VDOT
Virginia Department of Transportation

ELECTRONIC COPY
FEBRUARY 25, 2020

I-95 NORTHBOUND

RAPPAHANNOCK RIVER CROSSING

TECHNICAL PROPOSAL - VOLUME I

A DESIGN-BUILD PROJECT

FROM 1.26 MILES SOUTH OF ROUTE 3 TO
0.01 MILES SOUTH OF ENON ROAD

STATE PROJECT No. 0095-111-270 | FEDERAL PROJECT No. NHP-095-2(545) | CONTRACT ID No. C00105510DB106

BRANCH CIVIL® | FLATIRON | BRANCH - FLATIRON JOINT VENTURE | *in association with* STV 100 Years

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	Behind cover
Acknowledgement of RFP, Revisions, and/or Addenda	Attachment 3.6 (Form C-78-RFP)	Sections 3.6, 4.0.1.1	no	Located in appendix
Letter of Submittal	NA	Sections 4.1		Page 1
Letter of Submittal on Offeror's letterhead	NA	Section 4.1.1	yes	1
Identify the full legal name and address of Offeror	NA	Section 4.1.1	yes	1
Authorized representative's original signature	NA	Section 4.1.1	yes	1
Declaration of intent	NA	Section 4.1.2	yes	1
120 day declaration	NA	Section 4.1.3	yes	1
Point of Contact information	NA	Section 4.1.4	yes	1
Principal Officer information	NA	Section 4.1.5	yes	1
Interim Milestone and Final Completion Date(s)	NA	Section 4.1.6	yes	1
Any Unique Milestone dates introduced by the Offeror	NA	Section 4.1.7	yes	1
Proposal Payment Agreement or Waiver of Proposal Payment	Attachment 9.3.1 or 9.3.2	Section 4.1.8	no	Located in appendix
Certification Regarding Debarment Forms	Attachment 11.8.6(a) Attachment 11.8.6(b)	Section 4.1.9	no	Located in appendix
Commitment to achieving a Twelve (12%) DBE	NA	Section 4.1.10	yes	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	2
Organizational chart with any updates since the SOQ submittal clearly identified	NA	Section 4.2.2	yes	3
Revised narrative when organizational chart includes updates since the SOQ submittal	NA	Section 4.2.2	yes	2
Design Concept	NA	Section 4.3		Pages 4-25
Conceptual Roadway Plans and description	NA	Section 4.3.1.1	yes	Pages 5-14, plans located in Vol II
Conceptual Structural Plans and description	NA	Section 4.3.1.2	yes	Pages14-25, plans located in Vol II
Project Approach	NA	Section 4.4		Pages 26-38
Environmental Management	NA	Section 4.4.1	yes	Pages 28-32
Utilities	NA	Section 4.4.2	yes	Pages 32-34
Geotechnical	NA	Section 4.4.3	yes	Pages 35-38
Quality Assurance/ Quality Control (QA/QC) (as an appendix to Vol. I)	NA	Section 4.4.4	no	Located in 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		Pages 39-58
Sequence of Construction	NA	Section 4.5.1	yes	Pages 39-52
Transportation Management Plan	NA	Section 4.5.2	yes	Pages 52-58
Proposal Schedule	NA	Section 4.~~7~~6		Pages S1-S7
Proposal Schedule	NA	Section 4.~~7~~6	no	Located in Vol II
Proposal Schedule Narrative	NA	Section 4.~~7~~6	no	Pages S1-S7
Proposal Schedule in electronic format (CD-ROM)	NA	Section 4.~~7~~6	no	CD envelope

4.1 LETTER OF SUBMITTAL

February 25, 2020

BRANCH - FLATIRON JOINT VENTURE
442 Rutherford Avenue, NE, Roanoke, VA 24016
P. (540) 982-1678 | F. (540) 982-4217

Suril R. Shah, P.E., DBIA (APD Division)
Commonwealth of Virginia
Department of Transportation (VDOT)
Central Office Mail Center | Loading Dock Entrance
1401 East Broad Street
Richmond, VA 23219

Reference: Technical Proposal | I-95 Northbound Rappahannock River Crossing State Project No.: 0095-111-270 | Federal Project No.: NHP-095-2(545) | Contract ID No.: C00105510DB106

Dear Mr. Shah:

A solid partnership will be fundamental to the success of the I-95 Northbound Rappahannock River Crossing Design-Build (D-B) project (I-95 NB RRC project). This complex endeavor demands a D-B team that seamlessly collaborates both internally and with the Virginia Department of Transportation (VDOT). The **Branch-Flatiron Joint Venture (Branch-Flatiron)** is that team. We have thoughtfully assembled our team to include firms who have extensive experience working on similar projects. **Branch-Flatiron**, as the Offeror, has partnered with Lead Designer, **STV Incorporated dba STV Group Incorporated (STV)**, to furnish a product that meets or exceeds design and construction expectations. The Branch-Flatiron value proposition provides VDOT with the following:

Required Statements:

4.1.1 Full legal name and address of the Offeror:
Branch-Flatiron Joint Venture | 442 Rutherford Avenue, NE, Roanoke, VA 24016

4.1.2. - 4.1.3 Declaration of Offeror's Intent:
Branch-Flatiron, if selected, will enter into a contract with VDOT for the I-95 NB RRC project, in accordance with the terms of the RFP and all subsequent addenda. Further, the offer represented by our technical and price proposals will remain in full force and effect for 120 days after the date that the price proposal is submitted to VDOT.

4.1.5 Point of Contact for the Offeror:
Donald E. Bryson, Jr., Pursuit Manager
Address: 442 Rutherford Avenue, NE, Roanoke, VA 24016
Telephone: (704) 572-1684 | Fax: (540) 982-4217 | Email: donald.bryson@branchcivil.com

4.1.5 Principal Officer of the Offeror:
Jason Hoyle, Vice President, D-B/Major Projects
Address: 442 Rutherford Avenue, NE, Roanoke, VA 24016
Telephone: (540) 982-1678 | Fax: (540) 982-4217 | Email: jason.hoyle@branchcivil.com

4.1.6 Final Completion Date: Branch-Flatiron commits to a Final Completion Date of August 30, 2024. and commits to an Interim Milestone Date of October 29, 2021 for the FredEx Overlap Area per the RFP requirements.

4.1.7 Unique Milestone Dates: We are not including any unique milestone dates.

4.1.8 Proposal Payment Agreement: The executed Proposal Payment Agreement can be found in the Appendices of this proposal.

4.1.9 Certification Regarding Debarment Forms: The Certification Regarding Debarment Forms are included in Appendix B of this technical proposal.

4.1.10 DBE Participation Goal: Branch-Flatiron is committed to achieving the 12% DBE participation goal for the entire value of the contract.

Our team acknowledges receipt of Addendum #1 dated October 16, 2019, Addendum #2 dated November 8, 2019, Addendum #3 dated November 22, 2019, Addendum #4 dated December 20 2019, Addendum #5 dated January 17, 2020, and Addendum #6 dated February 6, 2020 respectively, and has included Form C-78 in Appendix A of our technical proposal. Branch-Flatiron is committed to delivering a safe and successful quality project to VDOT and the traveling public on-time and on-budget.

Sincerely,

Branch-Flatiron Joint Venture

Donald E. Bryson, Jr., Pursuit Manager

4.2 OFFEROR'S QUALIFICATIONS

4.2 OFFEROR'S QUALIFICATIONS

The fully integrated Branch-Flatiron team is comprised of leading bridge/roadway designers and D-B contractors who understand the project's challenges and complexities, as well as VDOT's procedures and expectations. The members of our project team have solved similar challenges on past projects and understand the importance of minimizing disruptions to local communities and the traveling public, while maximizing safety and the value of every dollar invested.

4.2.1 QUALIFICATIONS OF KEY PERSONNEL

Since the submission of our Statement of Qualifications (SOQ) dated July 2, 2019, the Branch-Flatiron team has made the following VDOT-approved changes. Evidence of VDOT's approval was received and the statement can be found in Appendices of this proposal.

- The transportation public relations division of Seventh Point, Inc. has separated from its parent company and created a new company named On Point Transportation, PR LLC (OPT). All transportation staff and services have transitioned to this new entity and will continue to provide communications, public relations, and creative services for this project.
- Mike Johnson, Lead QC Bridge Inspector and non-key personnel, is no longer employed by McDonough Bolyard Peck, Inc. (MBP). He has been replaced with Dave Williams (MBP).
- Mark Sellers, Lead Utility Coordination Manager and non-key personnel, is no longer employed by Flatiron. He has been replaced with Ismail Ahmed (Flatiron).
- Carolyn Aliff (NXL), non-key personnel, was submitted on the original organizational chart but has been moved from the Lead QA Roadway position to Lead QA Bridge position.
- Tim Brown (NXL), non-key personnel, was submitted on the original organizational chart but has been moved from the Lead QA Bridge position to Lead QA Roadway position.

The Branch-Flatiron team confirms that all other information presented in the SOQ remains true and accurate. The team proposed by Branch-Flatiron will remain intact for the duration of the contract.

4.2.2 ORGANIZATIONAL CHART

Under the leadership of our Design-Build Project Manager (DBPM), M. Jeff Humphreys, Jr., DBIA, the Branch-Flatiron team is structured to manage and deliver the design and construction of this project. Jeff is ultimately responsible for the successful delivery of the project and, as the single point of contact, responsible for all design and construction activities. Our organizational chart identifies key personnel and major functions to be performed. Our updated organizational chart, including all VDOT-approved changes, is included on the following page.

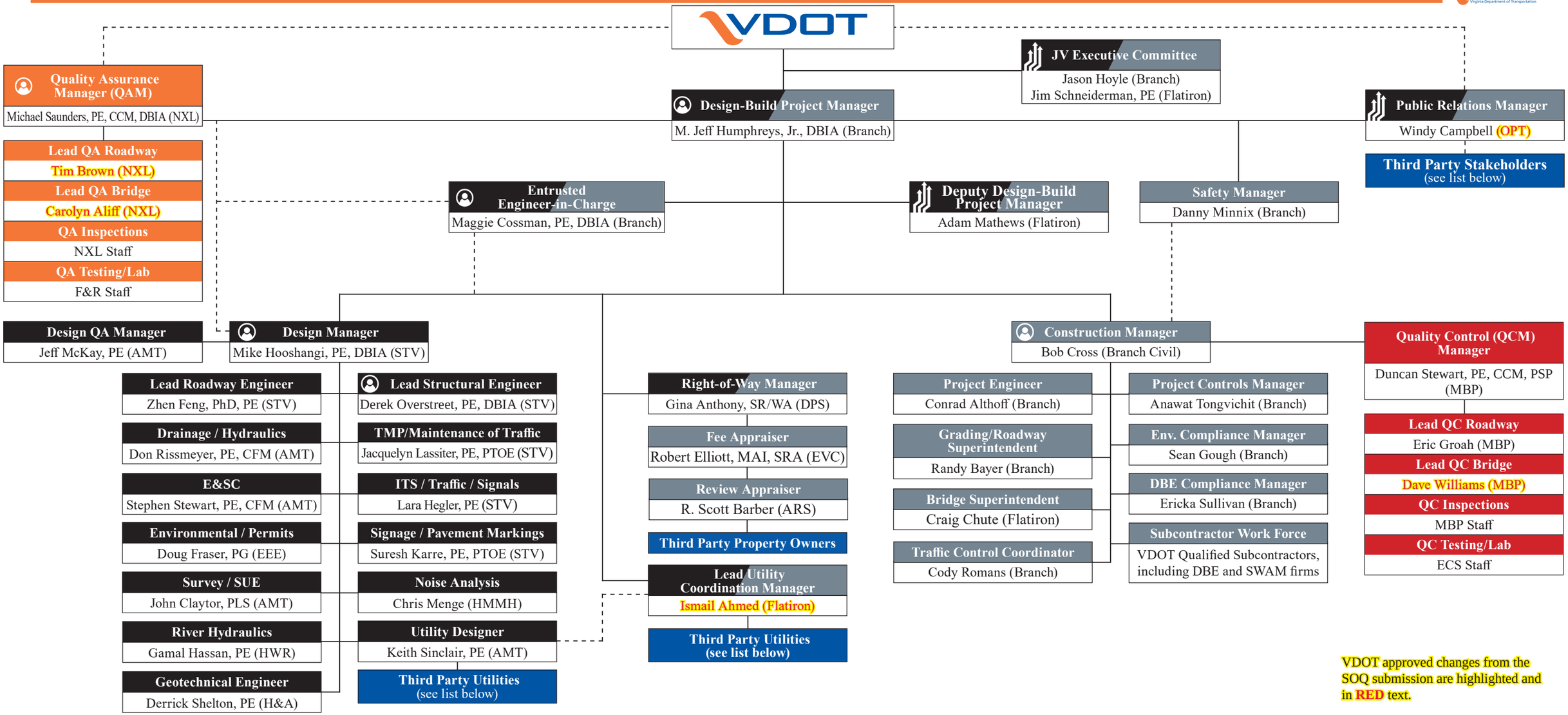
Benefits of the Branch-Flatiron Team

QUALIFICATIONS HIGHLIGHTS:

- Branch has completed more than $600 million worth of D-B projects. Branch recently completed construction of the nearby I-95 Southern Terminus Extension (STE) project and the I-95 Safety Improvements at Route 3 that will connect to this project.
- Flatiron has completed more than 33 D-B projects for a combined value of more than $6.5 billion, Flatiron has experience with incrementally launching steel girders on three prior projects, with the most recent launching operation occurring in November of 2019.
- STV's award winning D-B resume includes 39 projects, several of which were for VDOT, including the I-581/ Valley View Boulevard Interchange Phase II D-B project. A number of these projects were performed with Branch and Flatiron.

BENEFITS FOR VDOT:

- Our team has extensive VDOT experience and a firm knowledge of the I-95 Corridor, which will result in time and cost savings and a safe project for the traveling public.
- Our team will erect the steel girders for the bridge carrying the I-95 NB GP Lanes over the Rappahnnock River by incrementally launching them into position. This innovative construction method provides the best solution for constructing the proposed bridge in the constrained space while limiting impacts to the traveling public.
- Branch-Flatiron, being the only shortlisted JV, brings the experience, resources, and breadth of two established, successful D-B contractors. Our JV benefits VDOT by combining the resources of two accomplished D-B contractors with proven experience in Virginia – providing the resourses more than 4,000 national employees.



TEAM MEMBERS

Branch-Flatiron | STV
A. Morton Thomas and Associates, Inc. (AMT)
Appraisal Review Specialists, LLC (ARS)
Diversified Property Services, Inc. (DPS)
ECS Mid-Atlantic, LLC (ECS)
EEE Consulting, Inc. (EEE)
Elliott Valuation & Consulting Services, LLC (EVC)
Froehling & Robertson (F&R)
Haley & Aldrich, Inc. (H&A)
Harris Miller Miller & Hanson Inc. (HMMH)
Hassan Water Resources, PLC (HWR)
McDonough Bolyard Peck, Inc. (MBP)
NXL, a Division of Century Engineering, Inc. (NXL)
On Point Transportation PR LLC (OPT)

BRANCH CIVIL | FLATIRON | BRANCH - FLATIRON JOINT VENTURE | *in association with* STV 100 Years

Third Party Stakeholders

VDOT Transportation Ops
Stafford/Spotsylvania Counties
Fredericksburg MPO
Transurban
95 Express Lanes LLC
Friends of Rappahannock
Virginia Railway Express
Stafford County EMS
City of Fredericksburg EMS
Local Businesses
Local Schools
Local Residents
Parks and Recreation Departments

Adjacent Projects

I-95 Southbound CD Lanes Rappahannock River Crossing
I-95 Express Lanes Fredericksburg Extension (FredEx)

Construction Design Support

Technical Services Group, Construction Engineering Group

Traffic Management Task Force

Branch-Flatiron, STV, VDOT, and Third Party Stakeholders

Third Party Utilities

Dominion VA Power, SummitIG, Comcast, Verizon, Columbia Gas, City of Fredericksburg, Stafford County

VDOT approved changes from the SOQ submission are highlighted and in RED text.

Combined Resources
Design
Construction
3rd Parties
Quality Assurance (QA)
Quality Control (QC)

Key Staff
Value-Added Staff
Direct Lines of Reporting
Lines of Communication

4.3 DESIGN CONCEPT

4.3 DESIGN CONCEPT

The Branch-Flatiron team developed our design concept with an important goal in mind — honor VDOT's RFP requirements by **avoiding surprises to the public** and **minimizing or eliminating impacts to ongoing adjacent projects.** We took a holistic approach to developing the design for the I-95 NB RRC project by integrating the ongoing I-95 SB RRC and FredEx projects. Our design accommodates a future fourth I-95 NB lane between Exit 126 and the slip ramp from I-95 NB to the I-95 NB CD lanes. The key features and benefits of our approach are presented in **Exhibit 4.3-1.**

This project is located in a heavily constrained corridor with high traffic volumes with much of the construction occurring within the median, adding to the complexity. Accordingly, we placed significant emphasis on designing Maintenance of Traffic (MOT) plans to provide a safe work zone for construction personnel and the traveling public. Our plans minimize traffic disruptions and improve the effectiveness of traffic operations during construction.

Exhibit 4.3-1 / Features and Benefits of Our Design Concept

Holistic design integrated with the I-95 SB RRC and FredEx project improvements.	*Enhances safety along the corridor and decreases future inspection and maintenance requirements*
Our design maintains the geometric alignments defined in the RFP.	*By not increasing the project footprint we avoid risk due to the associated ROW, utility, and environmental implications.*
A refined roadway profile.	*Optimizes the limits of mill and overlay and new pavement construction and simplifies the MOT phasing while enhancing safety.*
Reduced the required height of Retaining Wall No. 02 supporting the I-95 NB GP lanes by nearly 50% compared to the RFP design concept.	*Reduces VDOT's future maintenance responsibilities for this 2,800' long retaining wall.*
The bridge carrying the I-95 NB GP Lanes over the Rappahannock River is designed to meet or exceed both the RFP requirements and erection method demands.	*Provides an innovative, practical, and safe erection method for the limited space between the existing structures while minimizing the impact on the I-95 traveling public.*
Use of durable materials for the bridge design.	*Reduces future inspection and maintenance requirements.*
Our MOT plan limited the number of lane shifts by providing temporary alignments and pavement to construct most of the proposed roadway behind a concrete barrier.	*Enhances safety for drivers by reducing confusion, creating a safer work zone for the traveling public and construction workers.*
The resuse and modification of the existing causeway.	*Optimizes construction operations, allows for continued recreational use of the river, and minimizes environmental impacts.*
Optimized design of the bridge carrying the I-95 NB GP Lanes over the Rappahannock River by using only two piers in the river.	*Minimizes environmental impacts and reduces the potential for debris build-up. Our pier layout is aligned with the new I-95 SB RRC Bridge, which allows for all the bridge piers to align should the existing bridges be replaced.*
Used a soldier pile retaining wall system for Retaining Wall No. 01 in areas where existing noise barrier panels would have needed to be removed for construction along Route 3 Ramp C.	*Uses a top-down construction method to eliminate the need to temporarily remove the existing noise barrier panels and exposing residents to highway and construction noise.*

4.3.1 CONCEPTUAL ROADWAY PLANS

Our Conceptual Roadway Plans meet or exceed the requirements of VDOT's RFP. The design concept for the roadway, including stormwater management facilities, will be contained within the right-of-way (ROW) and Limited Access limits identified in the VDOT RFP Conceptual Plans. **Our Conceptual Roadway Plans require no additional design exceptions and use only Design Waivers No. 1 and No. 2 as identified in the RFP.**

PROJECT LIMITS AND SCOPE

The proposed I-95 NB RRC project is located in the City of Fredericksburg and Stafford County, VA and extends from approximately 0.97 miles south of Route 3 to 0.01 miles south of Enon Road. The project includes the creation of a I-95 NB Collector-Distributor (CD) lane system through Exit 133. Features of the base scope include:

- The construction of Noise Barrier C located south of Route 3.
- The extension of the entrance ramp from Route 3 to the proposed I-95 NB CD lane system.
- The construction of Noise Barrier FH located north of Fall Hill Avenue.
- The addition of three I-95 NB General Purpose (GP) lanes parallel to the existing I-95 NB lanes and the conversion of the existing I-95 NB lanes to a CD lane system.
- The construction of a fourth bridge to carry the I-95 NB GP Lanes over the Rappahannock River.
- The creation of two new access ramps from the I-95 NB GP lanes to the I-95 NB CD lanes and from the I-95 NB CD lanes to the future I-95 Express Lanes.
- Modifications to the existing I-95/Route 17 interchange to reduce congestion and improve safety within the corridor.

Options to construct a I-95 NB auxiliary lane to Exit 136 (Option 1), a complete replacement of the existing bridge carrying the I-95 NB CD Lanes over Route 17 (Option 2), and the construction of a sidewalk connection through the I-95/Route 17 Interchange (Option 3).

Design Options

Our conceptual plans include provisions for incorporating the three RFP required options:

- Option 1 includes the addition of a fourth (auxiliary) lane from the northern tie-in of the I-95 NB CD lane system to the existing I-95 NB exit to Centreport Parkway (Exit 136).
- Option 2 is for a complete replacement of the existing bridge carrying the I-95 NB CD Lanes over Route 17.
- Option 3, which is contingent to Option 2, provides pedestrian improvements .within the I-95/Route 17 Interchange.

There are two major adjacent corridor improvement projects currently under construction, the I-95 SB RRC and FredEx projects, that will require consistent coordination during design and construction. Both adjacent projects were taken into consideration when developing our design. Our Conceptual Roadway Plans, shown in Volume II, Tab 4.3.1, depicts the proposed design elements required for a complete corridor-wide product. In addition, our design does not preclude the future fourth lane widening on I-95 NB between Exit 126 and the slip ramp from the I-95 NB GP lanes to the I-95 NB CD lanes.

A. GENERAL GEOMETRY

In Volume II, Tab 4.3.1, we have included a summary of the key design criteria, including the major geometric elements. **These geometric elements, along with other roadway design elements in our Conceptual Roadway Plans meet or exceed the specified RFP requirements.**

The I-95 NB RRC project includes the realignment/repurposing of existing I-95 NB, including the creation of the new CD lanes and ramp modifications. The general geometry in the Conceptual Roadway Plans, including horizontal curve data and associated design speeds and the number and width of lanes and shoulders, is in accordance with the RFP.

The existing portions of I-95 NB are classified as a Rural Principal Arterial (Interstate) and use VDOT Geometric Design Standard GS-1, with a minimum design speed of 75 MPH.

The proposed I-95 GP and I-95 NB CD are classified as an Interstate and use VDOT Geometric Design Standard GS-INT, with rolling terrain and a minimum design speed ranging from 70 (for CD) to 75 MPH (for GP). The typical section varies at transition points between the GP and CD lanes, but, in general, the typical section of the GP lanes will include three 12' wide travel lanes with 10' or 12' paved shoulders.

The interchange ramps are designed per VDOT Geometric Design Standard GS-R with a rolling terrain and minimum design speeds ranging from 25 to 60 MPH, except the slip ramp from I-95 NB to NB CD which follows VDOT Geometric Design Standards GS-INT, with a rolling terrain for the design speed of 70 MPH. Route 17 (Warrenton Road) is classified as Urban Other Principal Arterial and uses VDOT geometric standard GS-5 with a rolling terrain and a minimum design speed of 45 MPH.

In Volume II, Tab 4.3.1, we have included a summary of the key design criteria, including the major geometric elements. **These geometric elements, along with other roadway design elements in our Conceptual Roadway Plans meet or exceed the specified RFP requirements.**

Design Highlight: Horizontal Alignments

The horizontal alignments shown in our Conceptual Roadway Plans are consistent with the RFP Conceptual Plans, with modifications to the I-95 NB CD road to eliminate the station equation and simplify 3D modeling.

B. HORIZONTAL ALIGNMENTS

The horizontal alignments in the Branch-Flatiron team's Conceptual Roadway Plans have been developed to meet or exceed the RFP requirements. The horizontal alignment for the Option 3 sidewalk along Route 17 is also consistent with the RFP.

C. MAXIMUM GRADES OF VERTICAL PROFILES

The vertical profiles in the Branch-Flatiron team's Conceptual Roadway Plans have been developed to meet or exceed the RFP requirements. The maximum and allowable grades of roadway profiles are summarized in the following **Exhibit 4.3-2** and are also provided in the Conceptual Roadway Plans in Volume II, Tab 4.3.1.

The profiles for roadway segments have been verified, adjusted, and refined based on the latest VDOT survey and the latest design plans from adjacent projects provided by VDOT to:

Exhibit 4.3-2 / Maximum Grades of Vertical Profiles

ALIGNMENT	PROPOSED MAX. GRADE	PROPOSED MAX. DOWNGRADE	MAX. ALLOWABLE GRADE
I-95 NB GP Lanes	3.10%	-3.00%	4.00%
I-95 NB CD Lanes	3.00%	-3.50%	4.00%
I-95 Nb Slip Ramp	N/A	-3.09%	4.00%
I-95 Route 3 Ramp C	1.15%	-2.87%	5.00%
I-95 Route 17 Ramp B	2.00%	-2.30%	5.00%
I-95 Route 17 Ramp D	2.36%	-1.00%	5.00%
I-95 Route 17 Loop D	Matching existing		7.00%
I-95 NB FredEx HWN	3.70%	-1.00%	4.00%
Route 17 EB	Matching existing		7.00%
Route 17 WB	Matching existing		7.00%
I-95 NB GP Option 1	Matching existing		4.00%
I-95 NB CD Option 2	2.19%	-3.50%	4.00%
I-95 Route 17 Loop D Option 2	5.00%	N/A	7.00%

- Align with existing grades at tie in locations, providing for safer conditions for the traveling public by eliminating differential grades and expediting construction.
- Provides the required vertical clearance for Route 3 Ramp C.
- Provides the required vertical clearance on Route 17 if Option 2 is exercised.
- Balance earthwork within segments to minimize hauling operations on I-95.
- Contain roadway improvements completely within the ROW limits as defined in the VDOT RFP Conceptual Plans.

D. TYPICAL SECTIONS OF ROADWAY SEGMENTS

The typical sections for the base scope are shown in **Exhibit 4.3-3** below and detailed in Volume II, Tab 4.3.1. The typical sections identify the number and width of lanes, shoulders, and pavement. For all locations where new guardrail is to be installed, the Midwest Guardrail Standards (MGS) will be applied.

Flexible pavement section Alternative 1 "Standard Flexible Pavement" provided in the RFP has been incorporated into our design concept and the limits of full depth pavement installation is shown on the Conceptual Roadway Plans. The I-95 NB CD Lanes Ramp (North of Route 17) to I-95 Express Lanes will use the Express Lane pavement section as required by the RFP.

If Option 3 is exercised, a VDOT standard, ADA compliant 5' wide concrete sidewalk along Route 17 will be provided with handrail where applicable, as depicted in VDOT RFP Conceptual Plans, to improve pedestrian access, safety, and public acceptance.

E. CONCEPTUAL HYDRAULIC AND STORMWATER MANAGEMENT DESIGN

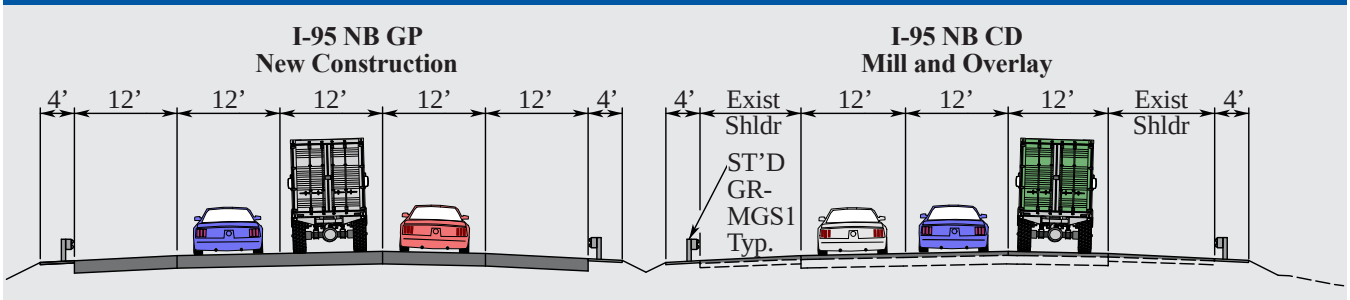
Drainage and stormwater management design follow the guidance of the Virginia Administrative Code, VDOT *Drainage Manual*, VDOT *Instructional and Informational Memoranda*, VDEQ *Stormwater Management Handbook*, and follows Part IIC technical criteria of the *Virginia Stormwater Management Program* as outlined by the RFP.

Storm Drainage Design

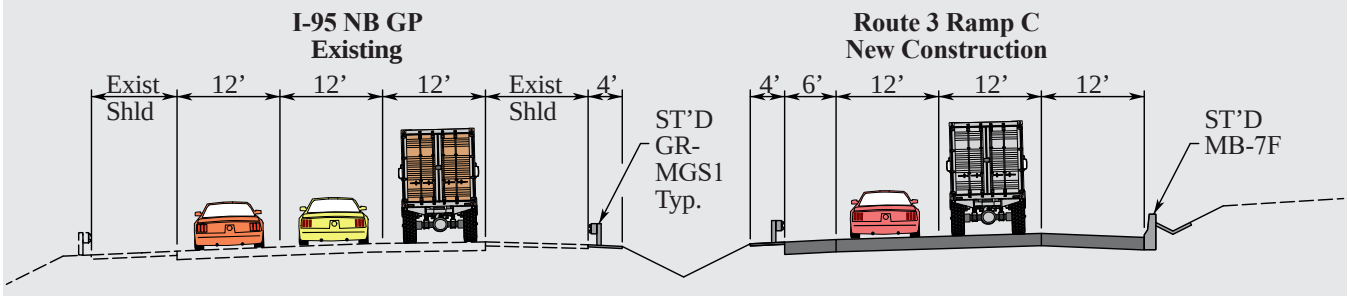
Storm drainage was designed to maximize the amount of runoff conveyed to each of the best management practices (BMPs) through the use of

Exhibit 4.3-3 / Typical Sections of Roadway Segments

Typical Section of I-95 NB GP and CD Lanes



Typical Section of I-95 NB and Route 3 Ramp C



curb and gutter, drainage inlets, storm sewer pipes, culverts and ditches. The intent is to maximize the removal rate of each BMP, minimizing the number of BMPs to achieve required removal. Any road drainage not captured by a BMP is conveyed to an appropriately sized receiving channel so that there are no adverse impacts downstream features.

Stormwater Management

Stormwater management has been designed in accordance with Technical Part II C of the *Virginia Stormwater Management Program Regulations* using the Performance Based Water Quality Method. The computed required removal efficiency and the breakdown for achieving the required removal for the project for the different options are shown in **Exhibit 4.3-4.** The breakdown includes the nutrient removal applied to the project as a result of overages from adjacent projects (I-95 SB and Route 3) from both on-site/BMP overtreatment and over purchase of nutrient credits.

To minimize the proposed number of BMPs for the project, the team will maximize the allowed nutrient credit purchase for this project (10 lbs). Minimizing the number of BMPs for the project will translate to reduced construction and maintenance costs for VDOT. The remaining required removal will be satisfied through the proposed BMPs, which were carefully evaluated based on removal rates and efficiencies. **Exhibit 4.3-4.** below provides more details.

Preliminary sizing information for the bioretention area approximates the expected treatment volume and computes associated surface area requirements based on a typical geometry and media depth. A contingency factor is applied to this approximation to account for additional grading requirements that would reduce the BMPs overall treatment volume. Additional grading requirements include berm for pretreatment cells and aquatic/safety benches. Flows that exceed the bioretention's treatment volume are to bypass the BMP using the existing roadside ditches.

Exhibit 4.3-4 / Summary of Required Phosphorus Removal for I-95 NB RRC

SCENARIO	REQUIRED PHOSPHORUS REMOVAL	OFF-SITE REMOVAL THROUGH NUTRIENT CREDIT PURCHASE (MAX. 10LBS OR 25% OF REQUIRED REMOVAL)			ON-SITE REMOVAL THROUGH BMPS		
		OVERAGE FROM I-95 SB RRC SB AND ROUTE 3	NUTRIENT CREDITS TO BE PURCHASED FOR I-95 NB RRC	TOTAL NUTRIENT CREDITS APPLIED TO PROJECT	OVERTREAMENT FROM I-95 SB RRC BMPS	REMOVAL FROM I-95 NB RRC PROPOSED BMPS	TOTAL ON-SITE REMOVAL APPLIED TO PROJECT
Base	35.07	6.25	3.66	**9.91**	6.51	18.65	**25.16**
Base + Option 1	35.23	6.25	3.57	**9.82**	6.51	20.90	**27.41**
Base + Option 2	34.67	6.25	3.54	**9.79**	6.51	18.37	**24.88**
Base + Option 2 and 3	34.72	6.25	3.59	**9.84**	6.51	18.37	**24.88**
Base + Option 1, 2, and 3	36.87	6.25	3.55	**9.80**	6.51	20.56	**27.07**

Dry swales were designed to extend the existing ditches base width to provide the adequate sheet flow required for dry swale treatment. The swales will not have an overflow bypass but will convey the existing ditches design storm (typically 10-year event) to minimize grading. Check dams were assumed to not be used but the implementation of them can reduce the required treatment surface area by providing additional storage within the channel.

The extended detention basin was sized using an approximated treatment volume and assumed that overflow bypass for larger events is provided through use of a typical stormwater management drainage structure.

Stormwater Quantity

The proposed stormwater management facilities will be designed to meet 9VAC25-840-40 Minimum Standard 19 (MS-19). Receiving channels will be checked for adequacy using MS-19 to confirm that 2-year and 10-year events do not adversely impact the receiving channels. Checks will confirm that the receiving channels are not subjected to erosive flows or inadequate containment of flows within the channels. These checks will extend downstream until the contributing drainage area is 100 times or greater than the proposed disturbed area (1% rule). The BMPs outlined above are primarily for meeting stormwater quality requirements, but also provide stormwater quantity relief through attenuation and infiltration of flows.

Hydrologic and Hydraulic Analysis and Scour Analysis

A conceptual hydrologic and hydraulic analysis (H&HA) was performed for the new bridge carrying the I-95 NB GP Lanes over the Rappahannock River and the temporary causeway that will be required for the construction of the new bridge. The bridge is located in a Zone A Federal Emergency Management Agency (FEMA) floodplain; therefore, the water surface elevation for a 100-year flood event is allowed to be increased up to one foot.

Our team has developed a preliminary HEC-RAS hydraulic model to determine the existing flood elevations and evaluate the impact of the new bridge on the existing flood elevations. We also developed a preliminary hydraulic model for the modified existing causeway that will be in place while the new bridge is under construction. The temporary causeway crosses the full width of the river incorporating the use of three 50’ long temporary bridges.

Design Highlight:
Pier Locations

The pier locations for the new bridge have been located to line up with the pier locations for the adjacent I-95 SB GP Lanes bridge that is currently under construction. This improves stream flow, reduces the potential for debris build-up, and minimizes changes in the scour potential at the existing bridge piers.

We developed preliminary hydraulic models to evaluate the temporary conditions that are assumed to exist while the existing I-95 SB RRC temporary causeway is modified and any other critical stages of causeway construction/removal. Our preliminary analysis shows that the proposed substructure units and temporary causeway will cause no significant impact to existing flood elevations.

Our team has completed a preliminary scour analysis for the new bridge carrying the I-95 NB GP Lanes over the Rappahannock River. The bridge piers will be supported by spread footings bearing on rock formations that have been determined by VDOT to resist scour during the service life of the bridge. Our team will perform additional borings, rock cores, and/or laboratory testing to validate VDOT’s preliminary scour determination. Our preliminary analysis has shown that the proposed bridge will have no impact on the scour potential at the existing bridges.

F. PROPOSED ROW LIMITS

The proposed right-of-way (ROW), Limited Access lines, and associated fences are shown on the Branch-Flatiron team’s Conceptual Roadway Plans in Volume II, Tab 4.3.1, which are identical to the VDOT RFP conceptual design. Permanent utility easements, maintenance access easements, and temporary construction easements will be further refined in the final design. These easements will be included in the ROW plan submittal for approval by VDOT. Our design stays within

the limits of ROW identified to be acquired by VDOT in the FredEx Overlap Area. The Branch-Flatiron team will work with VDOT to obtain approval for the limited access change from the Commonwealth Transportation Board.

G. PROPOSED UTILITY IMPACTS

We considered the potential impacts to utilities and have initiated coordination efforts with the utility companies to obtain As-Built plans and information regarding utility relocations, including timelines and costs.

The primary utility we expect to impact is the existing SummitIG fiber line that runs along the east side of northbound I-95. The As-Built drawings furnished by SummitIG indicate that the location is from 5' to 45' from the existing eastern edge of pavement of the I-95 NB GP lanes. There is potential for impacts throughout the entire length of the project resulting from the adjustment of the roadway footprint.

The greatest concentration of potential utility impacts is found at Route 17, with the majority of the potential impacts dependent on if Options 2 and 3 are implemented. These include underground cable and fiber facilities on the south side of Route 17 owned by Verizon Virginia, a gas line owned by Columbia Gas near Ramp D, and a VDOT power line that crosses I-95 at the abutment for the CD lanes bridge. Facilities on the north side or Route 17 include a SummitIG fiber optic line, VDOT power line, and 12" water line owned by Stafford County Department of Public Works, all at the abutment for the CD lanes bridge.

During final design, concurrent with the conflict evaluation of each utility, we will investigate design changes to minimize or eliminate the impacts. When utility relocations are unavoidable, we will work closely with the utility owner to relocate the utility and to maintain the project schedule.

H. SOUND WALL LOCATIONS

The I-95 SB RRC Final Design Noise Analysis identified two noise barriers, Noise Barriers C and FH, located along the east side of the I-95 corridor within the I-95 NB RRC project limits as being feasible and reasonable. The design and construction of these noise barriers has been deferred to the I-95 NB RRC project. The proposed locations of these noise barriers are shown on our Conceptual Roadway Plans in Volume II Tab 4.3.1. Noise Barrier C is 1,609 feet long and is located south of Route 3. Noise Barrier FH is located north of Fall Hill Avenue and extends the existing noise barrier to the north by 404'. A total of 30,606 square feet of exposed noise barrier area has been assumed for both noise barriers for proposal purposes. Our team has performed a preliminary noise evaluation and determined that no modifications are anticipated as a result of our I-95 NB RRC Conceptual Design. The Branch-Flatiron team will prepare a Final Design Noise Analysis to determine the final locations and dimensions for Noise Barriers C and FH and also confirm that no modifications are required to any existing noise barriers.

An architectural treatment resembling dry stack stone with a 2" relief will be provided on both sides of all noise barriers. Noise Barrier FH, which

Utility Types and Owners

Utility types and owners in the project corridor include:

- Power (Dominion Energy Virginia)
- Natural gas (Columbia Gas)
- Telecommunications
  - Comcast
  - Cox Communications
  - SummitIG
  - Verizon South
  - Verizon Virginia
- Water and sewer
  - City of Fredericksburg Department of Public Works
  - Stafford County Department of Public Works

Design Highlight: Eliminating Impacts to Stakeholders

Our team will use a top-down construction method to protect to the foundations of the existing noise barriers located along the east side of I-95 from Cowan Boulevard to just north of Fall Hill Avenue for Retaining Wall No. 01. This also eliminates the need to temporarily remove existing noise barrier panels during construction of the retaining wall that would have temporarily exposed to highway and construction noise.

is an extension of the existing noise barrier located just north of the Fall Hill Avenue overpass, will be designed to closely match the appearance of the existing noise barrier. Final design details will be developed such that positive drainage is maintained along both sides of all noise barriers. In accordance with the RFP, all noise barriers will be designed to eliminate the need for access doors by either locating the noise barriers close enough to the ROW to eliminate the need for maintenance behind the wall or by providing access via gaps in the walls with a minimum of 3:1 ratio of barrier overlap.

I. LIGHTING

Per VDOT IIM-TE-392, no continuous freeway lighting is required. However, in accordance with the RFP, intersection lighting will be provided at the following locations:

- I-95 NB Off-Ramp and Route 17
- SB I-95 Off-Ramp and Route 17
- Sanford Drive/South Gateway Drive and Route 17
- Uncontrolled pedestrian crossing at Route 17 and I-95 NB On-Ramp (Option 3)

Pole placements were designed to meet American Association of State Highway and Transportation Officials (AASHTO) lighting levels, VDOT standard lighting requirements, and IES RP-8-18 requirements. The luminaire type will be LED and the new light fixtures will be pre-wired, 7-pin twist lock ANSI 136.41. With the exclusion of continuous freeway lighting, there will be no need for future inspection and maintenance. In addition, the use of LED luminaires will reduce operational costs for VDOT as they require less power.

J. GUARDRAIL/BARRIER

The Branch-Flatiron team's corridor-level approach provides guardrail and barrier protections where required for integration with adjacent projects. The type, location, and limits of guardrail and traffic barrier are shown on the Conceptual Roadway Plans in Volume II Tab 4.3.1. The design and installation of new guardrails and end treatments comply with AASHTO's *Manual for Assessing Safety Hardware* (MASH) and VDOT standards as referenced in the RFP. Pavement will be installed up to and under guardrail and barrier, as required by VDOT standards.

Existing guardrails within the project limits that are impacted by the I-95 NB RRC improvements will be upgraded to MASH-complaint systems per RFP requirements. Adequate transitions are provided between the new MASH-compliant guardrail system and existing NCHRP 350 guardrails.

K. LOCATIONS OF MILL AND OVERLAY/BUILD-UP OF EXISTING PAVEMENT/NEW PAVEMENT

The proposed locations of mill and overlay/ build-up of existing pavement and new full depth pavement are shown on the Conceptual Roadway Plans in Volume II Tab 4.3.1. In accordance with the VDOT RFP requirements, we mill and overlay in areas where existing pavement is being retained or where existing pavement markings are eradicated. If Option 2 is exercised no pavement build-up will be proposed within 1,000' north and south of the new bridge.

L. SIGNAGE FOR INTERCHANGES AND I-95 NB GP AND CD LANES

We performed a comprehensive review of the existing overhead signing along the I-95 NB corridor using the existing signing inventory, conceptual signing roll plots, proposed plan for adjacent projects, and RFP requirements, as well as field observations. Our proposed signing plan is shown in the Conceptual Roadway Plans and encompasses the I-95/Route 3 interchange, the I-95/Route 17 interchange, I-95 GP and CD Lanes, I-95/Centreport Parkway Interchange (under Option 1), and the FredEx Overlap Area. The proposed standard VDOT sign structure locations

Safety for the traveling public

New signage will contain Type IX or higher retroreflective sheeting in accordance with *Traffic Engineering Division Instructional & Informational Memorandum Overhead Sign Lighting* (IIM-TE-380.1) and the 2016 VDOT *Road and Bridge Supplemental Specifications*. This will lower operating and ongoing maintenance costs to VDOT, as well as provide safety to the motoring public by eliminating the need for lane closures along I-95 for relamping.

have been placed in accordance with the Federal Highway Administration's (FHWA) 2009 *Manual on Uniform Traffic Control Devices* (MUTCD) and with proper clearances to other roadside features. The proposed sign face messages have been designed and positioned to determine proposed sign structure locations, sign panel sizes, and to provide the proper number of signs and spacing per the 2009 MUTCD requirements.

The removal of the existing overhead sign structures and the installation of the proposed overhead sign structures will be phased throughout construction. In some cases, overhead signs will be placed on temporary ground mounted bases protected by a barrier along the side of the roadway as appropriate. Proper sign messaging will remain throughout construction using overlays or new construction guide signs. In other cases, the new overhead sign structure will be installed and unveiled prior to removing the existing sign structure and overhead signing. Either solution will maintain public safety by properly directing traffic through construction work zones during the use of temporary alignments.

M. FUTURE I-95 NB FOURTH LANE WIDENING

As defined in the RFP, the future fourth lane will be 12' wide with a full 12' wide shoulder, with barrier protection where applicable. Our design does not preclude the future I-95 NB fourth lane and associated limits of construction between Exit 126 and the new slip ramp from I-95 NB GP to CD road.

N. OTHER KEY PROJECT FEATURES

The following describes our approach to additional key project features.

Intelligent Transportation Systems (ITS)

Our team performed an extensive review of the ITS components identified in the RFP, the NB RRC/FredEx ITS Overlap Exhibit, existing As-Builts, and the roll plots provided by VDOT. Confirmation of the existing ITS infrastructure will be identified by test holes prior to construction. New conduit and cable infrastructure for communications and power will be installed along the NB route where the existing infrastructure will be impacted by roadway construction and will tie into the existing transportation management systems (TMS) infrastructure.

Coordination with adjacent projects

Signing overlap adjustments for FredEx were incorporated into the signing design and coordinated with the ITS plans. Because Branch and Flatiron are both currently working on FredEx, we are in the best position to coordinate signing, lighting, and ITS for both projects, which mitigates potential rework and schedule delays.

Existing cameras and cabinets will remain in place unless impacted by construction, in which case new cameras and cabinets will be installed before the existing cameras are impacted. The field of view for the new cameras will be identified before installation. New dynamic message signs (DMS) will be installed in coordination with the signing plans and existing DMS locations. New fiber optic drop cables and conduit will be provided to the closed-circuit television (CCTV) and DMS locations from the trunk line. It is our understanding that SummitIG will be responsible for the relocation of the shared ITS fiber optic trunk line. This includes fiber optic cable and conduit along the route where impacts are expected.

South of the Rappahannock River, new cameras and cabinets will replace the existing equipment in kind where roadway construction will interfere with the ITS infrastructure. The new equipment will be installed outside of construction impacts before existing equipment is removed. New power, fiber optic drop cables, and conduit will be provided to the equipment. Existing infrastructure will remain in place where construction will not interfere with its operation. Our team will coordinate with SummitIG for any relocation of the shared fiber optic trunk line cabling and conduit.

Per the RFP, VDOT is coordinating the modification to the work associated with the FredEx project that will require an adjustment to their infrastructure in order to better accommodate the I-95 NB RRC project. Any additional ITS infrastructure relocations, including camera and cabinet relocations, that are needed will be coordinated with and tied into the FredEx

project. New cameras and cabinets will be installed and operational before the existing equipment is removed. DMS installation will be coordinated with the signing plans and power and fiber optic drop cables will be provided to the DMS through new conduit. The new equipment will tie into the existing infrastructure and the infrastructure proposed by the FredEx project. At the FredEx provided vehicle gate locations between approximate stations 5622+00 and 6043+25, new foundations, cabinets, and conduit will be designed and installed to connect into their existing system. Branch-Flatiron provides a cohesive and complete design that performs to the requirements of the FredEx project.

Under the base scope, the existing over-height detection system at I-95 NB at Exit 133 to Route 17 will be repositioned and signed accordingly. If Option 2 is exercised, the over-height detection system will be removed once the existing bridge is removed. In both cases, the over-height detection system will be maintained throughout construction. A temporary location will be required when the reconstruction of ramp D occurs. Further information on the maintenance of the over-height detection system through construction is explained in Section 4.5.

Traffic Signals

Signal justification analyses and designs will be provided at the following intersections per the RFP base scope:

- Route 17 and Off-Ramp from I-95 NB CD lanes
- Route 17 and Off-Ramp from SB I-95 CD lanes

In addition, our team will provide a traffic signal modification at the intersection of Route 17 and Route 670/1050 (Sanford Drive/South Gateway Drive) that will correspond to either the base scope or the Option 3 alternate scope. In addition to the scope above, if Option 3 is exercised, there will be an addition of two Rectangular Rapid Flashing Beacons (RRFBs) at unsignalized crossings proposed at the off-ramps.

Signal phases and timings will be maintained throughout construction and any required temporary signal adjustments by phase will be submitted in advance to VDOT for review and approval prior to implementation. Our team understands the importance of keeping Route 17 moving, and will use Synchro modeling to coordinate the signal timings with the other signalized intersections along the Route 17 corridor.

Design Standards

All new and modified traffic signal designs will be in accordance with the latest VDOT standards, manuals, special provisions, and requirements prescribed in the RFP. All pole placement lateral offsets will follow the clear zone requirements of the January 2017 *Roadway Design Manual*.

Model Based Design and Construction

A unique project feature of the I-95 NB RRC project will be the implementation of Model Based Design and Construction (MBDC). MBDC is the use and transfer of digital data in design, construction, and asset management. The use of three-dimensional (3D) modeling in design enhances coordination across disciplines, facilitates clash detection and resolution, provides automatic feedback to designers as design updates are made, and improves project quality.

Our team has already developed a detailed 3D model of the proposed design. This allowed us to optimize the roadway profile to better balance the earthwork, eliminate potential constructability concerns, such as in the tie-in areas, resolve complex grading issues at the bridge abutments and retaining walls, and minimize conflicts with the deep foundations supporting the existing bridge carrying the I-95 NB CD Lanes over Route 17. We anticipate that the 3D Model will also be used to provide animated virtual tours of the project during stakeholder and public outreach meetings.

The 3D model will continue to be developed by our team to the required Level of Development/ Level of Detail (LOD) required by the RFP. Initially, a 3D model will be developed for each work package. Once all work packages have been approved for construction a single cohesive 3D model will be developed for the entire project. The 3D model will then be updated on a quarterly basis to incorporate any approved plan revisions.

During construction, the 3D Model will be used to facilitate project planning efforts, confirm earthwork volumes and volume distribution throughout the project, enhance automated machine guidance, facilitate construction staking, and improve communication between design and construction staff. Finally, an 'As-Built' model and a LandXML file will be developed and provided to VDOT within 30 days after final acceptance. This model will include all final representations of the 3D model containing existing and constructed physical objects within the project limits.

The 'As-Built' LandXML file will be located within the GIS Datum and Coordinate System Standard accepted by VDOT and will include major transportation asset classes (i.e. overhead sign structures, noise barriers, pavement structures, bridge superstructures and substructures, retaining walls, culverts, guardrail, etc.). and their related attributes. This information will enable VDOT to manage and maintain these newly created major transportation assets throughout their lifecycle.

4.3.2 CONCEPTUAL STRUCTURAL PLANS

The Branch-Flatiron team's approach to the design of the bridges, retaining walls, and major drainage structures for the I-95 NB RRC project is to provide a solution that meets or exceeds the RFP requirements and will benefit the end users in terms of safety, operations, schedule, construction, and public acceptance. Our design approach uses reliable and durable materials and implements current best practices (such as the elimination of bridge joints where possible). It also employs other design enhancements in order to reduce inspection and long-term maintenance needs for VDOT, increase long-term asset performance, and improve constructability. Conceptual Structural Plans are included in Volume II, Tab 4.3.2 for the bridges carrying the I-95 NB GP Lanes over the Rappahannock River and the I-95 NB CD Lanes over Route 17 (Option 2). We have provided 11"x17" graphics of an elevation view, transverse section, and abutment configuration for both structures in Volume II.

I-95 NB GP LANES OVER THE RAPPAHANNOCK RIVER (B609)

The design approach for the bridge carrying the I-95 NB GP Lanes over the Rappahannock River is to provide a structure that minimizes environmental impacts, reduces inspection and long-term maintenance needs, and diminishes project risks associated with the construction of a major interstate bridge within the constrained workspace.

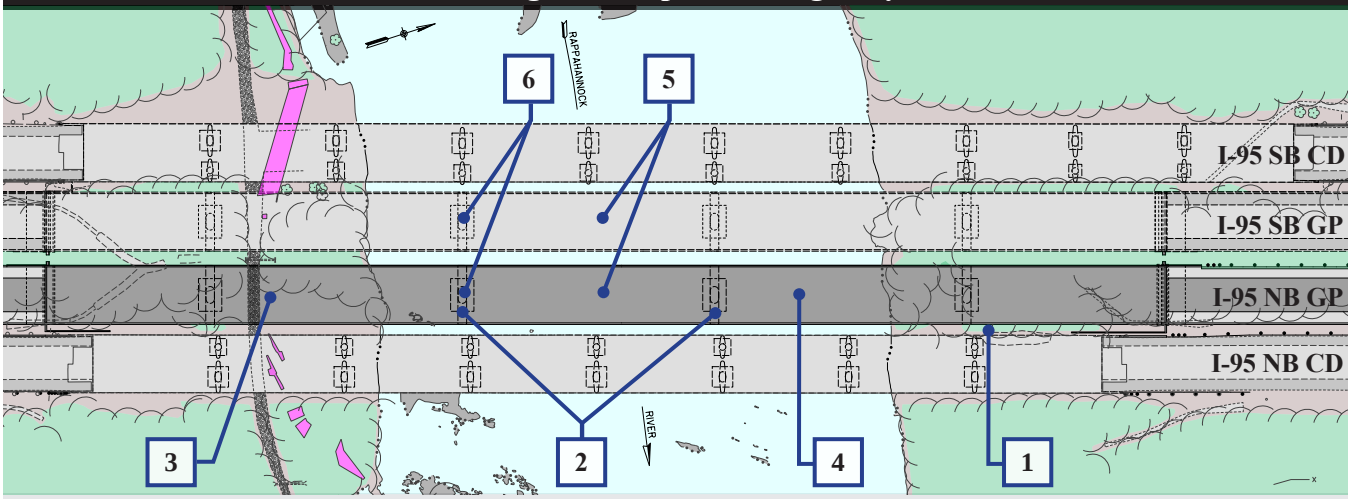
To achieve these objectives, the Branch-Flatiron team considered multiple span arrangements and alignment alternatives for the new bridge. For each alternative, we carefully considered the proximity of the new bridge to the existing bridges, constructability (method of erecting beams/girders, construction clearances, locations and maneuverability of cranes and other heavy equipment, requirements for temporary shoring, etc.), avoiding impacts to the I-95 SB RRC project, maintenance of traffic, schedule, initial cost, and future inspection and maintenance needs for VDOT.

Based on these objectives, we determined that a 5-span continuous structural steel plate girder structure that matches the bridge location, orientation, and length shown in the RFP Conceptual Plans was the best solution.

The steel superstructure facilitated our erection method which minimized the modifications to the existing causeway, minimized the number of piers, and contained nearly all of work in the space between the new I-95 SB GP lanes and the existing I-95 NB lanes. The use of ASTM A709 Grade 50W (weathering steel) coupled with a jointless deck using low permeability concrete provides VDOT with reduced life-cycle costs and long term asset performance.

The abutment and pier locations have been located such that they will match the abutment and pier locations of the adjacent bridge carrying the I-95 SB GP Lanes over the Rappahannock River that is currently under construction. In **Exhibit 4.3-5.** on the following page we describe the features and advantages of the proposed bridge layout.

Exhibit 4.3-5 / Features and Advantages of Proposed Bridge Layout



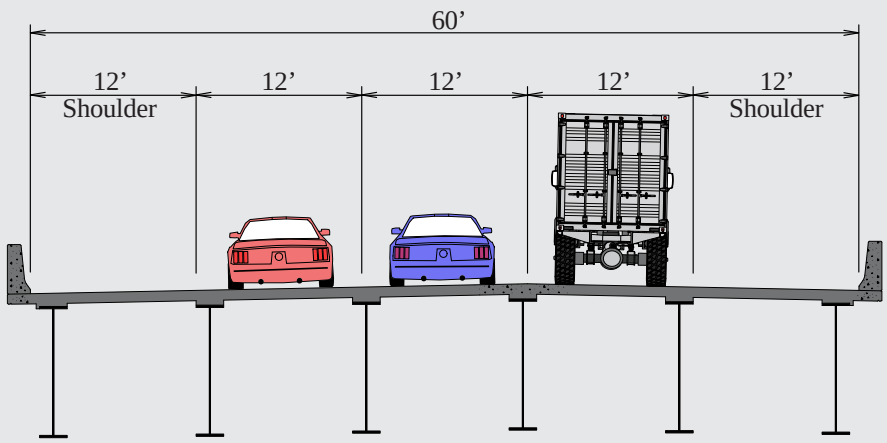
1. The horizontal clearance between the existing I-95 NB bridge and the new I-95 NB GP Lanes bridge meets the minimum horizontal clearance requirements specified in the RFP, which will provide VDOT sufficient horizontal clearance to inspect the underside of the new bridge carrying the I-95 NB GP Lanes over the Rappahannock River bridge using an under bridge inspection unit staged along the right shoulder of the I-95 NB GP lanes.
2. Only two piers are located within the river, which minimizes temporary and permanent environmental impacts and also reduces the potential for debris build-up.
3. The layout avoids impacts to the existing trail and archeologic features associated with the Rappahannock Navigation Canal and the Rappahannock Canal Lock #1/Minor's Lock.
4. Piers 3 and 4 for the new bridge carrying the I-95 NB GP Lanes over the Rappahannock River are located such that they do not encroach on the north channel of the Rappahannock River, which is defined as the clear distance between Pier 5 and Pier 6 of the existing I-95 SB bridge.
5. The new bridge will be very similar in appearance and design as the adjacent I-95 SB GP Lanes Bridge that is currently being constructed as part of the I-95 SB RRC project.
6. By matching the locations of the piers for the adjacent bridge carrying the I-95 SB GP Lanes over the Rappahannock River, VDOT will have greater flexibility to replace the existing I-95 NB and SB bridges in the future such that the pier locations between all four bridges could align with one another.

Superstructure

The new bridge will be a 5-span continuous structural steel plate girder structure with spans of 169'-8" – 270' – 270' – 270' – 207'-2" (measured between centerline of bearings) with a total bridge length of 1,200'-10" (measured from back of backwall to back of backwall). Our team understands that VDOT will secure approval of Design Waiver No. 2 to allow spans greater than 240' for this structure. Since the use of approximate equations to compute live load distribution factors for steel I-girder bridges do not apply for span lengths in excess of 240', our team will perform a refined analysis for the distribution of live loads. In compliance with the RFP, there are no fracture critical elements of any kind and no more than two bolted field splices per span. All structural steel will consist of ASTM A709 Grade 50W (weathering steel). All structural steel will be unpainted in conformance with VDOT's current practices for jointless structures. **The use of uncoated weathering steel reduces future maintenance needs since there is no paint system that will need to be removed, disposed of, and recoated over the life span of the structure.**

A transverse section of the new bridge is shown in **Exhibit 4.3-6** on the following page. The superstructure for the new bridge will conform with VDOT's jointless philosophy by using Virginia Abutments and continuous structural steel plate girders. In compliance with the RFP, the deck elevations between the proposed bridge and the adjacent bridges will not be greater than 10' at any given location, measured at parallel locations at the baseline. In order to provide reasonable safety for the passage of vehicular traffic, bridge deck drains will be provided to limit the maximum

Exhibit 4.3-6 / Transverse Section for the I-95 NB GP Lanes Bridge over Rappahannock River



The proposed structure will have a clear roadway width of 60’, accommodating three 12’ lanes, a 12’ outside shoulder, and a 12’ inside shoulder. A VDOT Standard 42” Concrete F-Shape Parapet (BPB-4) will be used along both sides of the bridge, which has an Adjusted Test Level of TL-5 and meets all RFP requirements.

spread width for the applicable design storm to the shoulder area with no encroachment in the travel lanes as required by the VDOT *Manual of the Structure and Bridge Division*.

To diminish the risks associated with constructing this major interstate bridge within the constrained workspace, our team will incrementally launch the structural steel plate girders from the southern approach of the bridge. **This is an innovative construction technique that our team has successfully employed on past projects, such as the Peace River bridge, Athabasca River bridge, and Kicking Horse Canyon bridges.** Our team has determined that incrementally launching the structural steel plate girders offers the following project advantages:

- The superstructure assembly has a smaller and more compact work area.
- Launching does not require delivery trucks loaded with girders to be staged on the adjacent bridges, which reduces the need for off-peak lane closures, enhances safety for construction personnel and the traveling public, and improves the overall efficiency of the girder delivery operation since the girders do not need to be immediately set into position at night.
- Launching eliminates the need for multiple large cranes to operate in close proximity to existing bridges with booms higher than the adjacent I-95 NB and SB traffic.
- Reduces the required overall footprint of the river causeway thereby minimizing disturbance to environmentally sensitive areas.
- Enhances worker safety since nearly all of the erection work, including the installation of most

Innovative Construction Technique - Incremental Launching

Kicking Horse Canyon Bridge | Canada

Our team understands the challenges of bridge construction within a constrained workspace and our experience overcoming them provides the basis for the mitigation strategies so that the bridge can be completed safely and on time. ***The Kicking Horse Canyon project incrementally launched the steel girders for the superstructure from the one end of the bridge to avoid having equipment below.*** *This innovative technique was contained primarily within the footprint of the superstructure and are applicable to the challenges of this project.*

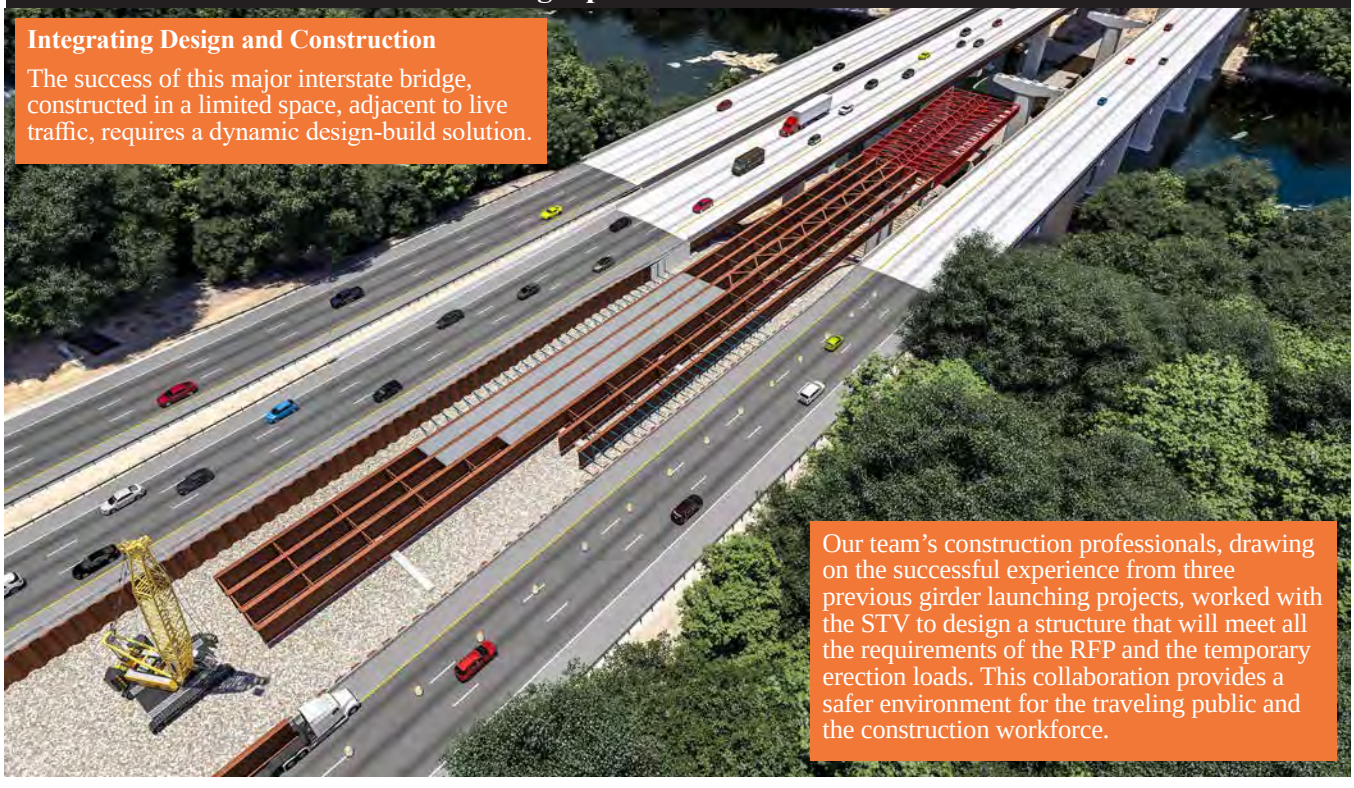
of the metal stay-in-place forms and overhang brackets, is performed within the launching pit in close proximity to the ground.

Our team has already developed a preliminary launching plan for the structural steel plate girders. The launching plan has been thoroughly coordinated between construction and design team members. A detailed incremental launching plan (i.e., erection plan) will be developed by Flatiron's internal Construction Engineering Group (CEG) post award. The incremental launching plan developed by the CEG and the design of the new bridge developed by STV will be advanced concurrently as the temporary conditions associated with incrementally launching the structural steel plate girders must be properly accounted for in the design of the superstructure and substructure of the new bridge. As required by the RFP, the incremental launching plan will be submitted to VDOT for review and approval with the final design of the new bridge.

The girders will be incrementally launched from a launching pit located at the southern approach to the new bridge along an essentially constant 0.50% downhill grade. The southern approach for the launching pit was chosen as it offered improved access for girder/material deliveries and the existing terrain is more accommodating for the excavation of the launching pit. The main features of the launching system consist of a low friction chain-type roller system, a lateral guide system, and a 150' long tapered launching nose. Branch-Flatiron's plan calls for a restraint system to remove the potential for the girders to move unencumbered to further increase safety.

With the exception of the first 225', the girders will be incrementally launched with the metal stay-in-place (SIP) forms and overhang brackets installed (the metal SIP forms are omitted in the first 225' in order to reduce the effects of wind forces and dead load deflections along the leading edge). A rendering of the incremental launching operation is shown in **Exhibit 4.3-7** below. Additional details describing the incremental launching sequence of construction are included in Section 4.5 Construction of the Project and **the Steel Girder Launch Sequence sheet in Volume II.**

Exhibit 4.3.-7 / Incremental Launching Operation



The superstructure and substructure of the new bridge will be designed by STV to account for the temporary conditions during the incremental launching operation. The structural steel plate girders and bolted field splices will be analyzed and sized for the various temporary support conditions and design wind forces as the girders are incrementally launched. In addition, the steel girder flange contact stresses, web local yielding, and web crippling will be analyzed and checked. Top and bottom lateral bracing will be included in the design to provide the necessary torsional stiffness during the launching operation. The individual substructure units will be designed to resist the applied forces from the incremental launching operation which will include the following:

- Longitudinal loads generated by the friction and other resistance forces in the temporary chain-type roller system, including forces generated as the tapered launching nose encounters a pier roller bearing.
- Transverse loads from the lateral guide system.
- Vertical loads, including, vertical jacking loads as the girders are lowered on to the final bearings.

Substructure

Virginia Abutments were determined to be the most appropriate abutment type to provide a jointless bridge based on the abutment type selection algorithm in the VDOT *Manual of the Structure and Bridge Division*. Both abutments will consist of full height cantilever abutments supported on spread footings bearing on intermediate geomaterial (IGM).

Hammerhead style piers supported by spread footings bearing on scour resistant competent rock will be used for each of the four piers. In compliance with the RFP, the pier locations closely line up with the locations of the new piers for the bridge carrying the I-95 SB GP Lanes over the Rappahannock River. The selected pier locations provide the following benefits:

- Minimizes changes in scour potential at the existing bridge piers.
- The locations of the proposed piers avoid impacts to the existing trail and archeologic features associated with the Rappahannock Navigation Canal and the Rappahannock Canal Lock #1/Minor's Lock and they do not encroach on the north channel of the Rappahannock River.
- Only two piers are located in the river, which minimizes temporary and permanent environmental impacts and also maximizes re-use of the causeway from the I-95 SB RRC project with only minor permit modifications being required for the I-95 NB GP Lanes bridge construction.
- The proposed pier locations also minimize the potential for debris buildup, impacts to recreational boat traffic, and scour. To further minimize the potential for debris build-up and improve stream flow, the columns for the piers will have rounded ends.

Independent Reviewers

The final bridge design developed by STV and the final incremental launching plan developed by the CEG will be reviewed by an independent review team within STV. This independent review team will be led by Jorge Suarez, PE who serves as STV's National Bridge Practice Technical Director. Jorge has more than 40 years of complex bridge design experience and has led a number of prominent assignments throughout the country, including his involvement with a previous firm that provided construction engineering and inspection services to VDOT for the I-95 Bridge Restoration project in Richmond, VA that used accelerated bridge construction techniques to replace the superstructures on 11 bridges.

The proposed structure meets all applicable hydraulic requirements, including current FEMA and VDOT guidelines as described in the VDOT *Drainage Manual*. The areas around bearing seats for the piers and abutments will be designed to permit jacking and replacement of bearings in accordance with the RFP.

Future Inspection and Maintenance Considerations

To reduce the need for future inspection and maintenance needs, the new bridge will use the durable materials and design approaches highlighted in **Exhibit 4.3-8** on the following page.

Exhibit 4.3-8 / Durable Materials and Design Approaches | Bridges B608 and B609

FEATURE	BENEFIT
All concrete will be low permeability concrete.	The use of low permeability concrete helps improve the bridge's long-term asset performance by limiting the depth of carbonation and slowing the ingress of detrimental deicing chemicals into the concrete.
Low Shrinkage Class A4 Modified Concrete will be used in deck slabs, parapets, terminal walls, integral backwalls of Virginia Abutments, integral backwalls of full integral abutments, and closure diaphragms of prestressed concrete bridges made continuous for live load.	Extends the service life of concrete elements and reduces costly maintenance by reducing shrinkage cracking in concrete bridge decks and other concrete superstructure components.
Class III Corrosion Resistant Reinforcing (CRR) steel will be used in the following structural elements in conformance with VDOT IIM-S&B-81.8. • Deck slabs. • Closure diaphragms of prestressed concrete bridges made continuous for live load. • Integral backwalls for Virginia Abutments. • Integral backwalls for full integral abutments. • Parapets and terminal walls. • Moment slabs.	The use of Class III CRR steel (solid stainless reinforcing steel) provides excellent corrosion protection and will help minimize future maintenance needs for these critical structural elements in the bridge.
Class I CRR steel will be used in the following structural elements in the bridge substructure in conformance with VDOT IIM-S&B-81.8. • Substructure units located within the splash zone as defined in the IIM. • All reinforcement above footings of Virginia Abutments, including, footing bars extending above the top of Virginia Abutment footings. • Footings of full integral abutments. • MSE wall copings. • MSE wall panels located within the splash zone as defined in the IIM.	The use of Class I CRR provides an appropriate level of corrosion protection and will help minimize future inspection and maintenance needs on these critical structural elements in the bridge substructure.
All bridges will conform with VDOT's jointless bridge philosophy.	The elimination of expansion joints reduces future maintenance needs, provides improved riding quality, lowers impact loads, and reduces snowplow damage.
Laminated elastomeric bearings will be used for all bearings.	Laminated elastomeric bearings are a very low maintenance bearing type as compared to high-load multi-rotational bearings and low profile bearings.
Areas around bearing seats will be designed to facilitate jacking and replacement of bearings.	Provides for the future replacement of bearings without having to strengthen the structure to accommodate the jacking forces.
To account for the corrosive soils at the site for the bridge carrying the I-95 NB CD Lanes over Route 17 (Option 2), all steel H-piles will be designed with a corrosion allowance, which is the thickness of metal (above what is structurally required for the pile) needed to compensate for loss of metal that will occur as the pile corrodes.	Increasing the piles sizes to include a sacrificial thickness will help achieve a 75-year design life.
All MSE walls will be designed for a 100-year service life with respect to soil reinforcement design.	Improves the long-term asset performance and minimizes inspection and long-term maintenance needs for VDOT.
An impervious membrane will be placed below the pavement and just above the first row of MSE reinforcement.	The impervious membrane will help improve the long-term asset performance by intercepting any flows containing deicing chemicals before they reach the MSE reinforcement.

Bridge Aesthetics

An architectural treatment resembling dry stack stone with a 2” relief will be used on the exposed vertical faces of abutment retaining walls that are in view of I-95 in accordance with the RFP. In addition, the new bridge will be very similar in appearance to the adjacent bridge carrying the I-95 SB GP Lanes over the Rappahannock River.

I-95 NB CD LANES OVER ROUTE 17 (B608) – OPTION 2

The design concept for Option 2 is for a complete replacement of the existing bridge carrying the I-95 NB CD Lanes over Route 17. The existing bridge has substandard vertical clearance over Route 17 and has a history of being frequently hit by overheight vehicles. Our design approach for the new structure is to provide a structure that has adequate vertical clearance, is entirely jointless, does not contain fatigue prone details, and uses durable materials thereby reducing inspection and long-term maintenance needs for VDOT and increasing the structures long-term asset performance. The new bridge carrying the I-95 NB CD Lanes over Route 17 will match the bridge location, orientation, and span lengths shown in the RFP Conceptual Plans. The new bridge will also be similar in appearance to the adjacent bridge carrying the I-95 NB GP Lanes over Route 17 that is currently being constructed as part of the I-95 SB RRC project.

Superstructure

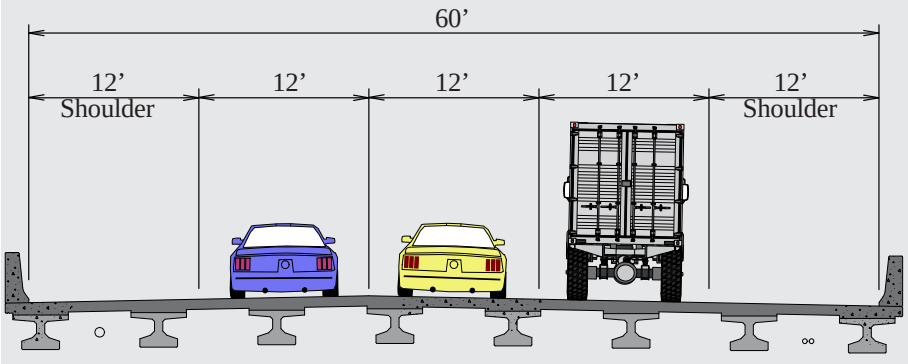
The new bridge will be a 2-span structure with spans of 70’-6” and 74’-6” for a total bridge length of 145’ measured from end of slab to end of slab. **The new bridge will be constructed in a single phase of construction thereby eliminating the need for longitudinal construction joints in the bridge deck, which will reduce inspection and maintenance needs for VDOT as construction joints create planes of weakness that frequently cause maintenance problems.**

A transverse section of the new bridge is shown in **Exhibit 4.3-9.** below. The superstructure for the new bridge will conform with VDOT’s jointless philosophy by using full integral abutments and 29” deep prestressed concrete bulb-T beams made continuous for live load. Full integral abutments were determined to be the most appropriate abutment type to provide a jointless bridge based on the abutment type selection algorithm in the VDOT *Manual of the Structure and Bridge Division*. The new bridge will be required to carry two 4” diameter conduits for ITS and a dry 8” diameter water supply pipe for the bridge standpipe system. **The vertical profile and cross slope for the bridge has been set such that no bridge deck drains are required** in order to limit the maximum spread width for the applicable design storm to the shoulder area with no encroachment in the travel lanes as required by the VDOT *Manual of the Structure and Bridge Division*. This eliminates the need to perform routine maintenance work to remove debris from bridge deck drain inlets.

Substructure

The superstructure for the new bridge will be supported by a single multi-column pier and full integral abutments. The abutments will be supported by a single row of steel H-piles located behind MSE walls. The MSE walls will tie into the MSE walls for the adjacent bridge carrying the I-95 NB GP Lanes over Route 17. The MSE walls

Exhibit 4.3-9 / Transverse Section for the I-95 NB CD Lanes Bridge over Route 17



The proposed structure will have a clear roadway width of 60’, accommodating three 12’ lanes, a 12’ outside shoulder and a 12’ inside shoulder. A VDOT standard 42” Concrete F-Shape Parapet (BPB-4) will be used along both sides of the bridge, which has an Adjusted Test Level of TL-5 and meets all RFP requirements.

in front of the abutments will be protected by an bridge pier (abutment) protection system (VDOT BPPS-3 Standard) in accordance with VDOT *Manual of the Structure and Bridge Division*.

Each of the pier columns will be supported by individual pile footings supported by steel H-piles. The individual pile footings will be located adjacent to and/or between the existing pile footings such that the new steel H-piles can be installed without interfering with the existing cast-in-place piles for the center pier.

Recognizing that it may not be feasible to remove the existing cast-in-place piles without damaging them and potentially breaking off, our team's innovative design solution allows us to avoid conflicts with the existing foundations and complete the bridge construction work in the median of Route 17 in a more expeditious manner. The new pier will be protected by a bridge pier protection system (VDOT BPPS-1 and BPPS-2 Standards) in accordance with the RFP.

Future Inspection and Maintenance Considerations

To reduce the need for future inspection and maintenance, the new bridge will use the durable materials and design approaches highlighted in **Exhibit 4.3-8** on the previous page.

Standpipe System

In accordance with the RFP, a dry standpipe will be provided at each abutment along both parapets for the new bridge carrying the I-95 NB CD Lanes over Route 17. The standpipe fire hydrant and water supply fire protection system will comply with the requirements of NFPA 502, Section 6.6.

Bridge Aesthetics

The new bridge will be very similar in appearance as the adjacent I-95 NB GP Lanes bridge that is currently being constructed as part of the I-95 SB RRC project. An architectural treatment resembling dry stack stone with a 2" relief will be used on the exposed vertical faces of abutments, wingwalls, and MSE walls as per the RFP.

Accommodations for a Sidewalk Connection Through the I-95/Route 17 Interchange – Option 3

The design concept for Option 3 is for a sidewalk along the north side of Route17 through the I-95/ Route 17 Interchange. The sidewalk will be located adjacent to the Abutment B MSE wall and a concrete median barrier (VDOT Standard MB-7D) will be used to separate vehicular and pedestrian traffic underneath the bridges. No modifications are anticipated to be required to the adjacent structures that are being constructed as part of the I-95 SB RRC project. Should Option 3 not be executed then the design of the new bridge carrying the I-95 NB CD Lanes over Route 17 will be designed to not preclude a future sidewalk along the north side of Route 17 through the I-95/ Route 17 Interchange.

COWAN BOULEVARD OVER I-95 AND FALL HILL AVENUE OVER I-95

A bridge pier protection system (VDOT BPPS-1 and BPPS-2 Standards) will be installed along the inside shoulder of Route 3 Ramp C at the Cowan Boulevard and Fall Hill Avenue overpasses since both of the existing bridge piers will be located less than 30' from the edge of the nearest travel lane. The installation of the bridge pier protection system at these two overpasses will protect the existing bridge piers from collision damage thereby enhancing safety and improving the structures long-term asset performance.

RETAINING WALLS

Two retaining walls are required within the project limits. All retaining walls will be designed to meet or exceed the RFP requirements. An aesthetic treatment resembling dry stack stone with a 2" relief will be provided on all exposed vertical surfaces of retaining walls that are in view of I-95.

Retaining Wall No. 01

Retaining Wall No. 01 is located along the outside shoulder of Route 3 Ramp C from Station 5484+54 to Station 5505+08. This retaining wall is necessary in order to avoid impacts to the existing noise barriers located in the vicinity of the Fall Hill Avenue overpass. Retaining Wall No. 01 will consist of two wall types; a reinforced cast-in-place concrete cantilever retaining wall and a soldier pile retaining wall system using precast concrete panels. A galvanized VDOT Standard HR-1 handrail will be used along the top of the wall in compliance with the RFP requirements.

The reinforced cast-in-place concrete cantilever retaining wall will be used where the excavation limits for the retaining wall construction will not encroach within the influence zone for the existing noise barriers foundations. The exposed face of the retaining wall adjacent to traffic will be constructed with an F-shape barrier face. A typical section of the reinforced cast-in-place cantilever retaining wall is shown in **Exhibit 4.3-10.**

The soldier pile retaining wall system will be used where top down construction is required to avoid excavating within the influence zone for the existing noise barriers foundations. **By using a top-down construction method, our team was able to eliminate the need to temporarily remove the existing noise barriers panels during construction of this retaining wall. The removal of existing noise barriers panels would have resulted in nearby residents being temporarily exposed to highway and construction noise.** The soldier pile retaining wall system will be protected by a VDOT Standard MB-7F barrier. Class I CRR steel will be used in all reinforced concrete elements located within the splash zone in conformance with VDOT IIM-S&B-81.8.

Retaining Wall No. 02

Retaining Wall No. 02 is an MSE wall and is located along the inside shoulder of the I-95 NB GP lanes from Sta. 4510+00 to Sta. 4538+00 to minimize impacts to the drainage system installed as part of the I-95 SB RRC project and allow for the bifurcation of the I-95 NB and SB GP lanes. By bifurcating the roadway the grade of the new I-95 NB GP lanes was set independently from the I-95 SB GP lanes to better conform to existing topography and accommodate a future fourth lane. This retaining wall is mostly located within a horizontal curve and will retain the inside shoulder of the I-95 NB GP lanes. The wall layout has been aligned to be parallel to the I-95 NB GP lanes alignment. To minimize the need for future inspection and maintenance, Retaining Wall No. 02 will use the durable materials and/or design approaches highlighted in **Exhibit 4.3-11.** on the following page.

The retaining wall will require traffic protection since it is located adjacent to a roadway shoulder. A VDOT Standard 42” Concrete F-Shape Parapet (BPB-4) will be used on the retaining wall. This parapet has an Adjusted Test Level of TL-5 and is also the same style of parapet proposed on the new bridges. A typical section of Retaining Wall No. 02 is shown in **Exhibit 4.3-12** below.

Exhibit 4.3-10. / Retaining Wall No. 01

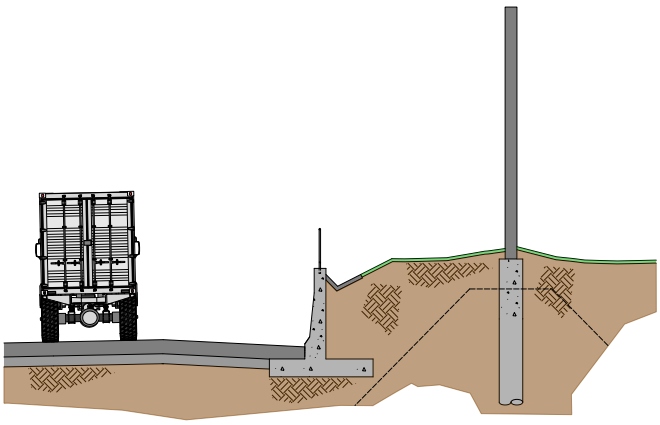
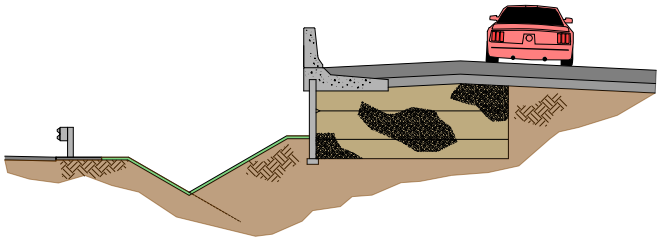


Exhibit 4.3-12. / Retaining Wall No. 02



MAJOR DRAINAGE STRUCTURES

The only major drainage structure that will be completed as part of the I-95 NB RRC project is the extension of the existing triple 8’x8’ reinforced concrete box culvert located along the outside shoulder of the I-95 NB CD lanes near Sta. 5635+50. The existing box culvert will be extended to accommodate the construction of the additional travel lanes for the I-95 NB GP lanes and Ramp HWN. An H&HA, including scour analysis will be completed for this culvert extension. Structural details for the skewed/kinked box culvert extension will be developed. Standard VDOT box culvert details will be used to the greatest extent possible for all other structural details. As required by the RFP, the existing construction joints will be cleaned and sealed and any spalled and/or delaminated concrete surfaces in the culvert barrels will be repaired.

Exhibit 4.3-11. / Durable Materials and Design Approaches | Retaining Wall No. 2

FEATURE	BENEFIT
The overall height of the retaining wall has been reduced from the RFP design concept by placing additional fill within the median of I-95.	By reducing the required height of the retaining wall VDOT will have less wall area to maintain.
Low permeability concrete will be used in all parapets on top of MSE retaining walls.	The use of low permeability concrete helps improve the retaining wall's long-term asset performance by slowing the ingress of detrimental deicing chemicals into the concrete and it also limits the depth of carbonation.
Class III CRR steel will be used in the parapet and moment slab.	The use of Class III CRR (solid stainless reinforcing steel) provides excellent corrosion protection and will help minimize future maintenance needs on the retaining wall.
All MSE walls will be designed for a 100-year service life with respect to soil reinforcement design.	Improves the long-term asset performance and minimizes inspection and long-term maintenance needs for VDOT.
An impervious membrane will be placed below the pavement and just above the first row of MSE reinforcement.	The impervious membrane will help improve the long-term asset performance by intercepting any flows containing deicing chemicals before they reach the MSE reinforcement.

DESIGN QA/QC

We will establish, implement, and maintain quality assurance and quality control (QA/QC) procedures and systems to meet VDOT contract requirements at every design phase. The overall management of the design QA/QC program is the responsibility of our design manager, Mike Hooshangi, PE, DBIA. QA staff will be led by Jeff McKay, PE, and he will report directly to Mike. Jeff is responsible for the QA of design elements included in the project and will perform a complete QA review of the all design documents. QC will be performed by the individual discipline leads who will also report to Mike. QA responsibilities and procedures will be separate from the QC roles and both will be detailed in the design QA/QC plan. QA staff assignments will be independent from design production and QC functions.

Mike will monitor adherence to the approved design QA/QC plan. This will include conducting design reviews, completing interdisciplinary coordination, performing constructability reviews, involving VDOT in the overall design review process, and confirming that all design and field changes follow the same QA and QC procedures. He will confirm conformance of submittals to the design QA/QC plan prior to submission.

