

# TECHNICAL PROPOSAL **VOLUME I**

A DESIGN-BUILD PROJECT

## Warrenton Southern Interchange US 15/17/29

From: Route 15/17/29 & Route 15/17/29 Business

To: 1.0 Mile South of Route 15/17/29 & Route 15/17/29 Business

Fauquier County, Virginia

State Project No.: 0029-030-121, P101, R201, C501, B616

Federal Project No.: STP-032-7 (032)

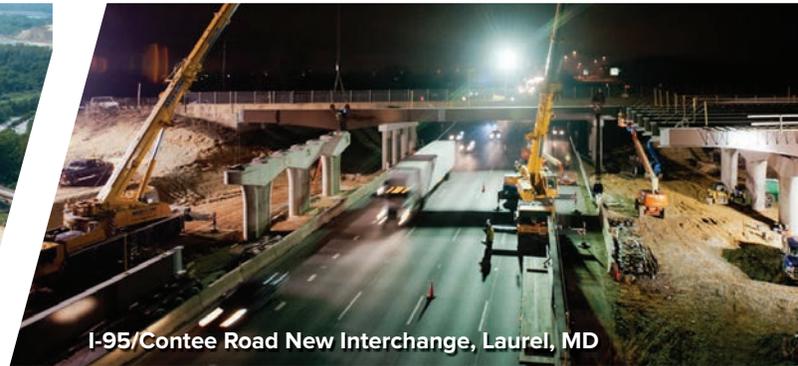
Contract ID No.: C00077384DB100

Date: December 7, 2017



4.0.1.1

# TECHNICAL PROPOSAL CHECKLIST AND CONTENTS



**ATTACHMENT 4.0.1.1**  
**Warrenton Southern Interchange**  
**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
<b>Technical Proposal Checklist and Contents</b>	Attachment 4.0.1.1	Section 4.0.1.1	no	i-iii
<b>Acknowledgement of RFP, Revisions, and/or Addenda</b>	Attachment 3.7 (Form C-78-RFP)	Sections 3.7, 4.0.1.1	no	Appendix 3.7
<b>Letter of Submittal</b>	NA	Sections 4.1		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
Proposal Payment Agreement or Waiver of Proposal Payment	Attachment 9.3.1 or 9.3.2	Section 4.1.7	no	Appendix 9.3.1
Certification Regarding Debarment Forms	Attachment 11.8.6(a) Attachment 11.8.6(b)	Section 4.1.8	no	Appendix 11.8.6

**ATTACHMENT 4.0.1.1**  
**Warrenton Southern Interchange**  
**TECHNICAL PROPOSAL CHECKLIST AND CONTENTS**

Technical Proposal Component	Form (if any)	RFP Part 1 Cross Reference	Included within page limit?	Technical Proposal Page Reference
<b>Offeror's Qualifications</b>	NA	Section 4.2		2-3
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	N/A
<b>Design Concept</b>	NA	Section 4.3		4-17
Conceptual Roadway Plans and description	NA	Section 4.3.1.1	yes	Vol I: 7-13 Vol II: 56-73
Conceptual Structural Plans and description	NA	Section 4.3.1.2	yes	Vol I: 14-17 Vol II: 74-75
<b>Project Approach</b>	NA	Section 4.4		18-39
Environmental Management	NA	Section 4.4.1	yes	18
Utilities	NA	Section 4.4.2	yes	22
Geotechnical	NA	Section 4.4.3	yes	28
Quality Assurance/ Quality Control (QA/QC)	NA	Section 4.4.4	yes	34

**ATTACHMENT 4.0.1.1**  
**Warrenton Southern Interchange**  
**TECHNICAL PROPOSAL CHECKLIST AND CONTENTS**

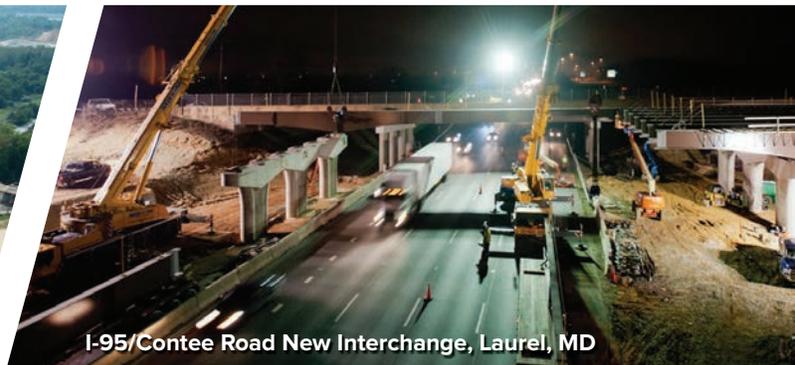
Technical Proposal Component	Form (if any)	RFP Part 1 Cross Reference	Included within page limit?	Technical Proposal Page Reference
<b>Construction of Project</b>	NA	Section 4.5		40-54
Sequence of Construction	NA	Section 4.5.1	yes	40
Transportation Management Plan	NA	Section 4.5.2	yes	45
<b>Disadvantaged Business Enterprises (DBE)</b>	NA	Section 4.6		
Written statement of percent DBE participation	NA	Section 4.6	yes	55
<b>Proposal Schedule</b>	NA	Section 4.7		Vol I & Vol II
Proposal Schedule	NA	Section 4.7	no	Vol II Tab 4.7
Proposal Schedule Narrative	NA	Section 4.7	no	Vol I Tab 4.7
Proposal Schedule in electronic format (CD-ROM)	NA	Section 4.7	no	Inside Front Cover of Vol I, Copy 1 of 10
List of Approved ATCs Included in Technical Proposal	Attachment 3.6.7	Section 3.6.7	No	Appendix 3.6.7

4.1

# LETTER OF SUBMITTAL



SR 29/I-276 New Interchange, Great Valley, PA



I-95/Contee Road New Interchange, Laurel, MD



Saintsbury Drive Roundabout, Fairfax, VA



I-581/Elm Avenue Interchange Modifications, Roanoke, VA





December 7, 2017

Bryan W. Stevenson, P.E.  
Alternative Project Delivery Division  
Virginia Department of Transportation  
1401 East Broad Street  
Richmond, VA 23219

Technical Proposal/Letter of Submittal  
**Warrenton Southern Interchange US 15/17/29**  
From: Route 15/17/29 & Route 15/17/29 Business  
To: 1.0 mile South of Route 15/17/29 & Route 15/17/29 Business  
Contract ID Number: C00077384DB100

Dear Mr. Stevenson:

The team of Allan Myers (Myers) and KCI Technologies (KCI) herein referred to as the Myers Team, presents an integrated design-build team with experience working together to design and construct the Warrenton Southern Interchange US 15/17/29 Design-Build Project (Project).

The Myers Team is committed to providing a Project to our collective stakeholders and the Department, delivered ahead of schedule and consistent with the priorities of cost-effectiveness and minimizing potential impacts to the traveling public. By working collaboratively with VDOT through the ATC process, Myers alternate alignment and sequence of construction allows for 90% of the Project to be constructed in one Phase, within current traffic patterns, and greatly reduces construction traffic entering and existing the work zone. The result of these efforts is a safer project for our collective stakeholders.

The Myers Team presents the following information as required by Section 4.1 of the RFP.

- 4.1.1 Allan Myers VA, Inc. (301 Concourse Boulevard, Suite 300, Glen Allen, VA 23059) is the legal entity who will execute a contract with VDOT for the Project.
- 4.1.2 Allan Myers VA, Inc. will enter into a contract with VDOT for the Project.
- 4.1.3 The offer represented by the Technical and Price Proposals will remain in full force and effect for one hundred twenty (120) days after this Technical Proposal is submitted to VDOT.
- 4.1.4 Design-Build Project Manager, Thomas Heil, P.E. will serve as the Point of Contact for Myers.  
**Thomas Heil, P.E., Design-Build Project Manager** (571) 485-0387 (Telephone)  
301 Concourse Boulevard, Suite 300 (610) 222-4348 (Fax)  
Glen Allen, VA 23059 tom.heil@allanmyers.com
- 4.1.5 The principal offeror of Allan Myers VA, Inc. with whom a Design Build contract would be written is:  
**Aaron Myers Vice President/General Manager** 804-920-8500 (Telephone)  
301 Concourse Boulevard – Suite 300 804-418-7935 (Fax)  
Glen Allen, VA 23059 aaron.myers@allanmyers.com
- 4.1.6 As an enhancement to the Project, the Myers Team proposes a Beneficial Occupancy date of August 6<sup>th</sup>, 2020 where all traffic will be in its final location prior to the start of the upcoming school year.
- 4.1.7 The Myers Team commits to a Final Completion date of September 3<sup>rd</sup>, 2020, three months earlier than the RFP Final Completion, and in advance of the Labor Day holiday weekend.
- 4.1.7 Allan Myers has included an executed Proposal Payment Agreement in Appendix 9.3.1.
- 4.1.8 Certification Regarding Debarment Forms are included in Appendix 4.1.8.

Respectfully,

  
\_\_\_\_\_  
Aaron T. Myers, Vice President/General Manager  
Allan Myers VA, Inc.

# 4.2

# QUALIFICATIONS



SR 29/I-276 New Interchange, Great Valley, PA



I-95/Contee Road New Interchange, Laurel, MD



Saintsbury Drive Roundabout, Fairfax, VA



I-581/Elm Avenue Interchange Modifications, Roanoke, VA



#### 4.2.1 CONFIRMATION OF SOQ INFORMATION

The Myers Team confirms that the information contained in our Statement of Qualifications (June 1, 2017) remains unchanged, true, and accurate in accordance with Section 11.4 of the RFP. The organizational structure of our team remains unchanged and the Key Personnel designated remain intact. The narrative and organizational chart below remain unchanged from the SOQ submission.

#### 4.2.2 ORGANIZATIONAL CHART

The Myers Team organizational chart includes all major disciplines for management, design, construction, and quality management of the Project. Through the indicated relationships and discipline working groups, our team will ensure design consistency and construction methods that exceed VDOT quality requirements.

**Design-Build Project Manager: Tom Heil, P.E., DBIA** will be responsible for the overall project design and construction. To support effective communication, Tom will be supported by the key personnel (QAM, DM, and CM) as well as value-added positions for Public Affairs (PA), Utility Coordination, TMP and the Safety Manager. This structure ensures Tom's ability to exercise appropriate control over the project design, construction, quality, stakeholder coordination, public safety, and contract administration. Structuring our Team to have these positions report directly to Tom will prioritize an expedited project schedule, optimized traffic flow, and incorporation of construction safety into the design.

**Quality Assurance Manager: Kaushik Vyas, P.E., DBIA** will report to the DBPM, with oversight by VDOT, and will manage the QA inspection and testing to ensure that all work and materials meet the contract requirements. He will communicate frequently with key staff, participate in regular coordination meetings, and confirm that the construction QC process is functioning properly. In addition, he will ensure the design QA/QC process is followed on submittals, along with the DBPM, prior to submission to VDOT.

**Design Manager: Stephen Drumm, P.E.** will serve as the Designer of Record and coordinate all design functions from NTP to final completion. He will report directly to the DBPM and coordinate with the Utility, TMP, Construction, and QA Managers to ensure collaboration during design and construction implementation. With support from Design QA/QC Manager, John Barefoot, P.E. he will prepare the DQMP and oversee the design QA/QC program to ensure a cohesive, high-quality, and integrated design.

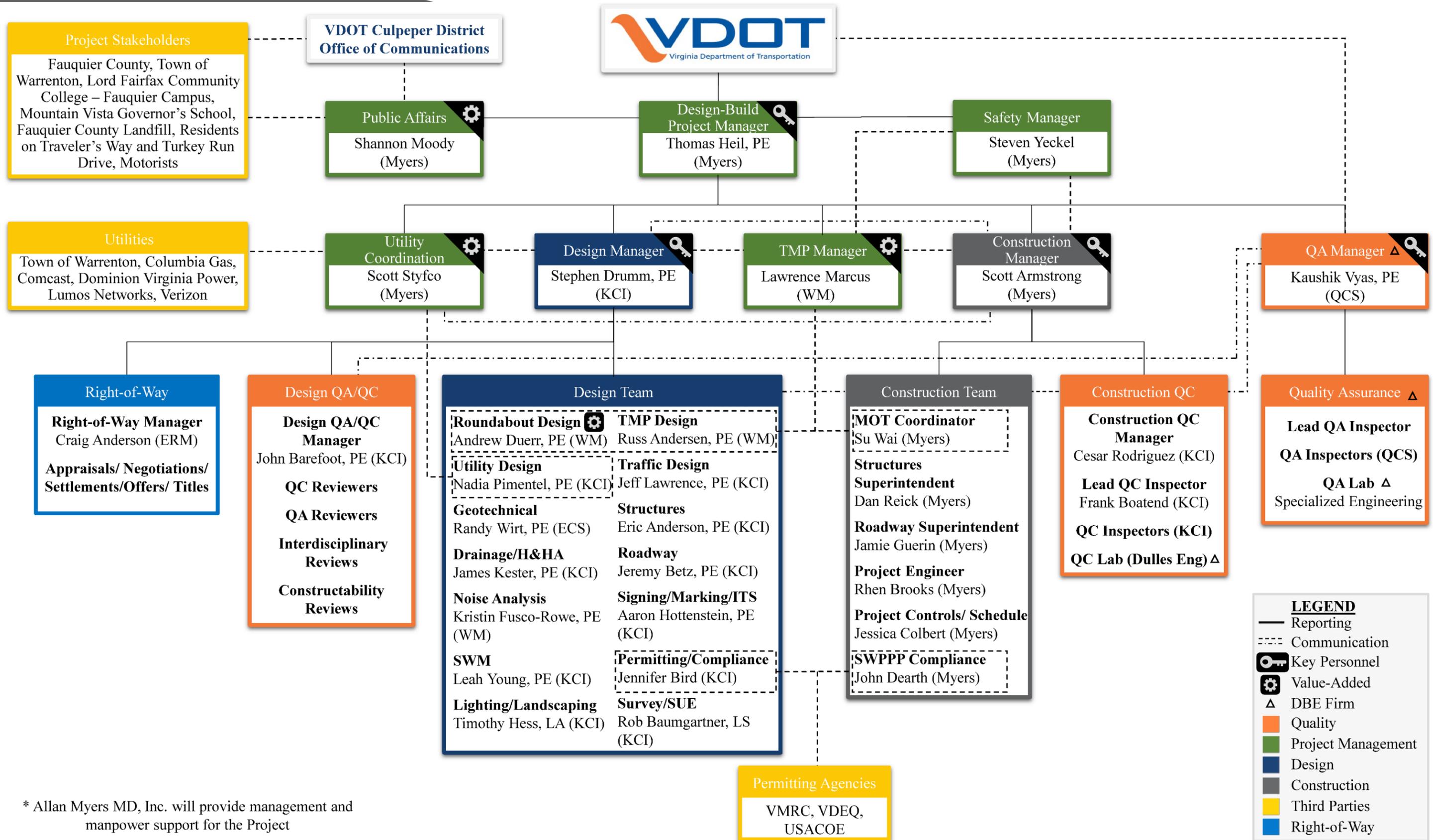
**Construction Manager: Scott Armstrong** will report to the DBPM and will coordinate with the Utility, Design, TMP, and Safety Managers to ensure collaboration through the construction process. Construction QC and all construction personnel will report to Scott. He will coordinate with the DM to ensure design understanding, proper construction planning, and implementation.

**Public Outreach: Shannon Moody** will work closely with VDOT and the DBPM to develop and implement a comprehensive public outreach effort. Her integration with construction operations will keep the design-build team focused on building public trust. She will serve as an internal sounding board for the team with an understanding of project success from a PR perspective.

**Utility Manager: Scott Styfco** will report to the DBPM and work closely with the utility companies, DM, CM, and utility designer. Scott will focus on impact avoidance measures through innovative design and practical construction methods and will lead coordination during construction. Scott helped eliminate several utility conflicts on I-64 Segment II, allowing the project to progress without delays.

**TMP Manager: Lawrence Marcus** will report to the DBPM and will lead the development and implementation of the TMP. Larry will coordinate closely with the TMP designer, roundabout designer, and MOT coordinator to provide a seamless link between design and construction. His unique blend of experience will ensure the TMP is developed and implemented to respect all work zones requirements, public and worker safety, and construction means and methods.

**Roundabout Designer: Andrew Duerr, PE** will report to the DM and will lead the roundabout design. He will coordinate closely with the roadway designers, TMP design team, and MOT coordinator to ensure that the roundabouts are constructible and achieve all performance goals (fastest path, design vehicle, and sight distance checks).



\* Allan Myers MD, Inc. will provide management and manpower support for the Project

**LEGEND**

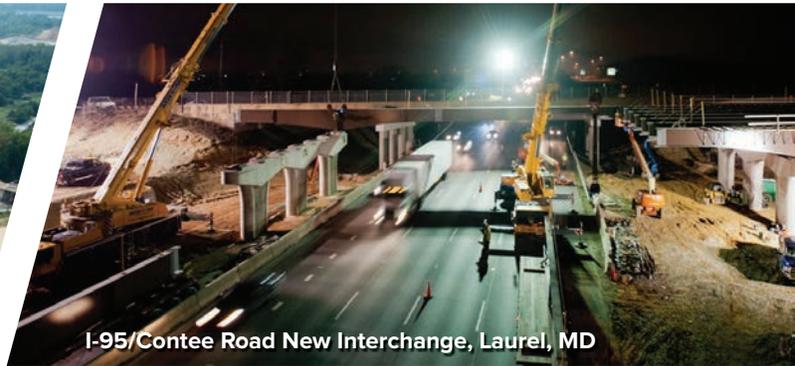
- Reporting
- - - - Communication
- 🔑 Key Personnel
- ⚙️ Value-Added
- Δ DBE Firm
- 🟠 Quality
- 🟢 Project Management
- 🟡 Design
- ⚫ Construction
- 🟡 Third Parties
- 🟢 Right-of-Way

# 4.3

# DESIGN CONCEPT



SR 29/I-276 New Interchange, Great Valley, PA



I-95/Contee Road New Interchange, Laurel, MD



Saintsbury Drive Roundabout, Fairfax, VA



I-581/Elm Avenue Interchange Modifications, Roanoke, VA



## DESIGN CONCEPT OVERVIEW

### Commitments and Deliverables of the Myers Team

The Myers Team is committed to designing and constructing an optimally functioning interchange which provides an aesthetically pleasing entryway to the Town of Warrenton with minimal construction impacts. Our approach to designing the US 15/17/29 interchange is focused on efficiency that meets or exceeds the scope of work while balancing the Project's cost, construction schedule, and long-term asset performance. Our design focused on three key goals:

1. Accelerating Final Completion to September 3, 2020 – three months ahead of schedule.
2. Improving safety and operations in both the final design and temporary configurations.
3. Reducing construction impacts and building 90% of the Project while maintaining most traffic in the current configuration.

### Design Efficiency that Meets or Exceeds the Intended Scope of Work

The design strategy of our Team is meeting or exceeding the RFP requirements to improve safety and operations. *Figure 4.3.1* on page 6 graphically depicts the interchange optimizations. The design optimization presented:

- Reduced ROW by 94%, with only drainage and temporary easements remaining.
- Avoids gas line impacts for SWM #4 at right station 139+, avoids the relocation of four utility poles along the west side of the Mainline and US 15/17/29 Business;
- Prevents 2 acres of tree removal and avoids 1.08 acres wetland impacts;
- Optimizes the roadway alignment by shifting the roundabouts, Ramp A, and Ramp C;
- Optimizes the bridge for a single span structure, eliminating the median pier and reducing the length by 100 ft., width by 8-1/2 ft., and deck area by 6,000 sf.;
- Improves the shared-use path configuration by eliminating the Ramp C crossing, providing barrier protection on the bridge, and adjusting cross slopes at crossing to the two percent ADA standard;
- Improves traffic operations during construction, reduces the number of major traffic phases to two, constructs much of the interchange in Phase 1, and opens the interchange to traffic in Phase 2;
- Eliminates approximately 16,000 sf. of retaining walls with the relocation of Ramp C;
- Reduces earthwork by lowering the eastern roundabout, Lord Fairfax Road, and Ramp C and D profiles 5' +/- from station 91+00 to station 103+00 along Lord Fairfax Road; and
- Provides additional mill and overlay for the inside lanes along the southern crossover Station 99+ to 104+ for the restoration of the temporary right and left turn lanes.

### Benefits to End Users and Project Risk Reduction

The design and construction utilizes concern for safety to improve operations, reduce project schedule, minimize construction impacts, and increase public safety and acceptance. Specific ways where the proposed design benefits end users are summarized below:

#### ***Improving Safety & Operations***

A detailed study of the roundabout design that balances the ramp entrance and exit points provides the following improvements to safety and operations:

- ***Interchange Configuration*** – Interchange safety is improved by exceeding RFP geometric requirements for layout of the east roundabout and Ramp C, increasing acceleration and deceleration lane lengths, providing barrier separation for the shared-use path, and improving sight distance on Lord Fairfax Road. Shifting the interchange and bridge to the north optimizes the bridge design and moves the construction work away from active traffic.
- ***East Roundabout*** – Shifting the roundabout 70' east and realigning the Ramp C connection south of

the bridge as an exit lane improves the geometric design and roundabout operation, removes the operational challenges of a NB Lord Fairfax Road and Ramp C exit lane, lowers the roundabout profile grade, and eliminates the Ramp C retaining walls. This improves the Ramp C LOS from B to A, reduces delays and queue lengths.

- West Roundabout – Shifting the roundabout 240' west and moving the Ramp A bypass lane closer to the roundabout avoids utility pole and ROW impacts. Using a temporary wire wall allows the roundabout to be built in a single phase. Safety of lane merging is improved by reducing the bypass lane speeds for Ramp A to match the roundabout speed of 25mph.
- Maintenance of Traffic – Shifting the interchange north allows for 90 percent of the interchange to be built a single phase with minor traffic impacts to Lord Fairfax Rd, maintains the existing intersection in its current location during much of construction, and improves capacity during construction. Eliminating the jughandle avoids weaving through the Ramp A exit for access to Lord Fairfax Rd.

### ***Compressing the Schedule***

#### **Our Team will accelerate construction and achieve Final Completion by September 3, 2020 - 3**

**months early.** The following design optimizations significantly contribute to this accelerated schedule:

- Reducing ROW impacts by 0.41 acres at Ramp A and 0.51 acres for the west roundabout
- Eliminating the relocation of the 13 KV power pole adjacent to Ramp A and the three utility poles adjacent to the western roundabout.
- Avoiding the conflict with a major power pole and ROW acquisition for the jughandle.
- Eliminating all permanent ROW acquisition and reducing temporary easement acquisition.
- Increasing construction efficiency by building 90 percent of the Project in Phase 1 outside of traffic.
- Reducing the amount of temporary pavement needed by approximately 50 percent.
- Reducing length of the bridge eliminated the need for a median pier and its associated BPPS.
- Optimizing the alignment and profile of the roundabouts helped to better balance the earthwork.

### ***Reducing Construction Impacts***

Construction impacts have been reduced by focusing on the approach to maintenance of traffic during construction. Revising the MOT requirements allows full movements at the southern intersection and eliminates the construction impacts associated with the jughandle. During Phase 1, 90 percent of the interchange will be constructed with limited impacts to traffic. We construct a functioning western roundabout in Phase 1 through the use of wire wall.

### ***Increasing Public Acceptance***

Project acceptance is increased by limiting traffic shifts, maintaining tree buffers, limiting ROW, and providing aesthetically pleasing features. ROW is avoided for two property owners; five property owners require only construction easements. The landscape plan will be developed with VDOT and local stakeholders to provide a gateway planting design incorporating JTHG guidelines. Our plans include architectural treatments on the MSE walls, a gateway landscaping plan, and a termination overlook for the shared-use path.

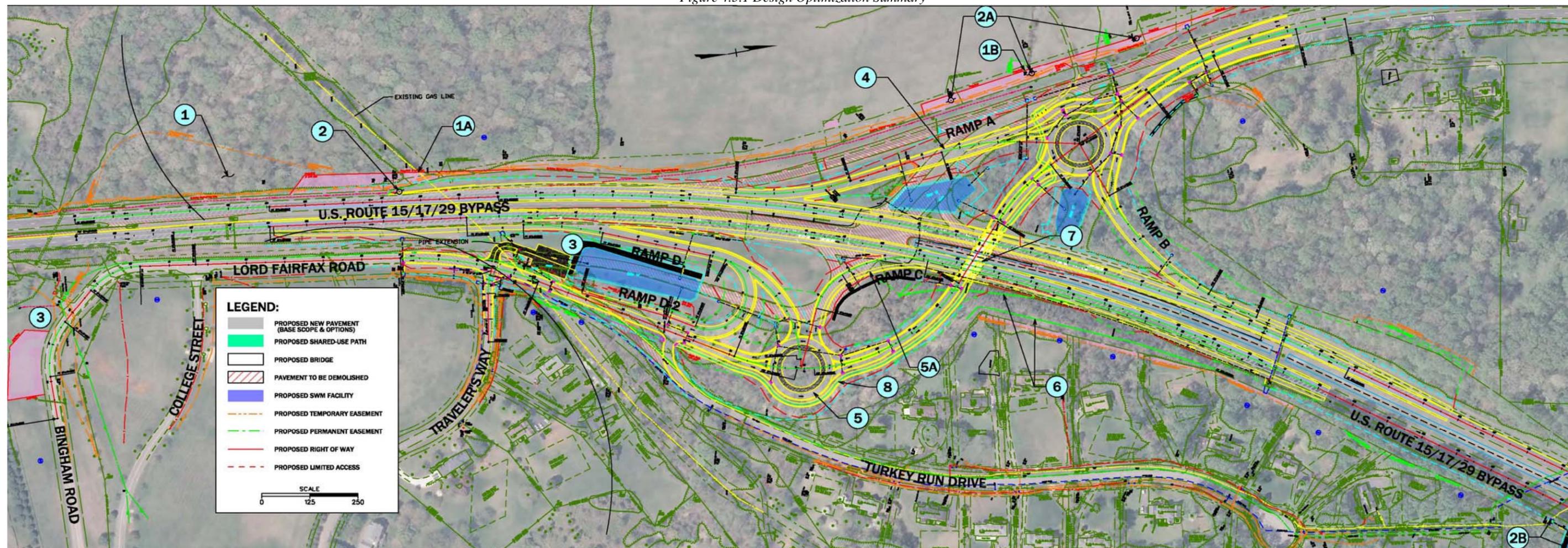
### **Reduced Future Inspection and Maintenance**

Our Team has considered the types of materials, methods, and functionality to reduce the need for future maintenance of the Project elements. Optimizing the design reduces future maintenance with a smaller bridge structure and eliminated retaining walls at Ramp C.

#### **Close Coordination with the Local Community:**

*“Solid project management, quality construction and close coordination with the local community have been key to this project’s success,” said Bart Thrasher, P.E., Richmond District Engineer, “The entire project team has been committed to completing this project with the next few decades in mind.” – VDOT news release from the recently completed I-95/Temple Avenue Interchange Project*

Figure 4.3.1 Design Optimization Summary



**RIGHT OF WAY AND UTILITY**

- (1) **Jughandle Right of Way:** Eliminating the jughandle reduces temporary right of way acquisition and land disturbance, eliminating 1.5+/- acres of clearing.
- (1A) **Permanent Right of Way:** Adjusting the limit of Ramp A 300 feet north to make use of the existing acceleration lane and eliminating the need for additional permanent right of way.
- (1B) **Permanent Right of Way:** Shifting the roundabout east and adjusting the Ramp A bypass lane closer to the roundabout eliminated the need for permanent right of way.

- (2) **Utility Pole:** Revising MOT phasing to a three-phase signal for access to Lord Fairfax Rd with left turn lane in lieu of jug handle eliminates the utility pole impacts.
- (2A) **Utility Pole:** Shifting the roundabout east and adjusting Ramp A bypass closer to the roundabout eliminates the need for relocating the utility poles.
- (2B) **SWM Pond:** Relocation of SWM pond D avoids the conflict with 20" Columbia Gas line at Right Station 139+ / - .
- (3) **Park and Ride:** Relocating the park and ride to Ramp D infield eliminates acquisition from Fauquier County, reduces land disturbance, and improves lot visibility.

**ROADWAY ALIGNMENT**

- (4) **Merge Modification Ramp A:** Addresses speed differentials between the 50 MPH bypass and 25 MPH roundabout merge. Shifting the bypass lane balances 25 MPH speeds for merging traffic.
- (5) **Relocation of Roundabouts:** Shifting roundabouts provided additional space for ramp modifications, reduction in bridge skew and avoidance of ROW and utility impacts.
- (5A) **Relocating of Ramp C:** Improves roundabout operation by separating the ramp C traffic to its own exit lane and increases LOS from a B to an A.
- (6) **Eliminating Ramp C Retaining Walls:** Eliminating approx. 1000-ft of retaining walls avoids clearing residential tree buffer along US 15/17/29.

**BRIDGE MODIFICATIONS**

- (7) **Bridge Length Reduction:** Bridge length has been reduced by 260-feet to 160-feet in total length by using integral abutments and MSE walls.
- (7) **Bridge Width Reduction:** Bridge width was reduced by matching the 12-foot lane widths for Lord Fairfax Road and using barrier separation to reduce the shared-use path width from 15'6 to 12'.
- (7) **Median Pier Elimination:** Single span 160-foot long bridge eliminates the need for the median pier.
- (7) **Future Widening:** The bridge length accommodates future widening within the available 38-feet of grass median for the additional two lanes, 10-foot shoulders and median barrier.

**SHARED USE PATH**

- (7) **Barrier Protection:** Separating the travel lane on the bridge and shared-use path with barrier protection makes it safer for pedestrians, eliminates the 6-inch raised curb, and reduces the total bridge width.
- (8) **Eliminating Ramp C Crossing:** With the relocation of ramp C, the proposed crossing of the path with the ramp has been eliminated, reducing the conflict points and improving safety.

**BENEFITS OF DESIGN OPTIMIZATIONS**

Cost	Environmental
Schedule	Future Maintenance
Safety	Public Perception

### 4.3.1 CONCEPTUAL ROADWAY PLANS

#### Commitments and Deliverables of the Myers Team

The Myers Team's roadway design concept was developed to meet or exceed the RFP requirements; improve safety; and avoid unnecessary impacts. The optimized roadway design facilitates public acceptance and considered durability and reduction of future maintenance. Features of the roadway design that benefit VDOT and the traveling public include:

- Limiting construction impacts including the temporary jug-handle, utility pole impacts, ROW acquisition, and clearing 1.5 acres of trees.
- Moving the new bridge north to improve capacity and safety during construction.
- Shifting the eastern roundabout and realigning Ramp C lowers the roundabout profile grade, eliminates the retaining walls, and avoids the shared-use path crossing of Ramp C.
- Shifting the western roundabout improves safety for Ramp A vehicular and pedestrian traffic by controlling speeds in the roundabouts and balancing merge speeds.
- Increasing safety by designing an ADA-compliant shared-use path street crossing at the western roundabout that improves driver visibility to trail users.
- Increasing public acceptance by reducing work zone impacts, improving safety for the shared-use path, limiting tree clearing, and relocating the park and ride facility.
- Extending the base milling and resurfacing scope for the inside lanes to approx. Sta. 99+00 to address the changes in traffic patterns and remove the temporary pavement markings.

#### DESIGN CRITERIA

Our design is based upon providing all aspects of work including the Base Scope, Option 1 and Option 2 for the interchange design and construction. Option 1 work has been included for full construction of the shared use path and Option 2 for additional resurfacing the inside lanes of US 15/17/29. The additional work will be separated for the relevant quantities per option and identified in Volume II plans. The design will be in accordance with VDOT 2005 Road Design Manual Vol I (rev March 2007), VDOT 2012 CADD Manual, VDOT 2008 Road and Bridge Standards Vol 1 and 2, ASHTO 2011 Green Book and supporting manuals, standards, specifications, and special provisions for survey, traffic, drainage, landscaping, noise, erosion control and SWM. The conceptual roadway design was developed in accordance with the Design Criteria Table identified in the RFP Attachment 2.2 including requirements for geometric design, traffic capacity, lane and shoulder widths, and overall roadside grading. The limits of construction and all stormwater management facilities are within the RFP right-of-way limits, and the right-of-way acquisition required for the Project is limited to only easements – a reduction of 94%. Our Team will prepare a design waiver for the shared use path width from 10 to 8-feet and the proposed design has no additional design waivers required for the Project.

***The following design requirements were exceeded and are in accordance with Attachment 2.2.***

- Western roundabout has a 2% cross slope for travel lanes verses the RFP travel lanes at 4.15% for the SUP crossing through the roundabout. The 2% crossings eliminate grade breaks between the crosswalks and travel lanes for a smooth transition and driver comfort through the roundabout.
- The Lord Fairfax Road stopping sight distance at the bridge crest has been increased from 311' to 391'. The design change improves safety over the RFP alignment.
- The lower Ramp A design speed, past the 25-mph merge at the roundabout, has been increased to 50-mph for a shorter and balanced merge with mainline US 15/17/29. Profile grade has been reduced from 7.8% to 1.75%. This shortens SB Ramp A acceleration lane, avoids utility and ROW impacts and improves driver comfort, safety, and merging conditions.

- Ramp C profile for the mainline tie-in has been improved with a longer vertical curve from 270' to 450' and the K value increase from 38 to 66. The change improves driver comfort merging onto NB mainline with a higher running speed, improving sight distance, and safety.
- Accel/Decel lane lengths have been optimized which resulted in exceeding the AASHTO minimum for Ramp A, B and C and increasing the design speed for Ramps A and C. The design change reduces speed differential providing better merge operations and improving safety.

**BENEFITS OF THE PROPOSED ROADWAY DESIGN**

Table 4.3.1 summarizes how the roadway design was developed to meet or exceed the RFP requirements for scope (Scope), improving public safety in the final configuration and during construction (Safety), minimizing construction impacts or compressing schedule (Impacts), improving public acceptance of the final configuration (Acceptance), and improving long-term performance and durability (Durability).

Table 4.3.1 – Roadway Design Benefits that Exceed the RFP Requirements

Improvement	Area Exceeded	Benefit to End Users
<b>Eastern Roundabout</b>	Scope	Improves LOS operations from an RFP LOS B to an LOS A and reduces the limits of construction for the acceleration lane.
	Safety	Eliminates the SUP crossing of RFP Ramp C. Improves exit spacing, signing and decision time, and separates conflict points.
	Impacts	Eliminates approx. 16,000 sf of Ramp C retaining walls.
	Acceptance	Provides a safer facility for the public.
	Durability	Allows flexibility for future widening options with no raised sidewalk.
<b>Western Roundabout</b>	Scope	Eliminates 4 utility pole relocations and ROW from Alwington Farm.
	Safety	Provides traffic calming for bypass lane and slower speeds at crosswalks/merge.
	Impacts	Reduces construction time by building the roundabout in one phase.
	Acceptance	Opens the interchange to traffic at the end of Phase 1. Landscapes 16-foot raised median for gateway to town.
	Durability	Accommodates WB-62 trucks with 18-foot lane and 14-foot truck apron.
<b>Retaining wall</b>	Scope	Eliminates two retaining walls by realigning Ramp C.
	Acceptance	Shifts Ramp C location and future traffic further from residential homes.
	Durability	Avoids maintenance for approx. 16,000 sf of retaining wall.
<b>Natural Environment</b>	Scope	Reduces impacts to forests (1.5 acres), avoids wetlands impacts and ROW takes. Eliminates jughandle and reconfigures the western roundabout.
	Impacts	Eliminates impacts on wetland and stream impacts
	Acceptance	Reduces impacts to trees and increases buffer to residential homes
	Durability	JTHG plan uses native vegetation for low maintenance. Ramp C buffer area reduced.
<b>Park and Ride</b>	Scope	Relocates park and ride lot to existing VDOT ROW within interchange.
	Impacts	Avoids 0.41 ac of ROW acquisition from Fauquier County.
	Acceptance	More visibility from US 15/17/29 and Lord Fairfax Road Roadway.
	Durability	Provides better access to SWM A for future maintenance.
<b>Lord Fairfax Road</b>	Scope	Improves sight distance for vertical curves at the bridge by 25%.
	Impacts	Reduces the curvature on the bridge for easier construction.
	Acceptance	Improves sight distance between roundabouts.
	Durability	Increases the profile grade on bridge which improves drainage.
<b>Ramps</b>	Scope	Improves accel/decel lane lengths and balances merge speeds.
	Impacts	Reduces interchange footprint to avoid ROW and utility relocations.
	Acceptance	Improves traffic operations for the interchange.
	Durability	Reduces crashes and impacts to guard rail and attenuators.
<b>JTHG Landscaping</b>	Scope	Gateway entrance for roundabout and Business Rte. with tree plantings and historic sign pull-off areas and benches.
	Impacts	Draw attention to natural highlights, and show a warm welcome to visitors and residents
	Durability	Reduces maintenance by using native plantings for landscaping.
	Acceptance	Creates a visually appealing corridor for Lord Fairfax Rd. and Business Rte.

## GENERAL GEOMETRY AND ROADWAY ALIGNMENTS

There are no changes to the geometric alignment for US 15/17/29 mainline geometry. The ramp connections will tie to the existing alignment and pavement as outlined in the RFP and our proposed changes to the single-span bridge accommodates future third-lane widening. The roundabouts have been initially designed to improve the basic horizontal and vertical configuration as outlined in the RFP with a 103-foot diameter circle, 18-foot lane widths, 14-foot truck aprons and the entrance and exit geometry following the NCHRP 672 requirements. Our adjustments to the western roundabout changed the travel lane cross slope to 2% to meet the shared use path ADA requirements and to ensure the profiles did not exceed 6% for Lord Fairfax Rd and 8% for the Business Rte. The adjustments for the eastern roundabout encompass the relocation of Ramp C to improve operations and eliminate the retaining walls. With the elimination of the shared-use path crossing Ramp C, the cross slope on the travel lanes can be maintaining at our proposed 4% profile slope. Additional shared use path optimizations include a barrier separated bridge crossing, and design adjustments for the two crossings of the western roundabout at Lord Fairfax Rd. and Ramp A / Bypass lanes. The design of the path will include the buffer, drainage, and subgrading and such that if Option 2 is approved, paving of the path can be easily accommodated to the proposed termination at the future Leeton Forest Plantation trail. Tables 4.3.2 and 4.3.3 summarize the horizontal and vertical geometry for each roadway and segment.

Table 4.3.2 Horizontal Geometry

Curve Name	Radius (ft.)	Design speed (mph)	E <sub>max</sub> (%)	Min. Radius (ft.)
<b>Lord Fairfax Rd</b>	<b>408 Min.</b>	<b>35</b>	<b>2.0%</b>	
LFR C-1	185	35	2.0%	
LFR C-2	170	35	2.0%	
LFR C-3	905	35	2.0%	
LFR C-4	480	35	2.0%	
LFR C-5	564	35	2.0%	
LFR C-6	800	35	2.0%	
<b>US 15/17/29 Business</b>	<b>536 Min.</b>	<b>40</b>		
LFR C-7	1,272.6	35	2.0%	
LFR C-8	2,610	35	2.0%	
<b>Ramp A</b>	<b>135-760 Min.</b>	<b>25 - 50</b>	<b>8.0%</b>	<b>135 - 760</b>
Ramp A-1	760	50	8.0%	
Ramp A-2	600	25	4.6%	
<b>Ramp B</b>	<b>135-760 Min.</b>	<b>25 - 50</b>	<b>8.0</b>	<b>135 -760</b>
Ramp B-1	700	25	4.2%	
Ramp B-2	1,024	50	7.5%	
<b>Ramp C</b>	<b>135-760 Min.</b>	<b>25-50</b>		<b>135 - 760</b>
Ramp C-1	150	25	8.0%	
Ramp C-2	300	30	7.6%	
Ramp C-3	4,559	50	2.6%	
<b>Ramp D</b>	<b>135-760 Min.</b>	<b>25-50</b>		<b>135 - 760</b>
Ramp D-1	900	50	7.9%	
Ramp D-2	300	30	7.6%	
<b>Ramp D2</b>	<b>135-760 Min.</b>	<b>25-50</b>		<b>135 - 760</b>
Ramp D2-1	98	20	4%	

Table 4.3.3 Vertical Geometry

Vertical Curve	Design Speed (mph)	Curvature (K) Crest/sag	SSD (ft.)	Grades
<b>Lord Fairfax Rd</b>	<b>35</b>	<b>29/26 Min.</b>		<b>6% Max.</b>
VC-1	35	71.4	391	+4.0%; -3.0%
VC-2	35	50.0	327	-3.0%; -6.0%
<b>US15 Business</b>	<b>40</b>	<b>44/64 Min.</b>		<b>8% Max.</b>
*VC-3	RDBT	12.5	163	-4.0%; -8.0%
VC-4	35	60.0	292	-8.0%; -5.5%
<b>Ramp A</b>	<b>25-50</b>	<b>12/26 Min.</b>		<b>Varies</b>
		<b>84/96 Min.</b>		
VC-A1	>35	664	>910	+1.0%; +1.75%
<b>Ramp B</b>	<b>25-50</b>	<b>12/26 Min.</b>		<b>Varies</b>
		<b>84/96 Min.</b>		
VC-B1	35	85.7	429	-1.0%; -4.5%
VC-B2	35	70.2	330	-4.5%; -1.65%
<b>Ramp C</b>	<b>25-50</b>	<b>12/26 Min.</b>		<b>Varies</b>
		<b>84/96 Min.</b>		
VC-C1	35	66.1	315	-7.0%; -0.2%
<b>Ramp D</b>	<b>25-50</b>	<b>12/26 Min.</b>		<b>Varies</b>
		<b>84/96 Min.</b>		
VC-R1	35	58.5	286	+2.7%; 8.0%
VC-R2	35	28.4	253	+8.0%; +0.96%
<b>Ramp D2</b>	<b>25-50</b>	<b>12/26 Min.</b>		<b>Varies</b>
		<b>84/96 Min.</b>		
VC-RD2-1	35	30.6	256	+5.53%; -1.0%

## TYPICAL SECTIONS

Proposed typical sections follow the RFP for the mainline, Lord Fairfax Road, and interchange ramps, Turkey Run, Traveler’s Way, and entrance connection roads. Modifications include:

- An adjustment to the typical section for the Business Rte. with the limits of the closed section roadway and 16-foot landscaped raised median connecting directly to the roundabout.
- Adjustments to the Ramp A and B configuration for western roundabout for the bypass lanes alignments, and ramp C at the eastern roundabout to accommodate WB-62 wheel paths.
- Revisions to the bridge typical for 12-foot lanes and 10-foot barrier separated shared-use path to match the Lord Fairfax lane widths and reduced the overall bridge width by 8.5 feet.
- Redesign of the Ramp C connection to NB US 15/17/29 has adjusted the typical section to eliminate the two retaining walls and shorten the proposed RFP acceleration lane.
- To eliminate sliver cuts along the NB lane embankment, use of a barrier wall at the shoulder will minimize cutting the slope and cutting of trees along the ROW line that acts as a community buffer.

**Roundabouts** – Both roundabout designs are consistent with the RFP, with a 103-foot diameter circle, 25-mph design speed, 18-foot circulatory roadway, 2% cross slope, 14-foot truck apron with modified CG-3, and flared entrances and exits. The WB-62 design vehicle can negotiate all turns, and approach, entry, and exit curve radii provide speed differentials meeting NCHRP 672.

**Shared Use Path** – The path is designed 8 feet wide per the RFP with no obstructions, 2% maximum cross slope, 7.5-foot buffer from roadways and a 4.5-foot offset to the hinge point. All street crossings have no more than a 2% cross-slope.

**Future Widening** – The proposed mainline US 15/17/29 typical section at the bridge (Figure 4.3.2) allows for future third lane widening in the median. The proposed typical for construction will provide a 38-foot grass median (48-feet from edge of NB / SB lanes) with the removal of the existing left turn lanes to Lord Fairfax Road. Our bridge span has been set to provide 140-feet for the future median widening with 10-foot outside shoulders three-lanes in each direction, including Ramp C and 10 foot inside shoulders.

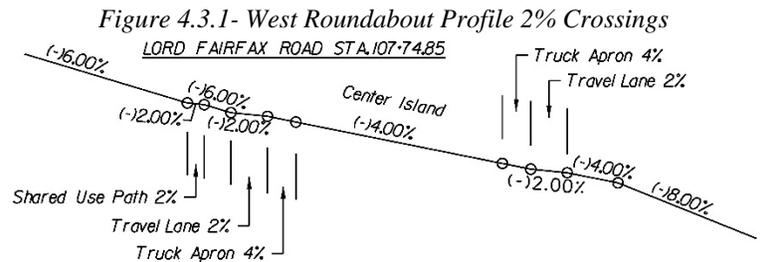
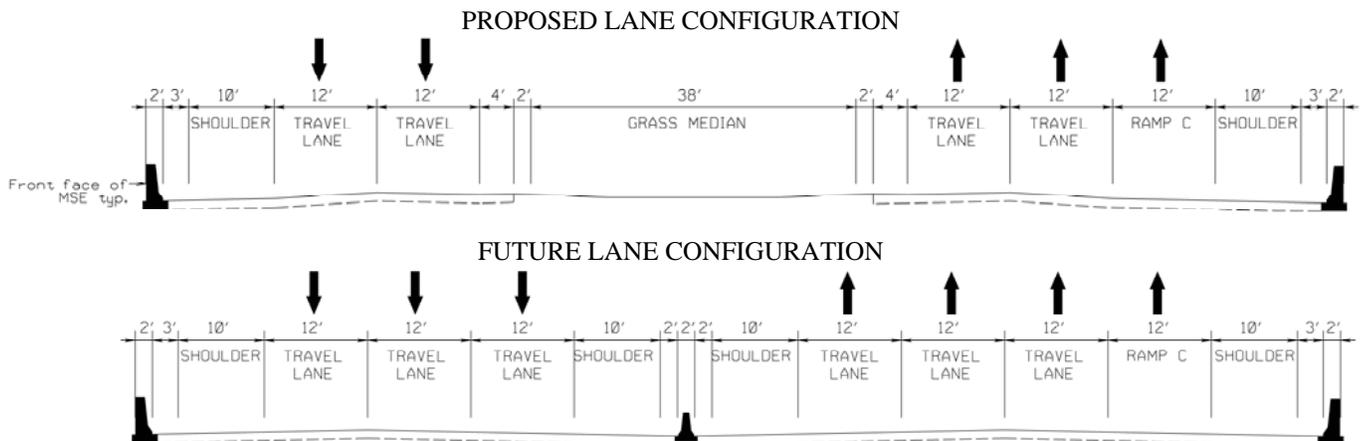


Figure 4.3.2 – Typical Sections Proposed and Future Widening at the Bridge



## CONCEPTUAL HYDRAULIC AND STORMWATER MANAGEMENT DESIGN

The Myers Team approach to the stormwater (SWM) design is to balance the water quality and water quantity requirements while minimizing environmental impacts, cost, and future maintenance. As shown in the conceptual plans, roadway drainage will be provided through a combination of roadside ditches and

closed stormwater networks. Post development stormwater discharges will be conveyed to SWM facilities and/or suitable outfalls. ***Our design emphasizes open channel flow and limits closed networks, providing less infrastructure for VDOT to maintain and opportunities for linear water quality treatment.***

Our Team has identified four existing outfalls leaving the VDOT right-of-way. These outfalls are shown in *Table 4.3.4* which compares the existing and proposed conditions regarding the percentage of newly added impervious area that is treated at each outfall. Our Team will perform a detailed H&H analysis on each outfall to ensure that the project impacts are mitigated and the integrity of downstream conveyances are maintained. The proposed design utilizes SWM control devices to provide peak flow attenuation wherever additional drainage area is added to an existing outfall. The design ensures that the Project exceeds the nutrient treatment requirements for additional impervious area.

