/ Quality Control (QA/QC)	NA	Section 4.4.2	yes	Page 28-31
	NA	Section 4.4.3	yes	Page 31-39
Construction of Project				
Sequence of Construction	NA	Section 4.5		Page 40-
Transportation Management Plan	NA	Section 4.5.1	yes	Page 40-48
	NA	Section 4.5.2	yes	Page 48-57

ATTACHMENT 4.0.1.1

I-66 EASTBOUND WIDENING INSIDE THE BELTWAY

TECHNICAL PROPOSAL CHECKLIST AND CONTENTS

Technical Proposal Component	Form (if any)	RFP Part 1 Cross Reference	Included within page limit?	Technical Proposal Page Reference
Disadvantaged Business Enterprises (DBE)	NA	Section 4.6		
Written statement of percent DBE participation	NA	Section 4.6	yes	Page 58
Proposal Schedule	NA	Section 4.7		
Proposal Schedule	NA	Section 4.7	no	N/A
Proposal Schedule Narrative	NA	Section 4.7	no	N/A
Proposal Schedule in electronic format (CD-ROM)	NA	Section 4.7	no	N/A



Attachment 3.6 - Form C-78

ATTACHMENT 3.6**COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION**RFP NO. C00108424DB92PROJECT NO.: NHPP-066-1(356)**ACKNOWLEDGEMENT OF RFP, REVISION AND/OR ADDENDA**

Acknowledgement shall be made of receipt of the Request for Proposals (RFP) and/or any and all revisions and/or addenda pertaining to the above designated project which are issued by the Department prior to the Letter of Submittal submission date shown herein. Failure to include this acknowledgement in the Letter of Submittal may result in the rejection of your proposal.

By signing this Attachment 3.6, the Offeror acknowledges receipt of the RFP and/or following revisions and/or addenda to the RFP for the above designated project which were issued under cover letter(s) of the date(s) shown hereon:

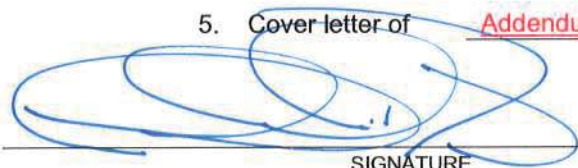
1. Cover letter of RFP – April 7, 2017
(Date)

2. Cover letter of Addendum #1- June 1, 2017
(Date)

3. Cover letter of Addendum #2- July 11, 2017
(Date)

4. Cover letter of Addendum #3- August 21, 2017
(Date)

5. Cover letter of Addendum #4- September 6, 2017
(Date)



SIGNATURE

9/27/17

DATE

Michael E. Post

PRINTED NAME

President/CEO/Manager

TITLE



4.1 - Letter of Submittal



September 27, 2017

Mr. Bryan W. Stevenson, PE
Alternative Project Delivery Division
Virginia Department of Transportation
1401 East Broad Street
Annex Building, 8th Floor
Richmond, VA 23219

RE: **I-66 Eastbound Widening Inside the Beltway
Fairfax County and Arlington County, Virginia
Contract ID Number: C00108424DB92
4.1 - Letter of Submittal**

Dear Mr. Stevenson:

Shirley Contracting Company, LLC (Shirley), as the Offeror, and Dewberry Consultants LLC (Dewberry), as the Lead Designer, are pleased to submit our Team's Technical Proposal for the I-66 Eastbound Widening Inside the Beltway Project (the Project). Our Team has unmatched experience performing Virginia Department of Transportation (VDOT) design-build projects having been awarded 18 projects, valued at more than \$1.1 billion. We are committed to providing VDOT and the traveling public with an unequalled level of assurance that the Project will be completed successfully and exceed the priorities established, while limiting risk to VDOT, the public, and stakeholders. We are excited for this opportunity and look forward to continuing our partnership with VDOT.

4.1.2 - 4.1.3 - Declarations: Should Shirley be selected, it is our intent to enter into a contract with VDOT for the Project in accordance with the terms of this Request for Proposal (RFP). Further, the offer represented by our Technical and Price Proposals will remain in full force and effect for one hundred twenty (120) days from the date this Technical Proposal is actually submitted to VDOT.

4.1.4 - Point of Contact: Garry A. Palleschi, Vice President, Shirley Contracting Company, LLC, 8435 Backlick Road, Lorton, VA 22079, 703.550.3579(P), 703.550.9346 (F) gpalleschi@shirleycontracting.com.

4.1.5 - Principal Officer: Michael E. Post, President/CEO/Manager, Shirley Contracting Company, LLC 8435 Backlick Road, Lorton, VA 22079, 703.550.8100(P).

4.1.6 - Interim Milestone Date: November 10, 2020 **Final Completion Date:** October 1, 2021

4.1.7 - Proposal Payment Agreement: An executed Proposal Payment Agreement, Attachment 9.3.1, is included in the Appendix.

4.1.8 - Certification of Debarment: Signed Certification Regarding Debarment Forms from all team members are included as an attachment in the Appendix.

On behalf of the entire Shirley/Dewberry Team, we thank VDOT for the opportunity to submit this Technical Proposal and look forward to your favorable review.

Sincerely,

Michael E. Post
President/CEO/Manager
Shirley Contracting Company, LLC

4.2 - Offeror's Qualifications

4.2 Offeror's Qualifications

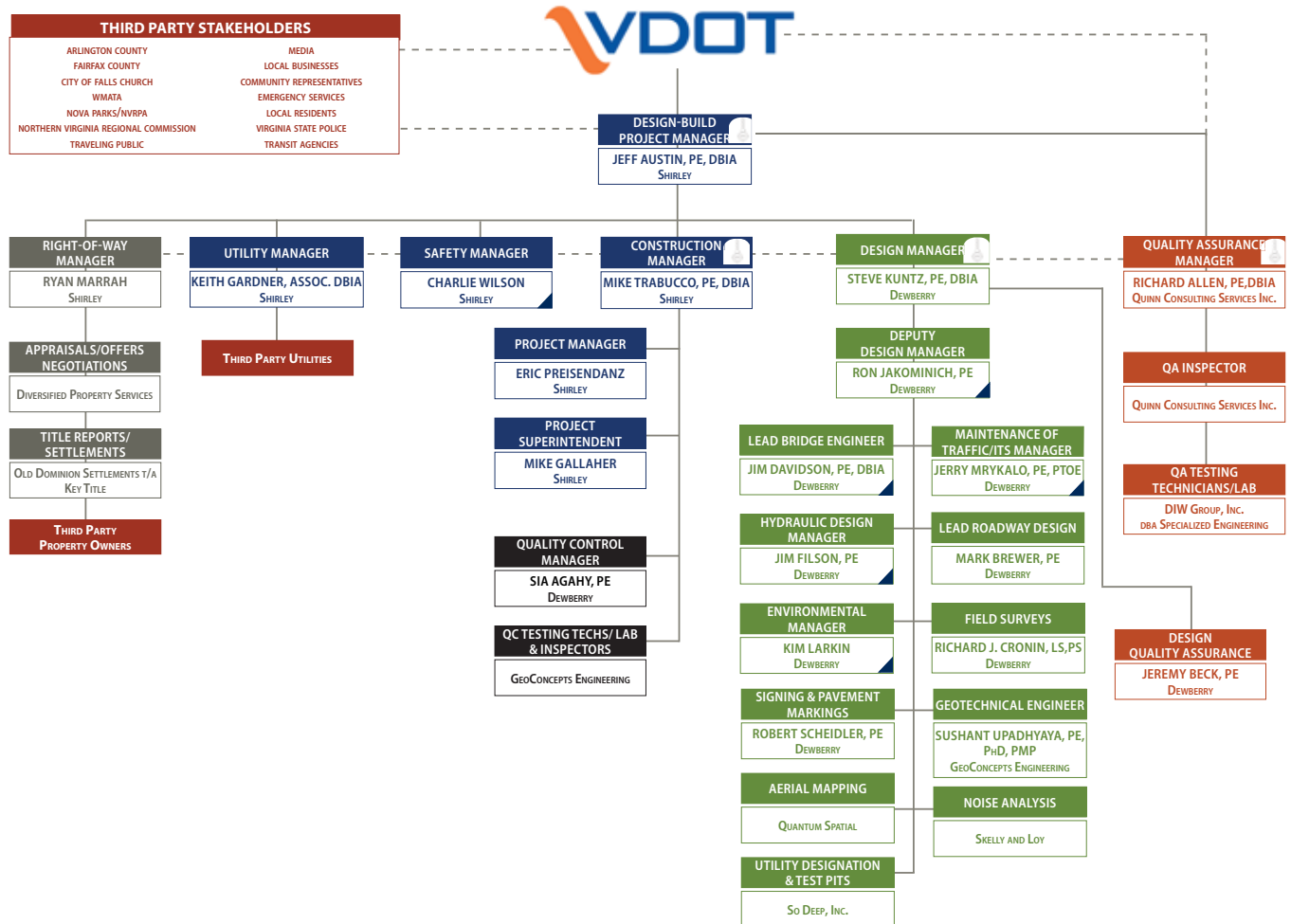
4.2.1 Confirmation

We confirm that the information contained in our Statement of Qualifications (SOQ) remains true and accurate in accordance with Part 1, Section 11.4, with the exception of Ryan Marrah who has been assigned to the Project as the Right-of-Way Manager, replacing Gary Christensen who is no longer with Shirley Contracting Company, LLC. This change was submitted to VDOT and approved on August 31, 2017.

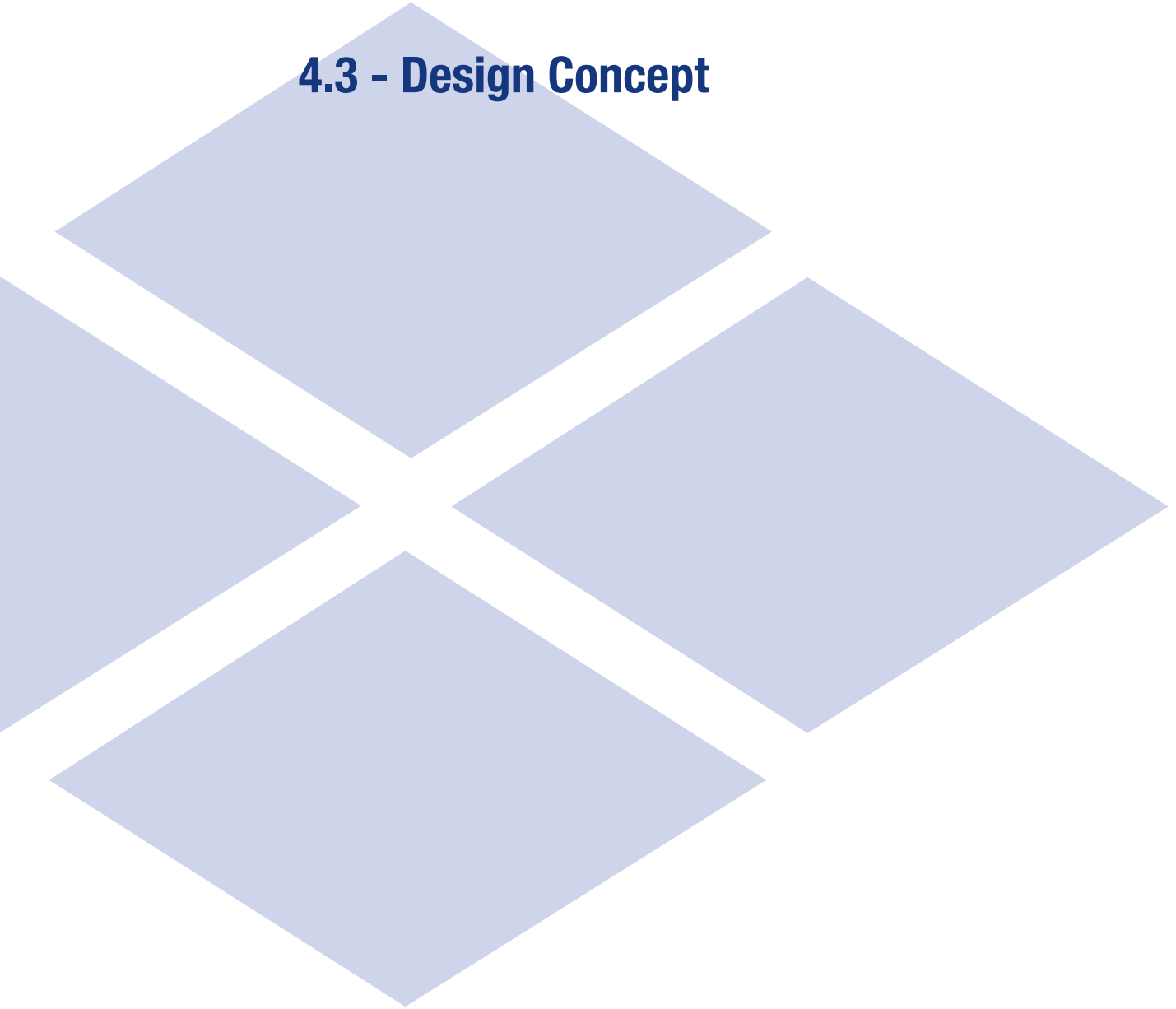
4.2.2 Organizational Chart

The Project Organizational Chart below identifies the “chain of command” and major functions to be performed and their reporting relationships in managing, designing and constructing the Project, including quality control/quality assurance. The Organizational Chart has been updated to reflect the change in the Right-of-Way Manager. As there is no change to the functional relationships among participants, an updated narrative is not required.

Figure 4.2.2.1 - Organizational Chart



4.3 - Design Concept



4.3 Design Concept

Introduction

Our Team's approach to developing a Conceptual Design and Technical Proposal is based on a competitive review of the Request for Proposal (RFP) documents and requirements and interviews with the Project site. It also focused on identifying an emerging industry from the local and experienced working on multiple interstate widening projects including I-66 Widening (Gaithersville to Hyattsville), I-66 Capacity Improvements - Segment I, and I-95 4th Lane Widening. These enhancements aim to achieve the following goals:

- reduce impacts to the travel lane adjacent to the road;
- reduce environmental impacts;
- reduce right-of-way (ROW) acquisition impacts;
- reduce long-term maintenance and costs;
- improve safety of the travel lane, construction and operations staff; and
- ensure early completion of the project to maximize the benefits.

In addition to achieving the goals identified above, our Team's concept also:

- ✓ meets or exceeds all requirements listed in the Design Criteria Table;
- ✓ proposed limits of construction in the stormwater management facilities, are within the existing proposed ROW limits shown in the RFP Conceptual Plan, with the exception of permanent and temporary easements; and
- ✓ does not include design elements that require Design Waivers and/or Design Exceptions beyond those identified or included in the RFP or Addenda.

Immediately upon release of the RFP, our Team established weekly coordination meetings with all design disciplines. Our collaboration approach between construction personnel, engineers, and other stakeholders is essential to identify potential challenges, develop solutions, and expedite design to minimize risk and project cost. Our approach focused on the I-66 Eastbound Widening Base Scope (I-66 EBW) and Option 1 for the I-66 Eastbound Direct Access (I-66 EDA). These enhancements are described in Table 1 and are also highlighted in Volume II - Design Conceptual Plan.

Table 1 - Proposed Design Concept Enhancements

Feature/Location	Enhancement	Project Benefit
I-66 EBW		
Proposed Outside (right) Shoulder Widths-Stations 221+00 to 231+00 and 236+50 to 238+50	Geometric modifications to provide a 2-foot shoulder, while maintaining the existing barrier location	<ul style="list-style-type: none"> ■ Improves safety by meeting VDOT standards for shoulder width. ■ Eliminates the portions of Design Waiver 1 ("DW-1") noted as Areas 9, 10, and 11.
Proposed Inside (left) Shoulder Widths-Stations 283+64 to 302+00	Provide a consistent 8-foot wide shoulder in the area where road side barrier acquisition is required to limit signal stationing.	<ul style="list-style-type: none"> ■ Increases the signal stationing width shoulder to the proposed design RFP Concept. ■ Improves safety and traffic operations.
Roadway Geometry / Entire Project Corridor	Improve vertical alignment geometry	<ul style="list-style-type: none"> ■ Promotes ease of construction with less variability and fewer construction issues/breaks. ■ Optimized vertical geometry to limit excessive overlay and provide defined vertical grades throughout.

Feature/Location	Enhancement	Project Benefit
I-66 EBW		
Existing Storm Drain Pipes to be Re-Utilized - Entire Project Corridor	Utilize in-tire storm drain pipe materials to meet RFP drainage requirements in lieu of replacement.	<ul style="list-style-type: none"> ▪ Bridge can remain in place during construction. ▪ Able to maintain critical drainage crossings without disruptions to traffic otherwise necessary in a pipe replacement.
EB Bridge over Bon Air Park (B679)	Utilize light weight concrete to replace the old elevated structure.	<ul style="list-style-type: none"> ▪ Eliminates bridge structure RFP pass ▪ Eliminates abutment widening ▪ Reduces maintenance costs ▪ Minimizes temporary impacts to C&T Trail
EB Bridge N. Sycamore Street (B678)	Modifies and incorporates existing gravel abutment widening	<ul style="list-style-type: none"> ▪ Reduces impacts to West Falls Church Metro Station
I-66 EDA		
Roadway Geometry - I-66 EDA option	Increases grade to separate approach and slip ramp area.	<ul style="list-style-type: none"> ▪ Increases driver comfort and safety during construction.

4.3.1 Conceptual Roadway Plans

The Project will add additional capacity along the heavily traveled Interstate corridor through Fairfax and Arlington Counties with Washington, DC. Our Team's design concept adheres to the requirements and goals presented in the RFP Conceptual Plan. The design also incorporates the three design waivers and five design waivers applied for with the EBW Project, and the three design waivers associated with the EDA Project. The following sections describe our Team's approach to these improvements as shown in our Team's Conceptual Plan included in Volume II - Design Report.

(a) General Geometry

I-66 EBW - The I-66 EBW Project generally consists of widening I-66 for approximately 4-miles to provide an additional least three travel lanes, including the main travel lanes along the facility from two to three lanes (east of Exit 69) and from three to four lanes (west of Exit 69). All lanes will be 12-foot wide except where the two left-most lanes are reduced to 11 feet as part of design expansion in the short stretch near Bon Air Park where all lanes are 11-feet, as mentioned in VDOT's design criteria table (Attachment 2.2). The paved roadway shoulders are generally 2-foot for the outside (right) shoulder and 4-foot wide for the inside (left) shoulder. We have strategically set the horizontal alignment to achieve multiple efficiencies and benefits as discussed in Section (b.). Proposed paved shoulders will be constructed of the same full strength pavement structure as the mainline, necessitating additional excavation.

Ramp modifications are required at Exits 68, 69, and 71. Additionally, there are seven I-66 mainline bridge repairs and/or replacements, a pedestrian bridge modification, and a new grade separation of the W&OD Trail Shared Use Path included in the scope. The improvements along the corridor are in accordance with the design criteria table, as well as the standards and specifications detailed in Section 2.1.1 of the RFP. Design of the I-66 mainline improvements adheres to the Urban Principal Arterial GS-5 standard for a 60 mph freeway.

I-66 EDA - The I-66 EDA option includes adding an auxiliary lane to the existing I-66 eastbound exit ramp to Route 7, then provides a connecting slip ramp to the existing flyover ramp. This connection provides improved eastbound access to the West Falls Church Metro Station. Our Conceptual Design for I-66 EDA is in accordance with the provided Design Criteria Table and the standards and specifications

4.3 Design Concept

within this RFP. Design along I-66 adheres to the 60 mph VDOT Urban Principal Arterial GS-5 standard, and all ramp improvements adhere to a VDOT Interchange Ramp GS-R standard with varying design speeds of 30 to 35 mph. The ramp lane widths will be a minimum of 12-feet for multi-lane ramps or 16-feet for single-lane ramps, and paved shoulders are generally 8 feet for right shoulders and 4-feet for left shoulders.

(b) Horizontal Alignments

I-66 EBW - This horizontal alignment associated with I-66 EBW is in compliance with all RFP requirements and closely resembles VDOT's conceptual plan, with the following elements:

- improve construction access;
- avoid temporary elements to side of the existing roadway;
- minimize sliver widening;
- simplify construction of future main entrance.

The proposed alignment for the majority of the Project aligns the proposed edge of median shoulder with the existing edge of median shoulder, so that the structure can be repositioned or retained in its current position and minimize utility and drainage impacts. Additionally, our Team adjusted the position of the barrier in order to increase shoulder width for signal stand and driver comfort. The proposed horizontal alignment also carefully aligns the proposed crown point so that the cross-slopes correction is kept to a minimum and sliver widening is minimized.

Our concept meets standards and specifications of a 60 mph VDOT GS-5 facility, with the exception of the design waivers and exceptions identified in the RFP. Our Team's design exceeds minimum horizontal curve requirements and signal poles at ramp terminals, providing a safer facility with improved functionality.

I-66 EDA - This option is designed to ensure I-66 adheres to a VDOT GS-5 for 60 mph and all connecting ramps to a VDOT GS-R for design speeds ranging from 30 to 35 mph. The three identified Design Waivers associated with the I-66 EDA option are utilized; however, specific to DW-2 the gore designs are improved from the VDOT RFP Concept. Our Team proposes a horizontal alignment which is fully compliant with the RFP with several beneficial adjustments:

1. Shifting the baseline on Ramp A enables more distance between Ramp W's exit/entrance gores;
2. Modified Ramp A geometry to align better to the existing ramp, thereby minimizing sliver widening while maintaining grade to shoulders; and
3. Providing 140-feet of recovery length at the gore between Ramp B and Ramp W (DW-2), by providing the location of the Ramp W baseline.

(c) Maximum Grades

Our Team has optimized the vertical geometry for economy and safety, and we have also met or exceeded profile grades from those outlined as maximum grades in the Design Criteria Table.

With the **I-66 EBW** scope primarily consisting of in-state widening the proposed grades for I-66 eastbound is constrained by the existing roadway grades. Per the requirements of the RFP, our Team has established vertical geometry along I-66 in-lieu of a spline graded profile. With the use of a preliminary 3D model of the corridor, we have created the most efficient profile possible to ensure the existing road can be overlaid appropriately with prescribed slope relations while minimizing excavation and overlay build up. The maximum grades are identified in Table 2 on the following page.

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Table 2 - Maximum Vertical Grades

Road	Maximum Profile Grade (%)		
	Maximum Allowable	VDOT RFP Design	Proposed Design
I-66 EBW			
I-66 Eastbound	6.0	4.9	4.9
Ramp 1	5.0	8.0 *	8.0 *
Ramp 2	5.0	3	3
Ramp 3	6.0	4.0	4.0
Ramp 4	5.0	2.0	2.0
* Matching the existing 8% grade of Ramp 1			
I-66 EDA			
I-66 Eastbound	6.0	1.0	1.0
Ramp A	7.0	4.6	4.5
Ramp B	6.0	3	3
Ramp W	7.0	3	3

Modifications to Ramps 2, 3, and 4 generally follow the existing grades, requiring only slight adjustments to the existing pavement widths where necessary. Ramp 1 utilizes a maximum grade of 8% for the steep climb approach. Ramps 2, 3, and 4 match the existing ramp grades that the existing roadway is consistent with VDOT's RFP Criteria.

The **I-66 EDA** profile includes a widening and slight realignment of existing ramps similar to the Base Project, with the inclusion of the narrow cutting Ramp W. For Ramp W, the connection between Ramp B and Ramp A is made in a strategic location where the elevation of the two ramps are roughly equal. Easily traversable 3% grades are used with a sag vertical curve to make this connection which is well below the maximum allowable grade of 7%.

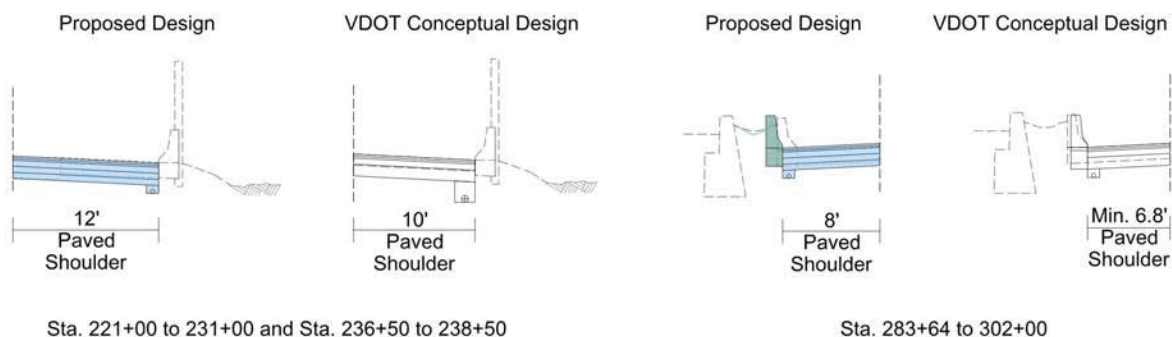
(d) Typical Sections

For **I-66 EBW**, our Team has generally followed VDOT's Conceptual Design. An additional 12-foot lane has been provided either by widening to the inside (median) or outside (right) shoulder location. These sections of 11-foot lanes between Station 250+50 and 281+88, as allowed in the RFP Design Criteria are utilized to limit impacts to Bon Air Park and the existing bridge, which takes Custis Trail under I-66. Ramp lanes are provided VDOT standard width of 12-foot for multi-lane ramps and 10-foot for single-lane ramps.

Shoulders along the corridor are consistent with those proposed in VDOT's Conceptual Design with enhancements as described below in Figure 4.3.1.

1. Eliminated portions of DW-1 between Station 221+00 to 231+00 and Station 236+50 to 238+50, which previously needed to reduce outside (right) shoulder widths to 10-feet. Our design provides a full 12-foot shoulder.
2. From Station 283+64 to 302+00 along the inside (left) shoulder our design accommodates a consistent 8-foot shoulder versus the existing shoulder (8-foot minimum width) provided with the VDOT Conceptual Design. This portion of I-66 is with a left turning curve, the maximumizing this shoulder width will provide improved sight lines and safer roadway.

Figure 4.3.1.1 - Shoulder Width Improvements



4.3 Design Concept

Pavement design match the provided in VDOT's conceptual design. When allowed per the RFP, existing travel lane pavement is milled and overlaid in accordance with VDOT Standard ACOT-1. Wedge overlay and bed preparation. It will be required along I-66 mainline in these areas to correct pavement cross slopes to current slope relaxation criteria, and improve roadway longitudinal grades. In addition to widening the roadway for the additional travel lanes provided, the shoulders are to be reconstructed to the same full depth pavement design as the travel lanes.

Retaining wall limits are depicted in Volume II - Design Concept. Our Team's design concept reduces these structures, thereby reducing the length of retaining walls by as much as 110 feet to stay within identified ROW, and avoid impacts to environmentally sensitive areas, property, utilities, and other costly infrastructure. With horizontal geometry adjustments on I-66 near the Bon Air Park Bridge, our Team was able to reduce the reconstruction of the existing wall by approximately 110-feet west and 6 feet east of the bridge in comparison to VDOT's conceptual design as depicted in Figure 4.3.1.2, which also reduced right-of-way impacts.

Figure 4.3.1.2 - Minimization of Wall Lengths



For the I-66 EDA project, our Team has prepared Typical Section and associated design elements that meet all requirements of the RFP. A consistent 8-foot shoulder is provided, along with the two 12-foot exit lanes. When traffic splits to either Route 7 or the direct access via Ramp W to Ramp A and the West Falls Chatham Metro facility, ramp lane widths are a minimum of 6 feet when a single lane, or 24-feet total when a dual lane ramp. Appropriate width shoulders are provided, ensuring that a wide shoulder is provided wherever it is critical and necessary.

The pavement section at the Route 7 interchange is the same that was prescribed with VDOT's conceptual design and is consistent between the I-66 widening and any new ramp construction. Retaining walls and noise barriers are required along Ramp A. Our Team's design optimizes the retaining wall layout to limit the length of the wall.

For both the I-66 EBW and I-66 EDA, appropriate roadside barrier protection is provided. Typical section graphics are included in Volume II - Design Concept, and discussion of the Bridge Typical Section is included in Section 4.3.2.

(e) Hydraulic and Stormwater Management (SWM)

Roadway Drainage

Our Team has analyzed the existing drainage network and proposed the drainage system to provide I-66 as-built performance, and incorporated the existing drainage report provided with the RFP Information Package. The existing drainage network is complex, entwined with WMATA drainage, and constrained by the Four Mile Run floodplain and watershed requirements. Our Team's proven hydraulic and stormwater management expertise is well suited to this challenge, and we have developed design with the following goals in mind:

4.3 Design Concept

- reduce or eliminate existing utility encroachments;
- avoid work under WMATA facilities and property;
- provide VDOT with a functional drainage system with extended service life; and
- limit future maintenance and disruption costs.

The existing drainage condition report provided with the RFP cited many pipes with deficiencies which can be remedied with rehabilitation or replacement. This survey also is missing information on many pipes which are to be utilized or where the survey was added to be true in the pipe. The most critical of these pipes are those which, if needed to be replaced, would disrupt traffic during construction, are particularly deep, or in the vicinity of WMATA, existing utilities, or sensitive environmental features. The network for the highway corridor is set up as a series of ditch or pipe manholes which cross I-66 to a drainage trunk line, which are large concrete structures that move water to Four Mile Run or other channels. Replacement of any of these pipes crossing I-66 or WMATA would necessitate extensive Maintenance of Traffic (MOT) operations to maintain travel lanes and reduce impacts to the traveling public.

Our Team has performed extensive pipe from analysis of the existing drainage network and pipes as a design which maintains many pipes by rehabilitating them in lieu of replacing them. Utilizing in-trench slip lining techniques, both with PVC pipe sleeves and Cured in Place Pipe rehabilitation (CIPP), we can avoid trenching and replacement of jack and bore pits. This is particularly important as many of the pipes along the corridor are either adjacent to Metro or existing walls and so depth that the access to jack and bore trenching is difficult.

The slip lining techniques used by our Team are in accordance with the latest revisions of the VDOT Drainage Manual and the VDOT Road and Bridge Specifications. For example the CIPP rehabilitation method, presented in Figure 4.3.3, provides a pipe with renewed structural integrity and better hydraulic characteristics than the original concrete pipe. For large diameter pipes, our Team will enter the pipe and make conventional repairs as needed, ensuring that the deficiencies noted with the pipe inspections are fixed both structurally and hydraulically.

Figure 4.3.1.3 - CIPP Rehabilitation Method



For the **I-66 EDA** project, the roadway drainage design approach is to utilize the existing network to the greatest extent possible. Similar to the **I-66 EBW** scope, this will limit traffic disturbance during construction and necessary tree clearing and keep environmental impacts to a minimum. Because pipe inspections were not available for this Project, our Team will inspect the existing pipe network that we plan to utilize for the roadway upgrade. Should the inspection indicate that certain pipes are deficient, our Team will use similar methods as those described above to avoid disruptive pipe replacement methods. Our computational analysis in this area confirms that most or all of these pipes can utilize these slip-lining techniques to convey the Project design flows. Overall, the existing drainage patterns remain the same from existing to the proposed configuration.

Stormwater Management

Stormwater management (SWM) will be designed in accordance with the Virginia Department of Environmental Quality (DEQ) II-C criteria for I-66 EBW and II-B criteria for I-66 EDA. SWM for I-66 EBW will utilize the Performance Based Methodology (9VAC25-870-96) and MS-19 Adequate Outfall Criteria (9VAC25-870 & 9VAC25-870-98). SWM for I-66 EDA will utilize the Virginia Runoff Reduction Methodology (9VAC25-870-65) and Channel and Flood Protection Criteria (9VAC25-870-66).

I-66 EBW will also adhere to specific criteria for the Four Mile Run watershed as defined by Arlington County and the Northern Virginia Regional Commission (NVRC). The additional SWM criteria for this watershed seeks to reduce and mitigate any impacts to the Four Mile Run floodplain and watershed as a whole. The Project Team will coordinate with the appropriate entities of NVRC to begin approval for construction activities located within the Four Mile Run watershed.

I-66 EBW - The stormwater management designed as part of the I-66 EBW project will utilize the existing VDOT stormwater management facility along North Sycamore Street to meet the water quality requirements. This facility will be retrofitted to meet water quality requirements and to provide peak discharge attenuation required for basin approval through NVRC and Arlington County. The RFP conceptual design proposed to meet the water quality requirements through the use of two water quality swales, a detention basin and six maintenance BMPs. The BMPs proposed in the RFP mostly consist of facilities that require expensive soil media that needs to be replaced every five years, resulting in high ongoing maintenance costs. We plan to meet 75% of the removal requirement on site while purchasing the remaining 25% of the credits through nutrient bank. ***Our design eliminated the BMP facilities that require maintenance intensive media, and reduced the number of facilities from nine to one.*** This efficient design reduces cost and long-term maintenance for VDOT as filtering and manufacturing BMPs pose significant ongoing maintenance challenges.

Stormwater Management Enhancements

- Reduce nutrient maintenance costs.
- Eliminate maintenance BMPs
- Reduce BMP facilities total
- Reduce Right-of-Way impacts

Our conceptual proposal is to utilize the same approach as the RFP for meeting the NVRC Four Mile Run requirements by retrofitting the North Sycamore Street Pond in order to reduce flowrates entering Four Mile Run. Per the RFP, this approach received conditional approval from NVRC, and by adhering to the same approach we reduce the risk to the Project Schedule that an alternative approach may not meet NVRC requirements. Our recent experience with the NVRC on the Route 27/244 Interchange Modifications Project provides the precedent for the Four Mile Run Watershed necessary to begin expedited approval for stormwater management approach. The proposed design will meet all water quality requirements.

I-66 EDA - Our SWM concept for I-66 EDA will use nutrient credits to meet 100% phosphorus removal since this option requires less than 10 lbs of phosphorus removal. ***This is an improvement over the RFP design, which proposed a bioretention basin to meet water quality and quantity requirements, thus reducing VDOT's long-term maintenance costs.***

(f) Proposed Right of Way Limits

Our Design Concept remains completely within the ROW that VDOT identified in the RFP Conceptual Plan. At Bon Air Park, we ***reduced the ROW required from VDOT's concept by approximately 800 SF.***

Our Team investigated and tailored the proposed design to avoid and minimize impacts in order to reduce conflicts and avoid acquisition of additional easements. We also optimized the design in order to reduce or avoid impacts to environmentally sensitive areas and residential properties. Adjustments to noise barriers

4.3 Design Concept

have been made to accommodate the 10-foot maintenance buffer within existing ROW to avoid additional impacts. The limits of proposed ROW are depicted in Volume II - Design Concept.

For the I-66 EDA project, design remains completely within existing ROW. Our Team designed and prepared temporary assemblages in order to meet the Project's requirements.

(g) Proposed Utility Impacts

Along I-66 EBW, there are multiple utilities which our Team has already begun investigating. Through effective communication between the utility companies and our design engineers, we are able to avoid most conflicts, minimize them where avoidance is not possible, and only as a last resort complete a relocation. Table 3 illustrates the utility impacts and relocation strategies.

Table 3 - Proposed Utility Impacts

Utility Description	Approximate Location	Potential Conflict	Relocation Plan
OVERHEAD POWER/COMMUNICATION LINES			
Dominion Power Distribution Lines	W&OD Station 58+50	Conflict with Proposed Bridge	In Kind Relocation
Dominion Power Distribution Lines	W&OD Station 59+00 to 62+00	Conflict with Proposed Bridge	In Kind Relocation
LNS	W&OD Station 58+50 (Attached to VP Poles)	Conflict with Proposed Bridge	In Kind Relocation
Verizon	W&OD Station 58+50 (Attached to VP Poles)	Conflict with Proposed Bridge	In Kind Relocation
UNDERGROUND POWER/COMMUNICATION LINES			
Dominion Power Distribution Lines	I-66 EB Station 267+00 to 270+00	Conflict with Proposed Noise Barrier	In Kind Relocation
AT&T Fiber	W&OD Station 53+00 to 61+00	Conflict with Proposed Bridge	In Kind Relocation
WATER			
2" Air Water in Casings	I-66 EB Station 129+25	Potential Conflict with Noise Barrier and Ditch	In Kind Relocation
8" Water	I-66 EB Station 158+00	Potential Conflict with Bridge Pier Footing	In Kind Relocation
8" Water	I-66 EB Station 158+00	Potential Conflict with Proposed Storm	In Kind Relocation
20" Water in Casings	I-66 EB Station 158+00	Potential Conflict with Proposed Storm	In Kind Relocation
GAS			
2" Steel Gas in Casings	I-66 EB Station 267+00 to 270+00	Potential Conflict with Proposed Median Storm	In Kind Relocation

Our Team specifically focused on the overhead electric transmission lines at the proposed W&OD Trail Shared Use Path Bridge over Route 29, a potential \$4 million relocation. VDOT has identified this within the RFP as an area of concern to lining necessary vertical and horizontal clearances with respect to this new overpass. Our Team has refined the design of this bridge such that clearance over Route 29 and clearance under the transmission lines are achieved.

Our Team's concept also addressed several utility impacts by strategically shifting the prescribed barriers. The barrier shift achieves the same noise attenuation by shifting the location. Our Team was able to avoid unnecessary impacts to drainage structures and utilities. Additionally, by utilizing the innovative slip lining method for rehabilitation, we further limit utility relocation.

4.3 Design Concept

As part of the **I-66 EDA** project most utilities can be avoided by adjusting and widening the roadway at similar elevations as they are today. However, one utility shed will require relocation along Ramp A near the Route 7 Bridge. Any associated electrical and communication utilities that feed this structure will be relocated as well.

(h) Noise Barrier Locations

Our Team's design impacts the RFP Concept by maintaining attention to elevation while avoiding the majority of utility and drainage conflicts. Our improved design provides the following:

- **Incorporated maintenance buffers while limiting the need for additional ROW** - at noise barrier Point 106, west of the I-66 westbound ramp to Symonds Street, we shifted the barrier to create a buffer to the existing ROW and drainage behind the barrier.
- **Limits impacts to existing drainage** - at noise barrier C1 the alignment has been shifted to avoid the existing drainage trunk line. At noise barrier O, outside of I-66 westbound near Patrick Henry Drive, we parallel the existing concrete ditch in the station and keep the barrier parallel to the slope south of the wall to collect water.
- **Avoid impacts to existing walls** - noise barrier E1 has been shifted to locate the barrier behind the existing MSE wall structure.

The barrier chain elements made, as well as the left abutment from the RFP Concept, were analyzed by our structural team. Skelly and Lopez, and provided the required attention to design a compliant and economical project to VDOT. For noise barriers made to retaining walls or bridges, our Team is employing a variety of methods which accomplish noise attention yet are economical and accessible for future maintenance.

The **I-66 EDA** option has one identified noise barrier at Ramp A, which begins as a mounted structure to the new retaining wall north of the Route 7 bridge and then transitioning to a ground mounted structure until it ties into the existing noise barrier. By limiting the retaining wall length as much as possible, we can transition a ground noise barrier which reduces VDOT's long term maintenance responsibilities.

(i) Trail Horizontal and Vertical Alignments

The Project includes two areas where existing shared use path trails are to be modified:

1. a grade separation at the W&OD Trail at Lee Highway; and
2. at the Custis Trail near where it crosses I-66 at Bon Air Park.

We have provided special attention to these areas in regard to design and constructability because we understand important these local trails are for community connectivity, recreation and daily commuting. Our design concept includes elements which are fully compliant with the RFP's requirements, meet the intent of the trail improvements, and can be built with minimal impacts to the project design construction.

The W&OD Trail Shared Use Path realignment and grade separated bridge crossing of Lee Highway is the centerpiece of a community improvement project in the Falls Church area. Our Team's historical design of the Trail matches the RFP Conceptual Design and the project characteristics. Our Team has also designed the grade separated trail crossing in a manner that reduces disruption to the project. **Our Team's past experience coordinating with NOVA Parks, and specifically the W&OD Trail, includes grade separated trail crossings on six different VDOT design-build projects over the past 12 years.** This work will be constructed with closures of the existing Trail and with minimal impacts to Route 29 as described in Section 4.5.

4.3 Design Concept

At the Custis Trail within Bon Air Park, our Team has modified the Trail alignment to reduce the impact footprint, while maintaining the required 12 mph design speed. The result of our improved profile is that tree clearing impacts will be reduced. Lastly, the impacts at the Custis Trail can be made while maintaining Trail traffic, similar to the improvements at the W&OD Trail.

Table 4 - Maximum Vertical Grades at Trails

Trail	Maximum Profile Grade (%)		
	Maximum Allowable	VDOT RFP Design	Proposed Design
W&OD Trail Western Approach	4.0	4.0	4.0
W&OD Trail Eastern Approach	4.0	4.0	3.18
W&OD Trail Connection	4.0	3.5	2.0
Custis Trail Shared Use Path	5.0	5.0	4.9
Custis Trail Connection	5.0	5.0	4.9

The vertical alignments for both of these trails are included with the Volume II – Design Concept, and demonstrate improved grades versus what VDOT’s RFP concept showed (see Table 4). At the W&OD Trail Shared Use Path bridge over Lee Highway, it was particularly important that the vertical clearance over Lee Highway was achieved. The RFP allows this clearance to be 17-feet

with the provided DW-5. Our Team was able to adjust the profile and reduce the bridge structural depth to meet the 17-foot clearance while also providing an eastern approach grade of 3.18%, a flatter grade than what was provided with VDOT’s concept.

(j) Other Key Project Features

WMATA Coordination

One of the primary goals is to limit or eliminate impacts to the WMATA Metrorail facility which runs between the I-66 westbound and eastbound lanes. Our design avoids all impacts to WMATA facilities. However, we plan to include WMATA in our coordination effort throughout the Project.

As an example, WMATA has two known locations of Traction Breaker System (TBS) lines which cross I-66 at approximate Stations 176+00 and 254+00. While we do not impact these facilities, performing work above and within 25-feet around them typically requires notification and coordination with WMATA. Our approach will be to identify WMATA elements which will require lengthy coordination efforts, beginning early in project development.

A second example, is the East Falls Church Metro Station where we will modify the existing N. Sycamore Street Bridge (B678) wing wall by incorporating it into the proposed abutment. This unique design concept minimizes the height of the wall and reduces excavation at the vicinity of the Metrorail facility.

Maintenance of ITS and Tolling

Our Team has taken the proactive step of developing design construction protocols to avoid impacts to existing VDOT Tolling and ITS infrastructure. First, the existing infrastructure will be avoided wherever possible. Where impacts are unavoidable, which is the case for some existing CCTV cameras, cabinets, and conduit runs, we have developed a protocol that allows for construction of the new replacement equipment in place to impact the existing devices, so that the devices can be “switched over”.

Although the tolling system was designed to accommodate this Project, our Team’s in depth planning has discovered several conflict points with the tolling equipment. Although we do not anticipate impacts to gantries EB-2 and EB-3 tolling communication are impacted in several places, such as the tolling cabinet that travels across the toll road sign shown in Figure 4.3.14 which is physically impacted by

Figure 4.3.1.4 - Tolling Conduit on Sign Structure



4.3 Design Concept

widening and right-of-way acquisition. For this structure, as well as other areas to be impacted, we will install a new right-of-way acquisition to remove the existing structure, and in coordination with VDOT and TransCore, we will “switch commitment to the new right-of-way to the existing line. The design and construction process. Team will maintain contact with VDOT and TransCore staff to ensure this critical system.

Landscaping

Landscaping is an element of the project which can have the greatest visual impact on both motorists and adjacent property owners. Having completed the 27/244 Interchange Modification Project, our Team recognizes the importance of landscaping. Our Team has the experience and design landscaping plans in conjunction with VDOT and Arlington County to ensure the final design meets the contract requirements and provides the aesthetic improvements desired by the community. In order to ensure the landscaping plans account for all final design roadway and bridge improvements, our Team will develop them after final design of the major elements have been completed. This ensures final slopes, grading, hardscapes, roadway, and structural elements are accounted for and that no conflicts will arise during planting. We will utilize the Landscaping Conceptual Plan sheets provided with the RFP as a starting point, but will update them to reflect final design elements. Plant species will be selected to ensure low-maintenance, drought tolerant, and native species are utilized, and plant locations will be identified that provide the desired screening and visual improvements while also accounting for existing utilities and proper offsets to roadways and shared use paths, including the W&OD Trail. We look forward to developing a comprehensive landscaping plan which meets the RFP requirements and provides the visual enhancement desired to serve the surrounding properties and communities.

4.3.2 Conceptual Structural Plans

As we prepared our structural concepts, we considered the best approach to design and construct the bridges with a focus on reducing cost, reducing maintenance, and enhancing constructability. Elements our Team has made include:

- 1 Utilizing lightweight concrete to replace the deck and relocations of the existing girders of the eastbound bridge over Bon Air Park (B679):
 - Allows the elimination of both new girders shown on the RFP Plans;
 - Eliminates the need for additional existing beams;
2. Modifying the existing wingwall between the eastbound bridge over N. Sycamore Street (B678) and the East Falls Church Metro Station minimizes impacts to the existing WMATA structures;
- 3 Employing 3-D, finite element analysis to design the superstructure of the new W&OD Trail Bridge (B680), provides a design that minimizes the structure depth and allows us to meet the tight vertical clearance to the Interstate 26 at the Dominion Energy ramp misside is;
4. Constructing steel brackets to support the new noise barriers on three of the bridges (B675, B682 and B683) reduces cost, speed construction and increases driver safety by having I-66 and the underpass roadway since it does not require partial demolition of the existing deck and ramps.

Bridge Structures

A description of our Team's concept for each of the bridges is discussed in Figures 4.3.2.3 and 4.3.2.4. Our Team's conceptual structural plans are included in Volume II - Design Concepts.

B675: I-66 Eastbound over Williamsburg Boulevard

This existing 3-span, 171-foot long bridge will be widened by 8-feet to provide an additional lane as required by the RFP. The final typical section of the bridge will consist of a 4-foot inside shoulder, four 12-foot lanes and a 12-foot outside shoulder. All design and construction requirements of the RFP will be

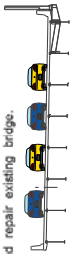
Exhibit 4.3.2.3

PROJECT MANAGER: *MVP* 05/09/2012 02:59:22 PM - 10/14/10
 DESIGNED BY DATE: *Daniel* 05/09/2012 02:59:22 PM - 10/14/10
 SUBSURFACE UTILITY BY DATE: *Daniel* 05/09/2012 02:59:22 PM - 10/14/10

ROUTE	STATE	PROJECT	SHEET NO.
66	VA	(FO) 0066-96A-417 P/O: R201.C501 0066-96A-493 P/O: C501	

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

I-66 EBL over Williamsburg Blvd. (B675)



SCOPE:

- Widen, modify and repair existing bridge.

FINAL TYPICAL SECTION:

- 4'-0" (min.) inside shoulder, 4 - 12'-0" (min.) outside shoulder.

PROPOSED SUBSTRUCTURE WIDENING:

- Cast-in-place concrete abutments on pile foundations.
- Existing piles will be reused.
- Single column pier on pile foundations.
- New substructure will aesthetically complement existing substructure.
- New BFB-4 barrier will be on the widened side.
- Existing slab slope protection shall be extended.


PROPOSED SUPERSTRUCTURE WIDENING AND NOISE BARRIER REPLACEMENT:

- New girders will be steel plate girders.
- Overhang steel bracing system for noise barrier post connection.
- Rehabilitate/Repair per RFP

PROPOSED VERTICAL CLEARANCE:

- 16'-8" minimum over Williamsburg Blvd.

I-66 EBL over North Sycamore St. (B678)



SCOPE:

- Widen, modify and repair existing bridge.

FINAL TYPICAL SECTION:

- 4'-3" (min.) inside shoulder, 3 - 12'-0" (min.) outside shoulder.

PROPOSED SUBSTRUCTURE WIDENING:

- Cast-in-place concrete abutment cap beam seats supported on double drilled shafts.
- Single-column pier on drilled shaft.
- New pier will aesthetically complement existing pier.
- Existing berm shall be extended.
- Rehabilitate/Repair per RFP

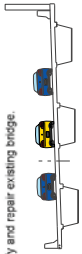
PROPOSED SUPERSTRUCTURE WIDENING:

- New girder will be precast pre-stressed concrete box.

PROPOSED VERTICAL CLEARANCE:

- 16'-7" minimum over North Sycamore St.

I-66 EBL over Bon Air Park (B679)



SCOPE:

- Widen, modify and repair existing bridge.

FINAL TYPICAL SECTION:

- 7'-0" (min.) inside shoulder, 3 - 11'-0" (min.) outside shoulder.

PROPOSED SUBSTRUCTURE WIDENING:

- Modify existing abutments. No widening.

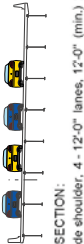
PROPOSED SUPERSTRUCTURE WIDENING:

- 1'-6" widening to the inside and 4'-0" to the outside.
- Full deck replacement.
- Reinstate existing outside steel box girder.
- Replace barrier.
- Repair per RFP.

PROPOSED VERTICAL CLEARANCE:

- 14'-5" minimum over existing hiking and biking trail.

I-66 EBL over Westmoreland St. (B677)



SCOPE:

- Widen, modify and repair existing bridge.

FINAL TYPICAL SECTION:

- 4'-0" (min.) inside shoulder, 4 - 12'-0" (min.) outside shoulder

PROPOSED SUBSTRUCTURE WIDENING:

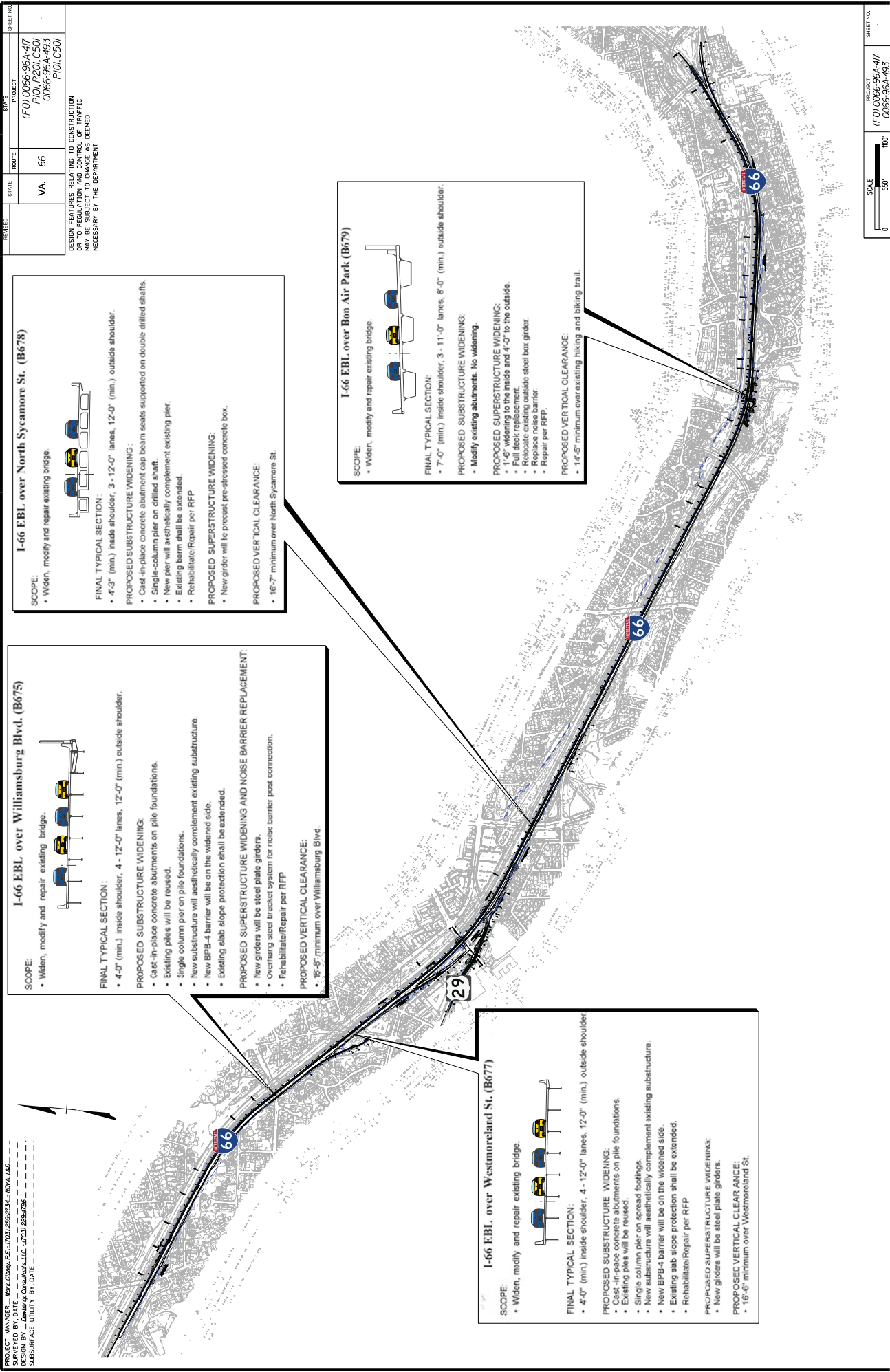
- Cast-in-place concrete abutments on pile foundations.
- Existing piles will be reused.
- Single column pier on spread footing.
- New substructure will aesthetically complement existing substructure.
- New BFB-4 barrier will be on the widened side.
- Existing slab slope protection shall be extended.
- Rehabilitate/Repair per RFP

PROPOSED SUPERSTRUCTURE WIDENING:

- New girders will be steel plate girders.

PROPOSED VERTICAL CLEARANCE:

- 16'-6" minimum over Westmoreland St.



ROUTE	STATE	PROJECT	SHEET NO.
66	VA	(FO) 0066-96A-417 0066-96A-493	

SCALE: 1" = 100'

Exhibit 4.3.2.4

PROJECT MANAGER: *Map Solutions, P.E. (703) 259-2244 - NOVA, VA*
 DESIGNED BY: *Danberry Consultants, LLC (703) 284-7736*
 SUBSURFACE UTILITY BY: DATE

ROUTE	STATE	PROJECT	SHEET NO.
66	VA	(FO) 0066-96A-417 P/OI R/OI CS01 0066-96A-493 P/OI CS01	

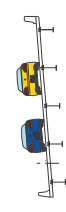
DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

I-66 EBL Ramp A over Rte. 7 (B686)

Option 1 - I-66 FDA

SCOPE:

- Widen, modify and repair existing bridge.



FINAL TYPICAL SECTION:

- 6'-8" (min.) inside shoulder, 2 - 12'-0" lanes, 8'-0" (min.) outside shoulder.

PROPOSED SUBSTRUCTURE WIDENING:

- Cast-in-place concrete abutments on pile foundations.
- Single column pier on pile foundations.
- New substructure will aesthetically complement existing substructure.
- New 8PB-4 barrier will be on the widened slab.
- Existing slab slope protection shall be extended.

PROPOSED SUPERSTRUCTURE WIDENING

- New girders will be steel rolled beams.
- Rehabilitate/repair per RFP.

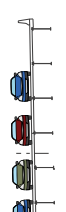
PROPOSED VERTICAL CLEARANCE:

- 16'-6" minimum over EBL Rte. 7.

I-66 WBL over Williamsburg Blvd. (B682)

SCOPE:

- Replace old noise barriers on existing bridge.



FINAL TYPICAL SECTION:

- No change to existing.

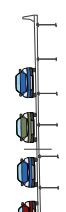
PROPOSED NOISE BARRIER REPLACEMENT:

- Overhang steel bracket system for noise barrier post connection.

I-66 WBL over Westmoreland St. (B683)

SCOPE:

- Replace old noise barriers on existing bridge.



FINAL TYPICAL SECTION:

- No change to existing.


PROPOSED NOISE BARRIER REPLACEMENT:

- Overhang steel bracket system for noise barrier post connection.

W & OD Trail Shared Use Path Bridge (B680)

SCOPE:

- New Shared Use Path Bridge



FINAL TYPICAL SECTION:

- 20'-0" Curb to Curb, 22'-0" Out to Out

PROPOSED SUPERSTRUCTURE:

- New girders will be steel plate girders.
- V-shape fence and railing per RFP

PROPOSED SUBSTRUCTURE:

- Open V-piers per RFP

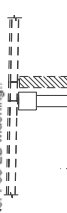
PROPOSED VERTICAL CLEARANCE:

- 17'-0" minimum over Lee Highway.

Hiking and Biking Pedestrian Bridge over I-66 (B681)

SCOPE:

- Relocation of Pier 3 for bridge over I-66 EB widening



PROPOSED PIER RELOCATION:

- Existing pier to be removed.
- Cap Beam supported by double filled shafts foundations.
- New pier is located with sufficient room to allow widening of EB I-66.

FINAL TYPICAL SECTION:

- No change to existing.

PROPOSED SUPERSTRUCTURE STRENGTHENING:

- New cover plates will be added to existing flanges of girders as necessary as a result of analysis on new span configuration.


PROPOSED VERTICAL CLEARANCE:

- No change to existing

I-66 WBL over Bon Air Park. (B684)

SCOPE:

- Modify existing bridge to support new noise barriers.

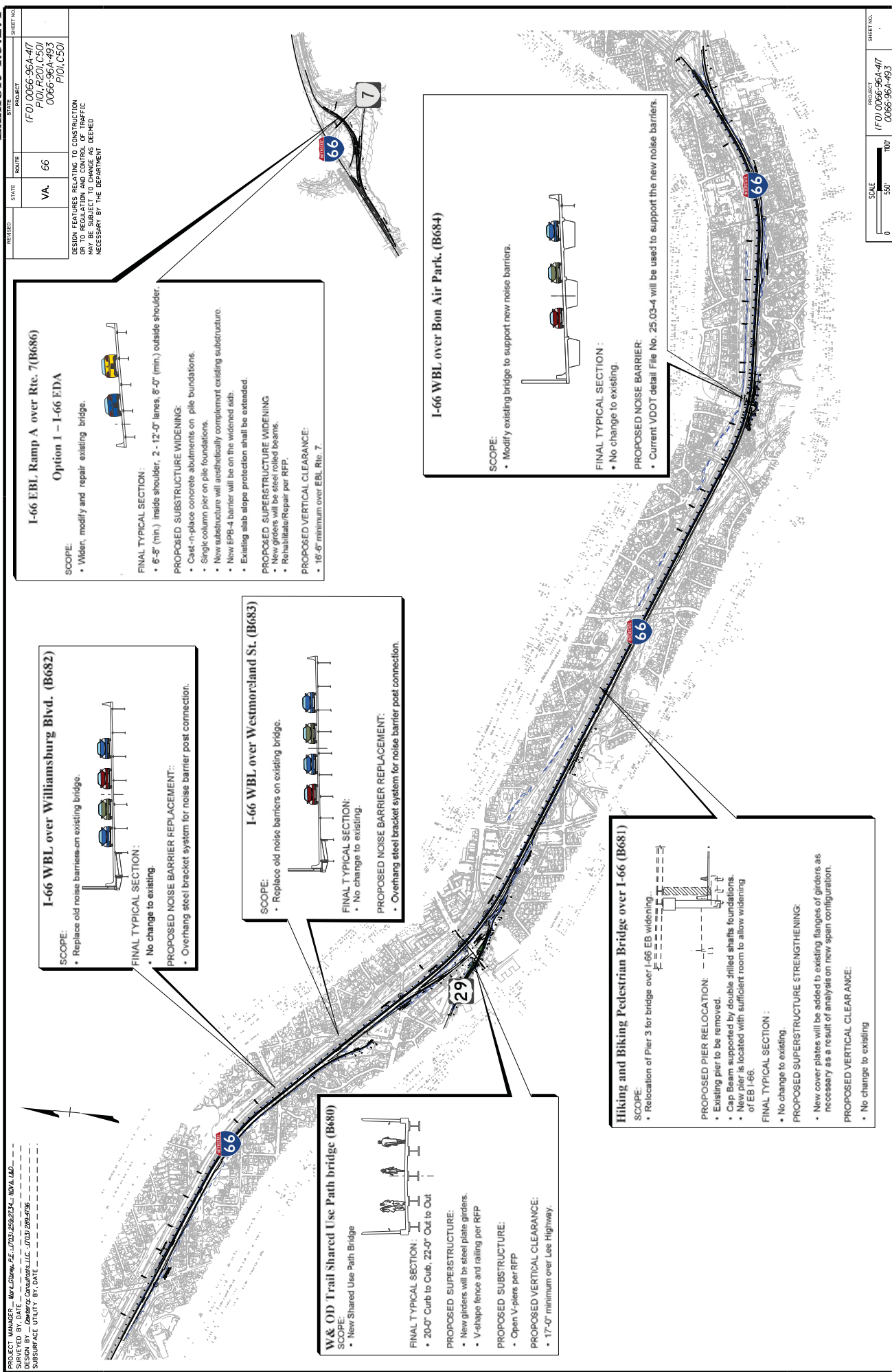


FINAL TYPICAL SECTION:

- No change to existing.

PROPOSED NOISE BARRIER:

- Current VDOT detail File No. 25.03-4 will be used to support the new noise barriers.



SCALE	PROJECT	SHEET NO.
0 500 1000	(FO) 0066-96A-417 0066-96A-493	

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met. New steel plate girders will be used to match the existing girders. The abutments will be widened to match the existing abutment and new piers will be supported on pile foundations similar to existing. A new VDOT standard BPB-4 barrier will be constructed on the widened side of the bridge only. The existing nose barrier on the bridge will be removed and replaced (refer to "Nose Barriers On Bridges" Section for a more detailed description of the attachment to the bridge). All repairs to the existing superstructure and substructure required by the RFP will be performed. Existing joints at the piers will be eliminated and the joints at the abutments will be reconstructed.

B677: I-66 Eastbound over Westmoreland Street

The existing 3-span 226-foot long bridge will be widened by 8 feet to provide an additional lane as required by the RFP. The final typical section of the bridge will consist of a 4-foot inside shoulder, four 12-foot lanes and a 12-foot outside shoulder. All design and construction requirements of the RFP will be met. New steel plate girders will be used to match the existing girders. The abutments will be widened to match the existing abutments and new piers will be constructed to support the widened bridge. It is anticipated that the widened abutments will be supported on pile foundations and new piers will be supported on spread footings, matching the existing bridge substructure. A new VDOT standard BPB-4 barrier will be constructed on the widened side of the bridge only. All repairs to the existing superstructure and substructure required by the RFP will be performed. Existing joints at the piers will be eliminated and the joints at the abutments will be reconstructed.

B678: I-66 Eastbound over N. Sycamore Street

The existing 2-span 4-foot long bridge will be widened by 8 feet-3 inches to provide an additional lane as required by the RFP. The final typical section of the bridge will consist of a 4-foot-3-inch inside shoulder, three 12-foot lanes and a 12-foot outside shoulder. The widened abutments will be supported on drilled shaft foundations (see further details in the abutment details) and the new pier will be a single column pier supported on a drilled shaft foundation. A new BPB-4 barrier will be constructed on the widened side of the bridge only.

