

Response to Request for Proposals

I-95 NORTHBOUND RAPPAHANNOCK RIVER CROSSING

City of Fredericksburg and Stafford County, Virginia

State Project No.: 0095-111-270
Federal Project No.: NHP-095-2(545)
Contract ID Number: C00105510DB106

February 25, 2020

VOLUME I TECHNICAL PROPOSAL



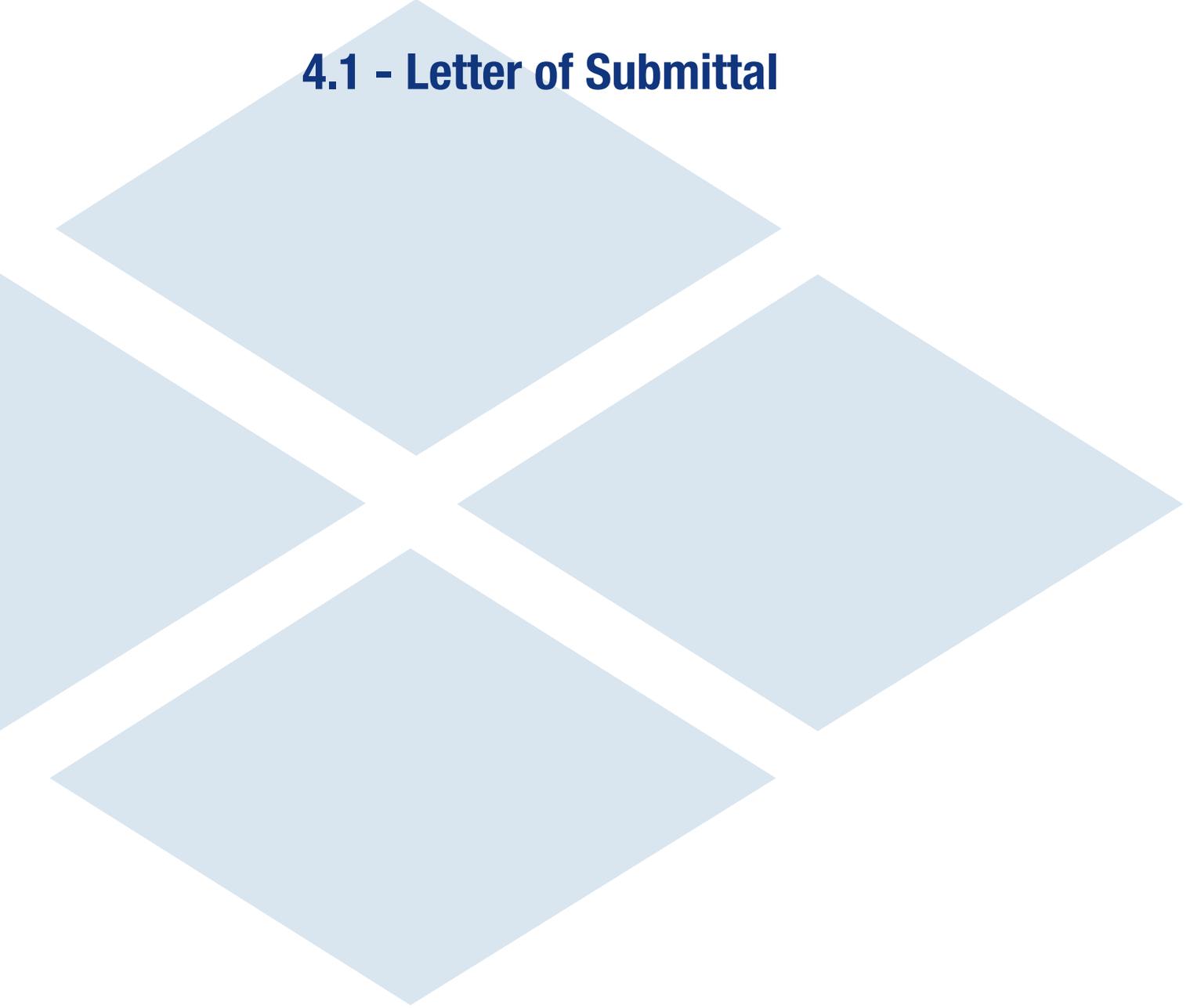
Submitted By:



In Association With:



4.1 - Letter of Submittal



February 25, 2020

Mr. Suril R. Shah, PE, DBIA
Alternative Project Delivery Division
Virginia Department of Transportation
1401 East Broad Street, Annex Building, 5th Floor
Richmond, Virginia 23219

Re: I-95 NB Rappahannock River Crossing
City of Fredericksburg and
Stafford County, Virginia
Contract ID Number: C00105510DB106
4.1 Letter of Submittal

Dear Mr. Shah:

Shirley Contracting Company, LLC (Shirley), as the Offeror, and Dewberry Engineers Inc. (Dewberry), as the Lead Designer, are pleased to submit our Team's Technical Proposal for the I-95 Northbound Rappahannock River Crossing Project (the Project). Our Team will provide VDOT and the traveling public with an unequalled level of assurance that the Project is completed successfully and exceeds the priorities established while limiting risk to all stakeholders.

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 the 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 the Price Proposal is 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, Chief Executive Officer, Shirley Contracting Company, LLC, 8435 Backlick Road, Lorton, VA 22079, 703.550.8100 (P).

4.1.6 - Final Completion Date: June 30, 2024

4.1.7 - Unique Milestone Date: February 4, 2022

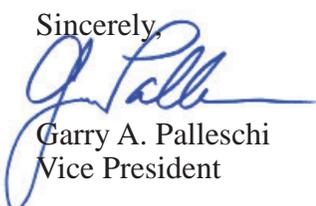
4.1.8 - Proposal Payment Agreement: An executed Attachment 9.3.1 Proposal Payment Agreement is included in the Appendix.

4.1.9 - Certification Regarding Debarment: Signed Certification Regarding Debarment Forms from all team members are included as attachments in the Appendix.

4.1.10 - DBE Participation Goal: Shirley commits that we will achieve a 12% DBE participation goal for the entire value of the contract.

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,



Garry A. Palleschi
Vice President

4.2 - Offeror's Qualifications

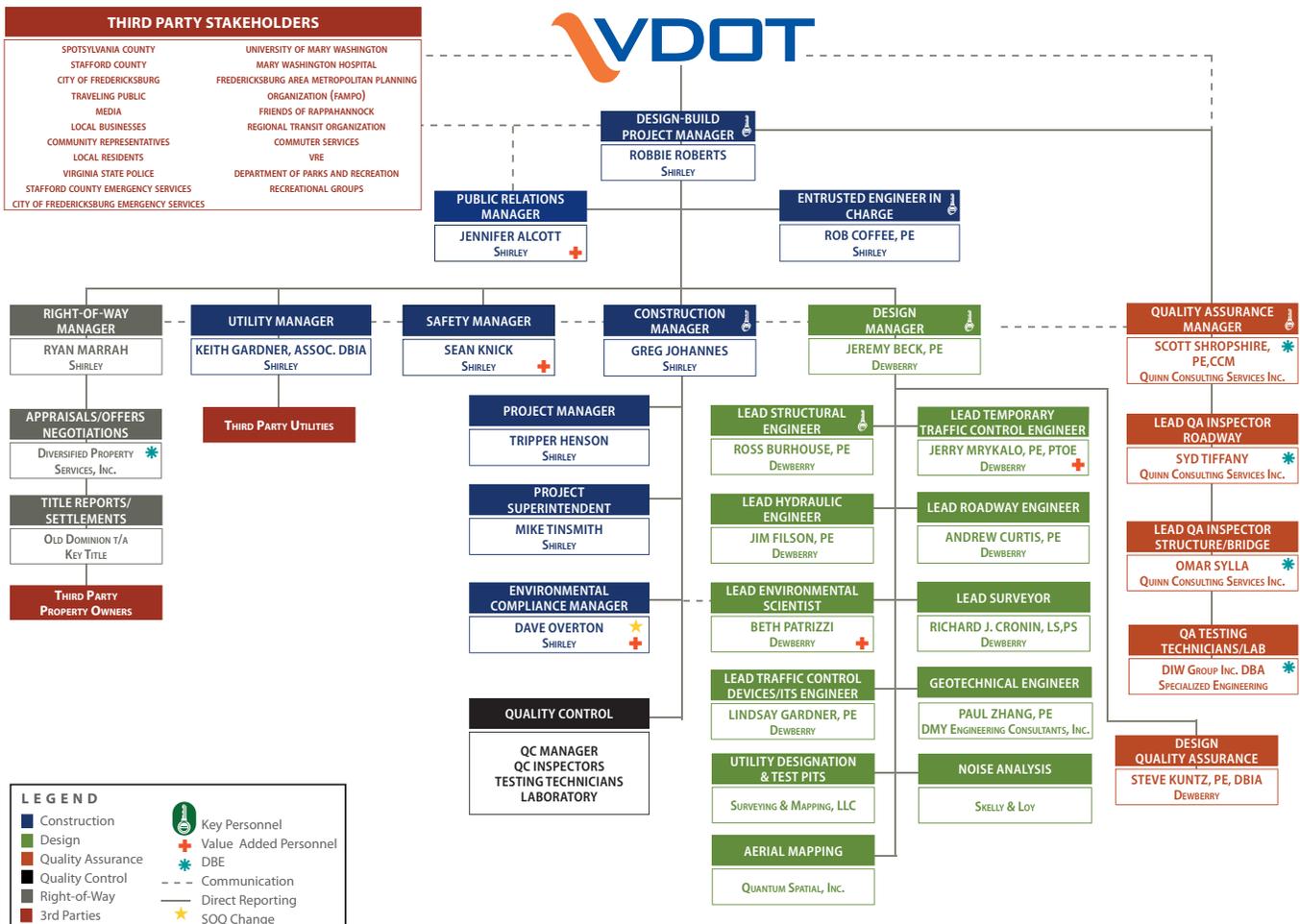
4.2 Offeror's Qualifications

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 Dave Overton who has been assigned to the Project as the Environmental Compliance Manager. Dave is replacing Chris Monahan, as he is no longer with Shirley Contracting Company, LLC. This change was approved by VDOT on January 29, 2020.

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 name change for the Environmental Compliance Manager, as described in Section 4.2.1. As there are no changes to the functional relationships among the participants, an updated narrative is not required.



4.3 - Design Concept

4.3 Design Concept

Introduction

The I-95 Northbound Rappahannock River Crossing Project (Project) provides a unique and exciting opportunity for our Team to demonstrate our design-build experience while focusing on critical Project risks and achieving VDOT defined Project Priorities, as summarized in Figure 4.3.1. To address these challenges, our Team thoroughly reviewed the Request for Proposal (RFP), including all addenda, conducted numerous site visits, explored multiple design concepts, interacted with VDOT at our Proprietary Meetings, and developed risk mitigating solutions.

Throughout the preparation of this Technical Proposal, our Team held weekly meetings with all disciplines to review and integrate all scope elements. We focused considerable effort identifying, categorizing, and mitigating risk items, exploring Alternative Technical Concepts (ATC's), discussing approaches to minimize impacts and reduce costs, all while enhancing safety, mobility, and constructability.

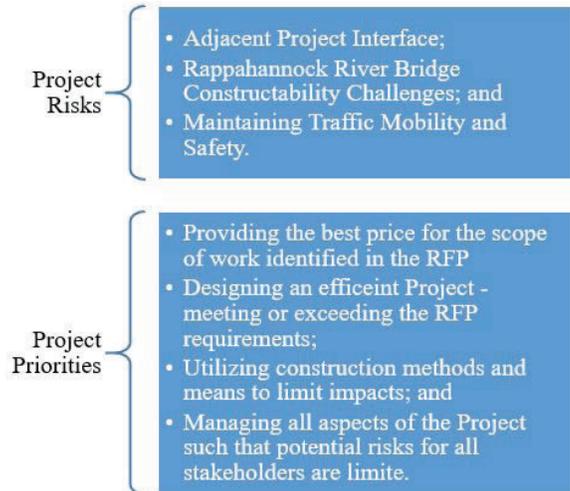


Figure 4.3.1 - Project Risks and Priorities

As a result, our Team formulated numerous Design Enhancements to the RFP Conceptual Plans which are depicted on Figure 4.3.2 at the end of this section and shown in detail within our Technical Proposal Volume II – Design Concept (Volume II Design Concept). Our Team confirms that our Technical Proposal:

- Meets or exceeds all requirements listed in the Design Criteria Table;
- Ensures that the limits of construction, including all potential SWM facilities, are within the existing/proposed right-of-way limits shown in the RFP Conceptual Plans with the exception of permanent and temporary easements; and
- Incorporates design elements that do not require Design Exceptions and/or Waivers unless they are identified or included in the RFP or Addendum.

4.3.1 Conceptual Roadway Plans

(a) General Geometry

Our proposed geometry, including that of Options #1, #2 and #3, have been prepared in accordance with the criteria identified in the Geometric Design Criteria Table (Attachment 2.2) of the RFP. Our Volume II Design Concept is similar to the RFP Conceptual Plans, except that geometric enhancements are implemented to benefit end users, particularly in terms of safety, operations, schedule, construction, and public acceptance. Table 1 provides a summary of our provided geometric design.

Table 1 - General Geometry Summary

Roadway	Classification	Design Speed (mph)	Min. Curve Radius (ft)	No. Thru Lanes	Width of Thru Lanes (ft)	Width/Paved Left Shoulder (ft)*	Width/Paved Right Shoulder (ft)*
NB I-95 GP Lanes (on new alignment, south of Route 17)	Interstate	75	2,215	3	12	10	10

4.3 Design Concept

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NB I-95 GP Lanes (north of Route 17)	Rural Principal Arterial (Interstate)	75	2,215	3	12	10	10
NB I-95 Slip Lanes	Interstate	75 **	2,215	2	12	10	10
NB I-95 CD Lanes (on new alignment or on existing CD Lanes)	Interstate	70	1,821	3	12	10	10
NB I-95 CD Lanes (on existing I-95 GP Lanes south of Route 17)	Rural Principal Arterial (Interstate)	75	2,215	3	12	10	10
Warrenton Road (Route 17)	Urban Principal Arterial (Other with Shoulder Design)	45	713	6 ***	12 ^	Raised Median	8
NB Route 3 Ramp C	Interchange Ramps	60	1,204	2	12	4	10
Route 17 Ramp B	Interchange Ramps	45	589	2	12^^	4	8
Route 17 Ramp D	Interchange Ramps	50	760	3	12^^	4	8
Route 17 Loop B	Interchange Ramps	35	316	1	18	4	8
Route 17 Loop D	Interchange Ramps	30	215	1	18	4	8
Route 17 Ramp C1	Interchange Ramps	25	135	1	18	4	8
Route 17 Ramp C2	Interchange Ramps	50	760	1	16	4	8
FredEx Ramp HWN Extension to NBCD	Interchange Ramps	55	960	1	16	4	8
NB I-95 GP Lanes (Option #1)	Rural Principal Arterial (Interstate)	75	2,215	3	12	10	12
NB I-95 CD Lanes (Option #2)	Interstate	70	1,821	3	12	10	10

* When guardrail (or barrier) is required, shoulder widths and limits of paving shall be increased in accordance with Standard GR-MGS-INS and Standard MC-4. See Typical Sections.

** Enhancement provided by our Team.

*** Three lanes in each direction.

^ Eleven foot lanes through Sanford Drive/South Gateway Drive intersection.

^^ Pavement widths widened for horizontal curvature.

(b) Horizontal Alignments

Proposed horizontal alignments, including curve data and associated design speeds, and the number and widths of travel lanes and shoulders for each Project roadway, have been presented within our Volume II Design Concept. Existing conditions and information about barrier locations and types, retaining wall locations, existing and proposed soundwalls, bridges, drainage elements, pavement information, provision for the Future 4th Lane on I-95, and other relevant data are also depicted. Appropriate notes and other call-outs have been provided along with information describing and depicting Options #1, #2 and #3. The horizontal alignments meet or exceed the Project envisioned scope and benefit VDOT and the public by reducing overall impacts, enhancing construction productivity and maximizing safety and operations. This is accomplished by providing enhancements that exceed the RFP requirements, as presented in Figure 4.3.2.

To provide benefits to VDOT and the public, our Team optimized horizontal alignments in six distinct locations as discussed in detail below. The adjustments made to the RFP Conceptual Plans are seen in the

Layered PDF files provided which depict plan views of our Volume II Design Concept overlaid with the RFP Conceptual Design.

1. Northbound Route 3 Ramp C

Between the existing Route 3 On-Ramp to Northbound (NB) I-95 and the Cowan Boulevard overpass, the proposed NB Route 3 Ramp C horizontal alignment is shifted towards the existing NB I-95 travel lanes by as much as nine feet to maximize the reuse of pavement recently installed with the I-95 Safety Improvements at Route 3 Project. This allows our Team to minimize earthwork and reduce right-of-way impacts along the outside of NB I-95 as shown in Figure 4.3.1.1 (*Enhancement 001*). This adjustment accounts for the Future 4th Lane on NB I-95 while establishing full-width shoulders, a traversable ditch section that facilitates surface and subsurface runoff and a 34' Clear Zone between the ramp and the Future 4th Lane on NB I-95.

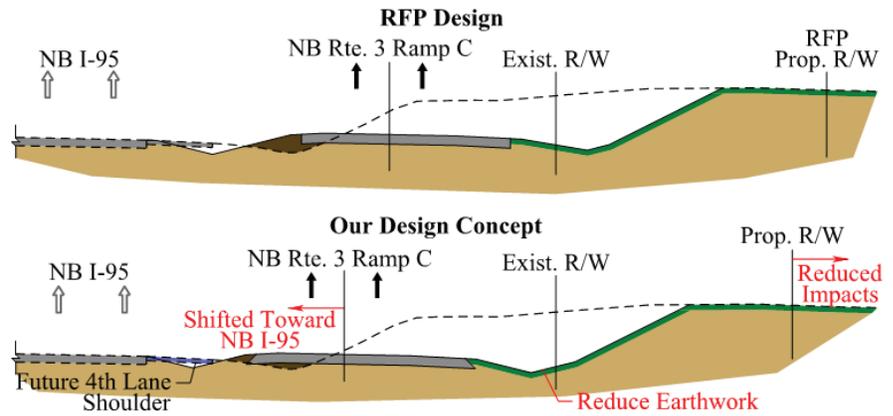


Figure 4.3.1.1 - NB Route 3 Ramp C Horizontal Shift Towards NB I-95

2. Northbound I-95 Slip Lanes

Beginning approximately 700 feet south of the existing Fall Hill Avenue overpass, the NB Route 3 Ramp C horizontal alignment is optimized in conjunction with the configuration of the NB I-95 Slip Lanes and associated NB I-95 General Purpose (GP) and Collector-Distributor (CD) alignments. North of the Fall Hill Avenue overpass, the NB I-95 GP Lanes are shifted towards the Southbound (SB) I-95 GP Lanes currently under construction as part of the I-95 SB CD Lanes - Rappahannock River Crossing Project (I-95 SB RRC), such that the two barrels of roadway become concentric to and immediately adjacent to one another.

The horizontal adjustment of the NB I-95 GP Lanes facilitates the reconfiguration of the NB I-95 Slip Lanes, providing a 75 mph design speed, while simultaneously enabling NB Route 3 Ramp C to converge with the existing traveled way much further south when compared to the RFP Conceptual Design. These geometric adjustments facilitate *Enhancements 004, 005 and 006* as shown in our Volume II Design Concept while providing the same number of travel lanes and merge lengths as the RFP Conceptual Plans.

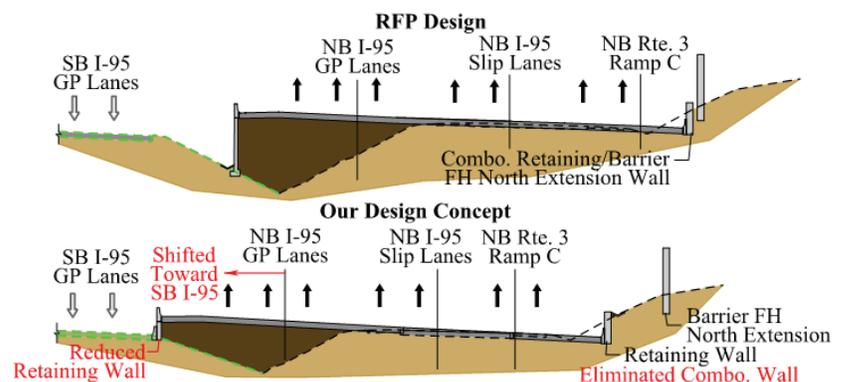


Figure 4.3.1.2 - NB I-95 GP Lane, Slip Lane, and NB Route 3 Ramp Optimization

As shown in Figure 4.3.1.2, these modifications eliminate a combination retaining/soundwall that would have been necessary to implement in the RFP Conceptual Design for Barrier FH North Extension *and reduce the retaining wall between the NB and SB barrels of I-95 north of Fall Hill Avenue by over 22,000 square feet*. Additionally, the horizontal adjustments facilitate a depressed median between the NB I-95 GP and CD Lanes approaching the Rappahannock River - the advantages of which are discussed in

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the sections below.

As shown in Figure 4.3.1.3, **Enhancement 003** provides future median barrier and drainage elements between NB Route 3 Ramp C and NB I-95 in their ultimate locations for the Future 4th Lane on NB I-95. Specifically, approaching the existing Fall Hill Avenue overpass from the south, our Volume II Design Concept retains the NB Route 3 Ramp C horizontal geometry, but replaces two separate runs of guardrail between the ramp and NB I-95, as shown in the RFP Conceptual Plans, with concrete median barrier. In addition to constructing median barrier in its ultimate location, our enhancement eliminates a median ditch and locates drop inlets and storm sewer where required for the Future 4th Lane improvement. This **reduces VDOT's future construction costs and traffic impacts**.

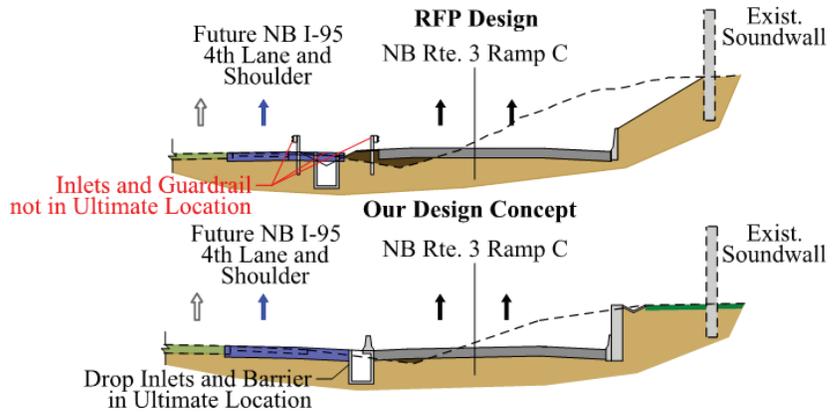


Figure 4.3.1.3 - Enhanced Median Condition Between NB Route 3 Ramp C and NB I-95

3. Northbound I-95 GP/CD Lanes South of the Rappahannock River

Between the NB I-95 Slip Lanes and the Rappahannock River, the NB I-95 GP Lanes are shifted to be directly adjacent to, concentric with and generally at the same elevation as the SB I-95 GP Lanes currently under construction as part of the I-95 SB RRC Project as shown in Figure 4.3.1.4 (**Enhancement 007**). At the same time, we also shifted the four-lane section of the NB I-95 Slip Lanes to the south to minimize impacts outside of NB I-95. Not only do these horizontal adjustments reduce the necessary retaining wall between the NB and SB I-95 barrels, they also reduce the vertical bifurcation between the SB and NB I-95 GP Lanes and facilitate a depressed median between the NB I-95 GP and CD Lanes.

The depressed median considerably reduces the overall drainage infrastructure necessary to collect and route runoff by implementing open channel flow in lieu of closed drainage systems along NB I-95, **reducing future VDOT inspection, maintenance, and construction costs**.

The depressed median also reduces the overall impervious area, decreasing the amount and velocity of water at certain outfalls. Because the median within this area varies between MB-7F just north of the NB I-95 Slip Lanes, to depressed median, and then back to MB-7E just south of the Rappahannock River, opportunity to further reduce impervious area within the MB-7E exists by eliminating the concrete cap and replacing it with pervious material.

As the NB I-95 GP alignment approaches the Rappahannock River, it is located to center the proposed bridge (B609) between the existing NB I-95 Bridge and the SB I-95 GP Lanes Bridge currently being constructed as part of the I-95 SB RRC Project (**Enhancement 013**). **Centering bridge B609 enhances constructability and ensures VDOT inspection and maintenance operations can easily reach the underside of the superstructure from the deck without the need to purchase or rent specialized equipment.**

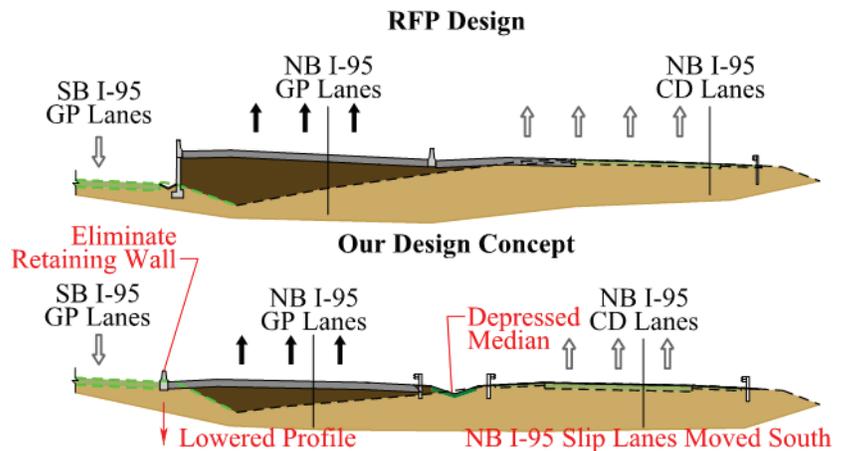


Figure 4.3.1.4 - NBI-95 GP/CD Lanes Configuration South of the Rappahannock River

4. Northbound I-95 GP/CD Lanes North of the Rappahannock River

During our review of the RFP Conceptual Plans, we noticed that the median widths on either side of the NB I-95 GP Lanes, north of the Rappahannock River, would not be wide enough nor deep enough to outfall the SB I-95 drainage elements currently being constructed. Moreover, to achieve proper freeboard, the narrow median ditches would require concrete lining and multiple drop inlets. These would have increased the construction cost and VDOT’s long-term maintenance responsibilities.

To address these concerns, our Team shifted the NB I-95 GP Lanes to be directly adjacent to, concentric with and generally at the same elevation as the NB I-95 CD Lanes (existing NB I-95) as shown in Figure 4.3.1.5 (Enhancements 007 and 012).

This adjustment retains as much of the depressed median between the NB and SB I-95 barrels as possible and minimizes impacts to drainage elements associated with the I-95 SB RRC Project. *This optimization considerably reduces the overall drainage infrastructure necessary to collect and route runoff (open channel flow versus closed system), reduces the overall impervious area, decreases the volume and velocity of water at certain outfalls, and minimizes water quality treatment requirements.*

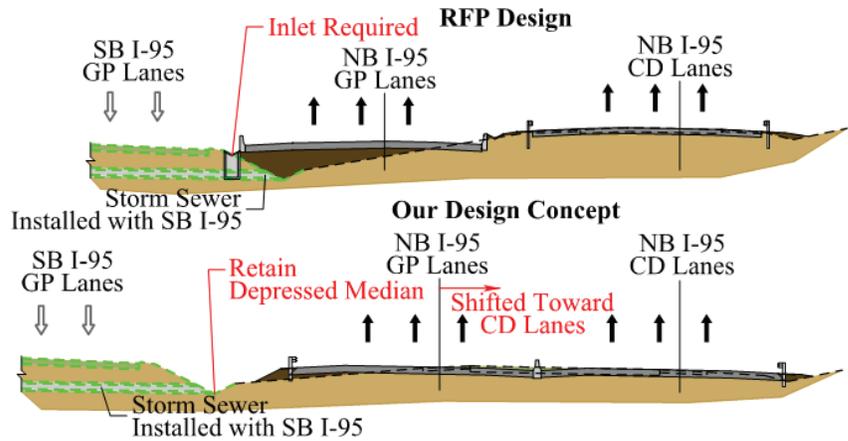


Figure 4.3.1.5 - NB I-95 GP/CD Lanes Configuration North of the Rappahannock River

5. Route 17 Interchange

At the Route 17 Interchange, our Concept implements two different geometric adjustments that increase safety and operations while minimizing right-of-way impacts along Ramp D.

The first adjustment shifts the NB I-95 CD Lanes towards the GP Lanes just south of the Route 17 Ramp D diverge as shown in Figure 4.3.1.6 (Enhancement 008). This shift provides more width to the outside of the CD Lanes such that three full-width through lanes and a full-width deceleration lane are implemented on the CD roadway approaching the ramp diverge. Similar to the RFP Conceptual Plan, two lanes will diverge towards Route 17 and two lanes will continue on the CD lanes; however, the choice lane configuration associated with the RFP Conceptual Plans will be eliminated. The proposed configuration allows for deceleration prior to the diverge without impacting through traffic on the CD lanes, while offering a 15-20% reduction in density during the peak hour in year 2042. Existing pavement already exists in this area and will be milled and overlaid as required to provide the auxiliary lane.

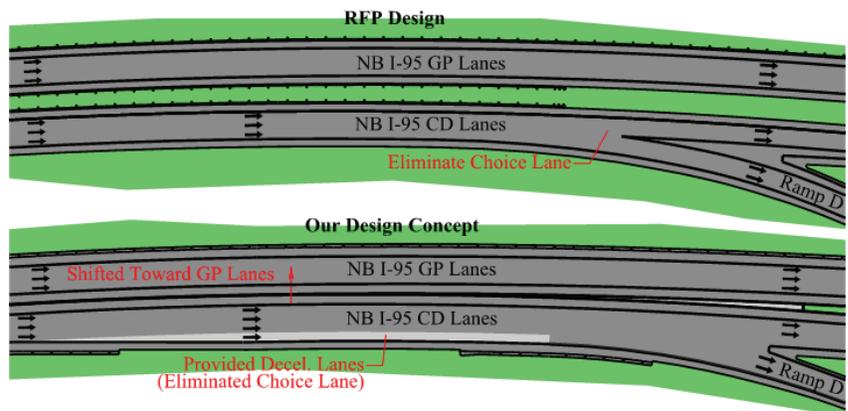


Figure 4.3.1.6 - Deceleration Lane on NB I-95 CD Lanes at Route 17 Ramp D

The second horizontal modification (Enhancement 009) shifts Route 17 Ramp D towards existing Loop D by as much as 17’ when compared to the RFP Conceptual Plans and *eliminates right-of-way impacts*

4.3 Design Concept

to six parcels. When combined, these two changes facilitate a flatter Ramp D diverge curve with a 1,210 foot radius in lieu of the compound curves of 954 and 814 foot radii envisioned within the RFP Conceptual Plans. The lane configuration of Ramp D continues to provide triple lefts and a single right at Route 17 and are widened in accordance with AASHTO Green Book Tables 3-26b and 3-27. ***These improvements will provide benefits to the public in terms of safety, operations and right-of-way impacts.***

6. Route 17

Along Route 17, our Team implemented horizontal adjustments to the Ramp D and Ramp B terminals. Specifically, the intersection turning radii at each ramp terminal are increased to better accommodate the Design Vehicle and the anticipated vehicle speeds approaching the intersections during free-flow conditions. These are highlighted in ***Enhancements 015 and 016*** within our Volume II Design Concept, and allow partial Z Recovery Areas to be implemented on Route 17 at ramp gore areas while still achieving the desired lane configuration.

For Option #3, our Team is providing curb and gutter and sidewalk immediately adjacent to Route 17 between Ramp B and the existing box culvert beneath Route 17, along with a small retaining wall over the box culvert as shown in Figure 4.3.1.7 (***Enhancement 011***). ***This eliminates a box culvert extension, two stream impacts, and impacts to an existing 12 inch sanitary force main.***

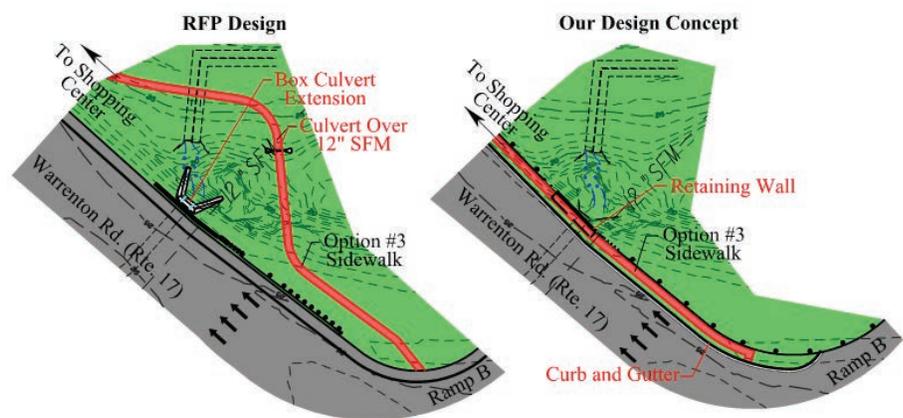


Figure 4.3.1.7 - Option #3 Enhancement 011

(c) Maximum Grades

Since nearly all of the existing roadways within the Project Limits are being utilized again, spline graded vertical profiles have been implemented for a large portion of the Project. These vertical alignments not only facilitate the establishment of appropriate superelevation and ensure proper pavement drainage, they will maximize the reuse of existing pavement, minimize pavement build-up and facilitate construction sequencing. Many of the maximum grades established for the Project are the same as the existing grades, which are in accordance with the established Project criteria.

Where portions of new roadways depart from the existing travel way, vertical profiles are established in accordance with the applicable criteria that will maximize safety and sight distance, accommodate drainage requirements, ensure bridge clearances, reduce adjacent impacts and facilitate construction. Three new vertical profiles locations will be established to include NB Route 3 Ramp C between the Route 3 interchange and the proposed NB I-95 Slip Lanes, NB I-95 GP Lanes between the NB I-95 Slip Lanes and the Rappahannock River, and should VDOT implement Option #2, a portion of the NB I-95 CD Lanes over Route 17 and Route 17 Loop D.

Maximum grades are summarized in Table 2 on the following page. These grades have been closely coordinated with existing and proposed conditions to maximize design efficiency and safety while minimizing asphalt build-up and facilitating construction activities.

Table 2 - Maximum Grades

Roadway	Maximum Grade	Maximum Allowable Grade	Location
NB I-95 GP Lanes	4.0	4.0	Sta. 4516+00.00 to Sta. 4524+80.18
NB Route 3 Ramp C	2.2	5.0	Sta. 5469+75.00 to Sta. 5473+75.00
NB I-95 Slip Lanes	1.7	4.0	Sta. 7005+40.35 to Sta. 7006+40.80
NB I-95 CD Lanes	3.5	4.0	Sta. 5610+00.00 to Sta. 5635+00.00
Route 17 (Warrenton Road)	1.4	7.0	Sta. 8027+00.00 to Sta. 8033+00.00
Route 17 Ramp B	2.3	5.0	Sta. 603+08.03 to Sta. 609+00.72
Route 17 Ramp D	1.0	5.0	Sta. 703+85.23 to Sta. 711+23.83
Route 17 Loop B	2.1	7.0	Sta. 11+00.00 to Sta. 12+00.00
Route 17 Loop D	2.6	7.0	Sta. 309+75.00 to Sta. 312+00.00
Route 17 Ramp C1	2.0	7.0	Sta. 202+09.58 to Sta. 203+68.96
Route 17 Ramp C2	2.4	5.0	Sta. 105+00.00 to Sta. 106+00.00
FredEx Ramp HWN Extension to NBCD	2.4	4.0	Sta. 6011+00.00 to Sta. 6021+00.00
NB I-95 GP Lanes (Option #1)	1.0	4.0	Sta. 4716+00.00 to Sta. 4726+00.00
NB I-95 CD Lanes (Option #2)	3.3	4.0	Sta. 5608+50.00 to Sta. 5617+00.00

(d) Typical Sections

Typical Sections for each Project roadway, including those of Options #1, #2 and #3, are provided within our Volume II Design Concept. The Typical Sections detail existing and proposed conditions including the number and width of lanes and shoulders, barrier locations and types, retaining wall locations and configurations, ditch geometry, underdrain locations, pavement information, rumble strip locations, the Future 4th Lane on NB I-95, and bridge structures. The Typical Sections meet or exceed the Project scope and benefit the public by providing safe and efficient travel corridors while minimizing impacts. For example, as shown in *Enhancement 002 and 010*, our Team provides Rumble Strips on both sides of Route 3 Ramp C for enhanced safety. In addition, our Team provides wider separation between Route 17 and the pedestrian facility (Option #3) for improved drainage and safety.

Standard Flexible Pavement (**Alternative 1**) is implemented by our Team for new and widened pavement. Mainline pavement designs extends through the shoulder areas and the demarcation marking the location of the FredEx pavement section has been provided.

(e) Conceptual Hydraulic and Stormwater Management Design

Our Team performed preliminary Hydrologic and Hydraulic Analysis (H&HA) for the I-95 GP Lanes over the Rappahannock River Bridge (B609), the associated causeway, and the extension of the triple box culvert conveying Falls Run just north of the Route 17 interchange. We also reviewed the Pipe Inspection and Assessment Report provided by VDOT to identify and categorize the conditions of existing pipes to be used as functional elements of the final design. Our effort ensures that practical solutions are provided that limit upstream and downstream impacts and address our construction sequence. We also focused

on optimal conveyance systems which efficiently utilize I-95 SB RRC Project culverts and storm sewer systems in combination with existing and proposed pipe networks.

I-95 GP Lanes over the Rappahannock River Bridge (B609)

Rappahannock River Bridge (B609) piers align with the existing NB bridge to ensure hydraulic conveyance is not impeded. During final design, our Team will complete a H&HA and scour analysis for B609 to account for the existing upstream and downstream bridges and Bridge (B609). Based on our review of available information, scour resistant hard gneiss and granite are anticipated to be encountered at the foundation locations.

Rappahannock River Causeway

The causeway currently in place for the I-95 SB RRC Project will be utilized to the greatest extent possible when constructing B609 to minimize impacts to the Rappahannock River. However, based on the location of B609 between the existing bridges, the causeway must be modified to facilitate construction. The modification will begin with the installation of a downstream causeway finger, shown as dark riprap in Figure 4.3.1.8, just north of the North Channel. It will be installed outside the Time of Year Restriction (TOYR) to access construction of Pier 6 and other “on-land” construction elements of B609.

After I-95 SB RRC bridge construction is complete and B609 Piers 6 and 7, Abutment B, and the associated girders are in place, the portion of the existing and modified causeway on the north side of the North Channel will be removed. This will allow unimpeded fish passage and recreational use within the North Channel for the remainder of construction.

Simultaneously, the existing upstream causeway fingers, south of the North Channel, will be relocated to the downstream side of the causeway to access construction of B609 Piers 3, 4 and 5. New hydraulic crossings will be added to the causeway as shown in Figure 4.3.1.9 (dark riprap and new hydraulic crossings). Once construction of B609 is completed, the causeway will be removed in its entirety.

Box Culverts

The triple box culvert conveying Falls Run, just north of the Route 17 interchange, is extended at its current skew for approximately 18’-24’. As shown in Figure 4.3.1.10, the southern wingwall angle is modified to avoid directly impacting or impeding future access to the existing 30 inch sanitary line similarly to what was shown in RFP Conceptual Plans, but without including a complicated bend within the box culvert. During final design our Team will complete a H&HA of the triple box and catalog the repairs as required by the RFP.

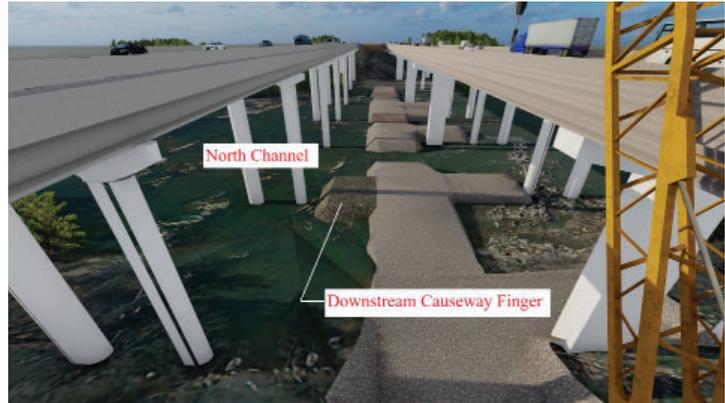


Figure 4.3.1.8 - First Causeway Modification Looking South, North Channel in the Middle

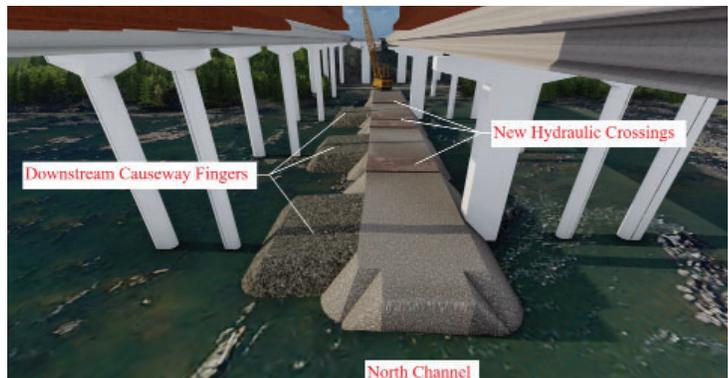


Figure 4.3.1.9 - Second Causeway Modification Looking South, North Channel in the Forefront

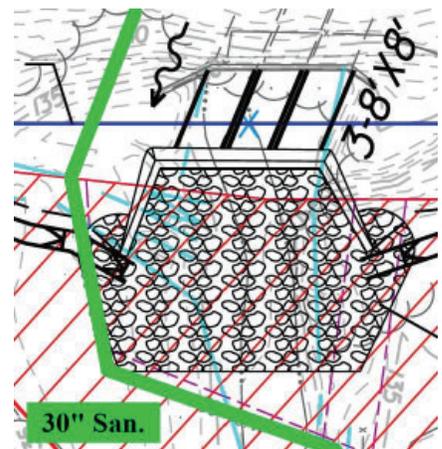


Figure 4.3.1.10 - Triple Box Culvert Wingwall Modification

4.3 Design Concept

Option #1 widens NB I-95 over 6' x6' box culverts. ***To avoid environmental impacts and limit disturbances***, our Team provides small retaining walls at the shoulder hinge point to avoid the box culvert extensions (***Enhancement 029***).

Storm Drainage and Underdrain

Roadway drainage infrastructure, inclusive of Options #1, #2 and #3, is provided to maximize safety and appropriately convey flow from existing and proposed roadway surfaces into closed storm sewer systems or open ditches. Runoff is then directed to treatment facilities and outfalls, ensuring water quality and quantity requirements are addressed. Computations demonstrating the adequacy of roadway and bridge deck drainage elements will be developed as part of the overall Project design and will be submitted for review and approval with each plan submission. Proposed drainage divides generally adhere to the existing divides and utilize existing systems and ditches where possible, minimizing impacts and overall construction costs.

Our Team optimized various roadway alignments and features to minimize the use of closed drainage systems as much as possible. However, due to the scope of improvements, a combination of open and closed drainage systems, utilizing non-metal pipes for permanent installation, are implemented. We examined the drainage elements currently being installed with the I-95 SB RRC Project and made certain modifications to our concept to ensure drainage infrastructure along both barrels of I-95 work in combination with one another. Furthermore, pipe rehabilitation is accounted for to ensure the structural and hydraulic capacity of existing storm sewer and culverts that are utilized as part of functional drainage systems. Underdrain is implemented as required and our Team plans to utilize double-wall, smooth interior, HDPE underdrain (***Enhancement 030***) to resist crushing during construction.

Stormwater Management Facilities

Stormwater Management (SWM) facilities are designed in accordance with Virginia Department of Environmental Quality (DEQ) II-C Criteria. Our Team has optimized the SWM design to ensure that water quality and quantity requirements are met while reducing future maintenance requirements. Our stormwater design utilizes the FredEx and I-95 SB RRC projects as “existing conditions.”

Our SWM approach focuses on locations which receive large amounts of runoff in order to support higher efficiency BMP's and reduces the overall number of BMP's. ***Our concept reduces the number of proposed SWM facilities as identified in the RFP Conceptual Plans by nearly 75%*** by improving the type and placement of each SWM facility and by retrofitting existing basins to provide increased treatment (***Enhancement 017***).

All stormwater facilities are located within the Route 3 and Route 17 interchanges. By locating facilities within interchanges, ***our approach eliminates right-of-way acquisition associated with stormwater management***. This also allows for safe ingress/egress for maintenance. The treatment achieved by the proposed facility in the northeast quadrant of Route 17 interchange is optimized, as shown in Figure 4.3.1.11, by reversing the flow of an existing drainage crossing in order to collect and treat more runoff from I-95. This reduces

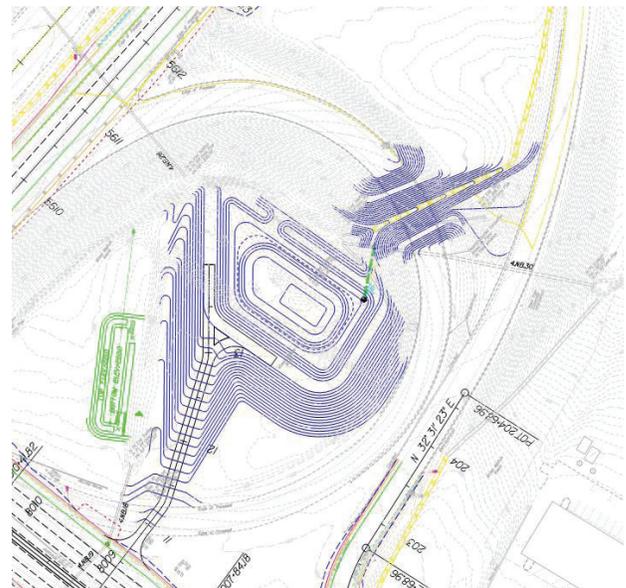


Figure 4.3.1.11 - Plan View of Pond in Route 17 Interchange Loop

long-term maintenance and right-of-way requirements.

Our methodology facilitates the ***elimination of all dry swales and bioretention facilities*** proposed in the RFP Conceptual Plans, which would have been costly to build, inspect, and maintain due to the filter media. Our Team’s design also implements minor retrofits to two existing stormwater basins which provide several pounds of treatment without increasing maintenance requirements for VDOT, takes advantage of available nutrient credits and overtreatment from adjacent projects and provides enough water quality treatment to address Options #1, #2 and #3.

There are approximately 20 locations where concentrated flow leaves the Project site which will be analyzed using MS-19 outfall criteria. Our proposed SWM facilities provide additional detention to achieve water quantity requirements. Option #1, if implemented by VDOT, adds an additional five outfalls which will be analyzed during final design.

(f) Proposed Right-of-Way Limits

As described throughout our Technical Proposal, our enhancements minimize right-of-way impacts in several locations. In fact, as shown in Table 3, ***our Team reduces the overall fee simple right-of-way acquisition area by over one acre and eliminated impacts to eight parcels***. Table 3 does not include the right-of-way areas to be acquired by VDOT for the FredEx overlap area.

Limited Access (L/A) adjustments are in accordance with the RFP Conceptual Plans and as shown in our Volume II Design Concept. The L/A adjustment shown in the southeast quadrant of the I-95/Route 3 interchange is not needed by our Team based on our stormwater management approach. Our Team will be responsible for the Commonwealth Transportation Board (CTB) approval for changes in the L/A, including those associated with Option #1.

Table 3 - Right-of-Way Reduction Summary

Parcel	VDOT Assigned Parcel Number	Fee Simple ROW Required (acre)	Fee Simple ROW Eliminated (acre)	Justification
Village of Idlewild Homeowner’s Association, Inc. (GPIN 7768-87-0632)	004	1.23	N/A	N/A
Village of Idlewild Homeowner’s Association, Inc. (GPIN 7768-87-0632)	005	0.41	N/A	N/A
Hylton Venture LLC (GPIN 7769-94-7825)	012	2.34	0.69	Shift Route 3 Ramp C Towards NB I-95 (<i>Enhancement 001</i>)
Bragg Hill Community Corporation (GPIN 7769-99-0343)	036	0	0.13	Optimize NB I-95 Slip Lane Configuration (<i>Enhancement 004</i>)
Ronald Reginald Watts (PIN 27526)	047	0	0.03	Optimize NB I-95 GP/CD Lanes Configuration (<i>Enhancement 012</i>)
Canyon Development Company, Inc. (PIN 27543)	049	0	0.25	Optimize Route 17 Ramp D Configuration (<i>Enhancement 009</i>)
Degen, Camille J. (PIN 28062)	052	0	0.01	Optimize Route 17 Ramp D Configuration (<i>Enhancement 009</i>)
Degen, Camille J. (PIN 28061)	053	0	0.07	Optimize Route 17 Ramp D Configuration (<i>Enhancement 009</i>)

Parcel	VDOT Assigned Parcel Number	Fee Simple ROW Required (acre)	Fee Simple ROW Eliminated (acre)	Justification
Ganeshji Inc. (PIN 28095)	057	0.06	N/A	N/A
SAI Group LLC (PIN 27566)	076	0.08	N/A	N/A
I-95 Route 17 Properties LLC (PIN 27561)	078	0	0.03	Design Optimization
Boutchyard Clayton Douglas & Boutchyard Harry Daniel JR (PIN 27959)	091	.02	0	N/A
	Totals	4.12	1.23	

(g) Proposed Utility Impacts

During preparation of this Technical Proposal, our Team focused considerable effort towards minimizing and/or avoiding utility impacts. Not only are Project costs minimized by these efforts, but risk of schedule impacts as well. Specific details of our approach to utility conflicts, avoidance efforts and unavoidable impacts are described in Section 4.4.2.

(h) Soundwall Locations

Our Team considered two separate soundwalls, Barrier C and Barrier FH North Extension, when preparing our Design Concept. We understand that according to Table 6 of the Draft Final Design Noise Analysis, a total of 30,606 square feet of soundwall is to be assumed for Barriers C and FH North Extension to include drystack relief architectural treatment on both sides.

Upon advancement of Project design through the Final Design Noise Analysis, our Team, in conjunction with VDOT, will determine the final soundwall locations and dimensions following applicable criteria and procedures. Upon approval of the Final Design Noise Analysis, VDOT will prepare concurrence letters outlining the results of the analysis for the VDOT Chief Engineer and FHWA. Once concurrence is achieved, our Team will prepare and mail letters to benefitted receptors to ascertain the desire to have soundwalls constructed as part of the Project. Upon completion of the survey, VDOT will prepare a second concurrence letter documenting the results, if necessary.

Based on our optimization efforts, we do not anticipate utilizing soundwalls mounted on retaining walls and/or bridges. Where possible, we will eliminate the need for access doors by providing access via gaps in the walls. We will work to enhance aesthetics and minimize future maintenance by eliminating and/or reducing infrastructure directly adjacent to the soundwalls. In fact, based on the horizontal adjustment our Team made to the NB I-95 Slip Lanes area, we are able to ground mount the Barrier FH North Extension soundwall and eliminate the need for combination retaining/soundwall (due to the offset dimension) as required by the RFP Conceptual Plans (*Enhancement 004*).

(i) Lighting

Roadway lighting is an important safety feature, especially at high conflict point areas such as uncontrolled pedestrian crossings of intersections (Option #3). Recognizing this, we will design and install roadway lighting systems in accordance with Section 2.9.5 of Part 2 of the RFP. Lighting systems will be installed in accordance with VDOT's IIM-TE-390 and IES RP-8 lighting design criteria utilizing AGI32 software.

Preliminary locations have been shown within our Volume II Design Concept.

(j) Guardrail/Barrier

Guardrail, barrier, Bridge Pier Protection Systems (BPPS) and their associated terminals proposed by our Team will meet Manual for Assessing Safety Hardware (MASH) requirements. These elements are provided, as shown on the Typical Sections and Roadway Plans within our Volume II Design Concept, where the result of striking a fixed object hazard or leaving the roadway would be more severe than the consequence of striking the barrier. Our Design Concept has been optimized to minimize the need for guardrail, barrier and BPPS, maximizing public safety and reducing VDOT's future maintenance requirements.

In accordance with the RFP Conceptual Plans, the existing concrete median barrier along Route 17 is removed and replaced with variable width raised concrete median between Sanford Drive/South Gateway Drive and Short Street. Because the hazards associated with the I-95 overpass piers within the Route 17 median cannot be eliminated, transitions

from the MB-7F and BPPS to the proposed raised concrete median will be implemented as shown in Figure 4.3.1.12. This is accomplished by first tapering the BPPS to a standard concrete median barrier and installing an appropriate impact attenuator. Then, the proposed raised concrete median is terminated upstream of the impact attenuator to provide a clear, flat approach to the impact attenuator optimizing safety.

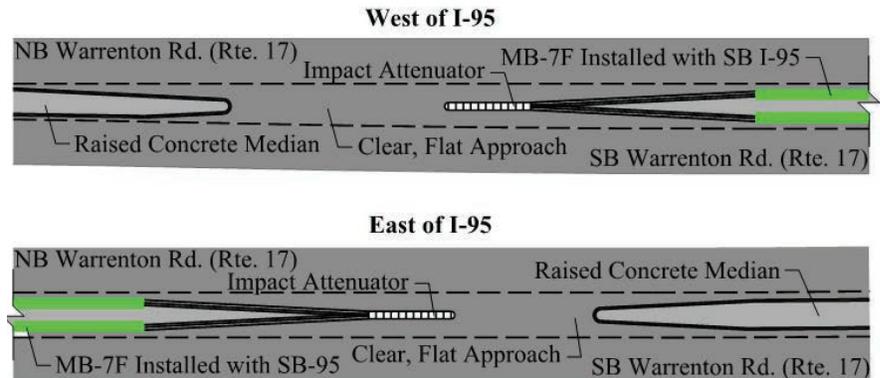


Figure 4.3.1.12 - Transition from BPPS to Raised Concrete Median on Route 17

Should VDOT implement Option #3, our Team will extend the run-on protection along the outside of NB Route 17 necessary to shield elements of the NB I-95 CD Lanes bridge over Route 17, from what was envisioned within the RFP Conceptual Plans, ensuring the safety of vehicles and pedestrians beneath the overpass.

(k) Locations of Mill and Overlay/Build-up of Existing Pavement/New Pavement

Locations of mill and overlay/build-up of existing pavement and that of new full depth pavement have been depicted in detail within our Volume II Design Concept. For clarity, full depth asphalt pavement has been shown in dark grey while asphalt mill and overlay/build-up has been shown in tan. As a large portion of existing pavement is reutilized, spline vertical profiles are implemented, maximizing the reuse of existing pavement while minimizing asphalt build-ups and facilitating traffic switches and safety during construction.

Limits of mill and overlay on the existing NB I-95 GP Lanes begin at the southern limit of the NB I-95 Slip Lanes, proceed through the areas where the GP Lanes are converted to CD Lanes, and terminate with the new pavement currently being constructed for NB I-95 as part of the I-95 SB RRC Project, just south of Route 17. North of Route 17, mill and overlay on the existing NB I-95 GP Lanes begins again where the new pavement currently being constructed for NB I-95, as part of the I-95 SB RRC Project, ends and terminates at the northern limit of the Project, which may include Option #1.

Limits of mill and overlay on the existing NB I-95 CD Lanes, Route 17 and the existing Route 17

interchange ramps are generally in accordance with the RFP Conceptual Plans - as shown in our Volume II Design Concept. To accommodate the removal of the existing median barrier and replacement with raised median along Route 17, and to be compliant with Standard WP-1, our Team incorporates mill and overlay of a significant portion of the inside lane of Eastbound Route 17 which is not currently shown in the RFP Conceptual Plans.

As a result of our Team's enhancement to Route 17 Ramp D, Route 17 Loop D is milled and overlaid in its entirety, (***Enhancement 014***), regardless of Option #2 being implemented by VDOT.

(l) Signage

A Conceptual Signing Plan, in accordance with the RFP requirements, has been developed and presented within our Volume II Design Concept. The signs shown reflect proposed guide signs, DMS signs, and specific service signs. Advance and Exit Direction interchange guide signs along I-95 are mounted on overhead structures. Final design of all signs will follow the principles and requirements of the MUTCD, 2011 Virginia Supplement to the MUTCD, the VDOT Traffic Design Manual, and all other applicable criteria. Our Team will closely coordinate the design of Express Lanes signs with the FedEx Project to ensure all signing is in place prior to Express Lanes opening and to allow for the continuous maintenance of Express Lanes signs.

(m) Provision for Future 4th Lane on Northbound I-95

Our Team's Design Concept has been developed to ensure that the Future 4th Lane on NB I-95 could easily be installed between Exit 126 and the proposed NB I-95 Slip Lanes. We have ensured that the Future 4th Lane improvement will accommodate a 12 foot wide travel lane and a 12 foot wide shoulder and that it will not require adjustments to NB Route 3 Ramp C installed with this Project nor the established right-of-way limits. For clarity, the Future 4th Lane on NB I-95 has been shown in blue within our Volume II Design Concept.

At the entrance to the proposed NB I-95 Slip Lanes, the Future 4th Lane improvements would become the rightmost travel lane of the Slip Lane entrance. This entrance lane will be provided as part of the current Project between the Slip Lanes and the Fall Hill Avenue overpass. From the Fall Hill Avenue overpass to approximately 1,500' to the south, a concrete barrier will be provided as part of the current Project between the existing NB I-95 travel lanes and proposed NB Route 3 Ramp C (***Enhancement 003***). This barrier, and associated drainage elements, facilitate the current and future conditions associated with the implementation of the Future 4th Lane. ***This Design Enhancement reduces current impacts, facilitates Future 4th Lane construction, and minimizes future costs ensuring long-term asset performance and durability.***

(n) Other Key Project Features

Intelligent Transportation System (ITS)

While ITS systems are critical to operational and incident management features of any interstate project, they are especially important for this Project given that FedEx Express Lane ITS systems extend to within the limits. This includes features such as existing overheight detection system, CCTV cameras, fiber optic cable in conduit, DMS signs, Toll Rates Signs (TRS), and access gate systems. We recognize that some of these systems are VDOT owned and operated, while some will be Express Lanes operated. Maintenance of continuous operations of these ITS devices are critical, as the FedEx Express Lanes are planned to open mid-way through construction of this Project. We fully understand the need to coordinate device design, installation, testing, and commissioning early in the development process in order to provide and maintain this full operability, and avoid relocation of existing devices to the extent possible. The final design of these devices will follow the RFP requirements, the VDOT Road & Bridge Standards and Specifications,

and all other required Standards and Specifications listed in sections 1.7.1 and 2.9.6 of RFP.

4.3.2 Conceptual Structural Plans

Both Bridge B609 over the Rappahannock River, shown in Figure 4.3.2.1, and Bridge B608 over Route 17 (Option #2) will be erected in close proximity to existing infrastructure and/or the bridges currently under construction for the I-95 SB RRC Project. Therefore, constructability and functionality in terms of future inspection and maintenance were major factors in the design of our bridge configurations. Our Team evaluated multiple configurations and alternatives for each bridge, including various span arrangements, abutment locations, superstructure types, and means and methods of construction. Our bridge designs will benefit VDOT and the public by reducing costs, minimizing traffic and environmental impacts during construction, reducing schedule risk, and minimizing VDOT’s future inspection and maintenance cost. A description of the two bridges is provided in the narrative below.



Figure 4.3.2.1 - Rappahannock River Crossings at the completion of all Projects Looking North

Northbound I-95 General Purpose (GP) Lanes Over the Rappahannock River (B609)

Constructability was a major driver of our Team’s proposed configuration for the Rappahannock River Bridge (B609). Given the extremely limited work area that will be available between the existing NB bridge and the newly constructed southbound bridge, we found that the span configuration depicted in the RFP Conceptual Plans would pose significant structural steel erection challenges. Following detailed analysis of multiple span configurations, our optimized configuration, (*Enhancement 024*), provides a span arrangement which will improve constructability and future maintenance, reduce the overall length and minimize the time and environmental impacts within the main channel of the Rappahannock River. Table 4 summarizes our Team’s configuration of B609.

Table 4 - B609 Proposed Configuration

Roadway Section	Total Out-to-Out Width	Span Arrangement & Total Length	Abutment Type	Pier Type
12' Left Shoulder 3 - 12' Travel Lanes 12' Right Shoulder	63'-4"	1 Span at 129'-8" 6 Spans at 135'-0" 1 Span at 129'-8" Total Length 1,083'-4"	Virginia Abutment on H-Piles behind MSE Walls	Hammerhead on Spread Footings

Superstructure

The RFP Conceptual Plans propose a 5-span bridge over the Rappahannock with maximum spans of 270 feet, matching those of the adjacent southbound bridge currently under construction. Our Team considered this arrangement but concluded it to be impractical given the logistical constraints. First, the full range of crane movement needed to erect the tall, heavy structural steel girders is prevented by the proximity of the adjacent NB and SB bridges. Second, the overlapping use of the causeway by both projects, and the environmental impacts to the river, proved expansive and problematic. To address these constructability challenges, *our Team developed an approach that utilizes eight shorter spans and significantly lighter structural steel girders that allows using cranes small enough to work within the constrained area.*

4.3 Design Concept

The general construction sequence for B609 is presented in detail within Section 4.5.1, and highlights our approach to address constructability and scheduling concerns. Our approach takes advantage of the existing NB bridge. Through detailed analysis, we have determined that the structure will have adequate capacity to support cranes, positioned over the piers, to erect these lightweight girder pieces from the bridge deck. The ability to set girders from the existing bridge affords greater flexibility to work around the constraints inherent with the causeway below.

As shown in our Volume II Design Concept, our Team's proposed superstructure for B609 consists of eight continuous plate girder spans with a maximum span length of 135'. The bridge deck provides a 60' wide roadway between two 42" tall F-shape parapets, supported on seven girder lines spaced at 9'-8" with 2'-8" overhangs. These shorter span lengths and closer girder spacing, in conjunction with the use of lightweight concrete in the deck slab, permit the individual girder weights to be reduced significantly. Our total bridge length (back to back of abutment backwalls) is 1,083'-4" compared to the RFP Conceptual Design of 1,200'-10". ***Our concept eliminates 117'-6" of bridge length and over 7,400 square feet of bridge deck (Enhancement 024), a substantial savings to VDOT's long-term inspection and maintenance costs.***

Enhancement 013 locates B609 to provide 13' of horizontal clearance between the existing NB bridge and the SB bridge currently under construction to assist with constructability, and to ensure VDOT inspection and maintenance operations can easily reach the underside of the superstructure from the deck without the need to purchase or rent specialized equipment. Our profile of NB I-95 maintains a constant grade along the full length of B609 while keeping the elevations close to the adjacent bridges and locating the low point off the bridge to the north. Scuppers will provide for bridge deck runoff, ensuring the design year storm spread does not encroach upon the travel way.

Our design of the superstructure utilizes lightweight concrete and corrosion resistant reinforcing steel to reduce long-term. Bearings will be low-maintenance VDOT standard Laminated Elastomeric Pads with PTFE sliding surfaces added where needed for additional expansion. Utilizing weathering steel plate girders and providing a jointless structure further reduces future maintenance and inspection costs.

Substructure

As shown in Figure 4.3.2.2 on the following page, seven piers and two abutments are aligned with the adjacent existing NB I-95 Bridge, resulting in maximum spans of 135 feet. The proposed pier locations minimize scour and will not introduce additional impacts to boat traffic nor will they increase potential for debris accumulation. The proposed substructure locations also avoid impacts to the Rappahannock Navigation Canal, the Rappahannock Canal Lock #1 / Minor's Lock and will not encroach into the North Channel of the river.

The hammerhead piers will be founded on spread footings on competent rock. Access via the causeway to the foundation locations for exploratory borings will be limited by TOYR and adjacent construction activities. Therefore, to accelerate design, immediately upon NTP, our Team is prepared to coordinate with the I-95 SB RRC Design-Builder to gain access on the causeway for our geotechnical subsurface explorations for Piers 1-5. For Piers 6 and 7, where the northern portion of the causeway will not be available until after October 15, 2020 due to TYOR, our Team will utilize available subsurface geotechnical information to conservatively design these foundations. ***Confirmatory borings (Enhancement 026) for these foundations will then be completed at risk following the Scope Validation Period when the causeway needed for the NB I-95 Bridge is in place, as discussed in Section 4.4.3.***

Virginia Abutments with buried approach slabs, supported on H-piles behind MSE Walls are utilized. The MSE walls feature architectural treatment, matching the adjacent newly constructed SB I-95 Bridge,

enhancing the aesthetics (*Enhancement 025*).



Figure 4.3.2.2 - Elevation View of the Rappahannock River Crossings Depicting Pier Alignment

I-95 Collector-Distributor (CD) Lanes Over Route 17 (Option #2) (B608)

Option #2 requires replacement of the existing NB I-95 CD Lanes bridge over Route 17. Should VDOT implement this option, our Team will improve the vertical clearance while maintaining the span arrangements of the three bridges currently under construction as part of the I-95 SB RRC Project. Table 5 summarizes our Team’s configuration of B608.

Table 5 - B608 Proposed Configuration

Roadway Section	Total Out-to-Out Width	Span Arrangement & Total Length	Abutment Type	Pier Type
12' Left Shoulder 3 - 12' Travel Lanes 12' Right Shoulder	63'-4"	1 Span at 69'-10" 1 Span at 73'-10" Total Length 145'-0"	Full Integral on H-Piles behind MSE Walls	Multi-Column on Pile Footings

Superstructure

Given the span requirements of the RFP, our Team determined that prestressed concrete Bulb-T beam spans continuous for live load would be the most cost-effective alternative for B608. The bridge deck will provide a 60' wide roadway between two 42" tall F-shape parapets, supported on eight girder lines spaced at 8'-4" with 2'-6" overhangs. To obtain the required clearance above Route 17 of 16'-6", the NB I-95 CD Lanes profile will be raised and the shallowest Bulb-T section possible (29") will be utilized to minimize the grade change.

Material selections were made with consideration toward reducing future inspection and maintenance needs, including the use of low permeability concrete, corrosion resistant reinforcing, prestressed concrete beams, and VDOT Standard Laminated Elastomeric Bearings.

Substructure

One pier and two abutments are aligned with the three adjacent bridges currently under construction as part of the I-95 SB RRC Project. The proposed substructure locations accommodate clearance below the bridge (16'-6") a total of eight, 12' travel lanes and shoulders, BPPS, and pedestrian facilities on Route 17.

The pier consists of a multi-column bent with H-pile foundations. The abutments are Full Integral supported on H-piles behind MSE Walls (featuring drystack relief architectural treatment). Per the RFP, the MSE

4.3 Design Concept

walls do not need to provide for future widening on or below the bridge. B608 will be built within the footprint of the existing bridge, requiring staged construction to accommodate traffic as shown in Figure 4.3.2.3. As discussed with VDOT in our Proprietary Meetings, the existing bridge was constructed with partial-depth prestressed deck panels, which can only be removed in full-bay increments. This induces limits on the amount by which the bridge can be partially demolished while remaining open to traffic during construction.

Therefore, the proposed superstructure and substructure configurations were selected with partial consideration of the temporary staging to accommodate demolition and erection. As discussed in Section 4.5.1, early opening of the new left turn lanes on Route 17 Ramp D and the closure of Route 17 Ramp C allows traffic across the bridge to be reduced to a single lane during construction, enhancing safety as well as constructability. Load ratings will be performed for the final configuration and for all construction stages of the new and existing bridges before placing into service.

The proposed pier for B608 within the median of Route 17 is in the same location as the existing pier. Although the RFP allows the reuse of the existing piles and footings in the proposed structure pending verification by non-destructive testing, uncertainty over their capacity introduces risk if the testing reveals lower resistance than assumed for design. To mitigate this risk, the pier is designed to be supported entirely on new piles driven outside the existing foundation. The pier for the first step of construction can be fully built without the need to remove any existing foundations. In the second step of construction, two existing pile caps will need to be demolished where in conflict with the new foundations, but all existing piles may be left in place below grade and will be isolated from the new structure.

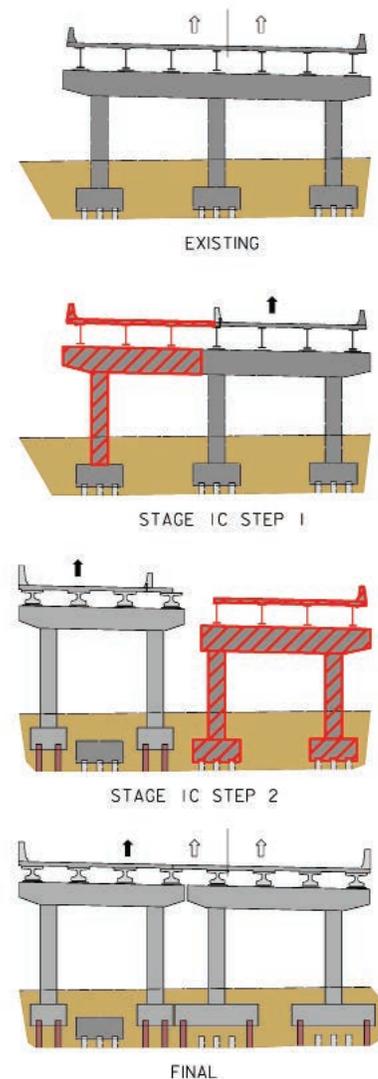


Figure 4.3.2.3 - Bridge B608 Construction Staging

Retaining Walls

Due to the immediate adjacent infrastructure, and to minimize impacts, retaining walls are required in several locations. Our Team worked diligently to limit the scope of these walls and provided several geometric optimizations. Table 6 summarizes the retaining walls that are shown in our Volume II Design Concept. Following Table 6, a narrative regarding our proposed configuration for Retaining Walls #1A, #1B, and #1C is provided.

Table 6 - Retaining Walls

Retaining Wall	Roadway	Location	Length (feet)	Cut/Fill	Type	Benefit
Retaining Wall #1A	NB Route 3 Ramp C	Sta. 5484+60.00 RT to Sta. 5493+50.00 RT	890	Cut	Post and Panel	Eliminate Impact to Existing Soundwall
Retaining Wall #1B	NB Route 3 Ramp C	Sta. 5495+55.00 RT to Sta. 5501+00.00 RT	600	Cut	Post and Panel	Eliminate Impact to Existing Soundwall
Retaining Wall #1C	NB Route 3 Ramp C	Sta. 5501+92.41 RT to Sta. 5506+45.00 RT	453	Cut	Post and Panel	Eliminate Impact to Existing Soundwall

Retaining Wall	Roadway	Location	Length (feet)	Cut/Fill	Type	Benefit
Retaining Wall #2	NB I-95 GP Lanes	Sta. 4506+34.80 LT to Sta. 4519+45.00 LT	1,310	Fill	MSE w/ Concrete (F-Shape) Moment Slab	Facilitate NB I-95 GP Lanes
Retaining Wall #3	Route 17 (Warrenton Road)	Sta. 8204+34.00 RT to Sta. 8204+94.70 RT	61	Fill	Modified RW-3	Eliminate Box Culvert Extension
Retaining Wall #4 (Option #3)	Route 17 (Warrenton Road)	Sta. 8204+33.79 RT to Sta. 8204+94.27 RT	61	Fill	Modified RW-3	Eliminate Box Culvert Extension
Retaining Wall #5 (Option #1)	NB I-95 GP Lanes	Sta. 4689+00.00 RT to Sta. 4690+00.00 RT	100	Fill	Modified RW-3	Eliminate Box Culvert Extension and Wetland/Stream Impact
Retaining Wall #6 (Option #1)	NB I-95 GP Lanes	Sta. 4710+00.00 RT to Sta. 4711+25.00 RT	125	Fill	Modified RW-3	Eliminate Box Culvert Extension and Wetland/Stream Impact
Retaining Wall #7 (Option #1)	NB I-95 GP Lanes	Sta. 4721+50.00 RT to Sta. 4722+50.00 RT	100	Fill	Modified RW-3	Eliminate Box Culvert Extension and Wetland/Stream Impact

Retaining Walls #1A, #1B, and #1C

As shown in our Volume II Design Concept and presented in Figure 4.3.2.4, Retaining Walls #1A, #1B, and #1C located outside of NB Route 3 Ramp C, adjacent to Fall Hill Avenue and in front of existing soundwalls, are configured to ensure the soundwalls remain serviceable after construction of Ramp C. Specifically, the retaining wall extends from the finished grade of the Ramp C shoulder towards the existing ground line to minimize excavation adjacent to the soundwall. Specifically, a 4' bench and 2:1 slope is implemented.

In this location, the RFP Conceptual Plans depict a short barrier/retaining wall with a cut slope leading up to the soundwall. From our review and analysis of the existing soundwall and associated geotechnical information, we know that the design of the soundwall assumed a relatively flat grade adjacent to the foundations and that excavation within 6 times the shaft diameter (36") of the soundwall may adversely impact the lateral capacity of the existing foundation shafts. Therefore, to avoid having to reinforce the lateral capacity of the soundwall foundations or otherwise impact the soundwalls, our Concept provides post and panel retaining walls adjacent to the Ramp C shoulder that avoid impacting the functionality of the existing soundwall.