At the northern end of the project limits, Turkey Run is a FEMA regulated stream and contains both a Zone AE and a Zone A. We have sized the SWM basins to mitigate peak discharge increases on-site. The final outfall analysis will confirm no increases in peak discharges and avoidance of adverse impacts to the culverts and the established BFEs for the FEMA stream.

*Table 4.3.4– Existing and Proposed Impervious Area and Treatment*

Outfall Station	Type	FEMA Zone	Existing Drainage Area (ac)	Proposed Drainage Area (ac)	Existing Impervious Area (ac)	Proposed Impervious Area (ac)	Treated Impervious Area (ac)
US 15/17/29 STA 98+44	48” CMP	-	86.0	87.7	7.5	9.7	2.9
*Lord Fairfax Rd STA 135+00	DBL 8’x10’ RCBC	AE	1124.0	1124.3	0.5	0.9	0.8
US 15/17/29 STA 143+20	Offsite36” RCP via Ditch	-	8.8	7.2	2.1	2.4	0.0
*US 15/17/29 STA 148+00	DBL 10’x10’ RCBC	A	1239.1	1240.1	1.5	2.0	0.8**

\*Same stream leaves and re-enters VDOT ROW; Drainage Area and Impervious Area totals include upstream outfall

\*\*Additional 0.8 ac of treatment provided at downstream outfall

The SWM for the Project is “grandfathered” into the criteria present in Part IIC of the VSMP Guidelines and the VDOT Drainage Manual. Therefore, water quality management will be assessed using a performance based methodology. Water quality control will be in accordance with the VDOT Drainage Manual and MS-19 regulations.

*Table 4.3.5- Stormwater Management Pollutant Removal*

SWM Device	Station	Total Pollutant Removal (lbs./yr.)
Enhanced Extended Detention Basin	Ramp D 13+75	4.8
Enhanced Extended Detention Basin	Ramp A 15+50	1.0
Extended Detention Basin	Ramp B 11+50	0.4
Enhance Extended Detention Basin	140+00	1.7
Grassed Swale	131+00	0.7
Grassed Swale	139+00	0.6
<b>Total On-site TP Removal</b>		9.2
<b>Total TP Load Reduction Required</b>		12.0
<b>% TP Removal On-Site (75% required)</b>		77%

A preliminary assessment to determine the requirements for pollutant removal for the Cedar Run-Owl Run Watershed (PL36) has been made. The Project site is approximately 38.6 acres of potential disturbed area. The total proposed impervious area of the Project is 14.1 acres, which represents a net increase of 3.0 acres compared to the 11.1 acres of existing condition impervious area. This additional development equates to a total phosphorus removal requirement of 12.0 lbs./yr. VDOT’s preferred option to satisfy water quality requirements is to purchase nutrient credits. In compliance with IIM-LD-251.4, our Team is providing the minimum required 75% onsite removal of target pollutants and purchasing 25% offsite credits as shown in *Table 4.3.5*.

The Team's approach provides SWM devices that deliver peak flow attenuation as well as water quality treatment that achieves the desired pollutant removal rates. The proposed stormwater management scheme ensures that the design does not negatively impact outfall channels or existing jurisdictional features. Our

Team has identified four locations for detention basins and two locations within the existing VDOT median for grassed treatment swales. The swales provide water quality treatment and eliminates the need for an additional extended detention device. The SWM design provides full treatment for the relocated park and ride facility.

### PROPOSED RIGHT OF WAY LIMITS

As shown on the conceptual plans in Volume II and summarized in *Table 4.3.6*, the proposed design eliminates the need for acquisition for five parcels and reduces total ROW acquisition by 94%. The proposed design concept only requires temporary easements for the construction of drainage easements and Lord Fairfax Road intersection connections with Turkey Run Drive and Traveler's Way.

*Table 4.3.6 ROW Impacts*

Parcel	RFP Impact SF	Myers Impact SF	Reduction SF	Reduction (%)
Fauquier County ROW	15225	0	15225	100
Fauquier County Easement	2534	0	2534	100
Alwington Farm, LLC ROW South	17761	0	17761	100
Alwington Farm, LLC ROW North	22395	0	22395	100
Alwington Farm, LLC Temp Easement	75015	0	75015	100
Alwington Farm, LLC Drainage Easement	1500	750	800	53
Potomac District The Assemblies of God Easement	5147	5147	0	0
Lisa Newcomb and Paul Newcomb Easement	833	833	0	0
Scott Beers and Dana Last Easement	444	444	0	0
Damon Stark and Carolyn Blackwell –Stark Easement	262	262	0	0
Francis Fusco and Erica Fusco Easement	564	564	0	0
<b>Summary</b>	<b>141,730</b>	<b>8000</b>	<b>133,570</b>	<b>94</b>

### PROPOSED UTILITY IMPACTS

Reconfiguration of the interchange and optimizing the maintenance of traffic design has been instrumental in the utility impact avoidance for the Project. Investigation of the potential utility conflicts associated with the proposed design identified 93 potential utility conflicts, 83 of which have been avoided through design. Of the 10 remaining potential conflicts, there are 7 potential conflicts on Lord Fairfax Road and Travelers Way which are anticipated to be avoided. The final design of SWM facilities and roadway alignment/grades will be adjusted to avoid impacts once testing pitting confirms exact depths and locations. The three unavoidable utility impacts on Lord Fairfax Road which have been incorporated into the proposal schedule and are not critical path work items for the sequence of construction.

### NOISE BARRIER LOCATIONS

The Myers Team will perform an updated noise analysis and report as a result of modifying the RFP concept. We will conduct this final analysis for the three common noise environments (CNEs) within the Project area to confirm that while there may be impacts, and noise mitigation may be feasible, it will still not be reasonable. Because the SF/BR significantly exceeds the max SF/BR of 1600, it does not seem possible a noise barrier would be reasonable; and no noise abatement is anticipated for this project.

The final analyses will be conducted in accordance with the VDOT *State Noise Abatement Policy (SNAP)*, effective July 13, 2011, VDOT *Highway Traffic Noise Impact Analysis Guidance Manual (Version 7)*, 23 Code of Federal Regulations (CFR) Part 772 Procedures for Abatement of Highway Traffic Noise and Construction Noise (July 13, 2011), and FHWA's *Highway Traffic Noise Analysis and Abatement Policy and Guidance (December 2011)*. The results will be documented in the Final Design Highway Traffic Noise Technical Report per VDOT *Noise Report Development and Guidance Document (Version 5)*.

## OTHER KEY PROJECT FEATURES

### Landscaping

We envision this plan to be a collaborative effort balancing VDOT’s desire for a dynamic Byway that is within an established budget and reasonable future costs of maintenance. Our Team will support VDOT and the Town of Warrenton in the development of a landscaping plan for which provides a gateway to the community.

Our landscape architect has reviewed the site, JTHG design guidelines, significance of Leeton Plantation, and historic Warrenton and prepared a preliminary landscaping concept centered on the vehicular driving and visual experience throughout the intersection and along the Byway. A highlight of the conceptual landscaping plan at the western roundabout is shown in *Figure 4.3.3*.

This concept can be used as a starting point for the site design and landscaping, developed with input from community stakeholders to refine the contextual design, planting pallet, gateway and reinforcement of the JTHG concepts for approval by VDOT. Incorporating native deciduous trees, texture and color, strategic tree sequencing, and naturally occurring shrubbery will draw attention to the areas natural highlights, show a warm welcome to visitors and residents, and assist in accommodating roundabout and ramp traffic.

### Leeton Forest Plantation Scenic View

The proposed shared use path terminates at the western roundabout for a future connection to the Leeton Forest, trail through the Alwington property that was the latter-day home of Charles Lee, the Attorney General for both George Washington and John Adams (1795-1801). Our Team will coordinate closely with the local stakeholders and Virginia Department of Historic Resources when developing the “western gateway” landscaping plan to include trail amenities that identify the area’s history.

Potential improvements include designing an overlook at the termination of the trail with interpretive signage, benches, and simple landscaping. This overlook would serve as the termination of the trail until such time the next phase is constructed and the details of its connections are developed. With the roundabout being 20 +/- feet above the existing Ramp A it provides for an excellent opportunity for an over look and view of the historic property as shown in *Figure 4.3.4*.

### ITS and Lighting

ITS Traffic Camera Relocation and Lighting Additional elements of the design include the relocation of the traffic camera up closer to the bridge to provide an adequate view of the interchange. The camera will require relocation of the exiting power and communication network and offer opportunities to offer power to the roundabout, anticipated community or town needs, and signage desired within the interchange and gateway. Addendum 4 has clarified the lighting requirements for the roundabouts. Each roundabout will have lighting in accordance with VDOT requirements with the power feeds coordinated with the power company for the feed and metering locations similar to that seen in *Figure 4.3.5*.

Figure 4.3.3 Landscaping at the Western Roundabout



Figure 4.3.4 Shared-Use Path Termination

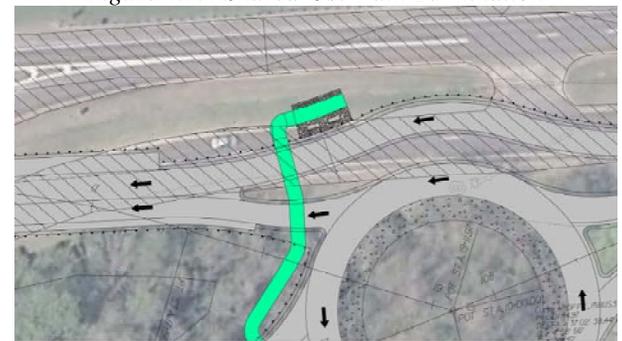


Figure 4.3.5 Completion of the Temple Avenue Roundabout with Lighting Features



## 4.3.2 CONCEPTUAL STRUCTURAL PLANS

### Commitments and Deliverables of the Myers Team

The Myers Team is committed to meeting VDOT's desired quality and efficiency goals for the bridge carrying Lord Fairfax Road over US Route 15/17/29. Our design concept prioritizes safety both during and post construction, minimizes the duration and extent of construction impacts, provides aesthetics that promote public acceptance, improves long-term durability, and reduces future maintenance. These commitments are evidenced by the proposed single-span weathering steel structure which includes the following design features:

- Decreasing the bridge length compresses the construction schedule, allows for removal of the center pier, and reduces future maintenance;
- Reducing the bridge width eliminates a girder line which improves cost, schedule, and public acceptance;
- Decreasing the bridge skew simplifies bridge details, shortens the construction schedule, reduces cost, and reduces future maintenance;
- Using fully integral abutments provides the preferred abutment type, shortens the construction schedule, eliminates bearings, and reduces future maintenance;
- Providing a constant bridge deck cross slope simplifies future widening, accelerates construction, and improves quality; and
- Placing barrier between traffic and the SUP increases the design speed and improves safety by fully separating path users from traffic.

## DESIGN APPROACH

Based on our review of the RFP and supporting documents as well as meetings with VDOT, we understand that the loading requirements will be calculated in accordance with the 7th Edition of the AASHTO LRFD Bridge Design and Specifications, and additional loads accounting for future wearing surface and construction tolerances will be considered, in accordance with VDOT I&IM S&B-80. Design procedures and details will meet or exceed those provided in the Structure and Bridge Manual Volume V. Highlights of sections that are specific to this structure:

- Typical Section – Part 2, File No. 06.02-11 (Urban Local Street System)
- Details for the shared use path (SUP) – Part 2, File No. 06.04-12 (Roadway with Curb)
- Beam Spacing and Overhangs – Part 2, File No. 11.02-2 (S=12' max and OH<0.3xS)
- Deflection Limits – Part 2, File No. 11.02-2 (AASHTO LRFD 2.5.2.6.2 - Span/1000)
- Abutment Type – Part 2, File No. 17.01-15 (Selection Algorithm)
- Guidelines for Integral Abutments – Part 2, File No. 17.01-16
- Abutments/ Use of MSE Walls – Part 2, File No. 17.01-7 (except overpass widening requirement)
- Bridge Length – Part 2, File Nos. 06.02-1 (horizontal. clearance), 17.01-7 (pile offset), 15.06-3 (barrier offset), 17.01-11 (abut. type limitations)

**BRIDGE OVER US ROUTE 15/17/29**

During the RFP phase, the Team evaluated bridge alternatives that exceeded the scope and requirements provided by VDOT regarding safety, risk to the schedule or constructability of the project, impacts to the traveling public, expandability of the typical section, cost, and long-term maintenance. The Team concluded that a single span structure with integral abutments supported on steel H-piles would best showcase the qualities and efficiencies desired by VDOT with the least amount of future maintenance.

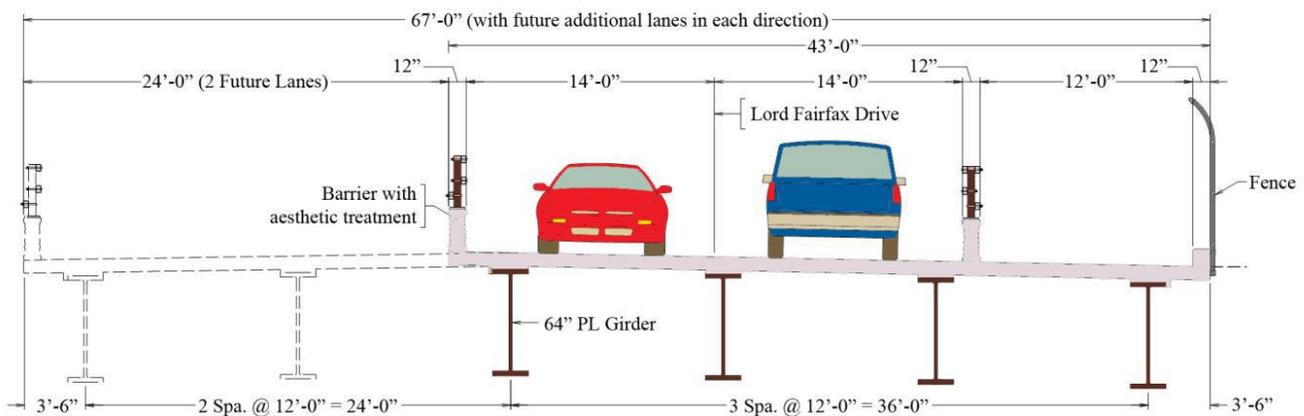
Superstructure – The bridge will be constructed on an 18-degree skew with a bearing-to-bearing span (pile-to-pile) of 160’ which is within the single span length limit for integral bridges. The bridge transverse section will be 43’-0” wide with four 64” weathering steel girders spaced at 12’-0” with 3’-6” overhangs. This section accommodates the two 12’-lanes on Lord Fairfax Road and the 8’ Shared Use Path (SUP). The bridge deck will be 9” thick and constructed with a constant cross slope to accelerate construction (simple screed operation), improve quality, and simplify future widening (See Figure 4.3.7 Transverse Section). Preliminary analysis indicates that drainage scuppers will not be needed on the structure with a cross-slope of 1.5% or greater. Although the design speed is 40MPH on Lord Fairfax Road, the right barrier will be placed between the travel lanes and the SUP, thus exceeding the bridge design criteria by providing a safer detail normally associated with greater design speeds (Design Speed > 45MPH). Due to the presence of the SUP, deflections of the structure will be limited to one-thousandth of the span length or approximately 1.9”.

Figure 4.3.6 – Proposed Bridge Rendering\*



\* Render adapted from VDOT Standard BR27C-AT-9 “DryStack”.

Figure 4.3.7 Transverse Section of Lord Fairfax Road Bridge



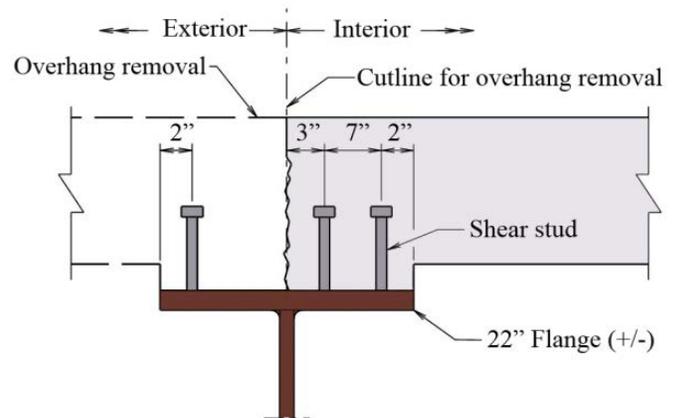
Substructure – Per the Chapter 17 abutment selection algorithm of the Structure and Bridge Manual, the structure will be jointless and use the most preferred abutment, the fully integral abutment. The integral abutment at Abutment A will have 13” of EPS and a 20’-0” approach slab (with curb, barrier, and fence) supported on a sleeper pad; Abutment B will have select backfill and a 20’-0” approach slab (with curbs). Per Volume V, Part 2, File 17.02-1, this arrangement will result in “most of the movement going toward the upgrade abutment”(Abutment A) and the use of a sleeper pad will be evaluated at Abutment B and installed if necessary. The abutments will be constructed on MSE wall structures offset from the US Route 15/17/29

baseline to accommodate extra lanes in each direction (north and south). Piles are anticipated to be HP12x53s and will be sleeved with 24" sand-filled CMP. The Team has reviewed the limits of the walls to mitigate the risk of conflict with MOT requirements and has determined that the maintenance of traffic can be accommodated with the walls fully constructed in the first phase of construction.

Common Sense Engineering– The Team will apply its experience in the construction and widening of hundreds of structures to apply concepts and details that are not only more constructible and economical but also more adaptable and functional. Examples of this include:

- Spacing shear studs to allow for easier cutting and removal of the overhang (without center stud interference). See *Figure 4.3.8*
- Spacing piles so the spacing can be repeated if ever widened (i.e. the end space exactly half the intermediate spacing)
- Spacing the girders at 12' feet to easily accommodate potential widenings in 12' lane increments
- The constant cross slope will also allow any future widening to occur to the south with a crown being strategically located directly over the left-most girder where the construction joint would be typically located; this configuration places the crown within 6" of the future center of the four-lane section and allows for a simple screed operation in the future.
- Detailing rebar to allow easy lapping of new bars for any potential widening.
- Girder details will use constant flange widths and unstiffened webs to decrease fabrication time and costs.

Figure 4.3.8 Exterior girder shear stud spacing



Benefits of the Proposed Bridge Design

Table 4.3.7 summarizes how our Team’s ideas and thoughtful consideration of materials, methods, and functionality in developing the proposed structure meet or exceed the RFP requirements in the following key areas:

- **Scope** – Meets/exceeds requirements and scope
- **Safety** – Improves public safety in final configuration and during construction
- **Impacts** – Minimizes construction impacts or compresses schedule
- **Public Acceptance** – Improves public acceptance of final configuration
- **Durability** – Improves long-term performance and durability; reduces future inspection/maintenance

Table 4.3.7 Structural Design Benefits that Exceed RFP Requirements

Improvement	Area Exceeded	Benefit to End Users
Barrier Placed Between Traffic and SUP	Scope	Designed for >45MPH speed instead of 40MPH
	Safety	Full separation of bicyclists and pedestrians from traffic
	Impacts	Shortens construction schedule by eliminating sidewalk pour.
	Acceptance	Improved public perception of safer facility

Improvement	Area Exceeded	Benefit to End Users
	Durability	No raised sidewalk results in flexibility for future widening options
<b>Decreased Bridge Length (260' to 160')</b>	Impacts	Shortens construction schedule by reducing pours in deck sequence; less beams set
	Acceptance	No pier, narrower width, and added architectural treatment avoid "tunnel" look.
	Durability	Less bridge to maintain. Fully integral abutments mean no bearings.
<b>Decreased Bridge Width (51.5' to 43')</b>	Impacts	Reduces size of fill footprint. Shortens construction schedule.
	Acceptance	Maintains buffer between Lord Fairfax Road and residents & reduces "tunnel" look.
	Durability	Less bridge to maintain. One less line of girders.
<b>Removed Piers</b>	Safety	Reduces activities in median. Improved traveler and worker safety.
	Impacts	Shortens construction schedule by removing MOT in median and pier construction.
	Acceptance	Open views underneath bridge will reduce confined or "tunnel" look.
	Durability	Eliminates maintenance of one substructure unit and bearings.
<b>Integral Abutments (instead of semi-integral)</b>	Scope	Providing more preferred abutment on selection chart.
	Impacts	Shortens construction schedule with simple pile pattern.
	Acceptance	More visually appealing than a semi-integral abutment
	Durability	No bearings to maintain. No joints at superstructure/substructure.
<b>Decreased Bridge Skew (30° to 18°)</b>	Scope	Better alignment - always desirable in bridge layout to remove or reduce skew.
	Impacts	Less design complications. Shortens construction schedule with simplified formwork.
	Durability	Reduces maintenance which is inherently increased with skew.
<b>Spaced Girders at 12'</b>	Impacts	Shortens construction schedule with less girder lines to set and less temporary traffic stoppages.
	Acceptance	Visually "cleaner" and less impacts to traffic.
	Durability	Simplifies addition of future lanes. RFP structure would require 3-4 girders to widen 24 feet (vs. 2 girders as proposed)
<b>Removed Crown -Constant Cross Slope</b>	Impacts	Shortens construction schedule with one screed setup.
	Durability	Allows for widening to break in other direction.
<b>Aesthetic Treatment of Walls</b>	Scope	Adding form-liner stone finish to MSE panels in addition to barriers.
	Acceptance	Visually appealing. Highlights JTHG.

**RETAINING WALLS AND MAJOR DRAINAGE STRUCTURES**

Although our design has eliminated many of the walls outlined in the RFP, all of the remaining retaining wall structures on the Project will be mechanically stabilized earth (MSE) walls as outlined in the concept plans. All MSE walls will be designed for local and global stability and use appropriate strap lengths and backfill material. Settlement magnitudes and time rates will be evaluated during design and measured during construction as part of the QC process.

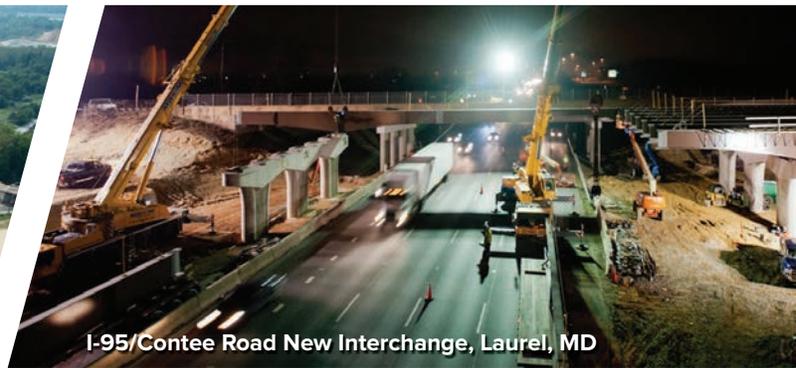
The Myers Team does not anticipate impacting or disturbing any major drainage structures (>36SF hydraulic opening) or either of the two small box culverts at Lord Fairfax Road (~Sta. 135+00) or US Route 15/17/29 (~Sta. 148+00).

# 4.4

# PROJECT APPROACH



SR 29/I-276 New Interchange, Great Valley, PA



I-95/Contee Road New Interchange, Laurel, MD



Saintsbury Drive Roundabout, Fairfax, VA



I-581/Elm Avenue Interchange Modifications, Roanoke, VA



### 4.4.1 ENVIRONMENTAL MANAGEMENT

#### Commitments and Deliverables of the Myers Team

The Myers Team is committed to ensuring environmental compliance for the Project and will support VDOT to be sure all regulatory requirements are met. Our proposed design includes measures to minimize the Project’s environmental impacts through reasonable design avoidance. In partnership with VDOT and permitting agencies, we will implement an environmental management program which:

- Promotes joint parallel C-107 inspections with VDOT, QA, and ESC inspection staff, and documented corrective actions.
- Reduces environmental impacts including the reduction of forest impacts by two acres and avoids 1.08 acres of wetland impacts.
- Meets all commitments of the NEPA CE as approved by the Federal Highway Administration (FHWA) on April 25, 2017.
- Monitors and documents compliance with all commitments, considerations, permit conditions, and approval requirements for design and construction.
- Incorporates activities into the project schedule that accounts for development of work products required to obtain applicable permits and to meet key environmental commitments.
- Avoids invasive species infestation by minimizing the area of disturbance and revegetating the project site with desirable species.
- Educates/trains employees to conduct activities in an environmentally responsible manner.

### APPROACH TO ENVIRONMENTAL MANAGEMENT

The Myers Team’s approach to environmental management for the Project is to create a partnership between the permitting agencies, VDOT, and our Team of environmental experts, designers, construction management staff, and craft personnel. Together, this partnership will ensure the project is designed with minimal environmental impacts and constructed in accordance with the RFP and NEPA CE commitments. Our Team will develop and implement an Environmental Management Plan based upon five key strategies shown in Figure 4.4.1. These are being implemented on the Project as follows:

1. Our environmental compliance staff are highly experienced in resource identification, permitting, and developing avoidance/minimization strategies.
2. Design optimizations have been successful at reducing forest and wetland impacts and right-of-way acquisition.
3. During construction, installation and monitoring of controls and BMPs will be incorporated into operation planning.
4. All team members will be educated about their individual roles and responsibilities in meeting the project commitments.
5. Environmental compliance processes will be documented and reviewed during design and construction.

Figure 4.4.1 Environmental Management Strategies



Environmental oversight of construction activities will be performed by our Environmental Manager (EM), Jennifer Bird. Construction and environmental field inspection will be managed by our SWPPP Manager.

Table 4.4.1 outlines individual roles and responsibilities for implementing the EMP. Together this team has the collective responsibility of:

- Ensuring all permit authorizations are strictly obeyed;
- Monitoring compliance with environmental commitments during design and construction;
- Evaluating the project to explore all potential avoidance and minimization measures; and
- Ensuring that all ESC measures are maintained to prevent sediment discharge to adjacent properties.

**Environmental Expertise**

Environmental Manager, Jennifer Bird has nearly 20 years of experience in ecological resource studies and the preparation of environmental documentation to support permitting with federal, state, and local agencies. She has worked closely with VDEQ, VMRC, and the USACE to obtain approvals for projects throughout Virginia along Rt 7 (Leesburg Pike), Rt 624, Rt 637, Rt 228, Rt 29, and Rt 20.

Table 4.4.1 Environmental Management Roles and Responsibilities

Role	Specific Environmental Responsibilities
DBPM <i>Thomas Heil</i>	<ul style="list-style-type: none"> <li>• Compliance with all laws, regulations, VDOT specs/special provisions.</li> <li>• Providing adequate resources and ensuring staff is appropriately trained.</li> </ul>
Design Manager <i>Stephen Drumm</i>	<ul style="list-style-type: none"> <li>• Tracking, reporting, and communicating regulatory requirements for the design team.</li> <li>• Incorporating environmental commitments and requirements into the project design.</li> </ul>
Environmental Manager <i>Jennifer Bird</i>	<ul style="list-style-type: none"> <li>• Developing the Environmental Management Plan (EMP), in conjunction with VDOT.</li> <li>• Assisting VDOT with regulatory agency coordination. All communication will go through VDOT or be approved by VDOT, as required in the IIM-LD-256.</li> <li>• Tracking environmental commitments from clearances, permits, and approvals.</li> <li>• Performing quality assurance reviews of environmental documentation, preparing agency notifications, and providing compliance reporting.</li> <li>• Overseeing the wetland/WUS delineations, T&amp;E studies, and environmental clearances.</li> </ul>
Construction Manager <i>Scott Armstrong</i>	<ul style="list-style-type: none"> <li>• Ensuring that ESC measures installed support the current state of site and construction phase.</li> <li>• Overseeing completion of C107 inspection forms.</li> <li>• Confirming environmental compliance activities are documented during construction.</li> <li>• Monitoring and tracking ESC maintenance and SWPPP updates to maintain regulatory compliance.</li> </ul>
SWPPP Manager <i>Jon Dearth</i>	<ul style="list-style-type: none"> <li>• Overseeing and monitoring environmental compliance during construction.</li> <li>• Monitoring and auditing C-107 compliance inspection forms and timely installation and maintenance of controls.</li> <li>• Auditing compliance with the Stormwater Pollution Prevention Plan (SWPPP).</li> </ul>

To maximize avoidance and minimization of impacts to environmental resources, the Team will develop an EMP. The EMP will ensure the following will occur to achieve environmental compliance.

Table 4.4.2 Achieving Environmental Compliance

During all Phases of the Project	
<ul style="list-style-type: none"> <li>• Thorough understanding of environmental resources</li> <li>• Communication of avoidance and minimization strategies</li> <li>• QA/QC of Design, Construction, and Environmental Compliance Activities</li> </ul>	<ul style="list-style-type: none"> <li>• Maintaining accurate, efficient documentation systems</li> <li>• Detailed tracking of impact reductions and/or avoidance</li> <li>• Education and training of design and construction staff</li> <li>• Teamwork and partnering with all involved parties</li> </ul>
Design	Construction
<ul style="list-style-type: none"> <li>• Environmental studies and documentation required for design modifications</li> <li>• Environmental reviews during design for additional avoidance and minimization</li> <li>• Validation, verification of existing environmental features</li> <li>• Supporting VDOT with agency coordination</li> <li>• Preparing the SWPPP and ensuring compliance</li> </ul>	<ul style="list-style-type: none"> <li>• Adequate field staffing to monitor and maintain erosion &amp; sediment control devices</li> <li>• Adherence to limits of disturbance and sequence of construction plans</li> <li>• Authority for the EM and SWPPP Manager to re-direct crews for E&amp;S needs</li> <li>• Updating and maintaining the SWPPP for full compliance</li> </ul>

## ENVIRONMENTAL IMPACT AVOIDANCE

### Avoidance and Minimization During Design

The proposed design eliminates the temporary jug handle for maintenance of traffic and has re-aligned Ramp C. These adjustments in the design have resulted in avoidance and minimization of environmental impacts. The environmental analysis in the CE originally estimated that 35 acres of forest are within the project area. The RFP design resulted in approximately 13 acres of forest clearing. The current proposed alternative requires approximately 11 acres of clearing. Additionally, wetland impacts were anticipated during preparation of the CE. Approximately 1.08 acres of wetland and 858 linear feet of stream channel were previously delineated within the project corridor. The current design completely avoids all permanent impacts to those wetlands and streams. A Stormwater Pollution Prevention Plan (SWPPP) will be developed to manage stormwater onsite during construction to identify the potential sources of stormwater discharge at the site and outline practices to control the volume of stormwater runoff and minimize the pollutants leaving the site.

### Impact Avoidance

The Myers Team's design concept has reduced forest clearing from the 35 acres estimated in the CE and 13 acres required for the RFP concept to 11 acres. In addition, the proposed design completely avoids all permanent impacts to the wetlands and streams delineated within the project corridor.

### Avoidance and Minimization During Construction

During construction, CM, Scott Armstrong will be onsite full-time to ensure compliance with all plans, specifications, and permit conditions. The site will be inspected regularly for compliance with the EMP. We will conduct post-storm inspections, monitor subcontractor activities for compliance, and promptly execute required corrective actions. In addition to the construction areas, we will also inspect access roads, staging areas, borrow and disposal sites, and storage areas for compliance with the approved plans. During the weekly look-ahead scheduling process, our CM and EM will identify opportunities to minimize the area of disturbance and schedule stabilization of completed work areas as quickly as possible.

As a new best practice from our recent VDOT DB experience, Myers Construction ESC Inspectors will partner with VDOT MS4 and SWPPP compliance staff to conduct joint inspections and collaborate on the tracking and resolution of maintenance items. On the I-64 DB Project, implementing a true partnering approach to environmental management, including joint inspections and transparent communication, has improved the Department's Environmental rating to green.

Integration of Myers' dedicated environmental management staff and SWPPP Manager Jon Dearth will ensure the Project is fully-compliant with the SWPPP and all environmental commitments. Jon will visit the site on a regular basis to assist the construction team in reviewing ESC measures, ensure that all devices are working properly, and the Project is following the SWPPP. He will review C107 Forms and provide any guidance necessary to ensure the SWPPP is properly maintained and all required documentation is in order.

In Myers' DB experience, we have found that the AFC Phase 1 and Phase 2 ESC plans which are a part of the SWPPP do not always cover every possible scenario during construction. If left unaddressed, the Project is at risk for non-compliance and potential sediment discharge. To mitigate this situation, Myers has implemented a SWPPP change process to rapidly update the ESC plans as construction progresses and compliance requires the use of different BMPs and ESC measures than what are shown on the approved plans. This process includes collaboration between the SWPPP Manager, CM, and VDOT's project-level management. This SWPPP change process has increased our ability to keep the SWPPP documents live and updated, as well as our ability to adapt the Project to the construction progress and ensure compliance with agency regulations.

### Commitment to Achieve Compliance

Myers' dedicated Environmental Compliance staff supports and trains our project teams to maintain the high standard of stormwater (ESC) compliance. This staff oversees stormwater permit compliance across all Myers' projects by monitoring with oversight of prompt and complete repairs to stormwater controls. This year, Myers expanded our SWPPP compliance training program to include construction crews in addition to refresher training for construction managers, superintendents, and construction project engineers.

## ENVIRONMENTAL AREAS OF CONCERN

A NEPA CE was approved by the Federal Highway Administration (FHWA) on April 25, 2017. Various recommendations provided in the CE set the basis for commitments to protect environmental resources onsite. The areas of concern covered by the CE included socio-economic resources, Section 4F and 6F resources, cultural resources, natural resources, agricultural/open space land, farmland, invasive species, air quality, noise, right of way and relocations, cumulative and indirect impacts, public involvement, and agency coordination. ATC 1 has resulted in significant avoidance and minimization of impacts; therefore, these areas of concern have been addressed as detailed in *Figure 4.4.3* below.

*Figure 4.4.3 Environmental Considerations and Mitigation*

Environmental Consideration	Commitments, Compliance, and Mitigation Approach
<b>Socio-economic resources</b>	<ul style="list-style-type: none"> <li>No adverse impacts.</li> </ul>
<b>Section 4F and 6F resources</b>	<ul style="list-style-type: none"> <li>No use of 4F or 6F property.</li> </ul>
<b>Cultural Resources</b>	<ul style="list-style-type: none"> <li>No adverse effects.</li> </ul>
<b>Natural Resources</b>	<ul style="list-style-type: none"> <li>The proposed design concept reduced forest impacts from 13 acres to 11 acres and avoids 1.08 acres of wetland impacts.</li> <li>VDGIF requested that all work be performed in the dry.</li> <li>Should water quality permits be required, the EM will coordinate with the regulatory agencies.</li> <li>The project will utilize Best Management Practices, including ESC and Spill Prevention Controls and Countermeasures and P2 Plan.</li> <li>Coordination with the USFWS determined that no critical habitats for northern long eared bats are located within the project site.</li> </ul>
<b>Agricultural/open space land</b>	<ul style="list-style-type: none"> <li>No use of agricultural or open space land is proposed.</li> </ul>
<b>Farmland</b>	<ul style="list-style-type: none"> <li>No use of farmland is proposed.</li> </ul>
<b>Invasive species</b>	<ul style="list-style-type: none"> <li>The potential exists for construction projects to further the establishment of invasive species. Our Team will avoid invasive species infestation by minimizing the area of disturbance, revegetating the project site with desirable species, and avoiding use of species such as crown vetch, tall fescue, and autumn olive where possible.</li> </ul>
<b>Air quality</b>	<ul style="list-style-type: none"> <li>This project is located within an area that is currently in attainment with all National Ambient Air Quality Standards. Open burning restrictions and Fugitive Dust precautions will be followed during construction.</li> </ul>
<b>Noise</b>	<ul style="list-style-type: none"> <li>There have been no changes to the RFP determination that noise mitigation may be feasible, but is not reasonable.</li> </ul>
<b>Right of way and relocations</b>	<ul style="list-style-type: none"> <li>Right of way is required although no relocations are anticipated.</li> <li>Acquisition required has been reduced by 94% from the proposed design.</li> </ul>
<b>Cumulative and indirect impacts</b>	<ul style="list-style-type: none"> <li>Incremental impacts of the project are considered small and would not rise to a level that would cause significant cumulative impacts.</li> </ul>
<b>Public involvement</b>	<ul style="list-style-type: none"> <li>Several public meetings have been held since 2016.</li> </ul>
<b>Agency coordination</b>	<ul style="list-style-type: none"> <li>Local, state, and federal agencies have been contacted as documented in the CE.</li> <li>The EM will continue to assist VDOT in maintaining open lines of communication with all regulatory agencies.</li> </ul>

## SCHEDULE INTEGRATION

The Myers Team seeks to mitigate the possibility of delays through a comprehensive CPM schedule. The proposal schedule included in Section 4.7 includes environmental management activities including permitting, surveys, installation of controls, and stabilization. During the early phases of design and agency coordination, we will follow the steps to confirm no wetland permit will be required.

## 4.4.2 UTILITIES

### Commitments and Deliverables of the Myers Team

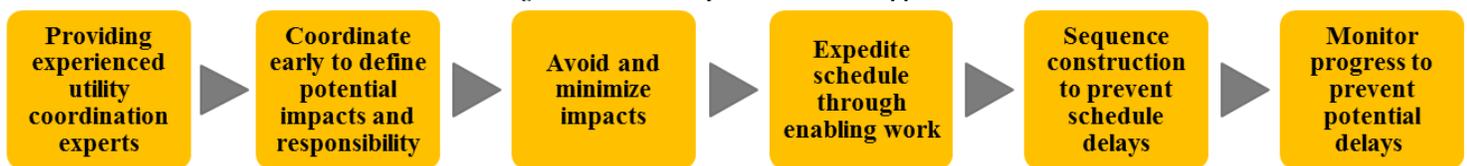
The Myers Team is committed to reducing the potential schedule risk associated with utility relocations by avoiding and mitigating utility impacts to the greatest extent feasible for the Project. The successful avoidance measures already implemented by our Team and additional strategies to continue to avoid and expedite unavoidable expedite utility relocations include:

- Continuing early coordination efforts from the SOQ phase into this proposal phase to verify planned utility mitigation strategies;
- Confirming avoidance of 83 of the 93 potential utility impacts identified for the Project;
- Sequence construction to avoid keep unavoidable and potential utility conflicts off the critical or near critical path of the schedule.
- Continuing to track and implement avoidance strategies for potential conflicts that remain pending confirmation of exact depths and locations;
- Utilizing KCI's in-house utility test pitting and designation crews to expedite resolution of potential conflicts and any unknown utilities encountered during construction;
- Assisting utility companies with relocation with preliminary alignments, preparation of UT-9s and P&E packages, construction stakeout, and maintenance of traffic.

### APPROACH TO UTILITY COORDINATION

The key to successful utility coordination for the Project is early, frequent, and open communication with utility companies that have potentially impacted facilities. The Myers Team uses an active approach to the utility coordination and relocation with an emphasizing hands-on coordination that will continue throughout the life of the Project. This is the most effective method for keeping the utility companies focused and cooperating towards the shared goal of timely and cost effective relocations. Work is performed in a systematic manner based on the policies and procedures in the VDOT Utility Manual (UM). Of equal importance is accurate and complete recordkeeping and the timely posting of utility information in the VDOT RUMS system, so that tracking of utility relocation data can proceed unhindered. Our approach to utility coordination, adjustments, and relocations includes the following proven strategies:

Figure 4.4.2 - Utility Coordination Approach



**Providing Experienced Utility Coordination Experts**  
 KCI has significant in-house resources to support the utility engineering needs throughout the Project. With experience in design and relocation services for major communication companies, natural gas transmission companies, water, and energy companies, we are confident in our qualifications to handle utility work appropriately. Our utility experience includes Verizon, AT&T, and third party communication companies, Exelon, Duke Energy, Delmarva Power, and Peco, to name a few. KCI understands the internal processes in place between municipalities and DOT's when relocating water and sewer lines through their extensive work in the mid- Atlantic region.

**Impact Avoidance Successes**  
 Myers Superintendent, Dan Reick, led field utility coordination efforts with Dominion Energy on the I-95/Temple Ave. DB project to remove and relocate ½ mile of overhead power lines – which was accomplished on schedule. In addition, the Myers Team was responsible for water and sewer relocations associated with the Project, which allowed the team to meet the original schedule completion milestone despite delays due to ROW acquisition.

### Coordinating Early to Clearly Define Impacts and Responsibility

In pursuit of this Project, Nadia Pimentel and the utility coordination team have conducted preliminary coordination with contacts at each of the utility companies with facilities along the corridor and has requested records for their facilities along the corridor. Additionally, her conversations requested input and insight on the potential impacts and avoidance strategies for facilities with potential impacts. An in-depth conflict analysis has included analysis of the RFP, utility company records, Miss Utility of Virginia records, and comprehensive site visits by our utility coordination staff to identify all potential utility conflicts. A matrix of this information was developed along with estimated relocation timeframes and costs based on historical data, VDOT's PCES system over the past two years, and information directly from the utility companies. Ultimately, the goal of these efforts is to ensure that communication and organization occurs early in the design and pre-construction processes to avoid and mitigate utility impacts.

## UTILITY CONFLICTS AND SOLUTIONS

The Myers Team has fully evaluated the potential for utility conflicts for the Project and has implemented avoidance strategies to eliminate the majority of the potential conflicts identified. Below is further discussion of the utility impacts that have been avoided, remaining potential conflicts which will be avoided by confirming locations and avoiding through design, and confirmed conflicts which require relocation.

### Avoiding and Minimizing Utility Impacts to the Greatest Extent Feasible

The reconfiguration of the interchange, minimizing the proposed fill, and re-grading options were important elements that have allowed extensive utility avoidance for our Team. Our utility investigation efforts evaluated a total of 93 potential conflicts for the Project; we have identified and eliminated 83 of these impacts to date. Our utility coordination team has worked closely with the roadway and structural designers to develop the proposed ATCs with consideration for utility impact avoidance. The proposed ATC1 provides a significant reduction of utility conflicts from the original design concept. Utility Designer

#### ***Impact Avoidance Successes***

We have identified 93 potential utility conflicts, 83 of which have been avoided through design optimizations. 7 of 10 potential conflicts have the potential for avoidance by confirming depths and adjusting the final design. Activities for each of these 10 potential conflicts are incorporated into the project schedule and are not on the critical path of the schedule.

Nadia Pimentel, SUE Manager Scott Federer, and Power and Communication Lead Thomas Mitchell have coordinated with representatives of utility owners during this proposal phase. Specifically, they have coordinated with Mr. Tony Redd (TransCanada), Mr. Christopher Scott (representative of Columbia Gas of VA), Mr. Paul Bernard from the Town of Warrenton, and Ms. Debbie Coffelt of Dominion Energy. These efforts focused on developing a plan specifically tailored to meet the relocation needs of the project while maintaining coordination and placement of all utilities within the project limits.

### ***20" Gas Transmission Main***

Our Team's experience with TransCanada and with gas transmission lines quickly focused our attention to avoiding impacts and protecting the 20" pipe line from damage during construction. During the RFQ phase, we contacted the local representative of TransCanada to obtain more detail and the depth of the line for the Project. We were provided with plan information that verified the line would not be impacted if the alignment for the project remain as designed in the RFP. The active coordination with the highway and drainage design teams will avoid impacts to the 20" transmission gas main, which crosses the Project area in the southern section. Addendum 4 has requested an Alternating Current Gradient Survey to be conducted on the 20-inch line during the Scope Validation Period. The testing will be incorporated into the schedule and will determine if the gas line needs to be recoated. This avoidance represents an estimated \$1M savings to the gas company and a possible 2-year design and construction relocation time. Our Team provided additional avoidance by eliminating the widening for the temporary access road and jughandle and maintaining the Lord Fairfax profile on the east side of the crossing. During construction, TransCanada will have inspectors in the proposed Lord Fairfax and Travelers Way intersection to confirm appropriate coverage and protection of the transmission gas main.

### **Dominion Energy/VEPCO**

Major conflicts with Dominion Energy have been avoided with our ATC 1 by avoiding the 13 KV three phase end pole at left station 107+30 (See Fig. 4.4.3). One of the main challenges this Project presented was an existing pole line, located in the west limits of the Project area. The design team developed ATC 1 to avoid potential relocation of approximately seven poles owned by Dominion carrying three phase double circuit lines and 3<sup>rd</sup> party communication cables. **This avoidance represents an estimated \$250,000 total savings for the impacted utility companies, and approximately 18-months of design and construction relocation.**

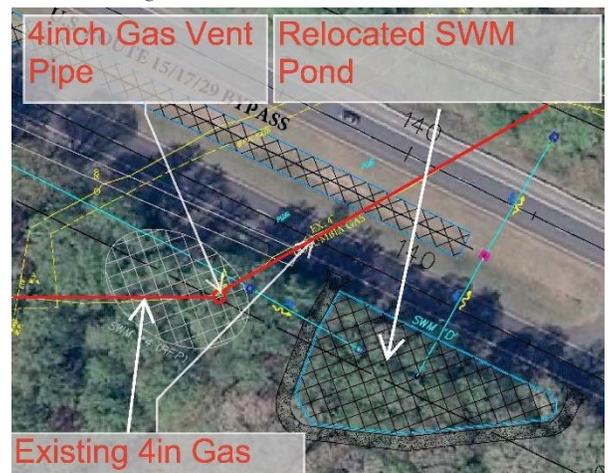
Figure 4.4.3 – Utility Poles Avoidance at South End



### **4" Gas Distribution Main**

A 4" distribution gas main crossing US 15/17/29 at station 139+25 shows a gas vent pipe conflict with the SWM facility located in the north section of the Project. This was avoided by moving the SWM pond approximately 150' north of the original proposed location and providing a new culvert outfall crossing at station 140+40. The new location of the 30" culvert optimizes the crossing of US15/17/29 with a perpendicular crossing instead of an angled one as shown in Figure 4.4.4. SUE is required to verify the depths and location of the lines for our proposed mitigation design and to see if any additional avoidance measures are required. We will re-grade the area by adding fill material to the original site which will increase the current cover of the distribution main. **This avoidance represents an estimated \$250,000 savings for Columbia Gas of Virginia and 9-months of design and construction relocation.**

Figure 4.4.4 - 4in Gas SWM D



### **Confirmed and Potential Utility Conflicts**

Three confirmed utility conflicts are unavoidable and will require relocation. These conflicts are with Dominion Energy/VEPCO utility pole at Ramp D2, Lumos pedestals on Lord Fairfax Rd., and the Warrenton fire hydrant on Lord Fairfax Rd. The potential conflicts that remain are not critical path items and pose very minimal schedule risk.