The challenges associated with the design and construction of the bridge include the widening of the existing cast-in-place concrete box girder and the widening of the abutments toward the existing WMATA station. We reviewed and considered several options for widening the superstructure of the bridge including modifying the existing box girder. We investigated bridges with a similar configuration (including in other States) and the bridge widening were designed. We determined that the simplest way to design and construct the superstructure widening is to utilize a new, separate precast prestressed concrete girder and to design the deck slab to tie the existing abutment and girder together. Diaphragms spaced the same as the existing girder will also be designed to further tie the abutment and girder together. We have modeled the entire superstructure (existing and proposed) utilizing a 3-D finite element analysis program so that we have all the design data to ensure that the finished structure performs as a single unit and there are no locations that could pose maintenance challenges due to differential deflections.

The abutment widening is complicated by the existing foundation of the East Falls Church Metro Station wall footings. While it is possible to widen Abutment A with no interference with the station wall foundations, the configuration of the station wall footing at Abutment B makes it impossible to widen utilizing a pile foundation similar to the existing abutment. We also considered the possibility of new abutment to the existing WMATA station elements along with the settlement requirements shown in the RFP. With all of this in mind, we have developed an innovative way to widen the existing abutments with the need to construct an elaborate sheeting and shoring structure to protect the WMATA structure. Our unique concept is to remove the top 8-feet of the existing wingwall to retain the existing fill between B678 and

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the WMATA structure, and then construct two new drilled shafts behind the existing retaining wall which will support the new abutments. The new abutments will cantilever over the existing wing wall that we are retaining in order to match the centerline of the bridge and face of the wall of the existing abutments (see Figure 4.3.2.1). This also mitigates the conflict between the WMATA footing and the widened footing of Abutment B. The added advantage of our concept is that impacts to the WMATA structure are reduced due to the reduction of new construction elements. All repairs to the existing structure and superstructure required by the RFP will be performed.

B679: I-66 Eastbound over Bon Air Park

This single span bridge will be widened by 4-feet to provide an additional lane as required by the RFP. The final typical section of the bridge will consist of a 7-foot inside shoulder, three 14-foot lanes, and an 8-foot outside shoulder. Based on the tie and in-ground conditions, the existing pile supported abutments need to be widened to accommodate the wider bridge. The new barriers on both sides of the bridge will be VDOT Standard PB-4.

On review of the bridge highlighted a constructability concern with the full deck slab replacement while maintaining two lanes of traffic at all times. The challenge is that the proximity of the existing WMATA bridge to the north (median side) and the park ROW to the south (outside side) does not allow the bridge width to be adjusted beyond the limits shown in the RFP plans. Additionally, the width of the existing bridge (44-foot curb-to-curb) and the widened bridge (48 feet curb-to-curb) does not provide the width to replace the entire deck slab in two stages while maintaining two adjacent lanes of traffic. Adding to the complexity is that the existing girders (which are to be retained) are steel stringers, which places further limitations as to how much the existing deck can be removed at any one time.

As presented at our Proprietary Meeting we have developed a three-stage plan to replace the bridge deck (see Figure 4.3.2.2). Stages 1 and 3 maintain the required two-lanes of traffic adjacent to each other, while during Stage 2 the lanes will be split on either side of the deck slab replacement. As

Figure 4.3.2.1 – B678 Typical Abutment Widening

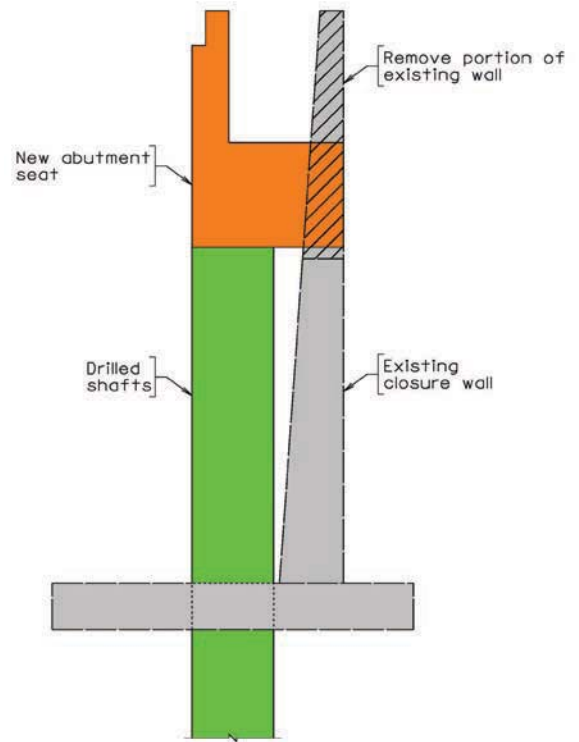
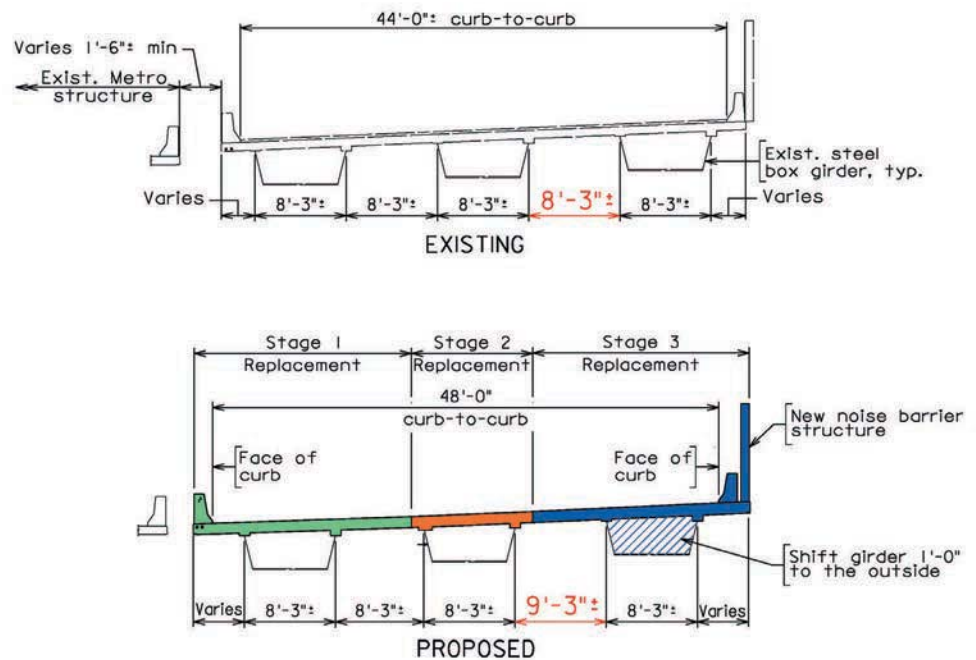


Figure 4.3.2.2 – B679 Existing and Final Typical Section



4.3 Design Concept

part of this plan we have considered the potential safety concerns associated with splitting traffic, and will utilize enhanced temporary traffic control in the vicinity of the bridge during this stage of construction (refer to Section 4.5 – Temporary Traffic Management Plan for more detail). Furthermore, the stage conventional construction method avoids traffic impacts for extended duration lane closures that would be necessary with the use of Accelerated Bridge Construction methods.

Finally, we analyzed the existing girders utilizing LRFD and by utilizing light weight concrete in the deck slab we are able to widen the bridge while eliminating the additional girders shown in the RFP plans. This is in accordance with the initial construction cost and long term VDOT maintenance and participation costs. On completion of the existing to side girder replacement for the existing Stage 3 construction new concrete deck slab on the existing abutments (with widening the abutments), and reconstruction of the approach to the abutment backwalls at the RFP location. We are able to do this while meeting the RFP requirements in increase the load on the existing structure by utilizing light weight concrete for the deck slab, which significantly reduces the dead load of the structure. Also, we are compliant with the RFP requirements to provide temporary members on approach to the structure, as we are to add a new girders.

The existing abutment seats are sufficiently wide enough to accommodate this minor shift in the outside girder and the abutment backwalls are wide enough to accommodate the wider bridge. On completion of the reconstruction of the existing parapets on the backwalls and relocation of the masonry to match the width of the bridge. The new barrier on the side of the bridge will be supported by existing the deck slab on side of the new BPB-4 Parapet. The abutment backwalls will be modified to accommodate the deck slab extension and build up on each slab required by the RFP, and all repairs to the existing structure will be performed.

B680: W&OD Trail Bridge over Lee Highway

This bridge will consist of a 6-span, 623-foot long bridge with spans of 88-feet, 109-feet, 100-feet-6-inches, 125-feet, 106-feet-6-inches, 94-feet. The typical section of the bridge will be 20-foot curb-to-curb and 22-foot “out-to-out”, matching the RFP. Abutments will be cast-in-place concrete and the piers will be cast-in-place concrete matching the preferred Option A shown in the Addendum 3 RFP Plans. Foundations for the abutments and piers are anticipated to be drilled shafts (either drilled shafts or piles).

Per the RFP requirements, the bridge must meet the RFP Conceptual Plans and exhibits from the June 3, 2017 Public Information Meeting, or our Team must complete additional public outreach efforts to present and obtain feedback for an alternate concept. As such, our Team will design and construct the bridge as shown in the RFP Conceptual Plans and public meeting exhibits, including the modifications allowed by VDOT as part of the RFP Addendum's.

The biggest challenge in the design of the bridge is the limited structural depth available given the minimum vertical clearance under the bridge to Lee Highway and the required overhead clearance to the Dominion Energy transmission lines. In order to develop a design with a structural depth that allows both of these conditions to be met, we have modeled the bridge utilizing a 3-D finite element analysis program. This allows us to model the full bridge in entirety to take advantage of the stiffness and load capacity of the total structure acting together, rather than modeling each girder individually. In fact, recognizing the importance of this issue, we modeled the bridge with two 3-D finite element programs (by two independent engineers) to ensure that the results are consistent across the two independent programs. The model includes the diaphragms between the beams as structural members as well as the entire width of the deck slab in order to allow the loads to be shared between all of the beams. Our analysis shows that either a four or five-girder system with all girders completely below the deck will meet all code requirements (flexure, shear,

4.3 Design Concept

live load deflection, etc.). Our technical plans show a five girder layout, but final analysis and design will determine the final beam configuration.

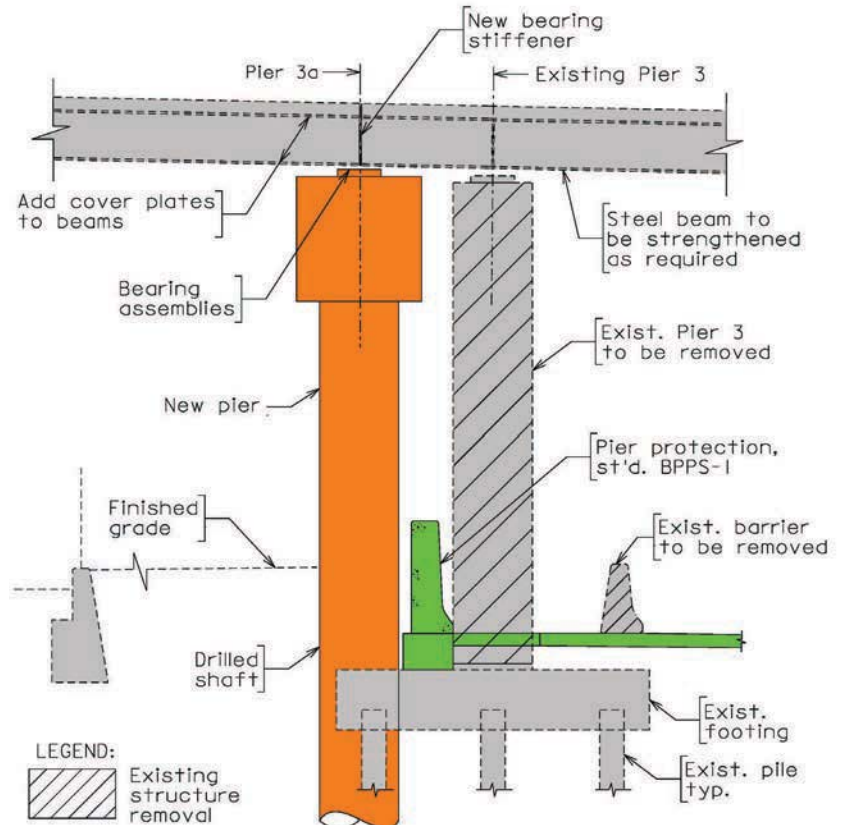
Our preliminary pre-design shows that we are able to utilize the preferred "Open V-piers" shown in the RFP Concept Plans.

B681: Hiking and Biking Trail (No. 4) over I-66

There are no changes to the existing cross section of leg height of this bridge. The relocation of Pier 3 will only change the span configuration of spans "c" and "d". The leg height of these spans will change from the existing 69-foot - 69-foot - 3 1/2-inches - 74-foot - 8 1/2-inches to accommodate the widening of EB I-66 and the bridge. The new Pier 3 will consist of two narrow concrete columns (straddling the existing Pier 3 footprint) and a concrete cap supported by drilled shafts.

Existing Pier 3, as shown in Figure 4.3.2.3 will be relocated per the RFP in order to allow sufficient room for widening of EB I-66 and the bridge. We analyzed the existing bridge for the changed span configuration as required for the load stipulated in the RFP. Our initial analysis indicates that the existing girders will be overstressed at the new Pier 3 and at existing Pier 4 due to the revised location of the superstructure. Therefore, we will add cover plates in order to meet the required flexural capacity of the girders.

Figure 4.3.2.3 – Relocated Pier 3



B682: I-66 Westbound over Williamsburg Boulevard

B683: I-66 Westbound over Westmoreland Street

The existing noise barrier on these bridges will be removed and replaced (refer to "Noise Barrier On Bridges" Section for a more detailed description of attachment to the bridges). There will be no modification to the bridge length, width or travel lane configuration.

B684: I-66 Westbound over Bon Air Park

A new noise barrier on the outside of the bridge will be constructed as required by the RFP. A portion of the existing deck slab and the outside parapet will be removed and reconstructed to accommodate the new noise barrier. As shown in the RFP concept plans for this bridge, the deck slab will be extended behind the new BPB-4 parapet to be constructed to support the new noise barrier. There will be no modification to the bridge length, width or travel lane configuration.

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B686: I-66 Eastbound Ramp A over Route 7 (I-66 EDA)

If VDOT exercises Option 1, the existing 2-span 46 foot long bridge will be widened by 8 feet to provide an additional lane as required by the RFP. The final typical section of the bridge will consist of a 6 foot - 8 inch sidewalk shoulder, two 12-foot lanes and an 8 foot outside shoulder. The new bridge will be a steel plate girder to match the existing girders. The abutments will be widened to match the existing and a new side curb and parapet will be constructed to support the new bridge. Foundations for the widened abutments and new pier are anticipated to be driven piles, matching the existing foundations. A new BPB-4 barrier will be constructed on the widened side of the bridge only. All repairs to the existing superstructure and substructure required by the RFP will be performed. Existing joints at the piers will be eliminated and the joints at the abutments will be reconstructed.

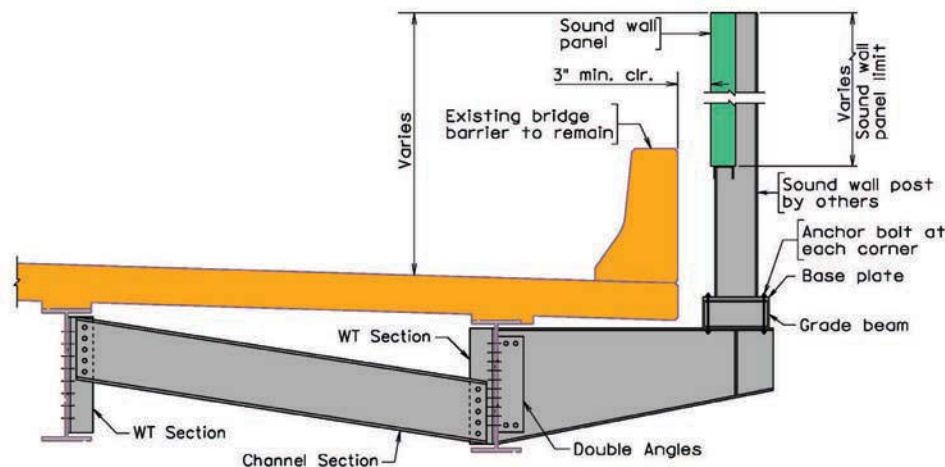
Noise Barrier on Bridges

As required by the RFP, noise barriers will either be replaced (B675, B679, B682 and B683) or added (B68) at the bridge sites. The new barrier panels will utilize lightweight material per RFP requirements.

For eastbound and westbound I-66 over Bon Air Park (B679 and B684) the noise barriers will be mounted on the bridge as shown in the RFP Conceptual Plans. This will consist of extending the deck slab behind the outside parapet to create a ledge that the panels supporting the panels are supported.

For eastbound and westbound I-66 over Williamsburg Boulevard (B675 and B682) and westbound I-66 over Westmead Street (B68), the Team has developed an innovative approach to replacing the existing noise barriers that does not require partial demolition or reconstruction of the existing deck slab and repairs.

Figure 4.3.2.4 – Noise Wall Support Bracket



As presented at our Proprietary Meeting we have designed a steel backstop system (see Exhibit 4.3.2.4) that will be field bolted to the existing fascia and first interior girder to support the new noise barrier. This approach allows the removal of the existing noise barrier and construction of the new barrier with considerably less impact to I-66 traffic. This will result in construction cost savings as

well as significantly increase safety to the traveling public during construction since temporary concrete barrier added temporarily and widths are not required.

Bridge Repairs

RFP, Part 2, Section 2.3.3 includes a table outlining the type and quantity of superstructure and substructure repairs for bridges B675, B677, B678, B679 and B686. Our final design plans for each of the bridge sites will show details and notes to complete each of the repairs required by the RFP. Please refer to Appendix B - Volume II - Design Report for more detail of the repairs required.

Material Selection, Maintenance & Construction Considerations

Nine of the 10 bridges in this Project are existing (three of those only involve adding or replacing noise barriers), and the reinforced precast materials have been selected to complement existing materials while meeting current VDOT criteria for modifications to existing structures. Examples of current materials include lightweight and low permeability concrete and rebar in reinforced steel. These elements greatly reduce maintenance of the new portions of these bridges. Additionally, repairs to the existing structures and structures, elimination of the joints at piers, and rehabilitation of abutment joints will greatly reduce the future maintenance requirements of the bridge.

Our Team has also considered the RFP design concepts which are possible to reduce structural elements. The design elements specifically described include eliminating widening and not widening the abutments at the Bon Air Park bridge (B679), will reduce long-term maintenance costs.

Retaining Walls

Due to the horizontal alignment adjustments described in Section 4.3 we have eliminated the median retaining wall from Station 146+00 to 147+50. The walls approaching Bon Air Park have also been reduced in length. Along the outside of I-66, noise barriers will be added adjacent to existing retaining walls at the following locations:

- Noise Barrier Height reduced by 10 feet on the existing MSE wall; and
- Noise Barrier will be constructed with existing cast-in-place concrete retaining wall.

The location raise concerns since the existing walls were designed for the width of the noise barriers. Our approach at this location is to design the foundation for the noise barriers such that they do not place any additional horizontal load on the existing walls. Since there are both cast-in-place concrete MSE walls, the substructure will be different for each type of wall.

In the location with an existing cast-in-place concrete wall, we will support the noise barrier on drilled shafts (approximately 24-foot in diameter). While the preferred is to locate the wall such that the foundation are below the existing retaining wall footing there may be some locations that we do not have the flexibility to move the noise barrier due to ROW, environmental, or other constraints. It will therefore be necessary to construct the drilled shaft. Since the posts (and foundations) are spaced at 24-feet, we are confident that the widely spaced posts will not have any structural impact to the existing walls or footing, and we will demonstrate this during final design.

Adjacent to the existing MSE wall, our approach is to move the noise barrier as far from the face of the MSE wall as possible while still meeting all of the Project requirements. This will place the majority of the new noise barrier beyond the limits of the existing reinforced fill (and the straps) and will allow us to support the wall on a drilled shaft foundation. For the portion of the MSE walls that the noise barriers are still above the reinforced fill, we anticipate supporting the barrier posts by a spread footing with a footprint that will minimize the additional load imparted to the existing MSE walls. As with the cast-in-place wall, the posts will be spaced at approximately 24-foot on center, so the additional load will not be carried for the entire length of the MSE wall. This allows the load from the noise barrier foundation to be spread over a wider area of the MSE wall and therefore minimizes the impact on the existing wall.

Finally, due to the outside widening of the existing EB I-66 Bridge over Bon Air Park (B679), the face of the existing retaining walls approach the bridge from both sides will need to be moved toward

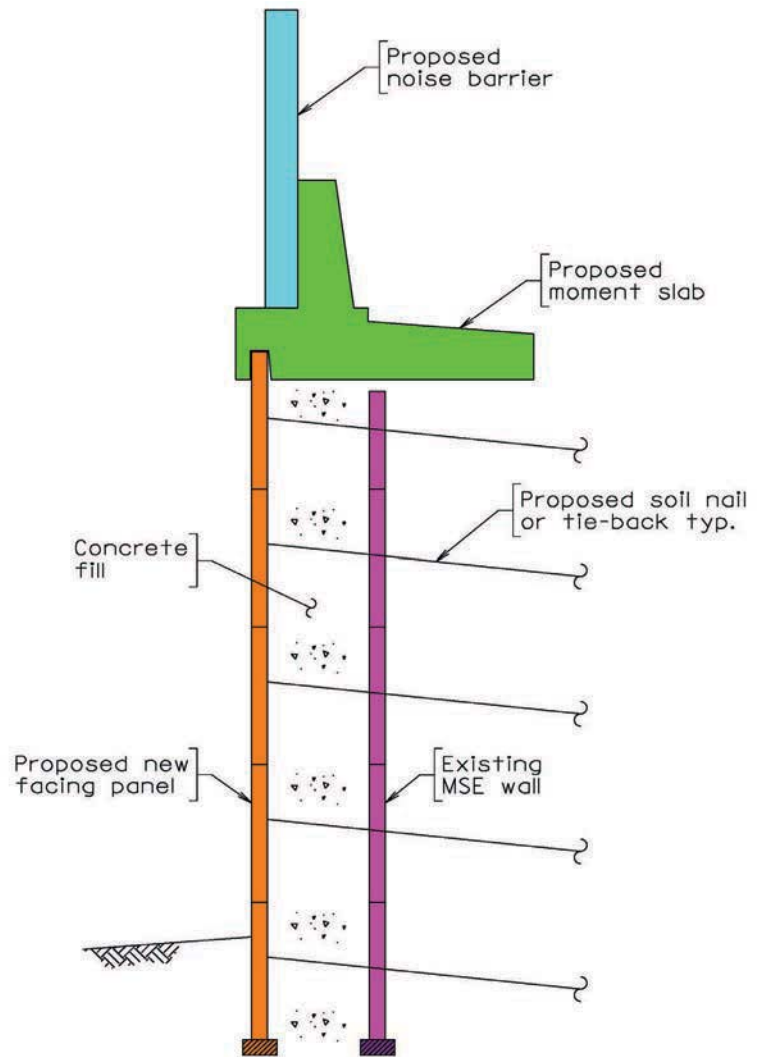
4.3 Design Concept

As discussed in Section 4.3.1(d) – our concept reduces the length of this modification by approximately 175-feet. On approach to moving the face of the wall is to construct an independent wall incorporating soil nails or tie-back in front of the existing MSE wall that will be designed for the full lateral earth pressure of the fill. The soil nails or tie-back will extend through the existing MSE fill to develop the full potential strength with the existing soils. This concept is shown in Figure 4.3.2.5 and the proposed panels will match the existing MSE wall. This approach does not rely on the existing MSE wall that is being changed in its design life.

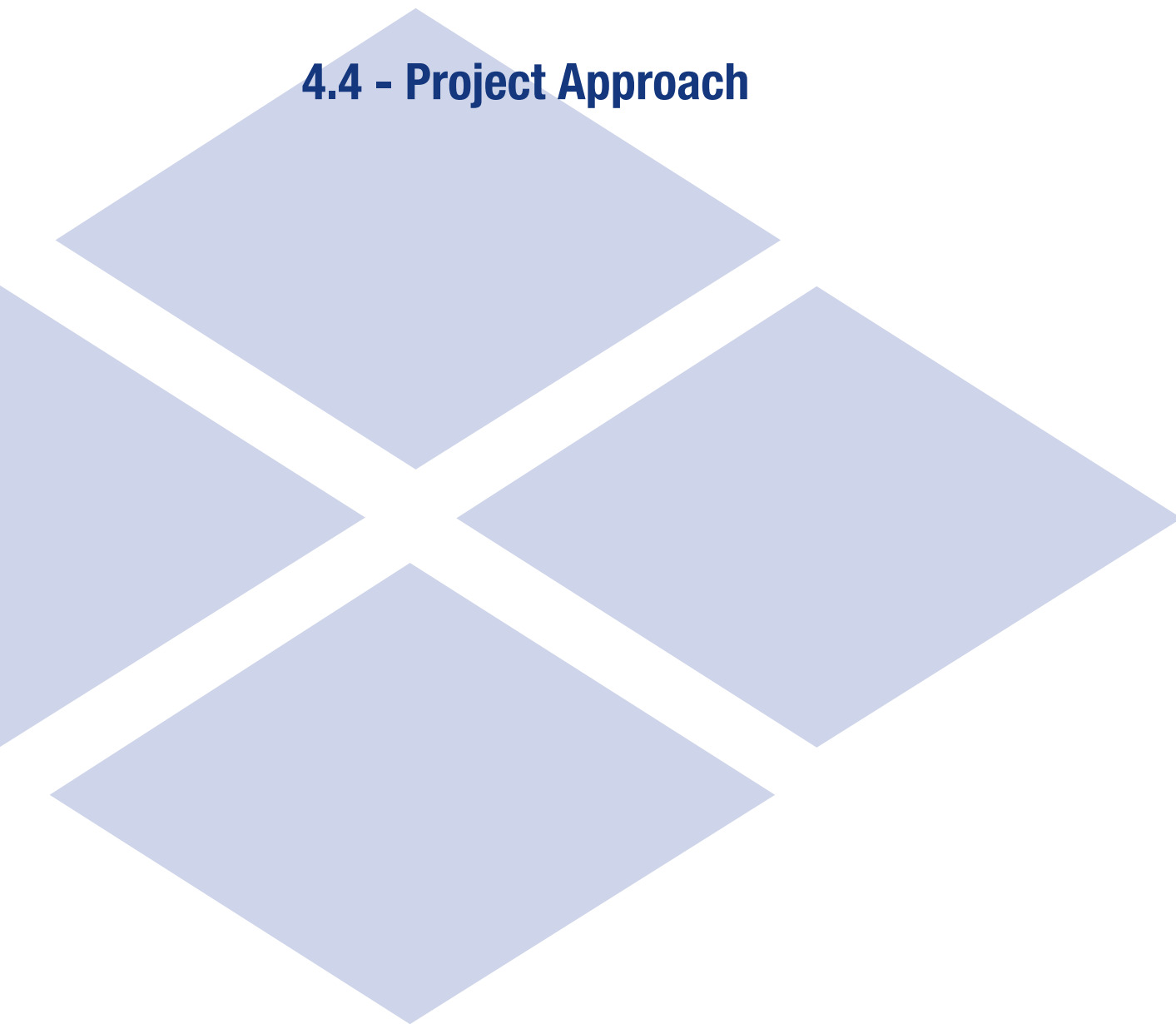
Major Drainage Structures

Our design requires no modifications to existing or the addition of any major drainage structures.

Figure 4.3.2.5 – Approach Retaining Wall Modifications at B679



4.4 - Project Approach





4.4 Project Approach

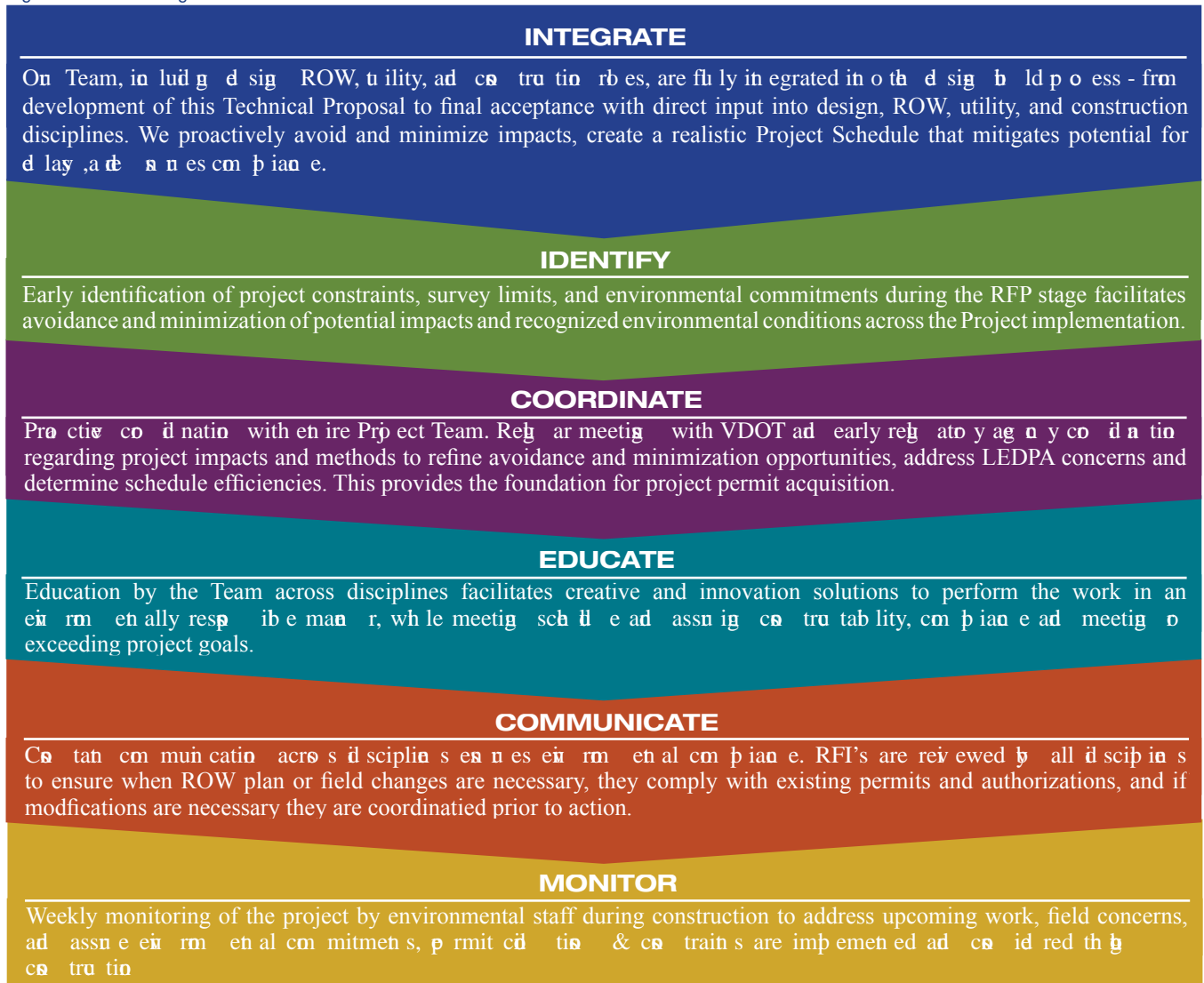
4.4.1 Environmental Management Approach

Environmental Management is a primary component of the Team's approach to all of its projects. Each discipline lead is involved in project planning beginning in the RFP phase and continuing through project completion to ensure all parties are aware of project constraints, schedule limitations, and to assure construction quality. Our fully integrated environmental approach includes:

- all necessary permits are identified at the beginning of the Project;
- project environmental constraints are identified and reflected;
- adequate timelines are identified in the schedule for environmental risks/permits;
- disturbance and permit impacts are fully defined and completely contained within the Project; and
- construction is completed in accordance with contract, permits, National Environmental Policy Act (NEPA) commitments, and Project specifications.

Our integrated process shown in Figure 4.4.1.1 ensures schedule risks and costs are minimized. Environmental Management is achieved by implementing the following concepts throughout project development:

Figure 4.4.1.1 - Integrated Environmental Process



4.4 Project Approach

As demonstrated, our approach integrates environmental considerations into every stage from design development to construction. Our past experience has resulted in lasting relationships with federal and state regulatory staff, and a deep understanding of project specific needs, such as the inclusion of MOT/TTC, and noise barrier construction activities in the early schedule and permit acquisition process.

Approach During Design and Construction

During the design phase, our Team focuses on identifying and incorporating additional project constraints, commitments, and risks into both the design and project schedule. This risk management approach is accomplished through our integrated environmental management process with key elements noted in Table 5. Once plans are finalized and released for construction, the environmental team shifts focus to assuring construction staff understands the Project constraints as they relate to each phase of construction. Our environmental professionals work closely with field staff to address construction monitoring of the permit and environmental commitments in the field.

Table 5 - Key Elements

Design Phase
<ul style="list-style-type: none">▪ Informal “Over the Shoulder” interaction daily with engineers and the Environmental Manager to avoid and minimize impacts within the Project area and resolve any design issues or concerns.▪ Bi-Weekly Technical Design Meetings - attended by environmental staff, design engineers, and construction representatives to comment on the design activities, schedules, issues, and concerns. Technical input, recommendations, and ideas related to the permit requirements, project constraints and commitments are offered in order to stay in compliance, circumvent conflicts between design and construction, and look for ways to streamline or provide further avoidance and minimization opportunities while maintaining constructability.▪ Internal reviews are conducted regularly to ensure the subsequent design revisions are in compliance with the Project environmental commitments.
Construction Phase
<ul style="list-style-type: none">▪ Preconstruction constraints and commitments training – led by the environmental staff, ensuring the construction team understands the constraints, where they are located, and how they are identified in the field.▪ Twice Weekly Erosion & Sediment (E&S) compliance checks – performed by the Project Inspectors to identify good trends and areas where additional work is needed. These checks are also intended as a part of the ROD and permit commitment checks through the life of construction.▪ Monthly meetings with the Inspector and Construction Manager to discuss environmentally sensitive areas included in the next month’s work.▪ Construction Field Revision Reviews are conducted and reviewed by both the design and environmental teams. This limits risks and potential for non-compliance for environmental items.

Because our process starts during the RFP phase, we have already begun to identify critical areas of concern which will have to be addressed or avoided prior to submitting final permit applications. Table 6 on the following pages identifies additional coordination and methods to limit risks, which will be completed during design to ensure that the Project complies with the commitments made.

4.4 Project Approach

Table 6 - Additional Coordination And Methods To Limit Risks

Environmental Resources	Requirements	Method to Limit Risk
W&OD Trail Bridge over Lee Highway	<ul style="list-style-type: none"> ▪ Conduct Public Meeting, Present Bridge Design prior to initiating final design with 28 renderings ▪ Avoid all impacts to Benjamin Elliott Coal Trestle ▪ Provide opportunity for VA. Dept of Historic Resources to review and approve plans ▪ Provide vibration monitoring during construction, provide access to Trestle & location for interpretive sign ▪ Obtain Permits from NOVA Parks for survey and construction work ▪ Provide landscaping notes on plans and coordinate with VDOT, Arlington County, NOVA Parks, and Dominion Energy ▪ Remain within the prescribed 4(f) impact limit 	<ul style="list-style-type: none"> ▪ Up front, early, and sustained coordination with NOVA Parks and VDOT ▪ Incorporate all meeting notification and review timelines into the Project Schedule ▪ Assure preparation of renderings and handouts are completed in advance to allow for review. ▪ Coordinate early with VDOT to assure legal requirements are met ▪ Utilize ECM to ensure utility relocations, grading and construction access impacts avoid Benjamin Elliot Coal Trestle and are contained within the limits prescribed ▪ Provide exclusionary fencing during construction ensuring all contractors are aware and will avoid resource, ensure appropriate signing restrictions are posted in multiple languages ▪ Minimize anticipated vibration through design elements, and planned construction activities, monitor during construction ▪ Apply to NOVA Parks for survey and construction permits ▪ Address utility conflicts with landscaping plan early, propose tree replacement, and alternative plans if necessary ▪ Incorporate design reviews into the Project Schedule ▪ Verify design is in keeping with the prescribed 1.82 acre LOD inclusive of construction access
Bon Air Park	<ul style="list-style-type: none"> ▪ Remain within the prescribed 4(f) impact limit ▪ Submit landscaping plans to Arlington County with tree protection and replacement ▪ Coordinate Bike/Trail closures and detours 21 days in advance with VDOT for review and approval ▪ Install Canopy Shield under bridges for pedestrian protection 	<ul style="list-style-type: none"> ▪ Verify design has minimized impacts ▪ Address utility conflicts with landscaping plan early, and propose alternative plans if necessary ▪ Coordinate with Arlington County Dept. of Recreation early to discuss concerns and conditions for tree protection and replacement ▪ Incorporate review times into the Project Schedule ▪ Ensure design has incorporated canopies and shields where necessary
Hazardous Materials	<ul style="list-style-type: none"> ▪ Conduct Phase II Environmental Site Assessments on five parcels including some within existing ROW ▪ Test noise barriers to be replaced and other structures slated for demolition for lead and asbestos containing materials, address abatement as required 	<ul style="list-style-type: none"> ▪ Assess potential for Recognized Environmental Conditions ▪ Adjust stormwater management locations and drainage alignments to avoid excavation of material found to be contaminated ▪ Ensure PPE and proper treatment and disposal as warranted. Test structures to be demolished upon NTP to ensure all necessary treatment measures are addressed early and incorporated into the construction methodology
Threatened and Endangered Species	<ul style="list-style-type: none"> ▪ No Impacts to Threatened and Endangered species are anticipated. Inventories for bats under bridges necessary prior to demolition to avoid disturbing protected bat roosts 	<ul style="list-style-type: none"> ▪ Environmental Compliance staff will conduct bat inventory after NTP to assess the need for exclusionary netting and additional coordination with USFWS or DGIF ▪ Bat surveys will be conducted prior to demolition

4.4 Project Approach

Environmental Resources	Requirements	Method to Limit Risk
Historic Districts	<ul style="list-style-type: none"> Avoid impacts to the four Historic Districts within and adjacent to project area by remaining within the prescribed project area 	<ul style="list-style-type: none"> Utilize ECM to detail the Project limits as cleared by the VDHR Environmental compliance staff reviews design submittals to ensure disturbance remains within prescribed limits
Water Quality Permits	<ul style="list-style-type: none"> Conduct wetland delineation and obtain Corps Jurisdictional Determination and Obtain WQ permits Continue to Evaluate and document possible avoidance and minimization alternatives Provide mitigation for unavoidable wetland and waters impacts 	<ul style="list-style-type: none"> Detail limits of waters of the U.S. in ECM to minimize impacts <i>Design avoids permanent impacts to waters and wetlands</i> Conduct Early Coordination to address regulatory agency concerns and comments Develop permit documents (including CZMA Consistency Approval) upon development of 60% plans to minimize the schedule risk Re-flag wetland and stream limits prior to construction to identify limits for avoidance by construction staff
Noise Impacts	<ul style="list-style-type: none"> Final barrier conditions are determined in final design and must conform with VDOT requirements and public commitments Complete Final Noise Analysis Do not demolish existing noise barriers until 30% of proposed noise barrier components are delivered to the site Complete construction within 90 calendar days from the start of demolition or clearing of trees Do not leave any single property with existing noise barriers without noise protection for more than 90 calendar days 	<ul style="list-style-type: none"> Develop final plan and profile details, including 3D model of proposed barrier, for proper analysis and TNM file development/update Complete final NADR documents, including public outreach and survey processes for new barriers Initiate above activities early in the design process, enabling barriers to be installed early during the construction process, per the RFP requirements, and ensure access for constructability Access new and replacement barriers from the roadway shoulder to minimize trail disruptions. Adjust noise barrier alignments to avoid drainage and utility conflicts

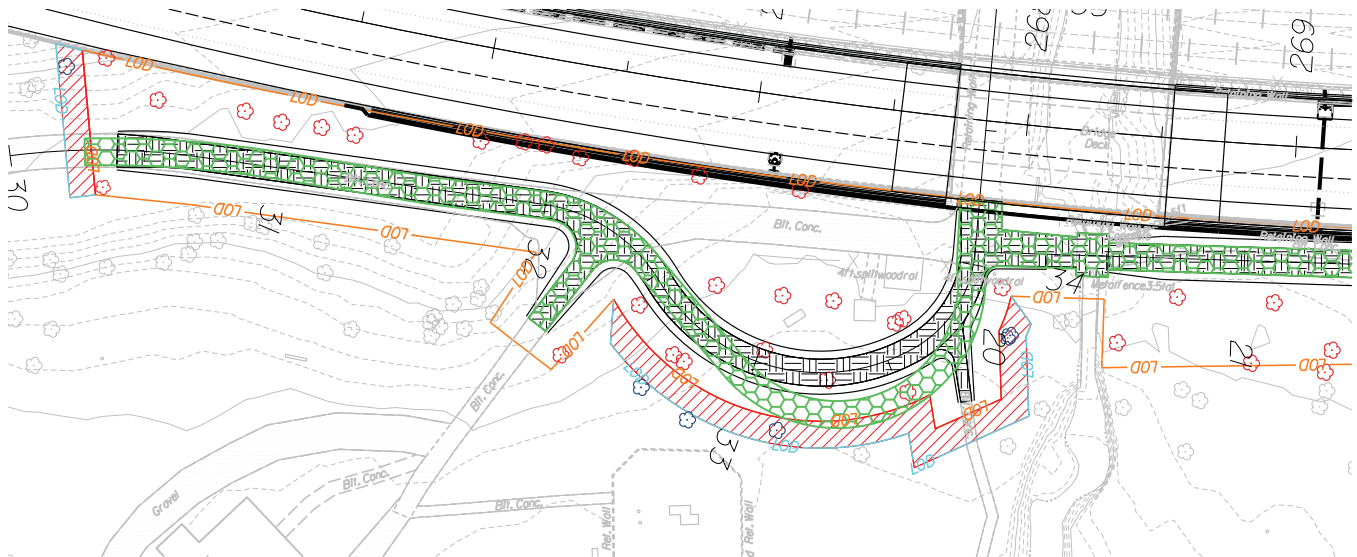
As each of these items are coordinated, the results and requirements of the agencies having jurisdiction will be tracked and updated in our Environmental Constraint Map (ECM) and placed within our Environmental Commitment Tracking Database (ECTD). The use of these documents which *exceed the requirements of the RFP*, assists our Team in tracking each commitment and risk. We have found value in using our ECM and ECTD with many of our projects, as they provide visual representation of project constraints. This is especially important in critically sensitive areas such as Bon Air Park and the W&OD Trail/NOVA Parks property. While these locations are reflected on the roadway construction plan, the ECM and ECTD details additional project elements, such as limits of environmental studies and the limits of the 4(f) properties and can be produced at a larger scale to provide additional details and dimensions to guarantee avoidance. An example is shown in Figure 4.4.1.2 on the following page, where our Team has already made adjustments to the shared use path in Bon Air Park to minimize the LOD. In this area, *these adjustments already have resulted in the reduction of approximately 5,200 SF of Bon Air Park impacts*. This avoidance and minimization demonstration is integral to project permitting and obtaining necessary approvals.

Additionally, our Team will be responsible for assessing the potential for Recognized Environmental Conditions. Based on the past use by Shreve Oil, Parcel 002 may contain residual petroleum contamination. The required Phase II testing will address whether the levels are high enough to warrant reporting to DEQ

4.4 Project Approach

and additional remediation. Our Team will report our findings and recommendation to VDOT and DEQ. Our Team will complete testing of structures which will be impacted by the Project for lead based paint and Asbestos Containing Materials (ACM) and will be considered a co-generator of any hazardous materials preparing shipping manifests and lading for VDOT signature as necessary.

Figure 4.4.1.2 - Bon Air Park Preliminary ECM



In addition to documenting critical and sensitive project areas, the ECM also enables our Team to identify design modifications which have been incorporated to demonstrate further efforts of minimization and avoidance.

Environmental staff involvement and commitment tracking with the ECTD does not end after permits are obtained, but continues until construction is completed and permits are closed. This involvement includes:

- **Focusing on Construction Monitoring and Coordination of the Permit and Environmental Commitments** - prior to the start of construction, environmental staff returns to the field to re-mark the limits of streams and wetlands at the permitted impact limits. Critical areas and historic sites such as the Benjamin Elliot Coal Trestle are delineated with safety fence and signed in multiple languages to prevent accidental access and erosion and sediment (E&S) control measures are installed in accordance with the plans.
- **Ensuring Permit Compliance** - we conduct preconstruction Constraints and Commitments Training, ensuring the construction team understands the constraints, their location, how they are identified, and who to contact with RFI's or unanticipated field constraints.
- **C107 E&S Compliance Checks** - performed by Project Inspectors, Construction, and Environmental staff twice per week to identify deficiencies and areas where additional attention is necessary. These checks are also required as a part of the ROD and permit commitments.
- **Monthly Meetings with the Construction Manager and QA/QC Staff** - to discuss environmentally sensitive areas included in the next month's work. These meetings give the ability for the group to revolve any construction issues identified, and to highlight those constraints in advance for construction staff to ensure project constraint compliance.
- **On-Call Assistance** - to address field condition items, or concerns after major storm events.

4.4.2 Structures

W&OD Trail Bridge (B680)

We have reviewed the RFP Conceptual Plans and exhibits from the June 13, 2017 public information meeting to understand the issues associated with the design and construction of this bridge. Given the limitations to the type of structure allowed by the RFP, the vertical clearance from the Dominion Energy transmission lines and over Route 29 are the most critical issues associated with both the design and construction of this bridge as depicted in Figure 4.4.2.1. Furthermore, other critical elements include the aesthetics of the proposed bridge and sequencing of construction to safely maintain continuous use of the W&OD Trail.

Figure 4.4.2.1 - W&OD Trail Bridge Over Route 29



The location of the crossing of Lee Highway and the 17-foot vertical clearance required above, coupled with the minimum vertical clearance requirements to the power lines, leaves an available structure depth of less than 30-inches for the bridge girders and deck slab. The long center span (125-feet) crossing Lee Highway makes the design of this bridge particularly challenging, further the live load deflection criteria for a pedestrian facility is more stringent than for a vehicular only bridge. The most effective way to meet the deflection criteria is to provide a girder with enough depth to efficiently control the deflection per the code requirements. Even with the shallow structure depth limitations, our preliminary design has a live load deflection of 2.7-inches, well below the allowable 4.1-inches.

As discussed in detail in Section 4.3.2 - Conceptual Structural Plans, our approach to the design of this bridge is to develop a 3-D finite element model recognizing that once the deck slab is placed and cured, the bridge will act as a cohesive unit rather than a series of individual girders. Our model includes the diaphragms, which are considered as structural members, helping to distribute the loads between all of the girders. With this approach, we have been able to develop a preliminary design of the superstructure that meets all code requirements while accommodating the minimal structure depth available.

Another challenge to the design of this bridge is to accommodate the preferred “Open V-Piers” shown in the RFP Concept plans and the public information meeting exhibits. We have developed a preliminary design of the piers that allows us to utilize this preferred configuration. Our design results in a pier configuration that matches the preferred aesthetics presented in the public meeting exhibits.

To ensure overall impacts to the public are minimized, we have scheduled bridge construction in Stage 3 concurrent with the outside widening and noise barriers. In addition, this affords the Team ample time to acquire all necessary permits, fully investigate utilities, coordinate with Dominion Energy, hold advance coordination meeting with the public, install maintenance of traffic measures, and establish a temporary trail alignment prior to commencing construction of the W&OD Trail Bridge.

During the initial phase of construction, we will focus on the foundation and substructure elements for the structure. Crews will begin with the Abutment retaining structures and work their way out towards Route 29. Understanding the concern of the affects that vibration may have on the Benjamin Elliott Coal

4.4 Project Approach

Trestle, our design will utilize an augured pile or spread footer foundation based on the final geotechnical investigations and utility test pit information. Vibration monitoring will be performed as required by the RFP and construction methods will be specifically selected to minimize the vibration.

Upon completion of the entire substructure, construction of the superstructure will commence. This portion of work requires significant advanced coordination and planning with Dominion Energy, Trail users, Arlington County, and VDOT. There are additional safety and logistical concerns and precautions that must be considered during girder erection. The erection equipment will be the closest element, temporary or permanent, to the Dominion Energy Lines at any time. These cranes will be carefully selected and positioned to ensure the maximum allowable buffer is maintained from the Dominion facility. Our Team will ensure that Dominion has the opportunity to review and comment on the planned erection procedure and that all comments are addressed before work commences. After the girders are erected the deck, lighting, fence and other superstructure elements will be completed prior to opening the pedestrian bridge to traffic. Upon opening the W&OD Trail Bridge to traffic all underbridge elements will be completed.

Noise Barriers

The noise barrier locations, heights and lengths will be finalized based on the optimization that occurs in the design phase; the final noise analysis completed by our noise consultant, Skelly & Loy; geotechnical constraints such as appropriate foundation types and any global/slope stability issues identified by our geotechnical consultant, GeoConcepts; and our extensive utility coordination.

The structural design of noise barriers will occur during the construction phase. The noise barrier designer will take data developed during the design phase and design of each of the walls, including the critical foundations, in conjunction with other members of the Team. For deep foundations (drilled shafts) the designer will evaluate all of the geotechnical data along with the actual forces (dead load, wind load, etc.) acting on the wall/posts to develop the dimensions (diameter and depth) of the drilled shafts as well as the concrete strength and reinforcing steel required. For shallow foundations (spread footings) the designer will coordinate with the geotechnical engineer to develop allowable foundation pressures at the proposed bottom of footings to develop the dimensions of the footings as well as the concrete strength and reinforcing steel required.

Upon completion of the structural design, shop drawings will be prepared and submitted for review and comment. The review of the shop drawings will consist of horizontal and vertical geometry, structural design of all elements of the walls (foundations, posts, panels), and geotechnical (type of foundations, making sure all identified geotechnical parameters/issues have been considered/evaluated). Only when there is agreement between the Team and the designer that the noise barrier design meets all project requirement will fabrication and construction begin.

Our Team has scheduled the noise barrier alignment and elevation design so that the foundation, post and panel designs will take place concurrent with Stage 1 and 2A construction. Ensuring that these submittals are prepared, coordinated, reviewed, and approved early allows fabrication of the post and panels to be sufficiently ahead of any construction operations as required by the RFP. As part of our CPM schedule, we have accounted for the required 30-day minimum notice for the clearing and/or removal of existing noise barriers for each individual noise barrier segment. This activity in the CPM schedule not only allows for the notice in accordance with the minimum requirements of the RFP but also allows for advanced planning and notifications leading up to the beginning of construction for each of these noise barriers.

Our Team has sequenced noise barrier construction concurrent with Stage 3 operations. This ensures that the existing noise barriers are maintained during Stage 1 & 2, which will greatly reduce the overall impact

4.4 Project Approach

of both daytime and nighttime construction operations on adjacent property owners. Understanding that minimizing removal and clearing of the existing vegetation is important to the local community and VDOT, we intend to only perform clearing operations necessary for the construction of and access to construct the noise barriers and outside widening improvements of I-66 eastbound, as well as the noise barriers for I-66 westbound. Doing so not only minimizes our environmental impact during construction, but also reduces the inconvenience construction activities have on adjacent property owners.

Retaining Walls

Our design concept incorporates several new and existing retaining walls for the following reasons:

- to keep project elements within the required ROW;
- to protect an existing structure (e.g. overhead sign or toll gantry);
- to support new noise barriers; and
- to account for the approach widening of I-66 EB over Bon Air Park Bridge (B679).

While each of these present unique design challenges, they all start with determining the length and height of each wall. The next step is to engage the Project geotechnical engineer to determine the design parameters (e.g. lateral earth pressures), limitations\concerns (e.g. global\slope stability), foundation types (e.g. piles, drilled shafts, or spread footings), and foundation design parameters (e.g. pile capacities, bearing capacities for spread footings). In the case of existing walls, the further step of obtaining as-built plans in order to evaluate the effects of the additional loads on the existing structures is vital.

Our design, shown in our Volume II – Design Concept, shows three new retaining walls to be designed and constructed. Due to the height of the walls, we anticipate they will be VDOT standard RW type walls.

In two locations, new noise barriers will be constructed behind existing retaining walls. One of the existing retaining walls is cast-in-place concrete cantilever and the other is MSE. We have reviewed the existing plans provided for these walls in the RFP Information Package and have developed designs which will not require modification or replacement of the existing retaining walls.

The modification of the existing retaining walls on the approaches to the eastbound Bon Air Park Bridge (B679) will consist of constructing new walls in front of the existing MSE walls that will be completely independent of the existing walls. To reduce the risk of a future failure, design of these new walls will assume that the existing MSE walls are not present and will be designed for the full lateral soil pressures. During construction, crews will utilize the I-66 EB work area to stage and deliver the majority of the materials. While it will be necessary to have equipment and access to the park area immediately adjacent to the wall, our Team will keep these impacts to a minimum. In doing so, our Team will maintain the Custis Trail pedestrian facility at all times.

For all of the retaining walls discussed above, during the design phase final horizontal and vertical alignment of the walls will be determined and geotechnical investigation will be performed. We will revisit the assumptions that were made during the procurement phase to confirm that the wall type assumed is still the best solution. Coordination between design and construction staff will be crucial to developing designs that meet the Project design criteria and are constructible.

Because our design retains many of the existing retaining walls, the primary concern during construction is the impact of new elements, such as noise barriers, will have on the existing wall systems. Our field Team will be deeply involved during the design phase to fully understand each type of existing retaining wall, the concerns related to that type of retaining wall system and how our proposed superimposed element

4.4 Project Approach

must be constructed to meet the design requirements. Our collaborative approach ensures that both the design team and construction team fully understand the equipment and working parameters necessary to construct the proposed elements.

4.4.3 Quality Assurance/Quality Control (QA/QC)

Our Team will deliver a superior quality project that minimizes VDOT's effort by providing detailed, comprehensive, accurate and auditable QA/QC documentation that clearly demonstrates compliance with the Contract and standards. With completion of each of our design-build projects, our QA/QC plan is refined and updated to include changes to VDOT's manuals, special provisions, standards and unique elements specific to each project. This document serves as the basis for our I-66 Eastbound Widening Inside the Beltway QA/QC plan. Our QA/QC Plan addresses both design and construction and defines the organization, work processes, and systems necessary to provide assurance and evidence that the Project is another quality undertaking successfully delivered by our Team. Our QA/QC Plan is in accordance with VDOT's *Minimum Requirements for Quality Assurance and Quality Control on Design-Build and Public-Private Transportation Act Projects, January 2012* (VDOT's QA/QC Manual) and establishes criteria for all personnel including Design, Contractor, QC, QA, and owners independent assurance and verification responsibilities.

Design QA/QC Approach

Our approach to design QA/QC includes implementing multiple processes with qualified QA and QC personnel throughout design. This ensures appropriate quality standards are included in the plans and other design documents, suitable materials are selected, and work is constructed in a safe manner. Our design QA/QC process is well-structured, easily audited, and is continually maintained to minimize VDOT's efforts.

Our Team implements design QA/QC by adhering to the approved QA/QC Plan, conducting design reviews, completing interdisciplinary coordination, performing constructability reviews, involving VDOT in the overall design review process, and ensuring that all field changes follow the same process as the original design. A brief discussion of these activities is provided below.

Design QA/QC Plan

As the Design Manager, Steve Kuntz, PE, DBIA, implements and manages the overall design QA/QC program (a subset of our QA/QC Plan) which identifies design QA and QC requirements. The design QA/QC program establishes the following:

- procedures for preparing and checking all drawings, specifications, and other design submittals including procedures to correct errors and deficiencies prior to submission;
- processes to ensure design submittals are stamped, signed, and dated by the responsible Professional Engineer licensed by the Commonwealth of Virginia;
- actions to ensure that the level, frequency, and methods for review of design, including independent review, are in compliance with VDOT's functional requirements for the Project;
- procedures for coordinating work performed off-site at fabrication shops, casting yards, and other pertinent fabrication facilities at remote locations, or in related tasks to ensure that conflicts, omission, or misalignments do not occur;
- procedures for identifying elements of design requiring special construction QA/QC attention/emphasis;
- identification by firm, discipline, name, qualification, duty, responsibility, and authority for all personnel and/or entities responsible for design QA/QC, including sub-consultants; and;

4.4 Project Approach

- establishment of design QA/QC functions, including scheduled activities for design QA/QC, identifying the drawings, specifications, and other design submittals that will be submitted to VDOT.

Steve verifies conformance with the QA/QC Plan using informal observations or by conducting audits of the checking and review processes established within the QA/QC Plan. Each submission of Documents to VDOT is accompanied by written notification from Steve certifying that the documents were reviewed in accordance with the QA/QC Plan.

Design Review

Design QC includes review of drawings, engineering computations, and other design related documents for technical accuracy, conformance to contract requirements, as well as form, content, and spelling. Design QA evaluates whether the designers assessed problems appropriately, applied correct analyses, and assigned qualified personnel to tasks when conducting design related activities.

Design QC functions are provided by design discipline leads checking completed work and are carried out to a level commensurate with the complexity of the design element. This effort is managed by the Design Manager who ensures formal and documented reviews occur at predetermined times for submitted design documents as identified within the QA/QC Plan.

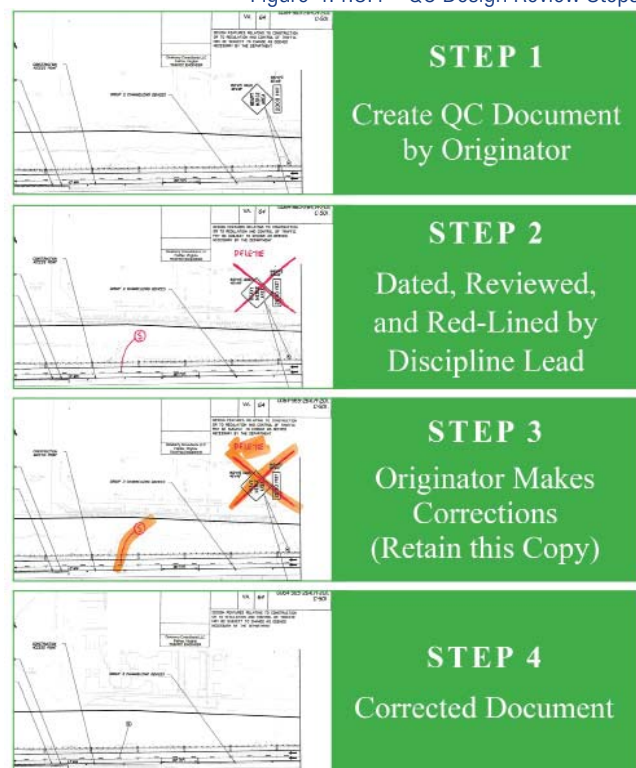
The process (shown in Figure 4.4.3.1) of checking deliverable documents first involves the creation of the QC Document (a copy of the deliverable) by the Originator (designer, writer, etc.). The QC Document is then dated, reviewed, and “red-lined” as appropriate by the design discipline leads who then return the QC Document to the Originator. The Originator “highlights” the “red-line” comments on the QC Document once the correction has been made or discusses the comments with the discipline leader for final determination, making note of final resolution. The Originator keeps the QC Document for record purposes and as evidence of performing design quality reviews.

The Design QA Supervisor, Jeremy Beck, PE, ensures that design activities adhere to this process and records of reviews are saved. Jeremy also performs design QA reviews throughout the duration of the Project as set forth in the QA/QC Plan. He ensures that required QC functions were performed properly, and in conjunction with the Design Manager, directs the correction of nonconforming design practices. He also ensures design standards, methods, and requirements of the Project are met, professional engineering judgment was applied correctly, and appropriate degree of care was utilized.

Interdisciplinary Coordination

Coordination between disciplines is critical to the success of the Project, not just during design, but also during ROW acquisition, utility relocations, and construction phases. Interaction between all discipline leaders through all phases ensures that project elements are properly coordinated, and schedule impacts

Figure 4.4.3.1 - QC Design Review Steps



4.4 Project Approach

and conflicts are avoided from the outset. During design, bi-weekly meetings are held so details can be discussed and coordinated with the multiple design discipline leaders including roadway, structural, hydraulics, and traffic engineers. Additionally, environmental permitting, utility relocation, ROW acquisition, and construction staff are involved to ensure the design:

1. progresses in a manner which considers long lead items (such as environmental permits);
2. is compliant with environmental regulations;
3. considers and identifies all ROW impacts;
4. is coordinated with utility relocation plans developed by third parties; and
5. matches the required phasing for project completion (such as advancing ROW or utility relocation plans on critical properties).

Potential conflicts or challenges are recognized and discussed at these meetings, and the entire project team is able to efficiently identify alternate solutions. Coordination between disciplines continues beyond the design phase, ensuring that unforeseen situations which may arise are addressed efficiently and collectively.

Constructability Review

Throughout our Team's history of working on VDOT design-build projects, we have found that regular, informal, over-the-shoulder type reviews from construction personnel work best to produce quality designs. These types of reviews are conducted at bi-weekly internal progress meetings where the Design Manager (and the discipline leads as appropriate) present roll plots and/or developed plans to the construction personnel who are building particular pieces of the Project. Immediate feedback regarding the design is provided and appropriate adjustments are discussed so that unnecessarily difficult, unsafe, or out of sequence construction is avoided. Conversely, explanations regarding design requirements are conveyed to construction personnel, ultimately resulting in a greater overall understanding of project requirements. This type of on-the-spot review regularly occurs within our design offices between discipline leads and construction personnel, as is typical of all of our VDOT design-build work.

In addition to informal constructability reviews, the Design Manager and Design-Build Project Manager (DBPM) coordinate formal reviews of the design by construction personnel prior to each plan submission. Comments regarding the constructability of the design are provided to the Design Manager for incorporation and/or further discussion prior to completing each design phase.

Quality Assurance and Quality Control of Design and Field Changes

Design changes, including field adjustments, will adhere to requirements of the QA/QC Plan, commensurate with those applied to the original design. The Design Manager ensures that QA and QC reviews of changes after plan approval occur throughout the duration of the Project. Following completion of the Team's QA/QC review, each change is submitted to VDOT for concurrence prior to implementation in the field.

Description of Construction QA/QC Procedures

Our Team's Construction QA and QC Procedures, found within our QA/QC Plan, have been established to conform to VDOT's QA/QC Manual and the Design-Build Contract requirements. Our Plan stipulates the specific requirements of the Project and implements appropriate Witness and Hold Points for inspection of work at critical stages. These critical inspection points allow for VDOT review and approval and identify inspection requirements by the key members from the Design Team, including the geotechnical engineer, prior to construction activities continuing. Having this level of Design Team involvement in construction activities allows the engineer to confirm that actual construction conditions conform to the parameters anticipated during design.