The design QA/QC plan will be developed and implemented in accordance with the contract requirements and VDOT's *Minimum Requirements for Quality Assurance and Quality Control on Design Build and Public-Private Transportation Act Projects, July 2018*. The design QA/QC plan is a dynamic document and approved changes will be issued as the design QA/QC process is refined throughout the life of the project. The plan will establish:

- Well-organized record keeping and document control, minimizing VDOT contract administration efforts.
- QC procedures for contract compliance, preparing, checking, and correcting all drawings, specifications, calculations, and other design submittals prior to submission.
- QA procedures for evaluation of problem assessment, applied analysis, and personnel qualifications.
- Procedures to require that all drawings, specifications, and other design submittals are signed and sealed by an appropriately licensed professional (professional engineer, land surveyor, or landscape architect) holding a valid license in the Commonwealth of Virginia.
- The level, frequency, and methods of review for the adequacy of the design of the project, including methods for completing independent reviews of final drawings, specifications, and other design submittals.
- Procedures for coordinating work performed by different persons in the same or adjacent area, fabrication shops, casting yards, and other pertinent fabrication facilities to confirm

that conflicts, omissions, or misalignments do not occur between drawings or between the drawings and the specifications and to coordinate the review, approval, release, distribution and revision of documents involving such persons.
- Procedures for identifying design elements that require special construction QA and/or QC attention or emphasis such as ground improvements or deep foundations for structures.
- Identification by firm, discipline, name, qualifications, registrations, duties, responsibilities, and authorities for all persons and entities assigned to be responsible for design QA or QC activities, including subconsultants.
- Design QA/QC functions, including scheduled activities for design QA and QC, identifying the drawings, specifications, and other design submittals to be submitted to VDOT for review at each stage of the design work.
- QA and QC procedures for ROW appraisals, data entry, and VDOT's Right-of-Way and Utilities Management System (RUMS), including completeness of contract information, utility agreements, and surplus property data.

Our design QA/QC process is highlighted below in **Exhibit 4.3-13**. On the following page we discuss the QA/QC practices implemented by our team in **Exhibit 4.3-14**.

Exhibit 4.3-13 / Design QA/QC Process

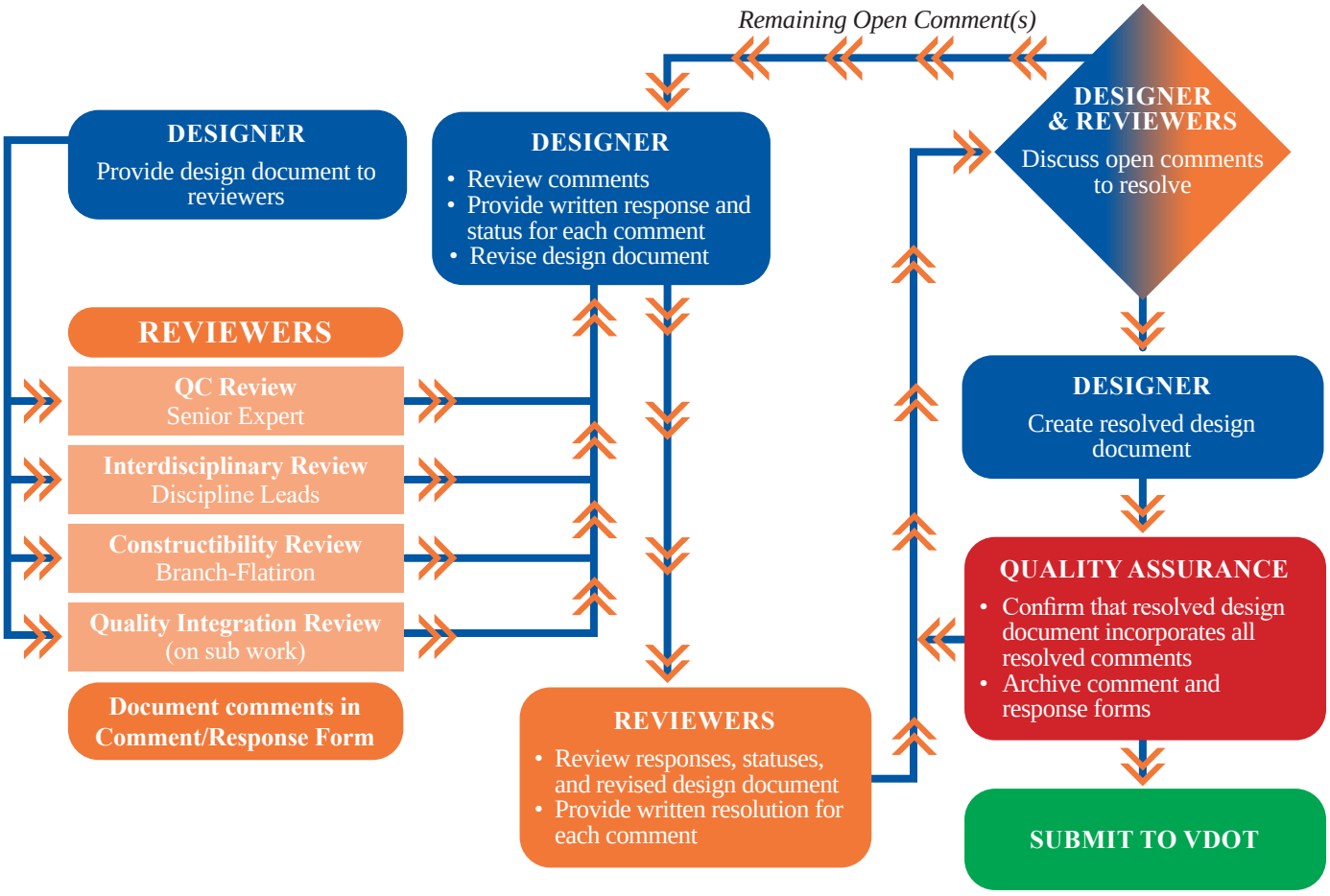


Exhibit 4.3-14. / QA/QC Practices Implemented by Our Team

DESIGN QUALITY REVIEWS

The Branch-Flatiron team will use a QA/QC design log to track the completion of design and/or the status of QA and QC reviews. Each review is tabulated on a review summary form, which indicates by signature that the QA and QC reviewers have completed their reviews and the Design Manager, Mike Hooshangi, PE, DBIA, has confirmed that comments have been incorporated into the design documents. The review documents, including the review summary form, become a permanent part of the project files. Quality reviews will also be conducted for any design changes that may be necessary during construction. ROW and Released for Construction plans will be accompanied by a completed VDOT LD-436 Quality Control Checklist and VDOT RW-301 for the specific submittal and a notice signed by our design manager, Mike.

INTERDISCIPLINARY COORDINATION

The interaction and coordination among pertinent design disciplines will be the responsibility of our Design Manager, who will hold bi-weekly design meetings to be attended by each discipline lead and members of the construction staff, as appropriate. These meetings will cover details of the design and coordination among the various disciplines including roadway, structural, hydraulics, geotechnical, and traffic engineers. One of the primary objectives of these meetings is to identify and eliminate conflicts, errors, misalignments, and/or plan inconsistencies before they get into the field under construction.

CONSTRUCTABILITY REVIEWS

These reviews significantly minimize the amount of potential RFIs and field issues, **reducing the need for additional VDOT resources.** Our team will hold bi-weekly internal design meetings attended by construction staff. These meetings will give the construction staff an opportunity to review the design for constructability and provide immediate feedback so appropriate design adjustments can be made. Prior to each plan submission, a formal constructability review will be led by the EIC, Maggie Cossman, PE, DBIA, and will include design and construction team members. Comments from those reviews will be provided to our design manager for incorporation and/or further discussion prior to completing each design phase.

QA/QC OF DESIGN AND FIELD CHANGES

Design changes, including field changes, will conform to the same design QA and QC measures and procedures as those applied to the original design. Design changes, including field changes and non-conformance evaluations, will be maintained in a database to track design and field changes and update the as-built documents. Our EIC, Maggie Cossman, PE, DBIA will confirm engineering decisions are not made in the field by non-engineers.

4.4 PROJECT APPROACH

4.4 PROJECT APPROACH

Branch-Flatiron provides a team who is committed to being a true partner, knows how to manage complex projects, and who can manage risk through best practices and lessons learned from similar large-scale major roadway and bridge improvement projects. As an established joint venture, members of our team have applied the systems, tools, processes, and procedures described in this section on previous projects, including the adjacent FredEx D-B and I-95 STE D-B in Stafford County.

Branch-Flatiron offers a team centered around partnership. Success requires trust and integration between an experienced team and multiple key stakeholders. We will build upon the partnership established on the FredEx project by making communication a priority and supplying the right technical resources at the right time.

BUILDING ON OUR SUCCESSES ON PROJECTS IN THE AREA

Our team has a solid history of successful projects in the I-95 corridor. Branch recently completed the I-95 STE D-B project **nine months ahead of schedule**. This success began by establishing an informal partnering process. Branch, VDOT, and 95 Express built a strong relationship that created a means for commitment and timely responsiveness. VDOT administered the contract, but during project delivery, the oversight and acceptance of design and construction were shared by both VDOT and 95 Express.

Because there were multiple stakeholders involved, developing an open and collaborative relationship was crucial to achieving the common project goals. This partnership allowed the team to proactively address review and approval of the design, submittals, and overall constructability. Design and construction of the ITS scope of work were adapted to address 95 Express's specific requirements and operational needs.

The team established this successful partnering relationship by engaging all stakeholders during the preconstruction phase. All stakeholders were invited to review and discuss the design before submittal for the official review period. Meetings were used to identify mutual objectives, such as operational needs, safety during construction, and operation time. Equipment warranties were also identified and addressed.

As this trust developed, Branch requested to begin work at-risk, ahead of schedule and ahead of Release for Construction (RFC) plans. This trust continued all the way through closeout, as project stakeholders provided one unified punch list inspection, which was quickly closed out through their combined efforts.

Value-Added Staff Highlight

The Branch-Flatiron team have included Value-Added staff to provide VDOT with additional expert resources to supplement our key staff. These value-added positions are similar to those currently working on the FredEx project and include:

- ***Executive Committee***
- ***Deputy DBPM***
- ***Traffic Management Task Force***
- ***Public Relations Manager***

These additional resources bring value to our team by providing additional oversight, planning, and communication.

Deputy D-B Project Manager
Adam Mathews

Adam has more than 23 years of construction experience, with nine years in D-B delivery and is currently supporting the FredEX project. He was also the DBPM on the NCDOT I-85 Yadkin River Bridge project with STV. Adam will assist the DBPM with project team management, job progress oversight, and proper resource allocation.

To continue a history of successful projects, Branch formed a construction JV with Flatiron, the Branch-Flatiron Joint Venture, for the adjacent FredEx project. Branch and Flatiron have been working together on D-B projects for the past three years in Virginia and North Carolina. Our JV benefits VDOT by combining the resources of two accomplished D-B contractors with proven experience in Virginia and the Southeast. Our combined workforce totals **more than 4,000 employees**. The FredEx project has allowed our team to develop an intimate knowledge and understanding of the area, including all relevant stakeholders. This local knowledge will allow our team to deliver success on this critical project.

PROJECT MANAGEMENT APPROACH

We will leverage our proven history of managing complex D-B projects, public relations, and coordinating with multiple stakeholders to implement best practices throughout the delivery of the Project. Through partnering with VDOT and other stakeholders, we will effectively manage all aspects of design and construction to limit impacts throughout the life of the Project. Elements of our project management approach are highlighted in **Exhibit 4.4-1**.

OVERALL PROJECT MANAGEMENT

Jeff Humphreys will serve as the DBPM and will have ultimate responsibility for project delivery. Jeff has more than 40 years of experience and serves as a knowledgeable and conscientious project manager with a knack for public interaction and exceeding the expectations of project owners. We have added Adam Mathews as the Deputy DBPM. With more than 23 years of construction experience, Adam will support the project management role and assist Jeff with leading the team.

Executive Committee

Providing VDOT with an additional level of accountability, we are providing an Executive Committee, a best practice learned from previous major D-B projects. The Executive Committee works with the DBPM to fulfill project objectives and commitments to VDOT and critical stakeholders. The Executive Committee is comprised of senior leadership from each JV partner's organization and provides ultimate authority to manage resources and mitigate risk, providing delivery certainty. The members of this committee are:

- Jason Hoyle, Vice President (Branch)
- Jim Schneiderman, PE , Vice President (Flatiron)

Currently working together in similar roles on three Branch-Flatiron JV projects, they will track and review project performance with the management team to make certain necessary resources, including design and construction personnel, equipment, and materials, are allocated to safely and efficiently complete the project. They will also review and provide direction to the team on how to best address issues regarding safety, quality, and the environment, should they occur.

Exhibit 4.4-1 / Project Management Approach

Integration of safety and constructability into the design.

Consideration of schedule and cost implications.

Improved coordination with VDOT and all relevant stakeholders.

Improved efficiency and elimination of surprises.

Attention to all design alternatives, access, equipment, and material resources.

Reduced field design changes during construction.

Consistency in approach, standards, and regulations during design.

Public Relations Manager

Clear communication and effective outreach with the VDOT Fredericksburg District are critical to engaging the public. To achieve this goal, our team will partner with VDOT to develop a comprehensive public communications and community engagement program.

DBPM, Jeff Humphreys, will lead all design and construction related public communications. He will be assisted by Public Relations Manager, Windy Campbell, of On Point Transportation PR LLC (OPT). Windy has extensive experience working as an outreach manager in Virginia and is familiar with VDOT's public relations processes and VDOT's *Policy Manual for Public Participation in Transportation Projects*. Windy and Jeff will work with VDOT's Fredericksburg District Communications team to notify the traveling public of project impacts, including lane shifts and closures. Detailed information about our plans to keep the traveling public aware of the construction of this critical project is in Section 4.5.2 Transportation Management Plan.

Partnering Approach

Our team will implement a detailed partnering approach with VDOT from the beginning of the Project. Elements of our approach include the following:

- Keeping the public and stakeholders well-informed and safe is our team's number one goal. Our approach identifies critical safety concerns during the design phase, which will assist in eliminating hazards during construction.
- Holding detailed partnering meetings, which include, but are not limited to, quarterly partnering meetings, over the shoulder reviews, task meetings, traffic management task force (TMTF), and QA/QC meetings.
- Creating an environment where stakeholders can provide input to the design and construction process, maintaining the integrity of the project and the interests of all parties are represented. The public will have the opportunity to discuss key concerns throughout the project's duration.

Coordination Meetings

Continual communication on all levels is the foundation of our team's integration. Branch-Flatiron and STV will implement a series of meetings as seen in **Exhibit 4.4-2** on the following page.

4.4.1 ENVIRONMENTAL MANAGEMENT

Branch-Flatiron has an exemplary record of environmental stewardship on all past projects throughout the Southeast and are committed to the same focused approach forward for this ecologically sensitive project the crosses over the Rappahannock river. Our team's approach to managing the environmental risks on this project are focused on minimizing impacts from the RFP, reviewing and incorporating all of the identified items of concern into our design and construction approach, and providing proper management during construction.

APPROACH TO ENVIRONMENTAL MANAGEMENT

Our design maintains the RFP footprint while also resulting in a slight reduction in the unavoidable impacts to streams and wetlands compared to the NEPA re-evaluation estimates; thus, streamlining Clean Water Act Section 401/404 permitting and lowering the required wetland and stream mitigation/compensation. In accordance with the RFP, VDOT will begin coordination for Section 401/404 permits for the FredEx Overlap Area that are separate and complete from both I-95 NB RRC and FredEx projects based on RFP Concept plans. The permits will be transferred to the successful offeror no later than October 30, 2020.

As part of acquiring the wetland and stream permit, VDOT will purchase all required mitigation for the overlap area based on the RFP Concept Plans. Based on our impact estimates, the I-95 NB RRC project can be permitted under a Virginia Water Protection permit VWP-3, and a State Programmatic General Permit (SPGP). A Virginia Marine Resources Commission (VMRC) Subaqueous Bed Permit will also be required for the I-95 NB RRC bridge. We understand that permit conditions for removal of the temporary causeway will be incorporated into our 401/404 permits.

EEE Consulting (3e), will lead our efforts to obtain the necessary environmental permits for the

project. 3e has successfully secured environmental permits for various transportation projects throughout Virginia. Our team members have good working relationships with key personnel at the U.S. Army Corps of Engineers (USACE), Virginia Department of Environmental Quality (VDEQ), Virginia Department of Game and Inland Fisheries (VDGIF), U.S. Fish and Wildlife (USFWS), and other regulatory agencies involved in the project.

Our team will engage our relationships with the permitting and resource agencies to initiate early coordination to identify specific areas of agency concern and to develop reasonable solutions to further avoid or minimize the impacts to jurisdictional or other sensitive areas. The Joint Permit Application will be developed during the early stages of the project design for timely agency submittal, review, and coordination. Our team has reached out to several private mitigation banks, including the bank used to recently purchase stream and wetlands credits in the lower Rappahannock watershed for the FredEx project.

Exhibit 4.4-2 / Coordination Meetings

MEETING (FREQUENCY)	DESCRIPTION
Task Forces (Weekly during design)	• Streamlines decision-making and design development process through discipline-specific, face-to-face collaboration. • Explores opportunities to mitigate risk and minimize impacts to the public through design innovations. • Evaluates safety, quality, design updates, environmental and sustainability opportunities, constructibility, schedule, utilities, and ROW.
Traffic Management Task Force (TMTF) Meetings (Monthly)	• Reviews current and upcoming MOT plans and activities to help coordinate operations with our team, VDOT, stakeholders, the adjacent projects, and the public. • Evaluates safety and schedule to minimize impacts.
Progress and Health, Safety, and Environmental (HSE) Meeting (Monthly)	• Facilitated by DBPM Jeff Humphreys. • Team reviews action items and updates of all aspects of the project ranging from safety, design, environmental compliance, construction, schedule, public relations, utilities, and ROW coordination.
Pre-Construction Planning (Prior to Each Operation)	• Held before the start of every major work activity. • Reviews the plan for construction of the work so that the team is clear on scope, safety, quality, and environmental compliance.
QA/QC Meeting (Weekly)	• Reviews safety, quality, environmental compliance, QA/QC, schedules, upcoming activities, and required communication. • Effectively keeps all parties informed of the Project's status and actively engaged.
Safety Meeting (Weekly)	• Communicates safety trends and related messages from Corporate to the operations team. • Provides job-specific update to the operations team.
Safety Meeting (Daily)	• Reviews that day's tasks and associated safety risk assessments between superintendents and their crews.
Design Integration Meeting (Bi-weekly)	• A focused meeting of key stakeholders and experts to discuss the design.
Constructability Review Meeting (Bi-weekly)	• These meetings will occur during the pre-construction phase. • Will be attended by design and construction personnel to review project constructability and provide input on the design.
Stakeholder Meetings (As Needed)	• These meetings make certain that constant engagement of stakeholders.
Public Meetings (As Needed)	• The meetings achieve engagement with the public and that their concerns and issues are addressed throughout the project life cycle. This includes "pardon our dust" meetings.

Several banks reported having wetland and stream mitigation credits available in the project watershed.

ENVIRONMENTAL AREAS OF CONCERN

Our team has evaluated all environmental documents provided by VDOT identifying the environmental conditions and areas of concern, as highlighted in **Exhibit 4.4-3** below. We have developed an integrated approach to minimize or mitigate potential issues that could adversely affect the project schedule or costs. This has been achieved through a proactive approach including:

- Initiate early communication, post award, with permitting agencies in an effort to facilitate an efficient permitting process, reducing the potential for delays.
- Immediate analyses of potential critical issues (e.g., threatened and endangered [T&E] species, cultural resources, fisheries, time of year restrictions, surveys and monitoring plans, and noise abatement) to eliminate or reduce project impacts and address early planning of mitigation measures.
- Incorporation of compliance reporting and documentation schedules/requirements using project-specific formwork to streamline the entire range of the permitting process.
- Special attention to the project environmental commitments, through incorporation into our construction workplans and project hold point meetings.

The Time of Year Restrictions (TOYR) associated with anadromous fish and threatened and endangered species are the most challenging

Exhibit 4.4-3 / Environmental Conditions/Areas of Concern

ENVIRONMENTAL CONDITIONS/AREAS OF CONCERNS	MITIGATION STRATEGIES
Cultural Resources and Section 4(f) Resources	• Avoid impacts to the Rappahannock River canal and Canal Lock #1/Minor's Lock. • Minimize temporary impacts to the trail system. • Keep impacts below de minimis levels: Fredericksburg Battlefield.
Wetlands and Waters of the US (WOUS)	• Early coordination/consultation with USACE and VDEQ. • Evaluate and Incorporate Avoidance and Minimization Measures. • Develop restoration approaches for temporary impact areas. • Early preparation of Joint Permit Application.
Threatened and Endangered Species	• Northern Long Eared Bat – Complete Bat Survey of Bridge Structures. • Complete T&E mussel survey upon expiration and complete relocation of T&E mussels if found. • Complete Section 7 of ESA consultation with USFWS. • Adhere to TOYR provided in the RFP.
Hazardous Materials	• Avoidance of impacting areas with identified hazardous materials. • Prepare a project-specific Spill Prevention Control & Countermeasure (SPCC) Plan presenting measures to avoid spillages of fuels, chemicals, and fluids, and emergency response actions. • Compliance with Section 411 in the 2016 Road and Bridge Specifications for Type B structures and VDOT Special Provisions for asbestos inspection and abatement. • Conduct a Phase I ESA in conformance with ASTM Standard E 1527-13 for all ROW acquisitions and comply with the special provisions regarding asbestos inspections on structures. • Remove and dispose of any discovered hazardous material in compliance with all applicable federal, state, and local regulations.
Noise Mitigation	• Maintaining equipment mufflers and lubrication • Scheduling of construction events and limiting usage times to minimize noise near sensitive abutters. • Where practical and feasible, configuring construction sites to minimize backup alarm noise. • Using variable message and sign boards that are solar powered or connected to the local power grid.

environmental issue for the I-95 NB RRC project. Specific TOYR conditions that will be imposed with the Clean Water Act Section 401/404 permits for the project will require early and extensive consultation with VDGIF, VMRC, USACE, and potentially the NOAA Fisheries Service (NOAA) and National Marine Fisheries Service. We have identified the stated TOYR within our construction schedule to properly accommodate the in-stream work necessary to modify the existing causeway, construct bridge pier containment areas, and for keeping at least 50% of the flow of the river open, including the northern section of the river that is used by boaters. Additional TOYR information is highlighted in **Exhibit 4.4-4** below.

Branch-Flatiron is committed to completing a mussel survey in 2020 upon expiration of the current mussel survey. If mussels are found, our team is prepared to secure approvals/permits for relocation of the T&E mussels from the river crossing construction area prior to river construction activities. If no T&E mussels area found, our approach is to coordinate with VDGIF, USFWS, and USACE to eliminate mussel TOYR from the Section 401/404 permits. The Northern Long-Eared Bat TOYR occurs from April 15th to September 15th. This restriction does not apply to the FredEx Overlap Area per the 4(d) rule. Pre-construction bat surveys will be completed on bridge structures scheduled for replacement. Migratory bird surveys will be completed if Option 2 is implemented.

Hazardous materials have been identified in the 2015 NEPA EA and Finding of No Significant Impact (FONSI) and 2018 NEPA Re-evaluation. One property was identified as having potential hazardous materials, however, it is outside of our proposed limits of construction so there is not a perceived significant risk to the project. A Phase I ESA in conformance with ASTM Standard E 1527-13 will be completed for all right-of-way acquisitions. Asbestos inspections on structures will also be completed in accordance with the VDOT Special Provision.

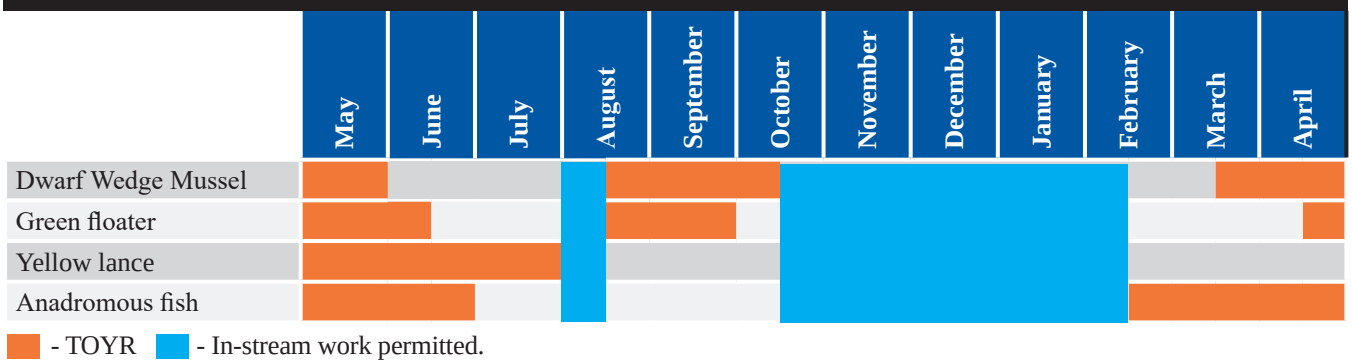
CONSTRUCTION APPROACH

During construction, Branch-Flatiron Environmental Compliance Manager, Sean Gough and Mike Saunders, QAM, will hold point meetings at all identified environmentally sensitive areas. Based on our team's previous experience these meetings, which will include all concerned parties, are invaluable to confirming environmental compliance prior to construction activities beginning. Branch-Flatiron will also conduct internal, on-site preconstruction meetings to properly educate all staff on the permit requirements and best practices on impact avoidance.

Construction in the Overlap Area will be permitted with the 401/404 permits transferred from VDOT to Branch-Flatiron. The first environmental hold point meetings will address these permit requirements. Once the remaining project 401/404 permits are obtained, an additional hold point meeting will be held prior to any construction to educate the team on the permit requirements in these areas.

By launching the superstructure from above for the I-95 NB RRC bridge, our team's erection approach will further limit environmental risk by only requiring a minor shift of the existing causeway,

Exhibit 4.4-4 / Time of Year Restrictions for In-Stream Work



and limiting the footprint of the causeway to only what is required for substructure construction. The existing causeway in the Rappahannock River will be modified as needed for the project Additionally, our schedule, for both design and construction, accommodates coordination with the agencies and the I-95 SB RRC project team to facilitate the transfer of responsibility of the installed causeway for the I-95 SB RRC project.

4.4.2 UTILITIES

The I-95 NB RRC project consists of construction occurring adjacent to, and tying into an existing system with multiple utilities and utility owners found throughout the project limits. The Branch-Flatiron team's first step was to identify all potential impacts to determine if we could eliminate or minimize the utility impact through design. As this is an established area with horizontal and vertical constraints, the opportunity to eliminate the impact through design is limited. If the impact was identified as unavoidable, our approach shifted to how to properly managing the relocation to avoid impacts to the project schedule and cost.

Within this section we describe our strategy to minimize utility related impacts, deal with unforeseen circumstances, and maintain the project schedule. Our team's experience managing this risk will allow us to effectively coordinate with both public and private utilities impacted by the project.

UTILITIES IN PROXIMITY AND POTENTIAL CONFLICTS WITH DESIGN

During the procurement stage, the Branch-Flatiron team performed an in-depth analysis of the utilities in the corridor and developed strategies to address the conflicts. We then created a Utility Conflict Matrix, containing all owners, locations, anticipated impacts, relocation durations, and prioritization. We have identified two areas where coordination is critical to maintaining project schedule. These areas consist of the overlap area between Route 17 and the FredEx project and the Route 17 corridor. Route 17 is critical as it contains the greatest concentration of potential impacts identified within the project limits while the FredEx Overlap Area is critical due to the Interim Milestone.

As part of our overall analysis we determined that the greatest potential for utility impacts on the project is to the fiber optic spine owned by SummitIG, which is running just outside of the eastern edge of the existing northbound I-95 GP lanes for the length of the project. It is critical to keep this utility service operational during the entire construction period. This will require additional coordination and communication with not only SummitIG, but also VDOT's ITS staff.

This project is unique as there is the potential for impacts to be eliminated, or introduced, through efforts performed by the adjacent ongoing projects. This could occur at Route 17 where efforts performed by the I-95 SB RRC project contractor could eliminate conflicts identified for this project. Early communication with adjacent projects is imperative in fully identifying the utility impacts. In **Exhibit 4.4-5** on the following page we have summarized our utility assessment to detail the main utility conflicts we see for the project. We have begun communication with each utility owner and have developed our strategy to address the work plan, schedule, and cost for each impacted utility.

COORDINATION AND COMMUNICATION

Keith Sinclair, PE will lead utility communications and coordination efforts on the project. Early coordination is critical to the success of the project, especially for the utility impacts located within the FredEx Overlap Area due to the Interim Milestone. Below are some of the elements which will be managed by our utility coordination team.

Field Inspection

Keith will lead the field investigation efforts. These efforts include use of Subsurface Utility Engineering (SUE) to layout and excavate testholes, and record through survey the required relevant location data. This data will be incorporated into our design to help identify impacts properly.

Utility Field Inspection Meetings

Branch-Flatiron will conduct a preliminary review meeting and VDOT Utility Field Inspection Meeting (UFI) with utility owners to review the overall project scope, milestones, and utility relocation schedule and preliminary cost

Exhibit 4.4-5 / Identified Utility Conflicts

TYPE	OWNER	LOCATION	DESCRIPTION	PRIORITY
Gas	Columbia Gas	Route 17 8025+80	2" gas main on north side - potentially impacted by new ditch.	Medium
	Columbia Gas	Route 17 9006+75	4" gas main on south side - potentially impacted by 18" storm drain crossing.	High
	Columbia Gas	Route 17 9010+90	4" gas main on south side - potentially impacted by 18" storm drain crossing.	Medium
Electric	Dominion Energy	I-95 NB 4422+00	Pole for overhead crossing located in extended detention pond #1.	Medium
Sanitary	Stafford County	Route 17 8000+75 to 8004+75	8 " sewer - potentially impacted by Route 17 widening.	Medium
	Stafford County	Ramp HWN 5635+50	30" sewer - potential impact with proposed box culvert extension.	High
Water	Stafford County	Route 17 8001+00 to 8022+00	12" water line - potentially impacted by Route 17 widening and by NB CD bridge if Option 2 is implemented.	High
	Stafford County	Route 17 8026+00 to 8035+68	12" water line - potential impact with Route 17 widening.	Medium
	Stafford County	Ramp B 611+20	6" water line - potential impacts from Ramp B realignment and storm drain crossing.	Medium
Communications	SummitIG	I-95 NB 4388+00 to 4392+00	Fiber trunkline - potential impacts with storm water management facilities.	Low
	SummitIG	I-95 NB 4398+50 to 4409+50	Fiber trunkline - potential impacts with storm water management facilities.	Low
	SummitIG	Route 3 Ramp C 5443+75 - 5519+25	Fiber trunkline - multiple potential impacts due to proposed Ramp C, drainage ditch, drainage lines, and guardrail.	Medium
	SummitIG	I-95 NB CD lanes 5576+00 to 5583+00	Fiber trunkline - potential impacts with proposed CD lane widening.	Medium
	SummitIG	Route 17 Ramp D 702+75 to 708+00	Fiber trunkline - potential impacts with proposed Ramp D widening and guardrail.	High
	SummitIG	Route 17 Ramp C-2 102+00 to 105+06.30	Fiber trunkline - potential impacts with proposed Ramp C widening and guardrail.	High
	SummitIG	Ramp HWN 5623+25-6040+00	Fiber trunkline - multiple potential impacts due to ramp widening, new ramp HWN, drainage ditch, new drainage lines, and guardrail.	High
	SummitIG	Auxiliary Lane 4690+00 - 4730+00	Fiber trunkline - mulitple potential impacts due to Option 1 I-95 NB widening.	Low
	Verizon	Route 17 8001+25 to 8005+25	Underground T/Tg - potential impacts due to Route 17 widening.	Medium
	Verizon	Route 17 8019+75 to 8021+75	Underground T/Tg - potential impacts due to Bioretention #2.	Low
	Verizon	Route 17 8028+90	Underground T/Tg - potentially impacted by Route 17 widening.	Low

responsibility determination. We will continue to monitor the progress of each utility company, as they prepare a conceptual relocation plan and estimate to monitor that they are meeting the schedule milestones and have the required project information needed to support their design.

Task Meetings

We will implement and lead Utility Coordination meetings which will occur on an as needed basis as part of the regular design task meetings. These meetings are primarily between the internal design and construction teams, but they will include other relevant parties, as necessary. This could include parties such as VDOT, utility owners, and staff from the adjacent projects. The intent of Utility Coordination meetings is for cross-discipline coordination to occur helping provide a clear understanding of utilities encountered for all elements of the project.

Prior Rights | Cost Identification

We will work with utility owners to confirm prior rights of each owner's facilities if claimed. We will coordinate and obtain all proper documentation, including cost estimates, relocation plans, and letters of no conflict dependent upon the utility's compensable right. Cost sharing responsibility for any required utility relocations will be documented on VDOT Form UT-9 and shared with each utility company. If there is a dispute over prior rights, Branch-Flatiron will continue to coordinate with the utility company until it is resolved.

RISK MITIGATION STRATEGIES

The key to safeguarding against potential schedule impacts due to utility relocations is consistent, ongoing communications. The Branch-Flatiron team will continually track and communicate with the companies involved throughout the entire relocation phase. Through our experience on past projects we have developed multiple strategies to mitigate impacts of delays associated with utility relocations going beyond schedule timeframes, and discovery of unknown utilities.

Once utility relocation activities begin, Lead Utility Coordination Manager, Ismail Ahmed, will track the progress of the relocations as well as communicate with the field supervisors. All identified utility conflicts have been incorporated into our Critical Path Management (CPM) Schedule and tied to the respective successor work activity. To further provide construction details, Ismail will use our three week look ahead schedule to confirm utilities and their status of relocation correspond with the work activities. If it is apparent that a utility is falling behind, additional meetings and oversight will be used to identify solutions, or work-arounds, for schedule recovery.

When an unidentified utility is encountered, we will bring in AMT's SUE group, as well as Miss Utility to help track the line down to a point of identification. Once identified, we will immediately contact the company to come to the field and confirm it is theirs and if it is active or abandoned. We will incorporate the utility into the matrix and design and identify a solution as necessary.

Strategies to Mitigate Utility Delays

We have multiple strategies to avoid impacts of delays associated with utility relocations going beyond schedule timeframes. These include:

- Communication and coordination with utility owners throughout all stages of the project.
- Early identification of utility easements required.
- Planning and coordination with adjacent projects.
- Maintain a Dynamic Utility Tracking Matrix throughout the project duration.
- Effective and collaborative coordination meetings, including UFI, with the right attendees.
- In-depth knowledge of VDOT *Utility Manual*, RUMS, and VDOT requirements for Utility P&E's.
- Incorporation of utility relocation activities into the project schedule.
- Prioritization of relocations provided to utility owners.
- Working around or protecting utilities in place while new facilities are being installed.

4.4.3 GEOTECHNICAL

Branch-Flatiron has performed a thorough review of the I-95 NB RRC Geotechnical Data Report (GDR) and the geotechnical data from the I-95 SB RRC project that was provided with the RFP. From our review of the subsurface data included, we have identified the site conditions and the anticipated geotechnical risks on the project. The key geotechnical risks associated with the I-95

NB RRC project are summarized in **Exhibit 4.4-6** below and on the following pages.

UNSUITABLE MATERIALS

We have reviewed the I-95 NB RRC GDR and the geotechnical data from the I-95 SB RRC project in order to assess the potential for unsuitable materials, as defined in the RFP. The I-95 NB RRC GDR included the logs of 338 borings that were drilled in the median of I-95 where most of the roadway and bridge construction will occur. Unsuitable materials (except those containing deleterious materials) that are excavated will be improved by drying, mixing, or chemically treating these soils with lime or cement so that they can be re-used as compacted fill on this project.

Exhibit 4.4-7. on the following page presents a summary of the approximate locations where unsuitable materials are anticipated within two feet of the pavement subgrade. Where unsuitable materials are encountered in roadway widenings, they will be undercut and replaced with suitable materials stockpiled from other areas on site, or with select backfill that has a CBR of 30 that is wrapped in a VDOT approved geosynthetic. Alternatively, the unsuitable subgrade materials can be improved in-situ by drying, mixing, and/or chemical treatment in place.

To further inform the final design of the project, our field investigation and laboratory testing programs will include soil classification, CBR, and Resilient Modulus testing to identify the locations of unsuitable materials.

SETTLEMENT OF MSE WALLS

MSE walls will be constructed to create Retaining Wall No. 2, as well as the integral abutments and approach embankments to the new bridge carrying the I-95 NB CD Lanes over Route 17 (Option 2). These embankments/walls will meet the settlement and global stability requirements of the RFP.

For the construction of Retaining Wall No. 2, embankment fill will be placed as high as 20' immediately adjacent to the I-95 SB GP lanes. This retaining wall is underlain by deposits of silty sand, clayey sand, and sandy lean clay. The stability and settlement of this embankment, as well as the MSE wall, will be evaluated at several sections along its alignment for conformance with the RFP requirements. Settlements will also be evaluated to assess the potential impact of the new construction on the adjacent I-95 SB GP lanes. Due to the granular nature of the soils and depth to groundwater, the settlements are elastic and should occur as the embankment is constructed.

For Option 2 for the replacement of the existing bridge carrying the I-95 NB CD Lanes over Route 17, the GDR borings at Abutment A indicated an approximately 40' thick layer of compressible clay. The settlement of the backfill soil at this location is primarily elastic due to the depth of the clay layer and the amount of load increase on the clay layer due to amount of soil backfill to create the MSE wall. Ground improvement does not appear to be necessary in order to meet the construction schedule. During final design, if the amount of settlement is great enough to cause downdrag on the piles, potential solutions include increasing the size of the piles or using lightweight

Exhibit 4.4-6 / Summary of Key Geotechnical Risks

Based on our team's experience and review of the RFP documents for the I-95 NB RRC project, the key geotechnical risks include:

RISK	*MITIGATION STRATEGY*
Unsuitable materials	*Over-excavation and replacement, or mixing and/or chemical treatment.*
Settlement of MSE walls	*MSE walls designed to meet RFP requirements for stability and settlement.*
Fill cuts and slopes in Potomac Formation soils	*Over-excavation of soils and replacing them with select fill, and using light-weight fill, ground improvement techniques.*
Acid Sulfate Soils	*Avoidance, burying and encapsulating the soils, or treatment with lime.*
Corrosive soils	*Increase the size of steel piles to compensate for corrosion.*
Protection of adjacent structures	*Monitor and control vibrations at adjacent structures*

Exhibit 4.4-7 / Summary of Anticipated Undercuts

REPRESENTATIVE BORINGS	ESTIMATED STATION LIMITS OF UNDERCUT	REASON
19RW-AO-001	5450+00 and 5501+50	Low SPT N value, high plasticity soils, high moisture content, and high groundwater table
19GP-AP-064	4499+00 and 4509+00	Low SPT N value, high plasticity soils, and high groundwater table
19CD-AP-029	5514+00 and 5516+50	High plasticity soils
19CD-AP-035	5525+00 and 5529+00	Low SPT N value and high plasticity soils
19GP-CO-095	5525+00 and 5529+00	Low SPT N value, and high plasticity soils, and high groundwater table
19CD-AP-067	5578+00 and 5647+00	Low SPT N value and high plasticity soils
19GP-AP-160	4722+00 and 4724+00	Low SPT N value and high plasticity soils

fill in the embankment. The GDR borings indicate the soils at Abutment B are typically sandy residual soils and will settle quickly.

During our subsurface exploration program we will drill Standard Penetration Test (SPT) borings and perform in-situ cone penetrometer (CPT) and dilatometer (DMT) soundings to finalize our evaluation of settlement and global stability of the bridge approach embankments and MSE wall locations. Our testing will include consolidation tests with time-settlement readings so we can calculate short-term and long-term settlements. Our CPT soundings will include pore-pressure dissipation tests to measure horizontal permeability for evaluation of the time-rate of settlement for ground improvements if needed. The DMT and CPT soundings will be used to obtain soil shear strength parameters, along with triaxial or direct shear testing of undisturbed samples for global stability assessment.

FILL SLOPES AND CUTS IN POTOMAC FORMATION SOILS

Along Ramp HWN, between Sta. 6000+00 and Sta. 6025+00, there are layers of Potomac Formation Clay that will be encountered. We have evaluated several critical sections for their long-term stability and potential mitigation measures if the factor of safety does not meet VDOT's minimum requirements. We also analyzed the settlement of the embankments. The sections and the potential mitigation measures are summarized in **Exhibit 4.4-8** on the following page.

ACID SULFATE SOILS

The RFP indicates the soils at the site are known to be potentially acidic due to the presence of acid sulfate soils. The GDR included the results of laboratory tests for aggressive soils, typically consisting of sulfide-rich natural sediments, to exist within the project limits. Based on the 16 samples tested, no soil was identified with a sulfur content of 0.2% or higher. Based on currently available information, acid sulfate soils are not anticipated to be encountered during excavation activities within the project limits. However, it is noted that this is based on limited data. Additional sampling and testing will therefore be performed to confirm this conclusion. Where encountered, typical mitigation options include:

- **Neutralization in place |** Mix existing surface soils that will be exposed at the surface thoroughly with agricultural lime. Note that testing is required to confirm neutralization.
- **Capping with limestone aggregate |** Where materials are exposed on slope faces, bench slopes at 3H:1V and cap with limestone aggregate.
- **Reuse as embankment fill/reburial |** When reused as embankment fill, mix the excavated soil with agricultural lime. When excavated, the material should be mixed with agricultural lime within 48 hours. Place neutralized material within embankments, maintaining a 4' clearance between the embankment fill and the final pavement subgrade and exterior slope face.
- **Avoidance |** Adjust locations or improvements to avoid exposing acid sulfate soils.

Exhibit 4.4-8 / Mitigation of Fill Slopes and Cuts in Potomac Formation Soils

STATION	CONDITION AT THE SITE	POTENTIAL MITIGATION MEASURES
6005+00	Fill slope height - 27'. Potomac Formation Clays below the embankment.	• Excavate out the Potomac Formation Clay below the embankment and create a keyway backfilled with embankment fill.
6011+00	Cut slope height - 27'. Potomac Formation Clays at the top of the cut slope.	• Lay back the top of the slope to a 4:1 angle. • Excavate portions of the slope and replace with lightweight fill and geosynthetics. • Install rigid inclusions at the toe.

Where acid sulfate soils are encountered around structural foundations and it is not possible to avoid them, the structures will be designed to resist corrosion by using sulfate resistant concrete. The acidic nature of the soils is also problematic for establishing vegetative growth, as such, all cut and fill surfaces shall be treated with lime, such that a high quality vegetative cover can be established.

Our testing program will include Acid Base Accounting tests along with pH and sulfur content tests to evaluate the presence and location of acid-sulfate soils. These test results will be used to make recommendations for avoidance by covering these soils with non-aggressive fill, minimization of disturbance by adjusting the design, and neutralization with alkaline materials per the Acid-Base Accounting Test with a minimum of four tons per acre. On the FredEx project Branch and Flatiron are also using strategic reburial of acid sulfate soils. We will utilize this approach on this project, as appropriate.

CORROSIVE SOILS

To assess the potential for pile corrosion we reviewed the pH and resistivity analytical data in the I-95 NB RRC project GDR and the analytical data obtained from the adjacent I-95 SB RRC project. We specifically reviewed the analytical data in the vicinity of the bridge carrying the I-95 NB CD Lanes over Route 17, which is required to be replaced as part of Option 2.

We analyzed the laboratory data in accordance with Chapter 23 from the VDOT *Manual of the Structure and Bridge Division* regarding pile corrosion. The analytical test results from the I-95 NB RRC project indicate that one soil sample near the I-95/Route 17 Interchange classifies this soil as aggressive. To account for the corrosive soils, all steel H-piles for the bridge carrying the I-95 NB CD Lanes over Route 17 will be designed with a corrosion allowance, which is the thickness of metal (above what is structurally required for the pile) needed to compensate for loss of metal that will occur as the pile corrodes.

PROTECTION OF ADJACENT STRUCTURES

Constructing new structures, such as bridges and retaining walls, while maintaining existing adjacent structures represents a geotechnical challenge, mainly to avoid horizontal and vertical movements and vibrations that could damage existing adjacent structures. We have identified the following adjacent structures that may need to be monitored during construction:

- **Bridge carrying Cowan Boulevard over I-95 |** The excavation work associated with the construction of Route 3 Ramp C will occur in close proximity to the eastern most bridge abutment and pier.
- **Existing noise barrier located east of I-95 between Cowan Boulevard and Fall Hill Avenue |** The construction of Retaining Wall No. 01 and Route 3 Ramp C will require drilling and/or excavation work within close proximity to the existing noise barrier foundations.
- **Bridge carrying Fall Hill Avenue over I-95.** The construction of Retaining Wall No. 01 and Route 3 Ramp C will require drilling and/or excavation work within close proximity to the eastern most bridge abutment and pier.
- **Existing noise barrier located east of I-95 north of Fall Hill Avenue.** The construction of Retaining Wall No. 01 and Route 3 Ramp C will require drilling and/or excavation work within close proximity to the existing noise barrier foundations.

- **I-95 bridges over the Rappahannock River.** The construction of the new bridge carrying the I-95 NB GP Lanes over the Rappahannock River will require drilling and/or excavation work in close proximity to the adjacent structures.
- **I-95 bridges over Route 17.** Should Option 2 be exercised then the replacement of the existing bridge carrying the I-95 NB CD Lanes over Route 17 will require pile driving and excavation work to occur in close proximity to the adjacent structures.

In accordance with the *Special Provision for Monitoring of Existing Adjacent Structures During Construction*, the Branch-Flatiron team will monitor and control vibrations to less than 0.5 inches per second at structures within a 200' radius of drilling, driving, or excavation activities. The vibration monitoring equipment will be capable of providing remote e-mail notification immediately upon occurrence of a vibration event exceeding the maximum peak particle vibration level.

COORDINATION AND REVIEW BY THE GEOTECHNICAL ENGINEER OF RECORD

During construction, the Geotechnical Engineer-of-Record will monitor and inspect critical elements of the project during construction to confirm that the construction is in accordance with the geotechnical engineering recommendations. These critical elements of the project include:

- Foundation subgrades for the abutments and piers of the bridge carrying the I-95 NB GP Lanes over the Rappahannock River.
- Embankment and pavement subgrades.
- Assessment and treatment of potentially weak or unsuitable materials.
- Installation and load testing of the pile foundations for the bridge carrying the I-95 NB CD Lanes over Route 17 (Option 2).
- Settlement monitoring instrumentation installation and results.
- Vibration monitoring instrumentation installation and results.

GEOTECHNICAL ENGINEERING REPORTS

To meet the schedule demands for the project, especially for the FredEx Overlap Area where there is an interim milestone requirement, our team's approach for developing the Final Geotechnical Engineering Report (GER) for the project is to prepare four individual Final GER's for the project. Final GER's will be prepared for the FredEx Overlap Area Early Work Package, the bridge carrying the I-95 NB GP Lanes over the Rappahannock River, the bridge carrying the I-95 NB CD Lanes over Route 17 (Option 2), and the balance of the project area. Each of the Final GER's will be prepared according to the VDOT *Materials Manual of Instruction, Chapter III Geotechnical Engineering* (MOI Chapter III), and *Chapter VI Pavement Design* (MOI Chapter VI) as appropriate.

Addressing Geotechnical Issues

The results of our subsurface exploration and testing program will be the basis of our final Geotechnical Engineering Report, which will include recommendations to address the project geotechnical issues. Specifically, our exploration program will be designed to address the following issues:

- Presence of unsuitable materials
- Pavement design
- Presence and remediation of acid sulfate soils
- Corrosion
- Protection of adjacent structures
- Existing and proposed slopes
- Settlement of MSE walls
- Foundations for bridges and retaining walls
- Traffic structures (signs and poles)
- Culverts

4.4.4 QUALITY ASSURANCE/ QUALITY CONTROL

Branch-Flatiron's Construction QA/QC approach is included as an appendix to Volume I.

4.5 CONSTRUCTION OF THE PROJECT

4.5 CONSTRUCTION OF THE PROJECT

The Branch-Flatiron team provides an experienced and proven D-B construction management organization that has established goals focused on providing the best value to VDOT and project stakeholders. Our construction management approach to meeting these goals is integrating the entire team, including the designer, subcontractors, suppliers, subconsultants, and VDOT, with a focus on designing and planning the scope of work to maximize safety and minimize impacts to the traveling public.

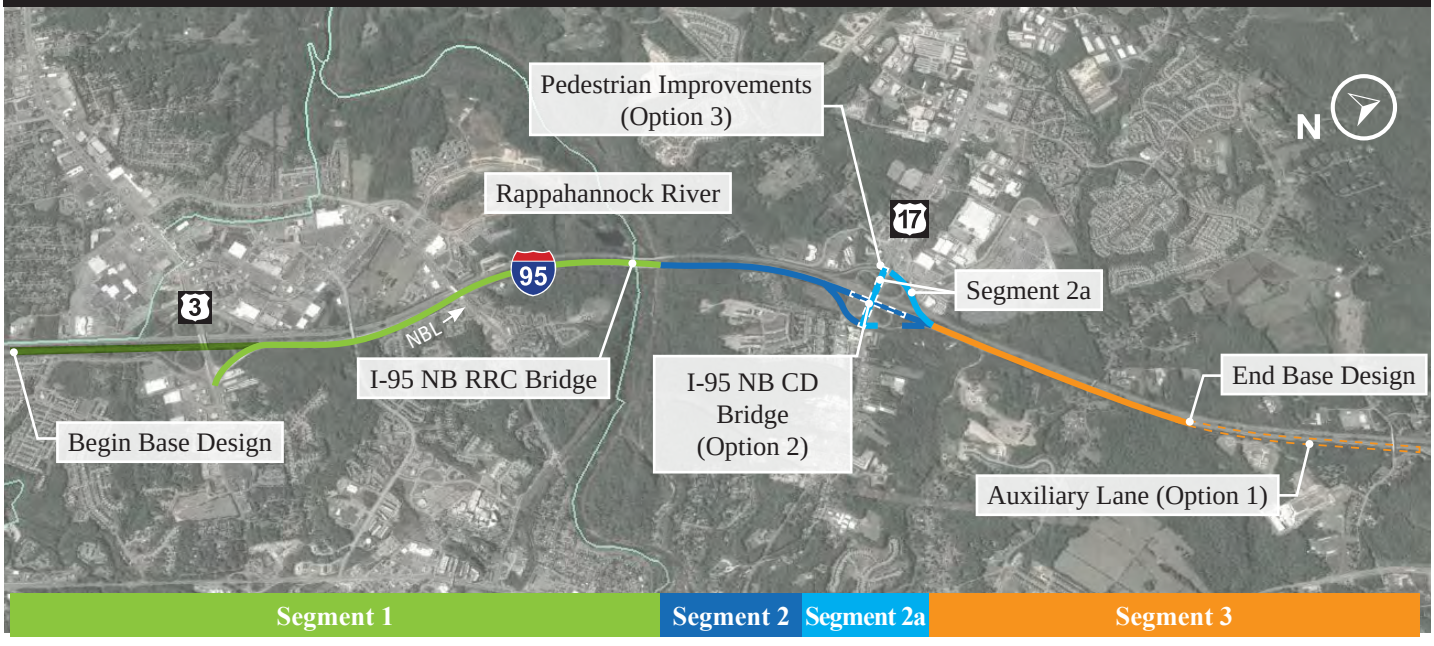
During the pursuit stage, the Branch-Flatiron team met weekly to discuss the design and construction approach and how we will provide the greatest benefit for the project. **While our design remains similar to that of the RFP Conceptual Design, we focused on refinements to incorporate our construction means and methods that would benefit the goal of maximizing safety and minimizing impacts to the traveling public.** We have segmented the project as described in the following Section 4.5.1.B using geographical and schedule driven boundaries. Even though the project is segmented, we looked at the project as a whole, including the additional scopes for Options 1, 2, and 3, so that our approach within each segment accommodates the others. Additionally, we have looked outside the construction limits and at the adjacent projects, I-95 SB RRC and FredEx, in order to account for the coordination efforts when formulating our approach. The practices we employ have been proven on previous similar projects to enhance schedule flexibility and deliver the project on time and on budget.

4.5.1 SEQUENCE OF CONSTRUCTION

4.5.1.A APPROACH TO PHASING

Our team's sequence is focused on minimizing the amount of traffic shifts and exposure to the traveling public, while maximizing work zone areas off alignment. Our simplified phasing plan for the I-95 NB GP lanes uses only two minor traffic shifts prior to placing traffic on the new GP alignment. By maintaining traffic patterns we are able to avoid driver confusion and provide a safer construction site. **Exhibit 4.5-1** below highlights the three segments of the project area.

Exhibit 4.5-1 / Segmentation Map



4.5.1.B GENERAL SEQUENCE OF ACTIVITIES

As shown in **Exhibit 4.5-1** we have divided the project into three segments. The project segmentation was arrived upon by using both natural geographical dividers, as is the case of the Rappahannock River, and scheduling demands, as is the case of the overlap area with the FredEx project, which has an interim milestone of October 29, 2021. Each segment will receive the necessary crews and resources, including earthwork, structures, QA/QC, and erosion and sediment control crews allowing for concurrent operations within the segments. This helps provide productivity and schedule adherence by focusing at a micro-level on the critical activities within each segment.

Segments 1 and 2 are sequenced similarly and both have four phases. In both segments, Phases 1 and 2 are leading up to completion of the proposed I-95 NB GP Lanes and RRC Bridge, allowing for traffic to shift into its new pattern for Phase 3. Phase 3 for Segments 1 and 2 focus on improvement and modifications to the existing GP lanes and converting them into the proposed CD system. In Phase 4, both segments are put into their final pattern. Both segments will be functional while the final lift of paving and striping occurs. The sequencing of Segment 3, which requires three phases, is independent of the other segments due to the interim milestone for the FredEx Overlap Area.

Segment 1: Route 3 to North End of the I-95 NB GP Lanes Bridge over the Rappahannock River

Segment 1 construction requires four phases to complete. To effectively discuss the phasing within this section this narrative has been subdivided into the Rappahannock River Bridge and roadway efforts.

I-95 NB GP Lanes Bridge over the Rappahannock River

Our team's decision to incrementally launch the girders was based on the constraints of the area to construct the superstructure coupled with the safety benefits it provides. In **Exhibit 4.5-2** on the following page we show a snapshot of the launching operation and the safety and access benefits provided. We also have included a launching sequence plan in Volume II of the technical proposal.

Notable Elements of Segment 1

The notable elements of Segment I include the following:

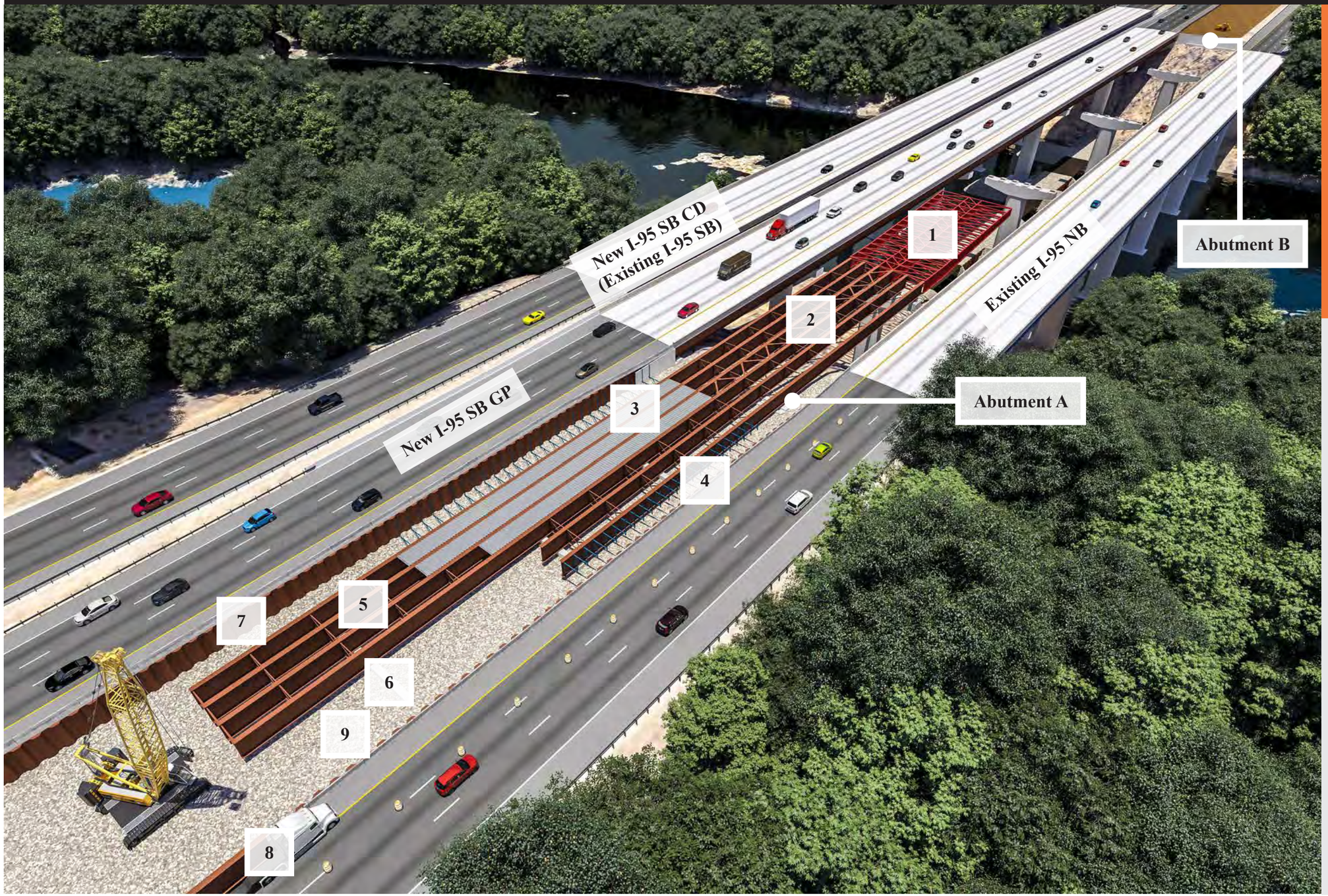
- **NB Rappahannock River Bridge**
- **I-95 NB GP lane**
- **I-95 NB CD lanes**
- **Route 3 Ramp C**
- **I-95 NB GP to CD slip ramp**
- **Earthwork and drainage**
- **Noise Barriers C and FH**
- **Retaining walls**

Segment 1 Phase 1 The I-95 NB RRC Bridge is key to the sequencing of operations in both Segments 1 and 2, as well as successful completion of the project. Construction of the bridge will begin in Phase 1 and it's progression is independent of the roadway phasing. It will be required to be completed prior to Roadway Phase 3 commencing.

After project award, we will coordinate with the I-95 SB RRC contractor to expedite geotechnical investigations using the existing causeway to access the pier foundation locations. Activities for the soil sampling for the abutments and launching pit will also be coordinated with the I-95 SB RRC contractor. We will coordinate with the agencies and the I-95 SB RRC contractor to secure the modification of the permits to adjust the existing causeway to facilitate the smooth transition of responsibility of the causeway.

Once the permits are received and the transition is complete we will modify the causeway and entrance to construct the river piers for the new I-95 NB RRC Bridge. Operations for the causeway adjustment will occur outside of the TOYR which

Exhibit 4.5-2 / Elements of the Incremental Launching Process



Key

1. *Launching nose*
2. *Span e girders*
3. *Span d girders with SIP forms*
4. *Overhang brackets*
5. *Span c girders being assembled*
6. *Roller support*
7. *Support of excavation*
8. *Girder being delivered in shoulder (note all deliveries to take place during allowable temporary lane closure*
9. *Launching pit*

Incremental Launching

This exhibit shows the girder launching in-progress. In the rendering, the girders have been launched to Pier 1 with the launching nose extending into Span b. To start the process, the launching nose and Span e girders are delivered to the launching pit and assembled on temporary supports. Once the nose and first two girder field sections are assembled, the assembly launched to Pier 1 using hydraulic strand jacks located at the abutment pulling the girders across rollers. More sections of girders are delivered to the launching pit and attached to the end of the current girder assembly. At this point, the full assembly is launched as before, out to Pier 2. The process repeats itself landing on each pier and adding girders field sections until the steel framework reaches the far abutment.

Metal SIP forms and overhang brackets will be installed in the launching pit for spans a,b,c, and d. Once the girders reach the far abutment the launching nose will be removed and the girders will be lifted off of the rollers using temporary jacks and they will be lowered onto the bearings.

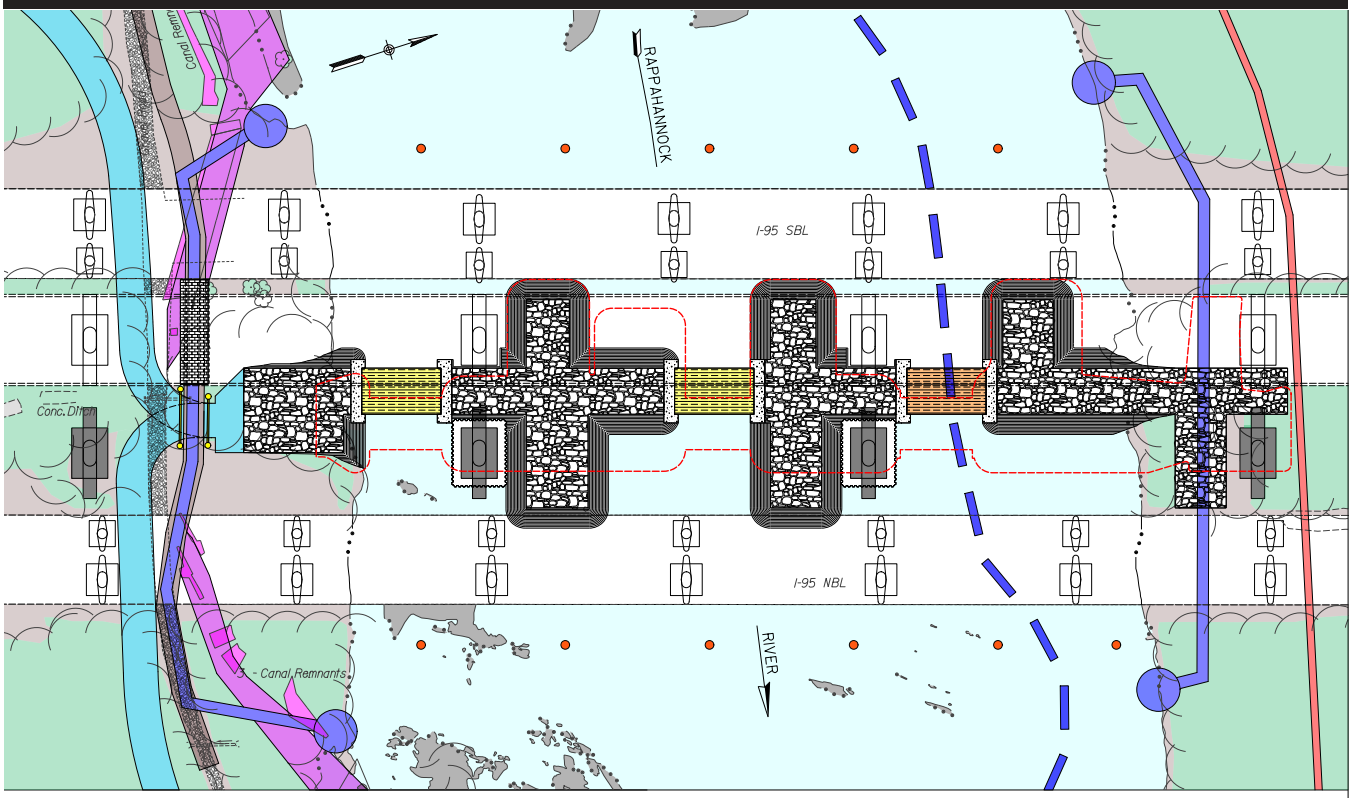
have been accounted for in our schedule. Our causeway concept is provided in **Exhibit 4.5-3** above. Access to the causeway and piers will be via a temporary access to the river as seen above. Branch-Flatiron will use and maintain the Canal Lock protection system installed under the I-95 SB RRC project only after verification and validation has occurred. Recreational traffic through the North Channel will be maintained at all times except during the allowable closure activities provided in the RFP. We will coordinate at least two weeks in advance of full closures and will provide the necessary notifications, signing, and portage. Any limitations to the access of the shared use path found on the southern river bank will be coordinated throughout construction with the respective local governments. After the access to the piers has been provided, construction of the four piers will begin using two substructure crews to expedite operations and minimize schedule risk.

Piers will be founded on rock. Cofferdams and support of excavation will be provided at the pier locations as necessary to facilitate construction. Pier construction work will be done with conventional equipment and methods to build each column and then the hammerhead cap. The roller systems and guide systems along with all bearings are placed prior to the start of launching.

Also in this phase we will begin work on Abutments A and B. Appropriate Support of Excavation (SOE) will be provided to build each abutment. Abutments will be constructed up to the girder seat elevation. The backwall will not be constructed until the launching operation is complete.

The launching pit will be built concurrently with Abutment A. The southern approach was chosen as it offered improved access for girder/ material deliveries and the existing terrain is more accommodating. This area will receive a

Exhibit 4.5-3 / Causeway



temporary support of excavation system along both sides of the pit, a solid floor, and a girder support system as shown in the drawings in **Exhibit 4.5.2.** Our launching pit will include all necessary drainage considerations so that the operation is safe and environmentally responsible. Entrance to the launching pit will be via a temporary haul road built from the median to the floor of the pit.

Materials will be brought directly to the launching pit using just-in-time deliveries. Smaller material deliveries, such as hardware and bracing will be brought directly into the median using a construction entrance. Larger materials, such as girders, will be delivered along the adjacent NB lane of I-95 using the lanes closure requirements from the RFP. Girders will be staged nearby until they are ready to be hauled and off-loaded from the existing I-95 NB shoulder using a lane closure. Assembly of the steel framing system is done in the launching pit rather than out over the river. This includes all splices and bracing. We applied the knowledge gained in our prior launching experiences to design our launching pit to have the necessary room and equipment for operations to take place safely.

The main features of the launching system consist of a low-friction, chain-type roller system, a lateral guide system, and a 150' long tapered launching nose. Movement of the girders will be done using hydraulic jacks to pull the superstructure in short increments then resetting the jacks and pulling again. An additional system will be provided to anchor the girders to keep them from moving and accelerating solely due their own weight. In all, it is a controlled system that safely moves the superstructure ahead.

Once the launching pit is prepared, the launching nose consisting of four tapered girders and cross-bracing will be assembled on temporary supports in the pit. Then the first set of girders will be delivered, off-loaded, and placed into position. These girders will be attached to the launching nose and all cross frames will be installed. The next section of girder field sections will be delivered and spliced to the previous section. At this point, the temporary supports beneath the launching nose will be removed and the entire assembly is moved far enough ahead to accommodate installing the next two girder field sections. Once this next section of girders is installed, the system is moved out far enough to land the girders onto Pier 1 with the launching nose cantilevered out over Span B.

Launching Safety Benefits

Performing assembly activities from land greatly simplifies construction and increases safety to both workers and the public.

At this stage there is enough room to erect two more spans of girders and install metal stay in place (SIP) forms and overhang brackets. Reinforcing bundles will be placed on these sections as well. Note that the first 225' of girders will not have the metal SIP forms or reinforcing steel installed due to the extra weight it would impose on the cantilever. Once ready, the girders are moved ahead enough to land on Pier 2. The process repeats itself until the girders arrive at Abutment B.

The launching nose has been designed for the maximum deflection to provide a smooth touchdown on the chain-type rollers on each pier. These rollers are placed on supports that rock to accommodate the angle of the launching nose and the vertical displacement of the girders as they are moved along the length of the bridge. We will also use a lateral guide roller system to maintain the correct launching path. Even with the lateral guide system, the girders will be surveyed to confirm they do not get out of alignment during the launching operations.

The procedure for constructing and launching the girders will prescribe safe wind loads and weather conditions for the operations to occur. Since the launching is happening out of traffic, the operations can take place during the day for safer operations. Provisions will be provided for securing the girders due to extreme weather events.

With the superstructure in its final alignment, the launching nose is removed. It is then time for the girders to be lowered onto the bearings. Using a prescribed sequence, the girders will be raised off the roller system and the rollers will be removed. The steel framework is then lowered using hydraulic jacks and shim stacks.

After the launching operations are completed the remaining superstructure efforts will occur. Manlifts and smaller cranes will be used from the causeway below and will provide access to activities on the underside of the deck.

The remaining SIP forms will be placed and the deck constructed using conventional methods in accordance with the approved deck placement sequence. The remaining sections of the abutments will also be constructed. Parapets will constructed once the deck and abutments are complete.

Roadway

Segment 1 Phase 1 Roadway construction in Segment 1 begins with starting the portion of Proposed I-95 NB GP Lanes located within the existing median of I-95. Traffic control and erosion control elements will be necessary in advance of construction efforts beginning. These efforts will include earthwork, drainage, retaining wall construction, and temporary and permanent paving operations. It is anticipated that all of the borrow material required for the existing median embankment will be generated from both within the existing median and from the adjacent Route 3 Ramp C excavation.

While not required to be completed until later in the project, efforts will begin for the construction of Route 3 Ramp C in this phase as excavation in this location will provide a portion of the materials needed for the median embankment. Construction of the stormwater management facilities and Noise Barrier C south of the Route 3 interchange can also begin at this time. Multi-vehicle hauling operations from the Ramp C excavation to the I-95 median will occur during off-peak hours, which enhances safety, reduces impacts, and increases efficiency. Trucks hauling embankment and materials to and from Route 3 Ramp C, and the I-95 median will access/egress using paved construction entrances indicated on the MOT exhibits which are located in Volume II.

During this stage, the first of two traffic shifts will occur for I-95 NB traffic from approximately Station 4498+00 to 4530+00. By shifting traffic to the inside 4', using 11' lanes, 2' barrier offsets to the outside, and 10’ shoulder to the inside, it provides the space necessary for removal and full depth replacement of the outside shoulder. This allows for traffic to shift far enough to the east during the next phase to tie the existing I-95 NB GP Lanes into the proposed I-95 NB GP Lanes.

Segment 1 Phase 2 Phase 2 begins with the second of two I-95 NB traffic shifts. By shifting traffic to the outside 4', utilizing 11' lanes, a 10' outside shoulder, and 2' offset to the front of the traffic barrier service, we are able to remove and replace the existing inside shoulder with full-depth pavement. We are also able to tie the proposed I-95 NB GP Lanes into the existing GP lanes. Construction will continue along the Route 3 Ramp C alignment.

Segment 1 Phase 3 Phase 3 occurs when construction of the proposed I-95 NB GP Lanes, both Segments 1 and 2, and River bridge are complete and ready for traffic. Once traffic is switched to the proposed NB GP Lane and I-95 NB RRC Bridge, efforts will shift to the proposed I-95 NB CD Lanes and finalization of Route3 Ramp C. Barriers will be placed along the eastern edge of the I-95 NB alignment allowing for Ramp C and CD lane construction to occur protected by barrier. This increases safety for both workers and the traveling public. The remaining efforts in this area include earthwork, drainage, slip ramp paving, full depth shoulder replacement, and mill and overlay of the I-95 NB CD lanes.

Segment 1 Phase 4 Once the GP and CD lanes are completed for all segments, we will connect the existing entrance ramp from Route 3 to I-95 NB to the proposed Route 3 Ramp C, as well as open the I-95 NB GP to CD slip ramp. This will place traffic into its final pattern. The surface course of asphalt will be placed across the section using nighttime lanes closures as allowed by the RFP.

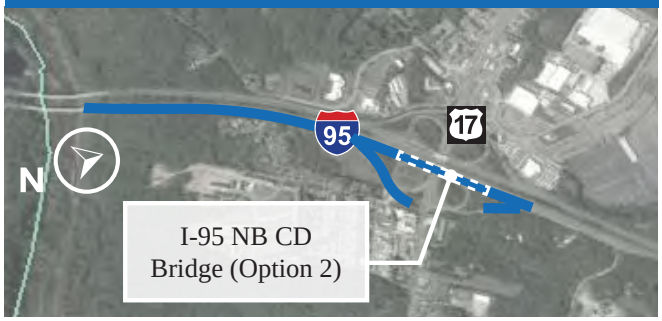
Segment 2: Northern Approach of the I-95 NB GP Lanes Bridge over the Rappahannock River to Station 4619+00

Segment 2 construction requires four phases to complete. To effectively discuss the phasing within this section, this narrative has been subdivided into Segment 2 and Segment 2A. Segment 2 includes the I-95 NB GP Lanes, I-95 NB CD Lanes, Route 17, and Ramp D. Segment 2A includes Route 17, Ramps B and C, Loop D, and the I-95 NB CD Bridge over Route 17 (Option 2).

Notable Elements of Segment 2

The notable elements of Segment 2 include the following

- **Route 17 Ramp D**
- **Route 17 Loop D**
- **I-95 NB GP lanes**
- **I-95 NB CD lanes**
- **Earthwork and drainage**
- **I-95 NB CD Lanes Bridge over Route 17 (Option 2)**



Segment 2 Phase 1A Work begins in the existing median for much of the proposed GP lanes. While this work progresses, shoulder closures will be used along the outside I-95 NB to allow for temporary widening to occur in two locations, Stations 4576+50 - 4582+50 and 4583+00 – 4599+00, which allows for subsequent shifting of traffic. Once the temporary widening is completed in this area, traffic will be shifted to the outside to provide full access to the median for GP lane construction. This shift will require the use of 11' lanes, with 2' offset to barrier and reducing the outside shoulder to 10'. Earthwork will progress in the median behind barrier. We have adjusted the profile for the proposed I-95 NB GP lanes to roughly balance within this section. This nearly eliminates the need for earthwork hauling operations to enter the work zone from I-95 in Segment 2, reducing impacts and enhancing safety.

The first efforts at Route 17 Ramp D will begin in this phase and require two sub-phases to complete. To provide a safe work zone and sufficient room for the following stage, a shoulder closure with a temporary barrier placed 2' from traveled way will be required along outside of the ramp. 14' lanes will be maintained in both sub-phases per the VWAPM. Traffic along the ramp will maintain the existing pattern while portions of the proposed ramp are constructed outside the existing footprint. Also, in this phase the small pond found at Station 716+00 will be drained and backfilled allowing for full build-out of the ramp.

Segment 2 Phase 1B In this phase, traffic will shift onto the recently completed portion of Ramp D to allow for the remainder of the ramp to be completed. I-95 traffic will maintain the same pattern as provided in Phase 1A. Widening efforts must occur along NB Route 17 in order to make all of the proposed turn movements functional. The sequencing of Route 17 is described below in Segment 2A Phase 1.

Segment 2 Phase 2 Phase 2 begins once Ramp D is fully complete and the proposed turn movements, specifically the triple left turn onto NB Route 17, are operational. Completing Ramp D and making it operational allows for two things to occur. First, it allows for the decommissioning of Route 17 Loop C. Second, it allows for the initial steps of redirecting CD lane traffic and partial closure of the existing CD lanes to occur. The redirection and closure will only be implemented if Option 2 is exercised to allow for the existing bridge carrying the I-95 NB CD Lanes over Route 17 to be replaced in a single construction stage and early removal of the over-height vehicle restriction constraint, minimizing schedule risk, and enhancing safety. In this occurrence, after Loop C is decommissioned, only two movements will be using the CD lanes from Station 5595+00 to 5619+00. The first will be the over-height vehicles not wishing to exit Route 17 due to the restricted vertical clearance. The second movement will be Route 17 Loop D traffic. We will accommodate these movements at described in the paragraph below. Our efforts will not impact Route 17 Ramp C as this movement will be in its final configuration per the interim milestone.

Over-height vehicle traffic will be redirected onto Route 17 Ramp D and re-enter the GP/CD system using a temporary intersection through movement provided onto Route 17 Ramp C. Signing, signals, and the over-height vehicle detection system will be used to facilitate the through movement. Loop D traffic will required redirecting into the GP lanes which will require staged closures of the existing CD lanes. In the first stage we will close the CD lanes from approximately Station 5595+00 to 5602+00 to allow for a construction

of a temporary paved realignment onto the I-95 NB GP lanes as seen in **Exhibit 4.5-4.** Once the Loop D temporary alignment is completed traffic will be placed onto it allowing for work to occur on the CD lanes Station 5603+00 to 5619+00 and removal and replacement of the CD Lane bridge.

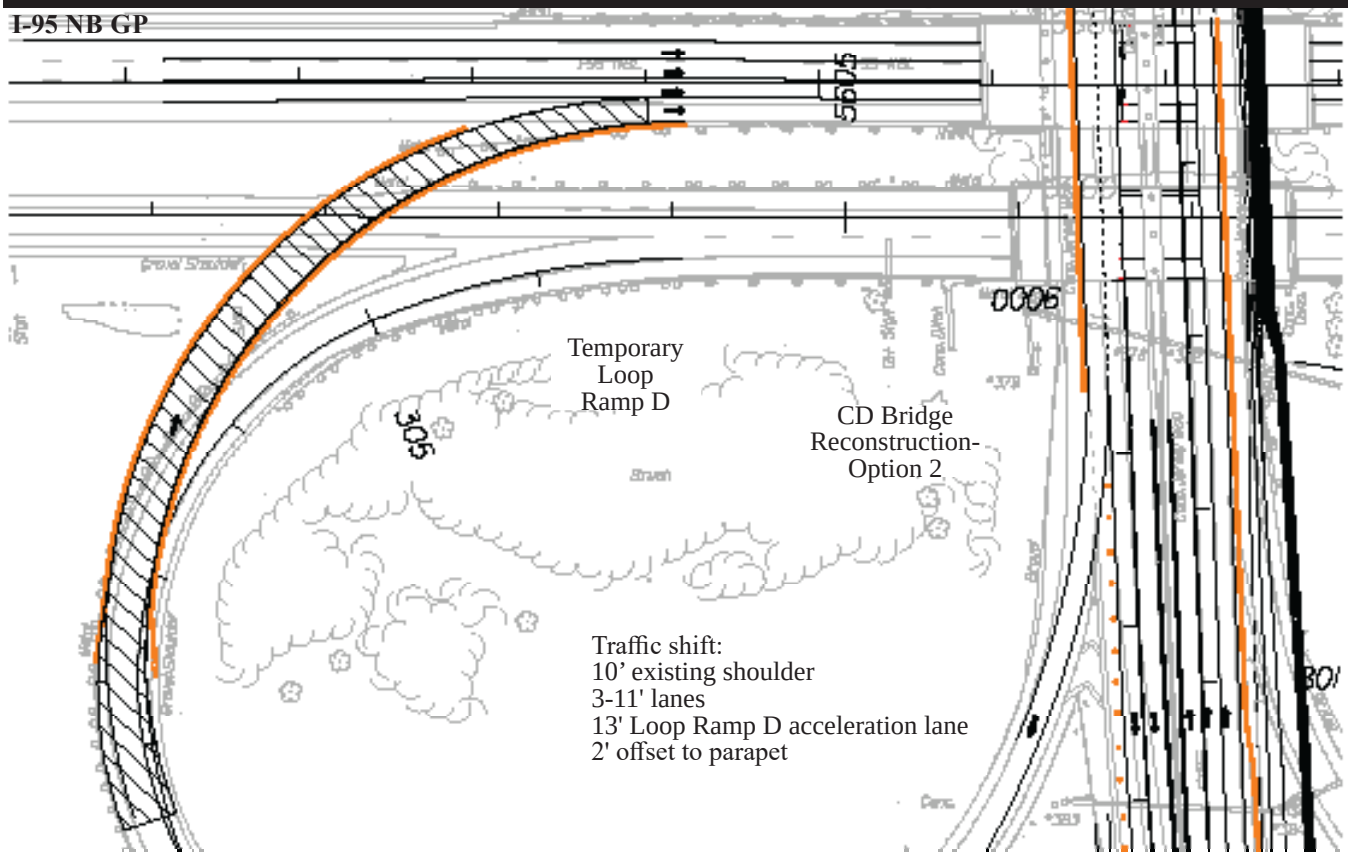
Also in this phase we will perform a traffic shift onto the new I-95 NB GP lanes to allow for work to progress on the CD lanes station 5575+00 to 5600+00. During this phase we will also construct a temporary connection from the proposed I-95 GP lanes to the proposed Route 17 Ramp D, which will get used in a later phase.

Segment 2 Phase 3 Phase 3 occurs when construction of the proposed I-95 NB GP Lanes, both Segments 1 and 2, and I-95 NB RRC Bridge are complete and ready for traffic. Once traffic is switched to the proposed I-95 NB GP lanes and new bridge over the Rappahannock River efforts will shift to finalizing the proposed I-95 NB CD Lanes. Barriers will be placed along the outside edge of the I-95 NB alignment, allowing for "I-95 NB CD Lane lane construction to occur protected by barrier. This increases safety for both workers and the traveling public. Traffic exiting to Route 17 Ramp D from the I-95 GP lanes will use the temporary ramp alignment constructed in the prior phase. The remaining efforts in this area include earthwork, drainage, full depth asphalt replacement, and mill and overlay of the CD lanes.

Segment 2 Phase 4 Corresponding with Segment 1 Phase 4, once all of the GP and CD lanes are completed we will open all ramp connections and final movements to make the corridor fully operational. All temporary pavements will be demolished and locations restored. The surface course of asphalt and any remaining final pavement markings will be placed across the section using lane closures, as allowed by the RFP.

Segment 2a Phase 1 Prior to completing Ramp D, as mentioned above in Segment 2, work will need to occur along Route 17 to accommodate the Ramp D triple left turn movement. Efforts begin with demolition of a portion of the existing median barrier and placement of pavement using nighttime lane closures. Once completed, traffic along I-95

Exhibit 4.5-4 / Temporary Loop D and I-95 NB CD Lane Closure



Notable Elements of Segment 2a

The notable elements of Segment 2a include the following

- **Route 17**
- **Route 17 sidewalk (Option 3)**
- **Route 17 Ramps B and C**
- **Earthwork and drainage**
- **I-95 NB CD Lanes Bridge over Route 17 (Option 2)**

NB Route 17 will require a minor shift to the inside to allow for the widening and tie in to occur. In this phase, work can also begin along Route 17 Ramp B. Lanes here be will required to be reduced to 14' to allow for the proposed construction to occur.

Segment 2a Phase 2 This phase is connected to the redirection of the CD road traffic and partial closure as discussed above in Segment 2. This phase will only be required if Option 2 is exercised. Once the traffic is redirected and CD lanes are no longer in use, demolition of the existing bridge superstructure will occur by span and require complete closures of NB or SB Route 17 using the 30 minute closure periods allowed in the RFP. **Demolition of the superstructure in a single phase also allows for the over-height vehicle constraint to be removed earlier in the project and enhances mobility and safety while reducing schedule risks.**

To allow for adequate space to construct Abutment A, we will be required to eliminate the existing SB Route 17 add-on lane, place barrier, and shift traffic towards the inside. Northbound Route 17 traffic will stay shifted to the west. With the decommissioning of Loop Ramp C, additional width is gained for barrier placement and adequate room for construction of Abutment B and Option 3 sidewalk with construction occurring behind barrier. A deceleration lane will be maintained for Loop Ramp B movement.

Segment 2a Phase 3 Once the I-95 NB CD Lanes bridge abutments (Option 2) are completed, Route 17 traffic will be shifted towards the outside shoulders of both lanes to allow for access and required construction footprint to construct the center bridge pier. A temporary barrier will be placed 2' off from the inside of traveled way in both directions allowing for work to occur in the median safely and efficiently. In this stage the existing center pier will be demolished and the proposed pier will be constructed. Once the center pier is completed, the prestressed concrete bulb-T beams will be erected from Route 17 using the 30 minute closures as allowed by the RFP.

Segment 2a Phase 4 Phase 4 begins once the Option 2 bridge is completed. After the CD bridge operations are complete, all barriers will be removed from Route 17 and the final surface course and pavement marking will occur utilizing lane closures per the RFP.

Segment 3: Station 4619+00 to the End of the Project

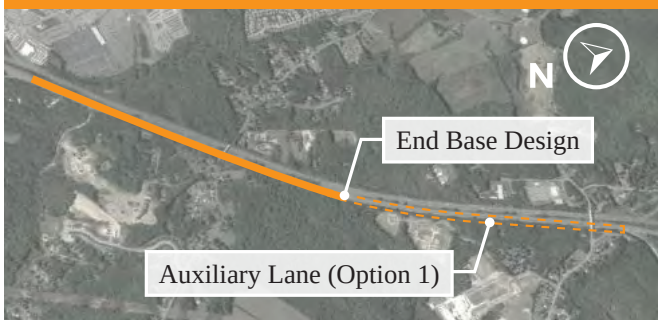
The FredEx Overlap Area is featured in Segment 3. The overlap area has an interim milestone of October 29, 2021 for completing the scope as defined in the RFP. Segment 3 requires three phases to complete construction for the FredEx Overlap Area. Segment 3 also contains the Centreport Auxiliary Lane (Option 1) which is independent of the sequencing discussed below as well as Segments 1 and 2. As such, this operation can occur when it best fits the project schedule.

Segment 3 Phase 1 Work in this area will start with early works beginning in advance of the rest of the project. Permanent and temporary widening will need to occur along the CD lanes, I-95 GP Lanes, and Ramp C to allow for a temporary realignment of the Ramp C and CD lanes movements from the work area onto I-95 NB GP lanes. Traffic along the CD lanes and Ramp C will shift 6' east and barrier will be placed 2' from the edge of travel lanes along both sides. Temporary shoulder closures will be used to add temporary widening along the GP lanes to facilitate the CD lanes and Ramp C realignment as seen on the MOT plans in Volume II.

Notable Elements of Segment 3

The notable elements of Segment 3 include the following

- **I-95 NB CD lanes**
- **Route 17 Ramp C2**
- **Slip Ramp from I-95 NB CD lanes to I-95 NB GP lanes**
- **Ramp HWN**
- **Intermediate Milestone- Ramp HWN Tie-In with FredEx**
- **Box Culvert Extension**
- **Centreport Auxiliary Lane (Option 1)**
- **Earthwork and Drainage**
- **ITS Infrastructure for FredEx Overlap Area**



The early works in this area consists of traffic control, clearing and grubbing, and erosion control. Relocation of the SummitIG Fiber will also begin is this phase. Continuing the coordination outlined in the RFP, the shared trunk line will remain in place when possible. Where relocation is required the existing fiber will remain during installation of the new trunk line, where feasible. This will help minimize impacts, reduce cost, and benefit the schedule.