For diligence in conflict resolution tracking, our Team has identified seven potential remaining conflicts on Lord Fairfax Rd. and Travelers Way. Investigation of each of these confirmed and potential conflicts will determine what options are available to eliminate the impact. KCI will utilize in-house utility designation crews to expedite test-pitting to confirm potential conflicts and implement avoidance measures in the final design. In addition, KCI's ability to design Verizon facilities through their Culpeper contract, will expedite design of the potential relocations at Lord Fairfax Rd. and Traveler's Way.

Table 4.4.4 describes the confirmed and potential conflicts being tracked for mitigation or relocation.

Table 4.4.4 Utility Conflicts and Potential Solutions

Utility Owner	Location	Description	Status	Mitigation Strategy
<b>Dominion /VEPCO</b> Utility Pole #CL77 & unknown	Lord Fairfax Rd./Ramp D2 93+43, 93+50	2 utility poles along the shoulder	Conflict	<ul style="list-style-type: none"> <li>Coordinate pole locations for relocation</li> </ul>
<b>Lumos Networks</b> Telephone Pedestals, Buried Telephone Cables, Buried T/TG Cable	Lord Fairfax Rd. Pedestals 90+13, 93+53 Cables 90+20, 90+14, 90+18, 91+67, 93+44	Two pedestals within SUP & buried cable potentially conflicts with drainage pipe/inlets/ ditches	Conflict	<ul style="list-style-type: none"> <li>Coordinate pedestal relocation</li> <li>Test pit to confirm subsurface depths and adjust design to avoid impacts</li> </ul>
<b>Verizon</b> Buried Tele/F.O. Cable	Lord Fairfax Rd. 87+05	Utility crosses proposed storm drain pipe	Possible conflict	<ul style="list-style-type: none"> <li>Coordinate test pitting with Verizon to confirm depth</li> <li>Adjust storm drain inverts to avoid impacts</li> </ul>
<b>Columbia Gas</b> 4" Natural Gas Pipeline Crossings	Lord Fairfax Rd. 89+54, 90+10	Pipeline under realigned roadway requires verified depth of cover	Possible conflict	<ul style="list-style-type: none"> <li>Confirm elevation and cover with SUE test pits</li> <li>Adjust roadway profile to provide adequate cover</li> </ul>
<b>Town of Warrenton Public Works</b> Fire Hydrant and 8-inch Water Line	Lord Fairfax Rd. 88+42, 89+02, 90+72	Fire hydrant within proposed drainage swale & 8-inch water line depth of cover	Conflict	<ul style="list-style-type: none"> <li>Relocate hydrant</li> <li>Revise profile for roadway and drainage to avoid conflict or design/construct relocation</li> </ul>
<b>Verizon</b> Buried Fiber Optic Cable	Travelers Way BL 10+45, 10+90	F.O. and cable crosses proposed swale and roadway	Possible conflict	<ul style="list-style-type: none"> <li>Coordinate test pits with Verizon and Lumos to verify depth and avoid impact</li> </ul>
<b>Lumos Networks</b> Buried Telephone Cables	Travelers Way BL 10+97	Telephone cable crosses proposed swale and roadway	Possible conflict	<ul style="list-style-type: none"> <li>Coordinate test pits with Lumos to verify depth and avoid impact</li> </ul>
<b>Columbia Gas</b> 4" Natural Gas Pipeline Crossings	Travelers Way BL 10+65	Utility crosses proposed roadway	Possible conflict	<ul style="list-style-type: none"> <li>Test pits to avoid 4" gas line under roadway</li> </ul>
<b>Town of Warrenton Public Works</b> 6" PVC Water Main/Valve	Travelers Way BL 10+00, 10+45	6" PVC water (shown as unknown) needs adequate cover	Possible conflict	<ul style="list-style-type: none"> <li>Test pit for depth to avoid impacts</li> </ul>
<b>Town of Warrenton Public Works</b> 4" Sanitary Force Main and Manhole	Travelers Way BL 10+58	Manhole partially under proposed curb	Possible conflict	<ul style="list-style-type: none"> <li>Confirm location and depth and avoid impacts through design</li> </ul>

Our Team will coordinate storm drain profiles and elevations with confirmed utility depths to avoid the remaining potential conflicts to the greatest extent possible. We will coordinate with all affected utility companies to discuss their clearance requirements and design standards and adjust proposed elevations, to impact as few crossings as possible. During construction, our designers will work closely with construction staff to verify field conditions and redesign to avoid unanticipated utility relocations.

Our Team will be responsible for the removal of the existing signal system along US 15/17/29, reconfiguration and restoration of the ITS camera for power and telecommunication, power feed for roundabout lighting, temporary southern signal, relocation of any Warrenton facilities. Utility company relocations will include relocation of two power poles, adjustment for the telecommunications pedestals, and any potential impacts from conflicts with storm drains and roadway elevations. The Team will work closely with Dominion Energy/VEPCO to optimize the relocation of the impacted poles along Lord Fairfax Road at the Traveler’s way/Turkey Run intersection, which carry single-phase distribution cables and Comcast cables providing service to the properties adjacent to the intersections.

### **Columbia Gas 4" Gas Distribution Main**

The 4-inch distribution main that extends along Lord Fairfax Rd. provides services to the residential community and Lord Fairfax Community College. Potential impacts are a storm drain at the new intersection of Traveler's Way. SUE will confirm the location and potential avoidance. (See Figure 4.4.5.) If relocation is required, KCI will prepare conceptual relocation plans for approval by Columbia Gas.

### **Dominion Energy/VEPCO**

Utility pole conflicts (# CL77 and unknown) with the shoulder of Ramp D2 at Lord Fairfax Road station 93+43 and 93+50 have been identified and will require relocation. We will coordinate power service disconnections and new power feed design once traffic is shifted and signals are removed from service. Construction has been sequenced in a way that this area is not near the critical path.

### **Telecommunications Lines**

Verizon and Lumos have buried telecommunication lines providing services to VDOT for the Signal system at the existing Lord Fairfax and US 15/17/29 intersection. These will be removed and reconfigured for the relocation of the ITS camera. Telecommunication services to residential homes and the College are provided along Lord Fairfax Road and impacts to the system have been identified that will need to be addressed during design and construction. With the alignment of Lord Fairfax and Traveler's Way, relatively minor coordination for the relocation of pedestals, and the extension of conduits are anticipated. KCI staff will prepare a concept avoidance plan for Verizon and Lumos for their approval. If required, we will prepare a concept plan and coordinate construction with the schedule.

### **Town of Warrenton Water and Sewer**

Impacts to Warrenton's water and sewer services were identified and we contacted Mr. Paul Bernard to determine how the relocation, design, and construction for utility relocations was arranged. Mr. Bernard indicated the design and construction would be part of the Project, ductile iron pipe is to be used, and the Town will review the plans and inspect the work. SUE will be required to prepare the avoidance and relocation plans. Our review indicated a possible fire hydrant relocation and adjustment to a water valve at the intersection of Lord Fairfax and Traveler's Way to be part of a design submittal to Warrenton.

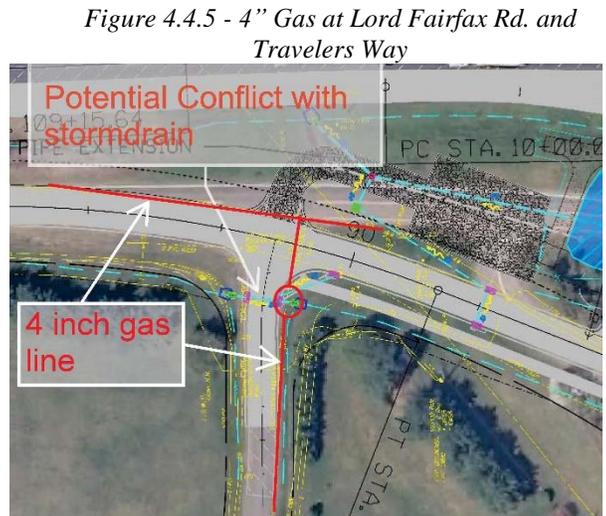


Figure 4.4.5 - 4" Gas at Lord Fairfax Rd. and Travelers Way

### **Utility Avoidance Success**

*On a similar two-lane to four-lane widening of Skeet Club Road, KCI and Utility Designer Nadia Pimentel played an integral part in designing around Colonial Pipeline's 36" and 40" gas transmission mains through utility analysis and preliminary routing report development. Impact avoidance eliminated \$16M of utility relocation expenses on the project.*

## **SCHEDULE MITIGATION STRATEGIES**

### **Expediting Schedule through Enabling Work**

For the UFI meeting, our Team will perform preliminary alignment designs to relocate impacted facilities, and will perform design of any water/sewer and Verizon relocations. These alignments will be electronically provided to utility companies so they can be built from the relocation designs. This allows utility companies to move toward P&E submission faster. If appropriate, we will partner with the utility companies, assisting with preparation of UT-9s and P&E packages to expedite utility relocation design, approval, and relocation.

### Sequencing Construction to Prevent Schedule Delays

Segmenting the Project into four areas for construction phasing allows work to begin with minimal utility impacts. During construction, we anticipate assisting the utility companies with clearing/grubbing; right of way and easement stakeout; access roads/laydown areas; and installing conduits, encasement pipes, and other items to maintain the schedule. We will work with the utility companies to determine if relocation work (i.e. manhole/handhole construction, trenching, etc.) can be performed by our Team to expedite the schedule. Partnering with the utility companies to support relocation construction saves the utility companies from hiring a contractor, and removes potential schedule obstacles.

### Monitoring Progress to Prevent Potential Delays

Maintaining frequent communication with utility companies will ensure they stay on schedule and provide time to adjust operation sequencing. Progress with each utility owner will be tracked by our Utility Coordinator using a tracking matrix, which will be updated and provided to the DBPM, DM, CM, and VDOT bi-weekly. The matrix will include all utility milestones to facilitate design and relocation on a regimented schedule.

The most significant milestone for utility companies is the submission of P&Es. The Myers Team will institute a Utility Task Force to streamline the management, review, and approval of the P&E's. This group will continue to function during the utility relocation construction activities to assist the utility company's contractor with execution of work and resolving issues before they are critical and potentially affect the project schedule. Potential issues with relocations exceeding the UFI schedule will be flagged, mitigation measures identified, and remediation measures implemented to maintain the schedule. The Team will partner with the utility companies and VDOT regarding any delay or lack of progress and assist in defining recovery strategies.

### Unidentified/Non-Located Utilities

If an unidentified utility is encountered during construction, KCI's in-house utility designation staff can provide SUE trucks and designation crews within hours. The utility will be traced back until it reaches a box or other piece of equipment that proves ownership and will be as-built to determine and avoid potential conflicts. If relocation is necessary, the potential schedule impact will be identified proactively and incorporated into the project schedule to understand and mitigate potential schedule impacts.

Our utility task force will manage and assist, to the extent possible, with the preliminary engineering and development of the P&Es. They will work with all the involved companies to develop pro-rates, UT-9 documents, and coordinate the relocations with the project design to ensure all conflicts are resolved in the submitted P&E. We will seek approval of each P&E submittal from VDOT before recommending authorization. When relocation work begins in the field, our MOT Coordinator will take the lead on coordinating lane closures and work areas with the companies that are performing the utility work, allowing for smoother coordination with construction activities ongoing on the Project.

## INTEGRATED PROJECT SEQUENCING

The proposal schedule accounts for utility coordination, planning, field inspections, development of plans & estimates, and utility relocations in conflict with the final design. The schedule includes or utility relocations activities for 10 remaining potential conflicts. Specific activities shown in the schedule for each facility owner are surveys of existing utilities, preparing utility relocation concept plans, submitting plans for comment, reviewing and correcting comments, and updating the RUMS system. If avoidance is not deemed possible based on SUE, the schedule already accounts for the possible relocations. As confirmation of impact avoidance progresses and coordination with the utility companies continues, the durations included in the schedule may be reduced by minimizing or eliminating impacts that have been incorporated.

### **Successful On-Time On-Budget Mitigation Strategy**

On the Walney Road DB project, we managed private utility companies, long lead items, splicing crew availability, and weather challenges. Myers overcame challenges by partnering with the utilities to phase their work, supporting clearing and grubbing, E/SC, and MOT to ensure crews focused on the task at hand, relocating the utility lines.

### 4.4.3 GEOTECHNICAL

#### **Commitments and Deliverables of the Myers Team**

The Myers Team will identify, evaluate, and mitigate the geotechnical risks by establishing recommendations that fit the overall Project schedule and effectively implementing design concepts during construction. We will continue our implementation of the following geotechnical mitigation strategies, which began during the proposal design development, and will continue during final design and construction:

- Implementing 9-step geotechnical approach to proactively identify areas with the potential for unsuitable soils
- Conducting supplemental testing which exceeds the requirements of the MOI to confirm the extent of unsuitable soils which will be encountered
- Developing and updating a project schedule which incorporates activities for geotechnical investigation, analysis, settlement periods, and adjusted production rates to account for unsuitable soils
- Creating a detailed Soils Remediation Plan and settlement monitoring schedule that involves collaboration between geotechnical designers, construction staff, and QC representatives during construction to ensure thorough implementation and documentation of the remediation methods and settlement monitoring
- Utilizing multiple crews/shifts to accelerate construction due to delays associated with unsuitable soils if necessary

#### **GEOTECHNICAL APPROACH**

The Project is in the Blue Ridge Geologic Province of Virginia which presents a variety of challenging geotechnical conditions. The Project corridor consists predominately of moisture sensitive, moderate to highly plastic, fine-grained soils containing mica. These soils exhibit elevated moistures within the upper strata and subgrade elevations in many areas, and isolated areas of deeper highly plastic soils are present.

##### **Geotechnical Exploration Practices**

The Myers Team has thoroughly reviewed the VDOT-provided geotechnical documents including the Geotechnical Data Report (GDR) by GeoConcepts Engineering, Inc. dated July 13, 2017. A total of 23 Standard Penetration Test (SPT) soil borings were completed for the GDR. These values represent approximately 20% of the geotechnical boring coverage that will ultimately be required to meet the minimum requirements in the Chapter III of VDOT's Manual of Instructions (MOI).

Our Team is prepared to expedite the site investigation following NTP having already identified areas of concern for unsuitable soils and settlement. Our comprehensive review and evaluation of all available data during this proposal phase allows us to conduct the site reconnaissance and confirm the potential geotechnical risks promptly following NTP. We will expedite the geotechnical investigation to obtain prompt results to incorporate into the design of the bridge MSE abutments, foundations, and the Project's pavements. ECS successfully expedited the field investigation on the I-64 Widening - Short Pump DB project by having the subsurface exploration plan ready for review and comment at NTP and operating multiple drill rigs simultaneously to expedite the investigation.

The geotechnical exploration program will be tailored to address the real geotechnical issues relative to the proposed design. Our Team will conduct a thorough supplemental geotechnical investigation which exceeds the requirements of the VDOT MOI Chapter III. All additional exploration, investigation, and testing will be

performed in support of the required final design level geotechnical engineering report (GER). Sampling and testing of in-situ soils will be focused on delineating the extent of highly plastic, excessively wet, and low CBR value (CBR<5) soils at the proposed subgrade elevation.

#### Geotechnical Design and Analyses Practices

The design and analyses of the geotechnical features will be in accordance with AASHTO LRFD Bridge Design, VDOT's MOI, and the requirements set forth in the Project Technical Provisions.

Laboratory testing and the subsequent selection of accurate engineering parameters will aid in refining the geotechnical analyses that has already been conducted. The key risk factors that have been identified for evaluation are the magnitude and time rate of settlement and the delineation of unsuitable soils.

In addition to the supplemental conventional SPT drilling, sampling and standard soil index tests; we will supplement the MOI compliant investigation with in-situ testing as needed with Pressuremeter Testing (PMT) that can be performed within the materials at the base of the retaining walls, bridge abutments, and deep fill locations. Shelby tube sampling will also be conducted so that direct shear, triaxial shear, and consolidation testing can be performed on undisturbed samples. The PMT test results as well as the shear strength and consolidation test results will be used to develop the engineering parameters for each soil stratum. The sampling and testing will be scheduled to expedite obtaining the parameters that are critical in confirming our preliminary evaluations of settlement rates and magnitudes, supporting the global stability analyses, and supporting the bridge abutments and retaining wall design.

Our Team used the available subsurface data from the GDR to create a matrix of potential unsuitable soil locations with a mitigation strategy for each location (*See Figure 4.4.6 on page 33*). After award, our geotechnical field exploration will pay attention to areas shown to be unsuitable in the GDR, performing additional sampling and testing of material in these areas that are more than the requirements of the MOI. Upon completion of the geotechnical field exploration and laboratory testing, we will utilize all available existing and supplemental geotechnical data to refine this matrix. This matrix will aim to minimize the amount of unsuitable soils that need offsite disposal, determine possible admixture and soil remediation strategies, perform engineering settlement and stability analyses, and provide geotechnical recommendations for the design and construction of the bridge foundations, retaining walls, slopes, roadway embankments and subgrade, pavements, and SWM facilities.

#### Construction Methods

To ensure that all geotechnical design recommendations are implemented during construction, the Myers Team will ***increase geotechnical representation onsite during critical earthwork and foundation operations and maintain thorough QC documentation throughout these operations.*** Randy Wirt, PE, and trained members of his geotechnical design team will be intimately involved during construction. Randy and his team combined have over 80 years of experience working on transportation projects. This experience will be critical in accurately delineating areas of unsuitable soils, generating the most effective and efficient plan to remediate the areas of unsuitable soils, and to ultimately ensure this plan is properly implemented and documented in the construction phase. The success of this approach comes through the importance our Team places on communication between the geotechnical engineer, construction staff, and the QC inspectors. The geotechnical representatives onsite during the critical earthwork and foundation operations will observe and document the remediation procedures, the settlement monitoring of the bridge approach fills and planned retaining walls, and recommend further mitigation techniques as necessary.

#### ***Geotechnical Analysis (Exceeding MOI Requirements)***

Due to the substantial amount of unsuitable materials identified, our Team will; Conduct supplemental geotechnical investigations which exceeds the MOI requirements; Increase the frequency of soil borings, paying attention to more accurately refine our delineation of unsuitable soils; and Supplement in-situ testing at the base of the retaining walls, bridge abutments, and deep fills to confirm estimated settlement rates and reduce schedule risk.

## GEOTECHNICAL RISKS AND CHALLENGES

The geotechnical risks have been identified and evaluated based on the existing Project information provided by VDOT, our understanding of the Project’s geologic setting, and the Team’s experience in the area. *Table 4.4.5* presents the identified geotechnical risks and potential impacts on the construction duration, costs, quality, and long-term serviceability of the Project. The mitigation strategies our Team will implement will provide and deliver a high-quality project with an expedited timeframe.

*Table 4.4.5 Geotechnical Risks*

Risk Description	Potential Impact	Mitigation Strategy
Unsuitable Subgrade Soils	<ul style="list-style-type: none"> <li>Schedule</li> <li>MOT/Public Safety</li> <li>Earthwork Quantities</li> <li>QA/QC Needs</li> </ul>	<ul style="list-style-type: none"> <li>Confirm and delineate accurate lateral and depth extents of the unsuitable soil in the areas already identified using the available subsurface information.</li> <li>Finalize Soils Remediation Plan prior to construction.</li> <li>Ensure schedule impacts are accounted for in the CPM schedule.</li> </ul>
Settlement Magnitude and Time-Rate	<ul style="list-style-type: none"> <li>Schedule</li> <li>Project Quality</li> <li>Long-term Serviceability</li> </ul>	<ul style="list-style-type: none"> <li>Utilize in-situ PMT testing and consolidation testing beyond MOI requirements to refine the preliminary settlement magnitude and time-rate analyses already accounted for in the proposal schedule.</li> <li>Implement field instrumentation to monitor settlements during construction.</li> <li>Schedule embankment construction as early as possible to allow for the settlement period to begin.</li> </ul>
External/Global Stability of Retaining Walls	<ul style="list-style-type: none"> <li>Schedule</li> <li>Project Quality</li> <li>Long-term Serviceability</li> </ul>	<ul style="list-style-type: none"> <li>Collect adequate undisturbed samples and run the appropriate laboratory tests to identify accurate shear strength parameters in problematic soils.</li> <li>Use these parameters to refine the preliminary analyses already completed by the Myers Team and modify the retaining wall design as necessary to meet the stability needs.</li> </ul>
Moisture Sensitive Soils	<ul style="list-style-type: none"> <li>Schedule</li> <li>Project Quality</li> <li>Long-term Serviceability</li> <li>QA/QC Needs</li> </ul>	<ul style="list-style-type: none"> <li>Confirm areas of moisture sensitive soils already identified with the available subsurface information.</li> <li>Denote the locations of these soils on the final Project Plans.</li> <li>Implement specific methods to protect these soils from the elements once exposed.</li> <li>Schedule earthwork operations to limit the exposure of the moisture sensitive soils</li> </ul>
Existing Structures/ Slopes	<ul style="list-style-type: none"> <li>Schedule</li> <li>Project Quality</li> <li>Long-term Serviceability</li> </ul>	<ul style="list-style-type: none"> <li>Confirm and refine the preliminary analysis of impacts to existing roadway due to bridge approach fills and Ramp A fills.</li> <li>Develop a mitigation and monitoring program during design phase and document on Project plans.</li> </ul>

### Unsuitable Subgrade Soils

To evaluate and delineate unsuitable soils, the Myers Team will follow a mitigation strategy that includes nine major action items undertaken from commencement of the Project through final construction.

1. Conduct thorough geotechnical investigation in compliance with VDOT MOI Chapter III
2. Supplement MOI complaint investigation with in-situ testing
3. Create a matrix of potential unsuitable soils locations with mitigation strategies for each location
4. Plan for mitigation/improvement strategies in the construction schedule
5. Prepare estimated quantities of unsuitable soils
6. Create a Soils Remediation Plan to include haul-off, treatment types/locations, and borrow sources
7. Increase geotechnical representation onsite during critical earthwork and foundation operations
8. Use onsite soils to the extent possible using drying (lime) or admixtures (cement) as needed
9. Develop alternative treatment methods that may accelerate schedule or improve quality

***This geotechnical process routinely exceeds minimum VDOT MOI requirements for quantity of testing.***  
 The key to successfully implementing this process on past projects has been identifying potentially

problematic areas prior to the design phase geotechnical exploration and planning the exploration to aid in gaining a better understanding of these areas. By doing so, the Soils Remediation Plan can be established during the design phase so problematic areas are accurately delineated on the final Project Plans in both surface area and in depth. The treatment methods are then accounted for in the construction schedule. The overall goal of the Soils Remediation Plan will be to minimize the amount of material being hauled onsite and offsite while still maintaining the Project quality and schedule.

The Myers Team has used the Project information provided by VDOT to evaluate the proposed subgrade soils and develop a matrix delineating station ranges where unsuitable soils are likely present. Large areas of the near surface soils contain micaceous high plasticity Fat clays (CH) and Elastic silts (MH) that are unsuitable as pavement subgrades. In addition, many of the near surface soils exhibit high natural moisture contents (in-situ moisture content over 30% of the optimum moisture content) and low CBR values (CBR values between 0.5 and 5.0). Through a process of assigning tributary areas between the provided GDR borings, we have identified areas of potentially unsuitable soils and have highlighted them on the preliminary Project Plans. *Figure 4.4.6* on page 33, presents the preliminary Project Plans with highlighted areas of potentially unsuitable soils, defines the criteria used to define unsuitable soils, explains the process used to identify these areas, and addresses the remediation options that have been considered. Based on our Team's evaluation using the currently available geotechnical information it is estimated that approximately 50% of the planned subgrade footprint could be impacted by potentially unsuitable soils. ***We have used this evaluation to mitigate the risk by preparing estimated quantities and locations of unsuitable soils to account for this in the construction schedule.***

#### ***Planning for Unsuitable Soils***

Unsuitable soils have been accounted for in the proposal schedule by adjusting production rates for earthwork activities including cut to fill and fine grading. Planning for anticipated field conditions mitigates the potential schedule risk and will be confirmed during geotechnical field investigations.

The Myers Team will further mitigate the impacts of this risk by increasing the supplemental boring frequency beyond the requirements of the MOI in the areas identified as containing potentially unsuitable soil. This will help provide a refined and accurate delineation of unsuitable soils for the final Project Plans and help to create a Soils Remediation Plan to include haul-off, treatment types/locations, and identify borrow sources. The goal of this plan will be to utilize onsite soils to the extent possible using lime and cement as needed. These techniques have been shown to dry wet soils, reduce the plasticity, and increase the strength of the stabilized soil matrix, thus reducing the amount of undercut and haul-off unsuitable soil. Using four to six percent lime treatment by volume works well with highly plastic and moderate to excessively wet soils sampled through the Project corridor. ***During the design phase, we will conduct a laboratory testing program to optimize the percent of lime and/or cement to increase the quality and effectiveness of the remediation techniques.*** In addition, the use of geotextiles with limited depth undercuts will be considered depending on the site-specific subgrade conditions encountered during the supplemental geotechnical investigation. We will also evaluate and identify locations of onsite borrow sources to reduce the need for imported fill and limit the impacts dump trucks will have on the local traffic and public safety.

#### **Settlement Magnitude and Time-Rate**

Based on the available geotechnical data there is a potential for high plasticity soils (MH/CH) at the base of retaining walls and within areas of deeper fills at bridge abutments. The key to mitigating settlement risk is to accurately identify the location, magnitude, and time-rate of potential settlement and incorporate the details into the plans and construction schedule. Our Team has already begun taking steps to mitigate this risk by evaluating settlement magnitude and time-rate in the location of the planned bridge approaches and abutments. Our Team will also begin embankment construction as

#### ***Accounting for Settlement***

Based on the subsurface data provided in the preliminary GDR, the Myers Team estimates settlement rates ranging from 1 to 3 inches at each approach/abutment and has accounted for approximately 60 days for settlement following completion of the approach embankment construction within the proposal schedule included in Section 4.7.

early as possible to allow the settlement period to begin. We estimate a settlement magnitude ranging from one and three inches at each approach/ abutment with settlement being complete within approximately 30 to 45 days after the completion of approach embankment construction. A duration of 60 days has been incorporated into the proposal construction schedule to account for potential risks. Our Team will further mitigate this risk during the design phase by collecting additional Shelby tubes and PMT testing in the critical locations. Groundwater monitoring wells will also be installed where necessary to accurately measure short-term and long-term groundwater levels. Should the supplemental geotechnical investigation indicate larger settlement magnitudes and longer time rates than estimated in the preliminary analyses, the impacts of this can be proactively mitigated by utilizing light weight fill material, installing geosynthetic grids or fabrics, or surcharging embankment fills.

#### External/Global Stability of Retaining Walls

The available geotechnical data indicates the potential for thick layers of highly plastic, fine-grained soils near the proposed bridge abutments. If these soils are present behind and below the MSE retaining walls at the bridge abutments, they could pose a significant risk to both the external and global stability of the wall. To mitigate the potential schedule, quality, and long-term performance risks associated with these soils, our Team has completed preliminary external and global stability analyses for the bridge abutment MSE walls. From these analyses, it was estimated that Abutment A will require a reinforcement ratio of  $0.75 \cdot H$  and Abutment B will require a ratio  $0.9 \cdot H$ , for both external and global stability to be satisfied. This risk will be further mitigated in the design phase by collecting adequate Shelby tube samples in the fine-grained soil strata at the locations of the bridge abutments. These samples will be carefully transported to a laboratory to conduct direct and triaxial shear testing. The shear strength results will be used to refine the engineering analyses and subsequently confirm or modify the minimum length requirements for the MSE wall reinforced zones such that external and global stability are satisfied both in the short-term and long-term.

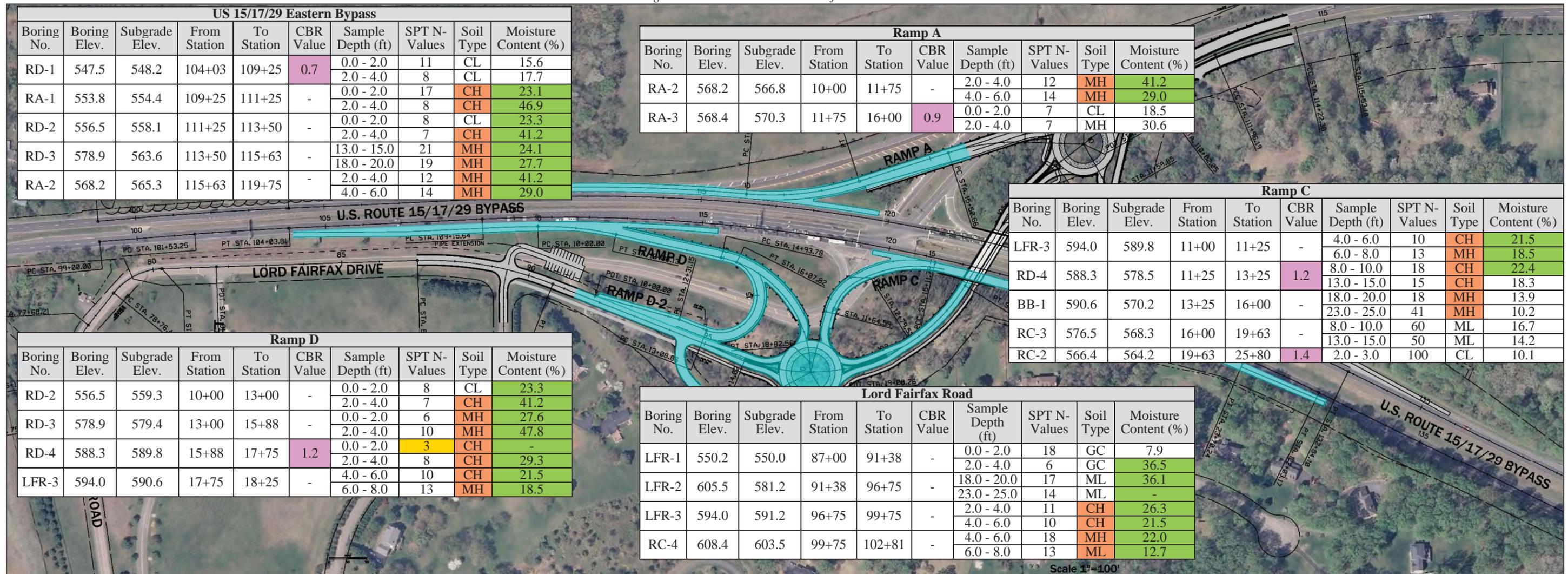
#### Moisture Sensitive Soils

As previously discussed, there are large areas through the project corridor where shallow, moisture sensitive, moderate to highly plastic, fine-grained soils are present. Many of these areas will require remediation because the soils are unsuitable for pavement subgrade; however, there will likely be areas of lean clay (CL) and silt (ML) that although moisture sensitive, can be suitable as subgrade material. If these soils are exposed to precipitation and allowed to become excessively wet, the time it will take to scarify and dry them to a workable moisture content can have an impact on the duration of construction activities. Our Team has identified and delineated these areas (*see Figure 4.4.6*) in addition to the potential unsuitable subgrade soils. Mitigation techniques include diverting water away from these construction areas and rolling/sealing sensitive soils that are exposed prior to an imminent rainfall. The supplemental geotechnical investigation will help refine the preliminary identified areas to denote them on the final Project Plans.

#### Existing Structures/Slopes

Construction of the interchange will include large fill placement and select wall locations adjacent to existing roadways, most notably on the northern portion of Ramp A and the location of the bridge approaches. To mitigate the risk associated with settlements and global stability, our Team has evaluated the impact the new approaches and Ramp A will have on the adjacent roadways. Global stability, settlement magnitudes, and settlement time rates were evaluated based on the existing subsurface information. Based on these evaluations, the effects on the existing roadway are not predicted to impact the traveling public. Our Team will further mitigate this risk in the design phase by revising these evaluations once supplement soil data is collected. A monitoring plan will be developed if necessary and careful implementation of the monitoring program will document soil movements near existing structures and slopes.

Figure 4.4.6 Geotechnical Areas of Unsuitable Soils



**Remediation Options for Unsuitable Subgrade Soils**

- 1) For subgrades in cut areas or on fills less than 3.0 feet, expose the subgrade elevation or surface that fill will be placed, undercut the unsuitable soils up to a depth of 3.0 feet below the top of subgrade. Place approved structural fill in lifts and compact until the subgrade elevation is reached.
- 2) For subgrades in cut areas or on fills less than 3.0 feet, expose the subgrade elevation or surface that fill will be placed, undercut the unsuitable soils up to a depth of 2.0 feet below subgrade. After undercutting, lime stabilize the top 12 inches of the exposed material with 4% to 6% lime by volume. Replace the material removed in lifts and lime stabilize with 4% to 6% lime by volume until the subgrade elevation is reached.
- 3) For subgrades founded on more than 3.0 feet of fill, proof roll the exposed soils before placing fill. If the soils fail a proofroll, in-situ lime stabilizes the top 12 inches of exposed material with 4% to 6% lime by volume before placing fill.
- 4) For subgrade soils unsuitable due to high natural moisture contents only, scarify, dry, and recompact the soils once the subgrade has been exposed. If drying of the soils cannot be achieved, in-situ lime stabilize the top 12 inches of subgrade with 4% to 6% lime by volume.

Legend	
<span style="background-color: #ADD8E6; border: 1px solid black; padding: 2px;"> </span> Unsuitable Soils	Delineates areas of potentially unsuitable soils
<span style="background-color: #FFD700; border: 1px solid black; padding: 2px;"> </span> Soft or Loose	Soils exhibiting an SPT N-Value less than 4 blows per foot (bpf)
<span style="background-color: #FF8C00; border: 1px solid black; padding: 2px;"> </span> Highly Plastic or Organic	Soils that classify as CH, MH, OH, or OL by USCS definition
<span style="background-color: #90EE90; border: 1px solid black; padding: 2px;"> </span> Excessively Wet	Soils that exhibit a natural moisture content more than 130% of that soils optimum moisture content
<span style="background-color: #DDA0DD; border: 1px solid black; padding: 2px;"> </span> Low CBR Value	Soils exhibiting a CBR value less than 5.0

#### 4.4.4 QUALITY ASSURANCE / QUALITY CONTROL

##### Commitments and Deliverables of the Myers Team

The Myers Team is committed to delivering quality to VDOT in both the design and construction of the Project. To achieve this elevated level of quality, we will:

- Create a partnership between designers, construction staff, independent QA staff, utility owners, permitting agencies, and VDOT;
- Transparently provide VDOT with full access to all design, construction, and quality documents through a Project SharePoint site;
- Ensure that certified quality personnel are available and assigned to the Project and that staffing assignments are updated and communicated with VDOT on a weekly basis;
- Consistently verify that work products provided meet or exceed contractual requirements through auditable documented quality checks, inspections, and testing;
- Routinely communicate with VDOT to provide confidence in performance of quality management program, thereby reducing VDOT’s administrative efforts; and,
- Evaluate and adapt the QA/QC Program to ensure that requirements are being met and that the program provides auditable outputs.

#### APPROACH TO QA/QC

Our Team’s approach to quality management focuses on continuous improvement and ensuring that Team members understand, implement, monitor, and document quality procedures. To accomplish this, the quality team, led by QAM Kaushik Vyas (Quinn), will prepare, present, obtain approval of, and continually update the QA/QC Plan for the Project. Quinn has provided QA Services on more than 40 DB and P3 projects in Virginia since 2008 where they have developed proven processes to independently verify successful implementation of project-specific QA/QC Plans.

The QA/QC Plan for the Project will be based on the VDOT’s *Minimum Requirements for Quality Assurance and Quality Control on Design Build and Public-Private Transportation Act Projects*, “QA/QC Guidelines.” Our Team will implement the QA/QC Plan to verify contract requirements are met; work and materials are provided correctly; and records, materials notebook, and documentation are accurate and complete. It is in the best interest of VDOT, Quinn, Myers, and KCI that our QA/QC Plan is well-structured, easily audited, and minimizes the need for VDOT to expand its contract administration efforts. In addition to meeting VDOT’s *QA/QC Guidelines*, it is important to the Myers Team that the QA/QC plan:

- Minimizes construction and design rework;
- Provides documented and streamlined QA/QC procedures – for both design and construction phases of the Project;
- Limits VDOT’s need to assign valuable resources; and
- Assures VDOT of a well-maintained, safe construction site that meets or exceeds the contract requirements.

##### **Facilitating Safe Inspections**

*The Myers Team will provide a well-maintained and safe construction site with safe access for all inspectors, including QA, QC, and VDOT. To further ensure their safety, inspection staff will be requested to attend project-specific safety orientation and training.*

Through expanding experience with design-build projects, the Myers Team knows **communication and transparency** are key to providing the Department with confidence in the Project’s quality program. On its most recent design-build project, Myers piloted the use of SharePoint for transparent sharing of quality control documentation for design and construction. This pilot program was deemed successful and received positive response from VDOT Independent Assurance (IA) personnel. We will use a similar format on SharePoint for the Warrenton Project. **The Project SharePoint site provides access to all the latest files, supports easily auditing documents, and reduces the amount of administrative support.**

### QA/QC STAFFING PLAN

An important element of ensuring appropriate staffing for all phases of the Project life-cycle is to have a person dedicated to managing and communicating the Project schedule as it evolves through design. Our Team has learned the value of discussing plan packaging with the design team early in the Project to maximize schedule benefits during construction. This review of plan sets allows the designer to better predict the QA/QC staffing that will be needed during the design phase. As the design and detailed scope quantities evolve, the scheduler updates the Project schedule to reflect the latest approved design elements, and communicates with the QA/QC firms. Just as the QA/QC Plan must be a living document, the QA/QC Staffing Plan must be flexible to adjust to the changing schedule as design and scope are advanced. Following is a description of the QA/QC staff and duties:

Table 4.4.7 – QA/QC Staff and Responsibilities

Staff	QA/QC Responsibilities
Design Build Project Manager <b>Tom Heil, PE</b>	Provides supervision and management of the overall Project including all design and construction; works with the QAM to develop the QA/QC program and continuously review the process as design and construction progress
Quality Assurance Manager <b>Kaushik Vyas, PE</b>	Responsible for ensuring compliance with the QA/QC Plan including design and construction activities, materials, testing and sampling. Authorized by the QA/QC Plan to initiate work stoppage for design and construction and recommend to VDOT withholding of payment.
Design Manager <b>Stephen Drumm, PE</b>	Responsible for coordinating and directing all design disciplines and subconsultants, assigning resources and ensuring all designers are following the QA/QC Plan; will continuously monitor the QA/QC Plan and design progress and update as needed
Design QA/QC Manager <b>John Barefoot</b>	Audits each design package before it leaves the design disciplines to ensure they conform to all QA/QC requirements including, design criteria, submittal checklist all applicable VDOT specifications/guidelines and other design publications as described in the QA/QC Plan.
Independent Technical Reviewers (ITR)	Senior technical staff will be assigned that have no role in the design development; technical reviewers will have multi-discipline experience to ensure all discipline work is coordinated
Construction Manager <b>Scott Armstrong</b>	CM will be on site and is responsible for day to day construction activities; will oversee the Project site and ensure all work is in conformance with Project requirements and the QA/QC plan
Construction QC Manager <b>Cesar Rodriguez</b>	Responsible overseeing the inspection staff and ensuring that the appropriate amount of inspection resources is available as the Project ramps up and ramps down; will monitor documentation to ensure all reports have the correct information and are uploaded to SharePoint
QC Inspections and Testing Staff	Responsible for quality control in accordance with the QA/QC plan and documenting materials, testing and inspection; inspectors will have the appropriate VDOT certifications that are documented in a matrix and shared with QA and IA

### APPROACH TO DESIGN QA/QC

KCI’s Quality Management System is certified to the ISO 9001:2015 standard. This certification requires a continuous internal audit program as well as annual certification audits by an outside consultant to ensure strict adherence to their rigorous checking and review procedures for plans, reports, and project deliverables. This robust design quality management program and auditing process will reduce VDOT’s contract administration efforts for the Project.

Our Team will use a *partnering-in-design* approach to incorporate comments and feedback into the design as part of the QA/QC process. This partnership between VDOT, the DBPM, DM, designers, CM, and construction staff will be initiated during the design kick-off meeting. VDOT and key stakeholders will be invited to attend in addition to our Team’s key staff, Design QA/QC Manager, design discipline leads, construction staff, and subconsultants. During the design kick-off meeting, the Team will focus on design partnering goals and will identify and align to critical plan packages to track design schedule milestones and help VDOT identify reviewer resource needs. In addition to the RFP requirements, items unique to our Team’s Partnering in Design process include:

- **Plan Submission Certifications** – To ensure well-structured and easily audited submissions, forms and certifications will be completed and electronically submitted with each design submittal to

digitally track drawing review certifications, calculation review certifications, and releases for deliverables. Documents will be stored for real-time review by QA/QC staff and VDOT.

- **Review Meetings** – Virtual “*Over the Shoulder*” design meetings, led by the DM will include Lead Discipline Engineers, MOT Manager, CM, Field Engineer, and QAM. VDOT, Permitting Agencies, Utility Owners, and key stakeholders will be invited to join review meetings as appropriate. Over-the-shoulder meetings allow all disciplines to collaborate and coordinate in real-time and allow comments to be designed in before submission, not reviewed in after submission. This process allows reviewers to monitor the progress of design so that when design packages are submitted there are *no surprises*, thereby reducing VDOT’s effort and time for reviews.
- **Project Sharepoint Site** – Sharepoint will host the latest version of design files to ensure all parties are working from the current versions to eliminate errors. QA/QC templates will be included in the DQMP and completed documents will be provided with each submission and available on the project SharePoint site where VDOT has access to real-time documentation.
- **Bluebeam** – Prior to submitting and uploading plans to VDOT’s Falcon system, our Team will utilize Bluebeam software to document and track the design QA/QC process. Designers will receive a Bluebeam request requiring them to meet the project design criteria and preliminary design checklist. The software will then be utilized to track each stage of the design QA/QC process and manage version control of plans, both during design and construction, to ensure all team members are working from the latest and greatest documents.

**Blue Beam Document Management**

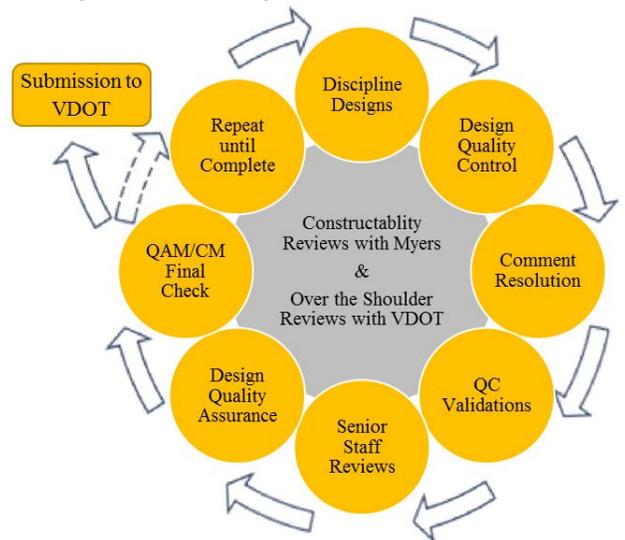
*Bluebeam software and document creation tools streamline document management processes and version control for sharing plans. Bluebeam is an industry-leading document collaboration solution which is used by more than 90% of the Top 50 Design-Build Firms as ranked by ENR, according to Bluebeam.*

**Design QA/QC Review Process**

Our Team’s Design Quality Management process incorporates multiple reviews so that deliverables are thoroughly checked prior to submission to VDOT. As shown in *Figure 4.4.6*, each step of the design process overlaps and integrates constructability reviews with Myers to provide design feedback and prevent construction issues in later phases. Further, our Team will collaborate with VDOT through over-the-shoulder reviews during the design process to incorporate comments into the initial design. Details and documentation for each of these steps will be provided in the QA/QC Plan submission post-award. Accurate and complete design packages are supported by weekly design discipline coordination meetings held through final design. During construction, design modifications will follow the same QA/QC process.

Bluebeam will be utilized throughout the design and the QA/QC process to verify and document that the project’s plans, reports, and calculations are in accordance with the quality control plan, VDOT requirements, and the RFP. Bluebeam provides the documentation that all required reviewers have received the plans, their comments have been addressed, and the revisions approved. The QA/QC process is expedited by automatic workflows for reviews and comment resolution. The Design QA/QC Manager audits this process and tracks the schedule for reviews and submissions to ensure they are timely, complete and adhere to the QA/QC plan.

*Figure 4.4.6 – Design QA/QC Process Overview*



## APPROACH TO CONSTRUCTION QA/QC

Myers' experience with DB and DBB projects has given us a full education on quality programs. Our experience shows the best approach is to integrate the QA/QC staff into the short-term scheduling process on a weekly basis. Beginning with the Preliminary and Baseline schedule, Myers performs high-level scope and resource planning that can be shared with the QA/QC firms. As design and construction evolve and progress, the planning is analyzed and further developed to create the following deliverables – each more detailed:

- **Monthly** – Project CPM Schedule is updated with actual progress and projects activity schedules for the remainder of the contract.
- **Weekly** – Short-Term five-week look-ahead schedule which details what each crew and subcontractor will be performing; detailed schedule for the next work week in a format that allows QC to assign inspections and testing technicians
- **Daily** – Updated daily schedule confirming exactly what each crew will do the next day.

Myers involves QA and QC staff in each of the weekly and daily aforementioned items, providing a collaborative environment that enables our Team to communicate the plan with QA and QC and to receive feedback on any potential quality concerns. Once the QA/QC Plan is approved by the Department, Quinn will prepare Activity Preparatory Meetings that will be classified as hold points in the Project schedule. These meetings are an integral part of delivering a quality project to the Department. Using the experience Quinn has gained in the delivery of VDOT DB projects, Quinn can provide preparatory meeting agendas that not only focus on the required minimum inspection and testing requirements but also focus on the lessons learned from previous VDOT DB projects.

Quinn will provide the Project with established processes and procedures for approving Project C-25 submissions, maintaining the project materials book, tracking project frequency of testing (FOT) requirements, and identifying and documenting project deficiencies and non-compliances. Quinn's successful track record in providing independent quality assurance can provide the Department confidence that the Project is being constructed in accordance with the contract documents and minimize the Department's required resources for IA/IV inspections.

During construction, the Construction QC Manager will oversee inspections of construction activities and materials testing to verify construction quality is measured at frequencies meeting or exceeding VDOT requirements. Hosting plans in BlueBeam gives construction and inspection staff access to the most current versions of plans once they are "Released for Construction". This ensures that as revisions are issued, all staff – including inspectors – are working from the latest plan set and submittals.