4.4 Project Approach

During construction, the QA and QC Teams follow the established and approved QA/QC Plan. The QA/QC plan is structured to ensure that QC and QA functions are performed independently and that procedures and work products are regularly audited. Key elements of the Construction QA/QC Procedures are summarized in the following paragraphs.

Construction Quality Assurance

The QAM, Richard Allen, PE, DBIA, with Quinn Consulting Services, Inc., is independent of the Designer, Contractor and QC Team, and is responsible for the Quality Assurance of the roadway, bridge and other construction operations, including the independent QA testing technicians. The QAM reports directly to the DBPM and has the authority and responsibility to stop work and withhold payment for any work not being performed in accordance with the Contract requirements or lacking the QA/QC documentation necessary to prove that the work meets the Contract requirements. The QAM oversees and directs the personnel responsible for performing QA inspections and testing of all materials used and work performed. He has personnel representing the QA Team that reports directly to him and are not part of the QC Team.

All QA inspection staff complete daily reports and QA Independent Assurance (QA IA) and Verification Sampling and Testing (QA VST) reports of all QA inspections. The QAM compares QA IA and QA VST results to the QC, Owner Independent Assurance (OIA) and Owner Verification Sampling and Testing (OVST) results to ensure consistency and accuracy at all testing levels. The QAM determines and certifies to VDOT whether the materials and work are in compliance with the approved drawings, specifications, and applicable VDOT standards and reference documents as outlined in the Contract. The QAM ensures that all inspectors have adequate certifications for the testing performed and that copies are maintained in the QAM project files on site. The QAM has autonomy and the responsibility to coordinate QA inspections and report findings directly to VDOT.

Construction Quality Control

The Construction QCM, Sia Agahy, PE, with Dewberry, reports directly to the Construction Manager and manages the day-to-day QC inspections and material testing. The QCM and QC Team are responsible for inspection of construction activities and all QC sampling, testing and analysis of materials ensuring construction quality is verified at frequencies exceeding those required by the VDOT *Construction Manual*, the *Materials Manual of Instructions* and Appendix 3, Tables A-3 and A-4 of VDOT's QA/QC Manual. The QCM assures that QC materials sampling and testing is consistent with the QC plan.

All QC staff actively inspecting and/or testing segments of work complete an Inspector Daily Report (IDR). The IDR's are electronic dairies in accordance with VDOT's Construction Division Memorandum CD-2000-14 and include, as an attachment, copies of all QC materials tests completed for the day's activities. Signed hard copies of the IDR's are submitted to the QCM on a daily basis for review and approval. The QCM completes an electronic Daily General Report, which summarizes the work covered by the IDR's. Copies of all signed Daily General Reports, IDR's, and test reports are then forwarded to the Construction Manager, QA Manager and others on the design-build team for use and review while the original documents are maintained as part of the permanent project records. A weekly report is produced by the QCM that contains summaries of tests, materials placed, actions taken for failing materials, NCR's, safety, inspection, environmental and schedule challenges.

QA/QC Staffing Plan

Our QA/QC personnel provide VDOT with unparalleled experience and understanding of the quality processes and coordination needed to successfully deliver the Project. Our design and construction staff has worked together and for VDOT for many years and is responsible for assembling and overseeing our QA/QC Plan. A list of our QA/QC staff and a description of their duties is listed in Table 7:

Table 7 - QA/QC Staff and Duties

Design-Build Project Manager
As Design-Build Project Manager, Jffrey Austin, PE, DBIA , provides supervisory and administrative management of the entire project including overall design and construction and reports at the executive level. He establishes the QA/QC program and directs the processes and administration of design and construction.
Quality Assurance Manager (QAM)
Richard Allen, PE, DBIA is the Quality Assurance Manager and is responsible for the development and administration of the QA/QC Plan, ensuring all work and materials as well as testing and sampling is performed in accordance with the Contract and approved construction plans and specifications. Richard will ensure that QA and QC staffing levels are adequate and comprehensive based on the work activities underway at any time. Richard has full authority to initiate work stoppage and is able to recommend to VDOT withholding payment for design and/or construction activities that are not acceptable - this authority will be made in writing as part of the QA/QC Plan.
Quality Assurance Testing and Inspection Technicians
Quinn Consulting Services, Inc. will provide a full-time Lead Quality Assurance Inspector and a full-time Office Engineer. Additional inspectors will be assigned as necessary during peak construction seasons to ensure quality assurance testing and inspections of work items are performed, QC inspections are observed, and correction of non-conformities are completed in accordance with the Contract documents. Based on the scope of work and our preliminary schedule of construction activities, we anticipate an additional one to two QA inspectors to be on-site during construction depending on the level of work activity. The Lead QA Inspector, Ali Sylla , reports directly to our Quality Assurance Manager. Specialized Engineering will perform QA laboratory testing for the Project. Specialized Engineering is an AMRL and CCRL certified laboratory and is independent from QC laboratory testing for the Project.
Design Manager
Steve Kuntz, PE, DBIA , directs and coordinates the design process including work by sub-consultants and is accountable for the design QA/QC Plan. He is responsible for implementing, monitoring, and as necessary adjusting the Design QA/QC Plan to ensure acceptable quality of the design work. Steve will also remain involved during construction to ensure design reviews are comprehensive of all construction submittals, and to ensure design involvement is appropriate for reviews of field adjustments, RFIs, and proposals.
Design Quality Assurance Supervisor
Jremy Beck, PE , is responsible for quality assurance of design elements included in the Project. Following completion of quality control reviews, he performs a complete QA review of all design elements prior to issuance to VDOT.
Independent Design QC Reviewers
Independent Design QC Reviewers perform the design QC function on each design element. The Design QC reviewers are completely independent and will be available to review and sign off on the QA review function.
Construction Manager
Mik Trabucco, PE, DBIA , is the Construction Manager and is accountable for the day-to-day construction performance and the Construction Quality Control portion of the QA/QC Plan, ensuring construction is in accordance with the Project requirements. He is the Project site full-time for the duration of construction.
Construction Quality Control Manager (QCM)
Sia Agahy, PE , is responsible for construction quality control and oversees construction quality control testing and inspection operations. Sia assigns inspectors and testing technicians for each work package and monitors reporting documentation to ensure that the work packages were completed in conformance with the contract requirements. QC staffing will include a full-time Senior Roadway Inspector for the Project duration and a full-time Senior Structural Inspector during bridge, retaining wall, and noise barrier construction. These two full-time inspectors will be supplemented with additional inspectors and testing technicians as necessary to complete the QC services. Based on the preliminary schedule and overlapping work activities, we anticipate three to six QC inspectors and technicians will be on-site during peak construction periods. The number of QC inspectors and technicians will decrease during slower periods, such as during winter months and as work decreases toward the completion of the Project.
Construction Quality Control Inspections and Testing
Together, Dewberry Consultants LLC & GeoConcepts Engineering, Inc. , are responsible for quality control testing and inspection of construction for conformance with the QA/QC Plan and project related documentation. They possess current VDOT materials certifications for the types of testing and/or inspections they are assigned to complete. GeoConcepts provides the independent AMRL and CCRL certified QC Laboratory to perform all QC laboratory tests.

4.4 Project Approach

Design QA/QC Procedure for One Unique Project Element

The unique project element which requires a comprehensive and coordinated design QA/QC approach is the noise barriers. Noise barriers represent a major element of the Project due to the quantity which need to be installed, and also represent a unique and challenging design element since layouts and detailed designs need to consider the following items:

- Locations of existing barriers;
- Timing of clearing and existing barrier removal;
- Avoidance of utilities, both overhead and underground;
- Avoidance of existing drainage facilities;
- Impacts to existing retaining walls and structures; and
- Ability to incorporate grading adjustments for maintenance access

Recognizing the complex nature of the noise barrier scope of work, QA and QC efforts have already started on this element during the RFP phase. One of the first areas of focus by our Team was determining if adjustments of noise barrier alignments were necessary to avoid existing drainage facilities and utilities, provide increased offsets to existing ROW, and avoid introducing additional loads on existing walls or structures. Updated layouts of the noise barriers have already been developed in great detail, going as far as to ensure bend locations accounted for conventional post spacing of 24-foot increments, ultimately allowing detailed designs to be completed by the fabricator and supplier which will not require adjustments in the layout that could introduce undesired conflicts. Design QA and QC on the conceptual noise barrier alignments have been coordinated between design staff, the utility manager, ROW manager, and construction staff.

Once refined alignments were developed, they were shared with our noise analysis sub-consultant, Skelly & Loy, so that updated preliminary noise models could be developed to ensure the noise reductions and attenuation met the contract requirements without requiring taller or longer barriers. Where increases in noise were identified, or where barriers were identified to be less efficient, direct communication between Skelly & Loy and engineering staff resulted in revised alignments which continued to avoid conflicts with items described above while addressing the deficiencies identified by the noise model.

The efforts described above reflect the back-and-forth communication and coordination which is critical to ensuring the proper design of the proposed noise barriers. Upon award of the contract, QA and QC efforts for the noise barriers will continue following receipt of updated design-level mapping and field surveys, which may require slight adjustments in the noise barrier locations/alignments. As roadway and grading plans are updated, noise barriers will be adjusted as needed, and detailed design information (including plan views, profiles, proposed grading, and noise barrier alignments) will be shared with Skelly & Loy to determine the required barrier heights to achieve the noise attenuation elevations. Should the adjusted alignments result in less efficient or ineffective noise analysis results, alignments will be adjusted through a coordinated effort involving design, utility, ROW, construction, and noise analysis staff.

Once final noise barrier alignments have been developed and coordinated with all pertinent staff, coordination will continue with construction staff to develop a better understanding of the timing of noise barrier installation and means of access. QA and QC efforts will continue during this time to ensure final grading accounts for access, and to ensure proper notes are added to the plans to indicate the locations of access points, areas to be avoided during construction, and limits of fences which need to be removed and replaced to facilitate construction and/or to maintain constant protection along the limited access lines.

Following development of the noise barrier plan and profile and completion of the noise model, independent design staff will complete a QC review of the noise barrier design focusing on the following:

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- length and height conforms to the noise model;
- alignment and maintenance buffer are contained within ROW and easements;
- conflicts with utilities and existing drainage are identified and avoided; and
- proper grading and drainage are identified around the barriers.

Following completion of QC reviews with all comments resolved, Jeremy Beck will complete a QA review of the final documents before submission, verifying that the QC reviews were performed and FHWA guidelines are met for the model and the plan.

QA and QC of the noise barriers does not end at the culmination of design however. During construction, shop drawings will be prepared by the noise barrier fabricator and supplier, and those documents will be reviewed by the design team. QA and QC reviews of the shop drawings will ensure foundation types and layouts will remain within ROW and easement limits and don't conflict with other existing or proposed features, and that the post and panel heights achieve the attenuation lines required by the final Noise Abatement Design Report (NADR).

Construction QA/QC Procedure For One Unique Project Element

One item that stands out as a key feature of this project is the W&OD Trail Overpass as it is a focal point of pedestrian traffic in the vicinity of this Project. Items of concern with respect to the Construction QA/QC Inspection Process can be categorized into three main components of a bridge structure: Superstructure, Substructure, and Foundation.

Superstructure - the pedestrian traffic supporting bridge deck slab, girders, and other appurtenances such as fences, railings, curbs, and lighting. A key aspect to this component is "aesthetics". Pedestrians using the Trail have full view of the deck surface, railings, fences, and lighting fixtures, which should provide adequate visibility, safety, and fall protection with pleasing aesthetic features. The Project's Quality Inspection Team (Team) focuses their construction inspections and material testing requirements to such activities as lighting fixture mountings and wiring including rotational capacity (ROCAP) testing of nut and bolt assemblies used for light pole mounts, concrete testing including air content, slump, temperature, unit weight, and compressive strength. Structural connection inspections are highly important for railing and fence post connections which may support pedestrian loads. In addition, electrical inspections are necessary to ensure proper electrical grounding of these features per VDOT Standards.

The concrete bridge deck upon which pedestrians travel is aesthetically important and highly visible to the Trail users requiring close inspection by the Team not only for concrete testing, but for uniformity of the finished surface. This uniform surface is the product of a highly qualified construction crew experienced in concrete finishing. The Team performs dry run depth checks (as applicable), wet depth checks, monitoring of wind speed and adverse weather concerns and continual observation of the finished deck surface for uniformity, smoothness, and quality of concrete finish through observation and monitoring of the curing procedures employed by the Contractor. These procedures may vary depending on ambient temperatures and existing weather conditions at the time of construction. Steel reinforcing bars (rebar) are inspected for type, size, number, placement, and concrete cover in accordance with the Plans. Sampling and testing of rebar is performed at increments equal to or greater than required by VDOT's QA/QC Manual Appendices A-3 & A-4.

The Team monitors the delivery of materials and on-site storage methods and above ground on-site storage methods of the girders received by the Contractor. The Team inspects all steel fasteners for proper torque requirements as determined by ROCAP testing (as applicable) with close attention to the on-site storage of fasteners in sealed and clearly marked containers.

4.4 Project Approach

Substructure - the part of the structure which supports the superstructure and which transfers the structural load to the foundation and consists primarily of the following items (as applicable to this structure): bearing assemblies, piers, and abutments.

The Team performs inspections of bearing pads based on the Surveyor's marks for centerline of bearing in both the transverse and longitudinal directions. Inspections are commonly performed at the time of bearing pad placement, after the girder is placed on the pad, and just prior to final tightening of the girder connection to the pier caps or abutments. Additionally, the Team confirms types and conditions of bearings supplied, pad thicknesses, and dimensions (as applicable) in accordance with construction plans.

The concrete support structures between spans (Piers) require close inspection with regard to formwork placement. Forms are checked for cleanliness prior to installation, and dimensions of the installed forms are checked and verified by the Team prior to the concrete pour taking place. The Team may use a "Pour Card" listing "step-by-step" procedures which is common practice to ensure all necessary inspection steps are performed by the Team prior to the concrete pour. As with the Superstructure, rebar is inspected for type, size, number, placement, and concrete cover. Sampling and testing of rebar is performed at increments equal to or greater than required by VDOT's QA/QC Manual Appendices A-3 & A-4.

As with the concrete pier inspections described above, concrete abutments supporting the end spans of the bridge structure are inspected by the Team in a similar manner. Upon completion of the abutment construction, backfilling of one side of the abutment takes place. The Team monitors backfill material provided by borrow sources (as applicable) per No. 1 of Appendix A-3, Table A-3 of VDOT's QA/QC Manual along with compaction inspection of this material in lifts through the top of fill for placement of sleeper slabs and approach slabs at each end of the bridge structure.

Foundation - the bridge component which transfers loads from the substructure to the bearing strata. Depending on the geotechnical properties of the bearing strata, shallow or deep foundations may be designed. For this project, deep foundations (i.e., piles and pile caps) will be utilized for the load transfer to the bearing strata. The installation of steel piles require close and continual monitoring by the Team in completion of VDOT Form C-1 (Pile Driving Record). Monitoring of blow counts (i.e., number of hammer blows per foot), verification of pile type, measurements of pile verticality, pile cutoff elevation, and a comparison of final (actual) tip elevation in comparison to plan tip elevation are performed for each individual pile. Upon successful pile installation and uniform surface preparation of the foundation soil, concrete pile caps are constructed per plan whereby inspection requirements follow the description for construction of the concrete piers. Formwork and rebar installation is closely checked for proper sizes, spacings, and clear cover dimensions.

As the aesthetic appearance of the finished product is of high concern to the Team, equally concerning is the safety considerations implemented by the Contractor. The Team pays close attention to the condition of safety barriers, lines, and temporary handrails, and falsework during the bridge construction. The use of exposed rebar protection caps is monitored and enforced along with on-site cleanliness with special attention paid to the proper and continual maintenance of concrete washout areas. With regards to safety, the Team ensures proper measures are implemented by the Contractor, as per the Plan, to control pedestrian traffic near the structure and place their safety and protection as the utmost importance on this project.

For each element, the QA/QC personnel, specifications, inspections, testing, work plan, and other construction coordination details will be discussed and documented at the Preparatory Inspection Meeting. This meeting will be attended by all QA and QC personnel, the prime contractor, and applicable subcontractors and suppliers. The meeting will ensure that all parties have a complete understanding of the

4.4 Project Approach

work and inspection and testing required to assure each work element is constructed in a quality manner. **This meeting will also provide a forum for unique construction safety and protection of historic resources such as maintaining safe clearance for construction equipment to the Dominion Energy transmission lines and necessary vibration monitoring at the Benjamin Elliott Coal Trestle.**

The QA/QC procedures described above along with the qualified personnel that our Team is bringing to the Project will provide confidence to VDOT that the operations will be carried out in accordance with the RFP requirements and with minimal VDOT intervention.

4.5 - Construction of the Project

4.5 Construction of the Project

4.5.1 Sequence of Construction

Throughout development of our Technical Proposal, our Team focused on means and methods to finish critical stages of work safely, quickly and efficiently. Key elements of our Team’s collaborative process included the following:

- Early mobilization to achieve maximum “Net Savings”;
- Introducing a Unique Milestone to provide beneficial use of the ultimate Eastbound lanes in work Area #1 in advance of the required Interim Milestone #1 specified in the RFP;
- Ensuring the safety of the traveling public and workers;
- Minimizing construction impacts to the traveling public through a strict safety and quality protocol;
- Minimizing impacts to the traveling public throughout all stages of construction;
- Effective management of environmental and technical construction; and
- Proactive stakeholder relations.

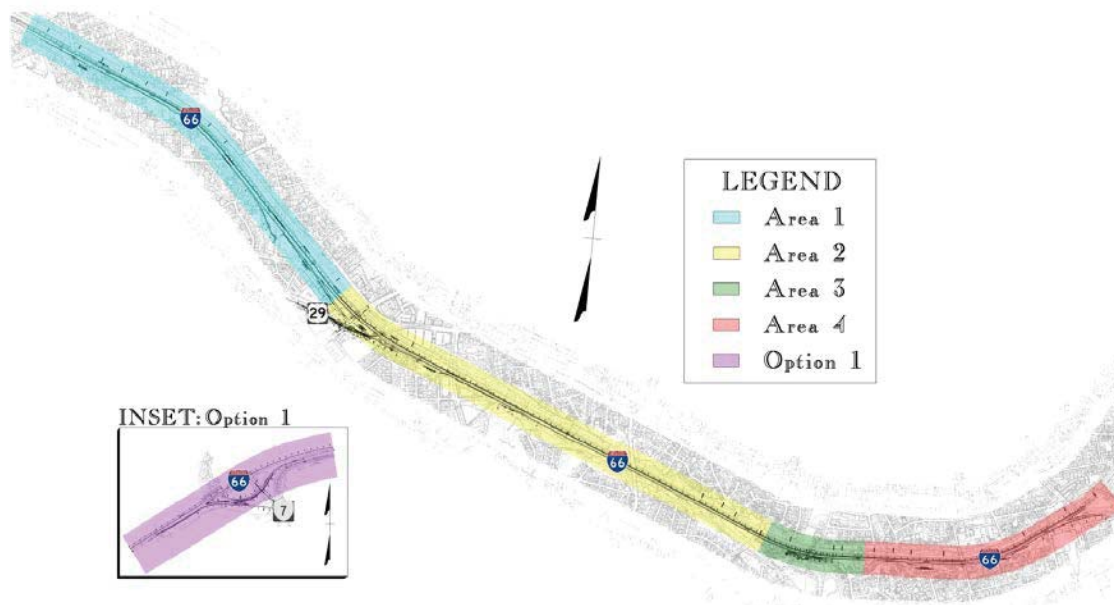
Our Team’s Proposal Schedule, presented in Section 4.7, was developed with input from all Project disciplines including design, permitting, utilities, ROW, QA/QC, and construction.

Project Work Areas

Our Team has broken the Project into four work areas to effectively execute each Stage of construction. This will allow us to focus our efforts on the key features of work in each Area to obtain important milestones such as the early opening associated with Unique Milestone #1. This also allows for maximum utilization of resources and reduction of construction activities from a safety and quality perspective. The Areas of Construction (plus Option 1) correspond with the approximate station ranges as shown below and in Figure 4.5.1.1:

- **Area 1** – Station 115+00 to 183+00
- **Area 2** – Station 183+00 to 260+00
- **Area 3** – Station 260+00 to 276+00
- **Area 4** – Station 276+00 to 315+00
- **Option 1** – Entirety of Option 1 Scope

Figure 4.5.1.1 - Areas of Construction



4.5 Construction of the Project

Within each Area, our sequence of construction is separated into five Stages as follows:

Stage 1 - I-66 EB Outside Temporary Shoulder Strengthening

Stage 2A/2B - I-66 EB Ultimate Median Widening

Stage 3A/3B - I-66 EB Ultimate Outside Widening

Stage 4 - I-66 Mill and Overlay, Surface Asphalt and “Finishing” Items

Stage - Traffic Signals and Landscaping

Unique Milestone #1 - Full Traffic Capacity from Route 267 to Route 29 Lee Highway

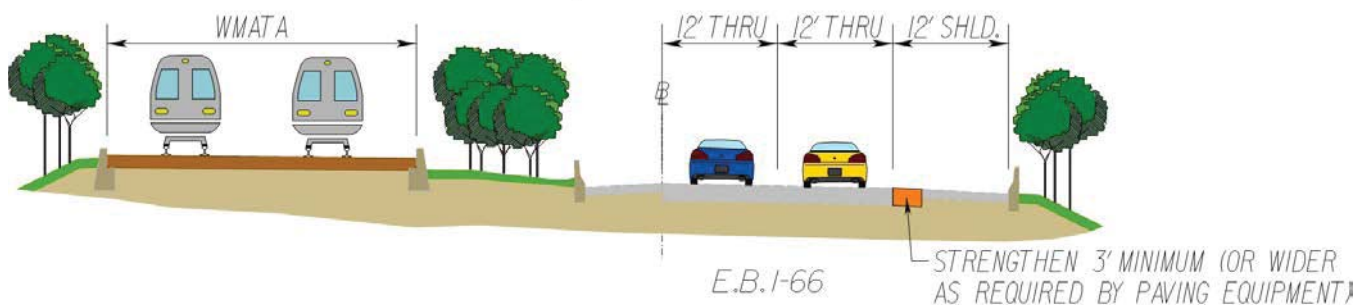
Our Unique Milestone #1 opens traffic to the 4-lane configuration in advance of Interim Milestone #1. This section of roadway includes the work associated with Area #1 from Route 267 - Dulles Connector Road to Route 29 - Lee Highway and will provide beneficial use to the traveling public by August 14, 2020, nearly three months in advance of the RFP requirement. Off peak temporary closures after this date will still be necessary to complete the finishes in Stage 4, but the early opening provides an improvement for peak hour traffic who will benefit from the added capacity. Another benefit to the unique milestone date is the beneficial use of the fourth lane before the traffic increases that typically occur after the start of the new school year. Our Unique Milestone is being achieved by prioritizing the roadway construction in Stage 2A and 3A. Final punchlist items as determined by VDOT will still be addressed with all other punchlist items at the end of the Project.

Provided below is a description of each Stage and the benefits of this proposed sequence:

Stage 1

The upfront design efforts will allow Stage 1 construction to begin as early as possible while the subsequent stages of work are still being developed and approved. At the beginning of Stage 1, the initial mobilization of the Project field office will occur, along with the survey controls, initial maintenance of traffic controls and construction signing. In order to accommodate the temporary traffic barrier service along the median widening, the outside shoulder will be strengthened to support the additional traffic loading as traffic is shifted to the outside as shown in Figure 4.5.1.2.

Figure 4.5.1.2 - Stage 1 - Strengthen Outside Shoulder



This shoulder strengthening operation will be performed at night during the allowable lane closure times. Operations will be planned so that no drop-offs greater than 2-inches remain at the end of each nightly operation.

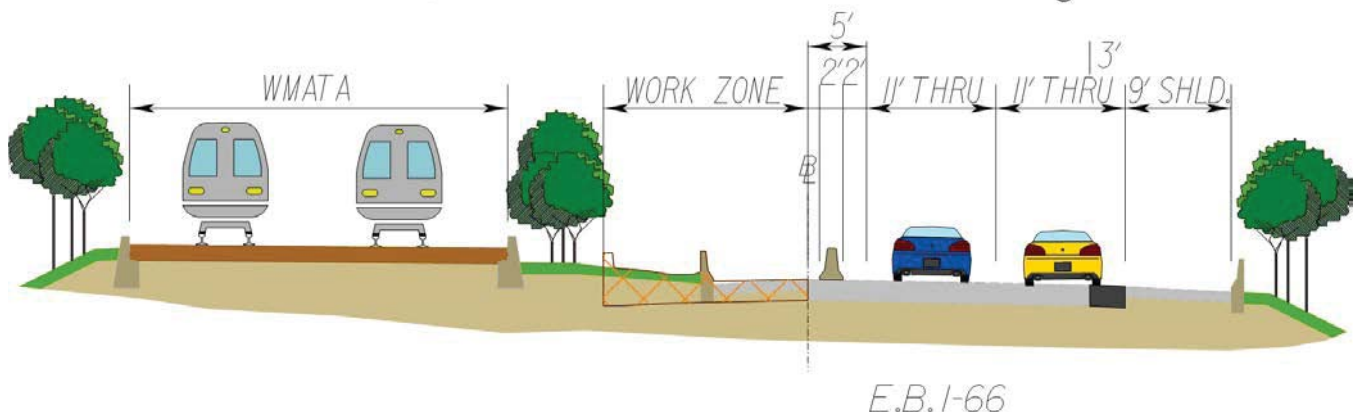
Temporary pavement markings will be placed to shift traffic to the outside of I-66, providing the necessary room to install temporary traffic barrier service for Stage 2 Construction. Before shifting traffic in this Stage, the management Team will coordinate with the Tolling Operations Contractor TransCore to allow the modifications to the tolling equipment to be completed and coordinated with each traffic switch.

4.5 Construction of the Project

Stage 2A/2B

Stage 2 work shown in Figure 4.5.1.3, includes the construction of the ultimate median widening, median drainage improvements, median bridge widenings, and the construction of the Westbound noise barriers. The W&OD Trail Bridge and Westbound noise barriers are sequenced independently from the mainline I-66 Eastbound improvements to allow the construction to begin as soon as possible and continue through Stage 3 work. Two 11-foot traffic lanes will be maintained on I-66 Eastbound and temporary traffic service barrier will be in place to provide a safe working area for the permanent median construction. Because all median work will be completed behind temporary traffic barriers, we expect only minimal impacts to the traveling public during this stage. Our sequencing allows for a 9-foot paved shoulder to accommodate vehicle breakdowns, incident management and police enforcement, *which exceed the requirements of the RFP*.

Figure 4.5.1.3 - Stage 2 - Median Widening



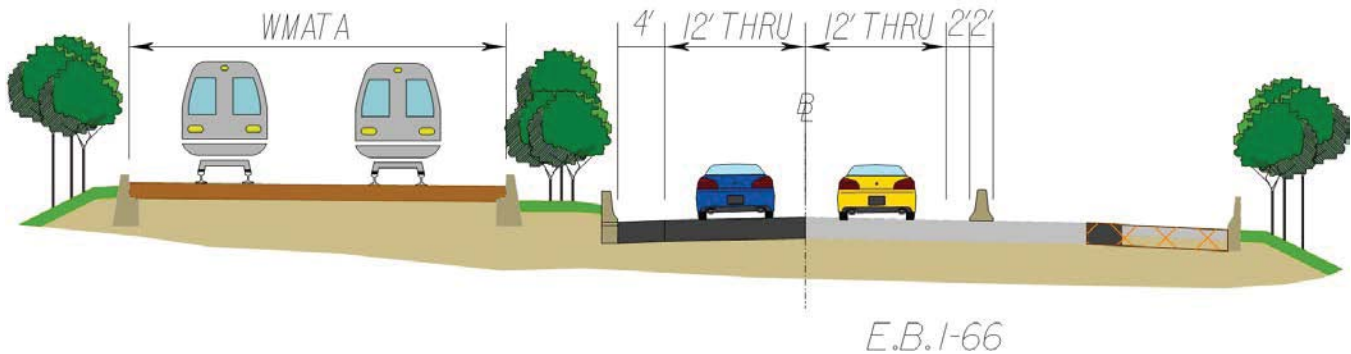
Crews will work starting from the west (Area 1) to the east (Area 4) to prioritize Unique Milestone #1 detailed in this section. Median bridge widenings will be constructed at the Williamsburg, Westmoreland, Sycamore, and Bon Air structures, as well as the pier relocation for the Pedestrian Bridge over I-66. Stage 2 has been divided into two portions, Stage 2A (Area 1) and Stage 2B (Areas 2-4) to expedite the work associated with Unique Milestone #1. Once Stage 2A (Area 1) is complete, traffic in that area will be shifted into the Stage 3A configuration while Stage 2B is concurrently being performed. This advanced sequencing of work is the key contributor to opening the ultimate configuration of Area 1 three months before the RFP requirement of Interim Milestone #1. Our Team will also prioritize the design and approval of the Noise Barriers along I-66 Westbound to begin this work in Stage 2 before access to the EB Noise Barriers is provided in Stage 3. Before shifting traffic in this Stage, the management Team will coordinate with the Tolling Operations Contractor TransCore to allow the modifications to the tolling equipment to be completed and coordinated with each traffic switch.

Stage 3A/3B

Stage 3 work shown in Figure 4.5.1.4 on the following page includes construction of the remaining mainline improvements and the completion of the W&OD Pedestrian Bridge. The ultimate outside widening will be completed along with all of the noise barriers and bridge widenings on I-66 Eastbound. Roadway, drainage improvements, concrete barrier and guardrail will be installed along with the required overhead sign foundations and ITS modifications. The Stage 3 traffic configuration provides 12-foot wide traffic lanes which is a safety and traffic operation enhancement, *exceeding the 11-foot lane requirement of the RFP*.

4.5 Construction of the Project

Figure 4.5.1.4 - Stage 3 - Reconstruct Remaining Pavement



Similar to Stage 2, Stage 3 has been divided into two portions; Stage 3A (Area 1) will be expedited to achieve the Unique Milestone #1 while the remaining Areas of Stage 3 are constructed. The complete deck reconstruction sequence of work at Bon Air Park described earlier will also be a critical element in this phase as the Team will focus on limiting the duration that traffic lanes on I-66 Eastbound will be in a split configuration. Once complete, all lanes of traffic will be shifted to the median and the outside deck reconstruction will occur. Similar to Stage 2 work, all construction activities will take place behind temporary traffic barriers to reduce the amount of temporary lane closures required to perform the work. The Team has developed an access plan for each noise barrier to limit the amount of clearing and disturbed ground that will be necessary. As required by the RFP documents, all existing noise barriers will be maintained as long as possible and will be removed as the new noise barrier are installed. The structure-mounted noise barriers on I-66 Westbound have been sequenced in Stage 3; however, they have the flexibility to be performed at any time throughout Stage 2 or 3. The W&OD Pedestrian Bridge will continue to be constructed in this phase and is anticipated to be completed by the end of Stage 3. Before shifting traffic in this Stage, the management Team will coordinate with the Tolling Operations Contractor TransCore to allow the modifications to the tolling equipment to be completed and coordinated with each traffic switch.

Stage 4

Stage 4 represents the final remaining work necessary for the completion of the contractual Interim Milestone 1 by November 10, 2020. During this Stage, the existing mainline lanes of I-66 Eastbound will be milled and surface asphalt will be placed on the entire width of the roadway. All remaining permanent roadway signing will also be installed and the pavement markings will follow in line with the placement of the surface asphalt.

Stage

Stage 5 includes the traffic signal work on Lee Highway at the intersections of Fairfax Drive and Washington Boulevard, as well as the landscaping required by the RFP documents.

I-66 EDA

Construction begins with installation of traffic control devices and erosion and sediment controls. Work then begins on bridge widening by installing the piers and abutments, erecting structural steel, demolition of the existing deck parapet and overhang, deck construction, and new parapets. Concurrently, crews will work to establish subgrade, install storm drainage, underdrains, aggregate subbase, and asphalt paving. Finally, the new roadway will be striped, guardrail and signage installed, maintenance of traffic devices removed, and the new roadway will be opened to traffic.

4.5 Construction of the Project

Sequence of Construction Benefits

A summary of the benefits of our proposed construction sequence is described as follows:

- Unique Milestone #1 will deliver a fourth lane to the traveling public three months ahead of schedule, prior to the start of the new school year, and alleviate the traffic backups currently occurring at the western end of the Project.
- The upfront design efforts will allow for an early start on the Stage 1 work to take advantage of the favorable weather and lower traffic volumes typically experienced during the summer months.
- The sequencing of noise barriers and access plan have been developed to maintain as much existing noise barriers as possible until they are required to be removed to construct the new soundwall in each respective area. The alignment has also been adjusted to reduce clearing impacts and disturbed area required to complete the work.
- The I-66 Westbound bridges over Westmoreland Street and Williamsburg Boulevard have been designed to accommodate the noise barriers without reconstructing the concrete overhang and parapet. This will allow the Team to significantly reduce lane closures on I-66 Westbound while most of the work can be performed from each respective side street.
- Sequencing allows for safety and mobility benefits of a full shoulder (Stage 2) and wider than required lanes (Stage 3).

Eliminating, Minimizing and Managing the Risks and Impacts of Construction

Our Team has focused on the risks and impacts inherent with the construction of this project and has taken those factors into account while developing the sequence of construction. Identifying and mitigating these risks will provide a safe work zone for both the traveling public and our workers. Table 8 describes the Risks/Impacts that we expect to manage and mitigate during the course of construction:

Table 8 - Risks/Impact of Construction and Our Teams Solution

Risk/Impacts of Construction	Solution to the Risk/Impact
Tolling Equipment and Continuous Operations	<ul style="list-style-type: none"> ■ Our Team will be working alongside TransCore to coordinate traffic switches that will require modifications to the existing Tolling equipment. ■ All modifications will be submitted to VDOT and TransCore for approval. ■ An activity has been included in the Proposal Schedule allowing 30 days for communication and modifications to occur.
ITS Equipment and Continuous Operations	<ul style="list-style-type: none"> ■ Impacts have been identified and design of roadway has been completed to minimize these impacts. ■ ITS items that require modifications and/or relocations will be detailed in a plan submitted to VDOT for approval.
Safety of the Traveling Public and Workers	<ul style="list-style-type: none"> ■ Our sequence of construction allows for improvements to the RFP by providing wider shoulders and lanes when available, longer accelerations lanes, and enhanced signing.
Traffic Impacts	<ul style="list-style-type: none"> ■ The proposed sequence of construction limits the amount of lane closures needed by protecting the work areas with temporary traffic service barrier.
Noise Sensitivity During Construction Operations	<ul style="list-style-type: none"> ■ Construction of these noise walls will be carefully sequenced to leave existing barriers in place until it is no longer feasible to construct the proposed noise barrier. ■ An access plan has been developed to strategically demolish and replace these barriers while minimizing the amount of time that any single property is left without a noise barrier (only applying to properties that previously had a noise barrier). ■ When working at night, proper equipment will be used to minimize noise impacts. Noise level monitoring will ensure compliance.

4.5 Construction of the Project

Risk/Impacts of Construction	Solution to the Risk/Impact
W&OD and Custis Trail Safety	<ul style="list-style-type: none">The safety of the traveling public utilizing the W&OD and Custis trail will be a priority of the team to ensure a safe trail is provided at all times throughout construction.Improvements will be given special attention by increasing warnings and enhanced safety measures to protect the worker.

Safety & Operations

It is our Team's number one goal to ensure the safety of the traveling public and the workers on the Project. We fully support VDOT's commitment to safety of the public, safety of its employees, and safety of all project stakeholders, and we plan to align our Team's vision of safety with VDOT. We expect each and every individual to be involved, empowered, and accountable for project safety. Our safety program will be led by Charlie Wilson, our Safety Manager, who will implement a Project Specific Safety Program and work directly with VDOT personnel. He will also have overall responsibility for ensuring the Project is delivered with a goal of zero incidents.

Safety Approach

Our Team's approach to safety is based on two primary facets each presenting their own safety challenges:

- Construction safety and;
- Traffic safety.

Construction Safety - Each Stage from earthwork to bridges, from utility installation to noise barriers have distinct safety challenges associated with them. We will work closely with our design partners to finalize a design that incorporates and considers safety elements and fully integrates anticipated construction processes and staging requirements.

Traffic Safety - Our Team's TMP, TTC, and Construction Sequencing have all been developed to provide the safest work zones while attaining the peak operational capacity of the roadway. Following traffic counts at the onset of design, all plans will be adjusted to allow the maximum flow of traffic through the corridor. As detailed in Section 4.5.2, enhanced safety strategies exceeding VDOT requirements will also be utilized to maximize safety, such as better quality pavement markings, and additional Portable Changeable Message Signs (PCMS). During construction, the VDOT Work Zone Safety Checklist will serve as the minimum standard to assure conformance with the Project's safety requirements, and checks will be performed daily.

Geotechnical Constraints

The sequence of the subsurface exploration will be coordinated such that test borings required for design of bridges and walls will be completed early, allowing design activities on critical elements to be advanced without impacting either the design or construction schedule. Selection of boring locations will be coordinated with design and permitting staff, ensuring that appropriate geotechnical information can be collected while avoiding environmentally sensitive areas.

Since our Team will complete the required geotechnical investigations and propose methods for remediation of poor soils, if any, along the roadway prior to construction, sequencing of work will be developed to include these geotechnical constraints/soil remediation. Roadway considerations such as unsuitable materials, low CBR value materials, and increased pipe bedding requirements will be identified in the geotechnical report and mitigation measures and recommendations may include practices such as:

4.5 Construction of the Project

- surcharging
- undercut & replacement with suitable material;
- lime or cement soil stabilization; and
- use of geo-stabilization grids and fabrics.

Bridge geotechnical solutions will be based on the concerns of settlement and global stability of new fills at abutment locations, bridge foundation requirements and capacities, and negative skin friction exerted on piles during anticipated settlement periods. Other constraints will also be identified in the geotechnical report and completed in conjunction with the appropriate elements and areas of improvement, and are not expected to cause any concerns or impacts to the construction schedule.

Environmental Impacts Construction Phase

During the construction phase, our Team ensures that all permits necessary for the work have been obtained, and work is completed in compliance with all commitments and permit conditions. Incorporating permitted impact limits in the Environmental Constraint Maps (ECM) and including them on the Project plans assures full compliance during construction. Our Team has a long standing relationship with the regulatory agencies which has served us well in coordinating projects, obtaining permits on-time, and ensuring construction is compliant with the conditions of the NEPA documents and permits. We recognize VDOT's heightened concern for environmental compliance during construction and to that end, we will continue to conduct our field inspections, provide early reporting of environmental issues to regulatory agencies, and conduct monthly coordination with the construction team.

Our Team has accounted for these constraints in all construction planning even at this early stage. This allows us to focus our environmental planning studies to critical areas of the schedule.

Once plans are finalized and released for construction, the environmental team shifts focus to construction monitoring of the permit and environmental commitments in the field. Prior to the start of construction, our Team will conduct an educational program for the construction staff slated to work on the Project. The educational program will touch on the environmentally sensitive areas including but not limited to:

- wetlands and streams
- threatened and endangered species
- environmental protection, including E&S measures;
- the importance of staying within the approved LOD;
- the location and limits of 4(f) resources; and
- archaeological/architectural resources.

This program will then transition into the monthly progress meetings where a member of the environmental staff will meet with all construction personnel and discuss any lessons learned from work in the past month, room for improvement, and/or highlight compliance with environmental requirements.

Additionally, prior to the start of construction, the original wetland team returns to the field to mark the limits of sensitive streams and wetlands. Critical areas are delineated with safety or silt fence to prevent accidental access and prescribed E&S control measures are installed in accordance with the plans. During construction, we will utilize our ECTD to monitor the site and ensure construction is conducted in compliance with all permits, commitments and regulatory requirements.

4.5 Construction of the Project

As construction progresses, our Team ensures E&S control documents are strictly adhered to and the approved Stormwater Pollution Protection Plan (SWPPP) is available for review and is followed. This starts with installation of all Phase 1 E&S devices such as silt fence, diversion dikes, sediment traps and basins prior to grubbing and grading operations. Our Team ensures stabilization of denuded areas is performed within the required time frames. Most importantly, we dedicate an E&S maintenance crew to the Project at all times to monitor the site and relieve over-burdened E&S devices, re-install or reinforce existing devices and prepare for forecasted rain and storm events. The crew is led by a foreman carrying the VDOT ESCCC and DEQ Registered Land Disturber credentials. VDOT Forms C-107a and C-107b as well as proper documentation is kept current at all times per DEQ and VDOT regulations.

Right of Way Acquisition

The ROW acquisition process must be well integrated into the design, utility and construction schedules, and started as early as possible. As we developed our sequence of construction, we continually analyzed the affect these disciplines have on public and private properties and our ability to minimize and avoid them. Most of the limits of construction for the I-66 EBW will be completed within the existing ROW, and our design has reduced the area of easements that are required, specifically at Bon Air Park. No easements are anticipated to be needed for the I-66 EDA work. **The ROW acquisitions process has been integrated into our sequence of construction and the work requiring these easements are sequenced later in the Project to minimize the risk of the acquisition process impacting construction.**

Staging and Storage Areas

To maximize safety and avoid delays to the schedule, staging and storage areas must be well-planned and positioned to minimize impacts to the traveling public. The challenge with this project is the restricted room available due to the WMATA facilities and developed urban areas within project limits. Material storage areas will be kept to a minimum, may require multiple relocations to follow the construction in each area, or may be located off-site. Our priority for material deliveries will be to manage to a “just-in-time” basis, when feasible, to avoid the need for large storage areas. Staging of materials behind and outside the deflection zones of the temporary traffic barriers in these areas will also serve as convenient areas for storage of items such as storm pipe and structures, bridge formwork and other consumable materials. We will also explore a central storage facility and project office compound located in close proximity to the Project. Workers will also be directed that parking in adjacent residential or commercial areas is prohibited.

Public Involvement/Stakeholder Coordination and Government Approvals

To avoid risk of delays to the schedule due to stakeholder approvals, it is imperative that the Team understands all of the parties that have input, their procedures and timeframes for approvals, and the affect they have on the sequence of work. We identified stakeholders in our Organization Chart included in Section 4.2.2 and will refine this list as the Project moves forward.

Immediately after Award, the Team will meet with each stakeholder to discuss the Project, understand **their issues and concerns, and explain the schedule and sequence of work. Input is incorporated in the schedule based on these discussions, and the schedule will in turn be communicated to them.**

We will plan to hold a minimum of five “Pardon our Dust” meetings with the public at critical stages of work to communicate Project details, our sequence of construction, and the overall schedule. We also use this forum to solicit feedback and establish lines of communication with those affected. Because traffic patterns change as work progresses, it is imperative that we coordinate directly with police, fire and rescue, local schools, and public transportation by establishing points of contact, distributing flyers, and presenting project details directly to them. Traffic changes are communicated on site through the effective use of

4.5 Construction of the Project

signs and PCMS signs. The Team presents updates to local neighborhood and Homeowners Associations, County governments, and other groups. We will also communicate with the public by submitting updates and graphics describing traffic patterns to the local media in order to reach large audiences.

Mitigating Potential Delays

As we develop our schedule, our Team will be constantly focused on identifying issues and concerns that **have the potential to create delays and then direct our efforts on mitigating them. At various stages of the Project, we rely on proven methods for creating, monitoring, and maintaining the schedule:**

- **Technical Proposal Stage** – As the groundwork for the Team’s schedule is developed in this stage, it is critical for all disciplines to have input. Our Team has met on a weekly basis since release of the RFP to discuss issues, create our concept, solicit feedback, and to make schedule adjustments accordingly. The schedule presented in Section 4.7 is the result of this close collaboration and has buy-in from all Team Members.
- **Design Stage** – As we proceed through the design process, the integration of the various disciplines rises to a higher level. We continue to hold team meetings at a minimum on a weekly basis to provide an over-the-shoulder forum for review, discussion and feedback. During this time period, our formal Project Schedule is developed and reviewed by VDOT and other stakeholders. Should issues arise or conditions change during design that impact the sequence of construction milestones, the Team reviews the schedule options for correction so that these milestones are maintained. Once finalized, it is communicated to each discipline, our construction forces, subcontractors and consultants, and other affected parties and is the basis for the Team’s planning efforts moving forward. Throughout this stage, the approved schedule is monitored, updated and communicated to VDOT by the Design-Build PM to ensure that it remains compliant.
- **Construction Stage** – As the Project Team transitions to construction, the Construction Manager and DBPM closely monitor and update the schedule on a regular basis. The CM ensures the schedule is communicated to the entire Team, including utility companies, QA/QC, government agencies, and others. In addition, shorter, more detailed schedules are created by the construction teams to better aid planning their work. These 2-week and 6-week “look ahead” schedules allow teams to plan activities on a daily basis and communicate specific tasks and milestones in a direct, concise way. An additional technique that our Team uses to monitor construction progress is the “Daily Shift Cost Report” (DSCR). At the end of each day, the construction field personnel compare the quantity of work, and the cost to do so, completed that day with the budgeted production and cost. Not only does this analysis provide an early indicator of schedule concerns, but it also instantly highlights potential issues with the schedule by focusing on production rates. Religiously completing and reviewing the DSCR’s allows the construction team to make immediate “real-time” adjustments to work crews, equipment, trucking, subcontractor resources, and material deliveries to adjust production rates in order to maintain the Project Schedule. Our Team will also review and adjust the durations of future schedule activities based on the DSCR production rates to help identify and mitigate schedule concerns for the later phases of the Project.

4.5.2 TRANSPORTATION MANAGEMENT PLAN

Our Team is dedicated to delivering this Project in manner that minimizes impacts to the public and all stakeholders during construction. All aspects of our Transportation Management Plan (TMP) and the Temporary Traffic Control (TTC) Plans will be developed with a focus on maximizing safety for the traveling public and construction personnel while minimizing travel delays throughout all stages of construction. To accomplish these safety and mobility goals, we have committed to several mitigation and communication strategies that **exceed the requirements of the RFP**. Some of these strategies are listed below, and all are detailed on the following pages.

4.5 Construction of the Project

- Early opening of the ultimate 4th lane to Lee Highway/Fairfax Drive Exit, by August 14, 2020, **three months earlier than required**
- Providing wider than required lanes and a usable 9-foot wide paved right shoulder along the eastbound **lanes during median widening**
- Early extension of the third lane east of Sycamore Street on ramp to enhance operations;
- Providing wider than required lanes during Stage 3;
- **Analyzing existing safety concerns and mitigating them prior to construction**
- Avoidance of lane closures by utilizing innovative pipe repair techniques and trenchless installation **methods**
- Enhanced pedestrian/bike safety by separating trail traffic from construction;
- Utilizing enhanced safety devices such as higher visibility devices, wet reflective markings, and **wider than required markings and**
- Enhanced public communication outreach, such as Twitter alerts through social media and more frequent “Pardon our Dust” meetings.

TMP Philosophy

Our TMP and construction program focuses on reducing the Project’s anticipated impacts to the traveling public and exceeding the safety requirements of the RFP. Above all, our Team values safety as our highest **priority in every facet of design and construction. Our TMP will place a particularly heavy focus on eliminating the need for temporary lane closures to the extent possible, as we thoroughly understand the important distinction that single lane closures have very high impacts on traffic.**

To meet our high safety and mobility standards, the TTC and TMP plan development will be led by our Maintenance of Traffic Engineer, Jerry Mrykalo, who is a Professional Traffic Operations Engineer (PTOE) and a certified VDOT Work Zone Traffic Control Training Instructor. Jerry has been the lead traffic engineer for 5 similar interstate widening projects, including the Shirley Team’s I-66 Widening Design-Build, allowing him to understand the unique safety and mobility issues of this Project. Furthermore, to **ensure the TMP development exceeds expectations, our design engineers have completed our in-house Work Zone Traffic Control Training Program and are all VDOT Advanced level certified, *exceeding the requirements of the RFP.***

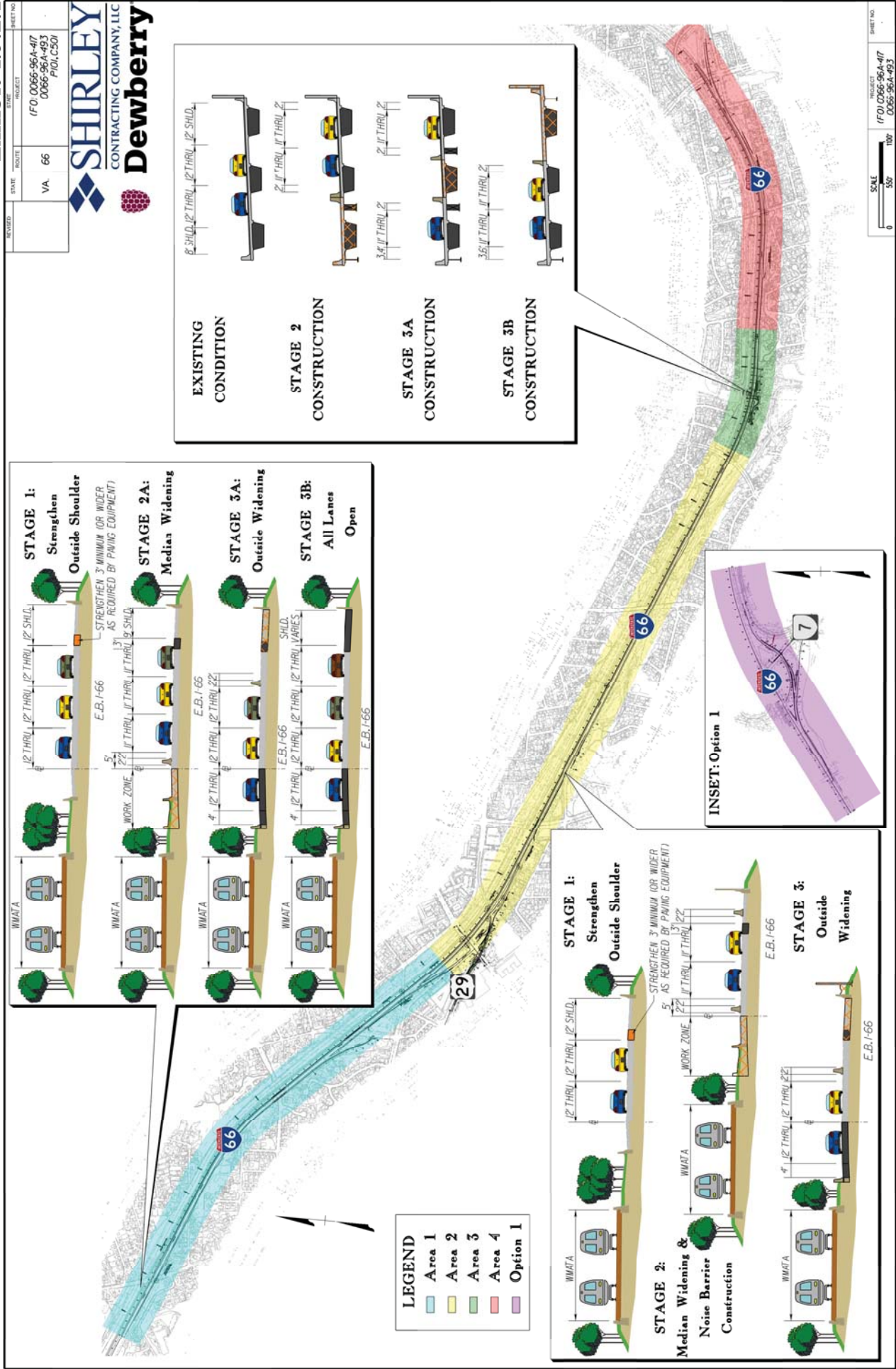
Sequencing of Work

As introduced in Section 4.5.1, the Project will be segmented into four areas (Areas 1 thru 4), plus Option 1, each of which has unique construction and temporary traffic control features. For each of the four work areas (plus Option 1), we have developed area-specific and bridge-specific temporary traffic control strategies as highlighted on Exhibit 4.5.2.1. The typical sections on this exhibit depict the innovative phasing that we will use to safely maintain all lanes during construction based on unique challenges **presented in each area.**

As we studied numerous phasing options in conjunction with developing the permanent roadway alignment, we ultimately selected an alignment that, where possible, shifted the new roadway slightly further into the median than the RFP. This permanent alignment shift allows our Team to deliver the safety and mobility features listed below that ***exceed the requirements of the RFP.*** Details of these enhancements and specific areas they will be utilized are also detailed on Exhibit 4.5.2.1.

- ✓ **Providing full paved shoulders for incident management**
- ✓ **Providing wider lanes than required**
- ✓ **Early opening of widening in certain areas**

Exhibit 4.5.2.1



4.5 Construction of the Project

- ✓ Minimizing temporary lane closures
- ✓ Separating trail traffic from construction activities;
- ✓ Temporarily extending acceleration lanes
- ✓ Elimination of the allowed weekend trail closure
- ✓ Avoidance of I-66 closures to complete B679 deck replacement; and
- ✓ Reducing the number of toll equipment adjustments required.

Traffic Control Details

As shown on Exhibit 4.5.2.1, our Team has developed a temporary traffic control strategy for this Project that minimizes stakeholder impacts. Immediately after beginning the design of the Type C, Category V TMP upon Project Award, we will complete detailed design of the site-specific Temporary Traffic Control (TTC) plans. These plans will be developed for each stage of work to identify barrier and channelization locations, temporary sign locations, PCMS devices, construction access points, temporary pavement markings, temporary drainage, areas of construction, and all other requirements per VDOT's I&IM-241.7, the Virginia Work Area Protection Manual, and the Manual on Uniform Traffic Control Devices (MUTCD). Our Team also recognizes common shortfalls with TTC in work zones, and we are committed to avoiding these conditions with carefully designed site specific TTC plans. For example, we will ensure that barrier ends and impact attenuators are flared as far away from traffic as possible, as driver collisions with impact attenuators can result in high severity crashes. We also thoroughly understand the importance of avoiding "abrupt" lane shifts meeting only minimum lengths on high speed / high volume freeways, and avoiding frequent lane shifts from side to side that are difficult for drivers to navigate safely.

Technical highlights of our proposal are as follows:

I-66 & Interchange Ramps including Option 1

- No planned long term lane closures or temporary detours
- Time of day restrictions will follow Part 2, Section 2.12.3 of the RFP. Temporary lane closures are anticipated for night time paving, shoulder improvements, placement of traffic barriers, delivery of materials, and bridge work;
- Temporary 20 minute maximum full stoppages on I-66 during overnight hours are only expected for overhead sign work
- No flagging operations are anticipated;
- Minimum 11-foot wide lanes will be maintained (12-foot wide to be utilized where feasible); and
- All temporary traffic shifts will be designed to meet the full posted speeds on I-66, double the minimum length requirements of the Virginia Work Area Protection Manual.

W&OD Trail & Custis Trail

- No long-term or weekend closures proposed
- No long-term temporary detours planned and
- Time of day restrictions will follow Part 2, Section 2.12.3 of the RFP.

Speed Limits During Construction & Incident Management

Our Team has taken the proactive step of already completing an analysis utilizing VDOT's TE-350 to determine the appropriate posted speed limit during construction. Based on this analysis, we recommend maintaining the existing posted speed limit of 55 mph for the following reasons:

- All temporary geometry and shifts will meet the standards for the full posted speed limit
- Our Team will strive to provide 12-foot wide lanes wherever possible; and

4.5 Construction of the Project

- In addition to increasing mobility delay, research has proven that lowering speed limits where geometric conditions do not require the reduction actually lessen safety, since large deviations between driver's speeds commonly result in increased crashes.

These recommendations will be discussed with VDOT's Traffic Engineering staff, and we understand that the final determination will be made in coordination with the District Traffic Engineer Post-Award.

Unique Project Challenges & Solutions

Specific attention has been given to the unique challenges of the Project, with focus on mitigation and communication strategies that maximize safety, minimize public impacts, and minimize schedule risk. By carefully studying these elements, our Team has developed the following mitigation strategies:

1. W&OD Trail Bridge

We recognize the existing W&OD crossing requires specific attention given the confluence of heavy pedestrian, bicycle, and vehicular traffic. While developing this proposal, we spent time observing existing conditions, documenting safety concerns, and formulating solutions to address the specific challenges:

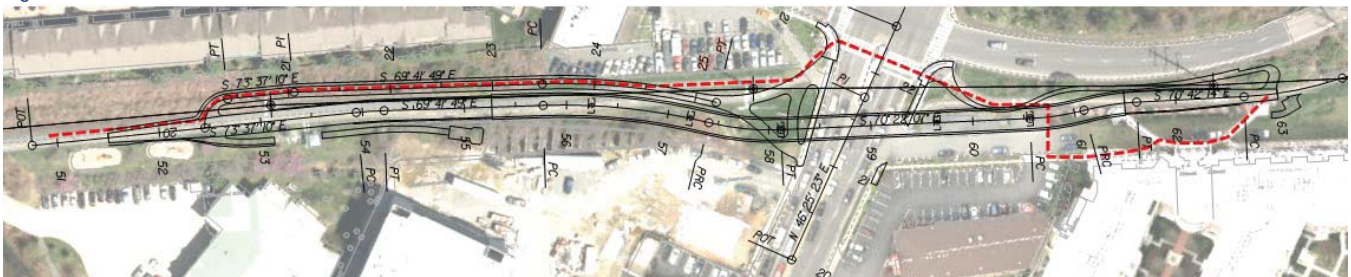
Challenge #1: The proposed bridge for the W&OD Trail is in conflict with the existing trail.

Challenge #2: Construction activities may increase driver distraction at the Lee Highway crossing.

Solutions: through coordination with VDOT and NOVA Parks upon Award, we commit to the following improvements that exceed the requirements of the RFP:

- Utilization of a paved trail diversion that maximizes the separation of trail traffic from construction activities. The preliminary alignment of our planned trail diversion is depicted in Figure 4.5.2.1;
- Use of temporary rumble strips along the W&OD trail to warn pedestrians and bicyclists of work area and height limitations;
- Enhanced/oversize warning sign enhancements on both the W&OD trail and Route 29 to maximize safety.

Figure 4.5.2.1 - Trail Access



2. Existing Shoulder Strengthening

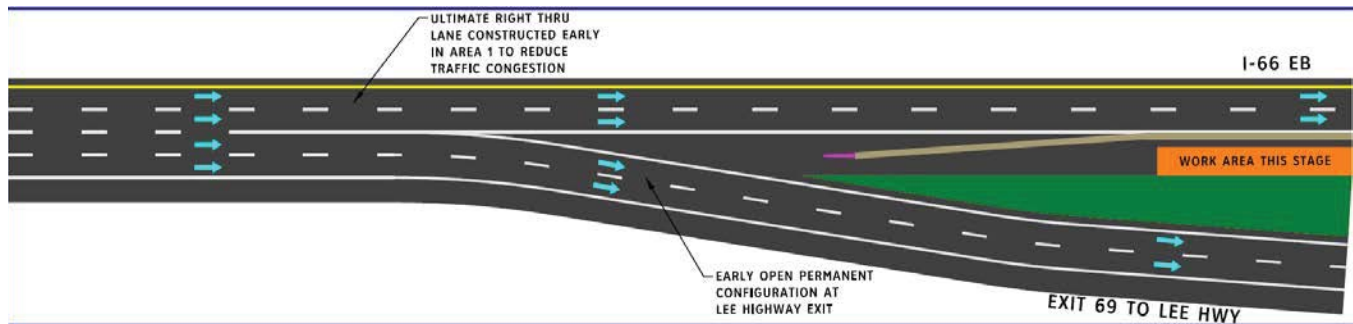
As shown on Exhibit 4.5.2.1, traffic will need to be shifted onto the existing outside shoulder during Stage 2 to facilitate median widening. In order to accommodate the traffic loading, this shoulder will be strengthened during Stage 1. Although the RFP specifies a minimum 6-inch temporary pavement section, we analyzed the required section based on the existing available CBR values and anticipated traffic loading. From this we calculated that the 6-inch section will be insufficient in areas that do not have an existing full depth subgrade section. **Therefore, our Team commits to utilizing a deeper section in these areas to avoid the risk of pavement deterioration.**

4.5 Construction of the Project

3. Early Opening of Permanent Third Lane and Usable Shoulder

Through careful studying of existing traffic congestion “breakdown” points, our Team has developed a plan to prioritize the delivery of additional lanes in areas that will provide the greatest benefit. Currently, one of the most congested areas is from the Route 267 to the Lee Highway and Fairfax Drive Exit (Exit 71). To alleviate this, ***our Team has committed to opening a segment of the permanent third lane from Route 267 to Lee Highway three months earlier than required, exceeding the requirements of the RFP.*** To accomplish this, our Team will open the permanent exit ramp (2 lanes) with the temporary exiting lane configuration depicted in Figure 4.5.2.2. Full signing and marking will also be installed to ensure drivers fully comprehend the new conditions. With this enhancement, we have found thru preliminary traffic analysis that this exit will be improved from a Level of Service (LOS) D (density of 29.9 pc/ln/mi) to LOS B (density of 18.9 pc/ln/mi) in the AM peak hour.