Where possible, earthwork efforts will begin as well as construction of the extension of the triple 8' x 8' box culvert. Embankment will be moved down station from the northern limits of Ramp HWN with the earthwork nearly balancing for the ramp.

Segment 3 Phase 2 Phase 2 begins once the CD and Ramp C traffic is shifted onto the GP lanes utilizing the temporary ramp connection constructed in Phase 1. At the beginning of this phase the GP lanes will be shifted west and use barriers placed 2' from the travel way along both sides of the system. This pattern will extend from approximate Stations 4630+00 to 4671+00 and be coordinated with ongoing FredEx work and MOT. The shift will allow for construction to occur for the entire overlap work area. Having access to the entire overlap work area provides flexibility in the work area and helps mitigate potential delays to the construction schedule and meeting interim completion date.

Earthwork operations will continue followed by installation of the surface drainage system, roadway base, and asphalt pavement up to and including the surface course. Barrier, pavement markings, signing, and ITS installation will advance along with the roadway efforts. On, or in advance of the interim milestone, we will we provide 95 Express LLC, or their agent, safe and unrestricted use of the FredEx Overlap Area.

Segment 3 Phase 3 Phase 3 contains efforts outside of the overlap area to place I-95 NB back into its typical configuration. Temporary pavement that was installed in Phase 1 will also be removed at this point. The pavement surface course and pavement marking will occur along the I-95 GP Lanes using nighttime lane closures.

4.5.1.C APPROACH TO SAFETY

Branch and Flatiron's proven safety programs focus on developing engineered solutions to mitigate safety risks on a daily basis. We do not simply develop safety standards at the start of each new project; rather, our safety program is a fundamental facet of our companies' values. We have established and proven safety policies and standards that are transferred to the project level.

All employees have the right — and the responsibility — to stop work if unsafe practices occur. Safety is everyone's responsibility, from the DBPM to the on-site laborers, to our subcontractors. Our safety team; led by Safety Manager, Danny Minnix, and supported by Construction Manager, Bob Cross; superintendents, the corporate safety team, and all site personnel share a common goal: **to maintain a safe project site at all times.**

Branch-Flatiron use the best practices from the Job Hazard Analysis (JHA) and Daily Risk Assessments (DRA) to incorporate safety into the work and educate our workforce and site visitors. We are committed to implementing processes and developing features during design that will improve safety. Safety is a key component of

constructability reviews. Safety improvements identified during constructability reviews will be incorporated into the design. In **Exhibit 4.5-5** we identify the main safely concerns on the project and potential mitigation strategies.

Prior to issuance of RFC drawings EIC, Maggie Cossman, PE, DBIA will review the safety components incorporated into the design with Danny and Bob. During this phase, they will also work together along with other key members of the team to identify potential project safety hazards. As a result of this collaboration, they will create a list of action items to address potentially hazardous work activities. The action item list will form the basis of safe work practices for project specific elements. Our approach involves coordination across disciplines and design and construction teams to address safety in all facets of the project.

To provide an additional tool to enhance public safety, Branch-Flatiron will utilize a Traffic Management Task Force (TMTF), made up of staff shown on our organization chart, including VDOT, and relevant stakeholders. Led by the Construction Manager and supported by the MOT Lead Designer, Traffic Control Coordinator, and Roadway Superintendent, the TMTF will meet at least monthly to review current MOT plans and determine if changes are required to address concerns. The TMTF will also review the construction schedule to determine any necessary revisions of the MOT plan. These meetings will provide another tool to keep VDOT and stakeholders up-to-date on project progress and upcoming traffic pattern changes.

4.5.1.D APPROACH TO CONSTRUCTION OPERATIONS

Environmental

Branch and Flatiron have a longstanding history of environmental stewardship and we are committed to achieving **zero environmental violations** during the construction of the project. During the pursuit we have tailored our design and construction approaches to minimize impacts to

Exhibit 4.5-5 / Safety Concerns and Mitigation Strategies

Concern: Traveling Public	
Mitigation	• Lane closures and traffic patterns will be coordinated with adjacent projects. • Design the MOT plan to maintain safe access to businesses and residences. • Establish an effective communication plan and public relations effort. • Use advanced warning signs and message boards to inform the traveling public of changes to their routines. • Provide positive separation of the traveling public and pedestrians from construction operations using a temporary concrete barrier. • Maintain safe pedestrian access in and along the Rappahannock River or provide detours when necessary. • Provide wrecker services to quickly remove disabled vehicles from the roadway. • Monitor Google Maps and WAZE for incidents or debris to expedite response. • Initiate formal partnering, through our TMTF, with VDOT, local municipalities, and first responders to review the MOT, construction schedules, and incident response plans.
Concern: Bridge Construction	
Mitigation	• NB RRC Bridge construction will occur behind barriers with girder deliveries occurring at night using a lane closure(s). • Material deliveries will not occur from the adjacent bridges. • NB RRC Bridge girder erection will not require the use of cranes from the causeway between the two adjacent bridges reducing driver distractions. • Girder assembly, cross-bracing installation, SIP installation, and hanging overhang brackets will occur on land increasing safety for workers and inspectors. • At Route 17 we have chosen to redirect Loop D traffic into NB GP lane. This allows us to demolish and reconstruct the Option 2 bridge in a single stage, removing the non-compliant bridge height earlier in the project.
Concern: Hauling and Access	
Mitigation	• Locate construction access points to enter and leave the site safely. • Construction entrances will be signed and conveyed to first responders. • Access to work zones will be from ramps and side roads when possible. • Multi-vehicle earthwork hauling operations entering I-95 will occur at off peak hours. • Material deliveries will occur during off-peak hours when possible.

the environment and to be consistent with the Section 4(f) de minimis impact finding.

Operations in environmentally sensitive areas carry risk. We will mitigate them through a collaborative design and construction process, adherence to environmental documents and permits, use of an environmental compliance matrix, and proper application of erosion and sediment control measures.

We will deliver a construction sequence and timeline for VDOT and governmental agencies to review. We will also maintain and track a comprehensive list of required environmental commitments, permits, and approvals in an environmental compliance matrix. The compliance matrix will be populated with applicable information contained in the RFP and environmental documents and all permit stipulations and conditions. It will also be used to generate monthly environmental compliance and permit schedule reports. The overall objective of regulatory compliance tracking is to confirm ongoing compliance with applicable regulatory and contractual requirements, and minimize potential delays and violations.

Before performing ground-disturbing activities, Mike Saunders, QAM, and Environmental Compliance Manager, Sean Gough, will lead environmental compliance hold-point meetings to address permit requirements. Before entering these areas, Mike, Sean, and Bob and grading/roadway superintendent Randy Bayer will meet with the construction workforce, VDOT, and appropriate agencies to review permit details and remind everyone of limitations established in the permit.

Access across the navigation canal will be limited to areas where only below-ground remains of the Rappahannock navigation system components survive. We will confirm and maintain the temporary protection system which was installed under I-95 SB RRC project. Use of the river access for pedestrians will be maintained when overhead or nearby by construction activities do not present a danger to users. In the occurrence of closure of the system we will provide the necessary measures and advanced notifications informing the users while providing information on alternative routes.

Our Approach to Sediment and Erosion Control

Highlights of our approach to sedimentation and erosion control include the following:

- Adhere to the General Construction Permit, including reporting requirements.
- Install approved devices as soon as areas become available.
- Maintain devices on a regular basis and after major storm events.
- Keep up-to-date RFC erosion and sediment control plans on-site at all times with field changes noted.
- Permanently vegetate any land-disturbing as soon as possible.
- Delineate environmentally sensitive areas (ESAs) prior to adjacent construction operations beginning.

The suspension of pedestrian and bicycle traffic on existing trails will be limited to less than 24 hours with a minimum of 24 hours between the next closure. Limitations of access to trails will be coordinated with local stakeholders as required by the RFP.

Utilities

The Branch-Flatiron team has in-depth knowledge and experience with VDOT's utility coordination process. Our team brings an experienced utility designing firm, A. Morton Thomas (AMT), and Utility Manager, Keith Sinclair, PE (AMT), to facilitate utility design and communication efforts early on as discussed in section 4.4.1. of this proposal. Our Lead Utility Coordination Manager, Ismail Ahmed, will lead monitoring, communication, and coordination efforts throughout construction of the project.

Utility Coordination

Branch-Flatiron's established relationships with utility owners along the corridor, built through successful coordination, facilitate reaching agreements on plans and unavoidable relocations as well as mitigating unexpected utility conflicts. Below are examples of how we will avoid delays, minimize schedule impacts, and maintain a safe construction site.

- Maintain an up-to-date Utility Matrix
- Provide utility relocation prioritization needs to each utility owner based on our CPM Schedule.
- Protection of utilities in place or avoidance when possible.
- Begin installation of a new utility element while construction operations advance with the existing element remaining in place to be abandoned after activation of the new feature, when construction operations and utility owners allow.
- Properly identify utilities through use of Virginia Miss Utility (VA811) to mark the underground utilities in the work area.
- Use of a comprehensive Testhole program to confirm exact locations.
- Hold Utility Coordination Meetings with utility companies, adjacent projects, and relevant stakeholders.
- Coordination with adjacent projects on utilities which impact both projects.

We have identified all utilities on site and have begun the development of our Utility Matrix. After award Ismail Ahmed and Keith Sinclair, PE, will continue to work with utility owners maintaining clear lines of communication to keep the matrix up to date. We will also coordinate with the adjacent projects to manage overlapping utilities. Due to the concurrent operations of the adjacent projects, there is a high probability of utilities being relocated from what was provided in the conceptual design. Relocation on behalf of the I-95 NB RRC project has the potential to present unsafe conditions to the adjacent operations. Communication and coordination is crucial to maintaining a safe site and the construction schedule.

Post award, priority will be given to establishing a detailed avoidance and relocation strategy with SummitIG, as they have the greatest amount of potential impacts within construction limits. They also have the greatest amount of potential impacts within the FredEx Overlap Area, which has an interim milestone.

Utility Relocation
When construction begins, each crew will be given color-coded utility plans, and we will have Virginia Miss Utility mark the underground utilities in the work area. We will have SummitIG identify their location as Miss Utility will not mark them. Supervisors will use the VA811 Location Enhanced Ticket Search (LETS) tool to confirm that all utilities have completed field markings and that Miss Utility tickets are valid daily. Utilities will then be exposed to confirm their location and depth so that there will be no conflict with the construction operations.

Utility Coordination and Implementation

Early communication, conveying elements such as construction plans, schedule, priorities, and continued coordination is key to successful coordination and implementation.

Throughout construction we will continue to manage the Utility Matrix and distribute it along with the latest plans to all parties as information is received during utility coordination meetings.

Signs will be installed on either side of overhead utilities to notify equipment operators and truck drivers of the overhead hazards. This approach will reduce our overall risk of striking a utility, disrupting services to the adjacent communities, or injuring our workforce during construction.

There is a potential for us to impact and require relocation of several wet utilities along Route 17, and at the extension of the box culvert along Ramp HWN. All utility relocation carried out by Branch-Flatiron for water and sewer will be in accordance with the requirements and standards of the specific utility owner.

4.5.1.E APPROACH TO STAGING AND STORAGE

Branch-Flatiron has identified staging and storage areas to best suit the project's needs. These efforts will continue post-award during the pre-construction stage and throughout the project with a focus on separating construction from the traveling public.

When planning these areas our objectives were to establish locations that minimize impacts to the traveling public, provide safe ingress and egress, and are close enough to the work area to avoid production inefficiencies. Staging materials behind the temporary traffic barriers provides convenient

and practical areas for items such as stormwater pipes and structures and bridge formwork and consumable materials. **Exhibit 4.5-5** on the following page demonstrates our anticipated staging, storage, and access areas.

When planning our approach to staging and storage we considered the staging of crew vehicles and site access. It was determined the best approach was to have construction crews park in designated locations and be shuttled into the work area. This reduces interaction and enhances safety to both employees and the traveling public.

Potential construction entrances, which are also identified in our MOT and phasing plans in Volume II, have been strategically located throughout the corridor to provide delivery access to the work areas. Construction entrances will be VDOT standard construction entrances and will be located away from the mainline when possible to enhance safety and avoid impacts. Active construction entrances will be spaced 1 mile apart along I-95. Construction entrance sequence will be incorporated in the MOT plans noting which construction entrances can be open at the same time in order to maintain 1 mile separation. Advance notice of construction entrance opening and closing will be provided to VDOT and emergency responders. Branch-Flatiron will field verify construction entrances have the appropriate site distance for safe egress, as well as adequate deceleration distances for incoming vehicles. We will also sign all construction entrances and add mile marker designations to facilitate proper delivery and provide direction to emergency responders.

Material deliveries will be carefully coordinated and just-in-time deliveries will be incorporated as much as possible to avoid excessive stockpiles. By using just-in-time deliveries, our team will maximize the available work areas while minimizing impacts to the traveling public.

4.5.2 TRANSPORTATION MANAGEMENT PLAN

The Branch-Flatiron team has the knowledge, understanding, and experience developing and implementing comprehensive Transportation Management Plans (TMP) for major interstate and bridge projects that safely and effectively communicate construction impacts to both the traveling public, adjacent projects, and major project stakeholders. Our TMP/Maintenance of Traffic Lead Designer, Jacquelyn Lassiter, PE, PTOE, has extensive experience in D-B MOT in the Northern Virginia area. Jacquelyn will support the Construction Manager, who will lead the TMTF. The TMTF will partner with VDOT to develop a checklist of responsibilities, expectations, and project requirements to mitigate potential impacts and deliver a successful project.

A Comprehensive Plan for Safety

The I-95 NB RRC project has been identified as a Type C, Category V project. This category rating was given due to the complexity of the project and the anticipated amount of work zone impact on the traveling public. In order to construct this project safely and efficiently our team has developed a comprehensive plan for managing the work zones in a safe and effective manner in accordance with the VDOT IandIM-241/TE-351, Virginia Work Area Protection Manual (VWAPM), Revision 2, VDOT Standards, and the RFP. The strategies included in the plan will be developed to minimize traffic delays, increase worker safety, and complete construction on time.

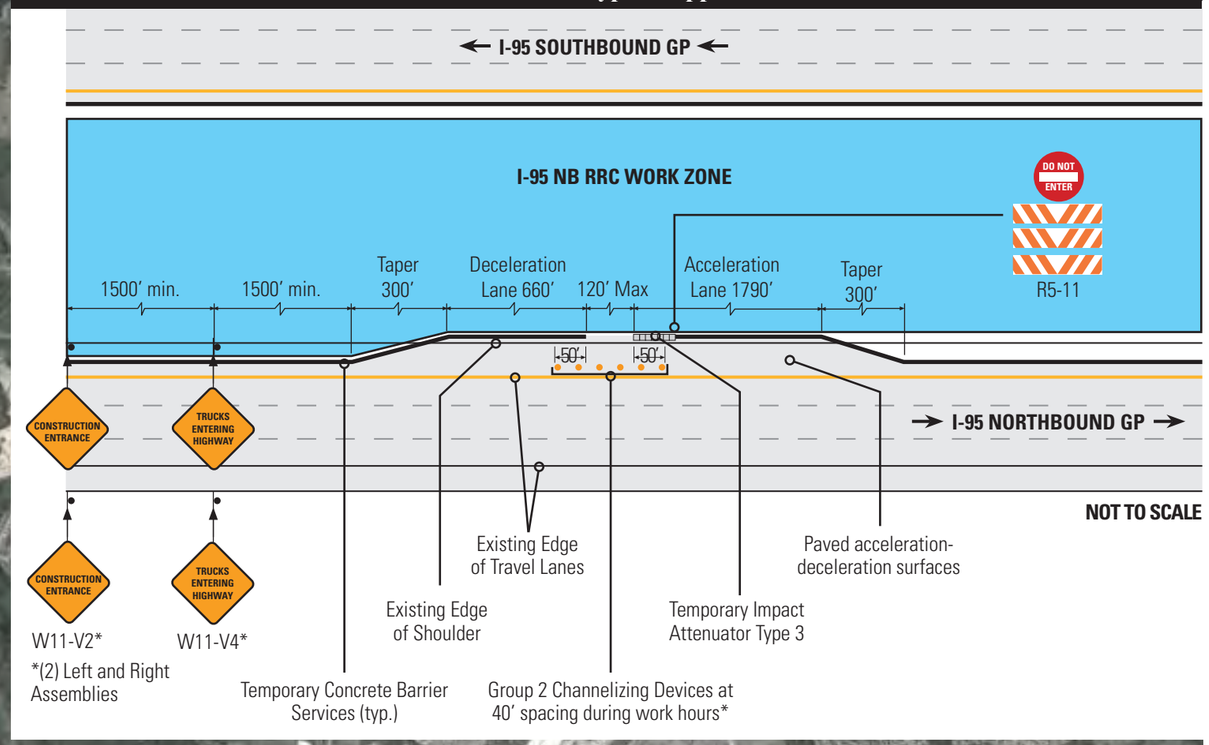
4.5.2.A TEMPORARY TRAFFIC CONTROL STRATEGIES

In addition to providing detailed MOT plans and a sequence of construction narrative, the TMP will address the safe and efficient operations in the work zone and adjacent roadway transportation systems. This includes highways, local streets, transit facilities, and residential and business communities near I-95 that will be impacted by the project. Our TMP will address the potential impacts to all users, including motorists, pedestrians, bicyclists, transit vehicles, and recreational river traffic. Developing, maintaining, and updating the TMP throughout the life of the project will lead to the successful completion of the project.

The TMP will include the requirements for minimum travel lanes and paved shoulders along the highway and CD road system. Due to the tight constraints of adjacent live traffic, reduced shoulder and lane widths occur in locations to allow for the optimization of the work zones reducing the overall number of traffic shifts.

Exhibit 4.5-5 / Access and Hauling

Inset Exhibit 4.5-5 / Median Construction Entrance Typical Application



A- Grading and paving operations will access/egress median using construction entrances.
B- Grading and paving construction entrances. **See Inset Exhibit 4.5-6. for details**. Further detailed in MOT plans.
C- Superstructure material staging and fabrication area. Girder deliveries occurring at night utilizing lane closure from NBL. Additional materials staged at Route 17 staging area.
C1- Foundation and substructure materials staged on causeway.
C2- Potential girder staging location. Proposed Route 3 Ramp C.
C3- Girder haul route to launching bed.
C4- Potential causeway access.
D- Staging area #1- used once Loop C is decommissioned. Used as staging area for bridge materials, temporary barrier, etc. Construction entrances along Route 17. Ramp C.
Additional Comments – Multi-vehicle earthwork and aggregate hauling operations entering/exiting I-95 median will occur during off-peak hours. Pipe and other misc roadway materials will often be staged behind barrier on alignment being constructed. Delivery will occur in off peak hours when possible.

For example, we construct a temporary ramp connection for Route 17 Ramp C to I-95 NB GP to allow for Ramp C traffic to only be shifted once prior to being placed in it's final configuration. This type of optimization allows for a greater probability of driver expectation with the omission of ever-changing traffic patterns. Locations of minimum lane widths are in identified in **Exhibit 4.5-6** below.

A 2' offset will be provided at all locations where a temporary barrier (TB) is used to enhance driver comfort and the ability to maintain high speed. Adequate and appropriate construction signage, temporary pavement markings, and temporary pavement markers will be provided and maintained to navigate traffic safely and easily through the work zone. Proper removal of the temporary pavement markings will occur when moving from one phase of construction to the next. Our MOT plans allows us to maintain existing speed limits through the work zones and throughout construction so as not to create further delays in traffic. All taper lengths have been designed to meet at a minimum the requirements of the VWAPM. The TMP will also address the access for safe and efficient snow removal operations for the transportation asset management system (TAMS) contractor; as well as, continual access to businesses, residential communities, intersections, pedestrian access points, and private entrances.

The sequence of construction will be incorporated into the TMP along with associated temporary traffic control plan. In addition, extensive coordination with the FredEx project and the I-95 SB RRC project will take place and be incorporated into the TMP and MOT plans. Our sequence of construction will identify which phase the adjacent projects are intended to be in. Our MOT plans will reflect that stage of their construction so that our team can develop a holistic traffic control plan containing consolidated signing, pavement markings, and traffic shifts within the overlap areas. Our proactive approach to coordinating staging will allow construction to be as seamless as possible and will maximize our probability of anticipating project delays.

The lane, shoulder, road closure, holiday, and time of year restrictions identified in the RFP will

Exhibit 4.5-6 / Minimum Lane and Ramp Widths

Segment	Phase	Min. Lane Width (11')	Min. Ramp (14')
Segment 1	Phase 1	Existing I-95 NB 4498+00 - 4530+00	
	Phase 2	Existing I-95 NB 4504+00 - 4541+00	
Segment 2	Phase 1A	Existing I-95 NB 4572+50 - 4603+00	Ramp D
	Phase 1B	Existing I-95 NB 4572+50 - 4603+00	Ramp D
	Phase 2	Existing I-95 NB 4562+00 - 4623+00	Exit 133 Ramp
	Phase 3		Exit 133 Ramp
Segment 2A	Phase 1	Route 17 NB 8007+00 - 8024+00	Loop B, Ramp B, Ramp C1
	Phase 2	Route 17 NB/SB 8002+00 - 8029+50	Ramp B, Loop D Temp Ramp
	Phase 3	Route 17 NB/SB 8002+00 - 8029+50	Loop D Temp Ramp
Segment 3	Phase 1		Ramp C2
	Phase 2	Existing I-95 NB 4628+50 - 4669+00	Ramp C2

be observed and incorporated into the TMP. A comprehensive list of our anticipated shoulder, ramp, and road closures are located in **Exhibit 4.5-7**. at the end of this section.

It is the intent of the team to maintain all on and off ramp operations within the project limits throughout the construction period. For example, the TMP will incorporate a multi-stage MOT approach (elaborated in Section 4.5.1) to stagger the mainline/CD full depth pavement construction around Ramp D to Route 17 in Segment 2 to continuously maintain the ramp operations and access to this busy arterial roadway.

Pedestrian traffic will also be considered when working within the Route 17 corridor. Our work zone at the intersection of Route 17 and Sanford Drive/South Gateway Drive will be designed to allow for full-time access to the existing bicycle path. In addition, trail and recreational river traffic will be considered, accommodated, and communicated throughout the life of the project. Our TMTF will notify VDOT, Friends of the Rappahannock and the public well in advance of any anticipated closures.

In addition to the above, our TMTF team will coordinate with VDOT and local agencies regarding the potential impacts to recreational waterway traffic. Access under the multiple existing bridges and the new bridge will be coordinated and signed appropriately to achieve safe passage of recreational traffic during construction.

4.5.2.B PUBLIC OUTREACH

Managing stakeholder expectations and potential project risks and challenges will be critical to delivering a successful project. Our Public Relations Manager, Windy Campbell of On Point Transportation PR LLC (OPT), will be integral in managing communication efforts.

In coordination with VDOT's Fredericksburg District Communications Office, a comprehensive public communications plan will be designed to effectively inform, engage, educate, and raise awareness of the project among all interested stakeholders. All information released to the public will be reviewed and approved by VDOT per the RFP requirements. Preliminary objectives of the public communications plan include, but are not limited to:

- Create a foundation of public awareness about the benefits of the project and its design, such as enhanced capacity, reduced traffic delays, improved travel times, and enhanced safety.
- Educate drivers on how to properly navigate the CD road system, increasing community understanding and minimizing negative impacts while maximizing positive outcomes.
- Establish processes and timelines to properly notify key stakeholders of planned and unplanned project impacts and traffic delays; thus, mitigating or eliminating potential conflicts that may affect the successful delivery of the project.
- Consistently engage key stakeholders in the development, details, and scheduling of the project construction and integrate their concerns and needs into the process.
- Minimize potential public opposition and build and maintain public acceptance strengthening the team's credibility.

Some of the tools our team will use to deliver information to motorists and pedestrians include but are not limited to:

- Utilization of existing DMS boards along the I-95 corridor to manage traffic operations during planned and unplanned traffic disruptions.
- Proper deployment of portable changeable message signs (PCMS), boards, taking careful consideration to place clear, concise messages with limited number of screen displays while being conscious to remove the PCMS when the message is no longer applicable. This will work to strengthen credibility of our messaging to the recurrent users of the corridor.
- Employing a mix of communication tactics including radio spots, traffic advisories to local media, construction updates for project website, and any stakeholder communication. Tactics also include holding "Pardon Our Dust" meetings with the public and key stakeholders coordinated with VDOT during pre-construction and prior to any major construction phases.
- Use of various social media platforms to push real time notifications out to the public.

- Development of visual aids for use in public meetings to demonstrate to users how to navigate the system as well as educate them on upcoming impacts.
- Continual coordination with VDOT TOC and VDOT PM for up to date lane closure information to be included on the VDOT website, VA511 system, and the Lane Closure Advisory Management System (LCAMs).

Our team will define the stakeholders for inclusion in a comprehensive outreach database. Initial key audiences requiring consistent, message-specific communications will include but are not limited to those highlighted **Exhibit 4.5-8.**

Exhibit 4.5-8 / Third Party Stakeholders

VDOT	End-users
Stafford/Spotsylvania Co.	Parks and Recreations
Fredericksburg MPO	VDHR
Transurban	Emergency responders
FHWA	Local businesses
95 Express Lanes LLC	Local schools
Friends of Rappahannock	Local residences
VRE	Local/regional media

4.5.2.C TRANSPORTATION OPERATIONS STRATEGIES

Transportation operations strategies constitute a critical part of a comprehensive TMP. Maintaining safe traffic operations for commuter and construction vehicles, managing incidents and implementing effective solutions to mitigate unexpected events within the work zone are key considerations for this project.

To construct the I-95 CD road bridge over Route 17, temporary traffic shifts and traffic signal modifications will be necessary along Route 17. Since Route 17 is a Corridor of Statewide Significance (CoSS), any potential changes to the traffic operations under work zone conditions need to be carefully evaluated. Any proposed temporary modifications would still need to maintain efficient traffic signal operations along the corridor.

Our team will conduct all necessary traffic analyses to evaluate and document the anticipated Work Zone Traffic Impact. These analyses will be completed using appropriate software such as Synchro/SimTraffic and methodologies consistent with the current *Highway Capacity Manual* (HCM) and VDOT's *Traffic Operations and Safety Analysis Manual* (TOSAM). This analysis will evaluate the construction impacts to traffic and allow our team to identify and implement necessary mitigation strategies or improvements to optimize the safety and mobility of the corridor.

Traffic signal modifications required to accommodate any detours associated with potential lane/road closures will be detailed in the TMP and any planned detour will be communicated to the public in advance. Temporary signal timings may be required to aid in the traffic operations as well as to relieve congestion. All lane closures and lane shifts will be coordinated with and communicated to the relevant stakeholders and adjacent projects to minimize disruption to traffic.

Incident Management Plan

An Incident Management Plan (IMP) will be developed to proactively address any work which impacts travel lanes or shoulders. The intent of the IMP will be to prepare for incidents along the construction corridor, as highlighted below. Our TMTF will coordinate with VDOT, EMS, and other stakeholders during the development of the plan and hold periodic stakeholder meeting to discuss the IMP.

Highlights of Our Incident Management Plan

The IMP will be developed to address the following:

- 24/7 point of contact for emergency notification of incidents by VDOT TOC.
- Emergency detour routes and sign layout plans in addition to TMP signage.
- Agency and stakeholder responsibilities matrix/ checklist.
- Coordination with VDOT TOC and first responders.
- Law enforcement, fire, and rescue access to the road network during incidents.
- Pre-planned incident messages on the PCMS and Dynamic Message Signs (DMS) leading to the corridor.
- Contact list for appropriate stakeholder response personnel.
- On-call towing information to provide fast incident clearing.

Exhibit 4.5-7 / Anticipated Shoulder, Ramp, and Road Closures / Segments 1 and 2

Segment	Type of Closure	Construction Activity to Accomplish	Specific Location
Segment 1	Temporary shoulder closures	Temporary pavement construction	Phase 1: I-95 NB GP Left shoulder - 4501+00 to 4527+00
		TBSC placement	Phase 1: I-95 NB GP Left shoulder - 4527+50 to existing River bridge abutment Phase 1: I-95 NB GP Right shoulder - 5442+00 to 5497+00
		Noise Barrier "C" construction	Phase 1: I-95 NB GP Right shoulder - 4384+00 to 4425+00
		Stormwater pond construction - Route 3	Phase 1: I-95 NB GP Left shoulder - 4425+00 to 4430+00 Phase 1: I-95 NB to Route 3 South Ramp right shoulder
	Temporary lane closures	Perform traffic shifts - by phase	Phase 1: 4498+00 to 4530+00 Phase 2: 4498+00 to 4541+50 Phase 3: 4498+00 to new I-95 NB River bridge abutment Phase 4: Tie-in locations
		RRC Bridge material deliveries into median	At construction entrance locations
	Complete closure (30 minute duration)	Overhead sign assembly erection	Three locations
	Long term shoulder closures	I-95 shoulder reconstruction	Phase 1: Right shoulder closure I-95 NB GP - 4498+00 to 4530+00
		I-95 slip ramp construction	Phase 3: Right shoulder I-95 NB GP - 4508+00 to 4523+00
		I-95 NB GP and River bridge construction	Phase 2: Left shoulder I-95 NB GP - 4504+00 to existing River bridge abutment
		Route 3 Ramp C construction	Phase 1, 2, and 3: Right shoulder Route 3 Ramp C 5443+00 to 5450+00
Segment 2	Temporary shoulder closures	Temporary pavement Cconstruction	Phase 1A and 1B: Right shoulder closure I-95 NB GP - 4576+50 to 4599+80
		TBSC placement	Phase 1A: Ramp D 703+00 to 718+00
	Temporary lane closures	Perform traffic shifts - by Phase	Phase 1A: 4572+50 to 4599+00 Phase 2: 4561+00 to 4583+00 Phase 3: 4570+00 to 4598+00 Phase 4: Tie-in locations
	Complete closure (30 minute duration)	Overhead sign assembly erection	Phase 1B: Two locations along Ramp D
	Long term shoulder closures	Construct I-95 NB GP	Left shoulder I-95 NB GP - 4572+50 to 4599+00
		Construct I-95 NB CD	Phase 2: Right shoulder I-95 NB GP - 4575+00 to 4583+00 Phase 2: Left shoulder I-95 NB CD - 5575+50 to 5594+25 Phase 3: Right shoulder I-95 NB GP - River bridge abutment to 4598+00
		Construct Route 17 Ramp D	Phase 1A: Right shoulder Ramp D - 703+00 to 718+00 Phase 1B: Left shoulder Ramp D - 703+00 to 718+00
	CD closure	Option 2 CD road and bridge construction	Phase 2 and 3: 5595+00 to 5621+00
	Overnight closure with detour	Perform traffic shift along Ramp	Phase 1A: Ramp D - Use Route 17 loops for detour route

*All station locations are approximate and do not contain the taper and buffer zone lengths required by the VWAPM

- Indicates closures with a time-of-day restriction.

Exhibit 4.5-7 / Anticipated Shoulder, Ramp, and Road Closures / Segments 2a and 3

Segment	Type of Closure	Construction Activity to Accomplish	Specific Location
Segment 2a	Temporary shoulder closures	Stormwater pond construction - Route 17	Phase 1: Right shoulder Loop Ramp B
	Temporary lane closures	Demolition of existing median and curb	Multiple locations along Route 17 NB and SB
		TBSC placement	Multiple locations along Route 17 NB and SB
		Curb and median reconstruction	Multiple locations along Route 17 NB and SB
		Traffic shifts	Multiple locations along Route 17 NB and SB by Phase
	Complete closure (30 minute duration)	Demolition of superstructure - Option 2	Phase 2: Route 17 NB and SB
		Girder erection - Option 2	Phase 3: Route 17 NB and SB
	Long term shoulder closures	Median construction	Multiple locations along Route 17 NB and SB
		Option 3 construction	Multiple locations along Route 17 NB and SB
		Median pier construction - Option 2	Phase 3: Left shoulder Route 17 NB and SB 8011+25 to 8028+00
		Stormwater pond construction	Phase 1: Left shoulder Loop B
		Ramp B construction	Phase 1: Left shoulder Ramp B 606+00 to 613+00 Phase 2: Right shoulder Ramp B 607+50 to 612+50
		Bridge abutment reconstruction - Option 2	Phase 2: Right shoulder Route 17 SB 8015+50 to 8011+75 Phase 2: Right shoulder Route 17 NB 8009+00 to 8014+00
		RTO Lane construction at Sanford Drive intersection	Phase 1: Right shoulder Route 17 NB 8023+00 to 8029+50
Segment 3	Temporary shoulder closures	Construct temporary pavement	Phase 1: Left shoulder I-95 NB GP - 4637+25 to 4646+75
	Temporary lane closures	Traffic shifts	Phase 1: I-95 NB GP - 4628+50 to 4672+00
		Temporary pavement removal and restoration	Phase 2: 1-95 NB GP - 4628+50 to 4672+00
		Place TB and Restripe - CD Road and Route 17	Phase 1: I-95 NB CD - 5612+00 to 5640+00
		Traffic shifts	Phase 1: I-95 NB CD - 5619+00 to 5637+00
	Complete closure (30 minute duration)	Overhead sign assembly erection	Two locations
	Long term shoulder closures	FredEx Overlap Area work	Phase 2: Left shoulder I-95 NB GP - 4636+50 to 4647+00 Phase 2: Right shoulder I-95 NB GP - 4639+00 to 4669+00 Phase 2: Right shoulder I-95 NB CD - 5621+00 to 5636+00 Phase 2: Right shoulder Ramp C2 - 102+00 to 105+00
		CD Road widening - CD Road interior shoulder	Phase 1: Left shoulder I-95 NB CD - 5612+00 to 5640+00
		Option 1 auxiliary lane	Phase 2: Right shoulder I-95 NB GP - 4689+00 to 4736+00
		Construct temporary Ramp C connection	Phase 1: Right shoulder I-95 NB GP - 4637+00 to 4639+00
	Overnight closure with detour	Route 17 Ramp C traffic shift	Use Route 17 loops for detour

*All station locations are approximate and do not contain the taper and buffer zone lengths required by the VWAPM

- Indicates closures with a time-of-day restriction.

4.6 PROPOSAL SCHEDULE

APPENDICES

ATTACHMENT 3.7 – FORM C-78-RFP (ACKNOWLEDGEMENT OF RECEIPT OF RFP, REVISIONS, AND/OR ADDENDA)

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

Jason Hoyle
SIGNATURE

2-19-2020
DATE

JASON HOYLE
PRINTED NAME

VP DESIGN-BUILD
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 25 day of February, 2020, by and between the Virginia Department of Transportation ("VDOT"), and Branch-Flatiron Joint Venture ("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] BRANCH CIVIL, INC.

By: _____

Name: Jason Hoyle

Title: Vice President | Branch Civil, Inc.

ATTACHMENT 11.8.6(A) – CERTIFICATION REGARDING DEBARMENT; PRIMARY COVERED TRANSACTIONS

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.

Jm Hoyle 2-12-2020 VICE PRESIDENT

Signature Date Title

BRANCH CIVIL, INC.

Name of Firm

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	12/17/19 Date	Vice President Title

Flatiron Constructors, Inc.

Name of Firm

ATTACHMENT 11.8.6(B) – CERTIFICATION REGARDING DEBARMENT; LOWER TIER COVERED TRANSACTIONS

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.

Jm Hoyle 2-12-2020 VICE PRESIDENT

Signature Date Title

BRANCH CIVIL, INC.

Name of Firm

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 Date Vice President Title

Flatiron Constructors, 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.

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.

E. Richard Capps | February 12, 2020 | Senior Vice President
Signature | Date | Title
E. Richard Capps Jr, P.E.

STV Incorporated dba STV Group Incorporated
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.

	December 9, 2019	Principal
Signature	Date	Title

A. Morton Thomas and Associates, 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.

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.

R. Scott B 01/14/2020 Managing Partner
Signature Date Title

Appraisal Review Specialists, 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.

Signature	12/9/2019	President/Treasurer
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.

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.

J. Randy Wirt 12/9/19 VICE PRESIDENT
Signature Date Title

ECS MID-ATLANTIC, 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.

Doug Tucker 12/9/19 Vice President

Signature Date Title

EEF Consulting, 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.

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.

RARES 1/13/20 President

Signature Date Title

Elliott Valuation + Consulting Services, 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.

Allen R. Pauly... 12-6-19 Regional VP

Signature Date Title

Froehling & Robertson, 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.

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.

	12-10-2019	Senior Vice President
Signature	Date	Title

Haley & Aldrich, 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.

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

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

Signature	12/10/2019 Date	President & CEO Title

Harris Miller Miller & Hanson 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.

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

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

[signature]	12/7/2019	President
Signature	Date	Title

Hassan Water Resources, PLC
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.

Kari Rose 12/10/19 Vice President

Signature Date Title

McDonough Bolyard Peck, 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.

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.

12/9/2019	Senior Vice President
Signature Date	Title

NXL a Division of Century Engineering

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.

Windy Campbell 12/9/19 Senior Public Relations Specialist
Signature Date Title

On Point Transportation PR
Name of Firm

QUALITY ASSURANCE/QUALITY CONTROL

4.4.4 QUALITY ASSURANCE/QUALITY CONTROL

Branch-Flatiron is committed to quality-based construction. Our approach is to install compliant work the first time to prevent schedule delays due to re-work. **Our team also firmly believes, and reinforces daily with our staff, that the quality of the product is our legacy.**

Construction project quality assurance (QA) and quality control (QC) are two fundamentally different processes with the same goal, to confirm adherence to the contract by meeting quality requirements. Both processes require the implementation of planned and systematic activities and consistent documentation. Branch-Flatiron has selected two highly-experienced firms to provide independent QA and QC services.

NXL, a Division of Century Engineering, Inc. (NXL), our QA firm, has provided construction engineering and inspection services (CEI) in the Mid-Atlantic for over 30 years. They have worked with VDOT on dozens of complex transportation projects and their staff thoroughly understands this area and VDOT's requirements for a quality finished project. Froehling & Robertson (F&R) will provide QA laboratory testing services for road construction and highway bridge fabrication and erection.

Exceeding Expectations

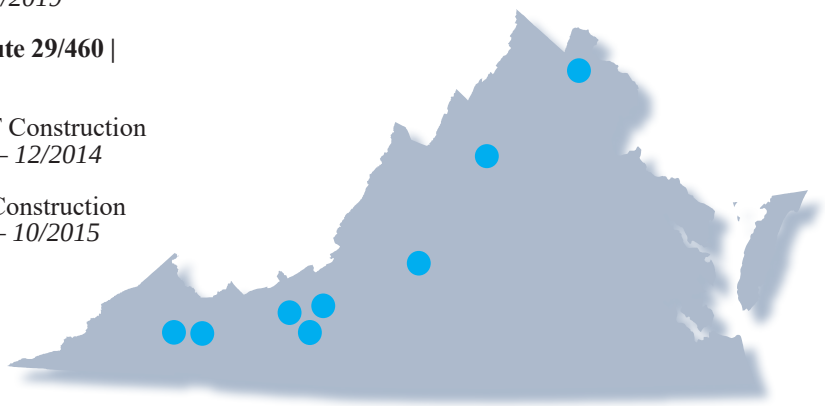
Branch-Flatiron's proven approach will strive to exceed VDOT's expectations for the I-95 NB RRC project, allowing VDOT to be minimally involved in the quality process, while meeting VDOT and ISO 9001 standards.

McDonough Bolyard Peck, Inc. (MBP), our QC firm, has a proven record of successfully providing QC services on a variety of transportation projects, including major highways, tunnels, and other complex projects. MBP's highway expertise also extends to the area of training. They successfully developed and presented a mandatory training class for new VDOT inspection personnel covering major construction topic areas. ECS, LLC Mid-Atlantic will provide an accredited, fully staffed and equipped QC laboratory to test all project required materials.

NXL and MBP have worked together on numerous VDOT projects throughout Virginia as seen in **Exhibit 4.4.4-1**. This long-standing relationship provides an understanding of roles, responsibilities, and processes. This history and understanding reduces learning curves, which eliminates schedule delays, safety concerns, and additional QA/QC oversight effort by VDOT.

Exhibit 4.4.4-1. / NXL and MBP's Recent History Together Providing Services for VDOT

- **Construction & Intelligent Transportation Systems Installation/Construction** | VDOT Southwest and Northwest Regions Operations | *8/2015 – Present*
- **Salem District Wide, Contract II** | VDOT Construction Engineering Inspection Services | *3/015 – 3/2019*
- **Odd Fellows Road Interchange at US Route 29/460** | VDOT Design Build | *2/2016 – 12/2018* |
- **Salem District Wide, Contract III** | VDOT Construction Engineering Inspection Services | *12/2010 – 12/2014*
- **Salem District Wide, Contract I** | VDOT Construction Engineering Inspection Services | *10/2011 – 10/2015*
- **Southwest Region ITS CEI Contract** | VDOT Construction Engineering Inspection Services | *9/2012 – 9/2016*
- **Region 2 Finals Contract II** | VDOT | *6/2011 – 6/2015*



During the procurement stage, Branch-Flatiron worked with both firms to review our detailed project approach, including schedule and anticipated resources, to confirm that both QA and QC are sufficiently staffed through the duration of the project. This includes provision of design/scope elements, key materials, sequencing, project schedule, concurrent operations, and day/night activities. These collaborative efforts yielded the staffing approaches for this project.

4.4.4.1 QA STAFFING PLAN

The NXL staffing plan started with analysis of the project scope. Branch-Flatiron worked with NXL to provide in-depth information on our approach. Through these efforts, NXL tailored its staff to meet Branch-Flatiron's anticipated schedule and is committed to maintaining the proper QA staffing to meet project demands.

As shown in **Exhibit 4.4.4-2** on the following page, the QA staffing remains relatively consistent throughout the project. NXL will provide dedicated personnel to meet or exceed oversight of QC staff.

4.4.4.2 QAM'S INDIVIDUAL SUPERVISORY APPROACH

Our Quality Assurance Manager (QAM) is Michael Saunders, PE of NXL. Michael's supervisory approach minimizes or eliminating the need for additional QA oversight by VDOT. To achieve this, he will implement a formal QA/QC plan, provide necessary resources, and perform appropriate oversight. This approach effectively navigates the processes, reviews, and reporting activities required to confirm quality work and provide timely delivery.

Michael will act as a single point of contact to manage our QA/QC plan. He will develop, implement, and manage the program in accordance with the RFP. He will work independently of the designer, contractor, and the QC team. **Michael will be available immediately upon contract award and will be present on the project site as-needed during the construction phase milestones and VDOT meetings and will devote approximately 12 hours a week to the project for its duration.** That time will be split to 8 hours per week on-site and 4 hours per week working remotely. Michael's involvement will adjust to meet the projects needs. He currently has no foreseeable commitments that would compete for his time during the I-95 NB RRC project. Michael will be present for main construction activities, including project milestones and VDOT meetings.

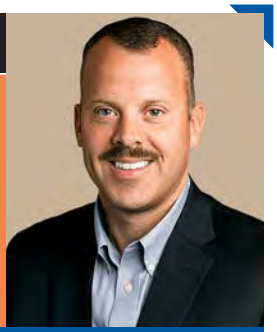
Michael is responsible for overall development of the QA plan and adherence to our QA/QC plan. He is also responsible for confirming that the I-95 NB RRC project is compliant with contract requirements. The QA/QC plan will meet or exceed VDOT's *Minimum Requirements for Quality Assurance and Quality Control on Design-Build and Public-Private Transportation Act Projects, July 2018*. The initial QA/QC Plan for construction will be a baseline level document which will be finalized after the RFC plans are issued, tailored to match the final design.

He will oversee the personnel responsible for performing QA inspections, materials testing, and work performed. He is responsible for overseeing QA for all construction activities, reports to the Design-Build Project Manager (DBPM), M. Jeff Humphreys, Jr., DBIA, and has direct lines of communication with Entrusted Engineer in Charge

Key Staff Highlight

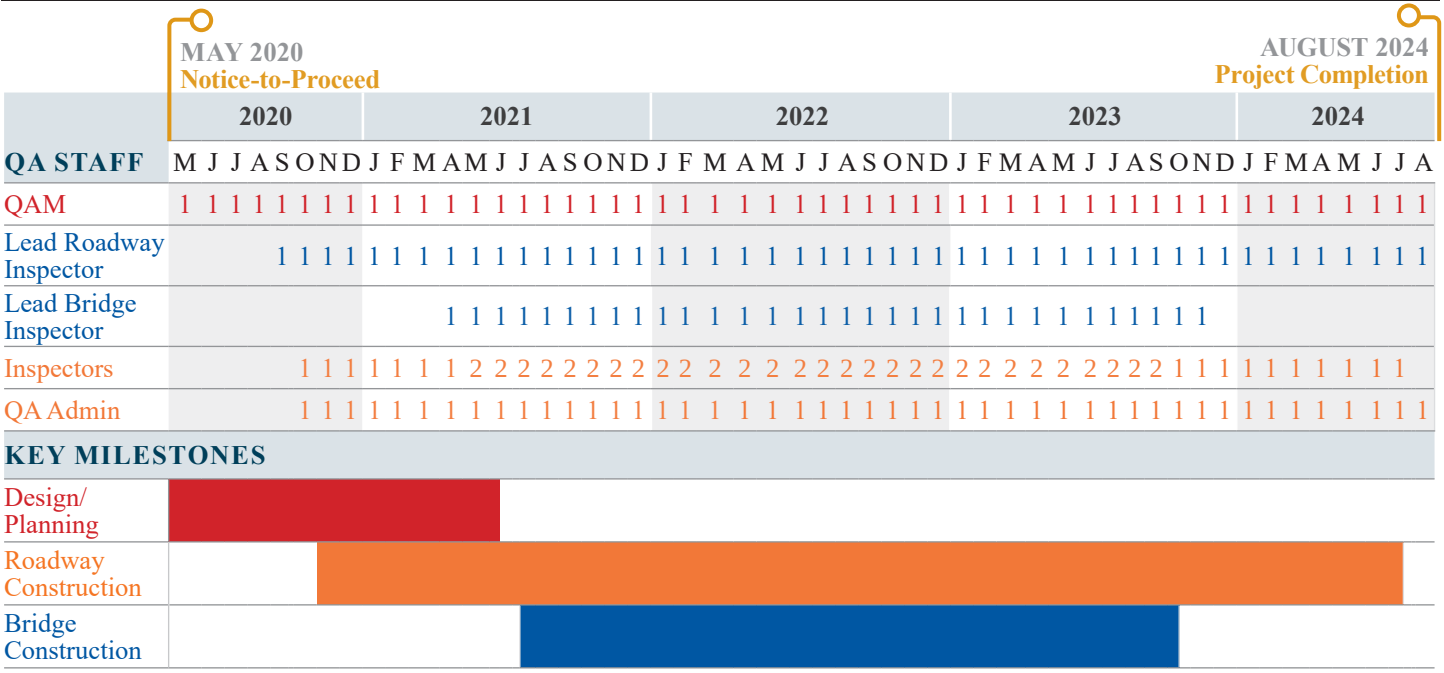
QAM Michael Saunders, PE manages NXL's CEI and surveying operations throughout the Commonwealth. He has over 18 years of experience in the construction industry. He is an experienced engineer with a focus on QA and is an efficient and fair manager of over 100 employees. Michael has experience as a Project Control Engineer and Area Construction Engineer for D-B and locally administered projects in the VDOT Richmond District. Michael has been focusing his talents on managing NXL's CEI and Survey operations throughout the State.

Michael is committed to the project for its duration and will be committed to the project approximately 12 hours per week.



Quality Assurance Manager
Michael Saunders, PE

Exhibit 4.4.4-2. / QA Staff Demands Over the Project Life Cycle



(EIC), Maggie Cossman, PE, DBIA, Design Manager (DM), Mike Hooshangi, PE, DBIA, and Construction Manager (CM) Bob Cross. He has the responsibility and authority to report any findings directly to VDOT, as well as to stop work for any tasks that are not being performed in accordance with contract requirements.

Michael thoroughly understands VDOT's D-B testing and inspection guidelines and will monitor the Branch-Flatiron QC program, serving as VDOT liaison regarding project compliance to confirm that VDOT's Independent Assurance/Independent Verification (IA/IV) testing is being performed. He will approve QC inspections and the QC frequency testing plan before submission to VDOT. He will oversee the preparation, maintenance, and submission of project documentation, including, but not limited to, diaries, Equal Employment Opportunity (EEO) laws, project Materials Notebook and documentation, As-Built sketches, approval of monthly pay packages, and the preparation and submission of final records. Michael will maintain the project Materials Notebook electronically on VDOT Form TL-142DB and perform monthly reviews of the project Materials Notebook by spot checking at least five materials and their source documentation.

Michael will conduct preparatory inspection meetings in accordance with Section 5.7 of the VDOT *Minimum Requirements for Quality Assurance and Quality Control on Design-Build and Public-Private Transportation Act Projects, July 2018*, prior to the start of any new work. This meeting will generally be scheduled as part of the Branch-Flatiron's pre-construction meeting to discuss specific upcoming work elements and will be attended by the Quality Control Manager (QCM), Construction Manager, Superintendents, VDOT representative(s), and applicable subcontractors.

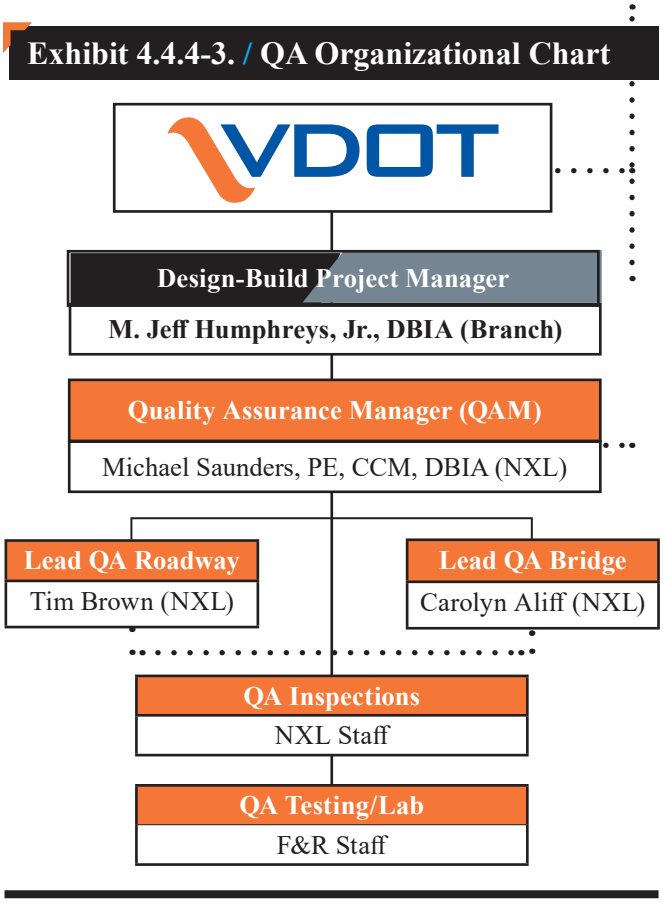
The inspection checklist used for monitoring the work will be identified and distributed to meeting attendees. Following the meeting, Michael will prepare and distribute meeting minutes to meeting attendees and absent project stakeholders. Michael will schedule the independent QA testing and inspections, comparing the QA and QC tests to confirm they are within established tolerances. He will certify that the work is completed in accordance with contract documents.

Michael will also manage the QA personnel so that sufficient staffing is maintained to certify compliance with the contract, plans, and specifications. He will also confirm that QA

inspectors have appropriate certifications for testings performed and will maintain copies in the project files on site.

Michael's direct reports are the Lead QA Bridge Inspector, and Lead QA Roadway Inspector, followed by other inspectors, technicians, laboratory and administrative staff, as shown in **Exhibit 4.4.4-3**. All QA inspections shall be performed by, or at the direction of, Michael. He shall confer with the QCM to resolve any deficiencies in the work. Maggie will confirm engineering decisions are not made in the field by non-engineers.

Exhibit 4.4.4-3. / QA Organizational Chart



Effective Pre-Construction Meetings

During pre-construction meetings Michael will facilitate a dialog among project stakeholders to build consensus among all team members regarding various project agendas. Agenda items may include:

- Applicable contract drawings
- Specifications
- Special Provisions
- Materials submittals
- Testing requirements
- Environmental concerns
- Public communications
- Safety issues
- Contractors' approach

4.4.4.2.A PROPOSED SUPERVISORY STRUCTURE AND MANAGEMENT PROCEDURES

Our QA organization will be structured as an integrated team with responsibility for quality delegated to the people most capable of affecting the end product. Our supervisory structure aligns with that as provided in the VDOT's *Minimum Requirements for Quality Assurance and Quality Control on Design-Build and Public-Private Transportation Act Projects, July 2018*

LEAD QA INSPECTORS

Michael will delegate specific work to two lead inspectors:

- **Lead QA Bridge Inspector | Carolyn Aliff**
- **Lead QA Roadway Inspector | Tim Brown**

They will be assisted by QA personnel assigned to perform inspection, testing, or monitoring of characteristics for acceptance. QAM and staff will never be the same personnel performing, or directly supervising the work being accepted.

Michael will directly supervise Carolyn Aliff and Tim Brown, both who are Virginia Department of Environmental Quality (DEQ) erosion and sediment control (E&SC)-certified. They are responsible for confirming daily project compliance and implementation of Michael's initial Construction QA plan, which will be available for review and approval at the project kick-off meeting. They will certify the project's

compliance with the Stormwater Pollution Prevention Plan (SWPPP) and the Virginia Pollutant Discharge Elimination System (VPDES) Construction Permit and have the authority and responsibility to stop work for activities that are not performed in accordance with contract requirements.

The Lead QA Inspectors will be on-site full-time for the duration of construction of the project. They are responsible for observing construction activities and confirming that they are performed in accordance with the approved for construction plans, specifications, and contract requirements. This includes observation of QC activities to confirm inspection and testing and the observation of any approved corrective action for any non-conformities of the work. The identity of the QA testing inspector or technicians will be given to VDOT for approval prior to the start of work, as well as a detailed qualification matrix for each type of testing. They will be supported by additional QA inspectors, as needed throughout the construction phase, to confirm compliance with VDOT Standards.

INDEPENDENT OFF-SITE QUALITY ASSURANCE LABORATORY

Froehling & Robertson, Inc. (F&R) will provide QA laboratory testing services for road construction and highway bridge fabrication and erection. F&R maintains AASHTO Materials Reference Laboratory (AMRL) accredited geotechnical and construction material testing laboratories throughout the Mid-Atlantic, allowing staff to deliver efficient and established service on the project. F&R's technicians will ultimately report to the QAM while reporting to the Lead QA inspectors for daily activities.

4.4.4.2.B QAM MANAGEMENT PROCEDURES

QA inspection staff shall complete daily reports and QA testing reports of QA inspections in accordance with the frequencies identified in Table A-2 Part 1 and Part 2 and Table A-3 of VDOT's *Minimum Requirements for Quality Assurance and Quality Control on Design-Build and Public-Private Transportation Act Projects, July 2018.* Michael will determine and certify to VDOT whether the materials and work comply with the approved drawings, specifications, and applicable VDOT standards as outlined in the contract requirements and any other applicable specifications, standards, and documents.

The Lead QA Inspectors shall establish a comprehensive system for project documentation at the project field office that will organize and track all construction QC, QA, owner independent assurance (OIA), and owner verification sampling and testing (OVST) documentation. The QA team shall be responsible for entering all field and lab test reports and results into the Materials Notebook and these shall be updated weekly. At a minimum, Michael shall audit the QC and QA testing and inspection records each month prior to certifying the monthly payment application.

The records shall present a factual representation of the work performed by Branch-Flatiron and allow a determination by Michael that all work was completed and tested in accordance with the plans and specifications. All documentation shall be adequately identified and cross-referenced to support a field audit by Michael and VDOT during the life of the project, as well as final audit after project completion.

Staff Highlight | Lead QA Inspectors

Senior Bridge Inspector Carolyn Aliff's 27 years of Virginia structures inspection experience provides a deep understanding of quality expectations for bridges and structures.

Lead QA Bridge Inspector | Carolyn Aliff

Lead QA Roadway Inspector | Tim Brown

Senior Roadway Inspector Tim Brown is an award-winning professional roadway inspector. He has been with NXL for more than a decade.

Field changes, including Field Design Change and Notice of Design Change will be approved by the DM prior to submission to VDOT. Maggie will confirm engineering decisions are not made in the field by non-engineers. Following VDOT acceptance, Michael will authorize the CM to proceed with the work and confirm QA inspection staff are aware of the change and have the updated applicable information.

PROCEDURE FOR INFORMATION MANAGEMENT

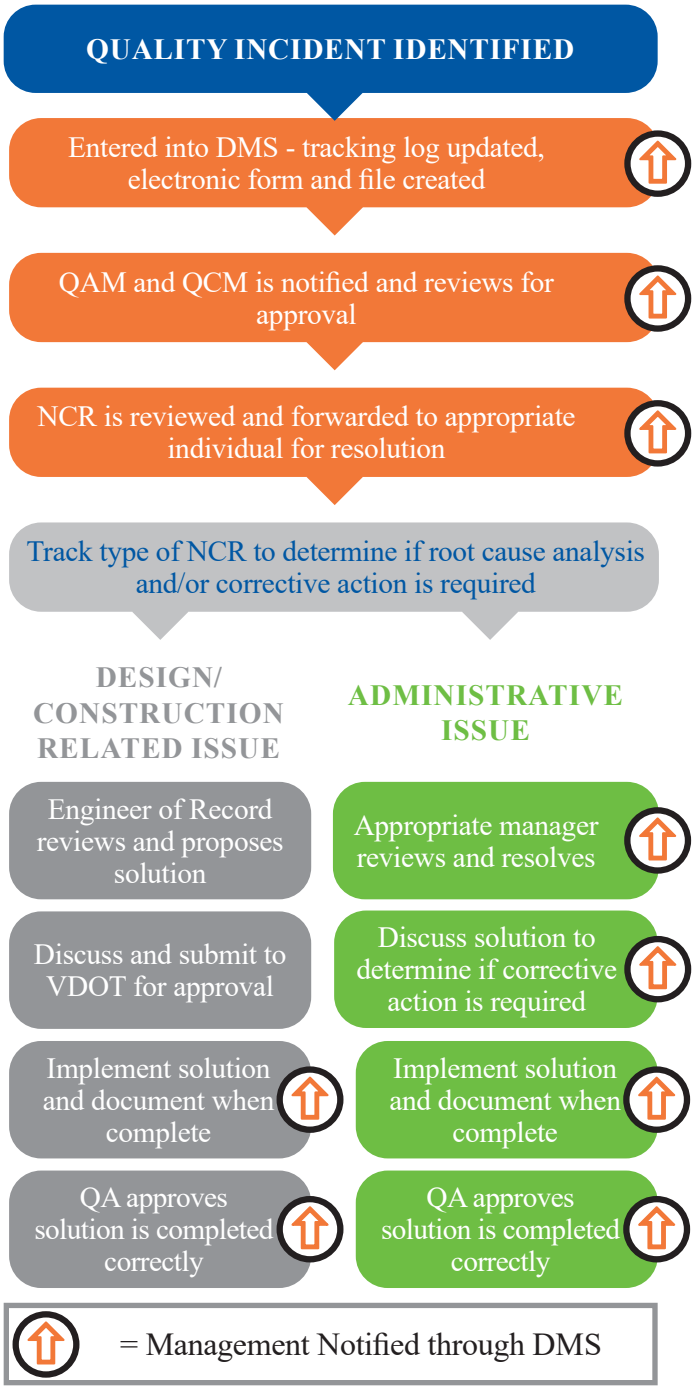
Led by our document control specialist, our team will manage project documentation in accordance with VDOT's special provision for electronic document control. Using a VDOT-approved electronic Document Management System (DMS) allows for greater collaboration between Branch-Flatiron, VDOT, and other project staff, by providing all personnel access to real-time project documentation.

It is critical that every level of our workforce has current information to correctly execute work. The DMS will notify personnel when changes occur or when they must perform a task, connecting all team members with the same data. A DMS enables all team members to use the QA/QC plan workflow. The software sends out automatic notifications when drawings have been changed or when clarifications are requested. Changes are approved following the established workflow and the project team will be notified about its progess. All team members are informed when changes are completed and approved. Revised drawings are then recorded and updated in the DMS.

Along with showing changes, we will use version control to preserve previous changes made, and current As-Built conditions, to easily track activities in a particular area. Previous versions are saved to keep original design records. Branch-Flatiron provides our superintendents with tablets to confirm field work is in corformance with the most current design plans.

Exhibit 4.4.4-5. / DMS Notifications

Using automatic notifications allows all parties to see the issue, status, and solution of each NCR in real time.



PROCEDURES FOR REPORTING AND DOCUMENTING NONCONFORMING WORK

The QAM, or his representative, will coordinate daily with VDOT regarding new and existing non-conformance items. Non-conformance reports (NCR) and a reporting log will be maintained throughout the duration of the project. Identified deficiencies will be assigned a NCR number. NCRs will be entered and tracked in the DMS, using the established workflow shown in **Exhibit 4.4.4-5**.

NCRs will be discussed in weekly meetings and metrics will be established to resolve items quickly. Any NCR not resolved within one month will be elevated to the JV Executive Committee. If VDOT determines a deficiency has occurred it will be entered into the system with an NCR number and tracked on a single non-conformance log. The NCR log will be provided to VDOT with the monthly Pay Application.

NCRs will be cross-referenced to the specific data sheets identifying the issue. Each NCR will be logged and tracked from initial issue through corrective action approval and until final correction is completed and approved. This work flow will be established within the DMS so all team members can see exactly where each NCR is within the process. Each NCR will be reviewed by the design team to confirm the proposed corrective action will obtain the intended design purpose. The Branch-Flatiron team's resolution of nonconforming work and response to NCRs will focus on the root cause of the non-conformance and presenting a solution that will improve the process and prevent future occurrence of the nonconforming items.

PROCEDURES FOR MATERIAL INSPECTION AND APPROVAL

All QA testing will be performed at the direction of the QAM and/or the QA Inspector. Field and laboratory testing will be performed for each material type that meets the frequencies outlined in Appendix 3 Table A-3: Parts 1 and 2 *Minimum Requirements for Quality Assurance and Quality Control on Design-Build and P3 Projects* dated July 2018. Work will be tested to meet the 2016 VDOT *Road and Bridge Specifications, the*

Exhibit 4.4.4-6. / QA Procedures for Materials Inspection

CM
Provides anticipated materials quality on look ahead schedule.
Updates QAM and VDOT regarding anticipated quantities prior to delivery.
Alerts QAM that materials are ready for pre-use acceptance.

QA TEAM
Selects random number sampling and testing for material.
Samples/performs/tests/inspects/accepts materials.
Monitors delivery tickets for quantity.
Confirm required tests are performed at correct frequency.
Check against requirements and source material.
Record in Materials Notebook.

CM
Provides QAM with actual quantities placed the day following materials receipt.

QA TEAM
Update actual quantities received and communicates to VDOT.
Reconcile anticipated versus actual quantities received.
Confirm test frequency matches required frequency.
Update DMS for materials requiring statistical acceptance.

QA TEAM
If test quantity is insufficient, record the deviation, explaining deficiencies, and update record.
If quantity of tests is sufficient, update record.
Discuss current status, including discrepancies, at QTF meeting.

QAM
As each segment of work is completed, finalize closeout record.

Construction Manual (2005 version), *Materials Manual of Instructions*, and other documents as specified in the Contract. See **Exhibit 4.4.4-6.** to see our typical QA procedures for Materials Inspection

VDOT's Project Manager will be invited to view all testing. Testing of trial samples may be required to demonstrate testing competence. Branch-Flatiron will furnish copies of all test results (both QA and QC) to VDOT's Project Manager or other authorized VDOT representatives as soon as possible after the test has been performed, recorded, and the results checked, to confirm compliance with appropriate testing guidelines. The requirements for furnishing test results do not include sample aging or curing time; therefore, reporting times will be extended accordingly. If necessary, proposals will be submitted in writing for approval to use alternate AASHTO or state-approved test methods.

A random selection process, ASTM D 3665, will be used to select sample locations. More specific testing quantities and/or frequencies will be established before initiation of corresponding work package activities. At a minimum, the project schedule will be evaluated in "look-ahead" schedules to establish more finite testing quantities applicable within that period. This will be even further refined at inspection preparatory meetings specific to planned work activities that occur outside of the monthly progress meetings.

This process also will be used to confirm hold points, to be depicted in the project schedule, and to establish witness points for the same period. The testing plan will be submitted and approved by the QAM with recommendation for approval by VDOT prior to the beginning of production or placement of the material.

Branch-Flatiron will identify to VDOT any and all off-site fabricated materials from producers. The inspection of project specific fabricated items will be accomplished by VDOT using its own forces and/or global agent. To facilitate these inspections, Branch-Flatiron will promptly notify VDOT of the intended fabricator and provide a copies of the approved shop drawings.

All material test reports, except those conducted by VDOT, will be approved by the QAM prior to submission to VDOT. The QAM will coordinate with VDOT to receive, review, and accept the necessary test reports for the material VDOT retains responsibility for as listed above.

Procedures for Hold and Witness Points

Hold and Witness points will be identified in the QA/QC plan and construction schedule to identify critical points in which construction cannot proceed until inspection, or observance has occurred. All preparatory meetings will be incorporated into the project schedule and identified as Hold Points. Per the contract, the Hold Points will require VDOT verification before proceeding. Specific Hold Points will be identified, but at a minimum will include:

- Preparatory meetings for each work package
- Design development services submissions
- Environmental submittals
- Certifications and permits
- Government approvals

Witness Points will be coordinated with the QAM and in the QA/QC plan. The Witness Points will be included in the project schedule and will be discussed in weekly meetings to provide sufficient notice for VDOT's verification.

4.4.4.3 QA/QC ORGANIZATION

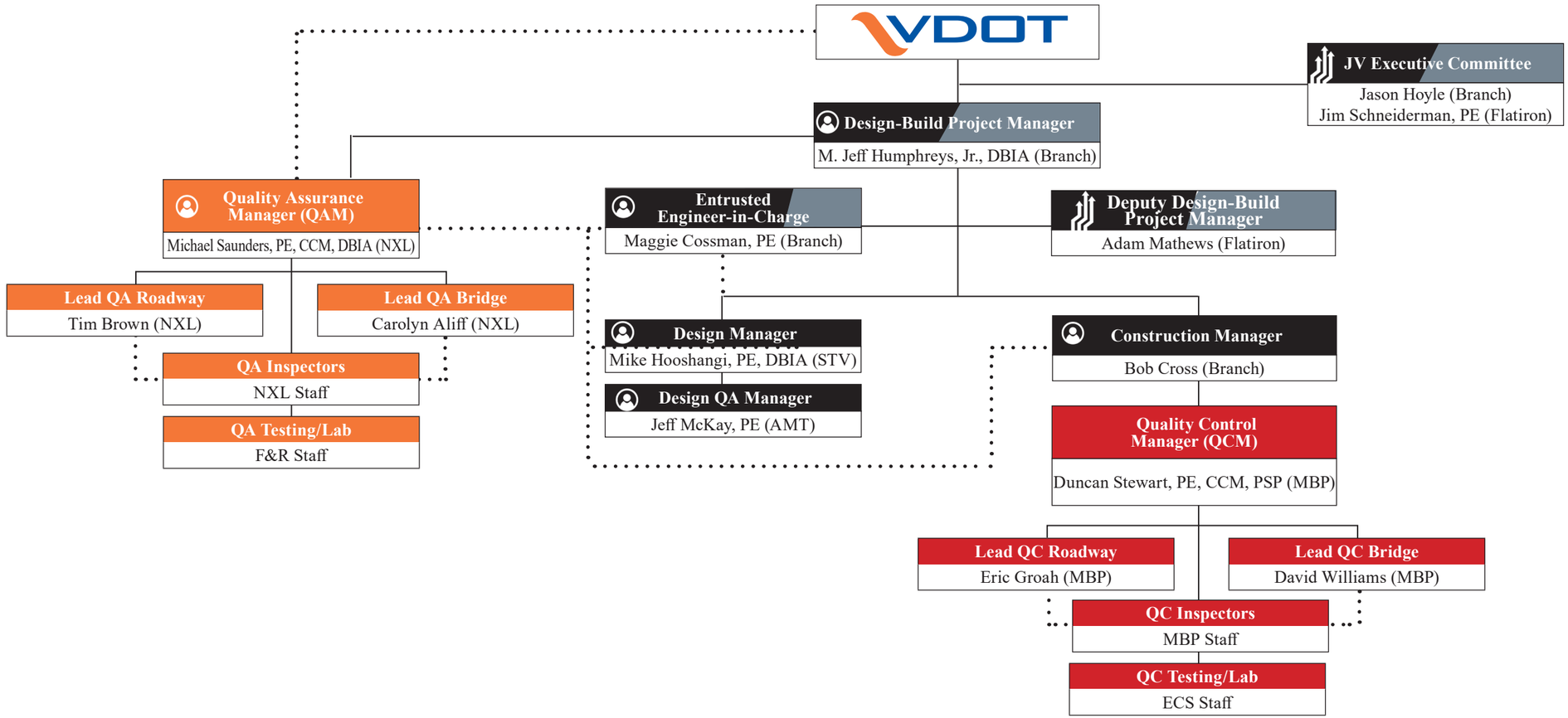
Branch-Flatiron understands that our construction personnel provide the first line of quality control on a project. Through efficient construction, we conserve resources by consistently producing test-ready work, as required by the schedule.

The QA/QC organization has been structured so that QC personnel and QA personnel provide an independent and unbiased assessment of the quality of processes, work, and material. **Exhibit 4.4.4-7,** on the following page, depicts our QA/QC organizational chart.

CONSTRUCTION QC CREWS

Additionally, Branch-Flatiron will supplement the MBP team with construction QC field crews. The Construction QC Crew, led by Branch-Flatiron field engineers, will track quantities, hold point plans, and sign off sheets. Field personnel will

Exhibit 4.4.4-7 / QA/QC Organizational Chart



coordinate daily with the inspection staff to confirm that work and materials consistently meet VDOT standards. They are also fully authorized to halt or slow production to correct deficiencies.

4.4.4.4 QUALITY CONTROL ORGANIZATION AND STAFFING PLAN

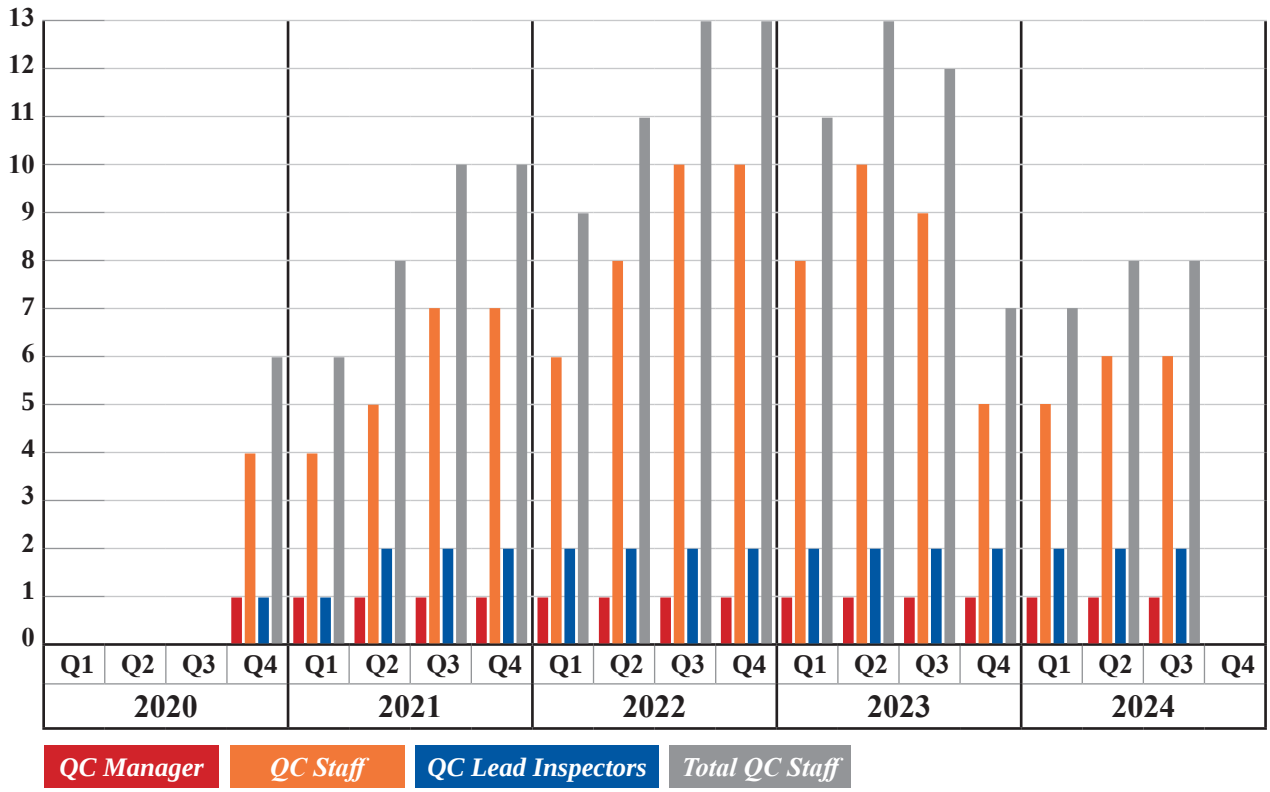
Our construction QC staff, operating independently from the QA staff, will perform all required inspection sampling and testing, as required by contract documents. **Exhibit 4.4.4-8** shows the anticipated resources necessary to achieve the Quality Control Requirements for this project. Staffing demands were arrived upon by performing an analysis of Branch-Flatirons construction approach and schedule

QUALITY CONTROL MANAGER

As Quality Control Manager (QCM), Duncan Stewart, PE, CCM, PSP reports directly to CM Bob Cross. He will manage the day-to-day QC inspections and materials testing. He is responsible for inspection of construction activities and all QC sampling, testing and required analysis of materials to achieve top construction quality that meets or exceeds contract requirements. Duncan is responsible for overseeing that construction quality testing occurs at frequencies exceeding those required by the VDOT *Construction Manual, the Materials Manual of Instructions* and Table A-2 Part 1 and Part 2 and Table A-3 of VDOT's *Minimum Requirements for Quality Assurance and Quality Control on Design-Build and Public-Private Transportation Act Projects, July 2018.* As the QCM, he also confirms that the QC inspections and materials sampling and testing is consistent with the Construction QC plan. Duncan will assign full-time senior project inspectors (Lead QC Inspectors) who will implement the daily QC process for the duration of the project.

Duncan will coordinate with Bob to implement the Quality Control Plan (QCP). Bob will also assist Duncan with administration of the QA/QC plan, as necessary, so that it is effectively engaged. Those

Exhibit 4.4.4-8 / QC Staff Demands Over the Project Life Cycle



QC staff is comprised of QC inspectors, technicians, and administration staff.

subcontractors, manufacturers, and suppliers providing quality control or inspection services will be accountable to Duncan.

The QC staff will take direction from Duncan, and will be supported, as needed, by Branch-Flatiron crews, subcontractors, and fabricator or producer personnel. Duncan will schedule the appropriate, qualified personnel to perform QC activities, ensuring ongoing work is subject to QC oversight.

LEAD QC INSPECTORS

Our team has provided two value-added roles to compliment the QC team. Our Lead QC Bridge Inspector, David Williams, will be dedicated solely to bridge structures. Lead QC Roadway Inspector, Eric Groah, is responsible for all roadway quality control. The Lead QC Inspectors will coordinate with and manage all additional inspectors and testing technicians to complete on-site materials testing and laboratory testing for QC activities to confirm compliance with plans, specifications, and other contract documents. The QC staff shall inspect and test all construction work performed to meet the VDOT *Road and Bridge Specifications*, any project specific Special Provisions, VDOT *Road and Bridge Standards*, executed project contract and any approved submittals. The construction QC team is responsible for their own project documentation and shall be responsible for entering all field and lab test reports and results into the Materials Notebook as needed and these shall be kept up to date weekly and monthly to allow the Branch-Flatiron monthly payment voucher to be approved.

QC INSPECTORS AND TECHNICIANS

The Lead QC Inspectors will be joined by other inspectors and testing technicians, as needed, to inspect the work. All QC inspectors will be VDOT-certified in Intermediate Workzone, Asphalt Field I&II, Soils & Aggregates, Pavement Markings, and GRIT, Nuclear Safety, ACI Concrete, DEQ E&S and SWM and OSHA 10-hour. Additional certifications relevant to specialized work elements may be required as needed. The inspectors will be highly experienced in VDOT practices and methodology and will be responsible for monitoring all of the work activities for the Project.

Quality Control Inspectors report to the QCM and support the Lead QC Inspectors. QC inspectors will perform inspection (and may perform testing) during construction operations. QC inspectors may also monitor or inspect activities of off-site fabricators, manufacturers, and other materials suppliers. This includes confirming that construction materials comply with plans and specifications, applicable building codes, good workmanship practices, and QC requirements set forth in contract documents. Branch-Flatiron understands we will be responsible for providing QA and QC testing of all off-site materials that are not identified in Part 2 Technical Requirements, from the RFP, including materials obtained from off-site soil borrow pits.

QC technicians report to the QCM in support of QA/QC plan administration. QC technicians will perform all QC tests required by the contract and inspection of all materials, construction, plant, and equipment for conformance to technical specifications. QC staff, operating independently from QA staff, will perform sampling and testing as required.

The QC inspection team will complete an Inspector Daily Report (IDR). The IDR will be submitted to the QC Manager, QAM, DBPM, Construction Manager (CM), and others, along with documentation of any material tests performed.

Staff Highlights / Quality Control Manager

Since 2008, Duncan Stewart has served as a QAM for six VDOT projects, of over $75M total construction value. Duncan is MBP's project manager for their contract serving VDOT's central office Construction Division. Under this contract he has supervised several CQIP reviews of design-build projects. In this role, he has become very familiar with VDOT's expectations, developed relationships with Area Construction Engineers (ACEs) and CMs in multiple Districts, and gained significant insight through lesson learned by reviewing the QA/QC work of various DB teams.

Quality Control Manager | ***Duncan Stewart , PE, CCM, PSP***

Staff Highlight | Lead QC Inspectors

Eric Groah has over 26 years of experience through his career with VDOT and as a consultant to VDOT. He has experience with urban projects, including bridges, retaining walls, grading, pipe rehabilitation, and emergency projects. He has established relationships with clients and reviewed project records and project sites for quality. Eric is highly organized and has experience working on multiple projects simultaneously and supervising several inspectors throughout his career.

Lead QC Roadway Inspector | Eric Groah

David Williams has 34 years of experience in the heavy civil construction industry, with 32 years working directly for VDOT, including as a Senior Construction Inspector. He is fully VDOT and DEQ certified and is proficient in all roadway and bridge construction. He has delivered numerous complex construction projects with an emphasis on safety, quality, budget, and schedule while maintaining VDOT CQIP scores above state goals.

Lead QC Bridge Inspector | Dav Williams

INDEPENDENT OFF-SITE QUALITY CONTROL LABORATORY

Branch-Flatiron's QC program, led by MBP, provides stringent actions for confirming quality in our work throughout construction. These actions focus on identifying defects in our processes and products we construct. ECS, LLC Mid-Atlantic will provide a fully staffed and equipped QC laboratory to test all project-required materials. Their near-by testing facilities enable them to provide real-time test results, avoiding schedule delays.

Samples collected for QC laboratory analysis will be handled, labeled, and tracked in accordance with the procedures described in the quality management system manual, which will be maintained at the ECS testing laboratory and made available to VDOT upon request.

ECS operates a fully accredited AASHTO, Cement And Concrete Reference Laboratory (CCRL), and AMRL-certified testing laboratory. The calibration and verification of its QC testing equipment will meet the applicable testing standard. Details of calibration policies and procedures can be found in the *Quality Management System Manual*. The independent laboratory and testing facilities will maintain certifications, calibrations, and equipment throughout the course of the project. Records will be available upon request.

Inspection activities will be scheduled and coordinated by the Lead QC Inspectors, who will coordinate with the Construction Manager to identify the required QC personnel, and schedule the QC tests and inspections

PROJECT MANAGEMENT PROCEDURES

All QC staff actively inspecting and testing segments of work will complete an IDR. The IDRs are electronic diaries and will include, as an attachment, copies of QC materials tests completed for the day. Signed electronic copies of the IDRs will be submitted daily to the Lead QC Manager for review and approval. The Lead QC Inspector will complete an electronic Daily General Report (DGR), which will summarize the work covered by the IDRs.

After the QC Manager reviews and approves, staff will forward electronic copies of signed DGRs, IDRs, and test reports to the Construction Manager, QA Manager, and other as-designated members of the team for use and review. The construction QC team will upload and enter all QC materials test results into the project's Materials Notebook.

The electronic records will be maintained as part of the permanent QC records. Paper copies of project documentation will be stored in binders

in storage cabinets at the project site, available for audit by the QAM and VDOT at any time. The process of uploading and storing electronic documents (IDRs, Source of Materials log, materials tickets, work zone reports, submittals, RFIs, NCRs, Materials Notebook, and other relevant information) will be finalized at the outset of the project, after consultation with Branch-Flatiron, VDOT, and the QA/QC team.

The Lead QC Inspectors will produce a weekly report, to be reviewed and approved by the QCM, containing summaries of tests, materials placed, actions taken for failing materials, NCRs, safety, inspection, environmental, and schedule issues. Our project management procedures are highlighted below in **Exhibit 4.4.4-9.**

ENVIRONMENTAL QUALITY CONTROL

Erosion and sediment controls will be inspected by the QC team to confirm implementation in accordance with the approved plans, erosion and sediment control laws and regulations, and the E&SC standards and specifications approved by the Virginia DCR and DEQ, as applicable. Branch-Flatiron will update the SWPPP weekly, and will be kept at the Branch-Flatiron project office, available for review. Branch-Flatiron will correct deficiencies as soon as possible to achieve compliance with the DEQ Permit. The Environmental QC Process is highlighted in **Exhibit 4.4.4-10**.

OUR QUALITY COMMITMENT

Our approach to QA/QC is to be accountable and transparent throughout the life of the project. We identify the issue as soon as possible, communicate with VDOT, perform additional testing to accurately diagnose the problem, propose feasible solutions, select and implement the desired resolution, and apply corrective procedures so that the problem does not reoccur. Our QA/QC plan is a living document that will be reviewed and revised as needed during the life of the project as shown in **Exhibit 4.4.4-11,** on the following page.

In summary, our QA/QC Plan will be structured so that the team correctly manages quality compliance and provides an objective measure of quality performance. Branch-Flatiron will reinforce to those team members who work on design and construction that quality begins with them.

All project employees will comply with QA/QC plan requirements. Our QA/QC plan requires periodic audits of the project contractor, designer, subconsultants, subcontractors, and suppliers. As a proactive measure, Branch-Flatiron will

Exhibit 4.4.4-10 / Environmental QC Process

Design

Confirm design is consistent with mitigation commitments and final permit conditions

Construction

Monitor and report compliance during construction
Bring solutions forward to address in-field conditions

Operation

Document long-term mitigation success

Exhibit 4.4.4-9 / Project Management Procedures

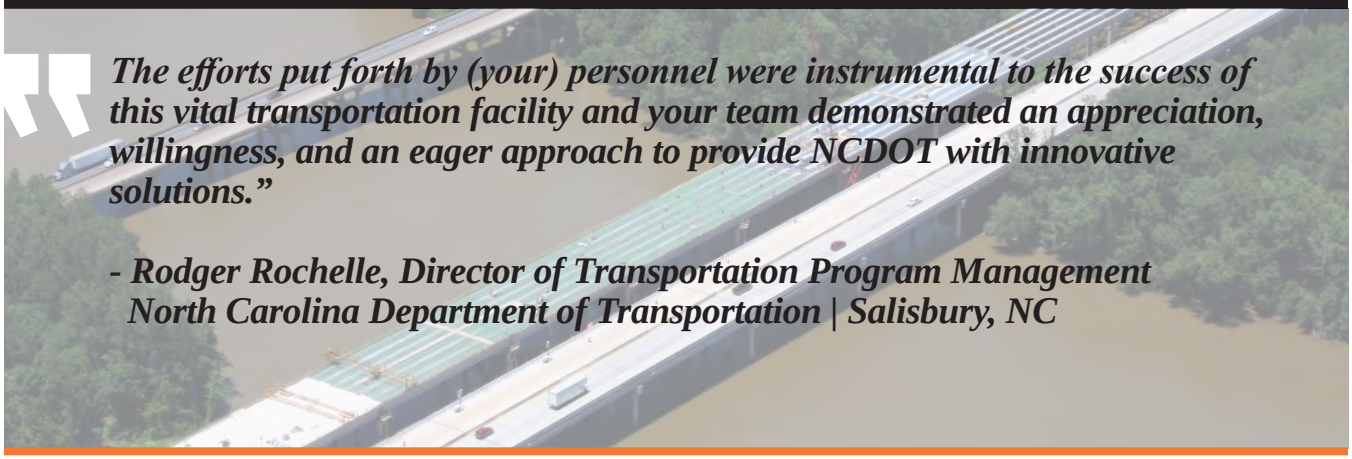
CONSTRUCTION QC PLANNING	EXECUTION	CLOSEOUT
• Review the CPM schedule • Review Item specifications • Develop inspection work plan • Schedule pre-item work meeting	• Conduct preparatory meeting • Perform inspection • Perform required materials testing • Document results in the DMS	• Confirm all work is complete • Item pre-final inspection • Create pre-final punch list • Punch list work completed • Project accepted

visit fabricators' shops to confirm that they are following VDOT's procedures for quality and reducing the risk of encountering quality issues on site. Our team will receive, handle, and properly store all construction materials and closely monitor them for compliance with contract specifications. We will implement a document control system to identify and manage materials in coordination with the schedule. Submittals will include all shop drawings, samples, certificates, test reports, and technical information required by the contract.We require all producers, subcontractors, and major suppliers of permanent materials to adhere to our quality management plan.