Our approach to QA/QC will also focus on the requirements needed for Project closeout to ensure that closeout is accomplished within 30 days of C-5 issuance. Construction and QA staff will conduct scheduled audit reviews a minimum of every two months to ensure all QA/QC documentation is up to date, including inspection reports, testing documentation and the materials notebook. This process has been helpful on the I-64 Segment II DB Project, where Myers, VDOT, and the QAM have implemented a process in which the QA/QC documentation is audited and closed out annually based on the monthly audit reviews. This will expedite Project closeout as a complete review of three years of records is avoided. We will implement a similar process on the Warrenton Project. By starting with the end in mind, our Team will manage the closeout process to be easier for both VDOT and the DB Team.

### ***Balancing Cost and Schedule***

*Our Team's approach to exceeding QA/QC requirements balances cost and schedule priorities. As an example of balancing priorities, on the I-64 Segment II project, Myers used a 5,000-psi concrete mix where only 4,000 psi was required to exceed the minimum strength requirements and compress the schedule.*

### ***QAM Certification Prior to Work***

*Prior to beginning any work element, QAM, Kaushik Vyas will confirm that all stakeholders contributing to the operation have read, understand and commit to following the procedures outlined in the QA/QC plan. This process incorporates quality into every level of design and construction and makes certain every team member understands they are responsible for checking their work and following the QA/QC plan.*

## DESIGN QA/QC FOR MAINTENANCE OF TRAFFIC

The Myers Team believes that MOT is the most critical design element for successful construction of the Project. US Route 15/17/29 is a rural principal arterial with a design speed of 60 MPH, posted speed of 55 MPH and current ADT of more than 44,000 VPD. The Project scope involves replacing the signalized at grade intersection of US Route 15/17/29 and Business US Route 15/17/29/Lord Fairfax Road with a grade separated double roundabout interchange, including the option to design and construct a shared use path (SUP) along Lord Fairfax Road and across the bridge, tying in west of the western roundabout. To successfully construct the Project, we will need to design a comprehensive MOT/TMP Plan that allows safe execution of the phased construction and maintain traffic with minimal disturbance to traffic flow. All designs will meet the requirements of the MUTCD and VDOT work area protection manual.

The primary goals of the MOT Plan are safe travel through the work zone, minimizing delays, worker safety, maximizing use of existing traffic patterns to reduce driver confusion, and maximize construction phasing to reduce project duration. Design disciplines will participate in developing the MOT Plan to ensure work is covered by these controls. These meetings will also serve to integrate ideas from both the design and construction personnel in developing MOT schemes that match the means and methods of construction with the design criteria, design manuals, and traffic needs.

The DBPM will have the overall responsibility of making sure a safe MOT Plan, that meets the Project requirements, is approved and implemented. Operational analysis, temporary signing, marking and signal design, use of correct standards and time of day restrictions will all follow the rigorous checking described in the QA/QC plan. As this integrated design progresses it will be reviewed by the MOT Manager and other discipline leads for compliance with design criteria and inter-disciplinary review, then it will be submitted to the QC Engineer. This review will focus beyond the criteria and ensure that each discipline's elements of design are integrated for each phase of the MOT. Perhaps the most important inter-disciplinary review is of the construction staff who will ensure that there is safe access into the work area, for staff, equipment, and material delivery. The construction staff will ensure that the work area defined has adequate area for storage of equipment, and materials.

After the ITR posts comments and plan mark ups to Bluebeam, the designer of record, MOT Coordinator and other Lead Discipline Engineers will be notified for consideration and implementation of changes/corrections. Their review will focus on meeting and exceeding the design criteria and ensuring that safety related to foreseeable scenarios (i.e. work area access, lane shifts, clear zone protection, etc.) has been addressed. Once these reviews are complete and the design has been revised to reflect discipline markups, the plans will be submitted to the Design QA/QC Manager for review. Given that the QC Engineers have not been involved in the development of the design, their perspective is fresh and uninfluenced by the day-to-day involvement in the Project. A revised set of plans with responses to QC comments, will be provided to the QAM for final inspection. This review ensures that comments have been incorporated, or adequately addressed, and that the process, procedures, and criteria have been followed.

Before releasing the plans for VDOT review, Myers' construction staff will perform one additional review. The focus of this review will be on constructability, feasibility, practicality, efficiency, and most importantly public and workforce safety. Once this review is completed and comments are addressed, the Release for Deliverable form will be executed starting with the QA Engineer and progressing through the MOT Manager, DM, QAM, and the DBPM before being submitted to VDOT as a complete package containing the plans, calculations, the form, and a statement that the QA/QC Plan has been followed in the implementation and execution of the design.

## CONSTRUCTION QA/QC PROCEDURES FOR UNSUITABLE SOILS REMEDIATION

As described in the Geotechnical Section 4.4.3 of the Proposal, the Myers Team estimates that approximately 50% of the planned subgrade footprint could be impacted by potentially unsuitable soils. In addition, there are challenges associated with settlement, external/global stability of retaining walls, moisture sensitive soils, and existing foundations/structures/slopes. While our Team is taking these challenges into account in the design and paying special attention to development of a detailed Soils Remediation Plan, it is also important that the in-situ soils are properly managed during the construction phase of the Project to meet the Geotechnical Engineer of Record's recommendations.

Mismanagement of the in-situ soils can create quality issues on the Project and have negative impacts to the Project schedule. While complete undercut and replacement of unsuitable soils is an option, our Team plans to reduce undercut and maximize the use of in-situ soils for the Project – either through densification, the use of in-situ admixtures, scarification/drying or undercut/replacement. During construction, our construction staff will work closely with the GER staff to ensure transparent, trackable, movement and treatment of soils

Prior to commencement of land disturbing activities, our Team will hold a preconstruction preparatory meeting to include field staff, the GER staff, and assigned Project inspectors (QC, QA, and IA). During this meeting, the detailed Soils Remediation Plan will be reviewed to ensure that personnel are clear about the requirements for monitoring and managing the soils on site. Further, during this meeting QC and QA will present the documentation procedures that will be used to track areas of unsuitable materials and the corresponding treatment method executed in the field. QC, with support of the GER, will be responsible for identifying the in-situ condition present in a work area and appropriately apply the correct recommended mitigation strategy. These evaluations and applications of remediation strategies will be recorded daily in the quality documentation. This documentation will provide transparency to VDOT as to how soils were managed on the Project.

Our field staff will coordinate with QC inspection staff daily on excavation operations to evaluate the presence of any potentially unsuitable materials. If any unsuitable materials are encountered, the QC inspectors will review the intended mitigation strategy in that specific location and then document the outcomes. The construction team is responsible for ensuring that mitigation strategies recommended by the GER and verified by QC are followed. The QCM will be responsible for reviewing daily QC inspection reports to ensure that handling of materials has been appropriately performed and documented. The CM will ensure that field staff are familiar with the requirements and recommended mitigation strategies. The QCM and CM, together, will also serve as second-tier escalation personnel should there be any issues related to the disposition of soils or any conflicts between the field staff and QC inspectors. The QA inspector and QAM will be responsible for making sure that Myers' field staff and the QC personnel are following approved quality management protocols and that all documentation is in place for VDOT's review. Ultimately the DBPM is responsible for making sure each party is meeting its obligations for these roles and responsibilities.

*Figure 4.4.7 Soils Reclamation Operation*

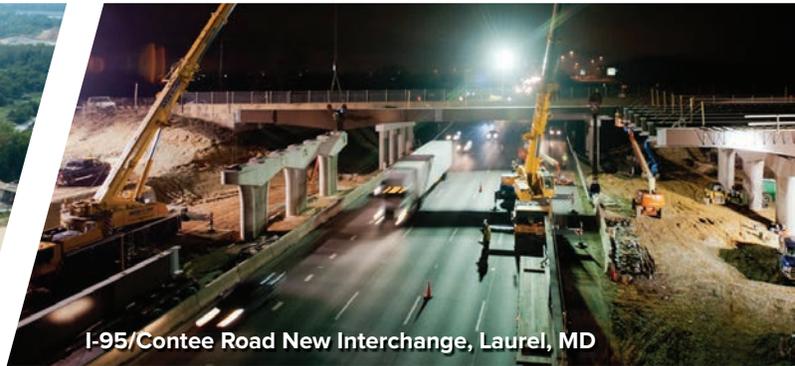


# 4.5

# CONSTRUCTION OF PROJECT



SR 29/I-276 New Interchange, Great Valley, PA



I-95/Contee Road New Interchange, Laurel, MD



Saintsbury Drive Roundabout, Fairfax, VA



I-581/Elm Avenue Interchange Modifications, Roanoke, VA



### 4.5.1 SEQUENCE OF CONSTRUCTION

#### Commitments and Deliverables of the Myers Team

The Myers Team approach to sequencing construction is focused on VDOT’s objectives to expedite construction of the new interchange and anticipate/mitigate potential schedule delays. Our approach and sequence of construction support these objectives by:

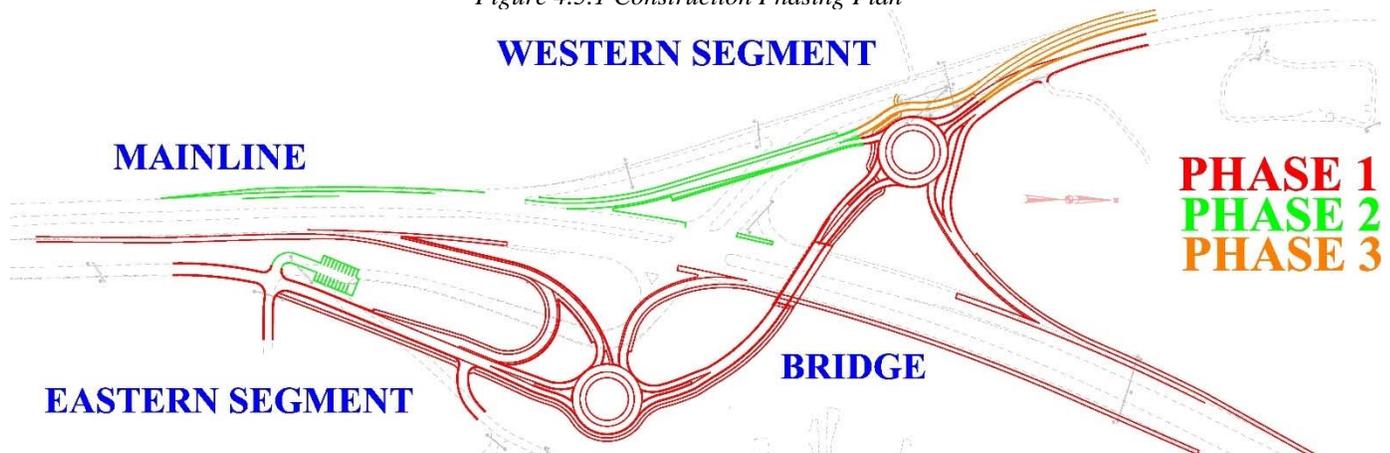
- Expediting Final Completion to September 3, 2020 – three months ahead of the required date;
- Phasing traffic to construct approximately 90% of the Project in Phase 1, including both roundabouts to increase production rates, improve safety, and provide higher quality;
- Avoiding over 90% of the potential 93 utility conflicts to date and sequencing construction so that the remaining potential conflicts are not on the critical path;
- Reducing ROW acquisition by 94% with only temporary easements remaining;
- Incorporating unsuitable soils into the proposal schedule by adjusting production rates for earthwork activities including for cut/fill and fine grading;
- Building a conservative settlement period of 60 days into the schedule, exceeding the 30-45-day settlement period recommended by our geotechnical engineer; and
- Accounting for cold weather with no permanent paving from December 16<sup>th</sup> - March 15<sup>th</sup>.

#### APPROACH TO CONSTRUCTION PHASING

The Myers Team’s approach to construction for the Warrenton Southern Interchange is to complete 90 percent of the work in Phase 1 with the most limited impact to traffic. This approach allows us to compress the construction schedule and **expedite completion to September 3, 2020 - three months early**. The construction phasing plan facilitates increased production rates by limiting impacts to roadway users and avoiding the restrictions associated with working within traffic. In developing the construction phasing plan, we focused on eliminating temporary features, reducing impacts to existing utilities, and accounting for geotechnical conditions.

The US 15/17/29 Bypass serves as a dividing line during the early phases of work, so we have split the work into the four work segments shown in Figure 4.5.1 to facilitate planning and scheduling. Myers will schedule work simultaneously in all segments to compress the schedule and open the interchange early.

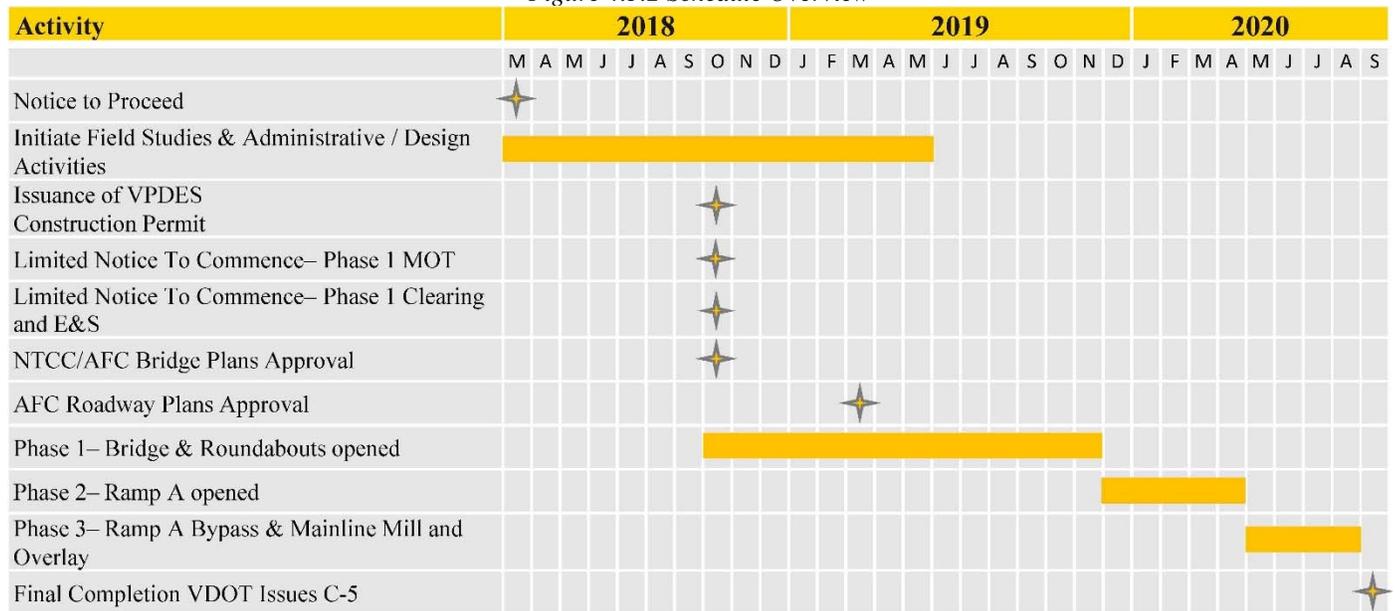
Figure 4.5.1 Construction Phasing Plan



#### EXPEDITING PROJECT COMPLETION

The Myers Team’s approach to construction and design optimizations compresses the construction schedule to complete the Project improvements prior to Labor Day in 2020. Figure 4.5.2 summarizes the schedule for key activities which contribute to this acceleration.

Figure 4.5.2 Schedule Overview



**ANTICIPATING AND MITIGATING POTENTIAL DELAYS**

Critical elements for the schedule milestones summarized above include reducing schedule risks by optimizing the alignment, limiting temporary measures, minimizing ROW acquisition, incorporating geotechnical elements into the schedule, and avoiding utility conflicts. These elements allow us to get an early start on construction activities. Once construction has commenced, optimization of the alignment allows opportunity for schedule gains due to our ability to work simultaneously at multiple locations. An earlier start, coupled with a large work zone, increases productivity, compresses the schedule and reduces the overall Project duration.

- **Optimizing the Alignment:** Shifting the bridge and roundabout locations allows for more of the work to be performed at one time, away from traffic and reduces the amount of fill needed to build the interchange. During Phase 1 construction, both roundabouts, the bridge, and three of the ramps can be built concurrently, which leads to more flexibility and efficiency during construction.
- **Limiting Temporary Measures:** Our approach to MOT uses much of the existing infrastructure and current traffic patterns. By reducing the amount of temporary pavement needed and eliminating the temporary signal at the north, we have limited the amount of upfront work that needs to be performed prior to major construction. The circulatory roadways for both roundabouts are constructed away from traffic, eliminating the need for extensive flagging operations to construct the central island, truck apron, and splitter islands for the western roundabout.
- **Avoiding Utility Conflicts:** Our design has eliminated four utility poles on the Project. Notable impacts avoided include the utility pole conflicts along the southwest quadrant by shifting Ramp A and avoiding conflict with the 4” gas line by relocating the pond in the northern end of the Project. During final design, our Team will continue to focus on impact avoidance for the remaining conflicts and potential conflicts on Lord Fairfax Road and Travelers Way. The proposal schedule includes activities for test pitting, designing, and relocating these conflicts. Potential delays due to these impacts are minimized, as these utility relocations are not on the schedule’s critical path.
- **Minimizing ROW Acquisition:** By reducing the overall Project footprint, we have reduced the schedule risk associated with acquiring ROW. The most significant reduction is due to the elimination of the temporary jughandle movement, which allows us to immediately start construction on the temporary southern intersection. We also shifted the western roundabout and Ramp A to the north to further minimize ROW needs along the southwest quadrant. Relocating the

Park and Ride also eliminates ROW needs.

- Incorporating Geotechnical Conditions into the Schedule: Unsuitable soils and settlement have been evaluated and accounted for in the sequence of construction with conservative production rates and settlement periods. Following NPT, our Team will commence geotechnical investigation to confirm actual field conditions. Onsite treatment of unsuitable soils including undercut/replacement, scarification/drying, and lime stabilization will be the preferred methods of remediation to accelerate the schedule and minimize additional construction traffic. Settlement has been incorporated into the schedule with a 60-day duration, which is more conservative than the 30-45-day duration identified by our geotechnical engineer.
- Prioritizing Early Design Packages: Early work packages will be prepared for Phase 1 E&S and Phase 1 MOT, allowing the commencement of work on early elements prior to the remainder of the design being completed and approved. Additionally, we will develop the bridge plans in an accelerated manner and prepare advanced design packages for the SWPPP and VPDES permit application, working with VDOT through the approval process. These early AFC approvals, along with issuance of the VPDES Construction Permit, accelerate construction operations such as clearing, E&S installation, initial MOT and temporary pavement installation, and MSE wall and embankment construction which starts settlement periods. Myers has utilized the submission and approval of early design packages on other VDOT DB Projects to compress the project schedule and accepts all schedule risks associated with this approach.

## SEQUENCE OF CONSTRUCTION

The Myers Team's Sequence of Construction (SOC) was developed to provide a safe and continuous traffic flow, reduce exposure to geotechnical risks, minimize construction impacts, and accelerate the project schedule. In addition to dividing the project into four segments geographically, the work is sequenced to be completed in three construction phases with only two major traffic switches. The construction phasing was derived in a way that allowed for the maximum amount of construction to take place away from traffic, providing maximum safety benefits to both construction personnel and the traveling public. Highlights of the sequence of construction include:

- Completing most of construction in the Phase 1, during which most of the traffic movements can remain in their existing configurations.
- Shifting most traffic movements into their final configuration prior to Phase 2.
- Completing construction of the Ramp A bypass lane in Phase 3 and placement of all traffic in its final location.

**PHASE 1** - Phase 1 includes the construction of temporary maintenance of traffic measures that will allow us to shift traffic away from the work area and closes Lord Fairfax Road at the US 15/17/29 Mainline. Once the temporary measures are in place, Phase 1 includes complete construction of the Eastern Segment (minus the Park and Ride), the bridge over US 15/17/29, and a functional western roundabout and Ramp B. Having 90% of the site available during this phase allows greater flexibility and efficiencies during construction and less impact for the traveling public.

**Temporary Construction for MOT** – Prior to the first traffic switch, we will place temporary pavement for MOT purposes. The most notably for the temporary southern intersection on US 15/17/29 Bypass at the existing cross-over at Station 100+00. Construction of the temporary signal for this intersection will occur in conjunction with placement of temporary pavement for the SB left turn lane, new spur connection to Lord Fairfax Road, and NB lane shift.

Temporary pavement will also be installed to modify the existing intersection of US 15/27/29 Mainline and Business 15/17/29 to allow for a controlled EB right turn onto SB US 15/17/29 to provide safe access to the left turn lane at the southern intersection from Business 15/17/29. Temporary widening and

crossovers will also be needed along Business 15/17/29 to shift WB Business traffic from the existing WB lanes, allowing for the construction of the roundabout in a single phase. The temporary pavement needed for Phase 1 can be seen in *Figure 4.3.0 on page 6*. Once the temporary pavement, temporary signal, signs markings, and channelizing devices are in place, traffic will be switched and construction on the permanent features can begin in the various segments.

**Eastern Segment** – Phase 1 construction within the Eastern Segment will primarily take place away from traffic. The major features to be constructed during this phase include complete construction of the Eastern Roundabout, Ramp C, Ramp D and D2, and Lord Fairfax Road from Station 94+00 to the bridge. The remainder of Lord Fairfax Road, from Station 87+00 to 94+00, and the reconstruction of the tie-ins to Travelers Way and Turkey Run Drive will be accomplished using short term lane closures.

**Western Segment** – The proposed design allows for significantly more construction to take place in the Western Segment of the Project during Phase 1 than the RFP concept. The Myers Team realignment of the Western Roundabout allows for the complete construction of the main roundabout during Phase 1, through use of a wire wall. This will eliminate the need to construct the roundabout using TTC-31.1 traffic patterns – improving schedule, safety, and quality of construction. Utilizing a temporary wire wall during construction on the recently completed I-95/Temple Avenue DB Project safely maintained traffic while providing schedule and cost efficiencies. Ramp B, the Ramp B bypass lane, and SWM "C" will also be completed during Phase 1 construction.

*Figure 4.5.3 – Temporary Wire Wall Construction at the I-95/Temple Ave Interchange*



**Bridge** – The entire bridge over US 15/17/29 Mainline and the associated MSE walls will be constructed during Phase 1. Our design has shortened the overall bridge length to where the bridge is a single span, thus eliminating the need to construct a pier in the median of 15/27/29 Mainline and the associated traffic impacts. Settlement periods are expected at the bridge abutments and earthwork operations will be prioritized to allow adequate time for settlement, which has been accounted for in the schedule.

## PHASE 2

Following the completion of Phase 1, the second major traffic shift takes place, shifting much of traffic into its final configuration. After the traffic switch, the following can take place:

**Mainline** – The work on the Mainline in Phase 2 is once again limited to MOT-related construction. At the start of Phase 2, the existing traffic signal at US 15/17/29 Business is removed. The temporary southern intersection is also reconfigured so that no turns are permitted from the Bypass, only turning movements out of Lord Fairfax Road are permitted.

**Western Segment** – The work in the Western Segment centers around the completion of the newly aligned Ramp A and its connection to the roundabout and to US 15/17/29 Mainline. Once Ramp A is completed, the temporary signal at the southern interchange and associated temp pavement can be removed. In addition to Ramp A, SWM "B" and associated outfalls will be constructed.

**Eastern Segment** – Construction of the Park and Ride and the SWM A facility is the primary work elements underway during this phase in the Eastern Segment.

## PHASE 3

**Western Segment** – Once the new Ramp A is connected to the roundabout, southbound traffic on US 15/17/29 Business is reduced to a single lane with a right lane closure, with all traffic diverted to use the roundabout. TCB is placed along the right edge of southbound US 15/17/29 Business, the roundabout,

and Ramp A to provide a safe work zone to construct the southbound "Bypass lane", shared use path connection, and drainage improvements on the western edge of the project.

**Mainline** – Phase 3 work on mainline will consist of removal of the temporary signal, demolition of pavement, grading the median and installing new drainage swales and installation of guardrail.

**All Segments** - Phase 3 will be completed with the final surface pavement being installed throughout all segments of the Project. This includes mill and overlay of mainline, including Option 2 if elected.

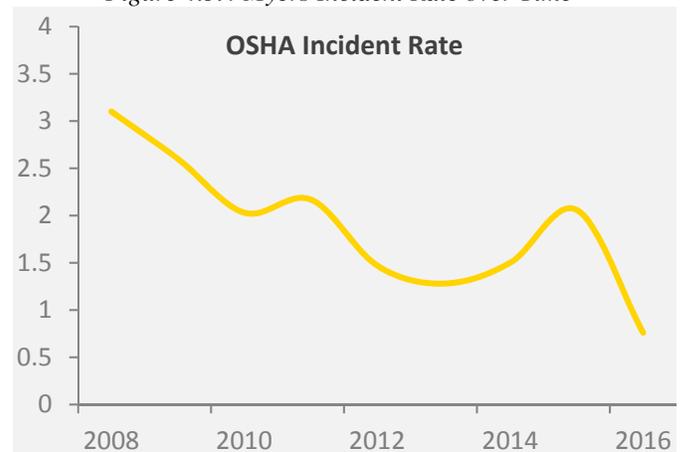
## SAFETY AND OPERATIONS

**Vehicular Traffic** - The Myers Team understands that drivers, residents, and the community must be well informed of impending traffic changes, and that fewer temporary traffic changes correlates to decreased crash rates. We understand that under the current traffic conditions during peak times drivers use the local roadways through Warrenton to avoid the long queues on US 15/17/29 Bypass, this creates a nuisance to residents and business owners. Our temporary traffic control plan reduces delays through the work area, despite adding a new temporary intersection and signal. The Myers Team will coordinate traffic patterns with VDOT well in advance of the change. Once traffic patterns are in place, we will coordinate with VDOT NWRO to adjust signal timing and warning signage to keep traffic moving safely. At times during each construction phase – such as to set bridge beams – there will be need for temporary use of "slow roll" traffic control or off-peak lane closures, these instances will be scheduled well in advance, coordinated with VDOT, and notice will be provided on PCMS signs in advance of the work zone prior to implementation.

**Pedestrian Traffic** - There are very few pedestrians using the intersection today, however once the shared use path is complete, it is likely that residents will use it. The Myers Team will use barricades to keep pedestrians and bicyclists safely out of active work zones. There is also the potential for the shared use path to lack a "logical terminus" on its northern end, as the trail construction in the Arrington development is not scheduled to be underway until after the interchange work is complete. We will direct trail users to utilize the shoulder of US 15/17/29 Business on the northern end of the project until this work can be completed.

**Safety Commitment** - Myers' Home Safe Tonight program is evidence of our commitment to create an existence absent of incident and injury. Since implementation of Home Safe Tonight in 2008, Myers has reduced its recordable incident rate 100% to a Best in Class rate of 0.76. Our Team will treat safety as an inseparable element of our approach to constructing the Project. During construction, daily morning and end-of-shift huddles provide a forum to address any safety concerns. Safe start meetings, held with each subcontractor before starting work on the Project, will orient them to the site and review project and operation-specific safety hazards.

Figure 4.5.4 Myers Incident Rate over Time



## STAGING AND STORAGE AREAS

Providing project staging and storage areas near the work zones keeps project costs down, improves safety, and reduces traffic impacts from work vehicles hauling materials to/from off-site locations. We have identified potential staging and storage areas within the project limits. For construction of the Eastern Segment, unused portions of the existing VDOT ROW along Lord Fairfax Road would provide for a safe and easily accessible site. For the Western Segment, potential locations include the area between Mainline/Ramp B and adjacent to abutment construction. Other possibilities include parcels 001, 002 and 007, which would require permits and agreements with the property owners. Following initial design efforts and work area assessments, a preferred site will be selected and secured in advance of construction.

## 4.5.2 TRANSPORTATION MANAGEMENT PLAN

### Commitments and Deliverables of the Myers Team

The Myers Team is fully committed to VDOT's goals of reducing work incidents and improving travel time through work zones. The goals of our construction approach are to mitigate impacts for the traveling public and major Project stakeholders to the greatest extent feasible, and to proactively partner with VDOT to effectively communicate construction impacts. Specific elements of our design, construction approach, and communication strategies to support these goals include:

- Constructing approximately 90% of the Project improvements while maintaining existing traffic movement in the current traffic configuration;
- Improving the level of service during construction by using dual three-phase signals to reduce delays, vehicle queues, and the potential for crashes;
- Requiring only two traffic shifts, shifting most traffic only once to final interchange ramps;
- Expediting construction with minimal safety risk by constructing the bridge, roundabout, and approach roadways in one phase behind barrier, away from active traffic;
- Maintaining a successful partnership with VDOT, key stakeholders, and the community to promote information sharing and transparent access to Project information; and,
- Providing timely and accurate information on traffic impacts to stakeholders, commuters and travelers through various communication methods tailored to each Project stakeholder.

### APPROACH TO MAINTENANCE OF TRAFFIC

The US 15/17/29 Mainline is a vital north-south corridor of statewide significance on the NHS that connects Warrenton and Fauquier County residents and businesses with the I-66 corridor and the Washington, DC Metropolitan region. TMP/MOT Coordinator Larry Marcus, in conjunction with CM Scott Armstrong, our TMP Designer, and Construction MOT Coordinator, will implement a design and construction sequence focused on the safety of the traveling public and the workforce. The TMP will aim to maximize driver safety, optimize construction efficiency and safety, and minimize community and driver impacts.

- **Maximizing Driver Safety** – The proposed traffic control plan maintains existing movements as much as possible during the Phase 1 construction and shifts drivers directly to the final interchange ramps. This approach requires the public to adapt to new patterns only once during construction, to the final patterns. Dual three-phase signals in Phase 1 improve the level of service by reducing delays, vehicle queues, and the potential for rear-end crashes over the RFP concept.
- **Optimizing Construction Efficiency and Safety** – Our Team proposes working in multiple areas simultaneously behind positive barrier. Construction entrances will be placed at the work limits and on lower volume, lower speed roadways where practicable; entrances will be clearly signed. The phasing plan allows the bridge, roundabouts, approach roadways, and splitter islands to be constructed away from traffic, improving operation efficiency and safety.
- **Minimizing Community and Driver Impacts** – By coordinating signals and reducing the number of signal phases, our approach will reduce the delay and length of queues from those currently experienced. We will maintain two through-lanes in each direction on the Bypass throughout most of construction. Exceptions include short duration closures during bridge beam placement, and limited short term single lane closures for initial MOT setup, traffic shifts, and mainline paving operations. Truck traffic from construction will be minimized by optimizing the design to reduce the fill required for construction and remediating/drying unsuitable soils when feasible. Public Relations Manager, Shannon Moody, will work with the VDOT Culpeper District Communications Team to apprise the community and local stakeholders of construction and traffic impacts.

Our Team will develop the TMP in accordance with the latest version of VDOT's IIM No. LD-241 for this Type C, Category V project that is anticipated to cause "sustained and substantial" work zone impacts per the IIM. The TMP will include Temporary Traffic Control Plans consistent with the VDOT WAPM and MUTCD; Transportation Operations Plans that identify specific services provided by the Myers Team and an Incident Management Plan; and Public Information Plans developed in partnership in partnership with the VDOT Culpeper District Communications Team.

## MAINTENANCE OF TRAFFIC

The Myers Team will develop a conceptual Temporary Traffic Control Plan that improves upon the RFP concept plan and adheres to the requirements of the RFP. Our approach uses only two primary traffic shifts, maintains much of existing movements during Phase 1, shifts most traffic to the interchange at the start of Phase 2, and reduces the required temporary pavement by 50%. Work will be designed and performed in accordance with the FHWA MUTCD and the Virginia WAPM.

During **Phase 1**, Myers will place temporary pavement at several locations and install temporary signage and markings to create 11-foot travel lanes with two-foot offsets to all barrier and channelizing devices. The existing intersection at US 15/17/29 Business will be maintained with three legs, with only traffic from the low-volume Eastern Segment requiring access via a new temporary southern intersection. Temporary left and right turn lanes provide access to the Eastern Segment from Mainline, and the two intersection signals will be coordinated with timing patterns established for the AM, PM, and Saturday peaks. Flexible delineators will separate Ramp A from the extended temporary southern intersection left turn lane. Shifting the proposed structure 100-feet to the north provides adequate sight distance on the southbound (SB) Mainline to the existing signal, allowing it to remain in place during Phase 1. Turn lanes have been sized to include the 95th percentile queues without spillover into adjacent thru lanes.

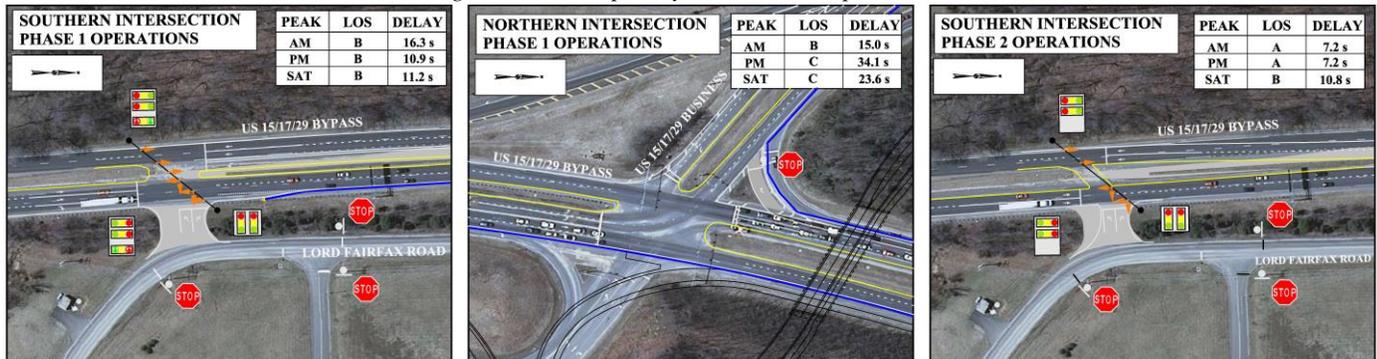
In **Phase 2** most of the traffic movements will be shifted to the newly-constructed roundabouts and interchange ramps, with only Ramp A still requiring construction. Motorists in the Eastern Segment traveling south on US 15/17/29 Bypass will still use the temporary southern intersection. Minor traffic disruptions may occur during traffic switches, placement of bridge beams, and the final paving operations. Once Ramp A is connected to the roundabout, the temporary southern intersection will be removed.

In developing the TTC plan and sequence of construction, we will focus on critical operations at the Temporary Southern Intersection and US 15/17/29 Business and Ramp A.

**Temporary Southern Intersection** – The current US 15/17/29 Mainline has very few traffic signals. The nearest traffic signal for northbound (NB) traffic is at Opal Road and Marsh Road, five miles south. NB Mainline drivers are currently warned of the existing signal through "SIGNAL AHEAD" signage with flashing beacons located 900 feet prior to the intersection; queues extending beyond. Adequate warning will be provided for NB drivers to the new signal at the crossover 1,800 feet south of the existing intersection, and will relocate the existing warning signs southward – 1,100 feet prior to the new temporary signal and 200 feet north of the Lovers Lane intersection. PCMS placed one and three miles prior to the work zone on each approach will advise drivers of work zone changes and queued traffic.

We will shift NB mainline traffic into the existing left turn bay at the crossover (extending the pavement to provide adequate tapers) to create space for a right turn deceleration lane. The existing SB left turn bay at the crossover will be widened three feet and extended, allowing for a three-foot buffer and flexible delineators to prevent Ramp A traffic from crossing over to the turn lane during **Phase 1**. A temporary three-phase signal with exclusive left and right-turn signals on the Mainline will be used at this intersection. Temporary stop controls will minimize conflicts between residents to the north, students/faculty accessing Lord Fairfax Community College, and those accessing the County offices and landfill. The signal will be coordinated with the existing signal at US 15/17/29 Business, with optimized timing patterns to reflect peak hour movements. This alternative improves Mainline operations as reflected in *Figure 4.5.5*.

Figure 4.5.5 Temporary Intersection Operations



During **Phase 2**, all turning movements from the mainline Bypass will be eliminated and shifted to the interchange ramps, allowing for the removal of the left turn signals and the signal at US 15/17/29 Business. The temporary southern signal operates as a two-phase signal where only movements out of Lord Fairfax Road are permitted. Traffic markings on the NB Bypass will be restriped to accommodate a Mainline traffic shift to provide room for construction of the Ramp A acceleration lane. Once Ramp A is constructed and connected to the roundabout, the temporary southern intersection and advance warnings can be removed.

**US 15/17/29 Business and Ramp A** – US 15/17/29 Business and the western roundabout will be constructed in two phases. During **Phase 1**, Ramp A will operate as it does today, but with a left lane drop on the SB approach. Two 11-foot wide NB lanes and a single 11-foot SB lane are in place adjacent to each other through the work zone on the Business Route. The new western roundabout will be functional at the end of Phase 1. During **Phase 2**, SB traffic on US 15/17/29 Business is split – Ramp A traffic will remain in a single lane on the existing ramp and traffic headed to Lord Fairfax Road and the NB Mainline diverted to the newly-constructed NB US 15/17/29 Business roadway and roundabout. The acceleration lane from Ramp A onto the SB Mainline will be shifted east. Once this work is complete, this traffic will use the new acceleration lane, and the temporary pavement in the SB median on the Mainline can be removed. Once the new Ramp A is complete between the roundabout and the Mainline, **Phase 3** will implement a right lane closure on the SB Business Route approaching the roundabout, and all traffic will travel through the roundabout. Drivers continuing south on the Mainline will use the new Ramp A while the channelized bypass lane at the roundabout, drainage swales, and shared use path connection are constructed.

TMP Graphics for Phase 1, Phase 2, and Phase 3 are included as *Figs. 4.5.6, 4.5.7, and 4.5.8*, respectively.

### CONSTRUCTION IMPACTS

The Myers Team focused our design on minimizing impacts to Mainline traffic, reducing new traffic patterns, and limiting shifts. Traffic will be maintained on existing roadways using existing patterns for most of the Project. Eliminating the RFP jughandle to the south and the temporary signal to the north reduces impact for Mainline travelers, reduces construction costs, and compresses schedule. Large trucks would have needed to travel at 5 mph to make the U-turn movement in the RFP. By maintaining continuity of traffic during construction, we have created a work zone that is less confusing and safer to the public.

The MOT plans will comply with the requirements of the RFP for number of lanes, minimum lane widths, offsets to barriers and channelizing devices, timing of temporary lane closures, and time-of-day restrictions. There are no temporary detours or work zone speed reductions proposed during construction. Specific impacts to each Project segment for traffic shifts, closures, and flagging operations are described below.

**US 15/17/29 Mainline** – Traffic will be shifted to accommodate construction and two 11-foot through lanes will be maintained throughout the Project. Long-term shoulder closures will be needed to accommodate construction of the ramp connections and bridge, and shorter-term shoulder closures will be needed throughout construction as our work encroaches on the existing roadway. Occasional short-term lane closures will be required for placing temporary pavement, setting up barrier, and placing pavement

markings. Nighttime stoppages are planned for the removal of overhead signs and bridge girder erection. All closures and stoppages will follow the time of day restrictions and durations depicted in the RFP.

Western Segment – Shoulder and short-term lane closures are needed during the construction of temporary widening and crossovers during Phase 1, and long-term SB single lane closures and traffic shifts will be required on the Business Route throughout construction. For the duration of Phase 2 NB traffic is reduced to a single 11-foot lane for the duration of Phase 2, and SB traffic will reduce to a single 11-foot lane for all of Phase 1 and the latter part of Phase 2. Minimum two-foot-wide shoulders will be provided.

Eastern Segment – Lord Fairfax Road will be closed between the US 15/17/29 Mainline and Turkey Run Drive after completion of the temporary southern intersection at the beginning of Phase 1, with all traffic east of the mainline using the new intersection for access. After Phase 1 construction is completed, traffic will be able to use the new bridge and interchange ramps, with only drivers wishing to travel SB on the US 15/17/29 Mainline using the southern intersection. Short-term lane closures and flagging operations will be needed to reconstruct and realign Lord Fairfax Road between Station 87+00 and 94+00, as well as to reconstruct the connections to Travelers Way and Turkey Run Drive. Travel lanes will be 11-feet wide.

**Successful Roundabout Interchange Construction with Minimal Traffic Impacts**

*“Building a brand-new interstate interchange and ramps while keeping traffic moving through the area was a challenge we were eager to meet,”* said Shane Mann, P.E., VDOT Richmond District Construction Engineer. *“We were able to complete most of the work off-road, with minimal traffic impacts. The new intersection will allow the 30,000 vehicles traveling through this area each day a smoother and safer ride.”* (Source: VDOT’s press release on the I-95/Temple Ave Improvements Project completion, 11/13/17)

**STAKEHOLDER IMPACTS AND COORDINATION**

**Stakeholder Impacts for the Sequence of Construction**

This Project impacts more than 50,000 local and commuter vehicles per day. Regional interests travel from outside of the Project area, including long-haul trucking; fire, police, and emergency services; Lord Fairfax Community College students and faculty; Town of Warrenton residents and business owners; and those wishing to access County services like the landfill. Those directly impacted daily by the construction activities are primarily the nearby residents, who are concerned not only with congestion and delays, but also noise, air quality, and the aesthetics near the site. *Table 4.5.1* summarizes impacts for the major Project stakeholders based on the proposed sequence of construction.

*Table 4.5.1 Stakeholder Impacts during Each Phase of Construction*

STAKEHOLDER	PHASE 1	PHASE 2	PHASE 3
Residents in the Eastern Segment, LFCC, MVGS, County Landfill and Transfer Center	<ul style="list-style-type: none"> <li>Motorists will use the new southern intersection with shorter delays</li> <li>Lord Fairfax Road traffic pattern allows vehicles entering from US 15/17/29 Mainline to travel unimpeded; changes to STOP controls at College Ave and landfill</li> <li>Bicyclists/pedestrians traveling to Warrenton to use temporary intersection, proceed N on Mainline, cross SB to reach the Bus. Route</li> </ul>	<ul style="list-style-type: none"> <li>Motorists traveling into Warrenton on the Bus. Route or north on the Mainline use newly-completed roundabouts and bridge</li> <li>Motorists traveling south on Mainline use temporary southern intersection or u-turn at Bus. Route</li> <li>Bicyclists/pedestrians have new shared use path or roadway shoulders as safer alternative</li> </ul>	<ul style="list-style-type: none"> <li>Traffic in the Eastern Segment will use the new interchange.</li> <li>Intersection controls on Lord Fairfax Road at College Ave and landfill entrance return to pre-construction conditions.</li> </ul>
Residents in the Western Segment and Town of Warrenton	<ul style="list-style-type: none"> <li>Motorists will use existing intersection, maintaining two lanes</li> <li>Traffic leaving the Western Segment will use a single lane, then split approaching the US 15/17/29 Mainline. Only redirected traffic</li> </ul>	<ul style="list-style-type: none"> <li>Users traveling NB on the Mainline or across Lord Fairfax Road will crossover to the NB lanes of the Bus. Route and enter the new roundabout</li> <li>Traffic proceeding SB will</li> </ul>	<ul style="list-style-type: none"> <li>Users accessing the Mainline crossover to the NB side and enter the western roundabout</li> <li>North traffic will use Ramp A, others will cross</li> </ul>

STAKEHOLDER	PHASE 1	PHASE 2	PHASE 3
	movement is to Lord Fairfax Road. <ul style="list-style-type: none"> <li>Bicyclists/pedestrians travel south to the new intersection and cross to Lord Fairfax Road</li> <li>Afternoon peak traffic likely decreases, limiting cut-throughs</li> </ul>	remain in the right lane <ul style="list-style-type: none"> <li>Bicyclists will use the new roadway; pedestrians use the NB shoulder on the Bus. Route.</li> </ul>	bridge and use Ramp C. <ul style="list-style-type: none"> <li>Bicyclists will use the new roadway; pedestrians use the NB shoulder on the Bus. Route.</li> </ul>
Emergency Responders	<ul style="list-style-type: none"> <li>Shoulder closures on the Mainline and US 15/17/29 Bus. limits space to clear incidents.</li> <li>Shorter queues = improved response times.</li> <li>Signals equipped with emergency vehicle detection; phasing plans to reduce response times</li> </ul>	<ul style="list-style-type: none"> <li>Shoulder closures on the Mainline and US 15/17/29 Bus. limits space to clear incidents</li> <li>Shorter queues = improved response times</li> </ul>	<ul style="list-style-type: none"> <li>Shoulder closures on the Mainline median and US 15/17/29 Bus. limits space to clear incidents</li> <li>Interchange movements, except for the "bypass lane" are complete, improving access</li> </ul>
Commuters	<ul style="list-style-type: none"> <li>New traffic patterns to be added</li> <li>Traffic models show dual three-phase signals to reduce queues</li> </ul>	<ul style="list-style-type: none"> <li>New interchange ramps open</li> <li>Traffic models show new configuration to reduce queues</li> </ul>	<ul style="list-style-type: none"> <li>Probability of crashes likely reduced with opening of intersection</li> </ul>
Other Local Schools	<ul style="list-style-type: none"> <li>Bus. routes may be modified due to the Lord Fairfax Rd. modification</li> <li>Students in the Eastern Segment may require an extra commuting time for prompt arrivals.</li> </ul>	<ul style="list-style-type: none"> <li>The new interchange is open; however, bus routes may be modified slightly until Ramp A is completed.</li> </ul>	<ul style="list-style-type: none"> <li>No impacts, as the new interchange is open.</li> </ul>
Out of Town Motorists	<ul style="list-style-type: none"> <li>Minimal impacts, as few tourist destinations in the Eastern Segment</li> <li>Adequate signage provided to ensure drivers are aware of access changes</li> <li>Less likelihood of sudden stops as fewer queues</li> </ul>	<ul style="list-style-type: none"> <li>GPS mapping systems may not reflect construction conditions</li> <li>Less likelihood of sudden stops as fewer queues</li> </ul>	<ul style="list-style-type: none"> <li>Minimal impacts as only traffic change occurs on SB US 15/17/29 Bus.</li> <li>Less likelihood of sudden stops except at roundabout entrances</li> </ul>
Commercial Vehicle Operators	<ul style="list-style-type: none"> <li>Use of 11-foot lanes may impact oversize loads</li> <li>Travel times improved due to shorter queues at intersections</li> <li>Rolling closures for bridge beams</li> <li>Large vehicles accessing the county transfer center and landfill must use the new southern intersection</li> </ul>	<ul style="list-style-type: none"> <li>With all truck aprons completed during Phase 1, larger tractor-trailers can use the roundabouts to negotiate turns</li> <li>Travel times improved due to signal modifications</li> <li>11-foot lanes used on the Mainline and US 15/17/29 Bus.</li> </ul>	<ul style="list-style-type: none"> <li>No impacts, as new interchange is open</li> <li>Truck drivers making the movement from the SB Bus. Route to the SB Mainline need to use western roundabout, as "bypass lane" is not done</li> </ul>
Virginia State Police	<ul style="list-style-type: none"> <li>Coordination required with new barracks project off Lord Fairfax Rd underway in early 2018</li> <li>Coordinating services for shifts, lane closures, signal work, etc.</li> </ul>	<ul style="list-style-type: none"> <li>Coordination will continue with the new barracks project.</li> <li>Coordination for scheduling VSP services for traffic shifts, lane closures, signal work, etc.</li> </ul>	<ul style="list-style-type: none"> <li>Coordination will continue with new barracks project, as well as scheduling VSP services</li> </ul>
Fauquier County and Town of Warrenton Staff	<ul style="list-style-type: none"> <li>County and Town staff will be impacted like those in the Western Segment, and will be made aware of impending changes.</li> </ul>	<ul style="list-style-type: none"> <li>Partnering with Town/County staff to reach constituents about the traffic shift</li> <li>Open lines of communication regarding citizen complaints</li> </ul>	<ul style="list-style-type: none"> <li>Partnering with the Town, County, and JTHG during construction of western roundabout and final landscaping</li> </ul>

### Approach to Public Outreach

The Myers Team has closely followed this Project for several years, attended public meetings, reviewed the public hearing transcript and read articles in the *Town Crier* and local blogs to understand the community's perspective. We understand the desires of the local stakeholders, and through our experience delivering projects for VDOT, we also understand the needs of state and local emergency services, maintenance forces, and the VDOT District office. Timely and accurate public outreach to stakeholders during all phases of the

Project is pertinent to its success. The Myers Team has several goals for public outreach on the Project:

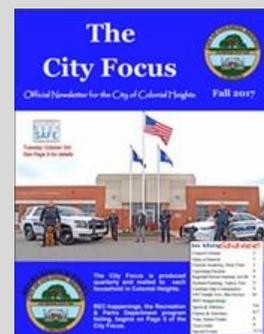
- Providing timely and accurate information to limit surprises for all stakeholders and maintain a transparent, trusting, and open environment for information sharing;
- Maintaining a successful partnership with VDOT, key stakeholders, and the community to promote information sharing and transparent access to project information; and
- Proactively anticipating and addressing community concerns and issues by promoting open, transparent communication protocols and providing multiple opportunities for community input.