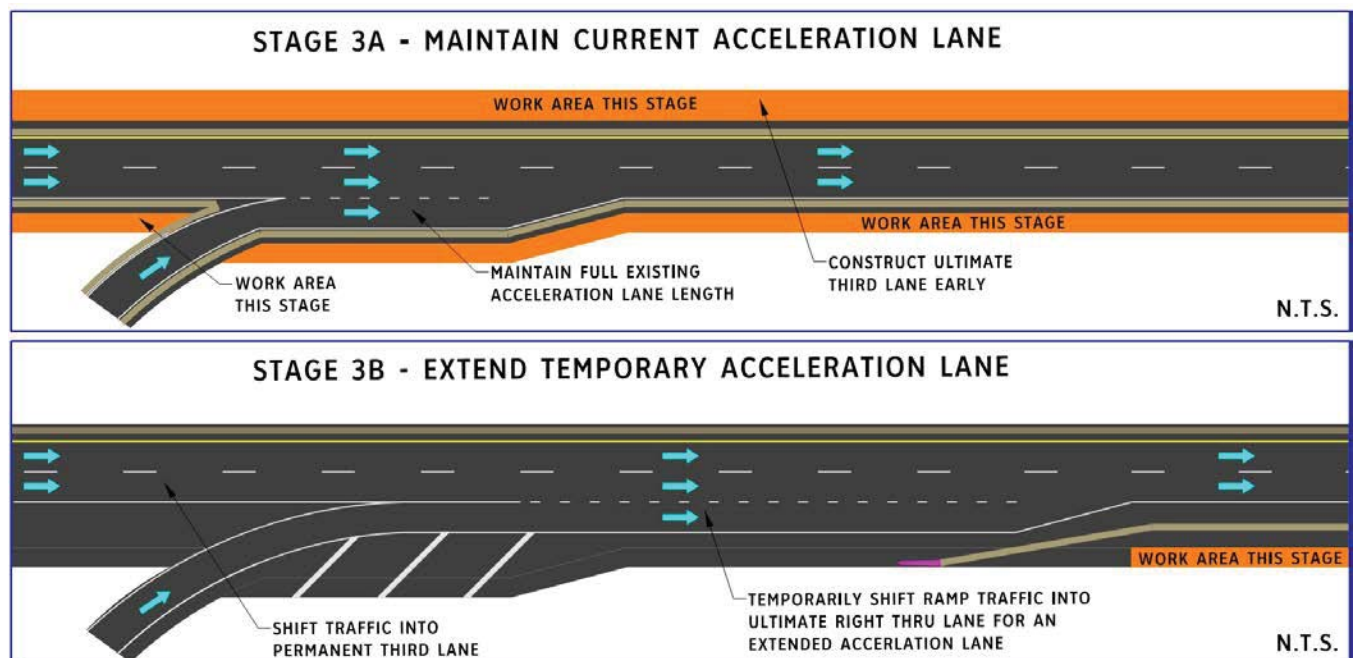
Figure 4.5.2.2 - 4th Lane Interim Opening



4. Temporary Extended Acceleration Lane from Sycamore Street

Similar to the section of I-66 leading up to Exit 71, the other major “breakdown” point is the merge from Sycamore Street, where traffic typically slows or stops due to the short acceleration lane. To prioritize the elimination of this condition, our sequence of construction temporarily lengthens the acceleration lane from Sycamore Street to improve the merge condition. We will achieve this by advancing the construction of the permanent widening in this area while longer duration bridge work to the east is still ongoing. Once the permanent widening is constructed in this area, the thru lanes will be shifted towards the median, opening up additional room on the outside (see Figure 4.5.2.3). This additional room (the ultimate right

Figure 4.5.2.3 - Sycamore Ramp



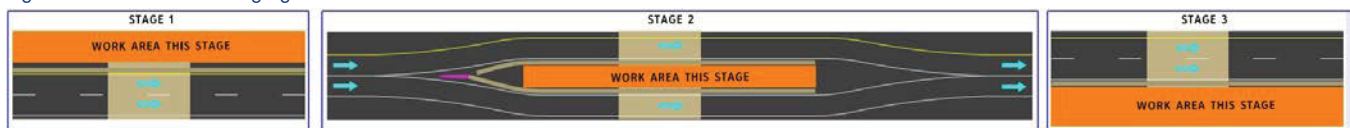
4.5 Construction of the Project

thru lane) will be used for the lengthened acceleration lane. With this enhancement, we have found thru preliminary traffic analysis that the merge will be improved from a Level Of Service (LOS) D (density of 32.4 pc/ln/mi) to LOS C (density of 26.2 pc/ln/mi). Additionally, this provides a safety benefit of minimizing rear-end and angled crashes associated with stopped traffic at a merge point.

5. I-66 EB at B679 (Custis Trail and Bon Air Park)

As detailed on Exhibit 4.5.2.1 and shown in Figure 4.5.2.4, our Team has developed a plan that allows the B679 bridge deck to be reconstructed while continually maintaining I-66. This innovative sequencing avoids the need for temporary closures that would be otherwise necessary if utilizing Accelerated Bridge Construction (ABC) techniques. During “Phase 2” of the sequence, one lane of traffic will be split around each side of the work zone to allow for deck replacement over the center tub girder. This split will be based on Figure 6H-38 of the 2009 MUTCD, and will follow all applicable requirements of the *Virginia Work Area Protection Manual*. In order to enhance the temporary traffic control within the vicinity of the bridge, additional safety measures will be utilized that exceed requirements. Our TTC plans will show enhanced extra warning signs, additional PCMS signs, temporary guide signs and regulatory signs confirming the “all lanes thru” condition, wider than required markings, and longer tapers and buffers to alert motorists of the traffic configuration.

Figure 4.5.2.4 - B679 Staging



To address the safety of construction access during Phase 2, access will be limited to times in which off-peak temporary lane closures are in place, where construction vehicles can enter/exit the work area without interacting with public traffic. We believe that the use of this innovative phasing provides important operational and safety benefits not attainable with ABC options. In addition to avoiding weekday and nighttime complete closures, the conventional bridge construction allowed with our phasing provides greater reliability and avoids the possibility of ABC installation problems that could result in failure to reopen lanes for the weekday rush. In addition, the work zone will be safely protected with concrete barrier, limiting worker exposure to live traffic that could be associated with ABC techniques. During final design and construction, our Team will work closely with VDOT’s construction, traffic engineering, and public communications staff to develop the details of this phasing plan.

6. Drainage Installation

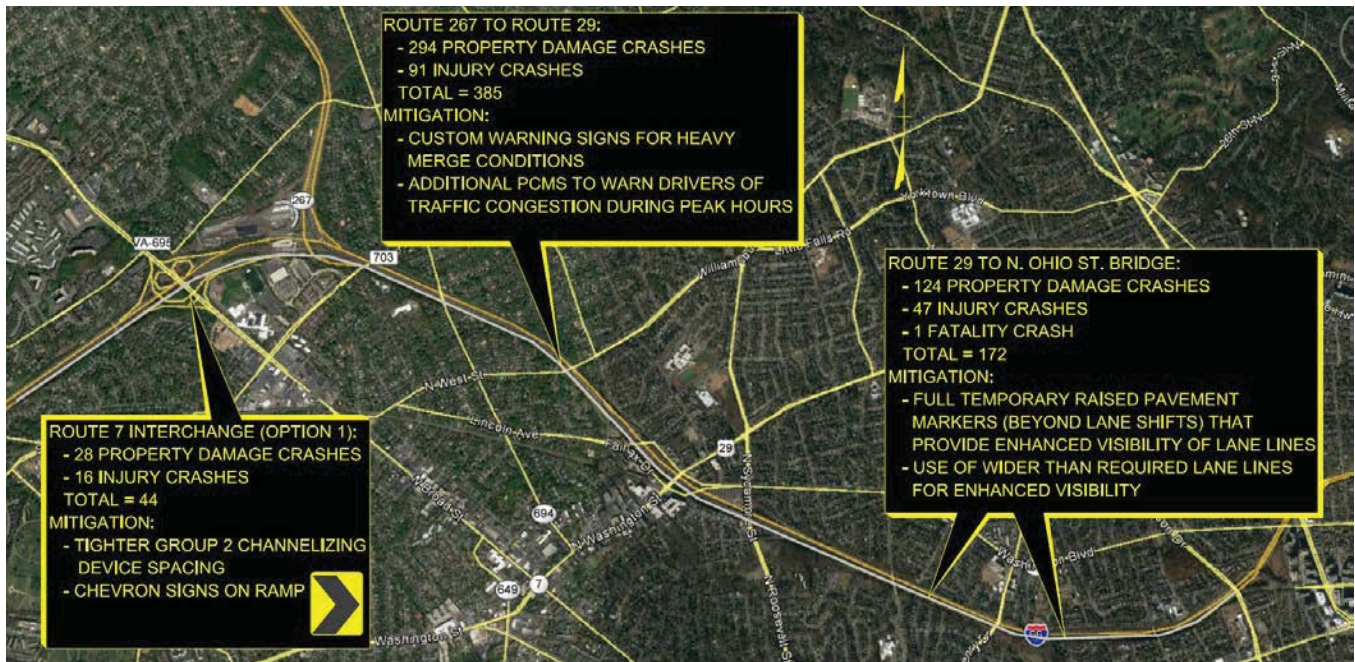
Thru careful coordination between our drainage and temporary traffic control designs, we have developed a drainage design that utilizes innovative technologies to avoid open cutting the existing travel lanes, thereby limiting temporary lane closures. By utilizing slip lining with a flexible membrane as explained in Section 4.3.1(e), we are able to repair deep pipes without the need for open cutting or replacing the pipes. In addition to avoiding lane closures along I-66, this method avoids impacts to the WMATA facilities in the median.

Investigation and Mitigation of Existing Safety Issues

Our Team has taken the proactive step of performing an investigation of existing crash statistics and safety concerns within the Project limits, and have already developed approaches to mitigate these conditions. As shown in Figure 4.5.2.5, there have been over 400 property damage crashes and 150 injury crashes within the Project limits since 2010. In recognition of this, we commit to implementing the site-specific mitigation strategies detailed on the exhibit prior to major construction activities as a safety enhancement, *exceeding RFP requirements*.

4.5 Construction of the Project

Figure 4.5.2.5 - Impact Management



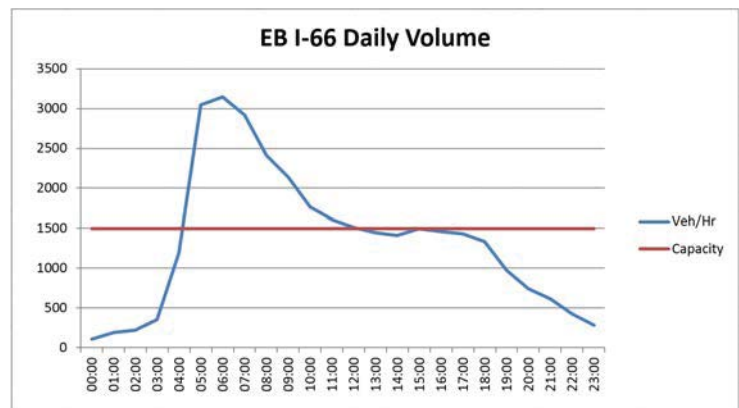
In addition to these enhancements, the following safety improvements will be utilized throughout all work areas and construction stages, such as:

- The use of tighter than required channelizing device spacing for increased work zone delineation and construction personnel safety
- Use of wider than required lane lines for increased delineation of lane shifts
- Full continuous temporary raised pavement markers for increased lane alignment and visibility, especially at night and during wet pavement conditions (only required at lane shifts per the Work Area Protection Manual); and
- Monitoring of traffic and safety conditions during construction by traffic engineers to ensure that the controls have been implemented as intended, and to provide suggestions and recommendation for enhancements.

Lane Closure Optimization

When full construction starts, lane closure impact minimization will be critical when working along I-66 in order to achieve our goals of maximizing safety and minimizing travel delays. Our temporary traffic control strategy puts an emphasis on eliminating the need for temporary lane closures to the greatest extent possible. To begin, we will collect updated 24-hour volume information along I-66 as an initial design activity. We understand that the lane closure restrictions listed in Section 2.12.3 of the RFP are to be followed, but we also recognize that the impacts of closing a single

Figure 4.5.2.6 - Daily I-66 Traffic Volumes



lane on I-66 are significantly greater than closing a single lane on a facility with multiple through lanes. An example of this can be seen in Figure 4.5.2.6, which show results of a preliminary 24-hour analysis. From the graph, our Team can determine the hours during which temporary lane closures might cause

traffic backups and delays. This undesirable condition occurs when traffic volumes (blue line) exceed the capacity of the remaining open travel lane (shown in red horizontal line). Utilizing this type of analysis gives us the ability to schedule short duration work (such as overhead sign truss erection) to the lower volume hours within the allowable lane closure window where feasible.

Also, given that the implementation of tolling on I-66 will likely alter travel patterns, our Team commits to recounting traffic mid-way through construction. This re-count will validate lane closure hours to ensure mobility impacts are minimized, providing a benefit that *exceeds the RFP requirements*. Finally, our Construction Team is trained and proficient in VDOT’s LCAMS system for temporary lane closure management. This allows our Team the advantage of being able to check our proposed lane closures versus planned construction and maintenance activities by others to ensure conflicts do not exist, providing measurable benefit to the Project.

Project Stakeholders

Our Team recognizes that proactive communication with all project stakeholders is essential. As with any large scale transportation project, some inconvenience is unavoidable, but our Team’s goal is to minimize these impacts. We have proactively identified project stakeholders, and have developed specific innovative communication and mitigation strategies that exceed project requirements. These include our commitment to use additional PCMS for motorist guidance, committing to hold additional “Pardon our Dust” meetings, and utilizing enhanced safety devices. The stakeholders, their potential impacts, and our planned communication and mitigation strategies are detailed in Table 9.

Table 9 - Planned Stakeholder Communications and Mitigation Strategies

Stakeholders	Impacts	Communication/Mitigation Strategies
Traveling Public	Increased Travel Delays	<ul style="list-style-type: none"> Hold a minimum of five “Pardon Our Dust” meeting for the general public, public safety officials, and other stakeholders throughout design and construction (1 more than required by the RFP) PCMS Signs and Twitter will be utilized for public notices Encourage public to follow project Twitter feed
W&OD Trail and NOVA Parks	Bridge construction and temporary trail re-alignment	<ul style="list-style-type: none"> Oversee pedestrian crossing warning signs Temporary trail diversion Encourage trail users to follow project Twitter feed Coordinate with NOVA Parks bicycle and other trail user clubs
Local Residents	Construction noise and construction activities close to their property	<ul style="list-style-type: none"> Coordinate construction activities with residential groups via notification and “Pardon Our Dust” meetings Encourage residents to follow project Twitter feed Install noise barriers to provide relief of construction and traffic noise Hold bi-monthly stakeholder meetings
Schools Fairfax County Arlington County Falls Church Colleges	Potential delays to school buses / transportation services	<ul style="list-style-type: none"> Coordinate construction activities directly with school staff No lane closures during school bus operating hours when possible Advance notification of traffic pattern changes
Police, Fire & Rescue Fairfax County Arlington County Virginia State Police	Potential response time impact	<ul style="list-style-type: none"> Advance notification of temporary lane restrictions and changes to traffic patterns; construction access points Communicate 24/7 emergency contact list Notify representatives of approved lane closures Hold special emergency responder meetings

Stakeholders	Impacts	Communication/Mitigation Strategies
Transform 66 Outside the Beltway	Potential impact to access routes	<ul style="list-style-type: none"> ▪ Coordinate lane closures to minimize public impacts ▪ Utilize a liaison to coordinate construction activities and avoid conflicts ▪ Coordinate public outreach to deliver a uniform, consistent message to drivers along I-66
Bus Transit Services Metrobus Arlington Transit Fairfax Connector	Possible impacts to bus transit routes	<ul style="list-style-type: none"> ▪ Send notifications of work to transit operators in advance of traffic switches
TransCore / VDOT Tolling	Disruption of tolling equipment	<ul style="list-style-type: none"> ▪ Reduce number of lane shifts under gantry locations ▪ Coordinate during both design and construction ▪ Construct new equipment prior to impacting existing equipment

Our Promise

We are passionate about providing and maintaining a safe work zone, and will continue to find ways to improve traffic patterns not only after construction, but during construction as well. On several of our recent projects, we implemented interim improvements aimed solely at improving safety and traffic flow during construction. For this Project, we have committed to doing the same by including a multitude of enhancements that exceed the requirements of the RFP. We look forward to designing and constructing this Project for VDOT, the local stakeholders, interested parties, and to another successful design-build project with VDOT.



4.6 - Disadvantaged Business Enterprises (DBE)



4.6 Disadvantaged Business Enterprises (DBE)

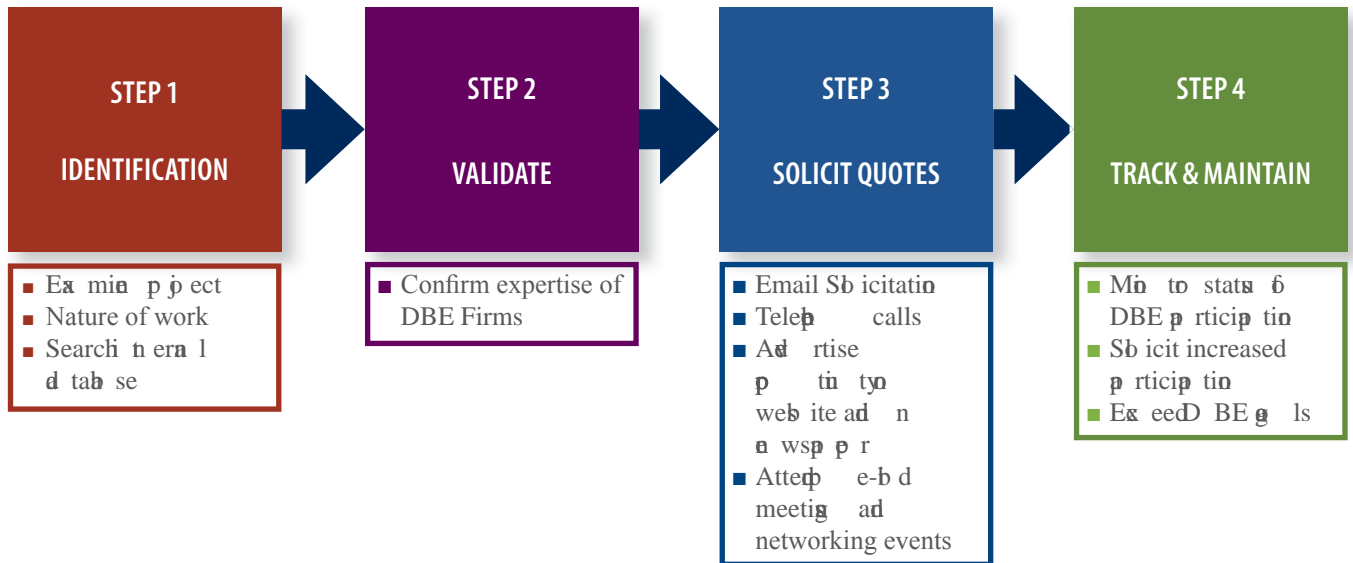
Commitment to Achieving the DBE Goal

Shirley Contracting Company, LLC (Shirley) is committed to achieving the % DBE participation goal for the Project for the entire duration of the contract.

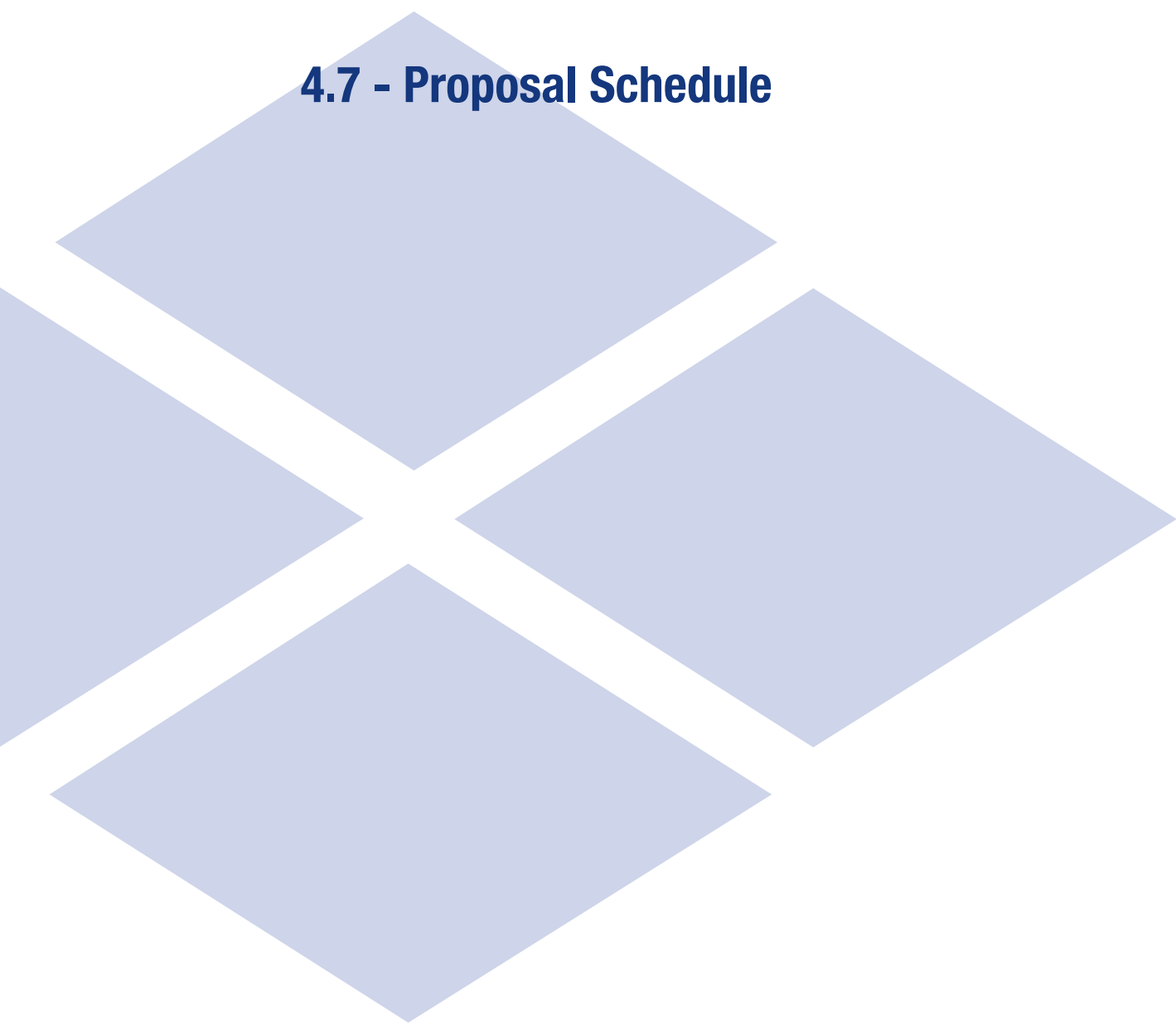
Shirley DBE Subcontracting Plan

Our Team consistently meets or exceeds the DBE goals set on all our Projects and continues to develop lasting relationships with many high respected firms to include: Diversified Property Services, Inc., GeoConcepts Engineering, and Quinn Consulting Services, Inc. We have successfully worked with these firms on multiple VDOT Design Build projects.

The following outlines the steps that we will take to meet or exceed the DBE requirement:



4.7 - Proposal Schedule





4.7 Proposal Schedule

4.7.1 Proposal Schedule

The Shirley Team's Proposal Schedule is provided in Volume I, Section 4.7.1 and Technical Proposal.

4.7.2 Proposal Schedule Narrative

Shirley has reviewed in detail the Project and schedule requirements of the RFP and has developed a Proposal Schedule outlining a plan to successfully manage all phases of this design-build contract. The schedule has been optimized to deliver the Project in the shortest amount of time possible while achieving the early completion incentives, the requirements of the RFP, minimizing impacts to road users and local stakeholders, protecting the environment, and ensuring motorists' and workers' safety. Our Team plans to execute and deliver the work required for Interim Milestone #1 Early Completion by September 1, 2020 and earning the full \$1,000,000 "No Excuse" Incentive offered in the RFP, and also the Early Final Completion of the entire Project by August 2, 2021 to earn the full \$400,000 incentive. As an added benefit we commit to Unique Milestone #1 and will open the 4-lane configuration for beneficial use of the travel lanes for the I-66 eastbound as part of the exit for Lee Highway by August 4, 2020.

A summary of the Contract and Schedule Milestones are shown in Table 10.

Table 10 - Contract and Schedule Milestones

Contract and Schedule Milestones	Date
Notice of Intent to Award	November 2020
Design-Build Contract Execution	January 2020
Notice to Proceed	January 2020
Scope Validity (20 Day)	May 2020
Stage 1C Completion	October 2, 2020
Stage 2A Completion	January 1, 2021
Stage 2B Completion	August 1, 2021
Stage A Completion	April 2020
Stage B Completion	January 2020
UNIQUE MILESTONE #1	August 4, 2020
I-66 DA (Operational) Completion	September 2020
Stage 4 Completion	September 2020
Early Completion Incentive - Interim Milestone #1	September 1, 2020
Substantial Completion - Interim Milestone #1	November 1, 2020
Stage C Completion	January 1, 2021
Early Completion Incentive - Final Completion	August 2, 2021
Final Completion	October 1, 2021

Work Breakdown Structure

In order to deliver the Project on time, our Team has developed a detailed Preliminary Proposal Schedule in accordance with the RFP requirements. The Team has organized the schedule in an hierarchical Work Breakdown Structure (WBS) in order to demonstrate the relationship and activity duration among the milestones, scope and timeline periods and significant events, environmental permitting ROW acquisition utility relocation construction and project management disciplines. All elements of the design-build process are captured under these Level 1 tasks and are briefly described below:

4. Proposal Schedule

- A. Schedule Milestones** Provided for easy review of the milestone dates and project status.
- B. Design Phase** Includes preliminary engineering services, plan development, QA/QC reviews, submittal milestones, and reviews by VDOT, FHWA and other regulatory agencies and approvals of plans. This section includes a second level WB to differentiate the type of design submission including Geotechnical Investigation, Roadway, Bridge and Utility design.
- C. Public Outreach** Includes milestones for planned public involvement, meetings and updates to the Office of Public Affairs for major traffic switches, and updates to the VDOT project specific website.
- D. Environmental Permitting** Includes wetland and stream delineations and the jurisdictional determination, permit management and preparation, mitigation, and permit submissions, reviews and approvals. Although our concept avoids impacts to wetlands and streams, our schedule includes placeholders for the Corps of Engineers Individual Permit and Department of Environmental Quality general Permit to minimize the risk of delays due to unforeseen impacts. Other planned permits include the LD-445/VSMP Permit and the SWPPP.
- E. Right of way Acquisition/Easements** This section of the WB is used to monitor the acquisition of ROW and easements for the Project including title searches, appraisals and appraisal reviews, offers, negotiations, and settlements. In order to prioritize groups of properties by order of need as we prepare our Baseline CPM, we may include a second level WB structure that includes separate ROW acquisition activities for separate areas of the Project. Dividing the ROW activities into separate groups of parcels will enable our Team to focus our ROW acquisition efforts on the most schedule critical acquisitions and track these critical acquisitions to ensure on time completion.
- F. Utility Relocations** Includes activities for UFI meetings, preparation of preliminary engineering (PE) estimates, approval of PE estimates, utility relocation design by the utility owner, approval of the utility design, and utility relocation construction. The utility relocations are separated into a second level WB group by utility owner.
- G. Construction** Includes all components of roadway and bridge construction as well as MOT, construction access, noise barriers, and drainage. The Construction section of the schedule is segmented by stage and Area and includes two levels of the WB structure to divide the construction activities into groups of work packages that can be easily tracked to monitor construction progress and ensure on-time completion.

Table 11 is a complete outline of the WB structure for the Project:

Table 11 - WBS Structure

WBS Code	WBS Name
66EBL	66 EBL INSIDE THE BELTWAY
66EBL.A	SCHEDULE MILESTONES
66EBL.B	DESIGN PHASE
66EBL.B.A	PRELIMINARY DESIGN
66EBL.B.B	GEOTECHNICAL INVESTIGATION and REPORT
66EBL.B.C	ROADWAY DESIGN
66EBL.B.C.1	ADVANCED SHOULDER STRENGTHENING / TMP STAGE 1 & 2
66EBL.B.C.2	SOUNDWALL FINAL ANALYSIS / ALIGNMENT & ELEVATION
66EBL.B.C.3	ROADWAY DESIGN
66EBL.B.C.5	OPTION 1 DESIGN
66EBL.B.D	BRIDGE DESIGN
66EBL.B.D.1	B675 (WILLIAMSBURG)
66EBL.B.D.2	B677 (WESTMORELAND)

4. Proposal Schedule

66EBL.B.D.3	B678 (N. SYCAMORE)
66EBL.B.D.4	B679 (BON AIR)
66EBL.B.D.5	B680 (WO&D TRAIL OVER LEE HIGHWAY)
66EBL.B.D.6	B681 (PIER RELO)
66EBL.B.D.7	OPTION 1 DESIGN
66EBL.B.E	UTILITY DESIGN
66EBL.C	PUBLIC OUTREACH
66EBL.D	ENVIRONMENTAL PERMITTING
66EBL.E	RIGHT OF WAY ACQUISITION/EASEMENTS
66EBL.F	UTILITY RELOCATIONS
66EBL.G	CONSTRUCTION
66EBL.G.A	PROJECT GENERAL ITEMS
66EBL.G.B	ADMINISTRATION & PIM
66EBL.G.C	MONTHLY PROJECT ADMINISTRATION TASKS
66EBL.G.C.1	DESIGN CONSTRUCTION SUPPORT
66EBL.G.C.2	VDOT FIELD OFFICE
66EBL.G.C.3	MOT CREW
66EBL.G.C.4	E&S MAINTENANCE
66EBL.G.C.5	QA/QC
66EBL.G.C.6	SCC EQUIPMENT AND YARD LOGISTICS
66EBL.G.C.7	SURVEY AND LAYOUT
66EBL.G.1	STAGE 1 - OUTSIDE SHOULDER STRENGTHENING
66EBL.G.1A	I-66 EDA (OPTION 1)
66EBL.G.2	STAGE 2 MEDIAN WIDENING
66EBL.G.2.A	STAGE 2 GENERAL ITEMS
66EBL.G.2.1	STAGE 2 AREA 1
66EBL.G.2.2	STAGE 2 AREA 2
66EBL.G.2.3	STAGE 2 AREA 3
66EBL.G.2.4	STAGE 2 AREA 4
66EBL.G.3	STAGE 3 OUTSIDE WIDENING
66EBL.G.3.A	STAGE 3 GENERAL ITEMS
66EBL.G.3.1	STAGE 3 AREA 1
66EBL.G.3.2	STAGE 3 AREA 2
66EBL.G.3.3	STAGE 3 AREA 3
66EBL.G.3.4	STAGE 3 AREA 4
66EBL.G.3.P	W&OD TRAIL - PEDESTRIAN BRIDGE AT LEE HIGHWAY
66EBL.G.3.S1	SOUNDWALLS - EBL
66EBL.G.3.S2	SOUNDWALLS - WBL
66EBL.G.4	STAGE 4 - MILL/OVERLAY & FINAL SURFACE ASPHALT
66EBL.G.5	STAGE 5 - SIGNALS AND LANDSCAPING
66EBL.G.5.A	SIGNAL AT LEE HWY/FAIRFAX
66EBL.G.5.B	SIGNAL AT LEE HWY/WASHINGTON
66EBL.G.5.C	LANDSCAPING

Calendars

The following is a description of the calendars used for the scheduling of this Project.

Global Calendar – All calendars are based on 8 hour work days and include the following holidays:

new Year Day Holiday from 12:00 AM December 31st until 12:00 AM the next work day following New Year Day, unless the holiday occurs on a Sunday and then the following Monday is considered the Holiday/

4. Proposed Schedule

Memorial Day Holiday from 12:00 AM Friday prior to Memorial Day until 12:00 AM Tuesday following Memorial Day.

Easter Holiday from 12:00 AM on Good Friday until 12:00 AM the following Monday after Easter Sunday.

Independence Day Holiday from 12:00 AM December 31st until 12:00 AM the next working day following Independence Day, unless the holiday occurs on a Sunday and then the following Monday is considered the Holiday.

Labor Day Holiday from 12:00 AM Friday prior to Labor Day until 12:00 AM Tuesday following the Labor Day.

Thanksgiving Day Holiday from 12:00 PM Wednesday prior to Thanksgiving Day until 12:00 AM Monday following Thanksgiving Day.

Christmas Day Holiday from 12:00 PM the day prior to Christmas Day until 12:00 PM the Day following.

Calendar 1 – “C00093577DB49 – I66 DB – 5 DAY WORKWEEK W/HOLIDAYS” – this calendar is based on five working days per week and is used for all design and administrative activities that are unaffected by weather.

Calendar 2 – C000935 DB49 – I66 DB – DAY WORKWEEK – Assigned to activities that have durations based on calendar days instead of working days. For example VDOT’s 21 calendar day review duration.

Calendar 3 – C000935 DB49 – I66 DB – WINTER SHUTDOWN – Assigned to activities that are anticipated to be shut down during the winter, such as asphalt paving and painting. This calendar contains no working days from December 15 of one year to March 31 of the next year.

Plan to Accomplish the Work/Means and Methods

The narrative below describes our Team’s overall plan and sequence of operations grouped by the Level I WB Project disciplines. These include design, public outreach, environmental permitting, ROW acquisition, utility relocation, construction and project management. The sequencing of all disciplines was developed by considering the construction phasing of operations and determining the longest path to project completion with all factors considered including manpower, subcontractors, materials, design, environmental constraints and most importantly, public and worker safety. The Project phasing was developed based on the sequence and constraints shown in the RFP roadway and bridge concept plans and was further refined and developed by the Team based on the geographic areas and additional phasing necessary to meet the MOT requirements and critical elements of work. We divided the Project into four work areas and five Stages that can be tracked and managed by dedicated supervision during construction.

Design Phase

The design phase includes preparation, Quality Assurance/Quality Control reviews, and submission of roadway and bridge plans at multiple stages of the design process with a 21-calendar day activity for VDOT review after each submission. Also included are reviews for FHWA and other regulatory agencies necessary. The design phase also includes non-critical activities for the completion of surveys, utility designations, test pits, utility relocation plans, and geotechnical investigations, including a 90-calendar day activity for VDOT’s review of the geotechnical report prior to submission of the final roadway, bridge and noise barrier plans. Our Team will begin the design phase of the Project immediately upon NTP to get

4. Proposed Schedule

an early start on identification of ROW impacts, maintenance of traffic, and roadway plans. The advanced set of Stage 1 plans will be provided first to expedite the shoulder strengthening work required to begin work on stage 2. All remaining roadway, bridge, and noise wall plans will be developed concurrently with the review and approval of the advanced set and is scheduled to be approved by August 21, 2019. The preliminary schedule reflects approval of the advanced Stage 1 plans on June 1, 2018 to allow for the accelerated completion of this work.

Public Outreach

The public outreach schedule includes submitting our Emergency Contact List and List of Affected Stakeholders upon Notice to Proceed, holding citizen information meetings during the design phase, public information Roadside Dust meetings each March or April at the start of the construction season and prior to major traffic switches, providing updates to the Office of Public Affairs, and additional specific group meetings as necessary. The schedule includes the major milestone activities for the Public Information meetings and major traffic changes. However, there are many other public involvement activities that our Team will perform, including meeting with local businesses and affected property owners, attending meetings with homeowners associations, local government representatives, and community groups, and providing information for regular updates at progress meetings and weekly lane closure plans.

Environmental Permitting

Environmental Permitting will begin upon NTP with the completion of wetland delineations, stream assessments, and jurisdictional determinations. All environmental permitting necessary will be completed by June 1, 2018 ahead of the planned start of the construction and the utility relocations which will take place within the Project limits that are impacted by environmental permitting. Note that placeholders for wetlands and waters permits are included to reduce the risk of schedule delays should there be unforeseen impacts.

Right of Way Acquisition

The administration of the ROW or easement acquisitions will start upon NTP with start of title searches and appraisals for the affected properties. These activities required for acquisition of the necessary easements include title searches, preparation of fair market value appraisals, appraisal reviews by the independent review appraiser, VDOT review and approval of the appraisals, preparation and delivery of offers to the affected property owners, negotiations with the property owners, and settlements, and relocation assistance, if necessary. The ROW/Easement acquisition process is scheduled to be completed on June 11, 2019.

Utility Relocations

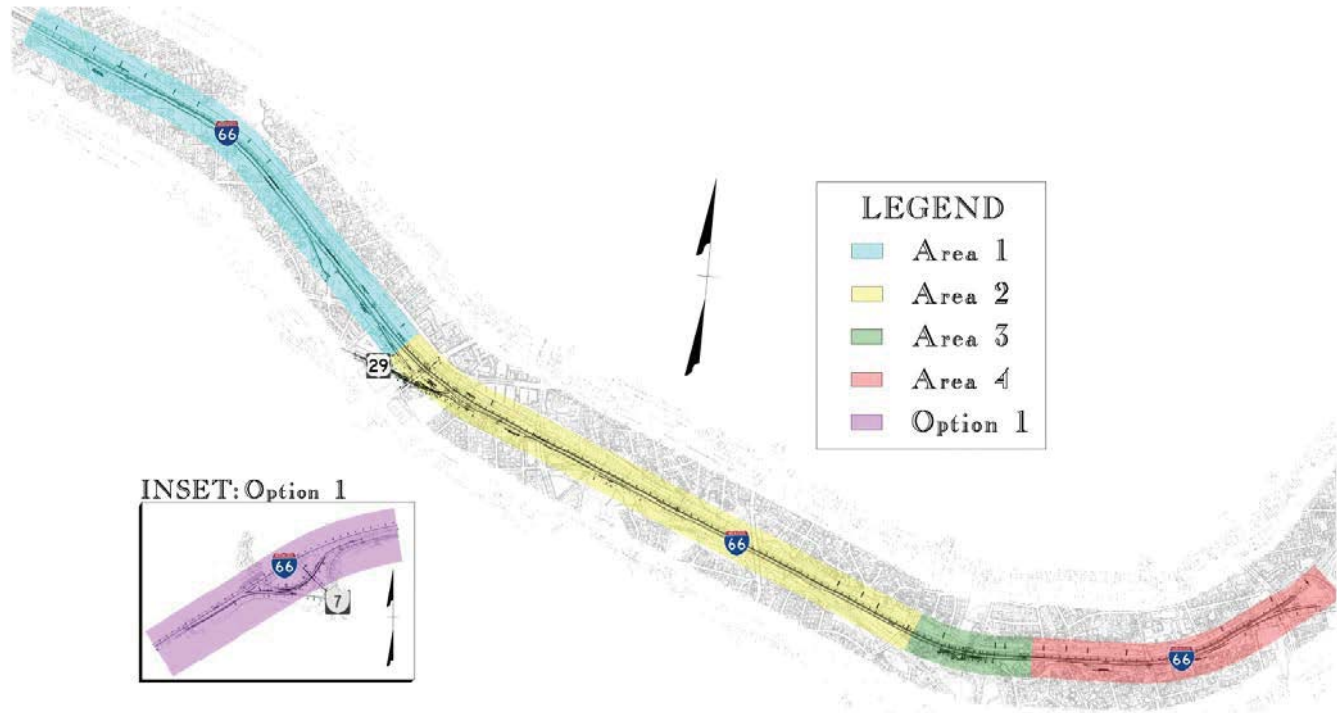
To simplify and track the utility relocations on the Project, we have created a work breakdown structure that groups the utility relocation activities by the utility owner. Within each utility owner group, we have included activities for holding the Utility Field Investigation (UFI) meeting, followed by preparation of the Preliminary Engineering (PE) estimates by the utility owner, approval of the PE estimate, design of the utility relocation, and construction of the relocation area. Although we have already met with each individual utility company to discuss the proposed relocations and prior rights, the utility relocation schedule starts with formal UFI meetings in July 2018 following completion of all utility test pits. This will enable our Team to confirm and adjust our list of utility conflicts based on the field test pit data prior to holding the formal UFI meeting. We will continue this early coordination of utilities throughout the Design Phase of the Project to ensure that the Roadway Plans are coordinated with the utility relocation plans. The utility relocations are anticipated to be completed prior to impacting construction operations and avoiding delays.

Geography and Construction Staging

Our Team plans to construct this Project in four geographic areas during five stages of construction. The limits of these Areas were carefully planned in order to construct the Project as safely and efficiently as possible. These Areas and Stages are described as follows and in Figure 4.7.1.1.

- Area 1 – Station 115+00 to 183+00
- Area 2 – Station 183+00 to 260+00
- Area 3 – Station 260+00 to 266+00
- Area 4 – Station 266+00 to 315+00
- Option 1 – Entirety of Option 1 scope

Figure 4.7.1.1 - Construction Areas and Geographic Phasing of Work



Within each Area, our sequence of construction is separated into five Stages as follows:

- Stage 1** - I-66 EB Outside Temporary shoulder strengthening
- Stage 2A/2B** - I-66 EB Ultimate Median Widening
- Stage 3A/3B** - I-66 EB Ultimate Outside Widening
- Stage 4** - I-66 Mill and Overlay, surface Asphalt and Finishing Items
- Stage 5** - Traffic Signals and Landscaping

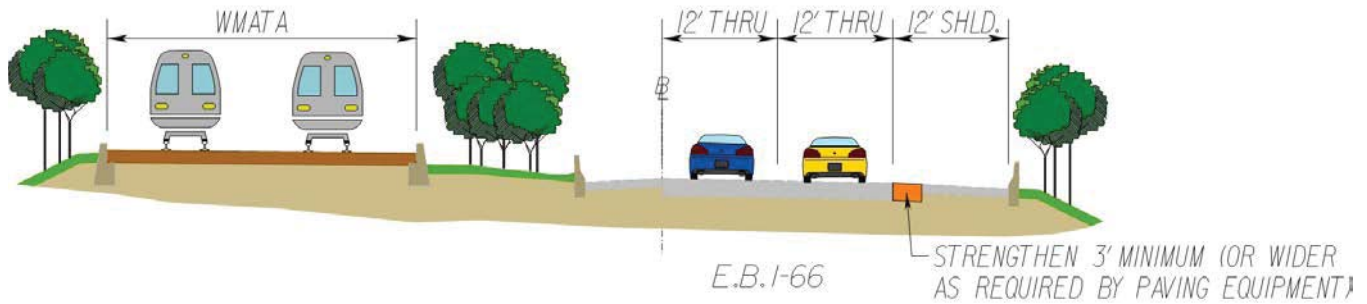
Construction Sequence

Stage 1 (Starts - June 2018)

The upfront design efforts will allow Stage 1 construction to begin as early as possible while the remaining stages of work are still being developed and approved. At the beginning of Stage 1, the initial mobilization of the Project field office will occur, along with the survey controls, initial maintenance of traffic controls and construction signing. In order to accommodate the temporary traffic barrier service along the median widening, the outside shoulder will be strengthened to support the additional traffic loading as traffic is shifted to the outside as shown in Figure 4.7.1.2 on the following page.

4. Proposed Schedule

Figure 4.7.1.2 - Stage 1 - Strengthen Outside Shoulder



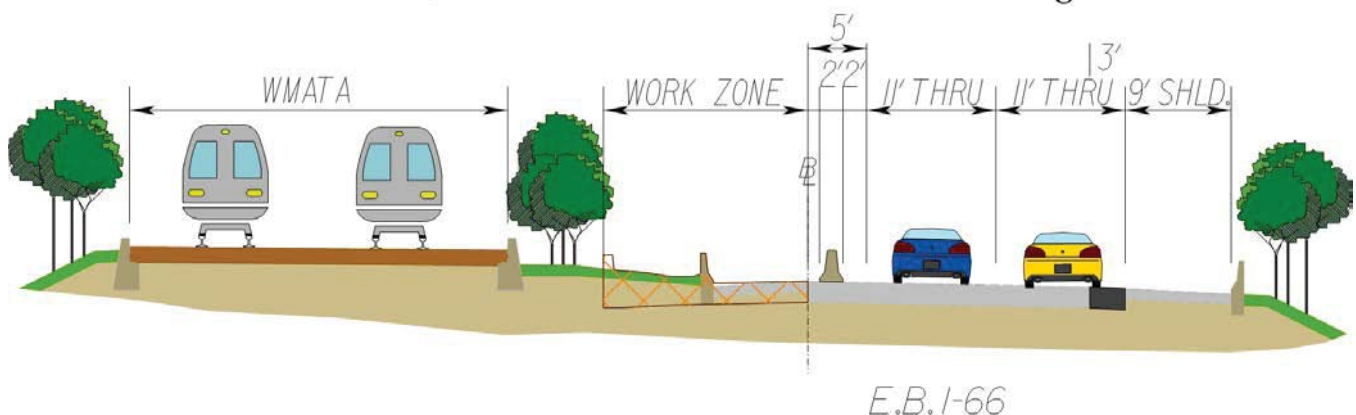
This shoulder strengthening operation will be performed at night during the allowable lane closure times. Operations will be planned so that no drop-offs greater than 2-inches remain at the end of each nightly operation.

Temporary pavement markings will be placed to shift traffic to the outside of I-66, providing the necessary room to install temporary traffic barrier service for Stage 2 Construction. Before shifting traffic in this stage, the management Team will coordinate with the Tolling Operations Contractor TransCore to allow the modifications to the tolling equipment to be completed and coordinated with each traffic switch.

Stage 2A/2B (Starts - October 2018)

Stage 2 work shown in Figure 4.7.1.3, includes the construction of the ultimate median widening, median drainage improvements, median bridge widenings, and the construction of the Westbound noise barriers. The W&OD Trail Bridge and Westbound noise barriers are sequenced independently from the mainline I-66 Eastbound improvements to allow the construction to begin as soon as possible and continue through Stage 3 work. Two 11-foot traffic lanes will be maintained on I-66 Eastbound and temporary traffic service barrier will be in place to provide a safe working area for the permanent median construction. Because all median work will be completed behind temporary traffic barriers, we expect only minimal impacts to the traveling public during this stage. Our sequencing allows for a 9-foot paved shoulder to accommodate vehicle breakdowns, incident management and police enforcement, *which exceed the requirements of the RFP*.

Figure 4.7.1.3 - Stage 2 - Median Widening



Crews will work starting from the west (Area 1) to the east (Area 4) to prioritize Unique Milestone #1 that has been created and detailed in this section. Median bridge widenings will be constructed at the Williamsburg, Westmoreland, Yamahome, and Bon Air structures, as well as the pier relocation for the Pedestrian Bridge over I-66. Stage 2 has been divided into two portions, Stage 2A (Area 1) and Stage 2B (Areas 2-4) to expedite the work associated with Unique Milestone #1. Once Stage 2A (Area 1) is complete, traffic in that area will be shifted into the Stage 3A configuration while Stage 2B is concurrently being

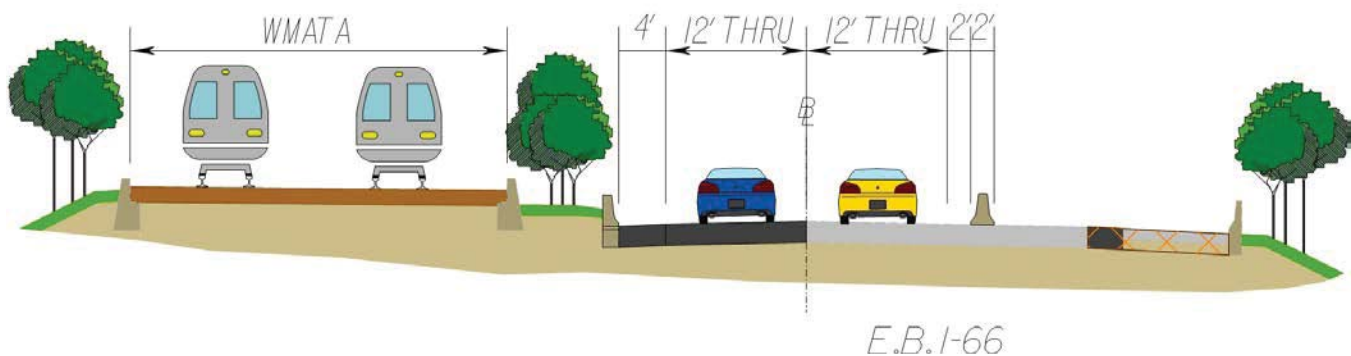
4. Proposed Schedule

performed. This advanced sequencing of work is the key contributor to opening the ultimate configuration of Area 1 three months before the RFP requirement of Interim Milestone #1. Our Team will also prioritize the design and approval of the Noise Barriers along I-66 Westbound to begin this work in Stage 2 before access to the EB Noise Barriers is provided in Stage 3. Before shifting traffic in this Stage, the management Team will coordinate with the Tolling Operations Contractor TransCore to allow the modifications to the tolling equipment to be completed and coordinated with each traffic switch.

Stage 3A/3B (Starts March 2019)

Stage 3 work shown in Figure 4.7.1.4 includes construction of the remaining mainline improvements and the completion of the W&OD Pedestrian Bridge. The ultimate outside widening will be completed along with all of the noise barriers and bridge widenings on I-66 Eastbound. Roadway, drainage improvements, concrete barrier and guardrail will be installed along with the required overhead sign foundations and IT modifications. The Stage 3 traffic configuration provides 12-foot wide traffic lanes which is a safety and traffic operation enhancement, *exceeding the 11-foot lane requirement of the RFP.*

Figure 4.7.1.4 - Stage 3 - Reconstruct Remaining Pavement



Similar to Stage 2, Stage 3 has been divided into two portions. Stage 3A (Area 1) will be expedited to achieve the Unique Milestone #1 while the remaining Areas of Stage 3 are constructed. The complete deck reconstruction sequence of work at Bon Air Park will also be a critical element in this phase as the Team will focus on limiting the duration that traffic lanes on I-66 Eastbound will be in a split configuration. Once complete, all lanes of traffic will be shifted to the median and the outside deck reconstruction will occur. Similar to Stage 2 work, all construction activities will take place behind temporary traffic barriers to reduce the amount of temporary lane closures required to perform the work. The Team has developed an access plan for each noise barrier to limit the amount of clearing and disturbed ground that will be necessary. As required by the RFP documents, all existing noise barriers will be maintained as long as possible and will be removed as the new noise barrier are installed. The structure-mounted noise barriers on I-66 Westbound have been sequenced in Stage 3; however, they have the flexibility to be performed at any time throughout Stage 2 or 3. The W&OD Pedestrian Bridge will continue to be constructed in this phase and is anticipated to be completed by the end of Stage 3. Before shifting traffic in this Stage, the management Team will coordinate with the Tolling Operations Contractor TransCore to allow the modifications to the tolling equipment to be completed and coordinated with each traffic switch.

Stage 4 (Starts - June 2020)

Stage 4 represents the final remaining work necessary for the completion of the contractual Interim Milestone 1 by November 10, 2020. During this stage, the existing mainline lanes of I-66 Eastbound will be milled and surface asphalt will be placed on the entire width of the roadway. All remaining permanent roadway signing will also be installed and the pavement markings will follow in line with the placement of the surface asphalt.

4.7 Proposal Schedule

Stage 5 (Starts - September 2020)

Stage 5 includes the traffic signal work on Lee Highway at the intersections of Fairfax Drive and Washington Boulevard as well as the landscape engineering RFP demonstrations.

I-66 EDA (Starts - April 2020)

Construction begins with installation of traffic control devices and erosion and sediment controls. Work then begins on bridge widening by installing the precast abutments, erecting structural steel, and mobilizing the deck stringer precast and retaining deck construction and waterproofing. Concurrently, crews will work to establish the drainage, drainage, aggregate base, and asphalt paving. Finally, the new roadway will be striped, guardrail and signage installed, maintenance of traffic devices removed, and the new roadway will be opened to traffic.

Key Scheduling Assumptions

- Environmental permitting agencies will accept VDOT's RFP and additional minimization efforts taken in the RFP phase as sufficient to process permit without delay.
- Utility companies will coordinate their relocations in accordance with our Project Schedule.
- There are no hazards material, threatened & endangered species, or fish or wildlife resources, other than those identified in the RFP, that could delay the Project Schedule.
- Crew leveling has been developed through crew-flow relationships between like activities.
- Crews are based on an 8-hour workday and 5-day per week calendar. A detailed description of the calendar is included in the schedule.
- Generally, the schedule has been built with work in certain areas of the Project starting when access is available (either via work availability, property rights, or utility access) and/or at the completion of a prior stage of work. We have provided some crew flow predecessor relationships in several locations throughout the schedule mainly where adjacent work is available and crew flow is logical as to 'stack to maximize resources' for each hour.
- Generally Finish-Start relationships are primarily used as much as possible to create logical flow of the work in a particular area. There is some overlap between different types of activity in any one area. For example, the earthwork moving activities in any one area may be running concurrently with storm pipe installation. In this type scenario, both will be completed with a 'Roll Grad' activity and both the pavement section activities will begin.

Critical Path

The critical path of the schedule will be analyzed at all stages of design to determine the schedule, and the construction to determine which activities are most critical to the key milestones. The Team can use the critical path to effectively manage project and efforts to minimize the risk of any schedule delay. Listed below is a description of the Project's Critical Path as depicted in the Proposal Schedule:

SCHEDULE MILESTONES

- Notice To Proceed
- Stage 1C complete
- Stage 2B Complete
- Stage B Complete
- Stage 4 Complete
- Stage 5C complete
- Address VDOT Final Purchasing - Interim Milestone 1
- Address VDOT Final Purchasing
- Early Final Completion
- Final Completion and/or Period

4.7 Proposal Schedule

Contract Final Completion

DESIGN PHASE

PRELIMINARY DESIGN

Notification Of Landowners/Bond

Supplemental Base Mapping/Field Survey

GEOTECHNICAL INVESTIGATION and REPORT

Prepare / Submit Soil Boring Location Plan

Review / Approve Soil Boring Location Plan (Internal Only)

Submit Soil Boring Location

Geotechnical Field Investigation

Prepare / Submit Noise Wall GER (As Req'd)

Review / Approve Noisewall GER (90 Day Review For D/B Projects)

ROADWAY DESIGN

Advanced Shoulder Strengthening / TMP Stage 1 & 2

Final Advanced Shoulder Strengthening Plans/TMP Stg 1&2 Plans Approved

Soundwall Final Analysis / Alignment & Elevation

Submit Final Soundwall Alignment & Elevation Plans

VDOT/FHWA Review/Comment Final Soundwall Alignment & Elevation Plans

Final Soundwall Alignment & Elevation Plans Approved

Prepare/Review/Approve Soundwall Panel Shop Drawings - EB

ENVIRONMENTAL PERMITTING

Property Access Easement

Wetland Delimitation, Survey, & Jurisdiction Determination

Submit "Joint Permit Application"

*Corps Of Engineers & DEQ Review And Approve General Permit

CONSTRUCTION

PROJECT GENERAL ITEMS

Mobilization/Construction

ADMINISTRATION & PIM

QA/QC Preparatory Inspection Meeting - MOT

QA/QC Preparatory Inspection Meeting - Aggregate Base

STAGE 1 - OUTSIDE SHOULDER STRENGTHENING

Stage 1 General Items

Install Stage 1 Construction Signage

Coordination With TransCore For Traffic Switch

Sta 122+50 To Sta 166+75 (Ramp 3 Sta 14+38)

Shoulder Strengthening

Sta 165+60 To Sta 219+60

Shoulder Strengthening

Sta 216+50 To Sta 311+00 (Ramp 2 Sta 26+90)

Shoulder Strengthening

Profile Milling

Install Temp Asphalt

STAGE 2 MEDIAN WIDENING

Stage 2 General Items

Install Stage 2 Construction Signage

Install Pavement Markings For Stage 2

Coordination With TransCore For Traffic Switch (Stage 2B)

Stage 2 Area 1

4.7 Proposal Schedule

Sta 129+60 To Sta 156+50

Install Temporary Service Barrier

I-66 Over Williamsburg Bridge Widening Sta 156+50 To 158+50

Install Temporary Service Barrier

Sta 158+50 To Sta 168+50

Install Temporary Service Barrier

I-66 Over Westmoreland Street Bridge Widening Sta 168+50 To Sta 171+00

Install Temporary Service Barrier

Construct Approach Structures

Construct Piers

Construct Approach Structures

Erect Structural Steel

Demo Existing Parapet/Overhang

Construct Deck

Construct Parapet

Stage 2 Area 2

Pedestrian Bridge Pier Relocation B681 Sta 226+00 To 226+50

Construct Pier

Strengthen Pier Structure

Install Relocated Pier Bearing

Demo Existing Pier

VDOT Safety Inspection

Bridge Widening Ready To Open

STAGE 3 OUTSIDE WIDENING

Stage 3 General Items

Coordination With TransCore For Traffic Switch (Stage 2B)

Stage 3 Area 3

I-66 Over Bon Air Park/Custis Trail Sta 267+50 To 268+75

Middle Lane Deck Reconstruction

Install Temp Service Barrier - Split Traffic

Demo Existing Deck

Construct Superstructure

VDOT Safety Inspection

Bridge Widening Ready To Open

Outside Lane Deck Reconstruction

Install Temporary Service Barrier

Demo Existing Deck Approach

Construct Approach Structures

Construct Approach Structures

Construct Deck Approach

Install Girder

VDOT Safety Inspection

Bridge Widening Ready To Open

Stage 3 Area 4

Sta 273+00 To Sta 304+50 And Ramp 2 Sta 20+00 To Sta 27+00

Section Complete - Sta 27+00 To 30+00

Soundwalls - EBL

Barrier C1

30-Day Notification Of Clearing/Demo

4.7 Proposal Schedule

Sta 135+00 To Sta 154+75

Clear Ad Grb
In tall E&S Ad Estab ish Access
Demo AdR emø Ek stigN ò se Barrier
In tall Fd tiø AdN ò se Barrier

Sta 129+50 To Sta 135+00

Clear Ad Grb
In tall E&S Ad Estab ish Access
Demo AdR emø Ek stigN ò se Barrier
In tall Fd tiø AdN ò se Barrier

Sta 158+25 To End Of Ramp 3 Sta 18+75

Clear Ad Grb
In tall E&S Ad Estab ish Access
Demo AdR emø Ek stigN ò se Barrier
In tall Fd tiø AdN ò se Barrier

Barrier D1 & D2

D1 - Fairfax Drive

In tall Fd tiø AdN ò se Barrier

D2 - Ramp 1 Sta 16+50 To 21+50

In tall Fd tiø AdN ò se Barrier

Barrier E1

Barrier E1 New - W&OD Trail Sta 59+00 To 62+50

In tall Fd tiø AdN ò se Barrier

E1 Replacement Sta 192+50 To 204+00

In tall Fd tiø AdN ò se Barrier

Barrier H - Bon Air Park

Sta 264+50 To 272+50

Set Pø t Fø Stru tu e Mtu edN ò se Barrier
Set Paa ls Fø Stru tu e Mtu edN ò se Barrier
Sd all Cm p ete - Sta 26+ 0 To 27 2+0

Barrier H1 Extension

Sta 282+00 To Sta 291+25

In tall Fd tiø AdN ò se Barrier
Backfill Wall/Dressup Slope
Sd all Cm p ete - Sta 28+ 0 To 29 1 25

STAGE 4 - MILL/OVERLAY & FINAL SURFACE ASPHALT

Stage 4 General Items

Remø Temp\$ eriv ce Barrier
Coordination With TransCore For Traffic Switch

Sta 122+50 To Sta 166+75 (Inside Lanes/Shoulder)

Mill Existing Mainline Lane/Shoulder Buildup

Sta 166+75 To Sta 219+60 (Inside Lanes/Shoulder)

Mill Existing Mainline Lane/Shoulder Buildup
In tall SM Asp lt
In tall Pav men Mark g
In tall Sig g

Sta 219+60 To Sta 311+00 (Inside Lanes/Shoulder)

Mill Existing Mainline Lane/Shoulder Buildup
In tall SM Asp lt

4.7 Proposal Schedule

In tall Sign

Sta 122+50 To Sta 166+75 (Outside Lanes/Shoulder)

Mill Existing Mainline Lane/Shoulder Buildup

In tall SM Asphalt

In tall Sign

Sta 166+75 To Sta 219+60 (Outside Lanes/Shoulder)

Mill Existing Mainline Lane/Shoulder Buildup

In tall SM Asphalt

In tall Pavement Marking

In tall Sign

Sta 219+60 To Sta 311+00 (Outside Lanes/Shoulder)

Mill Existing Mainline Lane/Shoulder Buildup

In tall SM Asphalt

In tall Pavement Marking

In tall Sign

Section Complete - Sta 296+00 To 311+00

STAGE 5 - SIGNALS AND LANDSCAPING

Signal At Lee Hwy/Fairfax

Construct Signal

Signal At Lee Hwy/Washington

Construct Signal

Landscaping

Landscaping

Project Controls

The project experienced live right major signal build roadway projects ahead of schedule, Shirley has developed project schedule to ensure the delivery, implementation progress tracking and recovery the CPM schedule throughout the project phases.

Schedule Development

For any signal build project it is important that the Project Team develop a detailed CPM schedule that considers the interrelationships between all of the signal build disciplines. This is especially important on a project with complex MOT requirements that must be integrated into the signal construction sequence. The Shirley Team has developed the Preliminary CPM Schedule, included in Volume II, that includes a Work Breakdown Structure (WBS) to clearly delineate the tasks of each discipline manager, including Design, Permitting, ROW, Utilities, and Construction.

Each discipline manager was responsible for producing a schedule to govern their own work and provide insight into how their schedule activities affect and are affected by activities in other disciplines. On each manager prepared their individual schedule, schedule development meetings were held by the DBPM. These meetings were attended by all discipline managers to review each individual schedule and integrate them into the overall project CPM Schedule. These meetings ensure that:

- The work packages within each discipline are comprehensive enough to define the work with no activities omitted
- The work packages are integrated with each discipline and between disciplines to generate a clearly defined project critical path, confirm that the critical path makes sense, and that the schedule shows that the Project will complete on time or ahead of schedule;
- Each discipline manager understands the schedule of the other disciplines and how their work interrelates with the other disciplines;

4. Proposed Schedule

- Each discipline manager understands how his work affects the critical path of the Project and the priorities of the DBPM and the other discipline managers and
- The schedule meets the requirements of the Contract.

These meetings have enabled the Shirley Team to create a detailed Preliminary Schedule that has been jointly prepared by and agreed to by all of the discipline managers, providing realistic expectations of the schedule of work to be completed by all team members and third parties.

Throughout the design phase of the Project as more detailed plans are developed and utility conflicts are verified through test pitting, these meetings will continue to further develop the Preliminary Schedule into the more detailed Baseline CPM Schedule. This schedule can then be utilized by all Team members to plan and track the progress of their work. It will be submitted to VDOT for review and approval and utilized during the planning phases for utilities, permitting, ROW, design, and subcontractor/supplier scope and purchasing. Specific milestone dates from the CPM schedule will be written into subcontracts and purchase orders, making them contractually responsible for meeting schedule deadlines.

Procedures For Monitoring and Reporting Schedule Progress to Ensure Timely Project Completion

The key to effectively monitoring schedule progress is maintaining efficient communication between the discipline managers, resulting in constant coordination and schedule feedback. From the NTP date through the completion of design activities, our Team, at a minimum will hold weekly Design Coordination Meetings that are run by the DBPM and attended by all of the discipline managers. Design Coordination Meetings have been a crucial tool on the other design-build projects by facilitating face-to-face communication between the discipline managers. For each Design Coordination Meeting, the DBPM will review the CPM Schedule and identify all activities that were scheduled for completion the previous week or are planned for the next two weeks. During the meeting, the Project Team discusses the status of progress since the last meeting with actual dates for completed activities, critical completion dates for future activities, the addition or deletion of schedule activities as the design evolves (for example the identification of a new utility impact or the ability to design around a planned utility relocation), the impact of revised schedule dates on other activities and disciplines; identification of ways to advance the schedule ahead of the planned completion or mitigate schedule delays and general design review, constructability, and determination of means and methods.

After each weekly meeting, the DBPM will update the CPM schedule and forward copies of an updated look-ahead schedule to each of the discipline managers identifying the critical dates agreed to during the weekly design meeting. This process continues throughout the design, permitting, and ROW phases to ensure that there is no slippage to the start of the utility relocation and construction phases of the Project.

During the utility relocation and construction phases of the Project, the DBPM, Superintendent, Designer of Record, QA Manager, QC Manager, and VDOT will continue to meet weekly for a Construction Progress Meeting to coordinate necessary QA, QC, Independent Assurance (IA) and Independent Verification (IV) inspections. At each meeting the Superintendent will review the work performed during the previous week and outline the schedule activities that will be performed during the following two weeks.