By implementing all of the elements presented in our QA/QC approach, Branch-Flatiron demonstrates our commitment to providing VDOT with a project built to the highest standards of quality and safety.

Exhibit 4.4.4-11 / QA/QC Plan

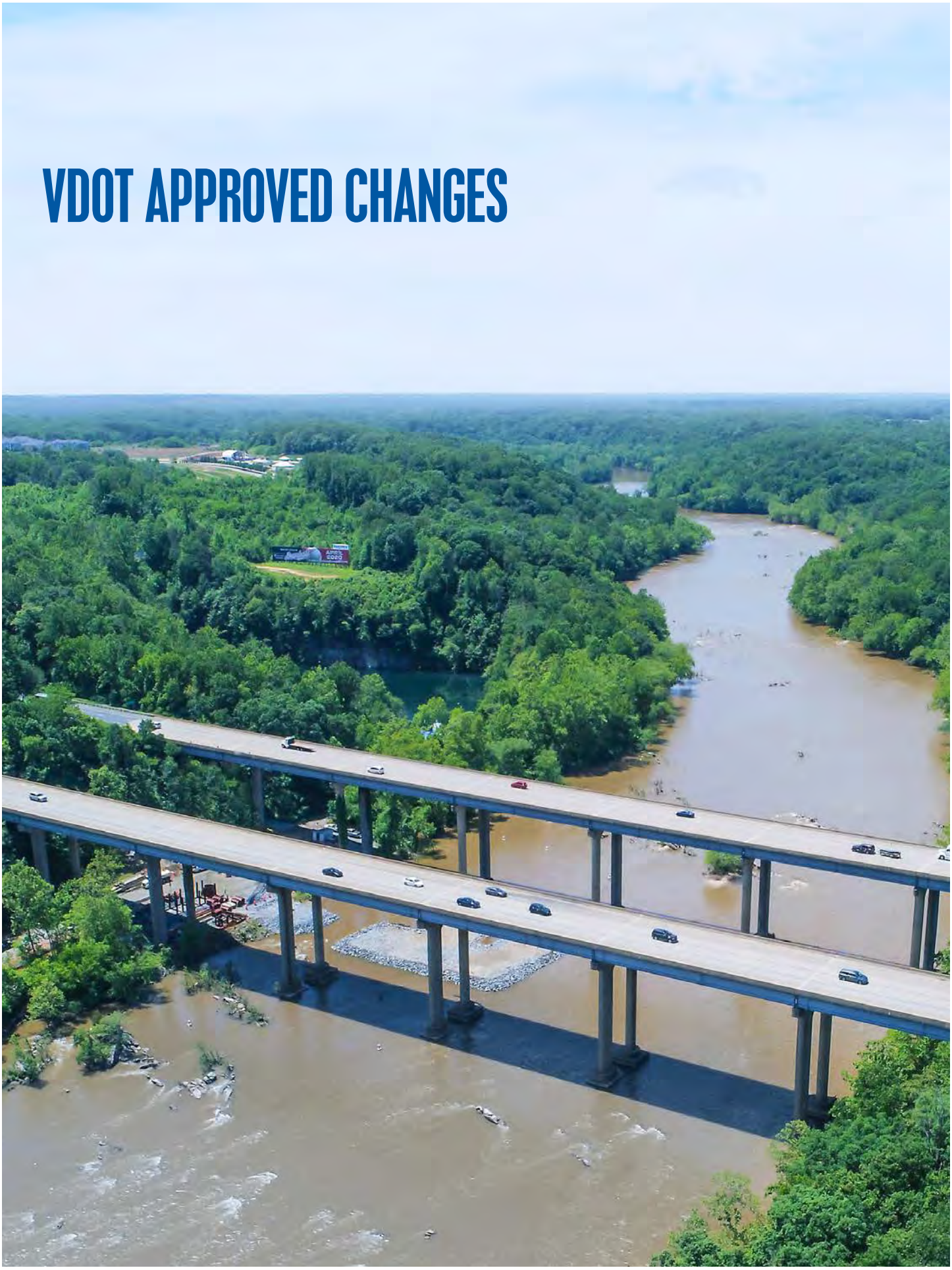
Team Accolades / Interstate 85 Yadkin River Bridge



The efforts put forth by (your) personnel were instrumental to the success of this vital transportation facility and your team demonstrated an appreciation, willingness, and an eager approach to provide NCDOT with innovative solutions."

- Rodger Rochelle, Director of Transportation Program Management
North Carolina Department of Transportation | Salisbury, NC

VDOT APPROVED CHANGES



Johnson-Surniak, Jennifer C.

From: Donald Bryson <donald.bryson@branchcivil.com>
Sent: Tuesday, February 4, 2020 1:51 PM
To: Andrew Bright; Wendy Ramsey; Johnson-Surniak, Jennifer C.
Subject: Fwd: I-95 Rappahannock North Bound Project

Sent from my iPhone

Begin forwarded message:

> **From:** Suril Shah <suril.shah@vdot.virginia.gov>
> **Date:** February 4, 2020 at 1:20:35 PM EST
> **To:** Donald Bryson <donald.bryson@branchcivil.com>
> **Subject: RE: I-95 Rappahannock North Bound Project**
>
> Dear Mr. Bryson,
>
> VDOT has reviewed and approved your request to replace the following non-key personnel on your team:
>
> Lead Utility Coordination Manager – Mark Sellers (no longer with the company) will be replaced with Ismail Ahmed
>
> Please note the requirements related to changes in the organizational chart and narrative as outlined in RFP Part 1, Section 4.2.
>
> Thanks,
> Suril
> **Suril R. Shah, P.E., DBIA**
> Senior Project Delivery Engineer
> VDOT - Alternative Project Delivery Division
> 1401 E. Broad Street, Richmond VA 23219
> Suril.Shah@VDOT.virginia.gov
> Phone: (804) 225-3799
>
> ---
>
> **From:** Donald Bryson [mailto:donald.bryson@branchcivil.com]
> **Sent:** Monday, February 03, 2020 12:08 PM
> **To:** Suril Shah
> **Subject:** I-95 Rappahannock North Bound Project
>
> Mr. Shah
>
> Please find attached a personnel change on the above captioned project. If you have any questions, please let me know.

Thank you

Donald E. Bryson Jr.
Pursuit Manager
704-572-1684

BRANCH CIVIL
VIRGINIA | NORTH CAROLINA
branchcivil.com

Johnson-Surniak, Jennifer C.

From: Donald Bryson <donald.bryson@branchcivil.com>
Sent: Friday, February 7, 2020 11:32 AM
To: Wendy Ramsey; Johnson-Surniak, Jennifer C.; abright@flatironcorp.com; Jacquelyn Watson
Subject: Fwd: I-95 North Bound Rappahannock project - Sub Change

FYI

Sent from my iPhone

Begin forwarded message:

> **From:** Suril Shah <suril.shah@vdot.virginia.gov>
> **Date:** February 7, 2020 at 10:39:13 AM EST
> **To:** Donald Bryson <donald.bryson@branchcivil.com>
> **Subject: RE: I-95 North Bound Rappahannock project - Sub Change**
>
> Dear Mr. Bryson – You have requested to change your sub from Seventh Point to On Point Transportation. Based on the information provided, there are no personnel changes on the organizational chart associated with this change.
>
> VDOT has reviewed and approved your above request provided On Point Transportation PR is in compliance with RFQ requirements including but not limited to SCC registration.
>
> Also, please note the requirements related to changes in the organizational chart and narrative as outlined in RFP Part 1, Section 4.2.
> Thanks,
> Suril
> **Suril R. Shah, P.E., DBIA**
> Senior Project Delivery Engineer
> VDOT - Alternative Project Delivery Division
> 1401 E. Broad Street, Richmond VA 23219
> Suril.Shah@VDOT.virginia.gov
> Phone: (804) 225-3799
>
> ---
>
> **From:** Donald Bryson <donald.bryson@branchcivil.com>
> **Sent:** Tuesday, February 4, 2020 12:00 PM
> **To:** Suril Shah <suril.shah@vdot.virginia.gov>
> **Subject:** I-95 North Bound Rappahannock project
>
> Mr. Shah
>
> Please find attached a change of name for a sub on the above captioned project. Should you have any questions, please let me know.
>
> Thank you

Donald E. Bryson Jr.
Pursuit Manager
704-572-1684

BRANCH CIVIL
VIRGINIA | NORTH CAROLINA
branchcivil.com

Johnson-Surniak, Jennifer C.

From: Donald Bryson <donald.bryson@branchcivil.com>
Sent: Friday, February 7, 2020 11:33 AM
To: Wendy Ramsey; Johnson-Surniak, Jennifer C.; Jacquelyn Watson; abright@flatironcorp.com
Subject: Fwd: I-95 Rappahannock North Bound Project - Non Key Personnel Change

FYI

Sent from my iPhone

Begin forwarded message:

> **From:** Suril Shah <suril.shah@vdot.virginia.gov>
> **Date:** February 7, 2020 at 10:56:01 AM EST
> **To:** Donald Bryson <donald.bryson@branchcivil.com>
> **Subject: RE: I-95 Rappahannock North Bound Project - Non Key Personnel Change**
>
> Dear Mr. Bryson - VDOT has reviewed and approved your request to replace the following non-key personnel on your team:
>
> Lead QC Bridge Inspector – Mike Johnson (no longer with the company) will be replaced with Dave Williams
>
> Please note the requirements related to changes in the organizational chart and narrative as outlined in RFP Part 1, Section 4.2
> Thanks,
> Suril
> **Suril R. Shah, P.E., DBIA**
> Senior Project Delivery Engineer
> VDOT - Alternative Project Delivery Division
> 1401 E. Broad Street, Richmond VA 23219
> Suril.Shah@VDOT.virginia.gov
> Phone: (804) 225-3799

From: Donald Bryson <donald.bryson@branchcivil.com>
Sent: Thursday, February 6, 2020 2:03 PM
To: Suril Shah <suril.shah@vdot.virginia.gov>
Subject: I-95 Rappahannock North Bound Project

Mr. Shah

Please replace this letter with the one sent earlier this am. It had an error in the information. If you have any questions, please let me know.

Thank you

Donald E. Bryson Jr.
Pursuit Manager
704-572-1684

BRANCH CIVIL
VIRGINIA | NORTH CAROLINA
branchcivil.com

From:	Donald Bryson
To:	Johnson-Surniak, Jennifer C.; Wendy Ramsey; Watson, Jacquelyn
Cc:	Bright, Andrew
Subject:	FW: I-95 Rappahannock North Bound Project - Non Key Personnel Change
Date:	Wednesday, February 19, 2020 12:20:13 PM
Importance:	High

****This e-mail is from outside STV****

fyi

From: Suril Shah <suril.shah@vdot.virginia.gov>
Sent: Tuesday, February 18, 2020 11:29 AM
To: Donald Bryson <donald.bryson@branchcivil.com>
Subject: RE: I-95 Rappahannock North Bound Project - Non Key Personnel Change
Importance: High

Dear Mr. Bryson - VDOT has reviewed and approved your request to replace the following non-key personnel on your team:

Lead QA Bridge – Carolyn Aliff will be replaced with Tim Brown
Lead QA Roadway – Tim Brown will be replaced by Carolyn Aliff

Please note the requirements related to changes in the organizational chart and narrative as outlined in RFP Part 1, Section 4.2

Thanks,
Suril

Suril R. Shah, P.E., DBIA
Senior Project Delivery Engineer
VDOT - Alternative Project Delivery Division
1401 E. Broad Street, Richmond VA 23219
Suril.Shah@VDOT.virginia.gov
Phone: (804) 225-3799

From: Donald Bryson <donald.bryson@branchcivil.com>
Sent: Monday, February 17, 2020 9:34 AM
To: Suril Shah <suril.shah@vdot.virginia.gov>
Subject: I-95 Rappahannock North Bound Project

Mr. Shah

Please find attached a personnel change on the above captioned project. If you have any questions, please let me know.

Thank you

Donald E. Bryson Jr.
Pursuit Manager
704-572-1684

BRANCH CIVIL

VIRGINIA | NORTH CAROLINA
branchcivil.com

BRANCH CIVIL® | FLATIRON | BRANCH - FLATIRON JOINT VENTURE | *in association with* STV 100 Years

442 Rutherford Avenue, NE
Roanoke, VA 24016
540.982.1678
www.branchcivil.com | www.flatironcorp.com

VDOT
Virginia Department of Transportation

ELECTRONIC COPY
FEBRUARY 25, 2020

I-95 NORTHBOUND

RAPPAHANNOCK RIVER CROSSING

TECHNICAL PROPOSAL - VOLUME II

A DESIGN-BUILD PROJECT

FROM 1.26 MILES SOUTH OF ROUTE 3 TO
0.01 MILES SOUTH OF ENON ROAD

STATE PROJECT No. 0095-111-270 | FEDERAL PROJECT No. NHP-095-2(545) | CONTRACT ID No. C00105510DB106

BRANCH CIVIL® | FLATIRON | BRANCH - FLATIRON JOINT VENTURE | *in association with* STV 100 Years

4.3.1 CONCEPTUAL ROADWAY PLANS

INDEX OF SHEETS

DESIGN CONCEPT

- THE CONCEPTUAL PLANS MEET OR EXCEEDS ALL REQUIREMENTS LISTED IN THE DESIGN CRITERIA TABLE (SHOWN ON THIS SHEET) IN ACCORDANCE WITH THE RFP.
- THE LIMITS OF CONSTRUCTION INCLUDING ALL STORMWATER MANAGEMENT FACILITIES ARE WITHIN THE EXISTING/PROPOSED RIGHT-OF-WAY LIMITS SHOWN IN THE RFP CONCEPTUAL PLANS.
- THE PROPOSED DESIGN CONCEPT DOES NOT INCLUDE DESIGN ELEMENTS THAT REQUIRE DESIGN EXCEPTIONS AND/OR DESIGN WAIVERS EXCEPT FOR THOSE IDENTIFIED OR INCLUDED IN THE RFP.
- THE PROPOSED DESIGN ELEMENTS ARE NOT IN CONFLICT WITH CONSTRUCTION FOR THE I-95 SB RRC OR FREDEX PROJECTS.

MAXIMUM GRADES

ALIGNMENT	PROPOSED MAXIMUM UPGRADE	PROPOSED MAXIMUM DOWNGRADE	MAXIMUM ALLOWABLE GRADE
I-95 NB GP	3.10%	-3.00%	4.00%
I-95 NB CD	3.00%	-3.50%	4.00%
I-95 NB Slip Ramp	N/A	-3.09%	4.00%
Route 3 Ramp C	1.15%	-2.87%	5.00%
Route 17 Ramp B	2.00%	-2.30%	5.00%
Route 17 Ramp D	2.36%	-1.00%	5.00%
Route 17 Loop D	Matching Existing		7.00%
FredEx Ramp HWN	3.70%	-1.00%	4.00%
Route 17 EB	Matching Existing		7.00%
Route 17 WB	Matching Existing		7.00%
I-95 NB GP (Option 1)	Matching Existing		4.00%
I-95 NB CD (Option 2)	2.19%	-3.50%	4.00%
Route 17 Loop D (Option 2)	5.00%	N/A	7.00%

UTILITY MATRIX

TYPE	CONFLICT ID	OWNER	LOCATION	DESCRIPTION	PRIORITY
Gas	G1	Columbia Gas	Route 17 8025+80	2" gas main on north side - potentially impacted by new ditch.	Medium
	G2	Columbia Gas	Route 17 9006+75	4" gas main on south side - potentially impacted by 18" storm drain crossing.	High
	G3	Columbia Gas	Route 17 9010+90	4" gas main on south side - potentially impacted by 18" storm drain crossing.	Medium
Electric	E1	Dominion Energy	I-95 NB 4422+00	Pole for overhead crossing located in extended detention pond #1.	Medium
Sanitary	S1	Stafford County	Route 17 8000+75 to 8004+75	8 " sewer - potentially impacted by Route 17 widening.	Medium
	S2	Stafford County	Ramp HWN 5635+50	30" sewer - potential impact with proposed box culvert extension.	High
Water	W1	Stafford County	Route 17 8001+00 to 8022+00	12" water line - potentially impacted by Route 17 widening and by NB CD bridge if Option 2 is implemented.	High
	W1	Stafford County	Route 17 8026+00 to 8035+68	12" water line - potential impact with Route 17 widening.	Medium
	W3	Stafford County	Ramp B 611+20	6" water line - potential impacts from Ramp B realignment and storm drain crossing.	Medium
Communications	C1	SummitIG	I-95 NB 4388+00 to 4392+00	Fiber trunkline - potential impacts with storm water management facilities.	Low
	C2	SummitIG	I-95 NB 4398+50 to 4409+50	Fiber trunkline - potential impacts with storm water management facilities.	Low
	C3	SummitIG	Route 3 Ramp C 5443+75 - 5519+25	Fiber trunkline - multiple potential impacts due to proposed Ramp C, drainage ditch, drainage lines, and guardrail.	Medium
	C4	SummitIG	I-95 NB CD lanes 5576+00 to 5583+00	Fiber trunkline - potential impacts with proposed CD lane widening.	Medium
	C5	SummitIG	Route 17 Ramp D 702+75 to 708+00	Fiber trunkline - potential impacts with proposed Ramp D widening and guardrail.	High
	C6	SummitIG	Route 17 Ramp C-2 102+00 to 105+06.30	Fiber trunkline - potential impacts with proposed Ramp C widening and guardrail.	High
	C7	SummitIG	Ramp HWN 5623+25-6040+00	Fiber trunkline - multiple potential impacts due to ramp widening, new ramp HWN, drainage ditch, new drainage lines, and guardrail.	High
	C8	SummitIG	Auxiliary Lane 4690+00 - 4730+00	Fiber trunkline - mulitple potential impacts due to Option 1 I-95 NB widening.	Low
	C9	Verizon	Route 17 8001+25 to 8005+25	Underground T/Tg - potential impacts due to Route 17 widening.	Medium
	C10	Verizon	Route 17 8019+75 to 8021+75	Underground T/Tg - potential impacts due to Bioretention #2.	Low
	C11	Verizon	Route 17 8028+90	Underground T/Tg - potentially impacted by Route 17 widening.	Low

DESIGN CRITERIA

Design Criteria		I-95 NB GP		I-95 NB CD		I-95 NB Slip Ramp	Route 3 Ramp C	Route 17 Ramp B	Route 17 Ramp C		Route 17 Ramp D	Route 17 Loop D	Route 17 Warrenton Road	FREDEX Ramp HWN
		On New Alignment South of Rte. 17	Exist. GP North of Rte.17	on New Alignment or on Exist. CD	Exist. NB Lanes South of Rte. 17	for I-95 NB GP to NB CD Lanes			Curve RC-1	Curve RC-2				Extension to NB CD
Classification		Interstate	Rural Principal Arterial (Interstate)	Interstate	Rural Principal Arterial (Interstate)	Interstate	Interchange Ramp	Interchange Ramp	Interchange Ramp	Interchange Ramp	Interchange Ramp	Interchange Ramp	Urban Other Principal Arterial	Interchange Ramp
Geometric Design Standards		GS-INT	GS-1	GS-INT	GS-1	GS-INT	GS-R	GS-R	GS-R	GS-R	GS-R	GS-R	GS-5	GS-R
Terrain		Rolling	Match Exist.	Rolling	Match Exist.	Rolling	Rolling	Rolling	Rolling	Rolling	Rolling	Rolling	Rolling	Rolling
Average Daily Traffic (ADT)	Current Yr. (2016)		62,200		69,000								65,300	
	Opening Yr. (2022)	40,300	65,600	38,100	38,100	13,800	24,300	7,200	8,400	8,400	19,600	9,800	83,900	6,932
	Design Yr. (2042)	47,000	76,200	44,100	44,100	15,900	28,200	8,400	9,700	9,700	22,700	11,400	103,800	8,087
Speed	Posted	65	65	65	65	65	-	30			30	-	45	N/A
	Design	75	75	70	75	70	60	45	25	50	50	30	45	55
Design Vehicle		WB-67	WB-67	WB-67	WB-67	WB-67	WB-67	WB-67	WB-67	WB-67	WB-67	WB-67	WB-67	WB-67
Min. Curve Radius		2,215	2,215	1,821	2,215	3,300	1,204	589	135	760	760	215	713	960
Super-elevation	Standard	TC-5.11R	Match Exist.	TC-5.11R	Match Exist.	TC-5.11R	TC-5.11R	TC-5.11R	TC-5.11R	TC-5.11R	TC-5.11R	TC-5.11R	TC-5.11U	TC-5.11R
	Max Rate	8.0%	Match Exist.	8.0%	Match Exist.	8% Note 5	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	4.0%	8.0%
Max. Grade		4.0%	Match Exist.	4.0%	Match Exist.	4.0%	5.0%	5.0%	7.0%	5.0%	5.0%	7.0%	7.0%	4.0%
Min. Stopping Sight Distance		820	820	730	820	820	570	360	155	425	425	200	425	495
Vertical Design Criteria	"K" Crest	312	312	247	312	312	151	61	12	84	84	19	84	114
	"K" Sag	206	206 (Note 6)	181	206	206	136	79	26	96	96	37	96	115
Lanes	Number	3	3	3/2	3	2	2	2	1	1	3	1	6	1
	Width	12	12	12	12	12	12	12	18	16	12	16	12	16
Paved Shoulder Width (Note 4)	Left	10	10	10 (3 Lane) 4 (2 Lane)	10	10	4	4	4	4	4	4	4	4
	Right	10	10	10	10	10	8 (Note 2)	8	8	8	8	8	8	8
Side Slopes		CS-4B	CS-4B	CS-4B	CS-4B	N/A	2:1 Max	2:1 Max	2:1 Max	2:1 Max	2:1 Max	2:1 Max	CS-4 or C&G	2:1 Max
Vertical Clearance		16.5	16.5	16.5	16.5	N/A	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5

NOTES:

1. FOR VDOT STANDARD GEOMETRIC CRITERIA NOT LISTED IN THE TABLE ABOVE, PLEASE SEE THE APPROPRIATE GEOMETRIC STANDARD IN APPENDIX A OF THE CURRENT VDOT ROAD DESIGN MANUAL.
2. ROUTE 3 RAMP C RIGHT GRADED SHOULDER WIDTH SHALL BE 12'.
3. PAVEMENT WIDTHS SHALL BE INCREASED DUE TO CURVATURE AS REQUIRED BY AASHTO.
4. PAVED SHOULDER WIDTHS SHOWN ARE MINIMUM. WHEN A CONCRETE BARRIER IS USED, THE PAVED SHOULDER SHALL BE EXTENDED TO THE FACE OF THE BARRIER.
5. THE CONCEPTUAL DESIGN OF THE SLIP RAMP INCORPORATES MODIFIED SUPERELEVATION TO PROVIDE CONSISTENT CROSS SLOPES AND REDUCE FALSE GUTTERS.
6. THE EXIST. VERTICAL CURVE ON THE I-95 NB GP WITH PVI AT APP. STA. 4536+00 HAS INSUFFICIENT K VALUE TO SUPORT 75 MPH DESIGN SPEED. IMPROVEMENTS BEYOND MILL, OVERLAY AND MARKING WILL NOT BE REQUIRED FOR THIS CURVE.
7. AVERAGE DAILY TRAFFIC VOLUMES PROVIDED BY THE I-95 NORTHBOUND RAPPAHANNOCK RIVER CROSSING INTERCHANGE MODIFICATION REPORT, SEPTEMBER 2019.

DESIGN BUILDER: FLATIRON BRANCH CIVIL

DESIGNED BY: STV 100 years

STATE PROJECT NO. 0095-III-270

FEDERAL PROJECT NO. NHP-095-2(545)

I-95 NB RAPPAHANNOCK RIVER CROSSING

DESIGN CONCEPT / INDEX OF SHEETS

VDOT Virginia Department of Transportation

SHEET NO. 1

CONCEPTUAL PLANS

PAGE NO. 59

PAVEMENT SECTION

The Design Builder has selected
Alternative 1: Standard Flexible Pavement - For Base Design Only

I-95 NB GP Lanes, CD Lanes, Route 17 and All Ramps.

Mainline Design

Intermediate - 3.0 inches (330 lbs/SY) Asphalt Concrete Type, IM-19.0D
Base - 8.0 inches Asphalt Concrete Type, BM-25.0A
Drainage - 2.0 inches of Aggregate Base Materials, Type I, Size No. 21B
Subbase - 6.0 inches Aggregate Base Material, Type I, 21A (stabilized with 4% cement by weight)

Shoulder Design

Extend Mainline Design thru shoulder area

I-95 NB CD Lanes Ramp (North of Route 17) to Express Lanes (Sta. 4635+00 to Sta. 4680+00), to include the CD Ramp entering NB General Purpose Lanes

This is to match the Express Lane pavement section, to be maintained by TransUrban upon completion.

Mainline Design

Surface - 2.0 inches (220 lbs/SY) Asphalt Concrete Type, SM-12.5E
Intermediate - 3.0 inches (330 lbs/SY) Asphalt Concrete Type, IM-19.0D
Base - 11.0 inches Asphalt Concrete Type, BM-25.0A
Drainage - 4.0 inches of Aggregate Base Materials, Type I, Size No. 21B
Subbase - 6.0 inches Aggregate Base Material, Type I, 21A (stabilized with 4% cement by weight)

Shoulder Design

Extend Mainline Design thru shoulder area

Mill and Overlay (all locations except Route 17)

Milling: 2.0 inches depth of milling required.
Overlay: 2.0 inches Asphalt Concrete Type, SM-12.5E.

Mill and Overlay (Route 17)

Milling: 1.5 inches depth of milling required.
Overlay: 1.5 inches Asphalt Concrete Type, SM-12.5E.

Build-up all locations

Areas where more than 2 inches or greater build-up/overlay is required to achieve proposed finished grade, milling of the existing pavement prior to build-up/overlay is not required. Variable thickness of IM-19.0D should be utilized for build-up/overlay areas prior to placement of the surface mix.

Rumble Strips

Shoulder Rumble Strips shall be installed along both sides of the I-95 NB General Purpose and Collector Distributor lanes within the project limits.

Underdrain

Standard Pavement Edgedrain, UD-4, with outlets shall be provided for all newly constructed and reconstructed roadways. Modified UD-1 underdrain shall be provided in lieu of standard UD-4 edgedrain for pavement sub-drainage in areas of high ground water, springs or cuts in excess of fifteen (15) feet. Standard Combination Underdrain (CD-1) shall be provided at the lower end of cuts, and standard median underdrain (UD-2) with outlets shall be provided beneath all raised grass medians. Standard Combination Underdrain (CD-2) shall be provided at grade sags, bridge approaches, and at the lower end of undercut areas. All existing underdrains/edgedrains shall be removed and replaced beneath the outside edge of the new pavement and all existing cross-drains shall be extended to daylight or connected to a storm drainage structure where the new pavement abuts the existing pavement.

DRAINAGE STRUCTURES

Pipe ID	Upstream Structure ID	Upstream Structure Type	Downstream Structure ID	Downstream Stucture Type
3-1 - 3-2	3-1	SWM Outlet Structure	3-2	ES24
16-3 - 16-4	16-3	DI-5 Grate	16-4	DI-5 Grate
16-4 - 16-5	16-4	DI-5 Grate	16-5	DI-10H TY 1 L 6
16-5 - 16-6	16-5	DI-10H TY 1 L 6	16-6	DI-10K TY2 L 8
16-6 - 17-1	16-6	DI-10K TY 2 L 8	17-1	DI-10K TY2 L 8
17-1 - 17-2	17-1	DI-10K TY 2 L 4	17-2	DI-10K TY2 L 4
17-2 - 17-3	17-2	DI-10K TY 2 L 4	17-3	DI-10K TY2 L 4
17-3 - 17-9	17-3	DI-10K TY 2 L 4	17-9	DI-10K TY3 L 4
17-4 - 17-9	17-4	DI-10K TY 3 L 4	17-9	DI-10K TY3 L 4
17-5 - 17-6	17-5	MH-12	17-6	MH-12
17-9 - 18-1	17-9	DI-10K TY 3 L 4	18-1	DI-10J TY 1
18-1 - 18-2	18-1	DI-10J TY 1	18-2	DI-10K TY 3 L 4
18-2 - 18-4	18-2	DI-10K TY 3 L 4	18-4	DI-10K TY 3 L 4
18-3 - 18-2	18-3	DI-10K TY 3 L 8	18-2	DI-10K TY 3 L 4
18-4 - 18-11	18-4	DI-10K TY 3 L 4	18-11	MH-12
18-5 - 18-4	18-5	MH-12	18-4	DI-10K TY 3 L 4
18-8 - 18-5	18-8	DI-10K TY 3 L 4	18-5	MH-12
23-1 - SB95 23-2	23-1	MH-12	NA	NA
23-2 - SB95 23-1	23-2	MH-12	NA	NA
23-5 - 23-3	23-5	ES36-Other	23-3	DI-5 Grate
23-6 - 23-7	23-6	SWM Outlet Structure	23-7	MH-12
24-6 - 24-7	24-6	MH-12	24-7	ES18
24-8 - 24-9	24-8	DI-2A	24-9	MH-12
11-2 TO 11-1	11-2	ES42-Headwall	11-1	DI-5 Grate
12-1 - 12-2	12-1	DI-7A Grate	12-2	DI-10K TY 3 L 6
12-4 to 12-5	12-4	DI-7 Grate	12-5	DI-10L TY 3 L 8
13-5 to 13-1	13-5	DI-10K TY3 L6	13-1	ES24
13-2 to 13-5	13-2	DI-7A Grate	13-5	DI-10K TY3 L 6
13-3 to 13-2	13-3	DI-5 Grate	13-2	DI-7A Grate
13-4 to 13-3	13-4	DI-5 Grate	13-3	DI-5 Grate
13-6 to 13-5	13-6	DI-10K TY3 L6	13-5	DI-10K TY3 L 6
13-7 to 13-6	13-7	DI-10K TY3 L6	13-6	DI-10K TY3 L 6
13-8 to 13-7	13-8	DI-10K TY3 L6	13-7	DI-10K TY3 L 6
14-1 to 13-4	14-1	DI-5 Grate	13-4	DI-5 Grate
14-2 to 14-1	14-2	DI-5 Grate	14-1	DI-5 Grate
15-1 to 15-2	15-1	DI-5 Grate	15-2	DI-10K TY2 L 8
15-2 to 15-3	15-2	DI-10K TY2 L 8	15-3	MH-12
15-8 to 15-9	15-8	MH-12	15-9	ES18
15-7 to 15-8	15-7	DI-10K TY3 L6	15-8	MH-12
15-6 to 15-7	15-6	DI-10K TY3 L6	15-7	DI-10K TY3 L 6
15-5 to 15-6	15-5	DI-10K TY3 L6	15-6	DI-10K TY3 L 6
15-3 to 15-4	15-3	MH-12	15-4	ES24
17-6- 17-7	17-6	MH-12	17-7	MH-12
19-2 to 19-1	19-2	DI-5 Grate	19-1	ES30-Headwall
19-3 to 19-2	19-3	DI-10L TY 3 L 8	19-2	DI-5 Grate
19-4 to 19-3	19-4	DI-5 Grate	19-3	DI-10L TY 3 L 8
19-7 to 19-3	19-7	D-10K TY 3 L 4	19-3	DI-10L TY 3 L 8
19-5 to 19-2	19-5	DI-5 Grate	19-2	DI-5 Grate
19-6 to 19-3	19-6	DI-10K TY 3 L 4	19-3	DI-10L TY 3 L 8
20-1 to 19-5	20-1	DI-5 Grate	19-5	DI-5 Grate
20-2 to 19-6	20-2	DI-10K TY 3 L 6	19-6	DI-10K TY 3 L 4
20-14 - 20-2	20-14	DI-5 Grate	20-2	DI-10K TY 3 L 6
20-3 to 20-1	20-3	DI-5 Grate	20-1	DI-5 Grate
20-4 to 20-3	20-4	MH-12	20-3	DI-5 Grate
20-5 to 20-4	20-5	DI-10K TY 3 L 6	20-4	MH-12
20-6 to 20-2	20-6	DI-10K TY 3 L 10	20-2	DI-10K TY 3 L 6
20-7 to 20-6	20-7	MH-12	20-6	DI-10K TY 3 L 10
20-8 to 20-4	20-8	MH-12	20-4	MH-12
20-9 to 20-8	20-9	DI-10K TY 3 L 6	20-8	MH-12
21-2 to 21-1	21-2	DI-10K TY 3 L 6	21-1	MH-12
21-4 to 21-3	21-4	DI-5 Grate	21-3	DI-10K TY 3 L 10
21-5 to 21-1	21-5	MH-12	21-1	MH-12
21-6 to 21-5	21-6	DI-10K TY 3 L 6	21-5	MH-12
21-7 to 21-3	21-7	DI-10K TY 3 L 8	21-3	DI-10K TY 3 L 10
21-8 to 21-5	21-8	MH-12	21-5	MH-12
21-9 to 21-8	21-9	DI-10K TY 3 L 6	21-8	MH-12
22-4 to 22-1	22-4	MH-12	22-1	DI-5 Grate
22-5 to 22-4	22-5	DI-5 Grate	22-4	MH-12
22-6 to 22-5	22-6	DI-5 Grate	22-5	DI-5 Grate
22-7 to 22-6	22-7	DI-5 Grate	22-6	DI-5 Grate
24-10 - 24-9	24-10	DI-3B 6	24-9	MH-12

DRAINAGE STRUCTURES

Pipe ID	Upstream Structure ID	Upstream Structure Type	Downstream Structure ID	Downstream Stucture Type
18-11 - 18-9	18-11	MH-12	18-9	ES24
20-10 to 20-6	20-10	DI-10K TY 3 L 6	20-6	DI-10K TY 3 L 10
20-15 - 20-10	20-15	DI-5 Grate	20-10	DI-10K TY 3 L 6
20-11 to 20-8	20-11	MH-12	20-8	MH-12
21-1 to 20-11	21-1	MH-12	20-11	MH-12
21-10 to 21-7	21-10	DI-10K TY 3 L 6	21-7	DI-10K TY 3 L 8
21-14 to 21-8	21-14	MH-12	21-8	MH-12
21-3 to 20-13	21-3	DI-10K TY 3 L 10	20-13	DI-10K TY 3 L 8
22-1 to 21-14	22-1	DI-5 Grate	21-14	MH-12
22-2 to 21-12	22-2	DI-5 Grate	21-12	DI-5 Grate
20-12 to 20-11	20-12	DI-10K TY 3 L 6	20-11	MH-12
20-13 to 20-10	20-13	DI-10K TY 3 L 8	20-10	DI-10K TY 3 L 6
21-11 to 21-10	21-11	DI-5 Grate	21-10	DI-10K TY 3 L 6
21-12 to 21-11	21-12	DI-5 Grate	21-11	DI-5 Grate
21-13 to 21-14	21-13	DI-10K TY 3 L 6	21-14	MH-12
EX IN 379 - 24-15	EX IN 379	Ex. Inlet	24-15	MH-12
24-15 - 24-1	24-15	MH-12	24-1	DI-2A
24-1 - 24-6	24-1	DI-2A	24-6	DI-2A
24-6 - 24-2	24-6	DI-2A	24-2	DI-5 Grate
24-5 - EX PIPE	24-5	DI-5 Grate	EX IN 395	Ex Pipe
24-11 - 24-12	24-11	DI-3B 8	24-12	ES18
EX 8X10 BOX - 24-14	EX CULVERT	EX BOX CULVERT	24-14	E2C 196
24-18 - EX EW 418	24-18	SWM Outlet Structure	EX EW 418	Ex. Pipe
24-19 - 24-17	24-19	DI3 B 6	24-17	MH-12
12-5 to culvert	12-5	DI-10L TY 3 L 8	12-5 Outlet	Ex Culvert
17-8 - EX EW 328	17-8	DI-10K TY 3 L 4	EX EW 328	EX EW
18-6 - SB95 18-8	18-6	DI-10K TY 3 L 12	SB 95 EX IN 18-8	DI-5 Grate
24-9 - EX MH 400	24-9	MH-12	EX MH 400	MH-12
SB95 17-5 - 17-5	SB95 EX ES 17-5	Existing ES (to be removed)	17-5	MH-12
SB95 17-8 - 17-6	SB95 EX ES 17-8	Existing ES (to be removed)	17-6	MH-12
EX IN 334 to 20-7	EX. IN 334	DI-7 Grate	20-7	MH-12
EX PIPE FROM 11-1	11-1	DI-5 Grate	EX-EW-11-3	ES42-Headwall
SB95 18-8 - 18-11	SB 95 EX IN 18-8	DI-5 Grate	18-11	MH-12
SB95 24-1A - 25-1	SB 95 EX IN 24-1A	EXISTING MH	25-1	DI-5 Grate
EX EW 386 - 25-2	EX. EW 386	EX EW (to be removed)	25-2	ES24
25-3 - 25-4	25-3	DI-5 Grate	25-4	ES24
25-5 - EX IN 463	25-5	SWM Outlet Structure	EX IN 463	Ex. Inlet
25-9 - EX ES 389	25-9	SWM Outlet Structure	EX ES 389	EX. ES
26-6 - 26-1	26-6	MH-12	26-1	ES30
EX 8x8 Box (a) - 26-2	Ex. 8x8 Box (a)	Ex. Box Culvert	26-2	Structural EW
EX 8x8 Box (b) - 26-2	Ex. 8x8 Box (a)	Ex. Box Culvert	26-2	Structural EW
EX 8x8 Box (c) - 26-2	Ex. 8x8 Box (a)	Ex. Box Culvert	26-2	Structural EW
26-7 - 26-8	26-7	MH-12	26-8	ES24
26-9 - 26-4	26-9	MH-12	26-4	ES24
26-10 - 26-9	26-10	DI-7A Grate	26-9	MH-12
26-3 - 26-9	26-3	DI-10K TY 2 L 8	26-9	MH-12
26-5 - 26-3	26-5	DI-10K TY 2 L 8	26-3	DI-10K TY 2 L 8
27-1 - 26-5	27-1	DI-10K TY 2 L 8	26-5	DI-10K TY 2 L 9
27-2 - 27-1	27-2	DI-10K TY 2 L 8	27-1	DI-10K TY 2 L 10
27-3 - 27-2	27-3	DI-10K TY 2 L 8	27-2	DI-10K TY 2 L 11
27-4 - 27-3	27-4	DI-10K TY 2 L 8	27-3	DI-10K TY 2 L 8

Rideability

Rideability will be applicable on the I-95 NB lanes for all newly constructed and overlaid pavement sections with the exception of ramps.

Sidewalk

4.0 inches Hydraulic Cement Concrete, class A3 over
4.0 inches Plain Aggregate, Type I, 21B

GUARDRAIL AND BARRIER LOCATIONS

ROADWAY	STATION TO STATION FROM	STATION TO STATION TO	OFFSET	TYPE
I-95 NB GP MAINLINE LANES	4407+87.55	4408+41.25	RT	GR-MGS2
	4408+41.25	4425+42.57	RT	GR-MGS1
	4425+42.57	4425+54.54	RT	GR-MGS3
	4415+50.02	4415+84.30	LT	GR-MGS4
	4415+84.30	4424+14.62	LT	GR-MGS1
	4424+14.51	4424+28.51	LT	GR-MGS3
	4461+29.01	4461+82.93	LT	GR-MGS2
	4461+82.93	4463+31.38	LT	GR-MGS1
	4463+31.38	4463+45.91	LT	GR-MGS3
	4461+31.62	4461+84.82	RT	GR-MGS2
	4461+84.82	4463+31.27	RT	GR-MGS1
	4463+31.27	4463+45.59	RT	GR-MGS3
	4469+64.51	4470+17.75	RT	GR-MGS2
	4470+17.75	4471+28.36	RT	GR-MGS1
	4471+28.36	4471+55.32	RT	FOA-5
	4472+83.75	4473+13.74	RT	FOA-5
	4473+13.74	4488+88.94	RT	GR-MGS1
	4488+88.94	4489+59.88	RT	GR-MGS1A
	4489+59.88	4499+22.83	RT	GR-MGS1
	4499+22.83	4501+43.36	RT	GR-MGS1A
	4501+43.36	4509+37.88	RT	GR-MGS1
	4509+37.88	4510+26.15	RT	GR-MGS1A
	4510+26.15	4512+40.70	RT	GR-MGS1
	4512+40.70	4512+78.45	RT	GR-MGS4
	4512+78.45	4513+05.87	RT	FOA-2 Ty. 1
	4487+49.06	4488+02.65	LT	GR-MGS2
	4488+02.65	4489+50.15	LT	GR-MGS1
	4489+50.15	4489+64.65	LT	GR-MGS3
	4500+79.21	4501+06.40	LT	FOA-5
	4501+06.40	4509+45.03	LT	GR-MGS1
	4509+45.03	4509+79.77	LT	GR-MGS4
	4509+79.77	4510+00.00	LT	FOA-2 Ty. 1
	4508+08.26	4508+22.75	LT	GR-MGS3
	4508+22.75	4514+86.51	LT	GR-MGS1
	4554+99.48	4555+26.66	LT	FOA-5
	4555+26.66	4561+54.00	LT	GR-MGS1
	4561+54.00	4561+88.38	LT	GR-MGS4
	4561+88.38	4562+15.52	LT	FOA-2 Ty. 1
	4510+00.00	4538+00.00	LT	MB 7F_L
	4538+00.00	4542+65.16	LT	MB 7F_L
	4521+78.52	4522+01.64	RT	IMP_ATT_SERV_TL3
	4522+01.64	4533+24.74	RT	MB 8-A Type I
	4533+24.74	4542+45.15	RT	MB 7E_R
	4554+85.99	4580+08.75	RT	MB 7F_R
	4562+08.75	4582+08.75	LT	MB 7F_L
	4580+05.34	4580+27.71	RT	FOA-2 Ty. 2
	4580+27.71	4580+59.19	RT	GR-MGS4
	4580+27.71	4591+08.75	RT	GR-MGS1
	4591+08.75	4591+22.79	RT	GR-MGS3
	4582+05.36	4582+24.59	LT	FOA-2 Ty.2
	4582+24.74	4582+58.81	LT	GR-MGS4
	4582+58.81	4598+29.02	LT	GR-MGS1
	4598+29.02	4598+43.52	LT	GR-MGS3
	4662+36.58	4668+32.32	RT	MB 8-A Type I
I-95 NB Slip-on Ramp	7000+00.00	7005+41.79	RT	GR-MGS1
	7005+41.79	7005+76.24	RT	GR-MGS4
	7005+76.24	7006+03.44	RT	FOA-2 Ty. 1
	7005+97.62	7008+77.76	RT	MB 7E_R
Route 3 Ramp C	5461+51.46	5462+04.93	RT	GR-MGS2
	5462+04.93	5463+52.10	RT	GR-MGS1
	5463+52.10	5463+66.57	RT	GR-MGS3
	5461+52.00	5462+05.87	LT	GR-MGS2
	5462+05.87	5463+54.75	LT	GR-MGS1
	5463+54.75	5463+69.32	LT	GR-MGS3
	5470+10.35	5470+64.23	LT	GR-MGS2
	5470+64.23	5471+61.86	LT	GR-MGS1
	5471+61.86	5472+27.62	LT	FOA-5
	5470+19.27	5470+72.74	RT	GR-MGS2
	5470+72.74	5471+72.15	RT	GR-MGS1
	5471+72.15	5472+06.45	RT	GR-MGS4
	5472+06.45	5472+33.63	RT	FOA-2 Ty. 1
	5472+27.62	5473+07.86	RT	MB 7F_R
	5473+07.06	5513+94.54	RT	MB 7F_R
	5473+08.48	5473+38.83	LT	FOA-5
	5473+38.83	5499+74.70	LT	GR-MGS1
	5499+74.70	5500+08.54	LT	GR-MGS1A
	5500+08.54	5500+38.67	LT	FOA-5
	5501+69.28	5501+99.52	LT	FOA-5

GUARDRAIL AND BARRIER LOCATIONS

ROADWAY	STATION TO STATION FROM	STATION TO STATION TO	OFFSET	TYPE
Route 3 Ramp C	5501+99.52	5512+94.74	LT	GR-MGS1
	5512+94.74	5513+28.90	LT	GR-MGS4
	55132+89.00	5513+55.89	LT	FOA-2 Ty. 1
	5513+50.05	5516+26.95	LT	MB 7E_L
	5513+90.21	5514+09.57	RT	FOA-2 Ty. 2
	5514+09.57	5514+44.03	RT	GR-MGS4
	5514+44.00	5522+13.67	RT	GR-MGS1
	5516+26.95	5516+46.52	LT	MB 8-A Type I
I-95 CD Lanes	5522+07.99	5542+82.47	RT	GR-MGS1
	5542+82.47	5543+12.65	RT	FOA-5
	5533+38.01	5542+78.19	LT	MB 7E_L
	5554+29.07	5554+59.21	RT	FOA-5
	5554+59.41	5555+46.18	RT	GR-MGS1
	5555+46.18	5555+60.67	RT	GR-MGS3
	5554+74.83	5555+05.02	LT	FOA-5
	5555+05.02	5591+00.09	LT	GR-MGS1
	5591+00.09	5591+14.54	LT	GR-MGS3
	5561+79.90	5562+33.49	RT	GR-MGS2
	5562+33.49	5563+97.83	RT	GR-MGS1
	5563+97.83	5564+12.32	RT	GR-MGS3
	5569+90.56	5570+44.39	RT	GR-MGS2
	5570+44.39	5571+92.60	RT	GR-MGS1
	5571+92.60	5572+07.17	RT	GR-MGS3
	5578+74.19	5579+28.02	RT	GR-MGS2
	5579+28.02	5580+81.22	RT	GR-MGS1
	5580+81.22	5580+95.78	RT	GR-MGS3
	5596+14.54	5596+68.31	RT	GR-MGS2
	5596+68.31	5601+77.17	RT	GR-MGS1
	5601+77.17	5601+91.66	RT	GR-MGS3
	5601+90.84	5602+44.42	LT	GR-MGS2
	5602+44.42	5605+51.43	LT	GR-MGS1
	5605+51.43	5605+81.60	LT	FOA-5
	5604+07.85	5605+57.77	RT	GR-MGS1
	5605+87.77	5605+87.95	RT	FOA-5
	5607+77.26	5608+07.41	LT	FOA-5
	5608+07.41	5609+69.26	LT	GR-MGS1
	5609+69.26	5609+83.75	LT	GR-MGS3
	5607+76.20	5608+06.38	RT	FOA-5
	5608+06.38	5618+43.47	RT	GR-MGS1
	5618+43.47	5618+57.97	RT	GR-MGS3
	5621+47.68	5622+01.27	LT	GR-MGS2
	5622+01.27	5623+66.77	LT	GR-MGS1
	5623+66.77	5623+81.27	LT	GR-MGS3
	5616+40.51	5616+80.78	RT	GR-MGS2
	5616+80.78	5636+14.97	RT	GR-MGS1
	5634+64.62	5635+18.21	LT	GR-MGS2
	5635+18.21	5636+83.71	LT	GR-MGS1
	5636+83.71	5636+98.20	LT	GR-MGS3
	5642+07.66	5642+30.81	RT	IMP_ATT_SERV_TL3
	5642+30.81	5662+23.59	RT	MB 8-A Type I
FREDEX Ramp	6000+00.00	6007+39.22	RT	GR-MGS1
	6007+39.22	6007+53.76	RT	GR-MGS3
	6023+61.97	6024+15.43	RT	GR-MGS2
	6024+15.43	6024+85.56	RT	GR-MGS1
	6024+85.56	6025+19.98	RT	GR-MGS4
	6025+19.98	6025+47.18	RT	FOA-2 Ty. 1
Route 17 Ramp B	606+80.14	607+36.29	LT	GR-MGS2
	607+36.29	608+46.25	LT	GR-MGS1
	608+46.25	608+61.09	LT	GR-MGS3
	607+31.90	607+84.21	RT	GR-MGS2
	607+84.21	608+45.31	RT	GR-MGS1
	608+45.31	608+59.27	RT	GR-MGS3
Route 17 Ramp D	709+14.56	709+66.35	LT	GR-MGS2
	709+66.35	715+26.21	LT	GR-MGS1
	715+26.21	715+41.27	LT	GR-MGS3
	709+15.00	709+70.53	RT	GR-MGS2
	709+70.53	710+51.38	RT	GR-MGS1
	710+51.38	710+65.81	RT	GR-MGS3
Route 17 Loop D	303+47.21	303+78.31	LT	GR-MGS4
	303+78.31	304+54.76	LT	GR-MGS1
	304+54.76	304+67.47	LT	GR-MGS3
	304+12.67	304+69.10	RT	GR-MGS2
	304+69.10	306+85.44	RT	GR-MGS1
Route 17	8010+90.47	8011+13.47	LT	IMP_ATT_SERV_TL3
	8011+13.47	8011+18.49	LT	MB 7D
	8011+18.49	8011+80.97	LT	MB 7F_L
	8016+71.67	8016+76.75	LT	MB 7D
	8016+76.75	8017+18.42	LT	IMP_ATT_SERV_TL3
	8023+14.09	8023+67.65	RT	GR-MGS2
	8023+67.65	8024+05.96	RT	GR-MGS4
	8024+05.96	8024+33.09	RT	FOA-2 Ty. 1
	8024+26.35	8024+86.06	RT	MB 8-A Type I
	9000+28.17	9001+15.69	LT	MB 7F_R

DESIGN BUILDER
FLATIRON BRANCH CIVIL

DESIGNED BY
STV 100 Years

STATE PROJECT NO. 0095-III-270
FEDERAL PROJECT NO. NHP-095-2(545)

VDOT Virginia Department of Transportation

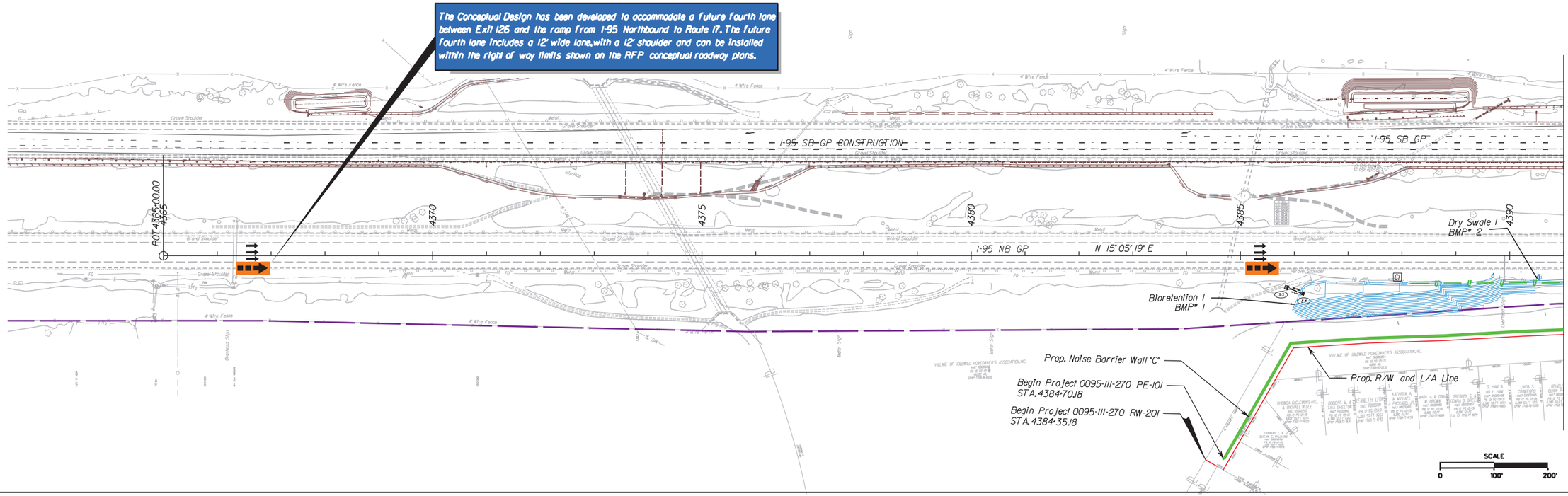
I-95 NB RAPPAHANNOCK RIVER CROSSING
PAVEMENT STRUCTURES,
GR LOCATIONS & DRAINAGE STRUCTURES

SHEET NO. 2

PAGE NO. 60

CONCEPTUAL PLANS

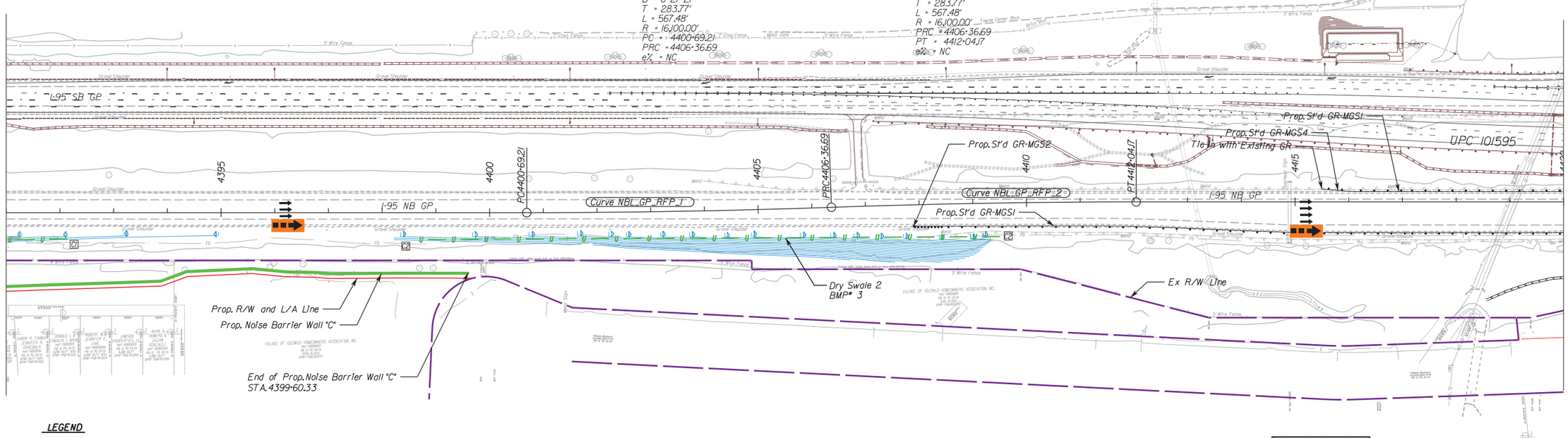
The Conceptual Design has been developed to accommodate a future fourth lane between Exit 126 and the ramp from I-95 Northbound to Route 17. The future fourth lane includes a 12' wide lane, with a 12' shoulder and can be installed within the right of way limits shown on the RFP conceptual roadway plans.



MATCHLINE STA. 4390+50 SEE MATCHLINE A-A

Curve NBL_GP_RFP_3
DS = 75 mph
PI = 4403+52.98
DELTA = 2° 01' 10.26" (LT)
D = 0° 21' 21"
T = 283.77'
L = 567.48'
R = 16,100.00'
PC = 4400+69.21
PRC = 4406+36.69
e% = NC

Curve NBL_GP_RFP_4
DS = 75 mph
PI = 4409+20.46
DELTA = 2° 01' 10.26" (RT)
D = 0° 21' 21"
T = 283.77'
L = 567.48'
R = 16,100.00'
PRC = 4406+36.69
PT = 4412+04.17
e% = NC



MATCHLINE STA. 4420+00 SEE SHEET 4

MATCHLINE STA. 4390+50 SEE MATCHLINE A-A

LEGEND

- Denotes Mill & Overlay With Buildup
- Denotes Full Depth Pavement
- Denotes Proposed Bridge
- Denotes Proposed Bridge (Option 2)
- Denotes Existing Bridge
- Denotes Mill & Overlay Existing Shoulder
- Denotes Demolition of Pavement
- Denotes Full Depth Shoulder
- Proposed Guardrail
- Proposed Barrier
- Proposed Grass Swale
- Proposed Right of Way/LA
- Existing Right of Way
- Denotes Cut
- Denotes Fill
- Denotes Proposed Overhead Sign Structure
- Denotes Proposed ITS Cabinet
- Denotes Adjacent Projects
- Denotes Proposed Noise Barrier
- Denotes Proposed Pole Mounted CCTV
- Denotes Future 4th Lane & 12' SHLD
- Denotes Proposed ITS Fiber Optic
- Denotes Utility Impact (W/Note)

Utility Conflict ID
C1 Summit IG
C2 Summit IG

Refer to Utility Matrix on Sheet 1

SCALE
0
100'
200'

NOTE: SEE SHEET 2 FOR PAVEMENT DESIGNS, GUARDRAIL AND DRAINAGE STRUCTURES

CONCEPTUAL PLANS

DESIGN BUILDER
FLATIRON
BRANCH CIVIL

DESIGNED BY
STV 100 Years

STATE PROJECT NO.
0095-111-270

FEDERAL PROJECT NO.
NHP-095-2(545)

I-95 NB RAPPAHANNOCK RIVER CROSSING
I-95 NB STA. 4365+00 TO STA. 4420+50

SHEET NO.
3

PAGE NO.
61

MATCHLINE STA. 4420+00 SEE SHEET 3

MATCHLINE STA. 4449+00 SEE SHEET 5

Prop. St'd GR-MGS3

Prop. St'd GR-MGS1

Dry Swale 4 BMP# 5

I-95 SB GP

N 15°05'19" E

EX. I-95 NB GP

I-95 NB GP

Curve NBL_GP_RFP_3

Curve NBL_GP_RFP_4

PC=4436+90.04

PRC=4443+06.51

Extended Detention 1 BMP #15

Dry Swale 3 BMP# 4

Prop. R/W and L/A Line

Prop. St'd FE-WI

ROUTE 3 EB

ROUTE 3 WB

Curve RTE3_RPC_BL_1

N 23°01'00" W

POT 5441+09.00

Begin Project 0095-111-270 C-501 STA 5443+21.00

Curve NBL_GP_RFP_3
V = 75 mph
PI = 4439+98.30
DELTA = 1° 45' 57.76" (RT)
D = 0° 17' 11"
T = 308.26'
L = 616.47'
R = 20,000.00'
PC = 4436+90.04
PRC = 4443+06.51
e% = match existing

Curve NBL_GP_RFP_4
V = 75 mph
PI = 4446+14.77
DELTA = 1° 45' 57.76" (LT)
D = 0° 17' 11"
T = 308.26'
L = 616.47'
R = 20,000.00'
PRC = 4443+06.51
PT = 4449+22.97
e% = match existing

Curve RTE3_RPC_BL_1
V = 60 mph
PI = 5448+54.32
DELTA = 38° 06' 18.67" (RT)
D = 4° 45' 32"
T = 415.81'
L = 800.73'
R = 1,204.00'
PC = 5444+38.52
PT = 5452+39.25
e% = 8.0%
w = 2.6'

LEGEND

- Denotes Mill & Overlay With Buildup
- Denotes Full Depth Pavement
- Denotes Proposed Bridge
- Denotes Proposed Bridge (Option 2)
- Denotes Existing Bridge
- Denotes Mill & Overlay Existing Shoulder
- Denotes Demolition of Pavement
- Denotes Full Depth Shoulder
- Proposed Guardrail
- Proposed Barrier
- Proposed Grass Swale
- Proposed Right of Way/LA
- Existing Right of Way
- Denotes Cut
- Denotes Fill
- Denotes Proposed Overhead Sign Structure
- Denotes Proposed ITS Cabinet
- Denotes Adjacent Projects
- Denotes Proposed Noise Barrier
- Denotes Proposed Pole Mounted CCTV
- Denotes Future 4th Lane & 12' SHLD
- Denotes Proposed ITS Fiber Optic — FO —
- Denotes Utility Impact (W/Note) XX — U —

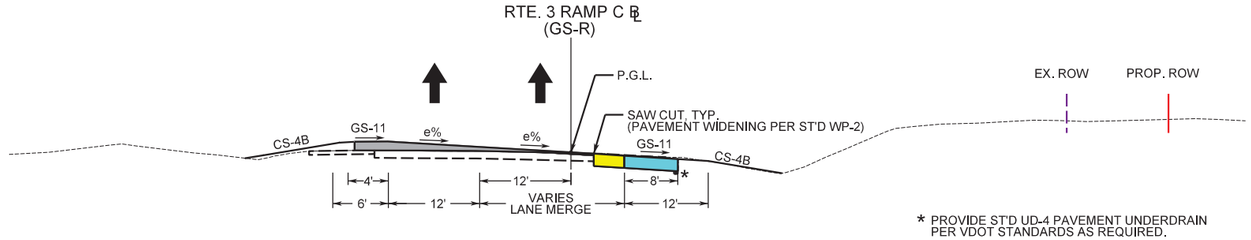
Utility Conflict ID
E1 Dominion Energy
C3 Summit IG

Refer to Utility Matrix on Sheet 1

SCALE 0 100' 200'

TYPICAL SECTIONS

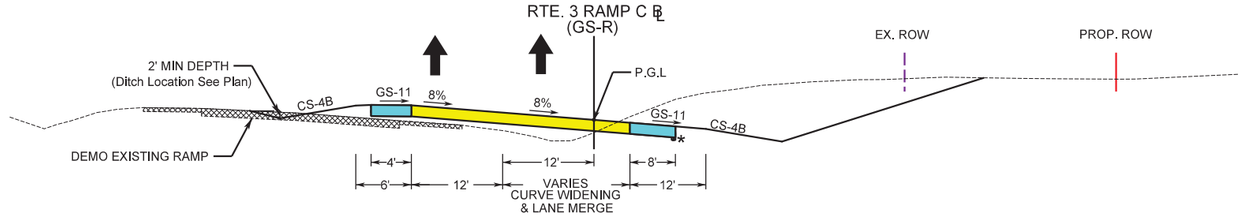
SECTION A-A



SECTION A-A

* PROVIDE ST'D UD-4 PAVEMENT UNDERDRAIN PER VDOT STANDARDS AS REQUIRED.

SECTION B-B



SECTION B-B

NOTE: SEE SHEET 2 FOR PAVEMENT DESIGNS, GUARDRAIL AND DRAINAGE STRUCTURES

CONCEPTUAL PLANS

DESIGN BUILDER

FLATIRON BRANCH CIVIL

DESIGNED BY

STV 100 Years

STATE PROJECT NO. 0095-111-270

FEDERAL PROJECT NO. NHP-095-2(545)

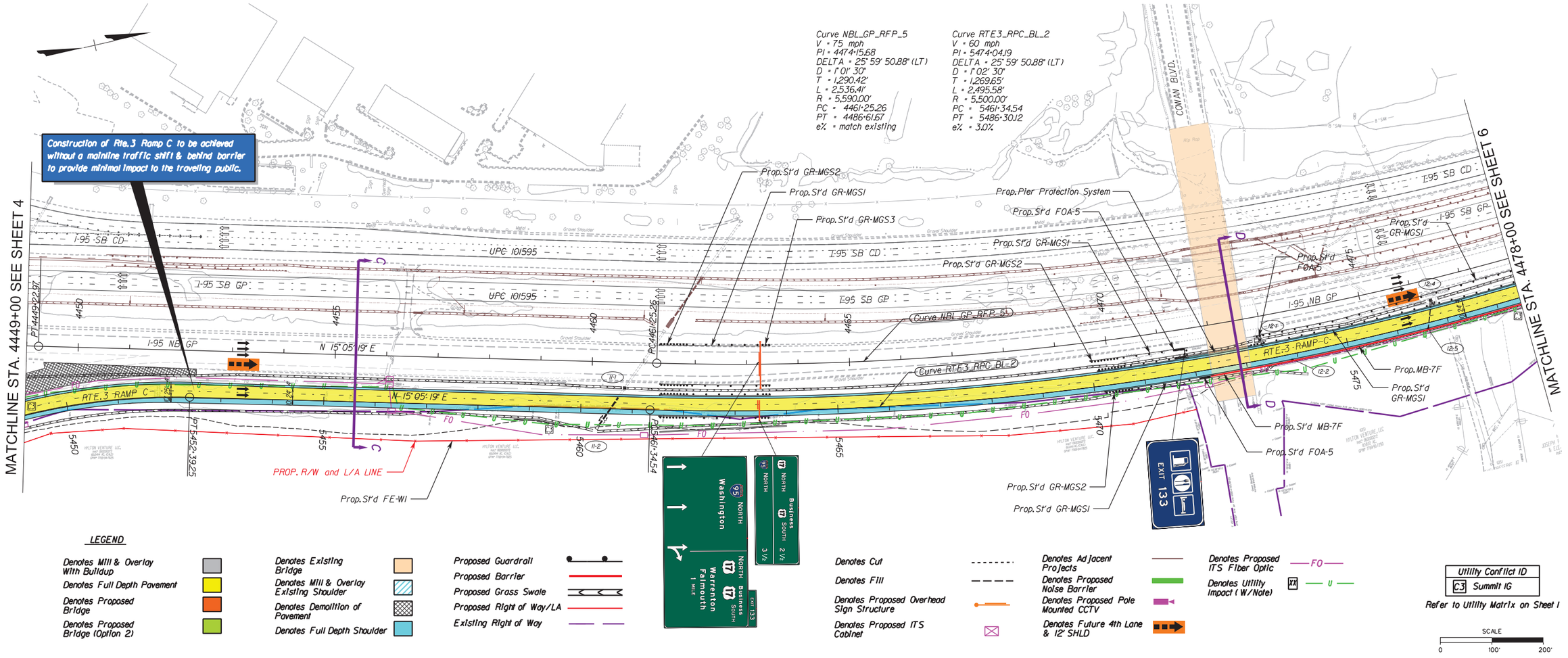
I-95 NB RAPPAHANNOCK RIVER CROSSING

I-95 NB STA 4420+00 TO STA 4449+00

VDOT Virginia Department of Transportation

SHEET NO. 4

PAGE NO. 62



LEGEND

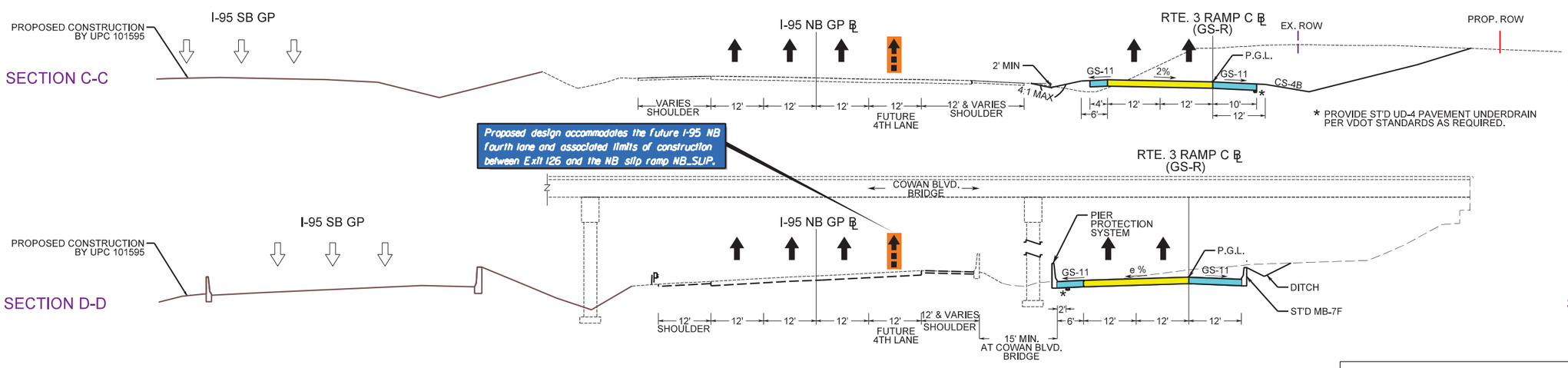
- Denotes Mill & Overlay With Buildup
- Denotes Full Depth Pavement
- Denotes Proposed Bridge
- Denotes Proposed Bridge (Option 2)
- Denotes Existing Bridge
- Denotes Mill & Overlay Existing Shoulder
- Denotes Demolition of Pavement
- Denotes Full Depth Shoulder
- Proposed Guardrail
- Proposed Barrier
- Proposed Grass Swale
- Proposed Right of Way/LA
- Existing Right of Way
- Denotes Cut
- Denotes Fill
- Denotes Proposed Overhead Sign Structure
- Denotes Proposed ITS Cabinet
- Denotes Adjacent Projects
- Denotes Proposed Noise Barrier
- Denotes Proposed Pole Mounted CCTV
- Denotes Future 4th Lane & 12' SHLD
- Denotes Proposed ITS Fiber Optic — FO —
- Denotes Utility Impact (W/Note) XX — U —

Utility Conflict ID
C3 Summit IG

Refer to Utility Matrix on Sheet 1

SCALE 0 100' 200'

TYPICAL SECTIONS



NOTE: SEE SHEET 2 FOR PAVEMENT DESIGNS, GUARDRAIL AND DRAINAGE STRUCTURES

CONCEPTUAL PLANS

DESIGN BUILDER
FLATIRON BRANCH CIVIL

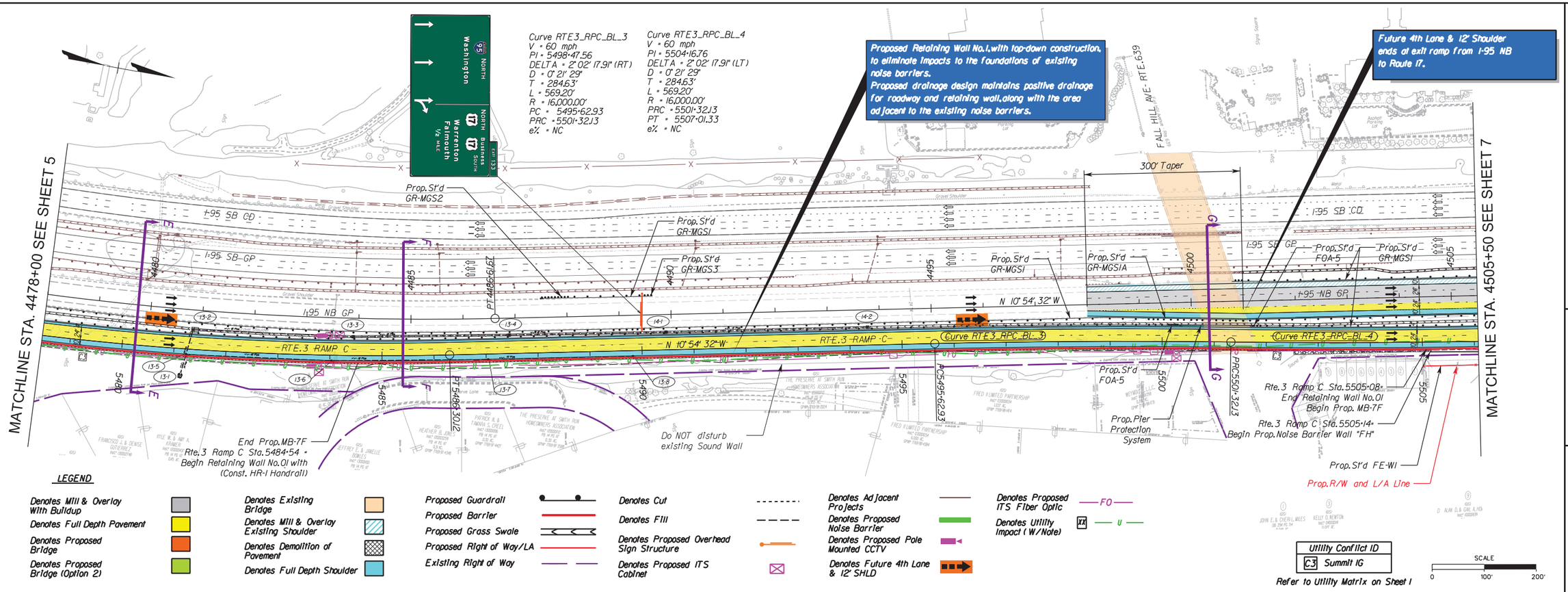
DESIGNED BY
STV 100 Years

STATE PROJECT NO. 0095-III-270
FEDERAL PROJECT NO. NHP-095-2(545)

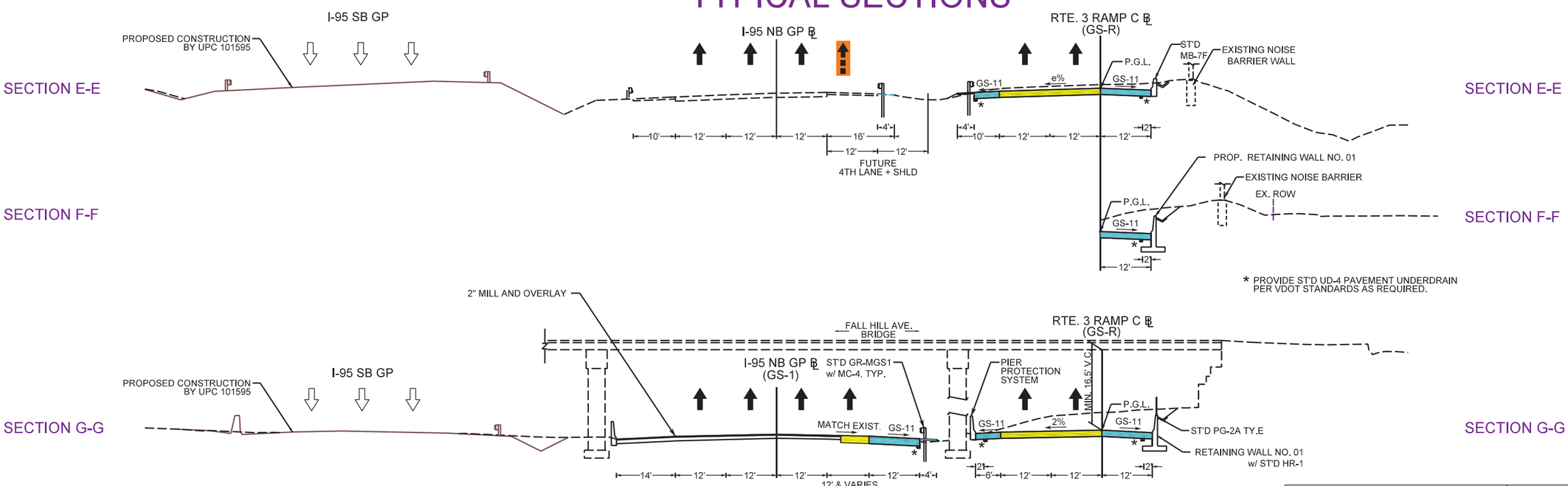
I-95 NB RAPPAHANNOCK RIVER CROSSING
I-95 NB STA. 4449+00 TO STA. 4478+00
VDOT Virginia Department of Transportation

SHEET NO. 5

PAGE NO. 63



TYPICAL SECTIONS



NOTE: SEE SHEET 2 FOR PAVEMENT DESIGNS, GUARDRAIL AND DRAINAGE STRUCTURES

CONCEPTUAL PLANS

DESIGN BUILDER
FLATIRON
BRANCH CIVIL

DESIGNED BY
STV 100 YEARS

STATE PROJECT NO. 0095-111-270
FEDERAL PROJECT NO. NHP-095-2(545)

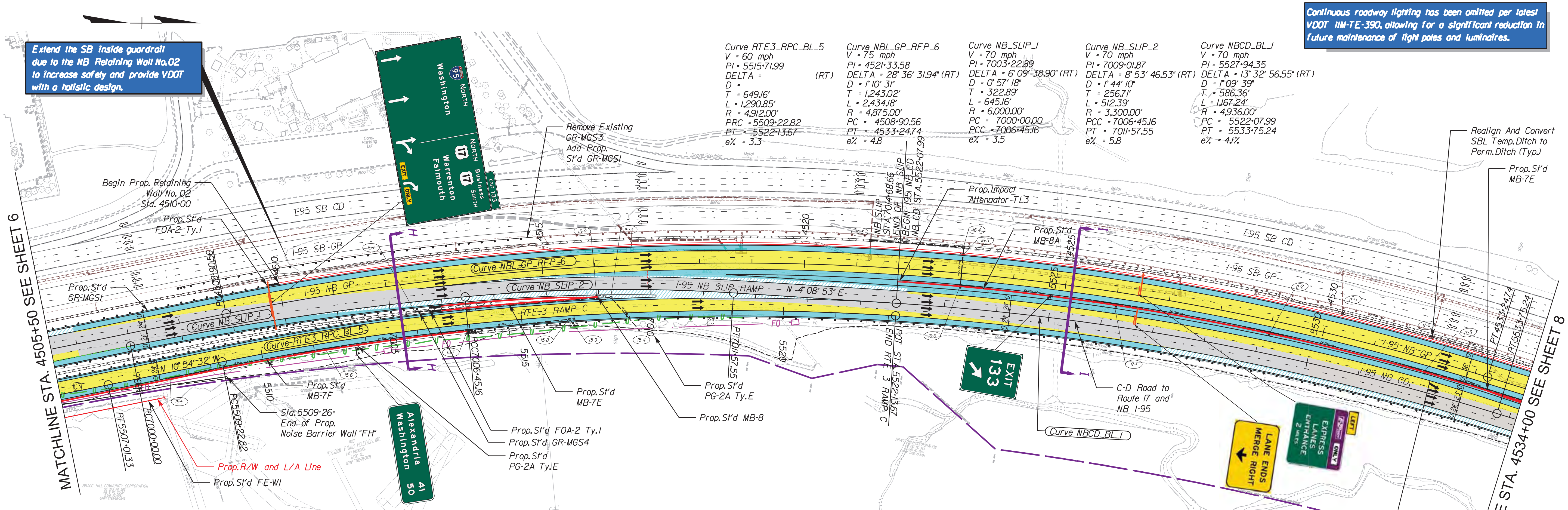
I-95 NB RAPPAHANNOCK RIVER CROSSING
I-95 NB STA.4478+00 TO STA.4505+50

SHEET NO. 6

PAGE NO. 64

Continuous roadway lighting has been omitted per latest VDOT IIM-TE-390, allowing for a significant reduction in future maintenance of light poles and luminaires.

Extend the SB inside guardrail due to the NB Retaining Wall No.02 to increase safety and provide VDOT with a holistic design.



MATCHLINE STA. 4505+50 SEE SHEET 6
MATCHLINE STA. 4534+00 SEE SHEET 8
Curve RTE3_RPC_BL_5
V = 60 mph
PI = 5515+71.99
DELTA = (RT)
T = 649.16'
L = 1,290.85'
R = 4,912.00'
PRC = 5509+22.82
PT = 5522+13.67
e% = 3.3
Curve NBL_GP_RFP_6
V = 75 mph
PI = 4521+33.58
DELTA = 28°36' 31.94" (RT)
D = 1°10' 31"
T = 1,243.02'
L = 2,434.18'
R = 4,875.00'
PC = 4508+90.56
PT = 4533+24.74
e% = 4.8
Curve NB_SLIP_1
V = 70 mph
PI = 7003+22.89
DELTA = 6°09' 38.90" (RT)
D = 0°57' 18"
T = 322.89'
L = 645.16'
R = 6,000.00'
PC = 7000+00.00
PCC = 7006+45.16
e% = 3.5
Curve NB_SLIP_2
V = 70 mph
PI = 7009+01.87
DELTA = 8°53' 46.53" (RT)
D = 1°44' 10"
T = 256.71'
L = 512.39'
R = 3,300.00'
PCC = 7006+45.16
PT = 7011+57.55
e% = 5.8
Curve NBCD_BL_1
V = 70 mph
PI = 5527+94.35
DELTA = 13°32' 56.55" (RT)
D = 1°09' 39"
T = 586.36'
L = 1,167.24'
R = 4,936.00'
PC = 5522+07.99
PT = 5533+75.24
e% = 4.1%
Remove Existing GR-MGS3. Add Prop. St'd GR-MGS1
Realign And Convert SBL Temp. Ditch to Perm. Ditch (Typ.)
Prop. St'd MB-7E
Begin Prop. Retaining Wall No. 02 Sta. 4510+00
Prop. St'd FOA-2 Ty. I
Prop. St'd GR-MGS1
Prop. Impact Attenuator TL3
Prop. St'd MB-8A
I-95 SB CD
I-95 SB GP
I-95 NB GP
Curve NBL_GP_RFP_6
Curve NB_SLIP_2
Curve NB_SLIP_1
I-95 NB SLIP RAMP N 4°08' 53" E
RTE-3 RAMP-C
Curve RTE3_RPC_BL_5
N 10°54' 32" W
I-95 NB CD
Prop. St'd MB-7F
Sta. 5509+26 End of Prop. Noise Barrier Wall "FH"
Prop. St'd MB-7E
Prop. St'd PG-2A Ty.E
Prop. St'd MB-8
Prop. St'd FOA-2 Ty. I
Prop. St'd GR-MGS4
Prop. St'd PG-2A Ty.E
Prop. R/W and L/A Line
Prop. St'd FE-WI
C-D Road to Route 17 and NB I-95
Curve NBCD_BL_1
PT 5507+01.33
PC 7000+00.00
PC 5509+22.82
PCC 7006+45.16
PT 7011+57.55
END RTE 3 RAMP C STA 5522+13.67
PT 4533+24.74
PT 5533+75.24
EXIT 133
LANE ENDS MERGE RIGHT
EXPRESS LANES ENTRANCE
Alexandria Washington 41 50
95 NORTH Washington
17 NORTH Warrenton Falmouth
Business South
Exit 133
600' Taper

LEGEND

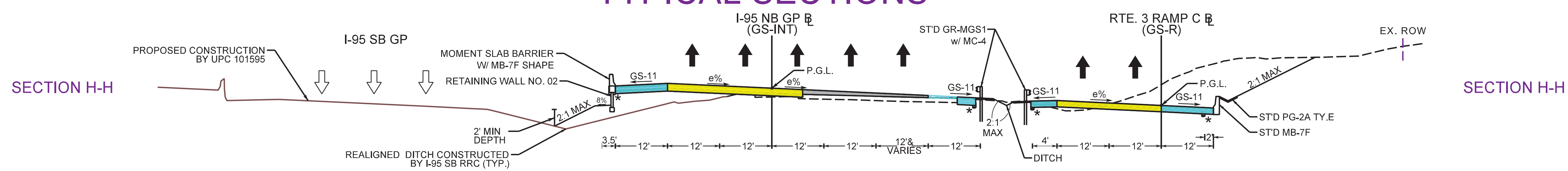
Denotes Mill & Overlay With Buildup	Denotes Existing Bridge	Proposed Guardrail	Denotes Cut	Denotes Adjacent Projects	Denotes Proposed ITS Fiber Optic
Denotes Full Depth Pavement	Denotes Mill & Overlay Existing Shoulder	Proposed Barrier	Denotes Fill	Denotes Proposed Noise Barrier	Denotes Utility Impact (W/Note)
Denotes Proposed Bridge	Denotes Demolition of Pavement	Proposed Grass Swale	Denotes Proposed Overhead Sign Structure	Denotes Proposed Pole Mounted CCTV	
Denotes Proposed Bridge (Option 2)	Denotes Full Depth Shoulder	Proposed Right of Way/LA	Denotes Proposed ITS Cabinet		
		Existing Right of Way			

Utility Conflict ID	
C3	Summit IG

Refer to Utility Matrix on Sheet I

SCALE 0 100' 200'

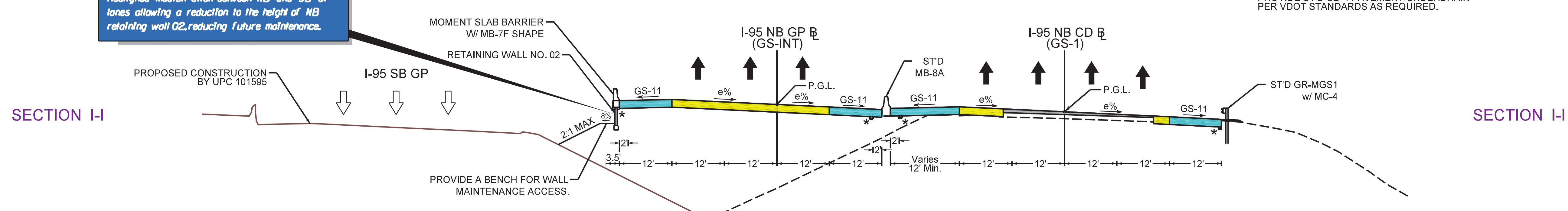
TYPICAL SECTIONS



SECTION H-H
I-95 SB GP
PROPOSED CONSTRUCTION BY UPC 101595
MOMENT SLAB BARRIER W/ MB-7F SHAPE
RETAINING WALL NO. 02
I-95 NB GP ℄ (GS-INT)
ST'D GR-MGS1 w/ MC-4
RTE. 3 RAMP C ℄ (GS-R)
EX. ROW
GS-11
e%
P.G.L.
2:1 MAX
2' MIN DEPTH
REALIGNED DITCH CONSTRUCTED BY I-95 SB RRC (TYP.)
2:1 MAX
DITCH
ST'D PG-2A TY.E
ST'D MB-7F
3.5' 12' 12' 12' 12' 12' 12'& VARIES 12' 4' 12' 12' 12'

* PROVIDE ST'D UD-4 PAVEMENT UNDERDRAIN PER VDOT STANDARDS AS REQUIRED.

Realigned median ditch between NB and SB GP lanes allowing a reduction to the height of NB retaining wall 02, reducing future maintenance.