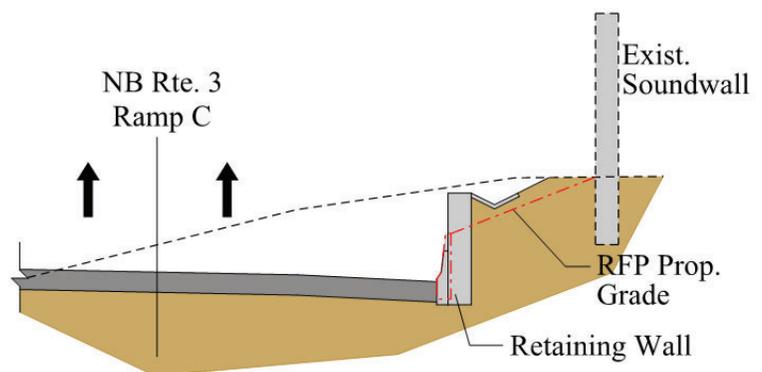
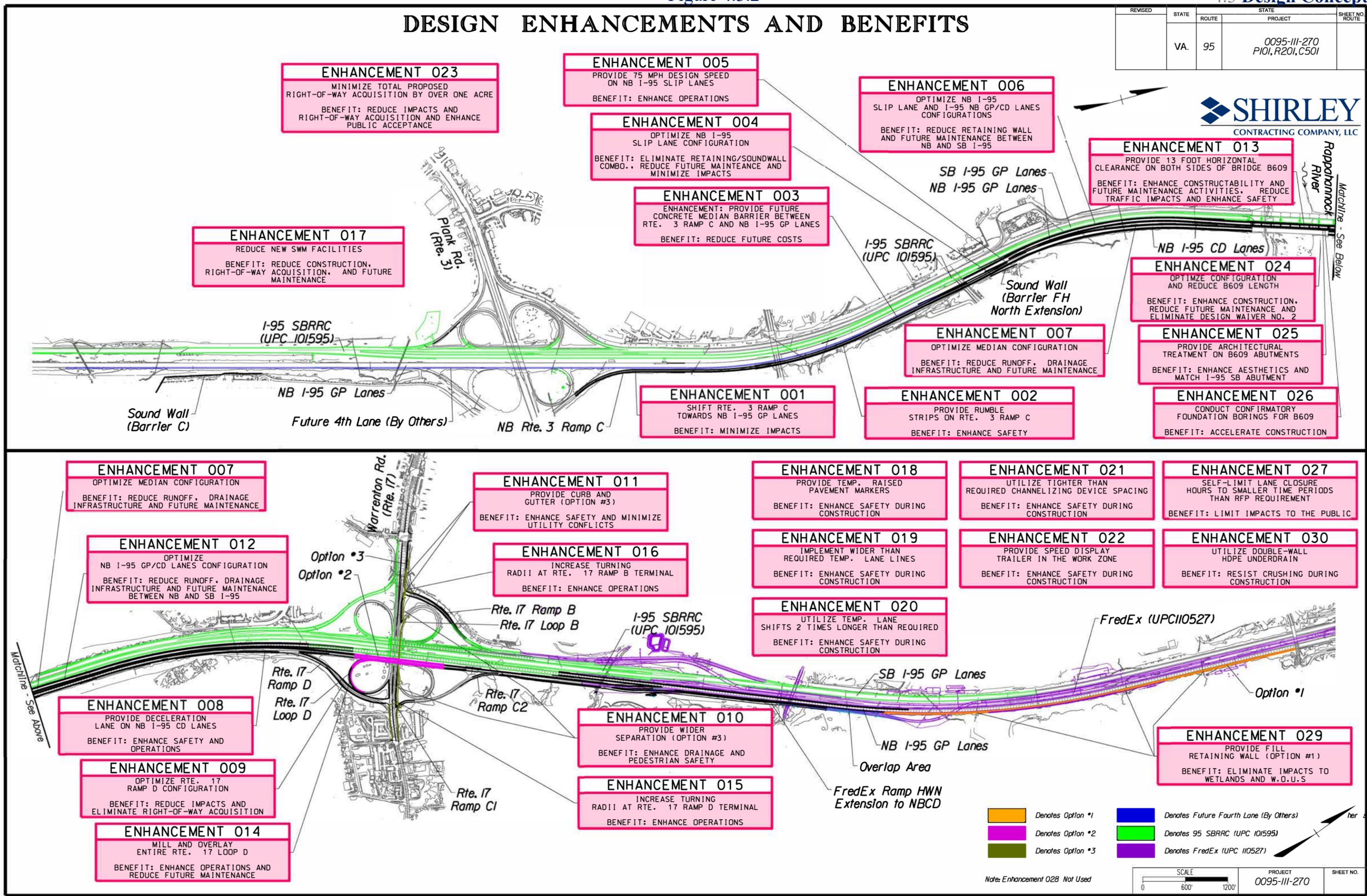


Figure 4.3.2.4 - Retaining Walls #1A, #1B, and #1C Configuration

DESIGN ENHANCEMENTS AND BENEFITS

REVISED	STATE	ROUTE	PROJECT	SHEET NO. ROUTE
	VA.	95	0095-III-270 P101, R201, C501	



ENHANCEMENT 007
OPTIMIZE MEDIAN CONFIGURATION
BENEFIT: REDUCE RUNOFF, DRAINAGE INFRASTRUCTURE AND FUTURE MAINTENANCE

ENHANCEMENT 012
OPTIMIZE NB I-95 GP/CD LANES CONFIGURATION
BENEFIT: REDUCE RUNOFF, DRAINAGE INFRASTRUCTURE AND FUTURE MAINTENANCE BETWEEN NB AND SB I-95

ENHANCEMENT 008
PROVIDE DECELERATION LANE ON NB I-95 CD LANES
BENEFIT: ENHANCE SAFETY AND OPERATIONS

ENHANCEMENT 009
OPTIMIZE RTE. 17 RAMP D CONFIGURATION
BENEFIT: REDUCE IMPACTS AND ELIMINATE RIGHT-OF-WAY ACQUISITION

ENHANCEMENT 014
MILL AND OVERLAY ENTIRE RTE. 17 LOOP D
BENEFIT: ENHANCE OPERATIONS AND REDUCE FUTURE MAINTENANCE

ENHANCEMENT 011
PROVIDE CURB AND GUTTER (OPTION #3)
BENEFIT: ENHANCE SAFETY AND MINIMIZE UTILITY CONFLICTS

ENHANCEMENT 016
INCREASE TURNING RADII AT RTE. 17 RAMP B TERMINAL
BENEFIT: ENHANCE OPERATIONS

ENHANCEMENT 010
PROVIDE WIDER SEPARATION (OPTION #3)
BENEFIT: ENHANCE DRAINAGE AND PEDESTRIAN SAFETY

ENHANCEMENT 015
INCREASE TURNING RADII AT RTE. 17 RAMP D TERMINAL
BENEFIT: ENHANCE OPERATIONS

ENHANCEMENT 018
PROVIDE TEMP. RAISED PAVEMENT MARKERS
BENEFIT: ENHANCE SAFETY DURING CONSTRUCTION

ENHANCEMENT 019
IMPLEMENT WIDER THAN REQUIRED TEMP. LANE LINES
BENEFIT: ENHANCE SAFETY DURING CONSTRUCTION

ENHANCEMENT 020
UTILIZE TEMP. LANE SHIFTS 2 TIMES LONGER THAN REQUIRED
BENEFIT: ENHANCE SAFETY DURING CONSTRUCTION

ENHANCEMENT 021
UTILIZE TIGHTER THAN REQUIRED CHANNELIZING DEVICE SPACING
BENEFIT: ENHANCE SAFETY DURING CONSTRUCTION

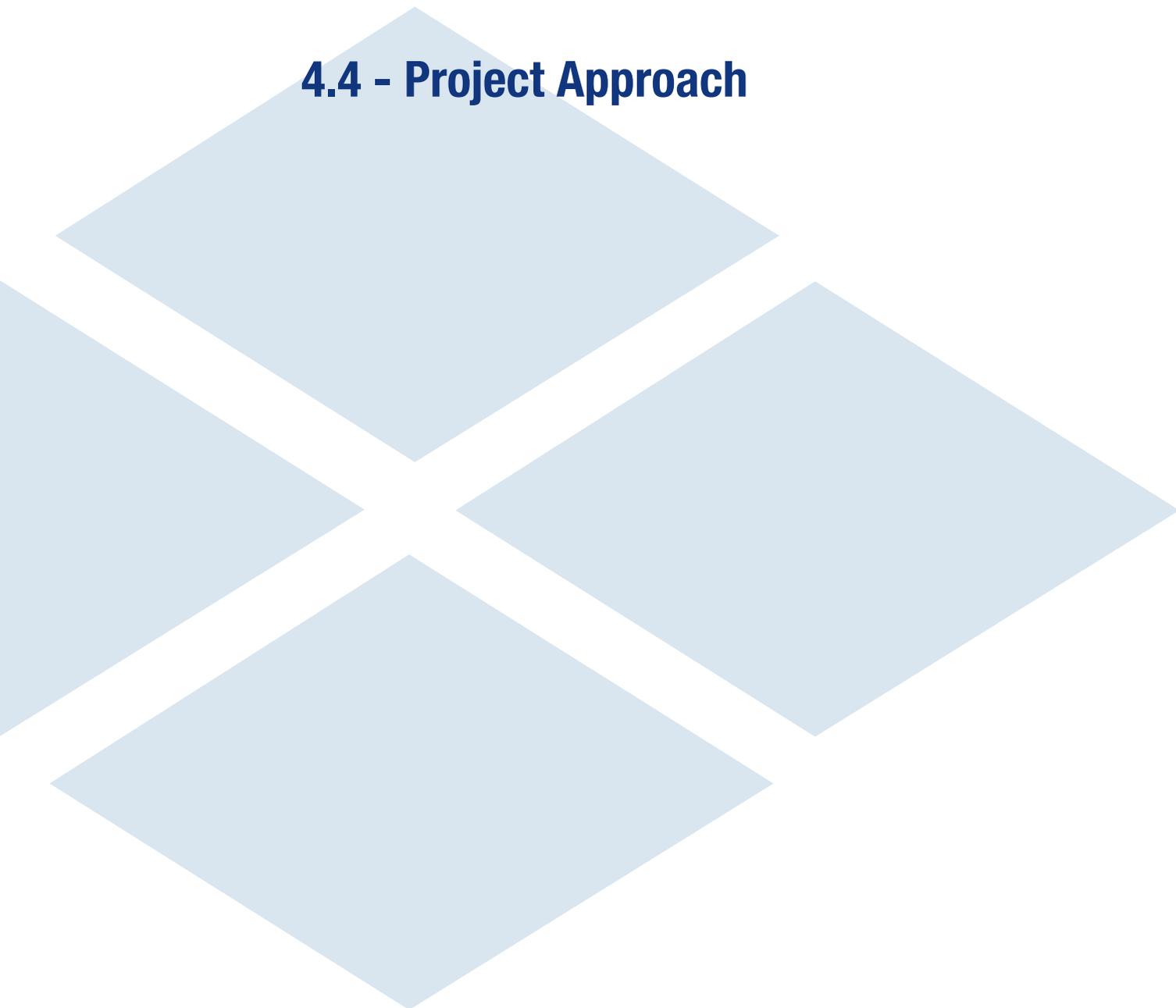
ENHANCEMENT 022
PROVIDE SPEED DISPLAY TRAILER IN THE WORK ZONE
BENEFIT: ENHANCE SAFETY DURING CONSTRUCTION

ENHANCEMENT 027
SELF-LIMIT LANE CLOSURE HOURS TO SMALLER TIME PERIODS THAN RFP REQUIREMENT
BENEFIT: LIMIT IMPACTS TO THE PUBLIC

ENHANCEMENT 030
UTILIZE DOUBLE-WALL HDPE UNDERDRAIN
BENEFIT: RESIST CRUSHING DURING CONSTRUCTION

- Denotes Option #1
- Denotes Option #2
- Denotes Option #3
- Denotes Future Fourth Lane (By Others)
- Denotes 95 SBRR (UPC 101595)
- Denotes FredEx (UPC 110527)

4.4 - Project Approach





4.4 Project Approach

4.4.1 Environmental Management Approach

A comprehensive environmental risk management approach will be implemented by our Team to carry out the environmental commitments during design and construction to ensure the Project’s success. Our Team’s approach begins with the commitment to create a culture of proactive and innovative environmental stewardship. To enact this approach, an Environmental Compliance and Management Team (ECMT) is assembled, which is a collaboration of the following:

- Roadway, drainage, and stormwater management engineers that can evaluate, anticipate, and protect environmental resources through phased erosion and sediment control and utilization of an Environmental Constraints Map (ECM) updated in real-time;
- Dedicated and committed construction personnel that are diligent and adaptable in the installation, inspection, and maintenance of erosion and sediment controls (ESC) on the Project site; and
- A full contingent of environmental scientists, Professional Wetland Delineators (PWDs), and certified arborists with extensive knowledge of the permitting process and the subtle nuances of each regulatory agency.

In fact, the ECMT has held preliminary discussions with several regulatory agencies during the preparation of this Technical Proposal geared towards identifying, avoiding, and minimizing Project impacts to environmental resources. Table 7 below outlines our approach and methods to mitigate potential delays due to recognized environmental conditions within the Project footprint.

Table 7 - Environmental Concerns and Potential Solutions

Recognized Environmental Condition	Method to Mitigate Potential Delay
Threatened and Endangered Species	<ul style="list-style-type: none"> ■ No impacts to T&E anticipated and TOYR implemented for all in stream work. ■ Bat Inventory conducted 14 days prior to work below bridge deck and after expiration of existing bat inventory. ■ Conduct mussel relocation survey prior to expiration of Fall 2018 survey.
Cultural Resources & Section 4(f) Resources	<ul style="list-style-type: none"> ■ Utilize ECM overlay of cultural resources and on-call subconsultant to avoid impacts. ■ Utilize existing access to 4(f) Resources, Rappahannock Navigation Canal, and Rappahannock Canal Lock to avoid adverse effects and adhere to de minimis impact findings. ■ Utilize, maintain, and/or improve existing protection measures to 4(f) and cultural resources as needed. ■ No alterations of the characteristics of Railroad properties. ■ Assist VDOT with expedited submission of design plans and documentation required for VDHR and FHWA review and approval. ■ Cemetery 44ST1226, at the southern end of the Project will be demarcated with orange safety fence.
Hazardous Materials	<ul style="list-style-type: none"> ■ Reduced ROW acquisition to avoid known preexisting hazardous materials. ■ Begin coordination for access to Phase I ESA and Phase II ESA properties at NTP.

Recognized Environmental Condition	Method to Mitigate Potential Delay
Wetlands/Streams/Water Quality Permitting	<ul style="list-style-type: none"> Facilitate Pre-Application Meeting with VDOT and regulatory agencies to ensure complete application submission and expedited permitting. Complete and submit CZMA consistency determination to DEQ at NTP. Preliminary coordination with regulatory agencies to facilitate expedited permitting of causeway impacts. Utilize existing causeway with limited modifications to avoid additional impacts.
Noise	<ul style="list-style-type: none"> Avoid significant changes in horizontal alignment or vertical profiles which would change the results of the Preliminary Noise Analysis. Shifted noise wall to prevent alterations of the characteristics of Railroad properties.

Environmental Risk Management During Design

One of the largest challenges facing the design is to ensure that recognized environmental conditions are addressed, impacts to environmental resources are minimized, all necessary environmental permits are obtained on-time, and that compliance with the plans and permits is maintained. These risks are managed by the use an Environmental Constraints Map (ECM), formal and informal coordination meetings and phased erosion and sediment control design matching construction design.

Environmental Constraints Map

As a tool to address environmental concerns and ensure avoidance and minimization practices will be implemented, our Team has developed an Environmental Constraints Map (ECM) – a Microstation file containing all known environmental elements within and adjacent to the Project. Creating, providing and maintaining the ECM during procurement, through design and into construction ensures that our Team identifies, avoids and minimizes environmental impacts - reducing risk and the potential for delay. By utilizing our Team’s ECM during the procurement phase, we have reduced impacts to wetlands and W.O.U.S. compared to the RFP Conceptual Design.

Formal and Informal Meetings

To further guarantee avoidance and minimization strategies are implemented during design and ensure environmental conditions have been integrated into the Project Schedule, the ECMT facilitates open communication between all stakeholders through a series of formal and informal environmental meetings presented in Figure 4.4.1.1.

This communication identifies predecessor and successor activities including realistic timeframes for preparing documents and third-party reviews.

After the ECMT has fully vetted the draft permit and impact limits, a meeting with VDOT and the regulatory agencies will be scheduled. During this meeting, impact limits based on

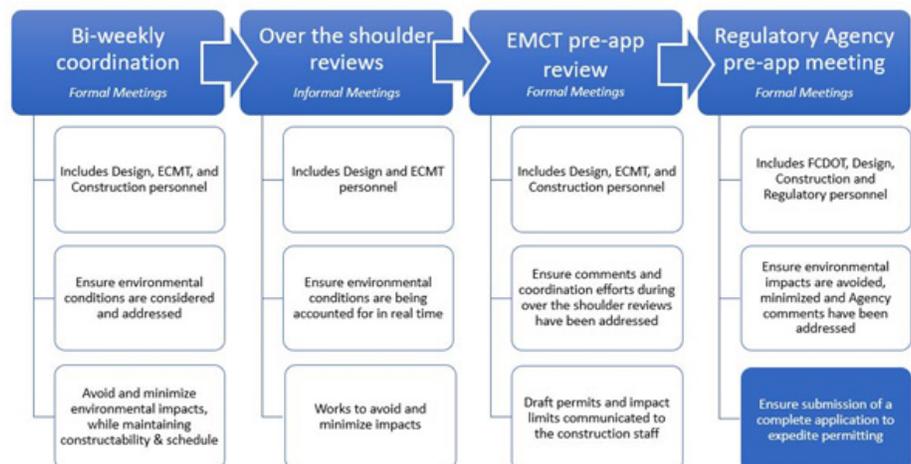


Figure 4.4.1.1- Formal and Information Environmental Meetings and Activities

4.4 Project Approach

design plans will be reviewed and comments regarding the design will be addressed. This will reduce the potential for delay of permit approvals caused by design adjustments, omission of data, additional information requests, and/or permit modifications.

Erosion and Sediment Control Design

Phased Erosion and Sediment (E&S) Control Plans, which mirror construction staging, will be developed in conjunction with the post-construction Stormwater Management (SWM) Plan, Pollution Prevention (P2) Plan, and Stormwater Pollution Prevention Plan (SWPPP). A DEQ certified Combined Administrator will perform an independent plan review and certify that the SWPPP prepared for the Project is in accordance with the applicable criteria. Utilizing this approach, our Team can ensure each control is installed and maintained for the specific stage of construction. In addition, this will be used to determine which phase of ESC measure will need to be installed. Due to the increased scrutiny on ESC measures and the nature of some underlying soils within the Project area, the use of more robust devices, such as super silt fence instead of silt fence, will ensure sediment laden runoff is controlled within the Project limits and undesired downstream impacts are avoided.

Environmental Risk Management During Construction

During construction, our EMT will coordinate closely with the permitting agencies to ensure permit requirements are met, construction monitoring is completed efficiently and effectively, and all documentation is up-to-date. Our EMT affirms our commitment to work together to achieve the following objectives:

- 100% environmental protection and compliance while building and maintaining environmental protection measures;
- Ensure the utilization and maintenance of appropriate environmental protection measures, using sound judgment and teamwork;
- Maintain a “green” status for the NPDES/ECI permit inspections throughout the duration of the Project; and
- Recognize, report, and quickly resolve any issues that may arise.

Pre-Construction Coordination

Prior to the start of construction activities, our ECMT returns to the Project site and properly demarcates all wetlands and Waters of the United States (WOUS) to ensure limits are easily identifiable by construction personnel. Our ECMT ensures that the wetland and WOUS are protected by silt fence and orange safety fence, as shown in the approved Erosion and Sediment Control (ESC) Plans, to avoid impacts to non-permitted areas. Permit impact plates, detailing the temporary and permanent impact limits, will also be shared with construction personnel to avoid impacts to non-permitted areas. Additionally, a pre-construction Environmental Constraints and Commitments Meeting will be held to educate all parties on the allowable limits of work specific to the Project.

Installation, Maintenance and Inspection of Erosion and Sediment Controls

Our Team takes a proactive approach towards environmental compliance and our crews have extensive experience and are knowledgeable of the standards for all types of E&S controls. We familiarize personnel with the Project site, topography and existing drainage patterns in order to provide thorough constructability reviews of the design plans. Upon mobilizing, issuance of land disturbance permits and Released for Construction Plans, Shirley and its subcontractors proceed with installation of E&S controls before any land disturbance takes place. While it is common to dedicate a crew to installation and maintenance of E&S controls, all crews participate in these critical activities and review the areas in which they are working daily, prioritizing environmental compliance equally with safe work practices.

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To support our construction teams, *Shirley has established an Environmental Department consisting of an Environmental Program Manager and full-time Environmental Inspectors*. The Environmental Inspectors primary functions are to perform the bi-weekly C-107 inspections, update the Stormwater Pollution Prevention Plan (SWPPP), and ensure compliance with all applicable environmental permits and regulations. The Inspectors participate in inspections performed by VDOT NPDES and Environmental Compliance Inspectors, and DEQ. They provide updates to VDOT on the status of any action items identified during the inspections, fostering communication and providing assurance to VDOT that corrective action is performed in a timely manner. The Inspectors also perform routine audits to ensure that the SWPPP and all other documentation is properly maintained.

C-107 Compliance Checks

Field inspections, completed on a twice-weekly basis, are to be completed by construction staff to identify deficiencies in E&S Control measures and areas where additional controls may be necessary. The C-107 Compliance Checks will be combined with the monthly construction compliance inspections as necessary to ensure adherence to the recently updated regulations released in the 2019 Construction General Permit (CGP).

Virginia Water Protection (VWP) Permit Inspections

Due to additional scrutiny being placed on environmental permit compliance, our ECMT will perform monthly site visits. They will confirm that permit requirements are being met, E&S Control measures are properly installed and maintained, and areas where additional attention may be required are identified and addressed before they become a deficiency on a formal log or C-107 Compliance Check. During these site visits, our ECMT utilizes tablets, paired with GIS software and KMZ files to display the Project area and jurisdictional impact limits on Google Earth. By pinpointing the location of both the Inspector and impacted area in real time, potential deviations from the permitted impacts are able to be assessed accurately and immediately. Additionally, these site visits provide opportunities for permitting and construction staff to evaluate upcoming field activities, which has proven to be effective in mitigating potential issues before they become problematic.

VWP Compliance Reporting

To assure permit compliance, our ECMT will complete the monthly VWP Permit Inspection Checklist and Biannual Construction Status Update Forms to document construction progress along with the timing of impacts for all permitted areas. In the event that an undesired sediment release or non-permitted impact occurs during construction, due to an unforeseen event such as an excessive rain event or ESC failure, our ECMT will quickly contact VDOT and applicable regulatory agencies to identify and implement appropriate corrective action measures.

On-Call Assistance

Inevitably, during construction, conditions may arise that will require immediate attention. Our ECMT will be available to meet on-site to address these potential concerns, providing information that will properly account for commitments and restrictions, previously identified during design. Should field conditions occur that necessitate additional impacts, our ECMT will work with regulatory agencies to quickly expedite and implement permit modifications.

4.4.2 Utilities

Our Team views the utility scope as a critical element of any successful design-build project delivery. Led by our Utility Manager, we have established a group of experienced, dedicated, in-house resources that focus solely on overseeing and managing this scope. Over the years, our Team has developed strong working relationships with each of the utility owners in the region that is vital to ensure positive and

4.4 Project Approach

efficient coordination. Our past design-build projects have required coordination with many of the same utility companies that are present on this Project including Dominion Energy, Verizon, Comcast, Summit IG, Columbia Gas, Washington Gas, and Stafford County Service Authority. Our focus, experience, and close working relationships with each of these utility owners has already benefited and positively affected our design concept and approach by allowing for ideas and solutions that minimize risk and promote schedule certainty.

Approach To Utility Coordination, Adjustments, and Relocations

Our Team’s approach to successful management of the utility scope of work encompasses the following goals:

- Accurate and timely identification of existing utilities;
- Investigation of potential conflicts within the Project footprint;
- Integration with design to determine conflicts and possible solutions;
- Coordination with utility owners to develop conflict resolution strategies/options;
- Primary focus of conflict resolution through final design to minimize relocations;
- Precise identification of easements needed for required relocations;
- Thorough integration with the Project Schedule and sequence of work; and
- Constant monitoring and tracking of the relocation progress.

Our Team’s first and highest priority throughout the design-build process is to completely avoid utility impacts through design. If conflicts cannot be completely avoided by design, we will work diligently with each utility owner to minimize relocations needed through a combination of design and work sequencing, and/or utility protection measures during construction. It is our Team’s position that relocating existing utilities to eliminate conflicts with new construction should only be performed as a last resort.

During the preparation of this Technical Proposal, our Team’s early coordination began by meeting with various utility owners to better understand their existing facilities, review both the conceptual and proposed design, discuss schedule, and address potential conflicts and risk. For example, we met with Summit IG to determine areas where we could “lift and lay” their facilities to reduce impacts to their facilities, the Project Schedule, and their customers.

Upon Award, these efforts will continue in earnest during final development of the design, right-of-way, permitting, scheduling, and construction sequence of work. Close coordination and early involvement will enable the utility companies to generate reasonable, clear and concise plans and estimates, best coordinate their crew availability, and maximize their production for needed relocations.

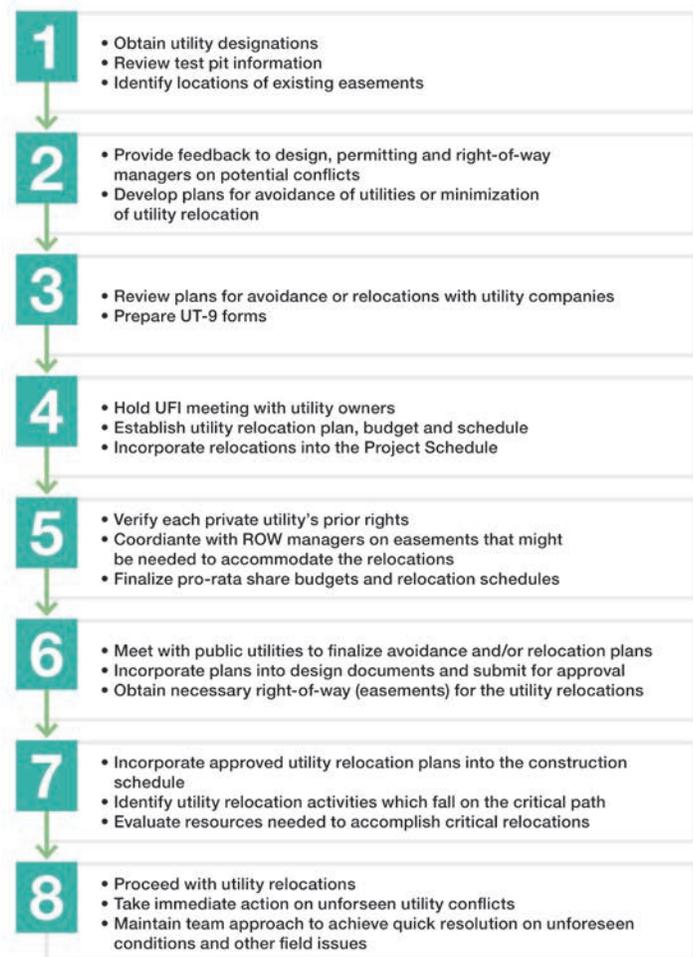


Figure 4.4.2.1 - Approach to Utility Coordination

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In addition, continued coordination will benefit both the utility owners and our Team as we work to develop solutions that are integrated into our final design and Project schedule. Figure 4.4.2.1 outlines the steps and activities we will perform to continue coordinating with each utility owner once the Project is underway.

Utility Conflicts and Solutions

After our design efforts, there are multiple utilities located within the Project footprint that are unavoidable and our strategies and solutions to mitigate them are identified in Table 8.

Table 8 - Unavoidable Utility Conflicts and Mitigation Strategies

Utility/Owner Description	Approximate Location	Potential Conflict	Relocation Plan/ Mitigation Strategy
POWER LINES			
3 Phase Overhead Dominion Energy	Route 17 Station 8003+00 to 8005+50	Conflict with Roadway	Relocate in kind
COMMUNICATION LINES			
Underground Fiber Summit IG	I-95 Station 4444+00 to 4457+00	Conflict with Ditch and Roadway	Relocate in kind
Underground Fiber Summit IG	I-95 Station 4472+50 to 4474+00	Conflict with Ditch	Relocate in kind
Underground Fiber Summit IG	I-95 Station 4481+00 to 4515+00	Conflict with Ditch and Roadway	Relocate in kind
Underground Fiber Summit IG	I-95 Station 4576+00 to 4578+00	Conflict with Roadway	Relocate in kind
Underground Fiber Summit IG	I-95 Station 4592+00 to 4606+00	Conflict with Ramp	Relocate in kind
Underground Fiber Summit IG	I-95 Station 4616+00 to 4675+00	Conflict with Storm and Roadway	Relocate in kind
Underground Fiber Summit IG	I-95 Station 4692+00 to 4707+00	Conflict with Storm and Barrier	Relocate in kind
Underground Copper Verizon	I-95 Station 4502+00	Conflict with Grading and Storm	Relocate in kind
Overhead Copper and Fiber Verizon	Route 17 Station 8001+00 to 8005+00	Conflict with Roadway	Relocate in kind
Overhead Coax	Route 17 Station 8001+00 to 8005+00	Conflict with Roadway	Relocate in kind
WATER			
6" Water City of Fredericksburg	Route 60, STA 401+65 RT, STA 410+80 RT	Conflict with widening	Adjust In-Place
12" Water in 36" Casing Stafford County	I-95 Station 4501+00	Conflict with Cut	Relocate in kind
12" Water Stafford County	Route 17 Station 8002+00 to 8005+00	Conflict with Storm	Relocate in kind
6" Water Stafford County	Route 17 Station 8022+00	Conflict with Storm	Relocate in kind
SANITARY SEWER			
8" Gravity Stafford County	Route 17 Station 8002+00 to 8005+00	Conflict with Storm	Relocate in kind
4" Sanitary Force Main Stafford County	Route 17 Station 8022+00	Conflict with Storm	Relocate in kind

Utility/Owner Description	Approximate Location	Potential Conflict	Relocation Plan/ Mitigation Strategy
G A S			
4" Gas Washington Gas	Route 17 Station 8001+50 to 8005+00	Conflict with Storm	Relocate in kind

Schedule Integration, Mitigation of Delays

Our Team has a fully integrated approach to manage the risk of utility conflicts impacting the schedule. As a first step, all information collected and reviewed from utility designations, test pits, as-builts, and coordination with utility owners is utilized to avoid conflicts and schedule delays. Team members are fully engaged with all aspects of the design-build process from design, to construction, to final completion. Our Team assists with the right-of-way acquisition process, prior rights research and easement determinations, conflict analysis, utility relocation construction coordination, and Project Scheduling. This integrated approach to the utility scope provides our Team greater insight and perspective which enables us to mitigate any unexpected schedule delays.

The key to this effort is the integration of utilities into our Weekly Design Progress Meetings beginning in the procurement phase. Conflicts are discussed and the entire team has input into the development of cost effective and efficient solutions.

During preparation of this Technical Proposal, our Team coordinated with the utility companies to develop design avoidance measures, relocation design, relocation phasing, and schedules for each impacted utility. This information, coupled with historical data captured from our past design-build experience, is integrated into our overall construction sequence and is reflected in our Proposal Schedule included in Section 4.6. We have sequenced the utility scope so that all activities are non-critical.

During construction, our Utility Manager constantly monitors progress of the relocations to quickly identify schedule concerns. If encountered, the schedule is reviewed for resequencing opportunities and the utility company is tasked with taking measures to mitigate the delay impact.

As we monitor the progress of relocations, schedule slippages will become readily apparent. If encountered, our Utility Manager will consult with the utility company to determine the nature of the delay and review options for the utility to correct. Simultaneously, the Utility Manager will review the issue with the Project's Construction Manager to identify opportunities for resequencing of the work, providing additional lane closures, extending work hours, supplementing resources, or any combination thereof. Additional scrutiny will be placed on the utility's performance and progress until our Team is satisfied that the schedule has been recovered.

Mitigation of Unexpected Utilities

Encountering unexpected and unknown utilities is a risk that can cause many challenges, including added cost and schedule delays. The following are strategies our Team has utilized on past projects that successfully limited these risks:

Early Coordination: As a "Step 1" activity, our Team has already begun early coordination with each utility owner to acquire a comprehensive understanding of existing facilities. We have obtained previous design plans, as-built drawings, and GIS mapping for review. Further, our Team has coordinated site visits and performed field surveys to ensure the utility designations are complete and accurate. This coordination and review of the existing facilities limits the risk of discovering an unidentified utility during construction.

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Redesign of Project Features: Once an unknown utility is identified, we will immediately perform an as-built survey of its location and overlay with the design to determine the extent of the conflict. Options will then be reviewed with affected disciplines to redesign elements that minimize and/or avoid the conflicts. If redesign is feasible, the Design Team will issue a formal Plan Revision to the Team.

Adjust in Place: If an unidentified utility is discovered during construction, our Team has successfully raised, lowered, or performed a “lift and lay” operation to eliminate the conflict. Self-performing in-place relocations is a key component to minimizing risk of schedule delay, reducing cost, and reducing the impact to the utility company’s facility. For example, in areas where existing conduit and cable has slack, we can perform a lift and lay to avoid the time and cost of placing new conduit, cable and splicing.

Assisting in Construction of the Relocation: Another method to handle unidentified utility conflicts is assisting the utility companies with the utility relocation work. In the past, we have assisted with the construction of duct banks, performed directional drilling, and drilled / installed utility poles to expedite relocations in the field. Assisting utility owners with relocations allows our Team to better control the schedule of a portion of the relocation, thereby reducing the risk of schedule delay.

Resequencing the Work: Upon evaluation of conflict resolution for unknown utilities, the Team will review the sequence of work and Project Schedule to mitigate this risk for delays and other schedule impacts.

4.4.3 Geotechnical Approach

Our Team thoroughly reviewed geotechnical data provided in the RFP, available geologic maps and historic data from nearby projects. With this information, we prepared a combined boring location, profile, and cross section plan which was utilized by our designers to detect, avoid or otherwise mitigate potential subsurface concerns as we developed our Design Concept. Based on our efforts, we expect to encounter several complex soil and rock layers consisting of, from deepest to shallowest, rock and rock outcrops, Coastal Plain deposits and fluvial deposits predominantly located near streams and wetlands, which are briefly described below.

Rock

Within the Project Limits, I-95 passes through several thrust faults and generally straddles the Fall Line which separates the Coastal Province with the Piedmont Province. The boring and rock core data indicates the rock will predominantly consist of granite and gneiss. The presence of nearby thrust faults will sometimes make the parent rock types interlayered with occasional conglomerates. Steeply sloping rock and rock outcrops are currently visible within and near the Rappahannock River which will be problematic to excavate. Where Route 17 crosses I-95, the rock has weathered significantly and this residuum layer can be over 100 feet thick.

Coastal Plain Deposits

Above the rock and residual soils, Coastal Plain deposits were encountered in the borings. The oldest Coastal Plain deposits locally are the Potomac Formation. The soils of this formation perform well for axial and lateral loading. However, the fine grained soils of the Potomac Formation are considered problematic per VDOT’s Manual of Instructions due to the presence of historic failure surfaces (Slickensides) that are not easily detected during the field exploration.

Above the Potomac Formation, younger Tertiary Age deposits consisting of various layers of sands, gravels, and fine grained soils are anticipated. The settlement and strength behavior are typically characterized based on the geologic origin and laboratory testing. Many of the provided borings do not characterize the

4.4 Project Approach

detailed geologic origin of the soils and simply identify the overall origin as “fluvial.” However, our Team has experience identifying the various geologies to accurately characterize the geologic origin of the soil samples and will appropriately identify and address problematic soils as may be encountered.

Fluvial Deposits

Above the Coastal Plain deposits, predominantly located near streams and wetlands, fluvial deposits will most likely be encountered. Soils of this geology tend to be normally consolidated with lower shear strength and may contain organic material. Where fill will be required to establish proposed grades, these fluvial soils will most likely require some additional wait time to ensure the fine-grained soils have consolidated. Our geotechnical program will include laboratory and in-situ testing to better model and address the settlement behavior.

Given the complex geologies noted above, our Team will implement a subsurface exploration and laboratory program that will characterize the soils and rock based on the geologic origin such that appropriate mitigation strategies can be implemented for the design and construction of bridges, slopes, roadways, structures, and fill embankments. Based on our work during preparation of this Technical Proposal, the following summarizes potential geological risks and our proposed mitigation strategy.

Project Geotechnical Risks and Mitigation

We have analyzed the provided geotechnical data based on our Teams proposed design. In addition to the evaluating proposed structures, we have also evaluated the risk to existing structures. Table 9 below summarizes the potential geotechnical risks and our mitigation strategies.

Table 9 - Geotechnical Risks and Mitigation Strategies

Risk Factor	Potential Risk	Mitigation Strategy
R O A D W A Y		
Roadway Subgrade	<ul style="list-style-type: none"> ▪ High moisture, unsuitable for support of roadway without treatment. ▪ Shallow groundwater table may cause temporary rise of groundwater during construction which will further soften and loosen existing subgrade. ▪ High Plasticity fine grained soils (Liquid limit greater 50) at subgrade will cause shrink/swell. ▪ Low CBR provides inadequate support for the RFP pavement section. RFP lab data suggests that all fine grained and most of the clayey and silty sand soils will be unsuitable. ▪ Low SPT N-value will provide poor support. ▪ Many of the RFP CBR tests were not performed in accordance with VTM-8 with regards to compaction. ▪ GDR data does not appear to correctly characterize locations of fill soils. Existing fill soils behave differently than natural soils. ▪ Complex geology and site history will result. 	<ul style="list-style-type: none"> ▪ Mechanically manipulate high moisture soils to dry them. ▪ Use drying additive such as Lime may mixed to reduce the moisture of the soil. ▪ Install temporary groundwater monitoring wells outside the roadway in shallow groundwater areas to accurately get the groundwater elevation. ▪ Install temporary and permanent drains or a drainage layer during construction to relieve any water pressures and allow roadway construction. ▪ Perform additional CBR to better delineate poor CBR soils. ▪ Undercut low CBR, high plasticity fine grained soils, and low SPT N-value soils and replace with suitable material. ▪ Evaluate existing soil samples from the RFP reports and develop a better method to identify low CBR soils. ▪ Overlay the current project topography with historic data to better understand where man placed fill soils will be present. ▪ Our Geotechnical report for embankments and roadway will provide mitigation options for each unsuitable soils and specific project remediation methods. ▪ The GER or his representative will be present during pavement subgrade evaluations to better delineate unsuitable soils and additional detail on location specific mitigation based on approved mitigation strategy.

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Risk Factor	Potential Risk	Mitigation Strategy
Problematic Geologic Descriptions on Boring Logs	<ul style="list-style-type: none"> ▪ Several of the borings drilled for the RFP identify the geologic origin as “fluvial;” Our review of the geologic maps and historic data indicate that the soils mapped as man placed fill soils, Coastal Deposits, Intermediate Geo Materials, or residual soils should be present. 	<ul style="list-style-type: none"> ▪ Review the RFP soil samples were possible and re-characterize the soil borings based on geology and on construction history and available geologic maps. Also evaluate where unsuitable soils may be present. ▪ Identify where problematic soils such as Potomac group soils may be present based on available geologic map and soil data.
Fill Embankments 10 feet in height	<ul style="list-style-type: none"> ▪ Long term settlement behavior of embankment. ▪ Soft compressible fine grained soils at toe of median widening will cause consolidation (slow) settlement. ▪ Shallow groundwater present of median embankment. ▪ Complex stress history due to recent construction. ▪ Unsatisfactory slope stability using standard 2:1 slope. ▪ Restricted right of way conditions require fill slopes to be designed as reinforced slope or require the use of retaining walls. 	<ul style="list-style-type: none"> ▪ Perform dilatometer testing to better characterize the settlement and in-situ stresses. ▪ Perform borings and field investigations at toe of median widening. ▪ Continuous SPT testing to accurately measure the thickness of compressible soil layers. ▪ Perform in-situ pressure-meter testing and 1-D Consolidation testing on undisturbed samples to better characterize the deformation behavior of the underlying soils. ▪ Install temporary groundwater monitoring wells where shallow groundwater may be present. ▪ Use 3-D (Settle3D) software to model settlement of embankments. ▪ Overlaying adjacent projects and historic grading to model the stress history of the soils and model anticipated future settlement. ▪ Prior to placement of any fill, shallow soft and loose-soils will be undercut if present near the ground surface. ▪ Monitor settlement during construction if required using piezometers and settlement plates; placement of pavement layers will be held until the settlement is within allowable thresholds. ▪ Use staged construction and drainage blankets as appropriate to accelerate settlement fine grained soils in a controlled manner . ▪ Use drainage blankets to control the ground water during construction of fill placement.
Slope Stability for Cut and Fill Slopes greater than 10 feet and at proposed pond locations	<ul style="list-style-type: none"> ▪ Limited soil strength test data provided within project areas where slopes are a concern. ▪ Soil geology is not clear on some of the boring logs and difficult to determine were problem soils such as Potomac Group are present. ▪ Shallow groundwater or perched groundwater is present at various locations and will require dewatering. ▪ Complex stress history due to recent adjacent construction. 	<ul style="list-style-type: none"> ▪ Perform additional subsurface exploration and evaluate existing soil samples. Perform in-situ testing including CPTu, Dilatometer, and pressure meter testing. ▪ Perform additional laboratory testing on undisturbed samples including Direct Shear testing and Tri-axial Testing. ▪ Where problematic soils such as the Potomac Group, use residual strength parameters and identify slickensides (existing failure planes) during field exploration in slope stability analysis. ▪ Install temporary groundwater monitoring wells as noted above. ▪ Provide horizontal drains to alleviate perched and permanent groundwater. ▪ Perform slope stability and reliability analysis for slope stability using Slide computer program. ▪ Design slopes to meet VDOT slope stability and right of way requirements. Adjust proposed grades, provide anchors, or retaining walls to meet this requirement.

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Risk Factor	Potential Risk	Mitigation Strategy
Existing Pavement	<ul style="list-style-type: none"> ▪ Limited pavement core data provided from the RFP. ▪ Most of the pavement core data was drilled in the shoulders. Very limited pavement cores of the existing travel lane were provided. ▪ Very little pavement core data on Route 17. ▪ Tie-ins to existing pavement will need to match the existing OGDL layers. 	<ul style="list-style-type: none"> ▪ Perform additional pavement cores where existing mainline pavement is to remain. ▪ Drill pavement cores and design new pavement to either match existing pavement or RFP minimum pavement section. ▪ Perform additional pavement cores on Route 17 during scope validation. ▪ Document depth and thickness of existing OGDL layers to ensure new pavement will match and provide continuous drainage.
IMPACTS TO EXISTING STRUCTURES		
Route 17 Bridge Foundations	<ul style="list-style-type: none"> ▪ Existing Route 17 bridge will be demolished and existing pile foundations will remain in place. ▪ Existing battered and vertical piles are in close proximity to proposed piles. ▪ Existing pile caps located at new pile cap location. ▪ New piles will induce ground vibrations on existing structures. 	<ul style="list-style-type: none"> ▪ Use analytical software to evaluate vibration risks onto existing structures. ▪ Monitor existing structures for vibration based on RFP threshold values. ▪ Existing piles will need to be accurately located prior to construction of new piles based on as-built data and field exploration. ▪ New foundations will be located to not be influenced by existing piles. ▪ Any existing concrete pile caps will need to be to avoid conflicts with the proposed footings. Gap between new footing and existing footing will be filled with loose stone to avoid “hard spots.” ▪ Evaluate if vibrations will affect existing nearby structures using analytical software. Provide monitoring plan if required. ▪ Pre-drill piles as require where vibrations are a concern.
Box Culverts	<ul style="list-style-type: none"> ▪ Fill placement above existing culverts will induce settlement of existing culverts. 	<ul style="list-style-type: none"> ▪ Preliminary analysis indicates minimal anticipated settlement. We will perform additional exploration and settlement analysis to validate our current analysis. The culvert will be modified if required to accommodate the possible change in grade due to the fill settlement. ▪ If required, a light weight fill will be used to reduce anticipated settlement.
New I-95 SB RRC Abutments MSE and foundation	<ul style="list-style-type: none"> ▪ Grades will change significantly due to adjacent I-95 SB RRC construction. ▪ Proposed abutments and MSE wall are in very close proximity to I-95 SB RRC abutments. 	<ul style="list-style-type: none"> ▪ Evaluate final grading from the I-95 SB RRC and final structure as-built elevations in relation to proposed abutments. ▪ Either adjust proposed abutment MSE wall footing elevations or design underpinning and sheeting and shoring to avoid impacting adjacent structures and roadway.
(NON-ABUTMENT) RETAINING WALLS		
Retaining Wall at Cut between Station 5484 and 5506 on CD lanes	<ul style="list-style-type: none"> ▪ Existing noise walls in this area are supported on drilled shafts. ▪ Existing adjacent Fall Hill Avenue noise wall foundations were not designed to accommodate a sloped condition for the cut. 	<ul style="list-style-type: none"> ▪ The walls will be designed as post and panel walls to avoid excavations impacting the lateral capacity of the existing shafts. ▪ Enhancement 010, will consider a wall at the location of the Falls Hill sound wall to maintain the current grades. ▪ Post and Panel walls will be supported on deep foundations consisting of 36- to 42-inch diameter drilled shafts with a continuous steel member and designed for anticipated lateral loading.

4.4 Project Approach

Risk Factor	Potential Risk	Mitigation Strategy
MSE Wall planned Station 4506 to 4519 on GP lane	<ul style="list-style-type: none"> ▪ The wall spans over an existing drainage ditch and soft compressible soils are present. 	<ul style="list-style-type: none"> ▪ Additional borings will be focused at these low points better define the anticipated soils below the MSE wall and embankment fill at this location. ▪ Undercut any shallow soft soils that are present at the bearing of the MSE wall. ▪ Both settlement of the MSE and embankment will be evaluated concurrently. Design of the MSE will accommodate the settlement.
Short Modified RW-3 at multiple locations	<ul style="list-style-type: none"> ▪ Minimal boring data at Wall locations. ▪ High Plasticity fine grained soils (Liquid limit greater 50) that will cause shrink/swell. 	<ul style="list-style-type: none"> ▪ Perform borings at all wall locations in Accordance with VDOT's Manual of Instruction (MOI). ▪ Determine where highly plastic shrink swell soils are present at footing locations. Proposed footings at these locations will be bear below the anticipated seasonal moisture or subgrade will be undercut. ▪ All soft soils encountered at bearing elevation will be undercut and replaced with suitable fill.
ROUTE 17 BRIDGE		
Piles	<ul style="list-style-type: none"> ▪ Lateral loading at abutments and piers may induce significant stresses in piles. ▪ Both geotechnical and PDA testing is available but subsurface conditions can vary in short ranges. 	<ul style="list-style-type: none"> ▪ Pile axial capacity will be calculated using in-situ data in conjunction with the SPT data. ▪ We have reviewed the existing PDA for the nearby I-95 SB RRC and will develop a better correlation for design of the piles. ▪ Lateral capacity will be based SPT, CPTu, pressure meter, and Dilatometer testing (where available) to better characterize the soils.
RAPPAHANNOCK BRIDGE		
Abutments	<ul style="list-style-type: none"> ▪ RFP borings are located over 50 feet from Abutments. ▪ Rock and soil elevations vary significantly along short horizontal distances. ▪ Very high and steep slopes are present at toe of proposed Abutment MSE walls. Proposed slope at this location is steeper than 2H:1V ▪ Existing rock outcrops visible, but not mapped. 	<ul style="list-style-type: none"> ▪ Perform additional boring testing at the bridge abutments; if shallow rock is encountered, rock will be cored. In the case of dense IGM soils, perform pressure-meter testing to better model settlement. ▪ In-situ and undisturbed samples will be used to model settlement behavior of soils. The Abutment approach will be modeled using analytical software (Settle3D). ▪ Where possible, map rock outcrops at the toe of the abutments and across the abutment. Perform additional subsurface investigation in conjunction with geophysical exploration (ReMi or MASW) to map rock profile.

Risk Factor	Potential Risk	Mitigation Strategy
Piers	<ul style="list-style-type: none"> ▪ Top of competent rock is variable, low RQD was observed at several locations, and low recovery of rock occurred during drilling. ▪ Nearby borings to Piers 1, 2, and 7 on land show significant variation of top of rock elevation. ▪ Piers 3 - 7 will require access through the causeway. 	<ul style="list-style-type: none"> ▪ Core the rock using NQ triple core barrels. This type of coring results in much higher recovery and better rock samples. ▪ Ensure that footings are bearing on competent rock. GER or his representative will be present during footing excavations to evaluate exposed rock. ▪ Sloping rock will require additional excavation for a relatively flat foundation. ▪ We propose <i>Enhancement 026</i> to perform borings prior to after scope validation of footings at Pier 6 and 7. At all other pier locations, the boring will be drilled during the Scope Validation Period. Where possible we will map the rock with geophysical methods as they will reduce impact to the I-95 SB RRC construction activities. ▪ At Piers 6 and 7 prepare a conservative design of the pier based on nearby data and perform confirmatory borings once access is available.
ACID-SULFATE SOILS		
Bridge Substructure and Areas of Cut & Fill	<ul style="list-style-type: none"> ▪ Current data suggests that corrosive soils are present that will impact bridge piles, although in limited locations. ▪ Current Acid-base accounting data suggests sporadic areas of deficient soils. 	<ul style="list-style-type: none"> ▪ Some of the acidic soils are considered extremely aggressive per VDOT's Bridge Design Manual and identification of aggressive soils at the proposed bridge piles will be required. ▪ Perform additional corrosion testing at structures and delineate corrosive soils. ▪ If corrosion is a risk for bridge piles, we will increase the pile size to allow for adequate sacrificial steel. ▪ Perform additional acid-base accounting in accordance with EP-600/ 2-78-054 in cut and at-grade sections of the project during design. ▪ Treat deficient areas by either replacement of existing soils or mixing lime into the existing soils. Add lime using either the greater of 4 tons per acre or 1.25 times the deficiency.

Unsuitable Soils for Pavement

We have evaluated the anticipated unsuitable subgrade soils as defined in the RFP based on the provided geologic data, and we anticipate encountering unsuitable soils due to high moisture content, highly plastic soils, low strength based on SPT, or potentially low CBR values. Several of the borings indicate shallow groundwater less than 2 feet below proposed grades. The on-site soils are anticipated to be moisture sensitive and shallow groundwater will soften and loosen existing soils when exposed during excavations. During final design, our Team will evaluate the appropriate measures to further mitigate the unsuitable materials. Examples of these measures include undercut and replacement or in-place soil stabilization and treatment.

4.5 - Construction of the Project



4.5 Construction of the Project

4.5.1 Sequence of Construction

The design and sequence of construction developed by our Team and presented in this Technical Proposal emphasize both safety and efficiency through all stages of construction. Our Team’s approach described below and in our Proposal Schedule in Section 4.6 is focused on the following objectives:

- Obtaining Early Work packages in order to achieve:
 - Interim Milestone Date Completion of the FredEx Overlap Area
 - Compliance with Time of Year Restrictions (TOYR) for B609 Rappahannock River Crossing causeway work
 - Maximum duration for the work not impacted by right-of-way acquisitions or utility relocations.
- Ensuring the safety of the traveling public and workers;
- Maintaining mobility and minimizing impacts to the traveling public on I-95, Interchange Ramps, and Route 17;
- Protecting environmentally sensitive areas during construction;
- Ensuring proper coordination with adjacent Projects;
- Committing to **Unique Milestone #1** to provide benefits to traffic mobility and congestion relief during construction; and
- Committing to an Early Completion date in advance of the RFP by sixty (60) days (June 30, 2024).

Our Team’s Proposal Schedule, presented in Section 4.6.1, was developed with input from all Project disciplines including design and engineering, permitting, utilities, right-of-way, QA/QC, and construction. The strategies above will enable us to achieve the enhancements shown in Table 10 below:

Table 10 - Construction Enhancements and Benefits

Enhancements	Benefits
Early design package for causeway modifications and permitting.	Allows schedule to advance on the Critical Path I-95 NB RRC outside the TOYR from October 2020 to February 2021.
Roadway geometry improvements on the I-95 Slip Lanes, GP Lanes and CD Lanes south of the RRC.	Reduces size of Wall C and impacts to existing sound walls from construction of new retaining Wall #1.
Early design package for E&S, MOT, drainage and grading for the FredEx Overlap Area.	Allows maximum duration for construction activities to achieve the Interim Milestone Completion Date of October 29, 2021.
B609 Sequencing Constructs Piers 6 and 7 early in the schedule. Sharing minimal causeway access with the adjacent Project.	Allows the northern Piers 6 and 7 to be constructed in the 2020-2021 season and requires only two 1-day closures of the north river channel. No other portage or closures required in our sequence.
Opening the Ramp D triple left turn lanes to Route. 17 NB including the new traffic signal early in the Project sequencing – Unique Milestone #1 (February 4, 2022).	Relieves congestion for the heavy NB I-95 to NB Route 17 traffic movement and allows early start for the replacement of the I-95 NB CD Bridge over Route 17. (Option #2)
Complete Project on June 30, 2024.	Final Completion sixty (60) days earlier than the RFP requirement.

Project Work Areas

Our Sequence of Work has been developed to allow efficient execution of the Project Schedule. To facilitate this effort, the Project is split into five major Work Areas and several sub-work Zones. The natural dividing line of work is split between south and north of the Rappahannock River. Within each Area/Zone, the sequencing is then organized by Stage, as shown in Exhibits 4.5.2.1 - 4.5.2.4. By establishing distinct Work Areas and Stages, our construction management teams can effectively oversee and manage

4.5 Construction of the Project

construction operations. This allows for the most efficient use of resources and ensures the utmost quality is achieved, while maintaining the highest levels of safety. Additionally, the Work Breakdown Structure (WBS) in our Proposal Schedule isolates the Route 17 Interchange and the work North of Route 17 inclusive of the widened CD lanes and planned FredEx Ramp HWN shown as part of the requirements for the Interim Milestone. Our Work Areas, Construction Sequencing and Staging, and Proposal Schedule include the Base Scope of Work as well as all three Scope Options. Figure 4.5.1.1 and Table 11 below detail each Project Work Area and the major scope elements included in each.



Figure 4.5.1.1 - Work Area Map

Table 11 - Work Areas and Major Elements of Work

Work Area	Sub Area	Major Elements
1. South of Rappahannock River		
Zone 1	South of Route 3 Interchange	<ul style="list-style-type: none"> Noise Barrier C SWM Basin Construction
Zone 2	I-95 NB GP Lanes Sta 4493+00 to 4543+00	<ul style="list-style-type: none"> 45,000 CY of Embankment New Grading / Drainage / Roadway MSE Retaining Wall #2
Zone 3	Route 3 Ramp C Construction	<ul style="list-style-type: none"> 58,000 CY Excavation New Grading / Drainage / Roadway Retaining Walls #1A, #1B, and #1C Modify SWM Pond 9C-1
Zone 4	I-95 NB CD Lanes 5511+00 to 5543+50	<ul style="list-style-type: none"> Shoulder Widening / Replacement to Existing I-95 NB Replacement of Guardrail Extension of Noise Barrier FH
2. Rappahannock River Bridge Crossing (B609)		
	Causeway	<ul style="list-style-type: none"> Reconfiguration and Removal of Causeway System for Bridge Pier Access
	Substructure	<ul style="list-style-type: none"> Abutment and Pier Construction
	Superstructure	<ul style="list-style-type: none"> Structural Girder and Bridge Decks
3. North of Rappahannock River		
Zone 1	I-95 NB GP Lanes 4555+00 to 4606+00 (Route 17)	<ul style="list-style-type: none"> 17,000 CY Excavation / 15,000 CY Fill New Grading / Drainage / Roadway
Zone 2	I-95 NB CD Lanes 5554+50 to 5606+00 (Route 17)	<ul style="list-style-type: none"> Additional Lanes and Approach to Route 17 Ramp D Shoulder Widening / Replacement of Guardrail
4. I-95/Route 17 Interchange		
Zone 1	Ramp D - NB CD Lanes to Route 17	<ul style="list-style-type: none"> Ramp Widening / Triple Left Turn Lanes
Zone 2	Ramp B - SB CD Lanes to NB Route 17	<ul style="list-style-type: none"> Ramp Widening / Triple Right Turn Lanes

4.5 Construction of the Project

Work Area	Sub Area	Major Elements
Zone 3	Route 17 Work	<ul style="list-style-type: none"> Widening and Signal Work up to Gateway Drive and Sanford Drive
	Option #2 – Replacement of Existing I-95 NB CD Lanes Bridge (B608)	<ul style="list-style-type: none"> Phased Demolition and Reconstruction of the Existing I-95 CD Lane Bridge over Route 17
	Option #3 – Sidewalk Connection through Route 17 Interchange	<ul style="list-style-type: none"> Sidewalk Installation with Pedestrian Crossings
5. Work North of Route 17 Interchange		
Zone 1*	I-95 NB CD Lanes 4619+00 to Tie-In to GP Lanes 4681+25	<ul style="list-style-type: none"> New Grading / Drainage / Roadway
Zone 2*	FRED-EX Ramp HWN	<ul style="list-style-type: none"> 60,000 CY Excavation / 40,000 CY Fill New Grading / Drainage / Roadway
Zone 3	I-95 NB CD Lanes to Sta 4619+00	<ul style="list-style-type: none"> New Grading / Drainage / Roadway
OPT 1	Option #1 – Auxiliary Lane Extension	<ul style="list-style-type: none"> Additional Lane to GP Lanes of I-95 NB

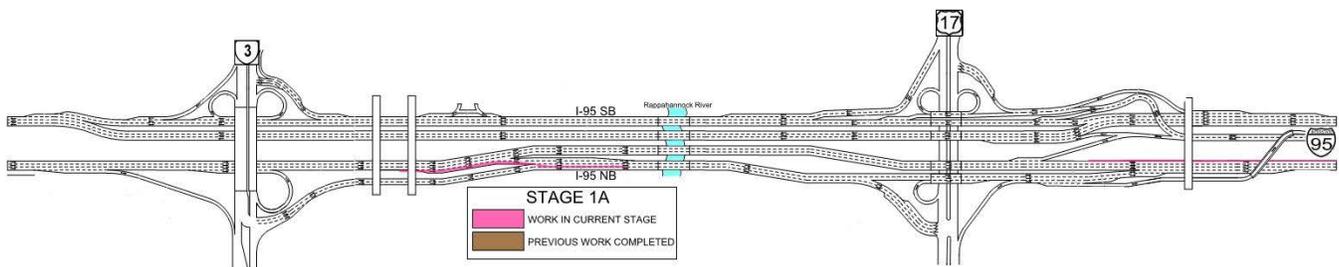
* Work Associated with Interim Milestone Overlap Area

Construction Sequence

From a macro level, the sequencing, staging, and flow of work between the Work Areas defined above is depicted in Exhibit 4.5.1.1 labeled “Sequence of Construction and Summary Schedule.” The narrative below details our Maintenance of Traffic Staging along with associated construction work. Exhibit 4.5.1.1 and the narrative below are color coded to easily show the progression of work in each Work Area. Additionally, Exhibits 4.5.2.1 through 4.5.2.4 provide detailed MOT staging with the same color coding scheme.

A benefit our sequence of work is it allows many portions of the Project to be constructed out of traffic and behind temporary concrete barrier service (TCBS) with limited dependence on daily/nightly lane closures for access or material deliveries.

Stage 1A - Temporary Shoulder Widening (Nov 2020 - Feb 2021)



Our Team is committed to maximizing shoulder widths during all stages of construction. In order to accomplish this, certain areas of the Project will require temporary widening and subsequent lane shifts so that a 10’ paved shoulder can be maintained at all times. In our Early Works Package, temporary TTC plans will be developed to incorporate all areas requiring adjustment. This work will be performed during allowable single or double lane closure periods. In these areas, existing rumble strips will be milled and re-paved prior to placement of new pavement markings.

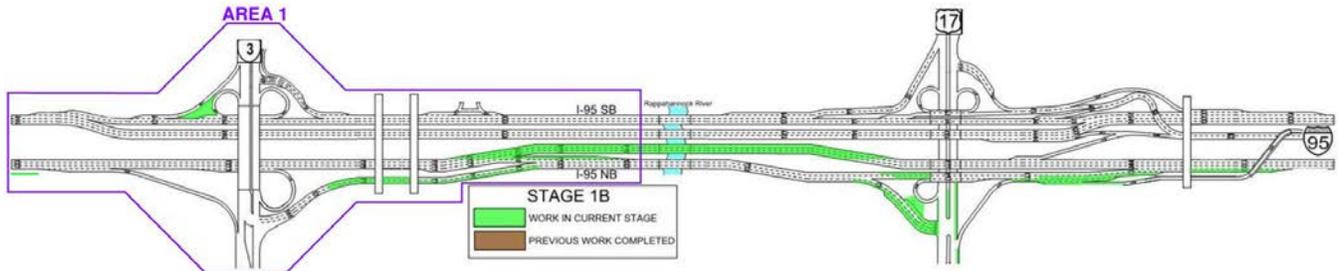
Stage 1B - Construction of Major Portions of Work

Work Area 1 (Zone 2): I-95 NB GP Lanes (Mar 2021-May 2022)

Stage 1B construction begins with the installation of perimeter erosion control devices and sediment basins in this Work Area. This Area will require the construction of MSE Retaining Wall #2 for 1,310 linear feet to support the embankment for the NB I-95 GP Lanes. During the early stages, work may still

4.5 Construction of the Project

be active on the I-95 SB RRC Project; we will therefore plan construction access from the left shoulder of existing NB I-95 GP Lanes in order to receive trucked embankment and drainage materials. Following the completion of the I-95 SB RRC Project, it will be necessary to close the left shoulder of the new SB I-95 GP Lanes and place TCBS for the installation of the MSE Wall #2 leveling pad and MB-7F placed at the base of the new wall. Earthwork required for the fills will be generated from the new Route 3 Ramp C Work Area and SWM Basin excavation located in the Route 3 Interchange.



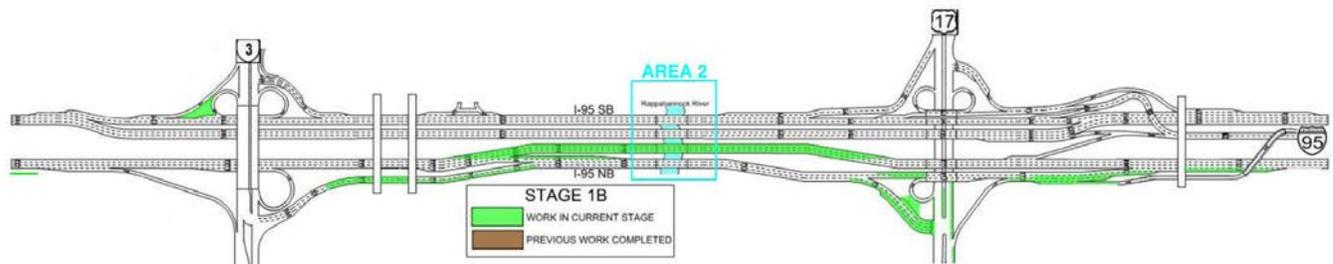
Work Area 1 (Zone 3): Route 3 Ramp C (Sept 2021-July 2022)

Construction of Route 3 Ramp C requires the installation of three cut retaining walls #1A, #1B, and #1C to support the existing sound barrier walls. Crews will be constructing these walls and generating excavated soils to be hauled to Work Area 1, Zone 2. Access to this area is behind TCBS that will be placed along the existing right shoulder of the NB I-95 GP Lanes. The southern portion of Route 3 Ramp C will require right-of-way acquisition, ITS utility relocations and clearing and grubbing prior to construction of the permanent roadway. This Work Area will extend north of the Fall Hill Avenue overpass in this Early Stage. This Work Area will be opened at the end of Stage 2B when the NB I-95 CD Lanes are complete and ready to receive traffic.

Work Area 1 (Zone 1): South of Route 3 Interchange (Aug 2022-Nov 2022)

This Work Area sits outside of the majority of the major construction activities and will carry float in our overall sequencing. The major element of work in this area is the construction of Noise Barrier C which is located adjacent to the Idlewild Community along existing NB I-95 Lanes. Following acquisition of right-of-way and design and procurement of noise barrier materials, construction crews will access this area only from the NB I-95 right shoulder. ***Our Team will restrict any work vehicles from entering the neighborhood streets for construction access or deliveries.*** Noise barrier foundations will be designed with this access in mind which may preclude larger construction equipment and wheeled vehicles from close access to the foundation locations. The other work element in this area is construction of SWM Basin(s).

Work Area 2: I-95 NB Rappahannock River Crossing (Feb 2021-Apr 2023)



The NB I-95 GP lane bridge over the Rappahannock River, B609, presents unique constructability challenges due to access, height, length, water features, and the proximity of the existing NB I-95 Bridge and the new SB I-95 GP lane bridge currently under construction. The narrative below describes the phases and steps that our Team will perform in order to successfully deliver this critical element to the Project.

4.5 Construction of the Project

Phase 1 – Modification to Existing Causeway

By necessity primary access to the work area will be from the I-95 SB RRC Project causeway. Our Early Works Permitting Package, will allow us to make modifications to the causeway during the October 15, 2020 to February 15, 2021 TOY window for work in the Rappahannock River. These modifications will not affect the I-95 SB RRC Project in any way. To maintain ongoing river traffic with only intermittent interruptions, a removable temporary causeway will be utilized for one day to walk our crane to the northern shore area in the vicinity of Piers 6 to 7. Once the crane is staged properly, the temporary causeway will be removed and the open channel restored. As described in Section 4.3.1(e), the existing causeway will be modified in this region to gain access to the Pier 6 foundation, as shown in Figure 4.5.1.2. With the crane in place, Piers 6 and 7 and Abutment B will be constructed. A temporary access road for light vehicles and small equipment will also be constructed to the Abutment B side of the bridge.



Figure 4.5.1.2 Phase 1 Modification to Existing Causeway for Piers 6 and 7

Phase 2 – Construction of Piers 1, 6, and 7, Abutment B, and Abutment A

To access the river bed for footing construction a cofferdam system will be used. Access to the individual Pier locations will be via rip-rap fingers from the main causeway. A temporary access ramp traversing the footprint of Abutment B to Piers 6 and 7 will allow routine deliveries, such as fuel, and worker access. With construction of Piers 6 and 7 complete, this access ramp will be removed and Abutment B built. Access for Abutment A construction will be from the median area of I-95, as shown in Figure 4.5.1.3.

As the substructure elements are completed in the northern side of the river, we will begin removal of the causeway, fingers and cofferdams. All equipment and supplies will be removed with the large crane being walked out of the area via a temporary 1-day obstruction of the main channel as described in Phase 1. This represents the final blockage of the main channel as any subsequent superstructure work will be accessed from above. The schedule presented in Section 4.6.1 depicts this causeway removal and temporary causeway work occurring in the October 15, 2021 to February 15, 2022 Time of Year window.



Figure 4.5.1.3 Construction of Piers 6 and 7, Abutment B to North and Pier 1 and Abutment A to South

Phase 3 – Erection of Structural Steel at Spans G and H

As discussed in Section 4.3.2, in order to facilitate the use of the existing NB Bridge for material deliveries and steel erection, traffic will be shifted to the east (right) bridge parapet leaving a 2' shoulder. The shifted three lanes and a left shoulder shall be maintained throughout construction cordoned off by Group II Channelizing Devices. Temporary shoulder and/or lane closures of these lanes will be performed as necessary and within the time frames and parameters allowed.

With the completion of all substructure elements from Pier 6 to the North, superstructure work will begin with the erection of structural steel girders on Spans G and H.

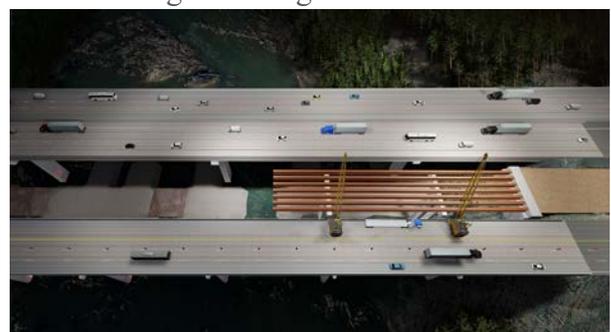


Figure 4.5.1.4 Phase 3 Erection of Structural Steel Girders at Spans G and H

4.5 Construction of the Project

As depicted in Figure 4.5.1.4, steel erection will occur at night during allowable lane closures on I-95 NB. A tandem crane pick method will be used to safely erect the girders.



Figure 4.5.1.5 Phase 4 Modifications to Existing Causeway

Phase 4 – Modification to Existing Causeway

Within the October 15, 2021 to February 15, 2022 TOY window, our Team will modify of the existing causeway constructed by the I-95 SB RRC Project. To account for the substructure layout of B609 Causeway fingers and cofferdams will be constructed to access construction for Piers 2, 3, 4, and 5, as shown in Figure 4.5.1.5.

Phase 5 - Substructure Construction Piers 2 through 5

Following completion of the in-river work in Phase 4, the balance of the Piers for B609 Bridge will be constructed, as shown in Figure 4.5.1.6. This final Phase of substructure construction is on the critical path of our Project Schedule. We are planning to have one pier stem form capable of construction of ½ of the pier height and one pier cap form. The stem form shall progress uninterrupted during substructure construction with the cap form following shortly thereafter. With the last four substructure elements in place, the temporary causeway will be modified in order to set the remaining structural steel for the Bridge.



Figure 4.5.1.6 Phase 5 Substructure Construction of Piers 2-5

Phase 6 - Erection of Structural Steel – Spans A through F

Depicted in Figure 4.5.1.7, structural steel erection will occur in two steps for Spans A through F in Phase 6. Step 1 work will entail the erection of the 3 outside (east) girders of the spans utilizing the crane from the causeway below. An assist crane will remain on top of the existing NB I-95 bridge. Steel deliveries will also be received from atop the existing bridge. Step 2 erection for the remaining girders will occur similar to Phase 3 described earlier.

Upon completion of structural steel erection, the causeway will be removed. While decking and substructure work is occurring, crews will remove the causeway starting in the Fall 2023 TOY window.



Figure 4.5.1.7 Phase 6 Erection of Structural Steel – Spans A through F (Left: Step 1, Right: Step 2)

4.5 Construction of the Project

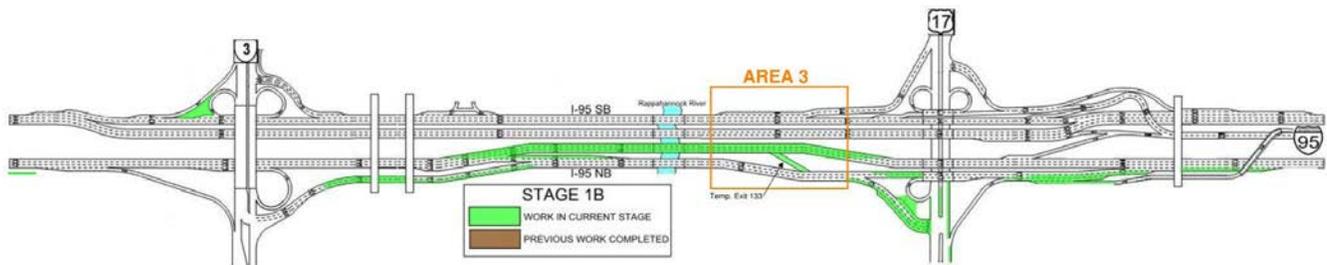
Phase 7 - Final Decking and Bridge Finishes

Phase 7 work will be timed with the progression of the substructure and structural steel erection in order to achieve efficient production in the SIP and reinforcing steel placement. As shown in Figure 4.5.1.8, the lightweight concrete deck will be installed with approach and finishes following shortly thereafter. Subsequent to the bridge safety inspection, any remaining temporary access shall be removed and the northern shoreline restored. With the roadway tie-ins complete to the approach slabs, the new NB I-95 GP Lanes will be ready to open to traffic.



Figure 4.5.1.8 Phase 7 Final Decking and Bridge Finishes

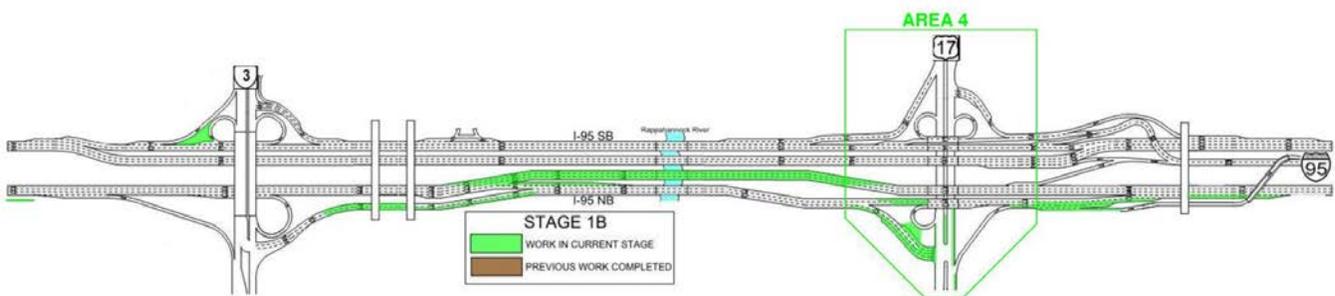
Work Area 3 (ZONE 1): NB I-95 NB LANES (Sept 2021 – Apr 2022)



Early in the beginning of Stage 1B of this Work Area, access will be gained from the left shoulder of existing NB I-95 GP Lanes. This Area is nearly balanced from an earthwork perspective, and the challenge is that our work must capture and control the drainage run-off from the newly constructed I-95 SB RRC Project during construction. As the roadway and drainage elements are being installed crews will construct a temporary connection to Route 17 Ramp D. This connection will serve the Route 17 interchange for NB I-95 traffic in the next Stage 2A.