Major Project stakeholders and our approach to keep them informed during all phases of the Project are described below:

- 1) **VDOT:** VDOT Culpeper District and the Northwestern Regional Operations group are key project partners. Open, routine communication at all Project levels will be established to ensure the success of the overall program. Public Relations Manager, Shannon Moody, will work closely with the VDOT Culpeper District Communications Team to establish the Project's Public Information Plan and disseminate public messages through all phases of the Project.
- 2) **Fauquier County:** Our Team will coordinate and communicate with County officials regularly to seek input, share information on public impacts, and to facilitate open communication.
- 3) **Town of Warrenton:** We will coordinate and communicate with Town of Warrenton officials regularly to seek input, share information on public impacts, and to facilitate open communication.
- 4) **Warrenton Residents, Business Owners, and Elected Officials** are concerned with impacts that construction will have on their businesses and residences, especially those on US 15/17/29, Turkey Run Dr. and Travelers Way. For businesses, it is the ability for customers, employees, and deliveries to reach them. For residents, their quality of life due to traffic delays, noise, and air quality impacts are concerning. Meetings and briefings will be held with these stakeholders including the formal construction kickoff, *Pardon Our Dust*. Email blasts, social and traditional media, traffic alerts, updates to the Project website, and Project update articles in the *Town Crier* will be used to reach these stakeholder groups. This is all especially important for the traffic shifts at the starts of Phases 1 and 2.
- 5) **Commuters** travel through it regularly. Their concerns are primarily safety and travel time within the corridor. They are acclimated to their drives, and may be surprised by changes to their routines. Dynamic signs and information disseminated through traditional and social media, updates to the Project website, updates on the VDOT 511 system, and targeted outreach to the major employers in the area will help inform this group of construction activity in the corridor. A detailed IMP will help establish emergency routes quickly, minimizing impacts.

### Community Outreach Partnership

Many of the outreach strategies required for this Project were used on the I-95/ Temple Ave. DB Project. Public Relations Manager, Shannon Moody, partnered with VDOT Richmond District Communications Team on the successful campaign. Quarterly newsletter Project updates were delivered to 8,000 addresses and 15 community education sessions were conducted to walk residents through traversing the newly constructed roundabout.



- 6) **Emergency Responders**, including the Warrenton Volunteer Fire Co., Fauquier County Fire Rescue, Warrenton Police Department, Fauquier County Sheriff, and private ambulance services require advance notice of any traffic shifts, adequate roadway facilities (shoulders, pull-offs, Opti-cons), and the IMP. These agencies will be included in the development of the TMP prior to construction, and notice of travel impacts throughout the Project will be provided through meetings, email blasts and traffic alerts. Notice will be given prior to the two major traffic shifts.
- 7) **Lord Fairfax Community College (LFCC) and Mountain Vista Governor's School (MVGS)** faculty, staff, and students will experience the greatest change to how they travel through the work zone with the new Phase 1 traffic pattern. Our Team will establish routine communication with the LFCC and MVGS administration, and will work with VDOT's Culpeper District Communications Team to provide early and frequent outreach through meetings and e-mail updates on pending impacts, as well as special event traffic coordination.
- 8) **Other Local Schools**, such as Brumfield and Central Elementary Schools, Taylor Middle, and Fauquier High School, while not within the *immediate* Project area, run carpools and bus routes in the area and will be included in the TMP process. School employees, students, and parents will be a focus for outreach. Fauquier County Public Schools Transportation will be kept up-to-date on traffic switches and other impacts to travel through email blasts, traffic alerts, traditional and social media, and Project website updates.
- 9) **Out-of-Town Tourists** rely on roadway signs and online resources to make travel plans. To make travel through the corridor as seamless as possible for visitors, our Team will provide timely Project updates via social and traditional media, traffic alerts, and the Project website. The Warrenton Fauquier Visitor Center will be a key partner in this outreach effort.
- 10) **Commercial Vehicle Operators**: These primarily long-haul vehicles currently use US 15/17/29 extensively. Dynamic signs and information disseminated through traditional and social media, updates to the Project website and VDOT 511, and coordination with the chambers of commerce will help inform this group of construction activity in the corridor.
- 11) **Virginia State Police (VSP)**: Our Team will coordinate, through VDOT, the service of the VSP for their assistance during traffic shifts, night-time lane closures, rolling lane closures, and any of the operations in-Appendix C of the WAPM. Additionally, we will coordinate closely with Mr. Ronnie Rice, the VSP Capital Outlay Program Director, during the development of the TMP to ensure that proposed temporary roadways can accommodate deliveries needed during the construction of the State Police Headquarters Building at Lord Fairfax Community College in 2018.
- 12) **Adjacent Projects**: Our Team will communicate weekly with the PMs of the adjacent projects to the south in Opal, the roundabout project at Falmouth Street and US 15/17/29 Business, the Arrington development, Town of Warrenton water station, and County development projects near Lord Fairfax Community College to accomplish the shared goal of completing each safely, on time and budget.

#### Public Safety Considerations

The Myers Team has evaluated construction impacts to vehicular, pedestrian, bicycle traffic and public transportation. The traffic data indicated that there were no pedestrians or bicycles within the Project area, and there are no existing ADA-compliant facilities. Paved shoulders vary in width from one to 10 feet and are discontinuous; bicyclists must take the travel lane. Signals do not have pedestrian clearance intervals. Transit facilities are also non-existent. Since there are no pedestrians, bicycle facilities or public transportation along the Project, our focus is on developing a Sequence of Construction (SOC) and TMP that minimizes impacts to vehicular traffic and opens the facilities that enhance the safety for any pedestrians and bicyclists as soon as possible.

Figure 4.5.6 Transportation Management Plan Phase 1

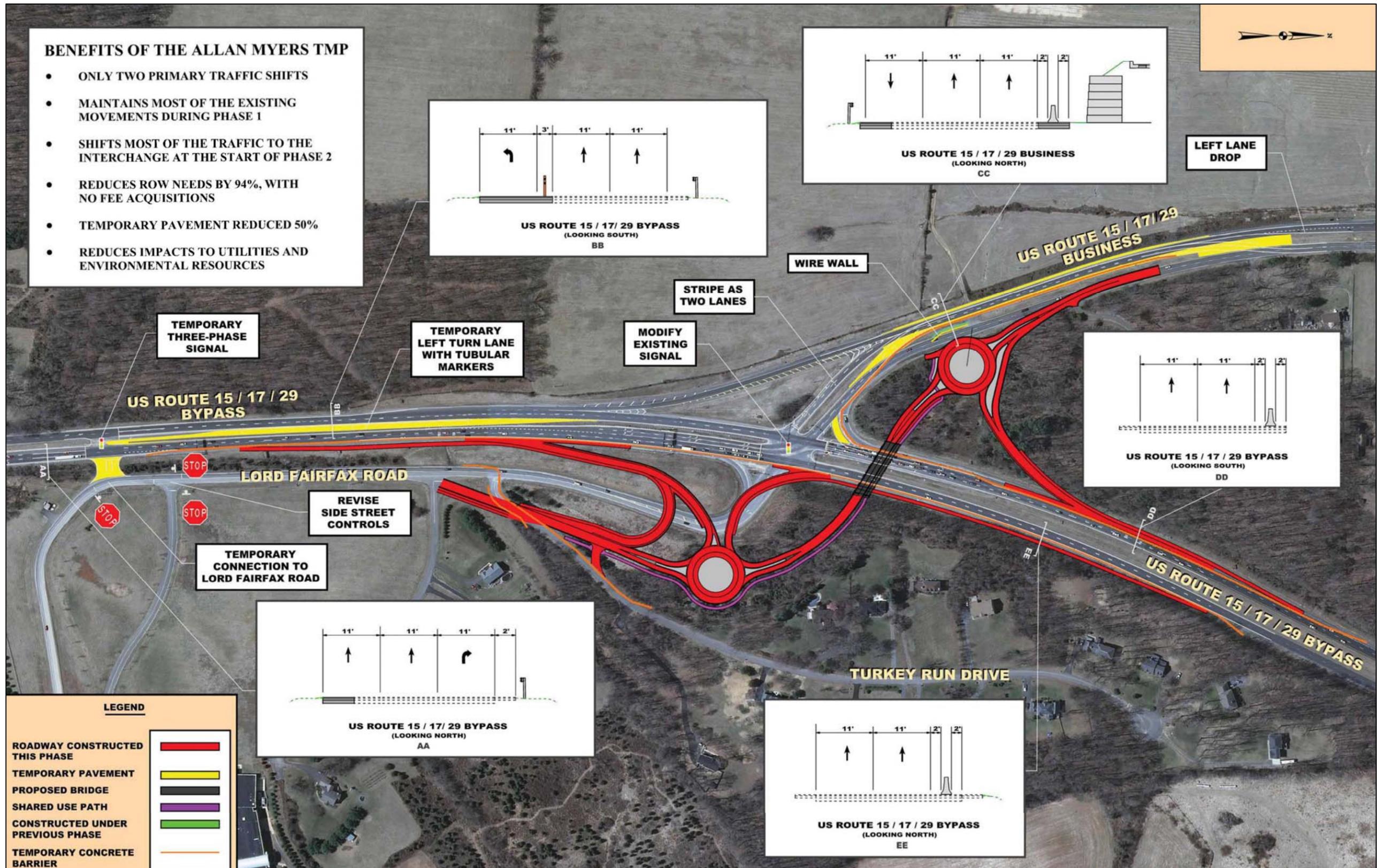


Figure 4.5.7 Phase 2 Transportation Management Plan

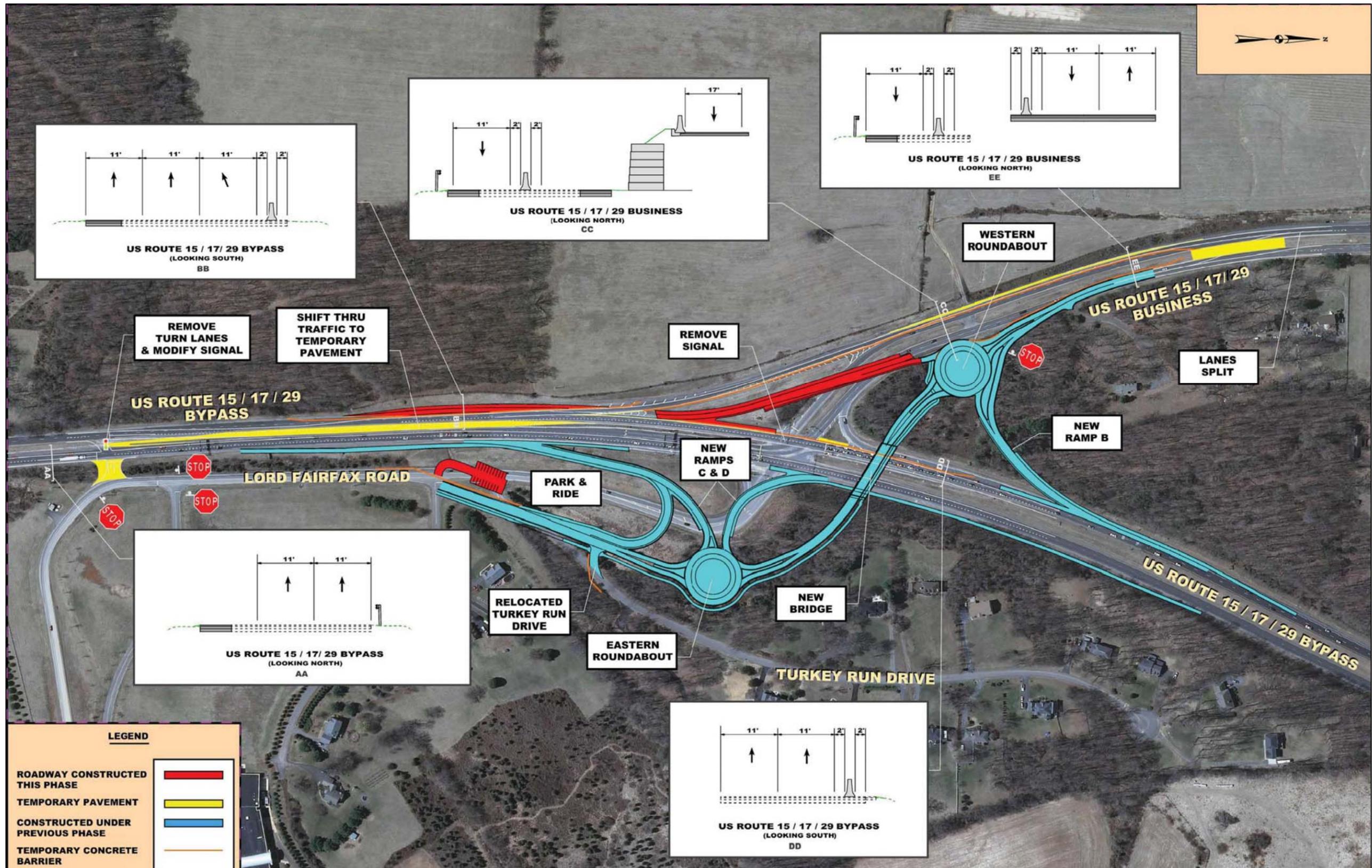
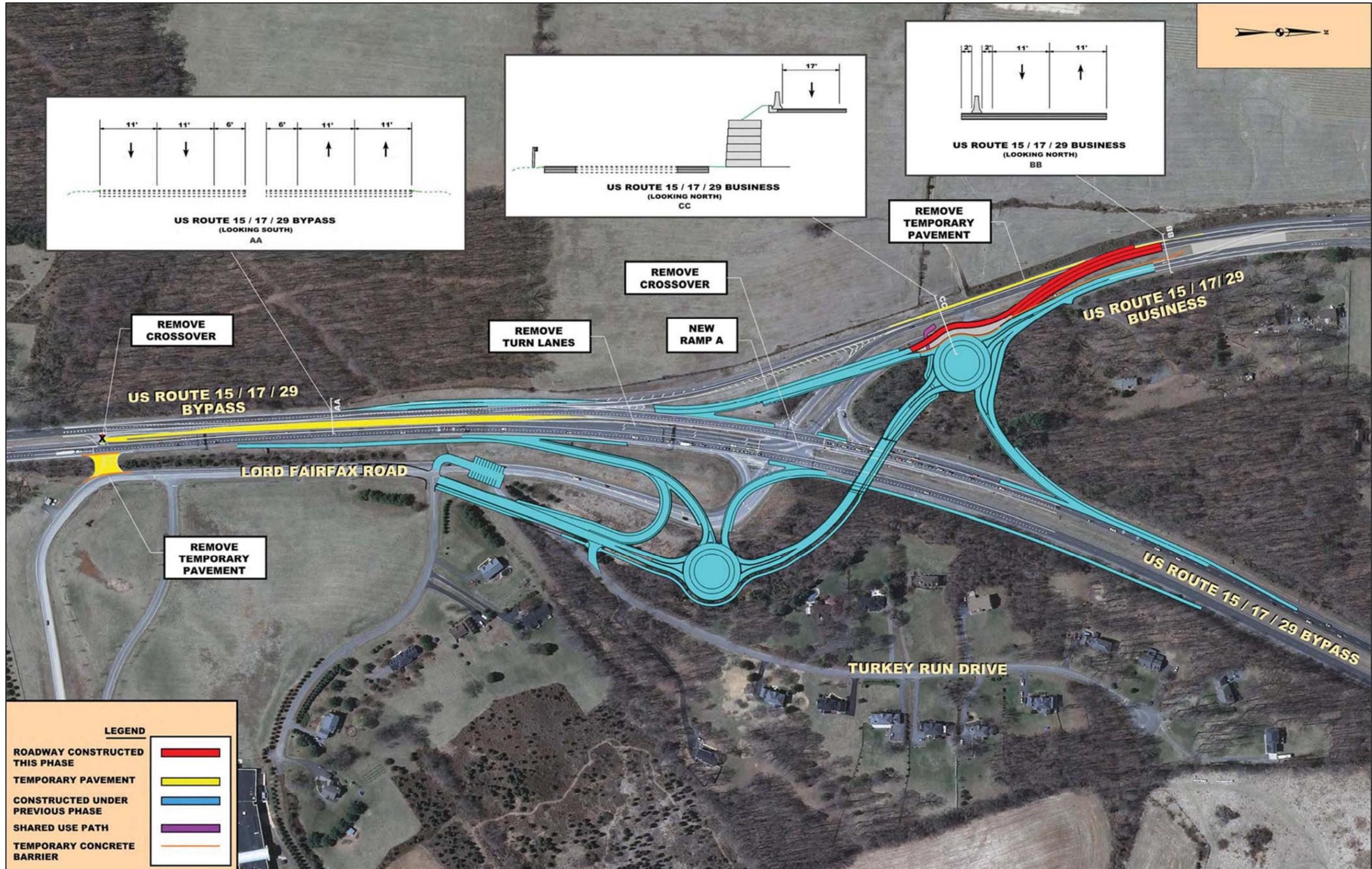


Figure 4.5.8 Phase 3 Transportation Management Plan

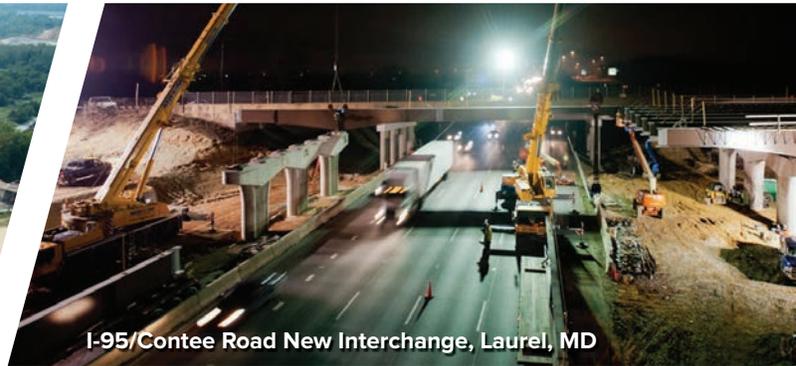


# 4.6

# DISADVANTAGED BUSINESS ENTERPRISES



SR 29/I-276 New Interchange, Great Valley, PA



I-95/Contee Road New Interchange, Laurel, MD



Saintsbury Drive Roundabout, Fairfax, VA



I-581/Elm Avenue Interchange Modifications, Roanoke, VA



## 4.6 DISADVANTAGED BUSINESS ENTERPRISES

### COMMITMENT TO DBE PARTICIPATION GOAL

The Myers Team is committed to achieving the eleven percent (11%) DBE participation goal for the entire value of the contract. The following DBE subcontracting narrative outlines the procedures we will use to achieve this goal for design and construction.

Myers consistently meets or exceeds the DBE participation goals on our projects. In selecting subconsultants and subcontractors, the Myers Team will select qualified and skilled DBE firms to achieve the Project goal. The Myers Team will use its proven DBE subcontracting plan for the Project. A summary of the Plan is provided below, specifying the means of soliciting DBE firms during the pre-construction phase. Our DBE Coordinator will be responsible for assisting our estimating department in solicitation of DBE firms and the compliance to the DBE goals and standards set forth by the Commonwealth.

**Overview** – To facilitate achieving the DBE goal for the Project, the Myers Team will:

- Determine items which may be subcontracted and quantify based on estimated dollar amounts
- Identify a pool of VDOT certified DBE subcontractors/suppliers
- Validate the qualifications and assess the expertise of certified DBE subcontractors/suppliers to determine if they can perform the scopes of work identified in the contract
- Encourage and assist certified and capable DBE subcontractors/suppliers to complete the Myers subcontractor pre-qualification process, if they are not already prequalified through previous projects with Myers
- Solicit price/scope quotes from certified and capable DBE subcontractors/suppliers
- Document the DBE solicitation process for Good Faith purposes, including all modes of communication such as phone, fax, email, visits and pre-bid solicitation meetings

The Project's Lead Estimator, in cooperation with the DBE Coordinator, is responsible for:

- Ensuring that DBE participation is solicited, recorded and documented in accordance with DBE compliance and utilization policies and procedures
- Investigating contract provisions to identify requirements to satisfy municipal, county, state or federal obligations, including training and reporting
- Ensuring Myers' commitment to proactively utilizing certified DBEs and to using all reasonable efforts to meet or exceed mandate DBE requirement is upheld

**DBE Solicitation** – Myers' estimating team solicits price/scope quotes from certified and capable DBE subcontractors/suppliers while determining pre-qualification status. Certified and capable DBE subcontractors/suppliers have been identified through searching DBE directory websites, attending project pre-bid meetings, and mass advertisements. The following elements will be included in the solicitation, or in any advertisement placed as a general solicitation to DBEs:

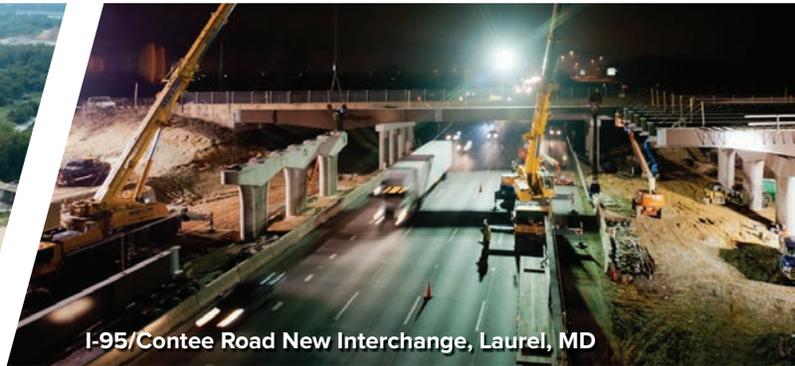
- The company name, address, telephone number, fax number and email address
- The project location and description of the work for which the bid is being solicited
- Our FTP Site for subcontractors to view plans and specifications
- The name of the Lead Estimator and DBE Coordinator who will be available to answer questions about the Project
- How to respond to the solicitation
- The date, time, and location where bids are to be submitted

4.7

# PROPOSAL SCHEDULE



SR 29/I-276 New Interchange, Great Valley, PA



I-95/Contee Road New Interchange, Laurel, MD



Saintsbury Drive Roundabout, Fairfax, VA



I-581/Elm Avenue Interchange Modifications, Roanoke, VA



### 4.7.1 SCHEDULE

The Proposal Schedule, included in Volume II, uses Primavera software and critical path method scheduling to depict the scope and sequence of work to complete the Project per the RFP requirements. A summary schedule is also provided to depict the longest path of the Project. A back-up copy of the Proposal Schedule's source documents in Primavera version 15.2 (XER) is included electronically on CD attached to the inside cover of the original Technical Proposal.

### 4.7.2 SCHEDULE NARRATIVE

#### SEQUENCE OF WORK

Project milestones have been setup to support and monitor the Myers Team's commitment to deliver the Project in advance of the RFP specified completion date of December 17, 2020. Myers' preliminary schedule indicates **Final Completion of the Project by September 3<sup>rd</sup>, 2020**. Table 4.7.1 provides a summary of dates that will be achieved for key activities, along with Project final completion.

Table 4.7.1 Schedule Overview

Milestone	Schedule
Notice to Proceed	March 2018
Initiate Field Studies and Administrative / Design Activities	March 2018
Issuance of VPDES Construction Permit	October 2018
Limited Notice to Commence Construction – Phase 1 MOT	October 2018
Limited Notice to Commence Construction – Phase 1 Clearing and E&S	October 2018
Notice to Commence Construction – AFC Bridge Plans	October 2018
Approved for Construction (AFC) Roadway Plans	March 2019
Completion of Phase 1 Construction – Bridge and Roundabouts Open to Traffic	November 2019
Completion of Phase 2 Construction – Ramp A Open to Traffic	April 2020
Completion of Phase 3 Construction – Ramp A Bypass Lane & Mainline Mill and Overlay Complete [ <b>Beneficial Occupancy</b> ]	<b>August 2020</b>
<b>Final Completion</b>	<b>September 2020</b>

#### Design-Build Advanced Activities

To achieve the Project milestones, our Team will proactively begin specific design phase activities at risk. Following VDOT issuance of the Notice of Intent to Award the contract, we will initiate:

- (1) Assessment of existing data and supplemental data requirements, if any,
- (2) Preparation of the Supplemental Boring Plan,
- (3) Preparation of the Hazardous Materials and Safety Plan development,
- (4) Development of the QA/QC and Public Information and Communication Plan, and
- (5) Completion of the contract agreement with design consultants.

Following CTB approval, the Myers Team will develop the preliminary Utility Status Report.

Following Notice to Proceed (NTP) and in addition to all identified schedule activities, we will complete the schedule critical activities such as:

- (1) Submit to VDOT for review and approval the QA/QC Plan;
- (2) Submit the Supplemental Boring Plan to VDOT for review and comment;
- (3) Initiate the Noise Abatement Design Report analysis;
- (4) Prepare and submit the Property Owner Access Notification Letters to VDOT for review and

comment;

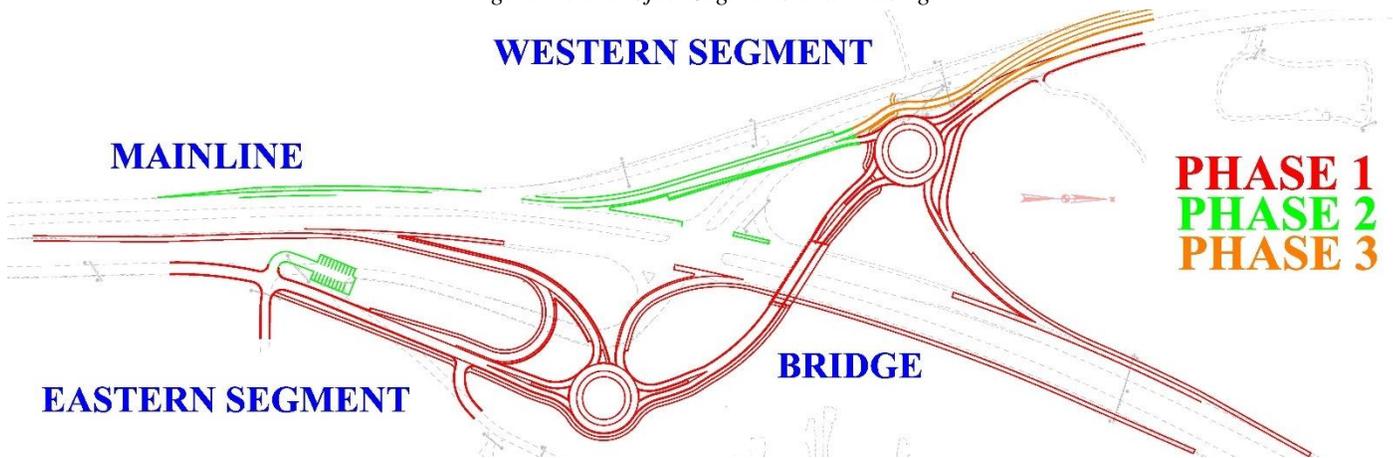
- (5) Distribute final Property Owner Access Notification Letter;
- (6) Initiate soil borings along all structures and roadways;
- (7) Prepare and submit Right-of-Way Acquisition Plans; and
- (8) Update RUMS with Utility Status Report date, initiate development of UT-9s and schedule kick-off meeting with the District Utility Engineer.

At a high level, post-notice to proceed, the priorities are with activities that support design of the structures, obtaining the VPDES permit, and constructing the MSE embankments for the bridge.

### SEQUENCING AND PHASING

The Myers Team plan proposes dividing the Project into four segments and three phases (as shown in *Figure 4.7.1*) to provide smaller, manageable areas, to meet the traffic maintenance requirements, and to provide the greatest flexibility possible in scheduling. Focusing on the goal of providing early completion of the entire Project, construction will be active in the Eastern Segment, Western Segment, the bridge over 15/17/29 Bypass, and on the 15/17/29 Mainline concurrently within each Phase of construction.

Figure 4.7.1 Project Segments and Phasing



Construction phasing was developed with a focus on providing access to as much construction as possible during Phase 1, while minimizing the overall impacts to traffic. Phase 1 construction includes the construction of the eastern roundabout and the associated Ramps C, D2 and D2; construction of the realigned Travelers Way and Lord Fairfax Road; construction of the western roundabout and associated Ramp B; and the construction of the bridge over the US 15/17/29 Bypass. During Phase 1 construction, traffic is generally in the same traffic patterns as they were prior to the start of construction, except for the creation of a temporary interchange at the south end of the Project, allowing for traffic access to and from Lord Fairfax Road. Should the Department elect to proceed with Option 1, the Shared Use Path would also be constructed during Phase 1 through the entire Eastern Segment and up to the Western Roundabout.

Upon the completion of Phase 1, traffic will then be placed on the newly constructed roundabouts and bridge, with all traffic movements being in their final configuration except for traffic exiting Lord Fairfax Road heading south on the bypass, and traffic heading south on 15/17/29 Business wishing to go south on the Bypass. These movements will be accommodated during Phase 2 of construction using the temporary southern interchange and the existing Ramp A, respectively. Phase 2 construction will consist of constructing Ramp A and connecting Ramp A to the western roundabout and the US 15/17/29 Bypass. The Park and Ride lot will also be constructed during Phase 2.

After the construction of Ramp A is complete, traffic will begin using that ramp to access the SB lanes of

the Bypass. Phase 3 construction will consist of constructing the Ramp A bypass lane, completing pavement demolition and mill and overlay operations on the US 15/17/29 Bypass, and placing surface pavement and final pavement markings throughout the Project. The remainder of the Shared Use Path at the western roundabout, as well as the mill and overlay of the inside lanes on US 15/17/29 Bypass will also be completed during Phase 3, should the Department elect to proceed with Options 1 and 2.

To meet early completion, the most critical element of the Project is the structure over the US 15/17/29 Bypass. The main driver in completing the bridge construction is the potential settlement periods that are expected at the abutments. Based on the information available in the GDR provided in the RFP package, it is anticipated that a settlement period of 30 – 45 days will be required once the MSE walls and embankments are completed, before the bridge abutments can be constructed. To mitigate this settlement period, the Myers Team will complete the geotechnical investigation required to finalize the actual settlement periods as the first part of the geotechnical investigation. To further mitigate potential issues that could stem from the settlement periods, we will focus both design and construction efforts to get an early start on the construction of the MSE walls and embankments. Although it is expected that the settlement period will be in the range of 30 – 45 days, we have carried a 60-day settlement period to further mitigate the potential risk to schedule.

Using the phasing described above, the Myers Team produced a plan to deliver Beneficial Occupancy of the Project in August 2020 – four months prior to the Project Completion specified in the RFP. The details of construction sequencing are provided in *Section 4.4 Project Approach* and *Section 4.5 Construction of Project*.

## WORK BREAKDOWN STRUCTURE

The Proposal Schedule is organized using a hierarchical Work Breakdown Structure (WBS) and is broken down by major scopes of work as shown below. For preconstruction scope areas, the WBS further details major work efforts. For construction, the WBS is broken down by segments geographically as shown in *Figure 4.7.1*. Then within each segment, the WBS is broken down into each MOT phase.

### Project Milestones

The Project Milestones section includes key points in the Project schedule that will be the basis of high-level schedule monitoring.

### Project Administration

The Project Administration section includes activities related to the overall management of the Project. Subsections of this WBS are:

- **Project Startup:** Mobilization activities are included here.
- **Management Submittals:** This section includes activities related to project management submittals such as the Project Specific Safety Plan, Hazardous Materials Management Plan, etc.
- **General Conditions/Miscellaneous Payments:** This section contains activities such as bonds and insurance procurement, schedule of values, project schedule, and the monthly payment certifications.
- **Quality Assurance/Quality Control (QA/QC):** This section tracks the submission of the QA/QC Plan and contractually required hold points, specifically preparatory meetings for each major scope of work and required QA/QC Plan approval in advance of submission of design packages.
- **Project Closeout:** This section includes punchlist and the various required inspection items.

### Scope Validation Period

The Scope Validation Period is 120 days. The schedule section includes activities related to scope validation investigations, submittals and negotiations (if necessary).

## Public Involvement

The Public Involvement section includes activities related to the Project's interaction with the public and includes the following:

- **Notifications:** This section includes activities related to properly gaining access to unacquired properties for Project purposes. This includes submission and approval and distribution of property notification letters.

## Design

The Design section includes activities related to the design efforts needed to commence construction. Subsections of this WBS are:

- **General design efforts:** This section includes design support activities such as reviewing final contract requirements, finalizing any optimization alternatives and assessing additional data requirements that need to be obtained through additional field investigations, borings and evaluations.
- **Design survey:** This section includes activities related to obtaining additional data through field survey and investigations.
- **Geotechnical:** This section includes activities related to performing additional soil borings, laboratory analyses geotechnical analysis and design.
- **Hydraulic and hydrologic analysis:** This section includes a single activity for confirmation that no hydraulic and hydrologic analysis is required.
- **Noise Analysis:** This section includes activities related to the performance of noise analysis activities to determine the necessity of any sound wall requirements on the Project.
- **Advanced roadway plans:** This section is used for any design plans required to accelerate construction on the Project where no right-of-way acquisition is required. Included in this section are Line and Grade Roadway Plans, Traffic Analysis Reports, Phase 1 MOT and TMP, Phase 1 of Clearing and Grubbing and ESC, FI/RW Plans and the Limited Access Control Change Request.
- **Final roadway design:** This section includes activities related to the preparation, submission and approval of the Approved for Construction (AFC) Roadway plans, as well as MOT for the remainder of the Project, landscape plans, and lighting / ITS plans..
- **Structural design:** This section includes activities related to the preparation, submission and approval of the Approved for Construction (AFC) bridge plans.
- **Sound Wall Design:** This section includes a single activity for confirmation that no sound wall is required.

## Permitting/Environmental

The Permitting/Environmental section includes activities related to the efforts needed to obtain necessary environmental permits for the Project. The activities in this section represent a conservative approach to the environmental activities on the Project. Subsections of this WBS are:

- **Threatened and Endangered Species studies:** While it is not anticipated that time of year restrictions will be warranted on this Project, we have included in our schedule the activities for the presence/absence surveys for the Northern Long Eared Bat. No calendar adjustments have been made in the schedule related to T&E species as the restrictions are not expected to be warranted.
- **VPDES:** This section includes activities related to the preparation, submission and issuance of the VPDES permit which is required prior to the commencement of land disturbing activities.
- **Waters of the US Permit:** This section includes activities to confirm the Preliminary Waters of the US delineations, prepare a Waters of the US Delineation Report, request jurisdictional determination of wetlands, and obtain concurrence from the agencies that there are no impacts to

Jurisdictional Waters of the US. As no impacts are anticipated under the current design, a permit is not expected to be required.

- **Pollution Prevention Plan:** This section includes activities related to the preparation, submission and approval of the Pollution Prevention Plan.
- **Stormwater Pollution Prevention Plan:** This section includes activities associated with setting up and maintaining the SWPPP documentation as the design progresses.
- **Hazardous Materials:** This section only includes an activity for confirmation that there are no asbestos containing materials onsite.
- **Preconstruction Inspections and Monitoring:** This section includes activities to perform and document any required preconstruction surveys.

### Right-of-Way

The Right-of-Way (ROW) section includes activities related to the efforts needed to acquire ROW required to commence construction of the Project. The acquisition of ROW is separated by individual parcels such that all VDOT identified potentially affected parcels (12 in total) are individually addressed within this section. As the proposed design concept anticipates acquisition at only six of these parcels, the schedule includes activities to “confirm” that ROW is not required on the remaining six parcels. Subsections of this WBS are:

- **Site Assessments/Survey/Research:** This section includes activities related to site investigations and research for parcels potentially affected by the Project. As the Myers Team has taken efforts to reduce ROW impacts, many parcels only need confirmation that they will not be affected.
- **Appraisals:** This section includes activities related to development of appraisals for parcels that are confirmed to be affected by the Project design.
- **Negotiations:** This section includes activities related to negotiating the purchase price of the parcel where necessary.
- **Acquire/Relocation/Condemn:** This section includes activities related to closing the acquisition process whether it be through acquisition or condemnation.

### Utilities

The Utilities section includes activities related to the efforts needed to relocate utilities in conflict with the final design. Each subsection below is further broken down by geographical section or utility owner. Where the Myers Team expects to find no conflicts with a particular utility, a placeholder activity has been created to confirm said assumption. Subsections of this WBS are:

- **Utility Coordination/Planning:** This section includes activities related to early coordination and issuance of Utility Master Agreements.
- **Utility Field Inspections:** This section includes activities related to field investigations, development of Subsurface Utility Exploration Drawings, and Utility Relocation Concept Plans for each Segment.
- **Plan and Estimates:** This section includes activities related to development and approval of Plan and Estimates and final utility relocations.
- **Utility Relocations:** This section includes activities related to the physical relocation of utilities.

### Procurement

The Procurement section includes activities related to the efforts related to relationships between Myers and its vendors and subcontractors. Subsections of this WBS are:

- **Vendor Procurement:** This section includes activities related to procurement of material vendors and subcontractors needed to construct the approved design. The activities in this section are not necessarily to represent completion of procurement, but rather to provide adequate lead times between design approval and start of construction.

- **Construction Submittals:** This section includes tracking pre-construction working drawings and shop drawings for key long lead items.
- **Fabrication:** This section includes activities related to the lead times of major materials.

### Construction

The Construction section includes activities related to the efforts needed to construct the approved design. This WBS section is broken down by geographical segmentation, then by phase, then specific area – Segment > Phase > Area – as shown below. All stationing is approximate. Note that each of the two requested options are in separate sections of the WBS. Subsections of this WBS are:

- Mainline US 15/17/29 Bypass
  - Phase 1
    - General / Entire Segment / All Areas
    - Roadway
  - Phase 2
    - General / Entire Segment / All Areas
  - Phase 3
    - General / Entire Segment / All Areas
    - Roadway
- Eastern Segment
  - Phase 1
    - General / Entire Segment / All Areas
    - Eastern Roundabout
    - Ramp C
    - Ramps D & D2
    - Lord Fairfax Road/Travelers Way/Turkey Run Drive
  - Phase 2
    - General / Entire Segment / All Areas
    - Park & Ride
  - Phase
    - General / Entire Segment / All Areas
- Western Segment
  - Phase 1
    - General / Entire Segment / All Areas
    - Western Roundabout
    - Ramp B
    - Business 15/17/29
  - Phase 2
    - General / Entire Segment / All Areas
    - Ramp A
  - Phase 3
    - General / Entire Segment / All Areas
    - Ramp A
    - Ramp A Bypass Lane
- Bridge B616
  - Phase 1
    - Substructure
      - Abutment A
      - Abutment B

- Superstructure
  - Option 1 – Shared Use Path
  - Option 2 – Mill and Overlay Outside Lanes – US 15/17/29 Bypass

## CRITICAL PATH

Per VDOT specifications, the critical path on the Project has been defined as the Longest Path. The Longest Path, as represented by the Project schedule, includes the following activities from Notice to Proceed (March 26, 2018) through our accelerated Project Final Completion Date (September 3, 2020) and is as follows:

- Notice to Proceed
- Environmental field studies
- Conceptual SWM Plans
- Procurement of VPDES Permit
- Issuance of Phase 1 TMP/MOT Plans
- Project mobilization
- Installation of erosion control measures
- Construction of bridge abutments / MSE walls
- Completion of bridge
- Phase 1 Completion / Opening of Bridge / Phase 1 Work
- Construction of Ramp A
- Removal of Existing Ramp A / Construction of Ramp A Bypass Lane
- Project finishes
- Punchlist
- Project closeout

In addition to the full Project schedule provided, we have included a print out of the summary longest path layout for the entire Project.

## MEANS AND METHODS

The durations in the Project schedule were calculated based on estimated quantities known at the time of proposal as well as historical average productions experienced on similar projects. As design progresses and quantities are finalized, the construction schedule will be reviewed and monitored. Any major modifications to the design or design quantities will be reviewed with VDOT and reflected in potential revisions to the project schedule.

### Geotechnical Improvements

As reflected by activities in the Project schedule, the Myers Team will perform geotechnical investigations and analysis to determine the most cost effective and schedule efficient method of stabilizing unsuitable soils. Where possible, we plan to use an in-situ stabilization method. These methods are typically faster which will provide schedule savings. In addition, in-situ stabilization will reduce/eliminate the need for on-road trucks to travel in and out of the work zone under traffic to dispose of the material, increasing safety for the Project and the travelling public.

### Reviews and Approvals

For each major deliverable in the schedule, there are activities for the preparation/submission of the item as well as the review and comment/approval of said deliverable. To further clarify the reviewer's responsibilities, review activities are labeled with either "R/C" or "R/A" to indicate "Review and Comment" or "Review and Approve", respectively.

Upon award, the Myers Team will use the activity code “C00077384DB100 Responsible Stakeholder” to identify the reviewing party on each of the “R/C” and “R/A” activities. This code will be utilized to identify which key stakeholder is responsible for the preparation, submission, and review of each deliverable identified in the project schedule. Further, Myers will be able to provide a filtered layout to key stakeholders that shows only their upcoming activities to aid in VDOT’s resource planning.

In addition to standard deliverable reviews and approvals, major hold points have been represented in the schedule – specifically the preparatory meetings required by the QA/QC Program. In the Proposal Schedule, there is one preparatory meeting shown for each major scope area. Post-award, some of these hold points may be duplicated if major scopes of work are going to stop and start with great gaps of time between. Likewise, the Team may choose to have separate preparatory meetings if different vendors are involved.

### **Subcontractors and Suppliers**

Lessons learned from schedule management on previous design-build projects have led to the inclusion of a Procurement section in the Project schedule. This section of the WBS captures the activities needed to execute contracts with various subcontractors and suppliers once the design is approved. This section also contains activities for the fabrication and delivery of major materials that typically have longer lead times such as bridge girders, structural rebar, and sound wall materials.

### **Resource Management**

Initial assessments of crew flow and allocation were performed at a high-level to make sure that there were no major challenges with resource needs on the Project, and so that Myers can be confident that the schedule is achievable. Post-award, Primavera’s role and resource functions may be used to monitor and track the number of self-perform and subcontract resources needed in the construction phase of the Project. Prior to the procurement phase of the Project, resources would be allocated to show what types of subcontractors and suppliers would be needed for each construction activity. Once a specific vendor is procured, an activity code would be assigned to that activity to represent the specific firm procured. For example, a bridge activity would be assigned the resource, “Bridge Contractor” pre-procurement. Post-procurement, the activity would be assigned a specific activity code with the firm’s name, “ABC Structural Company”. These assignments would allow the procurement and construction management staff to strategically plan with all resource availability considerations in mind. This will also help differentiate between work being self-performed by the Myers Team and work being performed by others.

## **SCHEDULE ASSUMPTIONS**

To properly manage the Project schedule, it is important to understand the scope of the work and interdisciplinary dependencies for proper management. In addition, it is important to understand the technical capabilities of the schedule management software. Care has been given to the setup of the Primavera schedule to ease future schedule management and to properly account for schedule risks to reduce potential impacts.

### **Calendars**

Project-specific calendars have been set up in Primavera to represent various restrictions and assumptions that must be applied to the project activities.

- Primary Calendars:
  - C00077384DB100 – 5 Day Office:
    - This calendar allows work five days per week except standard state holidays.
    - It is assigned all preconstruction activities that are not dependent on weather and would be primarily performed in an office.
  - C00077384DB100 – 5 Day Field:

- This calendar allows work five days per week except standard state holidays. It also accounts for normal weather patterns that would affect field activities, such as precipitation histories.
- It is assigned to all field activities that may be affected by weather or precipitation events.
- C00077384DB100 – 5 Day Paving:
  - This calendar allows work five days per week except standard state holidays. In addition to accounting for normal weather patterns, as shown in the “5-day Field” calendar, it also reduces working days to one day per week from December 15 of each year to March 15 of the following year.
  - It is assigned to all paving activities.
- C00106665DB82 – 7 Day:
  - This calendar allows work seven days per week.
  - It is assigned to cure activities and any activity whose duration is based on calendar days, such as review activities.

### Consistency of Activity Names and IDs

Care has been taken to maintain consistency throughout the Project schedule in terms of each activity’s name and ID. Each activity ID is ten digits, with the first 3 to 6 digits representing the WBS where the activity is contained. Activities of similar type are named consistently. Activities for installing asphalt are consistently named “Place Base Course” or “Place Intermediate Course” throughout the schedule. In addition, activities that are duplicative in multiple areas of the Project, have a suffix for the specific location or detail that is applicable. For example, the activity for installing the installing guardrail at the ramp A bypass lane will read “Install Guardrail – Ramp A Bypass Lane”.