SECTION I-I
I-95 SB GP
PROPOSED CONSTRUCTION BY UPC 101595
MOMENT SLAB BARRIER W/ MB-7F SHAPE
RETAINING WALL NO. 02
I-95 NB GP ℄ (GS-INT)
ST'D MB-8A
I-95 NB CD ℄ (GS-1)
ST'D GR-MGS1 w/ MC-4
GS-11
e%
P.G.L.
2:1 MAX
PROVIDE A BENCH FOR WALL MAINTENANCE ACCESS.
3.5' 12' 12' 12' 12' 12' Varies 12' Min. 12' 12' 12' 12' 12'

NOTE: SEE SHEET 2 FOR PAVEMENT DESIGNS, GUARDRAIL AND DRAINAGE STRUCTURES

CONCEPTUAL PLANS

DESIGN BUILDER: BRANCH CIVIL / FLATIRON

DESIGNED BY: STV 100 Years

STATE PROJECT NO. 0095-111-270

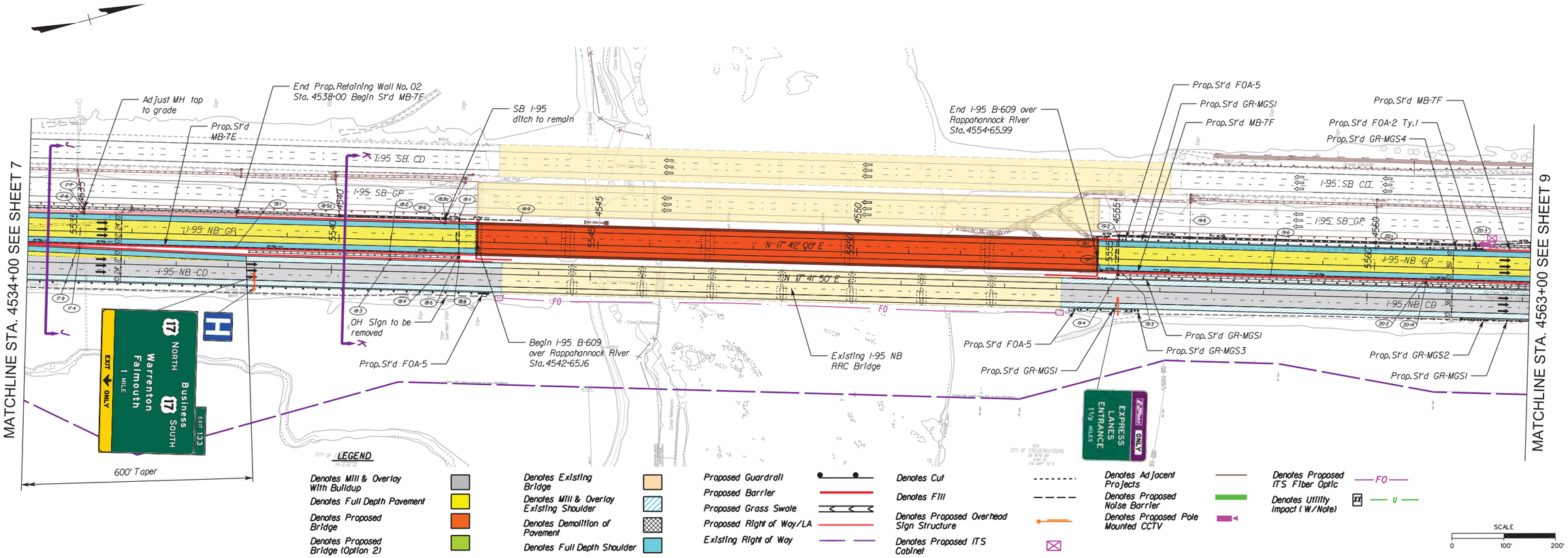
FEDERAL PROJECT NO. NHP-095-2(545)

VDOT Virginia Department of Transportation

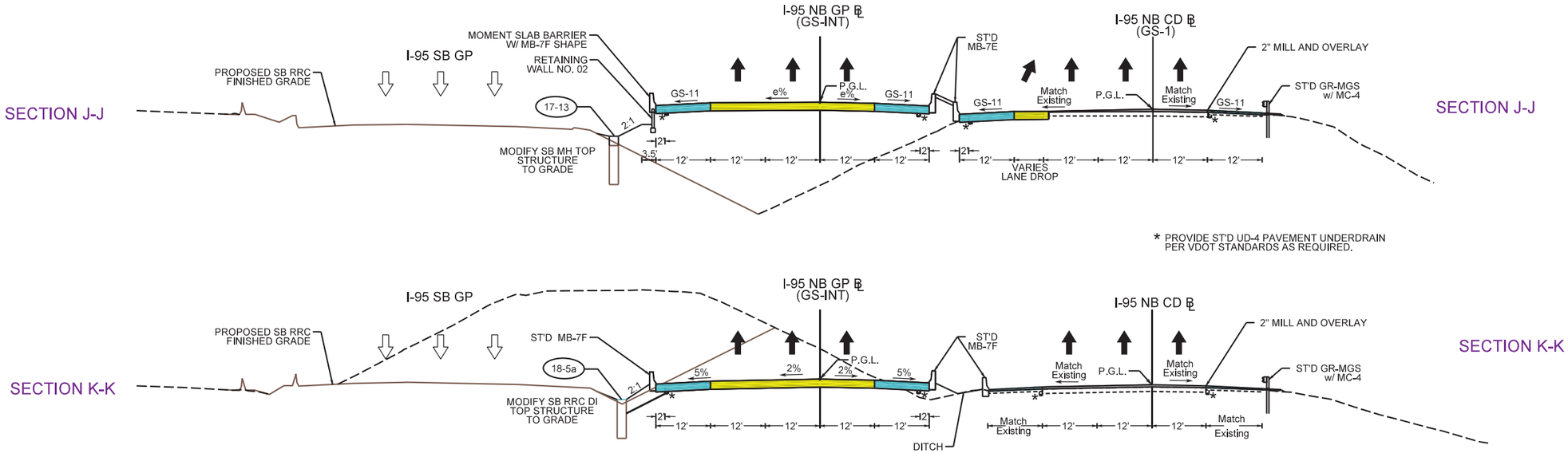
I-95 NB RAPPAHANNOCK RIVER CROSSING

I-95 NB STA.4505+50 TO STA.4534+00

SHEET NO. 7



TYPICAL SECTIONS



NOTE: SEE SHEET 2 FOR PAVEMENT DESIGNS, GUARDRAIL AND DRAINAGE STRUCTURES

CONCEPTUAL PLANS

DESIGN BUILDER

FLATIRON BRANCH CIVIL

DESIGNED BY

STV 100 years

STATE PROJECT NO. 0095-III-270

FEDERAL PROJECT NO. NHP-095-2(545)

VDOT Virginia Department of Transportation

I-95 NB RAPPAHANNOCK RVER CROSSING

I-95 NB STA 4534+00 TO STA 4563+00

SHEET NO. 8

PAGE NO. 66

DMS to be repositioned over the proposed I-95 NB thru lanes.

Sign panel to be repositioned over the proposed I-95 NB thru lanes.

Curve NBL_GP_RFP_7
V = 75 mph
PI = 4581+79.34
DELTA = 23° 59' 11.00" (RT)
D = 0° 42' 58"
T = 1,699.46'
L = 3,349.13'
R = 8,000.00'
PC = 4564+79.89
PT = 4598+29.02
e% = 3.0

Curve NBCD_BL_2
V = 70 mph
PI = 5581+39.77
DELTA = 23° 59' 21.00" (RT)
D = 0° 44' 04"
T = 1,657.17'
L = 3,265.78'
R = 7,800.00'
PC = 5564+82.60
PT = 5597+48.38
e% = 2.8

Curve RTE17_RPD_BL_1
V = 70 mph
PI = 701+70.50
DELTA = 10° 41' 51.83" (RT)
D = 3° 08' 47"
T = 170.50'
L = 340.00'
R = 1,821.00'
PC = 700+00.00
PCC = 703+40.00
e% = 8

Sign panel to be repositioned over the proposed I-95 NB thru lanes.

Sign Span Structure and Express Lanes DMS to be provided and installed by FredEx Project

Prop. St'd FOA-2 Ty.2

Prop. St'd GR-MGS4

Prop. St'd GR-MGS1

MATCHLINE STA. 4563+00 SEE SHEET 8

MATCHLINE STA. 4592+00 SEE SHEET 10

I-95 SB CD

I-95 SB GP

I-95 NB GP

I-95 NB CD

Curve NBL_GP_RFP_7

Curve RTE17_RPD_BL_1

Prop. R/W

OH Sign to be removed

Sign Span Structure to be provided and installed by FredEx Project

Prop. St'd GR-MGS3

Sign Span Structure to be provided and Installed by FredEx Project

Prop. St'd GR-MGS1

OH Sign to be removed

EXPRESS LANES ENTRANCE 1 MILE

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

EXPRESS DMS Price/Gates Closed

EXPRESS DMS Info/Gates Closed

NORTH 95 Washington LEFT LANES

NORTH 17 Warrenton Fauquier Business SOUTH 17 EXIT 133 EXIT ONLY

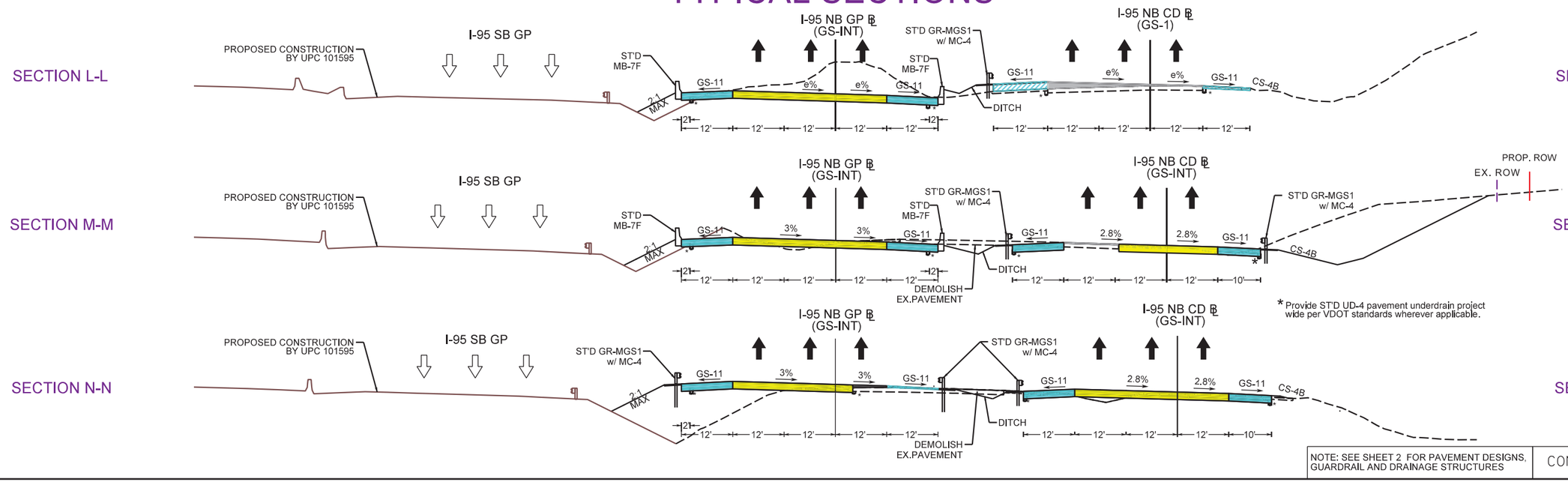
LEGEND

- Denotes Mill & Overlay With Buildup
- Denotes Full Depth Pavement
- Denotes Proposed Bridge
- Denotes Proposed Bridge (Option 2)
- Denotes Existing Bridge
- Denotes Mill & Overlay Existing Shoulder
- Denotes Demolition of Pavement
- Denotes Full Depth Shoulder
- Proposed Guardrail
- Proposed Barrier
- Proposed Grass Swale
- Proposed Right of Way/LA
- Existing Right of Way
- Denotes Cut
- Denotes Fill
- Denotes Proposed Overhead Sign Structure
- Denotes Proposed ITS Cabinet
- Denotes Adjacent Projects
- Denotes Proposed Noise Barrier
- Denotes Proposed Pole Mounted CCTV
- Denotes Proposed ITS Fiber Optic — FO —
- Denotes Utility Impact (W/Note) XX — U —

Utility Conflict ID
C4 Summit IG
Refer to Utility Matrix on Sheet 1

SCALE 0 100' 200'

TYPICAL SECTIONS



* Provide ST'D UD-4 pavement underdrain project wide per VDOT standards wherever applicable.

NOTE: SEE SHEET 2 FOR PAVEMENT DESIGNS, GUARDRAIL AND DRAINAGE STRUCTURES

CONCEPTUAL PLANS

DESIGN BUILDER: FLATIRON BRANCH CIVIL

DESIGNED BY: STV 100 years

STATE PROJECT NO. 0095-III-270

FEDERAL PROJECT NO. NHP-095-2(545)

I-95 NB RAPPAHANNOCK RIVER CROSSING

I-95 NB STA.4563+00 TO STA.4592+00

SHEET NO. 9

PAGE NO. 67

Curve RTE17_RPB_BL_1
V = 45 mph
PI = 600+81.09
DELTA = 12° 05' 09.42" (RT)
D = 7° 28' 48"
T = 81.09'
L = 161.58'
R = 766.00'
PC = 600+00.00
PCC = 601+61.58
e% = 7.7
w = 3.50'

Curve RTE17_RPB_BL_2
V = 45 mph
PI = 602+79.28
DELTA = 13° 25' 31.65" (RT)
D = 5° 43' 46"
T = 117.70'
L = 234.32'
R = 1,000.00'
PCC = 601+61.58
PRC = 603+95.90
e% = 6.8
w = 2.7'

Curve RTE17_RPB_BL_3
V = 45 mph
PI = 606+22.14
DELTA = 26° 15' 30.65" (LT)
D = 5° 54' 24"
T = 226.25'
L = 444.54'
R = 970.00'
PRC = 603+95.90
PCC = 608+40.45
e% = 7.0
w = 2.7'

Curve RTE17_RPB_BL_4
V = 45 mph
PI =
DELTA = (LT)
D =
T = 108.55'
L = 215.60'
R = 750.00'
PCC =
PT =
e% = 7.0
w = 2.7'

Curve RTE17_RPD_BL_2
V = 50 mph
PI = 706+64.68
DELTA = 37° 13' 38.29" (RT)
D = 5° 56' 37"
T = 324.68'
L = 626.35'
R = 964.00'
PCC = 703+40.00
PT = 709+66.35
e% = 7.6
w = 2.9'

Curve RTE17_RPD_BL_3
V = 50 mph
PI = 714+77.59
DELTA = 48° 59' 48.52" (LT)
D = 7° 02' 20"
T = 370.93'
L = 696.10'
R = 814.00'
PC = 711+06.66
PT = 718+02.76
e% = 8.0
w = 6.9'

Curve RTE17_WB_2
DS = 45 mph
PI = 8006+33.60
DELTA = 11° 56' 30.94" (RT)
D = 1° 51' 59"
T = 321.10'
L = 639.87'
R = 3,070.00'
PCC = 8003+12.50
PT = 8009+52.37
e% = 2.4

Curve RTE17_EB_1
V = 45 mph
PI = 9003+87.47
DELTA = 5° 44' 17.16" (LT)
D = 1° 25' 57"
T = 200.47'
L = 400.59'
R = 4,000.00'
PC = 9001+87.00
PCC = 9005+87.60
e% = MATCHING EX.

Curve RTE17_EB_2
V = 45 mph
PI = 9007+36.40
DELTA = 5° 33' 31.40" (LT)
D = 1° 52' 09"
T = 148.80'
L = 297.36'
R = 3,065.00'
PCC = 9005+87.60
PCC = 9008+84.96
e% = match existing

Curve RT17-LD-1
V = 30 mph
PI = 304+75.92
DELTA = 129° 23' 37.45" (RT)
D = 25° 27' 53"
T = 475.92'
L = 508.13'
R = 225.00'
PC = 300+00.00
PCC = 305+08.13

Curve RT17-LD-2
V = 30 mph
PI = 305+97.85
DELTA = 21° 36' 55.42" (RT)
D = 12° 11' 26"
T = 89.72'
L = 177.31'
R = 470.00'
PCC = 305+08.13
PT = 306+85.44

Curve RTE17-LB-1
PI = 11+08.76
DELTA = 24° 32' 38.15" (RT)
D = 11° 27' 33"
T = 108.76'
L = 214.19'
R = 500.00'
PC = 10+00.00
PCC = 12+14.19

Curve RTE17-LB-2
PI = 13+02.83
DELTA = 23° 50' 11.49" (RT)
D = 13° 38' 31"
T = 88.65'
L = 174.73'
R = 420.00'
PCC = 12+14.19
PT = 13+88.92

Curve RT17-RCI-1
PI = 200+96.68
DELTA = 65° 36' 24.34" (RT)
D = 38° 11' 50"
T = 96.68'
L = 171.76'
R = 150.00'
PC = 200+00.00
PCC = 201+71.76

Curve RT17-RCI-2
PI = 202+18.47
DELTA = 25° 40' 29.05" (RT)
D = 27° 56' 57"
T = 46.72'
L = 91.86'
R = 205.00'
PCC = 201+71.76
PT = 202+63.62

Curve RT17-LD-1
PI = 304+75.92
DELTA = 129° 23' 37.45" (RT)
D = 25° 27' 53"
T = 475.92'
L = 508.13'
R = 225.00'
PC = 300+00.00
PCC = 305+08.13

Curve RT17-LD-2
PI = 305+97.85
DELTA = 21° 36' 55.42" (RT)
D = 12° 11' 26"
T = 89.72'
L = 177.31'
R = 470.00'
PCC = 305+08.13
PT = 306+85.44

Curve RT17-RC1-1
PI = 200+96.68
DELTA = 65° 36' 24.34" (RT)
D = 38° 11' 50"
T = 96.68'
L = 171.76'
R = 150.00'
PC = 200+00.00
PCC = 201+71.76

Curve RT17-RC2-1
PI = 101+00.64
DELTA = 15° 48' 20.63" (RT)
D = 7° 54' 10"
T = 100.64'
L = 200.00'
R = 725.00'
PC = 100+00.00
PCC = 102+00.00

MATCHLINE STA. 8024+00 SEE SHEET 11

TRIPLE RIGHT TURN DESIGN ASSUMPTION
RIGHT LANE: WB-67
CENTER LANE: WB-40
LEFT LANE: WB-40

Utility Conflict ID

C5	Summit IG
C10	Summit IG
G2	Columbia Gas
W3	Stafford County Water

Refer to Utility Matrix on Sheet 1

Overheight Detection to remain active during construction. Sign messaging will be modified during construction to instruct overheight vehicles to their correct location.

The existing bridge pier protection and median barrier are modified for the proposed intersection configuration.

This facility will be required if only Bid Option 1 is selected in addition to the Base Scope. It is eliminated in the full build scenario (Base Bid plus all options) as proposed in the VDOT RFP.

Proposed signal installation and widening on Rte 17 NB will allow Proposed Ramp D to help relieve congestion during construction.

Prop.R/W and L/A Line
Prop.St'd FE-WI
Prop.ROW / Limited Access here is approximated based on the PDF sheets of VDOT RFP Plan included in the Addendum #6.

Express Lanes DMS to be provided and installed by FredEx Project

NOTE:
SEE SHEET 11
FOR TYPICAL SECTIONS

TRIPLE LEFT TURN DESIGN ASSUMPTION
RIGHT CENTER LANE: WB-67
LEFT CENTER LANE : WB-40
LEFT LANE: WB-40

NOTE: SEE SHEET 2 FOR PAVEMENT DESIGNS, GUARDRAIL AND DRAINAGE STRUCTURES

CONCEPTUAL PLANS

SCALE 0 100' 200'

MATCHLINE STA. 4592+00 SEE SHEET 9
MATCHLINE STA. 4620+00 SEE SHEET 12
MATCHLINE STA. 8005+00 SEE SHEET 11

LEGEND

- Denotes Mill & Overlay with Build-up
- Denotes Full Depth Pavement
- Denotes Proposed Bridge
- Denotes Proposed Bridge (Option 2)
- Denotes Existing Bridge
- Denotes Mill & Overlay Existing Shoulder
- Denotes Demolition of Pavement
- Denotes Full Depth Shoulder
- Denotes Proposed Raised Median
- Proposed Guardrail
- Proposed Barrier
- Proposed Grass Swale
- Proposed Right of Way/LA
- Existing Right of Way
- Denotes Adjacent Projects
- Denotes Proposed Noise Barrier
- Denotes Proposed Pole Mounted CCTV
- Denotes Proposed ITS Fiber Optic
- Denotes Utility Impact (W/Note)
- Denotes Cut
- Denotes Fill
- Denotes Proposed Overhead Sign Structure
- Denotes Proposed ITS Cabinet
- Proposed Signal Pole
- Luminaire

DESIGN BUILDER
FLATIRON
BRANCH CIVIL

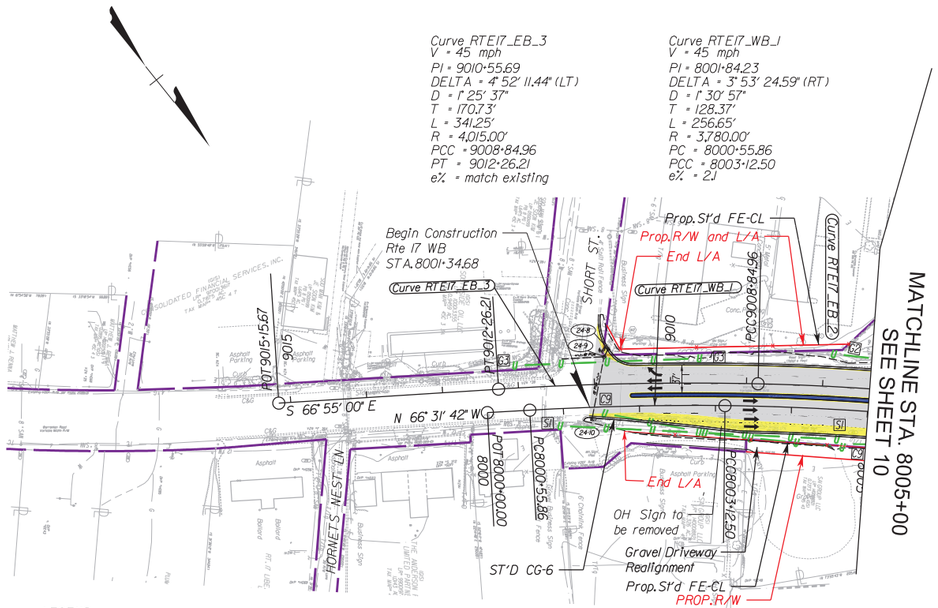
DESIGNED BY
STV 100 years

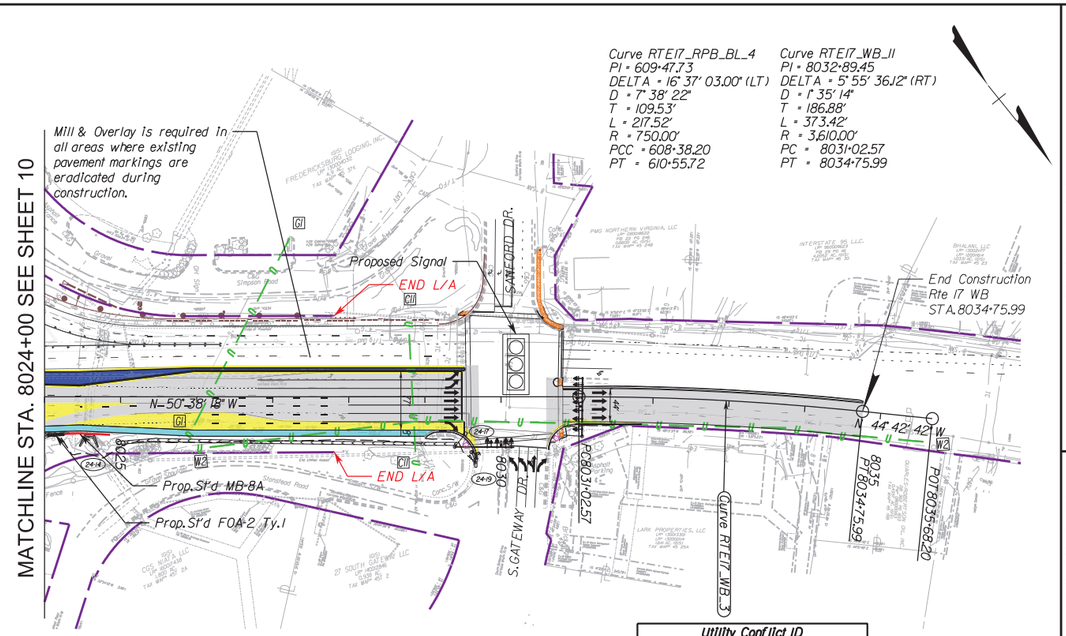
VDOT Virginia Department of Transportation

STATE PROJECT NO. 0095-111-270
FEDERAL PROJECT NO. NHP-095-2(545)

I-95 NB RAPPAHANNOCK RIVER CROSSING
I-95 NB STA.4592+00 TO STA.4620+00

SHEET NO. 10
PAGE NO. 68





LEGEND

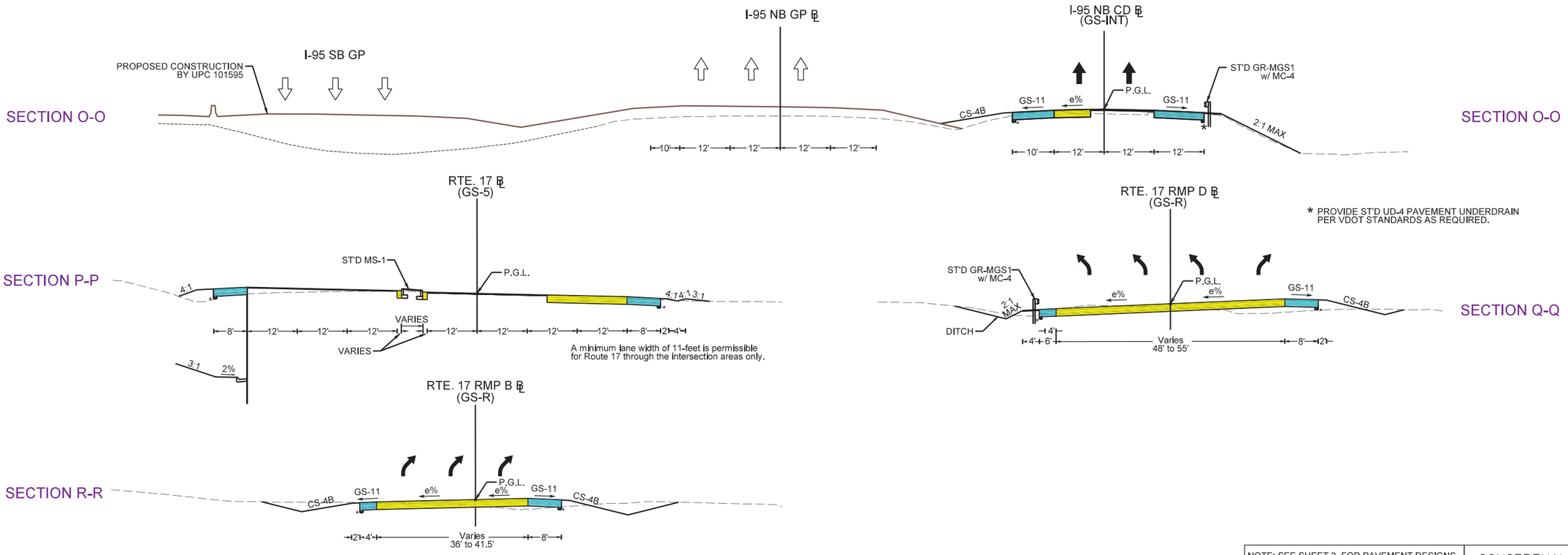
- Denotes Mill & Overlay With Buildup
- Denotes Full Depth Pavement
- Denotes Proposed Bridge
- Denotes Proposed Bridge (Option 2)
- Denotes Existing Bridge
- Denotes Mill & Overlay Existing Shoulder
- Denotes Demolition of Pavement
- Denotes Full Depth Shoulder
- Proposed Guardrail
- Proposed Barrier
- Proposed Grass Swale
- Proposed Right of Way/LA
- Existing Right of Way
- Denotes Cut
- Denotes Fill
- Denotes Proposed Overhead Sign Structure
- Denotes Proposed ITS Cabinet
- Denotes Adjacent Projects
- Denotes Proposed Noise Barrier
- Denotes Proposed Pole Mounted CCTV
- Denotes Proposed ITS Fiber Optic — FO —
- Denotes Utility Impact (W/Note) XX — U —

Utility Conflict ID

C9	Summit IG	S1	Stafford County Sanitary
C11	Summit IG		
G1	Columbia Gas	W2	Stafford County Water
G2	Columbia Gas		
G3	Columbia Gas		

Refer to Utility Matrix on Sheet 1

SCALE 0 100' 200'



NOTE: SEE SHEET 2 FOR PAVEMENT DESIGNS, GUARDRAIL AND DRAINAGE STRUCTURES

CONCEPTUAL PLANS

DESIGN BUILDER: FLATIRON BRANCH CIVIL

DESIGNED BY: STV 100 Years

STATE PROJECT NO. 0095-III-270

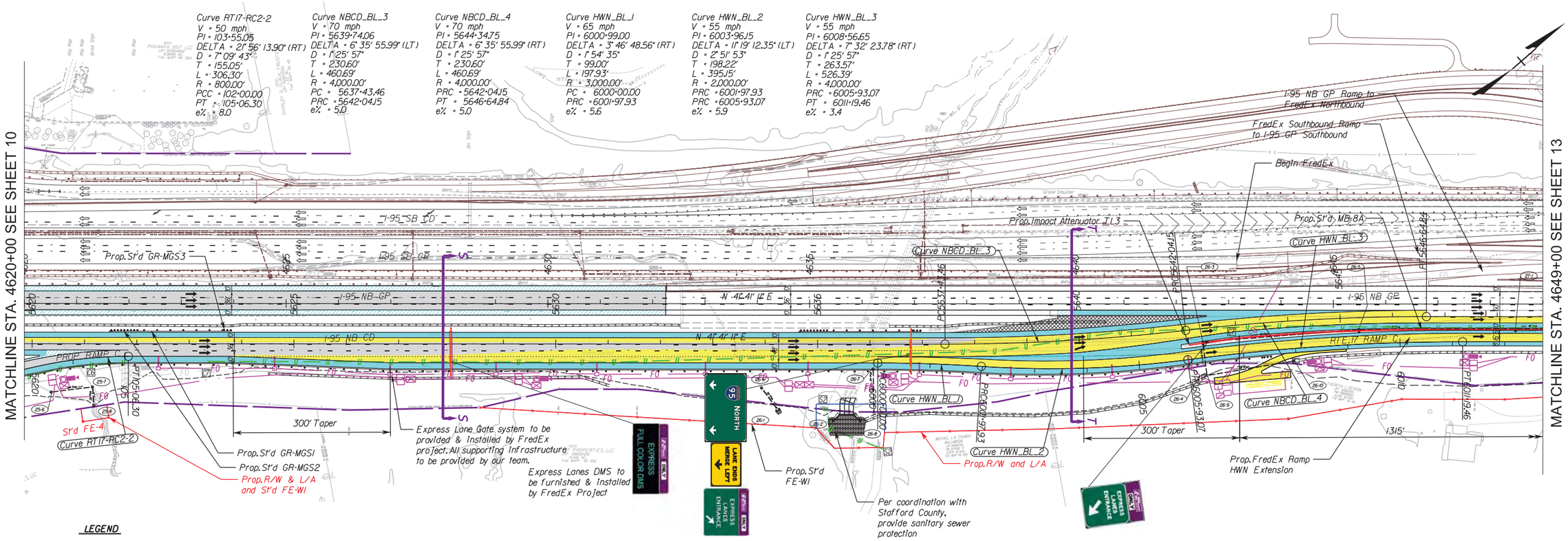
FEDERAL PROJECT NO. NHP-095-2(545)

I-95 NB RAPPAHANNOCK RIVER CROSSING
ROUTE 17 STA.8000+00 TO STA.8005+00
ROUTE 17 STA.8024+00 TO STA.8035+68.20

VDOT Virginia Department of Transportation

SHEET NO. 11

PAGE NO. 69



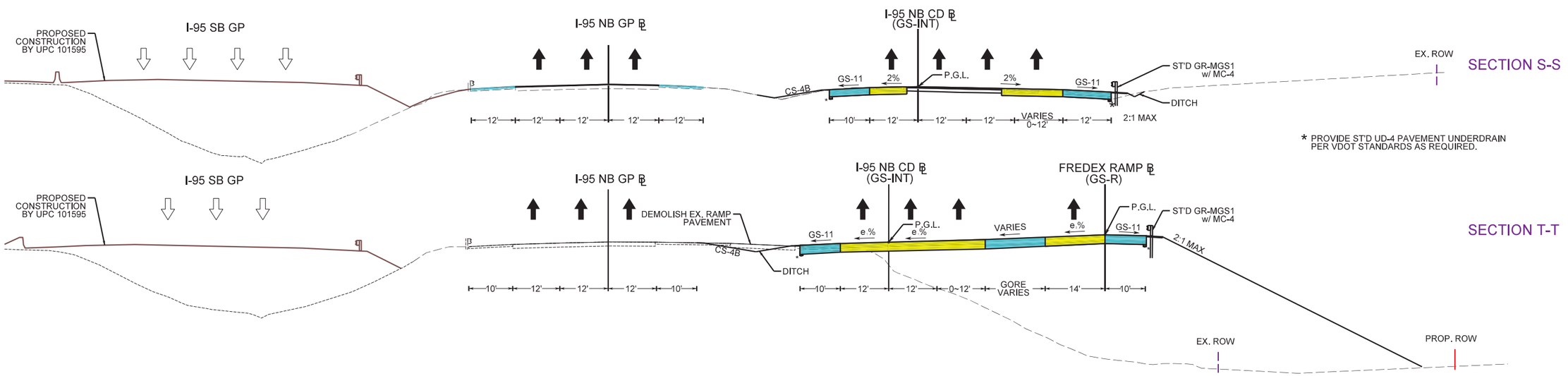
LEGEND

- Denotes Mill & Overlay With Buildup
- Denotes Full Depth Pavement
- Denotes Proposed Bridge
- Denotes Proposed Bridge (Option 2)
- Denotes Existing Bridge
- Denotes Mill & Overlay Existing Shoulder
- Denotes Demolition of Pavement
- Denotes Full Depth Shoulder
- Proposed Guardrail
- Proposed Barrier
- Proposed Grass Swale
- Proposed Right of Way/LA
- Existing Right of Way
- Denotes Cut
- Denotes Fill
- Denotes Proposed Overhead Sign Structure
- Denotes Proposed ITS Cabinet
- Denotes Adjacent Projects
- Denotes Proposed Noise Barrier
- Denotes Proposed Pole Mounted CCTV
- Denotes Proposed ITS Fiber Optic (FO)
- Denotes Utility Impact (W/Note) (XX) (U)

Utility Conflict ID	
C6	Summit IG
C7	Summit IG
S2	Stafford County Sanitary

Refer to Utility Matrix on Sheet 1

SCALE 0 100' 200'



NOTE: SEE SHEET 2 FOR PAVEMENT DESIGNS, GUARDRAIL AND DRAINAGE STRUCTURES

CONCEPTUAL PLANS

DESIGN BUILDER
BRANCH CIVIL
FLATIRON

DESIGNED BY
STV 100 Years

STATE PROJECT NO. 0095-III-270
FEDERAL PROJECT NO. NHP-095-2(545)

I-95 NB RAPPAHANNOCK RIVER CROSSING
I-95 NB STA. 4620+00 TO STA. 4649+00

VDOT Virginia Department of Transportation

SHEET NO. 12

PAGE NO. 70

Curve HWN_BL_4
V = 55 mph
PI = 6022+94.91
DELTA = 3° 23' 17.15" (LT)
D = 1° 25' 57"
T = 118.30'
L = 236.53'
R = 4,000.00'
PC = 6021+76.61
PRC = 6024+13.15
e% = 4.4

Curve HWN_BL_5
V = 55 mph
PI = 6025+31.40
DELTA = 3° 23' 11.81" (RT)
D = 1° 25' 57"
T = 118.25'
L = 236.43'
R = 4,000.00'
PRC = 6024+13.15
PT = 6026+49.58
e% = 4.4

Curve HWN_BL_6
V = 55 mph
PI = 6039+58.11
DELTA = 4° 14' 36.20" (RT)
D = 0° 34' 23"
T = 370.47'
L = 740.61'
R = 10,000.00'
PC = 6035+87.63
PT = 6043+28.24
e% = NC

MATCHLINE STA. 4649+00 SEE SHEET 12

MATCHLINE STA. 4678+00 SEE SHEET 14

Tie Into FredEx construction Addendum #5 Sta.5656+37

Remove Existing Impact Attenuator
Tie-In Prop.St'd MB-8A with existing

Prop.St'd MB-8A

Prop.R/W and L/A

Prop.St'd FE-WI

Prop.Temp. Construction Easement

Prop.St'd GR-MGS2
600' Taper

Prop.St'd GR-MGSI

Tie Into FredEx ramp HWN Addendum #5 Sta.6025+00

Prop.St'd FOA-5
Tie-In to the BPPSI

I-95 SB

I-95 NB GP

FREDEX

FREDEX RAMP HWN EXTENSION N 41° 41' 06" E

N 41° 41' 11" E

Curve HWN_BL_4

Curve HWN_BL_5

Curve HWN_BL_6

Truslow Rd.

PI 6025+31.40

PRC 6024+13.15

PT 6026+49.58

PC 6035+87.63

PC 6669+33.56

1315'

Our team has designed a fiber optic duct bank that ties into the FredEx duct bank providing a whole system to the owner. Coordination with FredEx will occur for proper location and installation.

LEGEND

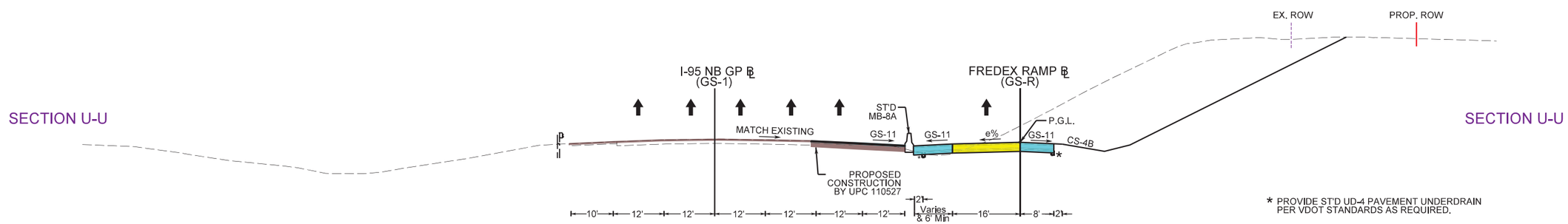
- Denotes Mill & Overlay With Buildup
- Denotes Full Depth Pavement
- Denotes Proposed Bridge
- Denotes Proposed Bridge (Option 2)
- Denotes Existing Bridge
- Denotes Mill & Overlay Existing Shoulder
- Denotes Demolition of Pavement
- Denotes Full Depth Shoulder
- Proposed Guardrail
- Proposed Barrier
- Proposed Grass Swale
- Proposed Right of Way/LA
- Existing Right of Way
- Denotes Cut
- Denotes Fill
- Denotes Proposed Overhead Sign Structure
- Denotes Proposed ITS Cabinet
- Denotes Adjacent Projects
- Denotes Proposed Noise Barrier
- Denotes Proposed Pole Mounted CCTV
- Denotes Proposed ITS Fiber Optic FO
- Denotes Utility Impact (W/Note) XX U

Utility Conflict ID
C7 Summit IG

Refer to Utility Matrix on Sheet I

SCALE 0 100' 200'

TYPICAL SECTIONS



* PROVIDE ST'D UD-4 PAVEMENT UNDERDRAIN PER VDOT STANDARDS AS REQUIRED.

NOTE: SEE SHEET 2 FOR PAVEMENT DESIGNS, GUARDRAIL AND DRAINAGE STRUCTURES

CONCEPTUAL PLANS

DESIGN BUILDER: FLATIRON / BRANCH CIVIL

DESIGNED BY: STV 100 Years

STATE PROJECT NO. 0095-III-270

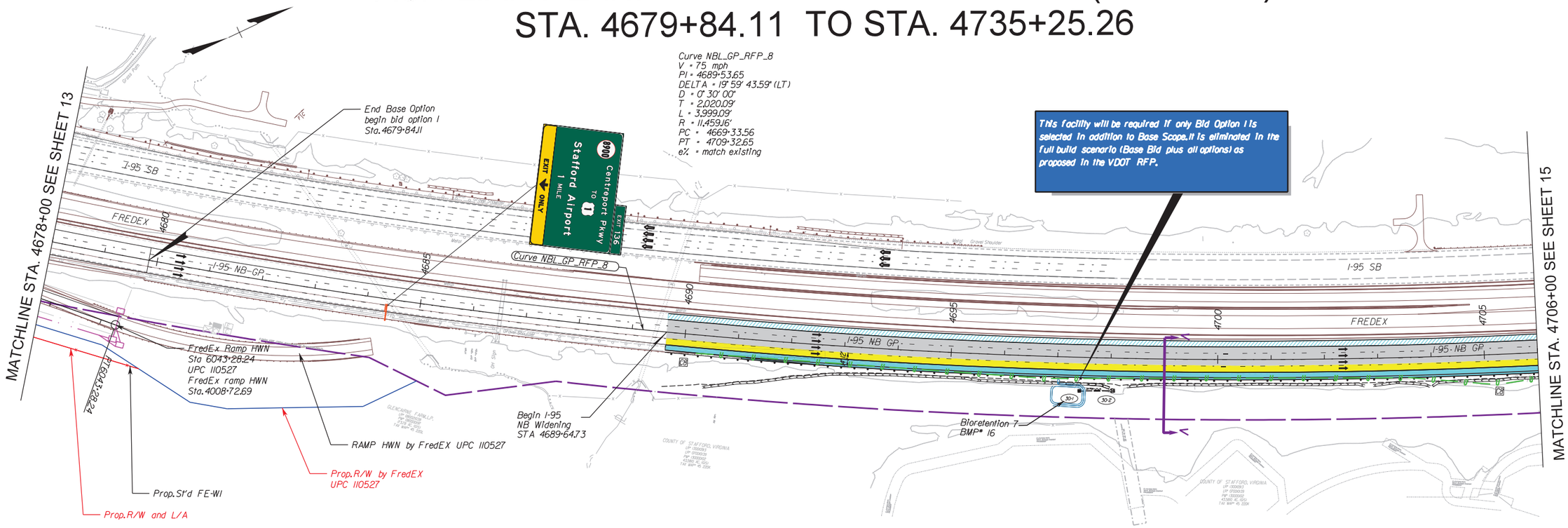
FEDERAL PROJECT NO. NHP-095-2(545)

I-95 NB RAPPAHANNOCK RIVER CROSSING
I-95 NB STA 4649+00 TO STA 4678+00

SHEET NO. 13

PAGE NO. 71

AUXILIARY LANE EXTENSION TO EXIT 136 (OPTION 1)
STA. 4679+84.11 TO STA. 4735+25.26



LEGEND

- Denotes Mill & Overlay With Buildup
- Denotes Full Depth Pavement
- Denotes Proposed Bridge
- Denotes Proposed Bridge (Option 2)
- Denotes Existing Bridge
- Denotes Mill & Overlay Existing Shoulder
- Denotes Demolition of Pavement
- Denotes Full Depth Shoulder
- Proposed Guardrail
- Proposed Barrier
- Proposed Grass Swale
- Proposed Right of Way/LA
- Existing Right of Way
- Denotes Cut
- Denotes Fill
- Denotes Proposed Overhead Sign Structure
- Denotes Proposed ITS Cabinet
- Denotes Adjacent Projects
- Denotes Proposed Noise Barrier
- Denotes Proposed Pole Mounted CCTV
- Denotes Proposed ITS Fiber Optic (FO)
- Denotes Utility Impact (W/Note) (XX) — U —

Utility Conflict ID
C8 Summit IG

Refer to Utility Matrix on Sheet I

SCALE 0 100' 200'

DRAINAGE STRUCTURES (OPTION 1)

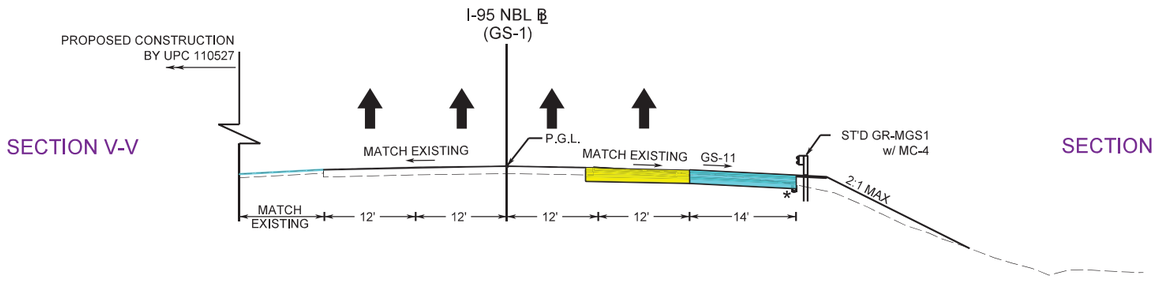
Pipe ID	Upstream Structure ID	Upstream Structure Type	Downstream Structure ID	Downstream Stucture Type
30-1 - 30-2	30-1	SWM Outlet Structure	30-2	ES24
EX 6X6 Culvert - 31-1	ex culvert	ex 6 x 6 culvert	31-1	EW 2 72
31-7 - ex pipe	31-7	DI-10G TY 1	EX PIPE	NA
31-6 - 31-5	31-6	SWM Outlet Structure	31-5	MH-12
31-5 - 31-4	31-5	MH-12	31-4	MH-12
31-4 - 31-3	31-4	MH-12	31-3	MH-12
31-3 - 31-2	31-3	MH-12	31-2	ES24
31-8 - 31-9	31-8	SWM Outlet Structure	31-9	ES24

GUARDRAIL AND BARRIER LOCATIONS (OPTION 1)

Roadway	Station to Station		Offset	Type
	From	To		
I-95 NB	4689+64.73	4727+58.53	RT	GR-MGS1
	4727+58.53	4727+73.03	RT	GR-MGS3
	4728+01.83	4728+55.42	RT	GR-MGS2
	4728+55.42	4735+01.89	RT	GR-MGS1
	4735+01.89	4735+32.06	RT	FOA-5

TYPICAL SECTIONS

SECTION V-V



SECTION V-V

* PROVIDE ST'D UD-4 PAVEMENT UNDERDRAIN PER VDOT STANDARDS AS REQUIRED.

NOTE: SEE SHEET 2 FOR PAVEMENT DESIGNS, GUARDRAIL AND DRAINAGE STRUCTURES

CONCEPTUAL PLANS

DESIGN BUILDER: FLATIRON / BRANCH CIVIL

DESIGNED BY: STV 100 Years

STATE PROJECT NO. 0095-III-270

FEDERAL PROJECT NO. NHP-095-2(545)

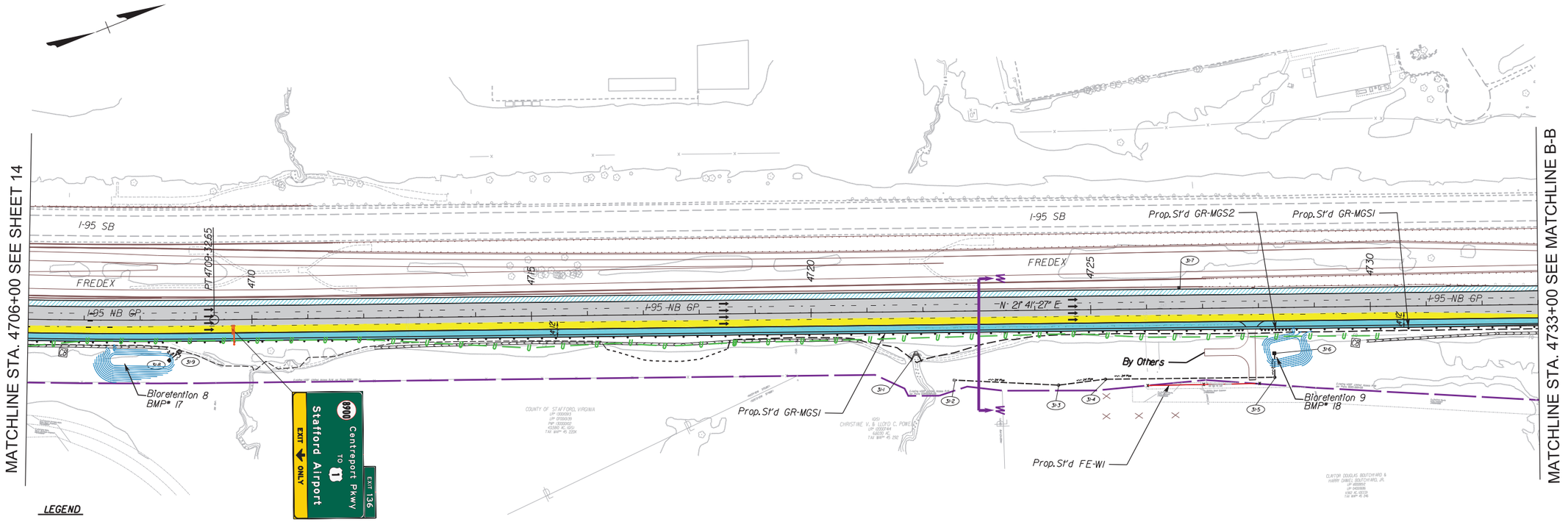
VDOT Virginia Department of Transportation

I-95 NB RAPPAHANNOCK RIVER CROSSING
I-95 NB STA.4678+00 TO STA.4706+00
BID OPTION I

SHEET NO. 14

PAGE NO. 72

AUXILIARY LANE EXTENSION TO EXIT 136 (OPTION 1)
STA. 4679+84.11 TO STA. 4735+25.26

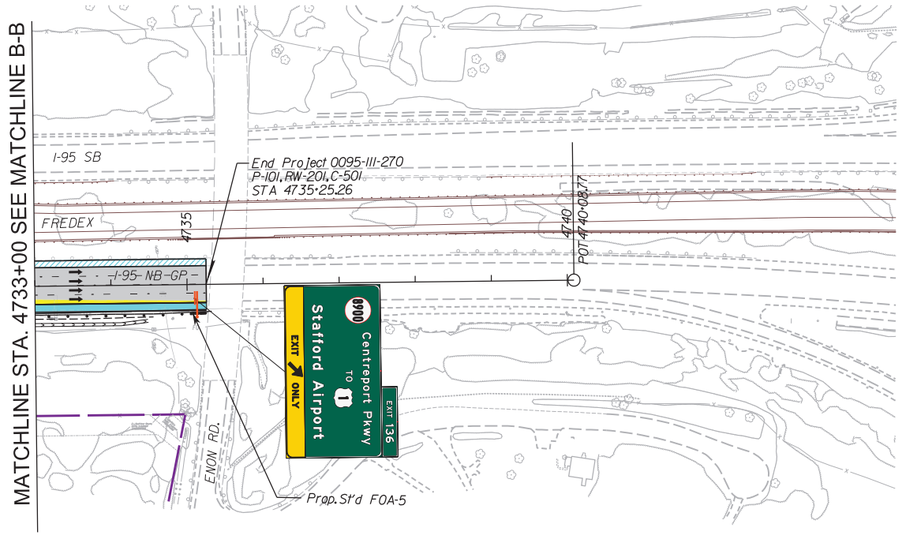


LEGEND

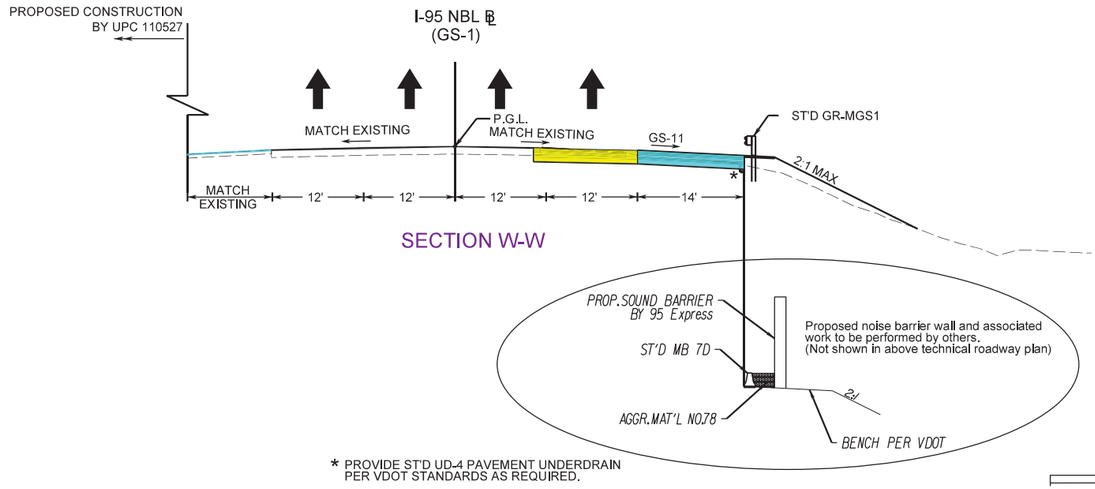
- Denotes Mill & Overlay With Buildup
- Denotes Full Depth Pavement
- Denotes Proposed Bridge
- Denotes Proposed Bridge (Option 2)
- Denotes Existing Bridge
- Denotes Mill & Overlay Existing Shoulder
- Denotes Demolition of Pavement
- Denotes Full Depth Shoulder
- Proposed Guardrail
- Proposed Barrier
- Proposed Grass Swale
- Proposed Right of Way/LA
- Existing Right of Way
- Denotes Cut
- Denotes Fill
- Denotes Proposed Overhead Sign Structure
- Denotes Proposed ITS Cabinet
- Denotes Adjacent Projects
- Denotes Proposed Noise Barrier
- Denotes Proposed Pole Mounted CCTV
- Denotes Proposed ITS Fiber Optic (FO)
- Denotes Utility Impact (W/Note) (xx) — U —

Utility Conflict ID
C8 Summit IG

Refer to Utility Matrix on Sheet 1



TYPICAL SECTIONS



SECTION W-W

* PROVIDE ST'D UD-4 PAVEMENT UNDERDRAIN PER VDOT STANDARDS AS REQUIRED.

SCALE
0 100' 200'

NOTE: SEE SHEET 14 FOR GUARDRAIL AND DRAINAGE STRUCTURES

NOTE: SEE SHEET 2 FOR PAVEMENT DESIGNS

CONCEPTUAL PLANS

DESIGN BUILDER
FLATIRON
BRANCH CIVIL

DESIGNED BY
STV 100 Years

STATE PROJECT NO.
0095-111-270

FEDERAL PROJECT NO.
NHP-095-2(545)

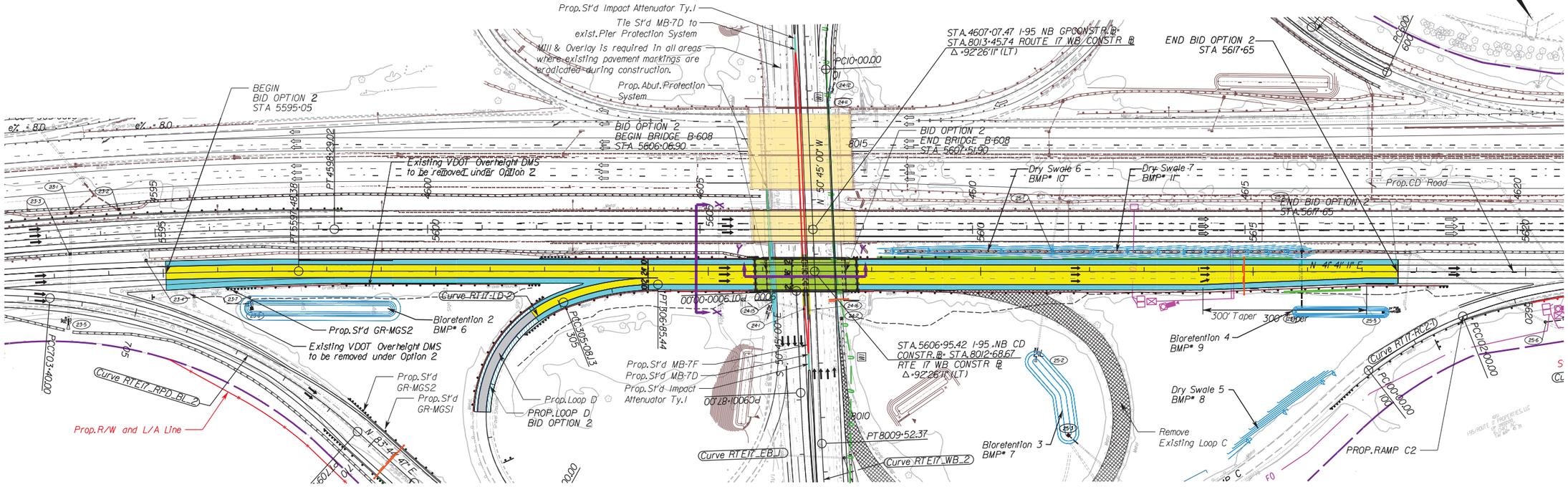
I-95 NB RAPPAHANNOCK RIVER CROSSING
I-95 NB STA. 4706+00 TO STA. 4740+08.77
BID OPTION I

VDOT Virginia Department of Transportation

SHEET NO.
15

PAGE NO.
73

REPLACEMENT OF EXISTING CD LANES BRIDGE (OPTION 2)



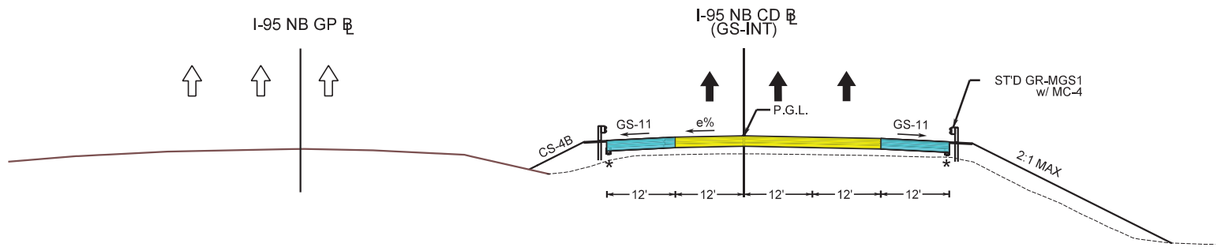
LEGEND

- Denotes Mill & Overlay With Buildup
- Denotes Full Depth Pavement
- Denotes Proposed Bridge
- Denotes Proposed Bridge (Option 2)
- Denotes Existing Bridge
- Denotes Mill & Overlay Existing Shoulder
- Denotes Demolition of Pavement
- Denotes Full Depth Shoulder
- Proposed Guardrail
- Proposed Barrier
- Proposed Grass Swale
- Proposed Right of Way/LA
- Existing Right of Way
- Denotes Cut
- Denotes Fill
- Denotes Proposed Overhead Sign Structure
- Denotes Proposed ITS Cabinet
- Denotes Adjacent Projects
- Denotes Proposed Noise Barrier
- Denotes Proposed Pole Mounted CCTV
- Denotes Proposed ITS Fiber Optic (FO)
- Denotes Utility Impact (W/Note) (XX — W —)

Utility Conflict ID
W/ Stafford County Water

Refer to Utility Matrix on Sheet 1

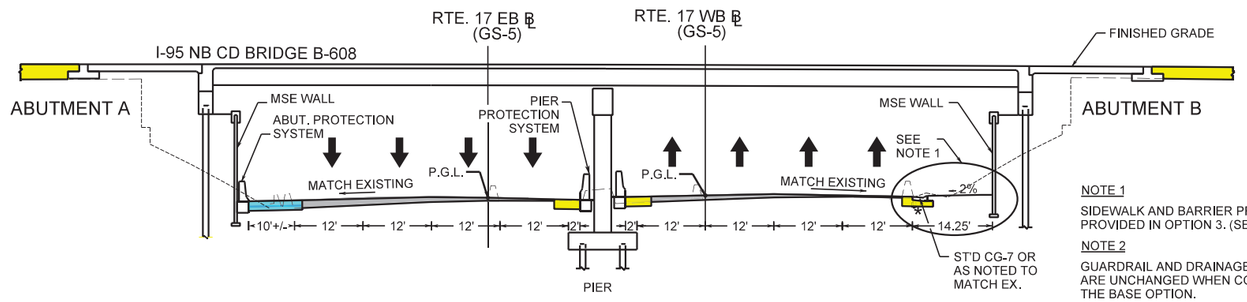
SECTION X-X



SECTION X-X

* PROVIDE ST'D UD-4 PAVEMENT UNDERDRAIN PER VDOT STANDARDS AS REQUIRED.

SECTION Y-Y



SECTION Y-Y

NOTE 1

SIDEWALK AND BARRIER PROTECTION ARE PROVIDED IN OPTION 3. (SEE SHEET 17)

NOTE 2

GUARDRAIL AND DRAINAGE STRUCTURES ARE UNCHANGED WHEN COMPARED TO THE BASE OPTION.

SCALE 0 100' 200'

NOTE: SEE SHEET 2 FOR PAVEMENT DESIGNS

CONCEPTUAL PLANS

DESIGN BUILDER: FLATIRON / BRANCH CIVIL

DESIGNED BY: STV 100 Years

STATE PROJECT NO. 0095-III-270

FEDERAL PROJECT NO. NHP-095-2(545)

I-95 NB RAPPAHANNOCK RIVER CROSSING

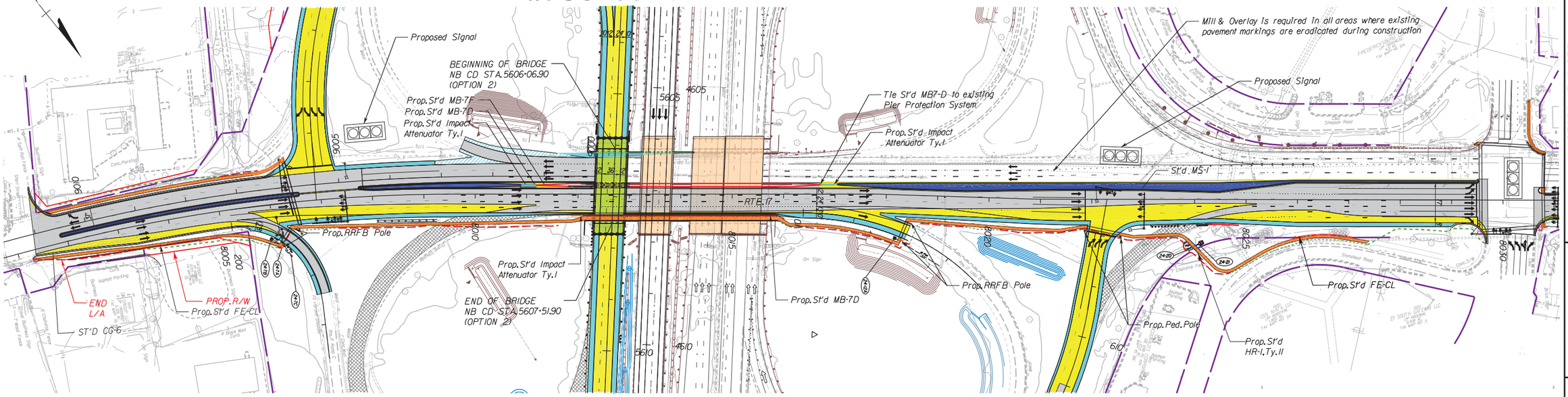
BID OPTION 2

VDOT Virginia Department of Transportation

SHEET NO. 16

PAGE NO. 74

SIDEWALK CONNECTION THROUGH I-95/ROUTE 17 INTERCHANGE (OPTION 3)
IN CONJUNCTION WITH OPTION 2

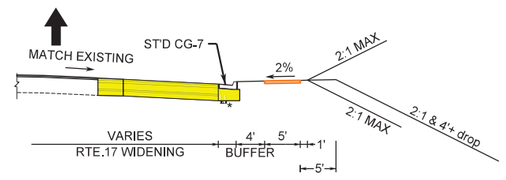


LEGEND

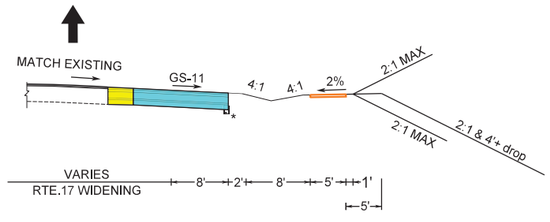
- Denotes Mill & Overlay With Buildup
- Denotes Full Depth Pavement
- Denotes Proposed Raised Median
- Denotes Proposed Bridge (Option 2)
- Denotes Existing Bridge
- Denotes Mill & Overlay Existing Shoulder
- Denotes Demolition of Pavement
- Denotes Full Depth Shoulder
- Proposed Guardrail
- Proposed Barrier
- Proposed Grass Swale
- Proposed Right of Way/LA
- Existing Right of Way
- Denotes Cut
- Denotes Fill
- Denotes Proposed Overhead Sign Structure
- Denotes Proposed ITS Cabinet
- Denotes Adjacent Projects
- Denotes Proposed Noise Barrier
- Denotes Proposed Pole Mounted CCTV
- Denotes Proposed ITS Fiber Optic — FO —
- Denotes Utility Impact (W/Note) XX — U —
- RRFB Pedestal Pole
- St'd CG-6
- Proposed Signal Pole
- Luminaire

SCALE 0 100' 200'

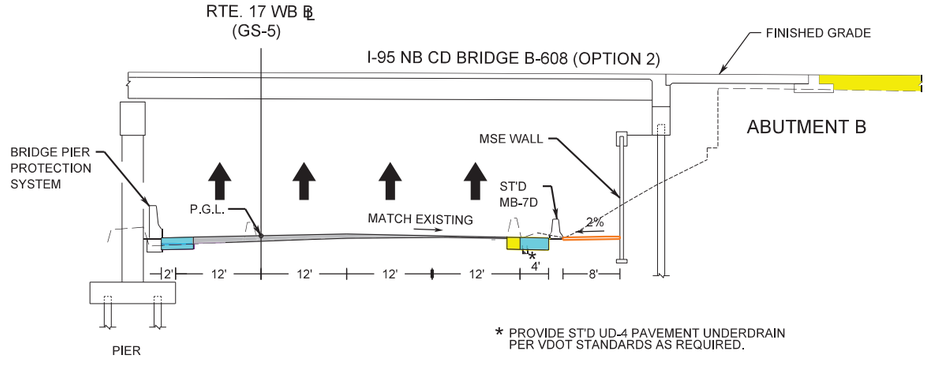
TYPICAL SECTIONS



CURB AND GUTTER SECTION WITH SIDEWALK

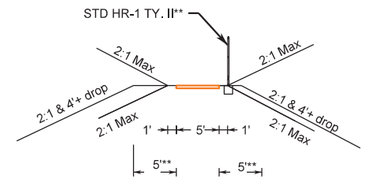


SHOULDER SECTION WITH SIDEWALK



* PROVIDE ST'D UD-4 PAVEMENT UNDERDRAIN PER VDOT STANDARDS AS REQUIRED.

SIDEWALK UNDER NEW BRIDGE B-608 (OPTION 3)
IN CONJUNCTION WITH OPTION 2



**SEE VDOT RDM FIG.A(1)-1-24 FOR RAILING ALTERNATIVE

ADA COMPLIANT HANDRAIL TYPICAL

GUARDRAIL AND BARRIER LOCATIONS (OPTION 3)

ROADWAY	STATION TO STATION FROM	STATION TO STATION TO	OFFSET	TYPE
RTE-17 WB	8011+86.60	8012+09.47	RT	IMP. ATT. Ty. 1
	8012+09.47	8015+89.47	RT	MB 7-D

DRAINAGE STRUCTURES (OPTION 3)

NOTE: ALL ITEMS ARE THE CHANGES FROM THE BASE OPTION

Pipe ID	Upstream Structure ID	Upstream Structure Type	Downstream Structure ID	Downstream Stucture Type
24-6 - 24-7A	24-6	MH-12	24-7A	MH-12
24-7B - 24-7A	24-7B	DI-5 Grate	24-7A	MH-12
24-7A - 24-7	24-7A	MH-12	24-7	ES18
24-11 - 24-12	24-11	DI-3B 8	24-12	ES18
24-12A - EX IN 415	24-12A	DI-5 Grate	EX IN 415	EX N
24-20 - 24-21	24-20	ES24	24-21	ES24

NOTE: SEE SHEET 2 FOR PAVEMENT DESIGNS

CONCEPTUAL PLANS

DESIGN BUILDER: FLATIRON BRANCH CIVIL

DESIGNED BY: STV 100 Years

STATE PROJECT NO. 0095-111-270

FEDERAL PROJECT NO. NHP-095-2(545)

VDOT Virginia Department of Transportation

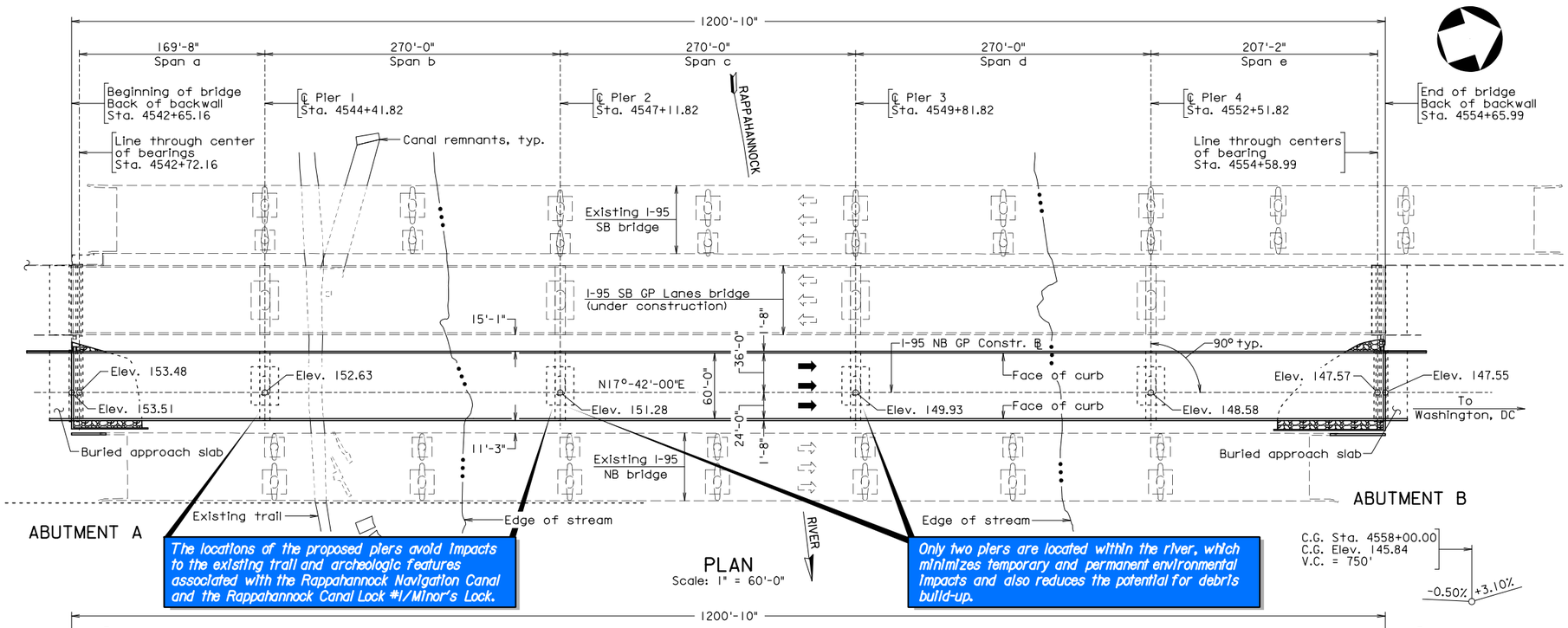
I-95 NB RAPPAHANNOCK RIVER CROSSING

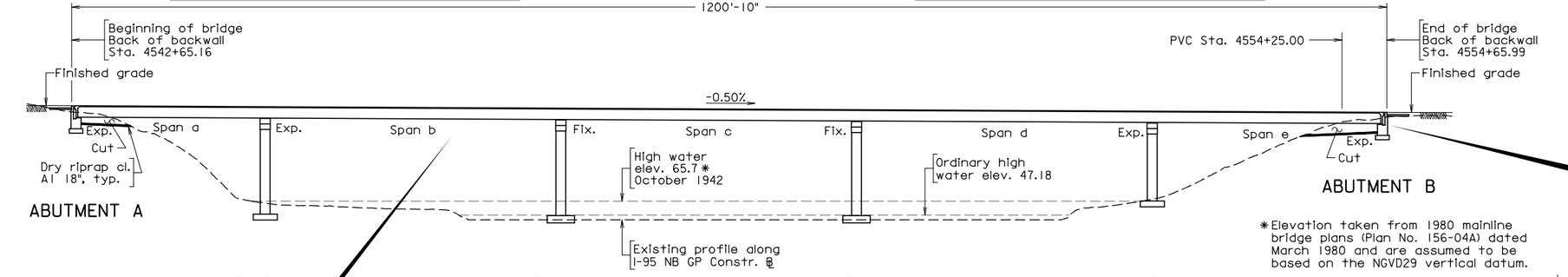
BID OPTION 3

SHEET NO. 17

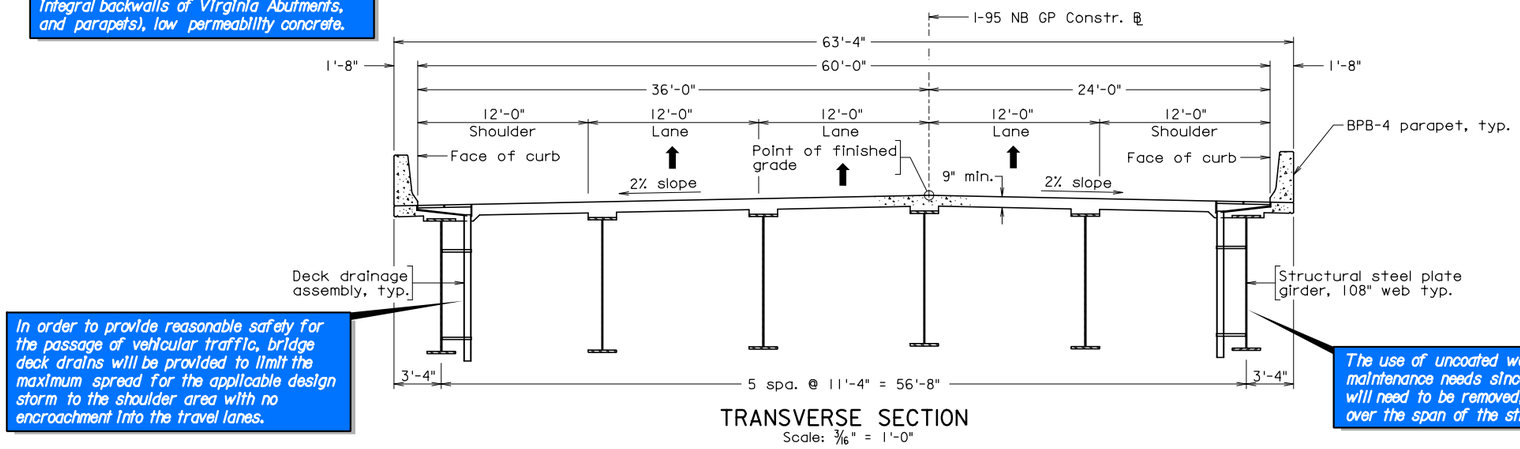
PAGE NO. 75

4.3.2 CONCEPTUAL STRUCTURAL PLANS

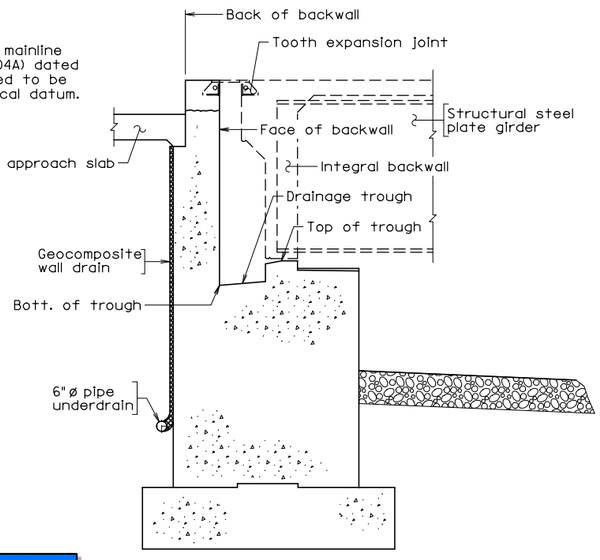




DEVELOPED SECTION ALONG I-95 NB GP CONSTR. ℄
Scale: 1" = 60'-0"



TRANSVERSE SECTION
Scale: 3/16" = 1'-0"



TYPICAL ABUTMENT SECTION
Not to scale

DESIGN EXCEPTION(S):

None.

GENERAL NOTES:

Width: 60'-0" face-to-face of curbs.

Span Layout: 169'-8" - 270'-0" - 270'-0" - 270'-0" - 207'-2" continuous steel plate girder spans.

Capacity: HL-93 loading.

Drainage area: 1,605 sq. mi.

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.

All structural steel, including bearings, shall be ASTM A709 Grade 50W and shall be unpainted.

Architectural treatment shall be provided on all exposed faces of abutments and retaining walls in view of I-95 in accordance with the RFP.

Low permeability concrete shall be used, additionally, Low Shrinkage Class A4 Modified shall be used in the deck slab, parapets, terminal walls, and integral backwalls of Virginia Abutments.

Corrosion resistant reinforcing steel shall be utilized in accordance with IIM-S&B-81.8.

Bridge No. of existing bridge on I-95 NB CD Lanes is 2901 and existing bridge on I-95 SB CD Lanes is 2900. Plan Nos. are 156-04 through 156-04E.

Bridge No. of proposed bridge under construction on I-95 SB GP Lanes is 2902. Plan No. is 299-97.

DESIGN BUILDER

FLATIRON BRANCH CIVIL

DESIGNED BY

STV 100 years

STATE PROJECT NO. 0095-III-270

FEDERAL PROJECT NO. NHP-095-2(545)

I-95 NB RAPPAHANNOCK RIVER CROSSING

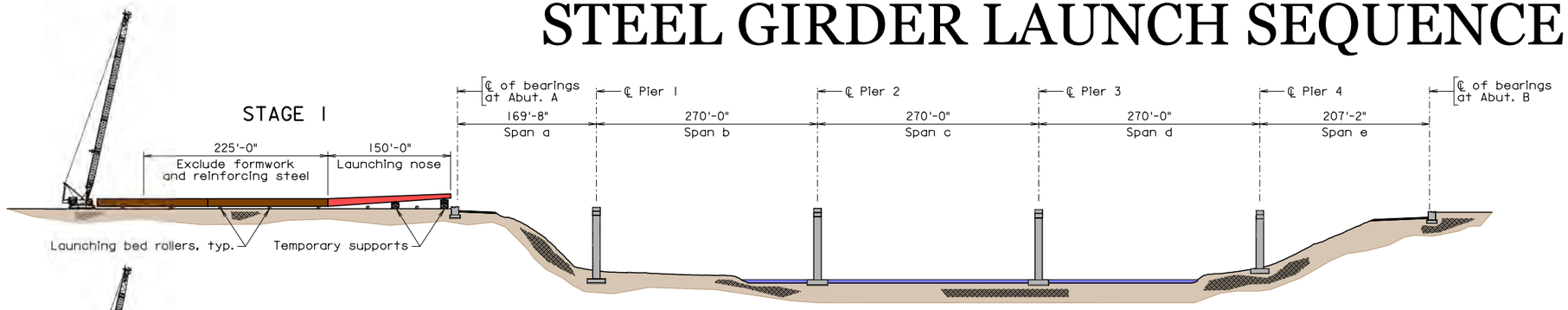
I-95 NB GP LANES OVER RAPPAHANNOCK RIVER
STAFFORD CO.-12 MI.S.OF RTE.17
PROJ.0095-III-270,B609

SHEET NO. S-01

PAGE NO. 76

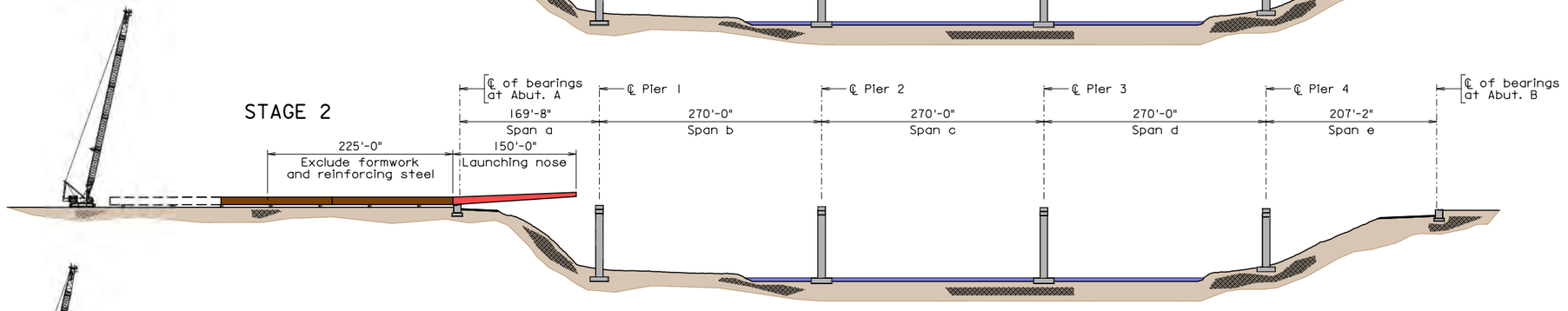
CONCEPTUAL PLANS

STEEL GIRDER LAUNCH SEQUENCE



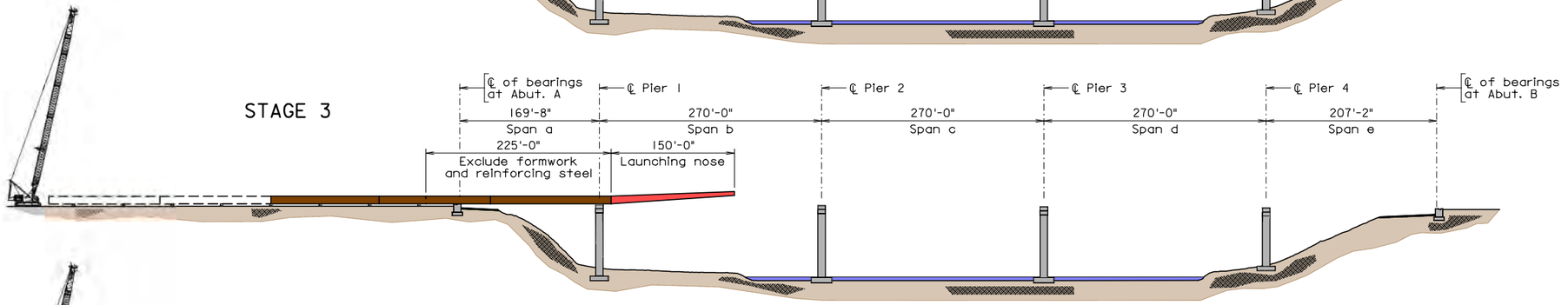
STAGE 1

1. Erect temporary supports and set launching bed rollers.
2. Erect launching nose on temporary supports.
3. Erect the first two girder field sections.



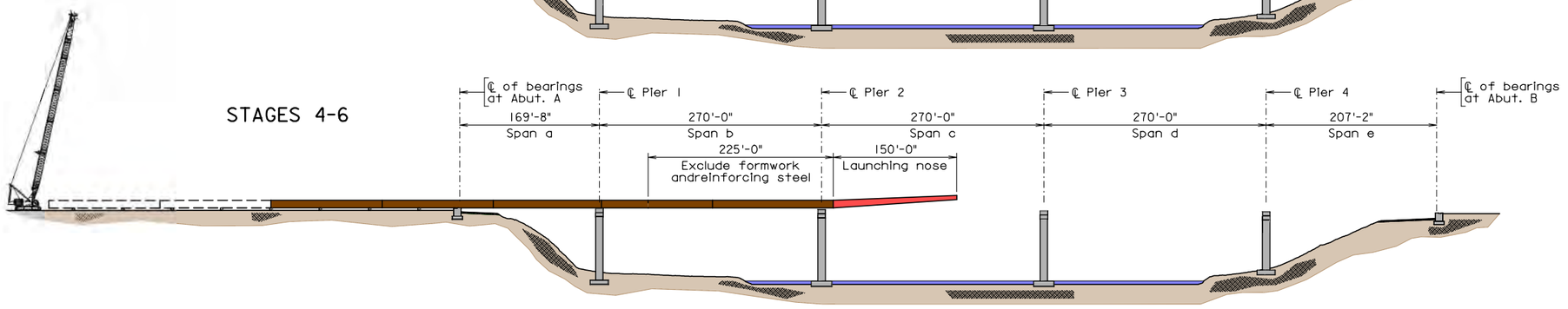
STAGE 2

1. Remove the temporary supports from the launching nose.
2. Launch assembly forward to Abutment A as shown.
3. Erect the next girder field sections.