Work Area 4 (Zone 1): Ramp D - NB CD Lanes to Route 17

Work Area 4 (Zone 3A): Widening of Route 17 South of I-95 (May 2021 – Feb 2022)

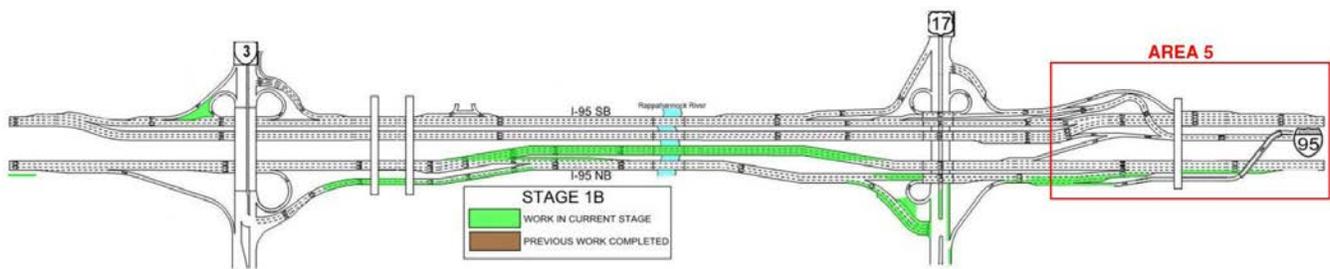


Early work will continue with the reconstruction and widening of existing Ramp D from the existing I-95 NB CD Lanes to the intersection of Route 17. The widening of Route 17 will occur concurrently south of I-95 to Short Street with the goal of constructing the new triple left turn lanes on Ramp D and the new receiving lanes on NB Route 17. The new traffic signal will be activated to allow the removal of traffic movements from existing Loop C. This is represented as our Team's **Unique Milestone #1** scheduled for February 4, 2022. This Milestone creates a benefit to the traveling public by improving congestion of the heavy I-95 NB to Route 17 NB traffic movement. It also eliminates a travel lane across the existing NB I-95 CD Bridge over Route 17, increasing safety and greatly improving the traffic movements for the phased demolition and reconstruction of the bridge.

4.5 Construction of the Project

WORK AREA 5 (ZONE 1): I-95 NB CD LANES

WORK AREA 5 (ZONE 2): FRED-EX RAMP HWN (Jan 2021 – Oct 2021)



These areas will be constructed concurrently and require major earthwork operations. With the Interim Milestone Completion of the FedEx Overlap Area, this work will occur early in our schedule sequence. Upon receipt of ROW and environmental permits from VDOT and completion of Plans, crews will start with the extension of the triple box culvert at Falls Run. Earthwork cut at the northern portion of this Work Area will be brought to the deeper fills surrounding the completed box culvert area. Upon completion of the major earthwork, electrical and sign crews will begin installation of the ITS infrastructure necessary for the Overlap Area. Median barrier will be installed separating the CD Lanes from future Ramp HWN. Work is scheduled in our 4.6.1 Proposal Schedule to be complete and accepted by the October 29, 2021 Interim Milestone Date.

End of Stage 1B - Major Traffic Shifts

The end of Stage 1B is highlighted by two major traffic switches:

1. *Unique Milestone #1* - Opening of New Ramp D and Triple Left Turn Movement to Route 17 NB

The first major traffic shift for motorists will be the opening of the new Route 17 Ramp D triple left turn lanes to NB Route 17 and the subsequent closing of existing Route 17 Loop C. This change will greatly enhance the safety and mobility of drivers during the demolition and reconstruction of the NB I-95 CD Lane bridge over Route 17 (Option #2). We commit to opening the new triple left turn by February 4, 2022.

2. Opening of new NB I-95 Rappahannock River Crossing (B609)

The most significant traffic shift for the Project will be the opening of the new NB I-95 Rappahannock River Crossing and the associated portions of the NB I-95 GP Lanes. Following bridge and road construction, NB I-95 traffic will be diverted to the new roadway in an overnight traffic shift. At the time of the initial shift to the new GP Lanes, Route 3 Ramp C will not open. It will remain closed in order to fully construct the new NB I-95 Slip Ramp into the NB I-95 CD Lanes south of the Rappahannock.

North of the Rappahannock, in order to maintain traffic to Exit 133- Route 17, the Team will construct a temporary ramp to connect the new I-95 NB GP Lanes to the existing NB I-95 CD Lanes and Route 17 Ramp D.

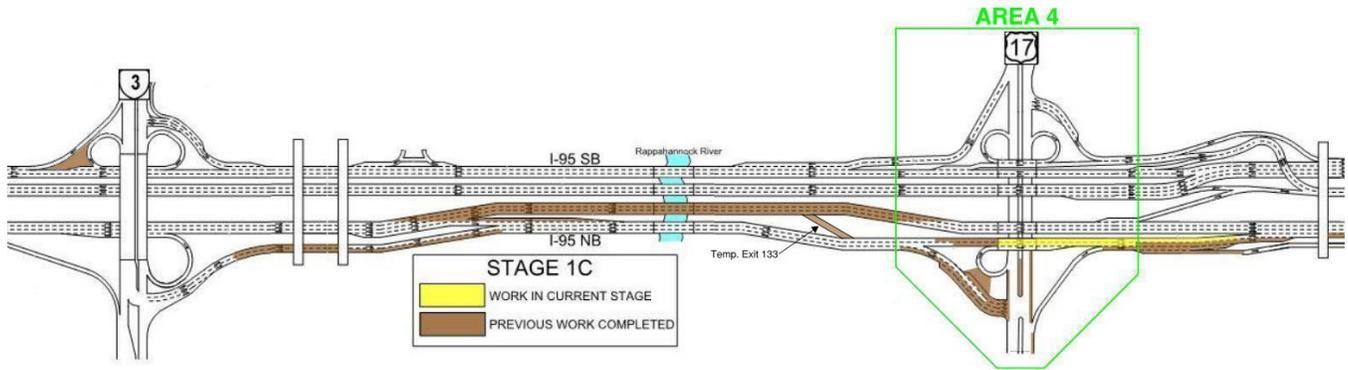
Stage 1C - I-95 CD Lane Bridge Over Route 17 (Option #2)

Work Area 4 (Option #2): Replacement of Existing I-95 NB CD Lanes Bridge (B608) (Feb 2022- Oct 2023)

The NB I-95 CD lanes bridge over Route 17 presents unique constructability challenges due to the fact that the footprint of the new bridge is nearly identical to that of the existing bridge. Furthermore, Pier work in the median of Route 17 is constrained by traffic on both sides and by the proximity of existing bridge structures. In order to mitigate these challenges, our schedule focuses on a detailed and well planned

4.5 Construction of the Project

sequence of construction.

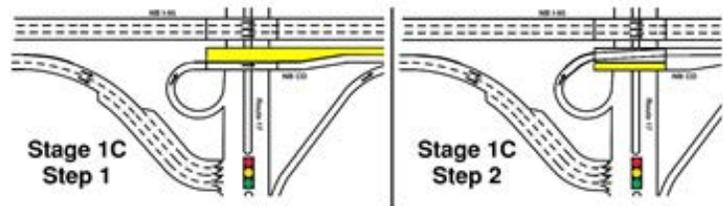


Prior to beginning work on Bridge B608, traffic will be shifted along Route 17 and the NB I-95 CD Lanes. To facilitate abutment demolition, support of excavation will be installed at each abutment. Prior to deck demolition, a timber demolition shield shall be installed over Route 17. Our plan is to saw cut the existing deck and remove slab sections, followed by girder removal. The existing structure is classified as “Type B” and provisions to protect the environment and workers will be utilized and disposal methods/locations documented.

Pier construction will be accessed via the median area of Route 17 and support of excavation will be required. Disturbance of the existing footing will be kept to a minimum and piles located to avoid the existing structural footing. Furthermore, the new pier will be stand alone and not designed nor constructed to utilize the existing footing for structural loads. Conventional MSE walls will be constructed for Abutments A and B; however, wire walls will be required along the staging line during Stage 1. These wire walls will remain in place with Stage 2.

Bulb-T girder erection will be performed with intermittent stoppages of Route 17. Debris shielding shall be installed between girder lines over the roadways to allow uninterrupted installation of SIP forms. Reinforcing will be installed, concrete decks placed, parapets constructed, and approaches completed.

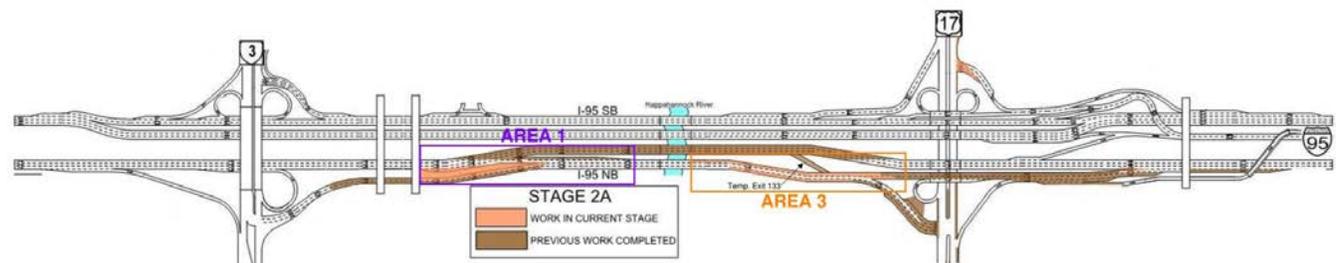
With Step 1 complete, traffic will be shifted to the newly constructed bridge and Step 2 construction completed in similar fashion to Stage 1.



Stage 2A - NB I-95 CD Lane Completion and Ramp B

Work Area 1 (Zone 4): I-95 NB CD Lanes 5511+00 to 5543+50

Work Area 3 (Zone 2): I-95 NB CD Lanes 5554+50 to 5606+00 (May 2023-Nov 2023)



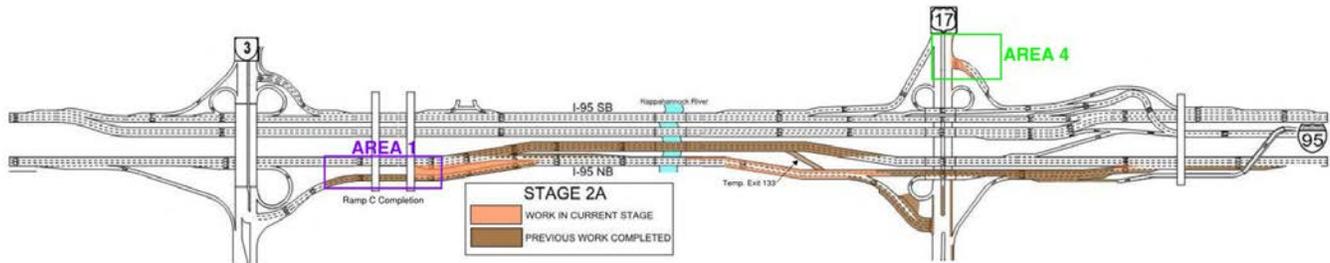
These two Work Areas will be constructed concurrently following the opening of the new I-95 NB GP

4.5 Construction of the Project

Lanes. The work will involve the widening or replacement of existing shoulders, drainage, installation of concrete median barriers to isolate the GP and CD Lanes, and the removal and installation of new guard-rail to meet current standards. Noise barrier FH will also be constructed in this Stage. With the majority of the work occurring out of traffic, all asphalt milling and final surface pavement overlays will be performed prior to opening the CD lanes to traffic.

Work Area 1 (Zone 3) Route 3 Ramp C (May 2023 – July 2023)

Work Area 4 (Zone 2) Route 17 Ramp B (July 2022-Nov 2022)



Completion of the Route 3 Ramp C will occur in this Stage including the final installation of all median barrier and BPPS elements. All final surface asphalt pavement and pavement markings will be installed prior to opening of traffic.

Area 4, Stage 2A will begin the reconfiguration of Route 17 Ramp B. Work will begin with the inside widening of the existing Ramp and traffic will be shifted to the new pavement. Concurrently, crews will be widening the NB Route 17 lanes from north of the I-95 overpass to Gateway Drive. The new traffic signal infrastructure will be installed for the future triple right turn lanes from SB I-95 CD Lanes to NB Route 17.

End of Stage 2A - Major Traffic Shift

The end of Stage 2A is highlighted by the following major traffic switch:

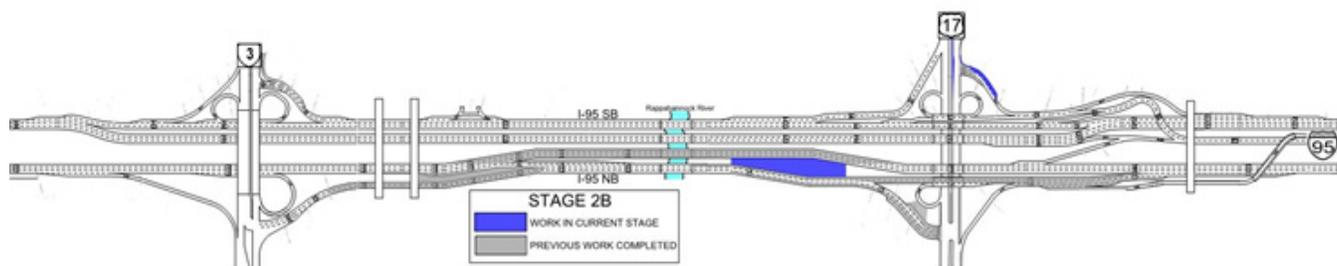
- Opening of the new I-95 NB CD Lanes from Route 3 Ramp C to Route 17.

The new I-95 NB CD Lanes will be opened in one night-time operation. This switch will also include the opening of new Route 3 Ramp C. All openings are intended to occur with final surface asphalt and permanent pavement markings in place. A benefit to our Sequence of Construction is that the Bridge B608 I-95 NB CD Lane replacement will be complete prior to the opening of the CD Lanes. Drivers will have full access to all new lanes, mitigating driver confusion as no permanent lane closures or major construction work will occur at the time of the shift.

Stage 2B - Ramp B Completion and Removal of Temp Ramp D

Work Area 4 (Zone 2/3): Route 17 Ramp B (May 2023 - Nov 2023)

Work Area 3 (Zone 1): Remove Temporary Route 17 Ramp D (Nov 2023 - Jan 2024)



In Stage 2B, Ramp B and the northern portion of the Route 17 Widening will be completed. The new

4.5 Construction of the Project

traffic signal at the Route 17 and Ramp B and the modifications to the traffic signal at Sanford Drive/Gateway Drive intersection will be completed. Additionally, in this Stage, the final portions of the Option #3 - Route 17 Sidewalk will be completed, should the Department move forward with the work. The timing of the completion of the Ramp B and Route 17 work is coinciding with the opening of the I-95 NB CD Lanes as the intent is to complete all Route 17 major construction by the November 2023 opening date.

Following the opening of the I-95 NB CD Lanes, crews will quickly remove the temporary Route 17 Ramp D and replace the opening with the permanent median barrier. All shoulders will be restored and final surface asphalt placed in this area.

Work Area 5 (Option #1): Auxiliary Lane Extension to Exit 136 (Nov 2021 - Sept 2022)

Should the Department exercise Option #1, the work will be constructed following the completion of the FredEx overlap area north of Ramp HWN. The sequencing for this work will begin with improvements to the left shoulder of NB I-95 that will occur similar to that in Stage 1A. Following the shift of NB I-95 traffic to the left, traffic barrier will be placed along the right shoulder and access to the area will be gained via one opening in the barrier and at either end.

Earthwork for the Auxiliary Lane extension consists of sliver cuts and fills for the length of the work area and extensions to existing minor drainage crossings and new ditchlines will be established. In order to eliminate impacts to existing streams and wetland areas, our Team will use retaining walls to avoid the extension of 3 box culverts along the Auxiliary Lane alignment. Opening of the new Auxiliary Lane will be coordinated with the FredEx Project and VDOT and available by the Spring of 2023.

Safety and Operations

At the top of our list of Shirley's Core Values is the safety of our people, our subcontractor partners, the client, and the public. The design and the means and methods of construction are developed with the safety of the workers and the traveling public as the highest priority. Our motto "Safety Starts with Me" reflects the company's policy and position that every individual must be involved, empowered and accountable for Project safety. The construction team will implement safety on site through the following standard practices:

- Training on construction safety, fall protection, first aid, rigging, trenching, and excavation;
- A Safety Manager assigned to the Project and support from the Safety Department;
- Safety Orientation for all Shirley and subcontractor employees;
- Daily safety talks and review of the Safe Plan of Action (SPA) for each day's activities;
- Daily safety inspections performed by members of the Project Team;
- Monthly Team safety meetings to review incidents and new safety topics;
- Issuance of a Shirley "Dig Permit" prior to any excavation activity;
- 100% Glove Policy to mitigate hand injuries; and
- Recognition of employees who consistently display a good safety attitude, follow safe work practices, and achieve safety performance goals.

For the safety of the traveling public, our Team's Transportation Management Plan (TMP), presented in Section 4.5.2, provides the baseline for maintaining mobility throughout the Project. Construction access has been well thought out to limit impacts to the public and will be coordinated with the adjacent construction projects. For the work zone setup, or any temporary lane closures, the VDOT Work Zone Safety Checklist will serve as the minimum standard for conformance with the Project's safety requirements, and checks will be performed daily. In the case of any incidents on or adjacent to the site, our Team will work closely with first responders, VDOT's Traffic Operations Center (TOC) and Incident Management staff to make the scene safe and restore traffic as soon as possible.

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Staging and Storage Areas

Our Team understands the importance of a smart site logistics plan and good housekeeping, as both improve public perception and safety for all involved. Storage of materials will be isolated to areas where safe delivery access can be provided while ensuring that no material is stored in a location which would introduce a hazard (such as obscuring line of sight) to the travelling public, construction, or inspection staff. Material staging areas will be defined for both roadway and bridge elements.

The Project contains large portions of construction work which are able to be constructed out of traffic and lend themselves well to create efficient staging and storage yards. In Section 4.5.2, per the Sequence of Construction and MOT Staging Exhibits 4.5.2.1 - 4.5.2.4, our Team's proposed construction entrances and staging/storage yard locations are depicted. As work progresses, the staging areas will be removed and relocated upon the major traffic movements and opening of new Work Areas. We also recognize that construction entrance locations may need to be adjusted during construction and will work with the Department, QA, and our Safety Manager to assure that we have the optimized location for truck traffic that is entering and exiting work areas.

4.5.2 Transportation Management Plan

Our Team is dedicated to delivering this Project in a way that exceeds expectations for the minimization of public impacts for all stakeholders during construction. Above all, our TMP and TTC Plans will be developed with a focus on maximizing safety for the traveling public and construction personnel while minimizing travel delays. To accomplish these safety and mobility enhancements, we have committed to several mitigation and communication strategies that exceed the requirements of the RFP, including:

- Where work does not encroach into the right shoulder, we will set temporary barrier 10' back from the edge line, to retain a 10' right shoulder in addition to a 10' left shoulder;
- Where work is required in the right shoulder area, staggering work to provide emergency pull-offs along the right shoulder;
- Opening Ramp D improvements early (*Unique Milestone #1*) to allow the NB CD bridge over Route 17 to be reconstructed without a temporary weave lane on the bridge (Option #2);
- Utilization of enhanced safety devices targeted to address specific conditions on I-95, such as wider than required pavement markings and longer than required lane shift lengths;
- Opening the NB CD in one single traffic switch at the end of Stage 2A, avoiding an interim opening of the exit from NB I-95 to Route 17 (Exit 133);
- Enhancing public communication outreach; such as building a scale model walk-through of the new Exit 133 configuration complete with overhead signs for a "pre-opening" public meeting, and "drive through open houses" at the SB I-95 welcome center; and
- Committing to regular work zone traffic control reviews by design engineers, to ensure design is implemented as intended, and to suggest safety enhancements.

TMP Philosophy

Our TMP and Construction Sequencing is focused on reducing the Project's anticipated impacts to the traveling public and exceeding the safety requirements of the RFP. Our TMP and TTC plans will place a particularly heavy emphasis on eliminating the need for temporary lane closures to the extent possible, as we thoroughly understand the impact that lane closures can have on this heavily congested section of I-95. 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 served in this role for four previous interstate widening projects, as well as the I-95/Route 630 Reconstruction and Widening Project allowing him to understand the unique safety and mobility considerations of this Project. Furthermore, our

4.5 Construction of the Project

Team commits to additional field reviews by our traffic engineering staff during construction is in addition to the Work Zone Safety Inspections completed by our QA and QC Team. These regular reviews will verify that traffic controls have been implemented correctly and provide recommendations for further enhancements. An example of a TTC Engineer Monitoring Report can be seen in Figure 4.5.2.1.

Sequence of Construction/Phasing

As introduced in Section 4.5.1, the Project will be segmented into five Areas (Area 1-5), each of which has unique construction and temporary traffic control features. For each of these Work Areas, we have developed area-specific Sequence of Construction and MOT Phasing strategies as highlighted on Exhibits 4.5.2.1 through 4.5.2.4 located at the end of this section. Color

coded shading is applied to each work element to show the sequencing of construction. Additionally, critical typical sections for each Stage of work are included to detail the MOT (TTC) phasing we will use to safely maintain all lanes during construction.

This sequencing allows our Team to efficiently construct the Project while minimizing impacts to traffic. We carefully studied numerous options when developing this staging, resulting in a plan that minimizes the need for temporary lane closures and maximizes the maintenance of shoulder areas. Sequencing highlights detailed in the exhibits include:

- Use of a pre-stage (Stage 1A) for off-peak shoulder operations necessary to begin Stage 1B permanent widening. This includes rumble strip removal where traffic will be shifted onto this shoulder, temporary shoulder widening to achieve a 10' remaining shoulder width, and shoulder strengthening where required;
- Staging work to maintain full 10' left and right shoulders in Area 1, ***exceeding the requirements of the RFP***;
- Constructing and opening Ramp D (***Unique Milestone #1***) prior to Stage 1C Option #2 NB CD over Route 17 bridge reconstruction, improving safety by eliminating a weave condition on this bridge during reconstruction ***exceeding the requirements of the RFP***;
- Opening the new Exit 133 and NB CD in one single traffic switch at the end of Stage 2A, avoiding the need for drivers to learn multiple travel pattern changes and avoiding multiple public outreach campaigns, ***exceeding the requirements of the RFP***; and
- Utilization of a sequencing that allows Interim Milestone work north of Route 17 to be accomplished with independent phasing, with staging that is not dependent on progress of other Project construction activities.

Traffic Control Details for Maintaining Traffic During All Phases

In addition to the sequencing of construction and TTC typical sections shown on Exhibits 4.5.2.1 through 4.5.2.4, this section includes the traffic control details to be implemented. Upon Project Award, we will begin the design of the Type C, Category V TMP and will develop site-specific Temporary Traffic Control (TTC) plans for each Stage of construction, with corresponding Erosion and Sediment Control (E&S) plans for each Stage. The TTC plans will detail all controls required for construction, such as work areas, temporary barrier, attenuators, channelizing devices, signs, PCMS, temporary markings, temporary drainage elements, construction access points, and all other requirements per VDOT's I&IM 241.7, the

The image shows a document titled "Temporary Traffic Control - Engineer Monitoring Report" from Dewberry Engineers Inc. The report includes the following information:

- Project:** Route 7 Corridor Improvements
- Location:** Fairfax County, VA
- Roadway:** Route 7
- Review Date & Time:** August 28th, 2019, 11:00 AM
- Report Date:** September 9th, 2019
- Report Number:** 02
- Review Performed By:** Gerard (Jerry) Mrykalo, PE, PTOE

General Findings Regarding Temporary Traffic Control:

The work area was observed to be in general good condition. The vast majority of pavement markings were highly visible, and temporary raised pavement markers were in place. Modifications to address observations and recommendations included in Report #01 did not appear to be implemented yet.

Comments Regarding Temporary Traffic Control:

1. It was observed the lane shift markings along westbound Route 7 from Sta. 209+73 to Sta. 206+65 did not appear to be 12" wide as denoted on plan sheet 1L(4). Ensure all pavement marking widths are the widths specified in the plans.
2. The edge line markings and drum placement around the median of Route 7 at Reston Avenue do not appear to be per plan sheet 1L(1). Ensure markings and drum placement are installed per plan sheet 1L(1).

Figure 4.5.2.1 Example TTC Engineering Report

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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 to reduce the likelihood of a high severity crash into an attenuator. Additional details are as follows:

I-95, Interchange Ramps, and Route 17 (Including Options #1, #2, and #3)

- All thru lanes and ramp lanes will be continuously maintained during all Stages, with the exception of temporary lane closures (time of day restrictions) following the hours defined in Part 2, Section 2.10.3 of the RFP. Temporary lane closures are anticipated for activities such as night time paving, placement of traffic barriers, delivery of materials, and bridge work;
- No detours are planned. 30-minute maximum full stoppages are only expected for overhead work (such as sign structure erection) and opening of new alignments;
- Flagging operations are only anticipated for overhead signal work along Route 17; and
- Minimum lane widths will be 11' (wider lanes to be maintained on ramps).

Work Zone Speed Reductions

Our Team has taken the proactive step of already completing an analysis utilizing VDOT's TE-350 process to determine a preliminary recommendation for the posted speed limit during construction. Based on this analysis, we recommend reducing the existing posted speed limit of 65 mph to 60 mph on I-95 for the following reasons:

- There were 2,511 crashes within the Project limits between 2013 to 2017 including eight fatality crashes; and
- The combination of high traffic volumes and high existing speed limit presents increased risk for both the traveling public and workers.

While our Team recommends this reduction, our temporary geometry and lane shifts will meet the standards for the existing speed limit of 65 mph to enhance safety, *exceeding the requirements of the RFP*. This speed reduction recommendation will be discussed with VDOT post-Award, and the final determination will be made in coordination with the District Traffic Engineer. Upon implementation, our Team also commits to the utilization of a Speed Display Trailer / Radar Speed Trailer as an additional enhancement.

Unique Project Challenges and Solutions

In addition to the minimum requirements of the RFP, 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 identified the following challenges and devised unique solutions to address each:

1. Crash Avoidance and Incident Management

While the entire length of I-95 in Virginia is a vital roadway, the section within the Project limits is further critical given the higher volumes between Exit 130 and Exit 133 and it is one of the number of crossings of the Rappahannock River in the region. Furthermore, the planned temporary closure of the Chatham Bridge in Fredericksburg puts even more emphasis on the need to avoid crashes and to quickly clear incidents when they do occur. Given this understanding, our Team commits to the following crash avoidance and incident management techniques:

- **Maintaining Shoulders:** Wherever possible, we commit to maintain both 10' left and 10' right shoulders during construction, *exceeding the requirements of the RFP*. This will be primarily

4.5 Construction of the Project

implemented in Work Areas 1 and 5, where temporary barrier will be set 10' back from the edge of the travel lane in areas where excavation does not encroach into this right shoulder area. These additional shoulders provide an “escape route” to help avoid right lane rear-end crashes, and will provide important refuge for vehicle breakdown, crash cleanup, or police enforcement without blocking the right lane. Furthermore, the additional shoulders facilitate EMS to more quickly navigate thru stopped traffic when responding to incidents.

- **Forgiving Geometry and Enhanced Safety Devices:** Crash avoidance thru targeted safety enhancements are the best way to reduce the number of incidents. We have proactively studied the existing crash trends, and commit to the utilization of the following enhanced safety devices that all *exceed the requirements of the RFP*:

- Full continuous temporary raised pavement markers with installation of all temporary markings, as shown in Figure 4.5.2.2 for increased lane visibility especially at night and during wet pavement conditions (only required at lane shifts per the Work Area Protection Manual);
- Use of wider than required lane lines for increased delineation of lane shifts;
- Use of full “L” length for lane shifts (not ½ L as allowed) to provide “forgiving geometry” and reduce potential side-swipe and run-off-road crashes; and
- The use of tighter than required channelizing device spacing for increase work zone delineation and improved safety.



Figure 4.5.2.2 Enhanced Safety Devices

- **Use of Emergency Pull-Offs:** For areas where excavation is required in the existing right shoulder area, work operations will be staggered in order to provide emergency pull-offs along the right shoulder, in addition to the required continuous 10' left shoulder. These pull-offs (depicted in Figure 4.5.2.3) will be provided at ½ mile maximum intervals, *exceeding the requirements of the RFP*, to enhance incident management.

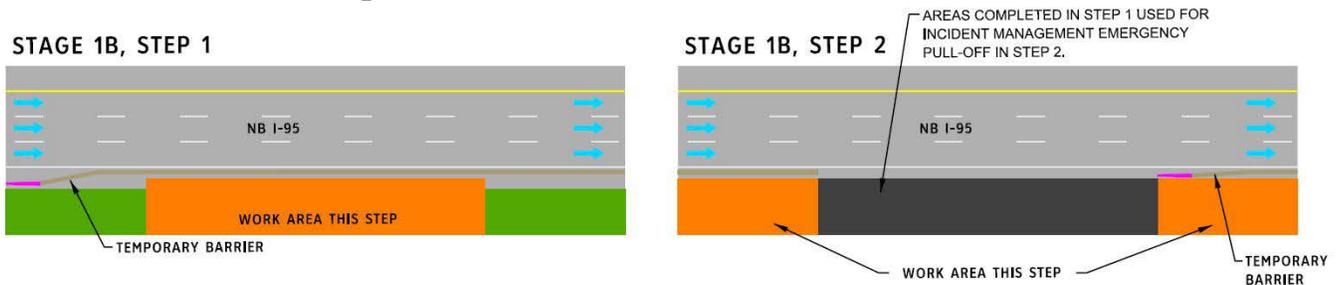


Figure 4.5.2.3 Emergency Pull-Offs

2. Route 17 Interchange Sequencing

With Exit 133 (Route 17) being a major regional interchange for both local and long-distance traffic, our Team understands the importance of minimizing impacts during both base construction operations and Option #2 NB CD bridge reconstruction. One of the undesirable conditions that we focused on was the presence of the back-to-back loop ramp weave movement along the NB CD across the NB CD bridge over Route 17. With Option #2 B608 bridge reconstruction, lane shifts required for phased bridge construction would complicate this weave area, requiring navigation of lane shifts and narrower shoulder widths, and likely less weaving distance through this high complexity weave.

In recognition of this, our Team will advance the construction of Ramp D (NB CD to Route 17) widening as a Stage 1B activity. This allows the early opening of the permanent triple left movement, and the closure of the existing Loop C from the NB CD to NB Route 17 prior to Option #2 bridge reconstruction. With this sequencing, the NB CD weave is removed prior to the weave being impacted by bridge work,

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resulting in the need to only maintain a single lane on the bridge reconstruction (SB Route 17 to NB I-95 movement). This sequencing enhancement results in numerous benefits including the early opening of added Ramp D capacity, and safety improvements to both vehicular traffic and construction personnel by eliminating the weave and providing wider shoulders on the bridge during reconstruction. Additionally, the over height vehicle detection system along the NB CD will be maintained and adjusted as necessary until the point at which the existing bridge is completely removed as the need for the system is eliminated. This unique sequencing is depicted in Figure 4.5.2.4 below, with bridge reconstruction typical sections included on Exhibit 4.5.2.3.

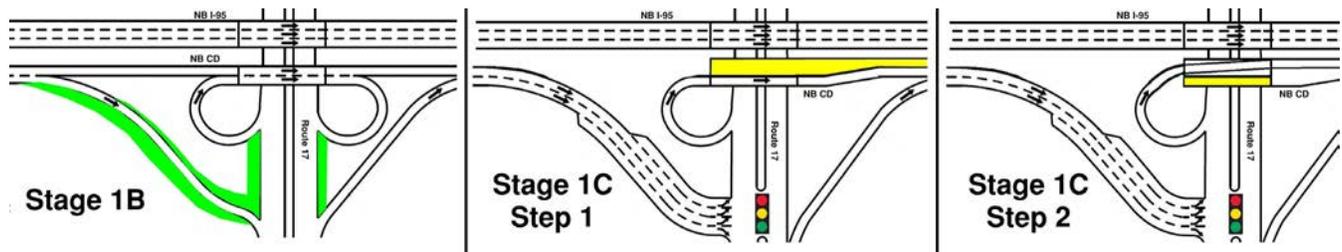


Figure 4.5.2.4 Sequence of Construction (Option#2)

3. Adjacent Project Coordination (I-95 SB RRC and Fred-Ex Projects)

Our Team recognizes the importance of coordination with adjacent projects, as both the I-95 SB RRC Project and the FredEx Project are expected to have concurrent work zones along I-95 with overlapping construction activities. If not fully coordinated, the possibility of conflicting traffic control can arise, potentially leading to a public safety risk. Furthermore, incomplete coordination can lead to potential schedule and project completion delays. To ensure activities are fully coordinated, our Team commits to establishing and maintaining regular coordination between projects. For example, if both projects require a lane closure for work in the same lane, work will be coordinated to determine if it can be accomplished during a single closure as opposed to two separate closures, having a recognizable benefit to the traveling public.

4. Lane Closure Optimization

When full construction starts, lane closure impact minimization will be critical when working along I-95. Our temporary traffic control strategy puts an emphasis on eliminating the need for temporary lane closures to the greatest extent possible. To minimize the impact of lane closures that are necessary, we will exceed the requirements of the RFP by collecting updated 24-hour volume information along I-95 as an initial design activity. We recognize that the lane closure restriction times listed in Section 2.10.3 of Part 2 of the RFP are to be followed, but given our Team's experience, we also recognize the impact that lane closures can have on the already congested I-95 and that constantly changing traffic volumes may now be different than previously collected volumes.

Next, these updated traffic volumes will be analyzed to determine which hours may cause traffic backups and delays during the allowed temporary lane closure window, in order to validate the RFP lane closure schedule. Seasonal variations will also be considered, such as the impact of summer travel. We can also utilize this data in development of the TMP to ensure construction activities that require lane closures occur during the hours of lowest volume. For example, this hour-by-hour analysis will allow activities of a short duration, such as overhead sign erection, to occur during the hours of lowest volume within the longer allowable overnight lane closure window, providing a safety and travel time benefit that *exceeds the requirements of the RFP*. Furthermore, our Team commits to recounting traffic and revalidating lane closure hours mid-way through construction as traffic volumes may shift after the Chatham Bridge over the Rappahannock River reopens.

4.5 Construction of the Project

Stakeholder Communication and Mitigation Strategies

Our Team recognizes that proactive communication with all project stakeholders is essential to a successful TMP. As with any large-scale transportation improvement project, some inconvenience is unavoidable, but our Team’s goal is to minimize these impacts. As detailed in Table 12, we have proactively identified project stakeholders, determined how they will be impacted, and we have devised targeted communication and mitigation strategies to reduce these impacts. While Section 2.11 of Part 2 of the RFP defines the components of a robust Public Involvement/Public Relations scope for the project, below are major enhancements to these minimum requirements that exceed the requirements of the RFP:

- Pre-Opening Public Meeting with Scale Model:**

The reconfiguration and relocation of Exit 133 from NB I-95 to Route 17 is a major traffic pattern change, as the exit point is relocated to south of the Rappahannock River, it will consist of different lane assignments, and it requires a weave maneuver along the NB CD. Robust public outreach and driver education is key for this opening, as drivers will need to be alert at the southern shift of the exit point in order to not miss the exit or to not make a last second lane change to exit. As a public outreach enhancement, our Team commits to hosting a pre-opening public meeting where we will build a scale model of the new dual shared-lane exit, complete with overhead signing that drivers will encounter. This technique was recently utilized for our I-95/Route 630 Reconstruction and Widening-Diverging Diamond Interchange (Exit 140) opening, as shown in Figure 4.5.2.5.



Figure 4.5.2.5 Public Outreach Meeting with Scale Model of Traffic Shift

- SB I-95 Welcome Center Open House:** In addition to the “Pardon Our Dust” and Pre-Opening meeting, the presence of the Welcome Center along SB I-95 provides an opportunity for continual 24/7 public outreach for drivers who cross the Rappahannock River on I-95. Our Team will coordinate with VDOT to establish a station at the Welcome Center that distributes Project information and upcoming work activities to the general public. Handouts will also contain references to the project web site where interested drivers can find additional information.
- Limiting Community Impacts Associated with Noise Barrier Construction:** Our Team commits to constructing the proposed noise barrier adjacent to the Village of Idlewild south of Route 3 with all access from I-95, eliminating construction traffic and disturbance to the residential community.

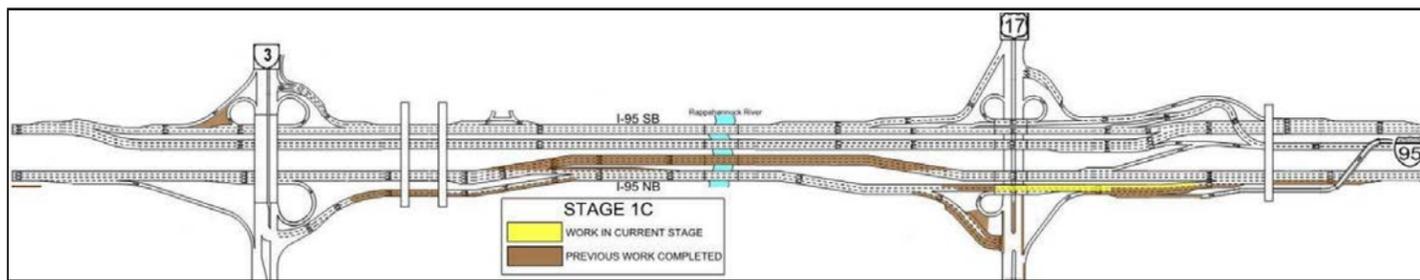
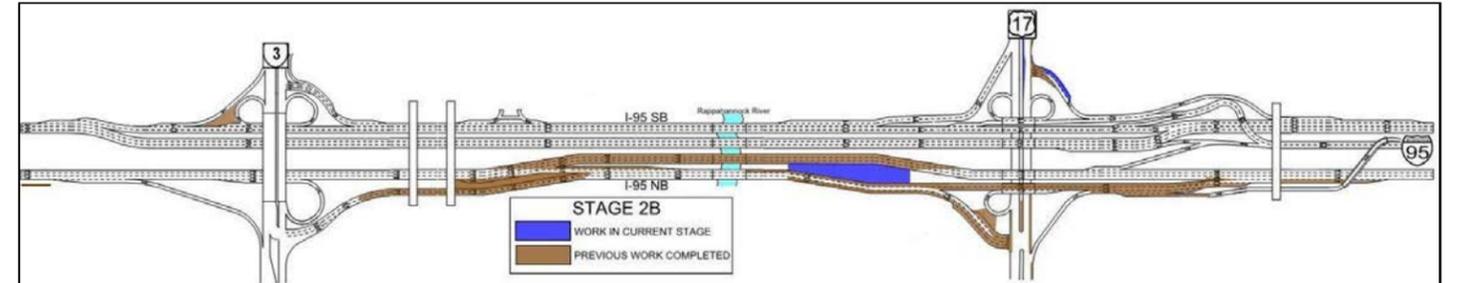
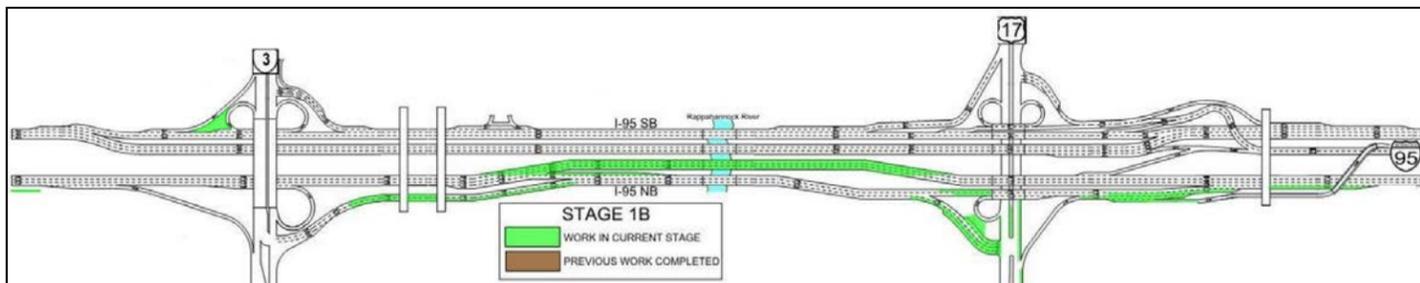
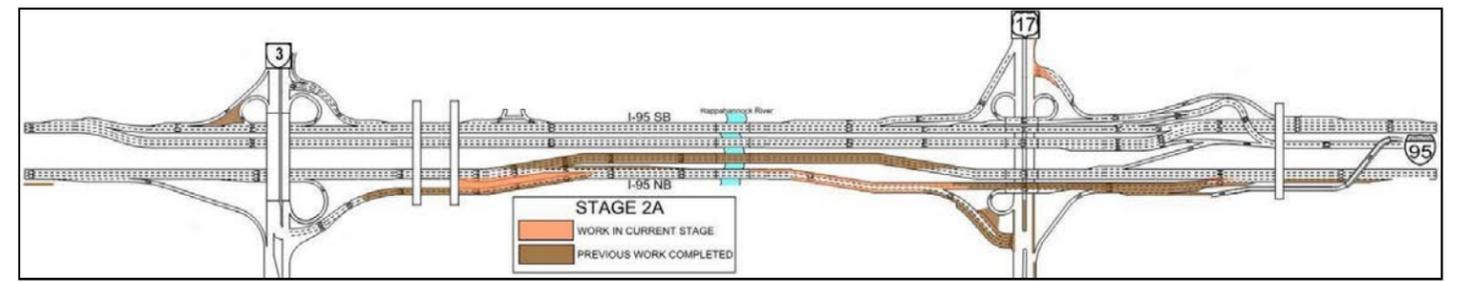
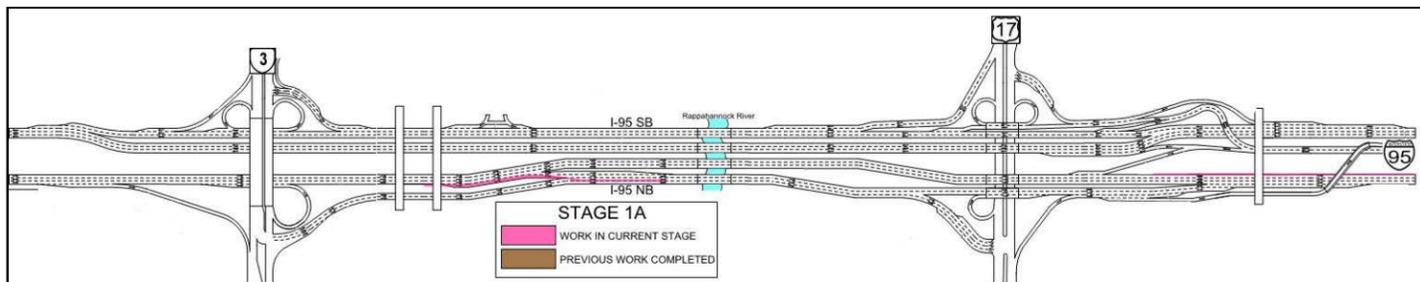
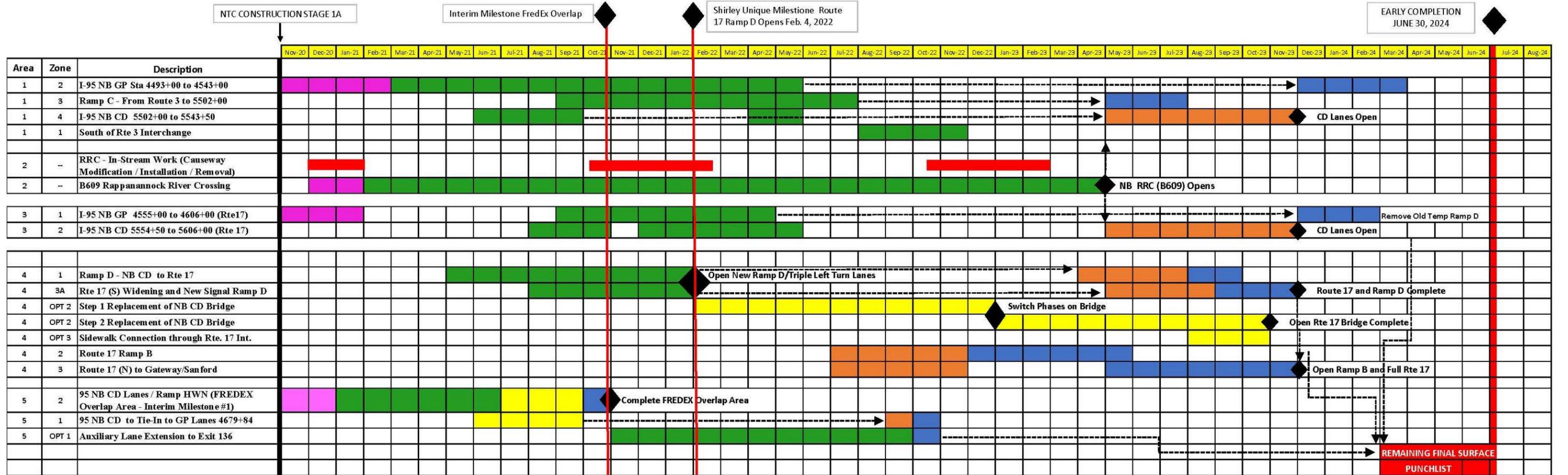
Table 12 - Stakeholder Communication and Mitigation Strategies

Stakeholders	Impacts	Communication/Mitigation Strategies
Traveling Public	Base & Option #1,2,3: Minimal travel time delays along I-95 and Route 17.	<ul style="list-style-type: none"> Hold “Pre-Opening Meeting” and Welcome Center “Open House” and “Pardon Our Dust” meetings for the general public, public safety officials, and other stakeholders throughout design and construction. Additional shoulders, wider lane lines, longer lane shift lengths, and reduced number of lane closures. PCMS will be utilized for public notices. Robust outreach campaign in accordance with Part 2.11 of RFP.
Friends of the Rappahannock & Water Traffic	Base: Minimal water route restriction in the vicinity of I-95 bridges.	<ul style="list-style-type: none"> Enhanced signs and warning devices for water traffic. Water Causeways and Water Crossing Route clearly delineated/defined and communicated.

4.5 Construction of the Project

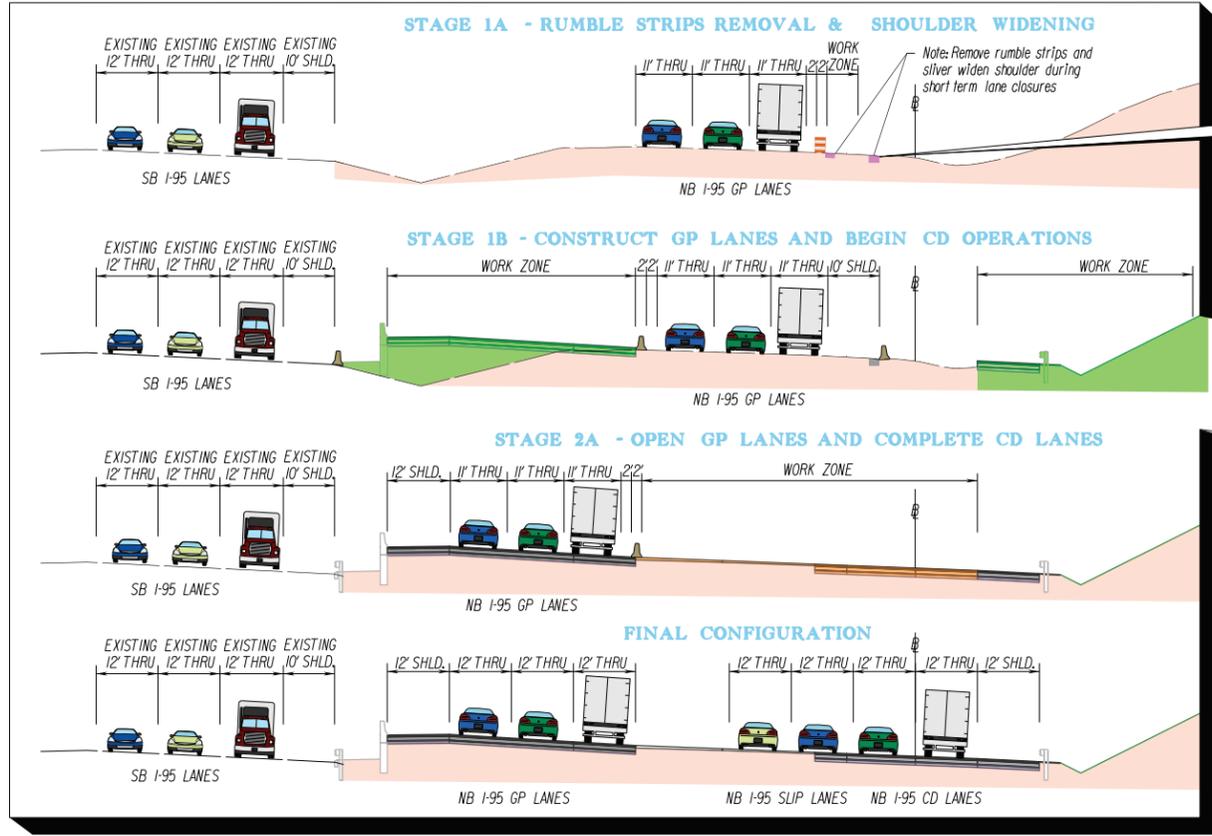
Stakeholders	Impacts	Communication/Mitigation Strategies
Local Residents	Base & Option #1,2,3: Possible construction noise and construction activities close to their property	<ul style="list-style-type: none"> • Coordination of construction activities with residential groups via notification via public meetings and targeted outreach. • Noise barriers to be constructed with access from I-95 only, not from neighborhood streets. • Access to all properties maintained at all times. • Encouragement for residents to follow Project related social media. • Establishment of Welcome Center “Open House”.
Schools Stafford County City of Fredericksburg Mary Washington Univ. Strayer University	Base & Option #1,2,3: Potential delays to school buses / transportation services.	<ul style="list-style-type: none"> • Coordination of 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 Stafford Fire-Rescue Stafford County Sheriff Fredericksburg Fire Fredericksburg Police	Base & Option #1,2,3: Potential response time impact.	<ul style="list-style-type: none"> • Additional shoulders provided for incident management, police enforcement, and quicker response to incidents. • Advance notification of temporary lane restrictions, changes to traffic patterns, and ingress/egress points. • Representatives will be notified of approved lane closure requests. • Pre-switch emergency responder meetings for response planning. • 24/7 Emergency Contact information.
Elected Officials	Base & Option #1,2,3: Constituent questions and inquiries.	<ul style="list-style-type: none"> • Our Team will inform elected officials of project status and upcoming events to help them answer direct inquiries they may receive from public. • Elected officials will be given contact information for our Team, either for their use or constituent use.
Bus Transit Services	Base & Option 1,2,3: Potential impacts to bus transit routes.	<ul style="list-style-type: none"> • Notifications of work will be sent to transit operators in advance of traffic switches.
Mary Washington Hospital	Base & Option 1,2,3: Potential delays accessing hospital or confusion in route to hospital	<ul style="list-style-type: none"> • No Long-term lane closures on hospital access routes. • Full blue “H” signing for hospital maintained at all times.
Adjacent Projects (SB RRC & Fred Ex)	Base & Option 1,2,3: Possible conflicting I-95 construction operations.	<ul style="list-style-type: none"> • Coordinate construction activities and avoid conflicts. • Coordination of lane closures to minimize public impacts. • Coordinating public outreach to deliver a uniform, consistent message to drivers along I-95.

Exhibit 4.5.1.1 - Sequence of Construction and Summary Schedule

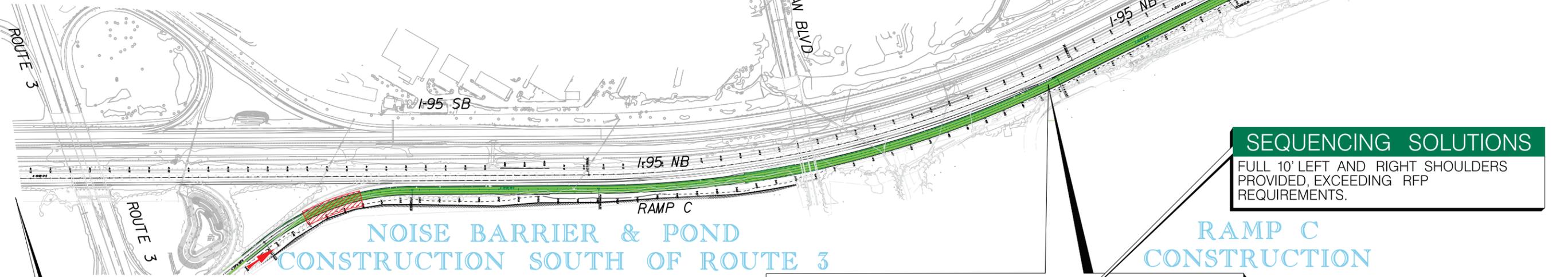


SLIP RAMP WORK

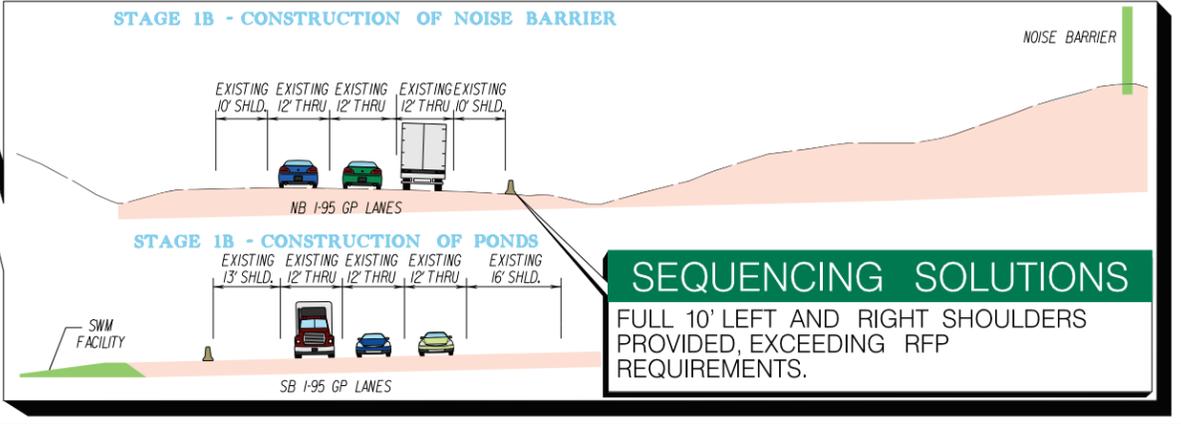
REVISED	STATE	ROUTE	STATE	PROJECT	SHEET NO.
	VA.	95		0095-III-270 P101, R201, C501	1



SEQUENCING SOLUTIONS
 EXISTING SHOULDER TO BE WIDENED TO ENSURE 10' SHOULDER IS PROVIDED AFTER LEFT EDGE LINE (YELLOW LINE) IS SHIFTED 5' TO RIGHT IN STAGE 1B TO ACCOMMODATE 1' SAW CUT, 2' BARRIER, AND 2' SHOULDER.



SEQUENCING SOLUTIONS
 FULL 10' LEFT AND RIGHT SHOULDERS PROVIDED, EXCEEDING RFP REQUIREMENTS.



SEQUENCING SOLUTIONS
 FULL 10' LEFT AND RIGHT SHOULDERS PROVIDED, EXCEEDING RFP REQUIREMENTS.

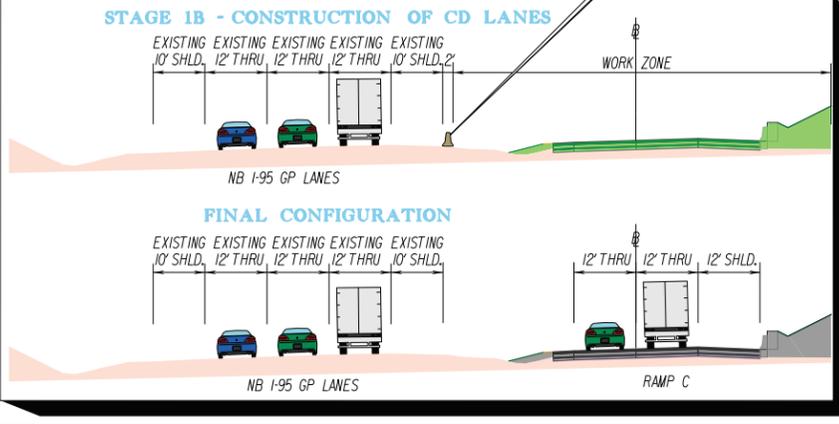


EXHIBIT 4.5.2.1

- Staging and Storage Area
- Construction Access Point
- Denotes Stage 1A
- Denotes Stage 1B
- Denotes Stage 1C
- Denotes Stage 2A
- Denotes Stage 2B

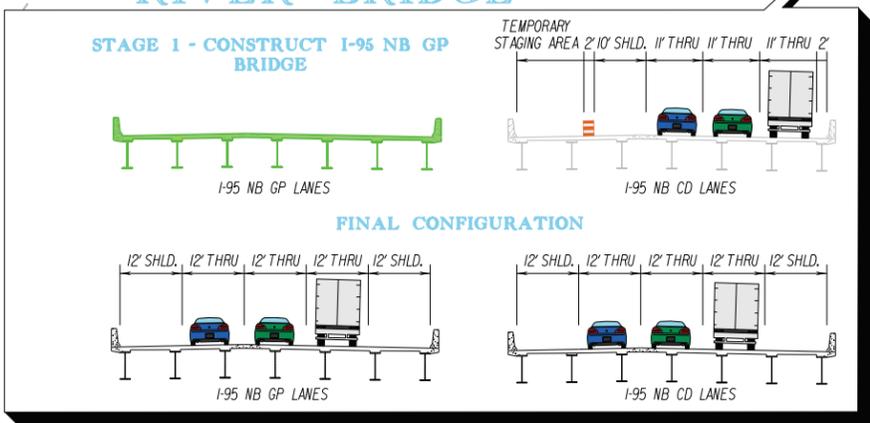
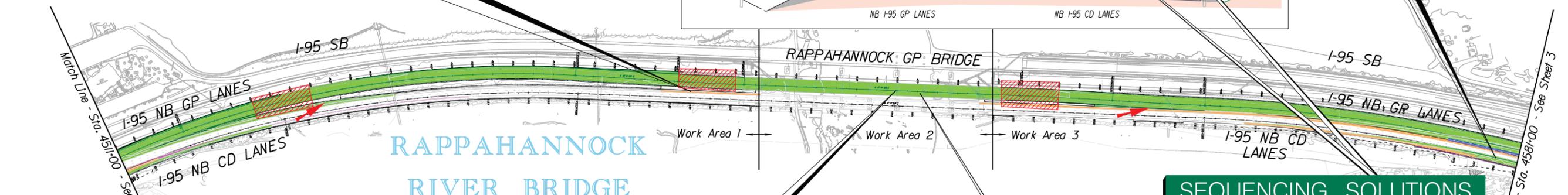
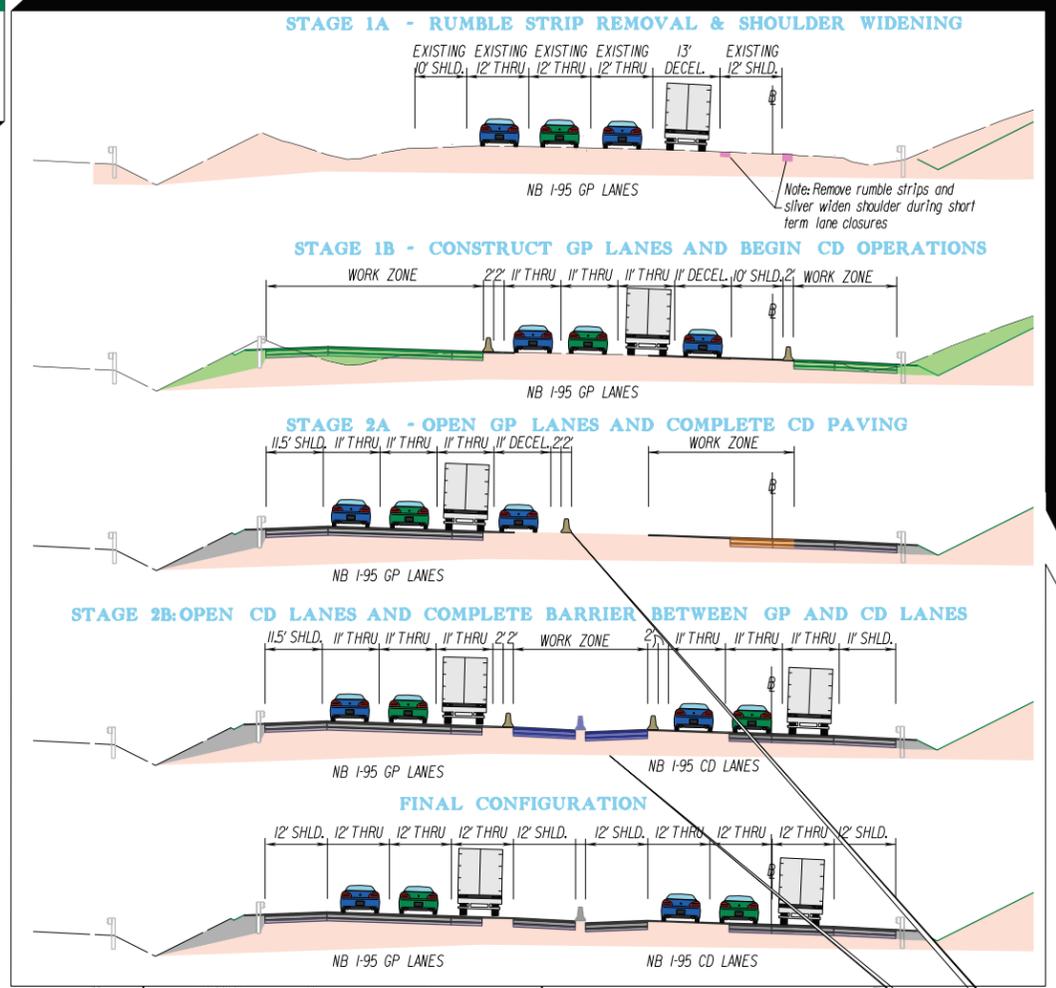
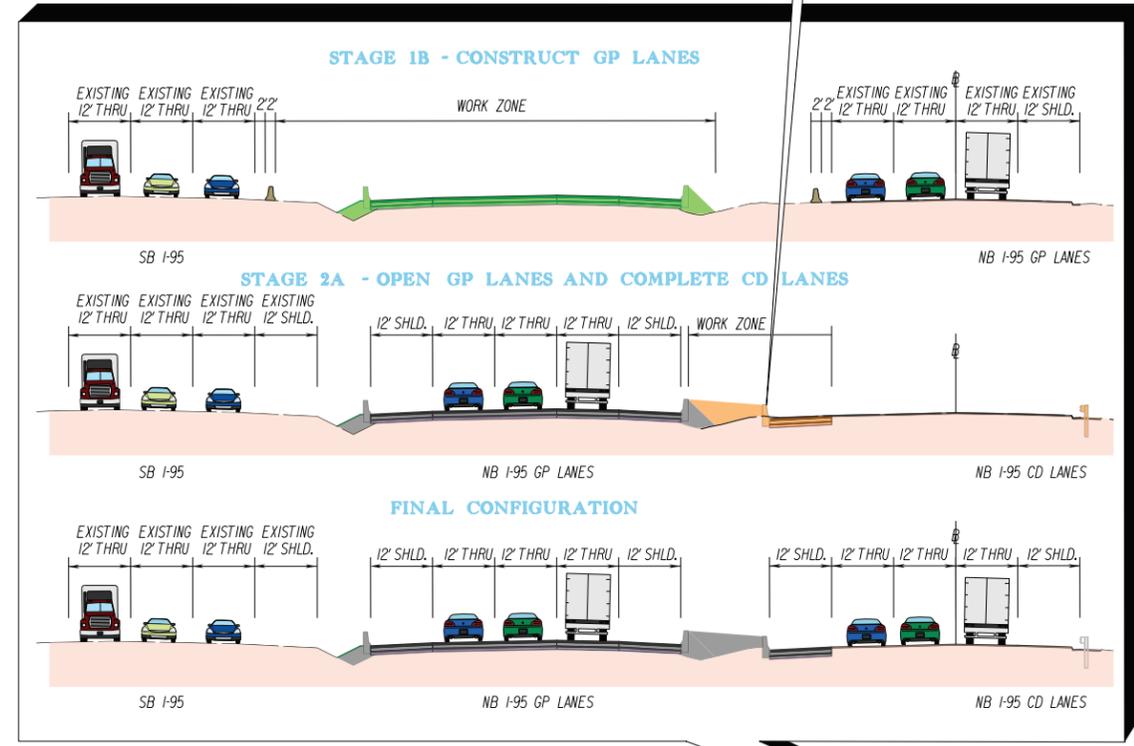
SCALE	PROJECT	SHEET NO.
0 250' 500'	0095-III-270	1

GP LANE CONSTRUCTION & CD LANE IMPROVEMENTS

SEQUENCING SOLUTIONS
 EXISTING GP LANES WIDENED AND CONVERTED TO CD LANES WHEN CLOSED TO TRAFFIC, REDUCING VEHICLE AND WORKER EXPOSURE.

EXISTING ROUTE 17 EXIT POINT WORK

REVISED	STATE	ROUTE	STATE	PROJECT	SHEET NO.
	VA.	95		0095-III-270 PI01, R201, C501	2



SEQUENCING SOLUTIONS
 EXISTING EXIT TO ROUTE 17 MAINTAINED UNTIL CD ROAD OPENS, AVOIDING THE NEED FOR MULTIPLE TRAVEL PATTERN CHANGES FOR EXIT 133.

SEQUENCING SOLUTIONS
 SB GP AND CD LANES UNAFFECTED BY NB GP BRIDGE CONSTRUCTION.

- Staging and Storage Area
- Construction Access Point
- Denotes Stage 1A
- Denotes Stage 1B
- Denotes Stage 1C
- Denotes Stage 2A
- Denotes Stage 2B

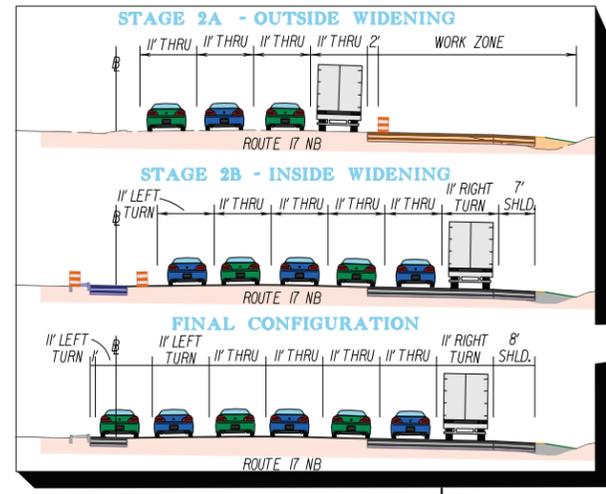
EXHIBIT 4.5.2.2

SCALE	PROJECT	SHEET NO.
0 250' 500'	0095-III-270	2

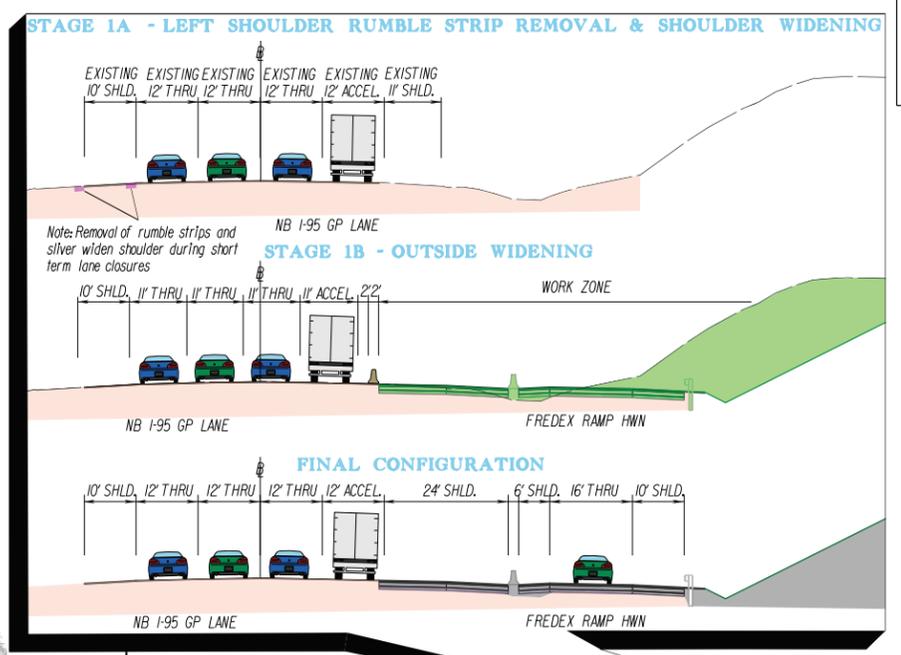
REVISED	STATE	ROUTE	STATE	PROJECT	SHEET NO.
	VA.	95		0095-III-270 PI01, R201, C501	3



RTE.17 WORK



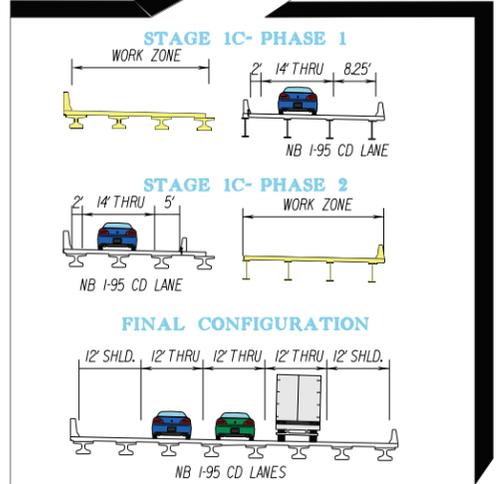
OUTSIDE WIDENING



Match Line - Sta. 4581+00 - See Sheet 2

Match Line - Sta. 4657+00 - See Sheet 4

NBCD OVER RTE.17 BRIDGE (OPTION 2)



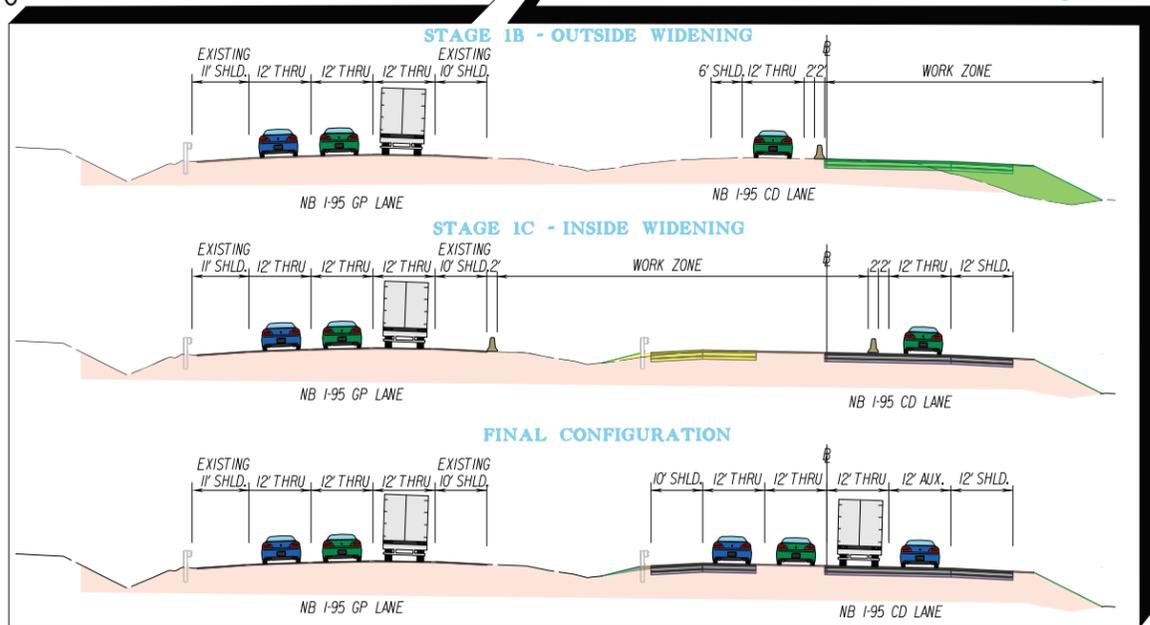
STAGE 1B- PHASE 1
STAGE 1B- PHASE 2

SEQUENCING SOLUTIONS

RAMP D CONSTRUCTED AND OPENED WITH SIGNALIZED TRIPLE LEFT TURN PRIOR TO OPTION 1 BRIDGE RECONSTRUCTION TO ELIMINATE WEAVE ON BRIDGE (SEE FIGURE 4.5.2.4)

SEQUENCING SOLUTIONS

INTERIM MILESTONE CONSTRUCTION IS NOT DEPENDENT ON SEQUENCING OF REMAINDER OF PROJECT.