### Activity Codes:

Project-specific activity codes have not been set up at this point. However, the baseline schedule will contain various activity codes representing such items as phase, segment of the Project, specific areas within each segment, type of work, and responsible party. This will allow custom filters and layouts to be created to better communicate various aspects of the project schedule to different stakeholders and contributors.

### Schedule Risk and Management

There are several sections of the schedule where adequate information is not yet available to thoroughly define schedule activities at a Baseline Schedule level of detail. In these areas, the Myers Team has drawn from previous design-build experience to build a schedule that minimizes the risk of future impact once additional details are known. Examples of known risk areas and risk minimization measure:

- **Settlement Periods:** The GDR information provided with the RFP suggests that compressible soils may be present at the bridge abutment locations, indicating that settlement periods may be necessary. Based on review of the available information it is estimated that the required duration of the settlement periods will be approximately 30 – 45 days. Upon NTP, the Myers Team will look to perform the geotechnical investigation and analysis required to confirm the actual settlement periods required for each abutment. Until that time a conservative approach using a 60-day settlement period for each abutment has been included in the schedule.
- **Plan packaging:** The Proposal Schedule shows the design packages being broken down by priority of work needed for construction. Myers construction staff has worked with the designers to define Advanced Work Packages (“AWP”s) that will allow an accelerated start to construction with low risk of future rework due to design progression. Key packages currently identified are:
  - Phase 1 Clearing and Grubbing, Erosion Control
  - Phase 1 TMP/MOT Plans

- Having these packages released for construction early will allow Myers to progress critical construction activities while the complete design is being finalized.
- **Plan reviews:** Two cycles are shown for almost every design submittal in the schedule. Using a collaborative approach to resolving comments should allow substantial time to get plans approved.
- **Utility Relocations:** All potential conflicts known at the time of submission of the Technical Proposal Plans are shown to be relocated in the Proposal Schedule. The Myers Team will continue to strive to minimize or eliminate all conflicts such that relocations shown in the schedule may not be necessary at all – allowing construction to advance earlier than projected in the proposal schedule.
- **ROW Acquisitions:** All potential parcel impacts known at the time of submission of the Technical Proposal Plans are shown to be acquired in the proposal schedule. The Myers Team will continue to strive to minimize or eliminate parcel impacts such that acquisitions shown in the schedule may not be necessary at all – minimizing dependencies on acquisition as much as possible.

Upon Notice of Intent to Award, the Myers Team will cost load the first three months of the proposal schedule and make any modifications necessary to meet the Contract Requirements for a Preliminary Schedule, updating any areas where additional information is known. Following submission of the Preliminary Schedule and as the design progresses, Myers may break down some areas to a higher level of detail necessary to properly manage a Baseline Schedule for the Project. This breakdown allows for better management of resources in addition to accurate monitoring of progress.

The CPM schedule will be the driving force behind all long-term and short-term planning. Design work and other preconstruction activities will be closely monitored with the schedule. A formal CPM schedule update will be submitted monthly to VDOT and distributed to the appropriate Project stakeholders.

In addition to the CPM schedule, the Myers Team will use the complete schedule process summarized in *Table 7.2*.

*Table 7.2 – Schedule Management Tools*

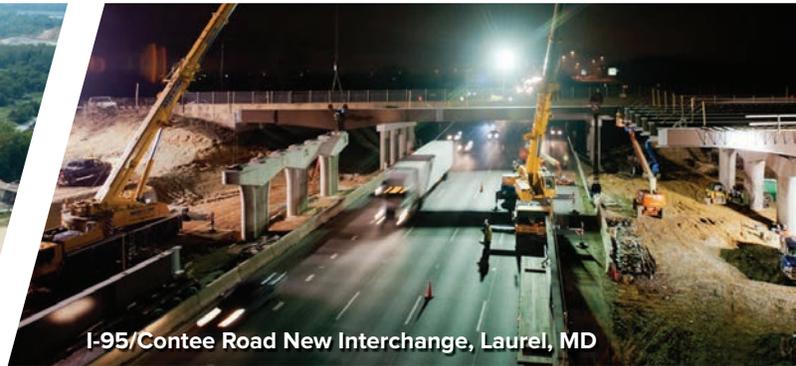
<b>Tool</b>	<b>Description</b>
CPM schedule	The CPM will be updated monthly (at a minimum) and as needed to track design and construction progress
Design schedule management	Technical work groups will monitor design progress and provide schedule updates.
Delay-free work plans	Using the CPM schedule, operation-specific planning packets will be created for each element of the Project and distributed to field managers.
Project team planner	Schedule based to-do list of management tasks will identify work zone, crew and equipment needs, and remove work operation constraints.
Morning and end-of-shift Huddles	Daily coordination meetings for field operations will provide daily schedule updates to construction management staff.
Look-ahead schedules	Weekly break down of CPM schedule activities into day-to-day operations to coordinate upcoming activities, traffic controls, subcontractors, and submittals.

# ATTACHMENT 3.6.7

## LIST OF APPROVED ATCs



SR 29/I-276 New Interchange, Great Valley, PA



I-95/Contee Road New Interchange, Laurel, MD



Saintsbury Drive Roundabout, Fairfax, VA



I-581/Elm Avenue Interchange Modifications, Roanoke, VA



**ATTACHMENT 3.6.7**  
**LIST OF APPROVED ATCs INCLUDED IN TECHNICAL PROPOSAL**

**OFFEROR:**

List all approved ATCs included in the Technical Proposal along with the page number references from Technical Proposal.

ATC ID Number	ATC Name Description	Date ATC Approved	Technical Proposal Reference Page(s) #
1	Roundabout Operational Analysis	11/09/2017	Pages 1-75

**By signing this document, the Offeror hereby confirms that they are agreeing to all conditions that may have accompanied the ATC approval(s). The Offerors shall make a note of RFP Part 4 Section 2.1.10**

*“If the Contract Documents incorporate any ATCs and Design-Builder, for whatever reason: (a) does not comply with one or more Department conditions of pre-approval for the ATC; (b) does not obtain required third-party approval for the ATC; or (c) fails to implement the ATC, then Design-Builder shall: (1) provide written notice thereof to Department; and (2) comply with the requirements in the Contract Documents that would have applied in the absence of such ATC. Such compliance shall be without any increase in the Contract Price or extension to the Contract Time(s). For the avoidance of doubt, Design-Builder shall not be entitled to any increase in the Contract Price or extension of the Contract Time(s) as a result of any delay, inability or cost associated with the acquisition of any property that may be required to implement any ATC”.*

  
 [Signature: Offerors POC or Principal Officer]

Aaron T. Myers  
 [Printed Name]

Vice President/General Manager  
 [Title]

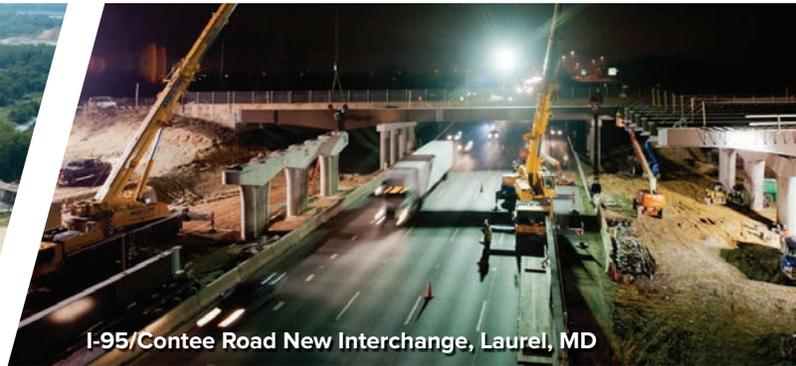
DATE: December 7, 2017

# ATTACHMENT 3.7

## FORM C-78-RFP



SR 29/I-276 New Interchange, Great Valley, PA



I-95/Contee Road New Interchange, Laurel, MD



Saintsbury Drive Roundabout, Fairfax, VA



I-581/Elm Avenue Interchange Modifications, Roanoke, VA



**ATTACHMENT 3.6**

**COMMONWEALTH OF VIRGINIA  
DEPARTMENT OF TRANSPORTATION**

**RFP NO.** C00077384DB100  
**PROJECT NO.:** 0029-030-121

**ACKNOWLEDGEMENT OF RFP, REVISION AND/OR ADDENDA**

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

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

- 1. Cover letter of RFP – July 18, 2017  
(Date)
- 2. Cover letter of Addendum #1- August 23, 2017  
(Date)
- 3. Cover letter of Addendum #2- October 27, 2017  
(Date)
- 4. Cover letter of Addendum #3- November 17, 2017  
(Date)
- 5. Cover letter of Addendum #4- December 1, 2017  
(Date)

  
SIGNATURE

December 7, 2017  
DATE

Aaron T. Myers  
PRINTED NAME

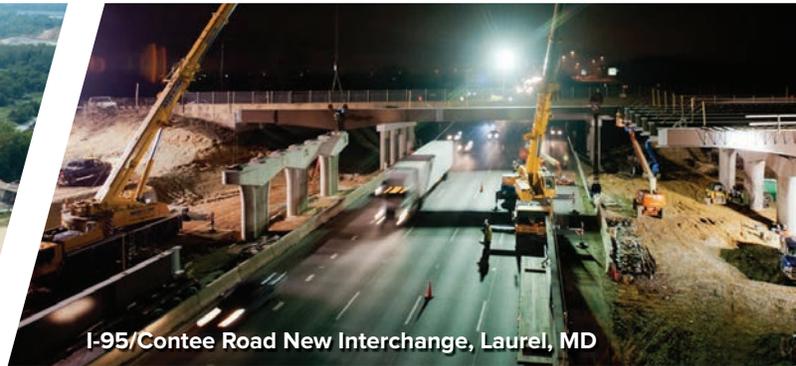
Vice President/General Manager  
TITLE

# ATTACHMENT 9.3.1

# PROPOSAL PAYMENT AGREEMENT



SR 29/I-276 New Interchange, Great Valley, PA



I-95/Contee Road New Interchange, Laurel, MD



Saintsbury Drive Roundabout, Fairfax, VA



I-581/Elm Avenue Interchange Modifications, Roanoke, VA



**ATTACHMENT 9.3.1**  
**PROPOSAL PAYMENT AGREEMENT**

**THIS PROPOSAL PAYMENT AGREEMENT** (this “Agreement”) is made and entered into as of this 7th day of December, 2017, by and between the Virginia Department of Transportation (“VDOT”), and Allan Myers VA, Inc. (“Offeror”).

**WITNESSETH:**

**WHEREAS**, Offeror is one of the entities who submitted Statements of Qualifications (“SOQs”) pursuant to VDOT’s April 26, 2017 Request for Qualifications (“RFQ”) and was invited to submit proposals in response to a Request for Proposals (“RFP”) for the **Warrenton Southern Interchange US 15/17/29 Project No. 0029-030-121** (“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 **Twenty five thousand and 00/100 Dollars (\$25,000.00)** ("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: \_\_\_\_\_

**ALLAN MYERS VA, INC.**

By:  \_\_\_\_\_

Name: Aaron T. Myers

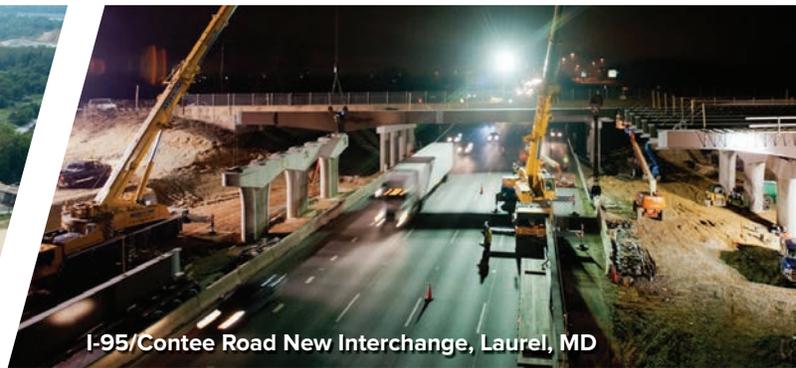
Title: Vice President/General Manager

# ATTACHMENT 11.8.6

# CERTIFICATION REGARDING DEPARTMENT FORMS



SR 29/I-276 New Interchange, Great Valley, PA



I-95/Contee Road New Interchange, Laurel, MD



Saintsbury Drive Roundabout, Fairfax, VA



I-581/Elm Avenue Interchange Modifications, Roanoke, VA



**ATTACHMENT 11.8.6(a)**  
**CERTIFICATION REGARDING DEBARMENT**  
**PRIMARY COVERED TRANSACTIONS**

**Project No.: 0029-030-121**

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.

	<u>11/26/17</u>	<u>Vice President/General Manager</u>
Signature    Aaron T. Myers	Date	Title

ALLAN MYERS VA, INC.  
Name of Firm



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

**Project No.: 0029-030-121**

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.

<u>J. Banoff-Wirt</u>	<u>12/7/17</u>	<u>Vice-President/Director of Engineering</u>
Signature	Date	Title

ECS Mid-Atlantic, LLC  
Name of Firm

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

**Project No.: 0029-030-121**

- 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.

<u>Craig Anderson</u>	<u>12/7/17</u>	<u>President</u>
Signature	Date	Title

ERM & Associates

Name of Firm

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

Project No.: 0029-030-121

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.

W. McA. K.      12/07/17      Sr. Vice President  
Signature      Date      Title

KCI TECHNOLOGIES, INC.  
Name of Firm

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

**Project No.: 0029-030-121**

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 4, 2017	President
Signature	Date	Title

Quinn Consulting Services, Inc.  
Name of Firm

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

**Project No.: 0029-030-121**

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                      Date                      December 7, 2017                      Partner  
Title

\_\_\_\_\_  
Wallace, Montgomery & Associates, LLP  
Name of Firm



**ALLAN MYERS**  
301 CONCOURSE BLVD.  
SUITE 300,  
GLEN ALLEN, VA 23059  
804-290-8500



**KCI TECHNOLOGIES**  
936 RIDGEBROOK ROAD  
SPARKS, MD 21152  
410-316-7800



**WALLACE MONTGOMERY**  
8150 LEESBURG PIKE  
SUITE 403  
VIENNA, VA 22182  
571-395-8100

# TECHNICAL PROPOSAL

## VOLUME II

A DESIGN-BUILD PROJECT

### Warrenton Southern Interchange US 15/17/29

From: Route 15/17/29 & Route 15/17/29 Business

To: 1.0 Mile South of Route 15/17/29 & Route 15/17/29 Business

Fauquier County, Virginia

State Project No.: 0029-030-121, P101, R201, C501, B616

Federal Project No.: STP-032-7 (032) Contract ID No.: C00077384DB100

Date: December 7, 2017



4.3.1

**CONCEPTUAL ROADWAY PLANS**



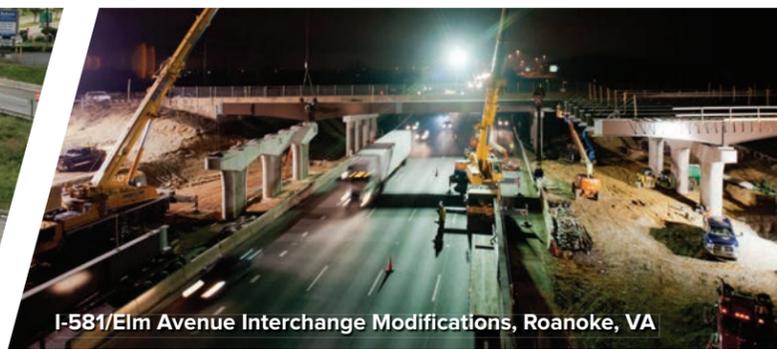
Saintsbury Drive Roundabout, Fairfax, VA



SR 29/I-276 New Interchange, Great Valley, PA



I-95/Contee Road New Interchange, Laurel, MD



I-581/Elm Avenue Interchange Modifications, Roanoke, VA

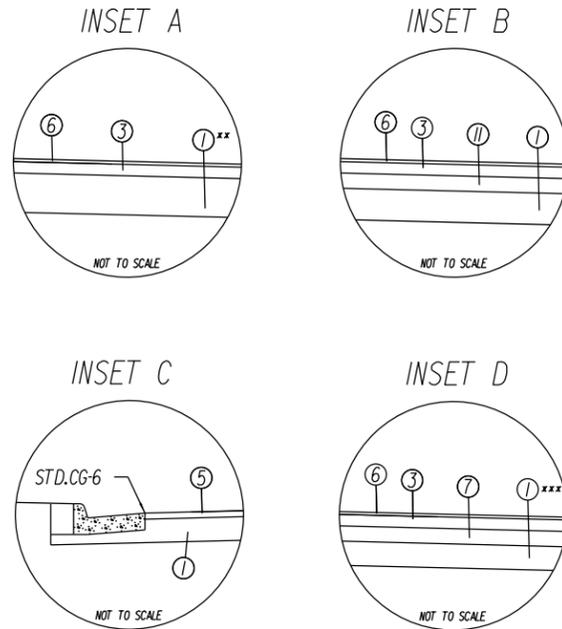
PROJECT MANAGER *Stephen Drumm P.E. (410) 316-7960 (KCI Technologies, Inc.)*  
 SURVEYED BY *Rice and Associates (703) 968-3200*  
 DESIGN SUPERVISED BY *Dion Ho P.E. (410) 891-1760 (KCI Technologies, Inc.)*  
 DESIGNED BY \_\_\_\_\_  
 CULPEPER DISTRICT DESIGN UNIT

# TYPICAL SECTIONS

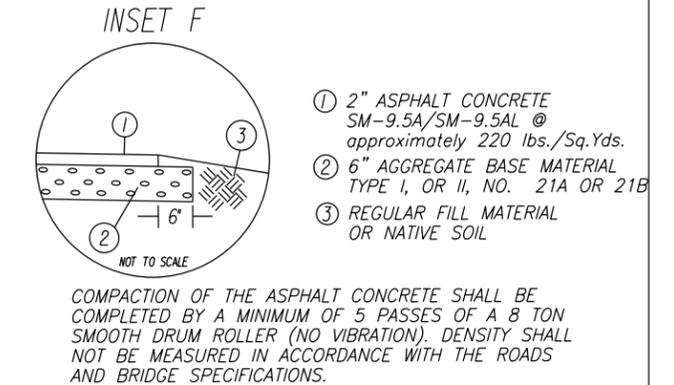
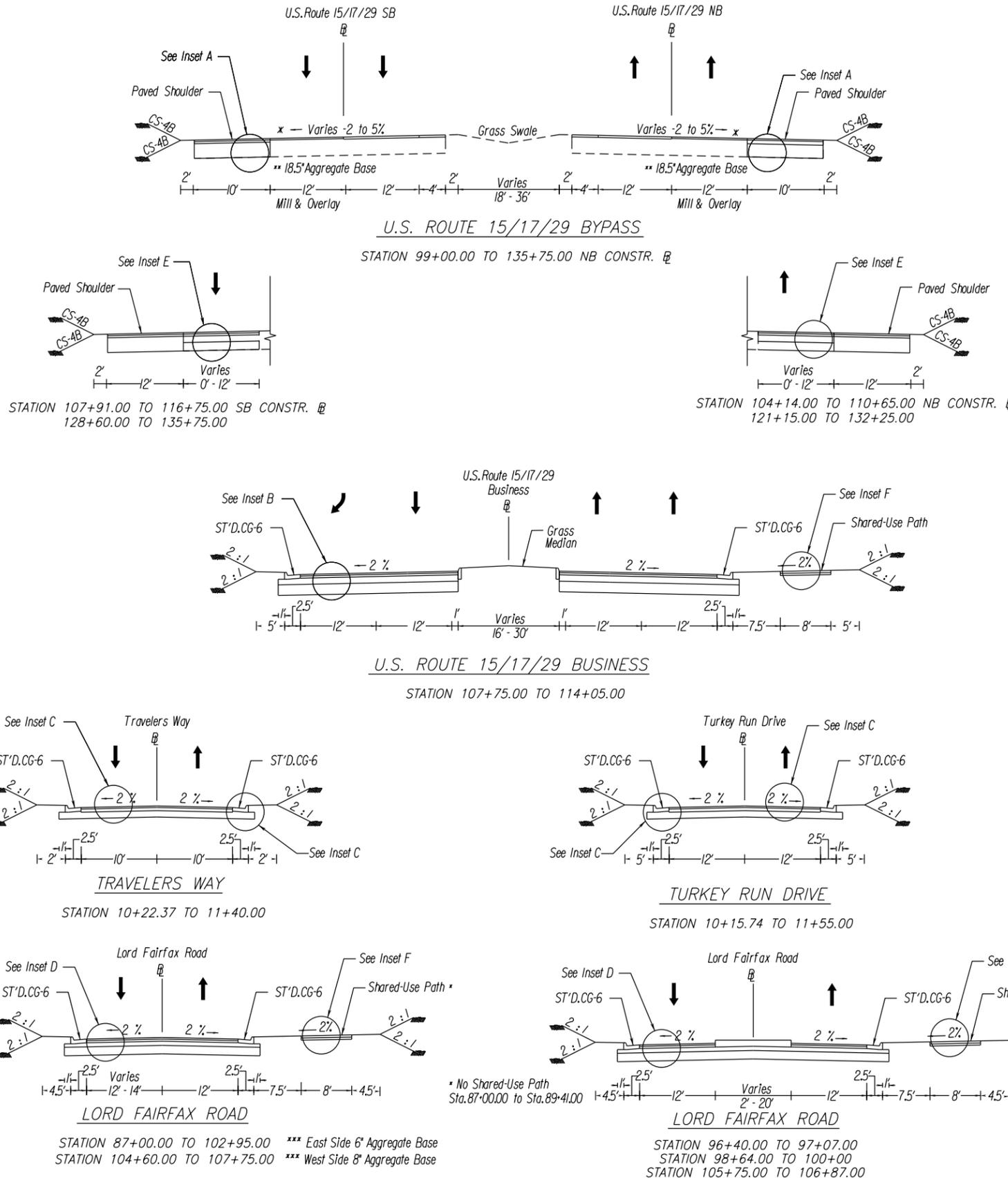
REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	29	0029-030-121 P101, R201, C501	

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

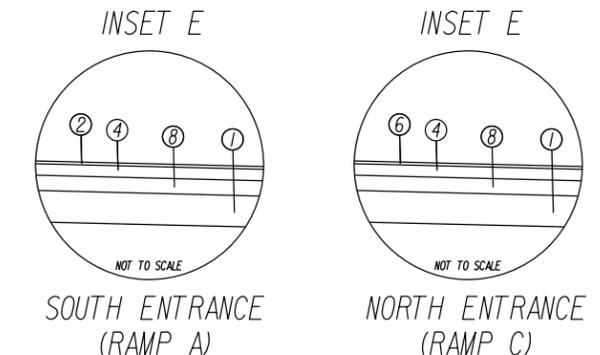
NOTE: PAVEMENT WIDTHS VARY AT TAPERS. SEE PLAN SHEETS AND CROSS SECTIONS FOR PAVEMENT LENGTHS AND WIDTHS.



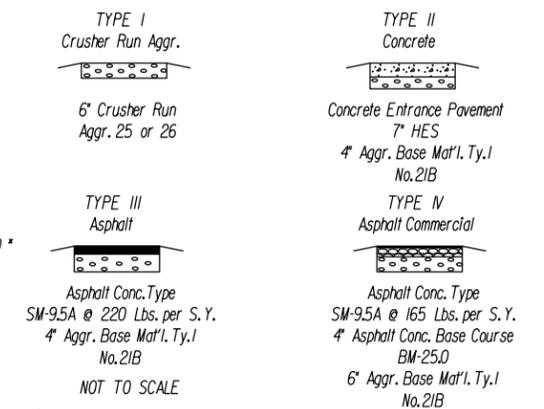
- ① 8" AGGREGATE SUBBASE MATERIAL, TYPE I, SIZE NO.21B
- ② 2" ASPHALT CONCRETE SURFACE COURSE, TYPE SM-12.5E
- ③ 2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE IM-19.0A
- ④ 2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE IM-19.0E
- ⑤ 2" ASPHALT CONCRETE SURFACE COURSE, TYPE SM-9.5A
- ⑥ 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE SM-9.5D
- ⑦ 4" ASPHALT CONCRETE BASE COURSE, TYPE BM-25.0A
- ⑧ 10" ASPHALT CONCRETE BASE COURSE, TYPE BM-25.0D
- ⑨ 1.5" STONE MATRIX ASPHALT SURFACE COURSE, TYPE SMA-9.5
- ⑩ PARKING LOT, 6" CRUSHER RUN, AGGREGATE 25 OR 26
- ⑪ 5" ASPHALT CONCRETE BASE COURSE, TYPE BM-25.0A



## SHARED USE PATH PAVEMENT STRUCTURE (OPTION 1)



## PRIVATE AND COMMERCIAL ENTRANCES



The type of entrance (I, II, III, IV) to be constructed will be determined by the existing condition.

Note:  
\* U.S. Route 15/17/29 Bypass Pavement to be milled and overlaid as required.

NOT TO SCALE	PROJECT 0029-030-121	SHEET NO. 1
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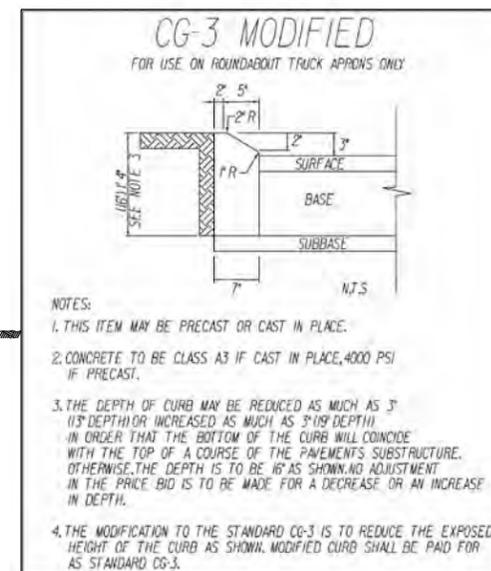
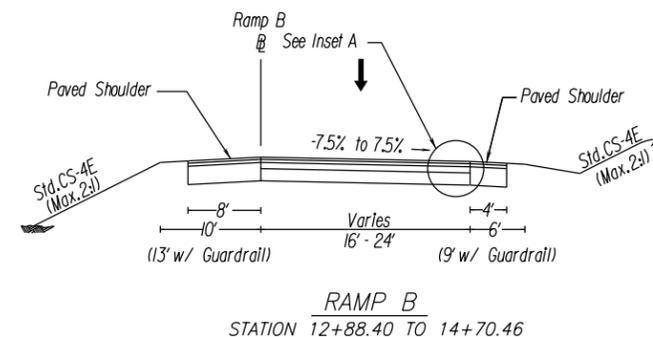
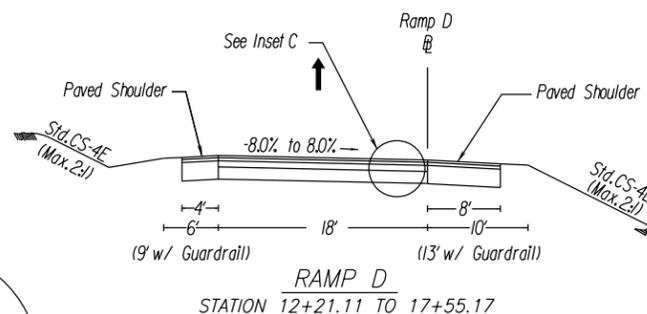
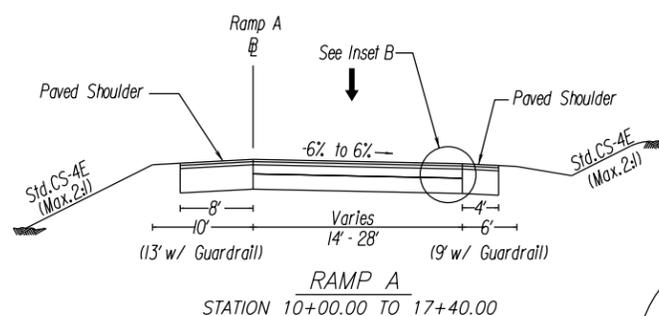
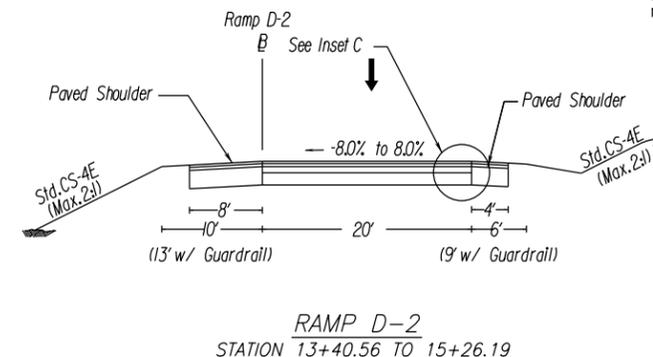
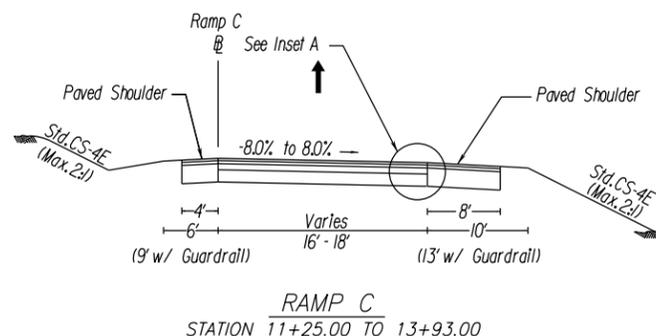
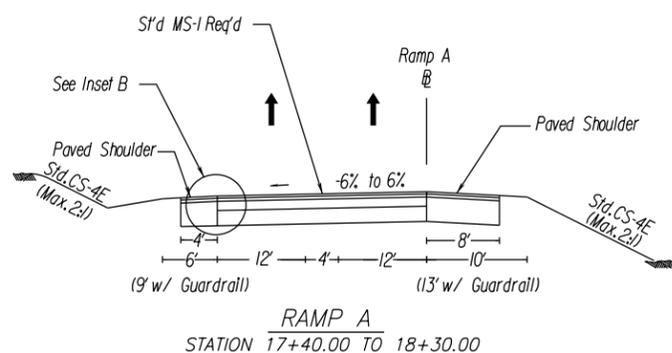


PROJECT MANAGER *Stephen Drumm P.E. (410) 316-7960 (KCI Technologies, Inc.)*  
 SURVEYED BY *Rice and Associates (703) 968-3200*  
 DESIGN SUPERVISED BY *Dion Ho P.E. (410) 891-1760 (KCI Technologies, Inc.)*  
 DESIGNED BY \_\_\_\_\_  
 CULPEPER DISTRICT DESIGN UNIT

# TYPICAL SECTIONS

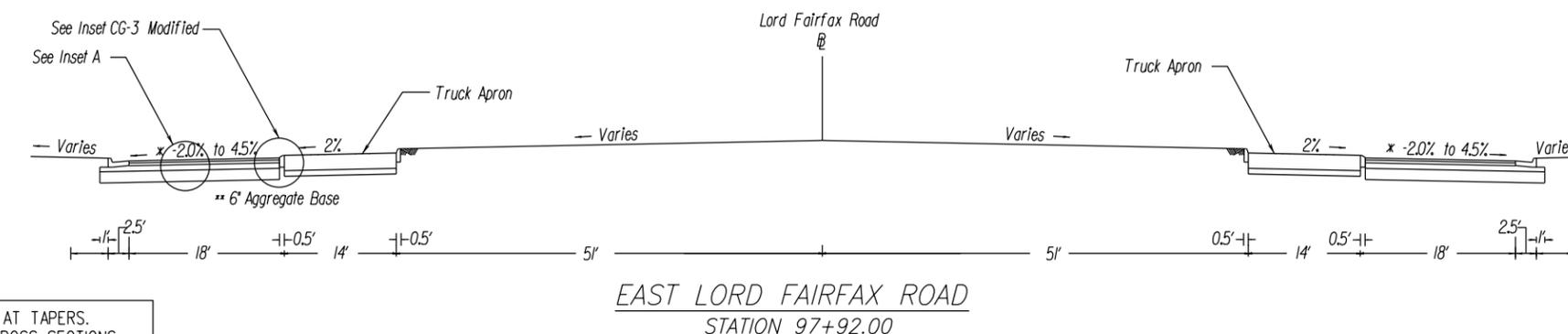
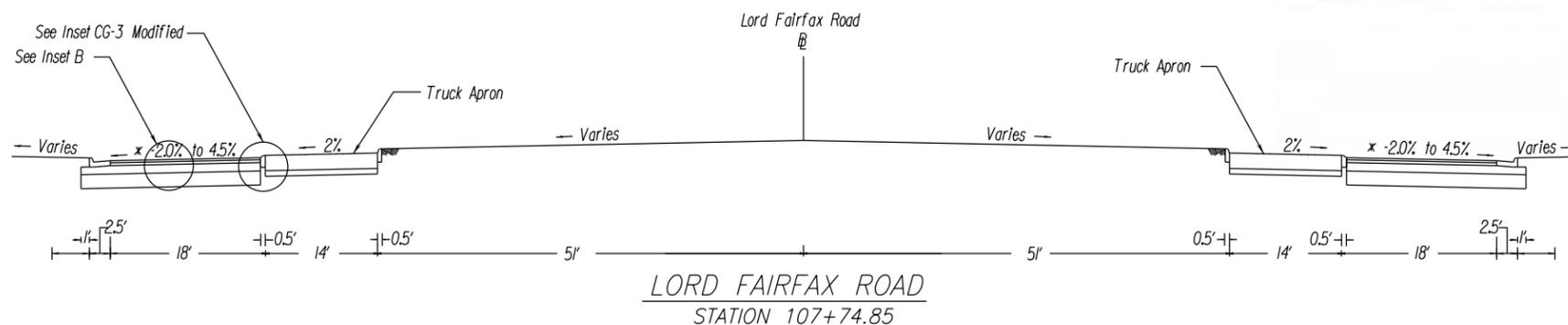
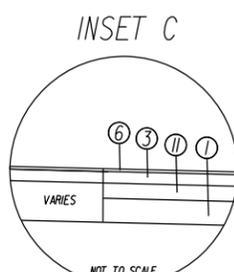
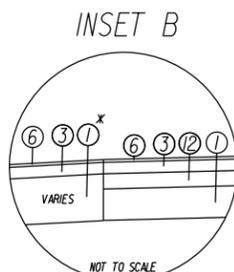
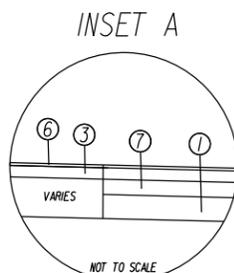
REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	29	0029-030-121 P101, R201, C501	

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



- ① 8" AGGREGATE SUBBASE MATERIAL, TYPE I, SIZE NO.21B
- ② 2" ASPHALT CONCRETE SURFACE COURSE, TYPE SM-12.5E
- ③ 2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE IM-19.0A
- ④ 2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE IM-19.0E
- ⑤ 2" ASPHALT CONCRETE SURFACE COURSE, TYPE SM-9.5A
- ⑥ 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE SM-9.5D
- ⑦ 4" ASPHALT CONCRETE BASE COURSE, TYPE BM-25.0A
- ⑧ 10" ASPHALT CONCRETE BASE COURSE, TYPE BM-25.0D
- ⑨ 1.5" STONE MATRIX ASPHALT SURFACE COURSE, TYPE SMA-9.5
- ⑩ PARKING LOT, 6" CRUSHER RUN, AGGREGATE 25 OR 26
- ⑪ 5" ASPHALT CONCRETE BASE COURSE, TYPE BM-25.0A
- ⑫ 6" ASPHALT CONCRETE BASE COURSE, TYPE BM-25.0A

Shoulder Pavement Section Not Shown



NOTE: PAVEMENT WIDTHS VARY AT TAPERS. SEE PLAN SHEETS AND CROSS SECTIONS FOR PAVEMENT LENGTHS AND WIDTHS.

Note:  
 \* Cross Slopes includes Roadway Profile Grade.  
 U.S. Route 15/17/29 Bypass Pavement to be milled and overlaid as required.

NOT TO SCALE	PROJECT 0029-030-121	SHEET NO. 2
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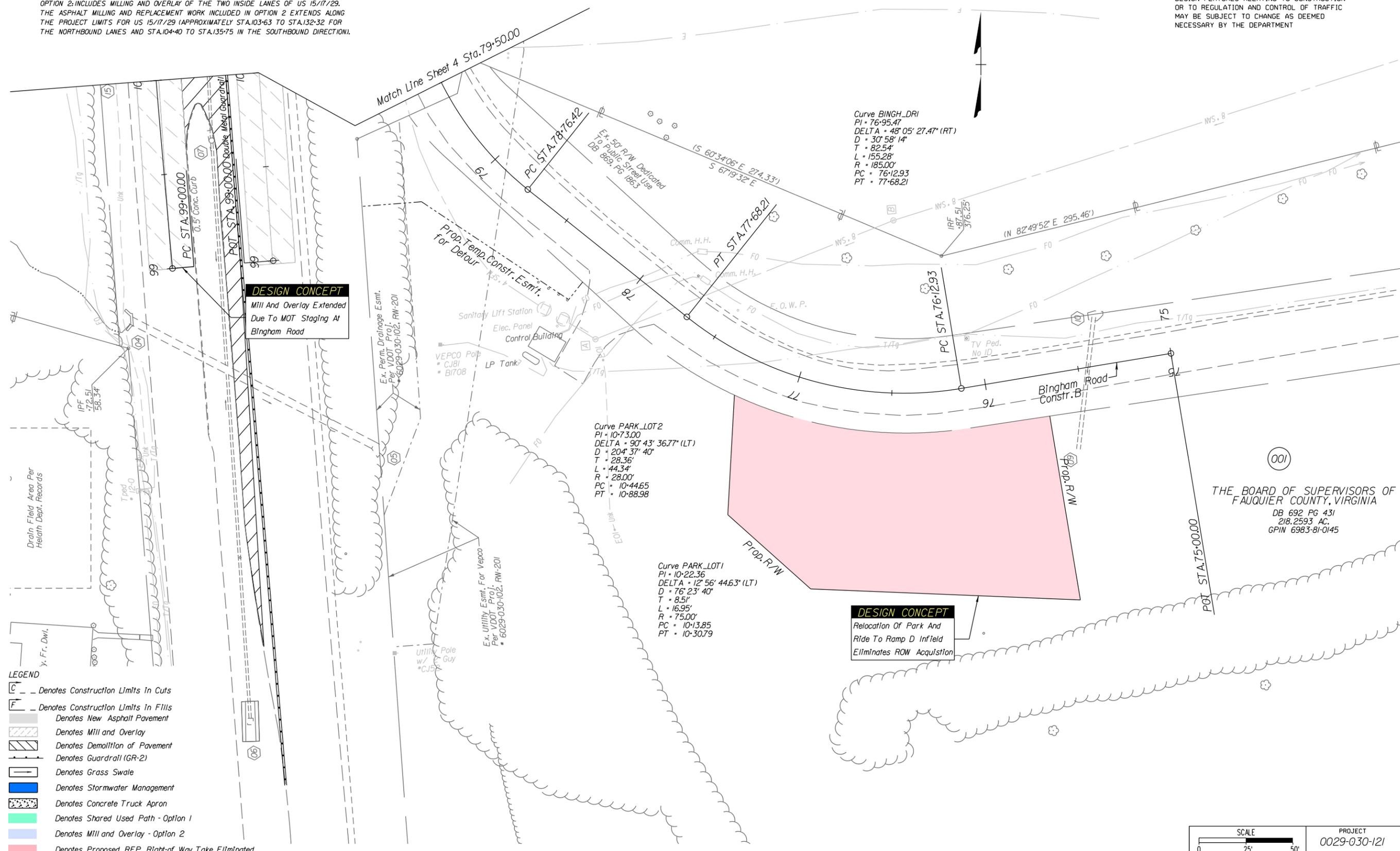


PROJECT MANAGER *Stephen Drumm P.E. (410) 316-7960 (KCI Technologies, Inc.)*  
 SURVEYED BY *Rice and Associates (703) 968-3200*  
 DESIGN SUPERVISED BY *Dion Ho P.E. (410) 891-1760 (KCI Technologies, Inc.)*  
 DESIGNED BY \_\_\_\_\_  
 CULPEPER DISTRICT DESIGN UNIT

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	29	0029-030-121 P101, R201, C501	

OPTION 2: INCLUDES MILLING AND OVERLAY OF THE TWO INSIDE LANES OF US 15/17/29. THE ASPHALT MILLING AND REPLACEMENT WORK INCLUDED IN OPTION 2 EXTENDS ALONG THE PROJECT LIMITS FOR US 15/17/29 (APPROXIMATELY STA.103+63 TO STA.132+32 FOR THE NORTHBOUND LANES AND STA.104+40 TO STA.135+75 IN THE SOUTHBOUND DIRECTION).

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



**LEGEND**

	Denotes Construction Limits in Cuts
	Denotes Construction Limits in Fills
	Denotes New Asphalt Pavement
	Denotes Mill and Overlay
	Denotes Demolition of Pavement
	Denotes Guardrail (GR-2)
	Denotes Grass Swale
	Denotes Stormwater Management
	Denotes Concrete Truck Apron
	Denotes Shared Used Path - Option 1
	Denotes Mill and Overlay - Option 2
	Denotes Proposed RFP Right-of Way Take Eliminated

001  
 THE BOARD OF SUPERVISORS OF  
 FAUQUIER COUNTY, VIRGINIA  
 DB 692 PG 431  
 218,2593 AC.  
 GPIN 6983-81-0145

SCALE 0 25' 50'	PROJECT 0029-030-121	SHEET NO. 3
--------------------	-------------------------	----------------



PROJECT MANAGER *Stephen Drumm P.E. (410) 316-7960 (KCI Technologies, Inc.)*  
 SURVEYED BY *Rice and Associates (703) 968-3200*  
 DESIGN SUPERVISED BY *Dion Ho P.E. (410) 891-1760 (KCI Technologies, Inc.)*  
 DESIGNED BY \_\_\_\_\_  
 CULPEPER DISTRICT DESIGN UNIT

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	29	0029-030-121 P101, R201, C501	

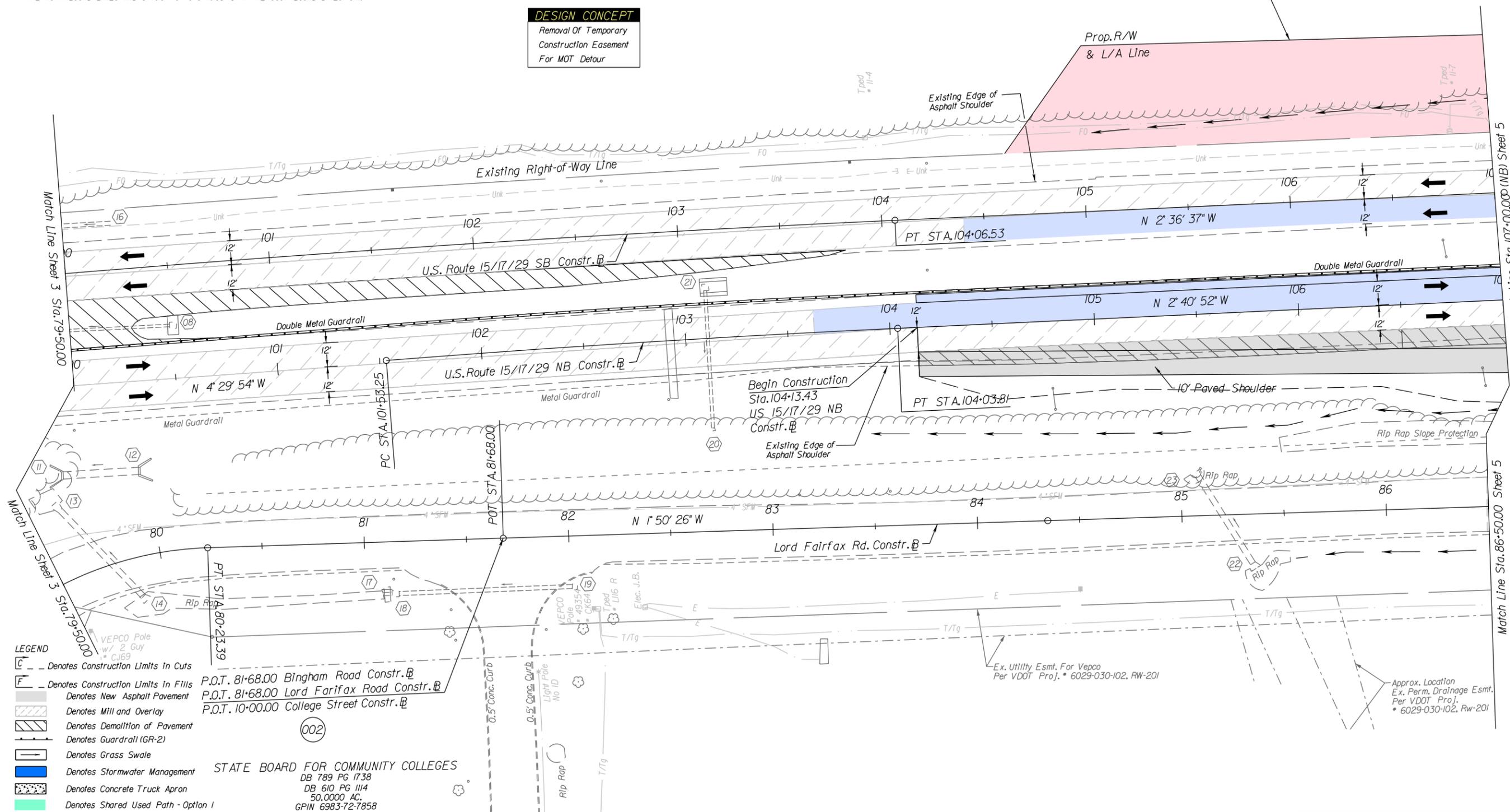
007  
 ALWINGTON FARM, LLC  
 DB 1328 PG 01  
 DB 255 PG 86  
 196.817 AC.  
 GPIN 6983-42-8913

**DESIGN CONCEPT**  
 Relocation Of Roundabout  
 Closer To Ramp A Bypass  
 Eliminates ROW Acquisition

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

OPTION 2: INCLUDES MILLING AND OVERLAY OF THE TWO INSIDE LANES OF US 15/17/29. THE ASPHALT MILLING AND REPLACEMENT WORK INCLUDED IN OPTION 2 EXTENDS ALONG THE PROJECT LIMITS FOR US 15/17/29 (APPROXIMATELY STA. 103+63 TO STA. 132+32 FOR THE NORTHBOUND LANES AND STA. 104+40 TO STA. 135+75 IN THE SOUTHBOUND DIRECTION).