STAGE 3

1. Launch assembly forward to Pier 1 as shown.
2. Erect the next two girder field sections.



STAGE 4

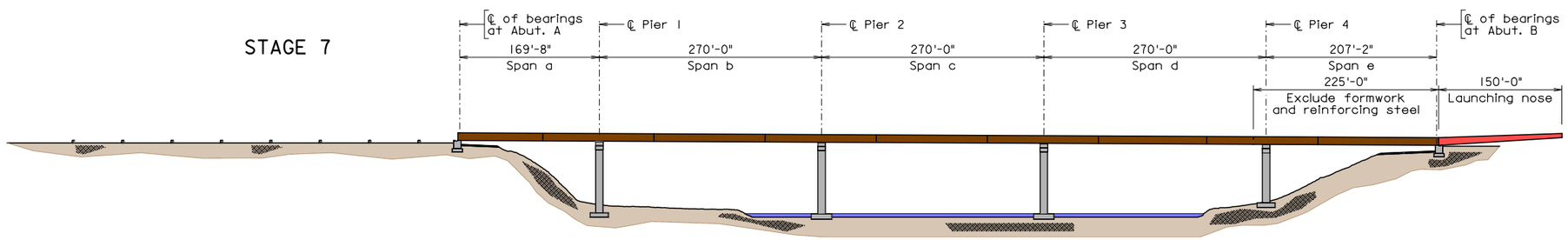
1. Launch assembly forward to Pier 2 as shown.
2. Erect the next two girder field sections.

STAGE 5

1. Launch assembly forward to Pier 3.
2. Erect the final two girder field sections.

STAGE 6

1. Launch assembly forward to Pier 4.



STAGE 7

1. Launch assembly forward to Abutment B.
2. Remove launching nose.
3. Install hydraulic jacks at abutments and piers and jack superstructure to remove load from rollers.
4. Remove rollers.
5. Lower superstructure onto bearings and remove hydraulic jacks.

CONCEPTUAL PLANS

DESIGN BUILDER

FLATIRON BRANCH CIVIL

DESIGNED BY

STV 100 years

STATE PROJECT NO. 0095-111-270

FEDERAL PROJECT NO. NHP-095-2(545)

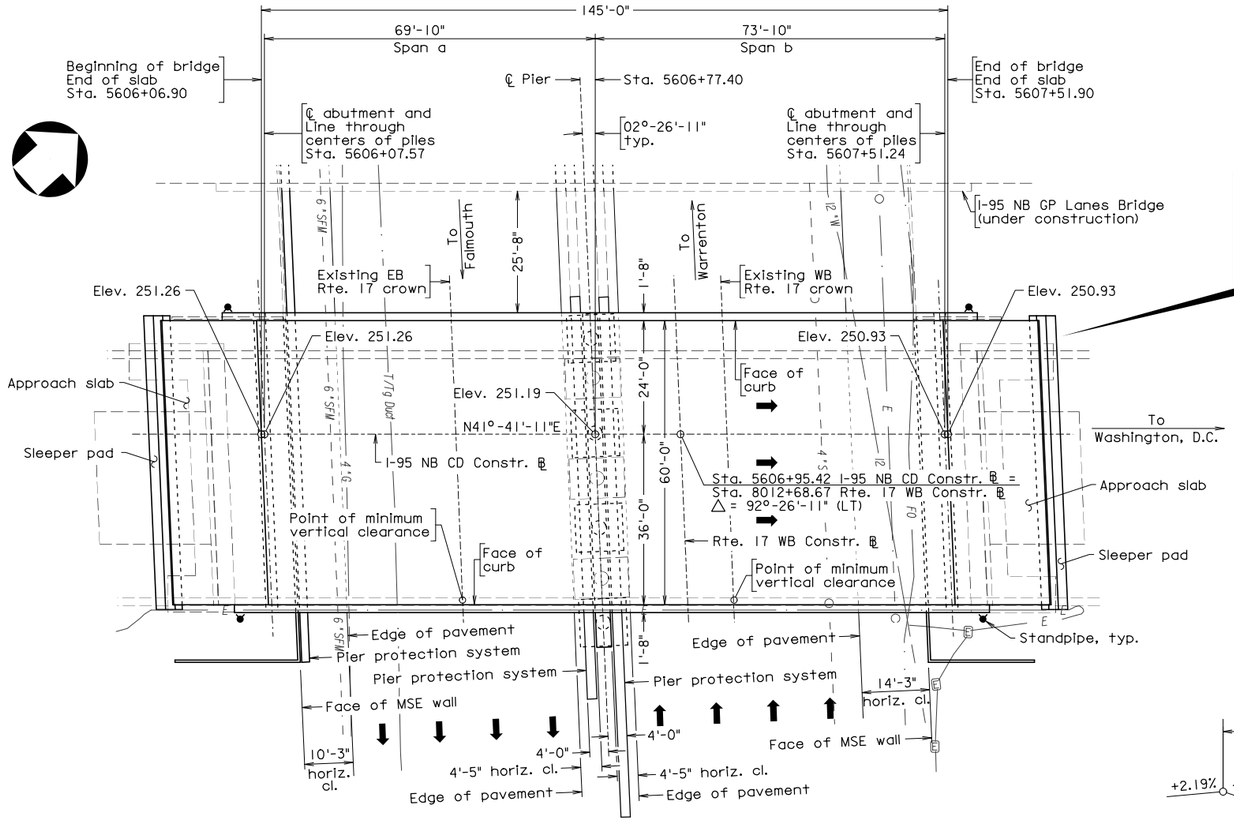
VDOT Virginia Department of Transportation

I-95 NB RAPPAHANNOCK RIVER CROSSING

I-95 NB GP LANES OVER RAPPAHANNOCK RIVER
SUPERSTRUCTURE
STEEL GIRDER LAUNCH SEQUENCE

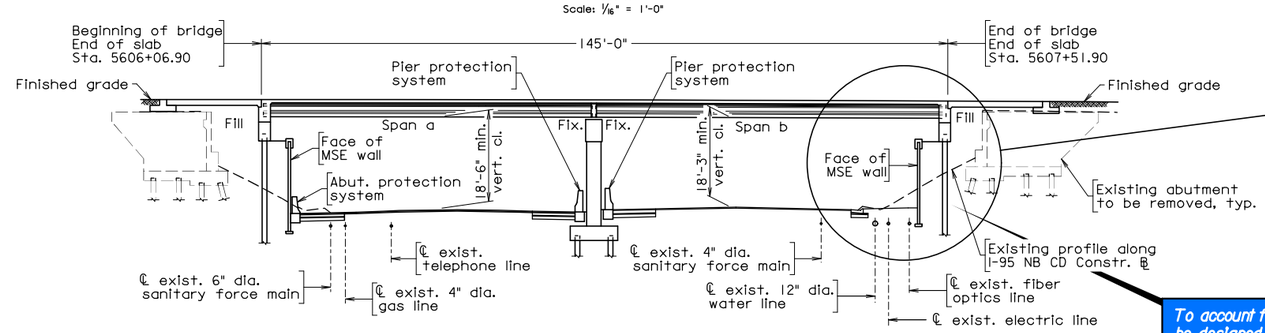
SHEET NO. S-02

PAGE NO. 77



PLAN

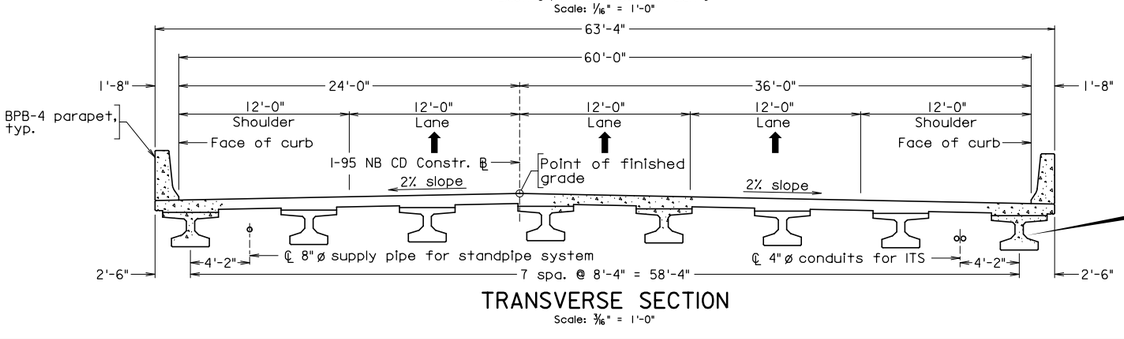
Scale: 1/16" = 1'-0"



DEVELOPED SECTION ALONG I-95 NB CD CONSTR. ℄

Existing pier not shown for clarity

Scale: 1/16" = 1'-0"



TRANSVERSE SECTION

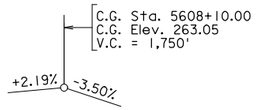
Scale: 3/16" = 1'-0"

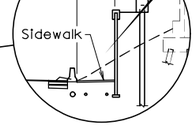
Low Maintenance Bridge - Jointless bridge, prestressed concrete bulb-T beams, Class III CRR steel in superstructure (bridge deck, integral backwalls, closure diaphragms, and parapets), low permeability concrete.

To account for the corrosive soils, all steel H-piles will be designed with a corrosion allowance, which is the thickness of metal (above that is structurally required for the pile) needed to compensate for loss of metal that will occur as the pile corrodes.

All MSE walls will be designed for a 100-year service life with respect to soil reinforcement design, which will improve the long-term asset performance and minimize inspection and long-term maintenance needs for VDOT.

Standard prestressed concrete bulb-T beam construction provides a durable solution with minimal inspection and maintenance requirements.



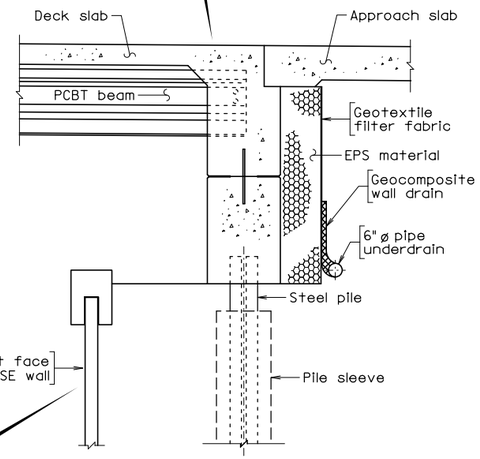


BID OPTION 3

Not to scale

Should Option 3 not be executed then the design of the new bridge will be designed to provide for a future sidewalk along the north side of Route 17 at the I-95/Route 17 Interchange.

The superstructure for the new bridge will conform with VDOT's jointless bridge philosophy by using full integral abutments and prestressed concrete bulb-T beam spans made continuous for live load. The elimination of joints will minimize inspection and long-term maintenance needs for VDOT.



TYPICAL ABUTMENT SECTION

Not to scale

DESIGN EXCEPTION(S):

None.

GENERAL NOTES:

Width: 60'-0" face-to-face of curbs.

Span Layout: 70'-6" - 74'-6" 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.

Bridge No. of existing bridge is 2031. Plan Nos. are 258-52 and 258-52A.

The existing structure is designated as a Type B structure in accordance with Section 411 of the Specifications.

Architectural treatment shall be provided on all exposed faces of abutments and wingwalls in accordance with the RFP.

Low permeability concrete shall be used, additionally, Low Shrinkage Class A4 Modified concrete shall be used in the deck slab, parapets, terminal walls, integral backwalls, and closure diaphragms.

Corrosion resistant reinforcing steel shall be utilized in accordance with IIM-S&B-81.8.

DESIGN BUILDER

BRANCH CIVIL

FLATIRON

DESIGNED BY

STV 100 years

STATE PROJECT NO. 0095-111-270

FEDERAL PROJECT NO. NHP-095-2(545)

I-95 NB RAPPAHANNOCK RIVER CROSSING

I-95 NB CD LANES OVER RTE.17 (WARRENTON RD.)
STAFFORD CO.-3.2 MI.N.OF RTE.3
PROJ.0095-111-270,B608

VDOT Virginia Department of Transportation

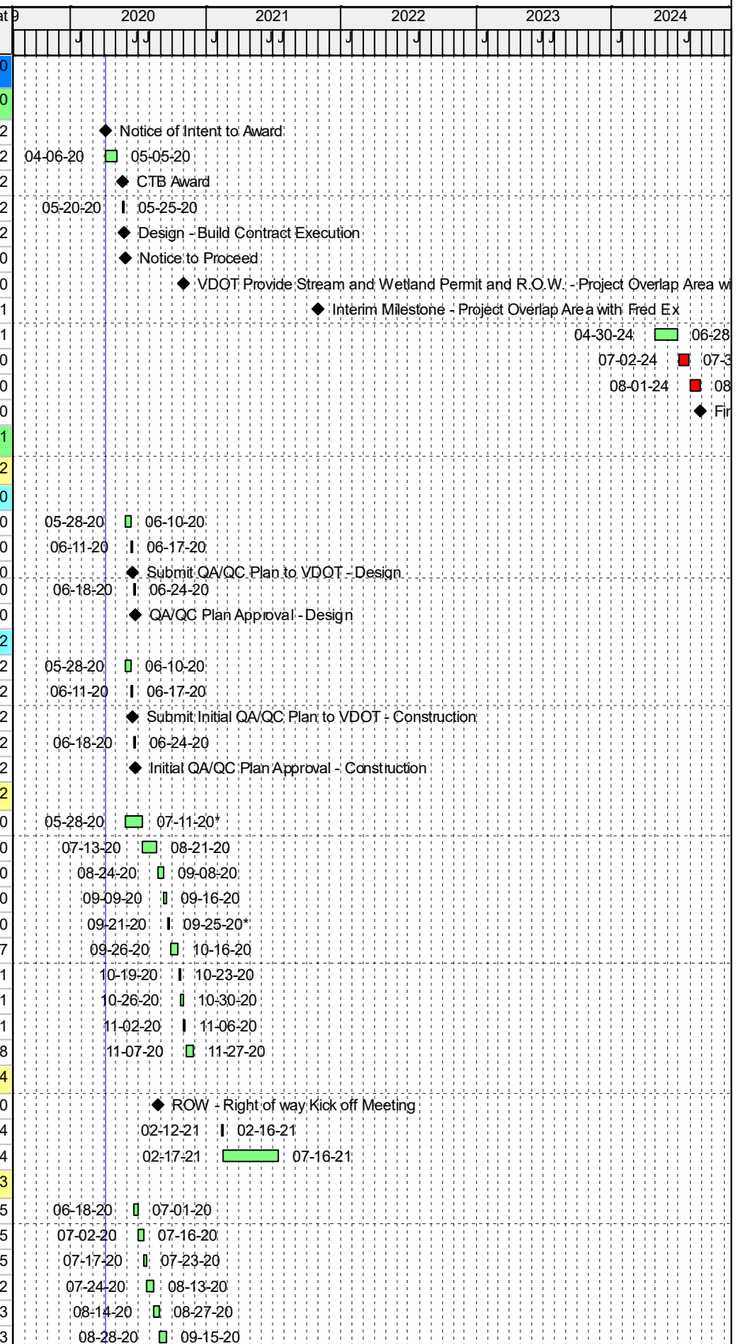
SHEET NO. S-03

PAGE NO. 78

CONCEPTUAL PLANS

PROPOSAL SCHEDULE

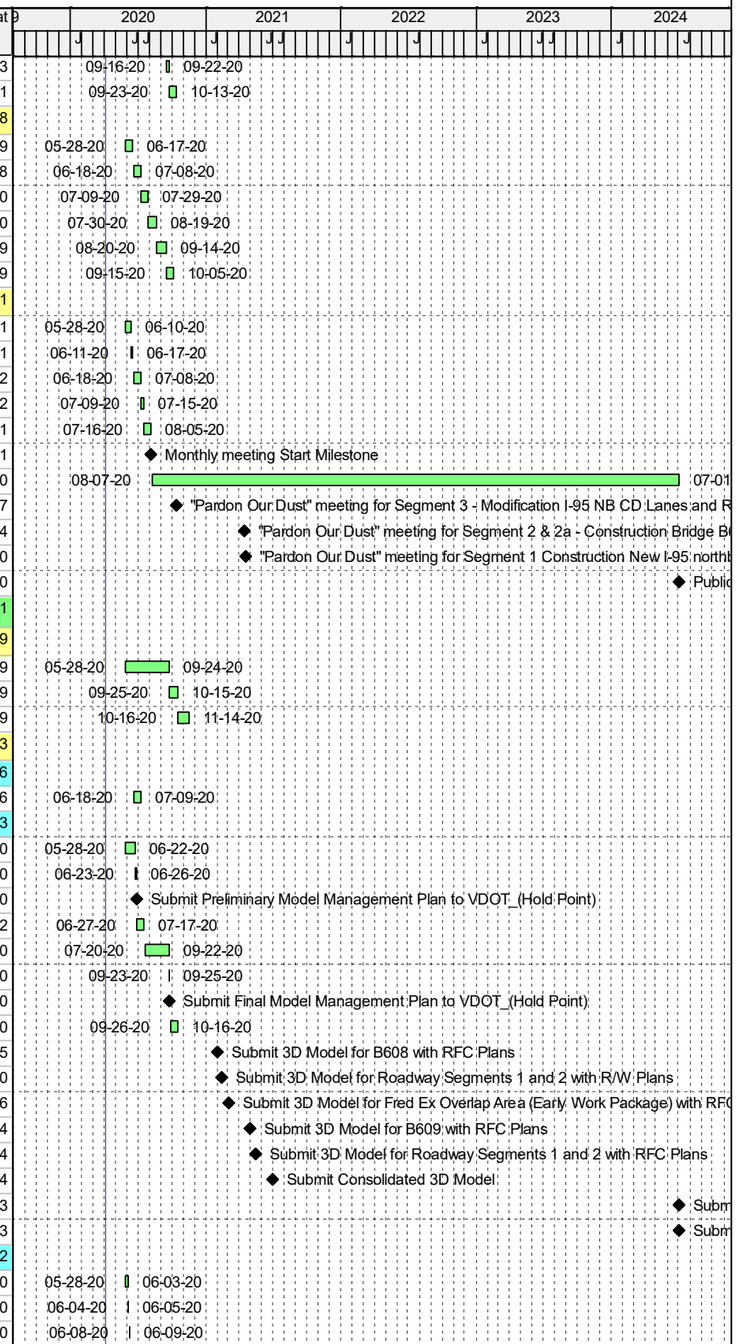
Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
I-95 NB RAPPAHANNOCK RIVER CROSSING		1081	04-06-20	08-30-24	0
PROJECT MILESTONES		1608	04-06-20	08-30-24	0
M-1000	Notice of Intent to Award	0	04-06-20*		22
M-1040	VDOT Request for Pre-Design-Build Conference	30	04-06-20	05-05-20	22
M-1010	CTB Award	0	05-20-20*		2
M-1020	Submit Bonds and COI	6	05-20-20	05-25-20	2
M-1030	Design - Build Contract Execution	0	05-26-20*		2
M-1050	Notice to Proceed	0	05-28-20*		0
M-1055	VDOT Provide Stream and Wetland Permit and R.O.W. - Project Overlap Area with Fred Ex (Hold Point)	0		10-30-20*	0
M-1060	Interim Milestone - Project Overlap Area with Fred Ex	0		10-29-21*	1
M-1080	Interim Milestone - System Integration Test Burn Period (60 days Prior to Final Completion)	60	04-30-24	06-28-24	1
M-1070	Interim walk through and Punch List corrections	30	07-02-24	07-31-24	0
M-1090	Final walk through and Punch List corrections	30	08-01-24	08-30-24	0
M-1100	Final Completion - August 30, 2024	0		08-30-24	0
ADMINISTRATION		1004	05-28-20	07-01-24	21
QA/QC PLANS		20	05-28-20	06-24-20	152
QA/QC PLANS - DESIGN		20	05-28-20	06-24-20	0
STV-QAQC-1010	Prepare QA/QC Plan - Design	10	05-28-20	06-10-20	0
STV-QAQC-1020	Internal Review/Approval QA/QC plan - Design	5	06-11-20	06-17-20	0
STV-QAQC-1030	Submit QA/QC Plan to VDOT - Design	0		06-17-20*	0
STV-QAQC-1040	QA/QC Plan Presentation - Design	5	06-18-20	06-24-20	0
STV-QAQC-1050	QA/QC Plan Approval - Design	0		06-24-20*	0
INITIAL QA/QC PLANS - CONSTRUCTION		20	05-28-20	06-24-20	152
JV-QAQC-1010	Prepare Initial QA/QC Plan - Construction	10	05-28-20	06-10-20	152
JV-QAQC-1020	Internal Review/Approval Initial QA/QC plan - Construction	5	06-11-20	06-17-20	152
JV-QAQC-1030	Submit Initial QA/QC Plan to VDOT - Construction	0		06-17-20	152
JV-QAQC-1040	Initial QA/QC Plan Presentation - Construction	5	06-18-20	06-24-20	152
JV-QAQC-1050	Initial QA/QC Plan Approval - Construction	0		06-24-20	152
UTILITY RELOCATIONS AND ADJUSTMENTS		125	05-28-20	11-27-20	12
D-UT-1000	Preliminary Utility meeting with VDOT - Project Wide (Hold Point)	45	05-28-20	07-11-20*	0
D-UT-1010	Coordination with Utility companies for the impacted utilities	30	07-13-20	08-21-20	0
D-UT-1020	Prepare and submit Preliminary Utility lists and Status report	10	08-24-20	09-08-20	0
D-UT-1030	QA/QC reviews and comments Preliminary Utility lists and Status report	5	09-09-20	09-16-20	0
D-UT-1040	Address QA/QC comments and submit Preliminary Utility lists and Status report (Hold Point)	5	09-21-20	09-25-20*	0
D-UT-1050	VDOT reviews and comments Preliminary Utility lists and Status report	21	09-26-20	10-16-20	17
D-UT-1060	Response to comments and prepare Final Utility lists and Status report	5	10-19-20	10-23-20	11
D-UT-1070	QA/QC reviews and comments Final Utility lists and Status report	5	10-26-20	10-30-20	11
D-UT-1080	Address QA/QC comments and submit Final Utility lists and Status report	5	11-02-20	11-06-20	11
D-UT-1090	VDOT approves Final Utility lists and Status report to proceed	21	11-07-20	11-27-20	18
RIGHT OF WAY ACQUISITION		325	08-25-20	07-16-21	74
ROW-1000	ROW - Right of way Kick off Meeting	0		08-25-20*	0
ROW-1010	ROW - Receive Authorization for Right of Way Acquisition	5	02-12-21	02-16-21	74
ROW-1020	ROW - Acquire Right of Way & Easement	150	02-17-21	07-16-21	74
HEALTH, SAFETY & WELFARE PLAN		79	06-18-20	10-13-20	73
PM-P-1000	Prepare Preliminary Heath, Safety and Welfare plan	10	06-18-20	07-01-20	75
PM-P-1010	QA/QC reviews and comments Preliminary Heath, Safety and Welfare plan	10	07-02-20	07-16-20	75
PM-P-1020	Address QA/QC comments and submit Preliminary Heath, Safety and Welfare plan	5	07-17-20	07-23-20	75
PM-P-1030	VDOT reviews and comments Preliminary Heath, Safety and Welfare plan	21	07-24-20	08-13-20	112
PM-P-1040	Response to VDOT comments and prepare Final Heath, Safety and Welfare plan	10	08-14-20	08-27-20	73
PM-P-1050	QA/QC reviews and comments Final Heath, Safety and Welfare plan	10	08-28-20	09-15-20	73



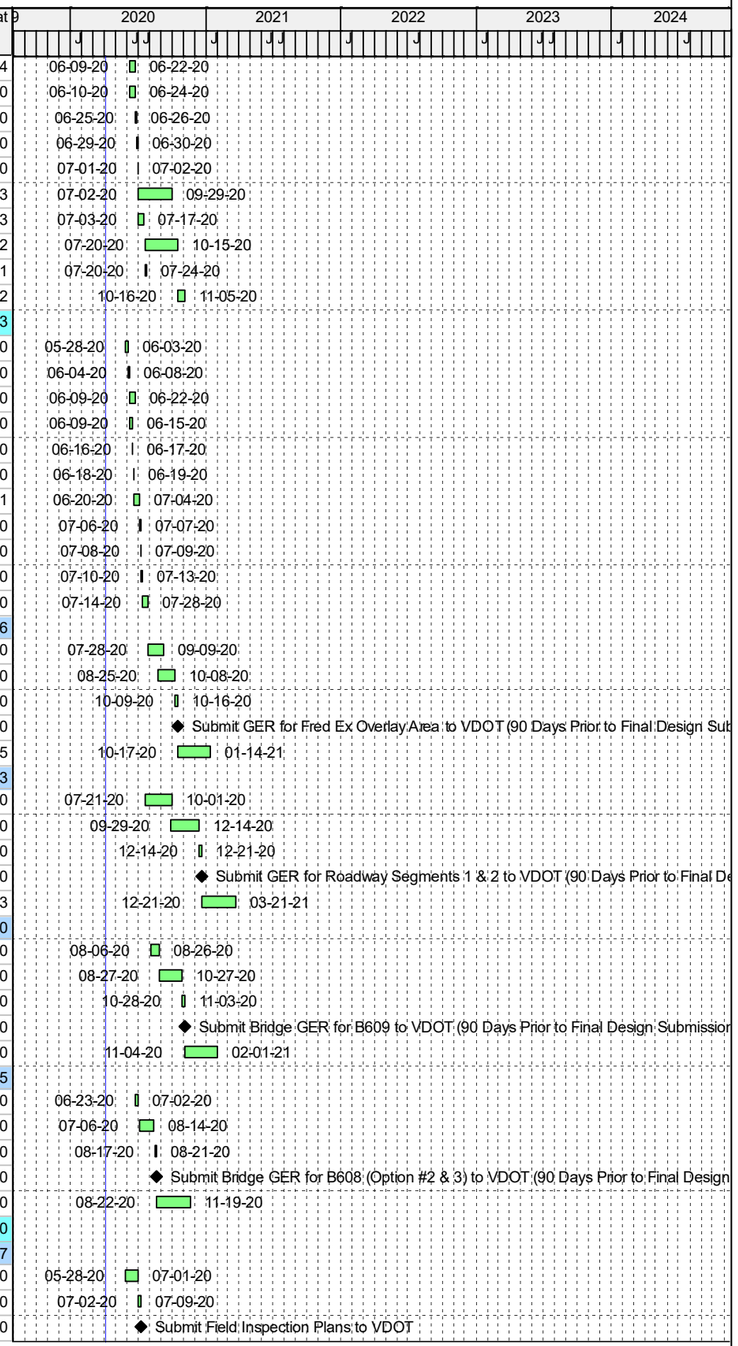
Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

BRANCH CIVIL · FLATIRON · BRANCH - FLATIRON JOINT VENTURE · STV 100 Years

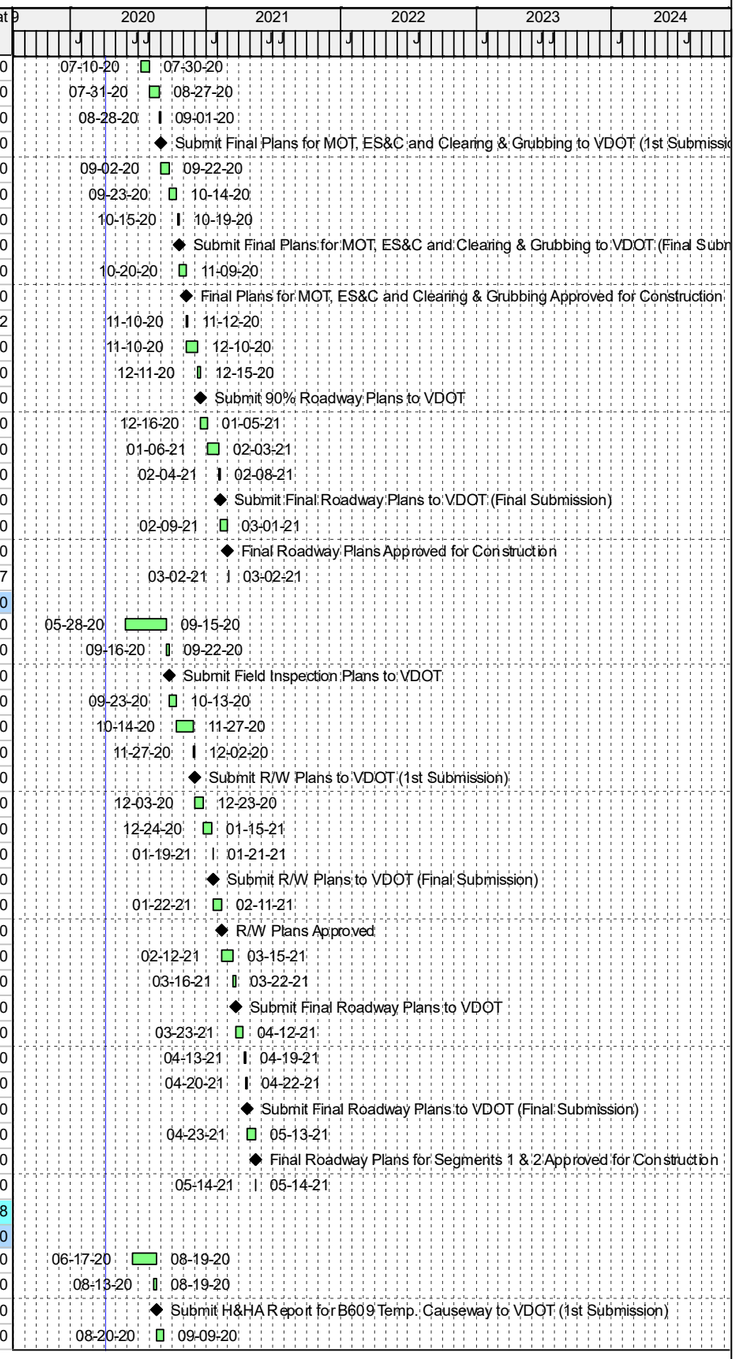
Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
PM-P-1060	Address QA/QC comments and submit Final Heath, Safety and Welfare plan	5	09-16-20	09-22-20	73
PM-P-1070	VDOT reviews and approves Final Heath, Safety and Welfare plan	21	09-23-20	10-13-20	111
PROJECT SCHEDULE		89	05-28-20	10-05-20	78
PM-SC-1010	Prepare and submit Preliminary Schedule	15	05-28-20	06-17-20	79
PM-SC-1020	VDOT reviews and approves Preliminary Schedule	21	06-18-20	07-08-20	118
PM-SC-1030	Prepare and submit Initial Baseline Schedule and Cost Load	15	07-09-20	07-29-20	80
PM-SC-1040	VDOT reviews and comments Initial Baseline Schedule and Cost Load	21	07-30-20	08-19-20	120
PM-SC-1050	Response to VDOT comments Final Baseline Schedule and Cost Load	15	08-20-20	09-14-20	79
PM-SC-1060	VDOT reviews and approves Final Baseline Schedule and Cost Load	21	09-15-20	10-05-20	119
PUBLIC INVOLVEMENT		1004	05-28-20	07-01-24	21
PM-PR-1000	Prepare and Submit initial Public Involvement/Public Relation Plan	10	05-28-20	06-10-20	21
PM-PR-1010	Prepare Public Information and demonstrating Plan for New I-95 northbound CD Lanes and GP Lanes	5	06-11-20	06-17-20	21
PM-PR-1020	VDOT reviews and approves Public Information and demonstrating Plan for CD Lanes and GP Lanes	21	06-18-20	07-08-20	32
PM-PR-1030	Prepare Public Information for Construction, MOT and Phasing Plan on I-95, Route 3 and Route 17	5	07-09-20	07-15-20	22
PM-PR-1040	VDOT reviews and approves Public Information for Construction, MOT and Phasing Plan on I-95, Route 3 and Route 17	21	07-16-20	08-05-20	31
PM-PR-1050	Monthly meeting Start Milestone	0	08-06-20		31
PM-PR-1060	Public Involvement/Public Relation Monthly meeting with VDOT	1425	08-07-20	07-01-24	30
PM-PR-1080	"Pardon Our Dust" meeting for Segment 3 - Modification I-95 NB CD Lanes and Ramp C2 (Hold Point)	0		10-13-20*	17
PM-PR-1100	"Pardon Our Dust" meeting for Segment 2 & 2a - Construction Bridge B608 over Route 17 and Route 17 Mod (Hold Point)	0		04-14-21*	34
PM-PR-1090	"Pardon Our Dust" meeting for Segment 1 Construction New I-95 northbound CD Lanes, GP Lanes and Bridge B609 (Hold Point)	0		04-19-21*	0
PM-PR-1070	Public Involvement/Public Relation Monthly meeting Finish Milestone	0		07-01-24	30
DESIGN		1061	05-04-20	08-29-24	1
SCOPE VALIDATION PERIOD		171	05-28-20	11-14-20	159
STV-SV-1010	Perform Scope Validation Investigation & Submit General Notice	120	05-28-20	09-24-20	159
STV-SV-1020	Prepare & Submit Supporting Documentation for Scope Issues	21	09-25-20	10-15-20	159
STV-SV-1030	Resolution of Scope Issues	30	10-16-20	11-14-20	159
DESIGN PHASE		1020	05-04-20	07-01-24	43
DESIGN EXCEPTIONS AND DESIGN WAIVERS		15	06-18-20	07-09-20	1016
STV-WV-1010	Verify Approved Design Waivers	15	06-18-20	07-09-20	1016
3D MODEL MANAGEMENT PLAN & 3D MODEL SUBMISSIONS		1004	05-28-20	07-01-24	43
STV-3D-1010	Develop Preliminary Model Management Plan	18	05-28-20	06-22-20	0
STV-3D-1020	Design QA/QC Preliminary Model Management Plan	4	06-23-20	06-26-20	0
STV-3D-1030	Submit Preliminary Model Management Plan to VDOT_(Hold Point)	0		06-26-20*	0
STV-3D-1040	VDOT Review and Approval of Preliminary Model Management Plan	21	06-27-20	07-17-20	2
STV-3D-1050	Develop Final Model Management Plan	44	07-20-20	09-22-20	0
STV-3D-1060	Design QA/QC of Final Model Management Plan	3	09-23-20	09-25-20	0
STV-3D-1080	Submit Final Model Management Plan to VDOT_(Hold Point)	0		09-25-20*	0
STV-3D-1100	VDOT Review and Approval of Final Model Management Plan	21	09-26-20	10-16-20	60
STV-3D-1110	Submit 3D Model for B608 with RFC Plans	0		02-02-21	155
STV-3D-1120	Submit 3D Model for Roadway Segments 1 and 2 with R/W Plans	0		02-11-21	0
STV-3D-1130	Submit 3D Model for Fred Ex Overlap Area (Early Work Package) with RFC Plans	0		03-02-21	136
STV-3D-1150	Submit 3D Model for B609 with RFC Plans	0		04-30-21	94
STV-3D-1140	Submit 3D Model for Roadway Segments 1 and 2 with RFC Plans	0		05-14-21	84
STV-3D-1160	Submit Consolidated 3D Model	0		06-29-21	84
STV-3D-1170	Submit As-Built Model	0		07-01-24	43
STV-3D-1180	Submit As-Built LandXML File	0		07-01-24	43
SUPPLEMENTAL SURVEY		111	05-28-20	11-05-20	2
STV-SU-1010	Prepare & Submit Draft Property Owner Permission-to-Enter Letter & Address Listing	5	05-28-20	06-03-20	0
STV-SU-1030	VDOT Review and Approval of Property Owner Permission-to-Enter Notification Letter	2	06-04-20	06-05-20	0
STV-SU-1040	Mail Property Owner Permission-to-Enter Letters Providing 15 Day Notice	2	06-08-20	06-09-20	0



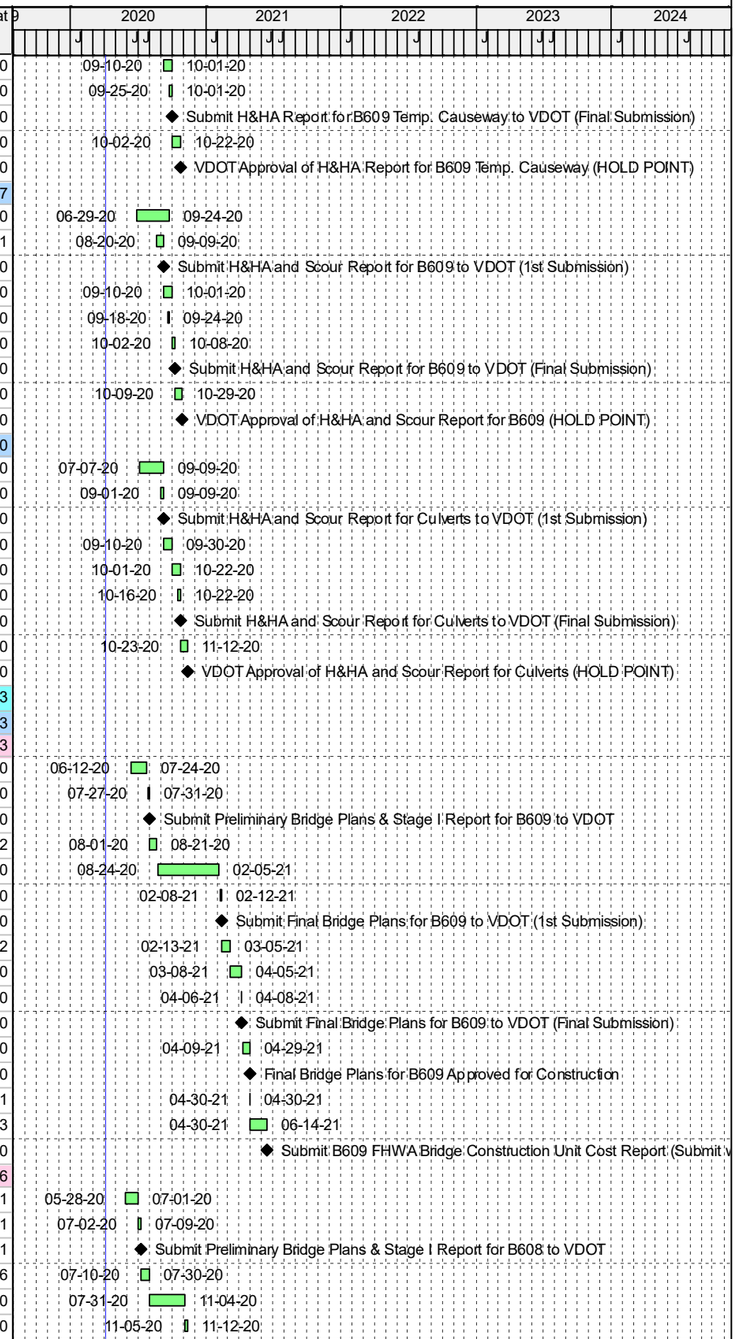
Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
STV-SU-1050	Stake Geotechnical Boring Locations	10	06-09-20	06-22-20	24
STV-SU-1060	Property Owner Wait Period (15 Days)	15	06-10-20	06-24-20	0
STV-SU-1070	Prepare & Submit Draft Property Owner Intent to Enter Letters	2	06-25-20	06-26-20	0
STV-SU-1080	VDOT Review and Approval of Property Owner Notice to Enter Letters	2	06-29-20	06-30-20	0
STV-SU-1090	Mail Property Owner Intent to Enter Letters Providing 15 Day Notice	2	07-01-20	07-02-20	0
STV-SU-1020	Perform Supplemental Survey & SUE	60	07-02-20	09-29-20	13
STV-SU-1100	Property Owner Wait Period (15 Days)	15	07-03-20	07-17-20	3
STV-SU-1110	Perform Supplemental Survey & SUE on Parcels Requiring Property Access	60	07-20-20	10-15-20	2
STV-SU-1120	Stake Geotechnical Boring Locations on Parcels Requiring Property Access	5	07-20-20	07-24-20	1
STV-SU-1130	Update Base Mapping Files	15	10-16-20	11-05-20	2
GEOTECNICAL ENGINEERING & SUBSURFACE INVESTIGATIONS		200	05-28-20	03-21-21	23
STV-GO-1010	Prepare and Submit Geotechnical Boring Location Plan	5	05-28-20	06-03-20	0
STV-GO-1020	Review of Geotechnical Boring Location Plan (Internal Only)	3	06-04-20	06-08-20	0
STV-GO-1030	Clear Utilities as Required	10	06-09-20	06-22-20	0
STV-GO-1040	Prepare & Submit Draft Property Owner Permission-to-Enter Letter & Address Listing	5	06-09-20	06-15-20	0
STV-GO-1050	VDOT Review and Approval of Property Owner Permission-to-Enter Notification Letter	2	06-16-20	06-17-20	0
STV-GO-1060	Mail Property Owner Permission-to-Enter Letters Providing 15 Day Notice	2	06-18-20	06-19-20	0
STV-GO-1070	Property Owner Wait Period (15 Days)	15	06-20-20	07-04-20	1
STV-GO-1080	Prepare & Submit Draft Property Owner Intent to Enter Letters	2	07-06-20	07-07-20	0
STV-GO-1090	VDOT Review and Approval of Property Owner Notice to Enter Letters	2	07-08-20	07-09-20	0
STV-GO-1100	Mail Property Owner Intent to Enter Letters Providing 15 Day Notice	2	07-10-20	07-13-20	0
STV-GO-1110	Property Owner Wait Period (15 Days)	15	07-14-20	07-28-20	0
GEOTECHNICAL ENGINEERING REPORT (GER) FOR PROJECT OVERLAP AREA WITH FRED EX		114	07-28-20	01-14-21	16
STV-GO-2010	Geotechnical Field Investigations, Laboratory Testing, & Analysis for FredEx Overlap Area	30	07-28-20	09-09-20	0
STV-GO-2020	Prepare Roadway Geotechnical Engineering Report (GER) for Fred Ex Overlap Area	30	08-25-20	10-08-20	0
STV-GO-2030	Design QA/QC of GER for Fred Ex Overlap Area	5	10-09-20	10-16-20	0
STV-GO-2040	Submit GER for Fred Ex Overlay Area to VDOT (90 Days Prior to Final Design Submission)	0		10-16-20*	0
STV-GO-2050	VDOT Review and Approval of GER for Fred Ex Overlap Area	90	10-17-20	01-14-21	25
GER FOR ROADWAY SEGMENTS 1 & 2		163	07-21-20	03-21-21	23
STV-GO-3010	Geotechnical Field Investigations, Laboratory Testing, & Analysis for Roadway Segments 1 & 2	50	07-21-20	10-01-20	0
STV-GO-3020	Prepare Roadway Geotechnical Engineering Report (GER) for Roadway Segments 1 & 2	50	09-29-20	12-14-20	0
STV-GO-3030	Design QA/QC of GER for Roadway Segments 1 & 2	5	12-14-20	12-21-20	0
STV-GO-3040	Submit GER for Roadway Segments 1 & 2 to VDOT (90 Days Prior to Final Design Submission)	0		12-21-20*	0
STV-GO-3050	VDOT Review and Approval of GER for Roadway Segments 1 & 2	90	12-21-20	03-21-21	33
GER FOR I-95 NB GP LANES OVER RAPPAHANNOCK RIVER (B609)		118	08-06-20	02-01-21	0
STV-GO-4010	Geotechnical Field Investigations, Laboratory Testing, & Analysis for B609	15	08-06-20	08-26-20	0
STV-GO-4020	Prepare Bridge GER for B609	40	08-27-20	10-27-20	0
STV-GO-4030	Design QA/QC Review of Bridge GER for B609	5	10-28-20	11-03-20	0
STV-GO-4040	Submit Bridge GER for B609 to VDOT (90 Days Prior to Final Design Submission)	0		11-03-20*	0
STV-GO-4050	VDOT Review and Approval of GER for B609	90	11-04-20	02-01-21	0
GER FOR I-95 NB CD ANES OVER RTE. 17 (OPTION 2 & 3) (B608)		102	06-23-20	11-19-20	45
STV-GO-5010	Geotechnical Field Investigations, Laboratory Testing, & Analysis for B608 (Option #2 & 3)	8	06-23-20	07-02-20	0
STV-GO-5020	Prepare Bridge GER for B608 (Option #2 & 3)	30	07-06-20	08-14-20	0
STV-GO-5030	Design QA/QC Review of Bridge GER for B608 (Option #2 & 3)	5	08-17-20	08-21-20	0
STV-GO-5040	Submit Bridge GER for B608 (Option #2 & 3) to VDOT (90 Days Prior to Final Design Submission)	0		08-21-20*	0
STV-GO-5050	VDOT Review and Approval of GER for B608 (Option #2 & 3)	90	08-22-20	11-19-20	70
ROADWAY PLANS (RDWAY, DRAINAGE, SWM, E&S, RET'N WALLS, MOT, TMP, PV MARK'N, SIGN, SIGNAL, ITS & LT)		239	05-28-20	05-14-21	0
PROJECT OVERLAP AREA WITH FRED EX (EARLY WORK PACKAGE)		187	05-28-20	03-02-21	17
STV-FRE-1020	Prepare Field Inspection Plans	25	05-28-20	07-01-20	0
STV-FRE-1030	Design QA/QC Review of Field Inspection Plans	5	07-02-20	07-09-20	0
STV-FRE-1040	Submit Field Inspection Plans to VDOT	0		07-09-20*	0



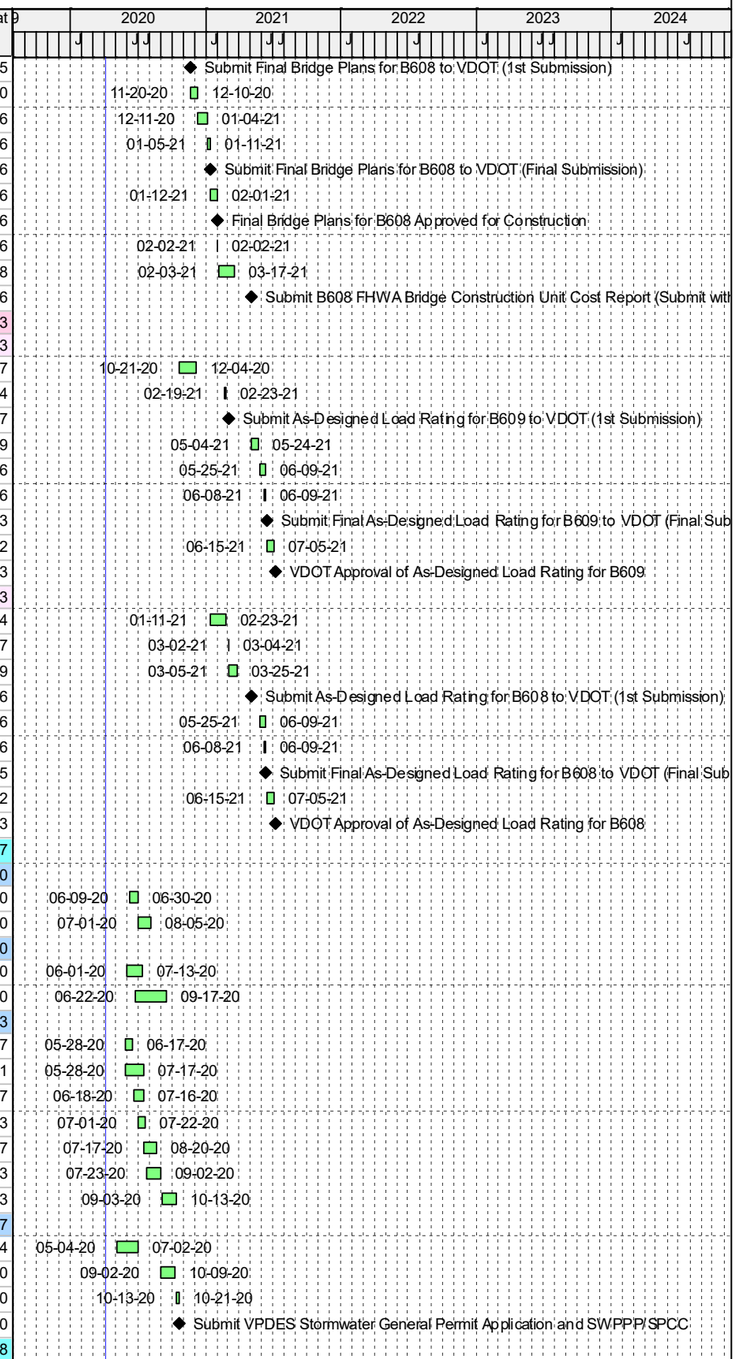
Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
STV-FRE-1050	VDOT Review of Field Inspection Plans	21	07-10-20	07-30-20	0
STV-FRE-1060	Address Comments and Prepare Final Plans for MOT, ES&C and Clearing & Grubbing	20	07-31-20	08-27-20	0
STV-FRE-1070	Design QA/QC Review of Final Plans for MOT, ES&C and Clearing & Grubbing	3	08-28-20	09-01-20	0
STV-FRE-1080	Submit Final Plans for MOT, ES&C and Clearing & Grubbing to VDOT (1st Submission)	0		09-01-20*	0
STV-FRE-1090	VDOT Review of Final Plans for MOT, ES&C and Clearing & Grubbing (1st Submission)	21	09-02-20	09-22-20	0
STV-FRE-1100	Address Comments / Revise Final Plans for MOT, ES&C and Clearing & Grubbing	15	09-23-20	10-14-20	0
STV-FRE-1110	Design QA/QC Review of Final Plans for MOT, ES&C and Clearing & Grubbing	3	10-15-20	10-19-20	0
STV-FRE-1120	Submit Final Plans for MOT, ES&C and Clearing & Grubbing to VDOT (Final Submission)	0		10-19-20	0
STV-FRE-1130	VDOT Review of Final Plans for MOT, ES&C and Clearing & Grubbing (Final Submission)	21	10-20-20	11-09-20	0
STV-FRE-1140	Final Plans for MOT, ES&C and Clearing & Grubbing Approved for Construction	0		11-09-20	0
STV-FRE-1150	Final Plans for MOT, ES&C and Clearing & Grubbing for FredEx Overlap Area Released for Construction	2	11-10-20	11-12-20	62
STV-FRE-1160	Prepare 90% Roadway Plans	20	11-10-20	12-10-20	0
STV-FRE-1170	Design QA/QC Review of 90% Roadway Plans	3	12-11-20	12-15-20	0
STV-FRE-1180	Submit 90% Roadway Plans to VDOT	0		12-15-20*	0
STV-FRE-1190	VDOT Review of 90% Roadway Plans	21	12-16-20	01-05-21	0
STV-FRE-1200	Address Comments / Revise Final Roadway Plans	20	01-06-21	02-03-21	0
STV-FRE-1210	Design QA/QC Final Roadway Plans	3	02-04-21	02-08-21	0
STV-FRE-1220	Submit Final Roadway Plans to VDOT (Final Submission)	0		02-08-21*	0
STV-FRE-1230	VDOT Review of Final Roadway Plans (Final Submission)	21	02-09-21	03-01-21	0
STV-FRE-1240	Final Roadway Plans Approved for Construction	0		03-01-21*	0
STV-FRE-1250	Final Roadway Plans for Fred Ex Overlap Area Released for Construction	1	03-02-21	03-02-21	17
ROADWAY SEGMENTS 1 & 2 (BASE DESIGN, INCLUDING OPTION 1, 2 & 3)		239	05-28-20	05-14-21	0
STV-SG1&2-1010	Prepare Field Inspection Plans	75	05-28-20	09-15-20	0
STV-SG1&2-1020	Design QA/QC Review of Field Inspection Plans	5	09-16-20	09-22-20	0
STV-SG1&2-1030	Submit Field Inspection Plans to VDOT	0		09-22-20	0
STV-SG1&2-1040	VDOT Review of Field Inspection Plans	21	09-23-20	10-13-20	0
STV-SG1&2-1050	Address Comments and Prepare Roadway R/W Plans	30	10-14-20	11-27-20	0
STV-SG1&2-1060	Design QA/QC Review of R/W Plans	3	11-27-20	12-02-20	0
STV-SG1&2-1070	Submit R/W Plans to VDOT (1st Submission)	0		12-02-20	0
STV-SG1&2-1080	VDOT Review of R/W Plans (1st Submission)	21	12-03-20	12-23-20	0
STV-SG1&2-1090	Address Comments / Revise R/W Plans	15	12-24-20	01-15-21	0
STV-SG1&2-1100	Design QA/QC Review of R/W Plans	3	01-19-21	01-21-21	0
STV-SG1&2-1110	Submit R/W Plans to VDOT (Final Submission)	0		01-21-21	0
STV-SG1&2-1120	VDOT Review of R/W Plans (Final Submission)	21	01-22-21	02-11-21	0
STV-SG1&2-1130	R/W Plans Approved	0		02-11-21*	0
STV-SG1&2-1140	Prepare Final Roadway Plans	21	02-12-21	03-15-21	0
STV-SG1&2-1150	Design QA/QC Review of Final Roadway Plans	5	03-16-21	03-22-21	0
STV-SG1&2-1160	Submit Final Roadway Plans to VDOT	0		03-22-21*	0
STV-SG1&2-1170	VDOT Review and Approval of Final Roadway Plans (1st Submission)	21	03-23-21	04-12-21	0
STV-SG1&2-1180	Address Comments / Revise Final Roadway Plans	5	04-13-21	04-19-21	0
STV-SG1&2-1190	Design QA/QC Final Roadway Plans	3	04-20-21	04-22-21	0
STV-SG1&2-1200	Submit Final Roadway Plans to VDOT (Final Submission)	0		04-22-21	0
STV-SG1&2-1210	VDOT Review of Final Roadway Plans (Final Submission)	21	04-23-21	05-13-21	0
STV-SG1&2-1220	Final Roadway Plans for Segments 1 & 2 Approved for Construction	0		05-13-21*	0
STV-SG1&2-1230	Final Roadway Plans for Segments 1 & 2 Released for Construction	1	05-14-21	05-14-21	0
HYDROLOGIC AND HYDRAULIC ANALYSIS (H&HA) AND SCOUR ANALYSIS		101	06-17-20	11-12-20	98
H&HA REPORT FOR B609 TEMP. CAUSEWAY		87	06-17-20	10-22-20	0
STV-HA-1020	Prepare H&HA Report for B609 Temp. Causeway	45	06-17-20	08-19-20	0
STV-HA-1030	Design QA/QC Review of H&HA Report for B609 Temp. Causeway	5	08-13-20	08-19-20	0
STV-HA-1040	Submit H&HA Report for B609 Temp. Causeway to VDOT (1st Submission)	0		08-19-20*	0
STV-HA-1050	VDOT Review & Comment on H&HA Report for B609 Temp. Causeway (1st Submission)	21	08-20-20	09-09-20	0



Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
STV-HA-1060	Address Comments / Revise H&HA Report for B609 Temp. Causeway	15	09-10-20	10-01-20	0
STV-HA-1070	Design QA/QC - H&HA Report for B609 Temp. Causeway	5	09-25-20	10-01-20	0
STV-HA-1080	Submit H&HA Report for B609 Temp. Causeway to VDOT (Final Submission)	0		10-01-20*	0
STV-HA-1090	VDOT Review of H&HA Report for B609 Temp. Causeway (Final Submission)	21	10-02-20	10-22-20	0
STV-HA-1100	VDOT Approval of H&HA Report for B609 Temp. Causeway (HOLD POINT)	0		10-22-20*	0
H&HA AND SCOUR ANALYSIS REPORT FOR B609		84	06-29-20	10-29-20	107
STV-HA-2010	Prepare H&HA and Scour Analysis Report for B609	60	06-29-20	09-24-20	10
STV-HA-2020	VDOT Review & Comment on H&HA and Scour Report for B609 (1st Submission)	21	08-20-20	09-09-20	211
STV-HA-2030	Submit H&HA and Scour Report for B609 to VDOT (1st Submission)	0		09-09-20	0
STV-HA-2040	Address Comments / Revise H&HA and Scour Report for B609	15	09-10-20	10-01-20	0
STV-HA-2050	Design QA/QC Review of H&HA and Scour Analysis Report for B609	5	09-18-20	09-24-20	10
STV-HA-2060	Design QA/QC - H&HA and Scour Report for B609	5	10-02-20	10-08-20	0
STV-HA-2070	Submit H&HA and Scour Report for B609 to VDOT (Final Submission)	0		10-08-20*	0
STV-HA-2080	VDOT Review of H&HA and Scour Report for B609 (Final Submission)	21	10-09-20	10-29-20	0
STV-HA-2090	VDOT Approval of H&HA and Scour Report for B609 (HOLD POINT)	0		10-29-20*	0
H&HA AND SCOUR REPORT FOR CULVERTS		88	07-07-20	11-12-20	0
STV-HA-3010	Prepare H&HA and Scour Analysis Report for Culverts	45	07-07-20	09-09-20	0
STV-HA-3020	Design QA/QC Review of H&HA and Scour Analysis Report for Culverts	5	09-01-20	09-09-20	0
STV-HA-3030	Submit H&HA and Scour Report for Culverts to VDOT (1st Submission)	0		09-09-20	0
STV-HA-3040	VDOT Review & Comment on H&HA and Scour Report for Culverts (1st Submission)	21	09-10-20	09-30-20	0
STV-HA-3050	Address Comments / Revise H&HA and Scour Report for Culverts	15	10-01-20	10-22-20	0
STV-HA-3060	Design QA/QC - H&HA and Scour Report for Culverts	5	10-16-20	10-22-20	0
STV-HA-3070	Submit H&HA and Scour Report for Culverts to VDOT (Final Submission)	0		10-22-20	0
STV-HA-3080	VDOT Review of H&HA and Scour Report for Culverts (Final Submission)	21	10-23-20	11-12-20	0
STV-HA-3090	VDOT Approval of H&HA and Scour Report for Culverts (HOLD POINT)	0		11-12-20*	0
BRIDGE DESIGN		272	05-28-20	07-06-21	753
ROADWAY SEGMENTS 1 & 2 (BASE DESIGN, INCLUDING OPTIONS 2 & 3)		272	05-28-20	07-06-21	753
I-95 NB GP LANES OVER RAPPAHANNOCK RIVER (B609)		247	06-12-20	06-14-21	43
STV-B609-1010	Prepare Preliminary Bridge Plans & Stage I Report for B609 (Stage I Bridge Design)	30	06-12-20	07-24-20	0
STV-B609-1020	Design QA/QC - Stage I Bridge Design for B609	5	07-27-20	07-31-20	0
STV-B609-1030	Submit Preliminary Bridge Plans & Stage I Report for B609 to VDOT	0		07-31-20*	0
STV-B609-1040	VDOT Review & Comment on Preliminary Bridge Plans & Stage I Report for B609	21	08-01-20	08-21-20	2
STV-B609-1050	Address Comments and Prepare Final Plans for B609 (Stage II Bridge Design)	110	08-24-20	02-05-21	0
STV-B609-1060	Design QA/QC - Stage II Bridge Design for B609	5	02-08-21	02-12-21	0
STV-B609-1070	Submit Final Bridge Plans for B609 to VDOT (1st Submission)	0		02-12-21*	0
STV-B609-1080	VDOT Review & Comment on Final Bridge Plans for B609 (1st Submission)	21	02-13-21	03-05-21	2
STV-B609-1090	Address Comments / Revise Final Bridge Plans for B609	20	03-08-21	04-05-21	0
STV-B609-1100	Design QA/QC - Stage II Bridge Design for B609	3	04-06-21	04-08-21	0
STV-B609-1110	Submit Final Bridge Plans for B609 to VDOT (Final Submission)	0		04-08-21*	0
STV-B609-1120	VDOT Review of Final Bridge Plans for B609 (Final Submission)	21	04-09-21	04-29-21	0
STV-B609-1130	Final Bridge Plans for B609 Approved for Construction	0		04-29-21*	0
STV-B609-1140	Final Bridge Plans for B609 Released for Construction	1	04-30-21	04-30-21	31
STV-B609-1150	Prepare B609 FHWA Bridge Construction Unit Cost Report	30	04-30-21	06-14-21	43
STV-B609-1160	Submit B609 FHWA Bridge Construction Unit Cost Report (Submit within 90 days of B608 Approval)	0		06-14-21	60
I-95 NB CD LANES OVER RTE. 17 (OPTIONS 2 & 3) (B608)		230	05-28-20	05-03-21	46
STV-B608-1010	Prepare Preliminary Bridge Plans & Stage I Report for B608 (Stage I Bridge Design)	25	05-28-20	07-01-20	51
STV-B608-1020	Design QA/QC - Stage I Bridge Design for B608	5	07-02-20	07-09-20	51
STV-B608-1030	Submit Preliminary Bridge Plans & Stage I Report for B608 to VDOT	0		07-09-20	51
STV-B608-1040	VDOT Review & Comment on Preliminary Bridge Plans & Stage I Report for B608	21	07-10-20	07-30-20	76
STV-B608-1050	Address Comments and Prepare Final Plans for B608 (Stage II Bridge Design)	65	07-31-20	11-04-20	50
STV-B608-1060	Design QA/QC - Stage II Bridge Design for B608	5	11-05-20	11-12-20	50



Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
STV-B608-1070	Submit Final Bridge Plans for B608 to VDOT (1st Submission)	0		11-19-20	45
STV-B608-1080	VDOT Review & Comment on Final Bridge Plans for B608 (1st Submission)	21	11-20-20	12-10-20	70
STV-B608-1090	Address Comments / Revise Final Bridge Plans for B608	15	12-11-20	01-04-21	46
STV-B608-1100	Design QA/QC - Stage II Bridge Design for B608	5	01-05-21	01-11-21	46
STV-B608-1110	Submit Final Bridge Plans for B608 to VDOT (Final Submission)	0	01-12-21		46
STV-B608-1120	VDOT Review of Final Bridge Plans for B608 (Final Submission)	21	01-12-21	02-01-21	66
STV-B608-1130	Final Bridge Plans for B608 Approved for Construction	0		02-01-21	46
STV-B608-1140	Final Bridge Plans for B608 Released for Construction	1	02-02-21	02-02-21	46
STV-B608-1150	Prepare B608 FHWA Bridge Construction Unit Cost Report	30	02-03-21	03-17-21	78
STV-B608-1160	Submit B608 FHWA Bridge Construction Unit Cost Report (Submit within 90 days of B608 Approval)	0		05-03-21	46
BRIDGE LOAD RATINGS (AS-DESIGNED)		173	10-21-20	07-06-21	753
AS-DESIGNED LOAD RATING FOR I-95 NB GP LANES OVER RAPPAHANNOCK RIVER (B609)		173	10-21-20	07-06-21	753
STV-B609-3010	Prepare As-Designed Load Rating for B609	30	10-21-20	12-04-20	87
STV-B609-3020	Design QA/QC - As-Designed Load Rating for B609	3	02-19-21	02-23-21	94
STV-B609-3030	Submit As-Designed Load Rating for B609 to VDOT (1st Submission)	0		03-04-21	87
STV-B609-3040	VDOT Review & Comment on As-Designed Load Rating for B609 (1st Submission)	21	05-04-21	05-24-21	69
STV-B609-3050	Address Comments / Revise As-Designed Load Rating for B609	10	05-25-21	06-09-21	46
STV-B609-3060	Design QA/QC - As-Designed Load Rating for B609	2	06-08-21	06-09-21	46
STV-B609-3070	Submit Final As-Designed Load Rating for B609 to VDOT (Final Submission)	0		06-14-21	43
STV-B609-3080	VDOT Review of As-Designed Load Rating for B609 (Final Submission)	21	06-15-21	07-05-21	1122
STV-B609-3090	VDOT Approval of As-Designed Load Rating for B609	0		07-06-21	753
AS-DESIGNED LOAD RATING FOR I-95 NB CD LANES OVER RTE. 17 (OPTIONS 2&3) (B608)		120	01-11-21	07-06-21	753
STV-B608-3010	Prepare As-Designed Load Rating for B608	30	01-11-21	02-23-21	94
STV-B608-3020	Design QA/QC - As-Designed Load Rating for B608	3	03-02-21	03-04-21	87
STV-B608-3040	VDOT Review & Comment on As-Designed Load Rating for B608 (1st Submission)	21	03-05-21	03-25-21	129
STV-B608-3030	Submit As-Designed Load Rating for B608 to VDOT (1st Submission)	0		05-03-21	46
STV-B608-3050	Address Comments / Revise As-Designed Load Rating for B608	10	05-25-21	06-09-21	46
STV-B608-3060	Design QA/QC - As-Designed Load Rating for B608	2	06-08-21	06-09-21	46
STV-B608-3070	Submit Final As-Designed Load Rating for B608 to VDOT (Final Submission)	0		06-09-21	755
STV-B608-3080	VDOT Review of As-Designed Load Rating for B608 (Final Submission)	21	06-15-21	07-05-21	1122
STV-B608-3090	VDOT Approval of As-Designed Load Rating for B608	0		07-06-21	753
ENVIRONMENTAL		116	05-04-20	10-21-20	67
PERMIT FOR GEOTECHNICAL BORINGS		41	06-09-20	08-05-20	0
STV-ENV-2010	Develop and Submit JPA/PCN for NWP 6 for Geotechnical Borings	16	06-09-20	06-30-20	0
STV-ENV-2020	USACE Review and Permit Issuance	25	07-01-20	08-05-20	0
HAZARDOUS MATERIALS		75	06-01-20	09-17-20	90
STV-ENV-3010	Perform Asbestos Inspections on Existing Structures	30	06-01-20	07-13-20	90
STV-ENV-3020	Prepare and Submit Phase I Environmental Site Assessment	60	06-22-20	09-17-20	90
THREATENED AND ENDANGERED SPECIES (T&E)		94	05-28-20	10-13-20	73
STV-ENV-4010	Prepare and Submit to DGIF Mussel Survey/Contingency Relocation Plan	15	05-28-20	06-17-20	107
STV-ENV-4020	Update Small Whorled Pogonia Survey	36	05-28-20	07-17-20	131
STV-ENV-4050	Agency Review and Approval of Mussel Survey/Contingency Relocation Plan	20	06-18-20	07-16-20	107
STV-ENV-4030	Harperella Habitat Survey	15	07-01-20	07-22-20	73
STV-ENV-4070	Complete Mussel Survey and Relocation (If Necessary)	25	07-17-20	08-20-20	107
STV-ENV-4040	Perform Survey of Existing Bridges	30	07-23-20	09-02-20	73
STV-ENV-4060	Complete ESA Section 7 Consultation	25	09-03-20	10-13-20	73
PERMITS FOR PROJECT OVERLAP AREA WITH FRED EX		116	05-04-20	10-21-20	67
STV-ENV-5010	VDOT Review and Coordination with DEQ and Permit Issuance	60	05-04-20	07-02-20	214
STV-ENV-5020	Develop VPDES Stormwater General Permit Application and SWPPP/SPCC	25	09-02-20	10-09-20	0
STV-ENV-5030	Internal Review	7	10-13-20	10-21-20	0
STV-ENV-5040	Submit VPDES Stormwater General Permit Application and SWPPP/SPCC	0		10-21-20*	0
PERMITS FOR ROADWAY SEGMENT 1 & 2 AND CAUSEWAY		193	05-28-20	03-10-21	138



Remaining Level of Effort | Actual Work | Critical Remaining Work
Actual Level of Effort | Remaining Work | Milestone

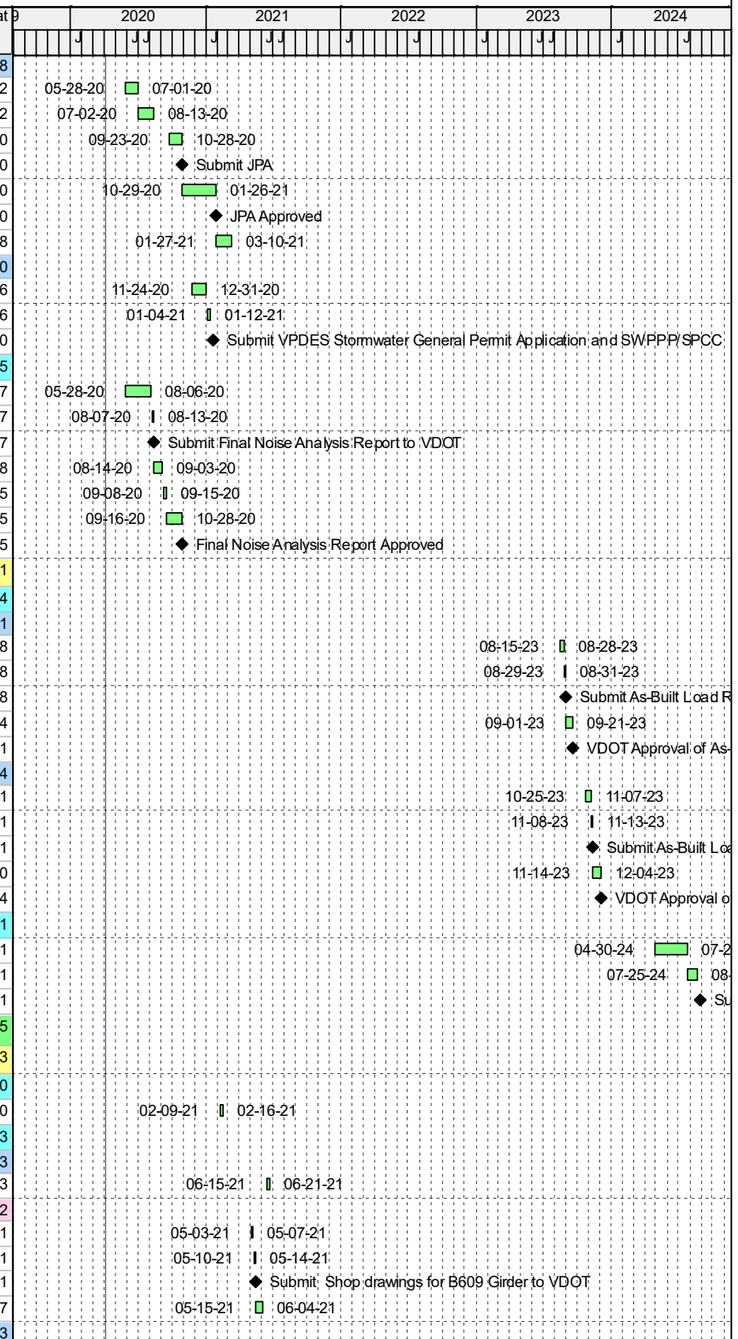
BRANCH CIVIL | FLATIRON | BRANCH - FLATIRON JOINT VENTURE | STV 100 Years

VDOT PROJECT NO. : 0095-111-270
C00105510DB106 : I-95 NB RAPPAHANNOCK RIVER CROSSING

4.6 PROPOSAL SCHEDULE
RRCNB- ALL ACTIVITY

02-21-20 11:26

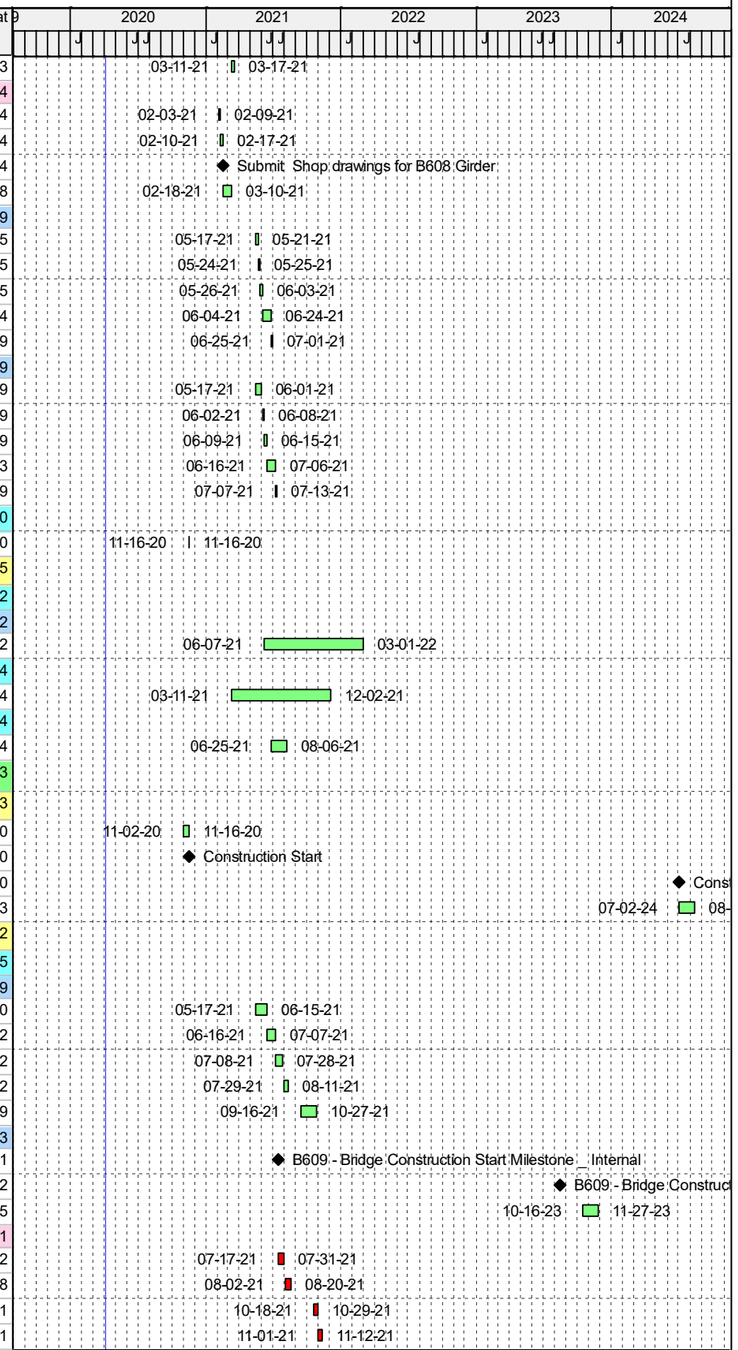
Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
JOINT PERMIT APPLICATION		193	05-28-20	03-10-21	138
STV-ENV-7010	Field Check Wetland Delineation& USM Values	25	05-28-20	07-01-20	112
STV-ENV-7020	Amend COE Jurisdictional Determination (if necessary)	30	07-02-20	08-13-20	112
STV-ENV-7030	Prepare Joint Permit Application (JPA) for WWP-3/SPGP and VMRC SAB Permits	25	09-23-20	10-28-20	0
STV-ENV-7040	Submit JPA	0		10-28-20*	0
STV-ENV-7050	Agency Review of JPA	90	10-29-20	01-26-21	0
STV-ENV-7060	JPA Approved	0		01-26-21*	0
STV-ENV-7070	Purchase Wetland and Stream Mitigation Credits	30	01-27-21	03-10-21	138
VPDES PERMIT		38	11-24-20	01-21-21	0
STV-ENV-8010	Develop VPDES Stormwater General Permit Application and SWPPP/SPCC	25	11-24-20	12-31-20	6
STV-ENV-8020	Internal Review	7	01-04-21	01-12-21	6
STV-ENV-8030	Submit VPDES Stormwater General Permit Application and SWPPP/SPCC	0		01-21-21*	0
NOISE ABATEMENT		105	05-28-20	10-28-20	245
STV-ENV-9010	Prepare Final Noise Analysis Report	50	05-28-20	08-06-20	247
STV-ENV-9020	Design QA/QC - Final Noise Analysis Report	5	08-07-20	08-13-20	247
STV-ENV-9030	Submit Final Noise Analysis Report to VDOT	0		08-13-20	247
STV-ENV-9040	VDOT Review of Final Noise Analysis Report	21	08-14-20	09-03-20	368
STV-ENV-9050	Prepare and Send Benefited Receptors Letters	5	09-08-20	09-15-20	245
STV-ENV-9060	Citizen Survey and VDOT Concurrence Letter	30	09-16-20	10-28-20	245
STV-ENV-9070	Final Noise Analysis Report Approved	0		10-28-20	245
DESIGN SERVICES DURING CONSTRUCTION		255	08-15-23	08-29-24	1
BRIDGE LOAD RATINGS (AS-BUILT)		72	08-15-23	12-04-23	184
AS-BUILT LOAD RATING FOR I-95 NB GP LANES OVER RAPPAHANNOCK RIVER (B609)		25	08-15-23	09-21-23	231
STV-B609-4010	Prepare As-Built Load Rating for B609	10	08-15-23	08-28-23	228
STV-B609-4020	Design QA/QC - As-Built Load Rating for B609	3	08-29-23	08-31-23	228
STV-B609-4030	Submit As-Built Load Rating for B609 to VDOT	0		08-31-23	228
STV-B609-4040	VDOT Review of As-Built Load Rating for B609	21	09-01-23	09-21-23	344
STV-B609-4050	VDOT Approval of As-Built Load Rating for B609	0		09-21-23	231
AS-BUILT LOAD RATING FOR I-95 NB CD LANES OVER RTE. 17 (OPTIONS 2 & 3) (B608)		25	10-25-23	12-04-23	184
STV-B608-4010	Prepare As-Built Load Rating for B608	10	10-25-23	11-07-23	181
STV-B608-4020	Design QA/QC - As-Built Load Rating for B608	3	11-08-23	11-13-23	181
STV-B608-4030	Submit As-Built Load Rating for B608 to VDOT	0		11-13-23	181
STV-B608-4040	VDOT Review of As-Built Load Rating for B608	21	11-14-23	12-04-23	270
STV-B608-4050	VDOT Approval of As-Built Load Rating for B608	0		12-04-23	184
RECORD PLANS (AS-BUILT)		85	04-30-24	08-29-24	1
STV-AB-1010	Prepare Record Plans (As-Built)	60	04-30-24	07-25-24	1
STV-AB-1020	QA/QC Record Plans (As-Built)	20	07-25-24	08-22-24	1
STV-AB-1030	Submit Record Plans (As-Built) to VDOT	0		08-29-24	1
CONSTRUCTION ENGINEERING AND PROCUREMENT		316	11-16-20	03-01-22	305
ENGINEERING		162	11-16-20	07-13-21	413
EARLY WORK PACKAGE - PROJECT OVERLAP AREA WITH FRED EX		5	02-09-21	02-16-21	0
E-EW-1040	Preconstruction Inspection Meeting - Early Work	5	02-09-21	02-16-21	0
STRUCTURES		110	02-03-21	07-13-21	413
B609 BRIDGE		34	05-03-21	06-21-21	43
E-B609-1040	Preconstruction Inspection Meeting for Bridge B609 construction	5	06-15-21	06-21-21	43
B609-BRIDGE GIRDER		23	05-03-21	06-04-21	32
E-B609-4000	Prepare & submit Shop drawings for B609 Girder Plan and Details to Designer	5	05-03-21	05-07-21	31
E-B609-4050	Address Designer comments, Prepare submitttal Package, QA/QC reviews and comments drawings for B609 Girder	5	05-10-21	05-14-21	31
E-B609-4060	Submit Shop drawings for B609 Girder to VDOT	0		05-14-21	31
E-B609-4070	VDOT Approval of Shop drawings for B609 Girder to proceed	21	05-15-21	06-04-21	47
B608 BRIDGE		30	02-03-21	03-17-21	493



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

BRANCH CIVIL | FLATIRON | BRANCH - FLATIRON JOINT VENTURE | STV 100 Years

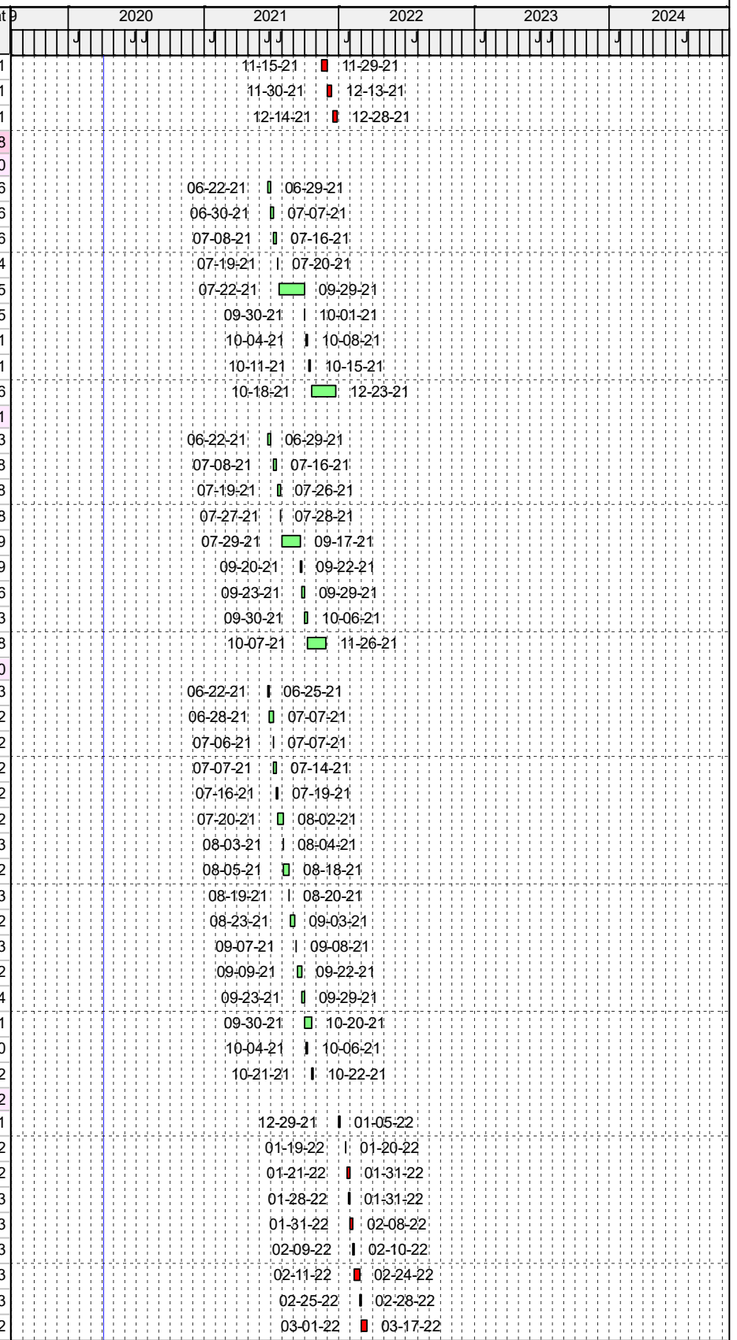
Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
E-B608-0580	Preconstruction Inspection Meeting for Bridge B608 construction	5	03-11-21	03-17-21	493
B608-BRIDGE GIRDER		25	02-03-21	03-10-21	364
E-B608-1040	Prepare Shop drawings for B608 Girder Plan and Details to Designer	5	02-03-21	02-09-21	364
E-B608-1050	Address Designer comments, Prepare submitttal Package, QA/QC reviews and comments drawings for B608 Girder	5	02-10-21	02-17-21	364
E-B608-1060	Submit Shop drawings for B608 Girder	0		02-17-21	364
E-B608-1070	VDOT Approval of Shop drawings for B608 Girder to proceed	21	02-18-21	03-10-21	538
MSE WALL		32	05-17-21	07-01-21	89
E-MSE-1000	Prepare construction plan and source of material for MSE wall	5	05-17-21	05-21-21	85
E-MSE-1010	QA/QC reviews and comments construction plan and SOM for MSE wall	2	05-24-21	05-25-21	85
E-MSE-1020	Address QA/QC comments and submit construction plan and SOM for MSE wall	5	05-26-21	06-03-21	85
E-MSE-1030	VDOT reviews and approves construction plan and SOM for MSE wall	21	06-04-21	06-24-21	124
E-MSE-1040	Preconstruction Inspection Meeting for MSE wall	5	06-25-21	07-01-21	89
NOISE WALL		39	05-17-21	07-13-21	339
E-NOI-1000	Prepare construction plan and source of material for Noise wall	10	05-17-21	06-01-21	339
E-NOI-1010	QA/QC reviews and comments construction plan and SOM for Noise wall	5	06-02-21	06-08-21	339
E-NOI-1020	Address QA/QC comments and submit construction plan and SOM for Noise wall	5	06-09-21	06-15-21	339
E-NOI-1030	VDOT reviews and approves construction plan and SOM for Noise wall	21	06-16-21	07-06-21	503
E-NOI-1040	QA/QC provides Preconstruction Inspection Meeting for Noise wall	5	07-07-21	07-13-21	339
ROADWAY PLANS - ROAD DRAINAGE, SWM, E&S, RET. WALL, MOT, TMP, PV MARKINGS, SIGN, SIGNALS, LIGHT &ITS		1	11-16-20	11-16-20	60
E-RD-1040	Preconstruction Inspection Meeting for Roadway and Drainage Construction	1	11-16-20	11-16-20	60
PROCUREMENT		239	03-11-21	03-01-22	305
BRIDGE B609		180	06-07-21	03-01-22	32
B609 SUPERSTRUCTURE		180	06-07-21	03-01-22	32
P-B609-1040	B609-Procurement Girders	180	06-07-21	03-01-22	32
BRIDGE B608		180	03-11-21	12-02-21	364
P-B608-1000	B608-Procurement Girders	180	03-11-21	12-02-21	364
MSE AND NOISE WALLS		30	06-25-21	08-06-21	84
P-SW-1000	Procurement materials for MSE walls and Noise walls - Project wide	30	06-25-21	08-06-21	84
CONSTRUCTION		927	11-02-20	08-13-24	13
MOBILIZATION AND DEMOBILIZATION		927	11-02-20	08-13-24	13
C-MOB-1000	Construction Mobilization - Early Work Package "Project Overlap Area with Fred Ex"	10	11-02-20	11-16-20	60
C-MOB-1010	Construction Start	0	11-17-20		60
C-MOB-1020	Construction Finish	0		07-01-24	0
C-MOB-1030	Construction Demobilization	30	07-02-24	08-13-24	13
SEGMENT 1		721	05-17-21	04-29-24	42
PHASE 1 I 95 NB NEW GP LANES, RAMP C AND B609 BRIDGE		618	05-17-21	11-27-23	145
GENERAL REQUIREMENT - UTILITY RELOCATIONS, MOT, E&SC AND CLEARING & GRUBBING		112	05-17-21	10-27-21	9
C-S1P1-1010	Utility relocations per Plan	20	05-17-21	06-15-21	0
C-S1P1-1020	Install temporary MOT signs and features per approved MOT Plan Segment 1 Phase 1	15	06-16-21	07-07-21	32
C-S1P1-1030	Establish construction entrances Segment 1 Phase 1	15	07-08-21	07-28-21	32
C-S1P1-1040	Install silt fences and E&S control features Segment 1 Phase 1	10	07-29-21	08-11-21	32
C-S1P1-1050	Clearing & Grubbing Segment 1 Phase 1	30	09-16-21	10-27-21	9
STRUCTURE - B609 BRIDGE CONSTRUCTION		594	06-22-21	11-27-23	53
C-B609-M1	B609 - Bridge Construction Start Milestone _ Internal	0	07-17-21		761
C-B609-M3	B609 - Bridge Construction Finish Milestone_ Internal	0		08-14-23	2
C-B609-M2	B609 - Remove causeway	30	10-16-23	11-27-23	55
B609 CAUSEWAY		109	07-17-21	12-28-21	11
C-CW-0911	Causeway - Causeway Access available	15	07-17-21	07-31-21	72
C-CW-1000	Causeway - Review and prepare to construct river access	15	08-02-21	08-20-21	48
C-CW-1010	Causeway - Place class I rip rap stone causeway	10	10-18-21	10-29-21	11
C-CW-1020	Causeway - Place aggregate surface causeway	10	11-01-21	11-12-21	11