In addition to weekly schedule meetings with the VDOT, our Team will also prepare and submit monthly schedule updates for review and approval by VDOT, including the narrative of the schedule modifications, updated activities, project issues affecting the schedule, and a description of the Critical Path with updated schedule milestones. These daily, weekly, and monthly reviews of production rates, activity durations, and overall schedule status will enable our Team to identify and mitigate potential schedule delays to ensure early completion.

Proposal Schedule		I-66 Eastbound Widening Inside the Beltway																
Activity ID	Activity Name	Original Duration	Total Float	Start	Finish	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	
D1120	LD-445 FORMS - VDOT PROCESS AND SEND TO DCR	21.0	24.0	03-Apr-18	23-Apr-18	N	D	J	F	M	A	M	J	J	A	S	O	N
D1140	LD-445 FORMS - DEQ REVIEW AND APPROVE	15.0	24.0	24-Apr-18	08-May-18	N	D	J	F	M	A	M	J	J	A	S	O	N
RIGHT OF WAY ACQUISITION/EASEMENTS		216.0	7.0	23-Jul-18	11-Jun-19	N	D	J	F	M	A	M	J	J	A	S	O	N
ALL PARCELS		216.0	7.0	23-Jul-18	11-Jun-19	N	D	J	F	M	A	M	J	J	A	S	O	N
E2000	2nd Submission Plans Submitted	0.0	7.0	23-Jul-18														
E2010	Complete 60 Yr. Title Exam	30.0	7.0	23-Jul-18	31-Aug-18													
E2020	Complete Appraisal	40.0	7.0	23-Jul-18	14-Sep-18													
E2030	Review Appraiser Completes Review	10.0	7.0	17-Sep-18	28-Sep-18													
E2040	Submit Appraisal to VDOT (RUMS)	2.0	7.0	01-Oct-18	02-Oct-18													
E2050	VDOT Approves Appraisal	21.0	9.0	03-Oct-18	23-Oct-18													
E2060	Prepare Offer Package	5.0	17.0	03-Oct-18	09-Oct-18													
E2070	Negotiator Make Initial Contact / Present Offer	10.0	7.0	24-Oct-18	06-Nov-18													
E2080	Negotiations	40.0	7.0	07-Nov-18	03-Jan-19													
E2090	Send Notice of Filing Certif. to Property Owner	3.0	11.0	04-Jan-19	08-Jan-19													
E2100	Prepare / Finalize Plat	4.0	13.0	04-Jan-19	09-Jan-19													
E2110	Prepare Certificate Package	5.0	9.0	04-Jan-19	10-Jan-19													
E2150	Obtain Signed Option	5.0	7.0	04-Jan-19	10-Jan-19													
E2230	Property Access for Construction - If By Option	0.0	115.0		10-Jan-19													
E2120	Submit Certificate Package to VDOT	0.0	9.0	11-Jan-19														
E2130	VDOT Reviews / Issues Certificate & Check	21.0	13.0	11-Jan-19	31-Jan-19													
E2160	Option / Settlement Docs Submitted to VDOT	5.0	7.0	11-Jan-19	17-Jan-19													
E2170	VDOT Reviews Settlement Documents	21.0	11.0	18-Jan-19	07-Feb-19													
E2140	Design Builder Files Certificate @ Court house	2.0	9.0	01-Feb-19	04-Feb-19													
E2240	Property Access for Constr. - If By Certificate	0.0	98.0		04-Feb-19													
E2250	Property Access for Utilities - If By Certificate	0.0	9.0		04-Feb-19													
E2180	Settlement Documents to Settlement Attorney	2.0	7.0	08-Feb-19	11-Feb-19													
E2190	Obtain release of Liens	60.0	7.0	12-Feb-19	06-May-19													
E2200	Notice to VDOT that all Liens Are Cleared	1.0	7.0	07-May-19	07-May-19													
E2210	VDOT Issues Settlement Check	21.0	9.0	08-May-19	28-May-19													
E2220	Settlement Atty. Holds Settlement / Records	10.0	7.0	29-May-19	11-Jun-19													
E2260	Property Access for Utilities - If By Settlement	0.0	7.0		11-Jun-19													
UTILITY RELOCATIONS		190.0	288.0	01-Jul-18	15-Apr-19													
DOMINION VA POWER		190.0	288.0	01-Jul-18	15-Apr-19													
FA1000	HOLD UFI MEETING WITH DVP	1.0	196.0	01-Jul-18	01-Jul-18													
FA1020	DVP SUBMITS PE ESTIMATE	20.0	196.0	02-Jul-18	21-Jul-18													
FA1040	REVIEW/APPROVE PE ESTIMATE	5.0	196.0	22-Jul-18	26-Jul-18													
FA1060	DVP COMPLETES UTILITY DESIGN	0.0	196.0		26-Jul-18													
FA1080	APPROVE UTILITY DESIGN	5.0	135.0	26-Sep-18	30-Sep-18													
FA1100	EASEMENT INSTRUMENTS ACQUIRED	5.0	135.0	01-Oct-18	05-Oct-18													
FA1120	DVP RELOCATES AT W&OD TRAIL/LEE HWY	25.0	9.0	05-Feb-19	11-Mar-19													
FA1140	DVP RELOCATES AT 267+00 EB 66 (SOUNDWALL CONFLICT)	25.0	288.0	12-Mar-19	15-Apr-19													
AT&T		165.0	9.0	01-Jul-18	11-Mar-19													
FB1000	HOLD UFI MEETING WITH AT&T	1.0	196.0	01-Jul-18	01-Jul-18													
FB1020	AT&T SUBMITS PE ESTIMATE	20.0	196.0	02-Jul-18	21-Jul-18													
FB1040	REVIEW/APPROVE PE ESTIMATE	5.0	196.0	22-Jul-18	26-Jul-18													
FB1060	AT&T COMPLETES UTILITY DESIGN	0.0	196.0		26-Jul-18													

Actual Work
 Remaining Work
 Critical Remaining Work
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TASK filter: All Activities

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Proposal Schedule		I-66 Eastbound Widening Inside the Beltway																
Activity ID	Activity Name	Original Duration	Total Float	Start	Finish	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
GCE1010	MONTHLY MAINTENANCE-QA/QC	31.0	380.0	29-Jun-18	10-Aug-18													
GCE1020	MONTHLY MAINTENANCE-QA/QC	30.0	380.0	13-Aug-18	21-Sep-18													
GCE1030	MONTHLY MAINTENANCE-QA/QC	31.0	380.0	24-Sep-18	05-Nov-18													
GCE1040	MONTHLY MAINTENANCE-QA/QC	31.0	380.0	06-Nov-18	18-Dec-18													
GCE1050	MONTHLY MAINTENANCE-QA/QC	29.0	380.0	19-Dec-18	28-Jan-19													
GCE1060	MONTHLY MAINTENANCE-QA/QC	31.0	380.0	29-Jan-19	12-Mar-19													
GCE1070	MONTHLY MAINTENANCE-QA/QC	31.0	380.0	13-Mar-19	24-Apr-19													
GCE1080	MONTHLY MAINTENANCE-QA/QC	30.0	380.0	25-Apr-19	05-Jun-19													
GCE1090	MONTHLY MAINTENANCE-QA/QC	30.0	380.0	06-Jun-19	17-Jul-19													
GCE1100	MONTHLY MAINTENANCE-QA/QC	31.0	380.0	18-Jul-19	29-Aug-19													
GCE1110	MONTHLY MAINTENANCE-QA/QC	31.0	380.0	30-Aug-19	11-Oct-19													
GCE1120	MONTHLY MAINTENANCE-QA/QC	30.0	380.0	14-Oct-19	22-Nov-19													
GCE1130	MONTHLY MAINTENANCE-QA/QC	31.0	380.0	25-Nov-19	06-Jan-20													
GCE1140	MONTHLY MAINTENANCE-QA/QC	30.0	380.0	07-Jan-20	17-Feb-20													
SCC EQUIPMENT AND YARD LOGISTICS		446.0	380.0	04-Jun-18	17-Feb-20													
GCF1000	MONTHLY MAINTENANCE-SCC EQUIPMENT AND YARD LOGISTICS	19.0	380.0	04-Jun-18	28-Jun-18													
GCF1010	MONTHLY MAINTENANCE-SCC EQUIPMENT AND YARD LOGISTICS	31.0	380.0	29-Jun-18	10-Aug-18													
GCF1020	MONTHLY MAINTENANCE-SCC EQUIPMENT AND YARD LOGISTICS	30.0	380.0	13-Aug-18	21-Sep-18													
GCF1030	MONTHLY MAINTENANCE-SCC EQUIPMENT AND YARD LOGISTICS	31.0	380.0	24-Sep-18	05-Nov-18													
GCF1040	MONTHLY MAINTENANCE-SCC EQUIPMENT AND YARD LOGISTICS	31.0	380.0	06-Nov-18	18-Dec-18													
GCF1050	MONTHLY MAINTENANCE-SCC EQUIPMENT AND YARD LOGISTICS	29.0	380.0	19-Dec-18	28-Jan-19													
GCF1060	MONTHLY MAINTENANCE-SCC EQUIPMENT AND YARD LOGISTICS	31.0	380.0	29-Jan-19	12-Mar-19													
GCF1070	MONTHLY MAINTENANCE-SCC EQUIPMENT AND YARD LOGISTICS	31.0	380.0	13-Mar-19	24-Apr-19													
GCF1080	MONTHLY MAINTENANCE-SCC EQUIPMENT AND YARD LOGISTICS	30.0	380.0	25-Apr-19	05-Jun-19													
GCF1090	MONTHLY MAINTENANCE-SCC EQUIPMENT AND YARD LOGISTICS	30.0	380.0	06-Jun-19	17-Jul-19													
GCF1100	MONTHLY MAINTENANCE-SCC EQUIPMENT AND YARD LOGISTICS	31.0	380.0	18-Jul-19	29-Aug-19													
GCF1110	MONTHLY MAINTENANCE-SCC EQUIPMENT AND YARD LOGISTICS	31.0	380.0	30-Aug-19	11-Oct-19													
GCF1120	MONTHLY MAINTENANCE-SCC EQUIPMENT AND YARD LOGISTICS	30.0	380.0	14-Oct-19	22-Nov-19													
GCF1130	MONTHLY MAINTENANCE-SCC EQUIPMENT AND YARD LOGISTICS	31.0	380.0	25-Nov-19	06-Jan-20													
GCF1140	MONTHLY MAINTENANCE-SCC EQUIPMENT AND YARD LOGISTICS	30.0	380.0	07-Jan-20	17-Feb-20													
SURVEY AND LAYOUT		293.0	517.0	26-Jun-18	08-Aug-19													
GCG1000	MONTHLY MAINTENANCE-SURVEY AND LAYOUT	19.0	517.0	26-Jun-18	20-Jul-18													
GCG1010	MONTHLY MAINTENANCE-SURVEY AND LAYOUT	31.0	517.0	23-Jul-18	03-Sep-18													
GCG1020	MONTHLY MAINTENANCE-SURVEY AND LAYOUT	30.0	517.0	04-Sep-18	15-Oct-18													
GCG1030	MONTHLY MAINTENANCE-SURVEY AND LAYOUT	31.0	517.0	16-Oct-18	27-Nov-18													
GCG1040	MONTHLY MAINTENANCE-SURVEY AND LAYOUT	31.0	517.0	28-Nov-18	09-Jan-19													
GCG1050	MONTHLY MAINTENANCE-SURVEY AND LAYOUT	29.0	517.0	10-Jan-19	19-Feb-19													
GCG1060	MONTHLY MAINTENANCE-SURVEY AND LAYOUT	31.0	517.0	20-Feb-19	03-Apr-19													
GCG1070	MONTHLY MAINTENANCE-SURVEY AND LAYOUT	31.0	517.0	04-Apr-19	16-May-19													
GCG1080	MONTHLY MAINTENANCE-SURVEY AND LAYOUT	30.0	517.0	17-May-19	27-Jun-19													
GCG1090	MONTHLY MAINTENANCE-SURVEY AND LAYOUT	30.0	517.0	28-Jun-19	08-Aug-19													
STAGE 1 - OUTSIDE SHOULDER STRENGTHENING		99.0	0.0	05-Jun-18	29-Oct-18													
STAGE 1 GENERAL ITEMS		99.0	0.0	05-Jun-18	29-Oct-18													
G1A-10000	INSTALL STAGE 1 CONSTRUCTION SIGNAGE	5.0	0.0	05-Jun-18	11-Jun-18													
G1A-10010	COORDINATION WITH TRANSORE FOR TRAFFIC SWITCH	30.0	0.0	30-Sep-18	29-Oct-18													
STA 122+50 TO STA 166+75 (RAMP 3 STA 14+38)		24.0	66.0	12-Jun-18	18-Jul-18													
G1B-10000	SHOULDER STRENGTHENING	20.0	0.0	12-Jun-18	12-Jul-18													

Actual Work
 Remaining Work
 Critical Remaining Work
 Milestone
 Summary

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Proposal Schedule		I-66 Eastbound Widening Inside the Beltway																	
Activity ID	Activity Name	Original Duration	Total Float	Start	Finish	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	
G2D-10200	REMOVE EXISTING GUARDRAIL	2.0	36.0	19-Nov-18	20-Nov-18	N	D	J	F	M	A	M	J	J	A	S	O	N	D
G2D-10300	DEMO ASPHALT	3.0	33.0	30-Nov-18	04-Dec-18														
G2D-10400	REGULAR EX	3.0	29.0	11-Dec-18	13-Dec-18														
G2D-10500	DRAINAGE ADJUSTMENTS	15.0	2.0	30-Jan-19	19-Feb-19														
G2D-10600	FINE GRADE SUBGRADE	2.0	68.0	20-Feb-19	21-Feb-19														
G2D-10800	UNDERDRAIN	2.0	68.0	22-Feb-19	25-Feb-19														
G2D-10700	AGGREGATE SUBBASE	2.0	68.0	26-Feb-19	27-Feb-19														
G2D-10900	INSTALL BM ASPHALT	3.0	44.0	05-Apr-19	09-Apr-19														
G2D-11000	INSTALL IM ASPHALT	2.0	44.0	10-Apr-19	11-Apr-19														
G2D-11100	INSTALL GUARDRAIL	5.0	42.0	12-Apr-19	18-Apr-19														
I-66 OVER WESTMORELAND STREET BRIDGE WIDENING STA 168+50 TO 168+50		0.0	42.0	19-Nov-18	18-Apr-19														
G2E-10000	INSTALL TEMPSERVICE BARRIER	2.0	0.0	19-Nov-18	20-Nov-18														
G2E-10010	CONSTRUCT ABUT A SUBSTRUCTURE	25.0	0.0	27-Nov-18	08-Jan-19														
G2E-10015	CONSTRUCT PIERS	20.0	0.0	11-Dec-18	15-Jan-19														
G2E-10020	CONSTRUCT ABUT B SUBSTRUCTURE	25.0	0.0	28-Dec-18	05-Feb-19														
G2E-10030	ERECT STRUCTURAL STEEL	5.0	0.0	06-Feb-19	12-Feb-19														
G2E-10040	DEMO EXISTING PARAPET/OVERHANG	20.0	0.0	08-Feb-19	07-Mar-19														
G2E-10050	CONSTRUCT DECK	20.0	0.0	22-Feb-19	21-Mar-19														
G2E-10060	CONSTRUCT PARAPET	15.0	0.0	22-Mar-19	11-Apr-19														
G2E-10080	VDOT SAFETY INSPECTION	5.0	42.0	12-Apr-19	18-Apr-19														
G2E-10090	BRIDGE WIDENING READY TO OPEN	0.0	42.0		18-Apr-19														
STA 171+00 TO STA 180+00		104.0	44.0	08-Nov-18	16-Apr-19														
G2F-10100	INSTALL TEMPSERVICE BARRIER	2.0	56.0	08-Nov-18	09-Nov-18														
G2F-10200	REMOVE EXISTING GUARDRAIL	2.0	56.0	12-Nov-18	13-Nov-18														
G2F-10300	DEMO ASPHALT	3.0	45.0	05-Dec-18	07-Dec-18														
G2F-10400	REGULAR EX	3.0	41.0	14-Dec-18	18-Dec-18														
G2F-10500	DRAINAGE ADJUSTMENTS	15.0	2.0	20-Feb-19	12-Mar-19														
G2F-10700	FINE GRADE SUBGRADE	2.0	55.0	13-Mar-19	14-Mar-19														
G2F-10900	UNDERDRAIN	2.0	55.0	15-Mar-19	18-Mar-19														
G2F-10800	AGGREGATE SUBBASE	2.0	55.0	19-Mar-19	20-Mar-19														
G2F-10600	MEDIAN BARRIER	3.0	55.0	21-Mar-19	25-Mar-19														
G2F-11000	INSTALL BM ASPHALT	3.0	46.0	10-Apr-19	12-Apr-19														
G2F-11100	INSTALL IM ASPHALT	2.0	46.0	15-Apr-19	16-Apr-19														
G2F-11110	SECTION COMPLETE - STA 171+00 TO 180+00	0.0	44.0		16-Apr-19														
STAGE 2 AREA 2		186.0	0.0	08-Nov-18	16-Aug-19														
STA 180+00 TO STA 205+00		113.0	71.0	12-Nov-18	01-May-19														
G2G-10100	INSTALL TEMPSERVICE BARRIER	3.0	63.0	12-Nov-18	14-Nov-18														
G2G-10200	REMOVE EXISTING GUARDRAIL	4.0	63.0	15-Nov-18	20-Nov-18														
G2G-10300	DEMO ASPHALT	4.0	54.0	10-Dec-18	13-Dec-18														
G2G-10400	REGULAR EX	5.0	51.0	19-Dec-18	28-Dec-18														
G2G-10500	DRAINAGE ADJUSTMENTS	18.0	2.0	13-Mar-19	05-Apr-19														
G2G-10700	FINE GRADE SUBGRADE	3.0	57.0	08-Apr-19	10-Apr-19														
G2G-10900	UNDERDRAIN	3.0	59.0	11-Apr-19	15-Apr-19														
G2G-10800	AGGREGATE SUBBASE	3.0	59.0	16-Apr-19	18-Apr-19														
G2G-10600	MEDIAN BARRIER	4.0	59.0	19-Apr-19	24-Apr-19														
G2G-11000	INSTALL BM ASPHALT	3.0	61.0	25-Apr-19	29-Apr-19														

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Proposal Schedule		I-66 Eastbound Widening Inside the Beltway																
Activity ID	Activity Name	Original Duration	Total Float	Start	Finish	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	
G2G-11100	INSTALL IM ASPHALT	2.0	65.0	30-Apr-19	01-May-19	N	D	J	F	M	A	M	J	J	A	S	O	N
G2G-11110	SECTION COMPLETE - STA 180+00 TO 205+00	0.0	71.0	14.0	15-Nov-18	29-Jul-19												
G2H-10000	INSTALL TEMP SERVICE BARRIER	2.0	79.0	15-Nov-18	16-Nov-18													
G2H-10010	CONSTRUCT ABUT A SUBSTRUCTURE	25.0	14.0	04-Mar-19	05-Apr-19													
G2H-10015	CONSTRUCT PIERS	20.0	14.0	18-Mar-19	12-Apr-19													
G2H-10020	CONSTRUCT ABUT B SUBSTRUCTURE	25.0	14.0	01-Apr-19	03-May-19													
G2H-10040	DEMO EXISTING PARAPET/OVERHANG	20.0	14.0	06-May-19	05-Jun-19													
G2H-10030	ERECT CONCRETE GIRDERS	5.0	14.0	06-Jun-19	12-Jun-19													
G2H-10050	CONSTRUCT DECK	15.0	14.0	13-Jun-19	08-Jul-19													
G2H-10060	CONSTRUCT PARAPET	10.0	14.0	09-Jul-19	22-Jul-19													
G2H-10080	VDOT SAFETY INSPECTION	5.0	14.0	23-Jul-19	29-Jul-19													
G2H-10090	BRIDGE WIDENING READY TO OPEN	0.0	14.0	08-Nov-18	29-Jul-19													
STA 207+00 TO STA 226+00		132.0	54.0	08-Nov-18	29-May-19													
G2I-10100	INSTALL TEMP SERVICE BARRIER	2.0	85.0	08-Nov-18	09-Nov-18													
G2I-10200	REMOVE EXISTING GUARDRAIL	3.0	85.0	12-Nov-18	14-Nov-18													
G2I-10300	DEMO ASPHALT	4.0	68.0	14-Dec-18	19-Dec-18													
G2I-10400	REGULAR EX	5.0	64.0	03-Jan-19	09-Jan-19													
G2I-10500	DRAINAGE ADJUSTMENTS	20.0	2.0	08-Apr-19	03-May-19													
G2I-10700	FINE GRADE SUBGRADE	2.0	40.0	06-May-19	07-May-19													
G2I-10900	UNDERDRAIN	3.0	43.0	08-May-19	10-May-19													
G2I-10800	AGGREGATE SUBBASE	3.0	43.0	13-May-19	15-May-19													
G2I-10600	MEDIAN BARRIER	4.0	43.0	16-May-19	21-May-19													
G2I-11000	INSTALL BM ASPHALT	3.0	45.0	22-May-19	24-May-19													
G2I-11100	INSTALL IM ASPHALT	2.0	48.0	28-May-19	29-May-19													
G2I-11110	SECTION COMPLETE - STA 207+00 TO 226+00	0.0	54.0	12-Nov-18	16-Aug-19													
PEDESTRIAN BRIDGE PIER RELOCATION B881 STA 226+00 TO 226+50		184.0	0.0	12-Nov-18	13-Nov-18													
G2J-10000	INSTALL TEMP SERVICE BARRIER	2.0	95.0	12-Nov-18	13-Nov-18													
G2J-10010	CONSTRUCT PIER	25.0	0.0	12-Apr-19	16-May-19													
G2J-10020	STRENGTHEN SUPERSTRUCTURE	40.0	0.0	17-May-19	19-Jul-19													
G2J-10030	INSTALL RELOCATED PIER BEARINGS	5.0	0.0	22-Jul-19	26-Jul-19													
G2J-10040	DEMO EXISTING PIER	10.0	0.0	29-Jul-19	09-Aug-19													
G2J-10050	VDOT SAFETY INSPECTION	5.0	0.0	12-Aug-19	16-Aug-19													
G2J-10060	BRIDGE WIDENING READY TO OPEN	0.0	0.0	14-Nov-18	16-Aug-19													
STA 226+50 TO STA 267+50		156.0	26.0	14-Nov-18	11-Jul-19													
G2K-10100	INSTALL TEMP SERVICE BARRIER	4.0	95.0	14-Nov-18	19-Nov-18													
G2K-10200	REMOVE EXISTING GUARDRAIL	4.0	95.0	20-Nov-18	29-Nov-18													
G2K-10300	DEMO ASPHALT	5.0	81.0	20-Dec-18	03-Jan-19													
G2K-10400	REGULAR EX	7.0	77.0	10-Jan-19	18-Jan-19													
G2K-10500	DRAINAGE ADJUSTMENTS	20.0	2.0	06-May-19	05-Jun-19													
G2K-10700	FINE GRADE SUBGRADE	4.0	22.0	06-Jun-19	11-Jun-19													
G2K-10900	UNDERDRAIN	4.0	22.0	12-Jun-19	17-Jun-19													
G2K-10800	AGGREGATE SUBBASE	4.0	22.0	18-Jun-19	21-Jun-19													
G2K-10600	MEDIAN BARRIER	4.0	22.0	24-Jun-19	27-Jun-19													
G2K-11000	INSTALL BM ASPHALT	4.0	22.0	28-Jun-19	08-Jul-19													
G2K-11100	INSTALL IM ASPHALT	3.0	23.0	09-Jul-19	11-Jul-19													
G2K-11110	SECTION COMPLETE - STA 226+50 TO 267+50	0.0	26.0	09-Jul-19	11-Jul-19													

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Proposal Schedule		I-66 Eastbound Widening Inside the Beltway															
Activity ID	Activity Name	Original Duration	Total Start Float	Finish	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
G3C-10030	VDOT SAFETY INSPECTION	5.0	86.0	07-Nov-19	13-Nov-19												
G3C-10040	BRIDGE WIDENING READY TO OPEN	0.0	96.0		13-Nov-19												
STA 158+50 TO STA 168+50					148.0	42.0	01-Jul-19	11-Feb-20									
G3D-10100	INSTALL TEMPSERVICE BARRIER	2.0	42.0	01-Jul-19	02-Jul-19												
G3D-10200	REMOVE EXISTING GUARDRAIL	2.0	42.0	08-Jul-19	09-Jul-19												
G3D-10300	DEMO ASPHALT	3.0	39.0	15-Jul-19	17-Jul-19												
G3D-10400	REGULAR EX	10.0	27.0	05-Aug-19	16-Aug-19												
G3D-10500	DRAINAGE ADJUSTMENTS	20.0	7.0	19-Sep-19	16-Oct-19												
G3D-10600	FINE GRADE SUBGRADE	5.0	22.0	17-Oct-19	23-Oct-19												
G3D-10800	UNDERDRAIN	2.0	23.0	24-Oct-19	25-Oct-19												
G3D-10700	AGGREGATE SUBBASE	2.0	23.0	28-Oct-19	29-Oct-19												
G3D-10900	INSTALL BM ASPHALT	3.0	24.0	30-Oct-19	01-Nov-19												
G3D-11000	INSTALL IM ASPHALT	2.0	25.0	04-Nov-19	05-Nov-19												
G3D-11100	INSTALL GUARDRAIL	5.0	92.0	06-Nov-19	12-Nov-19												
G3D-11110	SECTION COMPLETE - STA 158+50 TO RAMP 3 STA 19+00	0.0	42.0		11-Feb-20												
STA 165+50 TO 168+50 (GORE)					108.0	78.0	08-Jul-19	13-Dec-19									
G3D-11300	INSTALL TEMPSERVICE BARRIER	2.0	42.0	08-Jul-19	09-Jul-19												
G3D-11400	REMOVE EXISTING GUARDRAIL	2.0	62.0	10-Jul-19	11-Jul-19												
G3D-11500	DEMO ASPHALT	1.0	58.0	18-Jul-19	18-Jul-19												
G3D-11600	REGULAR EX	10.0	37.0	19-Aug-19	04-Sep-19												
G3D-11700	DRAINAGE ADJUSTMENTS	20.0	7.0	17-Oct-19	13-Nov-19												
G3D-11800	FINE GRADE SUBGRADE	5.0	7.0	14-Nov-19	26-Nov-19												
G3D-12000	UNDERDRAIN	2.0	7.0	27-Nov-19	28-Nov-19												
G3D-11900	AGGREGATE SUBBASE	1.0	7.0	29-Nov-19	29-Nov-19												
G3D-12100	INSTALL BM ASPHALT	3.0	7.0	02-Dec-19	04-Dec-19												
G3D-12200	INSTALL IM ASPHALT	2.0	7.0	05-Dec-19	06-Dec-19												
G3D-12300	INSTALL GUARDRAIL	5.0	78.0	09-Dec-19	13-Dec-19												
G3D-12310	SECTION COMPLETE - STA 165+50 TO 168+50 (GORE)	0.0	78.0		13-Dec-19												
STA 171+00 TO STA 180+00					181.0	3.0	10-Jul-19	06-Apr-20									
G3F-10100	INSTALL TEMPSERVICE BARRIER	2.0	42.0	10-Jul-19	11-Jul-19												
G3F-10200	REMOVE EXISTING GUARDRAIL	2.0	130.0	12-Jul-19	15-Jul-19												
G3F-10300	DEMO ASPHALT	2.0	127.0	19-Jul-19	22-Jul-19												
G3F-10400	REGULAR EX	15.0	98.0	05-Sep-19	25-Sep-19												
G3F-10500	DRAINAGE ADJUSTMENTS	20.0	63.0	14-Nov-19	17-Dec-19												
G3F-10700	FINE GRADE SUBGRADE	2.0	63.0	18-Dec-19	19-Dec-19												
G3F-10900	UNDERDRAIN	2.0	63.0	20-Dec-19	23-Dec-19												
G3F-10800	AGGREGATE SUBBASE	2.0	63.0	27-Dec-19	30-Dec-19												
G3F-10600	MEDIAN BARRIER	3.0	63.0	03-Jan-20	07-Jan-20												
G3F-11000	INSTALL BM ASPHALT	2.0	3.0	01-Apr-20	02-Apr-20												
G3F-11100	INSTALL IM ASPHALT	2.0	3.0	03-Apr-20	06-Apr-20												
G3F-11110	SECTION COMPLETE - STA 171+00 TO 180+00	0.0	3.0		06-Apr-20												
STAGE 3 AREA 2					175.0	23.0	28-Aug-19	15-May-20									
STA 180+00 TO STA 205+00					175.0	23.0	28-Aug-19	15-May-20									
G3G-10100	INSTALL TEMPSERVICE BARRIER	2.0	9.0	28-Aug-19	29-Aug-19												
G3G-10200	REMOVE EXISTING GUARDRAIL	2.0	9.0	04-Sep-19	05-Sep-19												
G3G-10300	DEMO ASPHALT	2.0	9.0	06-Sep-19	09-Sep-19												

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Proposal Schedule		I-66 Eastbound Widening Inside the Beltway															
Activity ID	Activity Name	Original Duration	Total Start Float	Finish	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
G3G-10400	REGULAR EX	15.0	9.0	10-Sep-19	30-Sep-19												
G3G-10500	DRAINAGE ADJUSTMENTS	20.0	9.0	01-Oct-19	28-Oct-19												
G3G-10700	FINE GRADE SUBGRADE	2.0	85.0	29-Oct-19	30-Oct-19												
G3G-10900	UNDERDRAIN	3.0	121.0	31-Oct-19	04-Nov-19												
G3G-10800	AGGREGATE SUBBASE	2.0	121.0	05-Nov-19	06-Nov-19												
G3G-10600	MEDIAN BARRIER	3.0	121.0	07-Nov-19	11-Nov-19												
G3G-11000	INSTALL BM ASPHALT	3.0	54.0	12-Nov-19	14-Nov-19												
G3G-11100	INSTALL IM ASPHALT	2.0	58.0	15-Nov-19	18-Nov-19												
G3G-11110	SECTION COMPLETE - STA 180+00 TO 205+00	0.0	23.0	15-May-20	15-May-20												
STA 207+00 TO STA 226+00		147.0	49.0	04-Sep-19	09-Apr-20												
G3I-10100	INSTALL TEMP SERVICE BARRIER	145.0	51.0	04-Sep-19	07-Apr-20												
G3I-10200	REMOVE EXISTING GUARDRAIL	2.0	22.0	04-Sep-19	05-Sep-19												
G3I-10300	DEMO ASPHALT	2.0	22.0	06-Sep-19	09-Sep-19												
G3I-10400	REGULAR EX	2.0	22.0	10-Sep-19	11-Sep-19												
G3I-10500	DRAINAGE ADJUSTMENTS	15.0	9.0	01-Oct-19	21-Oct-19												
G3I-10700	FINE GRADE SUBGRADE	20.0	9.0	29-Oct-19	29-Nov-19												
G3I-10900	UNDERDRAIN	10.0	67.0	02-Dec-19	13-Dec-19												
G3I-10800	AGGREGATE SUBBASE	2.0	97.0	16-Dec-19	17-Dec-19												
G3I-10600	MEDIAN BARRIER	2.0	97.0	18-Dec-19	19-Dec-19												
G3I-11000	INSTALL BM ASPHALT	3.0	97.0	20-Dec-19	27-Dec-19												
G3I-11100	INSTALL IM ASPHALT	2.0	36.0	01-Apr-20	03-Apr-20												
G3I-11110	SECTION COMPLETE - STA 207+00 TO 219+50	0.0	39.0	06-Apr-20	07-Apr-20												
STA 216+50 TO 226+00		145.0	49.0	06-Sep-19	09-Apr-20												
G3I-11300	INSTALL TEMP SERVICE BARRIER	2.0	35.0	06-Sep-19	09-Sep-19												
G3I-11400	REMOVE EXISTING GUARDRAIL	2.0	35.0	10-Sep-19	11-Sep-19												
G3I-11500	DEMO ASPHALT	2.0	35.0	12-Sep-19	13-Sep-19												
G3I-11600	REGULAR EX	15.0	9.0	22-Oct-19	11-Nov-19												
G3I-11700	DRAINAGE ADJUSTMENTS	20.0	9.0	02-Dec-19	06-Jan-20												
G3I-11900	FINE GRADE SUBGRADE	10.0	57.0	07-Jan-20	20-Jan-20												
G3I-12100	UNDERDRAIN	2.0	81.0	21-Jan-20	22-Jan-20												
G3I-12000	AGGREGATE SUBBASE	1.0	81.0	23-Jan-20	23-Jan-20												
G3I-11800	MEDIAN BARRIER	3.0	81.0	24-Jan-20	28-Jan-20												
G3I-12200	INSTALL BM ASPHALT	2.0	36.0	06-Apr-20	07-Apr-20												
G3I-12300	INSTALL IM ASPHALT	2.0	39.0	08-Apr-20	09-Apr-20												
G3I-12310	SECTION COMPLETE - STA 216+50 TO 226+00	0.0	49.0	08-Apr-20	09-Apr-20												
STA 226+00 TO STA 264+50		148.0	44.0	10-Sep-19	16-Apr-20												
G3J-10100	INSTALL TEMP SERVICE BARRIER	3.0	45.0	10-Sep-19	12-Sep-19												
G3J-10200	REMOVE EXISTING GUARDRAIL	3.0	45.0	13-Sep-19	17-Sep-19												
G3J-10300	DEMO ASPHALT	3.0	45.0	18-Sep-19	20-Sep-19												
G3J-10400	REGULAR EX	15.0	9.0	12-Nov-19	06-Dec-19												
G3J-10500	DRAINAGE ADJUSTMENTS	30.0	9.0	07-Jan-20	17-Feb-20												
G3J-10700	FINE GRADE SUBGRADE	10.0	37.0	18-Feb-20	02-Mar-20												
G3J-10900	UNDERDRAIN	4.0	50.0	03-Mar-20	06-Mar-20												
G3J-10800	AGGREGATE SUBBASE	3.0	50.0	09-Mar-20	11-Mar-20												
G3J-10600	MEDIAN BARRIER	4.0	50.0	12-Mar-20	17-Mar-20												
G3J-11000	INSTALL BM ASPHALT	4.0	36.0	08-Apr-20	13-Apr-20												

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I-66 Eastbound Widening Inside the Beltway

Proposal Schedule	Activity Name	Original Duration	Total Start Float	Finish	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
BARRIER O EAST																		
G352-12100	30-DAY NOTIFICATION OF CLEARING/DEMO	55.0	23.0	25-Jul-19	14-Oct-19													
STA 259+00 TO STA 254+50																		
G352-12200	CLEAR AND GRUB	30.0	146.0	25-Jul-19	09-Sep-19													
G352-12300	INSTALL E&S AND ESTABLISH ACCESS	25.0	223.0	10-Sep-19	14-Oct-19													
G352-12400	INSTALL FOUNDATIONS AND NOISE BARRIER	5.0	168.0	10-Sep-19	16-Sep-19													
G352-12500	BACKFILL WALL/DRESSUP SLOPE	15.0	168.0	20-Sep-19	19-Sep-19													
G352-12510	SOUNDWALL COMPLETE - STA 259+00 TO 254+50	2.0	218.0	11-Oct-19	14-Oct-19													
BRIDGE NOISE BARRIER REPLACEMENT WESTMORELAND DR																		
G352-14500	SET TEMP SERVICE BARRIER	17.0	214.0	10-Sep-19	02-Oct-19													
G352-14600	DEMO EXISTING NOISE BARRIER	2.0	214.0	10-Sep-19	11-Sep-19													
G352-14700	CONSTRUCT NOISE BARRIER FOUNDATION/SUPERSTRUCTURE STRENGTH	3.0	214.0	12-Sep-19	16-Sep-19													
G352-14800	REMOVE TEMP SERVICE BARRIER	10.0	214.0	17-Sep-19	30-Sep-19													
G352-14810	SOUNDWALL COMPLETE - WESTMORELAND DR	2.0	214.0	01-Oct-19	02-Oct-19													
BARRIER N1																		
G352-10000	30-DAY NOTIFICATION OF CLEARING/DEMO	102.0	146.0	10-Sep-19	12-Feb-20													
STA 287+00 TO STA 276+00																		
G352-10100	CLEAR AND GRUB	30.0	146.0	10-Sep-19	21-Oct-19													
G352-10200	INSTALL E&S AND ESTABLISH ACCESS	26.0	192.0	22-Oct-19	02-Dec-19													
G352-10300	INSTALL FOUNDATIONS AND NOISE BARRIER	5.0	153.0	22-Oct-19	28-Oct-19													
G352-10400	BACKFILL WALL/DRESSUP SLOPE	3.0	153.0	29-Oct-19	31-Oct-19													
G352-10410	SOUNDWALL COMPLETE - STA 287+00 TO 276+00	15.0	153.0	01-Nov-19	27-Nov-19													
STA 276+25 TO STA 268+75																		
G352-10500	CLEAR AND GRUB	3.0	190.0	28-Nov-19	02-Dec-19													
G352-10600	INSTALL E&S AND ESTABLISH ACCESS	0.0	192.0		02-Dec-19													
G352-10700	INSTALL FOUNDATIONS AND NOISE BARRIER	30.0	183.0	29-Oct-19	13-Dec-19													
G352-10800	BACKFILL WALL/DRESSUP SLOPE	5.0	163.0	29-Oct-19	04-Nov-19													
G352-10810	SOUNDWALL COMPLETE - STA 276+25 TO 275+75	3.0	163.0	05-Nov-19	07-Nov-19													
STA 268+75 TO STA 267+50																		
G352-10150	INSTALL TEMPS SERVICE BARRIER	2.0	146.0	22-Oct-19	23-Oct-19													
G352-10160	DEMO EXISTING DECK AND PARAPET	25.0	146.0	24-Oct-19	03-Dec-19													
G352-10220	CONSTRUCT DECK AND PARAPET	20.0	146.0	04-Dec-19	08-Jan-20													
G352-15220	INSTALL SOUNDWALL BEHIND PARAPET	20.0	146.0	09-Jan-20	05-Feb-20													
G352-10180	VDOT SAFETY INSPECTION	5.0	146.0	06-Feb-20	12-Feb-20													
G352-10190	BRIDGE WIDENING READY TO OPEN	0.0	146.0		12-Feb-20													
STA 267+50 TO STA 260+00																		
G352-11700	CLEAR AND GRUB	41.0	167.0	05-Nov-19	14-Jan-20													
G352-11800	INSTALL E&S AND ESTABLISH ACCESS	5.0	168.0	05-Nov-19	11-Nov-19													
G352-11900	INSTALL FOUNDATIONS AND NOISE BARRIER	3.0	168.0	12-Nov-19	14-Nov-19													
G352-12000	BACKFILL WALL/DRESSUP SLOPE	15.0	153.0	12-Dec-19	09-Jan-20													
G352-12010	SOUNDWALL COMPLETE - STA 269+00 TO 260+00	3.0	165.0	10-Jan-20	14-Jan-20													
BARRIER O CENTRAL																		
G352-12600	30-DAY NOTIFICATION OF CLEARING/DEMO	65.0	153.0	22-Oct-19	03-Feb-20													
STA 245+50 TO STA 243+50																		
G352-12700	CLEAR AND GRUB	35.0	153.0	09-Dec-19	03-Feb-20													
G352-12800	INSTALL E&S AND ESTABLISH ACCESS	5.0	163.0	09-Dec-19	13-Dec-19													
G352-12900	INSTALL FOUNDATIONS AND NOISE BARRIER	3.0	163.0	16-Dec-19	18-Dec-19													
G352-13000	BACKFILL WALL/DRESSUP SLOPE	15.0	153.0	10-Jan-20	30-Jan-20													

Actual Work
 Remaining Work
 Critical Remaining Work
 Milestone
 Summary

TASK filter: All Activities

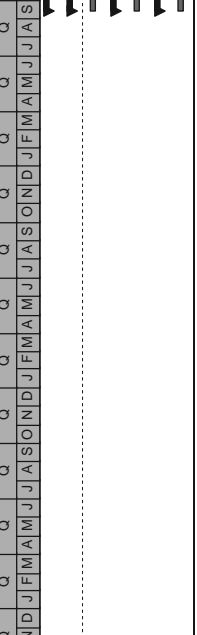
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Proposal Schedule

Activity ID	Activity Name	Original Duration	Total Float	Start	Finish
I-66 Eastbound Widening Inside the Beltway					
STAGE 5 - SIGNALS AND LANDSCAPING		183.0	0.0	14-Sep-20	11-Jun-21
SIGNAL AT LEE HWY/FAIRFAX		183.0	0.0	14-Sep-20	11-Jun-21
G5A-10320	CONSTRUCT SIGNAL	183.0	0.0	14-Sep-20	11-Jun-21
SIGNAL AT LEE HWY/WASHINGTON		183.0	0.0	14-Sep-20	11-Jun-21
G5B-10330	CONSTRUCT SIGNAL	183.0	0.0	14-Sep-20	11-Jun-21
LANDSCAPING		183.0	0.0	14-Sep-20	11-Jun-21
G5C-10340	LANDSCAPING	183.0	0.0	14-Sep-20	11-Jun-21

I-66 Eastbound Widening Inside the Beltway



Proposal Schedule	I-66 Eastbound Widening Inside the Beltway			
Activity ID	Activity Name	Original Duration	Total Start Fbat	Finish
G1A-10010	COORDINATION WITH TRANSORE FOR TRAFFIC SWITCH	30.0	0.0 30-Sep-18	29-Oct-18
STA 122+50 TO STA 166+75 (RAMP 3 STA 144+38)				
G1B-10000	SHOULDER STRENGTHENING	20.0	0.0 12-Jun-18	12-Jul-18
STA 165+60 TO STA 219+60				
G1C-10000	SHOULDER STRENGTHENING	25.0	0.0 13-Jul-18	16-Aug-18
STA 216+50 TO STA 311+00 (RAMP 2 STA 26+90)				
G1D-10000	SHOULDER STRENGTHENING	48.0	0.0 17-Aug-18	29-Oct-18
G1D-10100	PROFILE MILLING	2.0	0.0 24-Oct-18	25-Oct-18
G1D-10200	INSTALL TEMP ASPHALT	2.0	0.0 26-Oct-18	29-Oct-18
STAGE 2 MEDIAN WIDENING				
G2A-10000	INSTALL STAGE 2 CONSTRUCTION SIGNAGE	193.0	0.0 30-Oct-18	16-Aug-19
G2A-10010	INSTALL PAVEMENT MARKINGS FOR STAGE 2	5.0	0.0 30-Oct-18	06-Nov-18
G2A-10030	COORDINATION WITH TRANSORE FOR TRAFFIC SWITCH (STAGE 2B)	30.0	2.0 18-Jul-19	16-Aug-19
STAGE 2 AREA 1				
G2B-10100	INSTALL TEMPS SERVICE BARRIER	101.0	0.0 08-Nov-18	11-Apr-19
G2C-10000	INSTALL TEMPS SERVICE BARRIER	3.0	0.0 08-Nov-18	12-Nov-18
STA 158+50 TO STA 168+50				
G2D-10100	INSTALL TEMPS SERVICE BARRIER	2.0	0.0 15-Nov-18	16-Nov-18
I-66 OVER WESTMORELAND STREET BRIDGE WIDENING STA 168+50 TO STA 171+00				
G2E-10000	INSTALL TEMPS SERVICE BARRIER	94.0	0.0 19-Nov-18	11-Apr-19
G2E-10010	CONSTRUCT ABUT A SUBSTRUCTURE	2.0	0.0 27-Nov-18	08-Jan-19
G2E-10015	CONSTRUCT PIERS	20.0	0.0 11-Dec-18	15-Jan-19
G2E-10020	CONSTRUCT ABUT B SUBSTRUCTURE	25.0	0.0 28-Dec-18	05-Feb-19
G2E-10030	ERECT STRUCTURAL STEEL	5.0	0.0 06-Feb-19	12-Feb-19
G2E-10040	DEMO EXISTING PARAPET/OVERHANG	20.0	0.0 08-Feb-19	07-Mar-19
G2E-10050	CONSTRUCT DECK	20.0	0.0 22-Feb-19	21-Mar-19
G2E-10060	CONSTRUCT PARAPET	15.0	0.0 22-Mar-19	11-Apr-19
STAGE 2 AREA 2				
PEDESTRIAN BRIDGE PIER RELOCATION B681 STA 226+00 TO 226+50				
G2J-10010	CONSTRUCT PIER	85.0	0.0 12-Apr-19	16-Aug-19
G2J-10020	STRENGTHEN SUPERSTRUCTURE	40.0	0.0 17-May-19	19-Jul-19
G2J-10030	INSTALL RELOCATED PIER BEARINGS	5.0	0.0 22-Jul-19	26-Jul-19
G2J-10040	DEMO EXISTING PIER	10.0	0.0 29-Jul-19	09-Aug-19
G2J-10050	VDOT SAFETY INSPECTION	5.0	0.0 12-Aug-19	16-Aug-19
G2J-10060	BRIDGE WIDENING READY TO OPEN	0.0	0.0	16-Aug-19
STAGE 3 OUTSIDE WIDENING				
G3A-10050	COORDINATION WITH TRANSORE FOR TRAFFIC SWITCH	205.0	0.0 19-Aug-19	19-Jun-20
STAGE 3 AREA 3				
I-66 OVER BON AIR PARK/CUSTIS TRAIL STA 267+50 TO 268+75				
G3L-10000	MIDDLE LANE DECK RECONSTRUCTION	300.0	2.0 21-May-20	19-Jun-20
G3L-10010	INSTALL TEMPS SERVICE BARRIER - SPLIT TRAFFIC	30.0	0.0 19-Aug-19	19-Jun-20
G3L-10020	DEMO EXISTING DECK	205.0	0.0 19-Aug-19	19-Jun-20
G3L-10030	CONSTRUCT SUPERSTRUCTURE	71.0	0.0 19-Aug-19	04-Dec-19
G3L-10030	VDOT SAFETY INSPECTION	5.0	0.0 19-Aug-19	23-Aug-19
		36.0	0.0 26-Aug-19	17-Oct-19
		25.0	0.0 18-Oct-19	27-Nov-19
		5.0	0.0 28-Nov-19	04-Dec-19

Actual Work
 Remaining Work
 Critical Remaining Work
 Summary
 Milestone

12-Jun-18, STA 122+50 TO STA 166+75 (RAMP 3 STA 144+38)
 SHOULDER STRENGTHENING
 16-Aug-18, STA 165+60 TO STA 219+60
 SHOULDER STRENGTHENING
 29-Oct-18, STA 216+50 TO STA 311+00 (RAMP 2 STA 26+90)
 SHOULDER STRENGTHENING
 PROFILE MILLING
 INSTALL TEMP ASPHALT
 16-Aug-19, STAGE 2 MEDIAN WIDENING
 16-Aug-19, STAGE 2 GENERAL ITEMS
 INSTALL STAGE 2 CONSTRUCTION SIGNAGE
 INSTALL PAVEMENT MARKINGS FOR STAGE 2
 COORDINATION WITH TRANSORE FOR TRAFFIC SWITCH (STAGE 2B)
 11-Apr-19, STAGE 2 AREA 1
 12-Nov-18, STA 129+60 TO STA 156+50
 INSTALL TEMP SERVICE BARRIER
 14-Nov-18, I-66 OVER WILLIAMSBURG BRIDGE WIDENING STA 156+50 TO 158+50
 INSTALL TEMP SERVICE BARRIER
 16-Nov-18, STA 158+50 TO STA 168+50
 INSTALL TEMP SERVICE BARRIER
 11-Apr-19, I-66 OVER WESTMORELAND STREET BRIDGE WIDENING STA 168+50
 INSTALL TEMP SERVICE BARRIER
 CONSTRUCT ABUT A SUBSTRUCTURE
 CONSTRUCT PIERS
 CONSTRUCT ABUT B SUBSTRUCTURE
 ERECT STRUCTURAL STEEL
 DEMO EXISTING PARAPET/OVERHANG
 CONSTRUCT DECK
 CONSTRUCT PARAPET
 16-Aug-19, STAGE 2 AREA 2
 16-Aug-19, PEDESTRIAN BRIDGE PIER RELOCATION B681 STA 226+00
 CONSTRUCT PIER
 STRENGTHEN SUPERSTRUCTURE
 INSTALL RELOCATED PIER BEARINGS
 DEMO EXISTING PIER
 VDOT SAFETY INSPECTION
 BRIDGE WIDENING READY TO OPEN
 19-Jun-20, STAGE 3 OUTSIDE WIDENING
 19-Jun-20, STAGE 3 GENERAL ITEMS
 COORDINATION WITH TRANSORE FOR TRAFFIC SWITCH
 19-Jun-20, STAGE 3 AREA 3
 19-Jun-20, I-66 OVER BON AIR PARK/CUSTIS TRAIL STA 267+50 TO 268+75
 04-Dec-19, MIDDLE LANE DECK RECONSTRUCTION
 INSTALL TEMP SERVICE BARRIER - SPLIT TRAFFIC
 DEMO EXISTING DECK
 CONSTRUCT SUPERSTRUCTURE
 VDOT SAFETY INSPECTION

Proposal Schedule		I-66 Eastbound Widening Inside the Beltway																									
Activity ID	Activity Name	Original Duration	Total Float	Finish	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q											
					N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S
G3L-10040	BRIDGE WIDENING READY TO OPEN	0.0	0.0	04-Dec-19																							
OUTSIDE LANE DECK RECONSTRUCTION																											
G2L-10150	INSTALL TEMP SERVICE BARRIER	134.0	0.0	05-Dec-19																							
G2L-10160	DEMO EXISTING DECK AND PARAPET	2.0	0.0	05-Dec-19																							
G2L-10200	CONSTRUCT ABUT A SUBSTRUCTURE	25.0	0.0	09-Dec-19																							
G2L-10210	CONSTRUCT ABUT B SUBSTRUCTURE	25.0	0.0	21-Jan-20																							
G2L-10210	CONSTRUCT ABUT B SUBSTRUCTURE	25.0	0.0	25-Feb-20																							
G2L-10170	INSTALL GIRDER	17.0	0.0	31-Mar-20																							
G2L-10220	CONSTRUCT DECK AND PARAPET	20.0	0.0	23-Apr-20																							
G2L-10180	VDOT SAFETY INSPECTION	5.0	0.0	15-Jun-20																							
G2L-10190	BRIDGE WIDENING READY TO OPEN	0.0	0.0	19-Jun-20																							
STAGE 3 AREA 4																											
G30-11110	STA 273+00 TO STA 304+50 AND RAMP 2 STA 20+00 TO STA 27+00	0.0	0.0	19-Jun-20																							
G30-11110	SECTION COMPLETE - STA 273+00 TO 304+50	0.0	0.0	19-Jun-20																							
SOUNDWALLS - EBL																											
G3S1-10000	30-DAY NOTIFICATION OF CLEARING/DEMO BARRIER C1	2020.0	0.0	22-Aug-19																							
G3S1-10000	30-DAY NOTIFICATION OF CLEARING/DEMO BARRIER C1	1065.0	0.0	22-Aug-19																							
G3S1-10000	30-DAY NOTIFICATION OF CLEARING/DEMO BARRIER C1	30.0	0.0	22-Aug-19																							
STA 135+00 TO STA 154+75																											
G3S1-10600	CLEAR AND GRUB	36.0	0.0	08-Oct-19																							
G3S1-10700	INSTALL E&S AND ESTABLISH ACCESS	5.0	0.0	08-Oct-19																							
G3S1-10700	INSTALL E&S AND ESTABLISH ACCESS	3.0	0.0	15-Oct-19																							
G3S1-10800	DEMO AND REMOVE EXISTING NOISE BARRIER	3.0	0.0	18-Oct-19																							
G3S1-10900	INSTALL FOUNDATIONS AND NOISE BARRIER	25.0	0.0	23-Oct-19																							
STA 129+50 TO STA 135+00																											
G3S1-10100	CLEAR AND GRUB	26.0	0.0	12-Nov-19																							
G3S1-10100	CLEAR AND GRUB	5.0	0.0	12-Nov-19																							
G3S1-10200	INSTALL E&S AND ESTABLISH ACCESS	3.0	0.0	19-Nov-19																							
G3S1-10300	DEMO AND REMOVE EXISTING NOISE BARRIER	3.0	0.0	28-Nov-19																							
G3S1-10400	INSTALL FOUNDATIONS AND NOISE BARRIER	15.0	0.0	03-Dec-19																							
STA 188+25 TO END OF RAMP 3 STA 18+75																											
G3S1-11300	CLEAR AND GRUB	36.0	0.0	09-Dec-19																							
G3S1-11300	CLEAR AND GRUB	5.0	0.0	09-Dec-19																							
G3S1-11400	INSTALL E&S AND ESTABLISH ACCESS	3.0	0.0	16-Dec-19																							
G3S1-11500	DEMO AND REMOVE EXISTING NOISE BARRIER	3.0	0.0	19-Dec-19																							
G3S1-11600	INSTALL FOUNDATIONS AND NOISE BARRIER	25.0	0.0	27-Dec-19																							
BARRIER D1 & D2																											
G3S1-12100	D1 - FAIRFAX DRIVE	20.0	0.0	05-Feb-20																							
G3S1-12100	INSTALL FOUNDATIONS AND NOISE BARRIER	20.0	0.0	05-Feb-20																							
G3S1-12500	D2 - RAMP 1 STA 16+50 TO 21+50	15.0	0.0	04-Mar-20																							
G3S1-12500	INSTALL FOUNDATIONS AND NOISE BARRIER	15.0	0.0	04-Mar-20																							
BARRIER E1																											
G3S1-13000	BARRIER E1 NEW - WOOD TRAIL STA 59+00 TO 62+50	35.0	0.0	25-Mar-20																							
G3S1-13000	INSTALL FOUNDATIONS AND NOISE BARRIER	15.0	0.0	25-Mar-20																							
G3S1-13500	E1 REPLACEMENT STA 192+50 TO 204+00	20.0	0.0	15-Apr-20																							
G3S1-13500	INSTALL FOUNDATIONS AND NOISE BARRIER	20.0	0.0	15-Apr-20																							
BARRIER H - BON AIR PARK																											
G3S1-13800	STA 264+50 TO 272+50	15.0	0.0	21-May-20																							
G3S1-13800	SET POST FOR STRUCTURE MOUNTED NOISE BARRIER	10.0	0.0	21-May-20																							
G3S1-13900	SET PANELS FOR STRUCTURE MOUNTED NOISE BARRIER	5.0	0.0	08-Jun-20																							
G3S1-13910	SOUNDWALL COMPLETE - STA 264+50 TO 272+50	0.0	0.0	12-Jun-20																							
BARRIER H1 EXTENSION																											
G3S1-14300	STA 282+00 TO STA 291+25	26.0	0.0	13-May-20																							
G3S1-14300	INSTALL FOUNDATIONS AND NOISE BARRIER	23.0	0.0	13-May-20																							

Proposal Schedule		I-66 Eastbound Widening Inside the Beltway														
Activity ID	Activity Name	Original Duration	Total Float	Finish	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
G3S1-14400	BACKFILL WALL/DRESSUP SLOPE	3.0	0.0	17-Jun-20	19-Jun-20											
G3S1-14410	SOUNDWALL COMPLETE - STA 282+00 TO 291+25	0.0	0.0		19-Jun-20											
STAGE 4 - MILL/OVERLAY & FINAL SURFACE ASPHALT					54.0	0.0	22-Jun-20	09-Sep-20								
STAGE 4 GENERAL ITEMS					54.0	0.0	22-Jun-20	09-Sep-20								
G4A-10100	REMOVE TEMP SERVICE BARRIER	10.0	0.0	22-Jun-20	07-Jul-20											
G4A-10110	COORDINATION WITH TRANSVERSE FOR TRAFFIC SWITCH	30.0	0.0	11-Aug-20	09-Sep-20											
STA 122+50 TO STA 166+75 (INSIDE LANES/SHOULDER)					5.0	0.0	08-Jul-20	14-Jul-20								
MILL EXISTING MAINLINE LANES/SHOULDER BUILDUP					5.0	0.0	08-Jul-20	14-Jul-20								
STA 166+75 TO STA 219+60 (INSIDE LANES/SHOULDER)					19.0	0.0	15-Jul-20	10-Aug-20								
G4C-10000	MILL EXISTING MAINLINE LANES/SHOULDER BUILDUP	5.0	0.0	15-Jul-20	21-Jul-20											
G4C-10100	INSTALL SM ASPHALT	5.0	0.0	22-Jul-20	28-Jul-20											
G4C-10200	INSTALL PAVEMENT MARKINGS	4.0	0.0	29-Jul-20	03-Aug-20											
G4C-10300	INSTALL SIGNAGE	5.0	0.0	04-Aug-20	10-Aug-20											
STA 219+60 TO STA 311+00 (INSIDE LANES/SHOULDER)					19.0	0.0	22-Jul-20	17-Aug-20								
G4D-10000	MILL EXISTING MAINLINE LANES/SHOULDER BUILDUP	5.0	0.0	22-Jul-20	28-Jul-20											
G4D-10100	INSTALL SM ASPHALT	5.0	0.0	29-Jul-20	04-Aug-20											
G4D-10300	INSTALL SIGNAGE	5.0	0.0	11-Aug-20	17-Aug-20											
STA 122+50 TO STA 166+75 (OUTSIDE LANES/SHOULDER)					19.0	0.0	29-Jul-20	24-Aug-20								
G4E-10000	MILL EXISTING MAINLINE LANES/SHOULDER BUILDUP	5.0	0.0	29-Jul-20	04-Aug-20											
G4E-10100	INSTALL SM ASPHALT	5.0	0.0	05-Aug-20	11-Aug-20											
G4E-10300	INSTALL SIGNAGE	5.0	0.0	18-Aug-20	24-Aug-20											
STA 166+75 TO STA 219+60 (OUTSIDE LANES/SHOULDER)					19.0	0.0	05-Aug-20	31-Aug-20								
G4F-10000	MILL EXISTING MAINLINE LANES/SHOULDER BUILDUP	5.0	0.0	05-Aug-20	11-Aug-20											
G4F-10100	INSTALL SM ASPHALT	5.0	0.0	12-Aug-20	18-Aug-20											
G4F-10200	INSTALL PAVEMENT MARKINGS	4.0	0.0	19-Aug-20	24-Aug-20											
G4F-10300	INSTALL SIGNAGE	5.0	0.0	25-Aug-20	31-Aug-20											
STA 219+60 TO STA 311+00 (OUTSIDE LANES/SHOULDER)					19.0	0.0	12-Aug-20	09-Sep-20								
G4G-10000	MILL EXISTING MAINLINE LANES/SHOULDER BUILDUP	5.0	0.0	12-Aug-20	18-Aug-20											
G4G-10100	INSTALL SM ASPHALT	5.0	0.0	19-Aug-20	25-Aug-20											
G4G-10200	INSTALL PAVEMENT MARKINGS	4.0	0.0	26-Aug-20	31-Aug-20											
G4G-10300	INSTALL SIGNAGE	5.0	0.0	01-Sep-20	09-Sep-20											
G4G-10310	SECTION COMPLETE - STA 219+60 TO 311+00	0.0	0.0		09-Sep-20											
STAGE 5 - SIGNALS AND LANDSCAPING					183.0	0.0	14-Sep-20	11-Jun-21								
SIGNAL AT LEE HWY/FAIRFAX					183.0	0.0	14-Sep-20	11-Jun-21								
G5A-10320	CONSTRUCT SIGNAL	183.0	0.0	14-Sep-20	11-Jun-21											
SIGNAL AT LEE HWY/WASHINGTON					183.0	0.0	14-Sep-20	11-Jun-21								
G5B-10330	CONSTRUCT SIGNAL	183.0	0.0	14-Sep-20	11-Jun-21											
LANDSCAPING					183.0	0.0	14-Sep-20	11-Jun-21								
G5C-10340	LANDSCAPING	183.0	0.0	14-Sep-20	11-Jun-21											

◆ SOUNDWALL COMPLETE - STA 282+00 TO 291+25
 ◆ BACKFILL WALL/DRESSUP SLOPE
 ◆ 09-Sep-20, STAGE 4 - MILL/OVERLAY
 ◆ 09-Sep-20, STAGE 4 GENERAL ITEMS
 ◆ REMOVE TEMP SERVICE BARRIER
 ◆ COORDINATION WITH TRANSVERSE
 ◆ 14-Jul-20, STA 122+50 TO STA 166+75 (INSIDE LANES/SHOULDER)
 ◆ MILL EXISTING MAINLINE LANES/SHOULDER BUILDUP
 ◆ 10-Aug-20, STA 166+75 TO STA 219+60 (INSIDE LANES/SHOULDER)
 ◆ MILL EXISTING MAINLINE LANES/SHOULDER BUILDUP
 ◆ INSTALL SM ASPHALT
 ◆ INSTALL PAVEMENT MARKINGS
 ◆ INSTALL SIGNAGE
 ◆ 17-Aug-20, STA 219+60 TO STA 311+00 (INSIDE LANES/SHOULDER)
 ◆ MILL EXISTING MAINLINE LANES/SHOULDER BUILDUP
 ◆ INSTALL SM ASPHALT
 ◆ INSTALL SIGNAGE
 ◆ 24-Aug-20, STA 122+50 TO STA 166+75 (OUTSIDE LANES/SHOULDER)
 ◆ MILL EXISTING MAINLINE LANES/SHOULDER BUILDUP
 ◆ INSTALL SM ASPHALT
 ◆ INSTALL SIGNAGE
 ◆ 31-Aug-20, STA 166+75 TO STA 219+60 (OUTSIDE LANES/SHOULDER)
 ◆ MILL EXISTING MAINLINE LANES/SHOULDER BUILDUP
 ◆ INSTALL SM ASPHALT
 ◆ INSTALL PAVEMENT MARKINGS
 ◆ INSTALL SIGNAGE
 ◆ 09-Sep-20, STA 219+60 TO STA 311+00 (OUTSIDE LANES/SHOULDER)
 ◆ MILL EXISTING MAINLINE LANES/SHOULDER BUILDUP
 ◆ INSTALL SM ASPHALT
 ◆ INSTALL PAVEMENT MARKINGS
 ◆ INSTALL SIGNAGE
 ◆ SECTION COMPLETE - STA 219+60 TO 311+00
 ◆ 11-Jun-21
 ◆ 11-Jun-21
 ◆ 11-Jun-21
 ◆ 11-Jun-21
 ◆ 11-Jun-21
 ◆ LANDSC

Appendix

Appendix



Attachment 9.3.1 - Proposal Payment Agreement

ATTACHMENT 9.3.1
PROPOSAL PAYMENT AGREEMENT

THIS PROPOSAL PAYMENT AGREEMENT (this “Agreement”) is made and entered into as of this ____ day of _____, 2017, by and between the Virginia Department of Transportation (“VDOT”), and Shirley Contracting Co, LLC (“Offeror”).