INTERIM MILESTONE CD LANE WORK

- Staging and Storage Area
- Construction Access Point
- Denotes Stage 1A
- Denotes Stage 1B
- Denotes Stage 1C
- Denotes Stage 2A
- Denotes Stage 2B

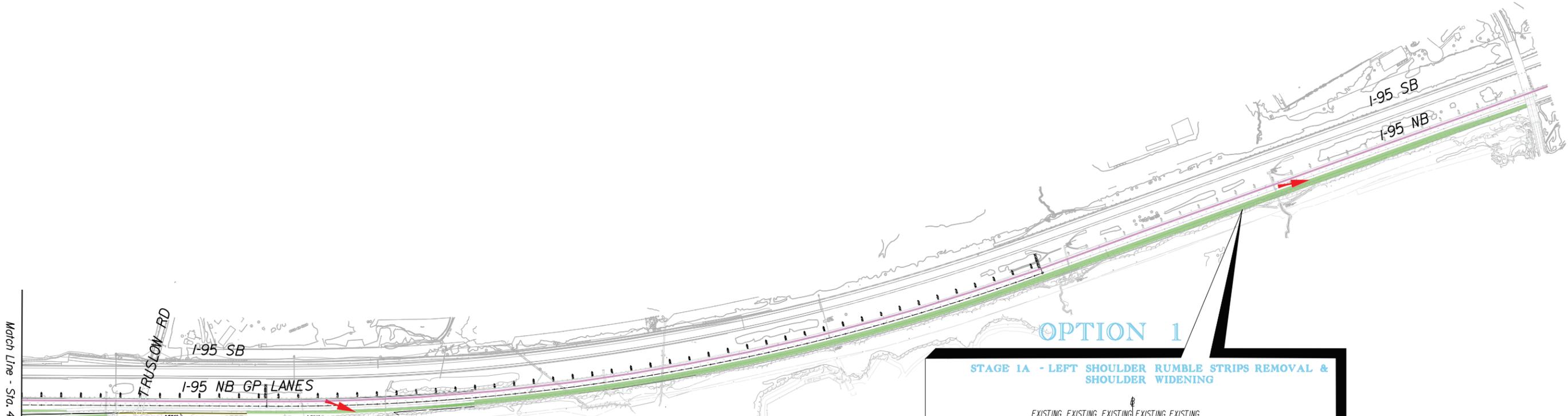
EXHIBIT 4.5.2.3

SCALE	PROJECT	SHEET NO.
0 250' 500'	0095-III-270	3

REVISED	STATE	ROUTE	STATE	PROJECT	SHEET NO.
	VA.	95		0095-III-270 P10I, R20I, C50I	4

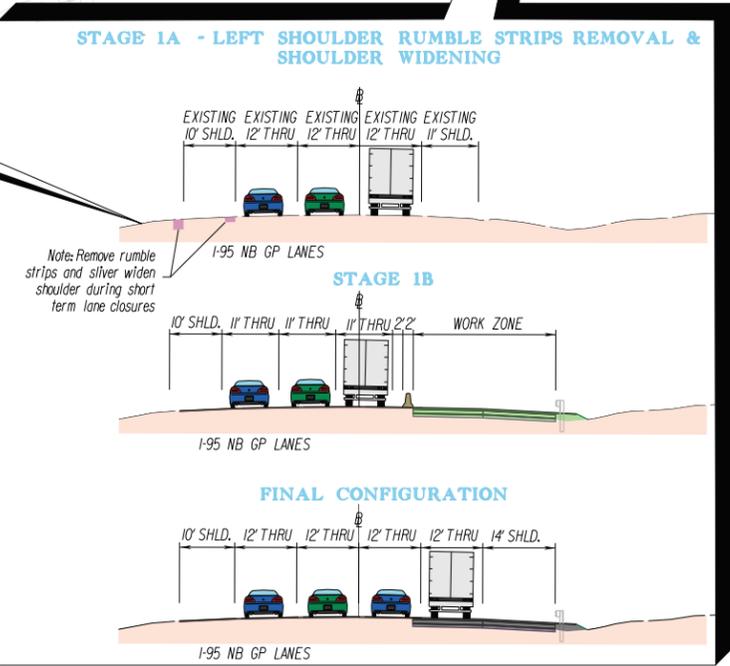
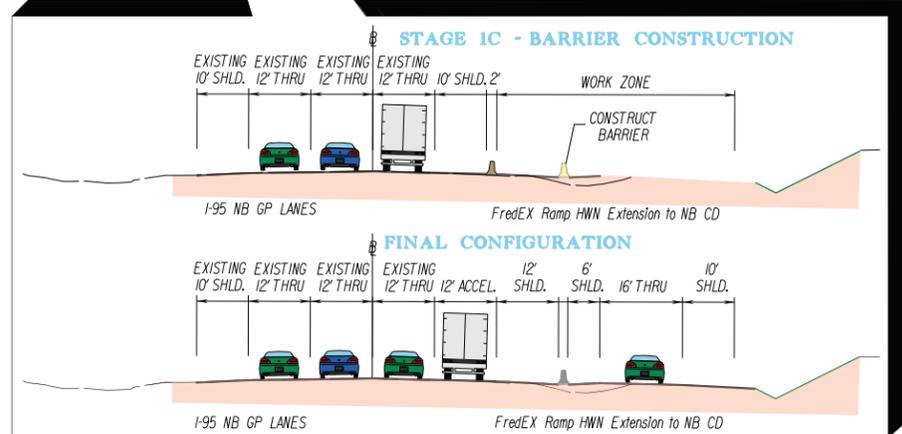


Match Line - Sta. 4657+00 - See Sheet 3



INTERIM MILESTONE BARRIER CONSTRUCTION

SEQUENCING SOLUTIONS
 EXISTING SHOULDER TO BE WIDENED TO ENSURE 10' SHOULDER IS PROVIDED AFTER LEFT EDGE LINE (WHITE LINE) IS SHIFTED 5' TO RIGHT IN STAGE 1B TO ACCOMMODATE 1' SAW CUT, 2' BARRIER, AND 2' SHOULDER.



- Staging and Storage Area
- Construction Access Point
- Denotes Stage 1A
- Denotes Stage 1B
- Denotes Stage 1C
- Denotes Stage 2A
- Denotes Stage 2B

EXHIBIT 4.5.2.4

SCALE 0 250' 500'	PROJECT 0095-III-270	SHEET NO. 4
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4.6 - Proposal Schedule



4.6 Proposal Schedule

4.6.1 Proposal Schedule

The Shirley Team’s Proposal Schedule is provided in our Volume II - Design Concept.

4.6.2 Proposal Schedule Narrative

Shirley has reviewed in detail the Project and schedule requirements in the RFP and has developed a Proposal Schedule outlining our plan to successfully manage all phases of the work. This schedule has been optimized to deliver the Project *ahead of schedule* while also *exceeding the requirements of the RFP*, minimizing impacts to the traveling public and other stakeholders, protecting the environment, coordinating with the utility companies, and ensuring motorist’s and worker’s safety. We commit to meeting the Interim Milestone Date for the completion of the FredEx Overlap Area. Finally, we commit to *Unique Milestone #1 by opening Ramp D triple left turn lanes onto NB Route 17* to improve traffic operations during construction. A summary of these Contract and Schedule Milestones are shown in Table 13.

Table 13 - Contract and Schedule Milestones

Contract and Schedule Milestones	Date
Notice of Intent to Award	April 06, 2020
Design-Build Contract Execution	May 26, 2020
Notice to Proceed	May 28, 2020
Begin Early Work for FredEx Overlap Area / Stage 1A Construction	November 16, 2020
Begin Early Work for RRC Crossing / Causeway Modifications	January 20, 2021
Begin Stage 1B Construction	May 14, 2021
Interim Milestone #1	October 29, 2021
Unique Milestone #1 – Open Ramp D / Triple Left onto NB Route 17	February 4, 2022
Complete Rappahannock River Bridge (B609)	April 21, 2023
Open Traffic to I-I-95 NB GP Lanes	April 28, 2023
Open Permanent I-I-95 NB CD Lanes from Route 3 to Route 17	November 22, 2023
Project Ready to Start Final Inspections / Punchlist	May 1, 2024
Final (Early) Completion	June 30, 2024

Work Breakdown Structure

Our Team has developed a detailed Proposal Schedule in accordance with the RFP requirements. The Team has organized the schedule into a hierarchical Work Breakdown Structure (WBS) in order to demonstrate the relationships and activity durations amongst the milestones, scope validation period, design, public involvement, 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 described below:

- A. **Schedule Milestones:** Area reserved for easy review of the Project status. The Scope Validation Period has also been included in this section.
- B. **Design Phase:** Includes preliminary engineering services, geotechnical work, plan development, design QA/QC reviews, submittal milestones, and VDOT and FHWA reviews and approvals. This section includes a second level WBS structure to group design activities for early design packages, roadway design elements and each bridge structure.

4.6 Proposal Schedule

- C. Public Involvement:** This section of the schedule includes activities and milestones for developing the planned public involvement process including communication plans, public information meetings, first responder meetings and updates to VDOT and the Public for major traffic shifts and the VDOT website.
- D. Environmental:** Includes wetland and stream delineations, jurisdictional determinations, permit management and preparation, mitigation, permit submissions, and reviews from the authorities having jurisdiction. Also included are hazardous material surveys and threatened and endangered species identification and assessment.
- E. Right-of-Way Acquisition:** This section of the schedule is used to outline and monitor the acquisition of ROW and easements for the Project including title searches, appraisals and reviews, offers, negotiations, and settlements.
- F. Utility Relocations:** Includes activities for utility relocations such as UFI meetings, preparation of plans and estimates (P&E), approval of plans and estimates, utility relocation design by the utility owner and DB Team, approval of the utility design, and utility relocation, installations and adjustments needed for construction of the new facilities. The utility relocations are separated into second level WBS groups based on utility owner and Project areas.
- G. Construction:** Includes all components of roadway and bridge construction including Project Management and the Quality Assurance/Quality Control processes. The Construction section of the schedule is segmented by additional levels of WBS structure to divide the construction activities into Area, Zone, Stages, and major portions of work such as roadway, bridge, culvert or retaining wall activities. This strategy and grouping of work packages has proven to allow for easy and clear tracking of activity progress to ensure on-time completion of the Interim and Unique Milestones, and early Final Completion.

Table 14 is a complete outline of the WBS Structure for the Project:

Table 14 - WBS Structure

WBS Path	WBS Name
C00105510DB106_PS-1.I-I-95 NB RRC.A	SCHEDULE MILESTONES
C00105510DB106_PS-1.I-I-95 NB RRC.A.A	I-I-95 NB RRC MILESTONES
C00105510DB106_PS-1.I-I-95 NB RRC.A.B	ADJACENT PROJECT KEY DATES / MILESTONES
C00105510DB106_PS-1.I-I-95 NB RRC.B	DESIGN PHASE
C00105510DB106_PS-1.I-I-95 NB RRC.B.A	PRELIMINARY DESIGN WORK
C00105510DB106_PS-1.I-I-95 NB RRC.B.A.A	DESIGN QA/QC PLAN
C00105510DB106_PS-1.I-I-95 NB RRC.B.A.B	SCHEDULE DEVELOPMENT and UPDATES
C00105510DB106_PS-1.I-I-95 NB RRC.B.A.C	SURVEY and MAPPING
C00105510DB106_PS-1.I-I-95 NB RRC.B.A.D	GEOTECHNICAL INVESTIGATIONS and REPORTING
C00105510DB106_PS-1.I-I-95 NB RRC.B.A.D.1	ROADWAY GER
C00105510DB106_PS-1.I-I-95 NB RRC.B.A.D.2	BRIDGE GER
C00105510DB106_PS-1.I-I-95 NB RRC.B.A.E	UTILITY DESIGNATIONS and TEST-PITS
C00105510DB106_PS-1.I-I-95 NB RRC.B.B	EARLY START PACKAGE- INTERIM MILESTONE AREA/ FREDEX OVERLAP / STAGE 1A
C00105510DB106_PS-1.I-I-95 NB RRC.B.C	ROADWAY / ROW DESIGN
C00105510DB106_PS-1.I-I-95 NB RRC.B.D	BRIDGE DESIGN

4.6 Proposal Schedule

WBS Path	WBS Name
C00105510DB106_PS-1.I-I-95 NB RRC.B.D.A	BRIDGE B609 RRC - EARLY PACKAGE FOR SUBSTRUCTURE WORK
C00105510DB106_PS-1.I-I-95 NB RRC.B.D.B	BRIDGE B609 RAPPAHANNOCK RIVER CROSSING
C00105510DB106_PS-1.I-I-95 NB RRC.B.D.C	BID OPTION #2 - BRIDGE B608 I-95 NB CD LANES OVER ROUTE 17
C00105510DB106_PS-1.I-I-95 NB RRC.C	PUBLIC INVOLVEMENT
C00105510DB106_PS-1.I-I-95 NB RRC.D	ENVIRONMENTAL PERMITTING
C00105510DB106_PS-1.I-I-95 NB RRC.D.A	JOINT WETLANDS and WATERS PERMITTING
C00105510DB106_PS-1.I-I-95 NB RRC.D.A.A	THREATENED & ENDANGERED SPECIES / CULTURAL RESOURCES
C00105510DB106_PS-1.I-I-95 NB RRC.D.B	HAZMAT and ENVIRONMENTAL SITE ASSESSMENTS
C00105510DB106_PS-1.I-I-95 NB RRC.D.C	LD 445 / VPDES / STORMWATER PERMIT
C00105510DB106_PS-1.I-I-95 NB RRC.D.C.A	PROJECT WIDE LAND DISTURBANCE PERMIT
C00105510DB106_PS-1.I-I-95 NB RRC.D.D	NOISE ANALYSIS
C00105510DB106_PS-1.I-I-95 NB RRC.E	RIGHT OF WAY ACQUISITION/EASEMENTS
C00105510DB106_PS-1.I-I-95 NB RRC.E.A	RIGHT OF WAY PLANS
C00105510DB106_PS-1.I-I-95 NB RRC.E.A.A	R/W PLANS
C00105510DB106_PS-1.I-I-95 NB RRC.E.A.B	PROJECT SPECIFIC ACQUISITION and RELOCATION PLAN
C00105510DB106_PS-1.I-I-95 NB RRC.E.B	ROW ACQUISITIONS
C00105510DB106_PS-1.I-I-95 NB RRC.E.B.A	R/W GROUP 1 ACQUISITIONS
C00105510DB106_PS-1.I-I-95 NB RRC.E.B.B	R/W GROUP 2 ACQUISITIONS
C00105510DB106_PS-1.I-I-95 NB RRC.F	UTILITY RELOCATIONS
C00105510DB106_PS-1.I-I-95 NB RRC.F.A	I-I-95
C00105510DB106_PS-1.I-I-95 NB RRC.F.A.A	SUMMIT IG TRUNK LINE
C00105510DB106_PS-1.I-I-95 NB RRC.F.A.B	VDOT ITS / VERIZON
C00105510DB106_PS-1.I-I-95 NB RRC.F.A.C	WATERMAIN (I-I-95 CROSSINGS)
C00105510DB106_PS-1.I-I-95 NB RRC.F.B	ROUTE 17
C00105510DB106_PS-1.I-I-95 NB RRC.F.B.A	WATERMAIN
C00105510DB106_PS-1.I-I-95 NB RRC.F.B.B	SANITARY SEWER
C00105510DB106_PS-1.I-I-95 NB RRC.F.B.C	GAS LINE
C00105510DB106_PS-1.I-I-95 NB RRC.F.B.D	OH POWER& COMM
C00105510DB106_PS-1.I-I-95 NB RRC.G	CONSTRUCTION
C00105510DB106_PS-1.I-I-95 NB RRC.G.A	PRE-CONSTRUCTION, SUBMITTALS and MATERIAL PROCUREMENT
C00105510DB106_PS-1.I-I-95 NB RRC.G.A.A	MONTHLY PROJECT ADMINISTRATION TASKS
C00105510DB106_PS-1.I-I-95 NB RRC.G.A.B	SUBMITTALS ROADWAY
C00105510DB106_PS-1.I-I-95 NB RRC.G.A.C	BRIDGE B609 (NB RAPPAHANNOCK CROSSING)
C00105510DB106_PS-1.I-I-95 NB RRC.G.A.D	BRIDGE B608 (NB CD LANE BRIDGE REPLACEMENT)
C00105510DB106_PS-1.I-I-95 NB RRC.G.A.E	CONSTRUCTION QUALITY ASSURANCE / QUALITY CONTROL PROCESS
C00105510DB106_PS-1.I-I-95 NB RRC.G.B	AREA 1 - WORK SOUTH OF RAPPAHANNOCK RIVER BRIDGE
C00105510DB106_PS-1.I-I-95 NB RRC.G.B.A	AREA 1 – GENERAL

4.6 Proposal Schedule

WBS Path	WBS Name
C00105510DB106_PS-1.I-I-95 NB RRC.G.B.B	Area 1 - Zone 1 - SOUTH OF Route 3 INTERCHANGE (SWM / SOUNDWALL)
C00105510DB106_PS-1.I-I-95 NB RRC.G.B.B.1	Area 1 - Zone 1 - SOUNDWALL C
C00105510DB106_PS-1.I-I-95 NB RRC.G.B.B.2	Area 1 - Zone 1 - Route 3 SWM
C00105510DB106_PS-1.I-I-95 NB RRC.G.B.C	Area 1 - Zone 3 - RAMP C - FROM Route 3 TO 5502+00
C00105510DB106_PS-1.I-I-95 NB RRC.G.B.C.1	Area 1 - Zone 3 - Ramp C from Route 3 to 5502 - MOT Stage 1B
C00105510DB106_PS-1.I-I-95 NB RRC.G.B.C.1.1	RETAINING WALL #1 - 5485 to 5496
C00105510DB106_PS-1.I-I-95 NB RRC.G.B.C.1.2	RETAINING WALL #2 - 5496 to 5505
C00105510DB106_PS-1.I-I-95 NB RRC.G.B.C.1.3	Area 1 - Zone 3 - Route 3 - SWM (Modify Existing Ponds)
C00105510DB106_PS-1.I-I-95 NB RRC.G.B.C.2	Area 1 - Zone 3 - Ramp C from Route 3 to 5502 - MOT Stage 2B
C00105510DB106_PS-1.I-I-95 NB RRC.G.B.D	Area 1 - Zone 2 - I-95 NB GP LANES 4493+00 TO 4543 +00 (RRC)
C00105510DB106_PS-1.I-I-95 NB RRC.G.B.D.1	Area 1 - Zone 2 - GP Lanes Route 3 to RRC - MOT Stage 1A
C00105510DB106_PS-1.I-I-95 NB RRC.G.B.D.2	Area 1 - Zone 2 - GP Lanes Route 3 to RRC - MOT Stage 1B
C00105510DB106_PS-1.I-I-95 NB RRC.G.B.D.3	Area 1 - Zone 2 - GP Lanes Route 3 to RRC - MOT Stage 2B
C00105510DB106_PS-1.I-I-95 NB RRC.G.B.E	Area 1 - Zone 4 - I-I-95 NB CD LANES 5502+00 TO 5543+50 (RRC)
C00105510DB106_PS-1.I-I-95 NB RRC.G.B.E.1	Area 1 - Zone 4 - CD Lanes 5502 to RRC - MOT Stage 1B
C00105510DB106_PS-1.I-I-95 NB RRC.G.B.E.1.1	Area 1 - Zone 4 - FALL HILL SOUNDWALL
C00105510DB106_PS-1.I-I-95 NB RRC.G.B.E.2	Area 1 - Zone 4 - CD Lanes 5502 to RRC - MOT Stage 2A
C00105510DB106_PS-1.I-I-95 NB RRC.G.B.E.3	Area 1 - Zone 4 - CD Lanes 5502 to RRC - MOT Stage 2B
C00105510DB106_PS-1.I-I-95 NB RRC.G.C	AREA 2 - RAPPAHANNOCK RIVER BRIDGE B609
C00105510DB106_PS-1.I-I-95 NB RRC.G.C.A	AREA 2 – GENERAL
C00105510DB106_PS-1.I-I-95 NB RRC.G.C.B	RAPPAHANNOCK RIVER CAUSEWAY RE-CONFIGURATION / CONSTRUCTION
C00105510DB106_PS-1.I-I-95 NB RRC.G.C.C	B609 – SUBSTRUCTURE
C00105510DB106_PS-1.I-I-95 NB RRC.G.C.C.9	B609 - ABUTMENT B
C00105510DB106_PS-1.I-I-95 NB RRC.G.C.C.8	B609 - PIER 7
C00105510DB106_PS-1.I-I-95 NB RRC.G.C.C.7	B609 - PIER 6
C00105510DB106_PS-1.I-I-95 NB RRC.G.C.C.6	B609 - PIER 5
C00105510DB106_PS-1.I-I-95 NB RRC.G.C.C.5	B609 - PIER 4
C00105510DB106_PS-1.I-I-95 NB RRC.G.C.C.4	B609 - PIER 3
C00105510DB106_PS-1.I-I-95 NB RRC.G.C.C.3	B609 - PIER 2
C00105510DB106_PS-1.I-I-95 NB RRC.G.C.C.2	B609 - PIER 1
C00105510DB106_PS-1.I-I-95 NB RRC.G.C.C.1	B609 - ABUTMENT A
C00105510DB106_PS-1.I-I-95 NB RRC.G.C.D	B609 - SUPERSTRUCTURE
C00105510DB106_PS-1.I-I-95 NB RRC.G.C.D.9	B609 - STRUCTURAL STEEL
C00105510DB106_PS-1.I-I-95 NB RRC.G.C.D.8	B609 - SPAN H DECK
C00105510DB106_PS-1.I-I-95 NB RRC.G.C.D.7	B609 - SPAN G DECK
C00105510DB106_PS-1.I-I-95 NB RRC.G.C.D.6	B609 - SPAN F DECK
C00105510DB106_PS-1.I-I-95 NB RRC.G.C.D.5	B609 - SPAN E DECK

4.6 Proposal Schedule

WBS Path	WBS Name
C00105510DB106_PS-1.I-I-95 NB RRC.G.C.D.4	B609 - SPAN D DECK
C00105510DB106_PS-1.I-I-95 NB RRC.G.C.D.3	B609 - SPAN C DECK
C00105510DB106_PS-1.I-I-95 NB RRC.G.C.D.2	B609 - SPAN B DECK
C00105510DB106_PS-1.I-I-95 NB RRC.G.C.D.1	B609 - SPAN A DECK
C00105510DB106_PS-1.I-I-95 NB RRC.G.C.E	B609 - PARAPETS / APPROACH SLABS / FINISH ES
C00105510DB106_PS-1.I-I-95 NB RRC.G.D	AREA 3 - WORK FROM RAPPAHANNOCK RIVER BRIDGE TO Route 17
C00105510DB106_PS-1.I-I-95 NB RRC.G.D.A	AREA 3 – GENERAL
C00105510DB106_PS-1.I-I-95 NB RRC.G.D.B	Area 3 - Zone 1 - I-I-95 NB GP LANES 4555+00 TO 4606+00 (Route 17)
C00105510DB106_PS-1.I-I-95 NB RRC.G.D.B.1	Area 3 - Zone 1 - GP Lanes RRC to Route 17 - MOT Stage 1A
C00105510DB106_PS-1.I-I-95 NB RRC.G.D.B.2	Area 3 - Zone 1 - GP Lanes RRC to Route 17 - MOT Stage 1B
C00105510DB106_PS-1.I-I-95 NB RRC.G.D.B.3	Area 3 - Zone 1 - GP Lanes RRC to Route 17 - MOT Stage 2B
C00105510DB106_PS-1.I-I-95 NB RRC.G.D.C	Area 3 - Zone 2 - I-I-95 NB CD LANES 5554+50 TO 5606+00 (Route 17)
C00105510DB106_PS-1.I-I-95 NB RRC.G.D.C.1	Area 3 - Zone 2 - CD Lanes RRC to Route 17 - MOT Stage 1B
C00105510DB106_PS-1.I-I-95 NB RRC.G.D.C.2	Area 3 - Zone 2 - CD Lanes RRC to Route 17 - MOT Stage 2A
C00105510DB106_PS-1.I-I-95 NB RRC.G.D.C.3	Area 3 - Zone 2 - CD Lanes RRC to Route 17 - MOT Stage 2B
C00105510DB106_PS-1.I-I-95 NB RRC.G.D.C.4	Area 3 - Zone 2 - CD Lanes RRC to Route 17 - MOT Stage 3
C00105510DB106_PS-1.I-I-95 NB RRC.G.E	AREA 4 - Route 17 INTERCHANGE
C00105510DB106_PS-1.I-I-95 NB RRC.G.E.A	AREA 4 – GENERAL
C00105510DB106_PS-1.I-I-95 NB RRC.G.E.B	Area 4 - Zone 1 - RAMP D - NB CD LANES TO Route 17
C00105510DB106_PS-1.I-I-95 NB RRC.G.E.B.1	Area 4 - Zone 1 - Ramp D - MOT Stage 1B – Step 1
C00105510DB106_PS-1.I-I-95 NB RRC.G.E.B.2	Area 4 - Zone 1 - Ramp D - MOT Stage 1B – Step 2
C00105510DB106_PS-1.I-I-95 NB RRC.G.E.B.3	Area 4 - Zone 1 - Ramp D - MOT Stage 2A
C00105510DB106_PS-1.I-I-95 NB RRC.G.E.B.4	Area 4 - Zone 1 - Ramp D - MOT Stage 2B
C00105510DB106_PS-1.I-I-95 NB RRC.G.E.C	Area 4 - Zone 3A - Route 17 MAINLINE WORK SOUTH OF I-95
C00105510DB106_PS-1.I-I-95 NB RRC.G.E.C.1	Area 4 - Zone 3A - Route 17 - MOT Stage 1B
C00105510DB106_PS-1.I-I-95 NB RRC.G.E.C.2	Area 4 - Zone 3A - Route 17 - MOT Stage 2A
C00105510DB106_PS-1.I-I-95 NB RRC.G.E.C.3	Area 4 - Zone 3A - Route 17 - MOT Stage 2B
C00105510DB106_PS-1.I-I-95 NB RRC.G.E.D	Area 4 - LOOP D
C00105510DB106_PS-1.I-I-95 NB RRC.G.E.D.1	Area 4 - Loop D - MOT Stage 1B
C00105510DB106_PS-1.I-I-95 NB RRC.G.E.D.2	Area 4 - Loop D - MOT Stage 1C
C00105510DB106_PS-1.I-I-95 NB RRC.G.E.E	Area 4 - Zone 2 - RAMP B - SB CD LANES TO NB ROUTE 17
C00105510DB106_PS-1.I-I-95 NB RRC.G.E.E.1	Area 4 - Zone 2 - Ramp B - MOT Stage 2A
C00105510DB106_PS-1.I-I-95 NB RRC.G.E.E.2	Area 4 - Zone 2 - Ramp B - MOT Stage 2B
C00105510DB106_PS-1.I-I-95 NB RRC.G.E.E.3	Area 4 - Zone 2 - Ramp B - MOT Stage 3
C00105510DB106_PS-1.I-I-95 NB RRC.G.E.F	Area 4 - Zone 3B - Route 17 MAINLINE WORK NORTH OF I-95
C00105510DB106_PS-1.I-I-95 NB RRC.G.E.F.1	Area 4 - Zone 3B - Route 17 - MOT Stage 2A
C00105510DB106_PS-1.I-I-95 NB RRC.G.E.F.2	Area 4 - Zone 3B - Route 17 - MOT Stage 2B
C00105510DB106_PS-1.I-I-95 NB RRC.G.E.F.3	Area 4 - Zone 3B - Route 17 - MOT Stage 3

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WBS Path	WBS Name
C00105510DB106_PS-1.I-I-95 NB RRC.G.F	BID OPTION #2 - REPLACEMENT OF EXISTING CD LANES BRIDGE
C00105510DB106_PS-1.I-I-95 NB RRC.G.F.A	BO #2 - MOT Stage 1C - PHASE 1 B608
C00105510DB106_PS-1.I-I-95 NB RRC.G.F.A.1	B608 – DEMOLITION
C00105510DB106_PS-1.I-I-95 NB RRC.G.F.A.2	B608 - SUBSTRUCTURE
C00105510DB106_PS-1.I-I-95 NB RRC.G.F.A.3	B608 – SUPERSTRUCTURE
C00105510DB106_PS-1.I-I-95 NB RRC.G.F.A.4	B608 - PARAPETS / APPROACH SLABS / FINISH ES
C00105510DB106_PS-1.I-I-95 NB RRC.G.F.B	BO #2 - MOT Stage 1C - PHASE 2 B608
C00105510DB106_PS-1.I-I-95 NB RRC.G.F.B.1	B608 – DEMOLITION
C00105510DB106_PS-1.I-I-95 NB RRC.G.F.B.2	B608 - SUBSTRUCTURE
C00105510DB106_PS-1.I-I-95 NB RRC.G.F.B.3	B608 – SUPERSTRUCTURE
C00105510DB106_PS-1.I-I-95 NB RRC.G.F.B.4	B608 - PARAPETS / APPROACH SLABS / FINISH ES
C00105510DB106_PS-1.I-I-95 NB RRC.G.G	BID OPTION #3 - SIDEWALK CONNECTION THRU I-I-95/ Route 17 INTERCHANGE
C00105510DB106_PS-1.I-I-95 NB RRC.G.H	AREA 5 - WORK NORTH OF Route 17 INTERCHANGE TO NORTHERN TERMINUS
C00105510DB106_PS-1.I-I-95 NB RRC.G.H.A	AREA 5 – GENERAL
C00105510DB106_PS-1.I-I-95 NB RRC.G.H.B	Area 5 - Zone 1 - I-I-95 NB GP LANES
C00105510DB106_PS-1.I-I-95 NB RRC.G.H.B.1	Area 5 - Zone 1 - Route 17 to Truslow GP Lanes - MOT Stage 1C
C00105510DB106_PS-1.I-I-95 NB RRC.G.H.B.2	Area 5 - Zone 1 - Route 17 to Truslow GP Lanes - MOT Stage 2B
C00105510DB106_PS-1.I-I-95 NB RRC.G.H.C	Area 5 - Zone 2 - I-I-95 NB CD LANES / RAMP HWN TO NORTHERN LIMITS (FREDEX OVERLAP AREA)
C00105510DB106_PS-1.I-I-95 NB RRC.G.H.C.1	Area 5 - Zone 2 - Route 17 to Truslow CD Lanes/Ramp HWN - MOT Stage 1A
C00105510DB106_PS-1.I-I-95 NB RRC.G.H.C.2	Area 5 - Route 17 to Truslow CD Lanes/Ramp HWN - MOT Stage 1B
C00105510DB106_PS-1.I-I-95 NB RRC.G.H.C.2.1	Area 5 - Route 17 to Truslow - BOX CULVERT EXTENSION
C00105510DB106_PS-1.I-I-95 NB RRC.G.H.C.3	Area 5 - Route 17 to Truslow CD Lanes/Ramp HWN - MOT Stage 1C
C00105510DB106_PS-1.I-I-95 NB RRC.G.H.C.4	Area 5 - Route 17 to Truslow CD Lanes/Ramp HWN - MOT Stage 2B
C00105510DB106_PS-1.I-I-95 NB RRC.G.H.C.5	Area 5 - Route 17 to Truslow - SWM
C00105510DB106_PS-1.I-I-95 NB RRC.G.I	BID OPTION #1 - AUXILIARY LANE EXTENSION TO EXIT 136
C00105510DB106_PS-1.I-I-95 NB RRC.G.I.A	Area 5 - BO #1 AUXILIARY LANE EXT TO EXIT 136 - MOT Stage 1A
C00105510DB106_PS-1.I-I-95 NB RRC.G.I.B	Area 5 - BO #1 AUXILIARY LANE EXT TO EXIT 136 - MOT Stage 1B
C00105510DB106_PS-1.I-I-95 NB RRC.G.I.B.1	Area 5 - BO #1 AUXILIARY LANE EXT TO EXIT 136 - RETAINING WALLS (At Existing Box Culverts)
C00105510DB106_PS-1.I-I-95 NB RRC.G.I.C	Area 5 - BO #1 AUXILIARY LANE EXT TO EXIT 136 - MOT Stage 2B

Geography and Construction Staging

Our Schedule is organized by 5 major geographical Areas, as shown in Figure 4.6.2.1, and minor Zones within each Area. The limits of these coincide with the elements that will drive the Project schedule and critical path. This will give us the ability to manage and track the overall progress and communicate with all workers, subcontractors, VDOT, and other stakeholders. The Schedule is further defined by individual Stages to coincide with the traffic management plans and planned sequence of work. Although each geographic Area can be constructed independently, we have scheduled our MOT Stages to provide the safest and most productive sequence of construction possible.



Figure 4.6.2.1 - Construction Areas and Geographic Phasing of Work

The five Areas of construction are defined as follows:

- **AREA 1** – Work south Rappahannock River. This includes Soundwall C and Storm Water Management construction south of the Route 3 Interchange, although these do not drive the Schedule and therefore are not tied to any major MOT Staging. The more critical work will be from the Route 3 Interchange to the Rappahannock River which will include widening and construction of Route 3 Ramp C, new I-95 NB General Purpose Lanes to tie into the new Rappahannock River Bridge and widening and modification of the existing I-95 NB Lanes to become the new I-95 NB Collector Distributor Lanes.
- **AREA 2** – This area of the Schedule is dedicated to the construction of the new Rappahannock River Bridge (B609) to carry the new I-95 NB General Purpose Lanes over the Rappahannock River. This includes construction and modification of the causeway in the Rappahannock River and coordination with the on-going I-I-95 SB RRC Project. The work has been scheduled to occur within allowable TOY restrictions without impact to the other on-going projects. Work in this Area is on the Project’s Critical Path.
- **AREA 3** – Work between the Rappahannock River and Route 17 Interchange. This area has the most complex MOT Phasing on the Project as it constructs the new I-I-95 NB GP lanes and modifies the existing I-I-95 NB Lanes to become the new I-I-95 NB CD Lanes. Multiple phases are utilized to construct the required Project elements while maintaining traffic flow with as minimal impacts to the traveling public as possible. Because of the multiple phasing and ties to construction of B609, this Area is also critical to the success of the overall schedule.
- **AREA 4** – Route 17 Interchange Work. This Area is dedicated to tracking and coordinating construction at the Route 17 Interchange and includes the widening and modifications of Ramp D and Ramp B along with the widening of Route 17 mainline. This Area also includes Option #2 for replacement of B608. This work will occur in two phases in order to maintain traffic flow for vehicles accessing I-I-95 NB from Route 17. Finally, this Area will include Option #3 for construction of new

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pedestrian facilities along the Route 17 corridor. We have committed to Unique Milestone #1 to open Ramp D and the triple-left turn lanes onto NB Route 17, which will increase traffic flow and overall operations of this interchange. This will also facilitate re-construction of B608 safely and more efficiently by reducing the number of lanes crossing over the bridge during the construction.

- **AREA 5** – Work north of the Route 17 Interchange to the northern terminus of the Project. This Area includes some minor modifications to the I-I-95 NB GP Lanes. However, the major portion of this work will be construction of the new I-I-95 NB CD Lanes from Route 17 to tie in with FedEx Ramp HWN and merging back to the I-I-95 NB GP Lanes. This work has been scheduled to be completed by Interim Milestone #1 and will be closely monitored and coordinated with the FedEx Project. Finally, this Area includes Option #1 for the widening of I-I-95 NB from the current northern limits to Centreport Parkway.

The major Stages of work are defined as follows:

- **STAGE 1A** – This Stage is primarily for early temporary widening, lane shifts and preliminary signage, MOT and erosion and sediment control installation in order to shift or modify existing traffic lanes to prepare for subsequent stages.
- **STAGE 1B/1C** – This Stage is for the first major construction areas of work. During this Stage, new traffic lanes and widenings will be constructed for I-I-95 NB GP Lanes, CD Lanes and widening and modification of ramps at Route 3, Route 17 and mainline of Route 17. Work for Interim Milestone #1 will be completed in this Stage. The work primarily consists of all work leading up to the major traffic switch to move I-95 NB traffic to the newly constructed I-95 NB GP Lanes and Rappahannock Bridge Crossing. Unique Milestone #1 for Ramp D to Route 17 triple left turn lanes will also be completed in this Stage of work.
- **STAGE 2A** – This Stage typically begins in each Area after traffic is switched to the new I-95 NB GP Lanes and Rappahannock River Bridge Crossing. This work consists of the second major stage to finish widenings and re-construction of existing lanes which were occupied by traffic during previous stages. Major focus in this Stage will be completion of the new I-95 NB CD Lanes, re-construction of the Bridge B608 over Route 17 (Option #2) and associated ramps, and Route 17 mainline construction. The major milestone in this Stage will be the opening of the new I-95 NB CD Lanes from Route 3 to Route 17.
- **STAGE 2B/3** – The final Stage of construction for most areas will consist of completing work on I-95 NB CD Lanes, final surface asphalt, pavement markings, grading and stabilization, and signage. This stage will end with final inspections, punchlist and the acceptance process, and Final Completion.

Schedule Calendars

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

5 HOL: “5-Day Workweek with Holidays” – This calendar is based on five working days per week with the Holidays inserted as non-workdays. This calendar is used for all design and administrative activities in the CPM network. This calendar is also used for the majority of the construction activities. Durations for construction activities include anticipated production rates for major elements of work as well as regularly anticipated loss time due to weather.

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5 HOL_LC: “5-Day with Holidays and Lane Closure Restrictions” – This calendar is used for construction activities that are typically impacted by lane closure restrictions. It includes holidays as inserted in the ‘5 HOL’ calendar as well as ‘block-out’ days for the anticipated days with lane closure restrictions.

5 HOL_WINTER SLDWN: “Winter Slowdown Calendar” - Assigned to activities that are typically impacted during winter months but are still able to be performed. Activities such as asphalt paving, finish grading and sub-base aggregates and concrete deck pours are included in this restricted calendar.

5 HOL_WINTER SHDWN: “Winter Shutdown Calendar” - Assigned to activities that are typically unable to be performed during mid-December through mid-March due to cold weather. Activities such as surface paving and permanent striping are included in this restricted calendar.

5 HOL_In Stream Work: “Rappahannock River Time of Year Restriction” – This calendar has been developed for the work to be completed within the footprint of the Rappahannock River as it is impacted by environmental time of year (TOY) restrictions. This includes construction of and modifications to the causeway for access and construction of the new bridge substructure elements.

7 DAY: “7-Day Calendar” – Assigned to activities that have durations based on calendar days instead of workdays. Activities such as VDOT’s 21 calendar day submittal review, concrete curing activities and monthly maintenance items are included in this calendar.

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 WBS Project disciplines. These include design, public involvement, environmental permitting, ROW acquisition, utility relocation, construction, and project management. The sequencing of each discipline was developed by considering the construction phasing and determining the longest path to Project completion. All factors were considered including manpower, subcontractors, materials, design, environmental constraints, coordination with other on-going projects, and most importantly, public safety and safety of the workforce. The Project staging was developed to address the full scope of work, and was further refined based on plan approvals, anticipated receipt of environmental permits, utility relocations and access to ROW parcels for new roadway and bridge work. We divided the Project into logical and manageable areas. The Areas can be tracked and managed by dedicated supervision during construction to best manage the work.

Design

This section of the schedule includes those activities necessary for preliminary design, geotechnical work, early MOT plans, roadway design, bridge design and third-party coordination including engineering plan preparation and approvals. It also includes time for the necessary Design QA/QC reviews at the multiple steps in the design process. We have included a 21-calendar day activity for VDOT/FHWA review after each submission. The design phase also includes activities for the completion of surveys, test pits, H&HA studies, and geotechnical investigations, including a 90-calendar day activity for VDOT’s review of the geotechnical report prior to submission of the final roadway and bridge plans.

Our Team begins the design phase immediately upon execution of the Contract. To address the overall Project duration included in the RFP, design disciplines will prepare roadway and bridge packages concurrently, along with the early design packages for the FredEx Overlap Area and B609 Substructure Elements to start construction in both locations early in the Project schedule. The FredEx Overlay Area plans are shown to be completed by November of 2020 and the B609 Preliminary Substructure Plans are shown to be completed by January of 2021. The remaining packages for B609, B608 and Final Roadway

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Plans are shown to be completed in May of 2021.

Critical Path activities in the design phase of the Proposal Schedule include initial field investigations and surveys and the preparation of the Rappahannock River Crossing Bridge (B609) design packages for both early work for the causeway construction and the overall construction packages. This design work is critical to the construction of the Rappahannock River Crossing Bridge (B609) which is on the critical path of the overall Project Schedule.

Public Involvement/Public Relations

The Public Involvement section includes submitting our Emergency Contact List upon NTP, scheduling the Public Hearing Meeting, assisting VDOT with development of the Public Information and Communication Plan (PICP) and holding Public Information Meetings in incremental stages during construction. This section also includes providing regular updates to the Office of Public Affairs. The schedule includes the major milestone activities for the Design Public Information Meetings which will include local businesses, homeowner's associations, government representatives, community groups, and other stakeholders. We will also provide information for regular weekly lane closure schedules to VDOT for use on its website.

Environmental Permitting

The Environmental Permitting process will begin at NTP with gaining access to affected property owners along the Project's corridor to begin the required Phase I environmental surveys. Our Team immediately performs wetland delineations, obtains jurisdictional determinations and prepares the Joint Wetlands and Water Permit Application (JPA). Following completion and submission of the 60% roadway plans, we will submit the necessary permit applications to the authorities having jurisdiction (AHJ). We anticipate that the Individual Permit for USACE as well as the Virginia Water Protection Permit from DEQ will require 90 days for review and approval. Our Team will also complete the requisite VPDES, Stormwater Pollution Prevention Plans (SWPPP) and related information for inclusion on the VDOT SWPPP General Information sheets. As VDOT is providing environmental permitting for the FedEx Overlap area, early permitting activities for this work will not be required. However, while we will pursue the full Land Disturbance Permit (LDP) prior to Stage 1 Early Package work activities, the Proposal Schedule allows for issuance of a limited LDP to ensure early construction activities may proceed as planned. In addition, we will pursue an early permitting package for work in and around the Rappahannock River for early construction activities associated with the causeway construction and modification.

Right-of-Way Acquisition

The acquisition of property rights is required to obtain permanent ROW as well as permanent and temporary easements. The acquisitions have been divided into two sections. One for the more critical areas and second one for the less critical areas of the Project. As VDOT is obtaining ROW for the construction needed for Interim Milestone #1, ROW is currently not on the critical path.

Our Team is very familiar with the ROW process and have included detailed activities on the Proposal Schedule. We have used the historical average timeframes that we anticipate for acquisition of property rights either by agreed negotiation or by certificate of take. Preparation of ROW plans will closely follow the completion of the 60% plans. The appraisal process will start after the 60% plans have been reviewed by VDOT and after the limits of ROW are confirmed. After VDOT review of the appraisals, offers are prepared and the negotiation process continues. Upon agreement with the landowner(s), the settlement package is prepared for VDOT review, the acquisition goes to settlement and entry is granted following Notice to Commence Construction by VDOT.

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Utility Relocations

Our Technical Proposal identifies the unavoidable utility impacts expected. To simplify and accurately track each utility relocation, we created a WBS that groups the utility relocation activities by utility owner and Project Area. This allows us to coordinate the work with construction sequencing. Within each utility owner group, we have included activities for holding the Utility Field Inspection (UFI) meeting, preparation of the plans and estimates by the utility owner, approval of the plans and estimates, design of the utility relocation, and relocation of the utility by Area. The utility relocation schedule starts with formal UFI meetings following completion of all utility test pits and progression of design documents to roughly 60%. This enables our Team to confirm and adjust our list of utility conflicts based on the field test pit data obtained prior to holding the formal UFI meetings. We continue this early coordination of utilities throughout the design phase of the Project to ensure that right-of-way and roadway plans are coordinated with the utility relocation plans.

Currently, we are projecting that the Summit IG Trunk Line, VDOT ITS and Verizon facilities along I-I-95 NB corridor will need to be adjusted, moved or relocated. Additionally, there are existing watermains crossing I-95 that will need to be modified to accommodate construction.

Additional utilities along the Route 17 corridor will also have to be adjusted, modified or relocated for the widening work and Option #2 bridge reconstruction which include existing watermains, sanitary sewers, gas lines, and overhead/underground electrical and communication services.

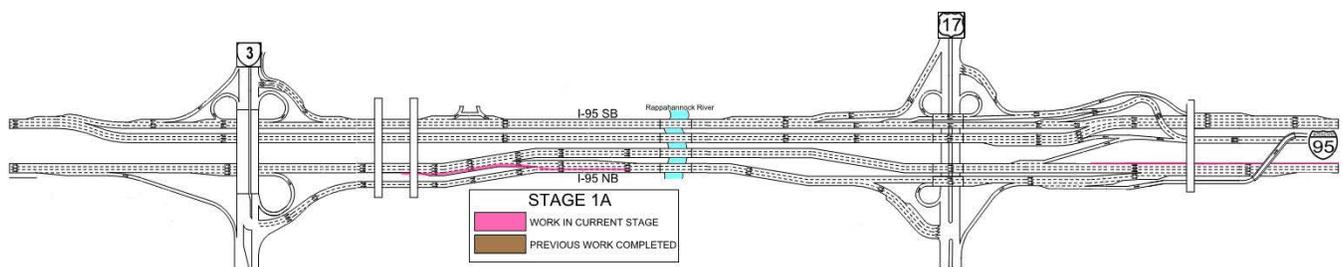
Since the wet utility relocations are the total responsibility of the Design-Build Team, we have not included UFI meetings in the Schedule as these relocations will be part of the roadway design package. Design packages and field work will still be coordinated with the utility owners. The timeframes for utility relocations are identified in our Proposal Schedule and linked to the appropriate construction activities. Utility relocations are not anticipated to be critical activities on this Project.

Construction

From a macro level, the sequencing, staging, and flow of work between the Work Areas defined above is depicted in Exhibit 4.5.1.1 labeled “Sequence of Construction and Summary Schedule.” The narrative below details our Maintenance of Traffic Staging along with associated construction work. Exhibit 4.5.1.1 and the narrative below are color coded to easily show the progression of work in each Work Area. Additionally, Exhibits 4.5.2.1 through 4.5.2.4 provide detailed MOT staging with the same color coding scheme.

A benefit our sequence of work is it allows many portions of the Project to be constructed out of traffic and behind temporary concrete barrier service (TCBS) with limited dependence on daily/nightly lane closures for access or material deliveries.

Stage 1A - Temporary Shoulder Widening (Nov 2020 - Feb 2021)



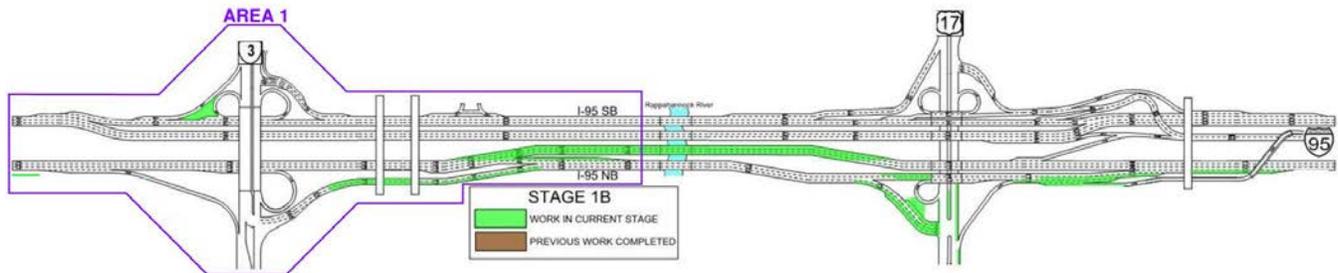
Our Team is committed to maximizing shoulder widths during all stages of construction. In order to accomplish this, certain areas of the Project will require temporary widening and subsequent lane shifts

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so that a 10' paved shoulder can be maintained at all times. In our Early Works Package, temporary TTC plans will be developed to incorporate all areas requiring adjustment. This work will be performed during allowable single or double lane closure periods. In these areas, existing rumble strips will be milled and re-paved prior to placement of new pavement markings.

Stage 1B - Construction of Major Portions of Work

Work Area 1 (Zone 2): I-95 NB GP Lanes (Mar 2021-May 2022)



Stage 1B construction begins with the installation of perimeter erosion control devices and sediment basins in this Work Area. This Area will require the construction of MSE Retaining Wall #2 for 1,310 linear feet to support the embankment for the NB I-95 GP Lanes. During the early stages, work may still be active on the I-95 SB RRC Project; we will therefore plan construction access from the left shoulder of existing NB I-95 GP Lanes in order to receive trucked embankment and drainage materials. Following the completion of the I-95 SB RRC Project, it will be necessary to close the left shoulder of the new SB I-95 GP Lanes and place TCBS for the installation of the MSE Wall #2 leveling pad and MB-7F placed at the base of the new wall. Earthwork required for the fills will be generated from the new Route 3 Ramp C Work Area and SWM Basin excavation located in the Route 3 Interchange.

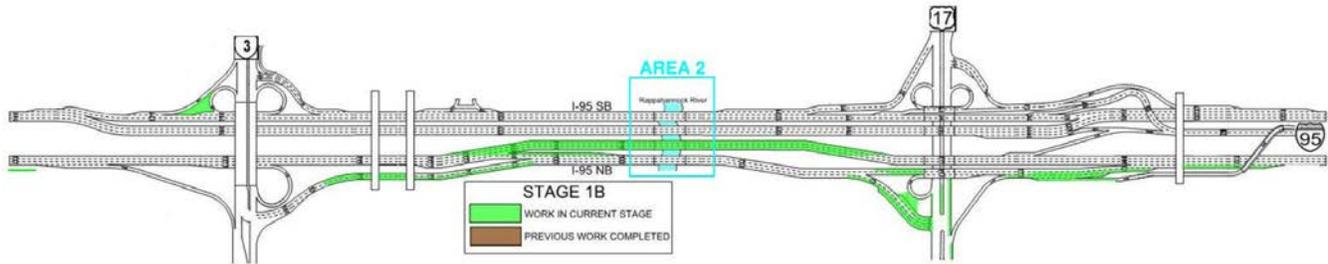
Work Area 1 (Zone 3): Route 3 Ramp C (Sept 2021-July 2022)

Construction of Route 3 Ramp C requires the installation of three cut retaining walls #1A, #1B, and #1C to support the existing sound barrier walls. Crews will be constructing these walls and generating excavated soils to be hauled to Work Area 1, Zone 2. Access to this area is behind TCBS that will be placed along the existing right shoulder of the NB I-95 GP Lanes. The southern portion of Route 3 Ramp C will require right-of-way acquisition, ITS utility relocations and clearing and grubbing prior to construction of the permanent roadway. This Work Area will extend north of the Fall Hill Avenue overpass in this Early Stage. This Work Area will be opened at the end of Stage 2B when the NB I-95 CD Lanes are complete and ready to receive traffic.

Work Area 1 (Zone 1): South of Route 3 Interchange (Aug 2022-Nov 2022)

This Work Area sits outside of the majority of the major construction activities and will carry float in our overall sequencing. The major element of work in this area is the construction of Noise Barrier C which is located adjacent to the Idlewild Community along existing NB I-95 Lanes. Following acquisition of right-of-way and design and procurement of noise barrier materials, construction crews will access this area only from the NB I-95 right shoulder. ***Our Team will restrict any work vehicles from entering the neighborhood streets for construction access or deliveries.*** Noise barrier foundations will be designed with this access in mind which may preclude larger construction equipment and wheeled vehicles from close access to the foundation locations. The other work element in this area is construction of SWM Basin(s).

Work Area 2: I-95 NB Rappahannock River Crossing (Feb 2021-Apr 2023)



The NB I-95 GP lane bridge over the Rappahannock River, B609, presents unique constructability challenges due to access, height, length, water features, and the proximity of the existing NB I-95 Bridge and the new SB I-95 GP lane bridge currently under construction. The narrative below describes the phases and steps that our Team will perform in order to successfully deliver this critical element to the Project.

Phase 1 – Modification to Existing Causeway

By necessity primary access to the work area will be from the I-95 SB RRC Project causeway. Our Early Works Permitting Package, will allow us to make modifications to the causeway during the October 15, 2020 to February 15, 2021 TOY window for work in the Rappahannock River. These modifications will not affect the I-95 SB RRC Project in any way. To maintain ongoing river traffic with only intermittent interruptions, a removable temporary causeway will be utilized for one day to walk our crane to the northern shore area in the vicinity of Piers 6 to 7. Once the crane is staged properly, the temporary causeway will be removed and the open channel restored. As described in Section 4.3.1(e), the existing causeway will be modified in this region to gain access to the Pier 6 foundation, as shown in Figure 4.6.2.2. With the crane in place, Piers 6 and 7 and Abutment B will be constructed. A temporary access road for light vehicles and small equipment will also be constructed to the Abutment B side of the bridge.



Figure 4.6.2.2 Phase 1 Modification to Existing Causeway for Piers 6 and 7

Phase 2 – Construction of Piers 1, 6, and 7, Abutment B, and Abutment A

To access the river bed for footing construction a cofferdam system will be used. Access to the individual Pier locations will be via rip-rap fingers from the main causeway. A temporary access ramp traversing the footprint of Abutment B to Piers 6 and 7 will allow routine deliveries, such as fuel, and worker access. With construction of Piers 6 and 7 complete, this access ramp will be removed and Abutment B built. Access for Abutment A construction will be from the median area of I-95, as shown in Figure 4.6.2.3.

As the substructure elements are completed in the northern side of the river, we will begin removal of the causeway, fingers and cofferdams. All equipment and supplies will be removed with the large crane being walked out of the area via a temporary 1-day obstruction of the main channel as described in Phase 1. This represents the final blockage of the main channel as any subsequent superstructure work will be accessed from above. The schedule presented in Section 4.6.1 depicts this causeway removal and temporary causeway work occurring in the October 15, 2021 to February 15, 2022 Time of Year window.



Figure 4.6.2.3 Construction of Piers 6 and 7, Abutment B to North and Pier 1 and Abutment A to South

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Phase 3 – Erection of Structural Steel at Spans G and H

As discussed in Section 4.3.2, in order to facilitate the use of the existing NB Bridge for material deliveries and steel erection, traffic will be shifted to the east (right) bridge parapet leaving a 2' shoulder. The shifted three lanes and a left shoulder shall be maintained throughout construction cordoned off by Group II Channelizing Devices. Temporary shoulder and/or lane closures of these lanes will be performed as necessary and within the time frames and parameters allowed.

With the completion of all substructure elements from Pier 6 to the North, superstructure work will begin with the erection of structural steel girders on Spans G and H. As depicted in Figure 4.6.2.4, steel erection will occur at night during allowable lane closures on I-95 NB. A tandem crane pick method will be used to safely erect the girders.



Figure 4.6.2.4 Phase 3 Erection of Structural Steel Girders at Spans G and H



Figure 4.6.2.5 Phase 4 Modifications to Existing Causeway

Phase 4 – Modification to Existing Causeway

Within the October 15, 2021 to February 15, 2022 TOY window, our Team will modify of the existing causeway constructed by the I-95 SB RRC Project. To account for the substructure layout of B609 Causeway fingers and cofferdams will be constructed to access construction for Piers 2, 3, 4, and 5, as shown in Figure 4.6.2.5.

Phase 5 - Substructure Construction Piers 2 through 5

Following completion of the in-river work in Phase 4, the balance of the Piers for B609 Bridge will be constructed, as shown in Figure 4.6.2.6. This final Phase of substructure construction is on the critical path of our Project Schedule. We are planning to have one pier stem form capable of construction of ½ of the pier height and one pier cap form. The stem form shall progress uninterrupted during substructure construction with the cap form following shortly thereafter. With the last four substructure elements in place, the temporary causeway will be modified in order to set the remaining structural steel for the Bridge.



Figure 4.6.2.6 Phase 5 Substructure Construction of Piers 2-5

Phase 6 - Erection of Structural Steel – Spans A through F

Depicted in Figure 4.6.2.7, structural steel erection will occur in two steps for Spans A through F in Phase 6. Step 1 work will entail the erection of the 3 outside (east) girders of the spans utilizing the crane from the causeway below. An assist crane will remain on top of the existing NB I-95 bridge. Steel deliveries will also be received from atop the existing bridge. Step 2 erection for the remaining girders will occur similar to Phase 3 described earlier.

Upon completion of structural steel erection, the causeway will be removed. While decking and substructure work is occurring, crews will remove the causeway starting in the Fall 2023 TOY window.

4.6 Proposal Schedule



Figure 4.6.2.7 Phase 6 Erection of Structural Steel – Spans A through F (Left: Step 1, Right: Step 2)

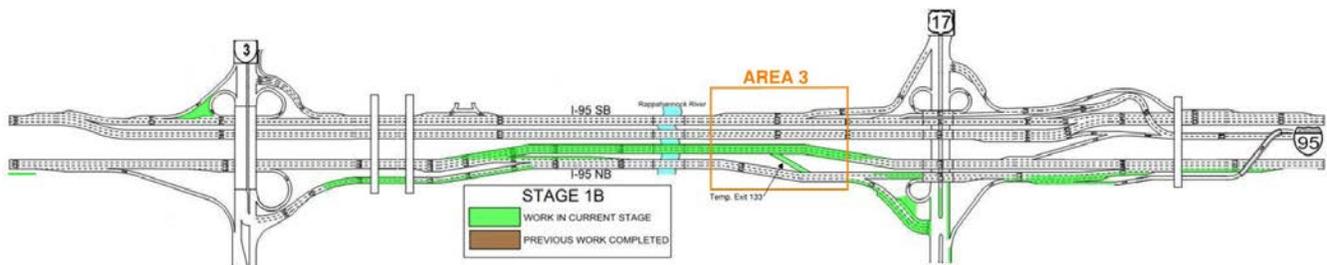
Phase 7 - Final Decking and Bridge Finishes

Phase 7 work will be timed with the progression of the substructure and structural steel erection in order to achieve efficient production in the SIP and reinforcing steel placement. As shown in Figure 4.6.2.8, the lightweight concrete deck will be installed with approach and finishes following shortly thereafter. Subsequent to the bridge safety inspection, any remaining temporary access shall be removed and the northern shoreline restored. With the roadway tie-ins complete to the approach slabs, the new NB I-95 GP Lanes will be ready to open to traffic.



Figure 4.6.2.8 Phase 7 Final Decking and Bridge Finishes

Work Area 3 (ZONE 1): NB I-95 NB LANES (Sept 2021 – Apr 2022)



Early in the beginning of Stage 1B of this Work Area, access will be gained from the left shoulder of existing NB I-95 GP Lanes. This Area is nearly balanced from an earthwork perspective, and the challenge is that our work must capture and control the drainage run-off from the newly constructed I-95 SB RRC Project during construction. As the roadway and drainage elements are being installed crews will construct a temporary connection to Route 17 Ramp D. This connection will serve the Route 17 interchange for NB I-95 traffic in the next Stage 2A.

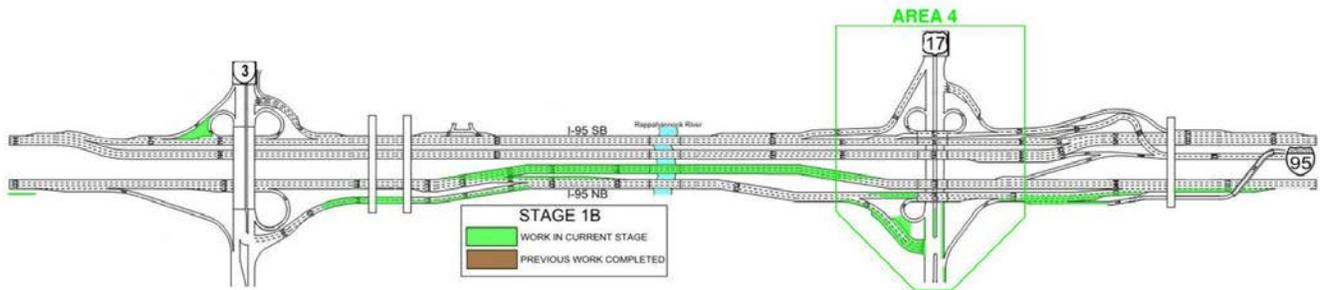
Work Area 4 (Zone 1): Ramp D - NB CD Lanes to Route 17

Work Area 4 (Zone 3A): Widening of Route 17 South of I-95 (May 2021 – Feb 2022)

Early work will continue with the reconstruction and widening of existing Ramp D from the existing I-95 NB CD Lanes to the intersection of Route 17. The widening of Route 17 will occur concurrently south of I-95 to Short Street with the goal of constructing the new triple left turn lanes on Ramp D and the new receiving lanes on NB Route 17. The new traffic signal will be activated to allow the removal of traffic movements from existing Loop C. This is represented as our Team's **Unique Milestone #1** scheduled for February 4, 2022. This Milestone creates a benefit to the traveling public by improving congestion of the heavy I-95 NB to Route 17 NB traffic movement. It also eliminates a travel lane across the existing NB

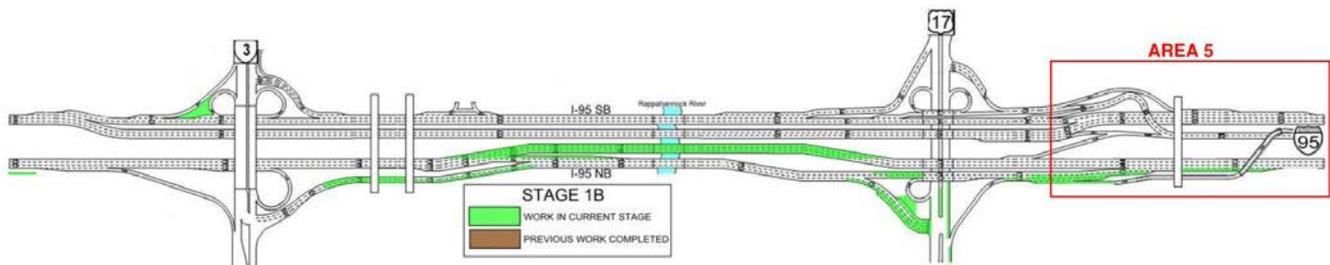
4.6 Proposal Schedule

I-95 CD Bridge over Route 17, increasing safety and greatly improving the traffic movements for the phased demolition and reconstruction of the bridge.



WORK AREA 5 (ZONE 1): I-95 NB CD LANES

WORK AREA 5 (ZONE 2): FRED-EX RAMP HWN (Jan 2021 – Oct 2021)



These areas will be constructed concurrently and require major earthwork operations. With the Interim Milestone Completion of the FredEx Overlap Area, this work will occur early in our schedule sequence. Upon receipt of ROW and environmental permits from VDOT and completion of Plans, crews will start with the extension of the triple box culvert at Falls Run. Earthwork cut at the northern portion of this Work Area will be brought to the deeper fills surrounding the completed box culvert area. Upon completion of the major earthwork, electrical and sign crews will begin installation of the ITS infrastructure necessary for the Overlap Area. Median barrier will be installed separating the CD Lanes from future Ramp HWN. Work is scheduled in our 4.6.1 Proposal Schedule to be complete and accepted by the October 29, 2021 Interim Milestone Date.

End of Stage 1B - Major Traffic Shifts

The end of Stage 1B is highlighted by two major traffic switches:

1. *Unique Milestone #1* - Opening of New Ramp D and Triple Left Turn Movement to Route 17 NB

The first major traffic shift for motorists will be the opening of the new Route 17 Ramp D triple left turn lanes to NB Route 17 and the subsequent closing of existing Route 17 Loop C. This change will greatly enhance the safety and mobility of drivers during the demolition and reconstruction of the NB I-95 CD Lane bridge over Route 17 (Option #2). We commit to opening the new triple left turn by February 4, 2022.

2. Opening of new NB I-95 Rappahannock River Crossing (B609)

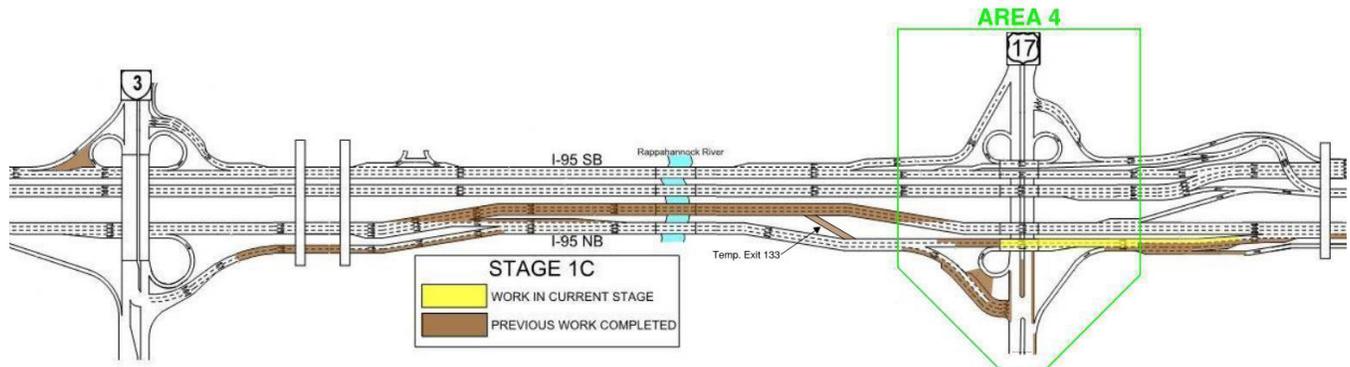
The most significant traffic shift for the Project will be the opening of the new NB I-95 Rappahannock River Crossing and the associated portions of the NB I-95 GP Lanes. Following bridge and road construction, NB I-95 traffic will be diverted to the new roadway in an overnight traffic shift. At the time of the initial shift to the new GP Lanes, Route 3 Ramp C will not open. It will remain closed in order to fully construct the new NB I-95 Slip Ramp into the NB I-95 CD Lanes south of the Rappahannock.

4.6 Proposal Schedule

North of the Rappahannock, in order to maintain traffic to Exit 133- Route 17, the Team will construct a temporary ramp to connect the new I-95 NB GP Lanes to the existing NB I-95 CD Lanes and Route 17 Ramp D.

Stage 1C - I-95 CD Lane Bridge Over Route 17 (Option #2)

Work Area 4 (Option #2): Replacement of Existing I-95 NB CD Lanes Bridge (B608) (Feb 2022- Oct 2023)



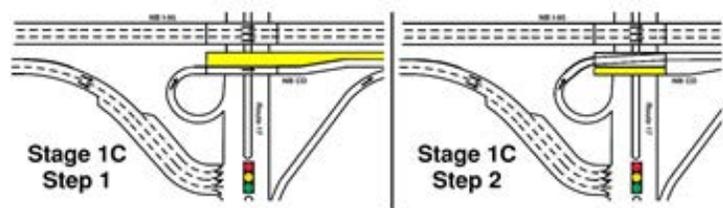
The NB I-95 CD lanes bridge over Route 17 presents unique constructability challenges due to the fact that the footprint of the new bridge is nearly identical to that of the existing bridge. Furthermore, Pier work in the median of Route 17 is constrained by traffic on both sides and by the proximity of existing bridge structures. In order to mitigate these challenges, our schedule focuses on a detailed and well planned sequence of construction.

Prior to beginning work on Bridge B608, traffic will be shifted along Route 17 and the NB I-95 CD Lanes. To facilitate abutment demolition, support of excavation will be installed at each abutment. Prior to deck demolition, a timber demolition shield shall be installed over Route 17. Our plan is to saw cut the existing deck and remove slab sections, followed by girder removal. The existing structure is classified as “Type B” and provisions to protect the environment and workers will be utilized and disposal methods/locations documented.

Pier construction will be accessed via the median area of Route 17 and support of excavation will be required. Disturbance of the existing footing will be kept to a minimum and piles located to avoid the existing structural footing. Furthermore, the new pier will be stand alone and not designed nor constructed to utilize the existing footing for structural loads. Conventional MSE walls will be constructed for Abutments A and B; however, wire walls will be required along the staging line during Stage 1. These wire walls will remain in place with Stage 2.

Bulb-T girder erection will be performed with intermittent stoppages of Route 17. Debris shielding shall be installed between girder lines over the roadways to allow uninterrupted installation of SIP forms. Reinforcing will be installed, concrete decks placed, parapets constructed, and approaches completed.

With Step 1 complete, traffic will be shifted to the newly constructed bridge and Step 2 construction completed in similar fashion to Stage 1.

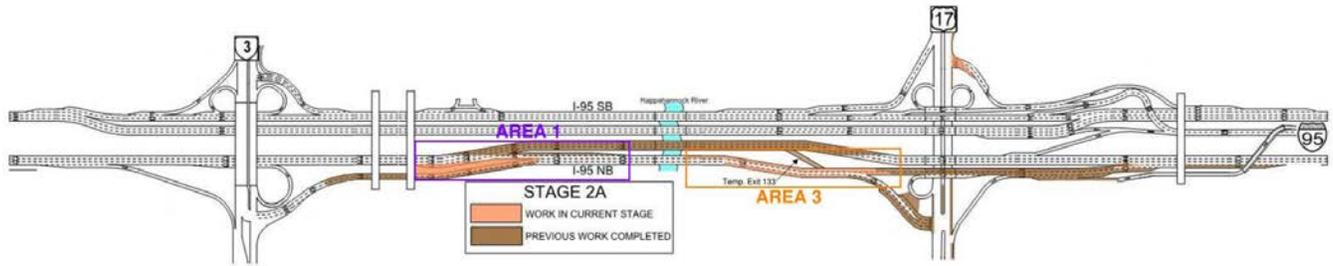


4.6 Proposal Schedule

Stage 2A - NB I-95 CD Lane Completion and Ramp B

Work Area 1 (Zone 4): I-95 NB CD Lanes 5511+00 to 5543+50

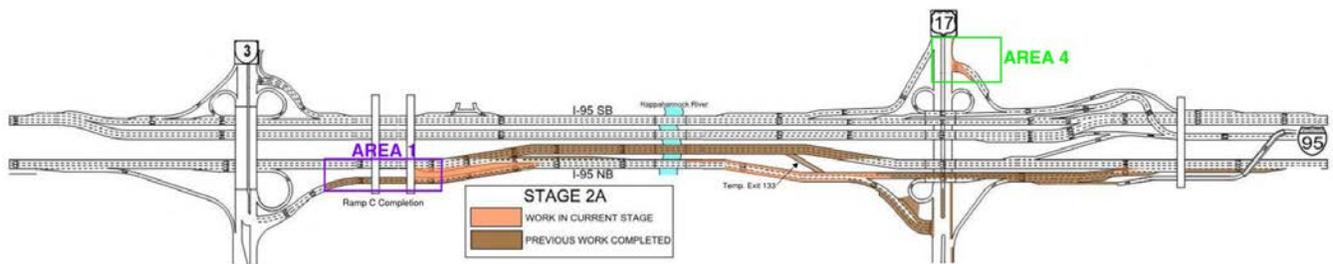
Work Area 3 (Zone 2): I-95 NB CD Lanes 5554+50 to 5606+00 (May 2023-Nov 2023)



These two Work Areas will be constructed concurrently following the opening of the new I-95 NB GP Lanes. The work will involve the widening or replacement of existing shoulders, drainage, installation of concrete median barriers to isolate the GP and CD Lanes, and the removal and installation of new guard-rail to meet current standards. Noise barrier FH will also be constructed in this Stage. With the majority of the work occurring out of traffic, all asphalt milling and final surface pavement overlays will be performed prior to opening the CD lanes to traffic.

Work Area 1 (Zone 3) Route 3 Ramp C (May 2023 – July 2023)

Work Area 4 (Zone 2) Route 17 Ramp B (July 2022-Nov 2022)



Completion of the Route 3 Ramp C will occur in this Stage including the final installation of all median barrier and BPPS elements. All final surface asphalt pavement and pavement markings will be installed prior to opening of traffic.

Area 4, Stage 2A will begin the reconfiguration of Route 17 Ramp B. Work will begin with the inside widening of the existing Ramp and traffic will be shifted to the new pavement. Concurrently, crews will be widening the NB Route 17 lanes from north of the I-95 overpass to Gateway Drive. The new traffic signal infrastructure will be installed for the future triple right turn lanes from SB I-95 CD Lanes to NB Route 17.

End of Stage 2A - Major Traffic Shift

The end of Stage 2A is highlighted by the following major traffic switch:

- Opening of the new I-95 NB CD Lanes from Route 3 Ramp C to Route 17.

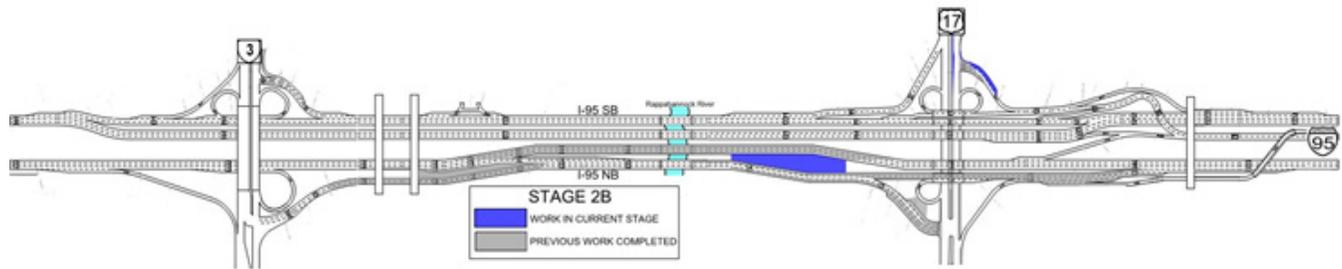
The new I-95 NB CD Lanes will be opened in one night-time operation. This switch will also include the opening of new Route 3 Ramp C. All openings are intended to occur with final surface asphalt and permanent pavement markings in place. A benefit to our Sequence of Construction is that the Bridge B608 I-95 NB CD Lane replacement will be complete prior to the opening of the CD Lanes. Drivers will have full access to all new lanes, mitigating driver confusion as no permanent lane closures or major construction work will occur at the time of the shift.

4.6 Proposal Schedule

Stage 2B - Ramp B Completion and Removal of Temp Ramp D

Work Area 4 (Zone 2/3): Route 17 Ramp B (May 2023 - Nov 2023)

Work Area 3 (Zone 1): Remove Temporary Route 17 Ramp D (Nov 2023 - Jan 2024)



In Stage 2B, Ramp B and the northern portion of the Route 17 Widening will be completed. The new traffic signal at the Route 17 and Ramp B and the modifications to the traffic signal at Sanford Drive/Gateway Drive intersection will be completed. Additionally, in this Stage, the final portions of the Option #3 - Route 17 Sidewalk will be completed, should the Department move forward with the work. The timing of the completion of the Ramp B and Route 17 work is coinciding with the opening of the I-95 NB CD Lanes as the intent is to complete all Route 17 major construction by the November 2023 opening date.

Following the opening of the I-95 NB CD Lanes, crews will quickly remove the temporary Route 17 Ramp D and replace the opening with the permanent median barrier. All shoulders will be restored and final surface asphalt placed in this area.

Work Area 5 (Option #1): Auxiliary Lane Extension to Exit 136 (Nov 2021 - Sept 2022)

Should the Department exercise Option #1, the work will be constructed following the completion of the FedEx overlap area north of Ramp HWN. The sequencing for this work will begin with improvements to the left shoulder of NB I-95 that will occur similar to that in Stage 1A. Following the shift of NB I-95 traffic to the left, traffic barrier will be placed along the right shoulder and access to the area will be gained via one opening in the barrier and at either end.

Earthwork for the Auxiliary Lane extension consists of sliver cuts and fills for the length of the work area and extensions to existing minor drainage crossings and new ditchlines will be established. In order to eliminate impacts to existing streams and wetland areas, our Team will use retaining walls to avoid the extension of 3 box culverts along the Auxiliary Lane alignment. Opening of the new Auxiliary Lane will be coordinated with the FedEx Project and VDOT and available by the Spring of 2023.

Project Management

In this section of the schedule, we identified early construction activities such as schedule preparation, mobilization, submittals, subcontractor and major material procurement, production of shop drawings, and fabrication of critical long lead time items such as steel girders and signal equipment.