**DESIGN CONCEPT**  
 Removal Of Temporary Construction Easement For MOT Detour



- LEGEND**
- C - Denotes Construction Limits in Cuts
  - F - Denotes Construction Limits in Fills
  - Denotes New Asphalt Pavement
  - Denotes Mill and Overlay
  - Denotes Demolition of Pavement
  - Denotes Guardrail (GR-2)
  - Denotes Grass Swale
  - Denotes Stormwater Management
  - Denotes Concrete Truck Apron
  - Denotes Shared Used Path - Option 1
  - Denotes Mill and Overlay - Option 2
  - Denotes Proposed RFP Right-of Way Take Eliminated

P.O.T. 81+68.00 Bingham Road Constr. **B**  
 P.O.T. 81+68.00 Lord Fairfax Road Constr. **B**  
 P.O.T. 10+00.00 College Street Constr. **B**

002  
 STATE BOARD FOR COMMUNITY COLLEGES  
 DB 789 PG 1738  
 DB 610 PG 1114  
 50.0000 AC.  
 GPIN 6983-72-7858

SCALE 0 25' 50'	PROJECT 0029-030-121	SHEET NO. 4
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PROJECT MANAGER Stephen Drumm P.E. (410) 316-7960 (KCI Technologies, Inc.)  
 SURVEYED BY Rice and Associates (703) 968-3200  
 DESIGN SUPERVISED BY Dion Ho P.E. (410) 891-1760 (KCI Technologies, Inc.)  
 DESIGNED BY  
 CULPEPER DISTRICT DESIGN UNIT

**DESIGN CONCEPT**  
 Revised MOT Three Phase  
 Signal To Lord Fairfax  
 Eliminated Util. Pole Impact

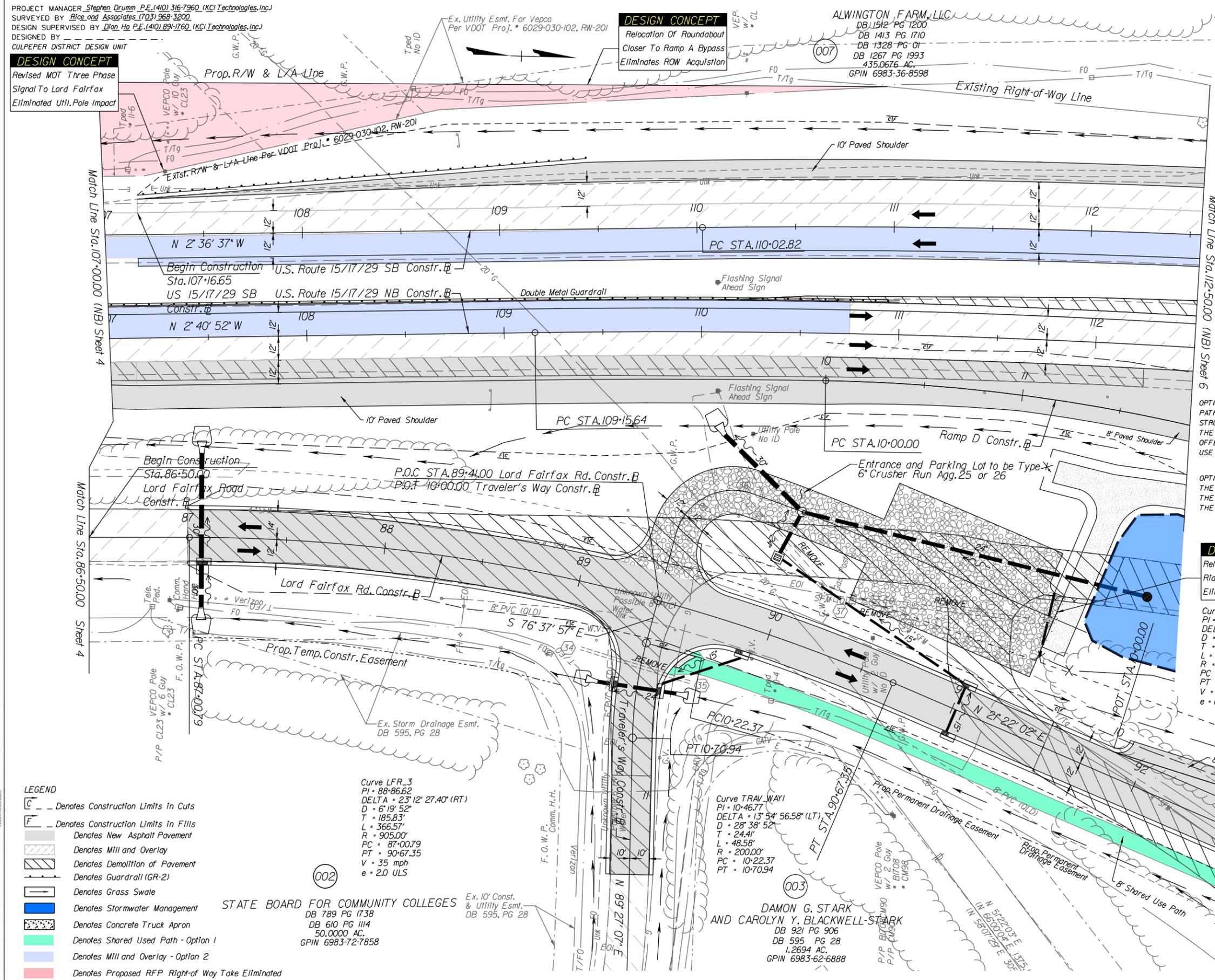
**DESIGN CONCEPT**  
 Relocation Of Roundabout  
 Closer To Ramp A Bypass  
 Eliminates ROW Acquisition

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	29	0029-030-121 P101, R201, C501	

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

**REFERENCES**  
 (PROFILES, DETAIL & DRAINAGE DESCRIPTION SHEETS, ETC.)

Lord Fairfax Road	5A
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OPTION 1: INCLUDES THE CONSTRUCTION OF THE ENTIRE LENGTH OF THE SHARED USE PATH, EXCEPT FOR THE PORTION OF THE SHARED USE PATH LOCATED ON THE BRIDGE STRUCTURE, WHICH IS A BASE SCOPE ITEM. THE DESIGN OF THE ENTIRE LENGTH OF THE SHARED USE PATH IS ALSO A BASE SCOPE ITEM AND SHALL BE DEPICTED ON THE OFFEROR'S TECHNICAL PROPOSAL. THE APPROXIMATE LENGTH OF 8-FOOT WIDE SHARED USE PATH INCLUDED IN OPTION 1 IS 1750 FEET.

OPTION 2: INCLUDES MILLING AND OVERLAY OF THE TWO INSIDE LANES OF US 15/17/29. THE ASPHALT MILLING AND REPLACEMENT WORK INCLUDED IN OPTION 2 EXTENDS ALONG THE PROJECT LIMITS FOR US 15/17/29 (APPROXIMATELY STA. 103+63 TO STA. 132+32 FOR THE NORTHBOUND LANES AND STA. 104+40 TO STA. 135+75 IN THE SOUTHBOUND DIRECTION).

**DESIGN CONCEPT**  
 Relocation Of Park And  
 Ride To Ramp D Infield  
 Eliminates ROW Acquisition

Curve RAMP-D1  
 PI = 11+04.53  
 DELTA = 13°15'00.33" (RT)  
 D = 6°21'58"  
 T = 104.53'  
 L = 208.13'  
 R = 900.00'  
 PC = 10+00.00  
 PT = 12+08.13  
 V = 40 mph  
 e = 6.4

- LEGEND**
- Denotes Construction Limits in Cuts
  - Denotes Construction Limits in Fills
  - Denotes New Asphalt Pavement
  - Denotes Mill and Overlay
  - Denotes Demolition of Pavement
  - Denotes Guardrail (GR-2)
  - Denotes Grass Swale
  - Denotes Stormwater Management
  - Denotes Concrete Truck Apron
  - Denotes Shared Used Path - Option 1
  - Denotes Mill and Overlay - Option 2
  - Denotes Proposed R/W Right-of Way Take Eliminated

Curve LFR-3  
 PI = 88+86.62  
 DELTA = 23°12'27.40" (RT)  
 D = 6°19'52"  
 T = 185.83'  
 L = 366.57'  
 R = 905.00'  
 PC = 87+00.79  
 PT = 90+67.35  
 V = 35 mph  
 e = 2.0 ULS

Curve TRAV WAY1  
 PI = 10+46.77  
 DELTA = 13°54'56.58" (LT)  
 D = 28°38'52"  
 T = 24.41'  
 L = 48.58'  
 R = 200.00'  
 PC = 10+22.37  
 PT = 10+70.94

STATE BOARD FOR COMMUNITY COLLEGES  
 DB 789 PG 1738  
 DB 610 PG 1114  
 50.0000 AC.  
 GPIN 6983-72-7858

DAMON G. STARK  
 AND CAROLYN Y. BLACKWELL-STARK  
 DB 921 PG 906  
 DB 595 PG 28  
 1.2694 AC.  
 GPIN 6983-62-6888

SCALE 0 25' 50'	PROJECT 0029-030-121	SHEET NO. 5
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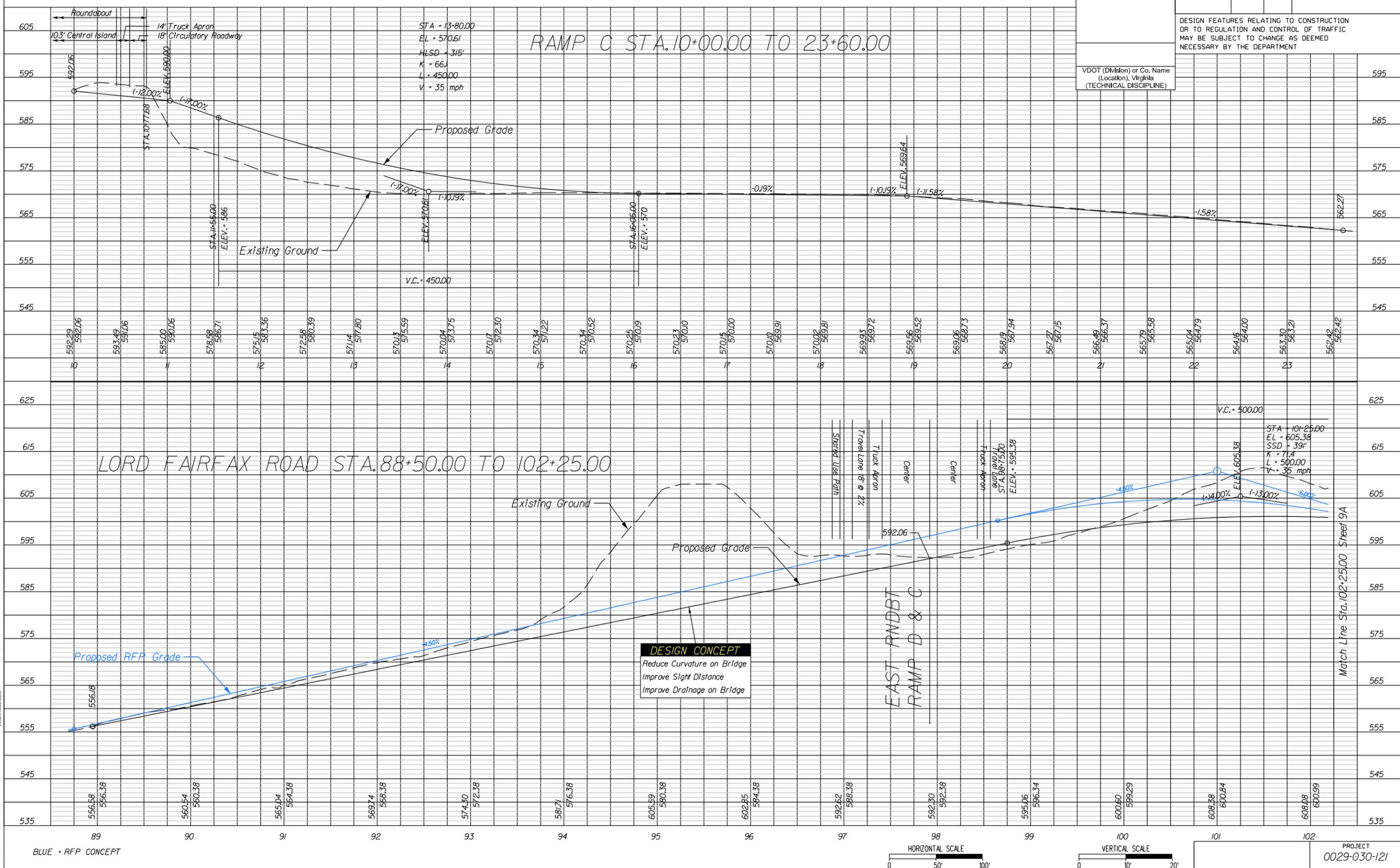


PROJECT MANAGER *Stephen Drumm P.E. (410) 316-7960 (KCI Technologies, Inc.)*  
 SURVEYED BY *Rice and Associates (703) 968-3200*  
 DESIGN SUPERVISED BY *Dion Ho P.E. (410) 891-1760 (KCI Technologies, Inc.)*  
 DESIGNED BY \_\_\_\_\_  
 CULPEPER DISTRICT DESIGN UNIT

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	29	0029-030-121 P101, R201, C501	

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

VDOT (Division) or Co. Name (Location), Virginia (TECHNICAL DISCIPLINE)



PROJECT 0029-030-121	SHEET NO. 5A
-------------------------	-----------------

PROJECT MANAGER *Stephen Drumm P.E. (410) 316-7960 (KCI Technologies, Inc.)*  
 SURVEYED BY *Rice and Associates (703) 968-3200*  
 DESIGN SUPERVISED BY *Dion Ho P.E. (410) 891-1760 (KCI Technologies, Inc.)*  
 DESIGNED BY  
 CULPEPER DISTRICT DESIGN UNIT

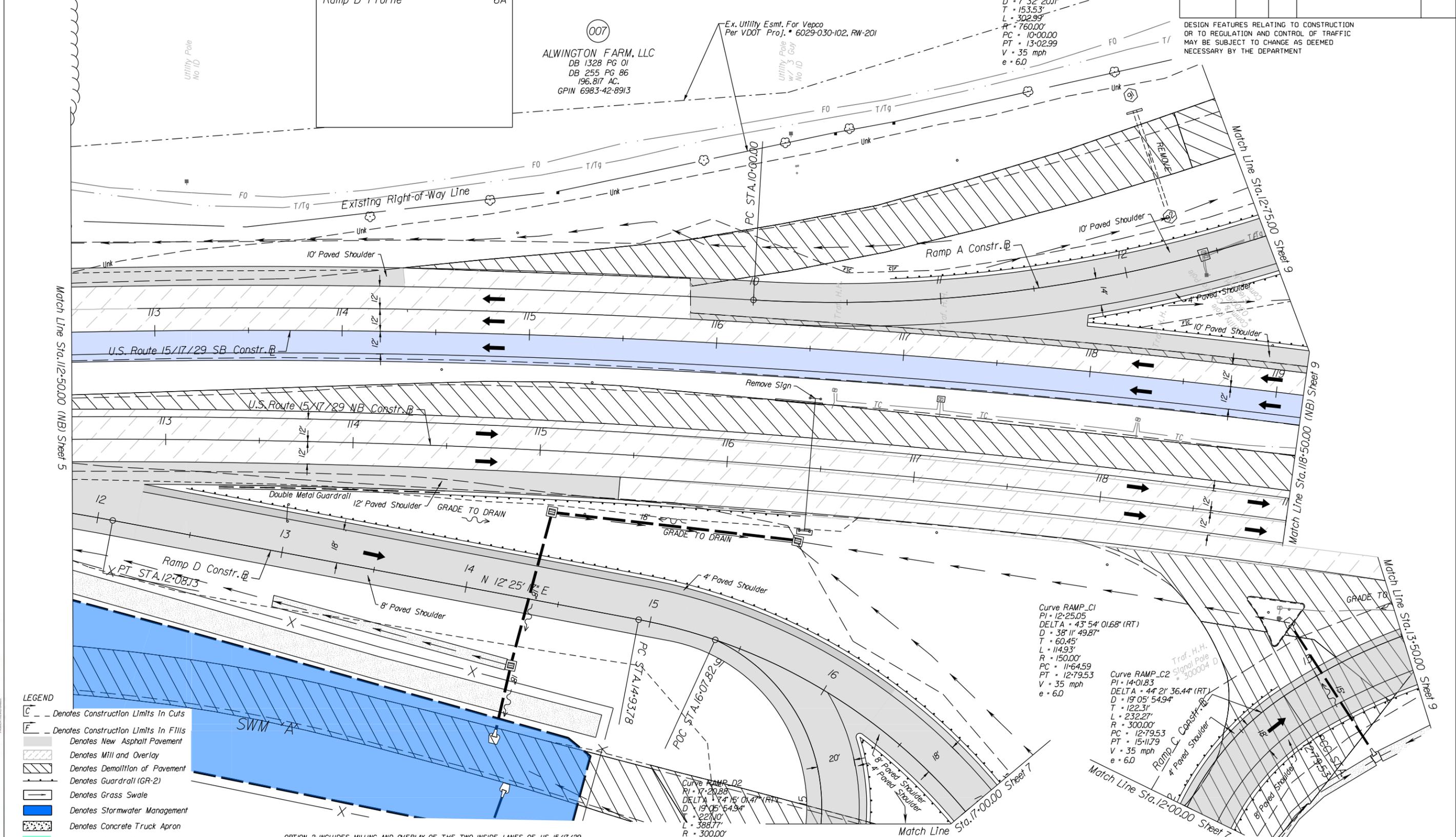
REFERENCES (PROFILES, DETAIL & DRAINAGE DESCRIPTION SHEETS, ETC.)	
Ramp D Profile	6A

007  
 ALWINGTON FARM, LLC  
 DB 1328 PG 01  
 DB 255 PG 86  
 196.817 AC.  
 GPIN 6983-42-8913

Curve RAMP\_A1  
 PI = 11+53.53  
 DELTA = 22° 50' 30.96" (LT)  
 D = 7° 32' 20.11"  
 T = 153.53'  
 L = 302.99'  
 R = 760.00'  
 PC = 10+00.00  
 PT = 13+02.99  
 V = 35 mph  
 e = 6.0

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	29	0029-030-121 P101, R201, C501	

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



Curve RAMP\_C1  
 PI = 12+25.05  
 DELTA = 43° 54' 01.68" (RT)  
 D = 38° 11' 49.87"  
 T = 60.45'  
 L = 114.93'  
 R = 150.00'  
 PC = 11+64.59  
 PT = 12+79.53  
 V = 35 mph  
 e = 6.0

Curve RAMP\_C2  
 PI = 14+01.83  
 DELTA = 44° 21' 36.44" (RT)  
 D = 19° 05' 54.94"  
 T = 122.31'  
 L = 232.27'  
 R = 300.00'  
 PC = 12+79.53  
 PT = 15+11.79  
 V = 35 mph  
 e = 6.0

Curve RAMP\_D2  
 PI = 17+20.88  
 DELTA = 17° 41' 06.47" (RT)  
 D = 19° 05' 54.94"  
 T = 221.10'  
 L = 388.77'  
 R = 300.00'  
 PC = 14+93.78  
 PT = 18+82.56  
 V = 35 mph  
 e = 6.0

- LEGEND**
- Denotes Construction Limits in Cuts
  - Denotes Construction Limits in Fills
  - Denotes New Asphalt Pavement
  - Denotes Mill and Overlay
  - Denotes Demolition of Pavement
  - Denotes Guardrail (GR-2)
  - Denotes Grass Swale
  - Denotes Stormwater Management
  - Denotes Concrete Truck Apron
  - Denotes Shared Used Path - Option 1
  - Denotes Mill and Overlay - Option 2
  - Denotes Proposed RFP Right-of Way Take Eliminated

OPTION 2: INCLUDES MILLING AND OVERLAY OF THE TWO INSIDE LANES OF US 15/17/29. THE ASPHALT MILLING AND REPLACEMENT WORK INCLUDED IN OPTION 2 EXTENDS ALONG THE PROJECT LIMITS FOR US 15/17/29 (APPROXIMATELY STA. 103+63 TO STA. 132+32 FOR THE NORTHBOUND LANES AND STA. 104+40 TO STA. 135+75 IN THE SOUTHBOUND DIRECTION).

SCALE 0 25' 50'	PROJECT 0029-030-121	SHEET NO. 6
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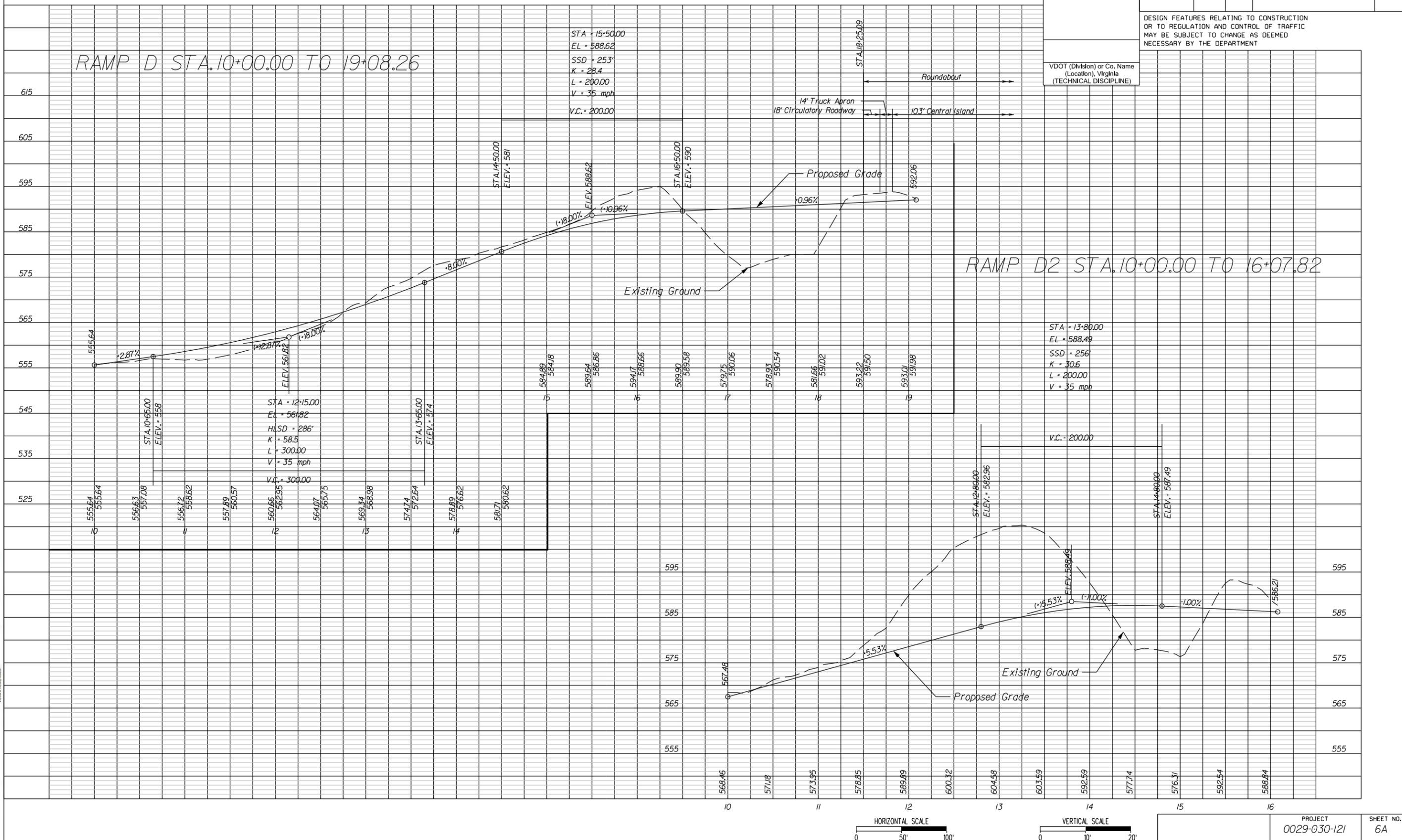


PROJECT MANAGER *Stephen Drumm P.E. (410) 316-7960 (KCI Technologies, Inc.)*  
 SURVEYED BY *Rice and Associates (703) 968-3200*  
 DESIGN SUPERVISED BY *Dion Ho P.E. (410) 891-1760 (KCI Technologies, Inc.)*  
 DESIGNED BY \_\_\_\_\_  
 CULPEPER DISTRICT DESIGN UNIT

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	29	0029-030-121 P101, R201, C501	

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

VDOT (Division) or Co. Name (Location), Virginia (TECHNICAL DISCIPLINE)



PROJECT MANAGER *Stephen Drumm P.E. (410) 316-7960 (KCI Technologies, Inc.)*  
 SURVEYED BY *Rice and Associates (703) 968-3200*  
 DESIGN SUPERVISED BY *Dion Ho P.E. (410) 891-1760 (KCI Technologies, Inc.)*  
 DESIGNED BY \_\_\_\_\_  
 CULPEPER DISTRICT DESIGN UNIT

REFERENCES (PROFILES, DETAIL & DRAINAGE DESCRIPTION SHEETS, ETC.)	
Ramp D-2 Profile	7A

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	29	0029-030-121 P101, R201, C501	

OPTION 1: INCLUDES THE CONSTRUCTION OF THE ENTIRE LENGTH OF THE SHARED USE PATH, EXCEPT FOR THE PORTION OF THE SHARED USE PATH LOCATED ON THE BRIDGE STRUCTURE, WHICH IS A BASE SCOPE ITEM. THE DESIGN OF THE ENTIRE LENGTH OF THE SHARED USE PATH IS ALSO A BASE SCOPE ITEM AND SHALL BE DEPICTED ON THE OFFEROR'S TECHNICAL PROPOSAL. THE APPROXIMATE LENGTH OF 8-FOOT WIDE SHARED USE PATH INCLUDED IN OPTION 1 IS 1,750 FEET.

OPTION 2: INCLUDES MILLING AND OVERLAY OF THE TWO INSIDE LANES OF US 15/17/29. THE ASPHALT MILLING AND REPLACEMENT WORK INCLUDED IN OPTION 2 EXTENDS ALONG THE PROJECT LIMITS FOR US 15/17/29 (APPROXIMATELY STA. 103+63 TO STA. 132+32 FOR THE NORTHBOUND LANES AND STA. 104+40 TO STA. 135+75 IN THE SOUTHBOUND DIRECTION).

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

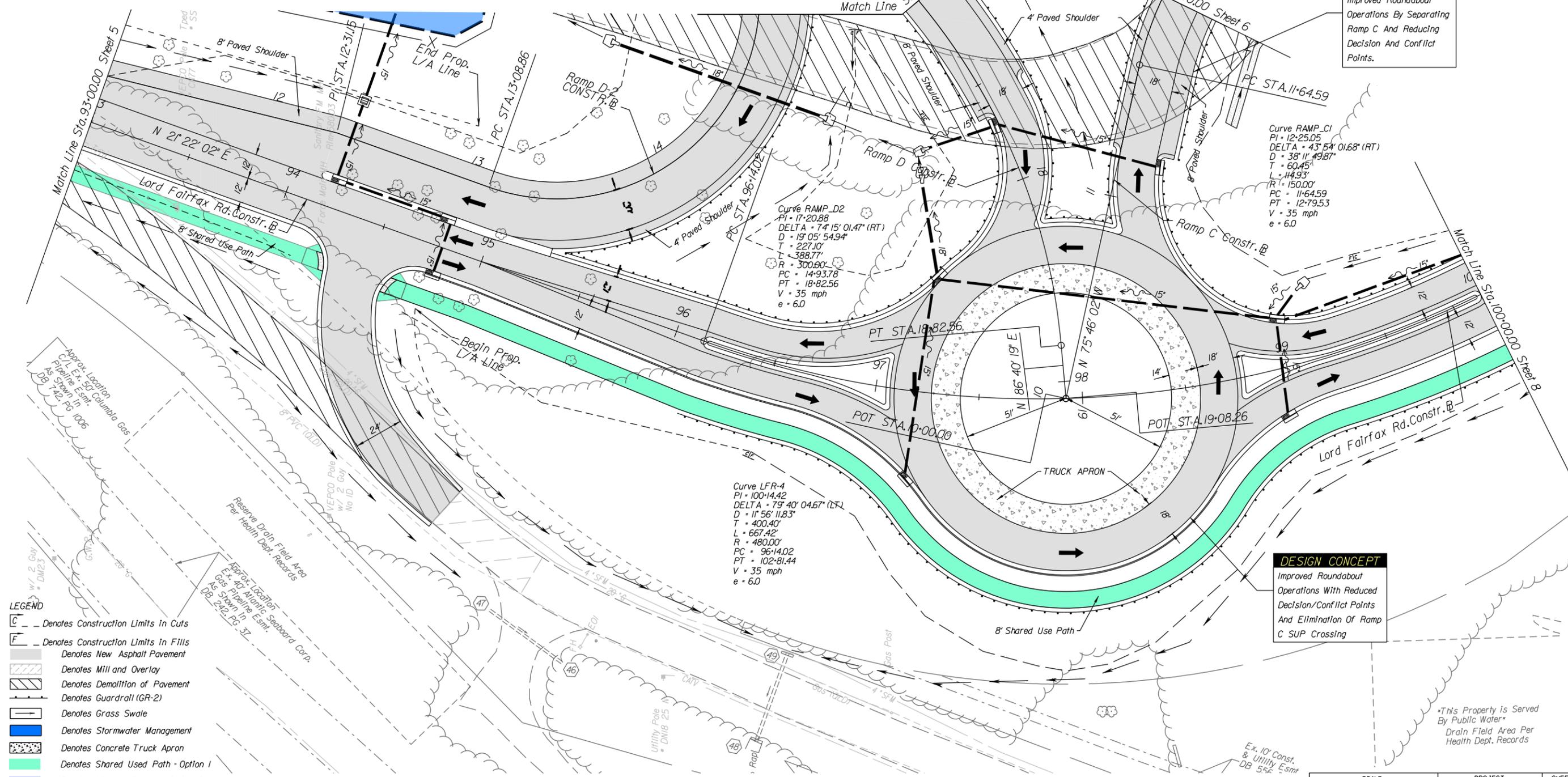
**DESIGN CONCEPT**

Improved Roundabout Operations By Separating Ramp C And Reducing Decision And Conflict Points.

Curve RAMP\_C1  
 PI = 12+25.05  
 DELTA = 43° 54' 01.68" (RT)  
 D = 38° 11' 49.87"  
 T = 60.45'  
 L = 114.93'  
 R = 150.00'  
 PC = 11+64.59  
 PT = 12+79.53  
 V = 35 mph  
 e = 6.0

Curve RAMP\_D2  
 PI = 17+20.88  
 DELTA = 74° 15' 01.47" (RT)  
 D = 19° 05' 54.94"  
 T = 227.10'  
 L = 388.77'  
 R = 300.60'  
 PC = 14+93.78  
 PT = 18+82.56  
 V = 35 mph  
 e = 6.0

Curve LFR-4  
 PI = 100+14.42  
 DELTA = 79° 40' 04.67" (LT)  
 D = 11° 56' 11.83"  
 T = 400.40'  
 L = 667.42'  
 R = 480.00'  
 PC = 96+14.02  
 PT = 102+81.44  
 V = 35 mph  
 e = 6.0



**DESIGN CONCEPT**

Improved Roundabout Operations With Reduced Decision/Conflict Points And Elimination Of Ramp C SUP Crossing

\*This Property is Served By Public Water\*  
 Drain Field Area Per Health Dept. Records

- LEGEND**
- C - Denotes Construction Limits in Cuts
  - F - Denotes Construction Limits in Fills
  - Denotes New Asphalt Pavement
  - Denotes Mill and Overlay
  - Denotes Demolition of Pavement
  - Denotes Guardrail (GR-2)
  - Denotes Grass Swale
  - Denotes Stormwater Management
  - Denotes Concrete Truck Apron
  - Denotes Shared Used Path - Option 1
  - Denotes Mill and Overlay - Option 2
  - Denotes Proposed RFP Right-of Way Take Eliminated

SCALE 0 25' 50'	PROJECT 0029-030-121	SHEET NO. 7
--------------------	-------------------------	----------------



PROJECT MANAGER *Stephen Drumm P.E. (410) 316-7960 (KCI Technologies, Inc.)*  
 SURVEYED BY *Rice and Associates (703) 968-3200*  
 DESIGN SUPERVISED BY *Dion Ho P.E. (410) 891-1760 (KCI Technologies, Inc.)*  
 DESIGNED BY \_\_\_\_\_  
 CULPEPER DISTRICT DESIGN UNIT

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	29	0029-030-121 P101, R201, C501	

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

**OPTION 1:** INCLUDES THE CONSTRUCTION OF THE ENTIRE LENGTH OF THE SHARED USE PATH, EXCEPT FOR THE PORTION OF THE SHARED USE PATH LOCATED ON THE BRIDGE STRUCTURE, WHICH IS A BASE SCOPE ITEM. THE DESIGN OF THE ENTIRE LENGTH OF THE SHARED USE PATH IS ALSO A BASE SCOPE ITEM AND SHALL BE DEPICTED ON THE OFFEROR'S TECHNICAL PROPOSAL. THE APPROXIMATE LENGTH OF 8-FOOT WIDE SHARED USE PATH INCLUDED IN OPTION 1 IS 1750 FEET.

**OPTION 2:** INCLUDES MILLING AND OVERLAY OF THE TWO INSIDE LANES OF US 15/17/29. THE ASPHALT MILLING AND REPLACEMENT WORK INCLUDED IN OPTION 2 EXTENDS ALONG THE PROJECT LIMITS FOR US 15/17/29 (APPROXIMATELY STA. 103+63 TO STA. 132+32 FOR THE NORTHBOUND LANES AND STA. 104+40 TO STA. 135+75 IN THE SOUTHBOUND DIRECTION).

**Curve LFR-4**  
 PI = 100+14.42  
 DELTA = 79° 40' 04.67" (RT)  
 D = 11' 56" 11.83"  
 T = 400.40'  
 L = 667.42'  
 R = 480.00'  
 PC = 96+14.02  
 PT = 102+81.44  
 V = 35 mph  
 e = 6.0

**DESIGN CONCEPT**  
 Eliminating Of Ramp C  
 Retaining Walls Avoided  
 Clearing Tree Buffer

**DESIGN CONCEPT**  
 Removing Retaining Walls  
 Avoided Proposed Temp.  
 Construction Easement

**Curve RAMP\_C3**  
 PI = 19+42.29  
 DELTA = 10° 47' 18.90" (RT)  
 D = 1' 15" 24.34"  
 T = 430.49'  
 L = 858.44'  
 R = 4559.00'  
 PC = 15+11.79  
 PT = 23+70.24  
 V = 35 mph  
 e = 6.0

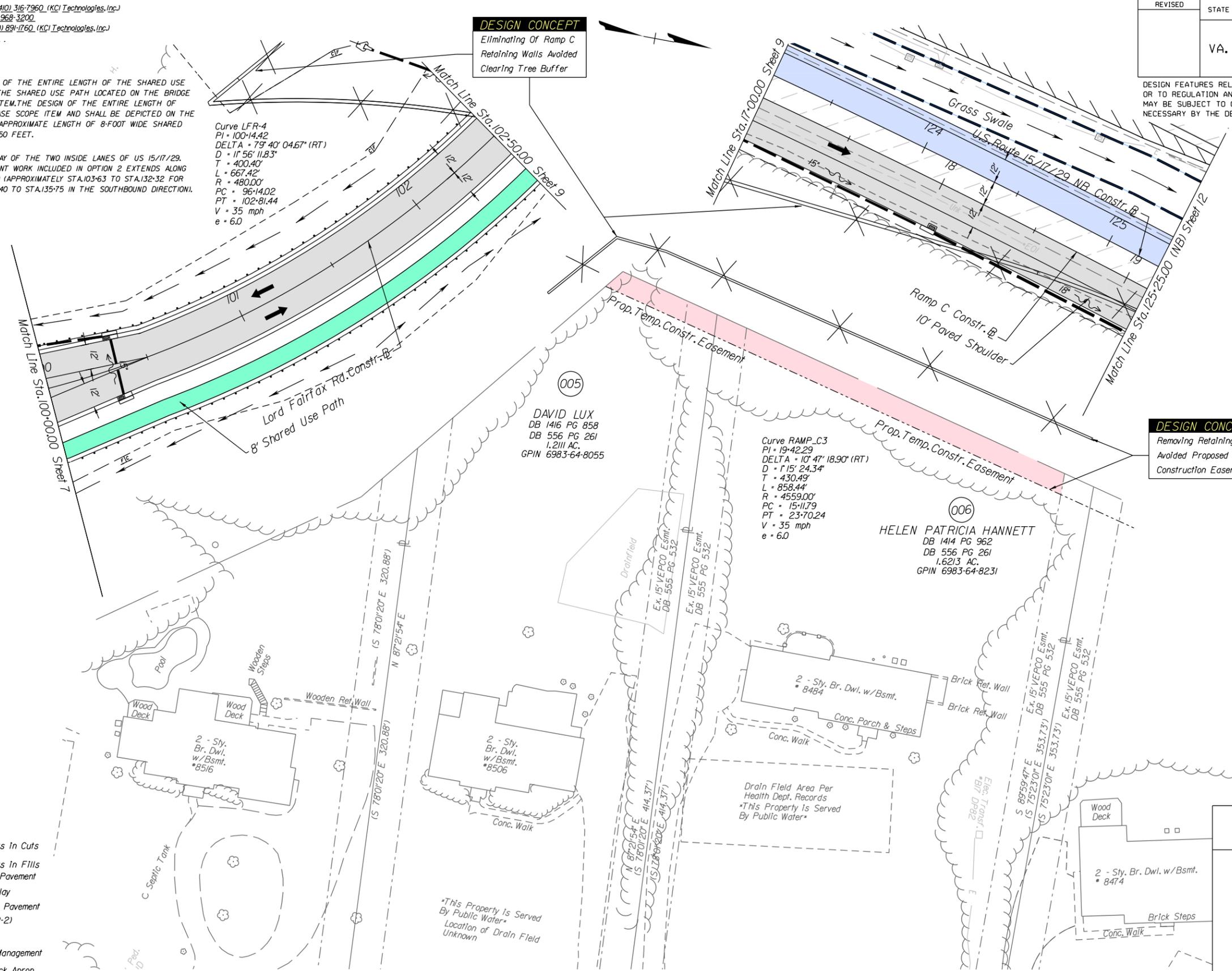
005  
 DAVID LUX  
 DB 1416 PG 858  
 DB 556 PG 261  
 1.2111 AC.  
 GPIN 6983-64-8055

006  
 HELEN PATRICIA HANNETT  
 DB 1414 PG 962  
 DB 556 PG 261  
 1.6213 AC.  
 GPIN 6983-64-8231

**LEGEND**

- Denotes Construction Limits in Cuts
- Denotes Construction Limits in Fills
- Denotes New Asphalt Pavement
- Denotes Mill and Overlay
- Denotes Demolition of Pavement
- Denotes Guardrail (GR-2)
- Denotes Grass Swale
- Denotes Stormwater Management
- Denotes Concrete Truck Apron
- Denotes Shared Used Path - Option 1
- Denotes Mill and Overlay - Option 2
- Denotes Proposed RFP Right-of Way Take Eliminated

WALLACE MONTGOMERY  
 KCI  
 ALLAN MYERS



**REFERENCES**  
 (PROFILES, DETAIL & DRAINAGE DESCRIPTION SHEETS, ETC.)

SCALE 0 25' 50'

PROJECT 0029-030-121

SHEET NO. 8

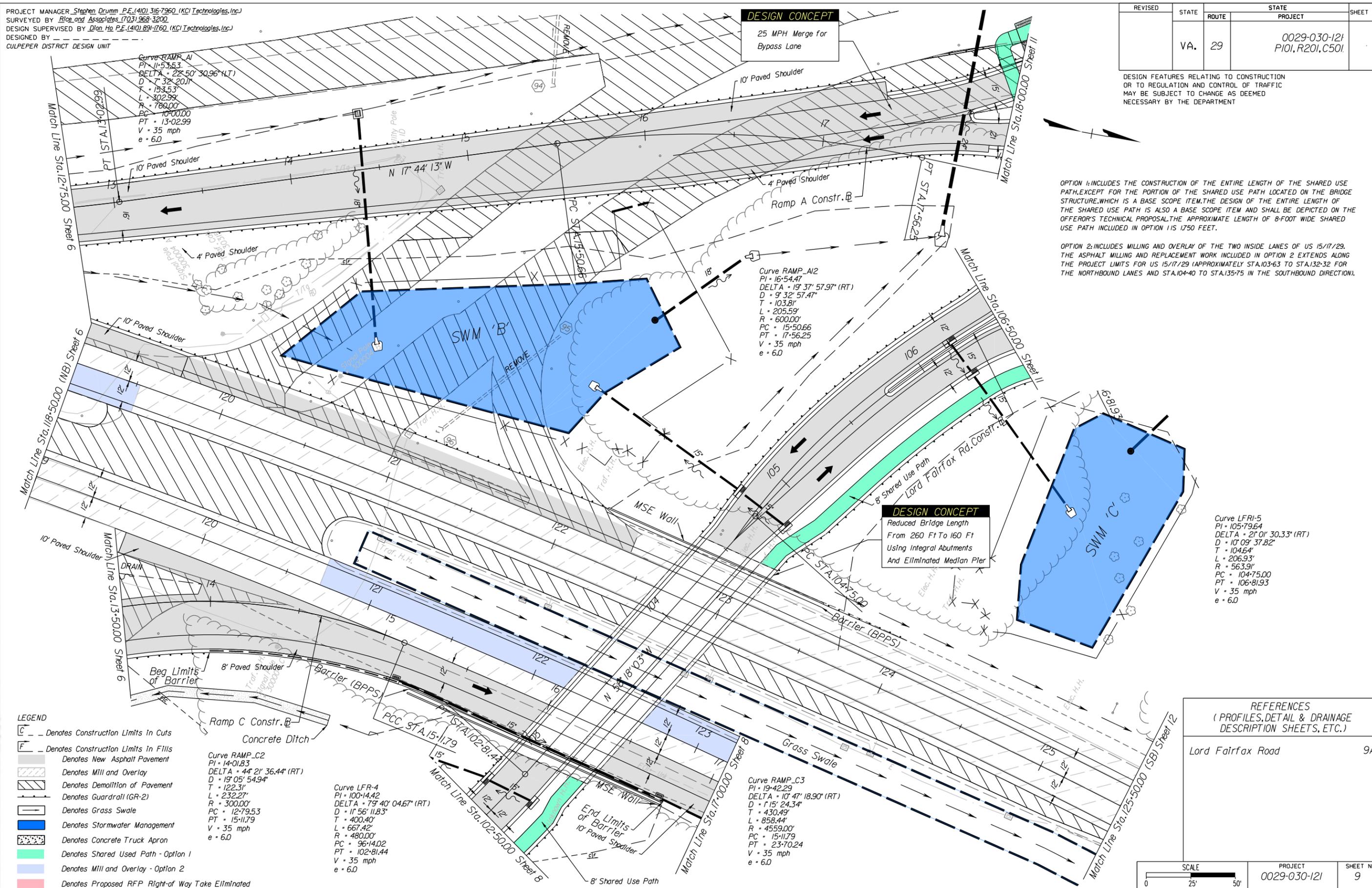
PROJECT MANAGER Stephen Drumm P.E. (410) 316-7960 (KCI Technologies, Inc.)  
 SURVEYED BY Rice and Associates (703) 968-3200  
 DESIGN SUPERVISED BY Dion Ho P.E. (410) 891-1760 (KCI Technologies, Inc.)  
 DESIGNED BY  
 CULPEPER DISTRICT DESIGN UNIT

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	29	0029-030-121 P101, R201, C501	

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

OPTION 1: INCLUDES THE CONSTRUCTION OF THE ENTIRE LENGTH OF THE SHARED USE PATH, EXCEPT FOR THE PORTION OF THE SHARED USE PATH LOCATED ON THE BRIDGE STRUCTURE, WHICH IS A BASE SCOPE ITEM. THE DESIGN OF THE ENTIRE LENGTH OF THE SHARED USE PATH IS ALSO A BASE SCOPE ITEM AND SHALL BE DEPICTED ON THE OFFEROR'S TECHNICAL PROPOSAL. THE APPROXIMATE LENGTH OF 8-FOOT WIDE SHARED USE PATH INCLUDED IN OPTION 1 IS 1750 FEET.

OPTION 2: INCLUDES MILLING AND OVERLAY OF THE TWO INSIDE LANES OF US 15/17/29. THE ASPHALT MILLING AND REPLACEMENT WORK INCLUDED IN OPTION 2 EXTENDS ALONG THE PROJECT LIMITS FOR US 15/17/29 (APPROXIMATELY STA. 103+63 TO STA. 132+32 FOR THE NORTHBOUND LANES AND STA. 104+40 TO STA. 135+75 IN THE SOUTHBOUND DIRECTION).