WITNESSETH:

WHEREAS, Offeror is one of the entities who submitted Statements of Qualifications (“SOQs”) pursuant to VDOT’s November 18, 2017 (Addendum #1 December 16, 2016) Request for Qualifications (“RFQ”) and was invited to submit proposals in response to a Request for Proposals (“RFP”) for the **I-66 Eastbound Widening Inside the Beltway Project No. 0066-96A-417, P101, R201, C501** (“Project”), under a design-build contract with VDOT (“Design-Build Contract”); and

WHEREAS, as part of the procurement process for the Project, Offeror has already provided and/or furnished to VDOT, and may continue to provide and/or furnish to VDOT, certain intellectual property, materials, information and ideas, including, but not limited to, such matters that are: (a) conveyed verbally and in writing during proprietary meetings or interviews; and (b) contained in, related to or associated with Offeror’s proposal, including, but not limited to, written correspondence, designs, drawings, plans, exhibits, photographs, reports, printed material, tapes, electronic disks, or other graphic and visual aids (collectively “Offeror’s Intellectual Property”); and

WHEREAS, VDOT is willing to provide a payment to Offeror, subject to the express conditions stated in this Agreement, to obtain certain rights in Offeror’s Intellectual Property, provided that Offeror submits a proposal that VDOT determines to be responsive to the RFP (“Offeror’s Proposal”), and either (a) Offeror is not awarded the Design-Build Contract; or (b) VDOT cancels the procurement or decides not to award the Design-Build Contract to any Offeror; and

WHEREAS, Offeror wishes to receive the payment offered by VDOT, in exchange for granting VDOT the rights set forth in this Agreement.

NOW, THEREFORE, in consideration of the mutual covenants and agreements set forth in this Agreement and other good and valuable consideration, the receipt and adequacy of which are acknowledged by the parties, the parties agree as follows:

1. **VDOT's Rights in Offeror's Intellectual Property.** Offeror hereby conveys to VDOT all rights, title and interest, free and clear of all liens, claims and encumbrances, in Offeror's Intellectual Property, which includes, without restriction or limitation, the right of VDOT, and anyone contracting with VDOT, to incorporate any ideas or information from Offeror's Intellectual Property into: (a) the Design-Build Contract and the Project; (b) any other contract awarded in reference to the Project; or (c) any subsequent procurement by VDOT. In receiving all rights, title and interest in Offeror's Intellectual Property, VDOT is deemed to own all intellectual property rights, copyrights, patents, trade secrets, trademarks, and service marks in Offeror's Intellectual Property, and Offeror agrees that it shall, at the request of VDOT, execute all papers and perform all other acts that may be necessary to ensure that VDOT's rights, title and interest in Offeror's Intellectual Property are protected. The rights conferred herein to VDOT include, without limitation, VDOT's ability to use Offeror's Intellectual Property without the obligation to notify or seek permission from Offeror.

2. **Exclusions from Offeror's Intellectual Property.** Notwithstanding Section 1 above, it is understood and agreed that Offeror's Intellectual Property is not intended to include, and Offeror does not convey any rights to, the Escrow Proposal Documents submitted by Offeror in accordance with the RFP.

3. **Proposal Payment.** VDOT agrees to pay Offeror the lump sum amount of **Forty thousand dollars and 00/100 Dollars (\$40,000.00)** ("Proposal Payment"), which payment constitutes payment in full to Offeror for the conveyance of Offeror's Intellectual Property to VDOT in accordance with this Agreement. Payment of the Proposal Payment is conditioned upon: (a) Offeror's Proposal being, in the sole discretion of VDOT, responsive to the RFP; (b) Offeror complying with all other terms and conditions of this Agreement; and (c) either (i) Offeror is not awarded the Design-Build Contract, or (ii) VDOT cancels the procurement or decides not to award the Design-Build Contract to any Offeror.

4. **Payment Due Date.** Subject to the conditions set forth in this Agreement, VDOT will make payment of the Proposal Payment to the Offeror within forty-five (45) days after the later of: (a) notice from VDOT that it has awarded the Design-Build Contract to another Offeror; or (b) notice from VDOT that the procurement for the Project has been cancelled and that there will be no Contract Award.

5. **Effective Date of this Agreement.** The rights and obligations of VDOT and Offeror under this Agreement, including VDOT's ownership rights in Offeror's Intellectual Property, vests upon the date that Offeror's Proposal is submitted to VDOT. Notwithstanding the above, if Offeror's Proposal is determined by VDOT, in its sole discretion, to be nonresponsive to the RFP, then Offeror is deemed to have waived its right to obtain the Proposal Payment, and VDOT shall have no obligations under this Agreement.

6. **Indemnity.** Subject to the limitation contained below, Offeror shall, at its own expense, indemnify, protect and hold harmless VDOT and its agents, directors, officers, employees, representatives and contractors from all claims, costs, expenses, liabilities, demands, or suits at law or equity (“Claims”) of, by or in favor of or awarded to any third party arising in whole or in part from: (a) the negligence or wilful misconduct of Offeror or any of its agents, officers, employees, representatives or subcontractors; or (b) breach of any of Offeror’s obligations under this Agreement, including its representation and warranty under Section 8 hereof. This indemnity shall not apply with respect to any Claims caused by or resulting from the sole negligence or wilful misconduct of VDOT, or its agents, directors, officers, employees, representatives or contractors.

7. **Assignment.** Offeror shall not assign this Agreement, without VDOT's prior written consent, which consent may be given or withheld in VDOT’s sole discretion. Any assignment of this Agreement without such consent shall be null and void.

8. **Authority to Enter into this Agreement.** By executing this Agreement, Offeror specifically represents and warrants that it has the authority to convey to VDOT all rights, title, and interest in Offeror’s Intellectual Property, including, but not limited to, those any rights that might have been vested in team members, subcontractors, consultants or anyone else who may have contributed to the development of Offeror’s Intellectual Property, free and clear of all liens, claims and encumbrances.

9. **Miscellaneous.**

a. Offeror and VDOT agree that Offeror, its team members, and their respective employees are not agents of VDOT as a result of this Agreement.

b. Any capitalized term used herein but not otherwise defined shall have the meanings set forth in the RFP.

c. This Agreement, together with the RFP, embodies the entire agreement of the parties with respect to the subject matter hereof. There are no promises, terms, conditions, or obligations other than those contained herein or in the RFP, and this Agreement shall supersede all previous communications, representations, or agreements, either verbal or written, between the parties hereto.

d. It is understood and agreed by the parties hereto that if any part, term, or provision of this Agreement is by the courts held to be illegal or in conflict with any law of the Commonwealth of Virginia, validity of the remaining portions or provisions shall not be affected, and the rights and obligations of the parties shall be construed and enforced as if the Agreement did not contain the particular part, term, or provisions to be invalid.

e. This Agreement shall be governed by and construed in accordance with the laws

of the Commonwealth of Virginia.

IN WITNESS WHEREOF, this Agreement has been executed and delivered as of the day and year first above written.

VIRGINIA DEPARTMENT OF TRANSPORTATION

By: _____

Name: _____

Title: _____

[Insert Offeror's Name] Shirley Contracting Company, LLC

By:  _____

Name: Michael E. Post

Title: President/CEO/Manager



**Attachment 11.8.6(a)(b) - Debarment
Forms**

ATTACHMENT 11.8.6(a)
CERTIFICATION REGARDING DEBARMENT
PRIMARY COVERED TRANSACTIONS

Project No.: 0066-96A-417, P101, R201, C501 & 0066-96A-493, P101, C501, B686

1) The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:

a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency.

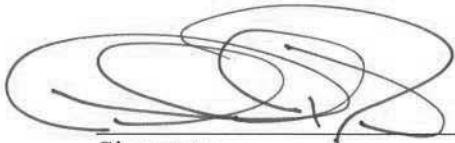
b) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; and have not been convicted of any violations of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification, or destruction of records, making false statements, or receiving stolen property;

c) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph 1) b) of this certification; and

d) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

2) Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

The undersigned makes the foregoing statements to be filed with the proposal submitted on behalf of the Offeror for contracts to be let by the Commonwealth Transportation Board.



Signature

9/27/17

Date

President/CEO/Manager

Title

Shirley Contracting Company, LLC

Name of Firm

ATTACHMENT 11.8.6(b)
CERTIFICATION REGARDING DEBARMENT
LOWER TIER COVERED TRANSACTIONS

**Project No.: 0066-96A-417, P101, R201, C501 & 0066-96A-493, P101, C501,
B686**

- 1) The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

- 2) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

The undersigned makes the foregoing statements to be filed with the proposal submitted on behalf of the Offeror for contracts to be let by the Commonwealth Transportation Board.

Dave Mahoney 8/25/17 Executive Vice President
Signature Date Title

Dewberry Consultants LLC
Name of Firm

ATTACHMENT 11.8.6(b)
CERTIFICATION REGARDING DEBARMENT
LOWER TIER COVERED TRANSACTIONS

**Project No.: 0066-96A-417, P101, R201, C501 & 0066-96A-493, P101, C501,
B686**

- 1) The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

- 2) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

The undersigned makes the foregoing statements to be filed with the proposal submitted on behalf of the Offeror for contracts to be let by the Commonwealth Transportation Board.

	August 22, 2017	President
Signature	Date	Title

Quinn Consulting Services, Inc.
Name of Firm

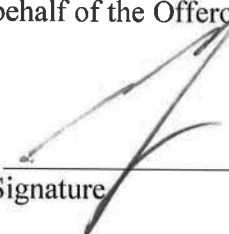
ATTACHMENT 11.8.6(b)
CERTIFICATION REGARDING DEBARMENT
LOWER TIER COVERED TRANSACTIONS

Project No.: 0066-96A-417, P101, R201, C501 & 0066-96A-493, P101, C501, B686

- 1) The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

- 2) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

The undersigned makes the foregoing statements to be filed with the proposal submitted on behalf of the Offeror for contracts to be let by the Commonwealth Transportation Board.

	August 22, 2017	VP of Business Development
Signature	Date	Title

Specialized Engineering
Name of Firm

ATTACHMENT 11.8.6(b)
CERTIFICATION REGARDING DEBARMENT
LOWER TIER COVERED TRANSACTIONS

**Project No.: 0066-96A-417, P101, R201, C501 & 0066-96A-493, P101, C501,
B686**

- 1) The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

- 2) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

The undersigned makes the foregoing statements to be filed with the proposal submitted on behalf of the Offeror for contracts to be let by the Commonwealth Transportation Board.

 8/29/17 _____ President _____
Signature Date Title

GeoConcepts Engineering, Inc. _____
Name of Firm

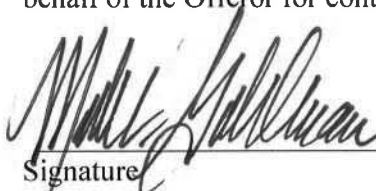
ATTACHMENT 11.8.6(b)
CERTIFICATION REGARDING DEBARMENT
LOWER TIER COVERED TRANSACTIONS

**Project No.: 0066-96A-417, P101, R201, C501 & 0066-96A-493, P101, C501,
B686**

- 1) The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

- 2) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

The undersigned makes the foregoing statements to be filed with the proposal submitted on behalf of the Offeror for contracts to be let by the Commonwealth Transportation Board.

 _____ Signature	08/25/2017 _____ Date	MANAGER _____ Title
 SO-DEEP, INC. _____ Name of Firm		

ATTACHMENT 11.8.6(b)
CERTIFICATION REGARDING DEBARMENT
LOWER TIER COVERED TRANSACTIONS

**Project No.: 0066-96A-417, P101, R201, C501 & 0066-96A-493, P101, C501,
B686**

- 1) The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

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The undersigned makes the foregoing statements to be filed with the proposal submitted on behalf of the Offeror for contracts to be let by the Commonwealth Transportation Board.

<u>W. J. McKeague</u>	<u>8/25/2017</u>	<u>Vice President</u>
Signature	Date	Title

Quantum Spatial, Inc.
Name of Firm

ATTACHMENT 11.8.6(b)
CERTIFICATION REGARDING DEBARMENT
LOWER TIER COVERED TRANSACTIONS

**Project No.: 0066-96A-417, P101, R201, C501 & 0066-96A-493, P101, C501,
B686**

- 1) The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

- 2) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

The undersigned makes the foregoing statements to be filed with the proposal submitted on behalf of the Offeror for contracts to be let by the Commonwealth Transportation Board.

	8/22/2017	President
Signature	Date	Title
Diversified Property Services, Inc.		
Name of Firm		

ATTACHMENT 11.8.6(b)
CERTIFICATION REGARDING DEBARMENT
LOWER TIER COVERED TRANSACTIONS

Project No.: 0066-96A-417, P101, R201, C501 & 0066-96A-493, P101, C501,
B686

- 1) The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

- 2) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

The undersigned makes the foregoing statements to be filed with the proposal submitted on behalf of the Offeror for contracts to be let by the Commonwealth Transportation Board.

Robert Ruske 8-22-17 Vice President
Signature Date Title

Old Dominion Settlements Inc., T/A Key Title
Name of Firm

Response to Request for Proposals

I-66 EASTBOUND WIDENING INSIDE THE BELTWAY

Fairfax County and Arlington County, Virginia

State Project No.: I-66 EBW (0066-96A-417, P101, R201, C501), UPC 108424

I-66 EDA (0066-96A-493, P101, C501, B686), UPC 110629

Federal Project No.: NHPP-066-1(356)

Contract ID Number: C00108424DB92

VOLUME II: DESIGN CONCEPT



SUBMITTED BY:
SHIRLEY
CONTRACTING COMPANY, LLC

IN ASSOCIATION WITH:
Dewberry

4.3.1 - Conceptual Roadway Plans



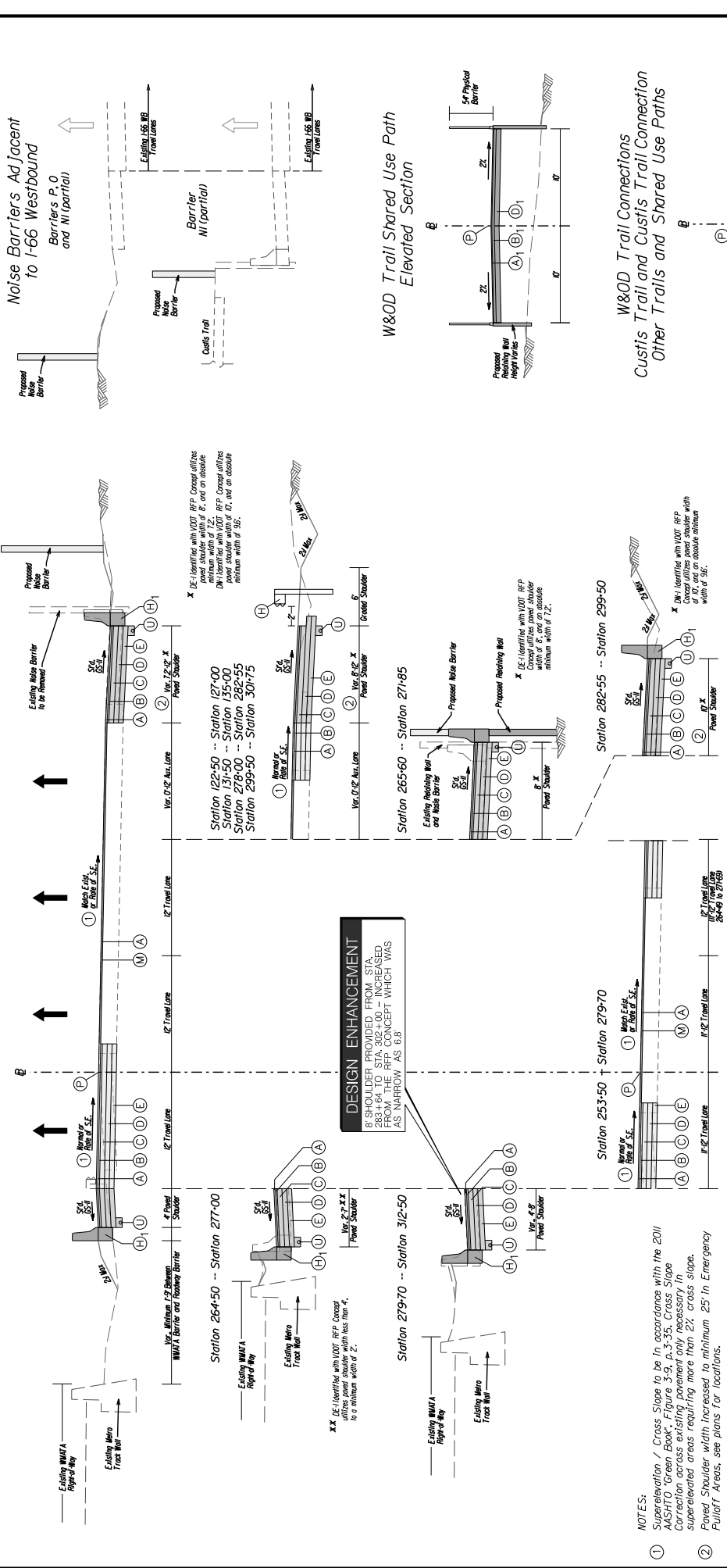
PROJ. COST MANAGERS: MWP CONSULTING, P.C. (703) 259-2224 - NORVA, VA
 DESIGNED BY: Dewberry Consultants, LLC (703) 292-7175
 SUBSURFACE UTILITY BY: DATE



STATE: VA ROUTE: 66 PROJECT: (F0) 0066-96A-417 P.O.L./R.O./C.S.O. 0066-96A-493 P.O.L./C.S.O. 24(1)

TYPICAL SECTIONS

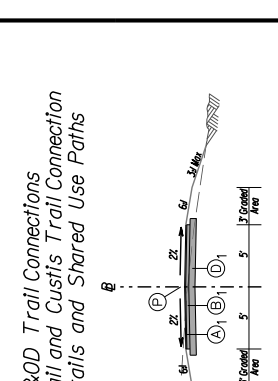
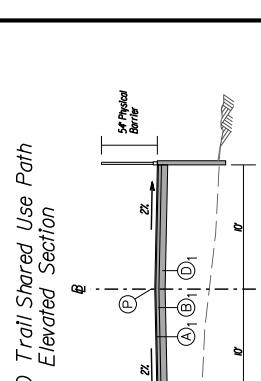
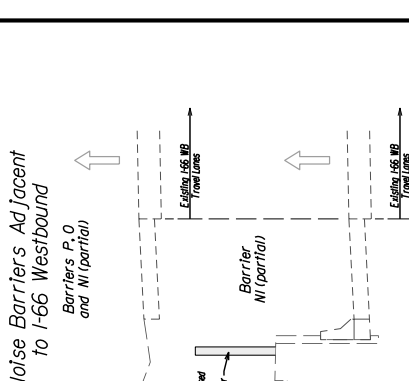
I-66 Eastbound
 Station 120+00 -- Station 158+75
 Station 251+50 -- Station 312+50



- NOTES:**
- Super-elevation / Cross Slope to be in accordance with the 2011 AASHTO "Green Book" Figure 3.9, p. 3-35. Cross Slope Correction across existing pavement only necessary in super-elevated areas requiring more than 2% cross slope.
 - Paved Shoulder width increased to minimum .25' in Emergency Pull-off Areas, see plans for locations.

LEGEND

- (A) 2' Asphalt Concrete, Type SM-12.5E estimated at 237 lbs/sy
- (A₁) 1' Asphalt Concrete, Type SM-4.75A estimated at 118 lbs/sy
- (B) 2' Asphalt Concrete, Type IM-19.0A estimated at 240 lbs/sy
- (B₁) 3' Asphalt Concrete, Type IM-19.0A estimated at 360 lbs/sy
- (C) 6' Asphalt Concrete, Type BM-25.0A
- (H) Midwest Guardrail System, Srd. MGS-1.1A
- (H₁) Concrete Barrier
- (M) Mill Existing Pavement 2"
- (P) Profile Grade Line
- (U) Pavement Edge drain, Srd. UD-4
- (X) Aggregate Base Material, Type I, Size No. 21A, pugmill mixed with 4% by weight hydraulic cement, extended min. 12' beyond edge of mainline pavement
- (X₁) Aggregate Base Material, Type I, Size No. 21B, extended min. 6' beyond edge of surface material
- (X₂) Cement Stabilized Subgrade with 12% hydraulic cement by volume, extended min. 12' beyond edge of mainline pavement



PROJECT: (F0) 0066-96A-417 0066-96A-493 SHEET NO. 24(1)

Not to Scale

PROJECT MANAGER: MFL/066-96A-417 - NVA/LSO
 DESIGNED BY: DAWBERG CONSULTANTS, LLC - JTD/03/28/21/736
 SUBSURFACE UTILITY BY: DATE

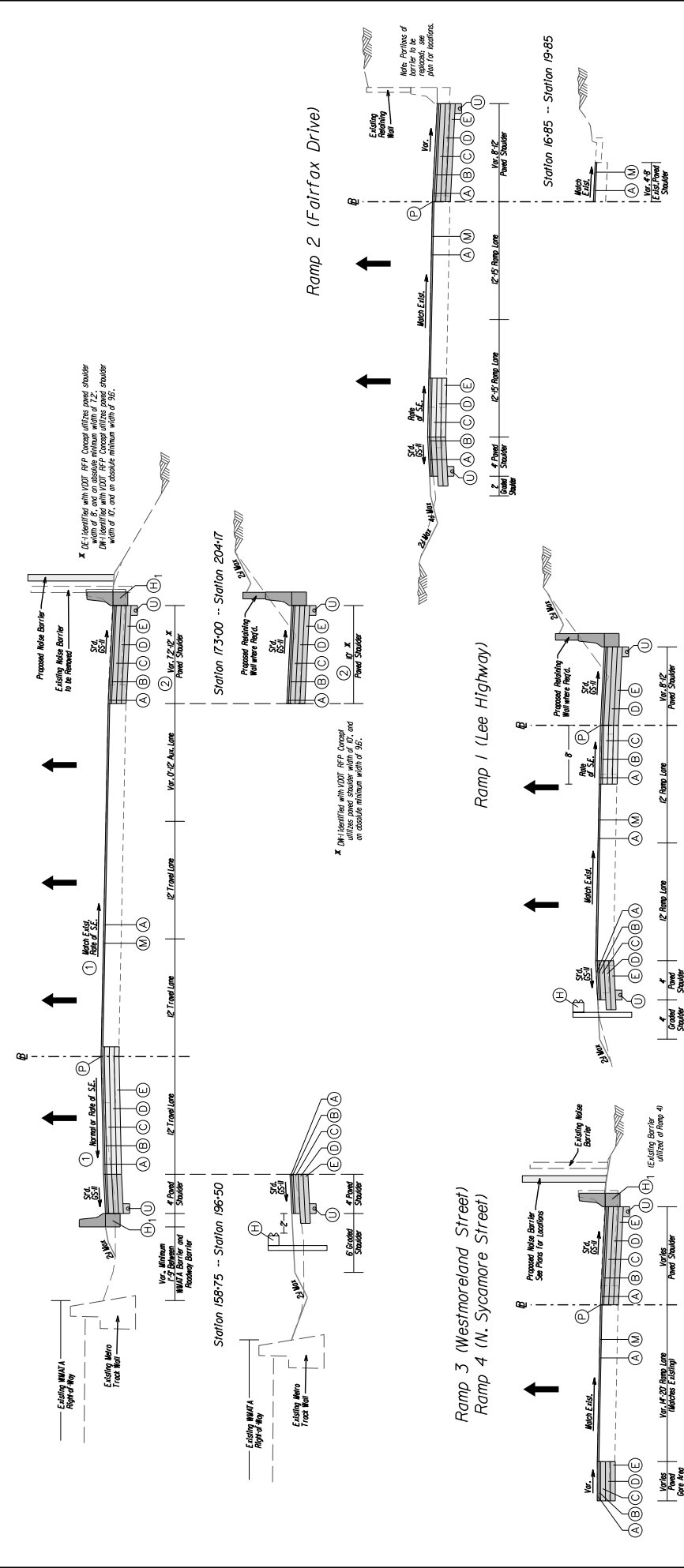


STATE: VA. ROUTE: 66 PROJECT: (F0) 066-96A-417
 PIOL R201.C501 0066-96A-493
 PIOL.C501 2421

DESIGN FEATURES RELATIVE TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

TYPICAL SECTIONS

I-66 Eastbound



- NOTES:
- 1 Superlevation / Cross Slope to be in accordance with the 2011 AASHTO "Green Book", Figure 3-9, p.3-35. Cross Slope Correction across existing pavement only necessary in super-elevated areas requiring more than 2% cross slope.
 - 2 Paved Shoulder width increased to minimum 25' in Emergency Pull-off Areas, see plans for locations.

Symbol	Description
(A)	2' Asphalt Concrete, Type SM-12.5E estimated at 237 lbs/sy
(A ₁)	1' Asphalt Concrete, Type SM-4.75A estimated at 118 lbs/sy
(B)	2' Asphalt Concrete, Type IM-19.0A estimated at 240 lbs/sy
(B ₁)	3' Asphalt Concrete, Type IM-19.0A estimated at 360 lbs/sy
(C)	5' Asphalt Concrete, Type BM-25.0A
(H)	Midwest Guardrail System, Sfd.MGS-1.1A
(H ₁)	Concrete Barrier
(M)	Mill Existing Pavement 2"
(P)	Profile Grade Line
(U)	Pavement Edge drain, Sfd.UD-4
(1)	6' Aggregate Base Material, Type 1, Size No.21A, pugmill mixed with 4% by weight hydraulic cement, extended min. 12' beyond edge of mainline pavement
(2)	6' Aggregate Base Material, Type 1, Size No.21B, extended min. 6' beyond edge of surface material
(3)	6' Cement Stabilized Subgrade with 12% hydraulic cement by volume, extended min. 12' beyond edge of mainline pavement

LEGEND

PROJECT: 066-96A-417
 SHEET NO.: 2421
 Not to Scale

PROJ. MGRS: *Not shown, see I-703/250/274 - NOVA, MD.*
 DESIGNED BY: *Dewberry Consultants, LLC - I-703/250/274*
 SUBSURFACE UTILITY BY: DATE



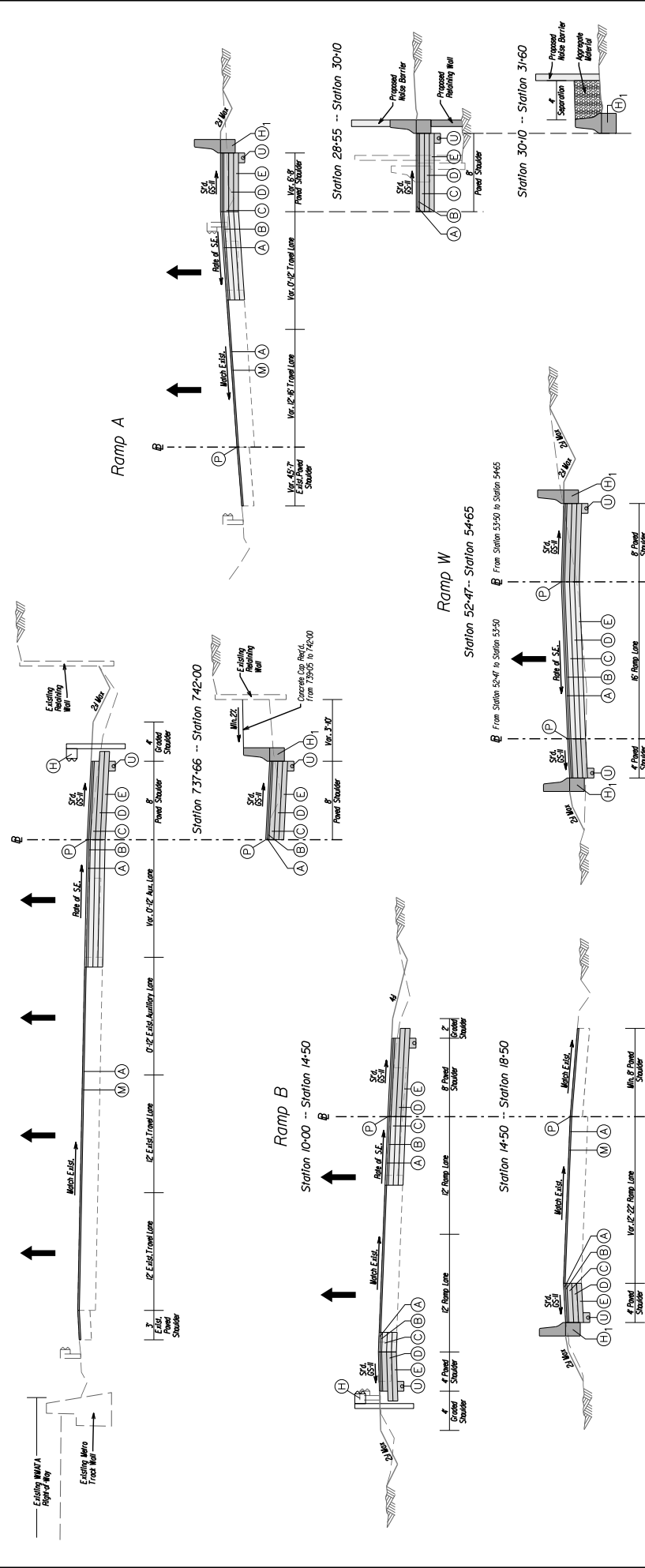
STATE: VA. ROUTE: 66 PROJECT: (FO) 0066-96A-417
 PIOL R201.C501 0066-96A-493
 PIOL C501 24(3)

DESIGN FEATURES RELATIVE TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

TYPICAL SECTIONS

I-66 EDA (Option 1)

I-66 Eastbound
 Station 737+66 -- Station 744+71



LEGEND

- (A) 2" Asphalt Concrete, Type SM-12.5E estimated at 237 lbs/sy
- (A₁) 1" Asphalt Concrete, Type SM-4.75A estimated at 118 lbs/sy
- (B) 2" Asphalt Concrete, Type IM-19.0A estimated at 240 lbs/sy
- (B₁) 3" Asphalt Concrete, Type IM-19.0A estimated at 360 lbs/sy
- (C) 5" Asphalt Concrete, Type BM-25.0A
- (H) Midwest Guardrail System, Srd. MGS-1, IA
- (H₁) Concrete Barrier
- (M) Mill Existing Pavement 2"
- (P) Profile Grade Line
- (U) Pavement Edgegrain, Srd. UD-4
- (6) Aggregate Base Material, Type I, Size No. 21A, pugmill mixed with 4% by weight hydraulic cement, extended min. 12' beyond edge of mainline pavement
- (6₁) Aggregate Base Material, Type I, Size No. 21B, extended min. 6' beyond edge of surface material
- (6₂) Cement Stabilized Subgrade with 12% hydraulic cement by volume, extended min. 12' beyond edge of mainline pavement

- (B) Denotes Proposed Travel Lane Pavement
- (B₁) Denotes Pavement Mill & Overlay or Pavement Variable Depth Overlay
- (B₂) Denotes Proposed Paved Shoulder
- (B₃) Denotes Retaining Wall or Noise Barrier
- (B₄) Denotes Shared Use Path

NOTES:
 1 Superlevation / Cross Slope to be in accordance with the 2011 AASHTO "Green Book", Figure 3-9, p.3-35. Cross Slope Correction across existing pavement only necessary in super-elevated areas requiring more than 2% cross slope.
 2 Paved Shoulder width increased to minimum 25' in Emergency Pull-off Areas, see plans for locations.

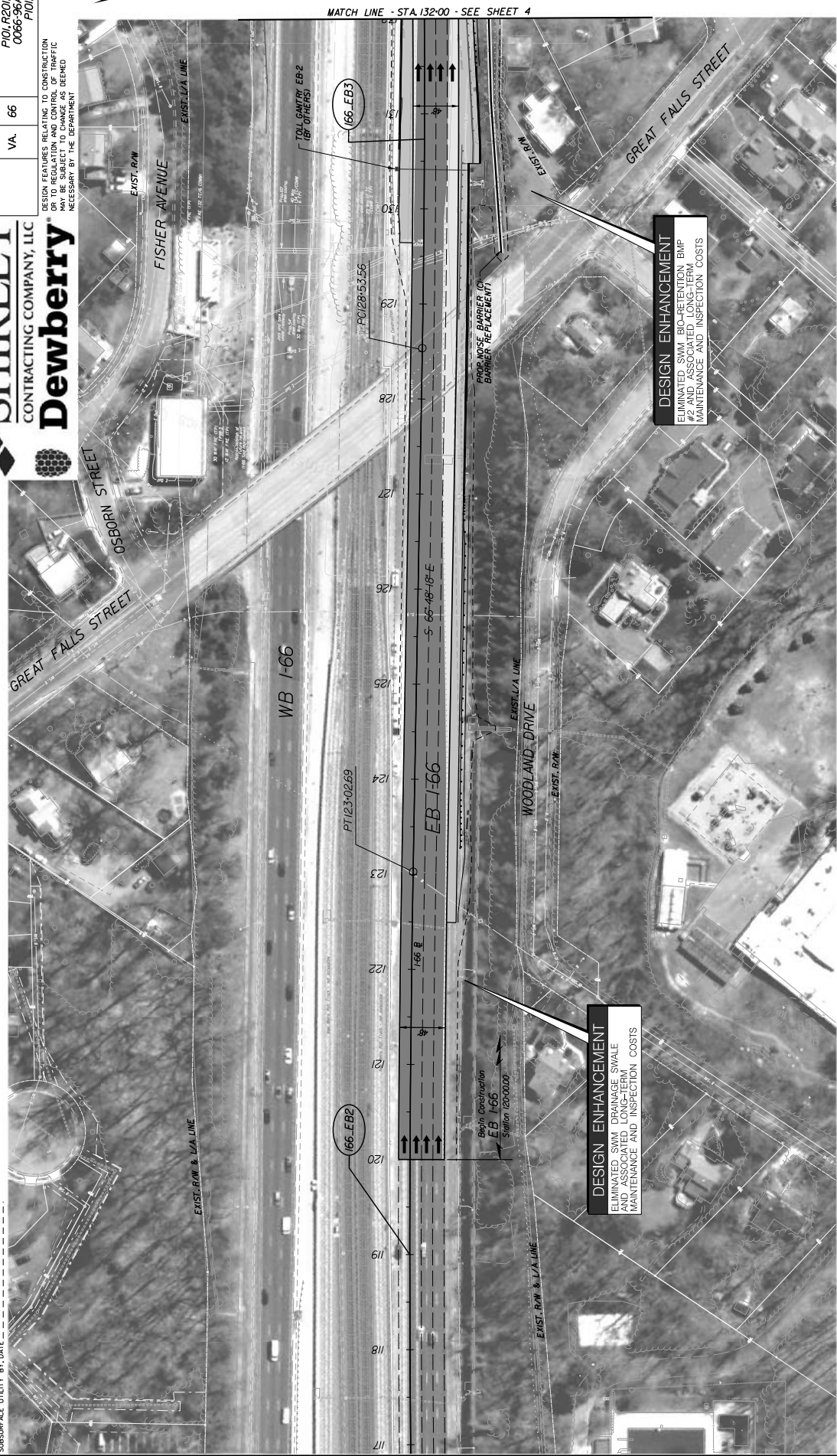
PROJECT: 0066-96A-417
 SHEET NO.: 24(3)
 Not to Scale

PROJECT MANAGER: *Map* 06/24/2024 - 10/14/2024
 DESIGNED BY: *Dewberry* 06/24/2024
 SUBSURFACE UTILITY BY: DATE



STATE	ROUTE	PROJECT	SHEET NO.
VA	66	(FO) 0666-96A-417 P.O.L. R201.C501 0666-96A-493 P.O.L. C501	3

DESIGN FEATURES RELATIVE TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT



LEGEND

	Denotes Proposed Travel Lane Pavement
	Denotes Proposed Mill & Overlay
	Denotes Variable Depth Overlay
	Denotes Proposed Paved Shoulder
	Denotes Proposed Bridge Deck
	Denotes Shared Use Path
	Denotes Reduction in Right-of-Way Impact
	Denotes Proposed Noise Barrier
	Denotes Proposed Conceptual Drainage
	Denotes Proposed Pipe Slip-Limit

Curve 166_EB2

DELTA	27°00'28.13" (RT)
D	0'15'00"
L	801.65'
R	22,596.00'
PC	115+00.00
PT	129+53.56
V	60 mph
e	N/C

Curve 166_EB3

DELTA	7°32'30.12" (LT)
D	0'22'35"
L	201.65'
R	15,000.00'
PC	129+53.56
PT	132+00.00
V	60 mph
e	N/C

DESIGN ENHANCEMENT
 ELIMINATED SWM DRAINAGE SWALE AND ASSOCIATED LONG-TERM MAINTENANCE AND INSPECTION COSTS

DESIGN ENHANCEMENT
 ELIMINATED SWM BIO-RETENTION BMP #2 AND ASSOCIATED LONG-TERM MAINTENANCE AND INSPECTION COSTS

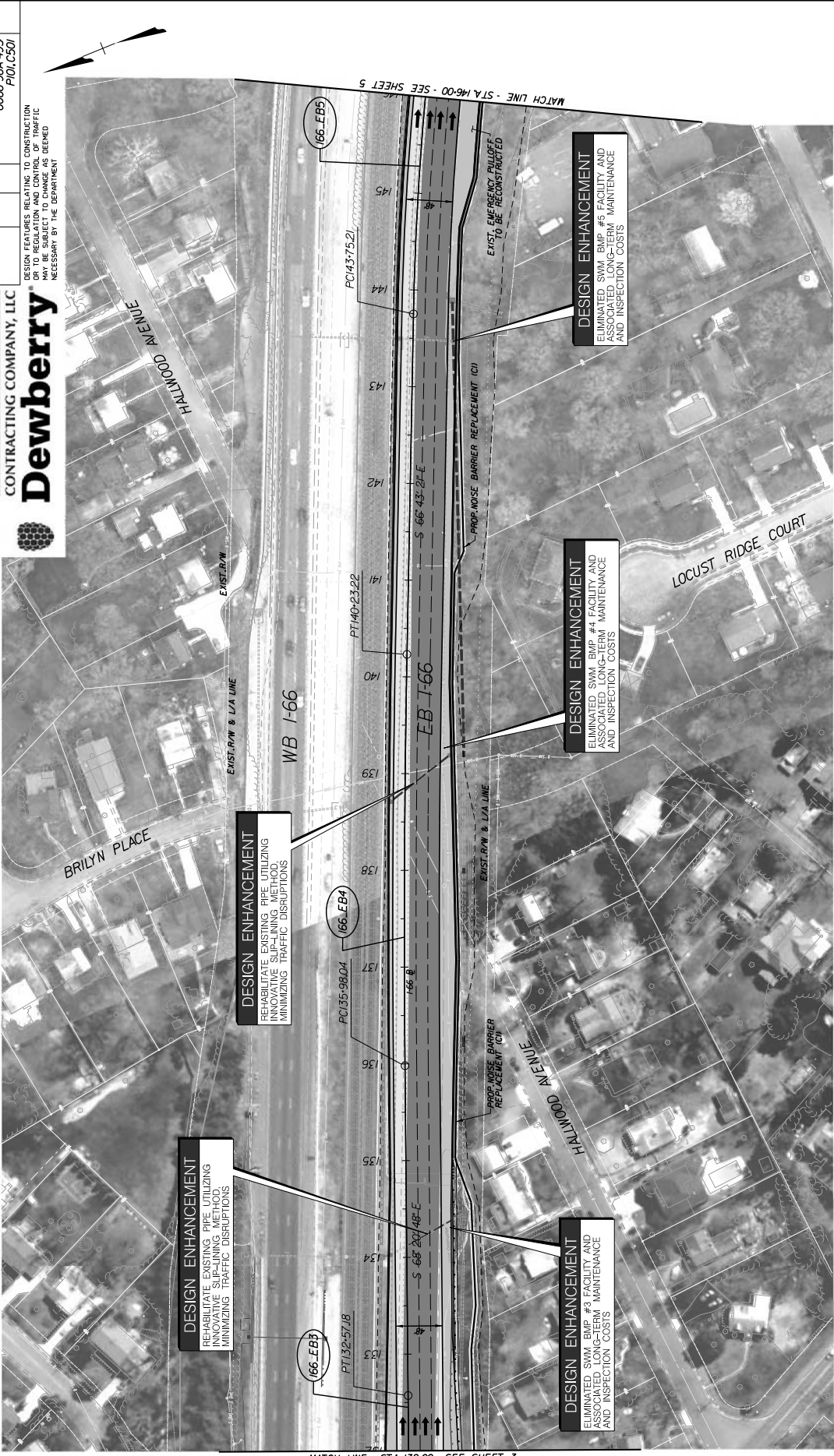
PROJECT NO. (FO) 0666-96A-417
 SHEET NO. 3



STATE PROJECT
VA. 66
PROJECT NO. 0066-96A-417
PIOL 0201.C501
0066-96A-493
PIOL C501

DESIGN FEATURES RELATIVE TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

PROJECT MANAGER: MFL/0066-96A-417-001/0201.C501-001/VA.66
DESIGNED BY: Dewberry Consultants, LLC - 07/03/2024/7/26
SUBSURFACE UTILITY BY: DATE



DESIGN ENHANCEMENT
REHABILITATE EXISTING PIPE UTILIZING INNOVATIVE SLIP-LINING METHOD, MINIMIZING TRAFFIC DISRUPTIONS

DESIGN ENHANCEMENT
REHABILITATE EXISTING PIPE UTILIZING INNOVATIVE SLIP-LINING METHOD, MINIMIZING TRAFFIC DISRUPTIONS

DESIGN ENHANCEMENT
ELIMINATED SWM BMP #3 FACILITY AND ASSOCIATED LONG-TERM MAINTENANCE AND INSPECTION COSTS

DESIGN ENHANCEMENT
ELIMINATED SWM BMP #4 FACILITY AND ASSOCIATED LONG-TERM MAINTENANCE AND INSPECTION COSTS

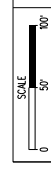
DESIGN ENHANCEMENT
ELIMINATED SWM BMP #5 FACILITY AND ASSOCIATED LONG-TERM MAINTENANCE AND INSPECTION COSTS

- LEGEND**
- Denotes Proposed Travel Lane Pavement
 - Denotes Proposed Mill & Overlay
 - Denotes Proposed Variable Depth Overlay
 - Denotes Proposed Paved Shoulder
 - Denotes Proposed Bridge Deck
 - Denotes Shared Use Path
 - Denotes Reduction in Right-of-way Impact
 - Denotes Proposed Noise Barrier
 - Denotes Proposed Conceptual Drainage

Curve 166.EB3
DELTA: 17.32° 30.02' (UT)
D: 0.22' 55"
L: 201.62'
R: 15.000.00'
PC: 139.592.76
PT: 159.79.76
V: 60 mph
e: N.C.

Curve 166.EB4
DELTA: 17.37° 26.65' (RT)
D: 0.22' 55"
L: 425.08'
R: 15.000.00'
PC: 149.592.21
PT: 169.79.76
V: 60 mph
e: N.C.

Curve 166.EB5
DELTA: 14.31° 09.26' (RT)
D: 1.50' 37"
L: 789.59'
R: 3.108.00'
PC: 149.592.21
PT: 169.79.76
V: 60 mph
e: 3.2%



SHEET NO. 4
PROJECT NO. 0066-96A-417
PIOL 0201.C501

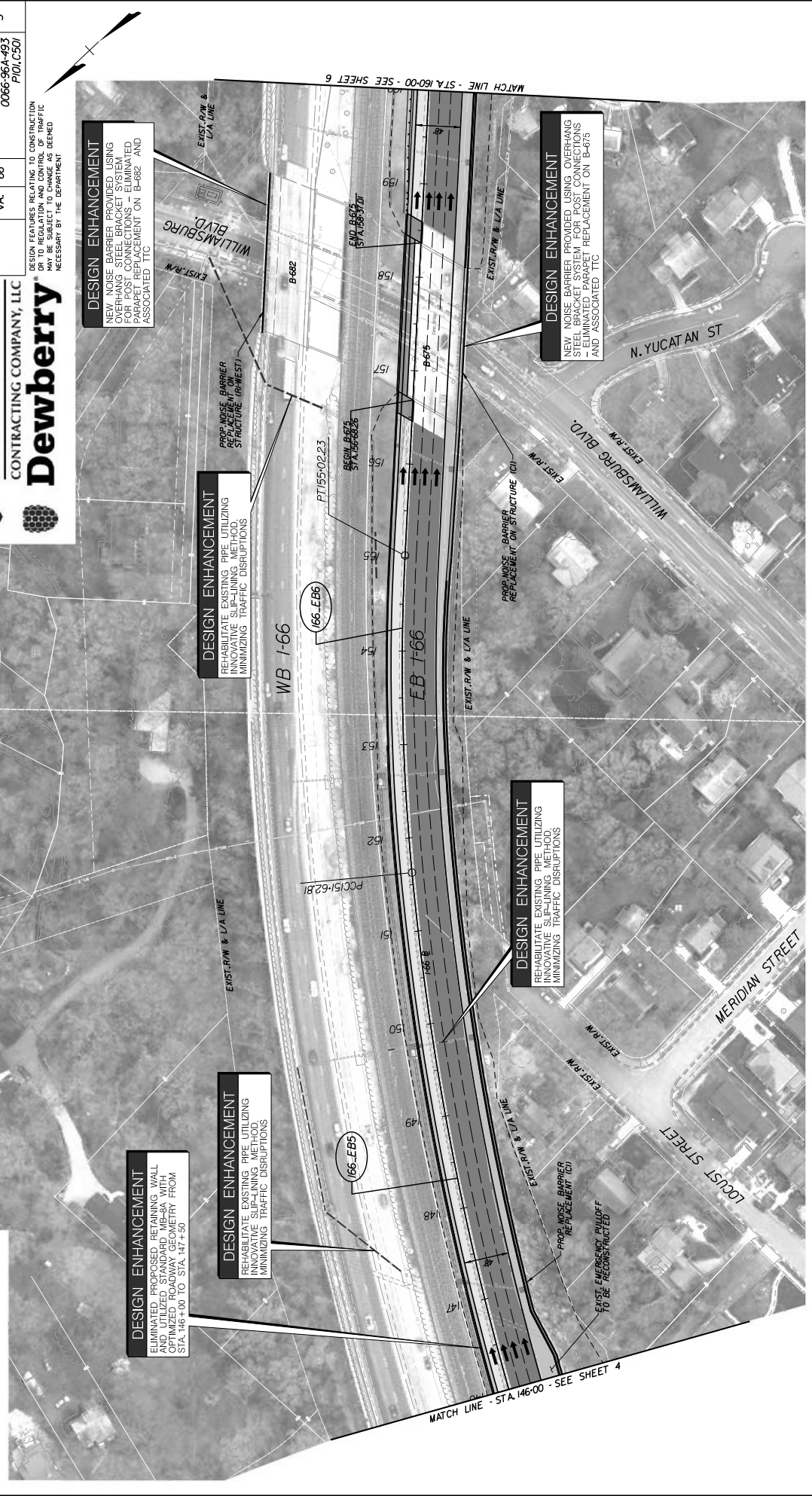


DESIGN FEATURES RELATIVE TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

PROJECT MANAGER: *Map Drawing*, P.E. 0703 259-224 - NVA (A) 00
 DESIGNED BY: *Dewberry Consultants, LLC* - 0703 228-7736
 SUBSURFACE UTILITY BY: DATE

STATE: VA. ROUTE: 66 PROJECT: (FO) 0066-96A-417 P/O: R201.C501 0066-96A-493 P/O: C501

SHEET NO. 5



DESIGN ENHANCEMENT
 NEW NOISE BARRIER PROVIDED USING OVERHANG STRUCTURE TO ELIMINATE PARAPET REPLACEMENT ON B-682 AND ASSOCIATED TTC

DESIGN ENHANCEMENT
 REHABILITATE EXISTING PIPE UTILIZING INNOVATIVE SLIP-LINING METHOD, MINIMIZING TRAFFIC DISRUPTIONS

DESIGN ENHANCEMENT
 REHABILITATE EXISTING PIPE UTILIZING INNOVATIVE SLIP-LINING METHOD, MINIMIZING TRAFFIC DISRUPTIONS

DESIGN ENHANCEMENT
 ELIMINATED PROPOSED RETAINING WALL AND UTILIZED STANDARD MB-8A WITH OPTIMIZED ROADWAY GEOMETRY FROM STA. 146+00 TO STA. 147+50

DESIGN ENHANCEMENT
 NEW NOISE BARRIER PROVIDED USING OVERHANG STRUCTURE TO ELIMINATE PARAPET REPLACEMENT ON B-675 AND ASSOCIATED TTC

DESIGN ENHANCEMENT
 PROPOSED NOISE BARRIER REPLACEMENT ON STRUCTURE (R-REST)

DESIGN ENHANCEMENT
 PROPOSED NOISE BARRIER REPLACEMENT ON STRUCTURE (C)

DESIGN ENHANCEMENT
 PROPOSED NOISE BARRIER REPLACEMENT (C)

DESIGN ENHANCEMENT
 PROPOSED NOISE BARRIER REPLACEMENT (C)

DESIGN ENHANCEMENT
 PROPOSED EMERGENCY RULOFF TO BE RECONSTRUCTED

SCALE: 1" = 50'

PROJECT: (FO) 0066-96A-417
 0066-96A-493

SHEET NO. 5

Curve 155. EBS
 P1 = 153+32.82
 DELTA = 87.19 43.14 (RT)
 T = 170.07'
 L = 339.42'
 PC = 155+02.23
 PCC = 155+02.23
 V = 60 mph
 e = .32%

Curve 156. EBS
 P1 = 147.713
 DELTA = 14.31 09.26 (RT)
 T = 39.52'
 L = 787.59'
 PC = 148.07
 PCC = 151+62.81
 V = 60 mph
 e = .32%

Curve 157. EBS
 P1 = 147.713
 DELTA = 14.31 09.26 (RT)
 T = 39.52'
 L = 787.59'
 PC = 148.07
 PCC = 151+62.81
 V = 60 mph
 e = .32%

Curve 158. EBS
 P1 = 147.713
 DELTA = 14.31 09.26 (RT)
 T = 39.52'
 L = 787.59'
 PC = 148.07
 PCC = 151+62.81
 V = 60 mph
 e = .32%

Curve 159. EBS
 P1 = 147.713
 DELTA = 14.31 09.26 (RT)
 T = 39.52'
 L = 787.59'
 PC = 148.07
 PCC = 151+62.81
 V = 60 mph
 e = .32%

Curve 160. EBS
 P1 = 147.713
 DELTA = 14.31 09.26 (RT)
 T = 39.52'
 L = 787.59'
 PC = 148.07
 PCC = 151+62.81
 V = 60 mph
 e = .32%

LEGEND

- Denotes Proposed Travel Lane Pavement
- Denotes Proposed Mill & Overlay / Variable Depth Overlay
- Denotes Proposed Paved Shoulder
- Denotes Bridge Deck
- Denotes Shared Use Path
- Denotes Reduction in Right-of-Way Impact
- Denotes Proposed Noise Barrier
- Denotes Proposed Conceptual Drainage

Match Line - STA. 146+00 - SEE SHEET 4

Match Line - STA. 160+00 - SEE SHEET 6

64

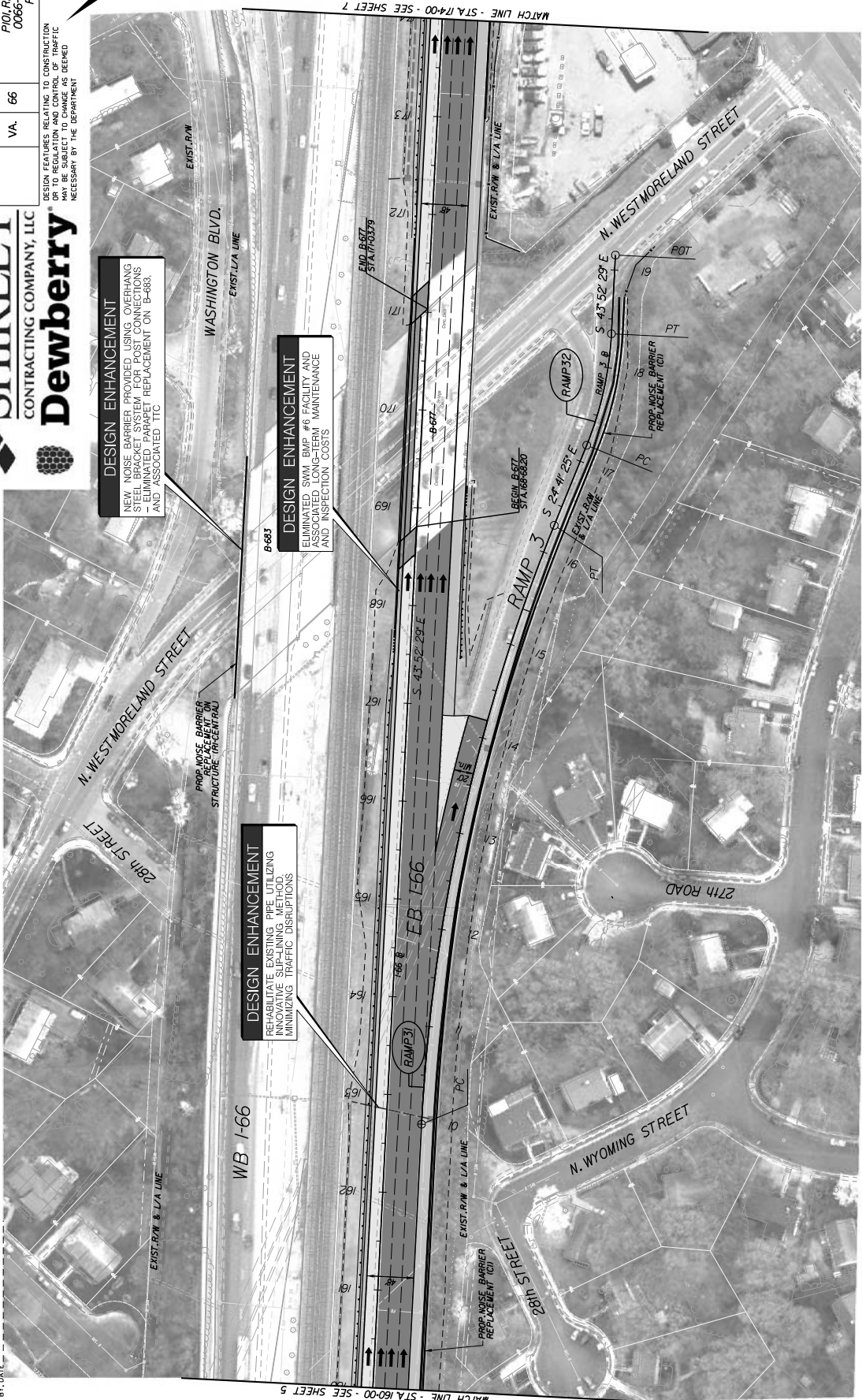
PROJECT MANAGER: *MVP Consulting, P.C.* (703) 259-2224 - NOKA, LD.
 DESIGNED BY: *Dewberry* (703) 292-7736
 SUBSURFACE UTILITY BY: DATE



STATE: VA. ROUTE: 66 PROJECT: (FO) 0066-96A-417
 PIOL R201.C501
 0066-96A-493
 PIOL.C501

DESIGN FEATURES RELATIVE TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

PROJ. SHEET NO. 6



DESIGN ENHANCEMENT
 NEW NOISE BARRIER PROVIDED USING OVERHANG STRUCTURE WITH POST CONNECTIONS AND ASSOCIATED TTC REPLACEMENT ON B-668.

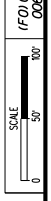
DESIGN ENHANCEMENT
 ELIMINATED SWM BMP #6 FACILITY AND ASSOCIATED LONG-TERM MAINTENANCE AND INSPECTION COSTS

DESIGN ENHANCEMENT
 REHABILITATE EXISTING PIPE UTILIZING INNOVATIVE SLIP-LINING METHOD, MINIMIZING TRAFFIC DISRUPTIONS

Curve RAMP32
 DEL: 17.7652
 D: 16.25' 13"
 T: 59.5'
 R: 350.00'
 PC: 17.6770
 PVI: 17.6770
 V: 45' 00"
 e: Match Exis.

Curve RAMP31
 DEL: 17.7751
 D: 5.02' 52"
 T: 30.72'
 R: 188.00'
 PC: 18.0000
 PVI: 18.0000
 V: 45' 00"
 e: Match Exis.

- LEGEND**
- Denotes Proposed Travel Lane Pavement
 - Denotes Proposed Mill & Overlay / Variable Depth Overlay
 - Denotes Proposed Paved Shoulder
 - Denotes Proposed Bridge Deck
 - Denotes Shared Use Path
 - Denotes Reduction in Right-of-Way Impact
 - Denotes Proposed Noise Barrier
 - Denotes Proposed Conceptual Drainage
 - Denotes Proposed Pipe Slip-Lining

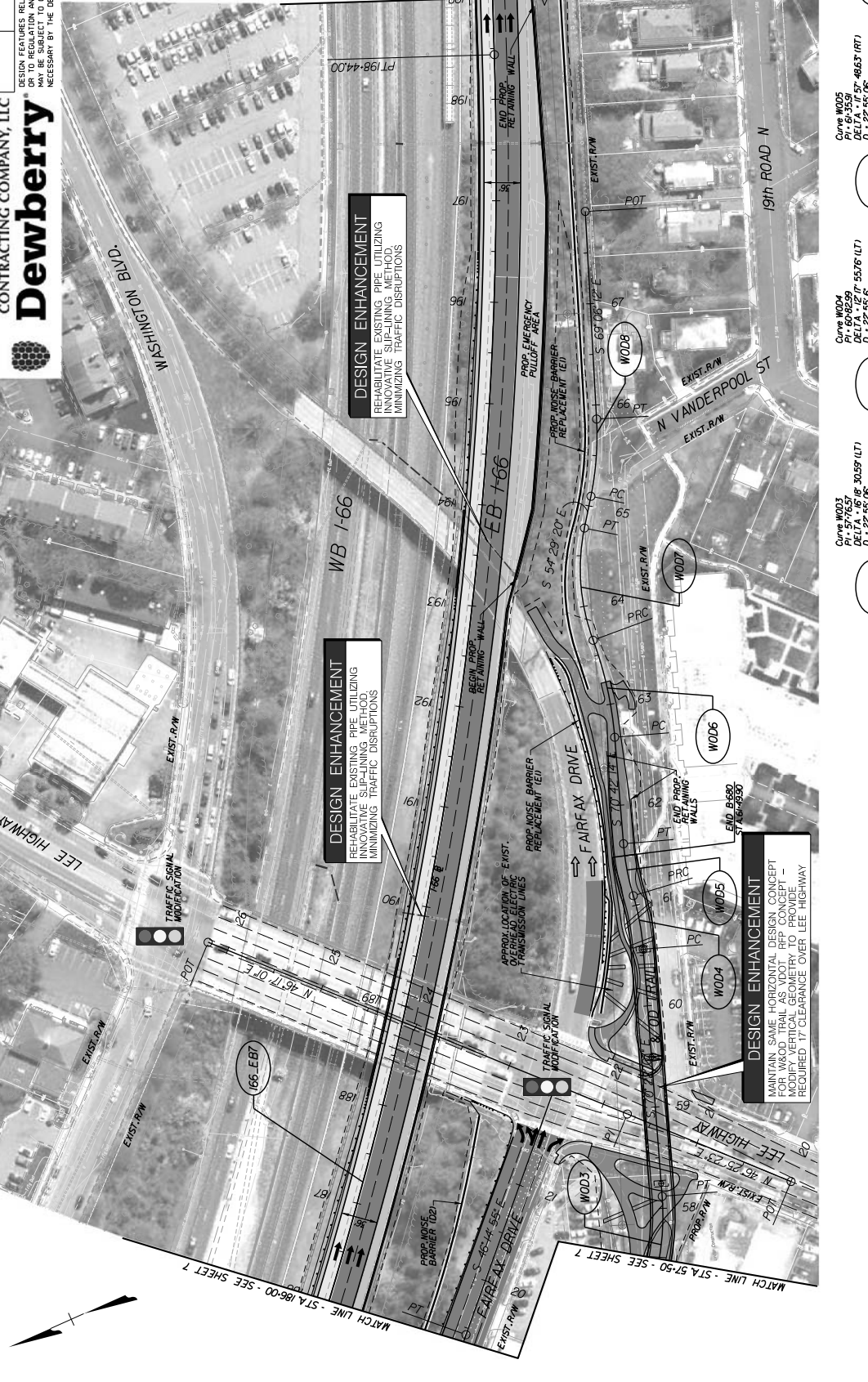


SHEET NO. 6



STATE	VA.	ROUTE	66
PROJECT	IF010066-96A-417 PIOL R201.C501 0066-96A-493 PIOL.C501		
SHEET NO.	8		

PROJECT MANAGER: *Map Drawing* 02-17031250-224 - NOVA, IAD.
 DESIGNED BY: *Dewberry Consulting, LLC* - 17031250-224-736
 SUBSURFACE UTILITY BY: DATE



DESIGN FEATURES RELATIVE TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

Curve 166.EBT
 PI = 190.9557
 D = 130.00
 T = 80.789
 L = 100.00
 PC = 182.9168
 V = 60.00 mph
 e = 3.0%

Curve RAMP13
 DELTA = 17.50
 D = 5378.117
 T = 74.53
 L = 537.81
 PC = 1040.00
 V = 17.50 mph
 e = Match E-161.

Curve WOOD7
 DELTA = 17.50
 D = 5378.117
 T = 74.53
 L = 537.81
 PC = 1040.00
 V = 17.50 mph
 e = Match E-161.

Curve WOOD8
 DELTA = 17.50
 D = 5378.117
 T = 74.53
 L = 537.81
 PC = 1040.00
 V = 17.50 mph
 e = Match E-161.

Curve WOOD3
 DELTA = 17.50
 D = 5378.117
 T = 74.53
 L = 537.81
 PC = 1040.00
 V = 17.50 mph
 e = Match E-161.

Curve WOOD4
 DELTA = 17.50
 D = 5378.117
 T = 74.53
 L = 537.81
 PC = 1040.00
 V = 17.50 mph
 e = Match E-161.

Curve WOOD5
 DELTA = 17.50
 D = 5378.117
 T = 74.53
 L = 537.81
 PC = 1040.00
 V = 17.50 mph
 e = Match E-161.

Curve WOOD6
 DELTA = 17.50
 D = 5378.117
 T = 74.53
 L = 537.81
 PC = 1040.00
 V = 17.50 mph
 e = Match E-161.

Curve WOOD7
 DELTA = 17.50
 D = 5378.117
 T = 74.53
 L = 537.81
 PC = 1040.00
 V = 17.50 mph
 e = Match E-161.

Curve WOOD8
 DELTA = 17.50
 D = 5378.117
 T = 74.53
 L = 537.81
 PC = 1040.00
 V = 17.50 mph
 e = Match E-161.

Curve WOOD9
 DELTA = 17.50
 D = 5378.117
 T = 74.53
 L = 537.81
 PC = 1040.00
 V = 17.50 mph
 e = Match E-161.