Quality Assurance and Quality Control

In a separate WBS group, we identified the QA/QC Activities for the Project. These include the submission and approval of the QA/QC plan and the Preparatory Meetings (Hold Points) that are required prior to commencing with associated construction activities. The overall Level of Effort for the QA/QC process is represented by a bar spanning all construction activities until Final Completion of the Project.

Critical Path

In summary, the Critical Path runs directly through the Pre-Construction activities, Design and Construction activities associated with the Rappahannock River Crossing Bridge (B609). As there are restrictions to

4.6 Proposal Schedule

when work can be done within the Rappahannock River, it is critical we have access to start initial design activities as well as causeway and cofferdam construction to access Abutment B, Pier 6 and Pier 7 work in the 2020/2021 allowable work times. We will construct our causeways and cofferdams in a manner so that once the initial causeway / cofferdam is constructed, we will be able to construct the pier footings, columns and caps without impacting the river or TOY restrictions. The modification of the existing causeway is the next critical activity in order to construct Piers 2 through 5. Abutment A and Pier 1 construction is outside the River footprint and will not require a causeway or cofferdam and therefore can be constructed during the earlier bridge substructure work.

The Critical Path continues through the completion of the B609 bridge structure including the final safety inspection which will be required in order to shift I-95 NB traffic onto the new bridge and I-95 NB General Purpose lanes. Roadways and bridge approaches will be constructed concurrently with the bridge, but those durations are not as long and therefore are not on the Critical Path.

Once traffic is shifted onto the newly constructed B609 Bridge and I-95 NB General Purpose Lanes, work will focus on the remaining construction activities for completing the remaining widenings, median areas, signage, ITS and other associated items for the new I-95 NB CD Lanes and interchanges at Route 3 and Route 17. The Critical Path during this next stage of work runs through the remaining work in Area 1-Zone 4 to complete the I-95 NB CD Lane construction between stations 5502 to the existing NB Rappahannock Bridge crossing. This includes work that could not be completed during previous stages while mainline I-95 NB traffic was occupying this corridor. This section of roadway will be the last section required to open traffic to the new permanent I-95 NB CD Lanes from Route 3 / Ramp C to the Route 17 Interchange.

Once the new permanent I-95 NB CD Lanes are opened in their permanent configuration to the Route 17 Interchange, work can begin on demolition of the temporary ramp from I-95 NB to Route 17 (Ramp D) and completion of the permanent median, drainage and pavement between the GP and CD lanes at this location. All permanent signage, ITS and other features will continue to be installed during this final stage of work.

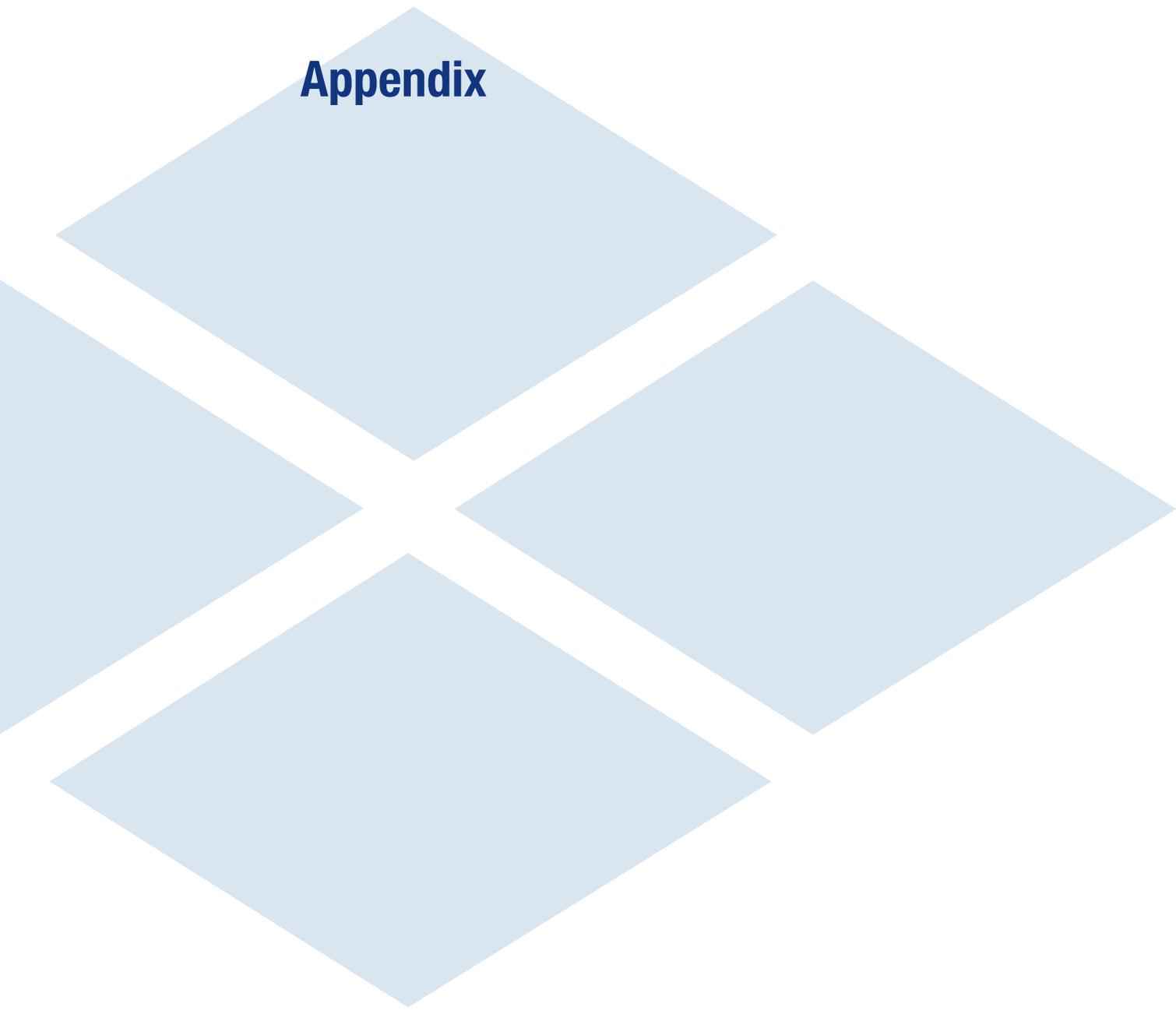
After this last section of permanent roadway is complete, all lanes will be in their final configuration and any remaining surface paving, striping, grading, guardrails and signage items will be completed. We anticipate starting final inspections and the punchlist process on or about May 1, 2024. We have included a 60-day period for final inspections and punchlist at which time we will achieve Final Completion on June 30, 2024, ahead of the RFP completion date.

Key Scheduling Assumptions

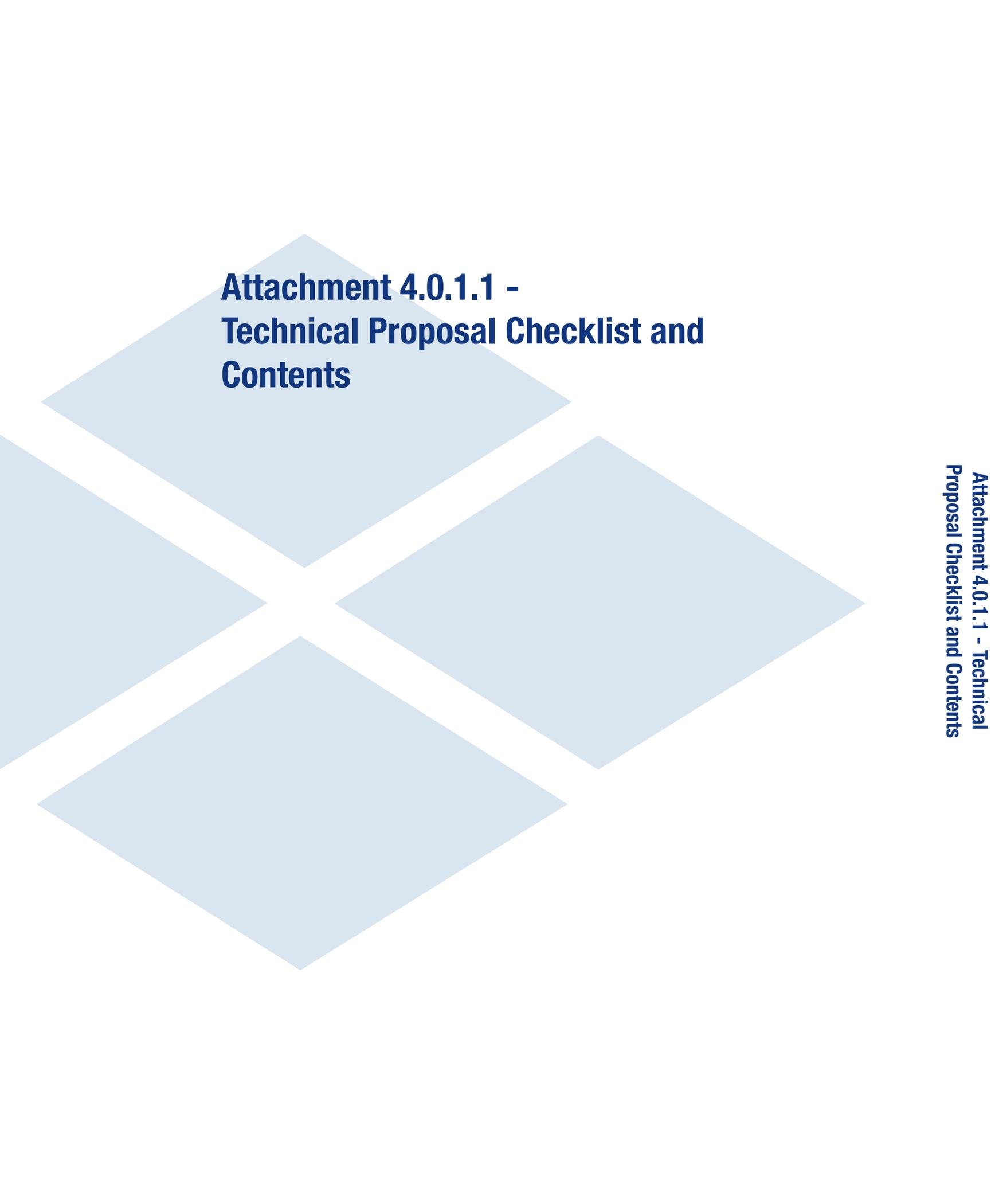
- Coordination with the I-95 SB RRC Project and FredEx Project will be critical to the overall success of the I-95 NB RRC Project and to maintain schedule certainty. Our schedule is based on the assumption that we will be able to access early work on B609 through their causeway on a limited basis as described elsewhere in this Proposal. The Schedule also assumes that VDOT meets its commitments for all right-of-way and permits in the FredEx Overlap Area.
- VDOT will review and approve Early Work packages as described.
- Utility companies will coordinate and perform their relocations in accordance with our Schedule.
- Environmental permitting agencies will accept VDOT's RFP avoidance and minimization efforts taken during the RFP phase as sufficient to process permits without delay.

4.6 Proposal Schedule

- There are no hazardous materials, threatened or endangered species, or unforeseen environmental constraints, other than those identified in the RFP, that could delay the Schedule.
- Crews are based on an 8-hour workday and 5-day workweek calendar. A detailed description of the calendars is included in this narrative.
- 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 not 'stack' too many work areas on top of each other.
- Finish-Start relationships are used as much as possible to create a logical flow of work in each area. There is some overlapping of activities such as with earthwork and drainage activities performed by different crews, but it is limited due to the constraints of the established Project corridor.



Appendix



**Attachment 4.0.1.1 -
Technical Proposal Checklist and
Contents**

ATTACHMENT 4.0.1.1
I-95 NORTHBOUND RAPPAHANNOCK RIVER CROSSING
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	Appendix
Acknowledgement of RFP, Revisions, and/or Addenda	Attachment 3.6 (Form C-78-RFP)	Sections 3.6, 4.0.1.1	no	Appendix
Letter of Submittal	NA	Sections 4.1		
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
Any Unique Milestone dates introduced by the Offeror	NA	Section 4.1.7	yes	Page 1
Proposal Payment Agreement or Waiver of Proposal Payment	Attachment 9.3.1 or 9.3.2	Section 4.1.8	no	Appendix
Certification Regarding Debarment Forms	Attachment 11.8.6(a) Attachment 11.8.6(b)	Section 4.1.9	no	Appendix
Commitment to achieving a Twelve (12%) DBE	NA	Section 4.1.10	yes	Page 1

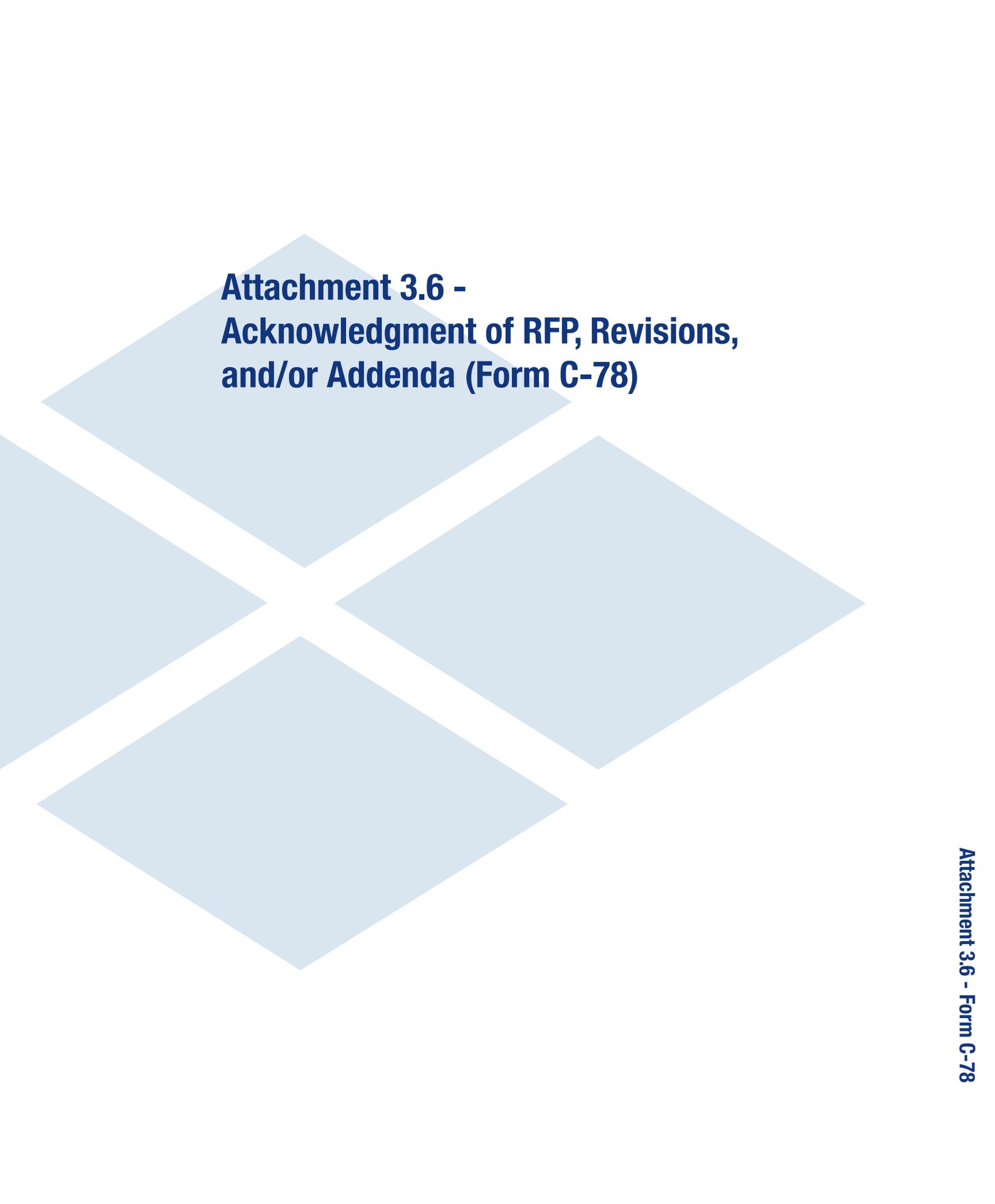
ATTACHMENT 4.0.1.1

I-95 NORTHBOUND RAPPAHANNOCK RIVER CROSSING
TECHNICAL PROPOSAL CHECKLIST AND CONTENTS

Technical Proposal Component	Form (if any)	RFP Part 1 Cross Reference	Included within page limit?	Technical Proposal Page Reference
participation goal				
Offeror's Qualifications	NA	Section 4.2		Page 2
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	NA	Section 4.3		Page 3-21
Conceptual Roadway Plans and description	NA	Section 4.3.1.1	yes	Page 3-15
Conceptual Structural Plans and description	NA	Section 4.3.1.2	yes	Page 16-21
Project Approach	NA	Section 4.4		Page 22-34
Environmental Management	NA	Section 4.4.1	yes	Page 22-25
Utilities	NA	Section 4.4.2	yes	Page 25-29
Geotechnical	NA	Section 4.4.3	yes	Page 29-34
Quality Assurance/ Quality Control (QA/QC) (as an appendix to Vol. I)	NA	Section 4.4.4	no	Appendix

ATTACHMENT 4.0.1.1
I-95 NORTHBOUND RAPPAHANNOCK RIVER CROSSING
TECHNICAL PROPOSAL CHECKLIST AND CONTENTS

Technical Proposal Component	Form (if any)	RFP Part 1 Cross Reference	Included within page limit?	Technical Proposal Page Reference
Construction of Project	NA	Section 4.5		Page 35-57
Sequence of Construction	NA	Section 4.5.1	yes	Page 35-46
Transportation Management Plan	NA	Section 4.5.2	yes	Page 46-57
Proposal Schedule	NA	Section 4. 7 6		Section 4.6
Proposal Schedule	NA	Section 4. 7 6	no	Section 4.6
Proposal Schedule Narrative	NA	Section 4. 7 6	no	Section 4.6
Proposal Schedule in electronic format (CD-ROM)	NA	Section 4. 7 6	no	Section 4.6



**Attachment 3.6 -
Acknowledgment of RFP, Revisions,
and/or Addenda (Form C-78)**

ATTACHMENT 3.7

**COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION**

RFP NO. C00105510DB106
PROJECT NO.: 0095-111-270

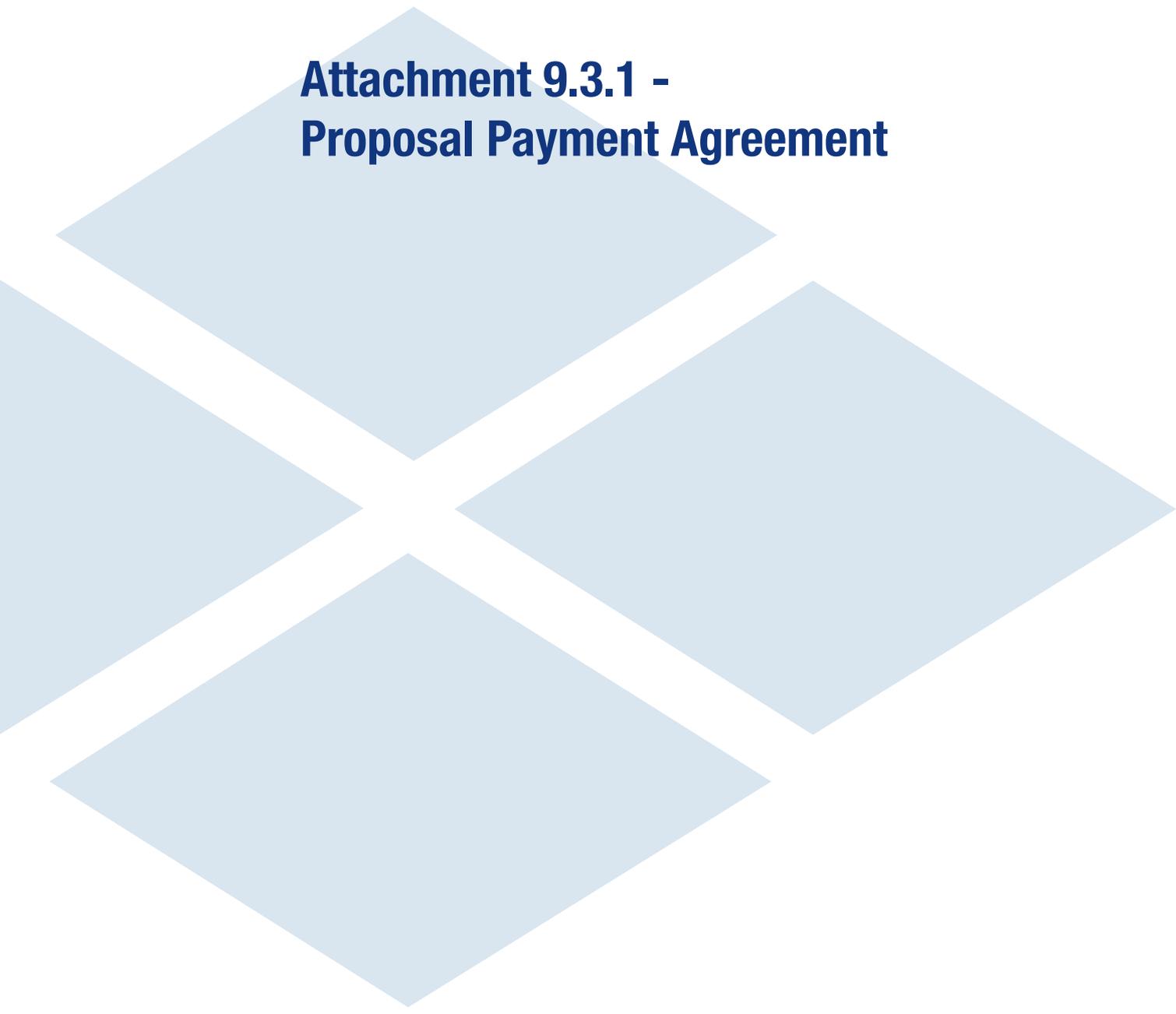
ACKNOWLEDGEMENT OF RFP, REVISION AND/OR ADDENDA

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 3.7, 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 – September 19, 2019
(Date)
2. Cover letter of RFP Addendum #1 – October 16, 2019
(Date)
3. Cover letter of RFP Addendum #2 – November 8, 2019
(Date)
4. Cover letter of RFP Addendum #3 – November 22, 2019
(Date)
5. Cover letter of RFP Addendum #4 – December 20, 2019
(Date)
6. Cover letter of RFP Addendum #5 – January 17, 2020
7. Cover letter of RFP Addendum #6 – February 6, 2020

 _____ SIGNATURE	<u>February 25, 2020</u> _____ DATE
Garry A. Palleschi _____ PRINTED NAME	<u>Vice President</u> _____ TITLE



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 _____, 2020, by and between the Virginia Department of Transportation (“VDOT”), and Shirley Contracting Company, LLC (“Offeror”).

WITNESSETH:

WHEREAS, Offeror is one of the entities who submitted Statements of Qualifications (“SOQs”) pursuant to VDOT’s May 13, 2019 Request for Qualifications (“RFQ”) and was invited to submit proposals in response to a Request for Proposals (“RFP”) for the **I-95 Northbound Rappahannock River Crossing, Project No. 0095-111-270** (“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 **Hundred Thousand and 00/100 Dollars (\$100,000.00)** ("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: _____

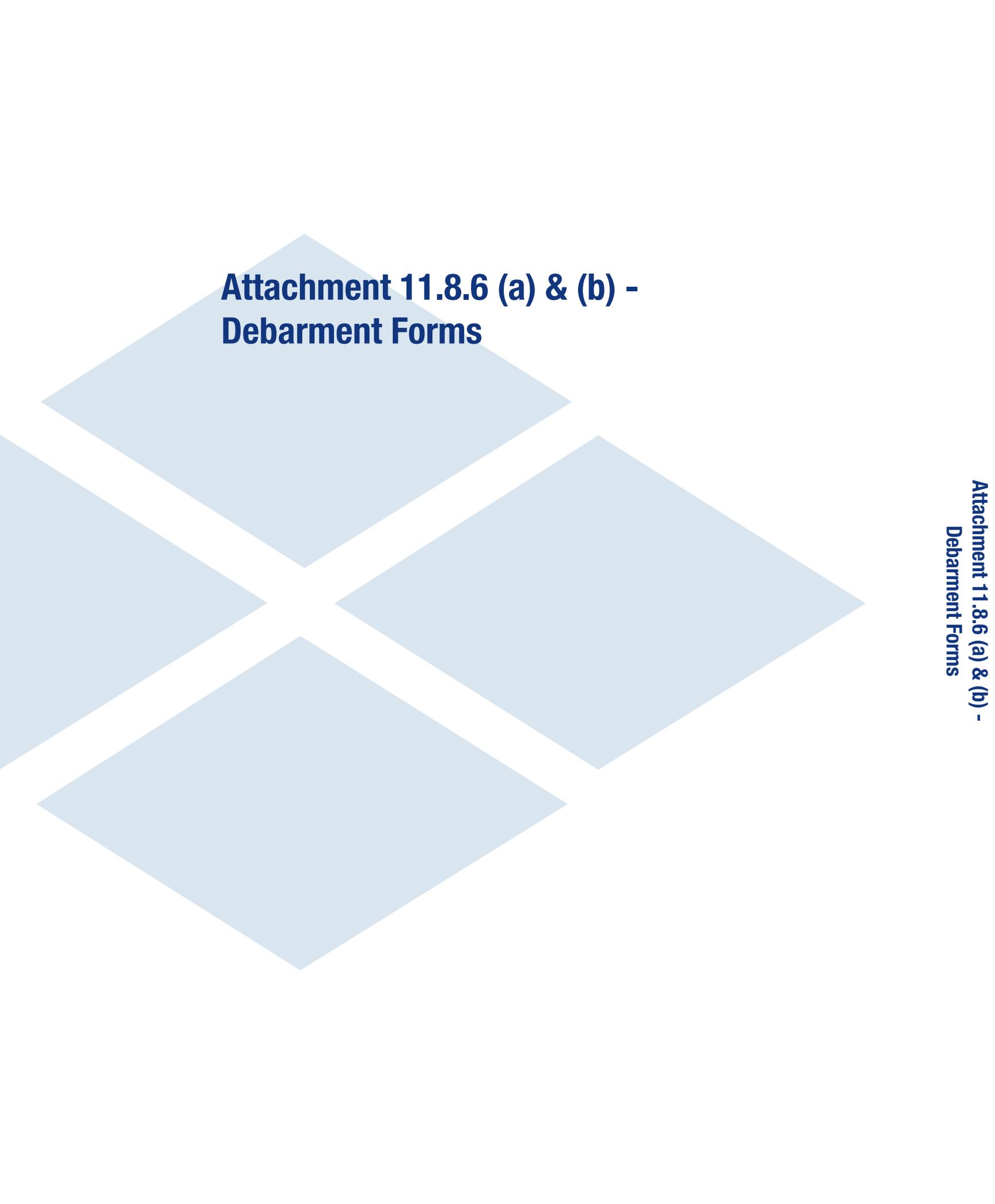
Title: _____

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

By: _____

Name: Garry A. Palleschi

Title: Vice President



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

ATTACHMENT 11.8.6(a)
CERTIFICATION REGARDING DEBARMENT
PRIMARY COVERED TRANSACTIONS

Project No.: 0095-111-270

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

February 25, 2020

Date

Vice President

Title

Shirley Contracting Company, LLC

Name of Firm

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

Project No.: 0095-111-270

- 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 1/30/20 Executive Vice President
Signature Date Title

DeLuberry Engineers Inc.
Name of Firm

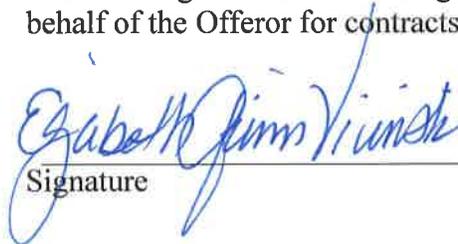
ATTACHMENT 11.8.6(b)
CERTIFICATION REGARDING DEBARMENT
LOWER TIER COVERED TRANSACTIONS

Project No.: 0095-111-270

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.

	01/28/2020	President
Signature	Date	Title

Quinn Consulting Services, Inc.
Name of Firm

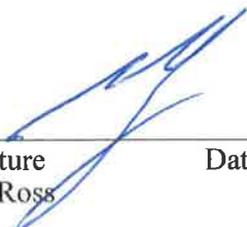
ATTACHMENT 11.8.6(b)
CERTIFICATION REGARDING DEBARMENT
LOWER TIER COVERED TRANSACTIONS

Project No.: 0095-111-270

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	1/28/2020	VP of Business Development
Signature Jerry Ross	Date	Title
<hr/>		
Specialized Engineering		
Name of Firm		

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

Project No.: 0095-111-270

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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.

 _____ Signature	<u>01/28/2020</u> _____ Date	<u>Vice President</u> _____ Title
--	------------------------------------	---

DMY Engineering Consultants Inc.

Name of Firm

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

Project No.: 0095-111-270

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<u>W. J. McKeague</u>	<u>1/28/2020</u>	<u>Vice President</u>
Signature	Date	Title

Quantum Spatial, Inc.
Name of Firm

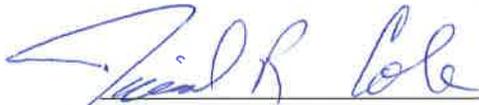
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CERTIFICATION REGARDING DEBARMENT
LOWER TIER COVERED TRANSACTIONS

Project No.: 0095-111-270

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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.



Signature

11/28/2020

Date

SR, VICE PRESIDENT

Title

SURVEYING AND MAPPING, LLC

Name of Firm

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

Project No.: 0095-111-270

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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.

 _____
Signature Date

President, CEO, COO
Title

Skelly and Loy, Inc.

Name of Firm

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

Project No.: 0095-111-270

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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.

	1/28/20	<u>President</u>
Signature	Date	Title

Diversified Property Services, Inc.
Name of Firm

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

Project No.: 0095-111-270

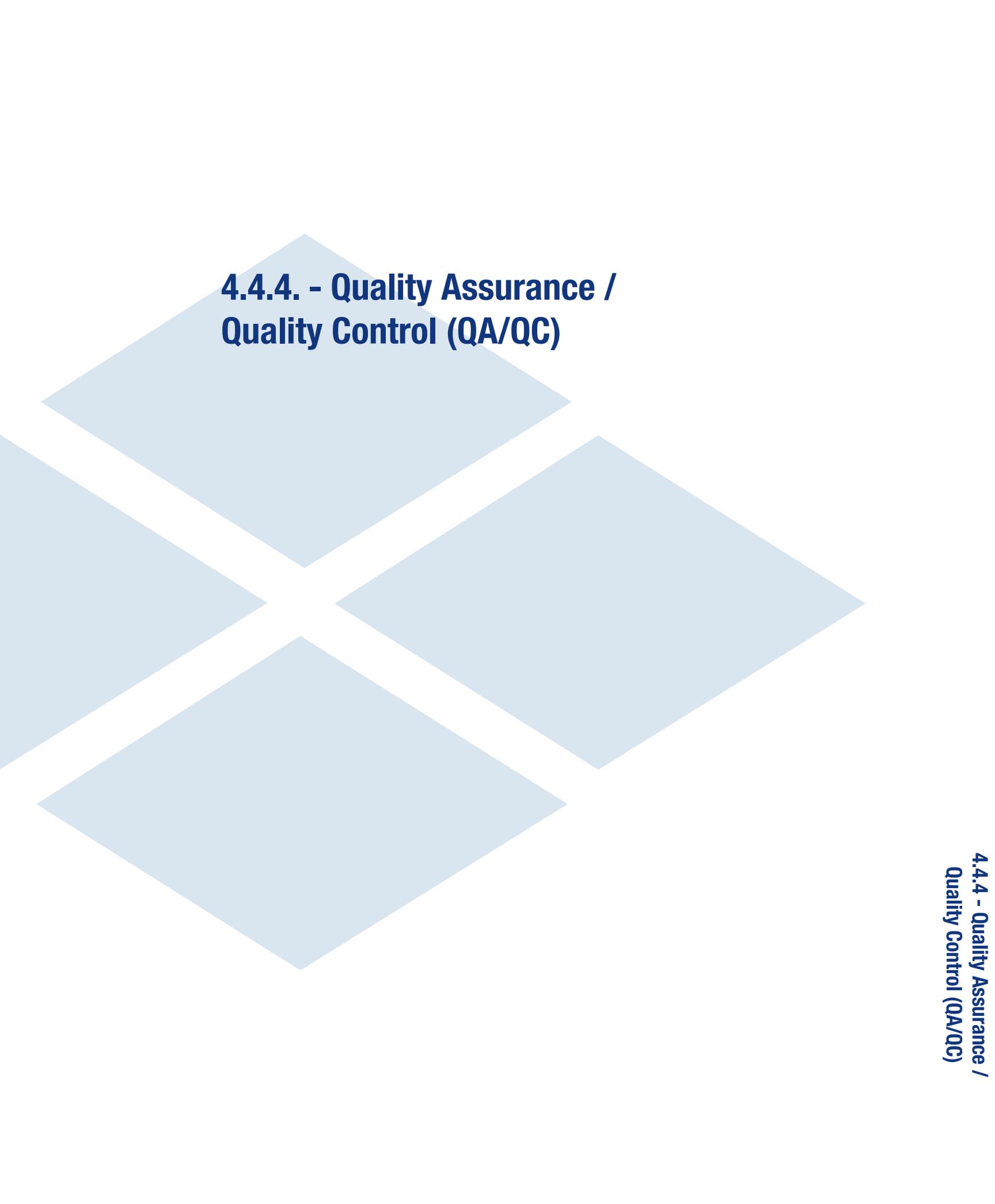
- 1) The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

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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.

Robert R. Runk 1-27-20 Vice President
Signature Date Title

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



4.4.4. - Quality Assurance / Quality Control (QA/QC)



4.4.4 Quality Assurance/Quality Control

4.4.4 Quality Assurance/Quality Control (QA/QC)

Our Team's approach to QA/QC during construction is established to conform to VDOT's Minimum Requirements for Quality Assurance and Quality Control on Design Build and Public-Private Transportation Act Projects, revised July 2018, (QA/QC Guide), as well as the resource requirements and level of effort mandated by the Team's Project Schedule and unique Scope of Work. Our approach encompasses procedures, detailed in our Project-specific QA/QC Plan, for construction Quality Assurance (QA), construction Quality Control (QC), materials testing, inspections, documentation, and auditing – all with the objective of minimizing VDOT's oversight role and resource requirements. The QA and QC Teams follow the approved QA/QC Plan that outlines the organization, roles and responsibilities, procedures, and is structured to ensure the independence of QA and QC functions. Schedule and coordination of QA/QC activities are addressed including Witness and Hold Points for inspection of work at critical stages.

4.4.4.1 Staffing Plan - Construction Quality Assurance

In Sections 4.5 and 4.6 of this Technical Proposal, our Team has presented the Sequence of Construction and Proposal Schedule, outlining our overall construction approach. After carefully reviewing the resource requirements necessary to meet this schedule, we planned our QA/QC staffing to align with the crew resources and subcontracts expected during each Project phase. Our QA/QC Staffing Plan is detailed in Exhibit 4.4.4.1, shown as an overlay to the Summary Schedule shown in Exhibit 4.5.1.2.

Using a Crew Loaded Analysis of the Summary Schedule, Exhibit 4.4.4.1 depicts the minimum number of anticipated self-perform and major subcontractor crews per month. A key indicator of the activity level of a large heavy-highway project is the staffing level of the self-perform grading and bridge crews. To determine the correct staffing for the QA effort, our Team is using the industry standard rule of thumb for the ratio of Quality Assurance inspection to grading crews which is approximately 4 to 5 crews per 1 roadway inspector. On the bridge side, the ratio is approximately 1 to 3 crews per 1 bridge inspector. The RFP requirements for the I-95 NB RRC Project ensure that 1 Lead QA Inspector - Roadway and 1 Lead QA Inspector – Structure/Bridge are onsite full-time during construction operations. Therefore, in order to determine the quantity of additional inspectors necessary, the above ratio has been applied to the anticipated number of crews as shown in Exhibit 4.4.4.1. Using this proven logic, it is anticipated that at the peak production of the Schedule, QA staffing will require 5 to 6 people, full-time, including the QAM, QA inspectors, and Support Staff.

Night work is always a factor when staffing for QA personnel. Fortunately, for our Sequence of Construction, many activities occur behind traffic barrier without the need for night-time lane closures. For safety and operational reasons, it is anticipated that night-time activities will only include activities such as:

- Early work such as Traffic Barrier Set and Shoulder Widening
- Structural Steel / Girder Erection
- Overhead Sign Installation
- Major Traffic Shifts
- Final Mill and Overlay of Mainline I-95

Since many of these activities are specialized in nature, it is not anticipated that additional night-time resources will be necessary for the QA effort.

As with any Project, there may be times when activities lull due to weather or other unanticipated issues; likewise, activities can also increase in volume based on availability of additional crews or subcontractors

4.4.4 Quality Assurance / Quality Control (QA/QC)

as well as time-of-year work windows for grading, paving, and other weather sensitive activities. Our Team assures VDOT that the proper level of QA resources will be allocated at all times for the amount of work occurring. The QA Staffing Plan as presented is the baseline of the minimal effort and details the level of commitment from our Team to meet and exceed the requirements of the RFP. Our Team's anticipated QA Staffing level will assure that the construction will be carried out in accordance with the RFP requirements with minimal VDOT resource requirements.

The following describes the Quality Assurance Team, their roles, responsibilities and projected time commitment during construction as is depicted on Exhibit 4.4.4.1.

Quality Assurance Manager (QAM)

Scott Shropshire, P.E., DBIA, Quinn Consulting Services, Inc.

Time Commitment:

- Design Phase: Estimated at 5% - 10%
- Construction Phase: 50% from Notice to Commence Construction until completion of the I-95 SB RRC Project; 100% from completion of the I-95 SB RRC Project to Final Completion.

Reporting directly to the Design Build Project Manager, (DBPM), the Quality Assurance Team is led by the Quality Assurance Manager, (QAM), Scott Shropshire, P.E., CCM with Quinn Consulting Services, Inc., (Quinn), and is a Key Personnel. Quinn is completely independent of the Designer and Contractor and is responsible for QA of all construction operations. Currently, Mr. Shropshire is serving as the QAM for both the I-95 SB RRC Project along with our Team's I-95 / Route 630 Reconstruction and Widening Project, currently scheduled for Final Completion in the Summer 2020. We are committing to VDOT that upon completion of the I-95 SB RRC Project, Scott will be dedicated full time to the Project in his role as QAM. This benefits VDOT and the Project by ensuring the continuity of this critical position as a Shirley Team member and as someone with direct experience with the Project challenges.

Our Team commits to 100% Full Time QAM participation on the I-95 NB RRC following completion of the I-95 SB RRC Project.

In his role as QAM, Scott not only reports to the DBPM, but has the autonomy to report directly to VDOT. In addition, he is tasked with the authority to unilaterally halt or suspend any work that is not in compliance with the Contract documents. Scott will review and approve monthly Applications for Payment and will report to VDOT if payments should be withheld for non-conformance or work that lacks the proper materials documentation. Further in this role as QAM, Scott and his designated QA Team are responsible for overseeing the performance of the required QC inspections and materials testing performed by Shirley's QC Team, including but not limited to: nuclear densities on soils and aggregates; concrete testing, and asphalt bulk specific gravities, as well as the other inspections and tests as prescribed in Appendix 2, Table A-2 of the QA/QC Guide.

The QAM will conduct Preparatory Inspection Meetings (PIM) in accordance with Section 5.7 of the QA/QC Guide prior to the start of any new type of work. This meeting will be scheduled within two weeks of the start of the pertinent activities and will be attended by the QAM, Construction Manager, Field Superintendents, safety personnel, subcontractors, and QA/QC personnel involved in the work. At these meetings, the QAM will facilitate a dialog between Project stakeholders where items such as the applicable contract drawings, specifications, special provisions, materials submittals, testing requirements, environmental concerns, public communications, and safety concerns. The contractor's schedule and sequence of work will be reviewed, and Witness and Hold Points confirmed based on the requirements in Sections 5.18 and 5.19 of the QA/QC Guide. The meeting will provide information enabling the adaptation of QA and QC processes to the contractor's work plan and identifying specific documentation

4.4.4 Quality Assurance / Quality Control (QA/QC)

and verification requirements including the names and qualifications of the responsible QA and QC staff. Material quantities and frequency of testing will be reviewed to ensure compliance with the minimum standards, and the Inspection Checklist used for monitoring the specific work type will be distributed. Following the PIM, the QAM will prepare and distribute meeting minutes to all parties.

The QAM will also manage and oversee the Non-Compliance Report (NCR) process. Scott will work closely with both Shirley and VDOT personnel to promptly identify, prepare, and distribute NCR's and document agreeable resolutions to each. In addition, the QAM will work with the QC team to monitor and track deficiencies and their resolution. The QAM and the QA team, when notified by Shirley that the work is complete, will coordinate acceptance inspections and develop a final punchlist with the Department and document completion of each punchlist item. Deficiencies, NCR's, and punchlist items will be tracked in the PlanGrid software system and recorded data will be reviewed by the Quality Team at each weekly Progress Meeting.

Our Team commits to quarterly audit and review of Materials Notebook for acceptance by VDOT, making an efficient Project Closeout Process.

The QAM and the QA Team will be responsible for oversight of the C-25 materials approval process and entering data provided by Shirley into the Materials Notebook. On a monthly basis, the QAM will audit the Material Notebook prior to approving the monthly Application for Payment for accuracy and completeness, (i.e. QA/QC IDR's materials testing reports), while attaching a list of any open NCR's for VDOT reference. Our Team is committed to providing quarterly VDOT reviews/audits of all materials documentation to ensure an expeditious and efficient Project closeout process.

Lead QA Inspectors

Lead QA Inspector - Structure/Bridge: Syd Tiffany, Quinn Consulting Services, Inc.

Time Commitment:

- Construction Phase: 100% (40-50 hours/week) during structure/bridge construction activities.

Lead QA Inspector - Roadway: Omar Sylla, Quinn Consulting Services, Inc.

Time Commitment:

Construction Phase: 100% (40-50 hours/week) during roadway construction.

Our Team includes two Lead QA inspectors – one for Structure/Bridge and the second for Roadway - onsite full-time during their respective construction activities reporting directly to the QAM. This approach promotes a focused inspection process that allows the Lead Inspectors to spend more of their time physically monitoring and observing construction as it is being performed, and ensures that inspections, testing and corrections of deficiencies or non-conforming work is being performed in accordance with the contract requirements. Our selected Lead Inspectors have extensive experience working in the Fredericksburg District and are very familiar with VDOT and the District expectations for construction quality inspection. Each possess the Dual Inspector Certification in Erosion & Sediment Control and Stormwater Management, and are responsible for certifying the Project's compliance with the SWPPP and the VPDES Construction Permit on the Construction Runoff Control Inspection Form (C-107 Part 1). Working in coordination with the QAM, Construction Team and QC personnel, the Lead QA Inspectors will manage the detailed, day-to-day operations related to the Quality Assurance functions, including the following:

- Review the 3-week Look-Ahead Schedules to assure inspection coverage;
- Assign certified inspectors at appropriate coverage ratios to scheduled construction activities;
- Coordinate daily with the Contractor and the Department's Independent Assurance (OIA) personnel;

4.4.4 Quality Assurance / Quality Control (QA/QC)

- Discuss sequence of construction with Superintendent and/or Foremen to ensure adherence to the approved plans and specifications;
- Monitor QC Program during field operations;
- Document and address concerns, issues, deficiencies, and non-conforming work; and
- Periodically verify that minimum test requirements are met relative to the scheduled construction activities.
- For the Mass Concrete Pours associated with B609 Rappahannock River Crossing, the bridge QA staff will assure that inspection of all aspects of the work are provided per the Special Provisions.

QA Office Engineer

Mark McMiller, Quinn Consulting Services, Inc.

Time Commitment:

- Construction Phase: Estimated at 50% - 100%

A QA Office Engineer, reporting to the QAM, will be assigned and responsible for maintaining the Materials Book, which includes the Source of Materials, quantity entries, materials testing results, Buy America Certifications, and materials invoice and ticket compilations. In addition, the Office Engineer will assist with checking QA and QC IDR's and laboratory testing reports, and is available to assist with field inspections when needed due to high volume workdays or when night/weekend inspections are required. By dedicating an Office Engineer, the QA Inspection Team is able to spend more time in the field monitoring construction and QC activities.

QA Inspectors/Testing Technicians (Roadway and Structures/Bridge)

Specialized Engineering

Time Commitment:

- Construction Phase: At peak, estimated 2 each at 100% (see Exhibit 4.4.4.1)

QA Inspectors and Testing Technicians will be utilized when the Lead QA - Structure/Bridge and Lead QA - Roadway Inspectors need support covering the volume of ongoing activities at any given time. These Inspectors and Testing Technicians hold applicable certifications for the materials they are inspecting and testing.

All QA inspectors will complete IDR's, QA Independent Assurance (QA IA) and QA VST reports for all quality assurance inspections. The QAM will compare QA IA and QA VST results to the QC, Owner Independent Assurance (OIA) and Owner VST (OVST) results for consistency and accuracy.

QA Laboratory

Specialized Engineering

Quinn will utilize Specialized Engineering, an accredited laboratory per the requirements of the *QA/QC Guide*, for the QA Laboratory. All laboratory results will be compared to the QC Laboratory results and any testing comparison discrepancies will be addressed and documented by the QAM and the Quality Team.

Staffing Plan - Construction Quality Assurance (QC)

The QC Team, led by the Construction Manager, has the training and experience required to properly execute the quality program. Our approach and commitment provide assurance to VDOT that quality will be addressed and allow the Department to minimize its oversight resources. Exhibit 4.4.4.1 also depicts the anticipated QC Staffing needs for the Project. Similar to the analysis performed with the QA staffing,

4.4.4 Quality Assurance / Quality Control (QA/QC)

we have used a ratio of self-perform crews to roadway and structure/bridge QC inspector. This ratio is higher for the roadway work due to utility crews and other underground work that requires more intense inspector and technician oversight. The structure/bridge ratio for QC staffing is similar to the QA analysis. An outline of our QC resources and responsibilities is as follows:

Construction Manager (CM)

Greg Johannes, Shirley Contracting Company, LLC

Time Commitment:

- Design Phase: Estimated at 25% - 50%
- Construction Phase: 100% from Notice to Commence Construction completion to Final Completion

As a Key Personnel, Greg has overall responsibility for construction, safety and the QC Program. During the Design Phase he will focus his efforts on constructability review of the plans, planning means and methods of construction, and coordinating with the Design Team to ensure those means and methods are accommodated by the final design details. During Construction, he directs and manages day-to-day construction activities, monitors and updates the schedule, coordinates with the utility discipline, and oversees the QC Program. He ensures construction is in accordance with the Project requirements and will be on the Project site full-time for the duration of construction operations.

Quality Control Manager (QCM)

Name, Firm TBD

Time Commitment:

- Construction Phase: 100% from Notice to Commence Construction completion to Final Completion

Reporting to the Construction Manager, the QCM is responsible for construction quality control and oversees quality control testing and inspection activities. The QCM assigns inspectors and testing technicians for each work package and monitors reporting documentation to ensure that the work is completed per Contract requirements. The QCM will assign two full-time QC inspectors – one for roadway and one for structures/bridges. Additional inspectors and testing technicians will be utilized when required by the schedule to ensure sufficient coverage is provided at all times during construction.

QC Inspectors/Testing Technicians

Name, Firm TBD

Time Commitment:

- Construction Phase: 3-4 Roadway Inspectors at peak of construction, 1 Full-Time Senior Structure/Bridge Inspector during bridge construction, 1 support Structure/Bridge Inspector during peak periods as per Exhibit 4.4.4.1.

QC Inspectors and Testing Technicians will be utilized at ratios to support covering the volume of ongoing construction activities at any given time. These Inspectors and Testing Technicians hold applicable certifications for the materials they are inspecting and testing.

QC Office Engineer

Name, Firm TBD

Time Commitment:

- Construction Phase: Estimated at 50% - 100%

A QC Office Engineer, reporting to the QCM, will be assigned and responsible for daily coordination with the Construction Manager to schedule the appropriate QC inspection and testing for the upcoming work.

4.4.4 Quality Assurance / Quality Control (QA/QC)

Our Team utilizes an Expected Daily Activity (EDA) Form to communicate to QA, QC and VDOT the upcoming work for the next day. Details such as scheduled MOT setups, concrete pour times, aggregate base production rates, and subcontractor activities are provided. The QC Office Engineer will also collect and review all Inspector Daily Reports (IDR's) and organize the reports for concise and timely submission to the QAM. The use of the QC Office Engineer ensures that the Inspectors are in the field, reviewing and verifying the work in place.

4.4.4.2 Construction Quality Assurance Approach

A key element to effectively manage our QA approach includes the implementation of an adaptive, compassionate, and flexible leadership style. Each entity, active or passive, associated with the Project has their respective expectations. The Owner and other third-party stakeholders, especially the traveling public, expect timely project completion, but also demand a quality product. With all of the dynamic aspects associated with quality in the construction process, supervision, leadership and establishing expectations of the entire QA/QC Program are critical to the Project's overall success. Three key attributes to this success include: communication, empowerment, and oversight.

Beginning at Notice of Award, the QAM communicates closely with the DBPM, Design Manager and Construction Manager (CM) to craft a thorough and compliant QA/QC Plan that is then communicated to all Team members. Moreover, the QA/QC Plan clearly communicates the Team's commitment and approach to construction quality to VDOT. Prior to construction commencement, a meeting will be held with all personnel associated with QC and QA, the DBPM and CM. The purpose of the meeting is to review the QA/QC Plan, establish the expectations and review the fundamentals of the inspection program. During construction, QA/QC meetings will be held at a minimum of once per week to discuss look-ahead items, progress status, and deficient or non-conforming work. Continuing throughout the life of the Project, design and construction meetings will be held regularly with quality always as a topic of discussion.

A second key aspect of a successful QA/QC Program is empowerment and delegation of authority. While ultimately responsible for certifying the completed work, it is not practical for the QAM to oversee every aspect of the work every day. In fact, as outlined in the QA/QC Guide, the testing requirements for QA are 10% of the work. Because the testing expectation for QC is 100%, it is essential for the QAM to empower, and establish guidelines to do so, QA inspection staff and QC with the ability to stop or suspend work for a quality or safety concern. In such cases, the QC Inspector will immediately notify the Quality Control Manager (QCM) and partnered QA Inspector, who will notify the QAM. Depending on the severity of the issue, the CM and/or DBPM may be notified. The goal of the Program is to ensure that issues are resolved at the lowest level so that productive work can resume as quickly as practical. For situations involving the design or RFC plans, the Engineer of Record will also be consulted.

Finally, oversight plays an indispensable role in providing feedback to the performance of construction operations and inspections. The QAM, using layman's terms, serves as the "quality-face" for the entire Team and VDOT. Moreover, the QAM certifies to VDOT that all work completed is in accordance with the approved plans, specifications, and contract documents. Through communication, empowerment and oversight by the QAM, the QA inspection team will review and scrutinize work activities alongside their QC counterparts. QA Inspectors will report to the respective Lead QA Inspector (Structure/Bridge or Roadway), who in-turn report to the QAM. The Office Engineer, also a certified QA Inspector, may report to a Lead QA Inspector when working in the field, or may report to the QAM regarding Project documentation, such as the Materials Notebook. The QAM will coordinate with the CM and the QCM to ensure all upcoming construction activities receive adequate and thorough inspection coverage. Furthermore, the Lead QA Inspectors will detail the inspection coverage with QC Staff and assign QA

4.4.4 Quality Assurance / Quality Control (QA/QC)

Inspectors as appropriate maintaining a minimum ratio of at least 1-QA Inspector to every 4-work crews. During construction operations, whether day or night work, QA staff will coordinate and monitor the execution of the QC Program, perform QA(IA) and/or QA(VST) testing as appropriate, and advise IA staff regarding the scheduled activities. Additionally, at the conclusion of the operation(s), QA and QC staff will discuss the operation(s) and resolve any discrepancies or notify the appropriate authority.

Construction Quality Control Approach

The Quality Control Team, led by our QCM and reporting to the CM, is responsible for daily QC inspections and material testing for all construction operations. In addition, the QCM and QC Team are responsible for all QC sampling, testing and analysis of materials and will verify quality at frequencies meeting or exceeding the VDOT Construction Manual, the Materials Manual of Instructions and the QA/QC Guide. The QCM participates in the preparation of the QA/QC Plan, including the checklists that will be utilized by QC inspectors during the inspection process. All QC Inspection Staff will hold the applicable certifications required by the QA/QC Guide for the work they are inspecting. The inspectors will be experienced in VDOT practices and methodology and will be responsible for monitoring all work activities.

All QC staff actively inspecting and/or testing components of the Project complete IDR's. The IDR's are electronic diaries 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 daily for review and approval and saved to a shared drive for access and immediate review by the QAM. The QCM prepares and submits an electronic Quality Control Monthly Report which summarizes all work completed during the period, inspections, tests, materials placed, action taken for failing materials, and NCR's. The QC Team will coordinate daily with the construction staff to ensure adequate staffing, including testing technicians, are assigned for the scheduled activities. The contractor will provide both three-week look-ahead schedules and an Expected Daily Activities (EDA) report to the QC Team to facilitate scheduling and coordination of testing and inspections.

4.4.4.3 QA/QC Organizational Chart

Our Teams Organizational Chart for our QA/QC Program is shown in Exhibit 4.4.4.2 and indicates all intended QA and QC personnel to be utilized. Solid lines between participants represent direct reporting relationships. Dashed lines represent lines of communication.

Value-Added Personnel

Included in our QA/QC Program are the following Value-Added personnel:

Geotechnical Engineer

Paul Zhang, P.E., DMY Engineering Consultants, Inc.

Time Commitment:

- Construction Phase: As required by Project Schedule

As required by the RFP, the Geotechnical Engineer of Record (GEOR) and designated inspection and testing personnel will be engaged throughout the construction phase to monitor and inspect deep foundation work, embankment work and pavement subgrades. The GEOR will be consulted as necessary to verify limits of unsuitable soils or when rock is encountered, which is known to exist at the location of new Bridge B609 over the Rappahannock River. The GEOR will also manage any monitoring for settlement, if required.

The GEOR will review all reports and tests associated with deep foundation work, such as pile installation,

4.4.4 Quality Assurance / Quality Control (QA/QC)

and confirm that the QA and QC was performed by certified inspection and testing technicians. Furthermore, the GEOR shall certify that the QA/QC was adequate and acceptable and submit its summary report to the QAM as back-up to the monthly Application for Payment submitted by the Design-Builder. The QAM will confirm that the geotechnical certification addressed work completed in the period and note such in its monthly summary submitted to the Department.

QA Office Engineer

Mark McMiller, Quinn Consulting Services, Inc.

Time Commitment:

- Construction Phase: Estimated at 50% - 100%

A QA Office Engineer, reporting to the QAM, will be assigned and responsible for maintaining the Materials Book, which includes the Source of Materials, quantity entries, materials testing results, Buy America Certifications, and materials invoice and ticket compilations. In addition, the Office Engineer will assist with checking QA and QC IDR's and laboratory testing reports, and is available to assist with field inspections when needed due to high volume workdays or when night/weekend inspections are required. By dedicating an Office Engineer, the QA Inspection Team is able to spend more time in the field monitoring construction and QC activities.

QA Office Engineer

Name, Firm TBD

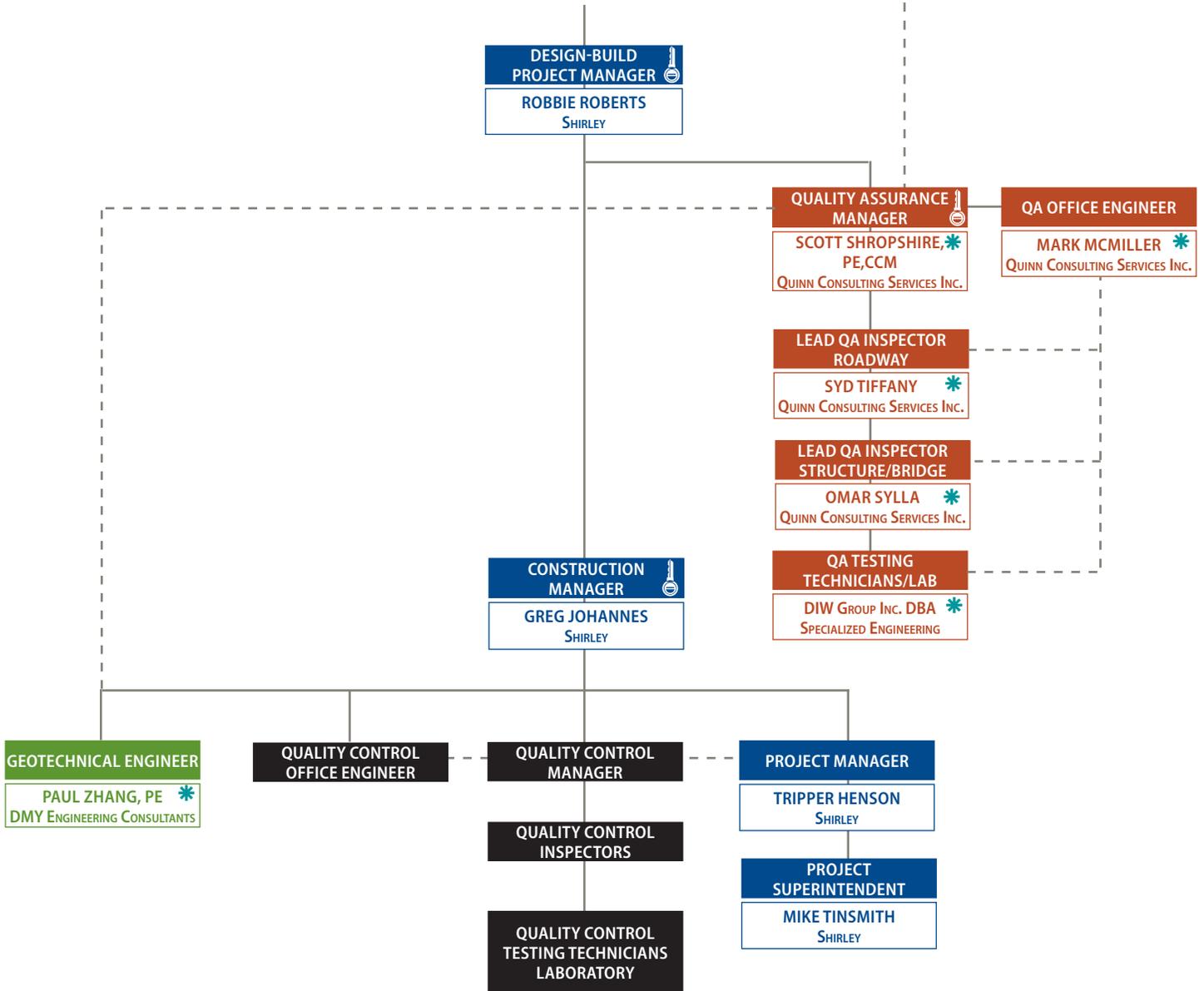
Time Commitment:

- Construction Phase: Estimated at 50% - 100%

A QC Office Engineer, reporting to the QCM, will be assigned and responsible for daily coordination with the Construction Manager to schedule the appropriate QC inspection and testing for the upcoming work. Our Team utilizes an Expected Daily Activity (EDA) Form to communicate to both QA and QC as well as VDOT the upcoming work for the next day with details such as scheduled MOT setups, concrete pour times, aggregate base production rates, and subcontractor activities. The QC Office Engineer will also collect and review all Inspector Daily Reports and organize the reports for concise and timely submission to the QAM. The use of the QC Office Engineer ensures that the Inspectors are where they need to be... in the field, reviewing and verifying the work in place.

4.4.4 Quality Assurance / Quality Control (QA/QC)

Exhibit 4.4.4.2 QA/QC Organizational Chart



LEGEND	
■ Construction	Key Personnel
■ Design	+ Value Added Personnel
■ Quality Assurance	* DBE
■ Quality Control	- - - Communication
■ Right-of-Way	— Direct Reporting
■ 3rd Parties	

Response to Request for Proposals

I-95 NORTHBOUND RAPPAHANNOCK RIVER CROSSING

City of Fredericksburg and Stafford County, Virginia

State Project No.: 0095-111-270

Federal Project No.: NHP-095-2(545)

Contract ID Number: C00105510DB106

February 25, 2020

VOLUME II DESIGN CONCEPT



Submitted By:



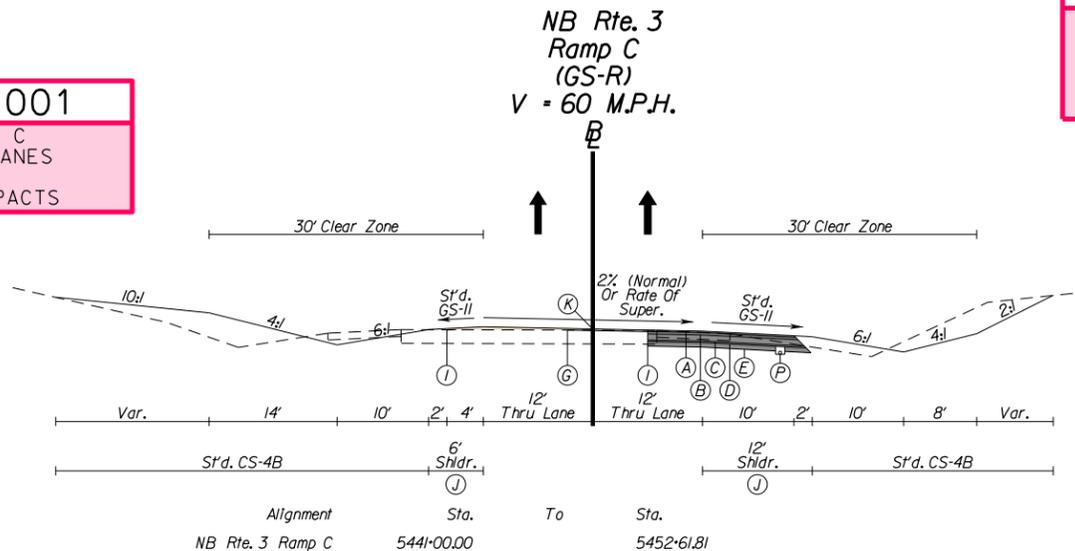
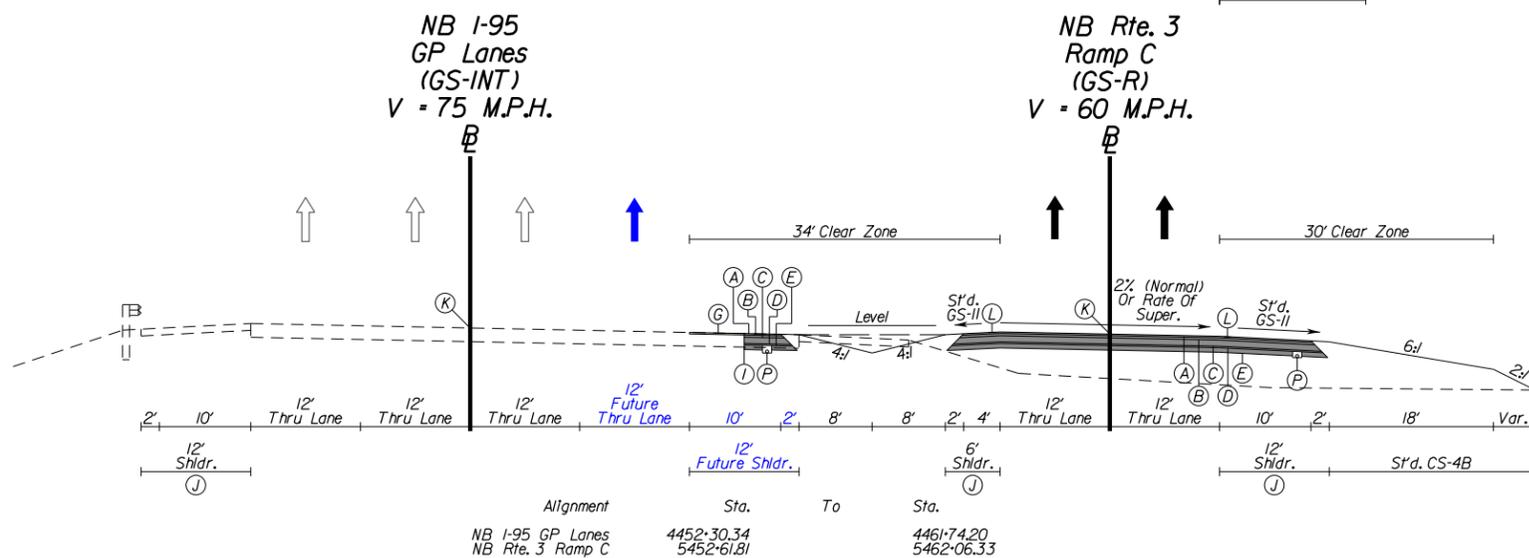
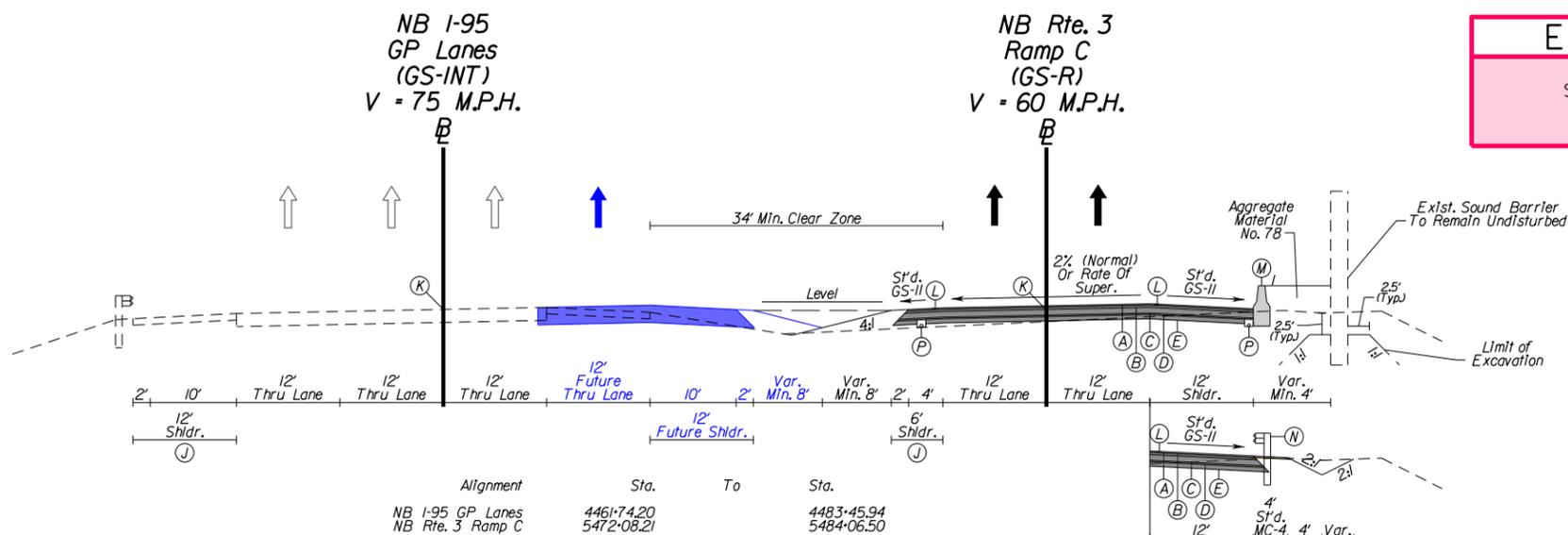
In Association With:



4.3.1 - Conceptual Roadway Plans

TYPICAL SECTIONS

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	95	0095-III-270 P101, R201, C501	2A(01)



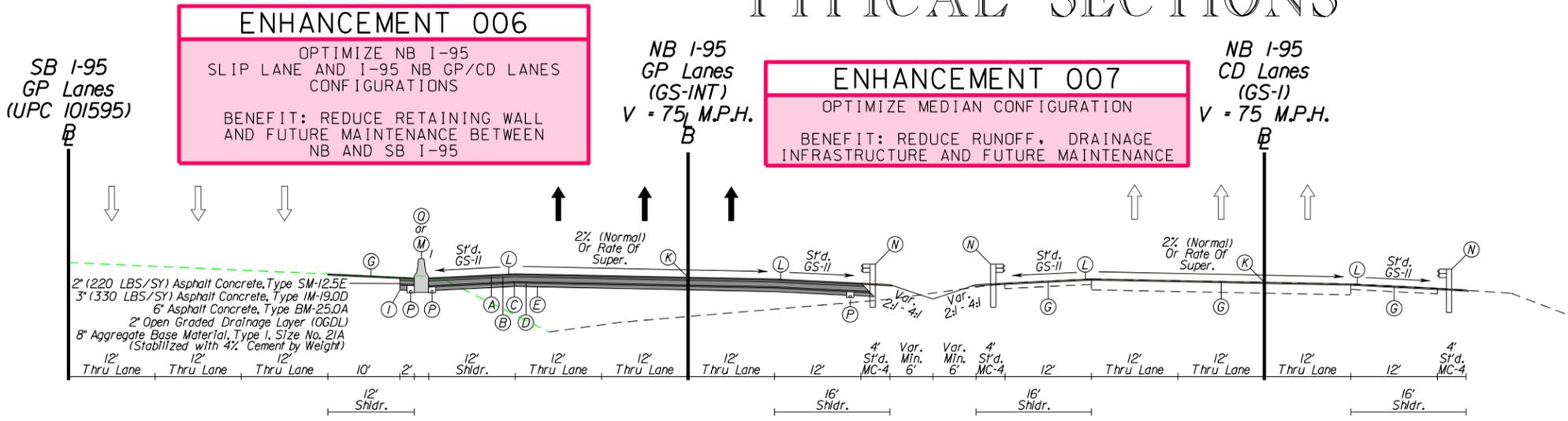
- (A) 2" (220 LBS/SY) Asphalt Concrete, Type SM-12.5E
 - (B) 3" (330 LBS/SY) Asphalt Concrete, Type IM-19.0D
 - (C) 8" Asphalt Concrete, Type BM-25.0A
 - (C₁) 1" Asphalt Concrete, Type BM-25.0A
 - (D) 2" Open Graded Drainage Layer (OGDL)
 - (D₁) 4" Aggregate Base Material, Type I, Size No. 21B
 - (E) 6" Aggregate Base Material, Type I, Size No. 21A (Stabilized with 4% Cement by Weight)
 - (F) Aggregate Base Material, Type I, Size No. 21B Connected To A Standard UD-4 Edge Drain Beneath The Curb Or Curb And Gutter And Extended 12" Behind The Curb
 - (G) Mill Exist. Surface 2" and Overlay with 2" (220 LBS/SY) Asphalt Concrete, Type SM-12.5E
 - (G₁) Mill Exist. Surface 1.5" and Overlay with 1.5" (165 LBS/SY) Asphalt Concrete, Type SM-12.5E
- Note: Exist. Surface Buildup Greater Than 2", Milling not Required. Utilize Var. Thickness Asphalt Concrete, Type IM-19.0D Prior to 2" (220 LBS/SY) Asphalt Concrete, Type SM-12.5E. See Asphalt Concrete Overlay Transitions, S'd. ACOT-1
- (I) Full Depth Saw Cut, Where Shown or 1' From the Edge of Exist. Pvmt.
 - (J) When Guardrail is Required, Shoulder Widths And Limits of Paving Shall Be Increased In Accordance With S'd. GR-MGS-INS And S'd. MC-4.
 - (K) Profile Grade Line (PGL)
 - (L) Edge Line Shoulder Rumble Strips, S'd. RS-5 Req'd.
 - (M₁) Concrete Median Barrier, S'd. MB-7D Req'd.
 - (M₂) Concrete Median Barrier, S'd. MB-7E Req'd.
 - (M₃) Concrete Median Barrier, S'd. MB-7F Req'd.
 - (N) Midwest Guardrail System, S'd. GR-MGSI Req'd.
 - (O) 6" Curb, S'd. CG-2 Req'd.
 - (O₁) 6" Curb & Gutter, S'd. CG-6 Req'd.
 - (P) Pavement Edgedrain, S'd. UD-4 Req'd.
 - (Q) Concrete Median Barrier, S'd. MB-8A Req'd.