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

BRANCH CIVIL · FLATIRON · BRANCH - FLATIRON JOINT VENTURE · STV 100 Years

Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
C-CW-1030	Causeway - Place temporary bridge causeway	10	11-15-21	11-29-21	11
C-CW-1040	Causeway - Place aggregate surface causeway	10	11-30-21	12-13-21	11
C-CW-1050	Causeway - Complete causeway construction	10	12-14-21	12-28-21	11
SUBSTRUCTURE		229	06-22-21	05-25-22	88
APPROACH ABUTMENT A		125	06-22-21	12-23-21	40
C-B609-1000	Abut A - Mobilize Crane	5	06-22-21	06-29-21	36
C-B609-1010	Abut A - Install Temp Shoring	5	06-30-21	07-07-21	36
C-B609-1020	Abut A - Drive Abutment Pile	5	07-08-21	07-16-21	36
C-B609-1030	Abut A - Pour Level Pad	2	07-19-21	07-20-21	44
C-B609-1040	Abut A - Construct MSE Wall	40	07-22-21	09-29-21	35
C-B609-1050	Abut A - Rebar for Abutment Cap	2	09-30-21	10-01-21	35
C-B609-1060	Abut A - F/P/S Abutment	5	10-04-21	10-08-21	41
C-B609-1070	Abut A - F/P/S Backwall	5	10-11-21	10-15-21	41
C-B609-1080	Abut A - Place approach fill to top of backwall for start of launching operation	40	10-18-21	12-23-21	36
APPROACH ABUTMENT B		107	06-22-21	11-26-21	211
C-B609-2000	Abut B - Mobilize Crane	5	06-22-21	06-29-21	123
C-B609-2010	Abut B - Install Temp Shoring	5	07-08-21	07-16-21	118
C-B609-2020	Abut B - Drive Abutment Pile	5	07-19-21	07-26-21	118
C-B609-2030	Abut B - Pour Level Pad	2	07-27-21	07-28-21	108
C-B609-2040	Abut B - Construct MSE Wall	30	07-29-21	09-17-21	119
C-B609-2050	Abut B - Rebar for Abutment Cap	2	09-20-21	09-22-21	119
C-B609-2060	Abut B - F/P/S Abutment	5	09-23-21	09-29-21	106
C-B609-2070	Abut B - F/P/S Backwall	5	09-30-21	10-06-21	183
C-B609-2080	Abut B - Place approach fill to top of backwall	30	10-07-21	11-26-21	178
PIER 1		85	06-22-21	10-22-21	80
C-B609-3000	P1 - Mobilize Crane	3	06-22-21	06-25-21	43
C-B609-3010	P1 - F/P/S Footing	7	06-28-21	07-07-21	52
C-B609-3020	P1 - Install Footing Rebar - assume mostly pre-tied	2	07-06-21	07-07-21	42
C-B609-3030	P1 - Assemble Column Forms	5	07-07-21	07-14-21	42
C-B609-3040	P1 - Install Column Rebar 1st pour	2	07-16-21	07-19-21	42
C-B609-3050	P1 - F/P/S/C - Column 1st pour	10	07-20-21	08-02-21	52
C-B609-3060	P1 - Install Column Rebar 2nd pour	2	08-03-21	08-04-21	43
C-B609-3070	P1 - F/P/S/C - Column 2nd pour	10	08-05-21	08-18-21	52
C-B609-3080	P1 - Install Column Rebar 3rd pour	2	08-19-21	08-20-21	43
C-B609-3090	P1 - F/P/S/C - Column 3rd pour	10	08-23-21	09-03-21	52
C-B609-3100	P1 - Install Column Rebar 4th pour	2	09-07-21	09-08-21	43
C-B609-3110	P1 - F/P/S/C - Column 4th pour	10	09-09-21	09-22-21	52
C-B609-3120	P1 - Assemble Cap Forms	4	09-23-21	09-29-21	44
C-B609-3130	P1 - F/P/S/C - Cap	15	09-30-21	10-20-21	51
C-B609-3140	P1 - Install Cap Rebar - assume mostly pre-tied	3	10-04-21	10-06-21	80
C-B609-3150	P1 - Upfit cap for Launching Equipment (rollers, etc.)	2	10-21-21	10-22-21	72
PIER 2		101	12-29-21	05-24-22	2
C-B609-4000	P2 - Cofferdam Installation	5	12-29-21	01-05-22	11
C-B609-4010	P2 - Pour Seal Slab	2	01-19-22	01-20-22	2
C-B609-4020	P2 - F/P/S Footing	7	01-21-22	01-31-22	2
C-B609-4030	P2 - Install Footing Rebar - assume mostly pre-tied	2	01-28-22	01-31-22	3
C-B609-4040	P2 - Assemble Column Forms	5	01-31-22	02-08-22	3
C-B609-4050	P2 - Install Column Rebar 1st pour	2	02-09-22	02-10-22	3
C-B609-4060	P2 - F/P/S/C - Column 1st pour	10	02-11-22	02-24-22	3
C-B609-4070	P2 - Install Column Rebar 2nd pour	2	02-25-22	02-28-22	3
C-B609-4080	P2 - F/P/S/C - Column 2nd pour	10	03-01-22	03-17-22	2

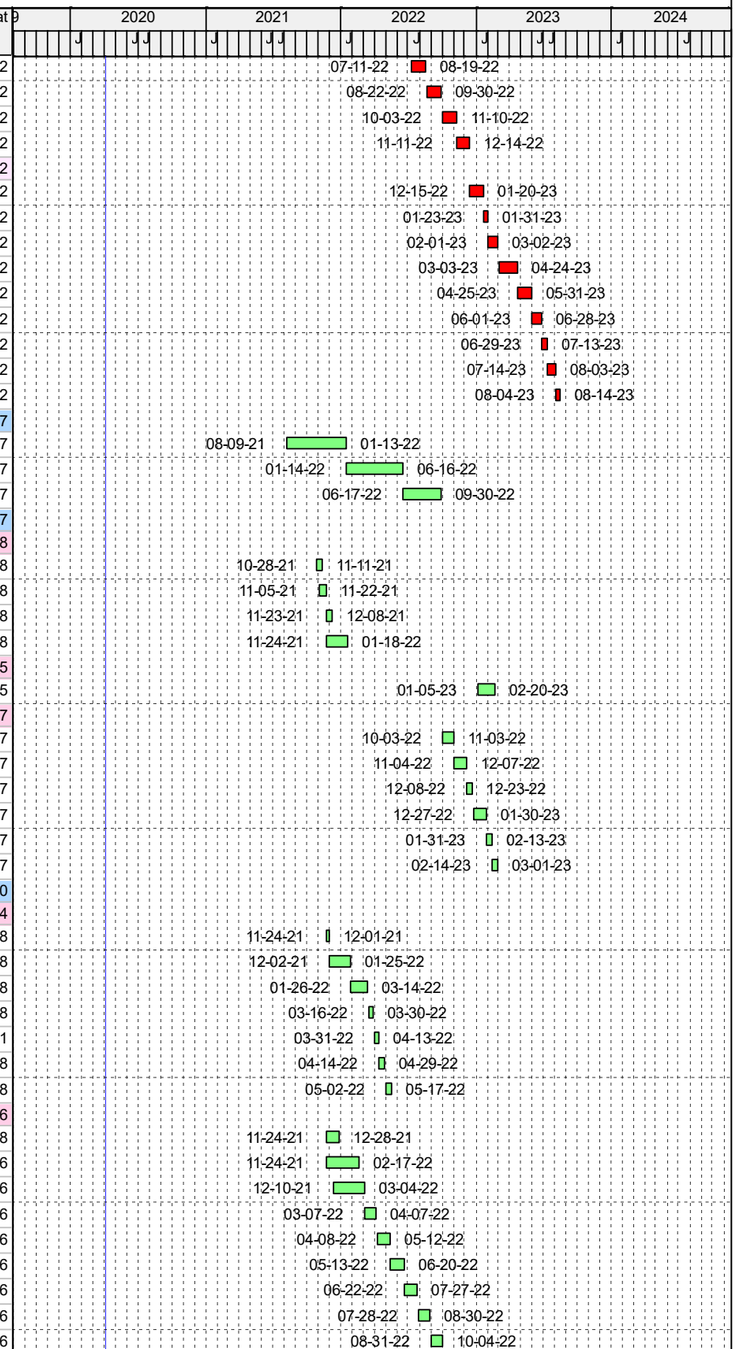


Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
C-B609-4090	P2 - Install Column Rebar 3rd pour	2	03-18-22	03-22-22	2
C-B609-4100	P2 - F/P/S/C - Column 3rd pour	10	03-23-22	04-05-22	2
C-B609-4110	P2 - Install Column Rebar 4th pour	2	04-06-22	04-07-22	2
C-B609-4120	P2 - F/P/S/C - Column 4th pour	10	04-08-22	04-21-22	2
C-B609-4130	P2 - Assemble Cap Forms	4	04-22-22	04-27-22	2
C-B609-4140	P2 - F/P/S/C - Cap	15	04-28-22	05-18-22	3
C-B609-4150	P2 - Install Cap Rebar - assume mostly pre-tied	3	05-02-22	05-05-22	10
C-B609-4160	P2 - Upfit cap for Launching Equipment (rollers, etc.)	2	05-20-22	05-24-22	2
PIER 3		97	01-06-22	05-25-22	30
C-B609-5000	P3 - Cofferdam Installation	5	01-06-22	01-12-22	23
C-B609-5010	P3 - Causeway Adjustments	6	01-13-22	01-21-22	30
C-B609-5020	P3 - Pour Seal Slab	1	01-24-22	01-24-22	23
C-B609-5030	P3 - F/P/S Footing	7	01-25-22	02-03-22	30
C-B609-5040	P3 - Install Footing Rebar - assume mostly pre-tied	2	02-02-22	02-03-22	30
C-B609-5050	P3 - Assemble Column Forms	5	02-03-22	02-10-22	30
C-B609-5060	P3 - Install Column Rebar 1st pour	2	02-11-22	02-14-22	30
C-B609-5070	P3 - F/P/S/C - Column 1st pour	10	02-16-22	03-01-22	34
C-B609-5080	P3 - Install Column Rebar 2nd pour	2	03-02-22	03-04-22	28
C-B609-5090	P3 - F/P/S/C - Column 2nd pour	10	03-07-22	03-18-22	34
C-B609-5100	P3 - Install Column Rebar 3rd pour	2	03-22-22	03-23-22	28
C-B609-5110	P3 - F/P/S/C - Column 3rd pour	10	03-24-22	04-06-22	33
C-B609-5120	P3 - Install Column Rebar 4th pour	2	04-07-22	04-08-22	27
C-B609-5130	P3 - F/P/S/C - Column 4th pour	10	04-11-22	04-22-22	33
C-B609-5140	P3 - Assemble Cap Forms	4	04-25-22	04-29-22	25
C-B609-5150	P3 - F/P/S/C - Cap	15	05-02-22	05-20-22	33
C-B609-5160	P3 - Install Cap Rebar - assume mostly pre-tied	3	05-04-22	05-06-22	33
C-B609-5170	P3 - Upfit cap for Launching Equipment (rollers, etc.)	2	05-24-22	05-25-22	25
PIER 4		112	09-30-21	03-17-22	108
C-B609-6000	P4 - F/P/S Footing	7	09-30-21	10-08-21	106
C-B609-6010	P4 - Install Footing Rebar - assume mostly pre-tied	2	10-07-21	10-08-21	118
C-B609-6020	P4 - Assemble Column Forms	5	10-08-21	10-15-21	118
C-B609-6030	P4 - Install Column Rebar 1st pour	2	10-18-21	10-20-21	118
C-B609-6040	P4 - F/P/S/C - Column 1st pour	10	10-21-21	11-03-21	106
C-B609-6050	P4 - Install Column Rebar 2nd pour	2	11-05-21	11-08-21	117
C-B609-6060	P4 - F/P/S/C - Column 2nd pour	10	11-09-21	11-22-21	106
C-B609-6070	P4 - Install Column Rebar 3rd pour	2	11-23-21	11-24-21	116
C-B609-6080	P4 - F/P/S/C - Column 3rd pour	10	11-26-21	12-09-21	107
C-B609-6090	P4 - Install Column Rebar 4th pour	2	12-10-21	12-13-21	115
C-B609-6100	P4 - F/P/S/C - Column 4th pour	10	12-14-21	01-31-22	107
C-B609-6110	P4 - Assemble Cap Forms	4	02-02-22	02-08-22	96
C-B609-6120	P4 - F/P/S/C - Cap	15	02-16-22	03-08-22	112
C-B609-6130	P4 - Install Cap Rebar - assume mostly pre-tied	3	03-10-22	03-14-22	89
C-B609-6140	P4 - Upfit cap for Launching Equipment (rollers, etc.)	2	03-16-22	03-17-22	89
SUPERSTURCTURE		402	12-27-21	08-14-23	2
LAUNCH PIT		214	12-27-21	01-03-23	75
C-B609-9000	Super - Launching pit SOE (if applicable), excavation, fine grade and stone base	15	12-27-21	01-21-22	36
C-B609-9010	Super - Launching pit setup beam supports and roller	15	01-24-22	02-15-22	36
C-B609-9020	Super - Launching pit removal	10	12-15-22	01-03-23	75
B609 GIRDER		164	03-02-22	12-14-22	2
C-B609-7010	Super - Launching Operation Bridge Span 1 (Including all steel upfit)	24	03-02-22	04-11-22	26
C-B609-7020	Super - Launching Operation Bridge Span 2 (Including all steel upfit)	24	05-25-22	07-07-22	2

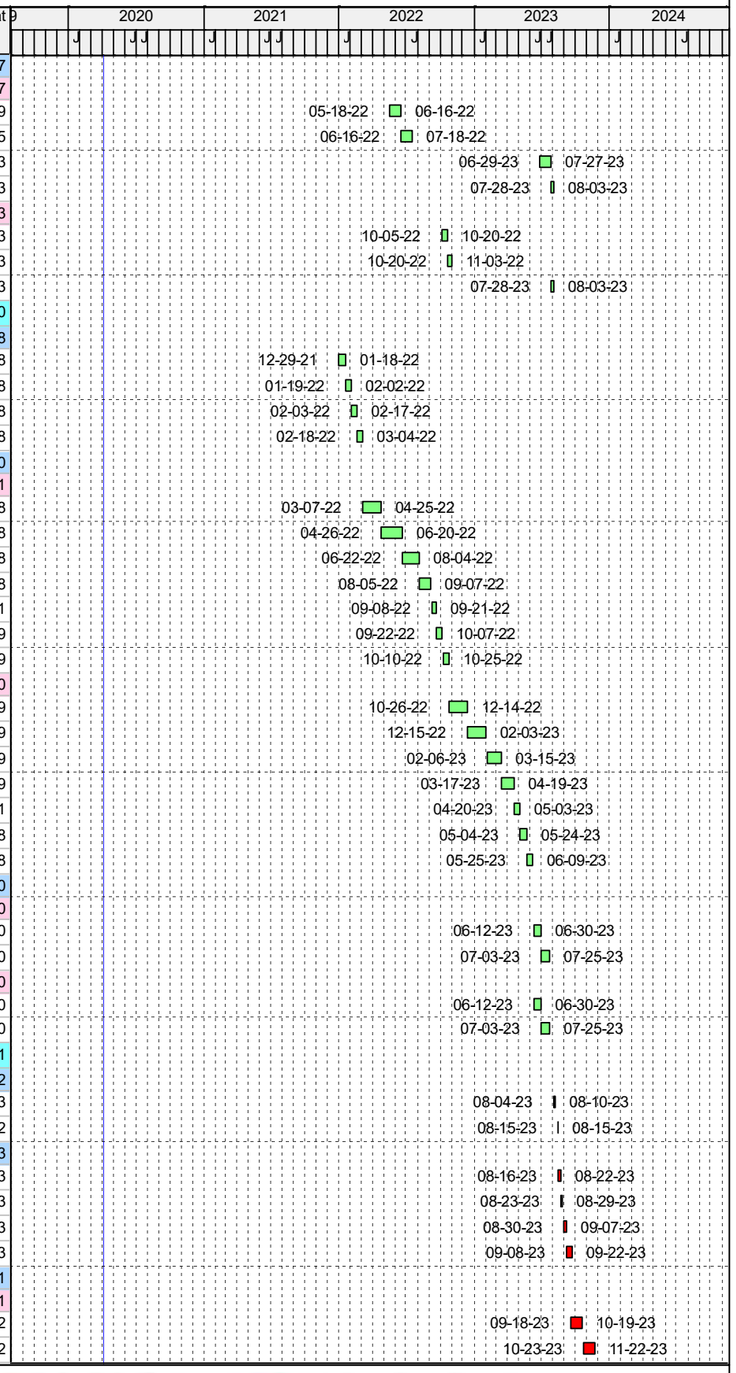
Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

BRANCH CIVIL · FLATIRON · BRANCH - FLATIRON JOINT VENTURE · STV 100 Years

Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
C-B609-7030	Super - Launching Operation Bridge Span 3 (Including all steel upfit)	24	07-11-22	08-19-22	2
C-B609-7040	Super - Launching Operation Bridge Span 4 (Including all steel upfit)	24	08-22-22	09-30-22	2
C-B609-7050	Super - Launching Operation Bridge Span 5 (Including all steel upfit)	24	10-03-22	11-10-22	2
C-B609-7060	Super - Launching Operation to finish (Including all steel upfit)	20	11-11-22	12-14-22	2
B609 BRIDGE DECK		164	12-15-22	08-14-23	2
C-B609-8000	Super - Install & Adjust Bridge Overhang Bracket	20	12-15-22	01-20-23	2
C-B609-8010	Super - Remove Rollers/Install remaining SIP sections over bents	7	01-23-23	01-31-23	2
C-B609-8020	Super - Install Edge Forms	20	02-01-23	03-02-23	2
C-B609-8030	Super - Install Deck Rebar	30	03-03-23	04-24-23	2
C-B609-8040	Super - Bidwell Set up/Dry Run	20	04-25-23	05-31-23	2
C-B609-8050	Super - Deck Pour	20	06-01-23	06-28-23	2
C-B609-8060	Super - Install Finger Joints	10	06-29-23	07-13-23	2
C-B609-8070	Super - Parapet Walls	15	07-14-23	08-03-23	2
C-B609-8080	Super - Grind/Groove Deck	6	08-04-23	08-14-23	2
STRUCTURE - NOISE WALL CONSTRUCTION		240	08-09-21	09-30-22	277
C-NW-1000	Noise Wall - Pile & Foundation	90	08-09-21	01-13-22	277
C-NW-1010	Noise Wall - Posts & Panels	90	01-14-22	06-16-22	277
C-NW-1020	Noise Wall - Miscellaneous to finish (Guardrail, Fence FE-W1, etc.)	60	06-17-22	09-30-22	277
EARTHWORK		284	10-28-21	03-01-23	277
MSE Wall 01		46	10-28-21	01-18-22	8
C-EA-1000	MSE01 - Fine grade and Foundation	10	10-28-21	11-11-21	8
C-EA-1010	MSE01 - Concrete Leveling Pad	10	11-05-21	11-22-21	8
C-EA-1020	MSE01 - Facing wall panel operations	10	11-23-21	12-08-21	8
C-EA-1030	MSE01- Place fill & reinforcing (if applicable)	30	11-24-21	01-18-22	8
EARTHWORK AFTER LAUNCH OPERATION		30	01-05-23	02-20-23	75
C-EA-2000	Abut 1 - Embankment Fill to grade after Launch Operation	30	01-05-23	02-20-23	75
SWM PONDS AND FEATURES		90	10-03-22	03-01-23	277
C-SWM-1000	SWM - Bioretention in Series # 1	20	10-03-22	11-03-22	277
C-SWM-1010	SWM - Dry Swale in Series # 1	20	11-04-22	12-07-22	277
C-SWM-1020	SWM - Dry Swale # 1	10	12-08-22	12-23-22	277
C-SWM-1030	SWM - Extended Detention Enhanced # 1	20	12-27-22	01-30-23	277
C-SWM-1040	SWM - Dry Swale # 2	10	01-31-23	02-13-23	277
C-SWM-1050	SWM - Dry Swale # 3	10	02-14-23	03-01-23	277
ROADWORK - NEW I-95 NB GP LANES AND NEW I-95 NB CD LANES		211	11-24-21	10-04-22	180
I-95 NB NEW GP LANES STA. 4509+00 TO END B609 BRIDGE		117	11-24-21	05-17-22	254
C-GP-1000	GP - Rough grade subgrade	5	11-24-21	12-01-21	218
C-GP-1010	GP - Storm Drainage pipe & Structure	30	12-02-21	01-25-22	218
C-GP-1020	GP - Underground conduits for ITS, electrical and lighting system	30	01-26-22	03-14-22	218
C-GP-1030	GP - Fine grade subgrade	10	03-16-22	03-30-22	218
C-GP-1040	GP - CTA Operation	10	03-31-22	04-13-22	231
C-GP-1050	GP - Install underdrain & edge drain	10	04-14-22	04-29-22	218
C-GP-1060	GP - Aggregate drain layer	10	05-02-22	05-17-22	218
RAMP C STA. 5447+00 to sta.5525+00		180	11-24-21	10-04-22	156
C-RAMPC-1020	95CD - Cut & Fill and rough grade subgrade (MSE 01)	20	11-24-21	12-28-21	8
C-RAMPC-1000	95CD - Cut & Fill and rough grade subgrade After launch	50	11-24-21	02-17-22	156
C-RAMPC-1010	95CD - MB-7F/Retaining wall	50	12-10-21	03-04-22	156
C-RAMPC-1030	95CD - Storm Drainage pipe & Structure	20	03-07-22	04-07-22	156
C-RAMPC-1040	95CD - Underground conduits for ITS, electrical and lighting system	20	04-08-22	05-12-22	156
C-RAMPC-1050	95CD - Fine grade subgrade	20	05-13-22	06-20-22	156
C-RAMPC-1060	95CD - CTA Operation	20	06-22-22	07-27-22	156
C-RAMPC-1070	95CD - Install underdrain & edge drain	20	07-28-22	08-30-22	156
C-RAMPC-1080	95CD - Aggregate drain layer	20	08-31-22	10-04-22	156



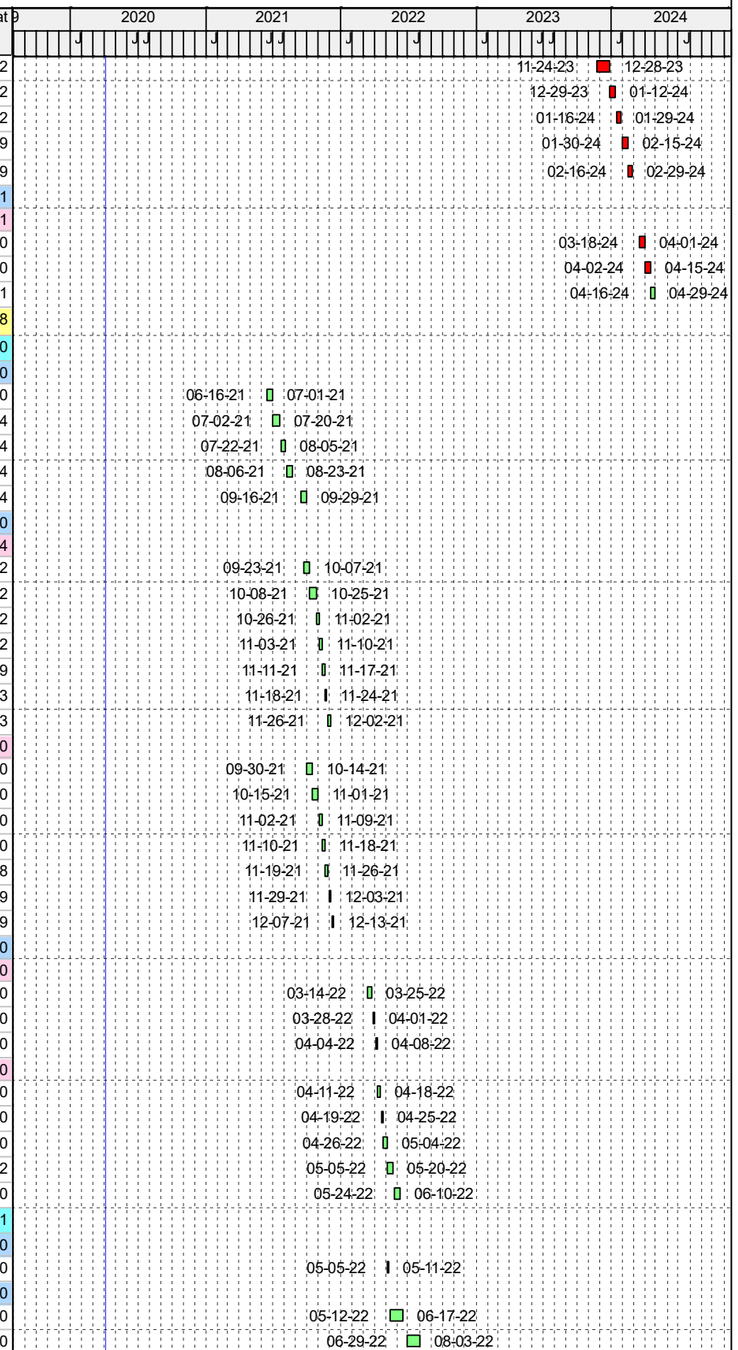
Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
PAVEMENT - NEW I-95 NB GP LANES AND NEW I-95 NB CD LANES		297	05-18-22	08-03-23	167
I-95 NB NEW GP LANES STA. 4509+00 to 4542+75 SOUTH OF B609		297	05-18-22	08-03-23	167
C-GP-1070	GP - Asphaltic Concrete Base Course BM 25.0A	20	05-18-22	06-16-22	179
C-GP-1080	GP - Asphaltic Concrete Intermediate Course IM 19.0A	20	06-16-22	07-18-22	425
C-GP-1110	GP - Approach Slab Abutment A & B	20	06-29-23	07-27-23	3
C-GP-1090	GP - Temporary Pavement and Temp Pavement marking for New I-95 NB GP Lanes to End B609 Finish	5	07-28-23	08-03-23	3
RAMP C STA. 5447+00 to sta.5525+00		125	10-05-22	08-03-23	3
C-RAMPC-2000	95CD - Asphaltic Concrete Base Course BM 25.0A	10	10-05-22	10-20-22	103
C-RAMPC-2010	95CD - Asphaltic Concrete intermediate Course IM 19.0A	10	10-20-22	11-03-22	103
C-RAMPC-2020	95CD - Temp. Pavement and Temp. Pavement marking for New Ramp C	5	07-28-23	08-03-23	3
PHASE 2 EXISTING I-95 NB GP LANES MODIFICATION		386	12-29-21	07-25-23	10
GENERAL REQUIREMENT - MAINTENANCE OF TRAFFIC, E & S CONTROL AND CLEARING		40	12-29-21	03-04-22	8
C-S1P2-1000	Install MOT signs and features per approved MOT Segment 1 Phase 2	10	12-29-21	01-18-22	8
C-S1P2-1010	Establish construction entrance Segment 1 Phase 2	10	01-19-22	02-02-22	8
C-S1P2-1020	Install silt fences and E&S control features Segment 1 Phase 2	10	02-03-22	02-17-22	8
C-S1P2-1030	Clearing Segment 1 Phase 2	10	02-18-22	03-04-22	8
ROADWORK - I-95 NB GP LANES WIDENING STA. 4496+00 to 4512+00		310	03-07-22	06-09-23	10
I-95 NB GP LANES OUTSIDE SHOULDER WIDENING		159	03-07-22	10-25-22	11
C-GP-7000	GP - Saw Cut & Demo outside shoulder, Cut & Fill and rough grade subgrade	30	03-07-22	04-25-22	8
C-GP-7010	GP - Storm Drainage pipe & Structure	30	04-26-22	06-20-22	8
C-GP-7020	GP - Underground conduits for ITS, electrical and lighting system	25	06-22-22	08-04-22	8
C-GP-7030	GP - Fine grade subgrade	20	08-05-22	09-07-22	8
C-GP-7040	GP - CTA Operation	10	09-08-22	09-21-22	11
C-GP-7050	GP - Install underdrain & edge drain	10	09-22-22	10-07-22	9
C-GP-7060	GP - Aggregate drain layer	10	10-10-22	10-25-22	9
I-95 NB GP LANES SLIP TO NEW I-95 NB CD LANES		151	10-26-22	06-09-23	10
C-GP-6000	GP - Full depth operation - Saw Cut & Demo Existing Pavemnt, Cut & Fill and rough grade subgrade	30	10-26-22	12-14-22	9
C-GP-6010	GP - Storm Drainage pipe & Structure	30	12-15-22	02-03-23	9
C-GP-6020	GP - Underground conduits for ITS, electrical and lighting system	25	02-06-23	03-15-23	9
C-GP-6030	GP - Fine grade subgrade	20	03-17-23	04-19-23	9
C-GP-6040	GP - CTA Operation	10	04-20-23	05-03-23	11
C-GP-6050	GP - Install underdrain & edge drain	10	05-04-23	05-24-23	8
C-GP-6060	GP - Aggregate drain layer	10	05-25-23	06-09-23	8
PAVEMENT - I-95 NB GP LANES WIDENING STA. 4496+00 to 4512+00		30	06-12-23	07-25-23	10
I-95 NB GP LANES OUTSIDE SHOULDER WIDENING		30	06-12-23	07-25-23	10
C-GP-7070	GP - Asphaltic Concrete Base Course BM 25.0A	15	06-12-23	06-30-23	10
C-GP-7080	GP - Asphaltic Concrete intermediate Course IM 19.0A	15	07-03-23	07-25-23	10
I-95 NB GP LANES SLIP TO NEW I-95 NB CD LANES		30	06-12-23	07-25-23	10
C-GP-6070	GP - Asphaltic Concrete Base Course BM 25.0A	15	06-12-23	06-30-23	10
C-GP-6080	GP - Asphaltic Concrete intermediate Course IM 19.0A	15	07-03-23	07-25-23	10
PHASE 3 I-95 CD LANES STA. 5525+00 to 5558+00		177	08-04-23	04-29-24	1
SHIFT TRAFFIC TO NEW I-95 NB GP LANES		7	08-04-23	08-15-23	2
C-GP-4040	GP- Pavement, Temp Signs and Temp. Pavement marking for I-95 NB onto New Bridge B609	5	08-04-23	08-10-23	3
C-GP-4070	GP - Switch I-95 NB GP Lanes Traffic onto new GP Lanes and Bridge B609- Hold Point	1	08-15-23	08-15-23	2
GENERAL REQUIREMENT - MAINTENANCE OF TRAFFIC, E & S CONTROL AND CLEARING		25	08-16-23	09-22-23	3
C-S1P3-1000	Install MOT signs and features per Approved MOT plan Segment 1 Phase 3	5	08-16-23	08-22-23	3
C-S1P3-1010	Establish construction entrance Segment 1 Phase 3	5	08-23-23	08-29-23	3
C-S1P3-1020	Install silt fences and E&S control features Segment 1 Phase 3	5	08-30-23	09-07-23	3
C-S1P3-1030	Clearing & Grubbing Segment 1 Phase 3	10	09-08-23	09-22-23	3
ROADWORK - I-95 NB CD LANES		108	09-18-23	02-29-24	11
I-95 NB CD LANES STA. 5525+00 TO 5558+00		108	09-18-23	02-29-24	11
C-CD-3000	95CD - Cut & Fill and rough grade subgrade	20	09-18-23	10-19-23	2
C-CD-3010	95CD - Storm Drainage pipe & Structure	20	10-23-23	11-22-23	2



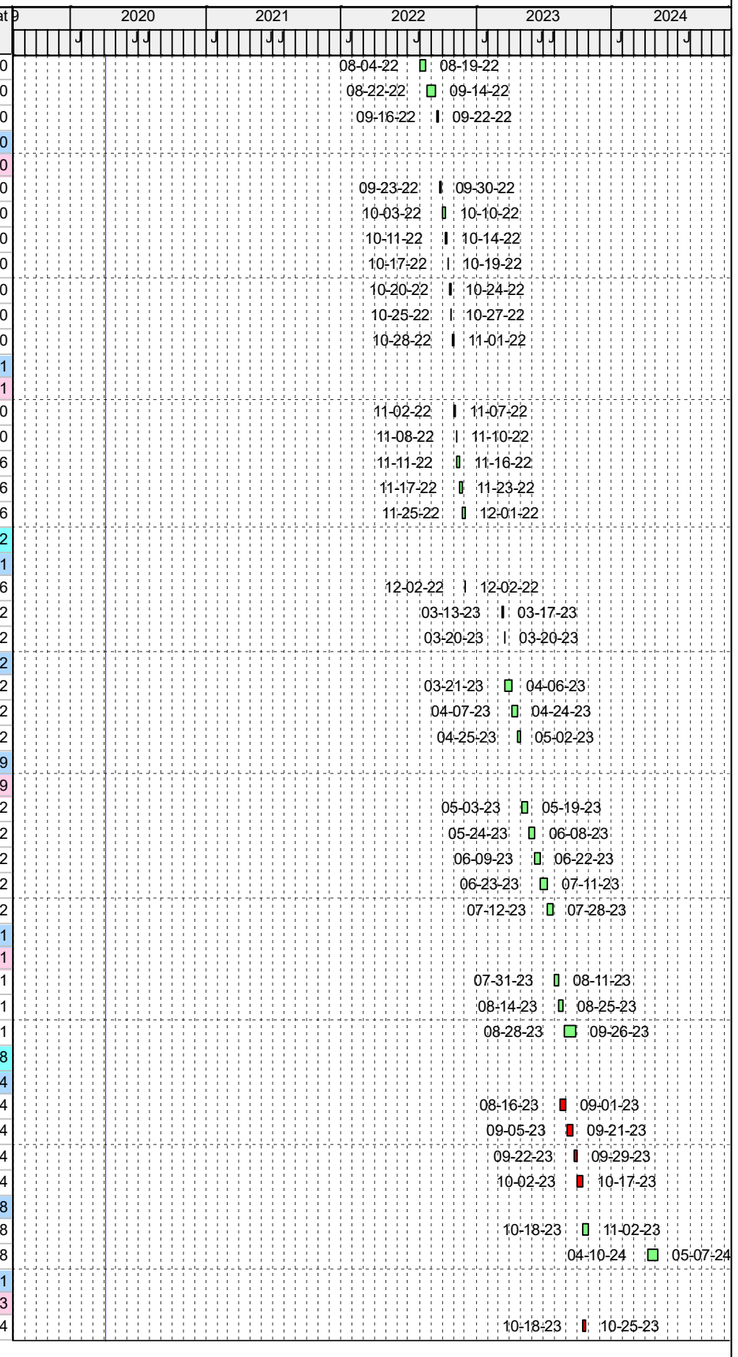
Remaining Level of Effort | Actual Work | Critical Remaining Work
Actual Level of Effort | Remaining Work | Milestone

BRANCH CIVIL | FLATIRON | BRANCH - FLATIRON JOINT VENTURE | STV 100 Years

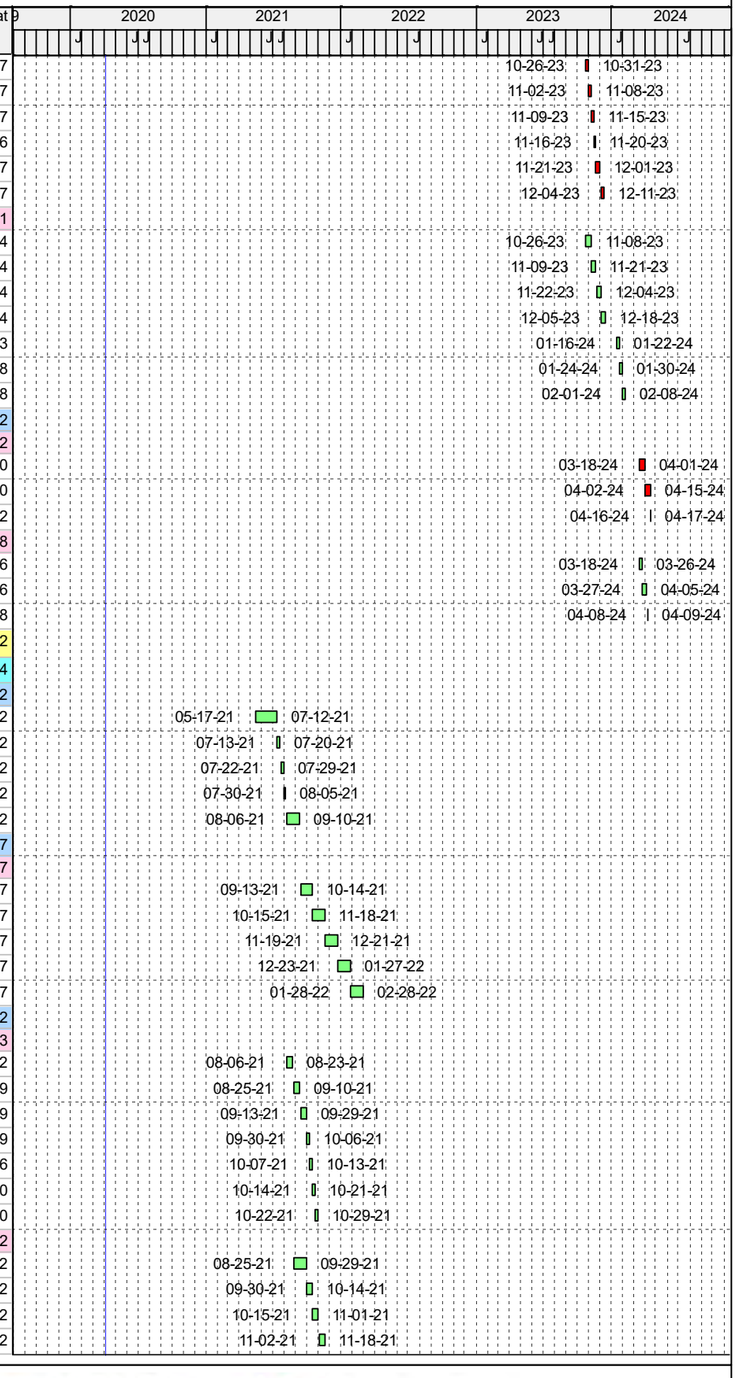
Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
C-CD-3020	95CD - Underground conduits for ITS, electrical and lighting system	20	11-24-23	12-28-23	2
C-CD-3030	95CD - Fine grade subgrade	10	12-29-23	01-12-24	2
C-CD-3040	95CD - CTA Operation	10	01-16-24	01-29-24	2
C-CD-3050	95CD - Install underdrain & edge drain	10	01-30-24	02-15-24	9
C-CD-3060	95CD - Aggregate drain layer	10	02-16-24	02-29-24	9
PAVEMENT - I-95 NB CD LANES		30	03-18-24	04-29-24	1
I-95 NB CD LANES STA. 5525+00 TO 5558+00		30	03-18-24	04-29-24	1
C-CD-3070	95CD - Asphaltic Concrete Base Course BM 25.0A	10	03-18-24	04-01-24	0
C-CD-3080	95CD - Asphaltic Concrete intermediate Course IM 19.0A	10	04-02-24	04-15-24	0
C-CD-3090	95CD - New I-95 NB CD lanes tie-in new Ramp C	10	04-16-24	04-29-24	1
SEGMENT 2		707	06-16-21	05-07-24	38
PHASE 1A NEW I-95 NB GP LANES STA.4558 +00 TO 4595+00 AND NEW RAMP D PARTIAL PHASE 1A		243	06-16-21	06-10-22	500
GENERAL REQUIREMENT - MAINTENANCE OF TRAFFIC, E & S CONTROL AND CLEARING		73	06-16-21	09-29-21	70
C-S2P1A-0100	Utility relocations/Adjustment	10	06-16-21	07-01-21	20
C-S2P1A-1000	Install temporary MOT signs per Approved MOT Plan Segment 2 Phase 1A	10	07-02-21	07-20-21	74
C-S2P1A-1010	Establish construction entrance Segment 2 Phase 1A and temporary shoulder widening	10	07-22-21	08-05-21	74
C-S2P1A-1020	Install silt fences and E&S control features Segment 2 Phase 1A	10	08-06-21	08-23-21	74
C-S2P1A-1030	Clearing & Grubbing I-95 Segment 2 Phase 1A	10	09-16-21	09-29-21	74
ROADWORK - NEW I-95 NB GP LANES STA.4558 +00 TO 4595+00 AND NEW RAMP D PH-1A		53	09-23-21	12-13-21	80
NEW I-95 NB GP LANES STA.4558 +00 TO 4595+00 TIE-IN EX. I-95 NB GP LANES		46	09-23-21	12-02-21	74
C-GP-5000	GPN - Cut & Fill and rough grade subgrade	10	09-23-21	10-07-21	62
C-GP-5010	GPN - Storm Drainage pipe and Structure	10	10-08-21	10-25-21	62
C-GP-5020	GPN - Underground conduits for ITS, electrical and lighting system	5	10-26-21	11-02-21	62
C-GP-5030	GPN - Fine grade subgrade	5	11-03-21	11-10-21	62
C-GP-5040	GPN - CTA Operation	5	11-11-21	11-17-21	39
C-GP-5050	GPN - Install underdrain & edge drain	5	11-18-21	11-24-21	63
C-GP-5060	GPN - Aggregate drain layer	5	11-26-21	12-02-21	63
NEW RAMP D PHASE 1A TIE TO ROUTE 17		48	09-30-21	12-13-21	80
C-RPD-2000	Ramp D - Cut & Fill and rough grade subgrade	10	09-30-21	10-14-21	70
C-RPD-2010	Ramp D - Storm Drainage pipe & Structure	10	10-15-21	11-01-21	70
C-RPD-2020	Ramp D - Underground conduits for ITS, electrical and lighting system	5	11-02-21	11-09-21	70
C-RPD-2030	Ramp D - Fine grade subgrade	5	11-10-21	11-18-21	70
C-RPD-2040	Ramp D - CTA Operation	5	11-19-21	11-26-21	48
C-RPD-2050	Ramp D - Install underdrain & edge drain	5	11-29-21	12-03-21	69
C-RPD-2060	Ramp D - Aggregate drain layer	5	12-07-21	12-13-21	69
PAVEMENT - NEW I-95 NB GP LANES STA.4558 +00 TO 4595+00 AND NEW RAMP D PH-1A		62	03-14-22	06-10-22	500
NEW I-95 NB GP LANES STA.4558 +00 TO 4595+00 TIE-IN EX. I-95 NB GP LANES		20	03-14-22	04-08-22	0
C-GP-5070	GPN - Asphaltic Concrete Base Course BM 25.0A	10	03-14-22	03-25-22	0
C-GP-5080	GPN - Asphaltic Concrete intermediate Course IM 19.0A	5	03-28-22	04-01-22	0
C-GP-5090	GPN - New I-95 NB GP Lanes tie-in	5	04-04-22	04-08-22	0
NEW RAMP D PHASE 1A TIE TO ROUTE 17		42	04-11-22	06-10-22	500
C-RPD-2070	Ramp D - Asphaltic Concrete Base Course BM 25.0A	5	04-11-22	04-18-22	0
C-RPD-2080	Ramp D - Asphaltic Concrete intermediate Course IM 19.0A	5	04-19-22	04-25-22	0
C-RPD-2090	Ramp D - Temp Pavement, Temp Signs and temp. Pavement Marking	5	04-26-22	05-04-22	0
C-RPD-2100	Ramp D - Install new traffic signals, ITS, COMM and Lighting	10	05-05-22	05-20-22	92
C-RPD-2110	Ramp D - Install new Guardrail, incidental concrete and Barrier	10	05-24-22	06-10-22	430
PHASE 1B NEW RAMP D PARTIAL AND ROUTE 17NB STA.8001+00 TO 8027+00		140	05-05-22	12-01-22	51
SHIFT TRAFFIC TO NEW RAMP D PARTIAL PHASE 1A		5	05-05-22	05-11-22	0
C-RPD-5000	Ramp D - Switch traffic onto Ramp D Partial Phase 1A	5	05-05-22	05-11-22	0
GENERAL REQUIREMENT - MAINTENANCE OF TRAFFIC, E & S CONTROL AND CLEARING		90	05-12-22	09-22-22	0
C-S2aP1B-0100	Utility relocations/Adjustment	20	05-12-22	06-17-22	0
C-S2P1B-1000	Install temporary MOT signs per Approved MOT Plan Segment 2 Phase 1B	20	06-29-22	08-03-22	0



Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
C-S2P1B-1010	Establish construction entrance Segment 2 Phase 1B	10	08-04-22	08-19-22	0
C-S2P1B-1020	Install silt fences and E&S control features Segment 2 Phase 1B	15	08-22-22	09-14-22	0
C-S2P1B-1030	Clearing & Grubbing I-95 Segment 2 Phase 1B	5	09-16-22	09-22-22	0
ROADWORK - NEW RAMP D PARTIAL AND ROUTE 17NB STA.8001+00 TO 8027+00		27	09-23-22	11-01-22	0
NEW RAMP D PARTIAL PHASE 1B		27	09-23-22	11-01-22	0
C-RPD-3000	Ramp D - Cut & Fill and rough grade subgrade	5	09-23-22	09-30-22	0
C-RPD-3010	Ramp D - Storm Drainage pipe & Structure	5	10-03-22	10-10-22	0
C-RPD-3020	Ramp D - Underground conduits for ITS, electrical and lighting system	3	10-11-22	10-14-22	0
C-RPD-3030	Ramp D - Fine grade subgrade	3	10-17-22	10-19-22	0
C-RPD-3040	Ramp D - CTA Operation	3	10-20-22	10-24-22	0
C-RPD-3050	Ramp D - Install underdrain & edge drain	3	10-25-22	10-27-22	0
C-RPD-3060	Ramp D - Aggregate drain layer	3	10-28-22	11-01-22	0
PAVEMENT - NEW RAMP D PARTIAL AND ROUTE 17NB STA.8001+00 TO 8027+00		18	11-02-22	12-01-22	51
NEW RAMP D PARTIAL PHASE 1B		18	11-02-22	12-01-22	51
C-RPD-3070	Ramp D - Asphaltic Concrete Base Course BM 25.0A	4	11-02-22	11-07-22	0
C-RPD-3080	Ramp D - Asphaltic Concrete intermediate Course IM 19.0A	3	11-08-22	11-10-22	0
C-RPD-3090	Ramp D - Temp Pavement, Temp Signs and temp. Pavement Marking tie-in Rte. 17	3	11-11-22	11-16-22	46
C-RPD-3100	Ramp D - Install new traffic signals, ITS, COMM and Lighting	5	11-17-22	11-23-22	46
C-RPD-3110	Ramp D - Install new Guardrail, incidental concrete and Barrier	5	11-25-22	12-01-22	46
PHASE 2 - I-95 NB CD LANES RESURFACE AND REPLACEMENT STA. 5576+00 TO 5619+00		201	12-02-22	09-26-23	132
TRAFFIC SWITCH TO NEW I-95 NB NEW 133 RAMP D AND MOD OLD RAMP D TIE-IN GP LANES		72	12-02-22	03-20-23	51
C-S2P2-1050	Switch Traffic onto new I-95 NB exit 133 Ramp D to the traffic	1	12-02-22	12-02-22	46
C-S2P2-1060	Construct & Built up Old Ramp D detour tie-in GP lanes Sta. 4602 +/-	5	03-13-23	03-17-23	52
C-S2P2-1070	Switch Traffic from I-95 NB CD Lanes over B608 to I-95 NB GP Lanes - Hold Point	1	03-20-23	03-20-23	42
GENERAL REQUIREMENT - UTILITY RELOCATIONS, MOT, E & SC AND CLEARING & GRUBBING		25	03-21-23	05-02-23	42
C-S2P2-0100	Utility relocations/Adjustment	10	03-21-23	04-06-23	42
C-S2P2-1000	Install temporary MOT signs Segment 2 Phase 2	10	04-07-23	04-24-23	42
C-S2P2-1020	Install silt fences and E&S control features Segment 2 Phase 2	5	04-25-23	05-02-23	42
ROADWORK - I-95 NB CD LANES STA. 5576+00 TO 5619+00		60	05-03-23	07-28-23	49
I-95 NB CD LANES STA. 5576+00 TO 5619+00		60	05-03-23	07-28-23	49
C-CD-4000	95CD - Demo existing	10	05-03-23	05-19-23	42
C-CD-4030	95CD - Fine grade subgrade	10	05-24-23	06-08-23	42
C-CD-4040	95CD - CTA Operation	10	06-09-23	06-22-23	52
C-CD-4050	95CD - Install underdrain & edge drain	10	06-23-23	07-11-23	42
C-CD-4060	95CD - Aggregate drain layer	10	07-12-23	07-28-23	42
PAVEMENT - I-95 NB CD LANES STA. 5576+00 TO 5619+00		40	07-31-23	09-26-23	51
I-95 NB CD LANES STA. 5576+00 TO 5619+00		40	07-31-23	09-26-23	51
C-CD-4070	95CD - Asphaltic Concrete Base Course BM 25.0A	10	07-31-23	08-11-23	51
C-CD-4080	95CD - Asphaltic Concrete intermediate Course IM 19.0A	10	08-14-23	08-25-23	51
C-CD-4090	95CD - Resurfacing all section	20	08-28-23	09-26-23	51
PHASE 3 - I-95 CD LANES WIDENING STA. 5555+00 TO STA. 5576+00		175	08-16-23	05-07-24	38
GENERAL REQUIREMENT - UTILITY RELOCATION, MOT, E &SC AND CLEARING & GRUBBING		35	08-16-23	10-17-23	44
C-S2P3-1000	Install temporary MOT signs per Approved MOT Plan Segment 2 Phase 3	10	08-16-23	09-01-23	44
C-S2P3-1010	Establish construction entrance Segment 2 Phase 3	10	09-05-23	09-21-23	44
C-S2P3-1020	Install silt fences and E&S control features Segment 2 Phase 3	5	09-22-23	09-29-23	44
C-S2P3-1030	Clearing I-95 Segment 2 Phase 3	10	10-02-23	10-17-23	44
EARTH WORK - I-95 NB CD LANES WIDENING STA. 5555+00 TO 5576+00		134	10-18-23	05-07-24	38
C-EA-6010	Bioretention # 1 Sta. 5596+00 to 5601+00	10	10-18-23	11-02-23	138
C-EA-6000	17NB - Demo Existing Loop C	20	04-10-24	05-07-24	38
ROADWORK - I-95 NB CD LANES WIDENING STA. 5555+00 TO 5576+00		74	10-18-23	02-08-24	31
I-95 NB CD LANES WIDENING STA. STA. 5555+00 TO 5576+00		35	10-18-23	12-11-23	63
C-CD2-3000	95CD - Cut & Fill and rough grade subgrade	5	10-18-23	10-25-23	44



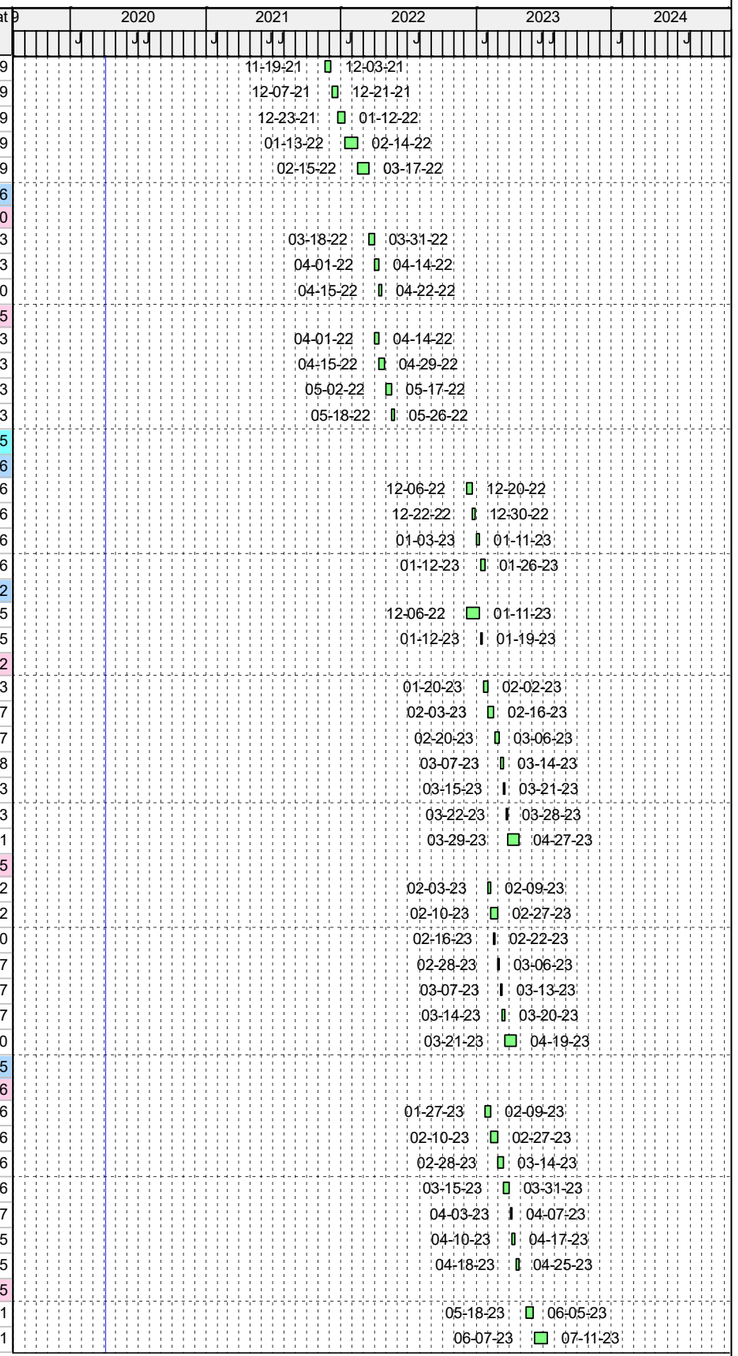
Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
C-CD2-3010	95CD - Storm Drainage pipe, Structure AND Pipe culvert Sta. 5460+/-	4	10-26-23	10-31-23	57
C-CD2-3020	95CD - Underground conduits for ITS, electrical and lighting system	4	11-02-23	11-08-23	57
C-CD2-3030	95CD - Fine grade subgrade	4	11-09-23	11-15-23	57
C-CD2-3040	95CD - CTA Operation	3	11-16-23	11-20-23	36
C-CD2-3050	95CD - Install underdrain & edge drain	8	11-21-23	12-01-23	57
C-CD2-3060	95CD - Aggregate drain layer	5	12-04-23	12-11-23	57
PROPOSED RAMP C1 STA.200+00 to 201+50		68	10-26-23	02-08-24	31
C-RDC1-3000	Ramp C1 - Cut & Fill and rough grade subgrade	8	10-26-23	11-08-23	44
C-RDC1-3010	Ramp C1 - Storm Drainage pipe & Structure and SWM ponds	8	11-09-23	11-21-23	44
C-RDC1-3020	Ramp C1 - Underground conduits for ITS, electrical and lighting system	8	11-22-23	12-04-23	44
C-RDC1-3030	Ramp C1 - Fine grade subgrade	8	12-05-23	12-18-23	44
C-RDC1-3040	Ramp C1 - CTA Operation	5	01-16-24	01-22-24	23
C-RDC1-3050	Ramp C1 - Install underdrain & edge drain	5	01-24-24	01-30-24	28
C-RDC1-3060	Ramp C1 - Aggregate drain layer	5	02-01-24	02-08-24	28
PAVEMENT - I-95 NB CD LANES WIDENING STA. 5555+00 TO 5576+00		22	03-18-24	04-17-24	52
I-95 NB CD LANES WIDENING STA. STA. 5555+00 TO 5576+00		22	03-18-24	04-17-24	52
C-CD2-3070	95CD - Asphaltic Concrete Base Course BM 25.0A	10	03-18-24	04-01-24	0
C-CD2-3080	95CD - Asphaltic Concrete intermediate Course IM 19.0A	10	04-02-24	04-15-24	0
C-CD2-3090	95CD - New I-95 NB CD lanes tie-in new Ramp D	2	04-16-24	04-17-24	52
PROPOSED RAMP C1 STA. 200+00 to 201+50		16	03-18-24	04-09-24	38
C-RDC1-3070	Ramp C1 - Asphaltic Concrete Base Course BM 25.0A	7	03-18-24	03-26-24	6
C-RDC1-3080	Ramp C1 - Asphaltic Concrete intermediate Course IM 19.0A	7	03-27-24	04-05-24	6
C-RDC1-3090	Ramp C1 - New Proposed Ramp C-1 tie-in	2	04-08-24	04-09-24	38
SEGMENT 2a BRIDGE B608 REPLACEMENT (OPTION # 2) AND ROUTE 17		711	05-17-21	04-15-24	52
PHASE 1 ROUTE 17 NB AND MEDIAN WIDENING STA. 8001+00 TO 8027+00		254	05-17-21	05-26-22	264
GENERAL REQUIREMENT - MAINTENANCE OF TRAFFIC, E & S CONTROL AND CLEARING		65	05-17-21	09-10-21	112
C-S2aP1-1040	Utility relocations/Adjustment	30	05-17-21	07-12-21	112
C-S2aP1-1000	Install temporary MOT signs per Approved MOT Plan Segment 2a Phase 1	5	07-13-21	07-20-21	112
C-S2aP1-1010	Establish construction entrance Segment 2a Phase 1	5	07-22-21	07-29-21	112
C-S2aP1-1020	Install silt fences and E&S control features Segment 2a Phase 1	5	07-30-21	08-05-21	112
C-S2aP1-1030	Clearing & Grubbing I-95 Segment 2a Phase 1	20	08-06-21	09-10-21	112
EARTHWORK		100	09-13-21	02-28-22	277
SWM PONDS AND FEATURES RAMP B		100	09-13-21	02-28-22	277
C-SWM-2000	SWM - Bioretention in series # 2	20	09-13-21	10-14-21	277
C-SWM-2010	SWM - Dry Swale in series # 2	20	10-15-21	11-18-21	277
C-SWM-2020	SWM - Bioretention # 2	20	11-19-21	12-21-21	277
C-SWM-2030	SWM - Bioretention in series # 3	20	12-23-21	01-27-22	277
C-SWM-2040	SWM - Dry Swale in series # 4	20	01-28-22	02-28-22	277
ROADWORK - ROUTE 17 NB WIDENING STA. 8001+00 TO 8027+00		149	08-06-21	03-17-22	132
ROUTE 17 NB WIDENING STA.8007 +/- to 8011 +/- AND PROPOSED RAMP C1		58	08-06-21	10-29-21	223
C-X17-8000	17NB - Demo Existing Barrier and Pavement, Cut & Fill and rough grade subgrade	10	08-06-21	08-23-21	112
C-X17-8010	17NB - Storm Drainage pipe & Structure	10	08-25-21	09-10-21	189
C-X17-8020	17NB - Underground conduits for ITS, electrical and lighting system	10	09-13-21	09-29-21	189
C-X17-8030	17NB - Fine grade subgrade	5	09-30-21	10-06-21	189
C-X17-8040	17NB - CTA Operation	5	10-07-21	10-13-21	196
C-X17-8050	17NB - Install underdrain & edge drain	5	10-14-21	10-21-21	190
C-X17-8060	17NB - Aggregate drain layer	5	10-22-21	10-29-21	190
I 95 SB EXIT 133 WIDENING TIE-IN TO ROUTE 17 NB STA. 8017+50 TO 8027+00		136	08-25-21	03-17-22	132
C-95S-2500	95S2R17 - Demo existing Shoulder and Pavement, Cut & Fill and rough grade subgrade	20	08-25-21	09-29-21	112
C-95S-2510	95S2R17 - Storm Drainage pipe & Structure	10	09-30-21	10-14-21	112
C-95S-2520	95S2R17 - Underground conduits for ITS, electrical and lighting system	10	10-15-21	11-01-21	112
C-95S-2530	95S2R17 - Fine grade subgrade	10	11-02-21	11-18-21	112



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

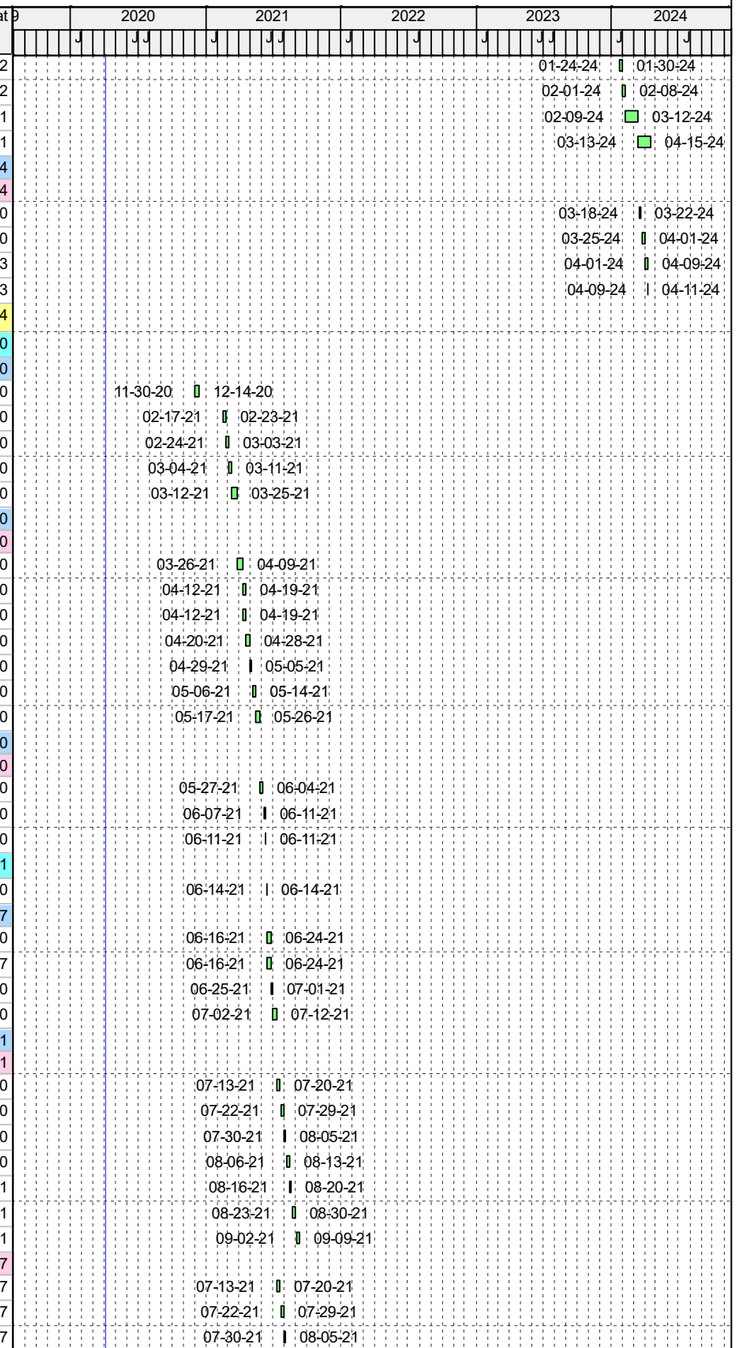
BRANCH CIVIL | FLATIRON | BRANCH - FLATIRON JOINT VENTURE | STV 100 Years

Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
C-95S-2540	95S2R17 - CTA Operation	10	11-19-21	12-03-21	99
C-95S-2550	95S2R17 - Install underdrain & edge drain	10	12-07-21	12-21-21	109
C-95S-2560	95S2R17 - Aggregate drain layer	10	12-23-21	01-12-22	109
C-95S-2570	95S2R17- ITS and COMM system	20	01-13-22	02-14-22	109
C-95S-2580	95S2R17 - Lighting System	20	02-15-22	03-17-22	109
PAVEMENT - ROUTE 17 NB WIDENING STA. 8001+00 TO 8027+00		49	03-18-22	05-26-22	176
ROUTE 17 NB WIDENING STA.8007 +/- to 8011 +/- AND PROPOSED RAMP C1		25	03-18-22	04-22-22	200
C-X17-8070	17NB - Asphaltic Concrete Base Course BM 25.0A	10	03-18-22	03-31-22	133
C-X17-8080	17NB - Asphaltic Concrete intermediate Course IM 19.0A	10	04-01-22	04-14-22	143
C-X17-8090	17NB - New Ramp B tie-in Route 17 NB	5	04-15-22	04-22-22	200
I 95 SB EXIT 133 WIDENING TIE-IN TO ROUTE 17 NB STA. 8017+50 TO 8027+00		39	04-01-22	05-26-22	175
C-95S-2590	95S2R17 - Asphaltic Concrete Base Course BM 25.0A	10	04-01-22	04-14-22	133
C-95S-2600	95S2R17 - Asphaltic Concrete intermediate Course IM 19.0A	10	04-15-22	04-29-22	133
C-95S-2610	95S2R17 - Temporary Signs and Temporary Pavement Marking	10	05-02-22	05-17-22	153
C-95S-2620	95S2R17 - New I-95 SB Tie-in Route 17 NB	5	05-18-22	05-26-22	153
PHASE 2 - BRIDGE B608 OVER ROUTE 17 STAGE 1		208	12-06-22	10-10-23	175
GENERAL REQUIREMENT - MAINTENANCE OF TRAFFIC, E & S CONTROL AND CLEARING		30	12-06-22	01-26-23	46
C-S2aP2-1000	Install temporary MOT signs per Approved MOT Plan Segment 2a Phase 2	10	12-06-22	12-20-22	46
C-S2aP2-1010	Establish construction entrance Segment 2a Phase 2	5	12-22-22	12-30-22	46
C-S2aP2-1020	Install silt fences and E&S control features Segment 2a Phase 2	5	01-03-23	01-11-23	46
C-S2aP2-1030	Clearing & Grubbing Segment 2a Phase 2	10	01-12-23	01-26-23	46
STRUCTURE - BRIDGE B608 SUBSTRUCTURE (ABUTMENT A&B)		97	12-06-22	04-27-23	192
C-B608-0100	Demo Existing superstructure B608 and Abutments	20	12-06-22	01-11-23	65
C-B608-0120	Mobilize Crane	5	01-12-23	01-19-23	65
ABUTMENT A		68	01-20-23	04-27-23	192
C-B608-1000	Abut A - Install Temp Shoring	10	01-20-23	02-02-23	73
C-B608-1010	Abut A - Construct MSE walls	10	02-03-23	02-16-23	127
C-B608-1020	Abut A - Drive Abutment Pile	10	02-20-23	03-06-23	127
C-B608-1030	Abut A - F/R/P/S for Abutment Cap	5	03-07-23	03-14-23	148
C-B608-1040	Abut A - F/R/P/S Beam Seat	5	03-15-23	03-21-23	183
C-B608-1050	Abut A - F/P/S Backwall	5	03-22-23	03-28-23	183
C-B608-1060	Abut A - Place selected fill material & Settlement Period	30	03-29-23	04-27-23	291
ABUTMENT B		52	02-03-23	04-19-23	75
C-B608-2000	Abut B - Install Temp Shoring	5	02-03-23	02-09-23	62
C-B608-2010	Abut B - Construct MSE Wall	10	02-10-23	02-27-23	62
C-B608-2020	Abut B -Drive Abutment Pile	5	02-16-23	02-22-23	80
C-B608-2030	Abut B - F/R/P/S Abutment Cap	5	02-28-23	03-06-23	77
C-B608-2040	Abut B - F/R/P/S Beam Seat	5	03-07-23	03-13-23	77
C-B608-2050	Abut B - F/P/S Backwall	5	03-14-23	03-20-23	77
C-B608-2060	Abut B - Place selected fill material & Settlement Period	30	03-21-23	04-19-23	110
ROADWORK - ROUTE 17 SB WIDENING STA. 8005+00 TO 8009+00		174	01-27-23	10-10-23	175
ROUTE 17 SB WIDENING STA. STA. 8005+00 TO 8009+00		61	01-27-23	04-25-23	56
C-RT17-4000	17SB - Demo existing pavement, Cut & Fill and rough grade subgrade	10	01-27-23	02-09-23	46
C-RT17-4010	17SB - Storm Drainage pipe & Structure	10	02-10-23	02-27-23	46
C-RT17-4020	17SB - Underground conduits for ITS, electrical and lighting system	10	02-28-23	03-14-23	46
C-RT17-4030	17SB - Fine grade subgrade	10	03-15-23	03-31-23	46
C-RT17-4040	17SB - CTA Operation	5	04-03-23	04-07-23	57
C-RT17-4050	17SB - Install underdrain & edge drain	5	04-10-23	04-17-23	45
C-RT17-4060	17SB - Aggregate drain layer	5	04-18-23	04-25-23	45
I-95 AND ROUTE 17 INTERCHANGE IMPROVEMENT (OPTION # 3)		97	05-18-23	10-10-23	175
C-R17-1000	OPT#3 - Traffic Signals and COMM conduits	10	05-18-23	06-05-23	151
C-R17-1010	OPT#3 - Construct sign and traffic signal foundations	20	06-07-23	07-11-23	151

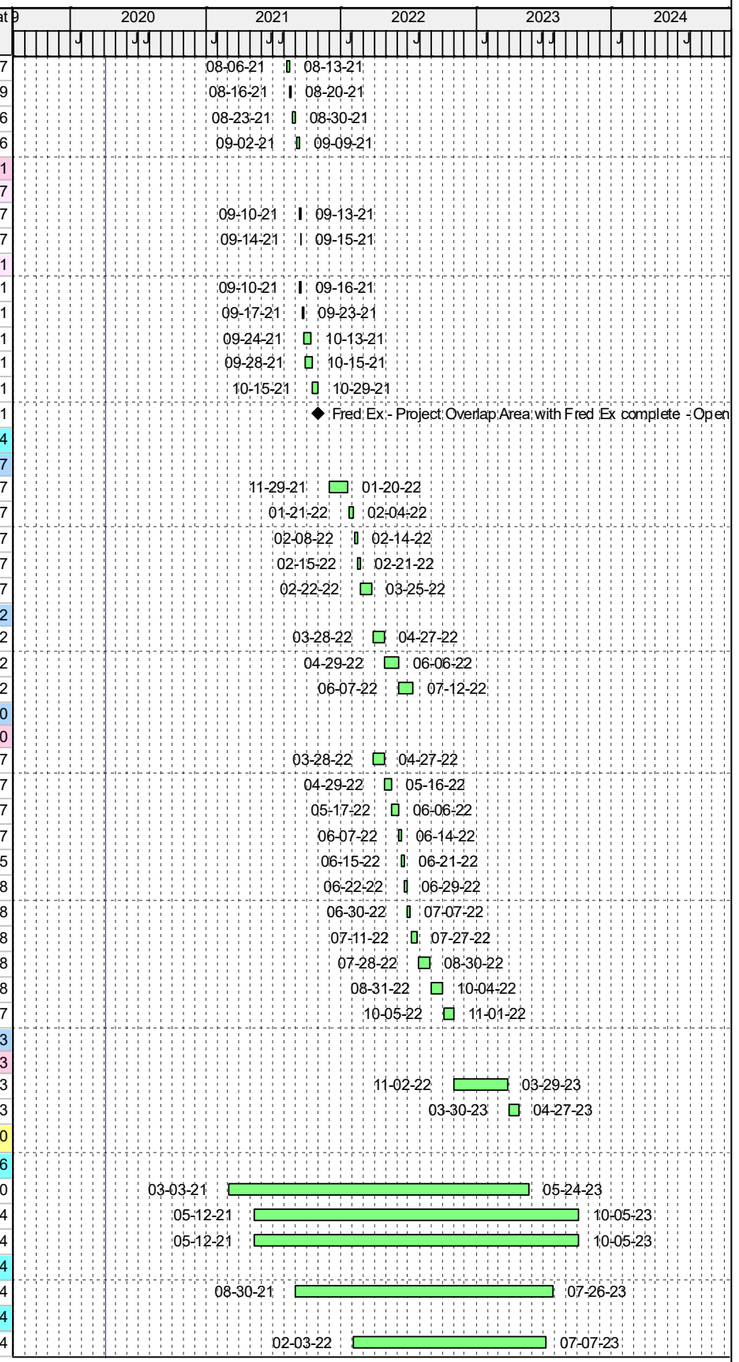


Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
C-RI7-1020	OPT#3 - Incidental Concrete Curb & Gutter	20	07-12-23	08-08-23	152
C-RI7-1030	OPT#3 - Place 21B	5	08-09-23	08-16-23	151
C-RI7-1040	OPT#3 - Concrete Sidewalk	20	08-17-23	09-14-23	152
C-RI7-1050	OPT#3 - Install Traffic Signals and ITS	5	09-15-23	09-22-23	152
C-RI7-1060	OPT#3 - Install Traffic Signs	5	09-25-23	10-02-23	152
C-RI7-1070	OPT#3 - Miscellaneous to complete	5	10-03-23	10-10-23	152
PAVEMENT - ROUTE 17 SB WIDENING STA. 8005+00 TO 8009+00		15	04-26-23	05-16-23	56
ROUTE 17 SB WIDENING STA. STA. 8005+00 TO 8009+00		15	04-26-23	05-16-23	56
C-RT17-1350	17SB - Asphaltic Concrete Base Course BM 25.0A	5	04-26-23	05-02-23	56
C-RT17-1360	17SB - Asphaltic Concrete intermediate Course IM 19.0A	5	05-03-23	05-09-23	56
C-RT17-1370	17SB - New 17 SB Tie-in	5	05-10-23	05-16-23	56
PHASE 3 - BRIDGE B608 OVER ROUTE 17 STAGE 2		271	03-07-23	04-15-24	52
GENERAL REQUIREMENT - MAINTENANCE OF TRAFFIC, E & S CONTROL AND CLEARING		124	03-07-23	09-01-23	52
C-S2aP3-1000	Install temporary MOT signs Segment 2a Phase 3	20	05-18-23	06-21-23	45
C-S2aP3-1010	Establish construction entrance Segment 2a Phase 3	10	06-23-23	07-11-23	45
C-S2aP3-1020	Install silt fences and E&S control features Segment 2a Phase 3	10	07-12-23	07-28-23	45
C-S2aP3-1030	Clearing & Grubbing Rte 17 and I-95 NB Segment 2a Phase 3	20	08-01-23	09-01-23	45
SHIFT TRAFFIC ROUTE 17 NB STA. 8001+00 TO 8027+00 TO EAST		2	03-07-23	03-08-23	154
C-S2aP2-1040	Switch traffic on Route 17 NB and SB to the outside	2	03-07-23	03-08-23	154
STRUCTURE - BRIDGE B608 PIER AND SUPERSTRUCTURE		168	03-09-23	11-09-23	153
C-B608-0500	B608 - Demo Existing B608 Pier	15	03-09-23	04-03-23	127
C-B608-0520	B608 - Finish milestone	10	10-25-23	11-09-23	134
PIER 1		53	04-05-23	06-21-23	154
C-B608-3000	P1 - Pile & Foundation	5	04-05-23	04-11-23	127
C-B608-3010	P1 - F/P/S Footing	5	04-12-23	04-18-23	158
C-B608-3020	P1 - Install Footing Rebar - assume mostly pre-tied	5	04-17-23	04-24-23	128
C-B608-3030	P1 - Assemble Column Forms	5	04-24-23	05-01-23	128
C-B608-3040	P1 - Install Column Rebar 1st pour	5	05-02-23	05-09-23	128
C-B608-3050	P1 - F/P/S/C - Column 1st pour	5	05-10-23	05-18-23	128
C-B608-3060	P1 - Assemble Cap Forms	10	05-19-23	06-07-23	128
C-B608-3070	P1 - F/R/P/S - Cap	10	06-08-23	06-21-23	135
C-B608-3080	P1 - Beam Seat	5	06-15-23	06-21-23	133
B608 SUPERSTRUCTURE		83	06-23-23	10-24-23	152
B608 GIRDER		10	06-23-23	07-11-23	133
C-B608-4000	Super - Erect Bridge Girder Span 1	5	06-23-23	07-03-23	133
C-B608-4010	Super - Erect Bridge Girder Span 2	5	07-05-23	07-11-23	133
B608 BRIDGE DECK		71	07-12-23	10-24-23	152
C-B608-5000	Super - Install & Adjust Bridge Overhang Bracket	10	07-12-23	07-28-23	133
C-B608-5010	Super - Install Edge Forms	10	08-01-23	08-15-23	133
C-B608-5020	Super - Install Deck Rebar	10	08-16-23	09-01-23	133
C-B608-5030	Super - Bidwell Set up/Dry Run	5	09-05-23	09-12-23	133
C-B608-5040	Super - Deck Pour	10	09-13-23	09-26-23	129
C-B608-5050	Super - Install Finger Joints	4	09-27-23	10-02-23	134
C-B608-5060	Super - Parapet Walls	10	10-03-23	10-16-23	130
C-B608-5070	Super - Grind/Groove Deck	5	10-17-23	10-24-23	134
ROADWORK - ROUTE 17 MEDIAN MODIFICATON		112	10-26-23	04-15-24	52
ROUTE 17 MEDIAN		112	10-26-23	04-15-24	52
C-X17-5000	17NB - Demo Existing median barrier, Cut & Fill and rough grade subgrade	10	10-26-23	11-10-23	45
C-X17-5010	17NB - Storm Drainage pipe & Structure	10	11-14-23	11-28-23	45
C-X17-5020	17NB - Underground conduits for ITS, electrical and lighting system	10	11-29-23	12-13-23	45
C-X17-5030	17NB - Fine grade subgrade	5	12-15-23	12-22-23	45
C-X17-5040	17NB - CTA Operation	5	01-16-24	01-22-24	28

Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
C-X17-5050	17NB - Install underdrain & edge drain	5	01-24-24	01-30-24	32
C-X17-5060	17NB - Aggregate drain layer	5	02-01-24	02-08-24	32
C-X17-5070	17NB- ITS and COMM system	20	02-09-24	03-12-24	41
C-X17-5080	17NB - Lighting System	20	03-13-24	04-15-24	41
PAVEMENT - ROUTE 17 MEDIAN MODIFICATON		18	03-18-24	04-11-24	54
ROUTE 17 MEDIAN		18	03-18-24	04-11-24	54
C-X17-5090	17NB - Asphaltic Concrete Base Course BM 25.0A	5	03-18-24	03-22-24	10
C-X17-5100	17NB - Asphaltic Concrete intermediate Course IM 19.0A	5	03-25-24	04-01-24	10
C-X17-5110	17NB - Temporary Signs and Temporary Pavement Marking	5	04-01-24	04-09-24	43
C-X17-5120	17NB - New Route 17 NB tie-in existing	1	04-09-24	04-11-24	43
SEGMENT 3		592	11-30-20	04-27-23	234
PHASE 1- TEMPORARY RAMP DETOUR TIE-IN I-95 GP LANES AT STA. 4639+00		133	11-30-20	06-11-21	0
GENERAL REQUIREMENT - UTILITY RELOCATIONS , MOT, E & SC AND CLEARING & GRUBBING		80	11-30-20	03-25-21	0
C-S3P1-1000	Utility relocations / Adjustments Segment 3 Phase 1	10	11-30-20	12-14-20	10
C-S3P1-1010	Install temporary MOT signs Segment 3 Phase 1	5	02-17-21	02-23-21	0
C-S3P1-1020	Establish construction entrance Segment 3 Phase 1	5	02-24-21	03-03-21	0
C-S3P1-1030	Install silt fences and E&S control features Segment 3 Phase 1	5	03-04-21	03-11-21	0
C-S3P1-1040	Clearing & Grubbing Segment 3 Phase 1	10	03-12-21	03-25-21	0
ROADWORK - TEMPORARY RAMP DETOUR TIE-IN I-95 GP LANES AT STA. 4639+00		43	03-26-21	05-26-21	0
I-95 CD LANES SHOULDER SHOULDER WIDENING FOR TEMP RAMP DETOUR		43	03-26-21	05-26-21	0
C-95CD-1000	95CD - Demo existing pavement and shoulder, Cut & Fill and rough grade subgrade	10	03-26-21	04-09-21	0
C-95CD-1010	95CD - Storm Drainage pipe & Structure and triple 8.0' x 8.0' Box Culvert extension	5	04-12-21	04-19-21	0
C-95CD-1020	95CD - Underground conduits for ITS, electrical and lighting system	5	04-12-21	04-19-21	0
C-95CD-1030	95CD - Fine grade subgrade	5	04-20-21	04-28-21	0
C-95CD-1040	95CD - CTA Operation	5	04-29-21	05-05-21	0
C-95CD-1050	95CD - Install underdrain & edge drain	5	05-06-21	05-14-21	0
C-95CD-1060	95CD - Aggregate drain layer	5	05-17-21	05-26-21	0
PAVEMENT - TEMPORARY RAMP DETOUR TIE-IN I-95 GP LANES AT STA. 4639+00		10	05-27-21	06-11-21	0
I-95 CD LANES SHOULDER SHOULDER WIDENING FOR TEMP RAMP DETOUR		10	05-27-21	06-11-21	0
C-95CD-1100	95CD - Asphaltic Concrete Base Course BM 25.0A	5	05-27-21	06-04-21	0
C-95CD-1110	95CD - Asphaltic Concrete intermediate Course IM 19.0A	5	06-07-21	06-11-21	0
C-95CD-1120	95CD - Temp. Pavement Tie-in	1	06-11-21	06-11-21	0
PHASE 2 - I 95 NB CD LANES TIE-IN PROJECT OVERLAP AREA WITH FRED EX AND PROPOSED RAMP C2		96	06-14-21	10-29-21	141
C-S3P2-1010	Shift Traffic - Utilize Temp ramp detour tie-in I -95 GP lanes Sta. 4639+00 - Hole Point	1	06-14-21	06-14-21	0
GENERAL REQUIREMENT - MAINTENANCE OF TRAFFIC, E & S CONTROL AND CLEARING		15	06-16-21	07-12-21	187
C-S3P2-1020	Install temporary MOT signs Segment 3 Phase 2	5	06-16-21	06-24-21	0
C-S3P2-1030	Utility relocations/ Adjustments	5	06-16-21	06-24-21	197
C-S3P2-1050	Install silt fences and E&S control features Segment 3 Phase 2	5	06-25-21	07-01-21	0
C-S3P2-1060	Clearing Segment 3 Phase 2	5	07-02-21	07-12-21	0
ROADWORK - I 95 NB CD LANES TIE - IN PROJECT OVERLAP AREA WITH FRED EX		76	07-13-21	10-29-21	1
I 95 NB CD LANES TIE - IN PROJECT OVERLAP AREA WITH FRED EX		41	07-13-21	09-09-21	1
C-FREDEX-2000	Fred Ex - Demo existing shoulder, Cut & Fill and Rough grade subgrade	5	07-13-21	07-20-21	0
C-FREDEX-2010	Fred Ex - Storm Drainage pipe & Structure	5	07-22-21	07-29-21	0
C-FREDEX-2020	Fred Ex - Underground conduits for ITS, electrical and lighting system	5	07-30-21	08-05-21	0
C-FREDEX-2030	Fred Ex - Fine grade subgrade	5	08-06-21	08-13-21	0
C-FREDEX-2040	Fred Ex - CTA Operation	5	08-16-21	08-20-21	1
C-FREDEX-2050	Fred Ex - Install underdrain & edge drain	5	08-23-21	08-30-21	1
C-FREDEX-2060	Fred Ex - Aggregate drain layer	5	09-02-21	09-09-21	1
RAMP C2 WIDENING		41	07-13-21	09-09-21	7
C-RDC2-1000	Ramp C2 - Demo existing shoulder, Cut & Fill and Rough grade subgrade	5	07-13-21	07-20-21	7
C-RDC2-1010	Ramp C2 - Storm Drainage pipe & Structure	5	07-22-21	07-29-21	7
C-RDC2-1020	Ramp C2 - Underground conduits for ITS, electrical and lighting system	5	07-30-21	08-05-21	7