Curve WOOD10
 DELTA = 17.50
 D = 5378.117
 T = 74.53
 L = 537.81
 PC = 1040.00
 V = 17.50 mph
 e = Match E-161.

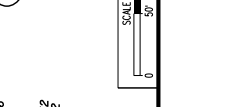
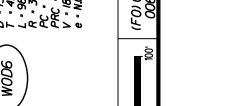
Curve WOOD11
 DELTA = 17.50
 D = 5378.117
 T = 74.53
 L = 537.81
 PC = 1040.00
 V = 17.50 mph
 e = Match E-161.

Curve WOOD12
 DELTA = 17.50
 D = 5378.117
 T = 74.53
 L = 537.81
 PC = 1040.00
 V = 17.50 mph
 e = Match E-161.

Curve WOOD13
 DELTA = 17.50
 D = 5378.117
 T = 74.53
 L = 537.81
 PC = 1040.00
 V = 17.50 mph
 e = Match E-161.

Curve WOOD14
 DELTA = 17.50
 D = 5378.117
 T = 74.53
 L = 537.81
 PC = 1040.00
 V = 17.50 mph
 e = Match E-161.

Curve WOOD15
 DELTA = 17.50
 D = 5378.117
 T = 74.53
 L = 537.81
 PC = 1040.00
 V = 17.50 mph
 e = Match E-161.



MATCH LINE - STA 199+00 - SEE SHEET 9

MATCH LINE - STA 57+50 - SEE SHEET 7

MATCH LINE - STA 186+00 - SEE SHEET 8

MATCH LINE - STA 186+00 - SEE SHEET 8

MATCH LINE - STA 186+00 - SEE SHEET 8

MATCH LINE - STA 186+00 - SEE SHEET 8

MATCH LINE - STA 186+00 - SEE SHEET 8

MATCH LINE - STA 186+00 - SEE SHEET 8

MATCH LINE - STA 186+00 - SEE SHEET 8

MATCH LINE - STA 186+00 - SEE SHEET 8

MATCH LINE - STA 186+00 - SEE SHEET 8

MATCH LINE - STA 186+00 - SEE SHEET 8

MATCH LINE - STA 186+00 - SEE SHEET 8

MATCH LINE - STA 186+00 - SEE SHEET 8

MATCH LINE - STA 186+00 - SEE SHEET 8

MATCH LINE - STA 186+00 - SEE SHEET 8

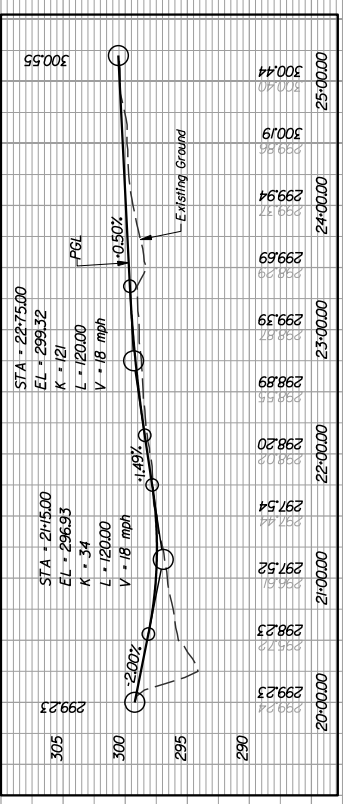


DESIGN FEATURES RELATIVE TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

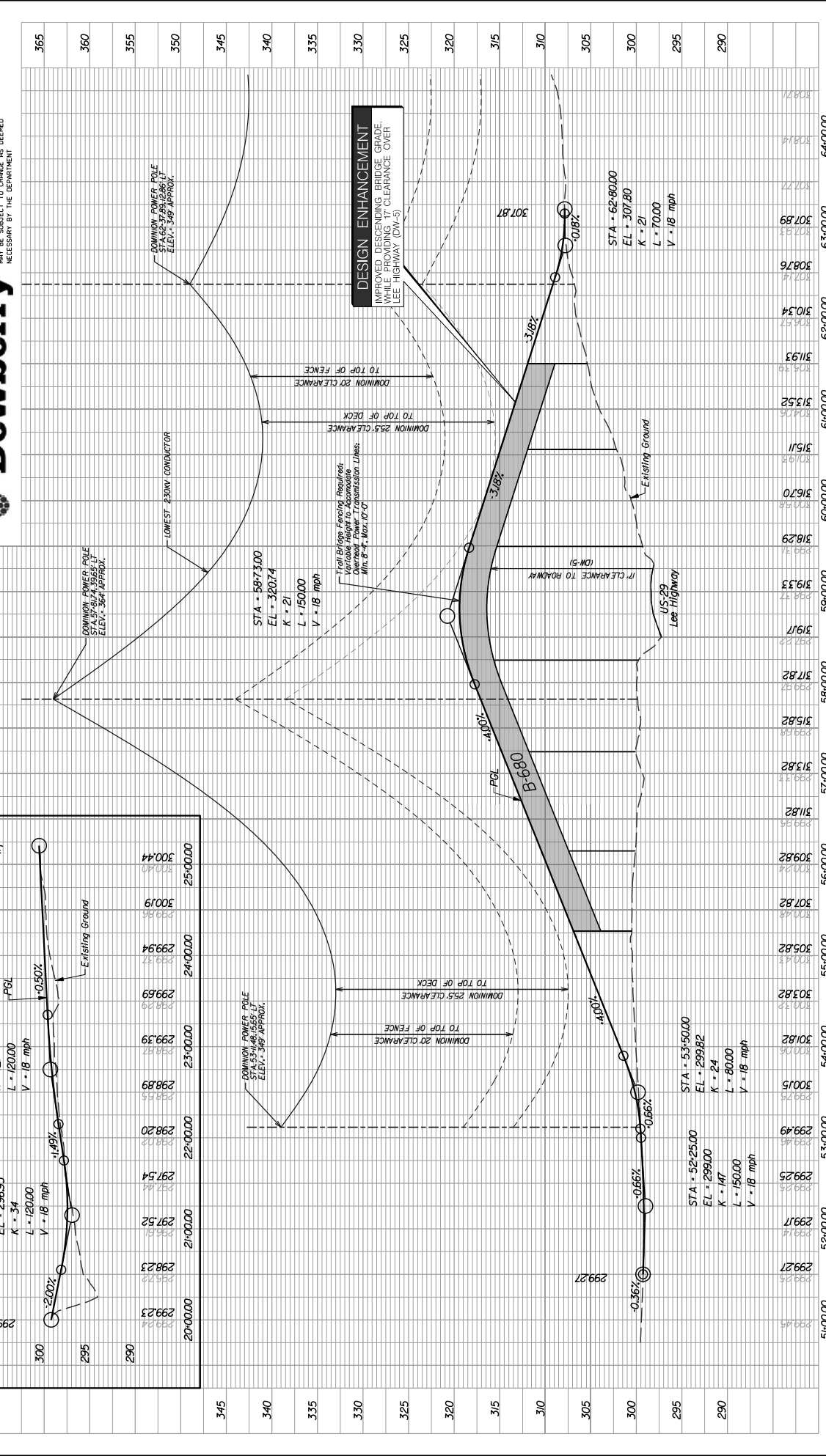
PROJECT MANAGER: MFL/0066-96A-417
 DESIGNED BY: Dewberry Consultants, LLC - J7031 288-7175
 SUBSURFACE UTILITY BY: DATE

STATE: VA. ROUTE: 66 PROJECT: (FQ) 0066-96A-417 PIOL/201.C501 0066-96A-493 PIOL.C501 SHEET NO.: 8A

W&OD Trail Connection



W&OD Trail Shared Use Path



SCALE: 1" = 20'

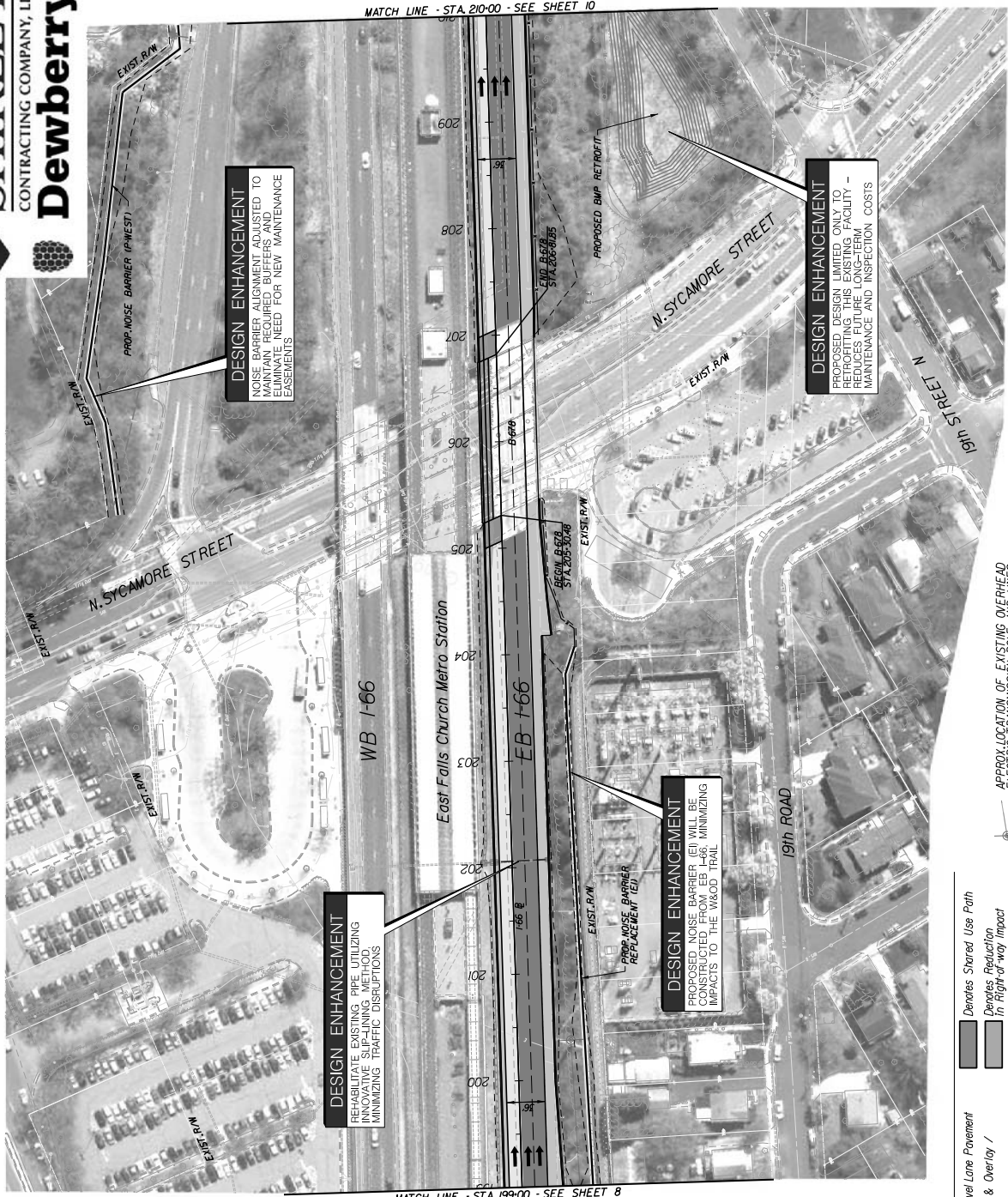
PROJECT: (FQ) 0066-96A-417 0066-96A-493 SHEET NO.: 8A

PROJECT MANAGER: *Map* 06/06/2014 - 10/01/2014
 DESIGNED BY: *Dewberry* 06/06/2014 - 10/01/2014
 SUBSURFACE UTILITY BY: DATE



STATE: VA. ROUTE: 66 PROJECT: (FO) 0066-96A-417 PIOL R201.C501 0066-96A-493 PIOL C501 SHEET NO.: 9

DESIGN FEATURES RELATIVE TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT



MATCH LINE - STA. 210+00 - SEE SHEET 10

MATCH LINE - STA. 199+00 - SEE SHEET 8



- LEGEND**
- Denotes Shared Use Path
 - Denotes Proposed Travel Lane Pavement
 - Denotes Pavement Mill & Overlay / Variable Depth Overlay
 - Denotes Proposed Paved Shoulder
 - Denotes Bridge Deck
 - Denotes Proposed Noise Barrier
 - Denotes Proposed Conceptual Drainage
 - Denotes Reduction in Right-of-Way Impact
 - Denotes Approximate Location of Existing Overhead Electric Transmission Pole and Lines
 - Denotes Proposed Pipe Slip-Lining

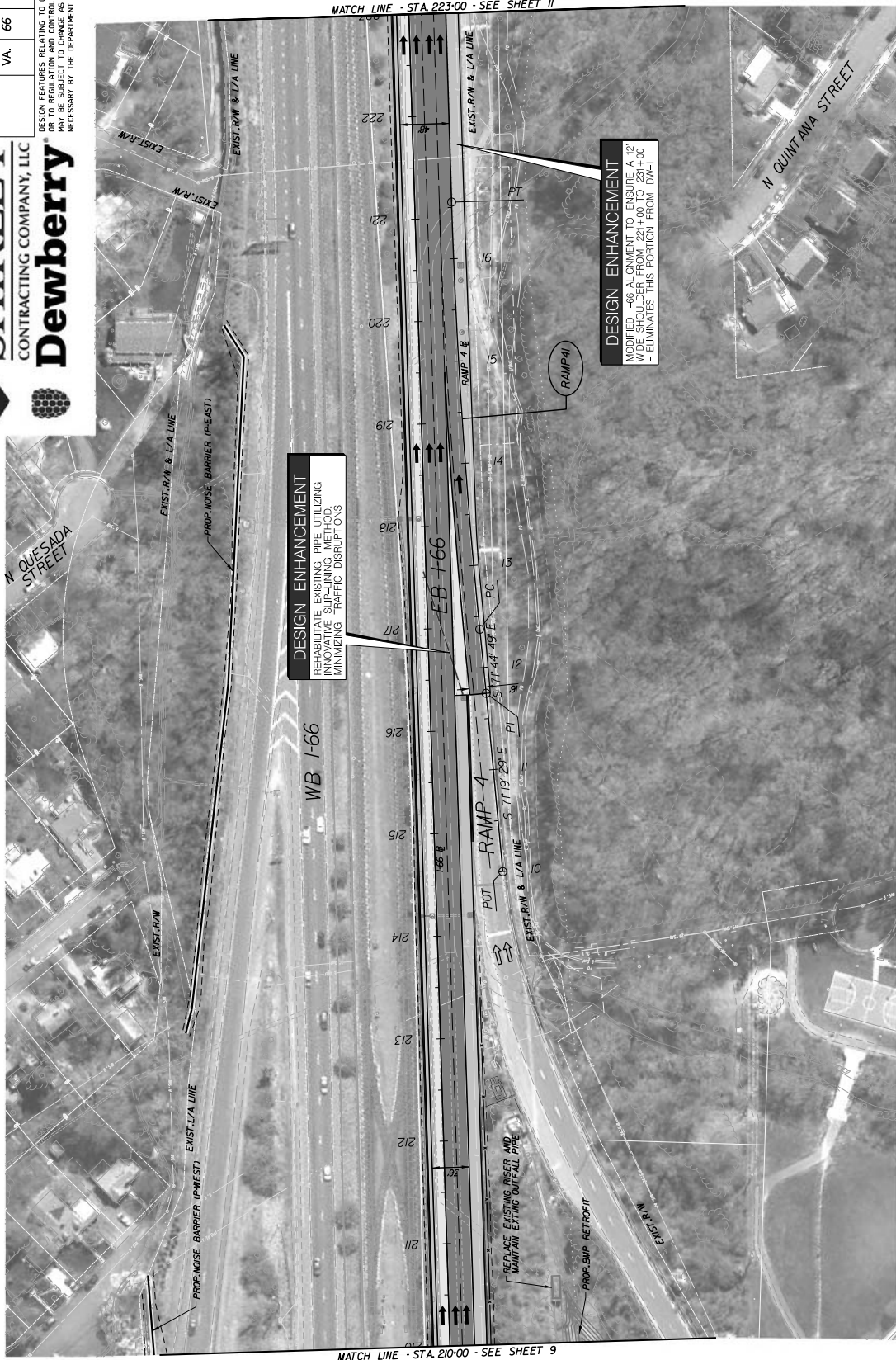
SCALE: 0 50 100
 PROJECT: (FO) 0066-96A-417 0066-96A-493
 SHEET NO.: 9

PROJECT MANAGER: Mark Galloway, P.E. (703) 259-2224 - NOVA, VA
 DESIGNED BY: Dewberry Consultants, LLC (703) 292-1736
 SUBSURFACE UTILITY BY: DATE



STATE: VA ROUTE: 66 SHEET NO.: 10
 PROJECT: (FQ) 0066-96A-417
 PIOL R201.C501
 0066-96A-493
 PIOL.C501

DESIGN FEATURES RELATIVE TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT



Curve RAMP4I
 PI = 14.4649
 DELTA = 5.59 220' (RR)
 T = 209.956'
 L = 477.5'
 PC = 217.53
 PT = 16.5528
 V = 45 mph
 G = 4.60% E. Int.

(RAMP4I)

- LEGEND**
- Denotes Proposed Travel Lane Pavement
 - Denotes Proposed Mill & Overlay
 - Denotes Proposed Depth Overlay
 - Denotes Proposed Paved Shoulder
 - Denotes Proposed Bridge Deck
 - Denotes Shared Use Path
 - Denotes Reduction in Right-of-way Impact
 - Denotes Proposed Noise Barrier
 - Denotes Proposed Conceptual Drainage
 - Denotes Proposed Pipe Slip-Lining



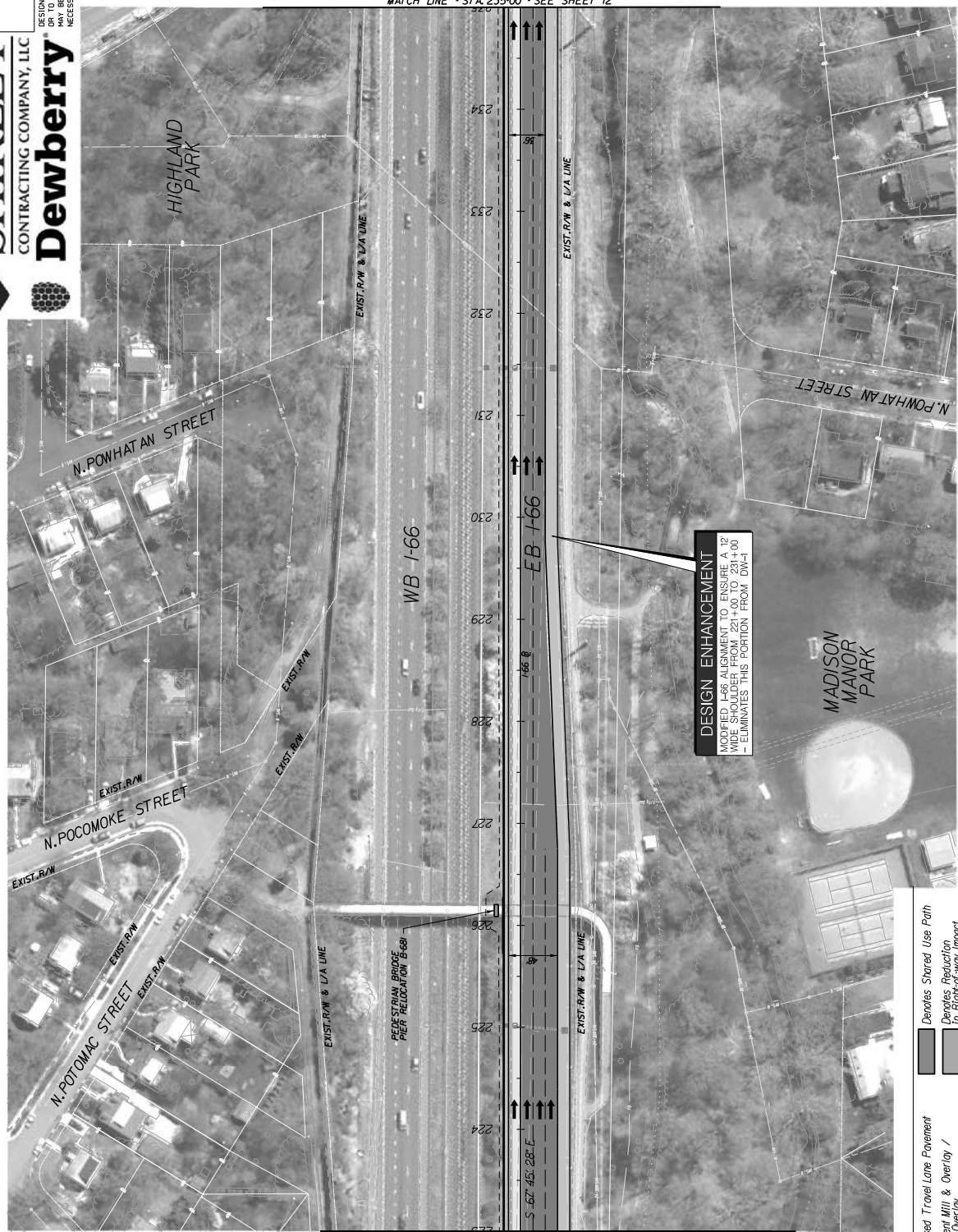
PROJECT: (FQ) 0066-96A-417
 0066-96A-493
 SHEET NO.: 10



STATE: VA. ROUTE: 66 PROJECT: (F0) 0066-96A-417 PIOL R201.C501 0066-96A-493 PIOL.C501 SHEET NO.: II

DESIGN FEATURES RELATIVE TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

PROJECT MANAGER: Mark S. ... DESIGN BY: Dewberry Consultants, LLC ... SUBSURFACE UTILITY BY: DATE

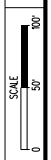


MATCH LINE - STA. 235+00 - SEE SHEET 12

MATCH LINE - STA. 223+00 - SEE SHEET 10

DESIGN ENHANCEMENT
 MODIFIED I-66 ALIGNMENT TO ENSURE A 12' WIDE SHOULDER FROM 221+00 TO 231+00
 - ELIMINATES THIS PORTION FROM DW-1

- LEGEND**
- Denotes Proposed Travel Lane Pavement
 - Denotes Proposed Mill & Overlay / Variable Depth Overlay
 - Denotes Proposed Paved Shoulder
 - Denotes Bridge Deck
 - Denotes Shared Use Path
 - Denotes Reduction in Right-of-way Impact
 - Denotes Proposed Noise Barrier
 - Denotes Proposed Conceptual Drainage
 - Denotes Proposed Pipe Slip-Lining



PROJECT: (F0) 0066-96A-417 0066-96A-493 SHEET NO.: II



STATE PROJECT
VA. 66
PROJECT NO. 0066-96A-417
PIOL R201.C501
0066-96A-493
PIOL.C501

DESIGN FEATURES RELATIVE TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

PROJECT MANAGER: Mark Galloway, P.E. (703) 298-2244 - NOKIA (A0)
 DESIGNED BY: Dewberry Consultants, LLC (703) 298-4736
 SUBSURFACE UTILITY BY: DATE

REVISIONS

SHEET NO. 12



MATCH LINE - STA. 248+00 - SEE SHEET 13

MATCH LINE - STA. 235+00 - SEE SHEET 11

- LEGEND**
- Denotes Shared Use Path
 - Denotes Proposed Travel Lane Pavement
 - Denotes Pavement Mill & Overlay / Variable Depth Overlay
 - Denotes Proposed Paved Shoulder
 - Denotes Bridge Deck
 - Denotes Proposed Noise Barrier
 - Denotes Proposed Conceptual Drainage
 - Denotes Proposed Pipe Slip-Lining



PROJECT NO. 0066-96A-417
0066-96A-493
SHEET NO. 12

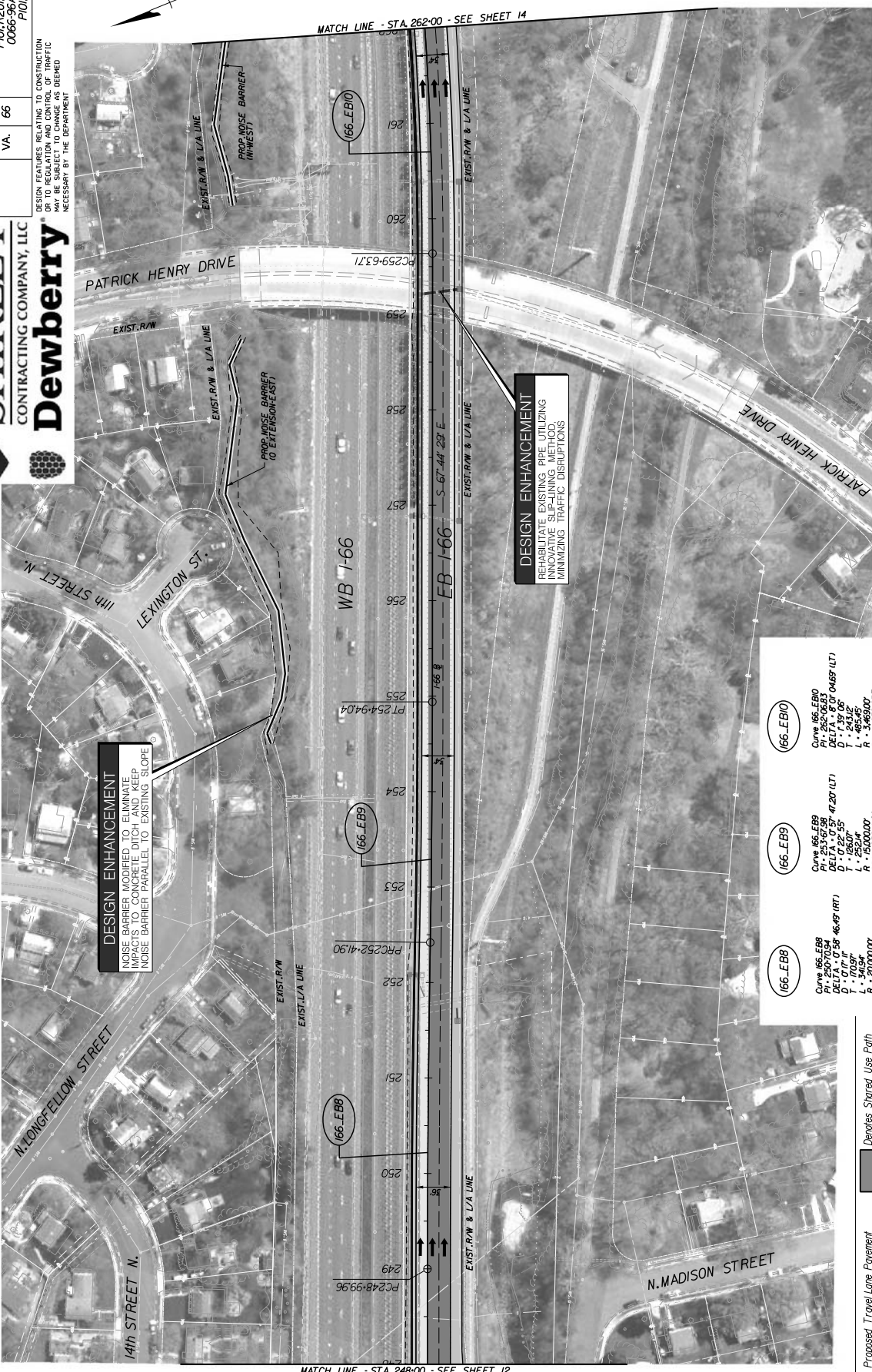
PROJECT MANAGER: MFL/0066-96A-417
 DESIGNED BY: Dewberry
 SUBSURFACE UTILITY BY: DATE



STATE: VA ROUTE: 66
 PROJECT: (FO) 0066-96A-417
 PIOL R201.C501
 0066-96A-493
 PIOL C501

DESIGN FEATURES RELATIVE TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

SHEET NO. 13



DESIGN ENHANCEMENT
 NOISE BARRIER MODIFIED TO ELIMINATE IMPACTS TO CONCRETE DITCH AND KEEP NOISE BARRIER PARALLEL TO EXISTING SLOPE

DESIGN ENHANCEMENT
 REHABILITATE EXISTING PIPE UTILIZING INNOVATIVE SLIP-LINING METHOD, MINIMIZING TRAFFIC DISRUPTIONS

Curve	PI	PT	PC	PCC	PE	VC	VI
166.EBB	254.9404	255.0000	254.9404	254.9404	254.9404	254.9404	254.9404
166.EB9	253.55	253.55	253.55	253.55	253.55	253.55	253.55
166.EB0	262.0623	262.0623	262.0623	262.0623	262.0623	262.0623	262.0623

- LEGEND**
- Denotes Proposed Travel Lane Pavement
 - Denotes Proposed Mill & Overlay / Variable Depth Overlay
 - Denotes Proposed Paved Shoulder
 - Denotes Bridge Deck
 - Denotes Shared Use Path
 - Denotes Reduction in Right-of-way Impact
 - Denotes Proposed Noise Barrier
 - Denotes Proposed Conceptual Drainage



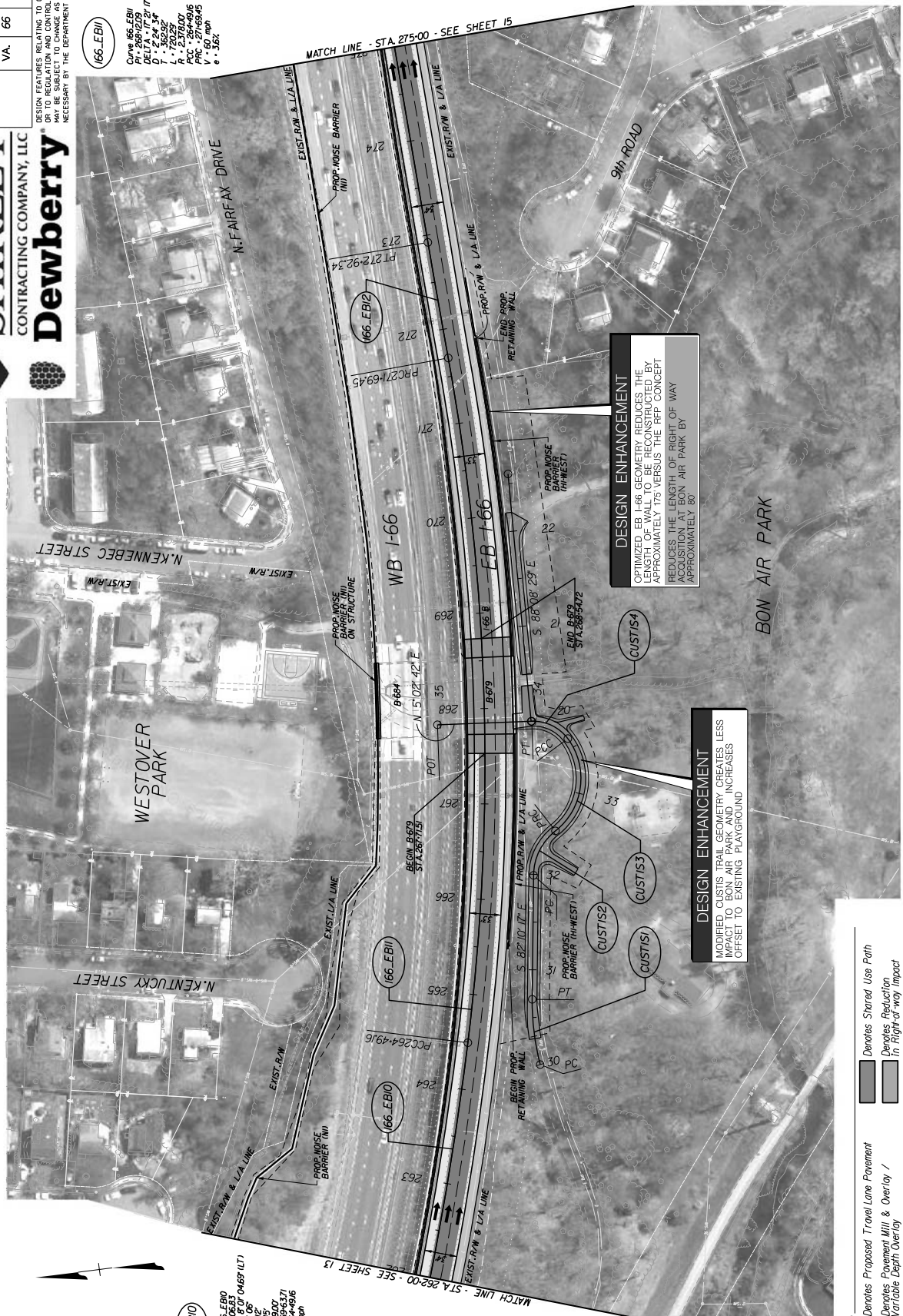
SHEET NO. 13



STATE	ROUTE	PROJECT	SHEET NO.
VA.	66	(FO) 0066-96A-417 PIOL R201.C501 0066-96A-493 PIOL.C501	14

DESIGN FEATURES RELATIVE TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

PROJECT MANAGER: MFL/0066-96A-417-001/250-2224 - NOVA, VA.
 DESIGNED BY: Dewberry Consultants, LLC - (703) 298-7136
 SUBSURFACE UTILITY BY: DATE: _____



(66_EB10)
 Curve 66_EB10
 PI = 262+06.83
 DELTA = 67.0469° (LT)
 D = 243.15'
 L = 482.45'
 PC = 262+63.71
 PCC = 264+49.16
 V = 6.0%
 e = 3.6%

(66_EB11)
 Curve 66_EB11
 DELTA = 17.21° (RD) (LT)
 D = 228.34'
 L = 228.34'
 PC = 264+96.45
 PCC = 264+96.45
 V = 6.0%
 e = 3.6%

(CUSTS1)
 Curve CUSTS1
 PI = 262+15.13
 DELTA = 15.13° (RT)
 D = 22.02' (S)
 L = 54.74'
 PC = 262+00.00
 PCC = 262+00.00
 V = 12.0%
 e = N.C.

(CUSTS2)
 Curve CUSTS2
 PI = 262+27.71
 DELTA = 15.13° (RT)
 D = 22.02' (S)
 L = 54.74'
 PC = 262+12.58
 PCC = 262+12.58
 V = 12.0%
 e = N.C.

(CUSTS3)
 Curve CUSTS3
 PI = 262+27.71
 DELTA = 15.13° (RT)
 D = 22.02' (S)
 L = 54.74'
 PC = 262+12.58
 PCC = 262+12.58
 V = 12.0%
 e = N.C.

(CUSTS4)
 Curve CUSTS4
 PI = 262+27.71
 DELTA = 15.13° (RT)
 D = 22.02' (S)
 L = 54.74'
 PC = 262+12.58
 PCC = 262+12.58
 V = 12.0%
 e = N.C.

DESIGN ENHANCEMENT
 OPTIMIZED EB I-66 GEOMETRY REDUCES THE LENGTH OF WALL TO BE RECONSTRUCTED BY APPROXIMATELY 175 VERSUS THE RFP CONCEPT. REDUCES THE LENGTH OF RIGHT OF WAY ACQUISITION AT BON AIR PARK BY APPROXIMATELY 80'

DESIGN ENHANCEMENT
 MODIFIED CUSTS1 TRAIL GEOMETRY CREATES LESS OFFSET TO EXISTING PLAYGROUND

- LEGEND**
- Denotes Proposed Travel Lane Pavement
 - Denotes Proposed Mill & Overlay
 - Denotes Variable Depth Overlay
 - Denotes Proposed Paved Shoulder
 - Denotes Proposed Bridge Deck
 - Denotes Shared Use Path
 - Denotes Pavement Reduction in Right-of-way Impact
 - Denotes Proposed Noise Barrier
 - Denotes Proposed Conceptual Drainage
 - Denotes Proposed Pipe Slip-Lining



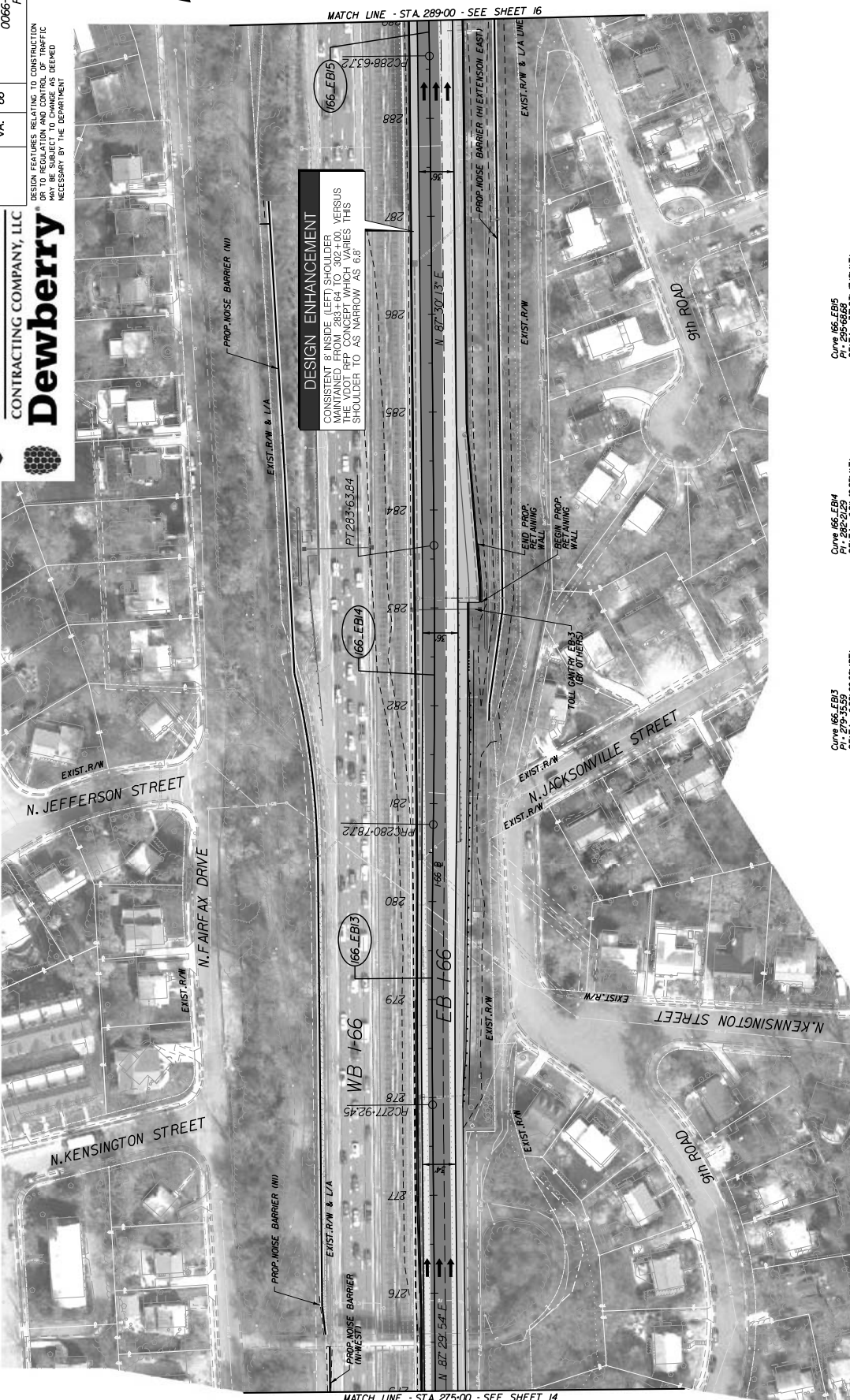
PROJECT	SHEET NO.
(FO) 0066-96A-417 0066-96A-493	14



STATE	ROUTE	PROJECT	SHEET NO.
VA.	66	(FO) 0066-96A-417 PIOL R201.C501 0066-96A-493 PIOL C501	15

DESIGN FEATURES RELATIVE TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

PROJECT MANAGER: MFL/0066-96A-417-001/250-224-100/VA (60)
 DESIGNED BY: Dewberry Consultants, LLC - (703) 228-7736
 SUBSURFACE UTILITY BY: DATE



DESIGN ENHANCEMENT
 CONSISTENT INSIDE LEFT SHOULDER CONCCEPT WHICH VARIES THIS SHOULDER TO AS NARROW AS 6.8'

Curve 166.EB15
 DELTA = 133.23-47.08 (LT)
 D = 226.17
 L = 159.36
 R = 235.00
 PC = 286.5372
 PT = 286.6372
 V = 60 mph
 e = .36%

Curve 166.EB4
 DELTA = 73.21-40.85 (LT)
 D = 0.28-39
 L = 285.27
 R = 1200.00
 PC = 280.7872
 PT = 280.8872
 V = 60 mph
 e = N.C.

Curve 166.EB3
 DELTA = 73.21-40.85 (RT)
 D = 0.28-39
 L = 285.27
 R = 1200.00
 PC = 279.9245
 PT = 279.9245
 V = 60 mph
 e = N.C.

Curve 166.EB13
 DELTA = 73.21-40.85 (RT)
 D = 0.28-39
 L = 285.27
 R = 1200.00
 PC = 277.9245
 PT = 277.9245
 V = 60 mph
 e = N.C.

- LEGEND**
- Denotes Proposed Travel Lane Pavement
 - Denotes Proposed Pavement Mill & Overlay / Variable Depth Overlay
 - Denotes Proposed Paved Shoulder
 - Denotes Proposed Bridge Deck
 - Denotes Shared Use Path
 - Denotes Reduction in Height of Way Impact
 - Denotes Proposed Noise Barrier
 - Denotes Proposed Conceptual Drainage
 - Denotes Proposed Pipe Slip-Lining



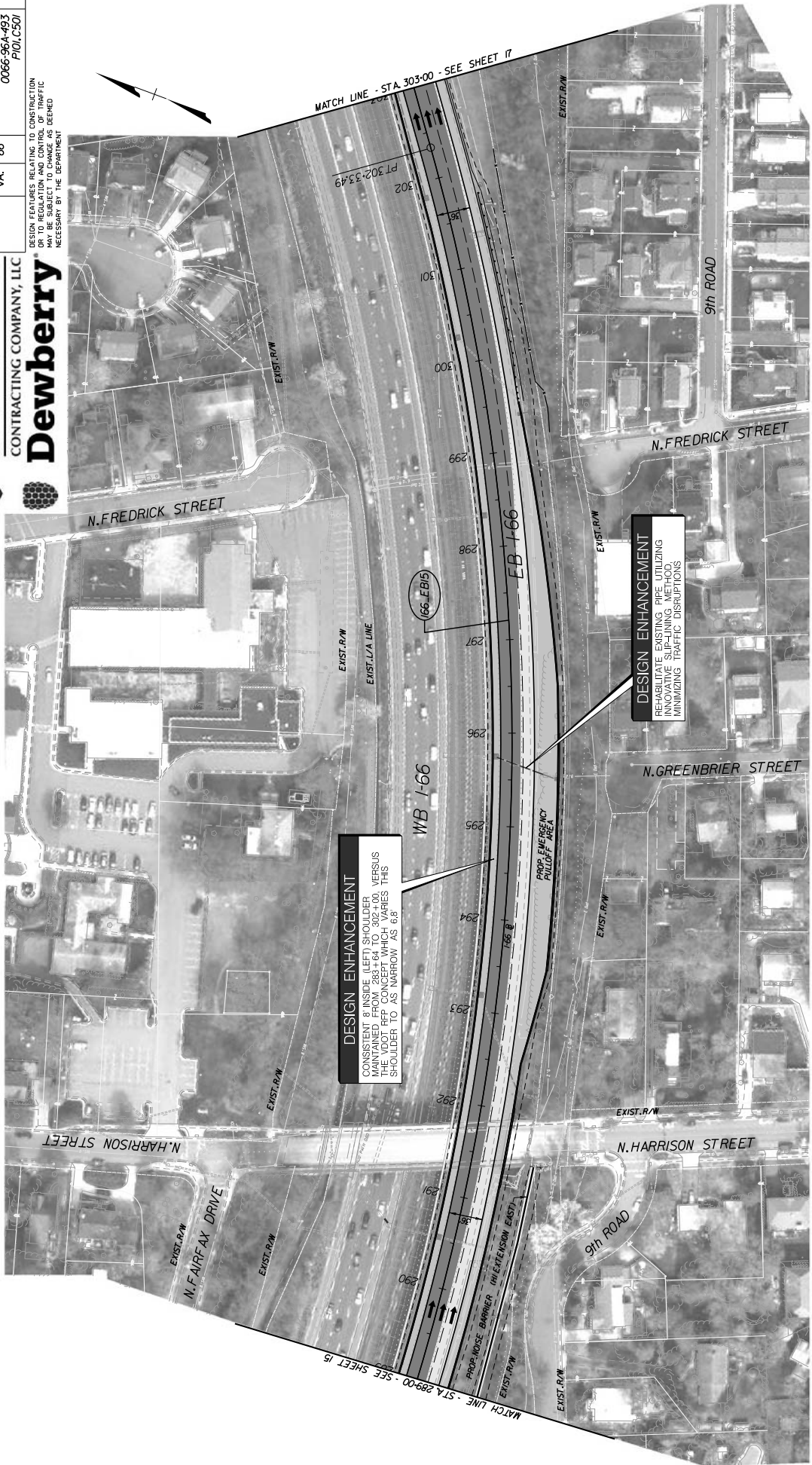
STATE	ROUTE	PROJECT	SHEET NO.
VA.	66	(FO) 0066-96A-417 0066-96A-493	15



STATE ROUTE PROJECT SHEET NO.
 VA. 66 (FO) 0066-96A-417 16
 P.O.I. R201.C501
 0066-96A-493
 P.O.I. C501

DESIGN FEATURES RELATIVE TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

PROJECT MANAGER: MFL/SL/ML/PE - (703) 259-2224 - NVA/ALD
 DESIGNED BY: DATE
 SUBSURFACE UTILITY BY: DATE



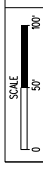
DESIGN ENHANCEMENT
 CONSISTENT 8' INSIDE (LEFT) SHOULDER, VERSUS MAINTAINED FROM 283+64 TO 302+00. THE VERTICAL CURVE COEFFICIENT VARIES THIS SHOULDER TO AS NARROW AS 6.8'

DESIGN ENHANCEMENT
 REHABILITATE EXISTING PIPE UTILIZING INNOVATIVE SLIP-LINING METHOD, MINIMIZING TRAFFIC DISRUPTIONS

Curve #65.EB15
 PI + 295+65.69
 DELTA = 33.23 47.18 (LT)
 L = 156.97
 L = 156.97
 L = 156.97
 PC + 289+65.72
 PT + 302+33.49
 V = 60 mph
 e = .56%

(66.EB15)

- LEGEND**
- Denotes Proposed Travel Lane Pavement
 - Denotes Shared Use Path
 - Denotes Proposed Mill & Overlay / Variable Depth Overlay
 - Denotes Reduction In Right-of-way Impact
 - Denotes Proposed Noise Barrier
 - Denotes Proposed Conceptual Drainage
 - Denotes Proposed Paved Shoulder
 - Denotes Bridge Deck
 - Denotes Proposed Pipe Slip-Lining



PROJECT SHEET NO.
 (FO) 0066-96A-417 16
 0066-96A-493



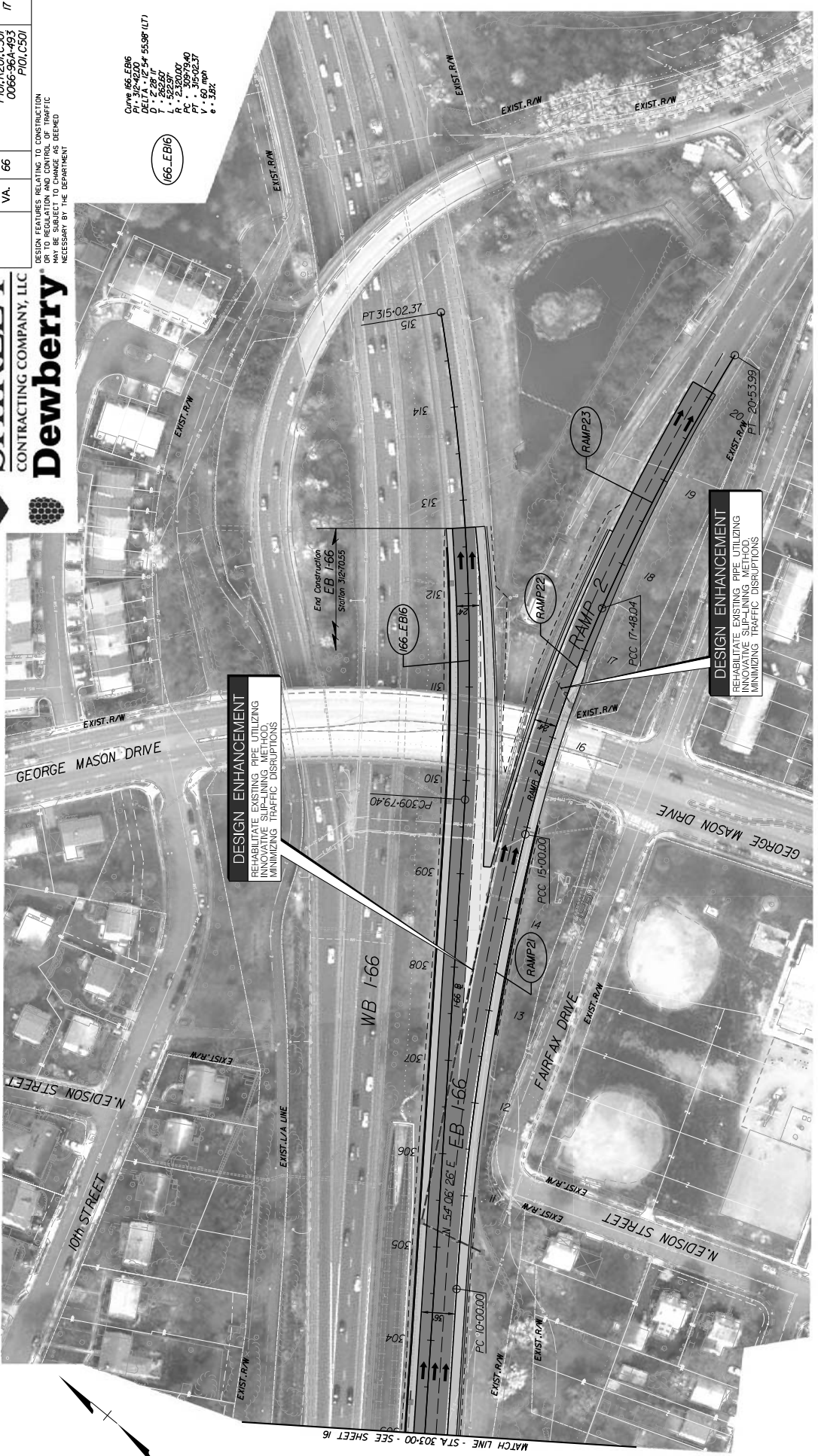
STATE	ROUTE	SHEET NO.
VA.	66	17

DESIGN FEATURES RELATIVE TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT.

Curve 166.EB16
 DELTA = 122.54' 55.98' (17)
 D = 2.281'
 L = 529.29'
 R = 2.330.00'
 PC = 309.79.40
 PT = 315.02.37
 V = 60 mph
 e = 3.62%

PROJECT MANAGER: MFL/Engineering, P.E. (703) 259-2224 - NVA, Ltd.
 DESIGNED BY: Dewberry Consultants, LLC (703) 294-7796
 SUBSURFACE UTILITY BY: DATE

PROJ. NO. 0066-96A-417
 PLOT. NO. CS01
 0066-96A-493
 PLOT. CS01



DESIGN ENHANCEMENT
 REHABILITATE EXISTING PIPE UTILIZING INNOVATIVE SLIP-LINING METHOD, MINIMIZING TRAFFIC DISRUPTIONS

DESIGN ENHANCEMENT
 REHABILITATE EXISTING PIPE UTILIZING INNOVATIVE SLIP-LINING METHOD, MINIMIZING TRAFFIC DISRUPTIONS

Curve RAMP21 DELTA = 122.54' 55.98' (17) D = 2.281' L = 529.29' R = 2.330.00' PC = 15.00.00 PT = 20.53.99 V = 50 mph e = Match Exis.	Curve RAMP22 DELTA = 122.54' 55.98' (17) D = 2.281' L = 529.29' R = 2.330.00' PC = 14.95.45 PT = 20.53.99 V = 50 mph e = Match Exis.	Curve RAMP23 DELTA = 122.54' 55.98' (17) D = 2.281' L = 529.29' R = 2.330.00' PC = 17.48.04 PT = 20.53.99 V = 50 mph e = Match Exis.
--------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------

LEGEND

[Symbol]	Denotes Proposed Travel Lane Pavement
[Symbol]	Denotes Proposed Mill & Overlay / Variable Depth Overlay
[Symbol]	Denotes Proposed Paved Shoulder
[Symbol]	Denotes Bridge Deck
[Symbol]	Denotes Shared Use Path
[Symbol]	Denotes Reduction in Right-of-way Impact
[Symbol]	Denotes Proposed Noise Barrier
[Symbol]	Denotes Proposed Conceptual Drainage
[Symbol]	Denotes Proposed Pipe Slip-Lining



STATE	ROUTE	SHEET NO.
VA.	66	17

DESIGN FEATURES RELATIVE TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT.

Curve 166.EB16
 DELTA = 122.54' 55.98' (17)
 D = 2.281'
 L = 529.29'
 R = 2.330.00'
 PC = 309.79.40
 PT = 315.02.37
 V = 60 mph
 e = 3.62%

PROJ. NO. 0066-96A-417
 PLOT. NO. CS01
 0066-96A-493
 PLOT. CS01

PROJECT MANAGER: MFL/Engineering, P.E. (703) 259-2224 - NVA, Ltd.
 DESIGNED BY: Dewberry Consultants, LLC (703) 294-7796
 SUBSURFACE UTILITY BY: DATE

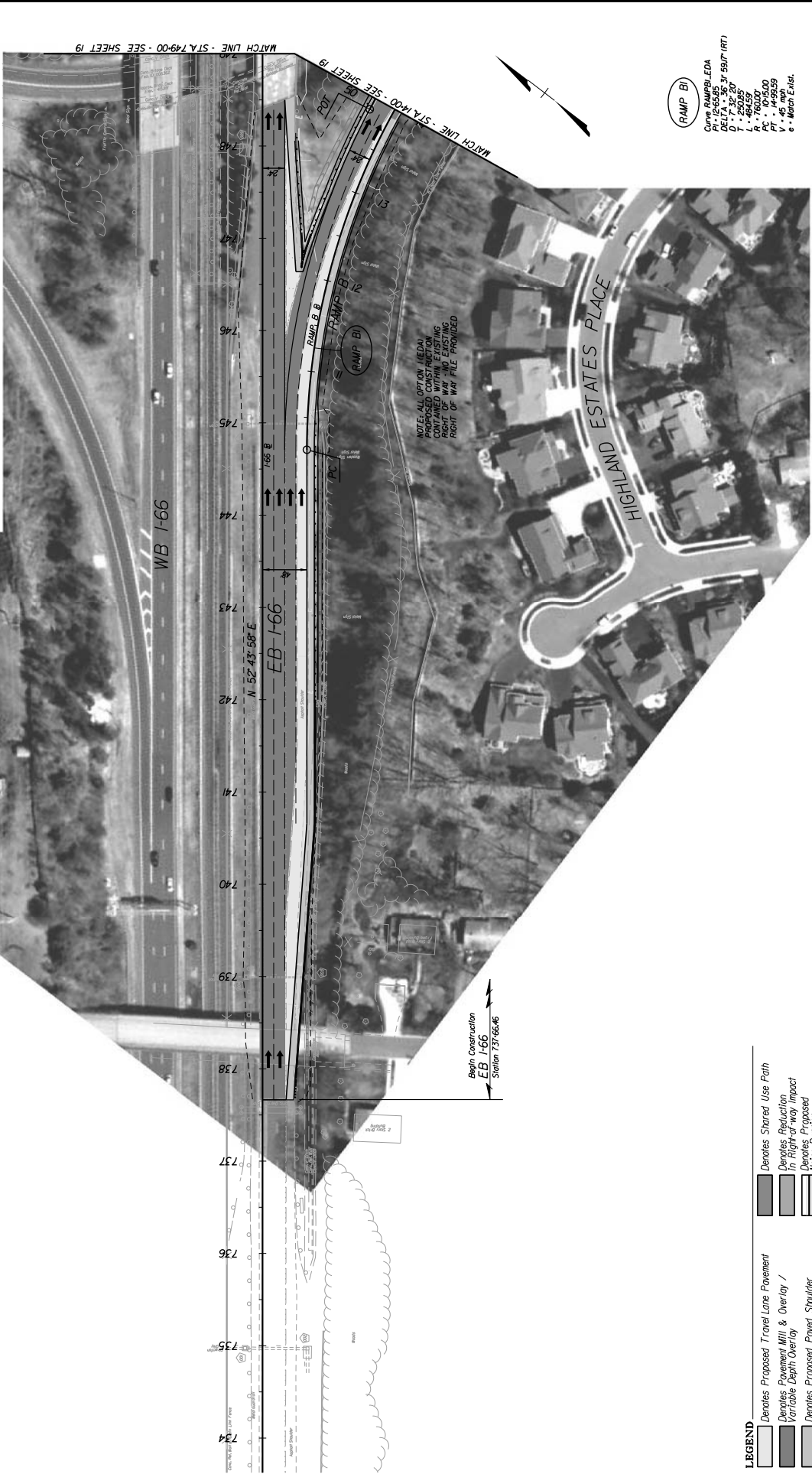
DESIGN FEATURES RELATIVE TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT.

PROJECT MANAGER Mark G. Gandy, P.E., (703) 258-2324 - (NOVA L&D)	STATE ROUTE VA. 66	SHEET NO. 18
DESIGN BY Dewberry Consulting, LLC (703) 258-7735	PROJECT (F0) 0066-96A-417 P01.P20.LC501 0066-96A-493 P10.LC501	
SUBSURFACE UTILITY BY DATE		



I-66 EDA (OPTION 1)

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT



- LEGEND**
- Denotes Proposed Travel Lane Pavement
 - Denotes Pavement Mill & Overlay / Variable Depth Overlay
 - Denotes Proposed Paved Shoulder
 - Denotes Bridge Deck
 - Denotes Shared Use Path
 - Denotes Reduction in Right-of-way Impact
 - Denotes Proposed Noise Barrier
 - Denotes Proposed Conceptual Drainage
 - Denotes Proposed Pipe Slip-Lifting

SCALE 0 50 100'	SHEET NO. 18
	PROJECT (F0) 0066-96A-417 0066-96A-493

PROJECT MANAGER: Mark Gillingham, P.E., (703) 258-2324 - (NOVA L&D)
 DESIGN BY: Dewberry Consulting, LLC, (703) 258-7735
 SUBSURFACE UTILITY BY: DATE

SHIRLEY
 CONTRACTING COMPANY, LLC
Dewberry

I-66 EDA (OPTION 1)

DESIGN ENHANCEMENT
 STORMWATER MANAGEMENT IMPROVEMENTS FOR ADDITION TO EXISTING RISER STRUCTURE WITHIN WB I-66 TO EB ROUTE 7 LOOP RAMP.

DESIGN ENHANCEMENT
 DESIGN PROVIDES RAMP GORE TO RECOVER AREA, WHICH THE VDOT RFP CONCEPT DID NOT.

DESIGN ENHANCEMENT
 MODIFIED RAMP GEOMETRY INCREASES GORE TO GORE SPACING BY 25' VERSUS VDOT RFP. MARKING AND IMPROVED RAMP W/ PROFILE.

DESIGN ENHANCEMENT
 DENOTES PROPOSED TRAVEL LANE PAVEMENT, DENOTES PAWMENT MILL & OVERLAY / VARIABLE DEPTH OVERLAY, DENOTES PROPOSED PAVED SHOULDER, DENOTES BRIDGE DECK.

DESIGN ENHANCEMENT
 DENOTES SHARED USE PATH, DENOTES REDUCTION IN HIGH-WAY IMPACT, DENOTES PROPOSED NOISE BARRIER, DENOTES PROPOSED CONCEPTUAL DRAINAGE.

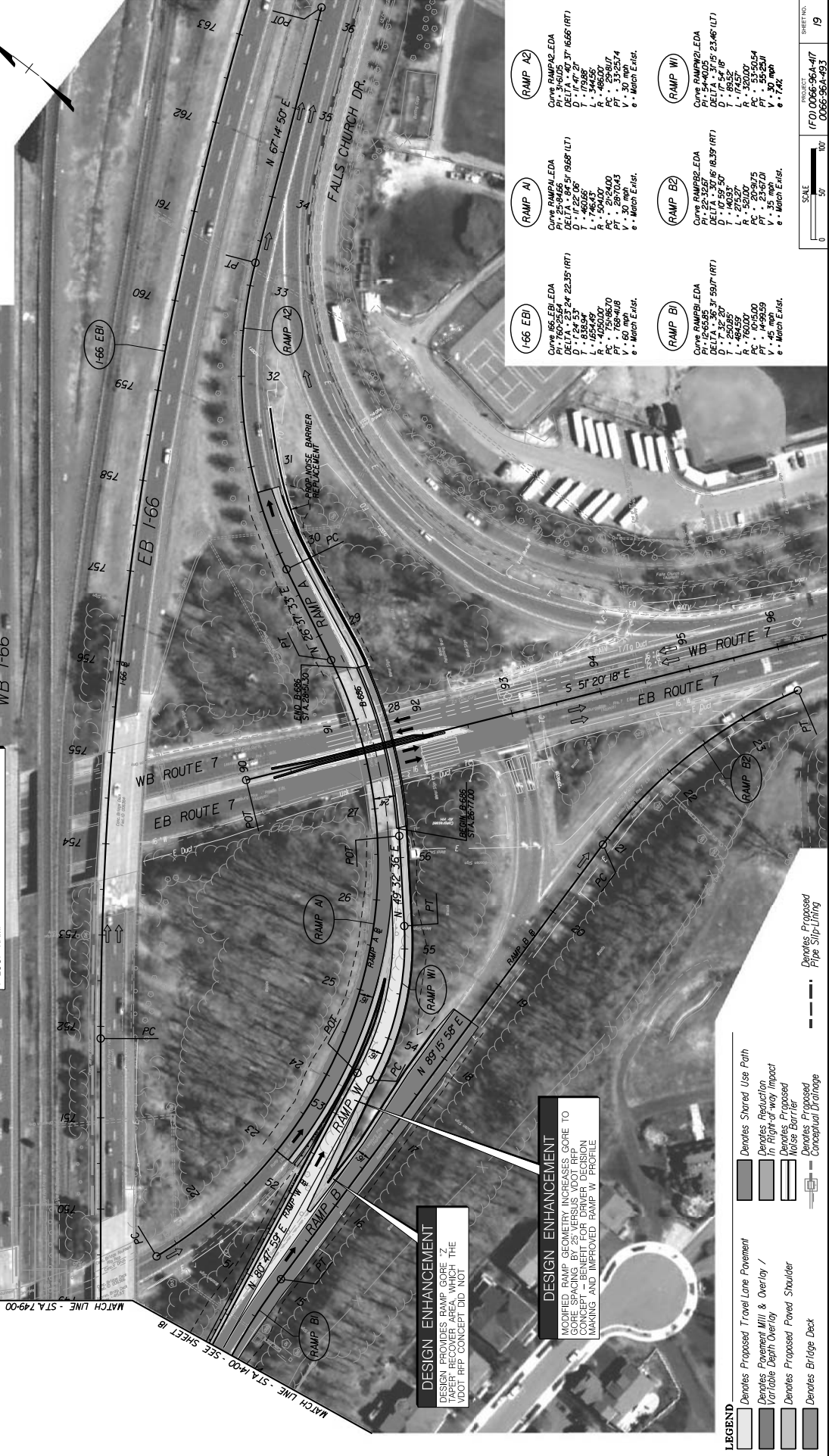
DESIGN ENHANCEMENT
 DENOTES PROPOSED TRAVEL LANE PAVEMENT, DENOTES PAWMENT MILL & OVERLAY / VARIABLE DEPTH OVERLAY, DENOTES PROPOSED PAVED SHOULDER, DENOTES BRIDGE DECK.