- Denotes Full Depth Asphalt Pavement
- Denotes Asphalt Mill and Overlay/Buildup
- Denotes S'd. MC-4
- Denotes Concrete
- Denotes Bridge
- Denotes Option *1
- Denotes Option *2
- Denotes Option *3
- Denotes 95 SBRR (UPC 101595)
- Denotes FredEx (UPC 110527)
- Denotes FredEx Interim
- Denotes Future Fourth Lane (By Others)

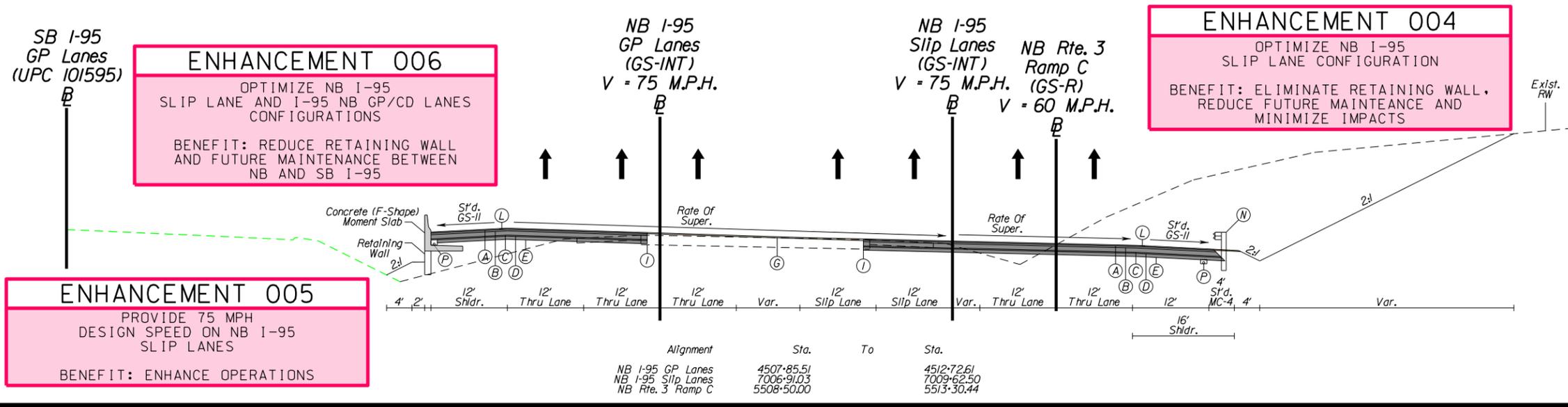
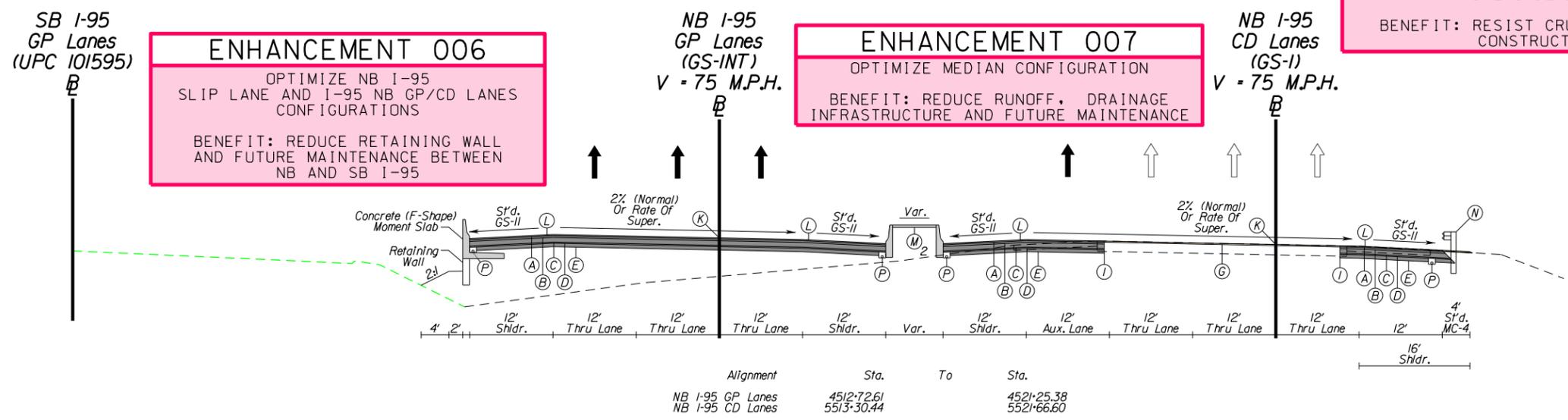
SCALE 0 10' 20'	PROJECT 0095-III-270	SHEET NO. 2A(01)
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TYPICAL SECTIONS

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	VA.	95	0095-III-270 P101, R201, C501	2A(03)



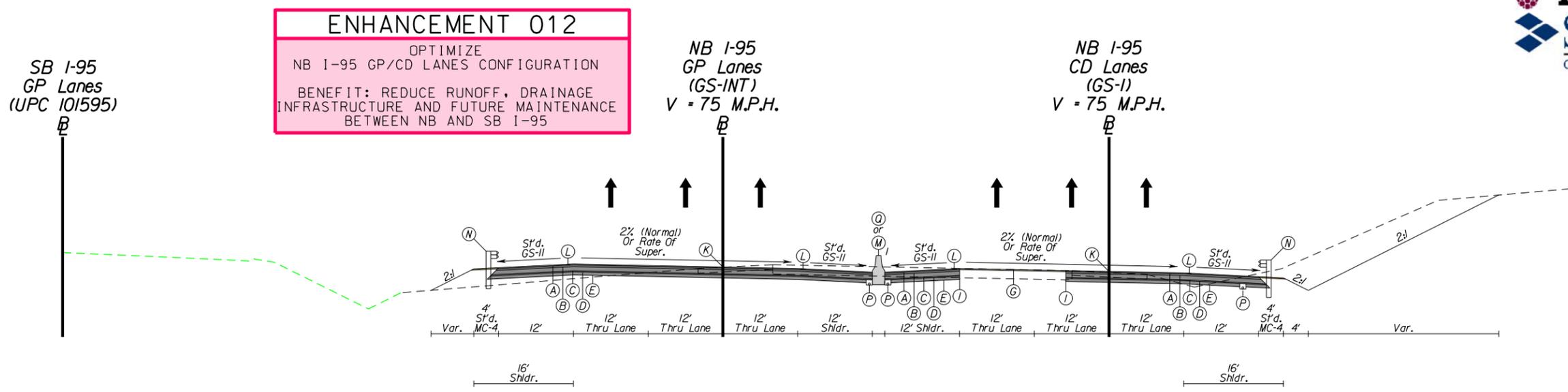
- (A) 2" (220 LBS/SY) Asphalt Concrete, Type SM-12.5E
- (B) 3" (330 LBS/SY) Asphalt Concrete, Type IM-19.0D
- (C) 8" Asphalt Concrete, Type BM-25.0A
- (C₁) 1" Asphalt Concrete, Type BM-25.0A
- (D) 2" Open Graded Drainage Layer (OGDL)
- (D₁) 4" Aggregate Base Material, Type I, Size No. 21B
- (E) 6" Aggregate Base Material, Type I, Size No. 21A (Stabilized with 4% Cement by Weight)
- (F) Aggregate Base Material, Type I, Size No. 21B Connected To A Standard UD-4 Edge Drain Beneath The Curb Or Curb And Gutter And Extended 12" Behind The Curb
- (G) Mill Exist. Surface 2" and Overlay with 2" (220 LBS/SY) Asphalt Concrete, Type SM-12.5E
- (G₁) Mill Exist. Surface 1.5" and Overlay with 1.5" (165 LBS/SY) Asphalt Concrete, Type SM-12.5E
Note: Exist. Surface Buildup Greater Than 2", Milling not Required. Utilize Var. Thickness Asphalt Concrete, Type IM-19.0D Prior to 2" (220 LBS/SY) Asphalt Concrete, Type SM-12.5E. See Asphalt Concrete Overlay Transitions, S'd. ACOT-1
- (I) Full Depth Saw Cut, Where Shown or 1' From the Edge of Exist. Pvmt.
- (J) When Guardrail is Required, Shoulder Widths And Limits of Paving Shall Be Increased In Accordance With S'd. GR-MGS-INS And S'd. MC-4.
- (K) Profile Grade Line (PGL)
- (L) Edge Line Shoulder Rumble Strips, S'd. RS-5 Req'd.
- (M₁) Concrete Median Barrier, S'd. MB-7D Req'd.
- (M₂) Concrete Median Barrier, S'd. MB-7E Req'd.
- (M₃) Concrete Median Barrier, S'd. MB-7F Req'd.
- (N) Midwest Guardrail System, S'd. GR-MGSI Req'd.
- (O) 6" Curb, S'd. CG-2 Req'd.
- (O₁) 6" Curb & Gutter, S'd. CG-6 Req'd.
- (P) Pavement Edgedrain, S'd. UD-4 Req'd.
- (Q) Concrete Median Barrier, S'd. MB-8A Req'd.



- Denotes Full Depth Asphalt Pavement
- Denotes Asphalt Mill and Overlay/Buildup
- Denotes S'd. MC-4
- Denotes Concrete
- Denotes Bridge
- Denotes Option *1
- Denotes Option *2
- Denotes Option *3
- Denotes 95 SBRR (UPC 101595)
- Denotes FredEx (UPC 110527)
- Denotes FredEx Interim
- Denotes Future Fourth Lane (By Others)

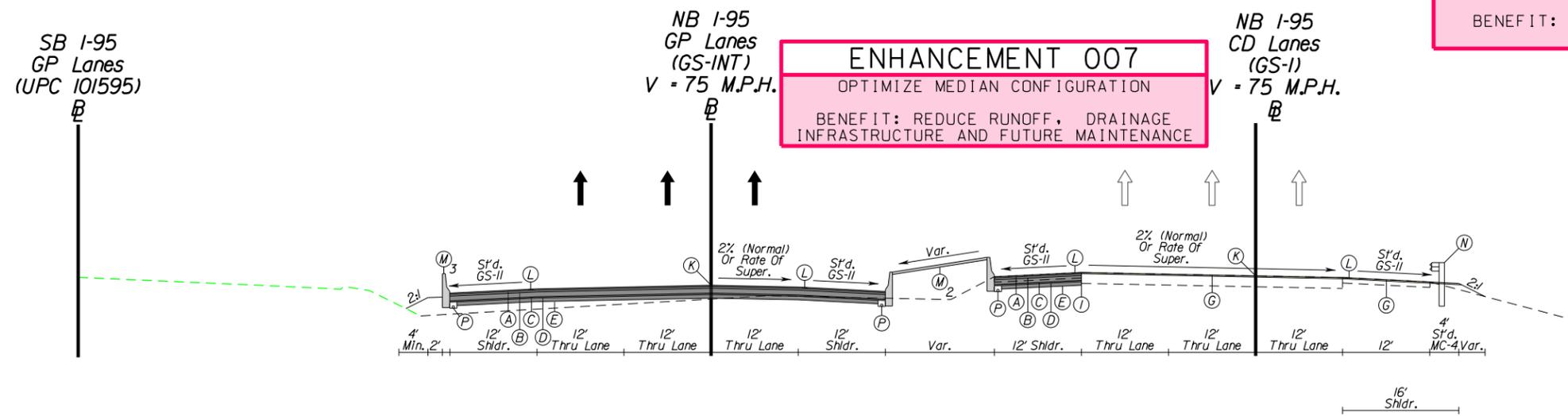
REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	95	0095-III-270 P101, R201, C501	2A(04)

TYPICAL SECTIONS



Alignment	Sta.	To	Sta.
NB I-95 GP Lanes	4565+23.79		4586+80.22
NB I-95 CD Lanes	5565+43.83		5586+82.81

ENHANCEMENT 030
UTILIZE DOUBLE-WALL HDPE UNDERDRAIN
BENEFIT: RESIST CRUSHING DURING CONSTRUCTION



Alignment	Sta.	To	Sta.
NB I-95 GP Lanes	4538+32.27		4543+26.52
Bridge B609	4543+26.52		4554+06.52
NB I-95 GP Lane	4554+06.52		4565+23.79
NB I-95 CD Lanes	5538+52.46		5543+47.48
Bridge B616	5543+47.48		5554+27.97
NB I-95 CD Lanes	5554+27.97		5565+43.83

- (A) 2" (220 LBS/SY) Asphalt Concrete, Type SM-12.5E
- (B) 3" (330 LBS/SY) Asphalt Concrete, Type IM-19.0D
- (C) 8" Asphalt Concrete, Type BM-25.0A
- (C₁) 1" Asphalt Concrete, Type BM-25.0A
- (D) 2" Open Graded Drainage Layer (OGDL)
- (D₁) 4" Aggregate Base Material, Type I, Size No. 21B
- (E) 6" Aggregate Base Material, Type I, Size No. 21A (Stabilized with 4% Cement by Weight)
- (F) Aggregate Base Material, Type I, Size No. 21B Connected To A Standard UD-4 Edge Drain Beneath The Curb Or Curb And Gutter And Extended 12" Behind The Curb

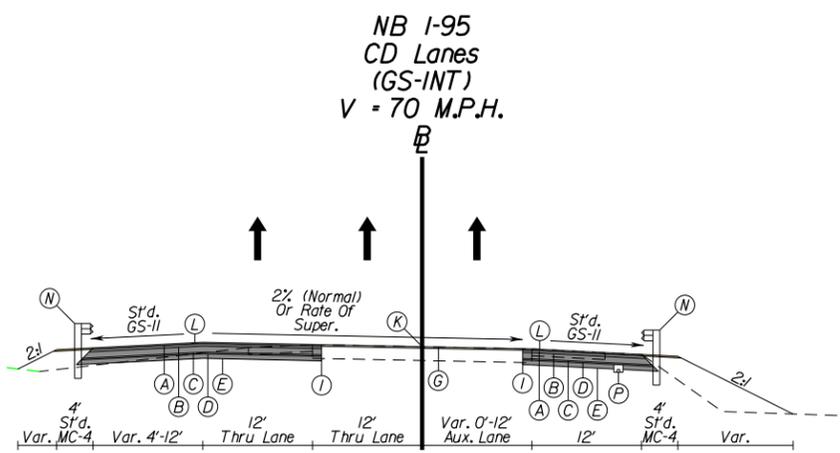
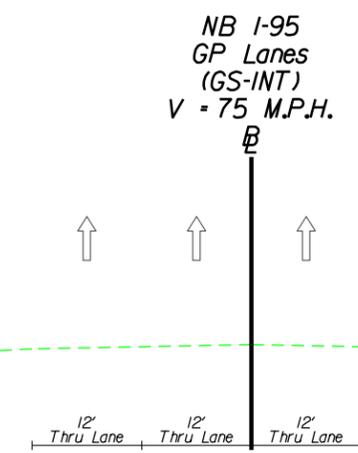
- (G) Mill Exist. Surface 2" and Overlay with 2" (220 LBS/SY) Asphalt Concrete, Type SM-12.5E
- (G₁) Mill Exist. Surface 1.5" and Overlay with 1.5" (165 LBS/SY) Asphalt Concrete, Type SM-12.5E
Note: Exist. Surface Buildup Greater Than 2", Milling not Required. Utilize Var. Thickness Asphalt Concrete, Type IM-19.0D Prior to 2" (220 LBS/SY) Asphalt Concrete, Type SM-12.5E. See Asphalt Concrete Overlay Transitions, S'd. ACOT-1
- (I) Full Depth Saw Cut, Where Shown or 1' From the Edge of Exist. Pvmt.
- (J) When Guardrail Is Required, Shoulder Widths And Limits of Paving Shall Be Increased In Accordance With S'd. GR-MGS-INS And S'd. MC-4.
- (K) Profile Grade Line (PGL)
- (L) Edge Line Shoulder Rumble Strips, S'd. RS-5 Req'd.

- (M₁) Concrete Median Barrier, S'd. MB-7D Req'd.
- (M₂) Concrete Median Barrier, S'd. MB-7E Req'd.
- (M₃) Concrete Median Barrier, S'd. MB-7F Req'd.
- (N) Midwest Guardrail System, S'd. GR-MGS1 Req'd.
- (O) 6" Curb, S'd. CG-2 Req'd.
- (O₁) 6" Curb & Gutter, S'd. CG-6 Req'd.
- (P) Pavement Edgedrain, S'd. UD-4 Req'd.
- (Q) Concrete Median Barrier, S'd. MB-8A Req'd.

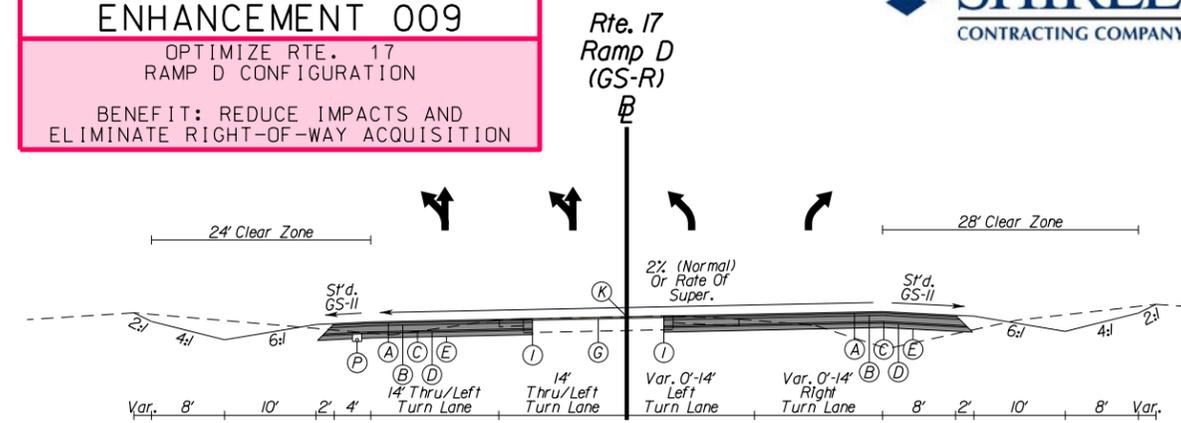
Denotes Full Depth Asphalt Pavement	Denotes Option #1
Denotes Asphalt Mill and Overlay/Buildup	Denotes Option #2
Denotes S'd. MC-4	Denotes Option #3
Denotes Concrete	Denotes 95 SBRR (UPC 101595)
Denotes Bridge	Denotes FredEx (UPC 110527)
	Denotes FredEx Interim
	Denotes Future Fourth Lane (By Others)

REVISED	STATE	ROUTE	PROJECT	SHEET NO.
	VA.	95	0095-III-270 P101, R201, C501	2A(05)

TYPICAL SECTIONS

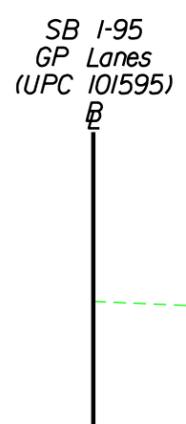


ENHANCEMENT 009
OPTIMIZE RTE. 17
RAMP D CONFIGURATION
BENEFIT: REDUCE IMPACTS AND
ELIMINATE RIGHT-OF-WAY ACQUISITION

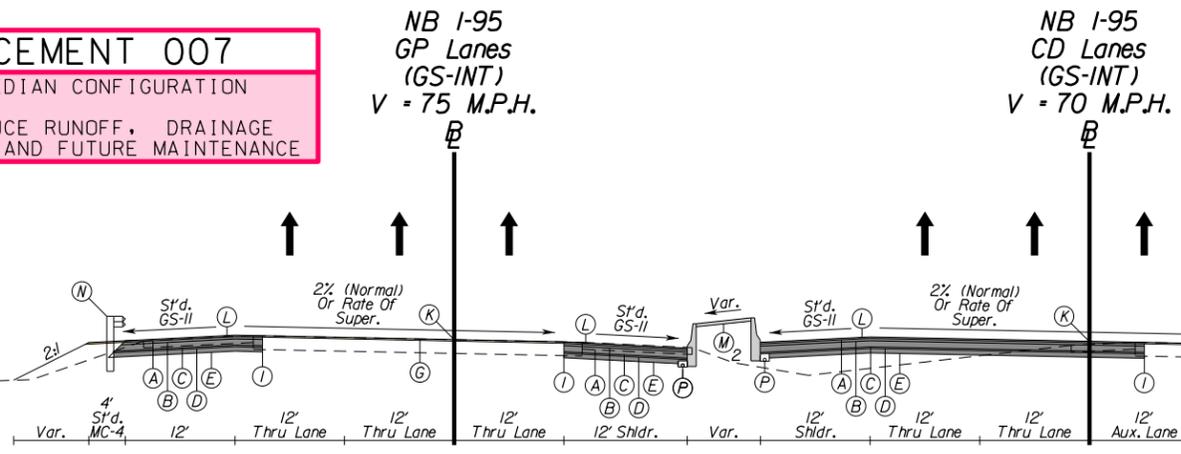


Alignment	Sta.	To	Sta.
NB I-95 GP Lanes	4597+32.89		4606+05.10
Bridge B652	4606+05.10		4607+92.12
NB I-95 GP Lane	4607+92.12		4636+29.58
NB I-95 CD Lanes	5597+25.87		5606+12.85
Bridge B608	5606+12.85		5607+73.89
NB I-95 CD Lanes	5607+73.89		5636+36.69

Alignment	Sta.	To	Sta.
Rte. 17 Ramp D	700+00.00		717+98.49



ENHANCEMENT 007
OPTIMIZE MEDIAN CONFIGURATION
BENEFIT: REDUCE RUNOFF, DRAINAGE
INFRASTRUCTURE AND FUTURE MAINTENANCE



ENHANCEMENT 008
PROVIDE DECELERATION
LANE ON NB I-95 CD LANES
BENEFIT: ENHANCE SAFETY AND
OPERATIONS

ENHANCEMENT 030
UTILIZE DOUBLE-WALL
HDPE UNDERDRAIN
BENEFIT: RESIST CRUSHING DURING
CONSTRUCTION

Alignment	Sta.	To	Sta.
NB I-95 GP Lanes	4586+80.22		4597+32.89
NB I-95 CD Lanes	5586+82.81		5597+25.87

- (A) 2" (220 LBS/SY) Asphalt Concrete, Type SM-12.5E
- (B) 3" (330 LBS/SY) Asphalt Concrete, Type IM-19.0D
- (C) 8" Asphalt Concrete, Type BM-25.0A
- (C₁) 1" Asphalt Concrete, Type BM-25.0A
- (D) 2" Open Graded Drainage Layer (OGDL)
- (D₁) 4" Aggregate Base Material, Type I, Size No. 21B
- (E) 6" Aggregate Base Material, Type I, Size No. 21A (Stabilized with 4% Cement by Weight)
- (F) Aggregate Base Material, Type I, Size No. 21B Connected To A Standard UD-4 Edge Drain Beneath The Curb Or Curb And Gutter And Extended 12" Behind The Curb

- (G) Mill Exist. Surface 2" and Overlay with 2" (220 LBS/SY) Asphalt Concrete, Type SM-12.5E
- (G₁) Mill Exist. Surface 1.5" and Overlay with 1.5" (165 LBS/SY) Asphalt Concrete, Type SM-12.5E
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- (I) Full Depth Saw Cut, Where Shown or 1' From the Edge of Exist. Pvmt.
- (J) When Guardrail Is Required, Shoulder Widths And Limits of Paving Shall Be Increased In Accordance With S'd. GR-MGS-INS And S'd. MC-4.
- (K) Profile Grade Line (PGL)
- (L) Edge Line Shoulder Rumble Strips, S'd. RS-5 Req'd.

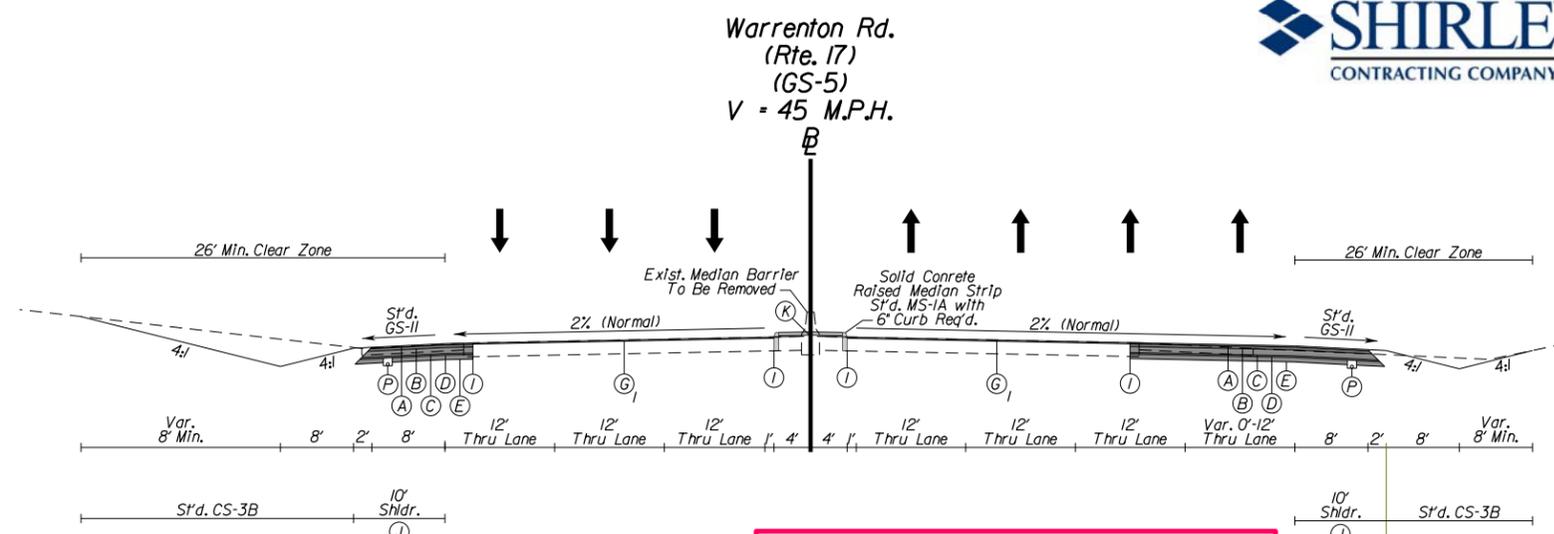
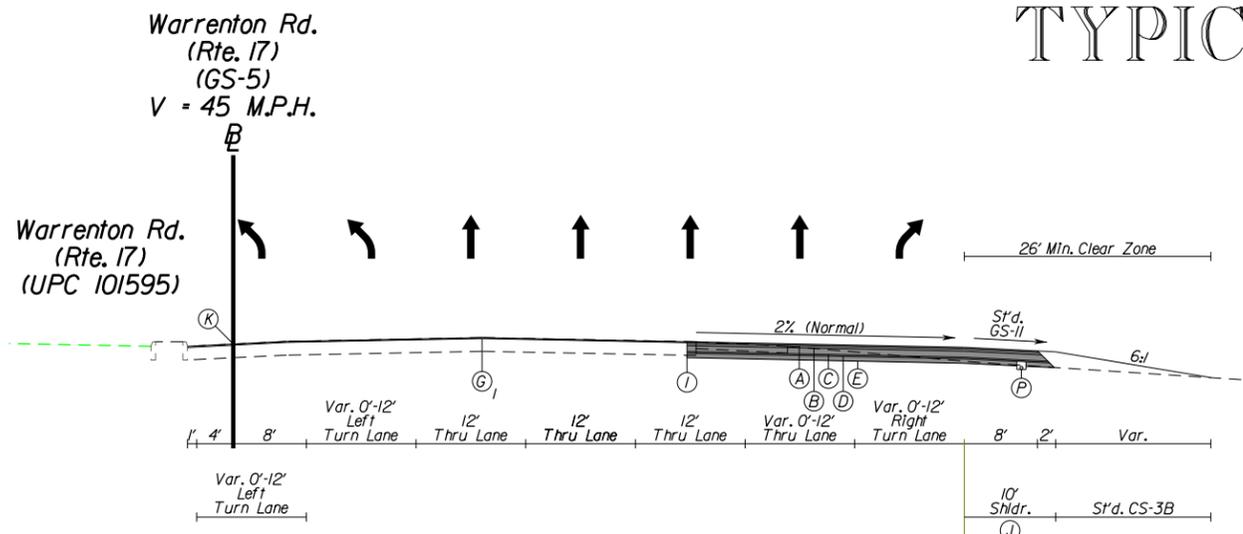
- (M₁) Concrete Median Barrier, S'd. MB-7D Req'd.
- (M₂) Concrete Median Barrier, S'd. MB-7E Req'd.
- (M₃) Concrete Median Barrier, S'd. MB-7F Req'd.
- (N) Midwest Guardrail System, S'd. GR-MGS1 Req'd.
- (O) 6" Curb, S'd. CG-2 Req'd.
- (O₁) 6" Curb & Gutter, S'd. CG-6 Req'd.
- (P) Pavement Edgedrain, S'd. UD-4 Req'd.
- (Q) Concrete Median Barrier, S'd. MB-8A Req'd.

- Denotes Full Depth Asphalt Pavement
- Denotes Asphalt Mill and Overlay/Buildup
- Denotes S'd. MC-4
- Denotes Concrete
- Denotes Bridge
- Denotes Option #1
- Denotes Option #2
- Denotes Option #3
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- Denotes FredEx (UPC 110527)
- Denotes FredEx Interim
- Denotes Future Fourth Lane (By Others)

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	95	0095-III-270 P101, R201, C501	2A(07)



TYPICAL SECTIONS

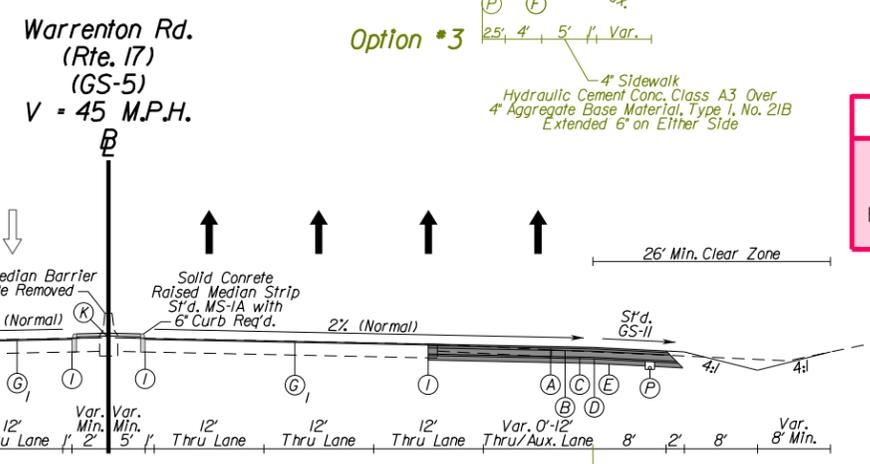


Alignment	Sta.	To	Sta.
Warrenton Rd. (Rte. 17)	8025+34.41		8034+76.83

Alignment	Sta.	To	Sta.
Warrenton Rd. (Rte. 17)	8005+87.61		8009+83.81

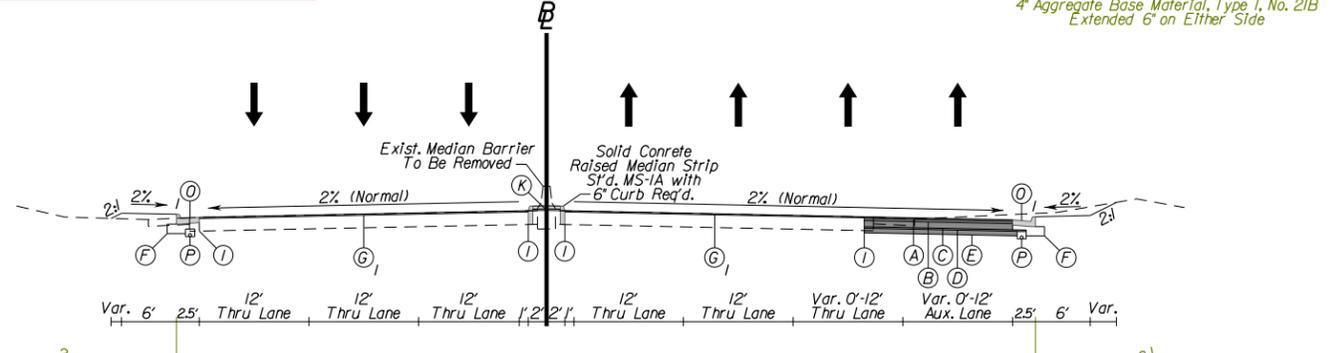
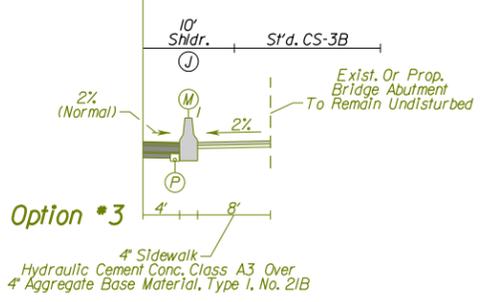
ENHANCEMENT 010
 PROVIDE WIDER SEPARATION (OPTION #3)
 BENEFIT: ENHANCE DRAINAGE AND PEDESTRIAN SAFETY

ENHANCEMENT 011
 PROVIDE CURB AND GUTTER (OPTION #3)
 BENEFIT: ENHANCE SAFETY AND MINIMIZE UTILITY CONFLICTS



Alignment	Sta.	To	Sta.
Warrenton Rd. (Rte. 17)	8009+83.81		8025+34.41

ENHANCEMENT 030
 UTILIZE DOUBLE-WALL HDPE UNDERDRAIN
 BENEFIT: RESIST CRUSHING DURING CONSTRUCTION



Alignment	Sta.	To	Sta.
Warrenton Rd. (Rte. 17)	8000+00.00		8005+87.61

- (A) 2" (220 LBS/SY) Asphalt Concrete, Type SM-12.5E
- (B) 3" (330 LBS/SY) Asphalt Concrete, Type IM-19.0D
- (C) 8" Asphalt Concrete, Type BM-25.0A
- (C₁) 11" Asphalt Concrete, Type BM-25.0A
- (D) 2" Open Graded Drainage Layer (OGDL)
- (D₁) 4" Aggregate Base Material, Type I, Size No. 21B
- (E) 6" Aggregate Base Material, Type I, Size No. 21A (Stabilized with 4% Cement by Weight)
- (F) Aggregate Base Material, Type I, Size No. 21B Connected To A Standard UD-4 Edge Drain Beneath The Curb Or Curb And Gutter And Extended 12" Behind The Curb

- (G) Mill Exist. Surface 2" and Overlay with 2" (220 LBS/SY) Asphalt Concrete, Type SM-12.5E
- (G₁) Mill Exist. Surface 1.5" and Overlay with 1.5" (165 LBS/SY) Asphalt Concrete, Type SM-12.5E
- Note: Exist. Surface Buildup Greater Than 2". Milling not Required. Utilize Var. Thickness Asphalt Concrete, Type IM-19.0D Prior to 2" (220 LBS/SY) Asphalt Concrete, Type SM-12.5E. See Asphalt Concrete Overlay Transitions, S't.d. ACOT-1
- (I) Full Depth Saw Cut, Where Shown or 1' From the Edge of Exist. Pvmt.
- (J) When Guardrail Is Required, Shoulder Widths And Limits of Paving Shall Be Increased In Accordance With S't.d. GR-MGS-INS And S't.d. MC-4.
- (K) Profile Grade Line (PGL)
- (L) Edge Line Shoulder Rumble Strips, S't.d. RS-5 Req'd.

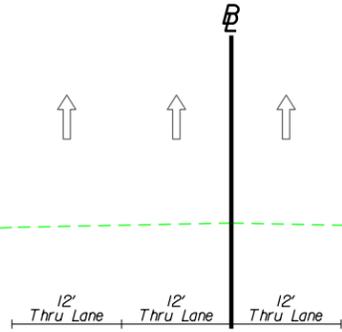
- (M₁) Concrete Median Barrier, S't.d. MB-7D Req'd.
- (M₂) Concrete Median Barrier, S't.d. MB-7E Req'd.
- (M₃) Concrete Median Barrier, S't.d. MB-7F Req'd.
- (N) Midwest Guardrail System, S't.d. GR-MGS1 Req'd.
- (O) 6" Curb, S't.d. CG-2 Req'd.
- (O₁) 6" Curb & Gutter, S't.d. CG-6 Req'd.
- (P) Pavement Edgedrain, S't.d. UD-4 Req'd.
- (Q) Concrete Median Barrier, S't.d. MB-8A Req'd.

- Denotes Full Depth Asphalt Pavement
- Denotes Asphalt Mill and Overlay/Buildup
- Denotes S't.d. MC-4
- Denotes Concrete
- Denotes Bridge
- Denotes Option #1
- Denotes Option #2
- Denotes Option #3
- Denotes 95 SBRR (UPC 101595)
- Denotes FredEx (UPC 110527)
- Denotes FredEx InterIm
- Denotes Future Fourth Lane (By Others)

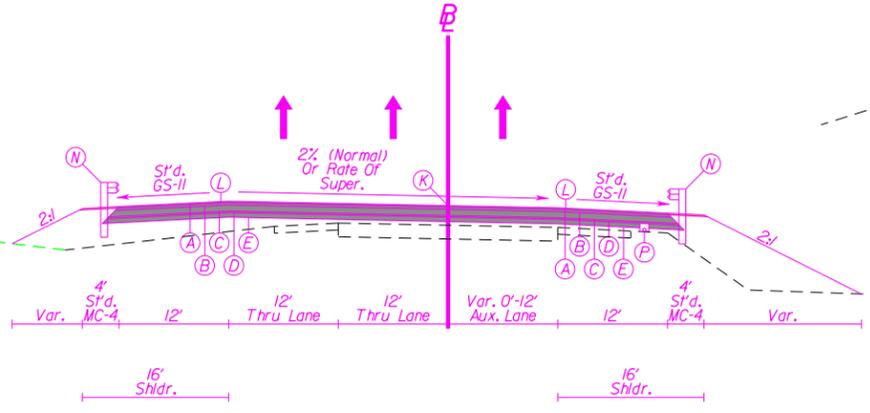


TYPICAL SECTIONS

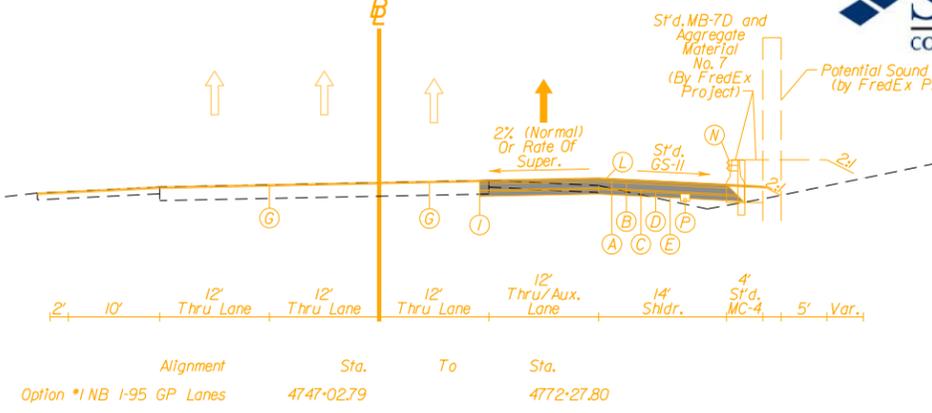
NB I-95
GP Lanes
(GS-INT)
V = 75 M.P.H.



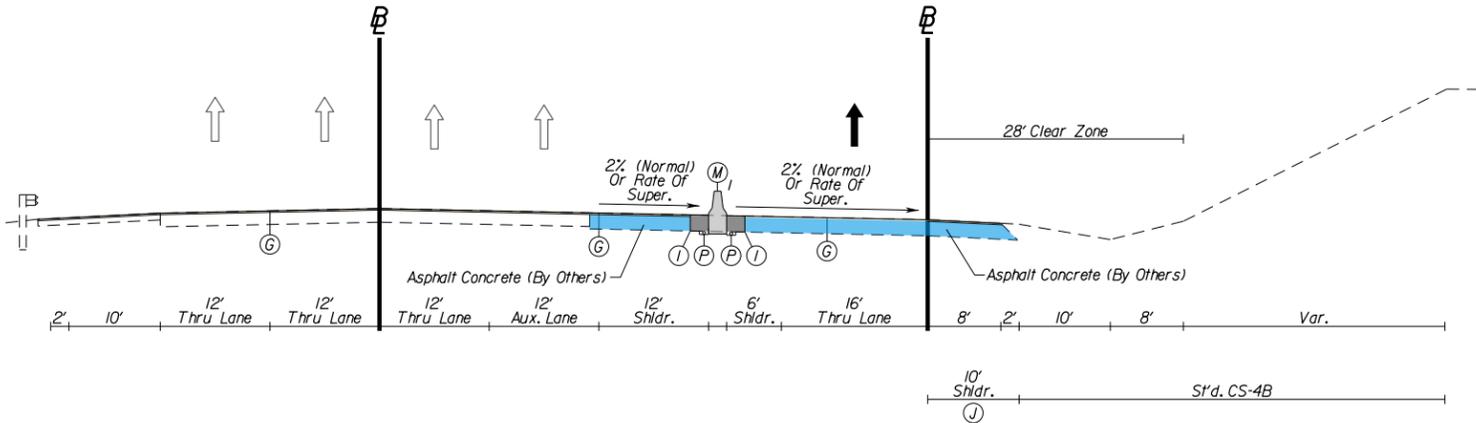
Option *2
NB I-95
CD Lanes
(GS-INT)
V = 70 M.P.H.



Option *1
NB I-95
GP Lanes
(GS-INT)
V = 75 M.P.H.



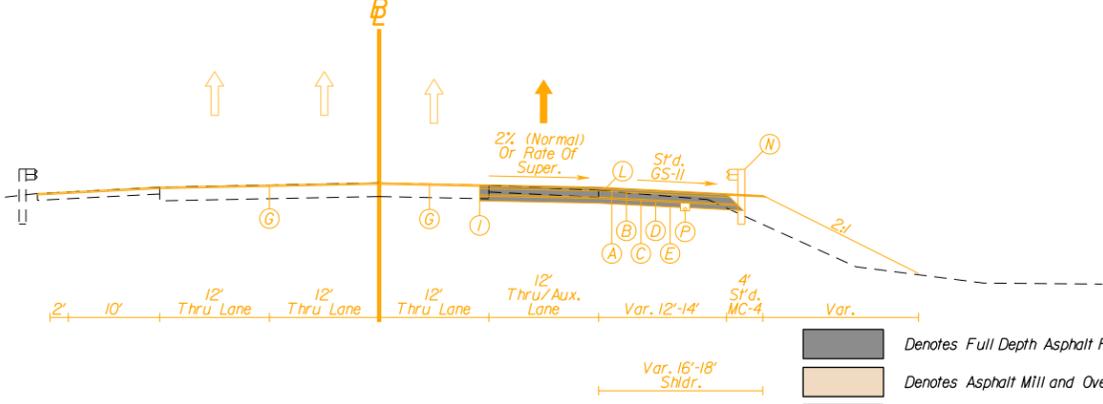
NB I-95
GP Lanes
(GS-INT)
V = 75 M.P.H.



FredEx Ramp HWN
Extension to NBCD
(Interim)
(GS-R)
V = 55 M.P.H.

ENHANCEMENT 030
UTILIZE DOUBLE-WALL
HDPE UNDERDRAIN
BENEFIT: RESIST CRUSHING DURING
CONSTRUCTION

Option *1
NB I-95
GP Lanes
(GS-INT)
V = 75 M.P.H.

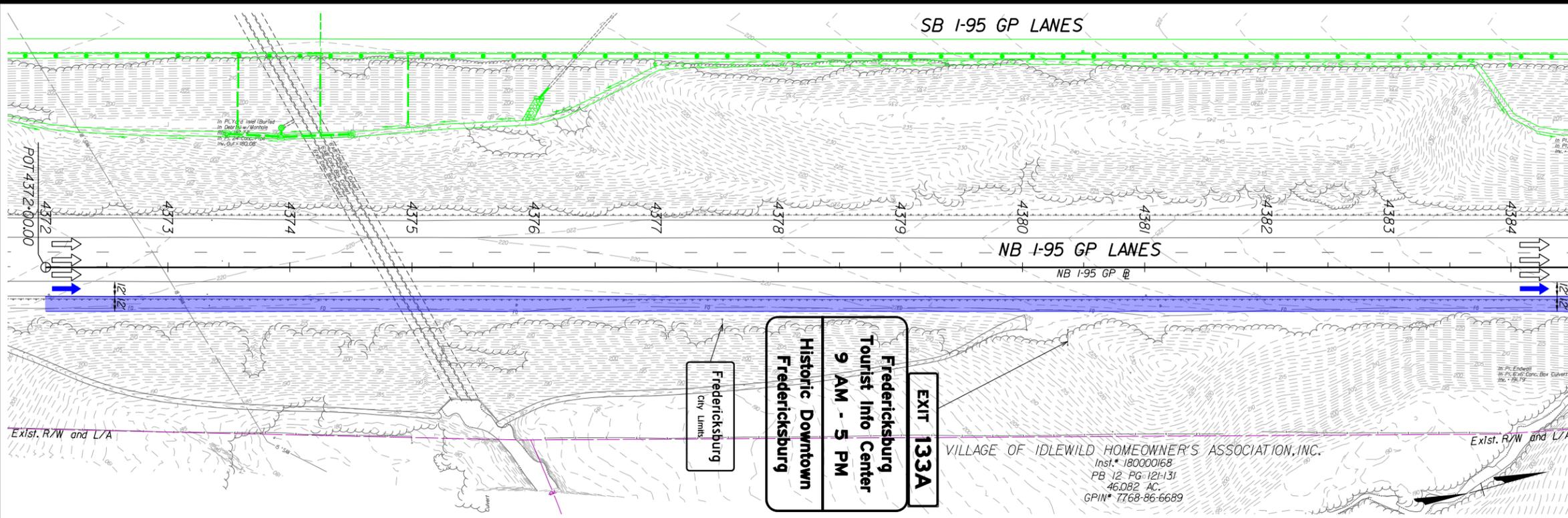


Alignment	Sta.	To	Sta.
NB I-95 GP Lanes	4659+31.99		4676+00.00
FredEx Ramp HWN Extension to NBCD	6023+00.00		6043+28.10

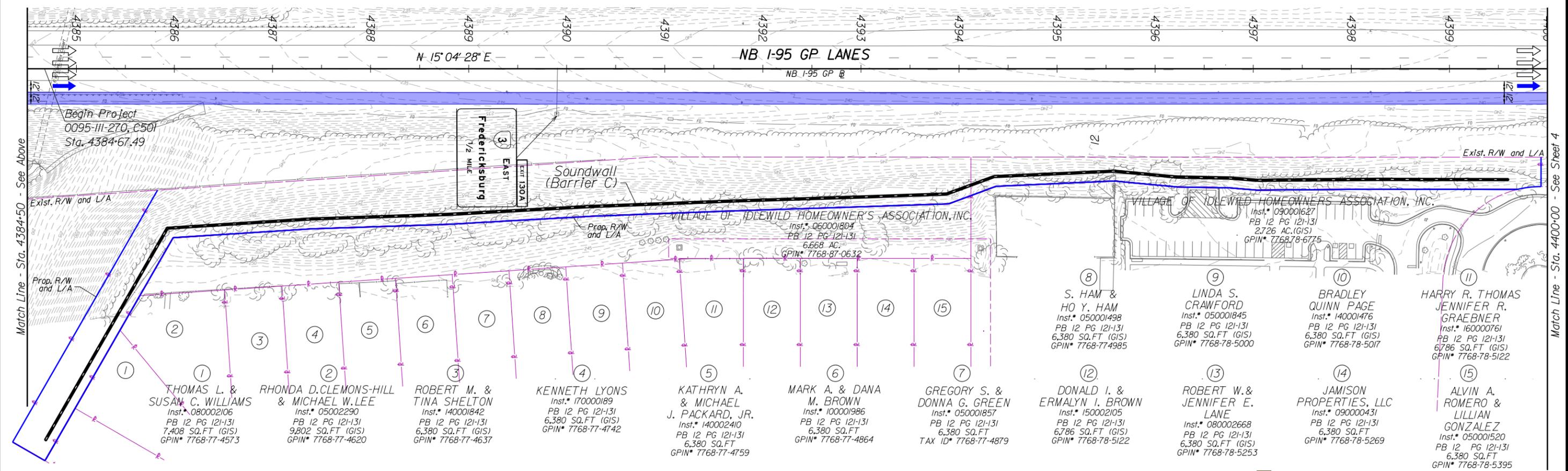
- (A) 2" (220 LBS/SY) Asphalt Concrete, Type SM-12.5E
- (B) 3" (330 LBS/SY) Asphalt Concrete, Type IM-19.0D
- (C) 8" Asphalt Concrete, Type BM-25.0A
- (C₁) 11" Asphalt Concrete, Type BM-25.0A
- (D) 2" Open Graded Drainage Layer (OGDL)
- (D₁) 4" Aggregate Base Material, Type I, Size No. 21B
- (E) 6" Aggregate Base Material, Type I, Size No. 21A (Stabilized with 4% Cement by Weight)
- (F) Aggregate Base Material, Type I, Size No. 21B Connected To A Standard UD-4 Edge Drain Beneath The Curb Or Curb And Gutter And Extended 12' Behind The Curb
- (G) Mill/Exist. Surface 2" and Overlay with 2" (220 LBS/SY) Asphalt Concrete, Type SM-12.5E
- (G₁) Mill/Exist. Surface 1.5" and Overlay with 1.5" (165 LBS/SY) Asphalt Concrete, Type SM-12.5E
Note: Exist. Surface Buildup Greater Than 2", Milling not Required. Utilize Var. Thickness Asphalt Concrete, Type IM-19.0D Prior to 2" (220 LBS/SY) Asphalt Concrete, Type SM-12.5E. See Asphalt Concrete Overlay Transitions, S'd. ACOT-1
- (I) Full Depth Saw Cut, Where Shown or 1' From the Edge of Exist. Pvmt.
- (J) When Guardrail Is Required, Shoulder Widths And Limits of Paving Shall Be Increased In Accordance With S'd. GR-MGS-INS And S'd. MC-4.
- (K) Profile Grade Line (PGL)
- (L) Edge Line Shoulder Rumble Strips, S'd. RS-5 Req'd.
- (M₁) Concrete Median Barrier, S'd. MB-7D Req'd.
- (M₂) Concrete Median Barrier, S'd. MB-7E Req'd.
- (M₃) Concrete Median Barrier, S'd. MB-7F Req'd.
- (N) Midwest Guardrail System, S'd. GR-MGS1 Req'd.
- (O) 6" Curb, S'd. CG-2 Req'd.
- (O₁) 6" Curb & Gutter, S'd. CG-6 Req'd.
- (P) Pavement Edgedrain, S'd. UD-4 Req'd.
- (Q) Concrete Median Barrier, S'd. MB-8A Req'd.

- Denotes Full Depth Asphalt Pavement
- Denotes Asphalt Mill and Overlay/Buildup
- Denotes S'd. MC-4
- Denotes Concrete
- Denotes Bridge
- Denotes Option *1
- Denotes Option *2
- Denotes Option *3
- Denotes 95 SBRRC (UPC 101595)
- Denotes FredEx (UPC 110527)
- Denotes FredEx Interim
- Denotes Future Fourth Lane (By Others)

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	95	0095-III-270 P101, R201, C501	3



Match Line - Sta. 4384+50 - See Below



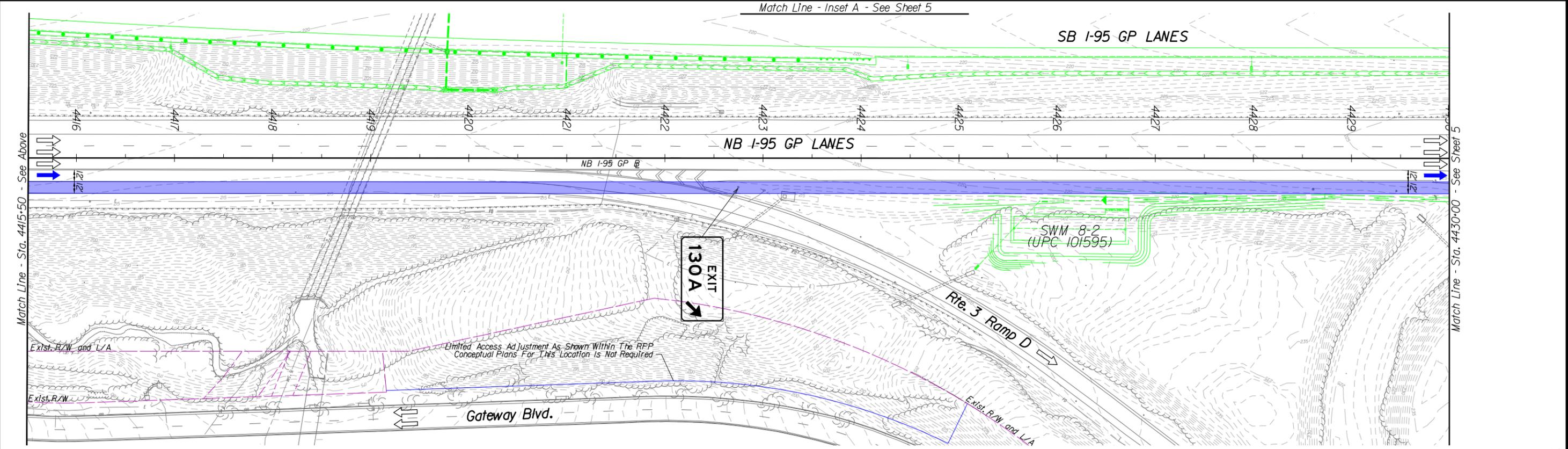
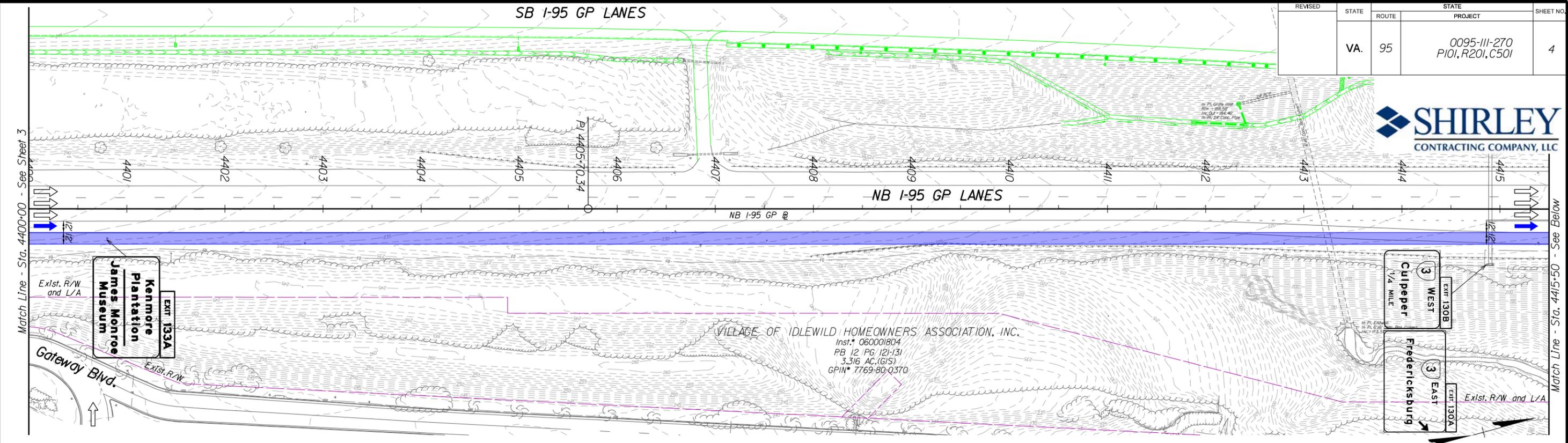
Match Line - Sta. 4384+50 - See Above

Match Line - Sta. 4400+00 - See Sheet 4

Denotes Full Depth Asphalt Pavement	Denotes Option *1	Denotes Exst. R/W / Prop. Line	Denotes Future Fourth Lane/Shoulder (By Others)	Denotes Exst. (or Currently Under Construction) Travel Lane	Denotes Traffic Signal
Denotes Asphalt Mill and Overlay/Buildup	Denotes Option *2	Denotes Prop. R/W per RFP Conceptual Design	Denotes 95 SBRR (UPC 101595)	Denotes Prop. Travel Lane	
Denotes S't'd. MC-4	Denotes Option *3	Denotes Prop. L/A	Denotes FredEx (UPC 110527)	Denotes Future Fourth Travel Lane (By Others)	
Denotes Concrete	Denotes Demolition of Pavement	Denotes Prop. Sound Barrier	Denotes FredEx Interim	Denotes Prop. Travel Lane (Option *1)	
Denotes Bridge	Denotes Area of R/W Reduction	Denotes Construction Limits in Cuts	Denotes R/W and L/A to be acquired by Others	Denotes Prop. Travel Lane (Option *2)	
		Denotes Construction Limits in Fills		Denotes LED Conventional Lighting Unit	
				Denotes LED Conventional Signal Mounted Lighting Unit	
				Denotes Prop. Sign Structure	
				Denotes Prop. Sign Structure by FredEx	

SCALE 0 50' 100'	PROJECT 0095-III-270	SHEET NO. 3
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REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	95	0095-III-270 P101, R201, C501	4

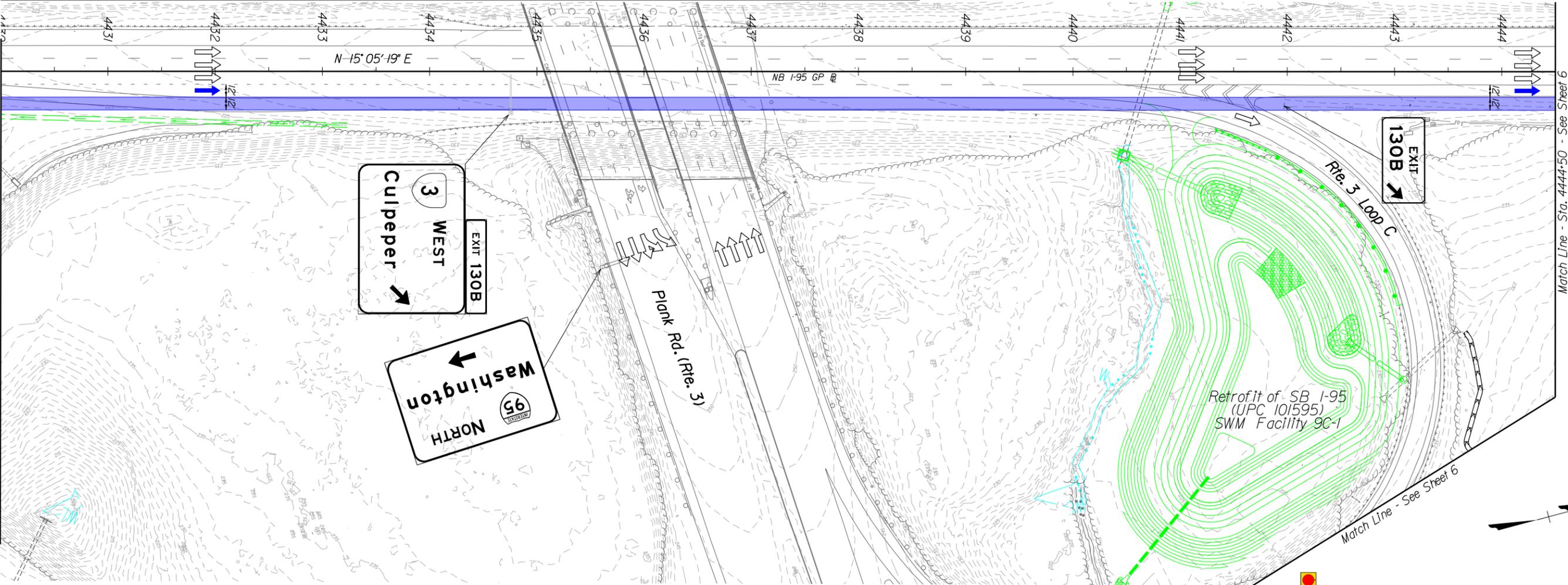
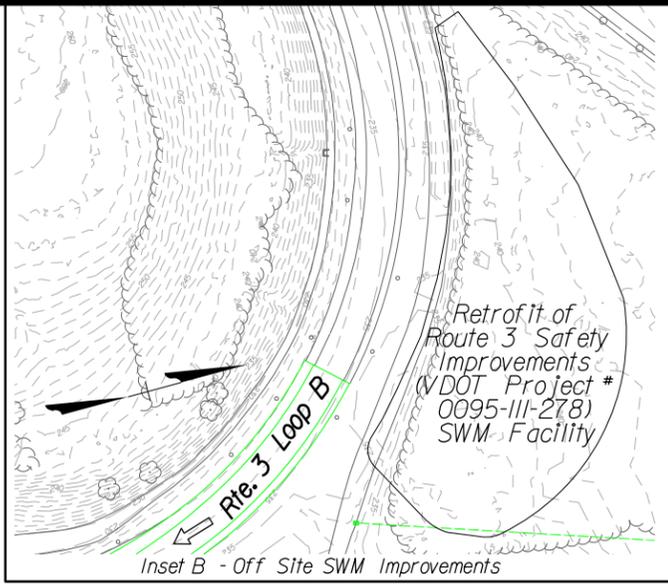
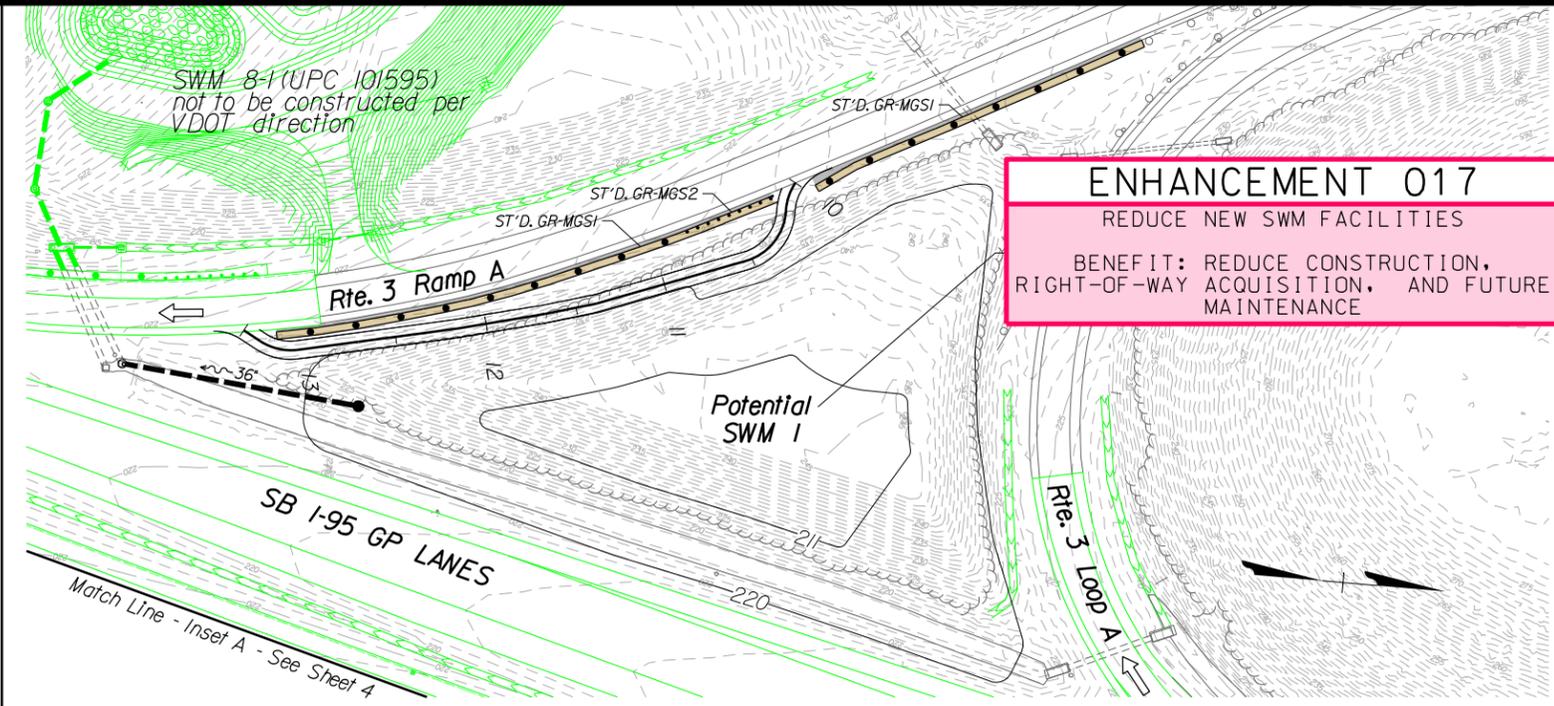


Denotes Full Depth Asphalt Pavement	Denotes Option *1	Denotes Exist. R/W / Prop. Line	Denotes Future Fourth Lane/Shoulder (By Others)	Denotes Exist. (or Currently Under Construction) Travel Lane	Denotes Traffic Signal
Denotes Asphalt Mill and Overlay/Buildup	Denotes Option *2	Denotes Prop. R/W per RFP Conceptual Design	Denotes 95 SBRR (UPC 101595)	Denotes Prop. Travel Lane	
Denotes S't'd. MC-4	Denotes Option *3	Denotes Prop. L/A	Denotes FredEx (UPC 110527)	Denotes Future Fourth Travel Lane (By Others)	
Denotes Concrete	Denotes Demolition of Pavement	Denotes Prop. Sound Barrier	Denotes FredEx Interim	Denotes Prop. Travel Lane (Option *1)	
Denotes Bridge	Denotes Area of R/W Reduction	Denotes Construction Limits in Cuts	Denotes R/W and L/A to be acquired by Others	Denotes Prop. Travel Lane (Option *2)	
		Denotes Construction Limits in Fills		Denotes LED Conventional Lighting Unit	
				Denotes LED Signal Mounted Lighting Unit	
				Denotes Prop. Sign Structure	
				Denotes Prop. Sign Structure by FredEx	

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	95	0095-III-270 P101, R201, C501	5

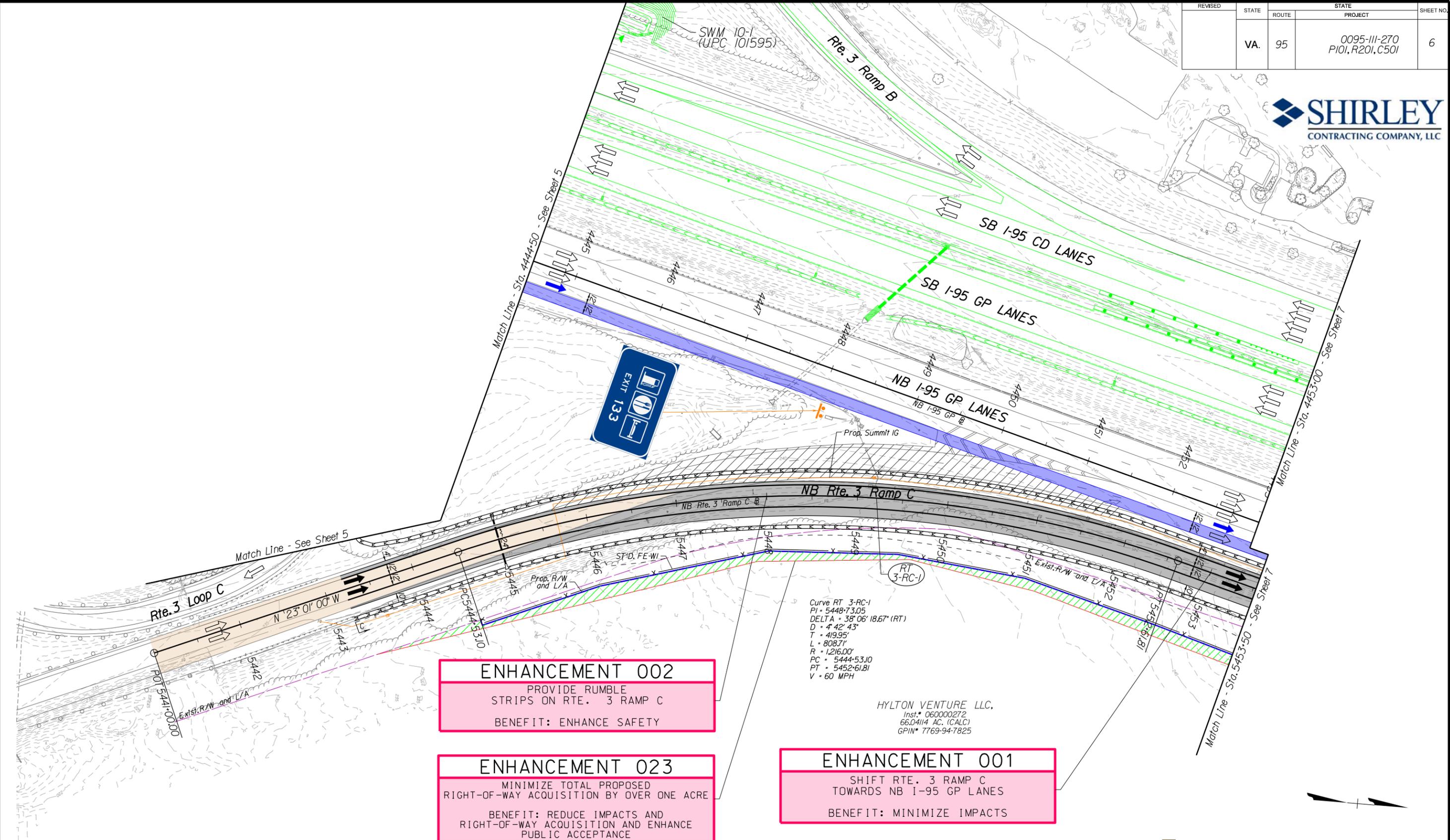


ENHANCEMENT 017
 REDUCE NEW SWM FACILITIES
 BENEFIT: REDUCE CONSTRUCTION,
 RIGHT-OF-WAY ACQUISITION, AND FUTURE
 MAINTENANCE



- | | | | | | |
|--|--------------------------------|---|---|--|------------------------|
| Denotes Full Depth Asphalt Pavement | Denotes Option *1 | Denotes Exist. R/W / Prop. Line | Denotes Future Fourth Lane/Shoulder (By Others) | Denotes Exist. (or Currently Under Construction) Travel Lane | Denotes Traffic Signal |
| Denotes Asphalt Mill and Overlay/Buildup | Denotes Option *2 | Denotes Prop. R/W per RFP Conceptual Design | Denotes 95 SBRRC (UPC 101595) | Denotes Prop. Travel Lane | |
| Denotes S't.d. MC-4 | Denotes Option *3 | Denotes Prop. L/A | Denotes FredEx (UPC 110527) | Denotes Future Fourth Travel Lane (By Others) | |
| Denotes Concrete | Denotes Demolition of Pavement | Denotes Prop. Sound Barrier | Denotes FredEx Interim | Denotes Prop. Travel Lane (Option *1) | |
| Denotes Bridge | Denotes Area of R/W Reduction | Denotes Construction Limits in Cuts | Denotes R/W and L/A to be acquired by Others | Denotes Prop. Travel Lane (Option *2) | |
| | | Denotes Construction Limits in Fills | | Denotes LED Conventional Lighting Unit | |
| | | | | Denotes LED Conventional Signal Mounted Lighting Unit | |
| | | | | Denotes Prop. Sign Structure | |
| | | | | Denotes Prop. Sign Structure by FredEx | |

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	95	0095-III-270 P101, R201, C501	6



ENHANCEMENT 002
 PROVIDE RUMBLE STRIPS ON RTE. 3 RAMP C
 BENEFIT: ENHANCE SAFETY

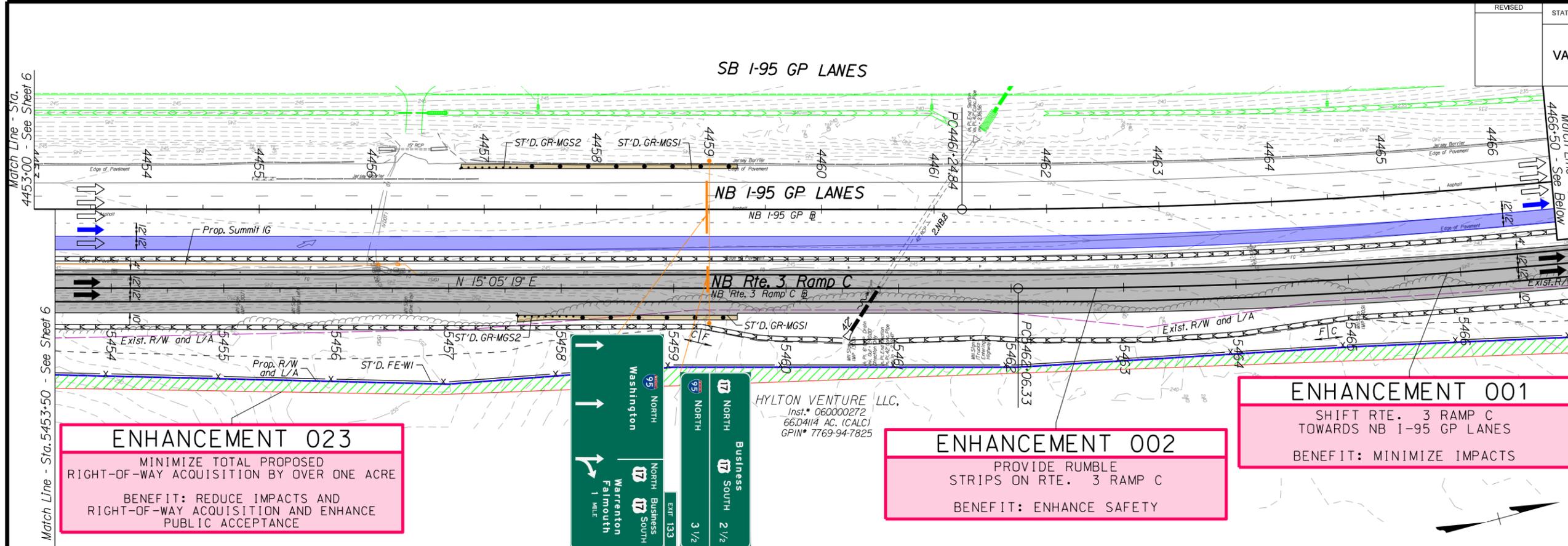
ENHANCEMENT 023
 MINIMIZE TOTAL PROPOSED RIGHT-OF-WAY ACQUISITION BY OVER ONE ACRE
 BENEFIT: REDUCE IMPACTS AND RIGHT-OF-WAY ACQUISITION AND ENHANCE PUBLIC ACCEPTANCE

ENHANCEMENT 001
 SHIFT RTE. 3 RAMP C TOWARDS NB I-95 GP LANES
 BENEFIT: MINIMIZE IMPACTS

Curve RT 3-RC-1
 PI = 5448+73.05
 DELTA = 38° 06' 18.67" (RT)
 D = 41' 42" 43"
 T = 419.95'
 L = 808.71'
 R = 1216.00'
 PC = 5444+53.10
 PT = 5452+61.81
 V = 60 MPH