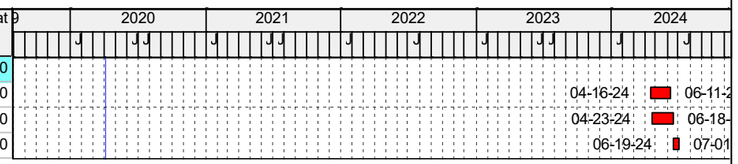
Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
C-RDC2-1030	Ramp C2 - Fine grade subgrade	5	08-06-21	08-13-21	7
C-RDC2-1040	Ramp C2 - CTA Operation	5	08-16-21	08-20-21	9
C-RDC2-1050	Ramp C2- Install underdrain & edge drain	5	08-23-21	08-30-21	6
C-RDC2-1060	Ramp C2 - Aggregate drain layer	5	09-02-21	09-09-21	6
PAVEMENT - I 95 NB CD LANES TIE - IN PROJECT OVERLAP AREA WITH FRED EX		34	09-10-21	10-29-21	1
RAMP C2 WIDENING		4	09-10-21	09-15-21	7
C-RDC2-2000	Ramp C2- Asphaltic Concrete Base Course BM 25.0A	2	09-10-21	09-13-21	7
C-RDC2-2010	Ramp C2- Asphaltic Concrete intermediate Course IM 19.0A	2	09-14-21	09-15-21	7
I 95 NB CD LANES TIE - IN PROJECT OVERLAP AREA WITH FRED EX		34	09-10-21	10-29-21	1
C-FREDEX-2200	Fred Ex - Asphaltic Concrete Base Course BM 25.0A	5	09-10-21	09-16-21	1
C-FREDEX-2210	Fred Ex - Asphaltic Concrete intermediate Course IM 19.0A	5	09-17-21	09-23-21	1
C-FREDEX-3000	Fred Ex - Milling existing pavement and removal of temp. Pavement	12	09-24-21	10-13-21	1
C-FREDEX-3010	Fred Ex - Asphaltic Concrete surface mix SM12.5E	12	09-28-21	10-15-21	1
C-FREDEX-3020	Fred Ex - Barrier/Guardrail, Final grading, seeding and Pavement Marking	10	10-15-21	10-29-21	1
C-FREDEX-3030	Fred Ex - Project Overlap Area with Fred Ex complete - Open to traffic	0		10-29-21	1
PHASE 3 I-95 NB AUXILLIARY LANES EXTENSION FROM STA. 4689+64.73 TO 4735+25.26 (OPTION #1)		347	11-29-21	04-27-23	234
GENERAL REQUIREMENT - UTILITY RELOCATIONS, MOT, E&SC AND CLEARING & GRUBBING		70	11-29-21	03-25-22	197
C-S3OPTA-0100	Utility relocations/ Adjustments	30	11-29-21	01-20-22	197
C-S3OPTA-0110	Install temporary MOT signs Segment 3 Option # 1	10	01-21-22	02-04-22	197
C-S3OPTA-0120	Establish construction entrance Segment 3 Option # 1	5	02-08-22	02-14-22	197
C-S3OPTA-0130	Install silt fences and E&S control features Segment 3 Option # 1	5	02-15-22	02-21-22	197
C-S3OPTA-0140	Clearing & Grubbing Segment 3 Option # 1	20	02-22-22	03-25-22	197
EARTHWORK		60	03-28-22	07-12-22	262
C-OPTA-1000	SWM-Bioretention # 3	20	03-28-22	04-27-22	262
C-OPTA-1010	SWM-Bioretention # 4	20	04-29-22	06-06-22	262
C-OPTA-1020	SWM-Bioretention # 5	20	06-07-22	07-12-22	262
ROADWORK - I-95 NB AUXILLIARY LANES EXTENSION FROM STA. 4689+64.73 TO 4735+25.26 (OPTION #1)		149	03-28-22	11-01-22	230
I-95 NB AUXILLIARY LANES EXTENSION FROM STA. 4689+64.73 TO 4735+25.26 (OPTION #1)		149	03-28-22	11-01-22	230
C-OPT1-2000	OPT#1 - Cut & Fill and rough grade subgrade	20	03-28-22	04-27-22	197
C-OPT1-2010	OPT#1 - Storm Drainage pipe & Structure	10	04-29-22	05-16-22	197
C-OPT1-2020	OPT#1- Underground conduits for ITS, electrical and lighting system	10	05-17-22	06-06-22	197
C-OPT1-2030	OPT#1 - Fine grade subgrade	5	06-07-22	06-14-22	197
C-OPT1-2040	OPT#1 - CTA Operation	5	06-15-22	06-21-22	205
C-OPT1-2050	OPT#1 - Install underdrain & edge drain	5	06-22-22	06-29-22	198
C-OPT1-2060	OPT#1- Aggregate drain layer	5	06-30-22	07-07-22	198
C-OPT1-2070	OPT#1 - Temporary Signs and Temporary Pavement Marking	10	07-11-22	07-27-22	198
C-OPT1-2080	OPT#1 - ITS and COMM system	20	07-28-22	08-30-22	198
C-OPT1-2090	OPT#1 - Lighting System	20	08-31-22	10-04-22	198
C-OPT1-2100	OPT#1Guardrail & Barrier	20	10-05-22	11-01-22	207
PAVEMENT - I-95 NB AUXILLIARY LANES EXTENSION FROM STA. 4689+64.73 TO 4735+25.26 (OPTION #1)		40	11-02-22	04-27-23	153
I-95 NB AUXILLIARY LANES EXTENSION FROM STA. 4689+64.73 TO 4735+25.26 (OPTION #1)		40	11-02-22	04-27-23	153
C-OPT1-3000	OPT#1 - Asphaltic Concrete Base Course BM 25.0A	20	11-02-22	03-29-23	153
C-OPT1-3010	OPT#1 - Asphaltic Concrete intermediate Course IM 19.0A	20	03-30-23	04-27-23	153
MISCELLENEOUS TO COMPLETE ALL SEGMENTS		817	03-03-21	07-01-24	0
BARRIER AND GUARDRAIL		638	03-03-21	10-05-23	176
C-BR-1000	New Concrete Barrier - Project Wide	500	03-03-21	05-24-23	160
C-GR-1000	New Guardrail - Project Wide	500	05-12-21	10-05-23	154
C-SGN-1010	Traffic Signs & Overhead Sign - Project Wide	500	05-12-21	10-05-23	154
ITS SYSTEM		400	08-30-21	07-26-23	154
C-ITS-1000	CCTV & ITS System - Project Wide	400	08-30-21	07-26-23	154
TRAFFICSIGNAL AND LIGHTING		300	02-03-22	07-07-23	164
C-SGN-1000	Traffic Signal & Lighting - Project Wide	300	02-03-22	07-07-23	164



Remaining Level of Effort | Actual Work | Critical Remaining Work
Actual Level of Effort | Remaining Work | Milestone

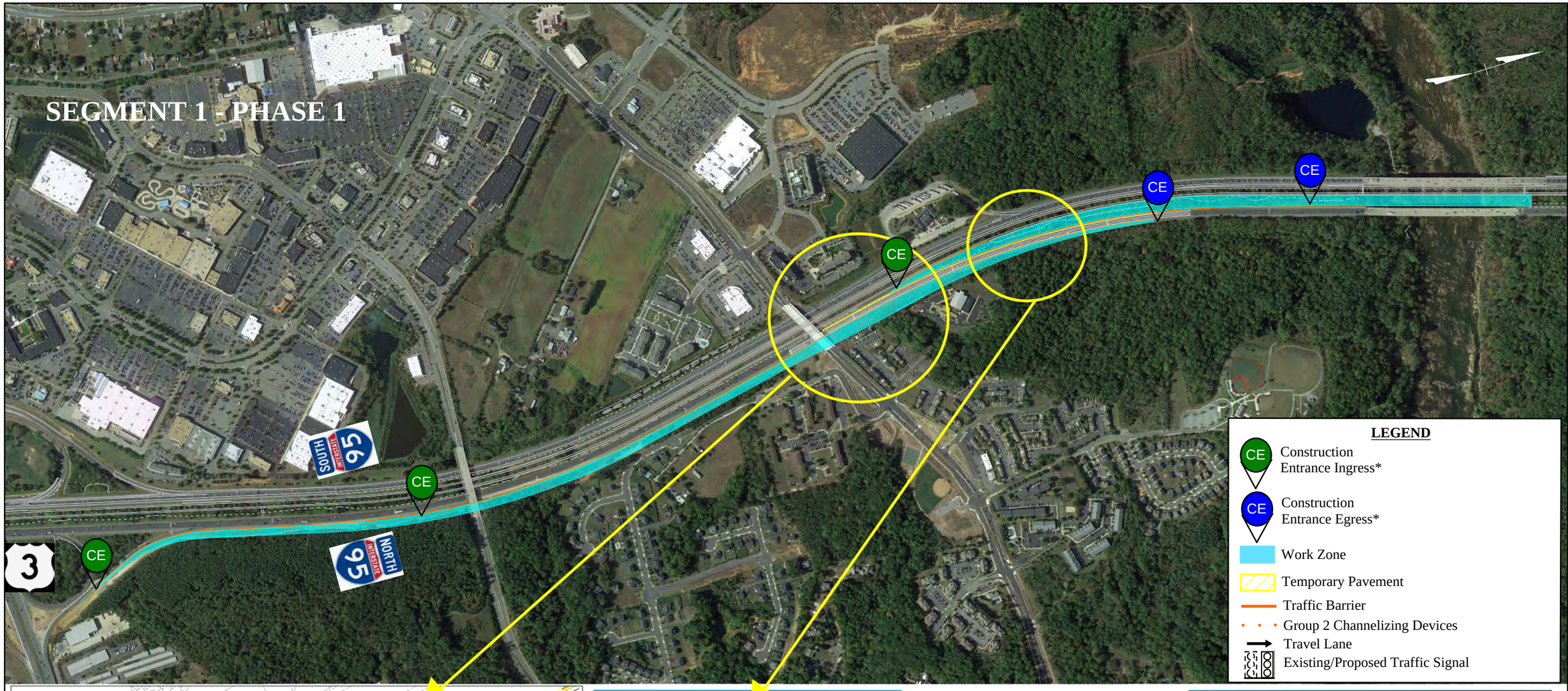
BRANCH CIVIL | FLATIRON | BRANCH - FLATIRON JOINT VENTURE | STV 100 Years

Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
ROADWAY FINAL		54	04-16-24	07-01-24	0
C-PV-1000	Asphaltic Concrete Surface SM-12.5E - Project wide	40	04-16-24	06-11-24	0
C-PV-1010	Final Pavement Marking - Project wide	40	04-23-24	06-18-24	0
C-PV-1020	Switch traffic to New Traffic Configuration - Project wide	9	06-19-24	07-01-24	0



ADDITIONAL INFORMATION

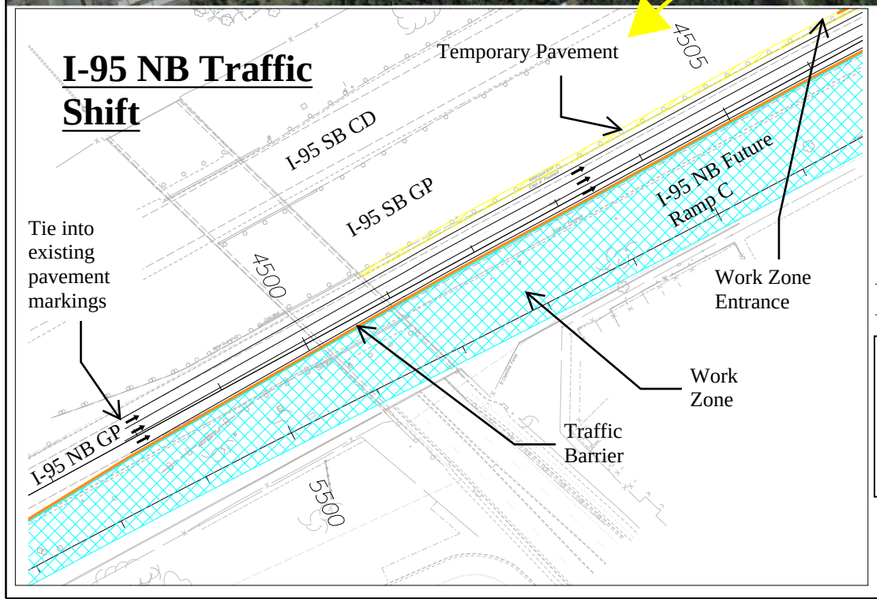
SEGMENT 1 - PHASE 1

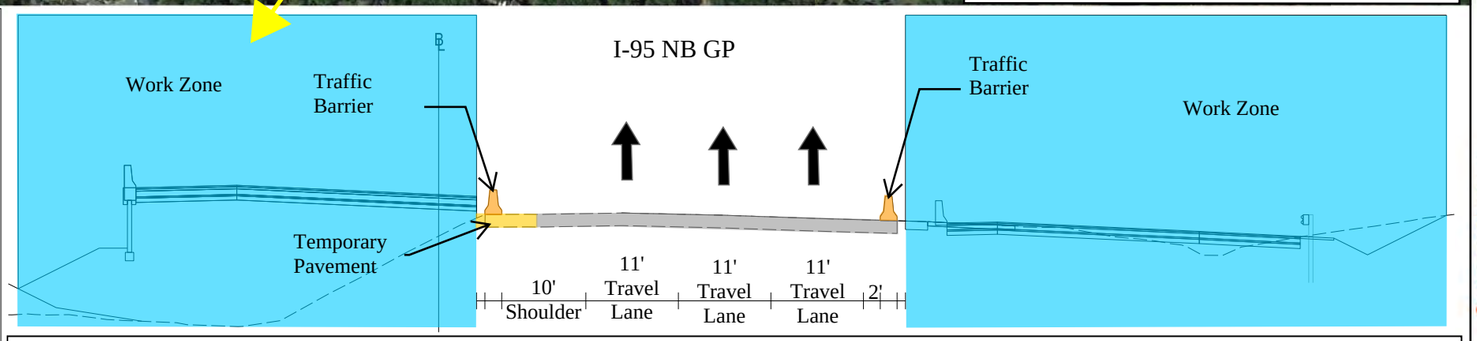


LEGEND

- Construction Entrance Ingress*
- Construction Entrance Egress*
- Work Zone
- Temporary Pavement
- Traffic Barrier
- Group 2 Channelizing Devices
- Travel Lane
- Existing/Proposed Traffic Signal

I-95 NB Traffic Shift





Phase 1:
1. Prior to traffic shift, construct 6' wide section of temp. pavement along the west side of I-95 NBL utilizing left shoulder closures.
2. Place traffic barrier along right shoulder from Ramp C. Maintain existing lane widths & shoulder
3. Perform 4' traffic shift (L=280') towards the outside and place traffic barrier along the right edge closing the ex. right shoulder. Maintain 3-11' lanes & 1-10' shoulder.
4. Place traffic barrier along the outside left shoulder.
5. Construct Ramp C. Construct NB GP Lanes, and Construct River Bridge.

*Note: Construction entrances will be spaced 1 mile apart on the GP lanes

N.T.S.

CONCEPTUAL PLANS

DESIGN BUILDER: FLATIRON / BRANCH CIVIL

DESIGNED BY: STV 100 Years

STATE PROJECT NO. 0095-III-270

FEDERAL PROJECT NO. NHP-095-2(545)

I-95 NB RAPPAHANNOCK RIVER CROSSING
MAINTENANCE OF TRAFFIC
SEGMENT 1 - PHASE 1

SHEET NO. MOT-1

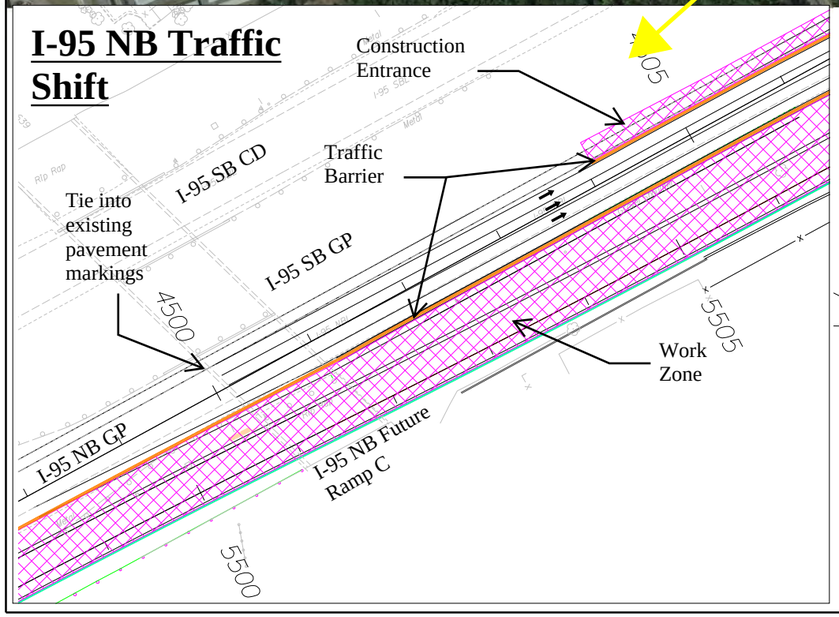
PAGE NO. 79

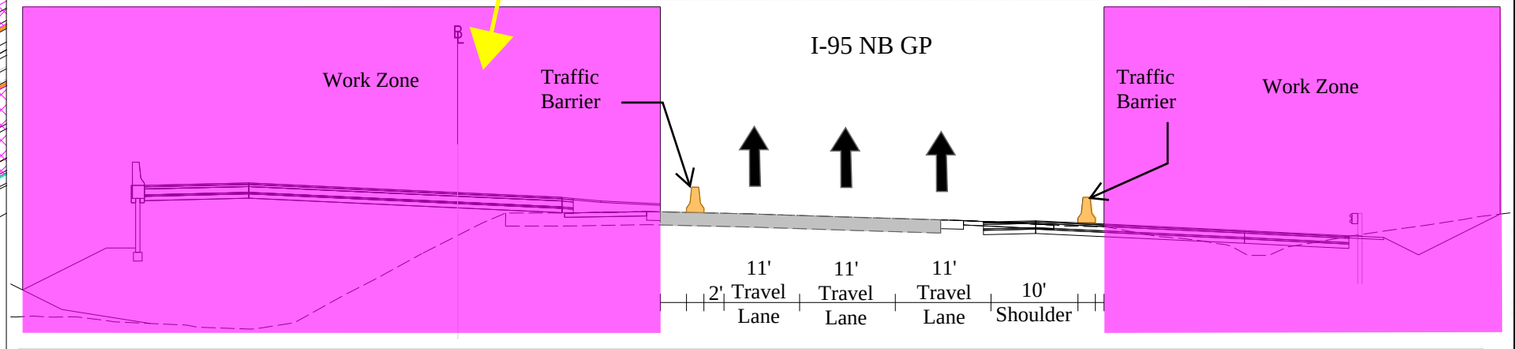
SEGMENT 1 - PHASE 2

LEGEND

- CE — Construction Entrance Ingress*
- CE — Construction Entrance Egress*
- Work Zone
- Temporary Pavement
- Traffic Barrier
- Group 2 Channelizing Devices
- Travel Lane
- Existing/Proposed Traffic Signal

I-95 NB Traffic Shift





Phase 2:
1. Perform 4' traffic shift towards the inside (L=280') and place traffic barrier along the left closing the existing left shoulder. Maintain 3-11' lanes and 1-10' shoulder.
2. Move traffic barrier along right edge line, maintaining positive protection.
3. Construct remaining full depth pavement along the existing left shoulder.
4. Continue Construction of NB GP, River Bridge, and Ramp C.

*Note: Construction entrances will be spaced 1 mile apart on the GP lanes.

N.T.S.

CONCEPTUAL PLANS

DESIGN BUILDER: BRANCH CIVIL / FLATIRON

DESIGNED BY: STV 100 Years

STATE PROJECT NO. 0095-III-270

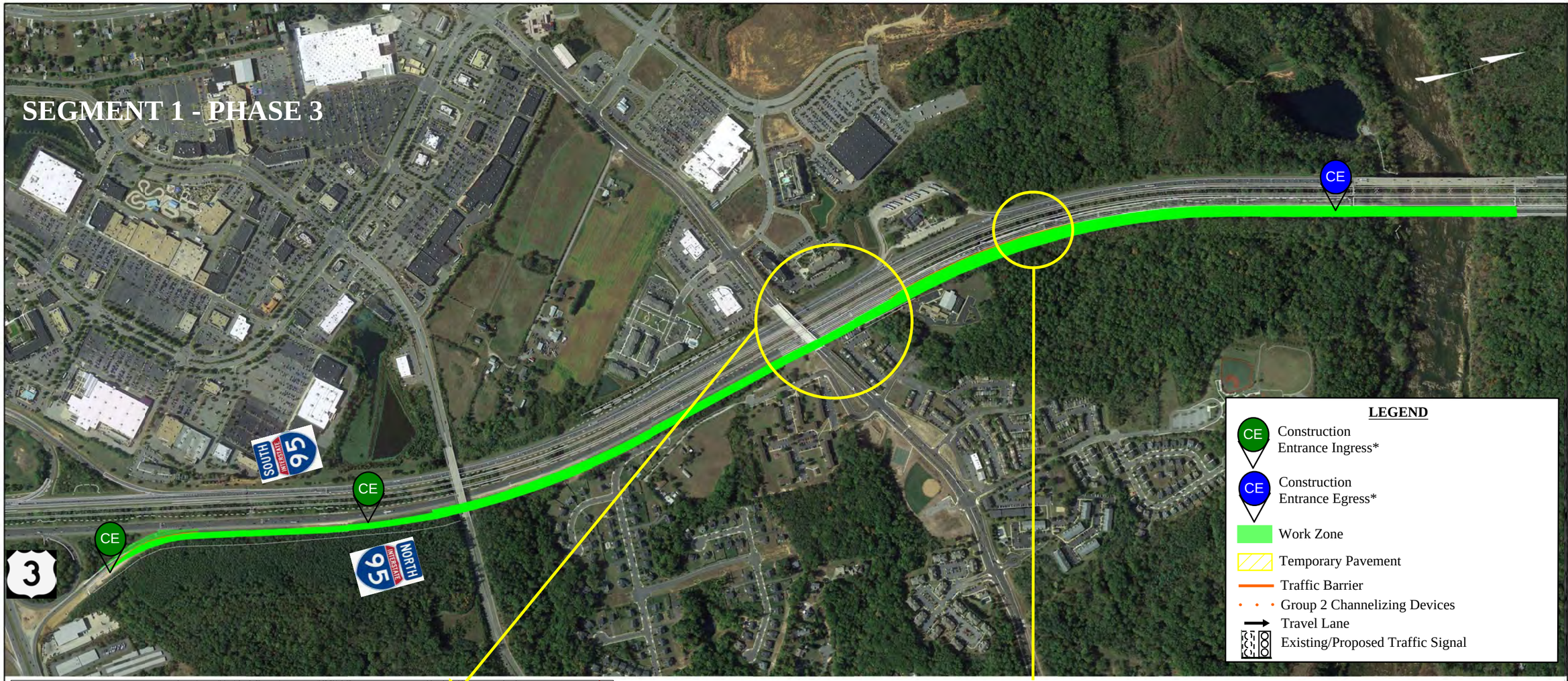
FEDERAL PROJECT NO. NHP-095-2(545)

I-95 NB RAPPAHANNOCK RIVER CROSSING
MAINTENANCE OF TRAFFIC
SEGMENT 1 - PHASE 2

SHEET NO. MOT-2

PAGE NO. 80

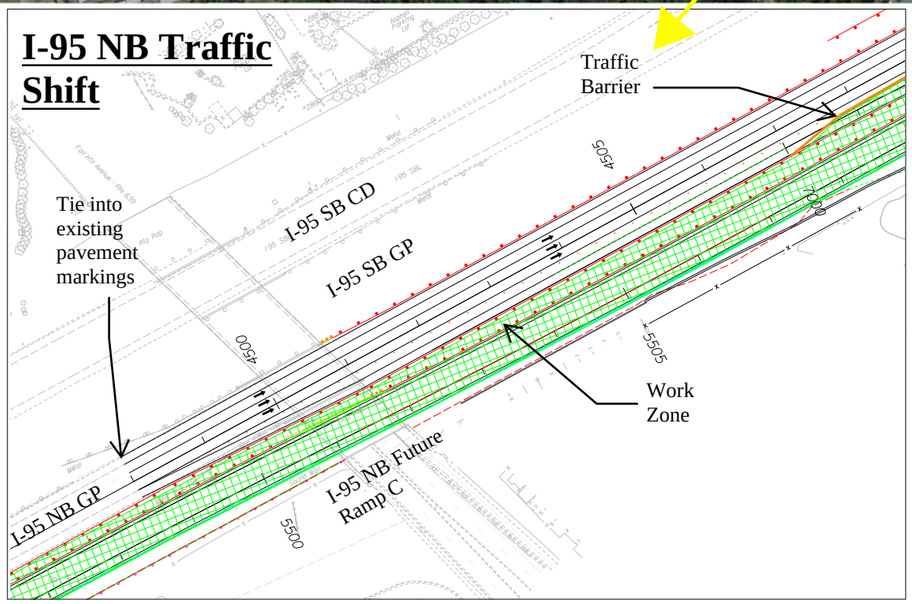
SEGMENT 1 - PHASE 3

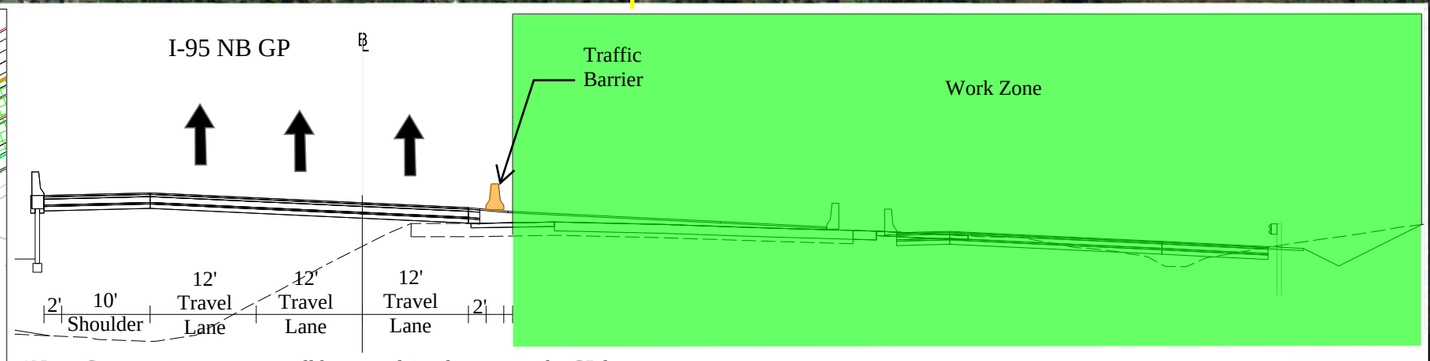


LEGEND

- CE — Construction Entrance Ingress*
- CE — Construction Entrance Egress*
- Work Zone
- Temporary Pavement
- Traffic Barrier
- Group 2 Channelizing Devices
- Travel Lane
- Existing/Proposed Traffic Signal

I-95 NB Traffic Shift





*Note: Construction entrances will be spaced 1 mile apart on the GP lanes.

Phase 3:
1. Shift traffic onto new I-95 GP Lanes, Rte 3 ramp traffic to maintain existing connection.
2. Place traffic barrier along left shoulder of new I-95 CD Road tying into the median barrier wall.
3. Construct final median barrier wall. Continue to construct Slip Ramp, CD Lane and Ramp C.

Phase 4:
1. Utilizing off-peak lane closures, perform final pavement course & striping of Rte 3 Ramp C and CD System, Open CD system.
2. Perform Demolition of existing Rte. 3 Ramp C gore utilizing shoulder closure of I-95 GP.

N.T.S.

CONCEPTUAL PLANS

DESIGN BUILDER: FLATIRON / BRANCH CIVIL

DESIGNED BY: STV 100 years

STATE PROJECT NO. 0095-III-270

FEDERAL PROJECT NO. NHP-095-2(545)

I-95 NB RAPPAHANNOCK RIVER CROSSING
MAINTENANCE OF TRAFFIC
SEGMENT 1 - PHASE 3

VDOT

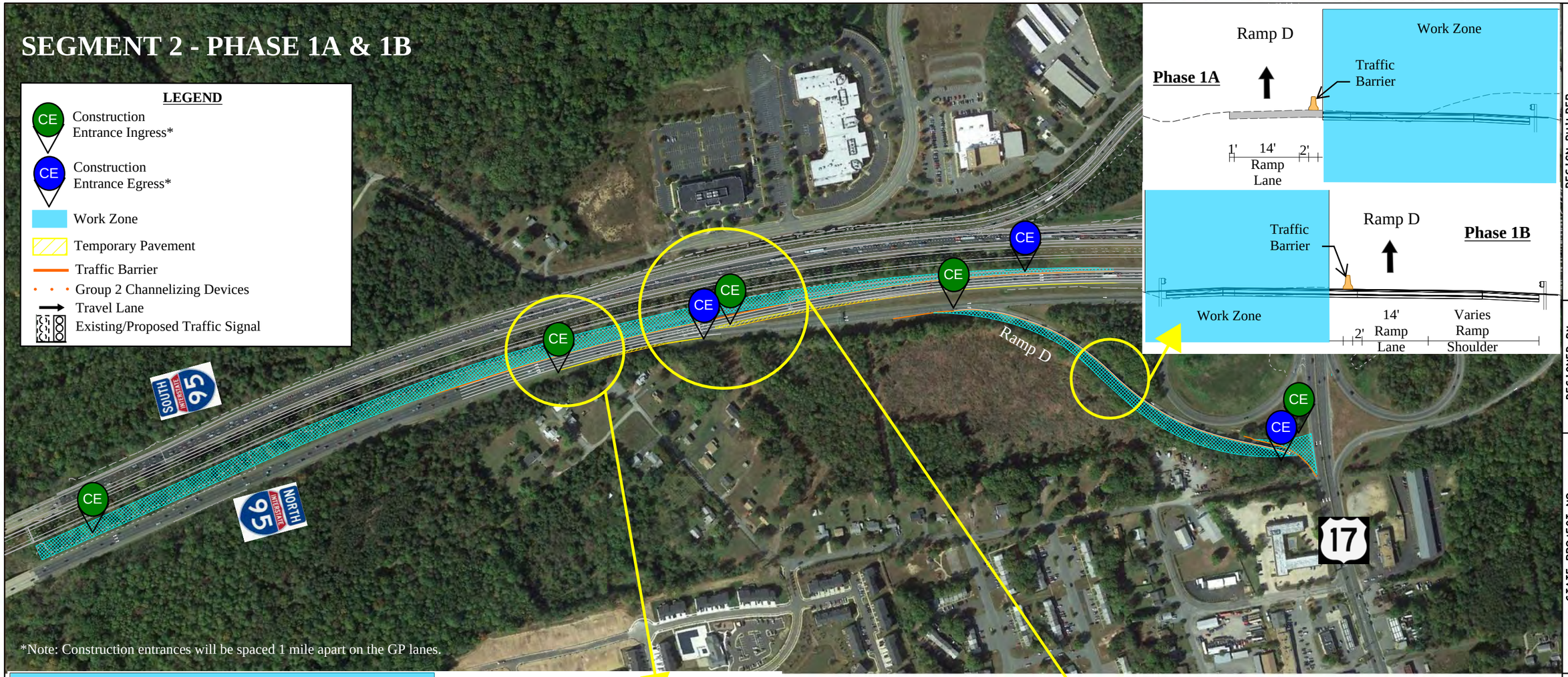
SHEET NO. MOT-3

PAGE NO. 81

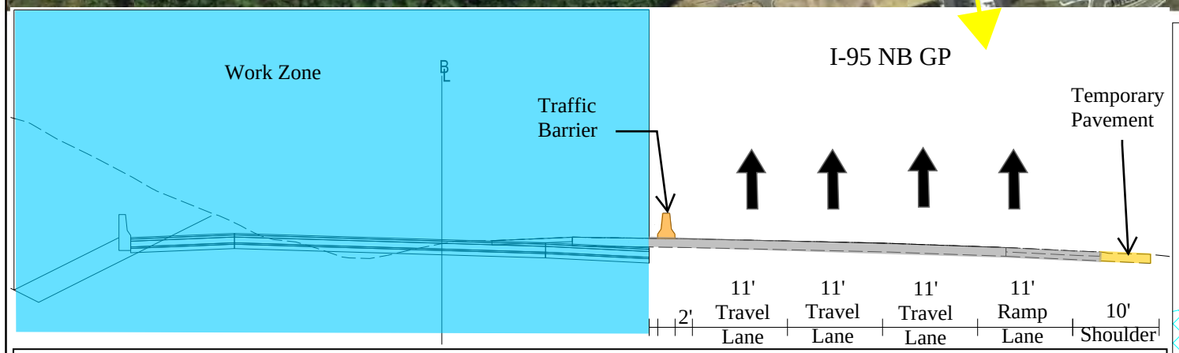
SEGMENT 2 - PHASE 1A & 1B

LEGEND

- CE — Construction Entrance Ingress*
- CE — Construction Entrance Egress*
- Work Zone
- Temporary Pavement
- Traffic Barrier
- Group 2 Channelizing Devices
- Travel Lane
- Existing/Proposed Traffic Signal



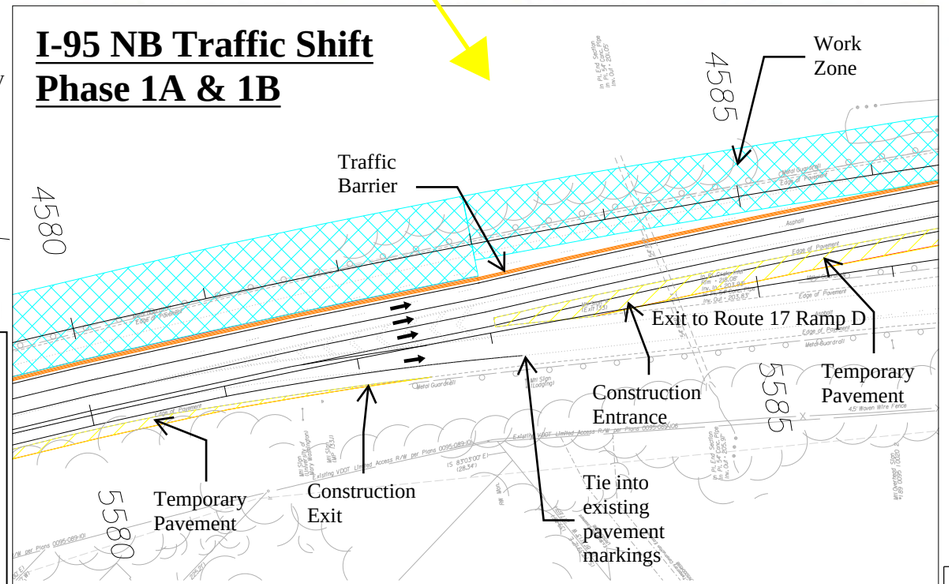
*Note: Construction entrances will be spaced 1 mile apart on the GP lanes.



Phase 1A:
1. Construct temporary pavement along right edge of existing shoulder utilizing off-peak shoulder closures.
2. Place traffic barrier along left edge, perform a mainline traffic shift utilizing a temporary alignment with a radius of 8000'. Maintain 3-11' lanes and 1-10' shoulder and existing decel length for exit 133 to I-95 CD.
3. Construct I-95 NB GP full depth pavement and other roadway features behind guardrail and traffic barrier.
4. Along Ramp D, place traffic barrier along right edge, maintain 14' wide ramp D lane. Construct East portion of full depth Ramp D.
5. Along Ramp D, place traffic barrier along left edge, construct proposed Ramp D tie in to Rte. 17.

Phase 1B:
1. Along Ramp D, place traffic barrier along left edge, maintain 14' wide ramp D lane. Construct West portion of full depth Ramp D.
2. Along CD Road at Ramp D departure, place traffic barrier along right edge, construct gore for Ramp D.

I-95 NB Traffic Shift Phase 1A & 1B



N.T.S.

CONCEPTUAL PLANS

DESIGN BUILDER: FLATIRON / BRANCH CIVIL

DESIGNED BY: STV 100 Years

STATE PROJECT NO. 0095-III-270

FEDERAL PROJECT NO. NHP-095-2(545)

I-95 NB RAPPAHANNOCK RIVER CROSSING

MAINTENANCE OF TRAFFIC SEGMENT 2 - PHASE 1A & 1B

VDOT Virginia Department of Transportation

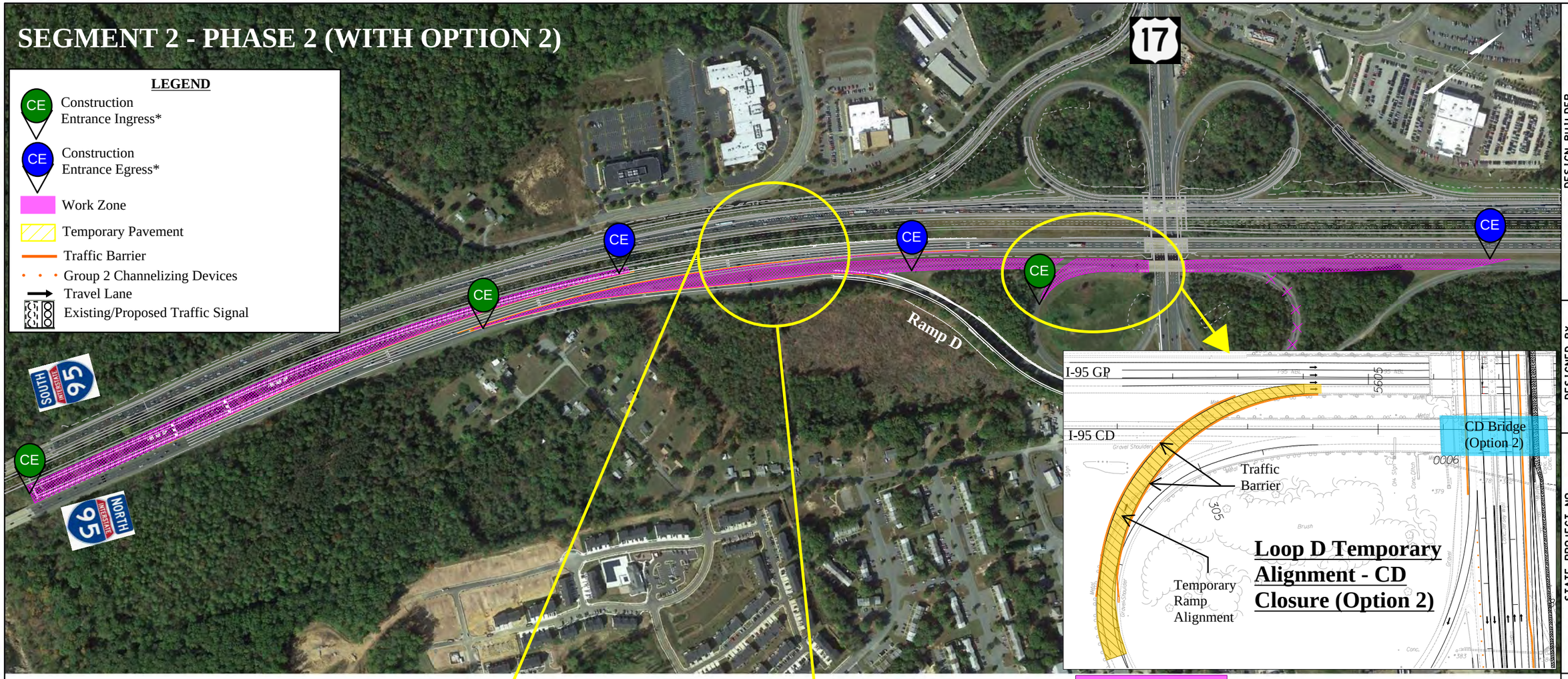
SHEET NO. MOT-4

PAGE NO. 82

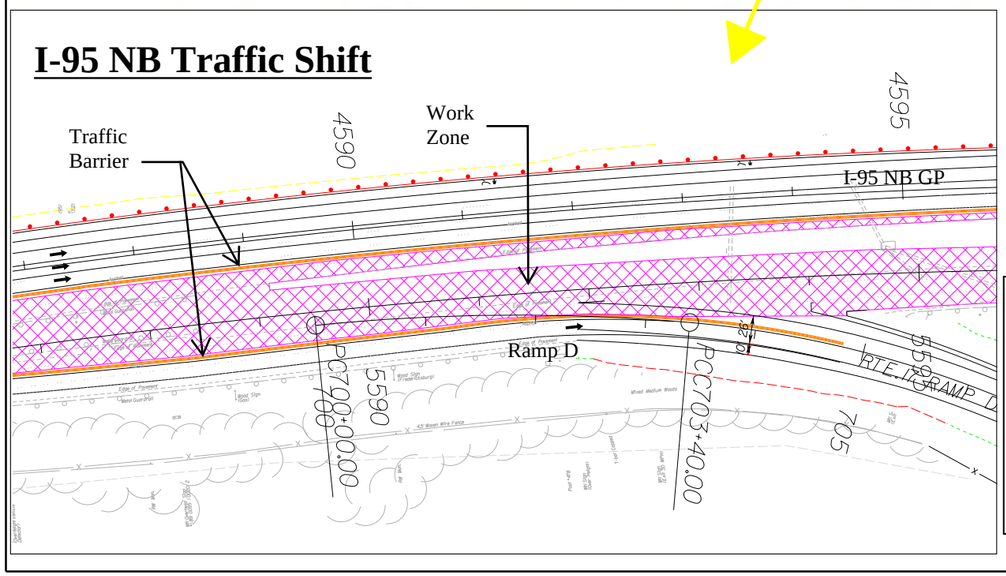
SEGMENT 2 - PHASE 2 (WITH OPTION 2)

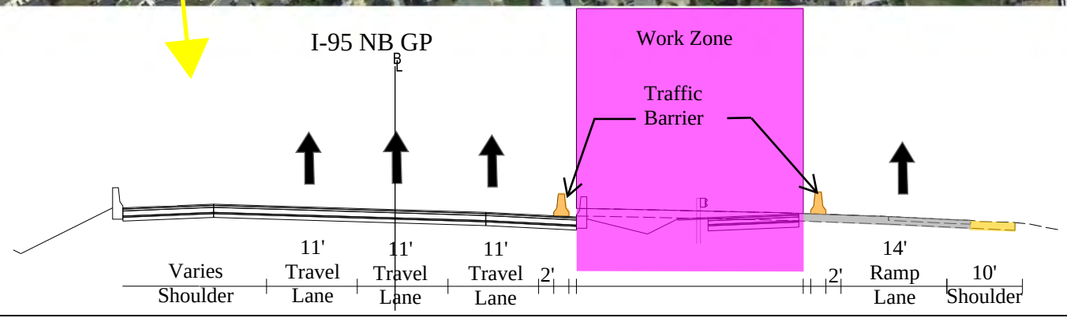
LEGEND

- CE — Construction Entrance Ingress*
- CE — Construction Entrance Egress*
- Work Zone
- Temporary Pavement
- Traffic Barrier
- Group 2 Channelizing Devices
- Travel Lane
- Existing/Proposed Traffic Signal



I-95 NB Traffic Shift





N.T.S.

Phase 2

1. Alter existing overheight signage messaging, close CD Road from Exit 133 to Ramp C and open Proposed Ramp D in final configuration allowing for a temporary through movement for potential overheight vehicles.
2. Place traffic barrier along left edge and perform a mainline traffic shift utilizing a temporary alignment with a radius of 8000' proposed pavements constructed in Phase 1. Maintain 3-11' lanes and 1-10' shoulder. Maintain existing departure point for exit 133 to I-95 CD and provide 690' decel length.
3. Place traffic barrier along right edge of temporary mainline alignment.
4. Place traffic barrier along left edge of I-95 CD road Exit 133, maintaining a 14' wide ramp lane with 2' offset to the face of barrier and utilize existing right shoulder width.
5. Construct I-95 NB GP full depth pavement and other roadway features in median section.
6. Under closure of CD Road - construct full depth pavement sections, final M&O, Proposed I-95 CD Road Bridge (under Option 2), and final striping.

*Note: Construction entrances will be spaced 1 mile apart on the GP lanes.

CONCEPTUAL PLANS

DESIGN BUILDER: FLATIRON / BRANCH CIVIL

DESIGNED BY: STV 100 years

STATE PROJECT NO. 0095-III-270

FEDERAL PROJECT NO. NHP-095-2(545)

I-95 NB RAPPAHANNOCK RIVER CROSSING

MAINTENANCE OF TRAFFIC SEGMENT 2 - PHASE 2

VDOT Virginia Department of Transportation

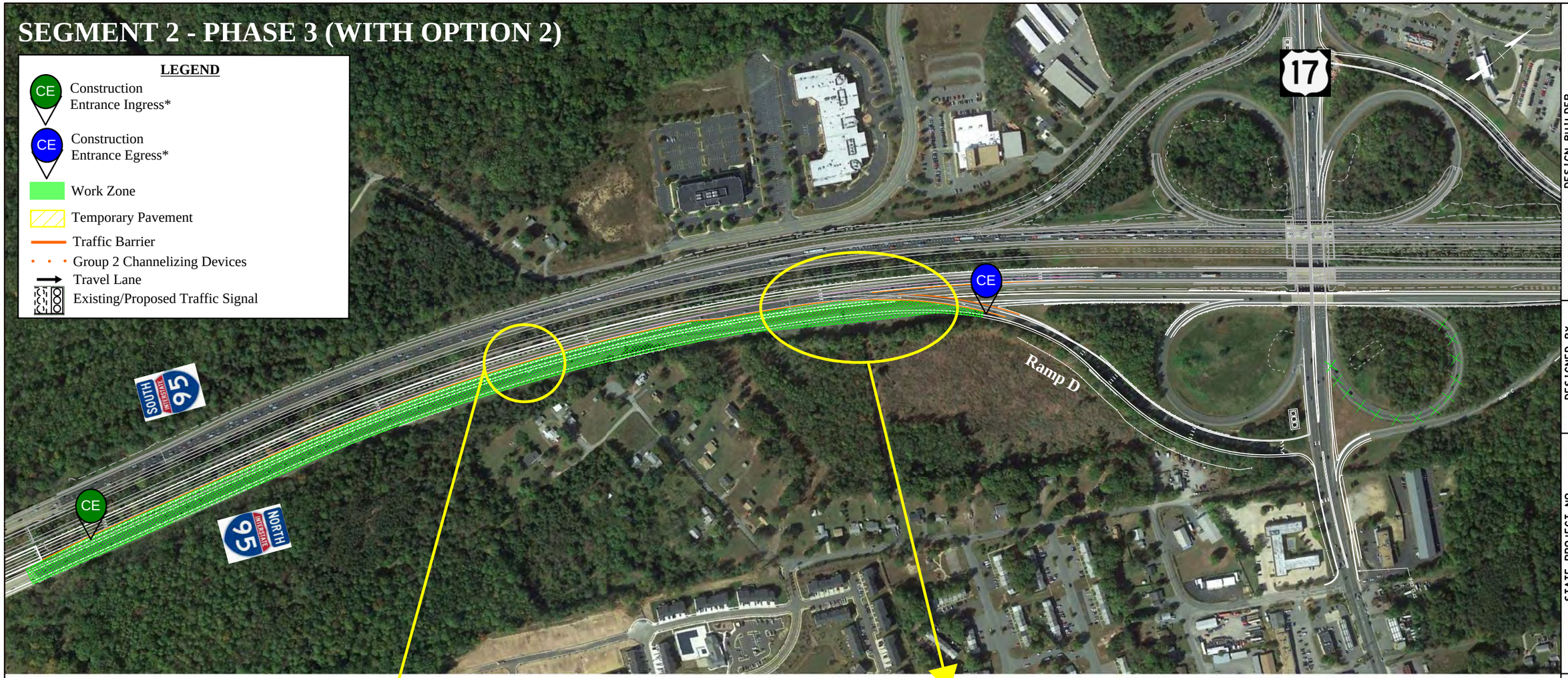
SHEET NO. MOT-5

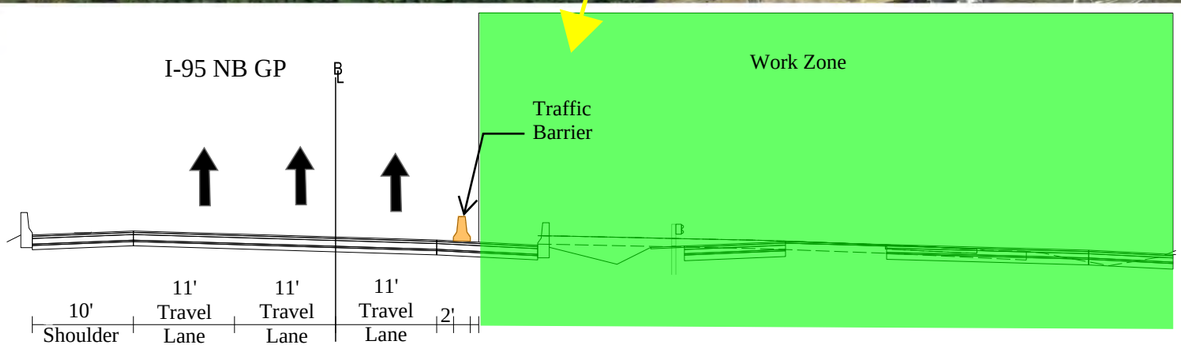
PAGE NO. 83

SEGMENT 2 - PHASE 3 (WITH OPTION 2)

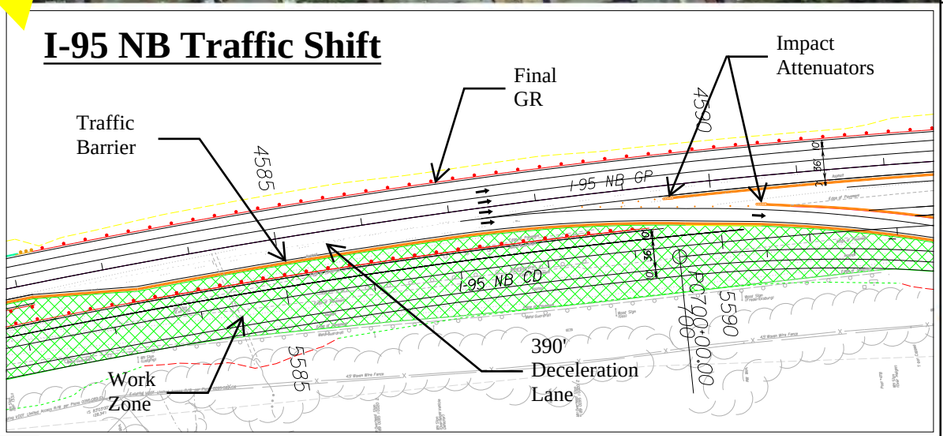
LEGEND

- CE — Construction Entrance Ingress*
- CE — Construction Entrance Egress*
- Work Zone
- Temporary Pavement
- Traffic Barrier
- Group 2 Channelizing Devices
- Travel Lane
- Existing/Proposed Traffic Signal





I-95 NB Traffic Shift



Phase 3:
1. Utilize new I-95 NB GP pavement, place traffic barrier along right edge of travel & continue final construction of I-95 NB CD system and perform final striping.
2. Move Exit 133 departure point to approx. Sta 4582+00 providing 390' deceleration and a 1600' radius to Ramp D.

Phase 4:
1. Construct any remaining resurfacing and final striping of I-95 NB GP and tie-ins utilizing off-peak lane closures.

N.T.S.

CONCEPTUAL PLANS

DESIGN BUILDER: FLATIRON / BRANCH CIVIL

DESIGNED BY: STV 100 Years

STATE PROJECT NO. 0095-III-270

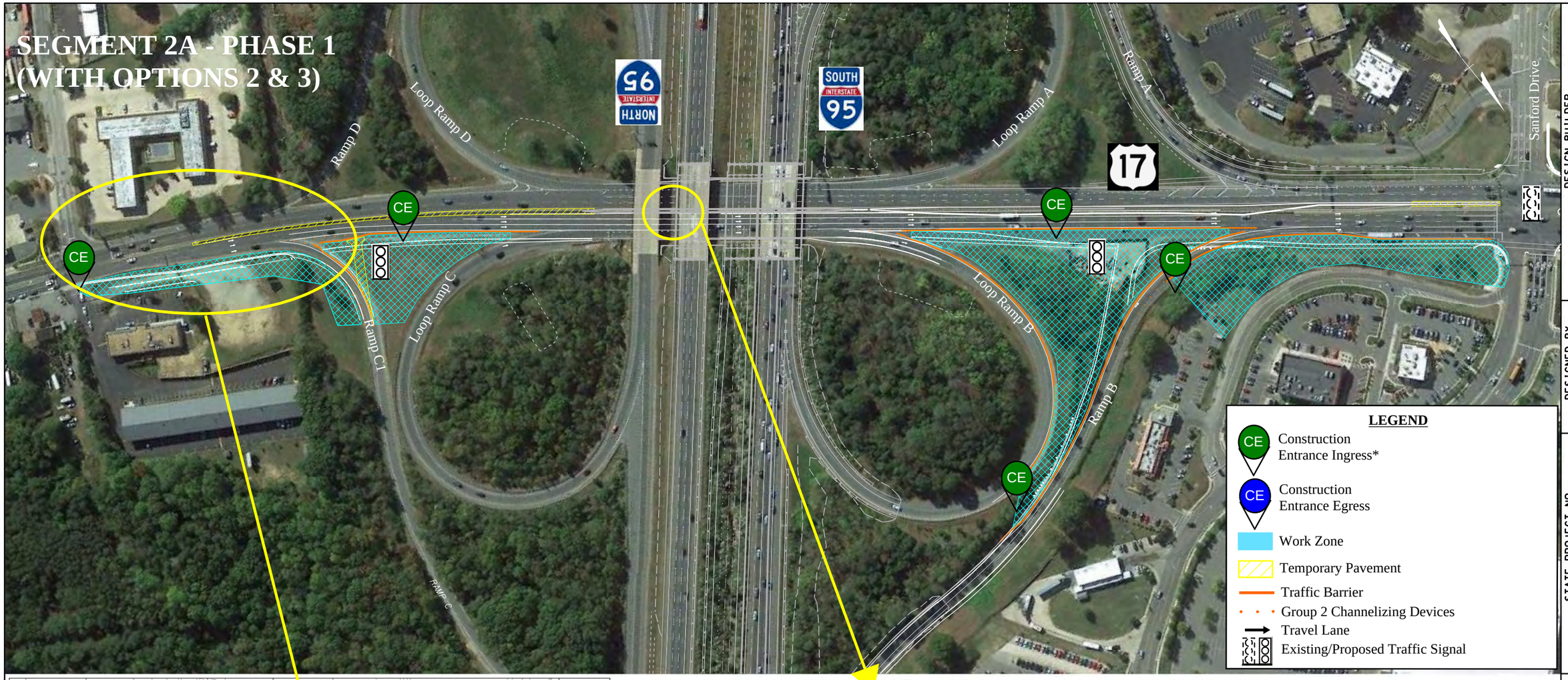
FEDERAL PROJECT NO. NHP-095-2(545)

I-95 NB RAPPAHANNOCK RIVER CROSSING
MAINTENANCE OF TRAFFIC
SEGMENT 2 - PHASE 3

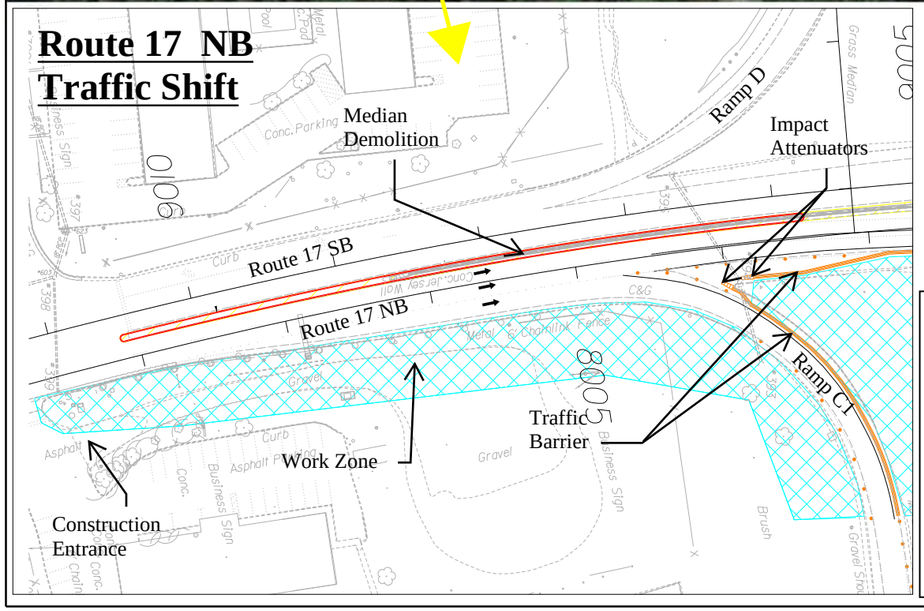
SHEET NO. MOT-6

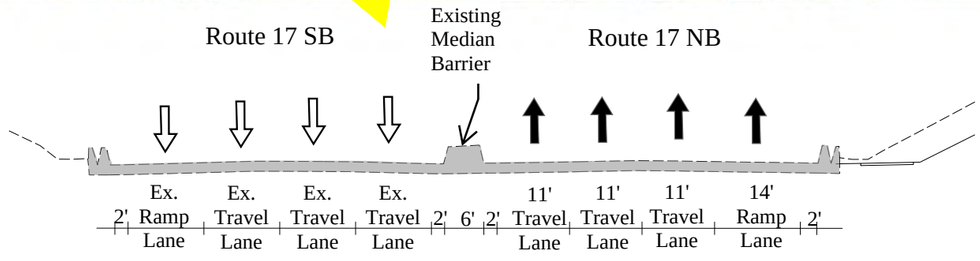
PAGE NO. 84

SEGMENT 2A - PHASE 1
(WITH OPTIONS 2 & 3)



Route 17 NB Traffic Shift





*Note: All Construction Entrances shown in the phase will serve as both ingress & egress

Phase 1:
1. Behind existing guardrail & utilizing off-peak right lane closures perform proposed roadway curb work at Short Street Intersection.
2. Perform inside off-peak lane closures to demolish existing median and install temporary pavement.
3. Place traffic barrier in gore area of Route 17 NB, Ramp C1, and Loop Ramp C as shown maintaining a 14' wide ramp with a 2' offset to face of barrier. Widen existing mainline section to proposed curb alignment in order to allow for triple left turn movement off proposed Ramp D, construct through movement receiving lane for next Phase, and install final signal.
4. Maintain existing inside edge line and perform 2.5' traffic shift towards inside providing 3-11' lanes and 1-14' ramp weave lane.
5. Place traffic barrier in gore area of Route 17 NB, Loop Ramp B, and Ramp B as shown maintaining a 14' wide ramp for Loop Ramp B, and a 15' wide ramp for Ramp B.
6. Construct proposed Ramp B, proposed sidewalk under Option 3, stormwater facilities, and other remaining roadway features.
7. Construct new curbline & install proposed traffic signal at the intersection of Route 17 & S. Gateway Dr. behind traffic barrier.
8. Construct a portion of the proposed median nose utilizing off-peak left lane closures at the intersection of Route 17 & Sanford Dr.

N.T.S.

CONCEPTUAL PLANS

DESIGN BUILDER
FLATIRON
BRANCH CIVIL

DESIGNED BY
STV 100 Years

STATE PROJECT NO.
0095-III-270

FEDERAL PROJECT NO.
NHP-095-2(545)

I-95 NB RAPPAHANNOCK RIVER CROSSING
MAINTENANCE OF TRAFFIC
SEGMENT 2A - PHASE 1

SHEET NO.
MOT-7

PAGE NO.
85

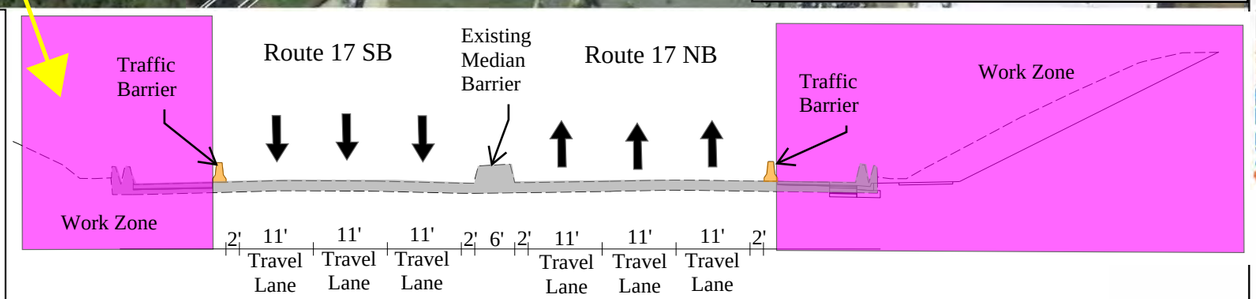
SEGMENT 2A - PHASE 2
(WITH OPTIONS 2 & 3)

Temporary Loop Ramp D
Ramp D
Loop Ramp D
Loop Ramp A
Ramp A
Sanford Drive
Loop Ramp B
Ramp B
Loop Ramp C
Ramp C1
Ramp C
CE
17
SOUTH INTERSTATE 95
NORTH INTERSTATE 95

LEGEND

- CE — Construction Entrance Ingress
- CE — Construction Entrance Egress
- Work Zone
- Temporary Pavement
- Traffic Barrier
- Group 2 Channelizing Devices
- Travel Lane
- Existing/Proposed Traffic Signal

Phase 2:
1. In NB direction, utilize new curb line, restripe NB pavement, maintain 3-11' through lanes following existing inside edge line.
2. Open Ramp D, decommission Loop Ramp C, maintain Loop B, and open Ramp B.
3. NB Route 17 at Sanford Dr intersection to utilize proposed lane use configuration.
4. Place traffic barrier along right edge line, maintaining 2' offset to face of barrier, of Route 17 NB. Open 4th lane for deceleration to Loop Ramp B.
5. Place traffic barrier along right edge of Ramp B, maintaining a 15' wide ramp with a 2' offset to face of barrier, construct remaining roadway elements associated with Ramp B.
6. Place traffic barrier along the existing Loop ramp D and Loop ramp A weave lane, remove add-on lane, maintain existing left edge line and restripe SB Route 17 to 2-11' through lanes and 1-11' ramp weave lane.
7. Construct portion of temporary loop ramp D outside of traffic.
8. Close CD road and construct remaining portion of temporary loop ramp D.
9. Perform a 3' traffic shift to the west (L=210') to allow for temporary loop ramp D acceleration lane. Maintain 3-11' lanes and provide 1-12' loop ramp D acceleration lane. Provide a minimum 1510' acceleration length, merge into I-95 NB GP.
10. Open temporary Loop ramp D and close remaining portion of CD road in order to reconstruct I-95 CD Road bridge outside of traffic.
11. Demolish existing I-95 CD bridge abutment and construct proposed abutment.

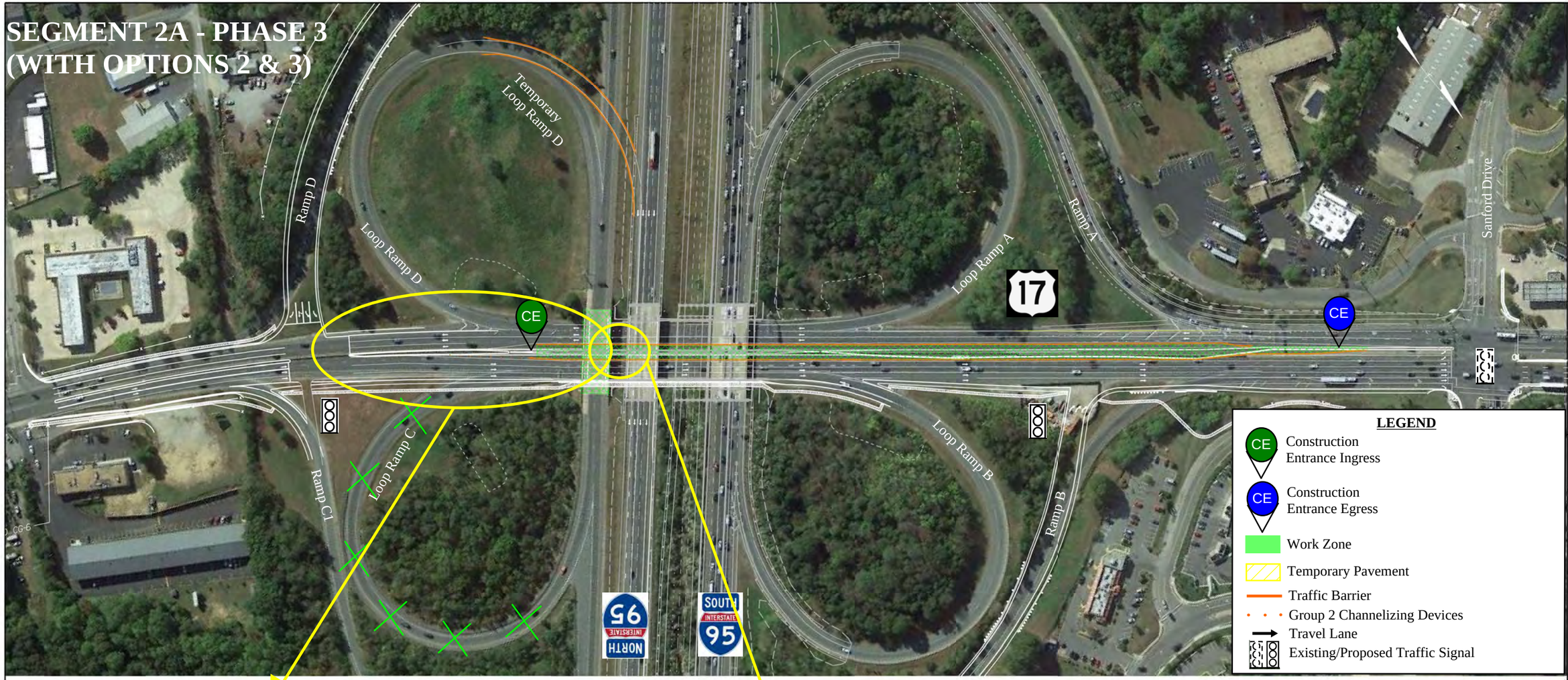


N.T.S.

CONCEPTUAL PLANS

DESIGN BUILDER: FLATIRON / BRANCH CIVIL
DESIGNED BY: STV 100 years
STATE PROJECT NO. 0095-III-270
FEDERAL PROJECT NO. NHP-095-2(545)
VDOT
I-95 NB RAPPAHANNOCK RIVER CROSSING
MAINTENANCE OF TRAFFIC
SEGMENT 2A - PHASE 2
SHEET NO. MOT-8
PAGE NO. 86

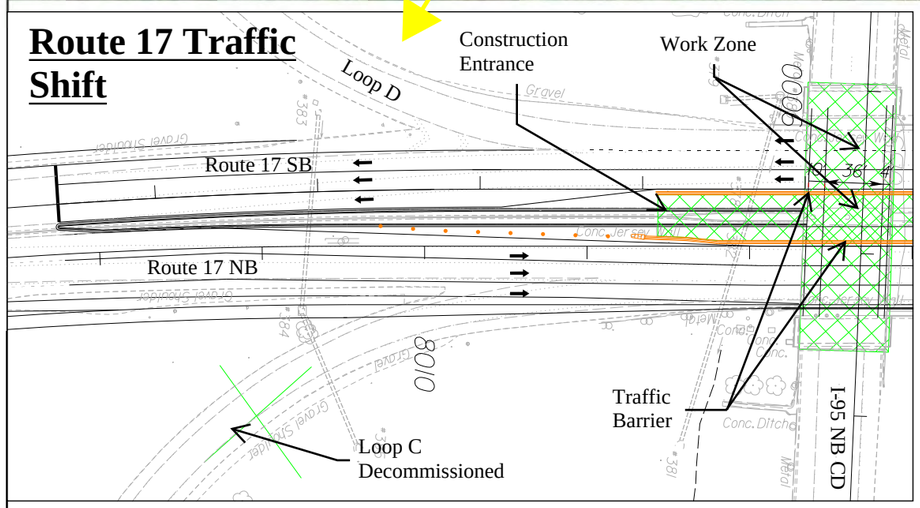
SEGMENT 2A - PHASE 3
(WITH OPTIONS 2 & 3)



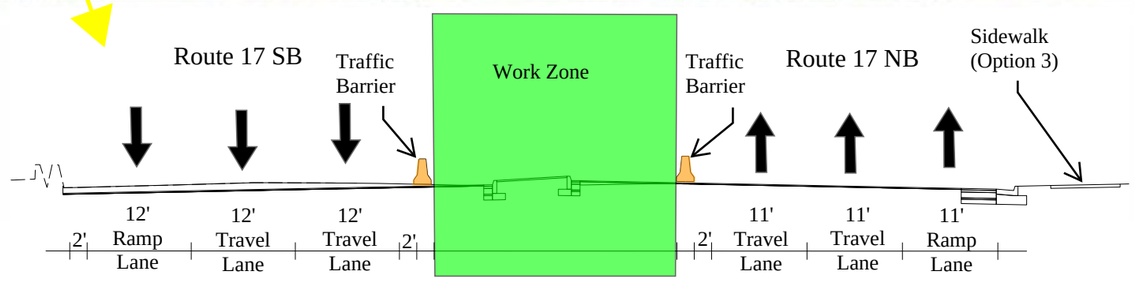
LEGEND

- CE — Construction Entrance Ingress
- CE — Construction Entrance Egress
- Work Zone
- Temporary Pavement
- Traffic Barrier
- Group 2 Channelizing Devices
- Travel Lane
- Existing/Proposed Traffic Signal

Route 17 Traffic Shift



N.T.S.



Phase 3:
1. Perform a 10.5' lane shift along NB Route 17 with a taper length of 3/4L = 355', place traffic barrier along inside edge line, providing 28' median work zone for median pier and median wall reconstruction. Maintain 3-11' through lanes.
2. Open remaining portions of Ramp B, provide access to Loop Ramp B.
3. At intersection of Route 17 & Sanford Drive, perform an 11' traffic shift along SB Route 17 towards the outside with a taper length of 3/4L = 372'. Place traffic barrier along inside edge line, contributing to the same 28' median work zone. Maintain 2-11' lanes and 1-11' Loop Ramp A to Loop Ramp D weave lane.
4. Maintain closure of CD Road and traffic shift of I-95 GP and temporary Loop ramp D alignment, and continue reconstruction of I-95 CD Bridge outside of traffic (Option 2).
5. Demolish existing I-95 CD bridge pier, construct new bridge pier.

Phase 4:
1. Construct any remaining portions of the sidewalk (Option 3) and install the proposed RRFBs at the unsignalized ramp crossings.
2. Final resurfacing and striping to be performed utilizing off-peak lane closures.

DESIGN BUILDER: FLATIRON / BRANCH CIVIL

DESIGNED BY: STV 100 Years

STATE PROJECT NO. 0095-III-270

FEDERAL PROJECT NO. NHP-095-2(545)

VDOT

I-95 NB RAPPAHANNOCK RIVER CROSSING
MAINTENANCE OF TRAFFIC
SEGMENT 2A - PHASE 3

SHEET NO. MOT-9

PAGE NO. 87

SEGMENT 3 - PHASE 1

Proposed FredEx Facilities will be in progress and not entirely constructed as shown. Coordination with FredEx project MOT will occur to ensure smooth traffic control operations

CE

CE

Ramp C2

I-95 NB CD

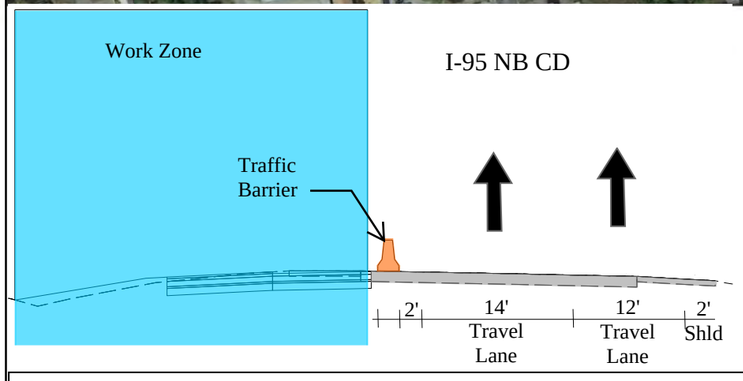
SOUTH 95 INTERSTATE

NORTH 95 INTERSTATE

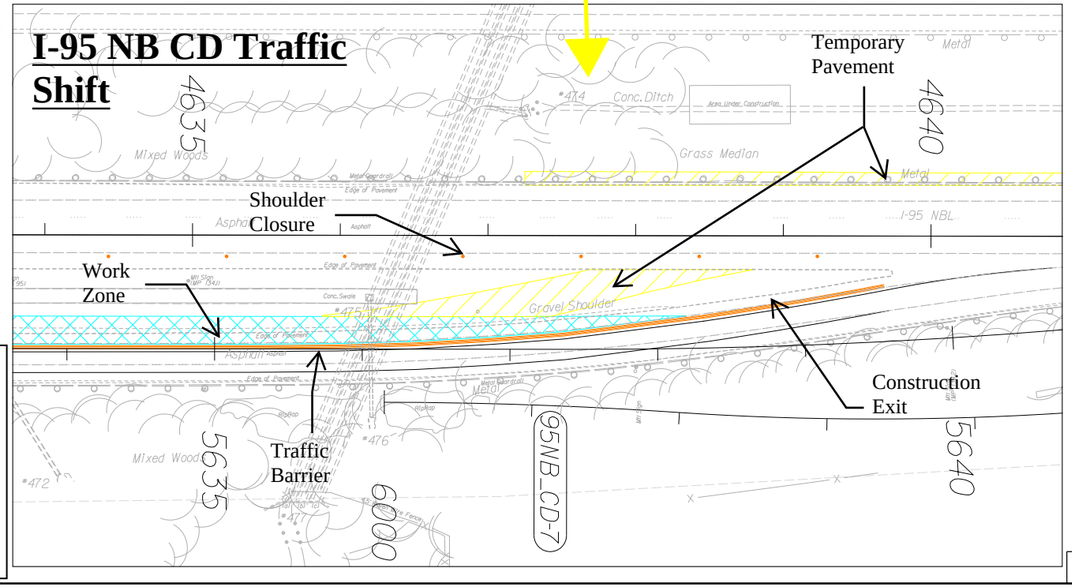
17

LEGEND

- CE — Construction Entrance Ingress
- CE — Construction Entrance Egress
- Work Zone
- Temporary Pavement
- Traffic Barrier
- Group 2 Channelizing Devices
- Travel Lane
- Existing/Proposed Traffic Signal



Phase 1:
1. Utilizing off-peak shoulder closures as needed, construct 9' wide temporary pavement for use in next phase (unless FredEx is in or past Stage 2B of their MOT. In which case, utilize their pavement).
2. Along the CD Road, perform a 6' traffic shift towards the East (L=455') starting at the abutment of the existing I-95 CD Road Bridge. Place traffic barrier along left edge, maintain 14' wide thru lane and 12' Ramp C accel lane. Maintain the same acceleration length for Ramp C.
3. Construct full depth pavement to the west of the traffic barrier.
4. Utilizing CD Road work zone and a shoulder closure of I-95 NB, construct temporary ramp pavement in the median for use in the next phase.



N.T.S.

CONCEPTUAL PLANS

DESIGN BUILDER: FLATIRON / BRANCH CIVIL

DESIGNED BY: STV 100 Years

STATE PROJECT NO. 0095-III-270

FEDERAL PROJECT NO. NHP-095-2(545)

I-95 NB RAPPAHANNOCK RIVER CROSSING
MAINTENANCE OF TRAFFIC
SEGMENT 3 - PHASE 1

VDOT Virginia Department of Transportation

SHEET NO. MOT-10

PAGE NO. 88

SEGMENT 3 - PHASE 2

Proposed FredEx Facilities will be in progress and not entirely constructed as shown. Coordination with FredEx project MOT will occur to ensure smooth traffic control operations

CE

Ramp C2

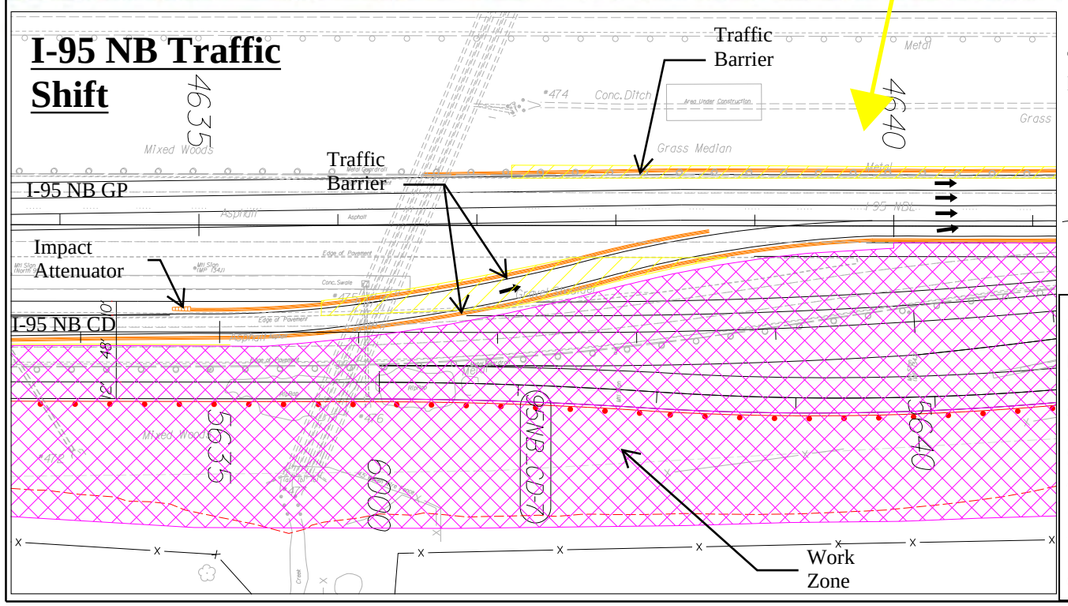
I-95 NB CD

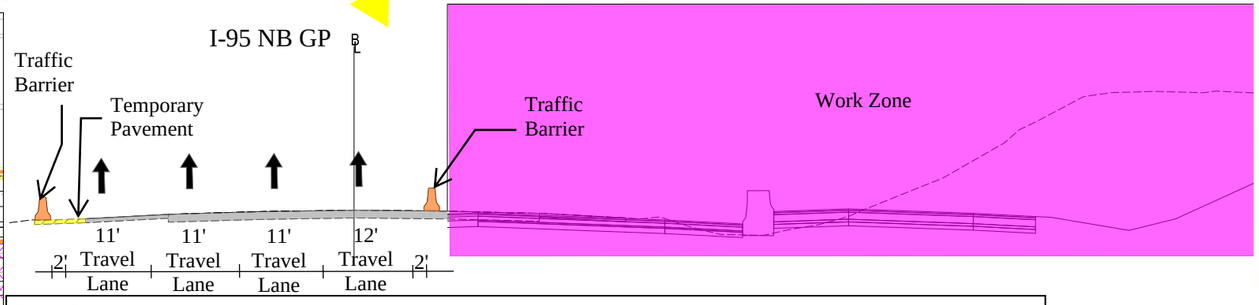
FredEx Ramp HWN

LEGEND

- CE — Construction Entrance Ingress
- CE — Construction Entrance Egress
- Work Zone
- Temporary Pavement
- Traffic Barrier
- Group 2 Channelizing Devices
- Travel Lane
- Existing/Proposed Traffic Signal

I-95 NB Traffic Shift





Phase 2
1. Shift I-95 GP lanes 9' to the West (L=1000') & utilize temporary pavement constructed in Phase 1. Place traffic barrier closing left and right shoulders. Maintain 3-11' lanes, and 1-12' acceleration lane.
2. Shift CD lane 6' towards the West onto final pavement constructed in Phase 1 (L=420'). Tie traffic barrier into existing GR at Ramp C and extend along right edge line through Ramp C temporary alignment. Maintain 1-14' Thru lane and 1-12' Ramp C accel lane. Maintain existing accel lane length.
3. Shift Ramp C traffic onto temporary alignment, maintain a minimum 1580' acceleration length onto I-95 GP.
4. Construct full depth and resurfacing portions of I-95 CD, I-95 slip ramp from CD to GP, and tie-in to FredEX Ramp HWN. Perform final striping.
Phase 3:
1. Open CD system and utilize shoulder closures to demolish temporary ramp C alignment. Utilize shoulder and lane closures for final resurfacing and restriping of tie-in locations and I-95 NB GP lanes.

N.T.S.

CONCEPTUAL PLANS

DESIGN BUILDER: FLATIRON / BRANCH CIVIL

DESIGNED BY: STV 100 Years

STATE PROJECT NO. 0095-III-270

FEDERAL PROJECT NO. NHP-095-2(545)

I-95 NB RAPPAHANNOCK RIVER CROSSING
MAINTENANCE OF TRAFFIC
SEGMENT 3 - PHASE 2

VDOT Virginia Department of Transportation

SHEET NO. MOT-II

PAGE NO. 89

SEGMENT 3 - OPTION 1
AUXILIARY LANE
EXTENSION TO EXIT 136

Proposed FredEx Facilities will be in progress and not entirely constructed as shown. Coordination with FredEx project MOT will occur to ensure smooth traffic control operations

CE

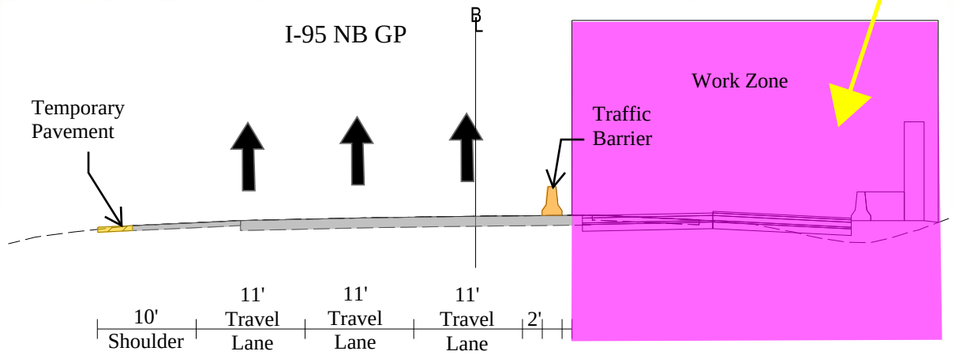
CE

SOUTH 95 INTERSTATE

NORTH 95 INTERSTATE

LEGEND

- CE — Construction Entrance Ingress
- CE — Construction Entrance Egress
- Work Zone
- Temporary Pavement
- Traffic Barrier
- Group 2 Channelizing Devices
- Travel Lane
- Existing/Proposed Traffic Signal



Phase 1:
1. Prior to traffic shift, install a 4' wide temporary pavement section.
2. Perform a 7' traffic shift (L=490') towards the West utilizing the temporary pavement previously installed. Place barrier along right edge line leaving 2' offset to the front of barrier. Maintain 3-11' lanes and 1-10' shoulder.
3. Construct full depth 4th lane section and other remaining roadway features.

Phase 2:
1. Utilize shoulder and lane closures for final resurfacing and restriping.

N.T.S.

CONCEPTUAL PLANS

DESIGN BUILDER: FLATIRON BRANCH CIVIL

DESIGNED BY: STV 100 Years

STATE PROJECT NO. 0095-111-270

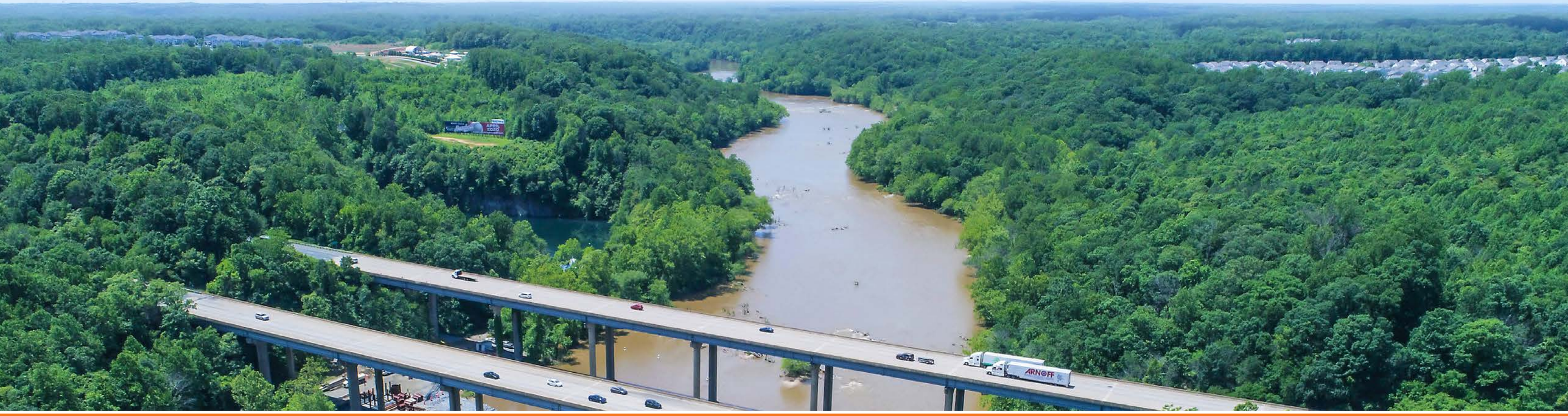
FEDERAL PROJECT NO. NHP-095-2(545)

I-95 NB RAPPAHANNOCK RIVER CROSSING
MAINTENANCE OF TRAFFIC
SEGMENT 3 - OPTION 1

VDOT Virginia Department of Transportation

SHEET NO. MOT-12

PAGE NO. 90



BRANCH CIVIL® | FLATIRON | BRANCH - FLATIRON JOINT VENTURE | *in association with* STV 100 Years

442 Rutherford Avenue, NE
Roanoke, VA 24016
540.982.1678
www.branchcivil.com | www.flatironcorp.com