DESIGN ENHANCEMENT
 DENOTES SHARED USE PATH, DENOTES REDUCTION IN HIGH-WAY IMPACT, DENOTES PROPOSED NOISE BARRIER, DENOTES PROPOSED CONCEPTUAL DRAINAGE.

DESIGN ENHANCEMENT
 DENOTES SHARED USE PATH, DENOTES REDUCTION IN HIGH-WAY IMPACT, DENOTES PROPOSED NOISE BARRIER, DENOTES PROPOSED CONCEPTUAL DRAINAGE.

DESIGN ENHANCEMENT
 DENOTES SHARED USE PATH, DENOTES REDUCTION IN HIGH-WAY IMPACT, DENOTES PROPOSED NOISE BARRIER, DENOTES PROPOSED CONCEPTUAL DRAINAGE.

DESIGN ENHANCEMENT
 DENOTES SHARED USE PATH, DENOTES REDUCTION IN HIGH-WAY IMPACT, DENOTES PROPOSED NOISE BARRIER, DENOTES PROPOSED CONCEPTUAL DRAINAGE.



LEGEND

- Denotes Proposed Travel Lane Pavement
- Denotes Pavement Mill & Overlay / Variable Depth Overlay
- Denotes Proposed Paved Shoulder
- Denotes Bridge Deck
- Denotes Shared Use Path
- Denotes Reduction in High-Way Impact
- Denotes Proposed Noise Barrier
- Denotes Proposed Conceptual Drainage

Curve Data

Curve	Curve Type	Delta	Stationing
I-66 EB1	Curve RAMP A2, EDA	DELTA = 23° 24' 22.35" (RT)	STA 2855+00 TO 2855+50
RAMP A1	Curve RAMP A1, EDA	DELTA = 87° 51' 09.68" (LT)	STA 2855+50 TO 2855+50
RAMP B1	Curve RAMP B1, EDA	DELTA = 30° 16' 18.39" (RT)	STA 2855+50 TO 2855+50
RAMP A2	Curve RAMP A2, EDA	DELTA = 40° 37' 16.66" (RT)	STA 2855+50 TO 2855+50
RAMP B2	Curve RAMP B2, EDA	DELTA = 37° 19' 23.46" (LT)	STA 2855+50 TO 2855+50

Scale and Orientation

SCALE: 1" = 100'

0 50 100

North Arrow

SHEET NO. 19

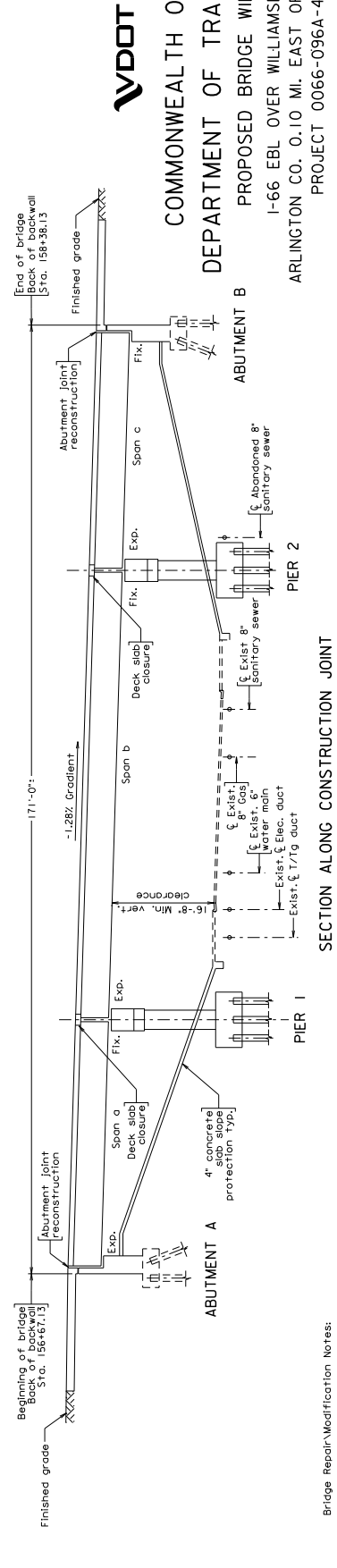
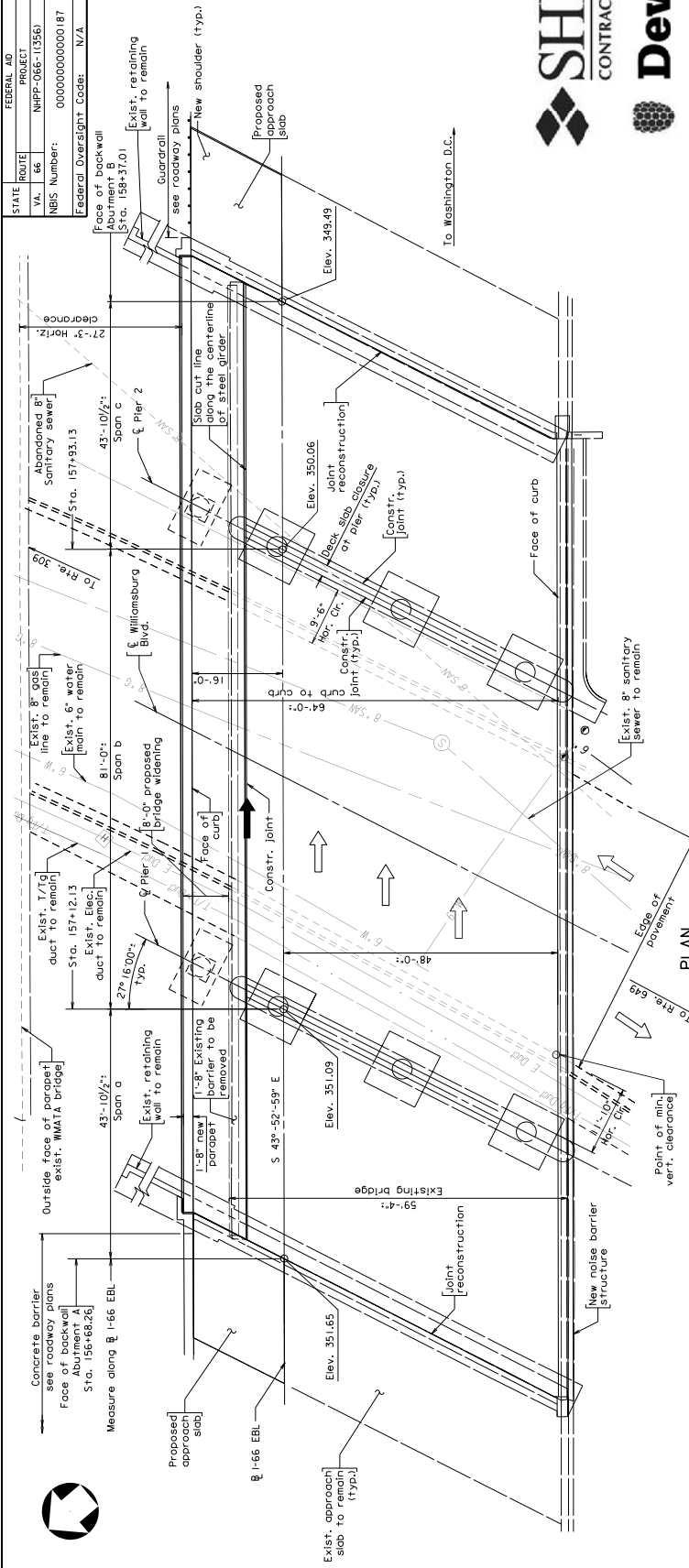
4.3.2 - Conceptual Structural Plans



STATE	FEDERAL AID	PROJECT	ROUTE	PROJECT	SHEET
VA. 1-66	NHPP-066-(1356)	0066-96A-417, B675	66	0066-96A-417, B675	1A
NBS Number:	000000000000187	108424	UPC No.		
Federal Oversight Code:	N/A		FHWA Construction and Scour Code:	X271-SN	

DESIGN EXCEPTIONS:
None

GENERAL NOTES:
For general notes, see sheet 1B.



**PRELIMINARY PLANS
THESE PLANS NOT TO BE USED
FOR CONSTRUCTION**

No.	Description	Date

For Table of Revisions see sheet 2.

Recommended for Approval: _____ Date: _____

Approved: _____ Chief Engineer

Date: September 2017 © 2017 Commonwealth of Virginia

188-09D Sheet 1A of 1

VDOT

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

PROPOSED BRIDGE WIDENING ON
I-66 EBL OVER WILLIAMSBURG BLVD.
ARLINGTON CO. 0.10 MI. EAST OF FAIRFAX CO. LINE
PROJECT 0066-096A-417, B675

SECTION ALONG CONSTRUCTION JOINT

Stations are shown along E 1-66 EBL

- Bridge Repair/Modification Notes:
1. Superstructure repairs shall be performed on the existing bridge in accordance with the RFP requirements. This includes repairing cracks, spalls and delamination on abutments, piers, and deck slab.
 2. Joints at piers will be retrofitted in accordance with Structure and Bridge Manual Volume V, Part 2.
 3. If existing bearings will be replaced utilizing steel-reinforced elastomeric pads as shown in RFP.
 4. Existing joints at abutments will be reconstructed.



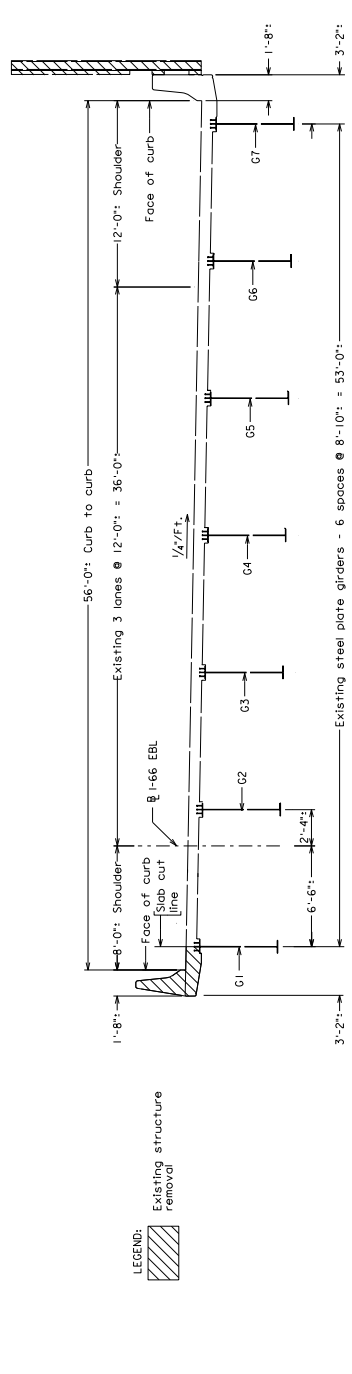
FHWA REGION	STATE	FEDERAL AID PROJECT	ROUTE	PROJECT	STATE	SHEET NO.
3	VA.		66		0066-96A-417, B675	1B

GENERAL NOTES:

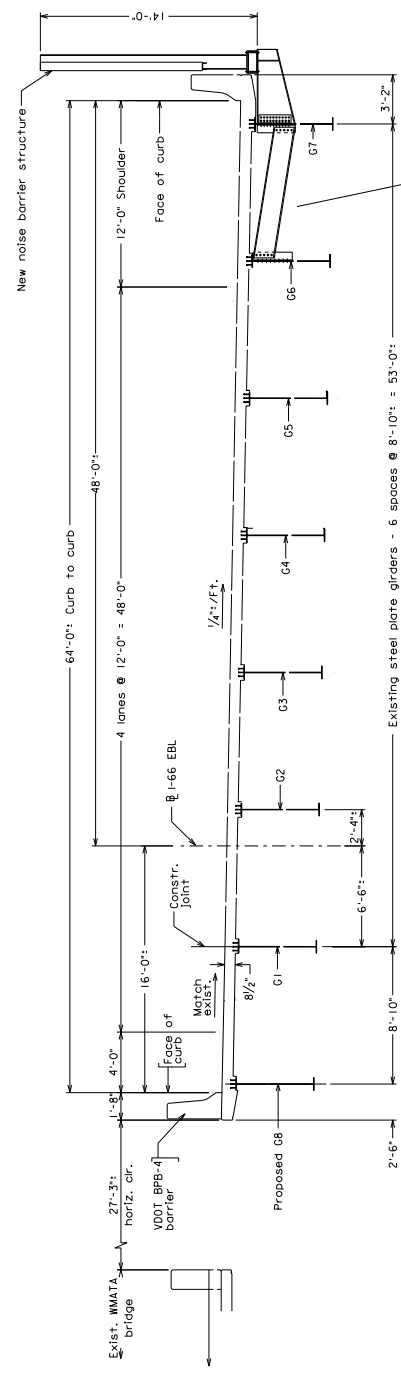
Width: 66' face to face of curbs. Includes widening of 8'-0" for left side of traffic.
 Span layout: 43'-10 1/2" - 81'-0" - 43'-10 1/2" simple plate girder spans.
 Capacity: HS20-44 Loading and modified military loading.
 HL-93 Loading for widening.

Specifications:
 Construction: Virginia Department of Transportation Road and Bridge Specifications, 2016.
 Design: AASHTO LRFD Bridge Design Specifications, 7th Edition, 2014 and VDOT Modifications.
 Standards: Virginia Department of Transportation Road and Bridge Standards, 2016.

Bridge No. of existing bridge is 2069 Plan No. is 188-09.
 The existing structure is designated a Type B structure in accordance with Sec. 411. Only existing soundwall contains lead.
 All structural steel within the widened portion of structure, except in bearings and sole plates, shall be ASTM A709, Grade 50. Structural Steel in bearing and sole plates shall be ASTM A709 Grade 36.
 Deck slab closure at piers shall be full joint closure. Joint closure concrete shall be LMC-VE concrete for Latex-Modified Concrete Early Strength Overlay.
 Structural steel for new beams shall be brown 195-30277.
 If crane or other equipment is to be used within the WMAA Zone of Influence (ZOI), impact analysis shall be performed by the contractor to verify there is no impact on existing WMAA structure.
 This plan set is prepared based on the information shown on the as-built plans of existing bridge. All dimensions affected by the geometrics and/or location of existing structure shall be checked in field by the contractor before commencement of construction work. Any marks showing dimensions and locations does not constitute a warranty of accuracy. All dimensions and locations are existing dimensions and stations that may vary and require field verification by the contractor.
 Existing side slope protection shall be extended to accommodate the widening.
 After completion of concrete substructure surface repair, all existing substructure (Abutments, Wingwalls, Piers) shall be inspected for deterioration. All deteriorated areas shall be repaired and pier caps shall receive a coat of epoxy Type EPS. All other areas on substructure shall receive a coat of waterproofing coating per Sect. 300.

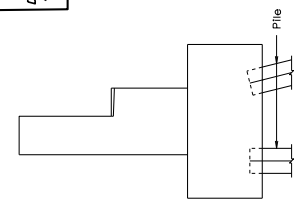


EXISTING TRANSVERSE SECTION

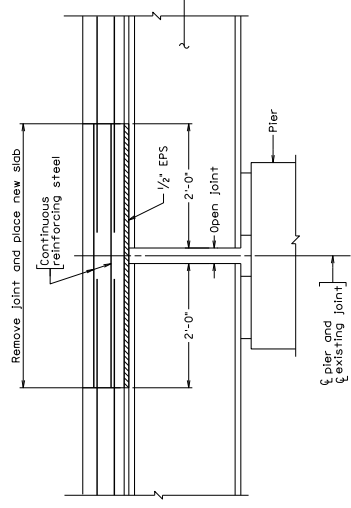


FINAL TRANSVERSE SECTION

DESIGN ENHANCEMENT
 PROVIDED A BRACKET SYSTEM AND A GRADE BEAM TO SUPPORT THE INTERMEDIATE NOISE BARRIER POST. ELIMINATES PARTIAL DEMOLITION RECONSTRUCTION OF THE EXISTING BESS. DECK AND PARAPET WALLS. IMPROVES THE STRUCTURAL INTEGRITY AND TO 1-66 TRAFFIC AND RESULTS IN PUBLIC SAFETY.



PROPOSED ABUTMENT SECTION
 NOT TO SCALE



CONTINUOUS SLAB RETROFIT DETAIL
 NOT TO SCALE

PRELIMINARY PLANS
 THESE PLANS NOT TO BE USED FOR CONSTRUCTION

COMMONWEALTH OF VIRGINIA DEPARTMENT OF TRANSPORTATION		STRUCTURE AND BRIDGE DIVISION	
TRANSVERSE SECTION			
No.	Description	Date	Revisions
1	As Issued	Sept. 2017	188-09D
2			
3			
4			
5			
6			
7			
8			
9			
10			

Scale: 1/4" = 1'-0" unless otherwise shown © 2017, Commonwealth of Virginia

STATE	FEDERAL AID	ROUTE	PROJECT	STATE	SHEET
VA. 66	NHPP-066-(1356)	66	0066-96A-417, B677	66	2A
NBS Number:	00000000000183	LPC No.	108424		
Federal Oversight Code:	N/A	FHWA Construction and Scour Code:	X271-SN		

DESIGN EXCEPTIONS:
None

GENERAL NOTES:

Width: 64'-0" face to face of curbs. Includes widening of 8'-0" on left side of traffic.
Span layout: 65'-6 1/2" - 92'-6" - 65'-6 1/2" simple steel plate girder spans.
Capacity: HS20-44 Loading and modified military loading
HL-93 Loading for widening.

Specifications:

Construction: Virginia Department of Transportation Road and Bridge Specifications, 2016.
Design Widening: AASHTO LRFD Bridge Design Specifications, 7th Edition, Standards, Virginia Department of Transportation Road and Bridge Standards, 2016.

Bridge No. of existing bridge is 2067 Plan No. is 188-11.

All structural steel within the widened portion of structure, except in bearings and sole plates, shall be ASTM A709, Grade 50, Structural Steel in bearing and sole plates shall be ASTM A709 Grade 36.

Deck slab closure at piers shall be full joint closure. Joint closure concrete shall be LMC-VE concrete for Latex-Modified Concrete Early Strength Overlays.

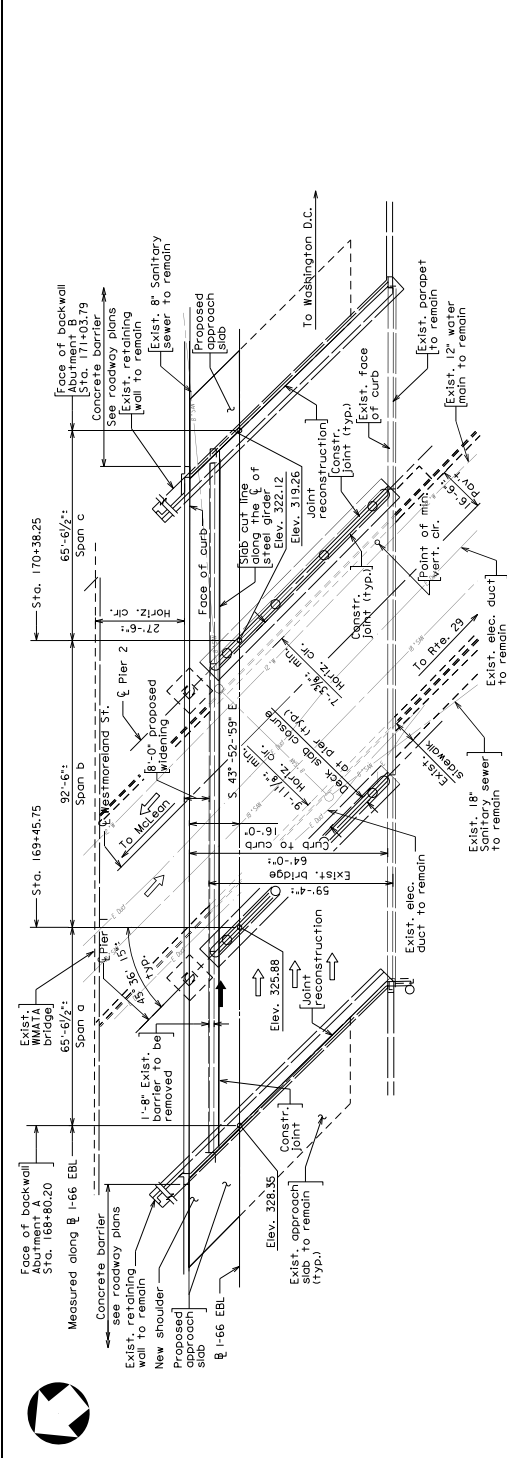
Structural steel for new beams shall be Brown 595-30277.

If crane or other equipment is to be used within the WMAA Zone of influence (200 ft) of the bridge, the contractor shall verify with the contractor to verify there is no impact on existing WMAA structure.

Existing slab slope protection shall be extended to accommodate widening.

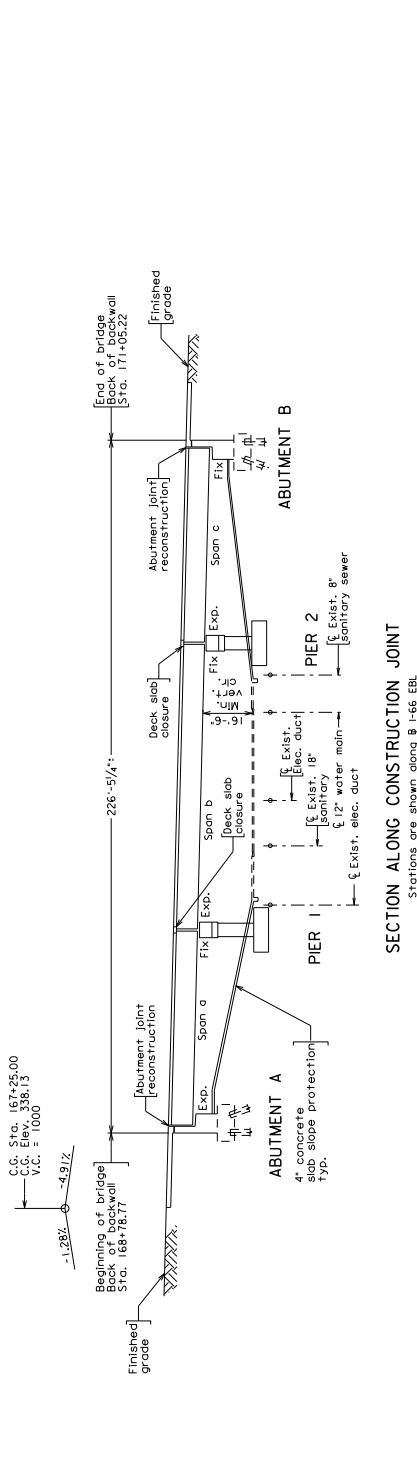
This plan set is prepared based on the information shown on the as-built plans of existing bridge. All dimensions affected by the geometry and/or location of existing structure shall be checked in field by the contractor before commencement of construction. Indicate any degree of precision. These +/- marks indicate existing dimensions and stations that may vary and require field verification by the contractor.

After completion of concrete substructure surface repair, all existing concrete substructure shall be repaired with repair concrete waterproofed. Abutment backwalls and top of abutments, piers and pier caps shall receive a coat of epoxy Type EP-5. All other areas on substructure shall receive a coat of waterproofing coating per Sect. 300.



PLAN

C.C. Sta. 167+25.00
C.C. Elev. 338.15
V.C. = 1000
-1.28% - 45 1/2'



SECTION ALONG CONSTRUCTION JOINT

Stations are shown along E 1+66 EBL



**COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION**

**PROPOSED BRIDGE WIDENING ON
I-66 EBL OVER WESTMORELAND ST.
ARLINGTON CO. 0.080 MI. RTE. 694
PROJECT 0066-96A-417, B677**

Recommended for Approval: _____ Date: _____

Approved: _____ Chief Engineer _____ Date: _____

180 - 11E Sheet 2A of 83

No.	Description	Date
REVISIONS		
For Table of Revisions see sheet 2.		

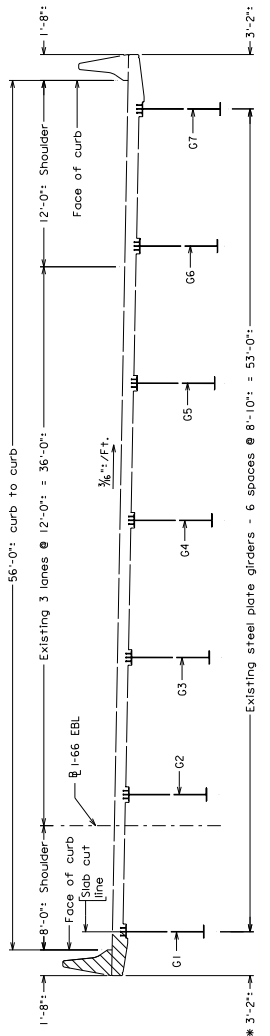
**PRELIMINARY PLANS
THESE PLANS NOT TO BE USED
FOR CONSTRUCTION**



- Bridge Repair/Modification Notes:
- All superstructure and substructure repairs will be performed on the existing bridge in accordance with the RFP requirements. This includes repairing cracks, spalls and delamination on abutments, piers, and deck slab.
 - Joints of piers will be retrofitted in accordance with Structure and Bridge Manual Volume V, Part 2.
 - 14 existing bearings will be replaced utilizing steel-reinforced elastomeric pads as shown in RFP.
 - Existing joints of abutments will be reconstructed.

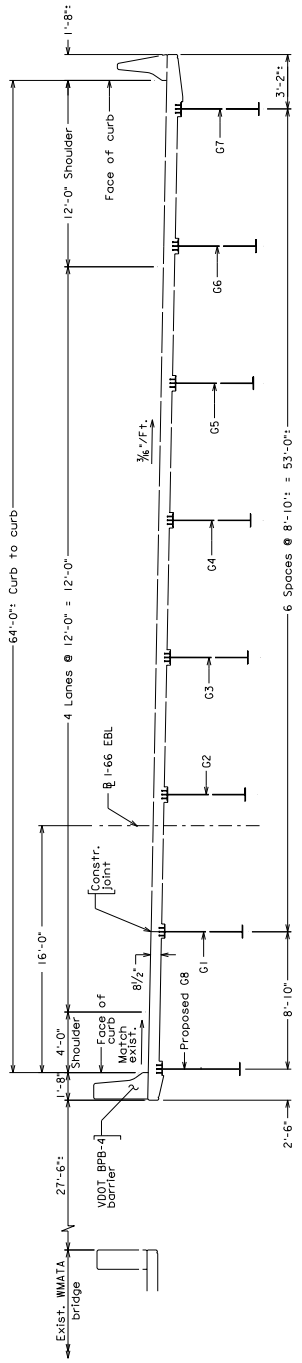
Scale: 1" = 20'-0"

FHWA REGION	STATE	FEDERAL AID PROJECT	STATE PROJECT NO.
3	VA.		
ROUTE	PROJECT	DATE	SHEET NO.
66	0066-86A-417, B677		28

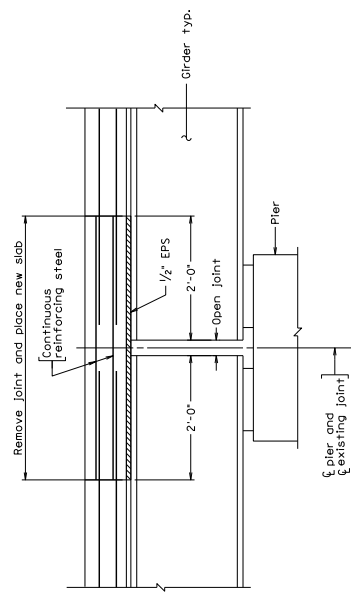


EXISTING TRANSVERSE SECTION

* = Denotes Limits of deck removal.

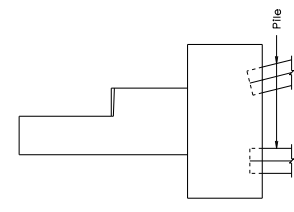


FINAL TRANSVERSE SECTION



CONTINUOUS SLAB RETROFIT DETAIL

Not to scale



PROPOSED ABUTMENT SECTION

Not to scale

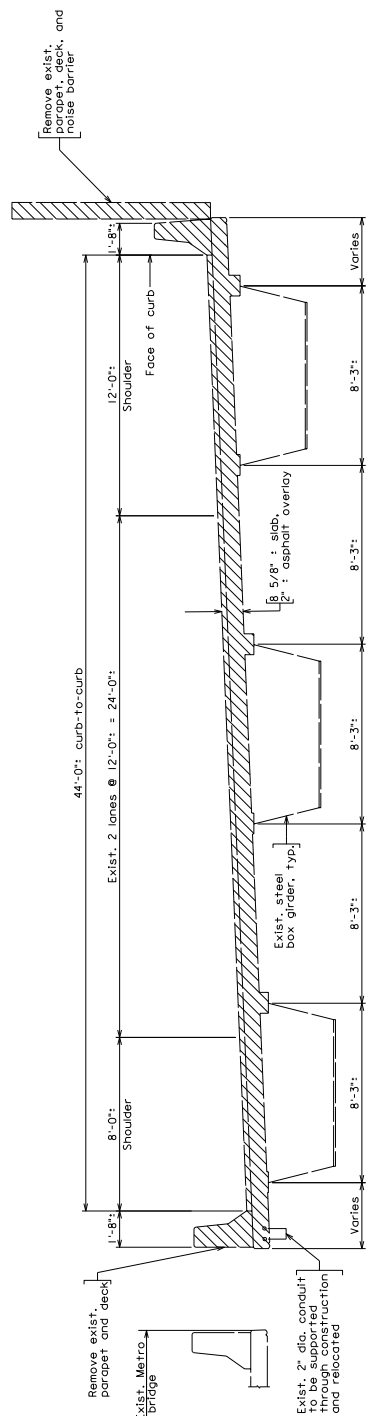
PRELIMINARY PLANS
THESE PLANS NOT TO BE USED FOR CONSTRUCTION

No.	Description	Date	Designed: J.H.	Date	Plan No.	Sheet No.
			Drawn: J.H.	May 2017	188-11E	28 of 28
		Checked: J.H.				
COMMONWEALTH OF VIRGINIA DEPARTMENT OF TRANSPORTATION STRUCTURE AND BRIDGE DIVISION						
TRANSVERSE SECTION						

Scale: 1/4" = 1'-0" unless otherwise shown © 2017, Commonwealth of Virginia



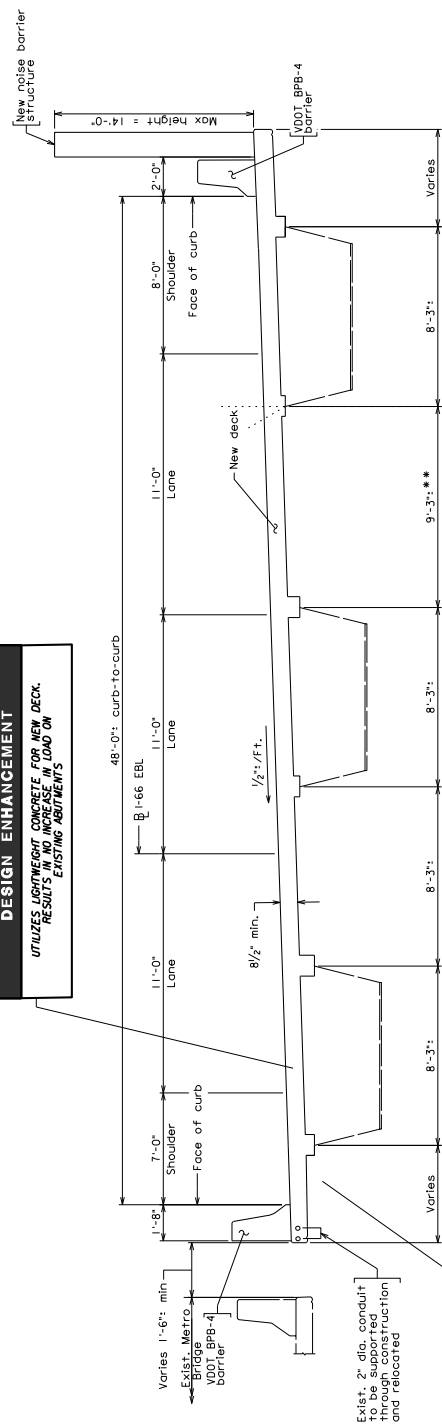
FHWA REGION	STATE	FEDERAL AID PROJECT	STATE PROJECT	SHEET NO.
3	VA		0066-96A-4.1.T. B679	4B



EXISTING TRANSVERSE SECTION

DESIGN ENHANCEMENT
 UTILIZES LIGHTWEIGHT CONCRETE FOR NEW DECK.
 RESULTS IN NO INCREASE IN LOAD ON EXISTING ABUTMENTS

LEGEND:
 Existing structure removal

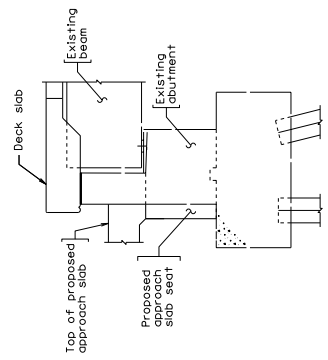


FINAL TRANSVERSE SECTION

DESIGN ENHANCEMENT
 ANALYZED REINFORCED OVERLAYS TO ELIMINATE NEW GIRDER SHOWN IN RFP. DOES NOT REQUIRE ABUTMENT WIDENING. REDUCES CONSTRUCTION COST AND FUTURE MAINTENANCE COST.

DESIGN ENHANCEMENT
 RELIATES EXISTING TUB GIRDERS ALONG ELIMINATION OF NEW GIRDER SHOWN IN RFP. DOES NOT REQUIRE ABUTMENT WIDENING. REDUCES CONSTRUCTION COST AND FUTURE MAINTENANCE COST.

*** Tub girders relocated by a foot.



DECK SLAB EXTENSION DETAIL
 Not to scale



PRELIMINARY PLANS
 THESE PLANS NOT TO BE USED FOR CONSTRUCTION

No.	Description	Date	Designed Drawn	Date	Checked	Plan No.	Sheet No.
						255-20A	4B of 4B

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Scale: 1/4" = 1'-0"

COMMONWEALTH OF VIRGINIA
 DEPARTMENT OF TRANSPORTATION
 STRUCTURE AND BRIDGE DIVISION

ESTIMATED QUANTITIES
 AND TRANSVERSE SECTION, B679

STATE ROUTE	FEDERAL AID	STATE PROJECT	SHEET NO.
VA. 66	NHPP-066-(1356)	66 0066-96A-417, B680	5A
NBS Number: 00000000030821	UFC No. 108424	FMHA Construction and Scour Code: N/A	X972-SN

DESIGN EXCEPTIONS:
None

GENERAL NOTES:
Width: 20'-0" face-to-face of curbs. Overall width: 21'-6"

Span layout: 88'-0" - 109'-0" - 100'-6" - 125'-0" - 106'-6" - 106'-6" - 94'-0" (Conceptual plan layout does not necessarily represent the final structural system to be designed by the design-builder.)

Capacity: 30 p.s.f. pedestrian loading with no reduction allowed.

Specifications:

Construction: Virginia Department of Transportation Road and Bridge Standards, 2016.

Design: AASHTO LRFD Guide Specifications for Design of Pedestrian Bridges, 2009 including Interims through 2015, and VDOT Modifications, 7th Edition, 2014; and VDOT Modifications.

Standards: Virginia Department of Transportation Road and Bridge Standards, 2016.

Lightweight concrete shall be used for deck and curbs.

Lighting on the structure shall be provided as per RFP Part 2 technical requirements and special provisions.

For additional information refer to RFP, public hearing and design charrette documents.

Type and location of the utilities shall be verified by the design-builder.



DEVELOPED SECTION ALONG C W & OD TRAIL

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION
PROPOSED SHARED USE PATH BRIDGE
W & OD TRAIL OVER LEE HIGHWAY
ARLINGTON CO. 0.20 MI. E. OF 25TH ST. N.
PROJECT 0066-096-417, B680

Recommended for Approval: _____ Date

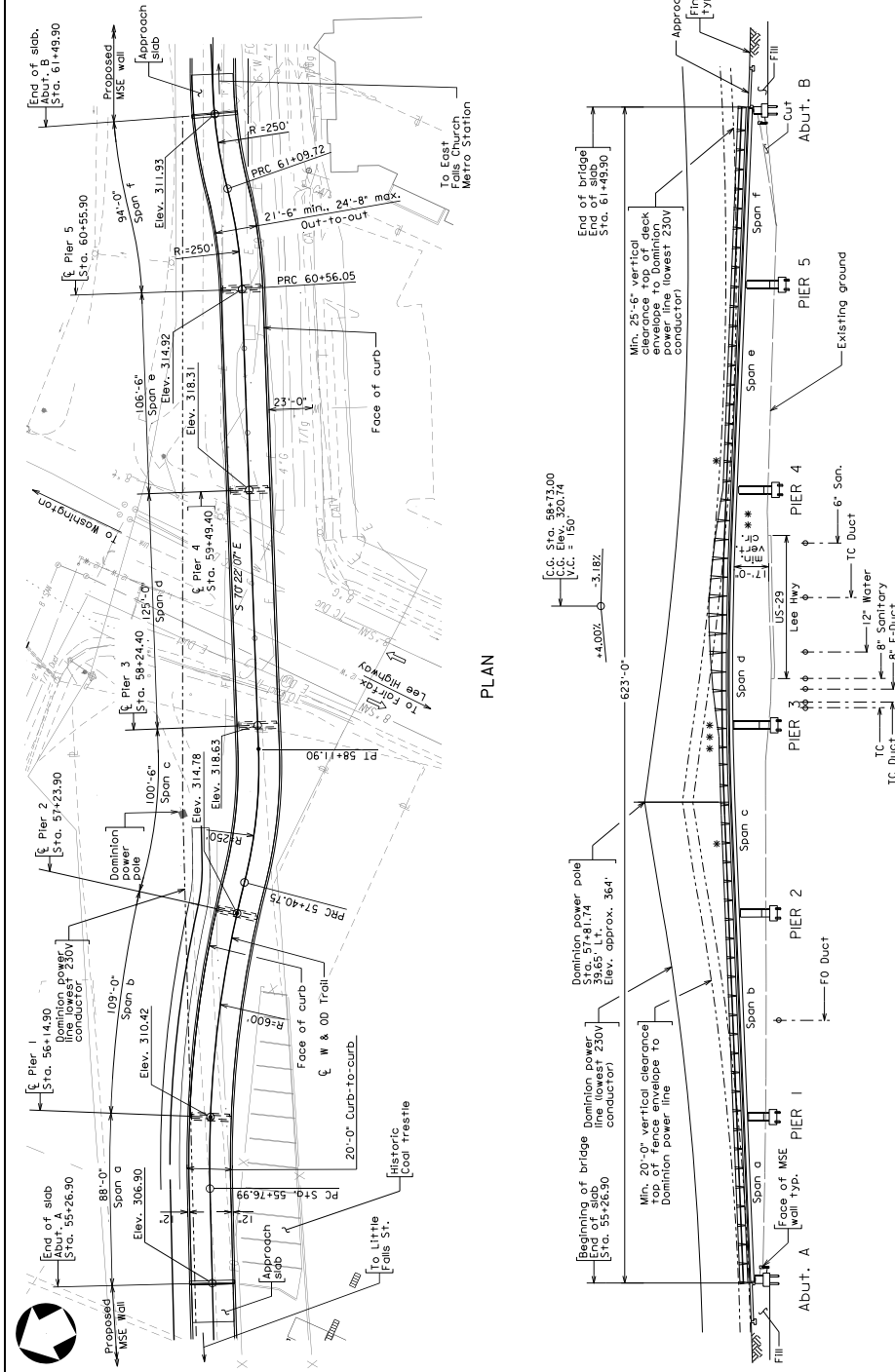
Approved: _____ Chief Engineer Date 299-62 Sheet 5A of

REVISIONS	
No.	Description

For Table of Revisions see sheet 2.

**PRELIMINARY PLANS
THESE PLANS NOT TO BE USED
FOR CONSTRUCTION**

Scale: 1/2" = 1'-0"



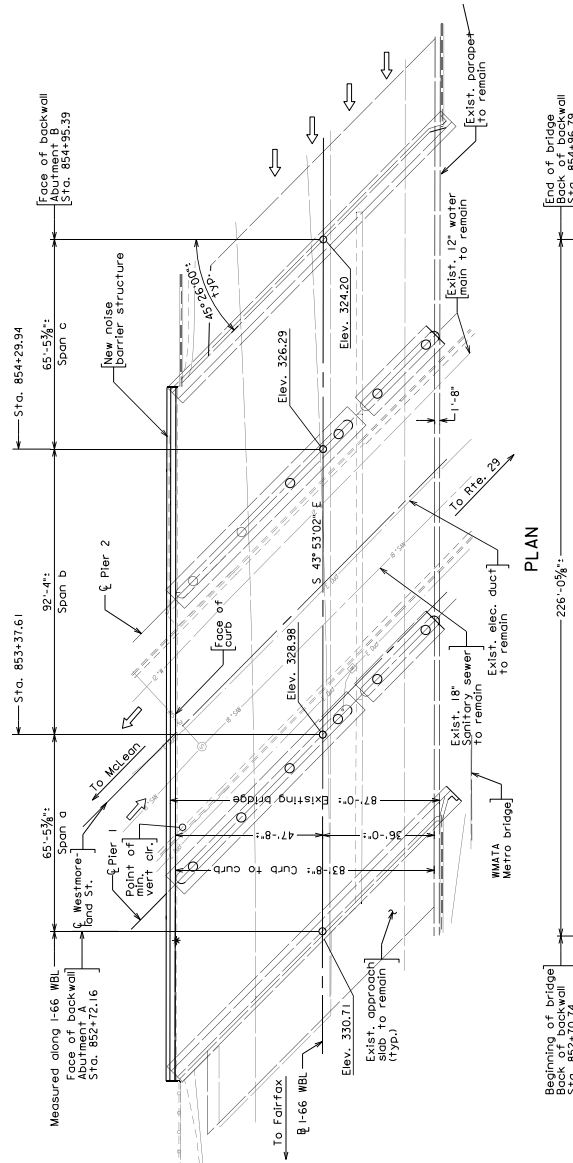
- ** V-shaped fence and railing posts are required.
- ** Min. vertical clearance of 17'-0" is achieved. A design waiver for 17'-0" min. vertical clearance is available if needed.
- ** Transition of top member of fence from fence posts (span d) to railing posts shall be curved.

STATE	FEDERAL AID	STATE	SHEET
VA. 66	PROJECT	ROUTE	NO.
NHPP-066-1(356)	0066-96A-417, B683	66	8A
NBS Number: 000000000000181	LFPC No. 108424		
Federal Oversight Code: N/A	FHWA Construction and Scour Code:		

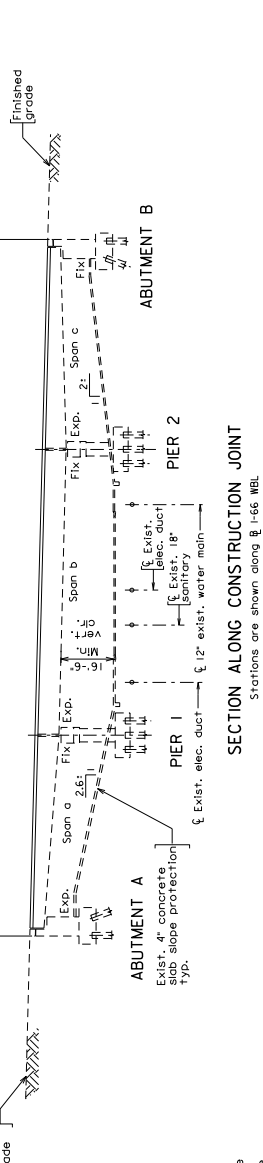
DESIGN EXCEPTIONS:
None

GENERAL NOTES:
Width: 83'-8" face to face of curbs. Includes widening of 1'-3" on right side of traffic.
Span layout: 65'-5 1/2" - 92'-4" - 65'-5 1/2" simple steel plate girder spans.
Capacity: HL-93 Loading

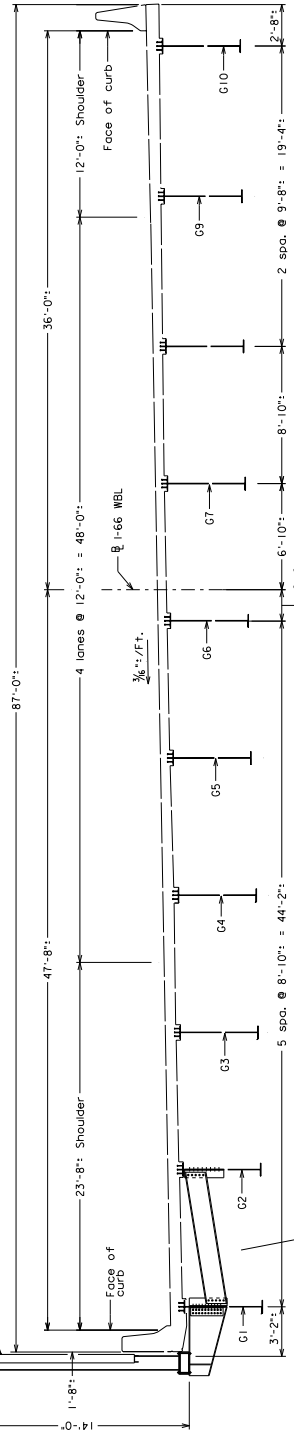
Specifications:
Construction: Virginia Department of Transportation Road and Bridge Specifications, 2016.
Design Widening: MASTO LRF Bridge Design Specifications, 7th Edition, 2014 and VDOT Modifications.
Standards: Virginia Department of Transportation Road and Bridge Standards, 2016.
Bridge No. of existing bridge is 2066 Plan No. is 188-11C.
The existing structure is designated a Type B structure in accordance with Sec. 411. Only existing soundwall contains lead.
If crane or other equipment is to be used within the IMATA Zone of influence (ZOI), impact analysis shall be performed by the contractor to verify there is no impact on existing IMATA structure.
This plan set is prepared based on the information shown on the as-built plans of existing bridge. All dimensions affected by the proposed construction shall be shown in red. Dimensions not in field by the contractor before commencement of construction work. Any +/- marks shown with dimensions and stations does not indicate that the contractor shall adjust the existing dimensions and stations that may vary and require field verification by the contractor.



PLAN



SECTION ALONG CONSTRUCTION JOINT
Stations are shown along $\bar{\bar{L}}$ 1-66 MBL



FINAL TRANSVERSE SECTION
Scale: 1/4" = 1'-0"

DESIGN ENHANCEMENT
PROVIDE A BRACKET SYSTEM AND A GRADE BEAM TO SUPPORT THE INTERMEDIATE NOISE BARRIER POST. ELIMINATES PARTIAL BRACKET SYSTEMS AND REDUCES CONSTRUCTION COST WITH LESS IMPACT TO I-66 TRAFFIC AND RESULTS IN PUBLIC SAFETY.

PRELIMINARY PLANS
THESE PLANS NOT TO BE USED FOR CONSTRUCTION

No.	Description	Date
REVISIONS		
For Table of Revisions see sheet 2.		



COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION
PROPOSED SOUND BARRIER REPLACEMENT ON
I-66 WBL OVER WESTMORELAND ST.
ARLINGTON CO. 0.080 MI. RTE. 694
PROJECT 0066-96A-417, B683

Recommended for Approval: _____ Date _____
Approved: _____ Chief Engineer _____ Date 188-11F
© 2017, Commonwealth of Virginia Sheet 8A of 93

STATE	FEDERAL AID	PROJECT	SHEET NO.
VA	NHPP-066-1(356)	0066-96A-493, B686	1A
NBS Number:	LPC No.	110629	
FHWA Construction and Scour Code:	N/A	X271-SN	

DESIGN EXCEPTIONS:
None

GENERAL NOTES:

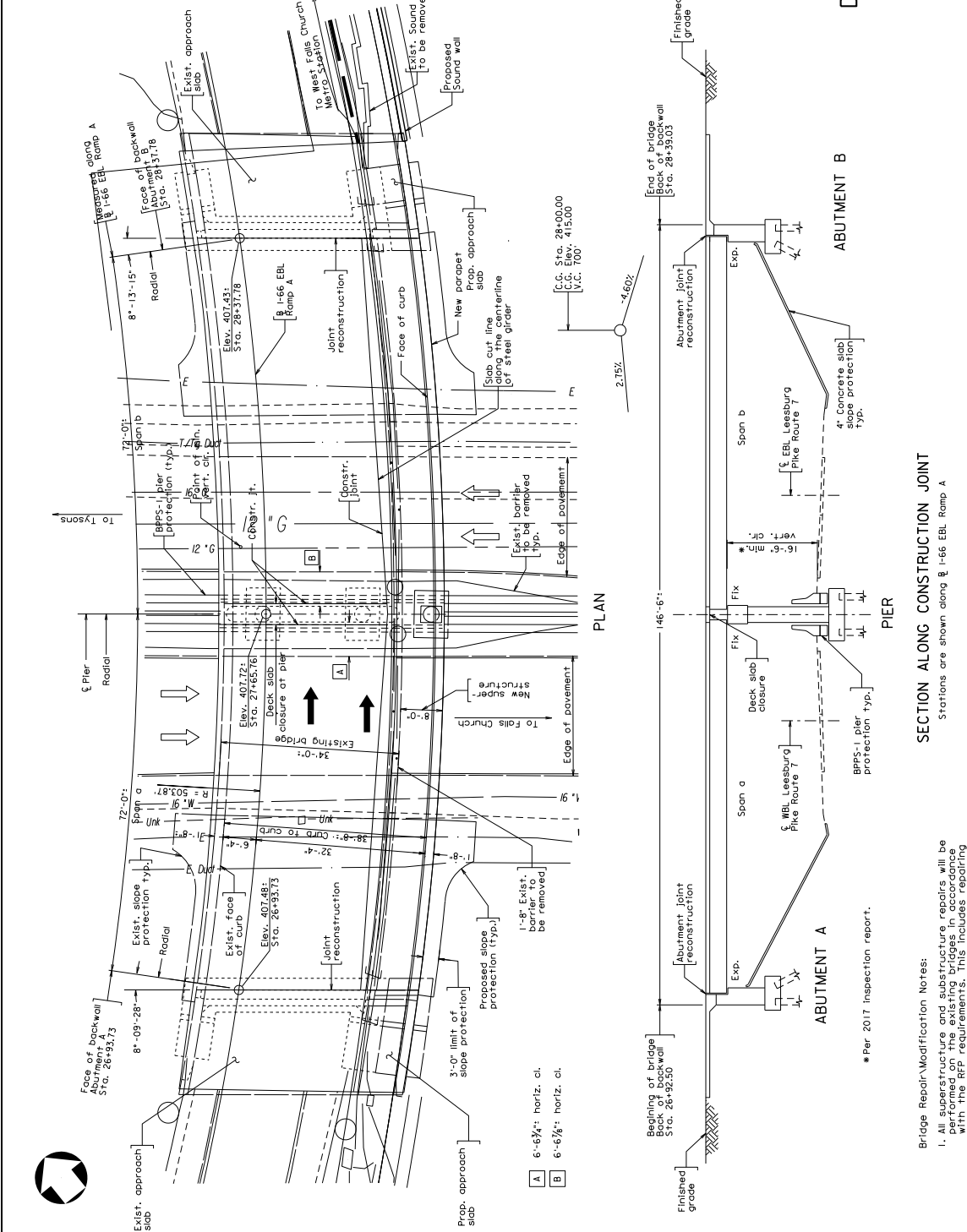
Width: 38'-8" face-to-face of curbs, includes widening of 8'-0" min. on right side of traffic.
Span layout: 72'-0" - 72'-0" simple plate girder spans
Capacity: H20-44 Loading and modified military loading.
HL-93 Loading for widening.

Specifications: Virginia Department of Transportation Road and Bridge Specifications, 2016.
Design Widening: ASHTO LRFD Bridge Design Specifications, 7th Edition, 2014 and VDOT Modifications.
Standards: Virginia Department of Transportation Road and Bridge Standards, 2016.
Bridge number of existing bridge is 2175. Plan number is 169-05A.

All structural steel which has been welded by AISC or other qualified fabricator shall be painted with a zinc-rich primer. Steel in bearing and sole plates shall be ASTM A709 Grade 50. Structural steel shall be painted with a zinc-rich primer. Steel in bearing and sole plates shall be ASTM A709 Grade 50 and shall be painted green, 595-34097.
Joint closure at piers shall be full joint closure. Joint closure concrete shall be LMC-VI concrete for Lores-Modified Concrete Early Strength Overlay.

This plan set is prepared based on the information shown on the drawings. The contractor shall verify the accuracy of the information in the field by the contractor before commencement of construction. The contractor shall be responsible for any errors or omissions. The contractor shall indicate any degree of precision. These "V" marks indicate existing dimensions and stations that may vary and require field verification by the contractor.
Existing slab slope protection shall be extended to accommodate the widening.

After completion of concrete substructure surface repair, all concrete shall be finished and cured. All concrete shall be waterproofed. Abutments backwalls and top of abutments seats shall be waterproofed. Abutments, labourments, wingwalls, piers shall be coated with a waterproofing material. Labourments, wingwalls, piers shall be coated with a waterproofing material. Labourments, wingwalls, piers shall be coated with a waterproofing material.



Recommended for Approval: _____ Date: _____

Approved: _____ Chief Engineer

Date: September, 2017. © 2017, Commonwealth of Virginia
169-05B
Sheet 1A of

No.	Description	Date
REVISIONS		
For Table of Revisions see sheet 2.		

**PRELIMINARY PLANS
THESE PLANS NOT TO BE USED
FOR CONSTRUCTION**

Scale: 1" = 10'-0"

SECTION ALONG CONSTRUCTION JOINT
Stations are shown along I-66 EBL Ramp A

* Per 2017 inspection report.

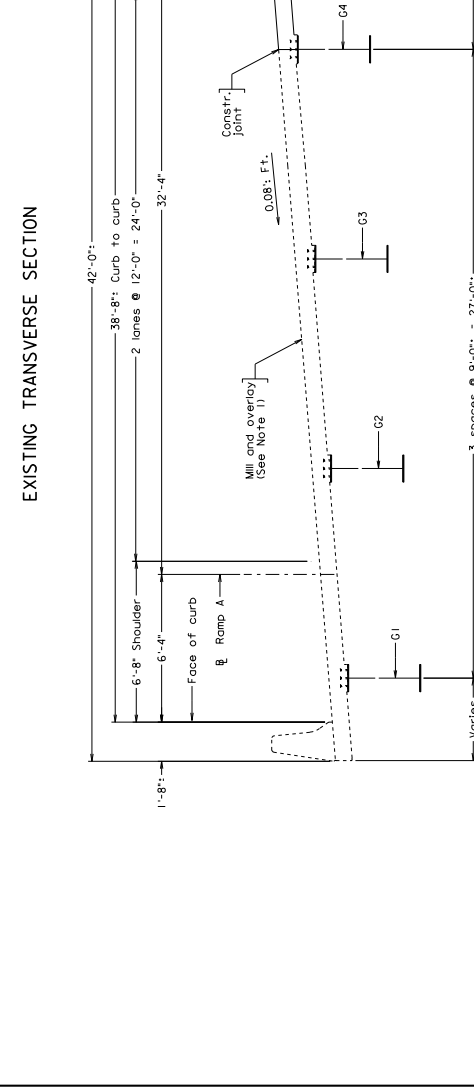
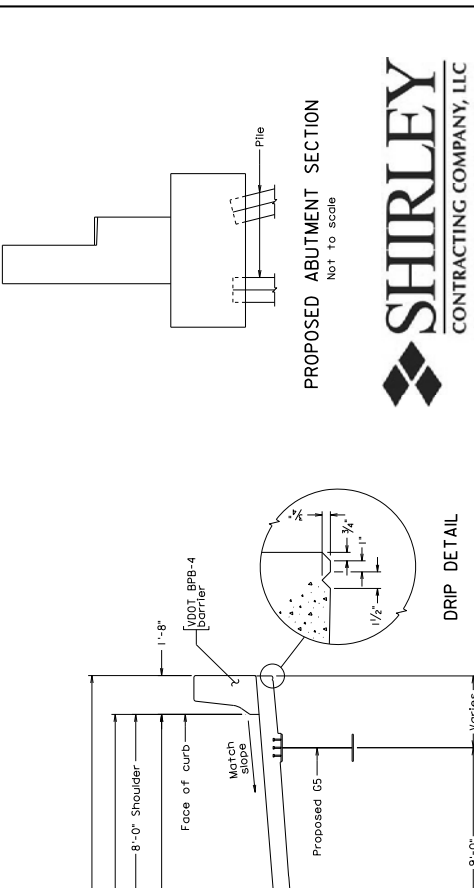
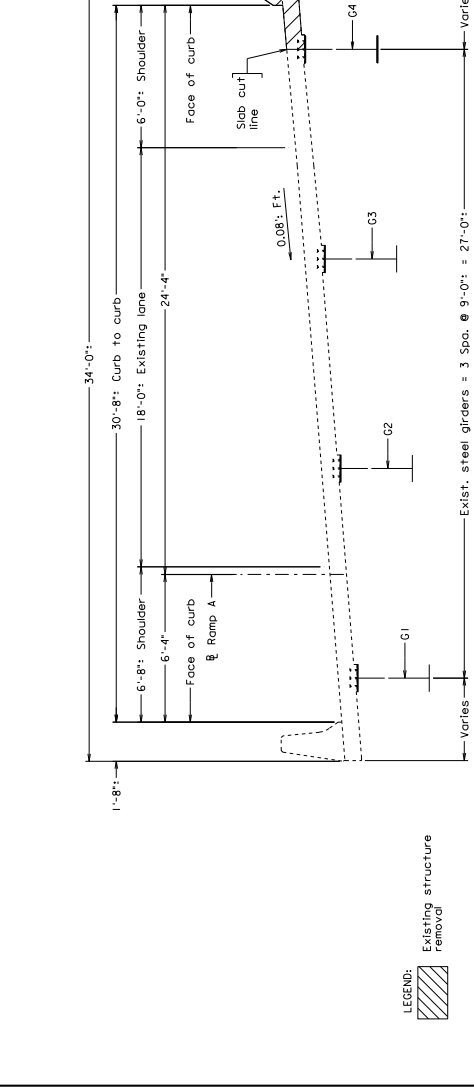
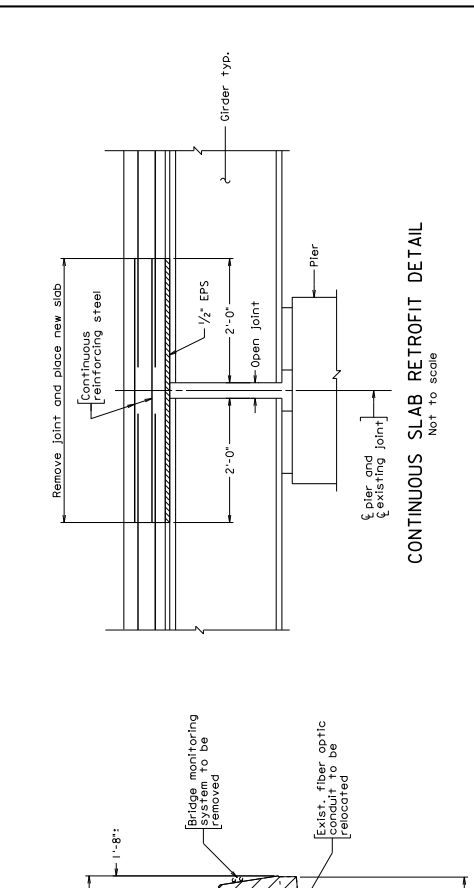
- Bridge Repair/Modification Notes:**
- All superstructure and substructure repairs will be performed on the existing bridges in accordance with the RFP requirements. This includes repairing and delimitation on abutments, piers and deck slab.
 - Lights at piers will be retrofitted in accordance with Structure and Bridge Manual Volume V, Part E.
 - Existing joints at abutments will be reconstructed.



COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION
PROPOSED BRIDGE WIDENING ON
I-66 E.B.L. RAMP A OVER RTE. 7
1.8 MI. N.W. OF FALLS CHURCH
PROJ. 0066-96A-493, B686

FHWA REGION	FEDERAL AID PROJECT NO.	STATE PROJECT NO.	SHEET NO.
3	NHPP-066-1(2560)	66	0668-86A-493, 8686
VA.			IB

PROJECT MANAGER: **WILLIAM J. ZIEGLER**, P.E., (703) 552-5254, wziegl@shirley.com
 DESIGNED BY: **DAVID J. HARRISON**, (703) 552-5254, dharriso@shirley.com
 CHECKED BY: **DAVID J. HARRISON**, (703) 552-5254, dharriso@shirley.com
 SURFACE UTILITY BY DATE: **AWP/PL/ML/BS/2/7/08**



**PRELIMINARY PLANS
 THESE PLANS NOT TO BE USED
 FOR CONSTRUCTION**

No.	Description	Date	Designed: B.P. Harrison	Date	Checked: D.J. Harrison	Plan No.	Sheet No.
	Revisions					169-05B	IB of

Scale: 3/8" = 1'-0" unless otherwise shown © 2017, Commonwealth of Virginia

SHIRLEY CONTRACTING COMPANY, LLC

Dewberry

COMMONWEALTH OF VIRGINIA
 DEPARTMENT OF TRANSPORTATION
 STRUCTURE AND BRIDGE DIVISION

TRANSVERSE SECTION

Note:
 1. Milling, Type A Hydro-Demolition followed by Very Early Strength Latex Modified Concrete Overlay will be performed on the existing deck.