HYLTON VENTURE LLC.
 Inst.# 060000272
 66.04114 AC. (CALC)
 GPIN# 7769-94-7825

- | | | | | | |
|--|--------------------------------|---|---|--|------------------------|
| Denotes Full Depth Asphalt Pavement | Denotes Option #1 | Denotes Exist. R/W / Prop. Line | Denotes Future Fourth Lane/Shoulder (By Others) | Denotes Exist. (or Currently Under Construction) Travel Lane | Denotes Traffic Signal |
| Denotes Asphalt Mill and Overlay/Buildup | Denotes Option #2 | Denotes Prop. R/W per RFP Conceptual Design | Denotes 95 SBRR (UPC 101595) | Denotes Prop. Travel Lane | |
| Denotes S't'd. MC-4 | Denotes Option #3 | Denotes Prop. L/A | Denotes FredEx (UPC 110527) | Denotes Future Fourth Travel Lane (By Others) | |
| Denotes Concrete | Denotes Demolition of Pavement | Denotes Prop. Sound Barrier | Denotes FredEx Interim | Denotes Prop. Travel Lane (Option #1) | |
| Denotes Bridge | Denotes Area of R/W Reduction | Denotes Construction Limits in Cuts | Denotes R/W and L/A to be acquired by Others | Denotes Prop. Travel Lane (Option #2) | |
| | | Denotes Construction Limits in Fills | | Denotes LED Conventional Lighting Unit | |
| | | | | Denotes LED Conventional Signal Mounted Lighting Unit | |
| | | | | Denotes Prop. Sign Structure | |
| | | | | Denotes Prop. Sign Structure by FredEx | |



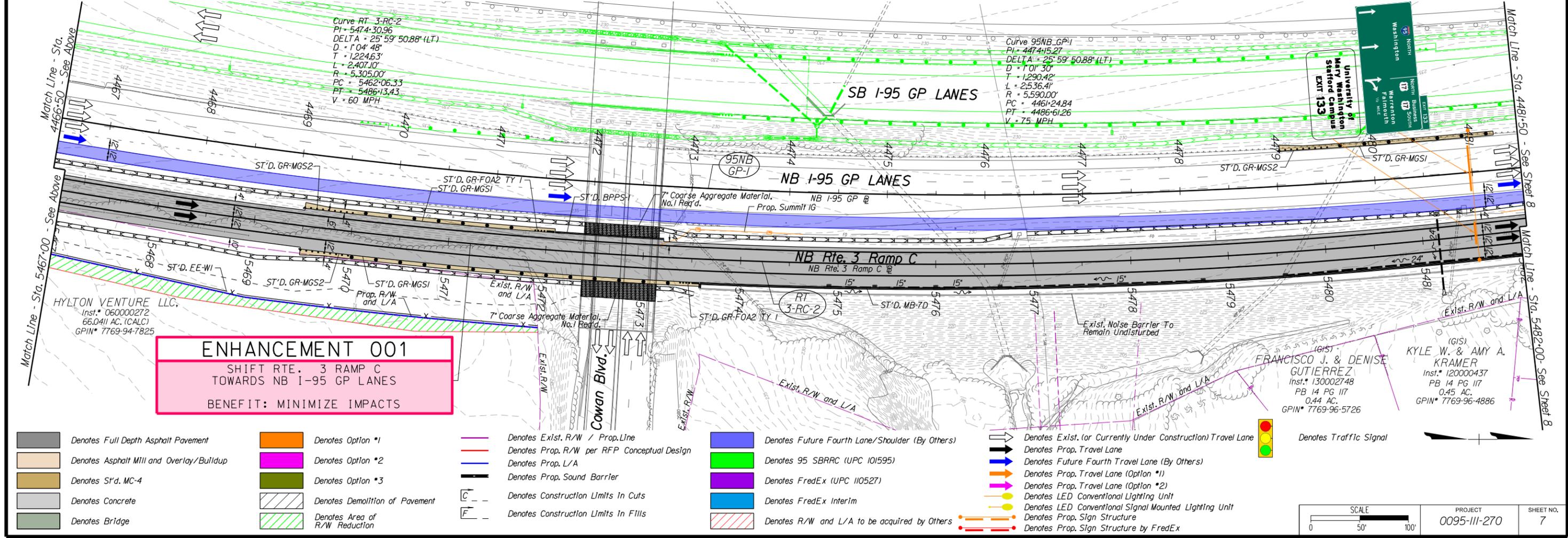
ENHANCEMENT 023
 MINIMIZE TOTAL PROPOSED RIGHT-OF-WAY ACQUISITION BY OVER ONE ACRE
 BENEFIT: REDUCE IMPACTS AND RIGHT-OF-WAY ACQUISITION AND ENHANCE PUBLIC ACCEPTANCE

ENHANCEMENT 002
 PROVIDE RUMBLE STRIPS ON RTE. 3 RAMP C
 BENEFIT: ENHANCE SAFETY

ENHANCEMENT 001
 SHIFT RTE. 3 RAMP C TOWARDS NB 1-95 GP LANES
 BENEFIT: MINIMIZE IMPACTS



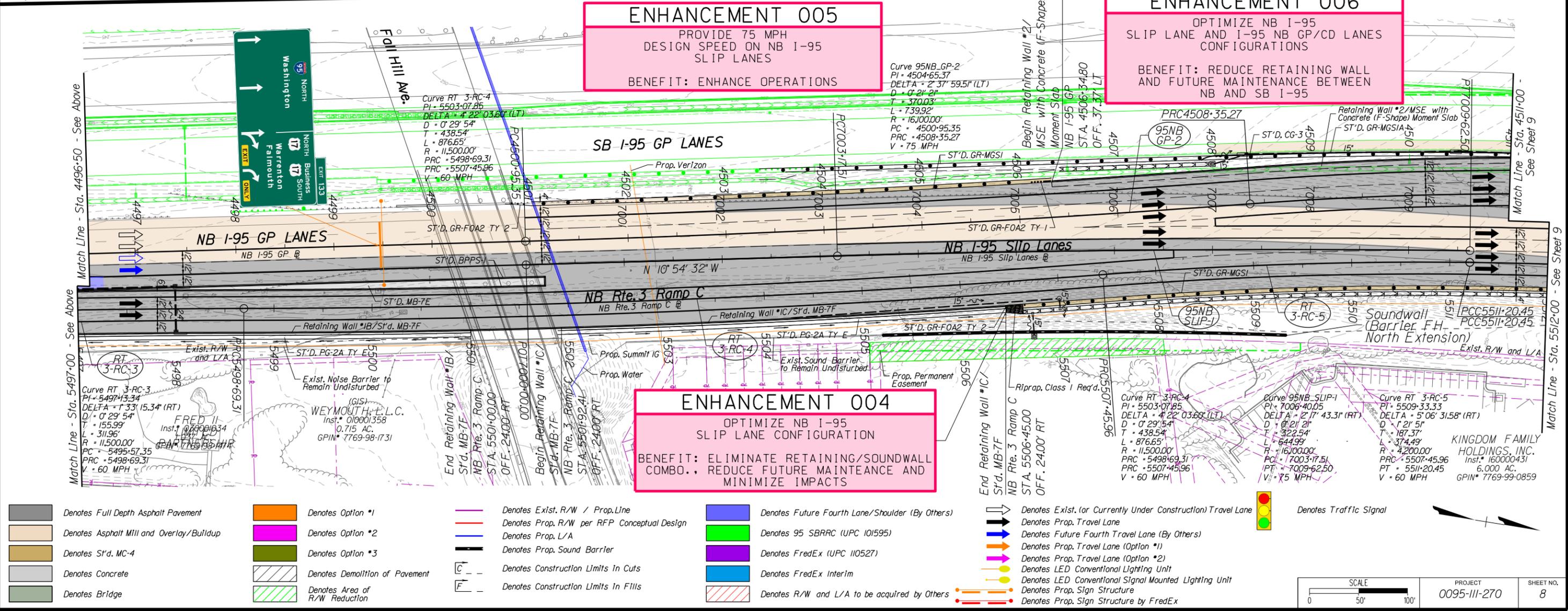
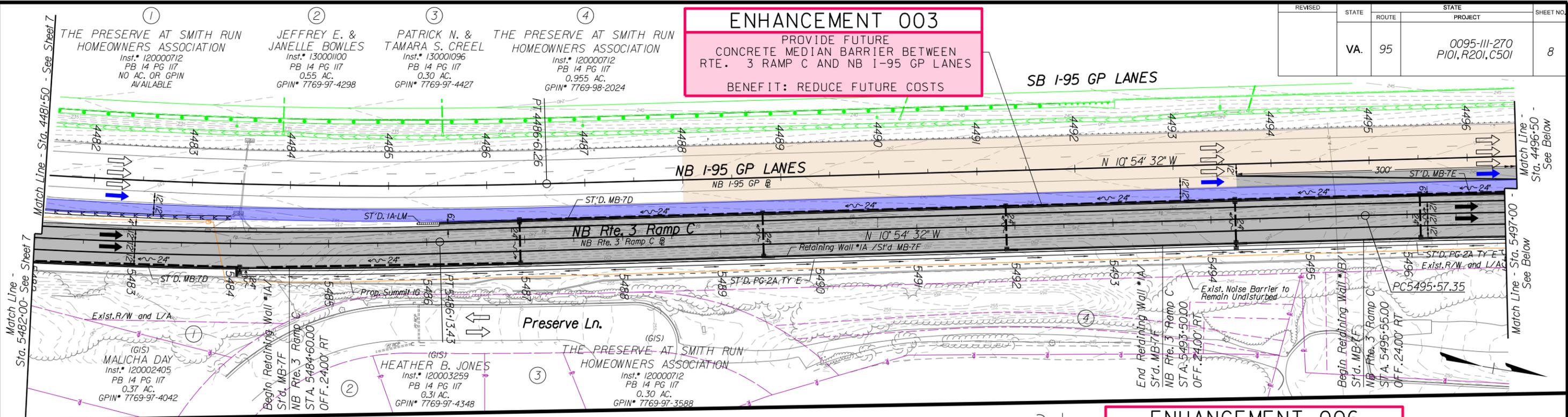
HYLTON VENTURE LLC,
 Inst. # 060000272
 66.04114 AC. (CALC)
 GPIN # 7769-94-7825



ENHANCEMENT 001
 SHIFT RTE. 3 RAMP C TOWARDS NB 1-95 GP LANES
 BENEFIT: MINIMIZE IMPACTS

- | | | | | | |
|--|--------------------------------|---|---|--|------------------------|
| Denotes Full Depth Asphalt Pavement | Denotes Option #1 | Denotes Exist. R/W / Prop. Line | Denotes Future Fourth Lane/Shoulder (By Others) | Denotes Exist. (or Currently Under Construction) Travel Lane | Denotes Traffic Signal |
| Denotes Asphalt Mill and Overlay/Buildup | Denotes Option #2 | Denotes Prop. R/W per RFP Conceptual Design | Denotes 95 SBRR (UPC 101595) | Denotes Prop. Travel Lane | |
| Denotes ST'd. MC-4 | Denotes Option #3 | Denotes Prop. L/A | Denotes FredEx (UPC 110527) | Denotes Future Fourth Travel Lane (By Others) | |
| Denotes Concrete | Denotes Demolition of Pavement | Denotes Prop. Sound Barrier | Denotes FredEx Interim | Denotes Prop. Travel Lane (Option #1) | |
| Denotes Bridge | Denotes Area of R/W Reduction | Denotes Construction Limits in Cuts | Denotes R/W and L/A to be acquired by Others | Denotes Prop. Travel Lane (Option #2) | |
| | | Denotes Construction Limits in Fills | | Denotes LED Conventional Lighting Unit | |
| | | | | Denotes LED Conventional Signal Mounted Lighting Unit | |
| | | | | Denotes Prop. Sign Structure | |
| | | | | Denotes Prop. Sign Structure by FredEx | |

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	95	0095-III-270 PI01, R20I, C50I	8



Denotes Full Depth Asphalt Pavement	Denotes Option *1	Denotes Exst. R/W / Prop. Line	Denotes Future Fourth Lane/Shoulder (By Others)	Denotes Exst. (or Currently Under Construction) Travel Lane	Denotes Traffic Signal
Denotes Asphalt Mill and Overlay/Buildup	Denotes Option *2	Denotes Prop. R/W per RFP Conceptual Design	Denotes 95 SBRR (UPC 101595)	Denotes Prop. Travel Lane	
Denotes S't.d. MC-4	Denotes Option *3	Denotes Prop. L/A	Denotes FredEx (UPC 110527)	Denotes Future Fourth Travel Lane (By Others)	
Denotes Concrete	Denotes Demolition of Pavement	Denotes Prop. Sound Barrier	Denotes FredEx Interim	Denotes Prop. Travel Lane (Option *1)	
Denotes Bridge	Denotes Area of R/W Reduction	Denotes Construction Limits in Cuts	Denotes R/W and L/A to be acquired by Others	Denotes Prop. Travel Lane (Option *2)	
		Denotes Construction Limits in Fills		Denotes LED Conventional Lighting Unit	
				Denotes LED Conventional Signal Mounted Lighting Unit	
				Denotes Prop. Sign Structure	
				Denotes Prop. Sign Structure by FredEx	

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	95	0095-III-270 P101, R201, C501	9



ENHANCEMENT 006
OPTIMIZE NB I-95
SLIP LANE AND I-95 NB GP/CD LANES
CONFIGURATIONS

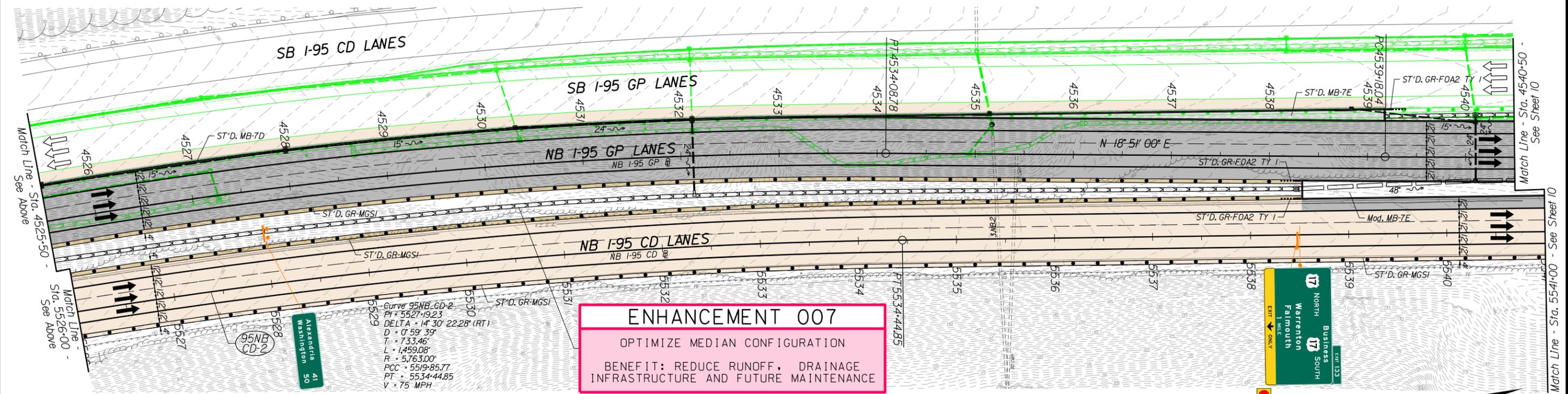
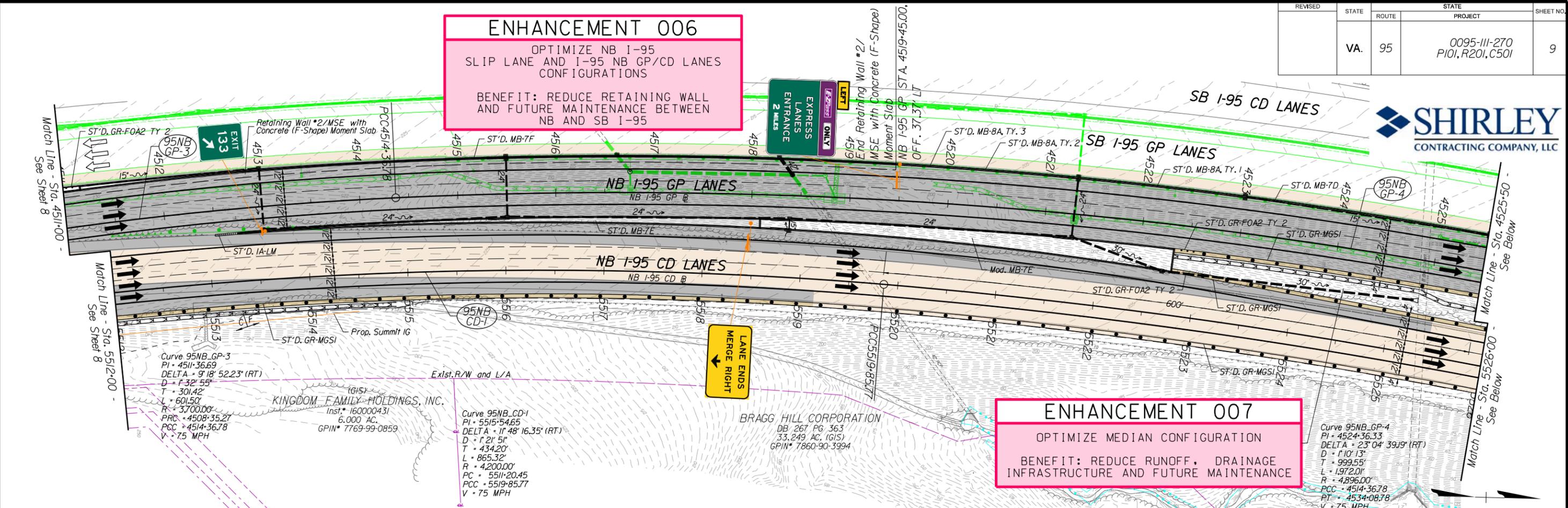
BENEFIT: REDUCE RETAINING WALL
AND FUTURE MAINTENANCE BETWEEN
NB AND SB I-95

ENHANCEMENT 007
OPTIMIZE MEDIAN CONFIGURATION

BENEFIT: REDUCE RUNOFF, DRAINAGE
INFRASTRUCTURE AND FUTURE MAINTENANCE

ENHANCEMENT 007
OPTIMIZE MEDIAN CONFIGURATION

BENEFIT: REDUCE RUNOFF, DRAINAGE
INFRASTRUCTURE AND FUTURE MAINTENANCE



Denotes Full Depth Asphalt Pavement	Denotes Option *1	Denotes Exist. R/W / Prop. Line	Denotes Future Fourth Lane/Shoulder (By Others)	Denotes Exist. (or Currently Under Construction) Travel Lane	Denotes Traffic Signal
Denotes Asphalt Mill and Overlay/Buildup	Denotes Option *2	Denotes Prop. R/W per RFP Conceptual Design	Denotes 95 SBRR (UPC 101595)	Denotes Prop. Travel Lane	
Denotes ST'd. MC-4	Denotes Option *3	Denotes Prop. L/A	Denotes FredEx (UPC 110527)	Denotes Future Fourth Travel Lane (By Others)	
Denotes Concrete	Denotes Demolition of Pavement	Denotes Prop. Sound Barrier	Denotes FredEx Interim	Denotes Prop. Travel Lane (Option *1)	
Denotes Bridge	Denotes Area of R/W Reduction	Denotes Construction Limits in Cuts	Denotes R/W and L/A to be acquired by Others	Denotes Prop. Travel Lane (Option *2)	
		Denotes Construction Limits in Fills		Denotes LED Conventional Lighting Unit	
				Denotes LED Conventional Signal Mounted Lighting Unit	
				Denotes Prop. Sign Structure	
				Denotes Prop. Sign Structure by FredEx	

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	95	0095-III-270 P101, R201, C501	10



ENHANCEMENT 024
OPTIMIZE CONFIGURATION AND REDUCE B609 LENGTH
BENEFIT: ENHANCE CONSTRUCTION, REDUCE FUTURE MAINTENANCE AND ELIMINATE DESIGN WAIVER NO. 2

ENHANCEMENT 025
PROVIDE ARCHITECTURAL TREATMENT ON B609 ABUTMENTS
BENEFIT: ENHANCE AESTHETICS AND MATCH I-95 SB ABUTMENTS

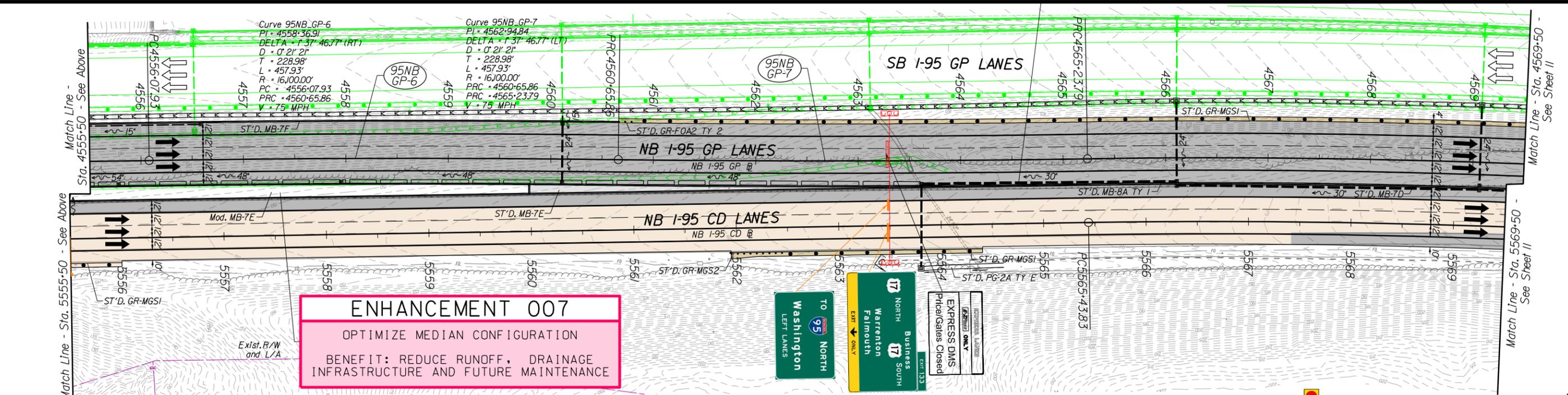
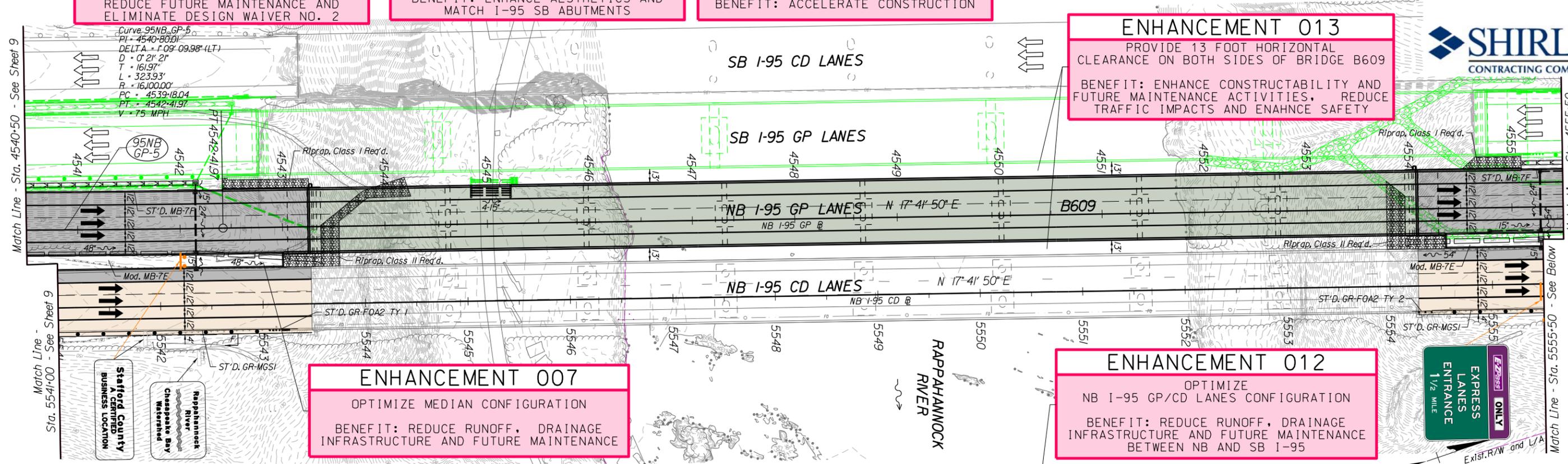
ENHANCEMENT 026
CONDUCT CONFIRMATORY FOUNDATION BORINGS FOR B609
BENEFIT: ACCELERATE CONSTRUCTION

ENHANCEMENT 013
PROVIDE 13 FOOT HORIZONTAL CLEARANCE ON BOTH SIDES OF BRIDGE B609
BENEFIT: ENHANCE CONSTRUCTABILITY AND FUTURE MAINTENANCE ACTIVITIES, REDUCE TRAFFIC IMPACTS AND ENAHNCE SAFETY

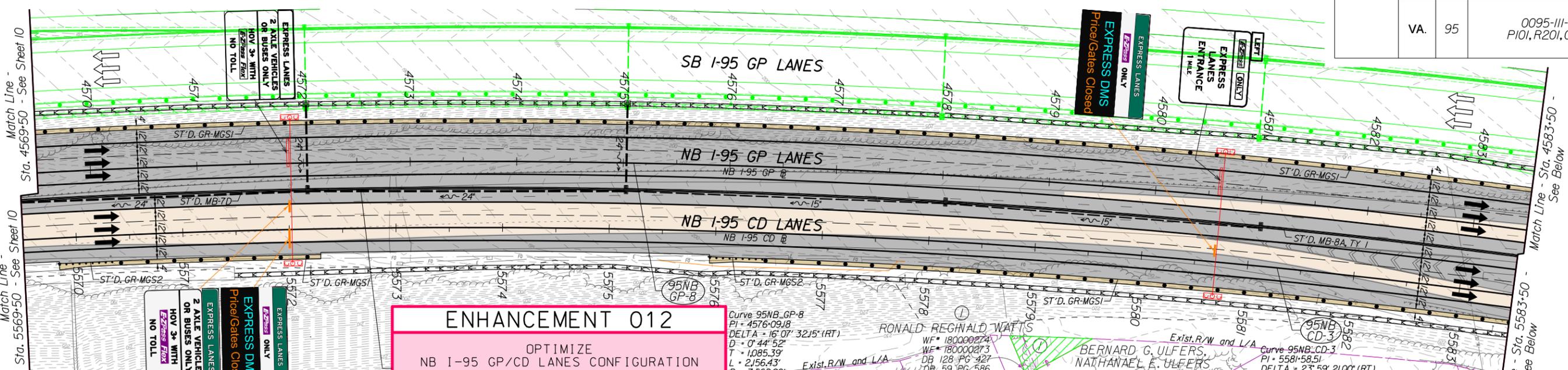
ENHANCEMENT 012
OPTIMIZE NB I-95 GP/CD LANES CONFIGURATION
BENEFIT: REDUCE RUNOFF, DRAINAGE INFRASTRUCTURE AND FUTURE MAINTENANCE BETWEEN NB AND SB I-95

ENHANCEMENT 007
OPTIMIZE MEDIAN CONFIGURATION
BENEFIT: REDUCE RUNOFF, DRAINAGE INFRASTRUCTURE AND FUTURE MAINTENANCE

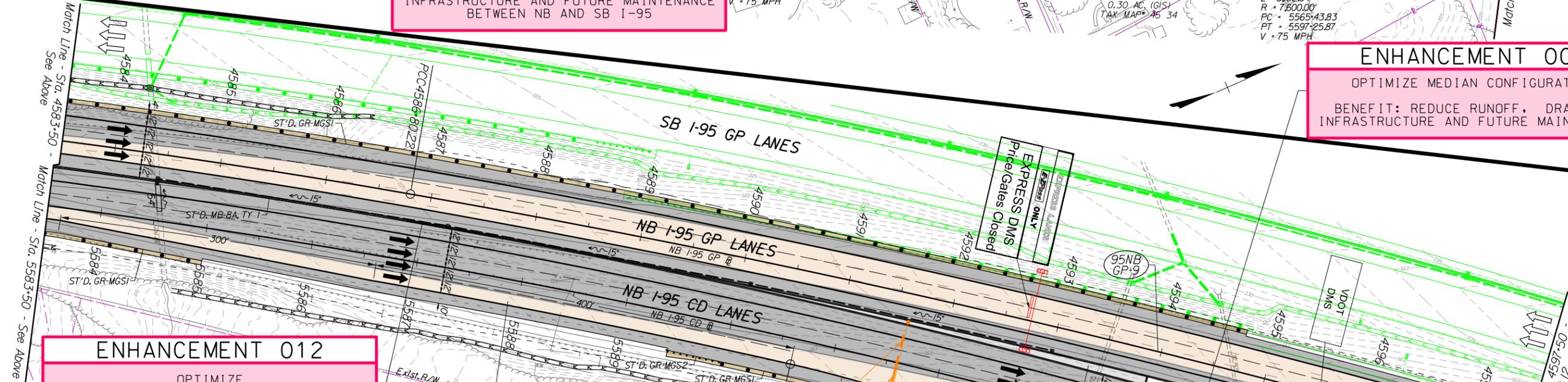
ENHANCEMENT 007
OPTIMIZE MEDIAN CONFIGURATION
BENEFIT: REDUCE RUNOFF, DRAINAGE INFRASTRUCTURE AND FUTURE MAINTENANCE



Denotes Full Depth Asphalt Pavement	Denotes Option *1	Denotes Exist. R/W / Prop. Line	Denotes Future Fourth Lane/Shoulder (By Others)	Denotes Exist. (or Currently Under Construction) Travel Lane	Denotes Traffic Signal
Denotes Asphalt Mill and Overlay/Buildup	Denotes Option *2	Denotes Prop. R/W per RFP Conceptual Design	Denotes 95 SBRR (UPC 101595)	Denotes Prop. Travel Lane	
Denotes ST'd. MC-4	Denotes Option *3	Denotes Prop. L/A	Denotes FredEx (UPC 110527)	Denotes Future Fourth Travel Lane (By Others)	
Denotes Concrete	Denotes Demolition of Pavement	Denotes Prop. Sound Barrier	Denotes FredEx Interim	Denotes Prop. Travel Lane (Option *1)	
Denotes Bridge	Denotes Area of R/W Reduction	Denotes Construction Limits in Cuts	Denotes R/W and L/A to be acquired by Others	Denotes Prop. Travel Lane (Option *2)	
		Denotes Construction Limits in Fills		Denotes LED Conventional Lighting Unit	
				Denotes LED Conventional Signal Mounted Lighting Unit	
				Denotes Prop. Sign Structure	
				Denotes Prop. Sign Structure by FredEx	



ENHANCEMENT 012
 OPTIMIZE NB I-95 GP/CD LANES CONFIGURATION
 BENEFIT: REDUCE RUNOFF, DRAINAGE INFRASTRUCTURE AND FUTURE MAINTENANCE BETWEEN NB AND SB I-95



ENHANCEMENT 007
 OPTIMIZE MEDIAN CONFIGURATION
 BENEFIT: REDUCE RUNOFF, DRAINAGE INFRASTRUCTURE AND FUTURE MAINTENANCE

ENHANCEMENT 012
 OPTIMIZE NB I-95 GP/CD LANES CONFIGURATION
 BENEFIT: REDUCE RUNOFF, DRAINAGE INFRASTRUCTURE AND FUTURE MAINTENANCE BETWEEN NB AND SB I-95

ENHANCEMENT 008
 PROVIDE DECELERATION LANE ON NB I-95 CD LANES
 BENEFIT: ENHANCE SAFETY AND OPERATIONS

Denotes Full Depth Asphalt Pavement	Denotes Option *1	Denotes Exist. R/W / Prop. Line	Denotes Future Fourth Lane/Shoulder (By Others)	Denotes Exist. (or Currently Under Construction) Travel Lane	Denotes Traffic Signal
Denotes Asphalt Mill and Overlay/Buildup	Denotes Option *2	Denotes Prop. R/W per RFP Conceptual Design	Denotes 95 SBRR (UPC 101595)	Denotes Prop. Travel Lane	
Denotes ST'd. MC-4	Denotes Option *3	Denotes Prop. L/A	Denotes FredEx (UPC 110527)	Denotes Future Fourth Travel Lane (By Others)	
Denotes Concrete	Denotes Demolition of Pavement	Denotes Prop. Sound Barrier	Denotes FredEx Interim	Denotes Prop. Travel Lane (Option *1)	
Denotes Bridge	Denotes Area of R/W Reduction	Denotes Construction Limits in Cuts	Denotes R/W and L/A to be acquired by Others	Denotes Prop. Travel Lane (Option *2)	
		Denotes Construction Limits in Fills		Denotes LED Conventional Lighting Unit	
				Denotes LED Conventional Signal Mounted Lighting Unit	
				Denotes Prop. Sign Structure	
				Denotes Prop. Sign Structure by FredEx	

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	95	0095-III-270 P101, R201, C501	12



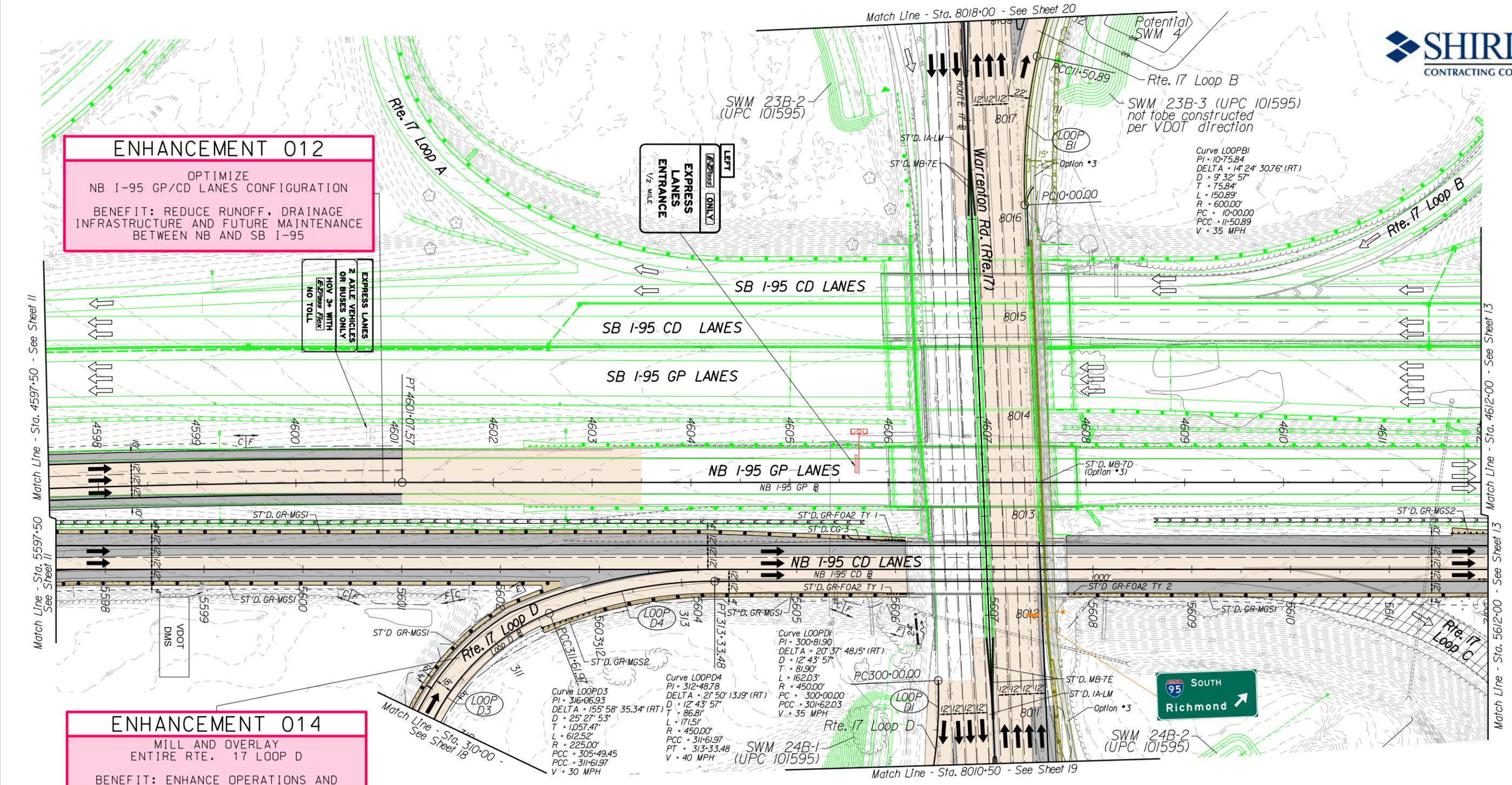
ENHANCEMENT 012
OPTIMIZE NB I-95 GP/CD LANES CONFIGURATION
BENEFIT: REDUCE RUNOFF, DRAINAGE INFRASTRUCTURE AND FUTURE MAINTENANCE BETWEEN NB AND SB I-95

EXPRESS LANES
2 AXLE VEHICLES OR BUSES ONLY
HOV 3+ WITH EZPASS FLEX
NO TOLL

LEFT
EXPRESS LANES ENTRANCE
1/2 MILE

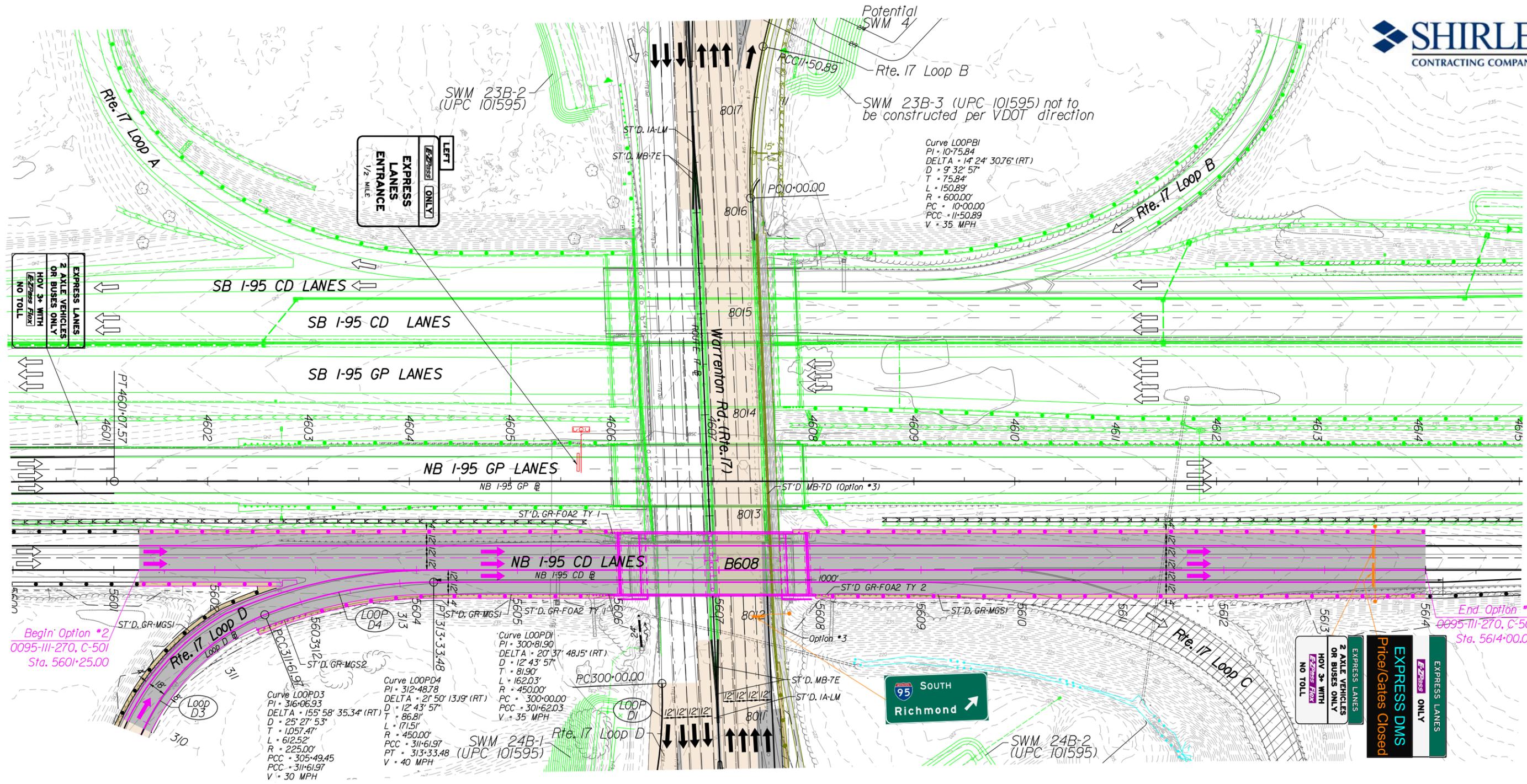
Curve LOOPBI
PI = 10+75.84
DELTA = 14° 24' 30.76" (RT)
D = 9° 32' 57"
T = 75.84'
L = 150.89'
R = 600.00'
PC = 10+00.00
PCC = 11+50.89
V = 35 MPH

ENHANCEMENT 014
MILL AND OVERLAY ENTIRE RTE. 17 LOOP D
BENEFIT: ENHANCE OPERATIONS AND REDUCE FUTURE MAINTENANCE



Denotes Full Depth Asphalt Pavement	Denotes Option *1	Denotes Exist. R/W / Prop. Line	Denotes Future Fourth Lane/Shoulder (By Others)	Denotes Exist. (or Currently Under Construction) Travel Lane	Denotes Traffic Signal
Denotes Asphalt Mill and Overlay/Buildup	Denotes Option *2	Denotes Prop. R/W per RFP Conceptual Design	Denotes 95 SBRR (UPC 101595)	Denotes Prop. Travel Lane	
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Denotes Bridge	Denotes Area of R/W Reduction	Denotes Construction Limits in Cuts	Denotes R/W and L/A to be acquired by Others	Denotes Prop. Travel Lane (Option *2)	
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				Denotes LED Conventional Signal Mounted Lighting Unit	
				Denotes Prop. Sign Structure	
				Denotes Prop. Sign Structure by FredEx	

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	95	0095-III-270 P101, R201, C501	12A

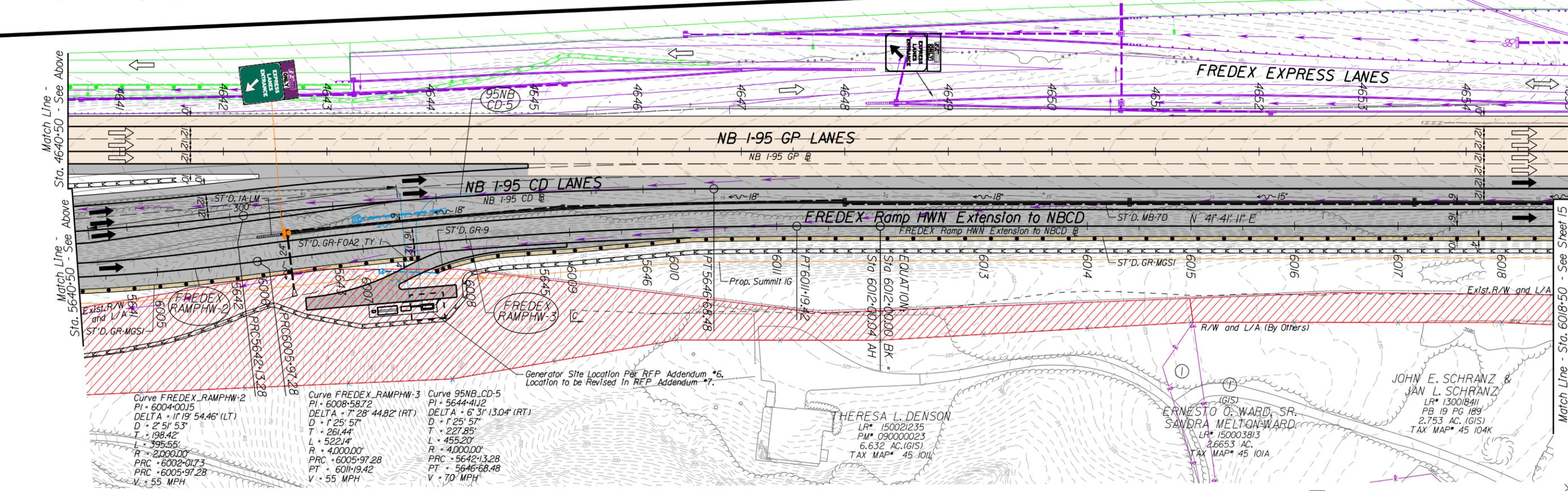
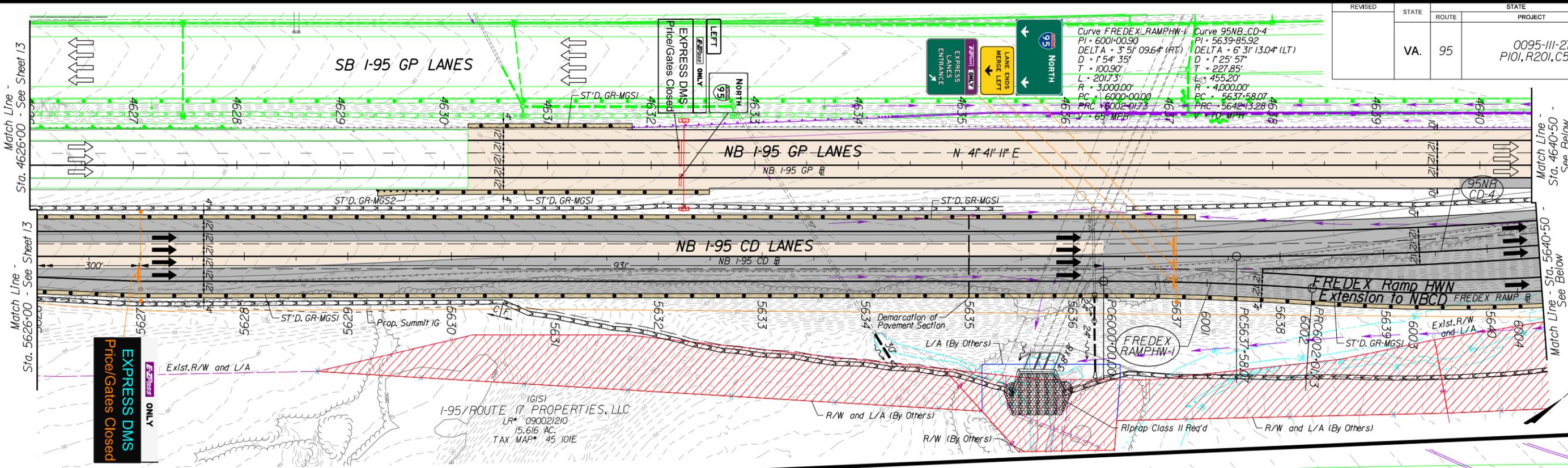


Denotes Full Depth Asphalt Pavement	Denotes Option *1	Denotes Exist. R/W / Prop. Line	Denotes Future Fourth Lane/Shoulder (By Others)	Denotes Exist. (or Currently Under Construction) Travel Lane	Denotes Traffic Signal
Denotes Asphalt Mill and Overlay/Buildup	Denotes Option *2	Denotes Prop. R/W per RFP Conceptual Design	Denotes 95 SBRR (UPC 101595)	Denotes Prop. Travel Lane	
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Denotes Bridge	Denotes Area of R/W Reduction	Denotes Construction Limits in Cuts	Denotes R/W and L/A to be acquired by Others	Denotes Prop. Travel Lane (Option *2)	
		Denotes Construction Limits in Fills		Denotes LED Conventional Lighting Unit	
				Denotes LED Conventional Signal Mounted Lighting Unit	
				Denotes Prop. Sign Structure	
				Denotes Prop. Sign Structure by FredEx	

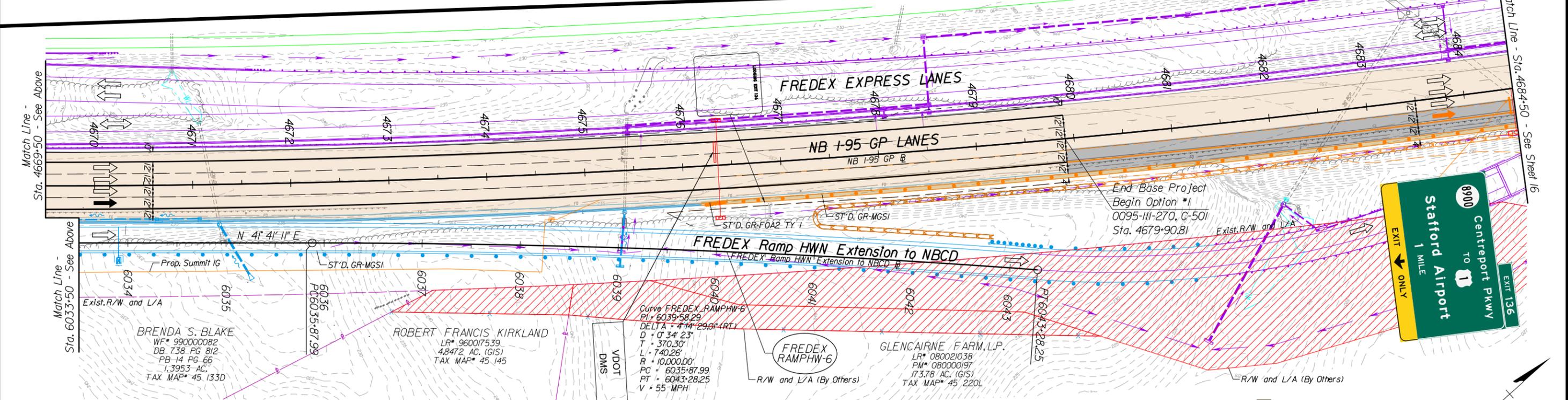
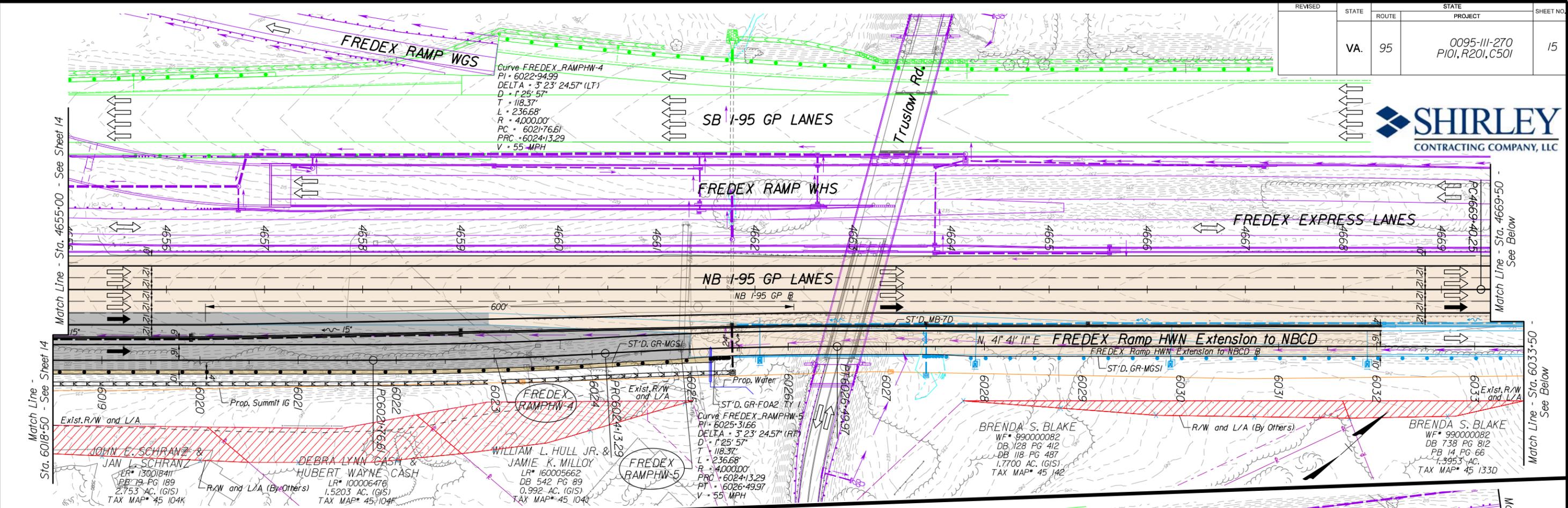
Begin Option *2
0095-III-270, C-501
Sta. 5601+25.00

End Option *2
0095-III-270, C-501
Sta. 5614+00.00

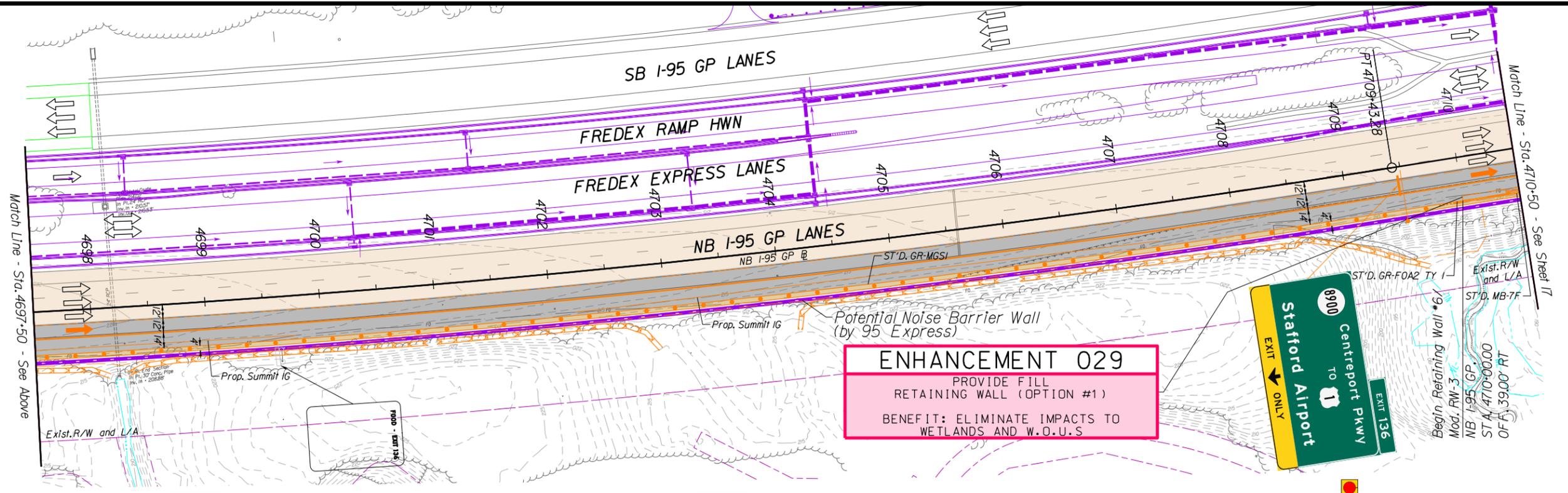
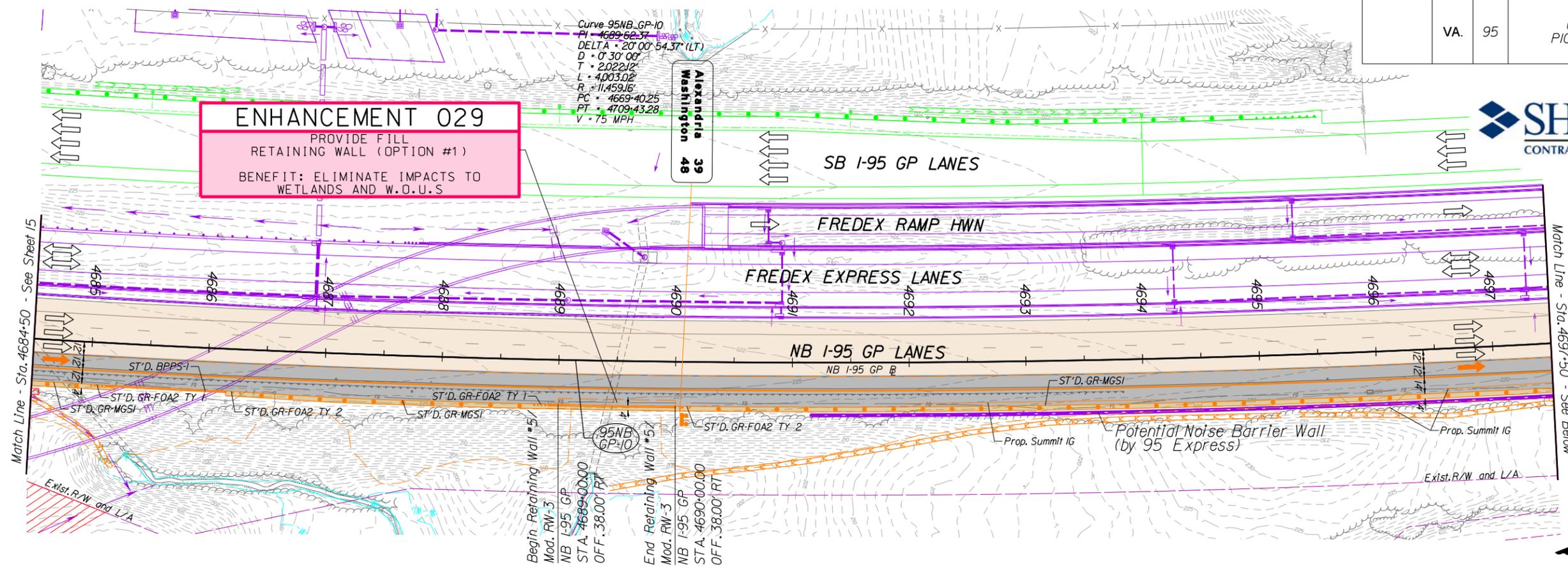




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Denotes ST'd. MC-4	Denotes Option #3	Denotes Prop. L/A	Denotes FredEx (UPC 110527)	Denotes Future Fourth Travel Lane (By Others)	
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		Denotes Construction Limits in Fills		Denotes LED Conventional Lighting Unit	
				Denotes LED Conventional Signal Mounted Lighting Unit	
				Denotes Prop. Sign Structure	
				Denotes Prop. Sign Structure by FredEx	

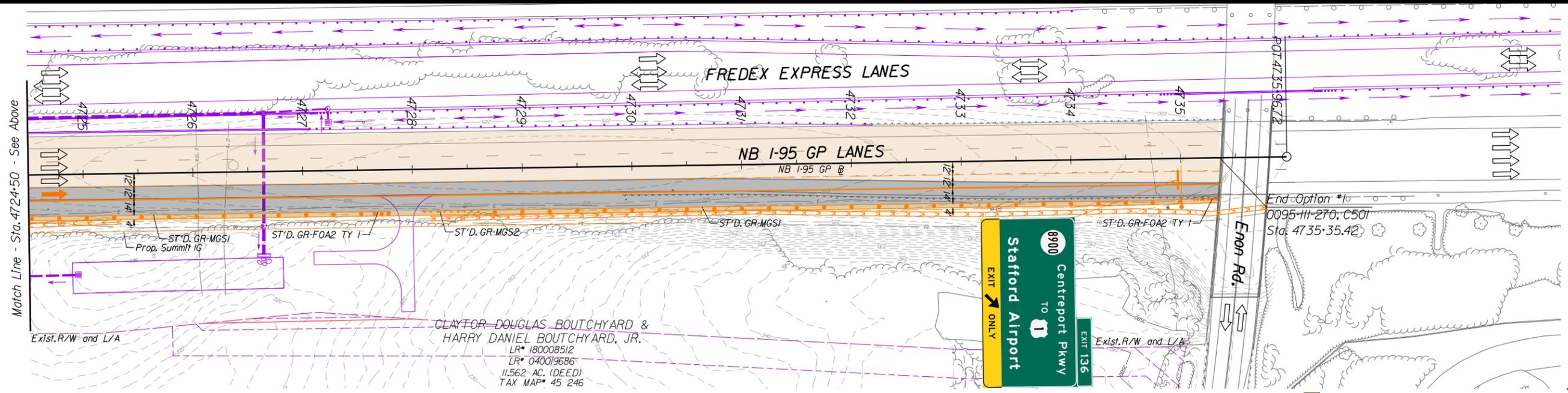
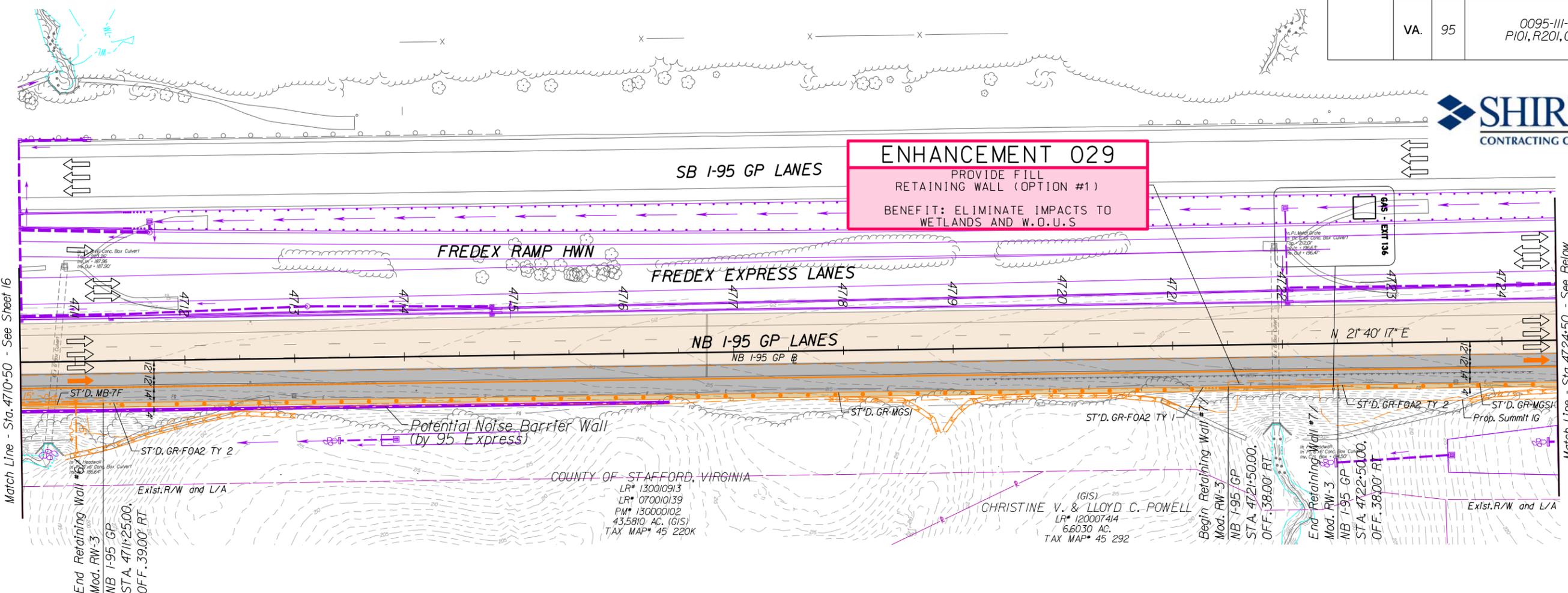


Denotes Full Depth Asphalt Pavement	Denotes Option #1	Denotes Exist. R/W / Prop. Line	Denotes Future Fourth Lane/Shoulder (By Others)	Denotes Exist. (or Currently Under Construction) Travel Lane	Denotes Traffic Signal
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				Denotes LED Conventional Signal Mounted Lighting Unit	
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				Denotes Prop. Sign Structure by FredEx	

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	95	0095-III-270 P101, R201, C501	17



Denotes Full Depth Asphalt Pavement	Denotes Option #1	Denotes Exst. R/W / Prop. Line	Denotes Future Fourth Lane/Shoulder (By Others)	Denotes Exst. (or Currently Under Construction) Travel Lane	Denotes Traffic Signal
Denotes Asphalt Mill and Overlay/Buildup	Denotes Option #2	Denotes Prop. R/W per RFP Conceptual Design	Denotes 95 SBRR (UPC 101595)	Denotes Prop. Travel Lane	
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				Denotes Prop. Sign Structure by FredEx	

REVISED	STATE	ROUTE	PROJECT	SHEET NO.
	VA.	95	0095-III-270 P101, R201, C501	19

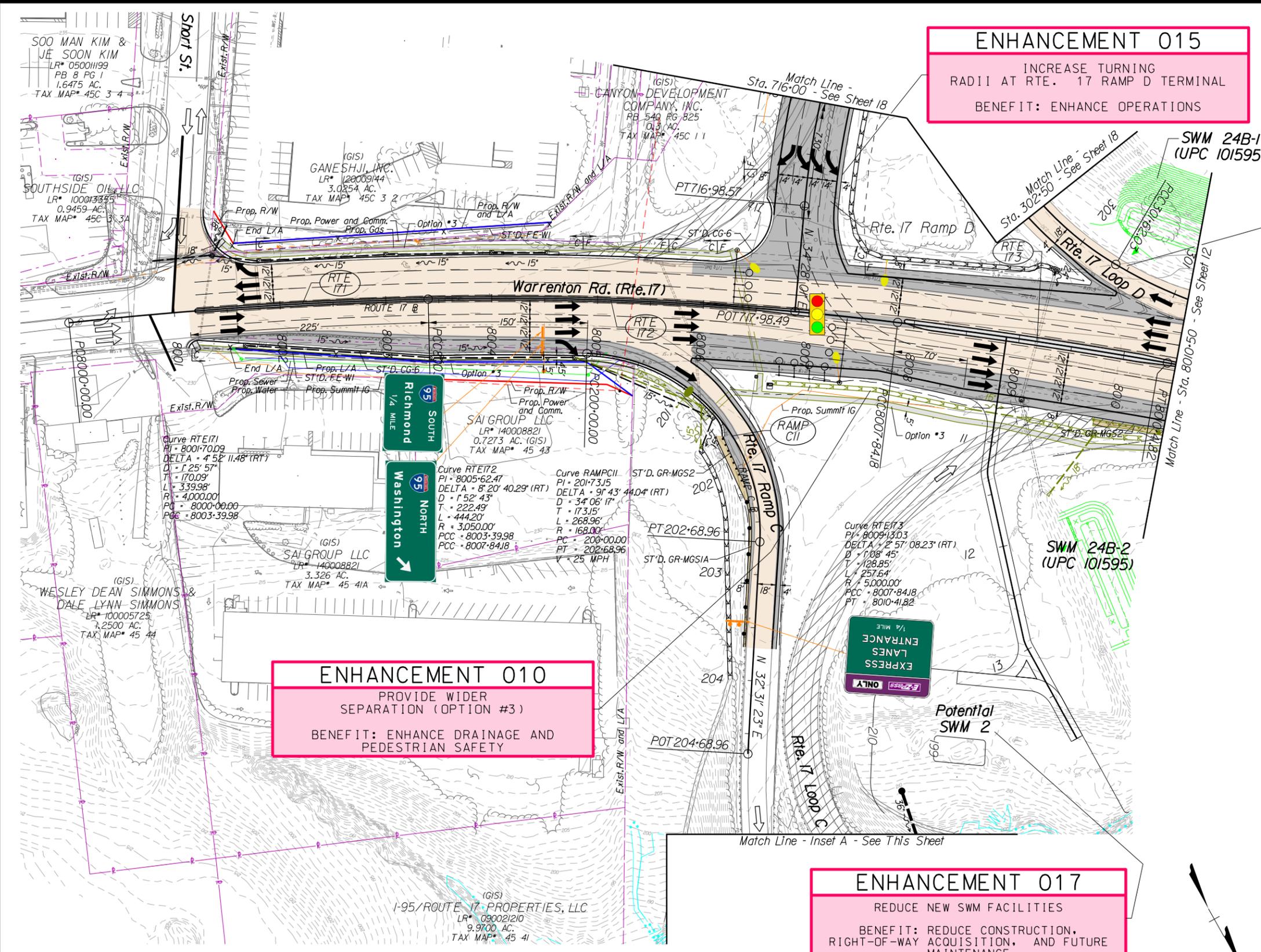


ENHANCEMENT 015
 INCREASE TURNING RADIUS AT RTE. 17 RAMP D TERMINAL
 BENEFIT: ENHANCE OPERATIONS

ENHANCEMENT 014
 MILL AND OVERLAY ENTIRE RTE. 17 LOOP D
 BENEFIT: ENHANCE OPERATIONS AND REDUCE FUTURE MAINTENANCE

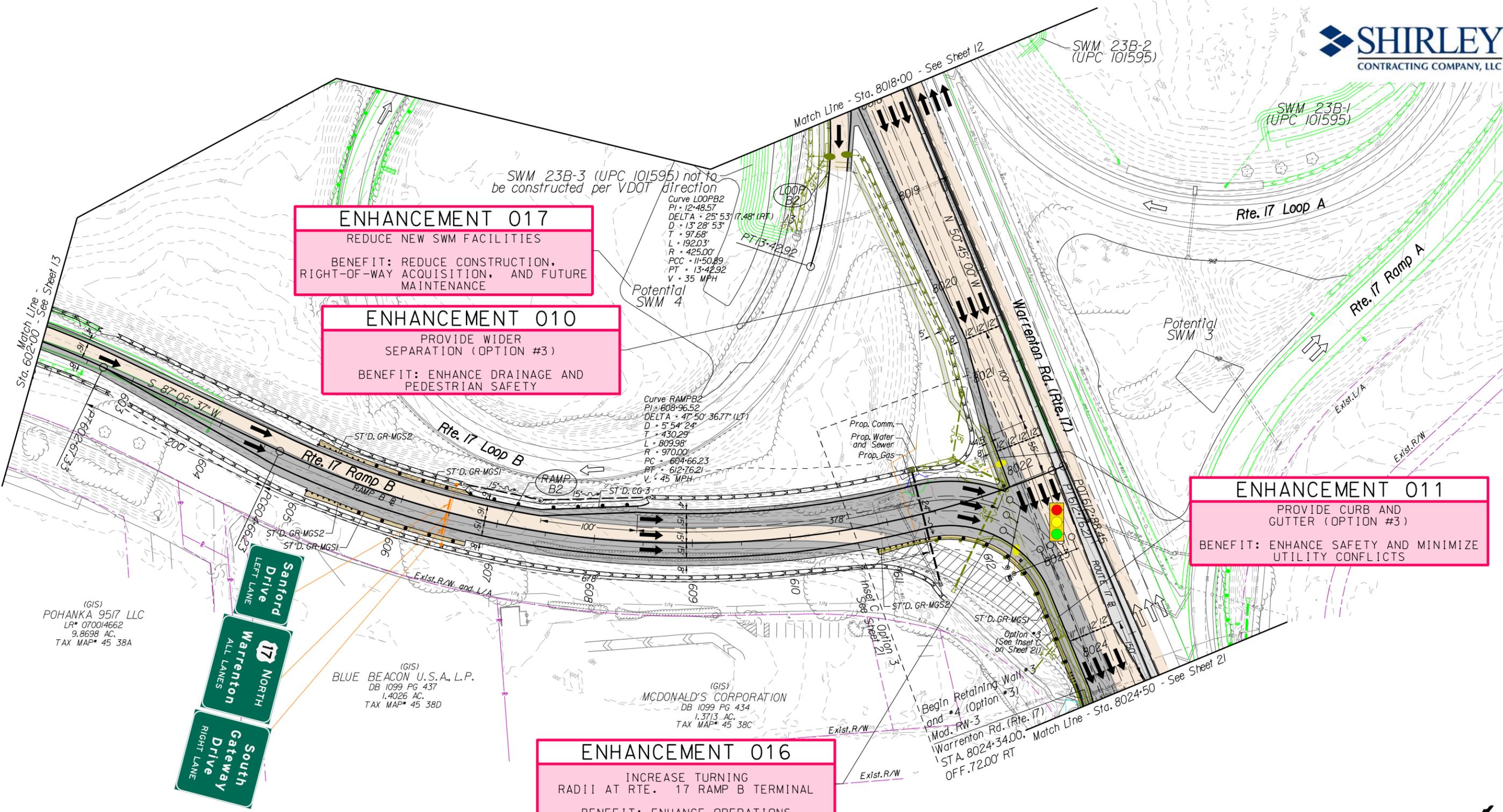
ENHANCEMENT 010
 PROVIDE WIDER SEPARATION (OPTION #3)
 BENEFIT: ENHANCE DRAINAGE AND PEDESTRIAN SAFETY

ENHANCEMENT 017
 REDUCE NEW SWM FACILITIES
 BENEFIT: REDUCE CONSTRUCTION, RIGHT-OF-WAY ACQUISITION, AND FUTURE MAINTENANCE



- | | | | | | |
|--|--------------------------------|---|---|--|------------------------|
| Denotes Full Depth Asphalt Pavement | Denotes Option #1 | Denotes Exist. R/W / Prop. Line | Denotes Future Fourth Lane/Shoulder (By Others) | Denotes Exist. (or Currently Under Construction) Travel Lane | Denotes Traffic Signal |
| Denotes Asphalt Mill and Overlay/Buildup | Denotes Option #2 | Denotes Prop. R/W per RFP Conceptual Design | Denotes 95 SBRR (UPC 101595) | Denotes Prop. Travel Lane | |
| Denotes St'd. MC-4 | Denotes Option #3 | Denotes Prop. L/A | Denotes FredEx (UPC 110527) | Denotes Future Fourth Travel Lane (By Others) | |
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| | | | | Denotes Prop. Sign Structure | |
| | | | | Denotes Prop. Sign Structure by FredEx | |

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	95	0095-III-270 P101, R201, C501	20



ENHANCEMENT 017
 REDUCE NEW SWM FACILITIES
 BENEFIT: REDUCE CONSTRUCTION, RIGHT-OF-WAY ACQUISITION, AND FUTURE MAINTENANCE

ENHANCEMENT 010
 PROVIDE WIDER SEPARATION (OPTION #3)
 BENEFIT: ENHANCE DRAINAGE AND PEDESTRIAN SAFETY

ENHANCEMENT 011
 PROVIDE CURB AND GUTTER (OPTION #3)
 BENEFIT: ENHANCE SAFETY AND MINIMIZE UTILITY CONFLICTS

ENHANCEMENT 016
 INCREASE TURNING RADII AT RTE. 17 RAMP B TERMINAL
 BENEFIT: ENHANCE OPERATIONS

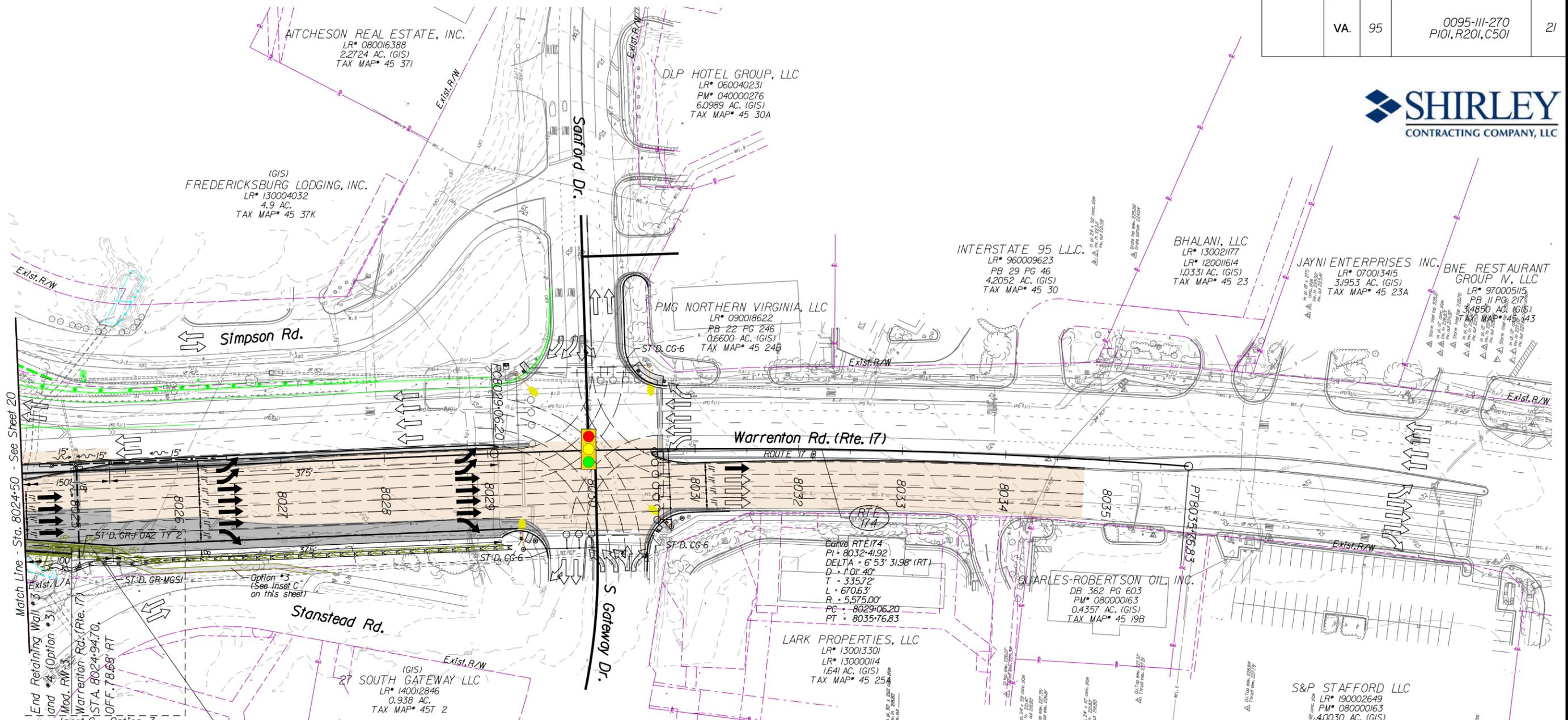
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(GIS)
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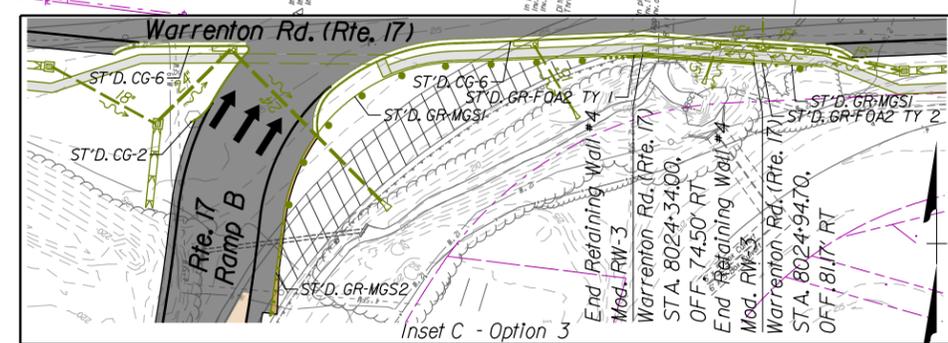
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 MCDONALD'S CORPORATION
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Denotes Full Depth Asphalt Pavement	Denotes Option #1	Denotes Exist. R/W / Prop. Line	Denotes Future Fourth Lane/Shoulder (By Others)	Denotes Exist. (or Currently Under Construction) Travel Lane	Denotes Traffic Signal
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				Denotes Prop. Sign Structure	
				Denotes Prop. Sign Structure by FredEx	

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	95	0095-III-270 P101, R201, C501	21



ENHANCEMENT 011
 PROVIDE CURB AND GUTTER (OPTION #3)
 BENEFIT: ENHANCE SAFETY AND MINIMIZE UTILITY CONFLICTS



- | | | | | | |
|--|--------------------------------|---|---|--|------------------------|
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| Denotes S't.d. MC-4 | Denotes Option #3 | Denotes Prop. L/A | Denotes FredEx (UPC 110527) | Denotes Future Fourth Travel Lane (By Others) | |
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| | | | | Denotes Prop. Sign Structure | |
| | | | | Denotes Prop. Sign Structure by FredEx | |

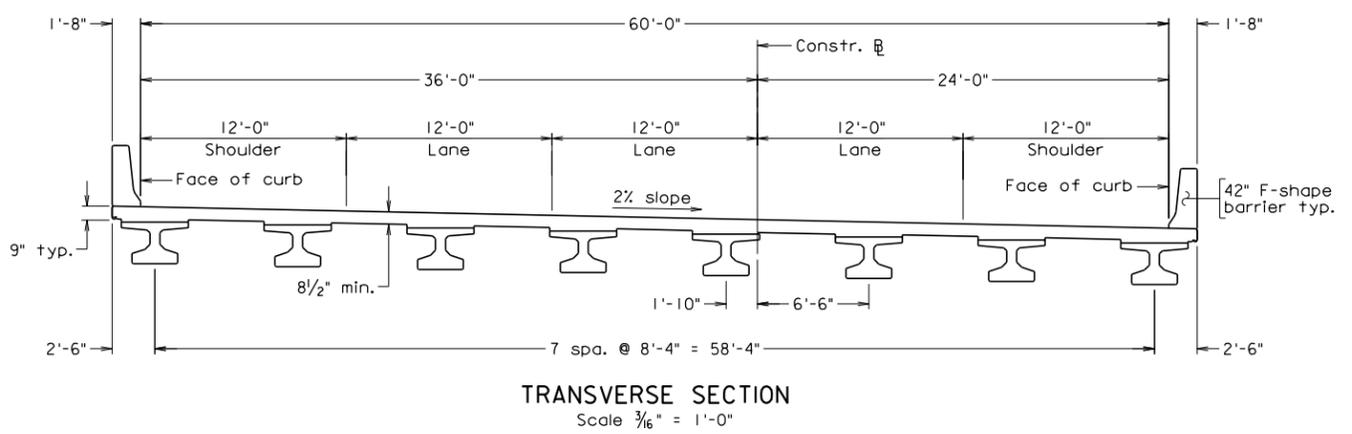
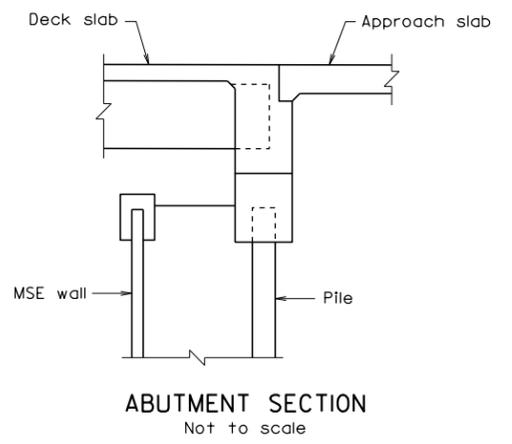
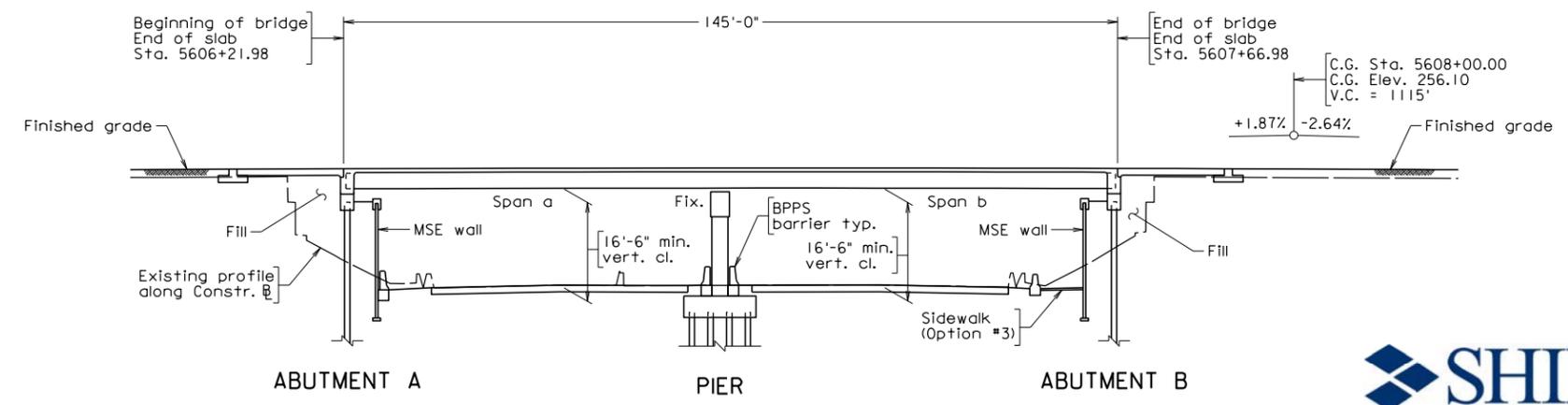
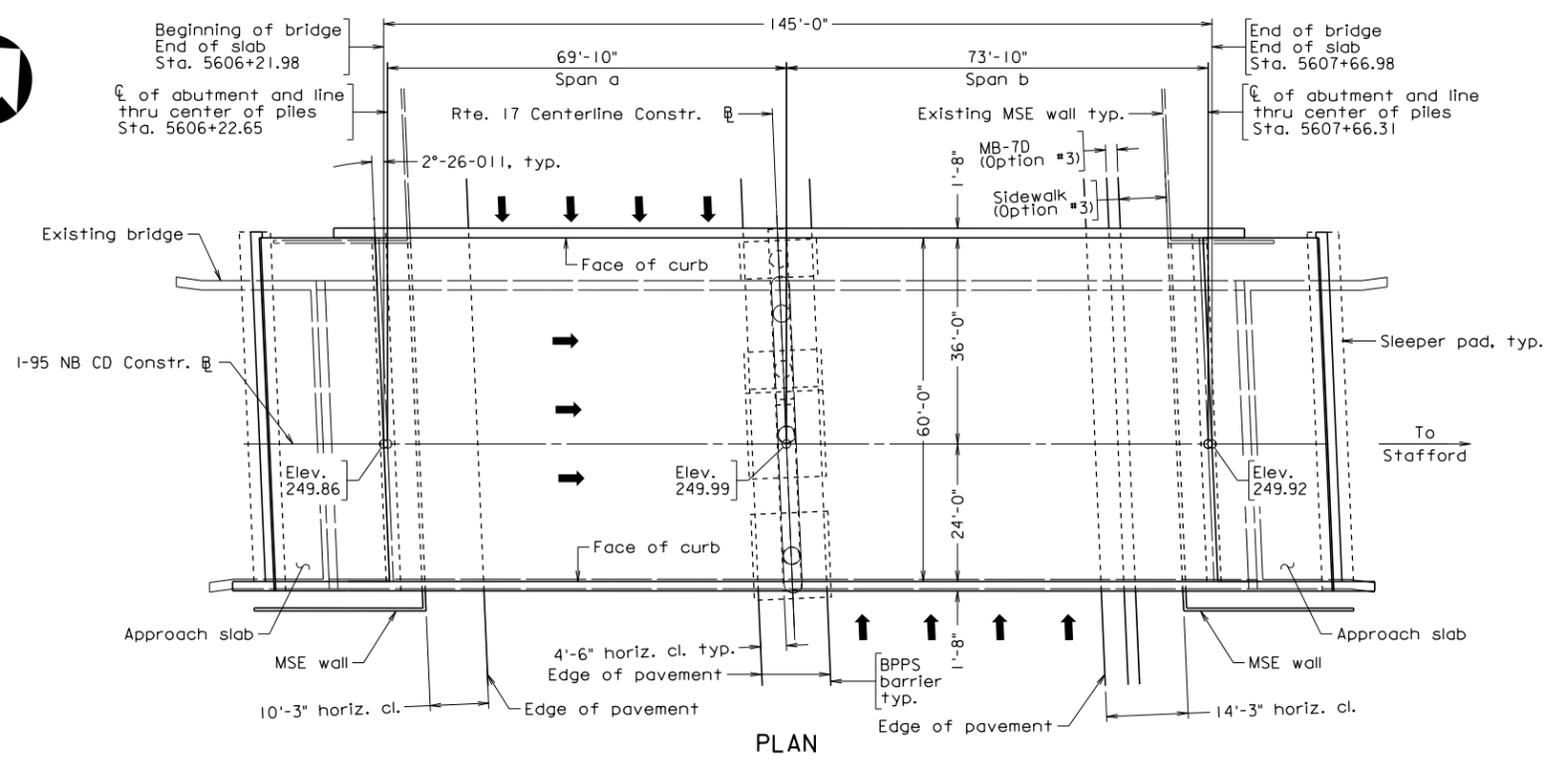
4.3.2 - Conceptual Structural Plans

STATE	FEDERAL AID		STATE		SHEET
ROUTE	PROJECT	ROUTE	PROJECT	NO.	
VA.	NHP-095-2(545)	95	0095-111-270, B608	1	
NBIS Number: 00000000030729			UPC No. 105510		
Federal Oversight Code: F0			FHWA Construction and Scour Code: X281-SN		

DESIGN EXCEPTION(S):
None

GENERAL NOTES:

Width: 60'-0" face-to-face of curbs.
 Span layout: 69'-10" - 73'-10" prestressed concrete 29" deep bulb-T beam spans continuous for live load
 Capacity: HL-93 loading.
 Specifications:
 Construction: Virginia Department of Transportation Road and Bridge Specifications, 2016.
 Design: AASHTO LRFD Bridge Design Specifications, 8th Edition, 2017; and VDOT Modifications.
 Standards: Virginia Department of Transportation Road and Bridge Standards, 2016; including all current revisions.
 These plans are incomplete unless accompanied by the Supplemental Specifications and Special Provisions included in the contract documents.
 Architectural treatment on MSE walls shall be drystack with 2" relief.



VDOT
 COMMONWEALTH OF VIRGINIA
 DEPARTMENT OF TRANSPORTATION
 PROPOSED BRIDGE ON
 I-95 NB CD LANES OVER RTE. 17
 (OPTION #2)
 STAFFORD CO. - 3.2 MI. N. OF RTE. 3
 PROJ. 0095-111-270, B608

PRELIMINARY PLANS
 THESE PLANS NOT TO BE USED FOR CONSTRUCTION

No.	Description	Date
REVISIONS		
Table of Revisions		

Recommended for Approval: _____
 Developer's Designee _____ Date _____

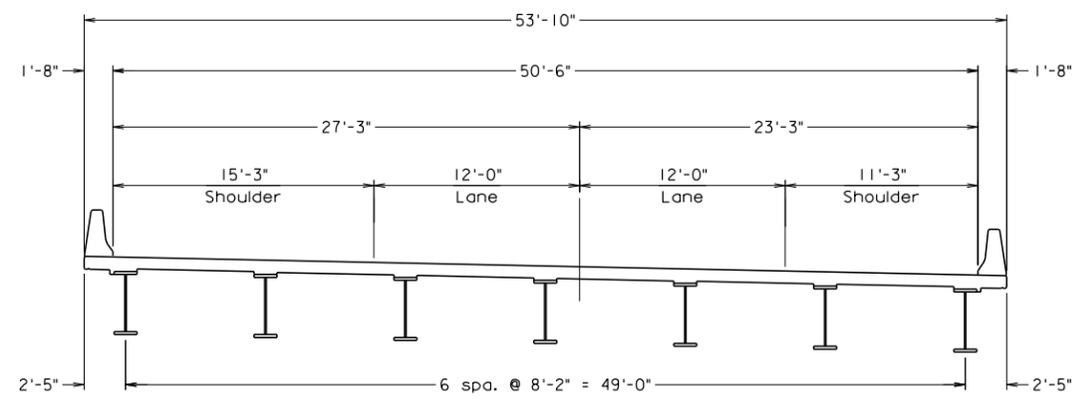
Approved: _____
 Chief Engineer _____ Date _____

b608_NB CD over Rte 17_OP&E.dgn

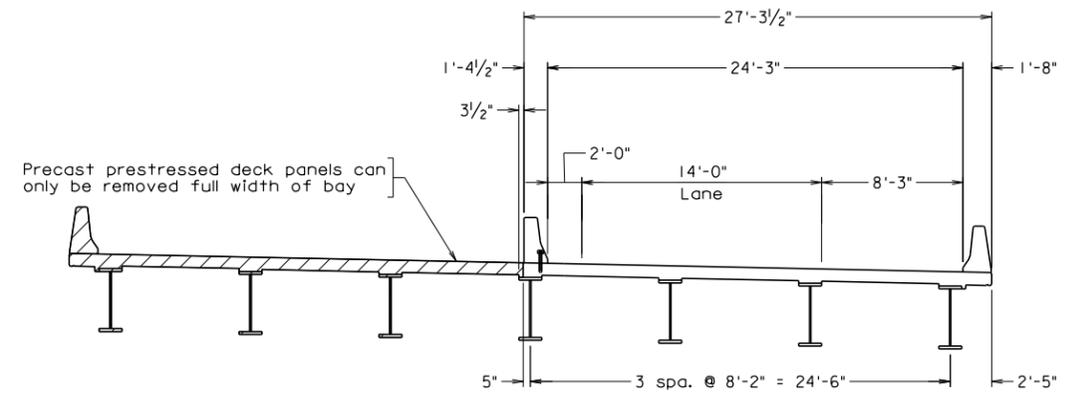
PLANS BY:	Dewberry Engineers Inc.
COORDINATED:	
SUPERVISED:	
DESIGNED:	J. Ross Burhouse
DRAWN:	
CHECKED:	

Scale: 1/16" = 1'-0" unless otherwise noted

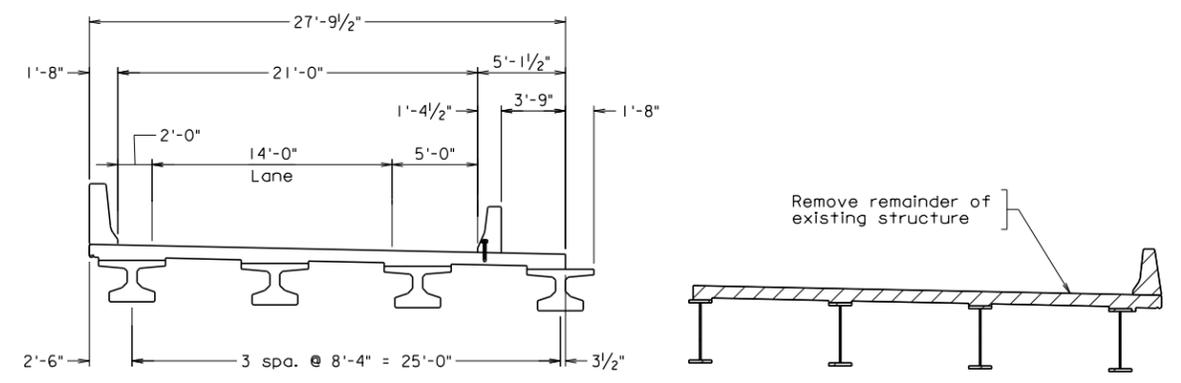
STATE	FEDERAL AID		STATE		SHEET
ROUTE	PROJECT		ROUTE	PROJECT	NO.
VA.			95	0095-111-270, B608	2



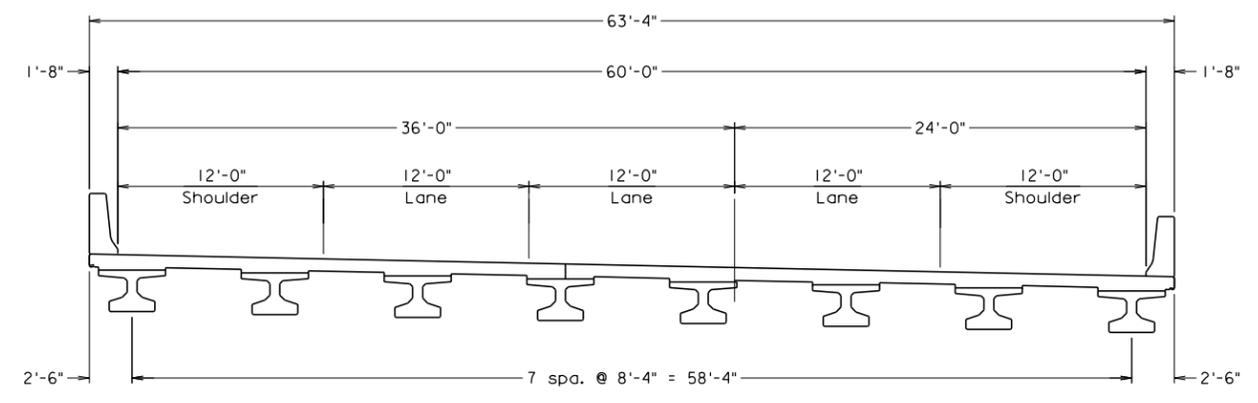
EXISTING TRANSVERSE SECTION



STAGE IC STEP 1



STAGE IC STEP 2



FINAL TRANSVERSE SECTION

Legend:
 Denotes existing structure to be removed.

b608_NB_CD over Rte 17 Staging.dgn

Dewberry Engineers Inc.
 Fairfax, Virginia
 STRUCTURAL ENGINEER

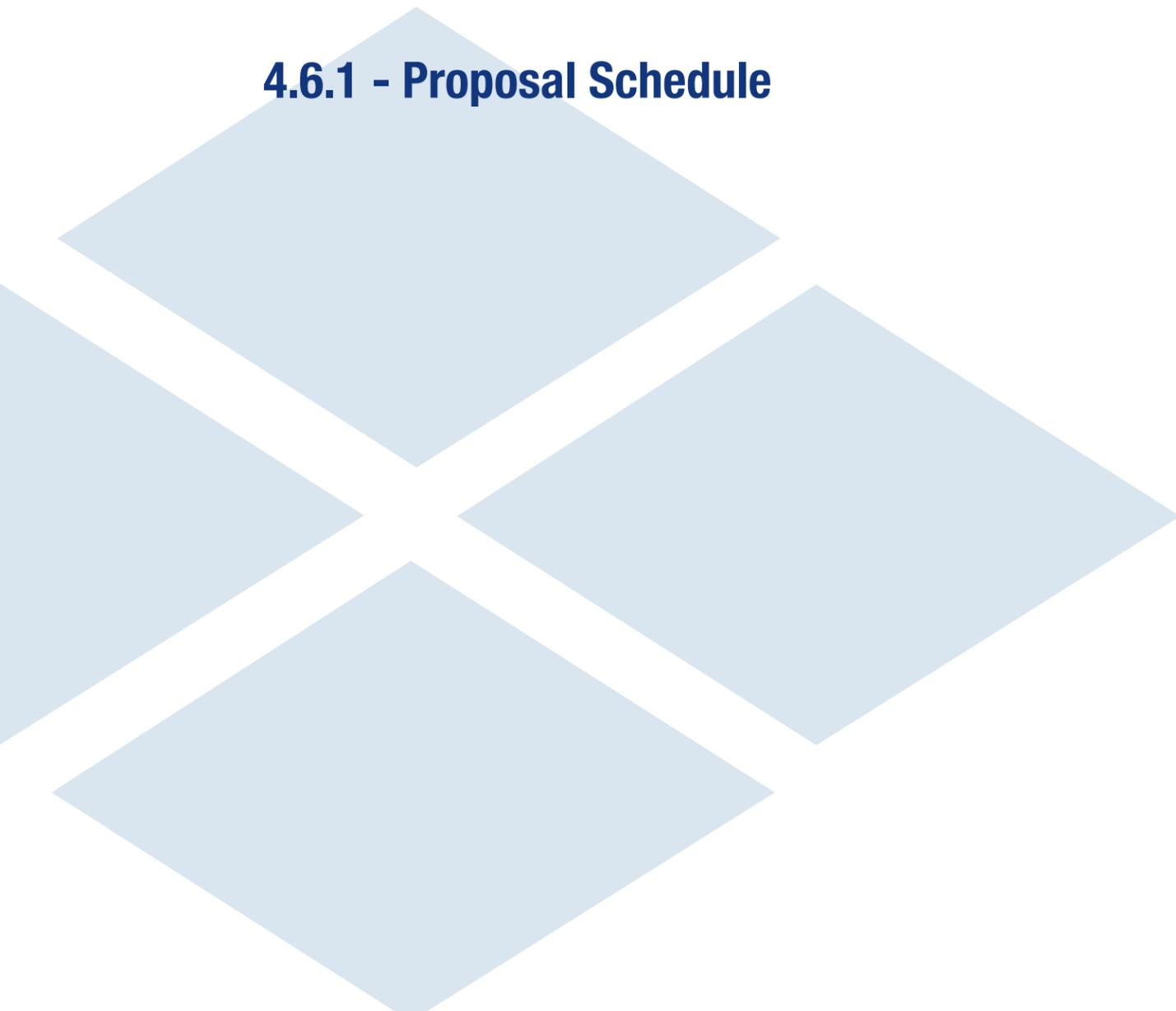
PRELIMINARY PLANS
 THESE PLANS NOT TO BE USED
 FOR CONSTRUCTION

Scale: 3/16" = 1'-0"
 © 2020, Commonwealth of Virginia



COMMONWEALTH OF VIRGINIA DEPARTMENT OF TRANSPORTATION				
STRUCTURE AND BRIDGE DIVISION				
I-95 NB CD LANES OVER RTE. 17 (OPTION #2) SEQUENCE OF CONSTRUCTION				
No.	Description	Date	Designed: JRR.....	Date
			Drawn:	Plan No.
			Checked:	Sheet No.
Revisions			Feb. 2020	2 of 2

4.6.1 - Proposal Schedule



Activity ID	Activity Name	Original Duration	Start	Finish	2020 2021 2022 2023 2024																																																			
					A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J
ENVIRONMENTAL PERMITTING					05-03-21, ENVIRONMENTAL PERMITTING																																																			
ENV0000-1000	Begin Environmental Permitting	0	07-10-20		◆ Begin Environmental Permitting																																																			
ENV0000-1100	Environmental Permitting Complete	0	05-03-21		◆ Environmental Permitting Complete																																																			
JOINT WETLANDS and WATERS PERMITTING					04-30-21, JOINT WETLANDS and WATERS PERMITTING																																																			
ENV1000-1000	Wetland Delineations - Survey & Flagging	20	07-10-20	08-06-20	■ Wetland Delineations - Survey & Flagging																																																			
ENV1000-1100	COE Jurisdictional Determination	30	08-07-20	09-18-20	■ COE Jurisdictional Determination																																																			
ENV1000-1200	Environmental Permit "Early Coordination-USACE/DEQ/VMRC"	20	08-21-20	09-18-20	■ Environmental Permit "Early Coordination-USACE/DEQ/VMRC"																																																			
ENV1000-1300	Prepare Joint Permit Application	20	09-21-20	10-16-20	■ Prepare Joint Permit Application																																																			
ENV1000-1400	Submit Joint Permit Application	0	11-03-20		◆ Submit Joint Permit Application																																																			
ENV1000-1500	Agency Review of JPA	90	11-03-20	01-31-21	■ Agency Review of JPA																																																			
ENV1000-1600	Provisional Permit Approval- NTP Mitigation Purchases	0	02-01-21		◆ Provisional Permit Approval- NTP Mitigation Purchases																																																			
ENV1000-1700	DEQ PUBLIC NOTICE Period	30	02-01-21	03-02-21	■ DEQ PUBLIC NOTICE Period																																																			
ENV1000-1800	Purchase Wetland and Stream Mitigation Credits	20	02-01-21	02-26-21	■ Purchase Wetland and Stream Mitigation Credits																																																			
ENV1000-1900	Purchase Nutrient Credits	20	02-01-21	02-26-21	■ Purchase Nutrient Credits																																																			
ENV1000-2000	Final Agency Review of JPA/VDOT Final Approval	21	03-03-21	03-31-21	■ Final Agency Review of JPA/VDOT Final Approval																																																			
ENV1000-2100	JPA Approved	0	04-01-21		◆ JPA Approved																																																			
ENV1000-2200	VDOT Environmental Clearance	30	04-01-21	04-30-21	■ VDOT Environmental Clearance																																																			
THREATENED & ENDANGERED SPECIES / CULTURAL RESOURCES					10-02-20, THREATENED & ENDANGERED SPECIES / CULTURAL RESOURCES																																																			
ENV1000-2300	T&E Species Identification and Impacts Coordination	40	07-10-20	09-03-20	■ T&E Species Identification and Impacts Coordination																																																			
ENV1000-2400	Prepare and Submit T&E Species Documentation with AHJs	20	09-04-20	10-02-20	■ Prepare and Submit T&E Species Documentation with AHJs																																																			
ENV1000-2500	Perform Culteral Resources Research	40	07-10-20	09-03-20	■ Perform Culteral Resources Research																																																			
ENV1000-2600	Prepare and Submit Cultural Resources Findings and Mitigation Plans with AHJs	20	09-04-20	10-02-20	■ Prepare and Submit Cultural Resources Findings and Mitigation Plans with AHJs																																																			
HAZMAT and ENVIRONMENTAL SITE ASSESSMENTS					10-23-20, HAZMAT and ENVIRONMENTAL SITE ASSESSMENTS																																																			
ENV2000-1000	Phase 1 Environmental Site Assessments	20	07-24-20	08-20-20	■ Phase 1 Environmental Site Assessments																																																			
ENV2000-1100	Prepare/Submit Phase 1 ESA Reports	30	08-21-20	10-02-20	■ Prepare/Submit Phase 1 ESA Reports																																																			
ENV2000-1200	VDOT Review Phase 1 ESA	21	10-03-20	10-23-20	■ VDOT Review Phase 1 ESA																																																			
ENV2000-1300	VDOT Approve Phase 1 ESA's (Hold Point)	0		10-23-20	◆ VDOT Approve Phase 1 ESA's (Hold Point)																																																			
LD 445 / VPDES / STORMWATER PERMIT					04-19-21, LD 445 / VPDES / STORMWATER PERMIT																																																			
PROJECT WIDE LAND DISTURBANCE PERMIT					04-19-21, PROJECT WIDE LAND DISTURBANCE PERMIT																																																			
ENV3000-1000	LD-445 Forms - Update with 60% Plans	10	01-08-21	01-21-21	■ LD-445 Forms - Update with 60% Plans																																																			
ENV3000-1100	Request Updated Permit Coverage (Application Complete - Hold Point)	0	01-22-21		◆ Request Updated Permit Coverage (Application Complete - Hold Point)																																																			
ENV3000-1200	Agency Review of Updated LD-445 / SWPPP	50	01-22-21	03-12-21	■ Agency Review of Updated LD-445 / SWPPP																																																			
ENV3000-1300	Complete Updated SWPPP (LD-455E) Certifications	5	03-15-21	03-19-21	■ Complete Updated SWPPP (LD-455E) Certifications																																																			
ENV3000-1400	VDOT Obtain Updated Permit Coverage and Release Work (Hold Point)	30	03-20-21	04-18-21	■ VDOT Obtain Updated Permit Coverage and Release Work (Hold Point)																																																			
ENV3000-1500	Approved Land Disturbance Permit Application and SWPPP Project Wide	0	04-19-21		◆ Approved Land Disturbance Permit Application and SWPPP Project Wide																																																			
NOISE ANALYSIS					12-21-20, NOISE ANALYSIS																																																			
ENV4000-1000	Perform Noise Study	25	06-18-20	07-23-20	■ Perform Noise Study																																																			
ENV4000-1100	Perform Noise Analysis - Modeling Activities	20	07-31-20	08-27-20	■ Perform Noise Analysis - Modeling Activities																																																			
ENV4000-1200	Optimization of Noise Wall Analysis	9	08-28-20	09-10-20	■ Optimization of Noise Wall Analysis																																																			
ENV4000-1300	Submit Noise Report	0	09-11-20		◆ Submit Noise Report																																																			
ENV4000-1400	VDOT Review & Comment on Noise Report	21	09-11-20	10-01-20	■ VDOT Review & Comment on Noise Report																																																			
ENV4000-1500	Comment Response/Re-Submit Noise Report	10	10-02-20	10-15-20	■ Comment Response/Re-Submit Noise Report																																																			
ENV4000-1600	Re-Submit Noise Report	0		10-15-20	◆ Re-Submit Noise Report																																																			
ENV4000-1700	VDOT Review 2nd Submission Noise Report	21	10-16-20	11-05-20	■ VDOT Review 2nd Submission Noise Report																																																			
ENV4000-1800	Noise Report Approved	0		11-05-20	◆ Noise Report Approved																																																			
ENV4000-1900	Public Comment Period	30	11-06-20	12-21-20	■ Public Comment Period																																																			
ENV4000-2000	Final Noise Analysis Approval	0		12-21-20	◆ Final Noise Analysis Approval																																																			

■ Actual Work
 ■ Critical Remaining Work
 Summary
■ Remaining Work
 ◆ Milestone



Activity ID	Activity Name	Original Duration	Start	Finish	2020												2021												2022												2023												2024														
					A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D						
RIGHT OF WAY ACQUISITION/EASEMENTS					320	10-17-20	02-07-22	02-07-22; RIGHT OF WAY ACQUISITION/EASEMENTS																																																											
RIGHT OF WAY PLANS					64	10-17-20	01-26-21	01-26-21, RIGHT OF WAY PLANS																																																											
R/W PLANS					58	10-27-20	01-26-21	01-26-21, R/W PLANS																																																											
ROW0000-1000	Prepare Right of Way Plans (with 60% 1st Submission Roadway Plans)	20	10-27-20	11-23-20	Prepare Right of Way Plans (with 60% 1st Submission Roadway Plans)																																																														
ROW0000-1100	VDOT Review/Comment Right of Way Plans	21	11-24-20	12-14-20	VDOT Review/Comment Right of Way Plans																																																														
ROW0000-1200	Comment Response / Plan changes	10	12-15-20	01-05-21	Comment Response / Plan changes																																																														
ROW0000-1300	VDOT Review 2nd Round R/W Plans	21	01-06-21	01-26-21	VDOT Review 2nd Round R/W Plans																																																														
ROW0000-1400	Right of Way Plans Approved	0		01-26-21	Right of Way Plans Approved																																																														
PROJECT SPECIFIC ACQUISITION and RELOCATION PLAN					47	10-17-20	12-25-20	12-25-20, PROJECT SPECIFIC ACQUISITION and RELOCATION PLAN																																																											
ROW0000-1500	Prepare and Submit R/W Aquisition and Relocation Plan	20	10-17-20	11-05-20	Prepare and Submit R/W Aquisition and Relocation Plan																																																														
ROW0000-1600	VDOT R/A Aquisition and Relocation Plan	21	11-06-20	11-26-20	VDOT R/A Aquisition and Relocation Plan																																																														
ROW0000-1700	Comment Response/Re-Submit Aquisition Plan	5	11-30-20	12-04-20	Comment Response/Re-Submit Aquisition Plan																																																														
ROW0000-1800	VDOT Review/Approve 2nd Submission Aquisition Plan	21	12-05-20	12-25-20	VDOT Review/Approve 2nd Submission Aquisition Plan																																																														
ROW ACQUISITIONS					273	01-04-21	02-07-22	02-07-22; ROW ACQUISITIONS																																																											
R/W GROUP 1 ACQUISITIONS					261	01-04-21	01-20-22	01-20-22, R/W GROUP 1 ACQUISITIONS																																																											
ROW1000-1000	R/W Group 1- Complete 60 Yr Title Exam	15	01-04-21	01-22-21	R/W Group 1- Complete 60 Yr Title Exam																																																														
ROW1000-1100	R/W Group 1- Complete Appraisal	32	01-27-21	03-11-21	R/W Group 1- Complete Appraisal																																																														
ROW1000-1200	R/W Group 1- Review Appraiser Completes Review	8	03-12-21	03-23-21	R/W Group 1- Review Appraiser Completes Review																																																														
ROW1000-1300	R/W Group 1- Submit Appraisal to VDOT (RUMS)	3	03-24-21	03-26-21	R/W Group 1- Submit Appraisal to VDOT (RUMS)																																																														
ROW1000-1400	R/W Group 1- VDOT Approves Appraisal	21	03-29-21	04-26-21	R/W Group 1- VDOT Approves Appraisal																																																														
ROW1000-1500	R/W Group 1- Prepare Offer Package	5	03-29-21	04-02-21	R/W Group 1- Prepare Offer Package																																																														
ROW1000-1600	R/W Group 1- Negotiator Make Initial Contact / Present Offer	10	04-27-21	05-10-21	R/W Group 1- Negotiator Make Initial Contact / Present Offer																																																														
ROW1000-1700	R/W Group 1- Negotiations	45	05-11-21	07-14-21	R/W Group 1- Negotiations																																																														
ROW1000-1800	R/W Group 1- Send Notice of Filing Certif. to Property Owner	3	07-15-21	07-19-21	R/W Group 1- Send Notice of Filing Certif. to Property Owner																																																														
ROW1000-1900	R/W Group 1- Prepare / Finalize Plat	4	07-15-21	07-20-21	R/W Group 1- Prepare / Finalize Plat																																																														
ROW1000-2000	R/W Group 1- Prepare Certificate Package	5	07-15-21	07-21-21	R/W Group 1- Prepare Certificate Package																																																														
ROW1000-2100	R/W Group 1- Obtain Signed Option	5	07-15-21	07-21-21	R/W Group 1- Obtain Signed Option																																																														
ROW1000-2200	R/W Group 1- Property Access for Construction - If By Option	0		07-21-21	R/W Group 1- Property Access for Construction - If By Option																																																														
ROW1000-2300	R/W Group 1- Submit Certificate Package to VDOT	0	07-22-21		R/W Group 1- Submit Certificate Package to VDOT																																																														
ROW1000-2400	R/W Group 1- VDOT Reviews / Issues Certificate & Check	30	07-22-21	09-01-21	R/W Group 1- VDOT Reviews / Issues Certificate & Check																																																														
ROW1000-2500	R/W Group 1- Option / Settlement Docs Submitted to VDOT	5	07-22-21	07-28-21	R/W Group 1- Option / Settlement Docs Submitted to VDOT																																																														
ROW1000-2600	R/W Group 1- VDOT Reviews Settlement Documents	21	07-29-21	08-26-21	R/W Group 1- VDOT Reviews Settlement Documents																																																														
ROW1000-2700	R/W Group 1- Design Builder Files Certificate @ Court house	2	09-02-21	09-03-21	R/W Group 1- Design Builder Files Certificate @ Court house																																																														
ROW1000-2800	R/W Group 1- Property Access for Constr & Utilities - If By Certificate	0		09-03-21	R/W Group 1- Property Access for Constr & Utilities - If By Certificate																																																														
ROW1000-2900	R/W Group 1 - Design Builder Requests NTCC by Parcels	5	09-07-21	09-13-21	R/W Group 1- Design Builder Requests NTCC by Parcels																																																														
ROW1000-3000	R/W Group 1- Settlement Documents to Settlement Attorney	2	08-27-21	08-30-21	R/W Group 1- Settlement Documents to Settlement Attorney																																																														
ROW1000-3100	R/W Group 1- Obtain release of Liens if Required	60	08-31-21	11-23-21	R/W Group 1- Obtain release of Liens if Required																																																														
ROW1000-3200	R/W Group 1- Access to Parcel	0		09-13-21	R/W Group 1- Access to Parcel																																																														
ROW1000-3300	R/W Group 1- Notice to VDOT that all Liens Are Cleared	1	11-24-21	11-24-21	R/W Group 1- Notice to VDOT that all Liens Are Cleared																																																														
ROW1000-3400	R/W Group 1- VDOT Issues Settlement Check	21	11-29-21	01-06-22	R/W Group 1- VDOT Issues Settlement Check																																																														
ROW1000-3500	R/W Group 1- Settlement Atty. Holds Settlement / Records	10	01-07-22	01-20-22	R/W Group 1- Settlement Atty. Holds Settlement / Records																																																														
ROW1000-3600	R/W Group 1- R/W Process Complete - Utilities Access to Parcels	0		01-20-22	R/W Group 1- R/W Process Complete - Utilities Access to Parcels																																																														
R/W GROUP 2 ACQUISITIONS					273	01-04-21	02-07-22	02-07-22; R/W GROUP 2 ACQUISITIONS																																																											
ROW1000-3700	R/W Group 2- Complete 60 Yr Title Exam	15	01-04-21	01-22-21	R/W Group 2- Complete 60 Yr Title Exam																																																														
ROW1000-3800	R/W Group 2- Complete Appraisal	32	02-12-21	03-29-21	R/W Group 2- Complete Appraisal																																																														
ROW1000-3900	R/W Group 2- Review Appraiser Completes Review	8	03-30-21	04-08-21	R/W Group 2- Review Appraiser Completes Review																																																														
ROW1000-4000	R/W Group 2- Submit Appraisal to VDOT (RUMS)	3	04-09-21	04-13-21	R/W Group 2- Submit Appraisal to VDOT (RUMS)																																																														

█ Actual Work
 █ Critical Remaining Work
 Summary
█ Remaining Work
 ◆ Milestone



Activity ID	Activity Name	Original Duration	Start	Finish	2020												2021												2022												2023												2024											
					A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D			
B609000-1200	Obtain Rappahannock River Permits / Early Bridge Substructure Package	0	11-03-20		◆ Obtain Rappahannock River Permits / Early Bridge Substructure Package																																																											
B609000-1300	Install MOT Devices / Construction Entrance from 95 NB to Abut. B	5	01-27-21	02-02-21	■ Install MOT Devices / Construction Entrance from 95 NB to Abut. B																																																											
B609000-1400	Install Temp. Sediment Basins / E&S Controls for RRC Bridge Construction	10	02-03-21	02-16-21	■ Install Temp. Sediment Basins / E&S Controls for RRC Bridge Construction																																																											
B609000-1500	Install Temporary Ramp / Access Road from Abut. B to Pier 7	15	02-17-21	03-09-21	■ Install Temporary Ramp / Access Road from Abut. B to Pier 7																																																											
B609000-1600	Install / Modify Access Road to Abut. A / Pier 1 from Old Quarry Road	15	03-10-21	03-30-21	■ Install / Modify Access Road to Abut. A / Pier 1 from Old Quarry Road																																																											
B609000-1700	Install MOT Devices / Lane Shift on Existing NB Bridge and Approaches	5	06-07-22	06-14-22	■ Install MOT Devices / Lane Shift on Existing NB Bridge and Approaches																																																											
RAPPAHANNOCK RIVER CAUSEWAY RE-CONFIGURATION / CONSTRUCTION		736	12-15-20	11-28-23																																																												
B609CWY-1000	Modify Existing Causeway/Mob Crane/Install In-Stream Northern Causeway to Pier 6 & 7	18	12-15-20	01-11-21	■ Modify Existing Causeway/Mob Crane/Install In-Stream Northern Causeway to Pier 6 & 7																																																											
B609CWY-1100	Modify Existing Causeway / Install Causeway Souther Portion Pier 2 to Pier 5	30	10-15-21	11-29-21	■ Modify Existing Causeway / Install Causeway Souther Portion Pier 2 to Pier 5																																																											
B609CWY-1200	Temporary (First) Shut Down Boat Traffic	0	10-17-22		◆ Temporary (First) Shut Down Boat Traffic																																																											
B609CWY-1300	Install Temporary Caus eway	5	10-17-22	10-21-22	■ Install Temporary Caus eway																																																											
B609CWY-1400	Demobilize Crane from Pier 6/7	2	10-24-22	10-25-22	■ Demobilize Crane from Pier 6/7																																																											
B609CWY-1500	Grading Abut. B / Pier 6/7 Area / Install Permanent Drainage and Rip Rap	10	10-26-22	11-08-22	■ Grading Abut. B / Pier 6/7 Area / Install Permanent Drainage and Rip Rap																																																											
B609CWY-1600	Remove Causeway Northern Portion	5	11-09-22	11-15-22	■ Remove Causeway Northern Portion																																																											
B609CWY-1700	Remove Temporary Caus eway	5	11-09-22	11-15-22	■ Remove Temporary Caus eway																																																											
B609CWY-1800	Open (First) Shut Down Boat Traffic	0		11-15-22	◆ Open (First) Shut Down Boat Traffic																																																											
B609CWY-1900	Remove Causeway Southern Portion	25	10-16-23	11-17-23	■ Remove Causeway Southern Portion																																																											
B609CWY-2000	Restore Abut. A / Pier 1 Area / Install Permanent Drainage and Rip Rap	5	11-17-23	11-28-23	■ Restore Abut. A / Pier 1 Area / Install Permanent Drainage and Rip Rap																																																											
B609 - SUBSTRUCTURE		342	03-10-21	07-21-22																																																												
B609 - ABUTMENT B		136	09-28-21	04-19-22																																																												
B609SUB-5200	Backfill Temporary Ramp at Abut. B	7	09-28-21	10-06-21	■ Backfill Temporary Ramp at Abut. B																																																											
B609SUB-5300	Drive Abutment B Piles	12	01-10-22	01-25-22	■ Drive Abutment B Piles																																																											
B609SUB-5400	Abutment B MSE Wall	30	01-26-22	03-08-22	■ Abutment B MSE Wall																																																											
B609SUB-5500	FPS Abutment B	25	03-09-22	04-12-22	■ FPS Abutment B																																																											
B609SUB-5600	Backfill Abutment B	5	04-13-22	04-19-22	■ Backfill Abutment B																																																											
B609 - PIER 7		141	03-10-21	09-27-21																																																												
B609SUB-4600	Install SOE Pier 7 / Excavate Pier 7	10	03-10-21	03-23-21	■ Install SOE Pier 7 / Excavate Pier 7																																																											
B609SUB-4700	FPS Pier 7 Footing	7	05-05-21	05-13-21	■ FPS Pier 7 Footing																																																											
B609SUB-4800	FPS Pier 7 Stem Lift 1 of 2	20	05-25-21	06-22-21	■ FPS Pier 7 Stem Lift 1 of 2																																																											
B609SUB-4900	FPS Pier 7 Stem Lift 2 of 2	12	06-23-21	07-09-21	■ FPS Pier 7 Stem Lift 2 of 2																																																											
B609SUB-5000	Remove SOE / Backfill Pier 7 Footing	3	07-12-21	07-14-21	■ Remove SOE / Backfill Pier 7 Footing																																																											
B609SUB-5100	FPS Pier 7 Cap	30	08-16-21	09-27-21	■ FPS Pier 7 Cap																																																											
B609 - PIER 6		161	03-24-21	11-08-21																																																												
B609SUB-4000	Install Cofferdam Pier 6	7	03-24-21	04-01-21	■ Install Cofferdam Pier 6																																																											
B609SUB-4100	FPS Pier 6 Footing	7	05-14-21	05-24-21	■ FPS Pier 6 Footing																																																											
B609SUB-4200	FPS Pier 6 Stem Lift 1 of 2	12	07-15-21	07-30-21	■ FPS Pier 6 Stem Lift 1 of 2																																																											
B609SUB-4300	FPS Pier 6 Stem Lift 2 of 2	12	08-02-21	08-17-21	■ FPS Pier 6 Stem Lift 2 of 2																																																											
B609SUB-4400	Asemble Cap Form	10	08-02-21	08-13-21	■ Asemble Cap Form																																																											
B609SUB-4500	FPS Pier 6 Cap	30	09-28-21	11-08-21	■ FPS Pier 6 Cap																																																											
B609 - PIER 5		68	11-29-21	03-15-22																																																												
B609SUB-3500	Install Cofferdam Pier 5	7	11-29-21	12-09-21	■ Install Cofferdam Pier 5																																																											
B609SUB-3600	FPS Pier 5 Footing	7	12-09-21	12-20-21	■ FPS Pier 5 Footing																																																											
B609SUB-3700	FPS Pier 5 Stem Lift 1 of 2	12	12-20-21	01-14-22	■ FPS Pier 5 Stem Lift 1 of 2																																																											
B609SUB-3800	FPS Pier 5 Stem Lift 2 of 2	12	01-14-22	02-01-22	■ FPS Pier 5 Stem Lift 2 of 2																																																											
B609SUB-3900	FPS Pier 5 Cap	30	02-01-22	03-15-22	■ FPS Pier 5 Cap																																																											
B609 - PIER 4		84	12-20-21	04-26-22																																																												
B609SUB-3000	Install Cofferdam Pier 4	7	12-20-21	01-07-22	■ Install Cofferdam Pier 4																																																											

█ Actual Work
 █ Critical Remaining Work
 Summary
 █ Remaining Work
 ◆ Milestone



Activity ID	Activity Name	Original Duration	Start	Finish	2020												2021												2022												2023												2024											
					A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D			
AREA 3 - WORK FROM RAPPAHANNOCK RIVER BRIDGE TO RTE 17					860	11-16-20	05-01-24	▼ 11-20-20, AREA 3 - GENERAL																																																								
AREA 3 - GENERAL					5	11-16-20	11-20-20	◆ Begin Stage 1 Construction - Area 1																																																								
AR30000-1000	Begin Stage 1 Construction - Area 1	0	11-16-20		▮ Install Initial MOT / Construction Signage																																																											
AR30000-1100	Install Initial MOT / Construction Signage	5	11-16-20	11-20-20																																																												
Area 3 - Zone 1 - I-95 NB GP LANES 4555+00 TO 4606+00 (RTE 17)					855	11-23-20	05-01-24	▼ 02-02-21, Area 3 - Zone 1 - GP Lanes RRC to Rte. 17 - MOT Stage 1A																																																								
Area 3 - Zone 1 - GP Lanes RRC to Rte. 17 - MOT Stage 1A					44	11-23-20	02-02-21	▮ Install Temp MOT Devices - Right Shoulder 95 NB																																																								
AR3Z11A-1000	Install Temp MOT Devices - Right Shoulder 95 NB	3	11-23-20	11-30-20	▮ Install Initial E&S / Perimeter Controls																																																											
AR3Z11A-1100	Install Initial E&S / Perimeter Controls	5	12-01-20	12-07-20	▮ Saw Cut / Excavate for Shoulder Sliver Widening																																																											
AR3Z11A-1200	Saw Cut / Excavate for Shoulder Sliver Widening	12	12-08-20	12-23-20	▮ Grade/Sub-Base Aggregate/Pave Shoulder Sliver Widening/Mill and Pave Rumble Strip																																																											
AR3Z11A-1300	Grade/Sub-Base Aggregate/Pave Shoulder Sliver Widening/Mill and Pave Rumble Strip	15	12-16-20	01-27-21	▮ Re-Stripe 95 NB GP Lanes - Shift to Right																																																											
AR3Z11A-1400	Re-Stripe 95 NB GP Lanes - Shift to Right	4	01-27-21	02-02-21																																																												
Area 3 - Zone 1 - GP Lanes RRC to Rte. 17 - MOT Stage 1B					402	09-15-21	04-28-23	▼ 04-28-23, Area 3 - Zone 1 - GP Lanes RRC to Rte. 17																																																								
AR3Z11B-1000	95 SB RRC Project Substantially Complete on 95 SB Left Shoulder	0	09-15-21*		◆ 95 SB RRC Project Substantially Complete on 95 SB Left Shoulder																																																											
AR3Z11B-1100	Install Temp Barrier / MOT Devices - Left Shoulder I95 NB	3	09-15-21	09-17-21	▮ Install Temp Barrier / MOT Devices - Left Shoulder I95 NB																																																											
AR3Z11B-1200	Install Temporary Construction Entrances from 95 NB	2	09-20-21	09-21-21	▮ Install Temporary Construction Entrances from 95 NB																																																											
AR3Z11B-1300	Install Temp Sediment Basins / Initial E&S / Perimeter Controls by RRC	8	09-22-21	10-01-21	▮ Install Temp Sediment Basins / Initial E&S / Perimeter Controls by RRC																																																											
AR3Z11B-1400	Clear and Grubb NB/SB Median Area	5	10-04-21	10-08-21	▮ Clear and Grubb NB/SB Median Area																																																											
AR3Z11B-1500	Strip Top Soil / Prep Area for Embankment Fill	7	10-11-21	10-19-21	▮ Strip Top Soil / Prep Area for Embankment Fill																																																											
AR3Z11B-1600	Place Embankment Fill 95 NB GP Lanes Abut B to 4579	35	10-20-21	12-10-21	▮ Place Embankment Fill 95 NB GP Lanes Abut B to 4579																																																											
AR3Z11B-1700	Install Deep Culverts / Drainage Pipes	10	11-01-21	11-12-21	▮ Install Deep Culverts / Drainage Pipes																																																											
AR3Z11B-1800	Install Drainage Pipe / Structures - 95 NB GP Lanes Abut B to 4579	10	12-13-21	01-04-22	▮ Install Drainage Pipe / Structures - 95 NB GP Lanes Abut B to 4579																																																											
AR3Z11B-1900	Saw cut / Demo Existing Pavement	7	01-05-22	01-13-22	▮ Saw cut / Demo Existing Pavement																																																											
AR3Z11B-2000	Cut / Fill to Sub-grade - 95 NB GP Lanes Abut. B to 4579	14	01-14-22	02-14-22	▮ Cut / Fill to Sub-grade - 95 NB GP Lanes Abut. B to 4579																																																											
AR3Z11B-2100	Install OH Sign Foundations / ITS Infrastructure	25	12-13-21	01-25-22	▮ Install OH Sign Foundations / ITS Infrastructure																																																											
AR3Z11B-2200	Place Aggregate Sub-base - 95 NB GP Lanes Abut. B to 4579	5	02-16-22	02-25-22	▮ Place Aggregate Sub-base - 95 NB GP Lanes Abut. B to 4579																																																											
AR3Z11B-2300	Install Underdrain	5	02-25-22	03-04-22	▮ Install Underdrain																																																											
AR3Z11B-2400	Pour Median Barrier Footing - 95 NB GP Lanes Abut B to 4579	10	03-04-22	03-18-22	▮ Pour Median Barrier Footing - 95 NB GP Lanes Abut B to 4579																																																											
AR3Z11B-2500	Pavement Section - 95 NB GP Lanes Abut. B to 4579	6	03-18-22	03-28-22	▮ Pavement Section - 95 NB GP Lanes Abut. B to 4579																																																											
AR3Z11B-2600	Pour Barrier Wall - 95 NB GP Lanes Abut. B to 4579	8	03-28-22	04-07-22	▮ Pour Barrier Wall - 95 NB GP Lanes Abut. B to 4579																																																											
AR3Z11B-2700	Finish Grade Ditch Between 95 SB / NB GP Lanes	7	03-30-22	04-08-22	▮ Finish Grade Ditch Between 95 SB / NB GP Lanes																																																											
AR3Z11B-2800	Install Guardrail / Signage 95 SB / NB Median Area	8	04-08-22	04-20-22	▮ Install Guardrail / Signage 95 SB / NB Median Area																																																											
AR3Z11B-2900	Install Temp Barrier/MOT Devices - Left Shoulder I95 NB GP Lanes 4579 to Rte. 17	5	10-04-21	10-13-21	▮ Install Temp Barrier/MOT Devices - Left Shoulder I95 NB GP Lanes 4579 to Rte. 17																																																											
AR3Z11B-3000	Install Construction Entrances from 95 NB Lanes	5	10-14-21	10-20-21	▮ Install Construction Entrances from 95 NB Lanes																																																											
AR3Z11B-3100	Saw Cut / Demo Existing Pavement	5	10-21-21	10-27-21	▮ Saw Cut / Demo Existing Pavement																																																											
AR3Z11B-3200	Cut / Fill to Sub-grade - 95 NB GP 4579 to Rte. 17	14	10-28-21	11-16-21	▮ Cut / Fill to Sub-grade - 95 NB GP 4579 to Rte. 17																																																											
AR3Z11B-3300	Install OH Sign Foundations	10	11-16-21	12-02-21	▮ Install OH Sign Foundations																																																											
AR3Z11B-3400	Place Aggregate Sub-base - 95 NB GP Lanes 4579 to Rte. 17	5	11-17-21	11-23-21	▮ Place Aggregate Sub-base - 95 NB GP Lanes 4579 to Rte. 17																																																											
AR3Z11B-3500	Install Underdrain	5	11-23-21	12-02-21	▮ Install Underdrain																																																											
AR3Z11B-3600	Pour Median Barrier Footing - 95 NB GP Lanes 4579 to Rte. 17	10	12-02-21	12-17-21	▮ Pour Median Barrier Footing - 95 NB GP Lanes 4579 to Rte. 17																																																											
AR3Z11B-3700	Pavement Section - 95 NB GP Lanes 4579 to Rte. 17	6	12-20-21	01-10-22	▮ Pavement Section - 95 NB GP Lanes 4579 to Rte. 17																																																											
AR3Z11B-3800	Pour Barrier Wall - 95 NB GP Lanes 4579 to Rte. 17	8	01-10-22	01-20-22	▮ Pour Barrier Wall - 95 NB GP Lanes 4579 to Rte. 17																																																											
AR3Z11B-3900	Finish Grade Ditch Between 95 SB / NB GP Lanes	7	01-12-22	01-26-22	▮ Finish Grade Ditch Between 95 SB / NB GP Lanes																																																											
AR3Z11B-4000	Install OH Sign Structures / Permanent and Temp. Signage	25	01-26-22	03-01-22	▮ Install OH Sign Structures / Permanent and Temp. Signage																																																											
AR3Z11B-4100	Install Guardrail / Signage 95 SB / NB Median Area	8	01-26-22	02-07-22	▮ Install Guardrail / Signage 95 SB / NB Median Area																																																											
AR3Z11B-4200	Construct Temporary Ramp from GP Lanes to Rte. 17 Exit / CD Lanes	10	04-08-22	04-22-22	▮ Construct Temporary Ramp from GP Lanes to Rte. 17 Exit / CD Lanes																																																											
AR3Z11B-4300	Remove Temp Barrier / Shift 95 NB GP Lanes to New Pavment / RRC Bridge	5	04-21-23	04-28-23	▮ Remove Temp Barrier / Shift 95 NB GP Lanes to New Pavment / RRC Bridge																																																											
Area 3 - Zone 1 - GP Lanes RRC to Rte. 17 - MOT Stage 2B					26	03-26-24	05-01-24	▼ 05-01-24, Area 3																																																								

█ Actual Work
 █ Critical Remaining Work
 ▼ Summary
█ Remaining Work
 ◆ Milestone



Activity ID	Activity Name	Original Duration	Start	Finish	2020												2021												2022												2023												2024											
					A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D			
Area 4 - Zone 3A- Rte. 17 - MOT Stage 2A					96	05-16-23	10-02-23																																																	▼	10-02-23; Area 4 - Zone 3A- Rte. 17							
AR4Z3A2A-1000	Install Temp. Barrier / MOT Devices - Rte. 17 EB/WB Inside Shoulders	5	05-16-23	05-23-23																																																	█	Install Temp. Barrier / MOT Devices - Rte. 17										
AR4Z3A2A-1100	Install Temporary Construction Entrances	3	05-23-23	05-26-23																																																	█	Install Temporary Construction Entrances										
AR4Z3A2A-1200	Install Initial E&S Controls	4	05-26-23	06-02-23																																																	█	Install Initial E&S Controls										
AR4Z3A2A-1300	Saw Cut / Demo Pvm. / Initial Cut / Fill / Earthwork - Rte. 17 Median	18	06-02-23	06-28-23																																																	█	Saw Cut / Demo Pvm. / Initial Cut / Fill / Ea										
AR4Z3A2A-1400	Install Drainage Pipe / Structures	10	06-28-23	07-13-23																																																	█	Install Drainage Pipe / Structures										
AR4Z3A2A-1500	Fill / Grade to Sub-grade - Rte. 17 Median	5	07-14-23	07-20-23																																																	█	Fill / Grade to Sub-grade - Rte: 17 Media										
AR4Z3A2A-1600	Modify Signal - Rte. 17 / Sanford Dr.	30	07-20-23	08-31-23																																																	█	Modify Signal - Rte. 17 / Sanford Dr.										
AR4Z3A2A-1700	Place Sub-grade Aggregate - Rte. 17 Mainline Outside Widening	5	07-21-23	07-27-23																																																	█	Place Sub-grade Aggregate - Rte. 17:Ma										
AR4Z3A2A-1800	Install Underdrain	3	07-27-23	08-01-23																																																	█	Install Underdrain										
AR4Z3A2A-1900	Pour Concrete Median / Barrier Walls	15	08-01-23	08-22-23																																																	█	Pour Concrete Median / Barrier Walls										
AR4Z3A2A-2000	Pavement Section - Rte. 17 Mainline Outside Widening	4	08-23-23	08-28-23																																																	█	Pavement Section - Rte. 17 Mainline O										
AR4Z3A2A-2100	Install Permanent Signage	12	08-28-23	09-14-23																																																	█	Install Permanent Signage										
AR4Z3A2A-2200	Install OH Sign Structure	10	08-28-23	09-12-23																																																	█	Install OH Sign Structure										
AR4Z3A2A-2300	Install Guardrail	7	09-14-23	09-25-23																																																	█	Install Guardrail										
AR4Z3A2A-2400	Shift Traffic Rte. 17 EB/WB Mainline to Final Configuration	5	09-25-23	10-02-23																																																	█	Shift Traffic Rte. 17 EB/WB Mainlin										
AR4Z3A2A-2500	Section Ready for Mill and Overlay / Final Pavement & Striping	0		10-02-23																																																	◆	Section Ready for Mill and Overlay										
Area 4 - Zone 3A - Rte. 17 - MOT Stage 2B					40	10-24-23	12-21-23																																																	▼	12-21-23; Area 4 - Zone 3A -							
AR4Z3A2B-1000	Remove Temp Barrier / MOT Devices	3	10-24-23	10-27-23																																																	█	Remove Temp Barrier / MOT De										
AR4Z3A2B-1100	Final Mill and Overlay / Permanent Striping Rte. 17 Mainline	20	10-27-23	11-28-23																																																	█	Final Mill and Overlay / Perma										
AR4Z3A2B-1200	Finish Grade Slopes / Ditches	7	11-29-23	12-11-23																																																	█	Finish Grade Slopes / Diche										
AR4Z3A2B-1300	Install Guardrail / Signage Rte. 17 Mainline	8	12-11-23	12-21-23																																																	█	Install Guardrail / Signage R										
AR4Z3A2B-1400	Section Complete	0		12-21-23																																																	◆	Section Complete										
Area 4 - LOOP D					57	04-15-22	07-07-22																																																	▼	07-07-22; Area 4 - LOOP D							
Area 4 - Loop D - MOT Stage 1B					46	04-15-22	06-21-22																																																	▼	06-21-22; Area 4 - Loop D - MOT Stage 1B							
AR4LPD1B-1000	Install Temp Barrier / MOT Devices -Temp. Shift Loop	3	04-15-22	04-20-22																																																	█	Install Temp Barrier / MOT Devices -Temp. Shift Loop										
AR4LPD1B-1100	Saw Cut / Demo Existing Pavement	2	04-20-22	04-22-22																																																	█	Saw Cut / Demo Existing Pavement										
AR4LPD1B-1200	Reconstruct Ramp Shoulder / Mainline Pavement	10	04-22-22	05-06-22																																																	█	Reconstruct Ramp Shoulder / Mainline Pavement										
AR4LPD1B-1300	Rough Grade Slopes / Ditches	5	05-06-22	05-13-22																																																	█	Rough Grade Slopes / Ditches										
AR4LPD1B-1400	Temp. Shift Ramp to New Pavement	2	05-13-22	05-17-22																																																	█	Temp. Shift Ramp to New Pavement										
AR4LPD1B-1500	Demo Existing Pavement	3	05-17-22	05-20-22																																																	█	Demo Existing Pavement										
AR4LPD1B-1600	Reconstruct Ramp Should / Mainline Pavement	10	05-20-22	06-06-22																																																	█	Reconstruct Ramp Should / Mainline Pavement										
AR4LPD1B-1700	Rough Grade Slopes / Ditches	5	06-06-22	06-13-22																																																	█	Rough Grade Slopes / Ditches										
AR4LPD1B-1800	Install Guardrail / Signage	4	06-13-22	06-17-22																																																	█	Install Guardrail / Signage										
AR4LPD1B-1900	Shift Ramp to permanent configuration	2	06-17-22	06-21-22																																																	█	Shift Ramp to permanent configuration										
AR4LPD1B-2000	Ramp Ready for Final Surface Pavement and Striping	0		06-21-22																																																	◆	Ramp Ready for Final Surface Pavement and Striping										
Area 4 - Loop D - MOT Stage 1C					11	06-21-22	07-07-22																																																	▼	07-07-22; Area 4 - Loop D - MOT Stage 1C							
AR4LPD1C-1000	Remove Temp Barrier / MOT Devices	1	06-21-22	06-22-22																																																	█	Remove Temp Barrier / MOT Devices										
AR4LPD1C-1100	Final Mill and Overlay / Permanent Striping Loop D	2	06-22-22	06-24-22																																																	█	Final Mill and Overlay / Permanent Striping Loop D										
AR4LPD1C-1200	Finish Grade Slopes / Ditches	5	06-27-22	07-01-22																																																	█	Finish Grade Slopes / Ditches										
AR4LPD1C-1300	Install Guardrail / Signage Loop D	3	07-01-22	07-07-22																																																	█	Install Guardrail / Signage Loop D										
AR4LPD1C-1400	Section Complete	0		07-07-22																																																	◆	Section Complete										
Area 4 - Zone 2 - RAMP B - SB CD LANES TO NB RTE 17					412	10-06-21	06-05-23																																																	▼	06-05-23; Area 4 - Zone 2 - RAMP B - SB C							
AR40000-3000	95 SB RRC Project Remove Temporary Signal / Restore Ramp B / Rte. 17 Area	0	10-06-21*																																																		◆	95 SB RRC Project Remove Temporary Signal / Restore Ramp B / Rte. 17 Area										
Area 4 - Zone 2 - Ramp B - MOT Stage 2A					94	07-07-22	11-17-22																																																	▼	11-17-22; Area 4 - Zone 2 - Ramp B - MOT Stage 2A							
AR4Z22A-1000	Install Temp. Barrier / MOT Devices - Ramp B Left Shoulder	5	07-07-22	07-14-22																																																	█	Install Temp. Barrier / MOT Devices - Ramp B Left Shoulder										
AR4Z22A-1100	Install Temporary Construction Entrances	3	07-14-22	07-19-22																																																	█	Install Temporary Construction Entrances										

█ Actual Work
 █ Critical Remaining Work
 ▼ Summary
█ Remaining Work
 ◆ Milestone



I-95 NORTHBOUND RAPPAHANNOCK RIVER CROSSING		4.6.1 CRITICAL PATH			FEBRUARY 25, 2020																																																								
Activity ID	Activity Name	Original Duration	Start	Finish	2020 2021 2022 2023 2024																																																								
					A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
I-95 NB RRC - Tech Proposal Schedule Final					1021	05-28-20	06-30-24	06-30-24, I-9																																																					
CONTRACT: C00105510DB106 I-95 NB RRC					1021	05-28-20	06-30-24	06-30-24, CC																																																					
SCHEDULE MILESTONES					1021	05-28-20	06-30-24	06-30-24, SC																																																					
I-95 NB RRC MILESTONES					1021	05-28-20	06-30-24	06-30-24, I-9																																																					
MS00000-1400	Notice to Proceed (05/28/2020)	0	05-28-20*		◆ Notice to Proceed (05/28/2020)																																																								
MS00000-1900	Complete RRC Bridge Plans	0	05-05-21		◆ Complete RRC Bridge Plans																																																								
MS00000-2500	Open Traffic to New 95 NB GP Lanes	0	04-28-23		◆ Open Traffic to New 95 NB GP Lanes																																																								
MS00000-2600	Open Permanent Rte. 3 Ramp C / 95 NB CD Lanes To Rte. 17	0	11-22-23		◆ Open Permanent Rte. 3 Ramp																																																								
MS00000-2700	Project Ready to Start Final Inspections / Punchlist	0	05-01-24		◆ Project Ready to S																																																								
MS00000-2800	Final Inspections / Complete Punchlist	60	05-01-24	06-30-24	Final Inspect																																																								
MS00000-2900	Administrative End of Contract	0	06-30-24		◆ Administrativ																																																								
MS00000-3000	Final Completion Date	0	06-30-24*		◆ Final Comple																																																								
ADJACENT PROJECT KEY DATES / MILESTONES					0																																																								
DESIGN PHASE					234	05-28-20	05-05-21	05-05-21, DESIGN PHASE																																																					
PRELIMINARY DESIGN WORK					40	05-28-20	07-23-20	07-23-20, PRELIMINARY DESIGN WORK																																																					
DESIGN QA/QC PLAN					0																																																								
SCHEDULE DEVELOPMENT and UPDATES					0																																																								
SURVEY and MAPPING					40	05-28-20	07-23-20	07-23-20, SURVEY and MAPPING																																																					
DES0000-2600	Obtain Right of Entry	30	05-28-20	07-09-20	Obtain Right of Entry																																																								
DES0000-2700	Perform Property Research / Field Surveys	40	05-28-20	07-23-20	Perform Property Research / Field Surveys																																																								
GEOTECHNICAL INVESTIGATIONS and REPORTING					20	05-28-20	06-24-20	06-24-20, GEOTECHNICAL INVESTIGATIONS and REPORTING																																																					
ROADWAY GER					0																																																								
BRIDGE GER					20	05-28-20	06-24-20	06-24-20, BRIDGE GER																																																					
DES0000-3900	Prepare Bridge Boring Location Plans	20	05-28-20	06-24-20	Prepare Bridge Boring Location Plans																																																								
UTILITY DESIGNATIONS and TEST-PITS					0																																																								
EARLY START PACKAGE- INTERIM MILESTONE AREA/FREDEX OVERLAP / STAGE 1A					0																																																								
ROADWAY / ROW DESIGN					0																																																								
BRIDGE DESIGN					234	05-28-20	05-05-21	05-05-21, BRIDGE DESIGN																																																					
BRIDGE B609 RRC - EARLY PACKAGE FOR SUBSTRUCTURE WORK					164	05-28-20	01-27-21	01-27-21, BRIDGE B609 RRC - EARLY PACKAGE FOR SUBSTRUCTURE WORK																																																					
DES3000-2700	Obtain Access to Causeway for Conformatory Borings	20	05-28-20	06-24-20	Obtain Access to Causeway for Conformatory Borings																																																								
DES3000-2900	Perform Conformatory Borings / Report for Abut A to Pier 5	20	06-25-20	07-23-20	Perform Conformatory Borings / Report for Abut A to Pier 5																																																								
DES3000-3000	Prepare Bridge Substructure Plans (1st Submission)	30	07-10-20	08-20-20	Prepare Bridge Substructure Plans (1st Submission)																																																								
DES3000-3100	Submit Preliminary Bride Substructure Design	0	08-20-20		◆ Submit Preliminary Bride Substructure Design																																																								
DES3000-3200	VDOT/FHWA Review Preliminary Submission Bridge Substructure	21	08-21-20	09-10-20	VDOT/FHWA Review Preliminary Submission Bridge Substructure																																																								
DES3000-3300	Comment Response Preliminary Submission Bridge Substructure/Prepare 1st Submission	25	09-11-20	10-15-20	Comment Response Preliminary Submission Bridge Substructure/Prepare 1st Submission																																																								
DES3000-3400	Design QA/QC (1st Submission)	8	10-16-20	10-23-20	Design QA/QC (1st Submission)																																																								
DES3000-3500	Submit Bridge Substructure Plans (1st Submission)	0	10-26-20		◆ Submit Bridge Substructure Plans (1st Submission)																																																								
DES3000-3600	VDOT/FHWA Review/Comment Bridge Substructure Plans (1st Submission)	21	10-26-20	11-15-20	VDOT/FHWA Review/Comment Bridge Substructure Plans (1st Submission)																																																								
DES3000-3700	Prepare Final Bridge Substructure Plans	20	11-16-20	12-15-20	Prepare Final Bridge Substructure Plans																																																								
DES3000-3800	Design QA/QC (Final Submission)	5	12-16-20	12-22-20	Design QA/QC (Final Submission)																																																								
DES3000-3900	Submit Final Bridge Substructure Plans	0	12-23-20		◆ Submit Final Bridge Substructure Plans																																																								
DES3000-4000	VDOT/FHWA Review/Comment Bridge Substructure Plans (Final Submission)	21	12-23-20	01-12-21	VDOT/FHWA Review/Comment Bridge Substructure Plans (Final Submission)																																																								
DES3000-4100	Final Comment Resolution Bridge Substructure Plans	10	01-13-21	01-26-21	Final Comment Resolution Bridge Substructure Plans																																																								
DES3000-4200	RFC Early Substructure Bridge Plans Issued for Construction	0	01-27-21		◆ RFC Early Substructure Bridge Plans Issued for Construction																																																								
BRIDGE B609 RAPPANNOCK RIVER CROSSING					194	07-24-20	05-05-21	05-05-21, BRIDGE B609 RAPPANNOCK RIVER CROSSING																																																					
DES3000-1000	Prepare Stage I Bridge Reports/TS&Ls	40	07-24-20	09-18-20	Prepare Stage I Bridge Reports/TS&Ls																																																								
DES3000-1100	Submit Preliminary Bridge Design (Stage 1)	0	09-21-20		◆ Submit Preliminary Bridge Design (Stage 1)																																																								
DES3000-1200	VDOT/FHWA Review/Comment Bridge Preliminary Design	21	09-22-20	10-12-20	VDOT/FHWA Review/Comment Bridge Preliminary Design																																																								

█ Actual Work
 █ Critical Remaining Work
 Summary
█ Remaining Work
 ◆ Milestone