**LEGEND**

	- Denotes Construction Limits in Cuts
	- Denotes Construction Limits in Fills
	Denotes New Asphalt Pavement
	Denotes Mill and Overlay
	Denotes Demolition of Pavement
	Denotes Guardrail (GR-2)
	Denotes Grass Swale
	Denotes Stormwater Management
	Denotes Concrete Truck Apron
	Denotes Shared Used Path - Option 1
	Denotes Mill and Overlay - Option 2
	Denotes Proposed RFP Right-of-Way Take Eliminated

Curve RAMP\_C2  
 PI = 14+01.83  
 DELTA = 44°21'36.44" (RT)  
 D = 19°05'54.94"  
 T = 122.31'  
 L = 232.27'  
 R = 300.00'  
 PC = 12+79.53  
 PT = 15+11.79  
 V = 35 mph  
 e = 6.0

Curve LFR-4  
 PI = 100+14.42  
 DELTA = 79°40'04.67" (RT)  
 D = 1°56'11.83"  
 T = 400.40'  
 L = 667.42'  
 R = 480.00'  
 PC = 96+14.02  
 PT = 102+81.44  
 V = 35 mph  
 e = 6.0

Curve RAMP\_C3  
 PI = 19+42.29  
 DELTA = 10°47'18.90" (RT)  
 D = 1°15'24.34"  
 T = 430.49'  
 L = 858.44'  
 R = 4559.00'  
 PC = 15+11.79  
 PT = 23+70.24  
 V = 35 mph  
 e = 6.0

**REFERENCES**  
 (PROFILES, DETAIL & DRAINAGE DESCRIPTION SHEETS, ETC.)

Lord Fairfax Road	9A
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SCALE 0 25' 50'	PROJECT 0029-030-121	SHEET NO. 9
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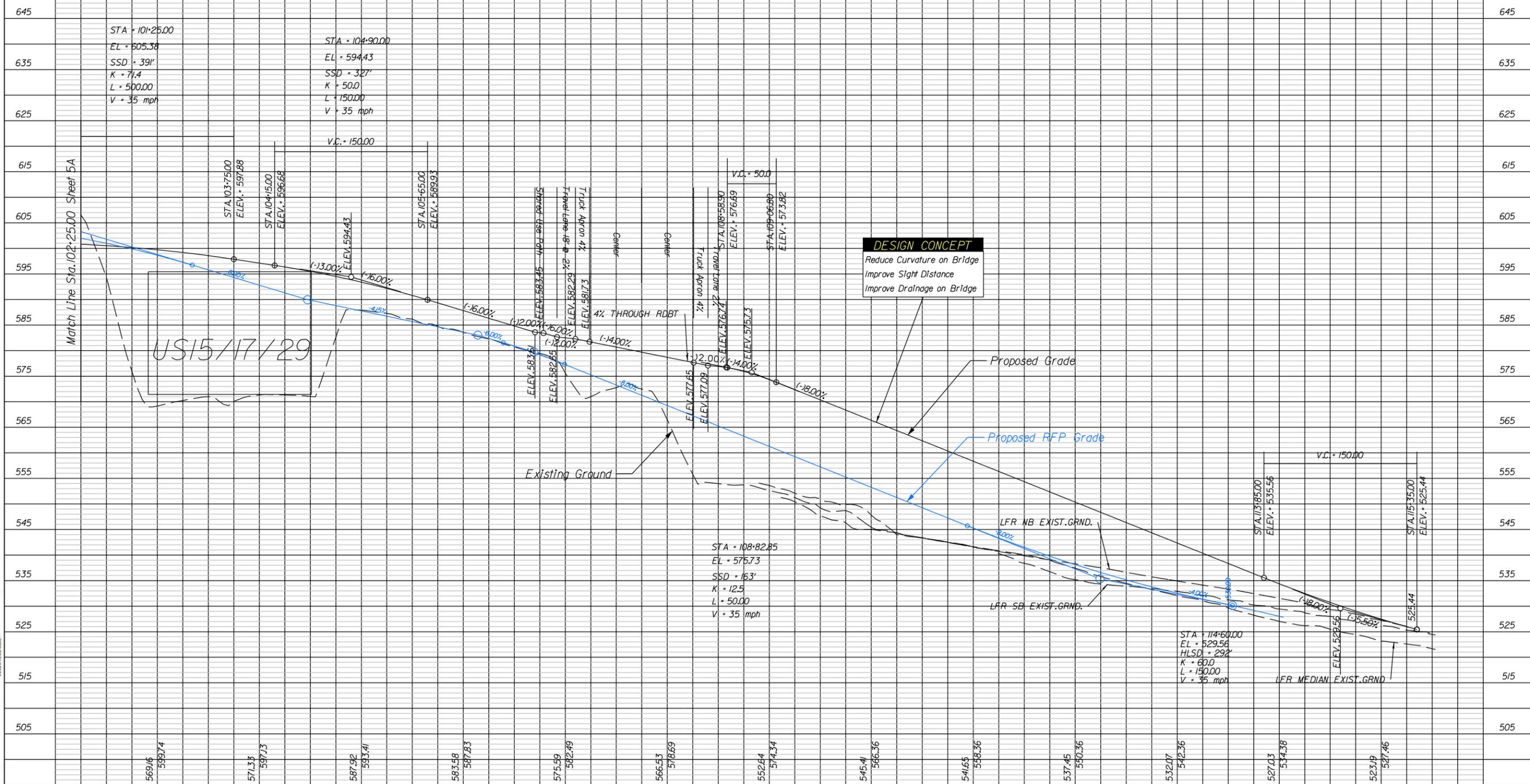
PROJECT MANAGER *Stephen Drumm P.E. (410) 316-7960 (KCI Technologies, Inc.)*  
 SURVEYED BY *Rice and Associates (703) 968-3200*  
 DESIGN SUPERVISED BY *Dion Ho P.E. (410) 891-1760 (KCI Technologies, Inc.)*  
 DESIGNED BY \_\_\_\_\_  
 CULPEPER DISTRICT DESIGN UNIT

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	29	0029-030-121 P101, R201, C501	

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

VDOT (Division) or Co. Name (Location), Virginia (TECHNICAL DISCIPLINE)

# LORD FAIRFAX ROAD STA. 102+25.00 TO 115+50.00



103 104 105 106 107 108 109 110 111 112 113 114 115  
 BLUE - RFP CONCEPT



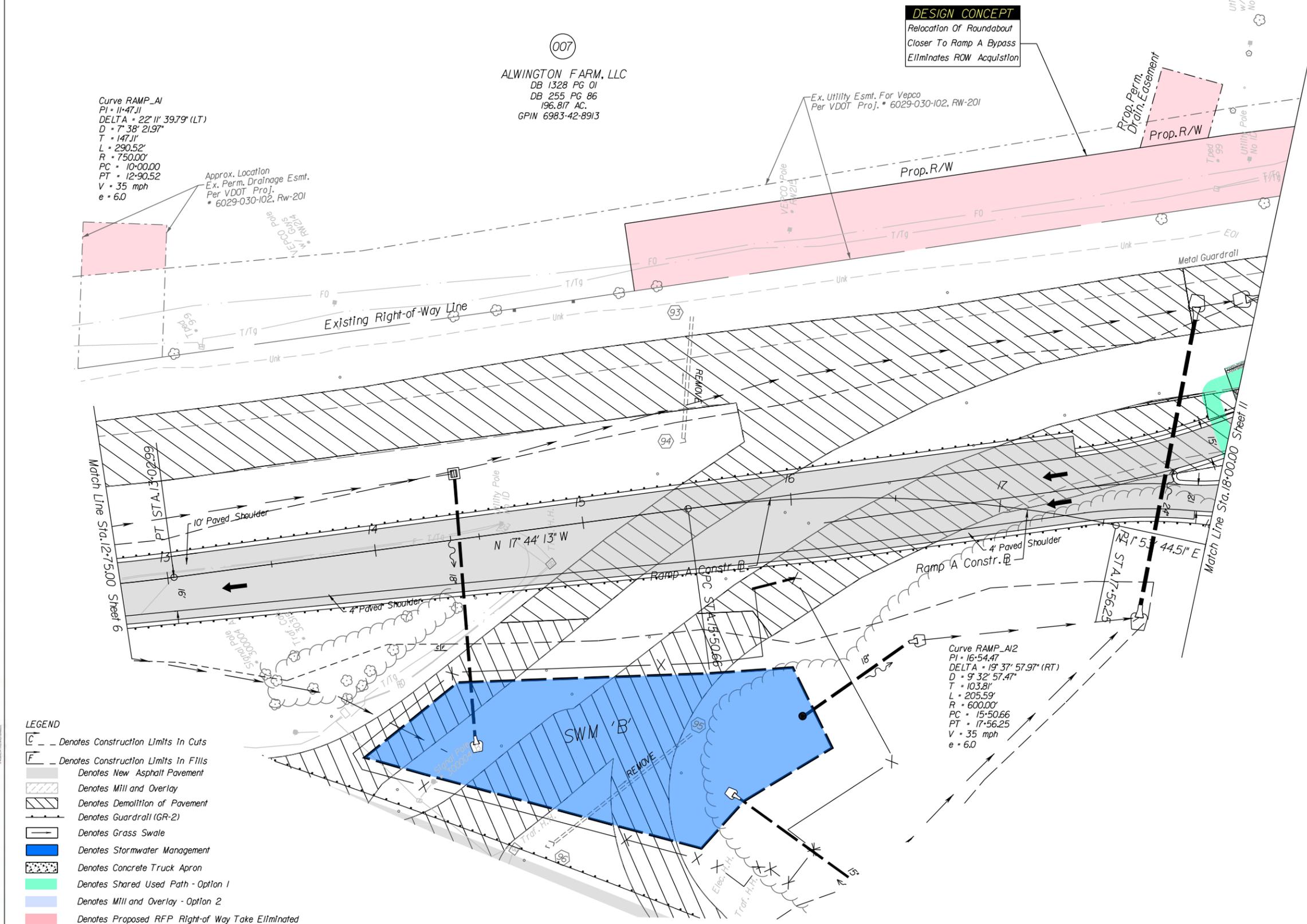
PROJECT 0029-030-121 545	SHEET NO. 9A
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PROJECT MANAGER *Stephen Drumm P.E. (410) 316-7960 (KCI Technologies, Inc.)*  
 SURVEYED BY *Rice and Associates (703) 968-3200*  
 DESIGN SUPERVISED BY *Dion Ho P.E. (410) 891-1760 (KCI Technologies, Inc.)*  
 DESIGNED BY \_\_\_\_\_  
 CULPEPER DISTRICT DESIGN UNIT

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	29	0029-030-121 P101, R201, C501	

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



Curve RAMP\_A1  
 PI = 11+47.11  
 DELTA = 22° 11' 39.79" (LT)  
 D = 7' 38" 21.97"  
 T = 147.11'  
 L = 290.52'  
 R = 750.00'  
 PC = 10+00.00  
 PT = 12+90.52  
 V = 35 mph  
 e = 6.0

007  
 ALWINGTON FARM, LLC  
 DB 1328 PG 01  
 DB 255 PG 86  
 196.817 AC.  
 GPIN 6983-42-8913

**DESIGN CONCEPT**  
 Relocation of Roundabout  
 Closer To Ramp A Bypass  
 Eliminates ROW Acquisition

Ex. Utility Esmt. For Veeco  
 Per VDOT Proj. # 6029-030-102, RW-201

Approx. Location  
 Ex. Perm. Drainage Esmt.  
 Per VDOT Proj. # 6029-030-102, Rw-201

Curve RAMP\_A2  
 PI = 16+54.47  
 DELTA = 19° 37' 57.97" (RT)  
 D = 9' 32" 57.47"  
 T = 103.81'  
 L = 205.59'  
 R = 600.00'  
 PC = 15+50.66  
 PT = 17+56.25  
 V = 35 mph  
 e = 6.0

- LEGEND**
- Denotes Construction Limits in Cuts
  - Denotes Construction Limits in Fills
  - Denotes New Asphalt Pavement
  - Denotes Mill and Overlay
  - Denotes Demolition of Pavement
  - Denotes Guardrail (GR-2)
  - Denotes Grass Swale
  - Denotes Stormwater Management
  - Denotes Concrete Truck Apron
  - Denotes Shared Used Path - Option 1
  - Denotes Mill and Overlay - Option 2
  - Denotes Proposed RFP Right-of Way Take Eliminated

**REFERENCES**  
 (PROFILES, DETAIL & DRAINAGE DESCRIPTION SHEETS, ETC.)

Ramp A Profile	10A
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SCALE 0 25' 50'	PROJECT 0029-030-121	SHEET NO. 10
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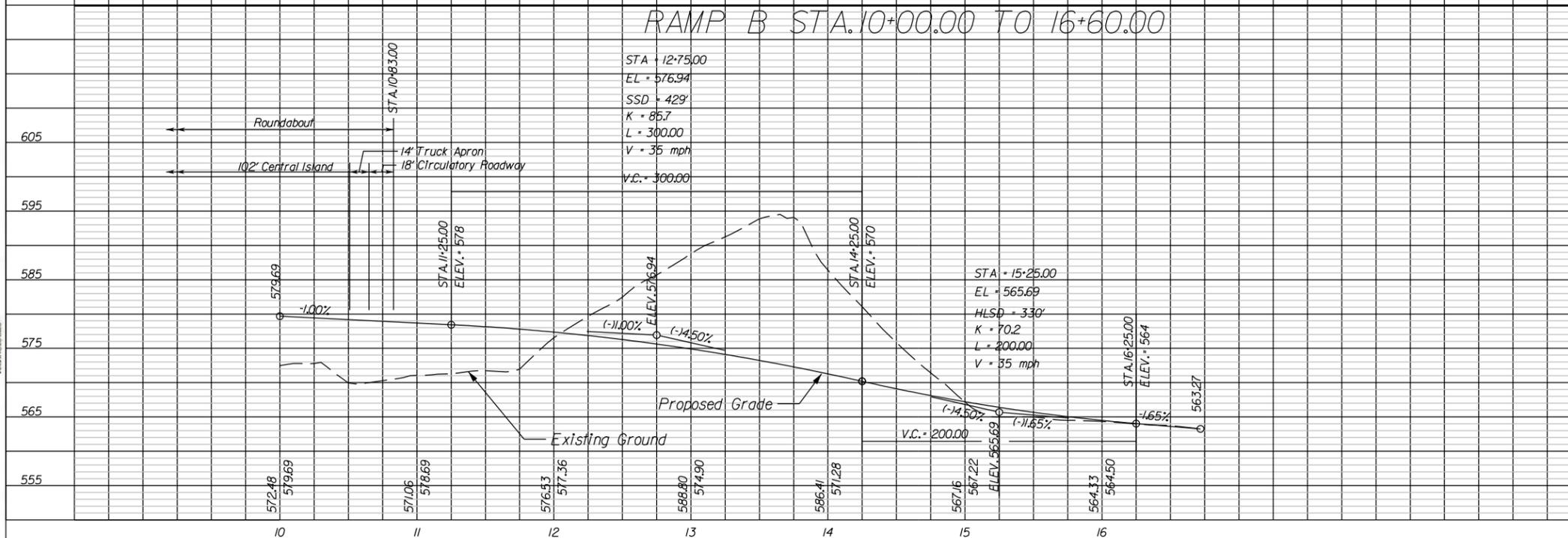
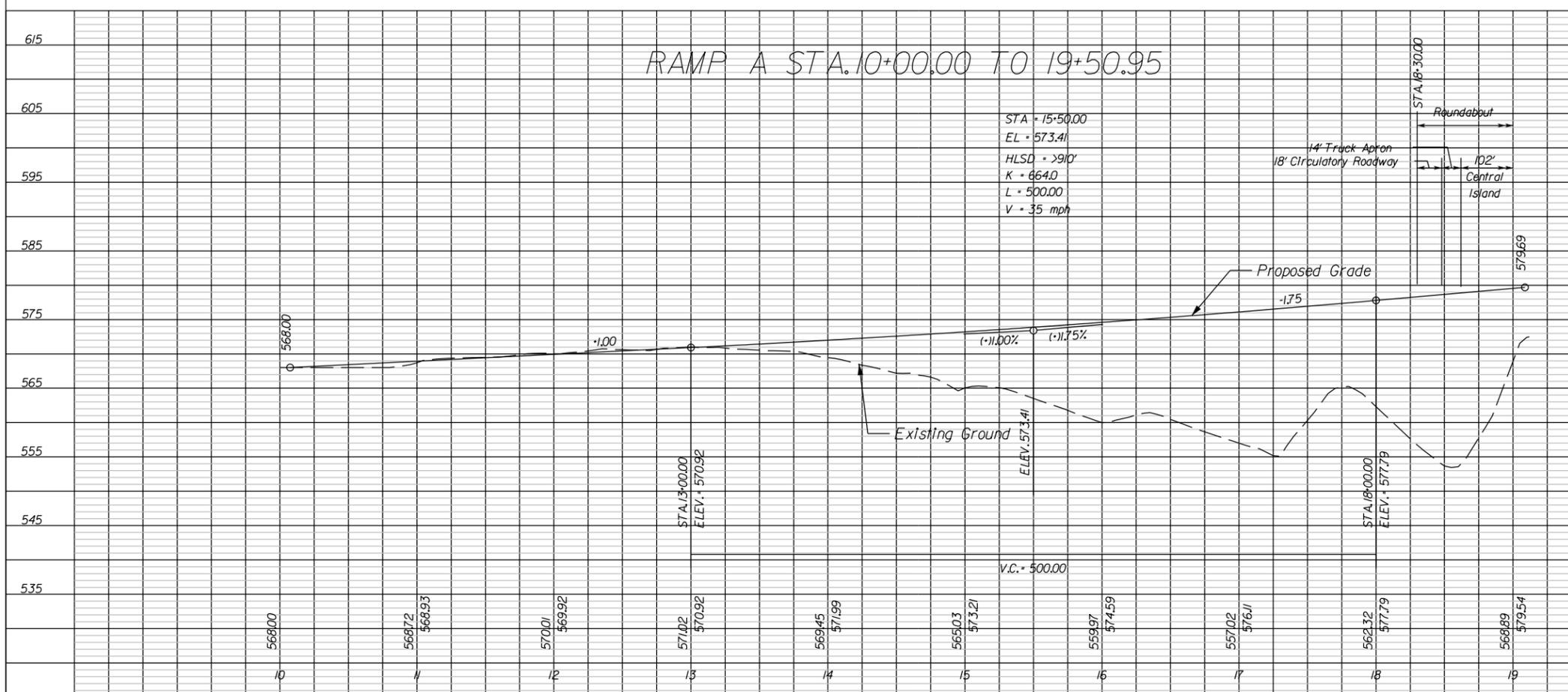


PROJECT MANAGER *Stephen Drumm P.E. (410) 316-7960 (KCI Technologies, Inc.)*  
 SURVEYED BY *Rice and Associates (703) 968-3200*  
 DESIGN SUPERVISED BY *Dion Ho P.E. (410) 891-1760 (KCI Technologies, Inc.)*  
 DESIGNED BY \_\_\_\_\_  
 CULPEPER DISTRICT DESIGN UNIT

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	29	0029-030-121 P101, R201, C501	

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

VDOT (Division) or Co. Name (Location), Virginia (TECHNICAL DISCIPLINE)



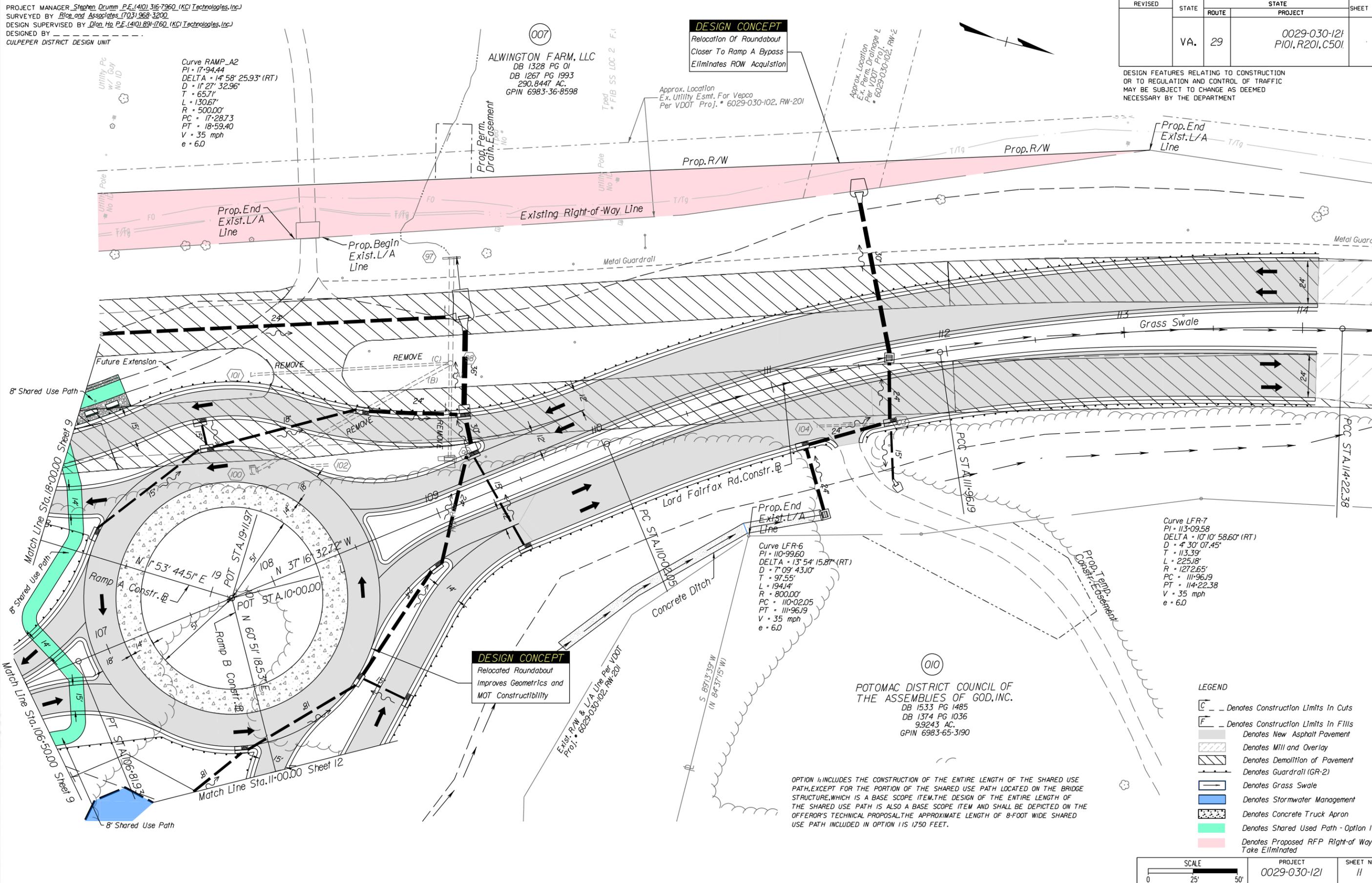
PROJECT 0029-030-121	SHEET NO. 10A
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PROJECT MANAGER *Stephen Drumm P.E. (410) 316-7960 (KCI Technologies, Inc.)*  
 SURVEYED BY *Rice and Associates (703) 968-3200*  
 DESIGN SUPERVISED BY *Dion Ho P.E. (410) 891-1760 (KCI Technologies, Inc.)*  
 DESIGNED BY \_\_\_\_\_  
 CULPEPER DISTRICT DESIGN UNIT

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	29	0029-030-121 P101, R201, C501	

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



**DESIGN CONCEPT**  
 Relocated Roundabout  
 Improves Geometrics and  
 MOT Constructibility

**DESIGN CONCEPT**  
 Relocation Of Roundabout  
 Closer To Ramp A Bypass  
 Eliminates ROW Acquisition

- LEGEND**
- C Denotes Construction Limits In Cuts
  - F Denotes Construction Limits In Fills
  - Denotes New Asphalt Pavement
  - Denotes Mill and Overlay
  - Denotes Demolition of Pavement
  - Denotes Guardrail (GR-2)
  - Denotes Grass Swale
  - Denotes Stormwater Management
  - Denotes Concrete Truck Apron
  - Denotes Shared Used Path - Option I
  - Denotes Proposed RFP Right of Way Take Eliminated

OPTION I INCLUDES THE CONSTRUCTION OF THE ENTIRE LENGTH OF THE SHARED USE PATH, EXCEPT FOR THE PORTION OF THE SHARED USE PATH LOCATED ON THE BRIDGE STRUCTURE, WHICH IS A BASE SCOPE ITEM. THE DESIGN OF THE ENTIRE LENGTH OF THE SHARED USE PATH IS ALSO A BASE SCOPE ITEM AND SHALL BE DEPICTED ON THE OFFEROR'S TECHNICAL PROPOSAL. THE APPROXIMATE LENGTH OF 8-FOOT WIDE SHARED USE PATH INCLUDED IN OPTION I IS 1750 FEET.

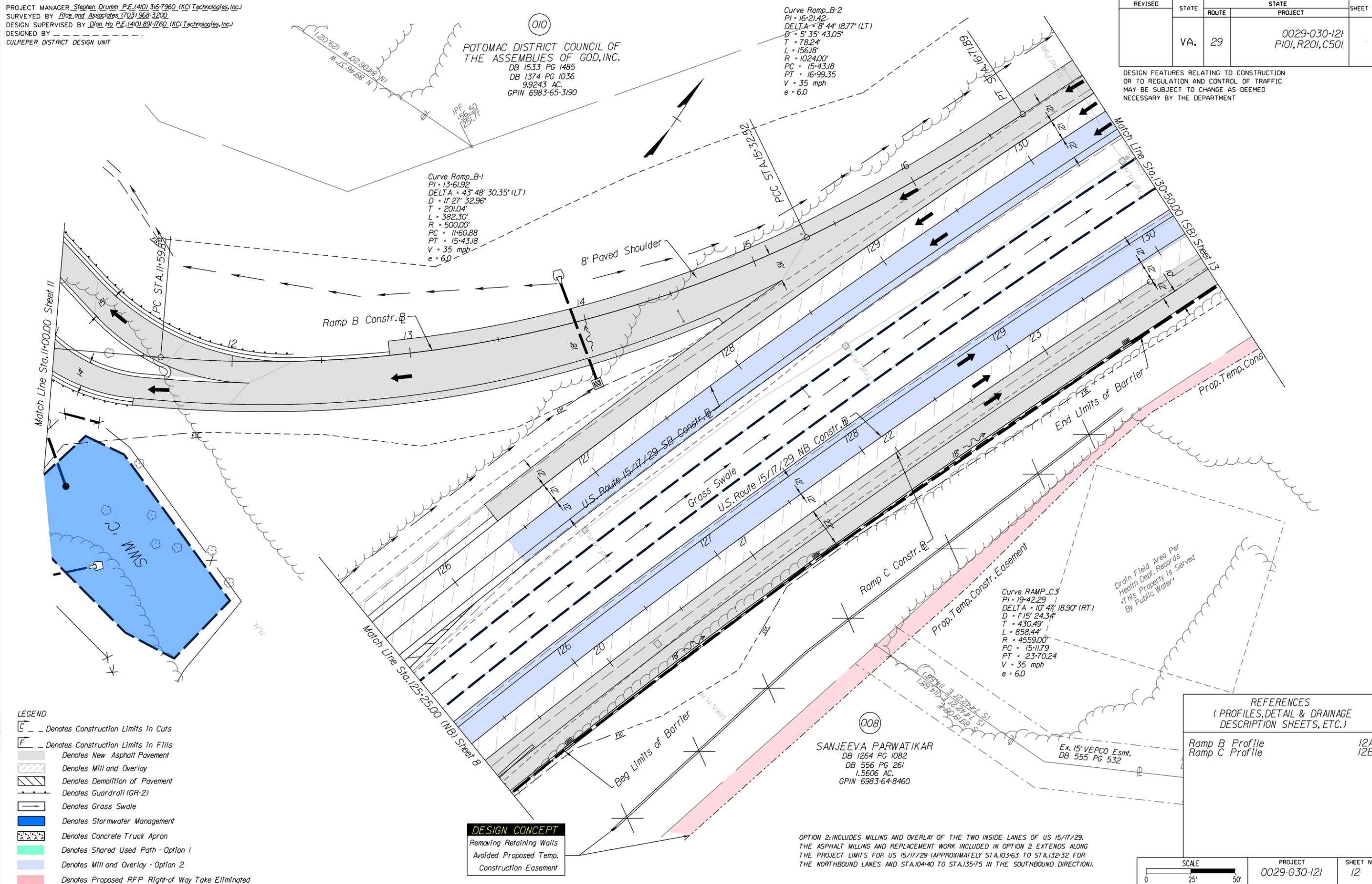
SCALE 0 25' 50'	PROJECT 0029-030-121	SHEET NO. 11
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PROJECT MANAGER Stephen Drumm P.E. (410) 316-7960 (KCI Technologies, Inc.)  
 SURVEYED BY Rice and Associates (703) 968-3200  
 DESIGN SUPERVISED BY Dion Ho P.E. (410) 891-1760 (KCI Technologies, Inc.)  
 DESIGNED BY \_\_\_\_\_  
 CULPEPER DISTRICT DESIGN UNIT

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	29	0029-030-121 P101, R201, C501	

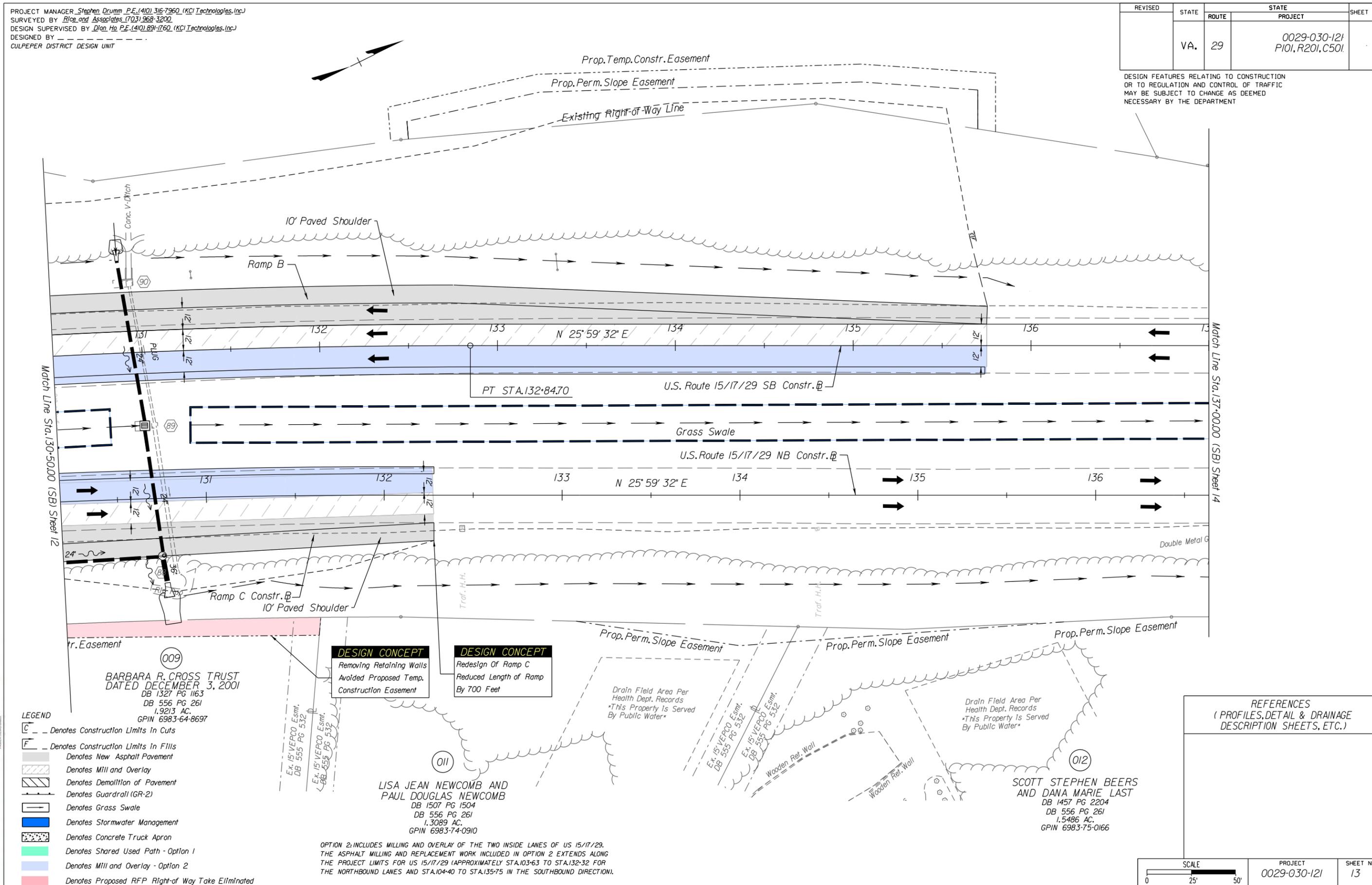
DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT



PROJECT MANAGER *Stephen Drumm P.E. (410) 316-7960 (KCI Technologies, Inc.)*  
 SURVEYED BY *Rice and Associates (703) 968-3200*  
 DESIGN SUPERVISED BY *Dion Ho P.E. (410) 891-1760 (KCI Technologies, Inc.)*  
 DESIGNED BY \_\_\_\_\_  
 CULPEPER DISTRICT DESIGN UNIT

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	29	0029-030-121 P101, R201, C501	

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



- LEGEND**
- C - Denotes Construction Limits in Cuts
  - F - Denotes Construction Limits in Fills
  - Denotes New Asphalt Pavement
  - Denotes Mill and Overlay
  - Denotes Demolition of Pavement
  - Denotes Guardrail (GR-2)
  - Denotes Grass Swale
  - Denotes Stormwater Management
  - Denotes Concrete Truck Apron
  - Denotes Shared Used Path - Option 1
  - Denotes Mill and Overlay - Option 2
  - Denotes Proposed RFP Right of Way Take Eliminated

**DESIGN CONCEPT**  
 Removing Retaining Walls  
 Avoided Proposed Temp. Construction Easement

**DESIGN CONCEPT**  
 Redesign Of Ramp C  
 Reduced Length of Ramp By 700 Feet

009  
**BARBARA R. CROSS TRUST**  
 DATED DECEMBER 3, 2001  
 DB 1327 PG 1163  
 DB 556 PG 261  
 1.9213 AC.  
 GPIN 6983-64-8697

011  
**LISA JEAN NEWCOMB AND PAUL DOUGLAS NEWCOMB**  
 DB 1507 PG 1504  
 DB 556 PG 261  
 1.3089 AC.  
 GPIN 6983-74-0910

012  
**SCOTT STEPHEN BEERS AND DANA MARIE LAST**  
 DB 1457 PG 2204  
 DB 556 PG 261  
 1.5486 AC.  
 GPIN 6983-75-0166

OPTION 2: INCLUDES MILLING AND OVERLAY OF THE TWO INSIDE LANES OF US 15/17/29. THE ASPHALT MILLING AND REPLACEMENT WORK INCLUDED IN OPTION 2 EXTENDS ALONG THE PROJECT LIMITS FOR US 15/17/29 (APPROXIMATELY STA. 103+63 TO STA. 132+32 FOR THE NORTHBOUND LANES AND STA. 104+40 TO STA. 135+75 IN THE SOUTHBOUND DIRECTION).

**REFERENCES**  
 (PROFILES, DETAIL & DRAINAGE DESCRIPTION SHEETS, ETC.)

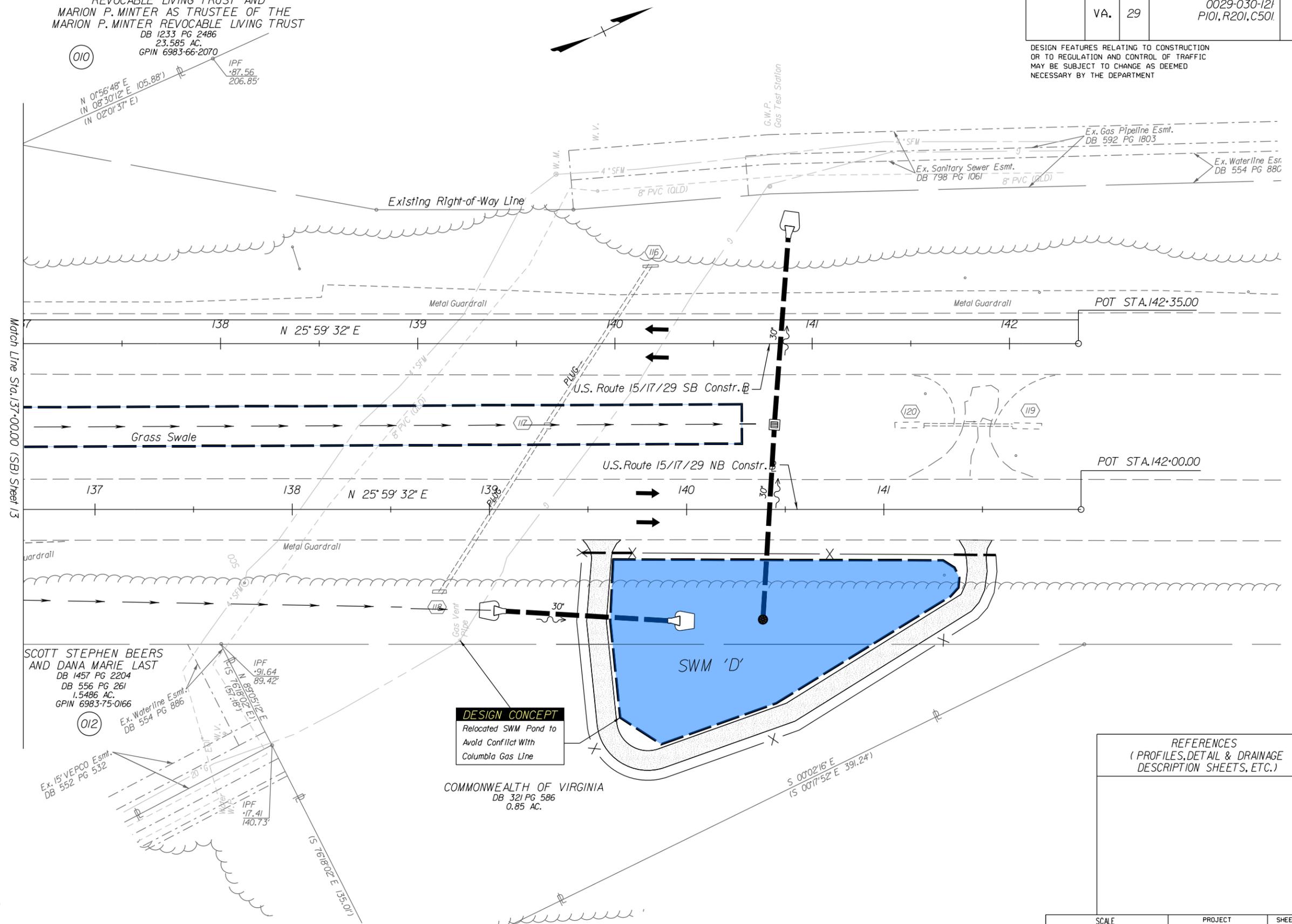
SCALE 0 25' 50'	PROJECT 0029-030-121	SHEET NO. 13
--------------------	-------------------------	-----------------

PROJECT MANAGER *Stephen Drumm P.E. (410) 316-7960 (KCI Technologies, Inc.)*  
 SURVEYED BY *Rice and Associates (703) 968-3200*  
 DESIGN SUPERVISED BY *Dion Ho P.E. (410) 891-1760 (KCI Technologies, Inc.)*  
 DESIGNED BY \_\_\_\_\_  
 CULPEPER DISTRICT DESIGN UNIT

**BILLY M. MINTER**  
 AS TRUSTEE OF THE BILLY M. MINTER  
 REVOCABLE LIVING TRUST AND  
 MARION P. MINTER AS TRUSTEE OF THE  
 MARION P. MINTER REVOCABLE LIVING TRUST  
 DB 1233 PG 2486  
 23.585 AC.  
 GPIN 6983-66-2070

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	29	0029-030-121 P101, R201, C501	

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



**SCOTT STEPHEN BEERS AND DANA MARIE LAST**  
 DB 1457 PG 2204  
 DB 556 PG 261  
 1.5486 AC.  
 GPIN 6983-75-0166

**DESIGN CONCEPT**  
 Relocated SWM Pond to Avoid Conflict With Columbia Gas Line

COMMONWEALTH OF VIRGINIA  
 DB 321 PG 586  
 0.85 AC.

- LEGEND**
- Denotes Construction Limits in Cuts
  - Denotes Construction Limits in Fills
  - Denotes New Asphalt Pavement
  - Denotes Mill and Overlay
  - Denotes Demolition of Pavement
  - Denotes Guardrail (GR-2)
  - Denotes Grass Swale
  - Denotes Stormwater Management
  - Denotes Concrete Truck Apron
  - Denotes Shared Used Path - Option 1
  - Denotes Mill and Overlay - Option 2
  - Denotes Proposed RFP Right-of Way Take Eliminated

**REFERENCES**  
 (PROFILES, DETAIL & DRAINAGE DESCRIPTION SHEETS, ETC.)

SCALE 0 25' 50'	PROJECT 0029-030-121	SHEET NO. 14
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# 4.3.2

## CONCEPTUAL STRUCTURAL PLANS



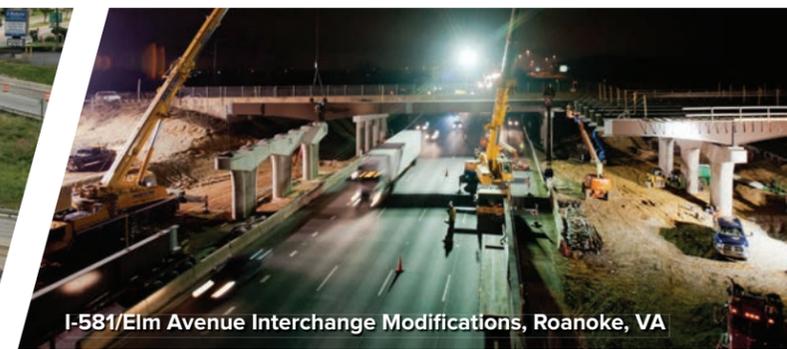
Saintsbury Drive Roundabout, Fairfax, VA



SR 29/I-276 New Interchange, Great Valley, PA



I-95/Contee Road New Interchange, Laurel, MD



I-581/Elm Avenue Interchange Modifications, Roanoke, VA

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-03-7(032)	XX	0029-030-121, B616	1
NBIS Number: 00000000XXXXX			UPC No. 77384		
Federal Oversight Code: NFO			FHWA Construction and Scour Code: X2X1-SN		

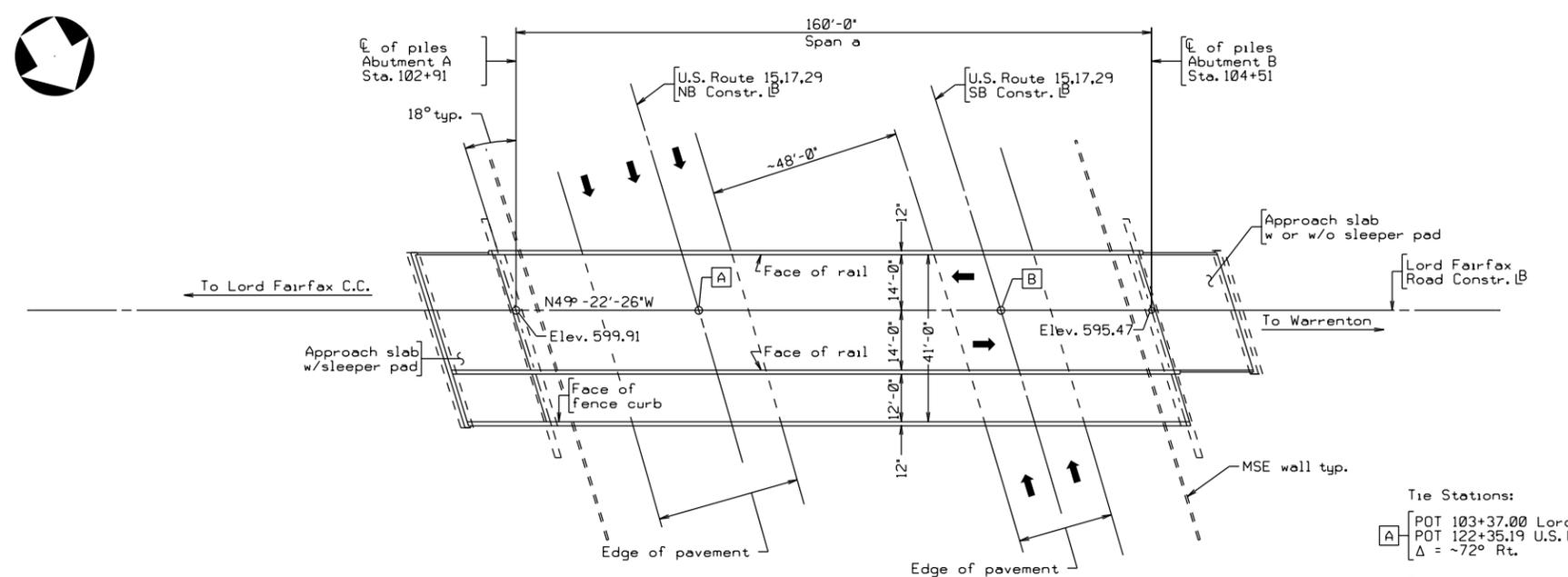
DESIGN EXCEPTION(S):  
None

GENERAL NOTES:  
Widths: 28'-0" roadway, 12'-0" SUP.  
Overall width 43'-0" out-to-out.

Span layout: 160'

Capacity: HL-93 loading.

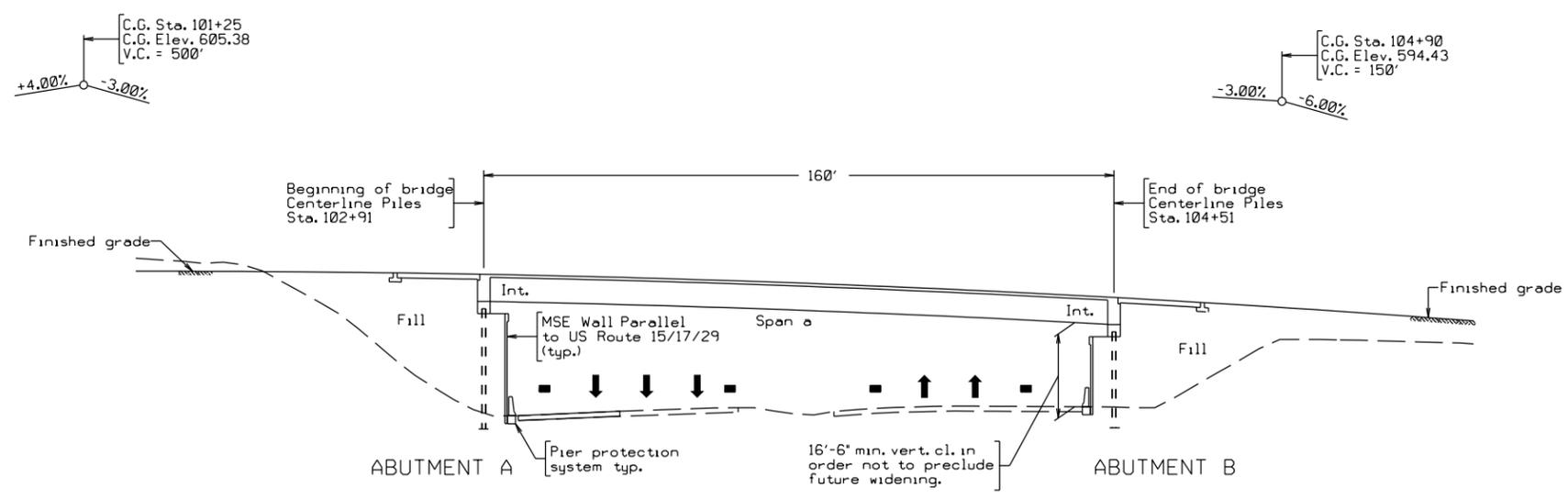
Specifications:  
Construction: Virginia Department of Transportation Road and Bridge Specifications, 2016.  
Design: AASHTO LRFD Bridge Design Specifications, 7th Edition, 2014; and VDOT Modifications.  
Standards: Virginia Department of Transportation Road and Bridge Standards, 2008; including all current revisions.  
Architectural treatment shall be 'DRYSTACK' texture similar to the pattern detailed on Structure and Bridge Standard Plan sheet BR27C-AT-9.



PLAN

Tie Stations:

[A]	POT 103+37.00 Lord Fairfax Road Constr. B
	POT 122+35.19 U.S. Route 15,17,29 NB Constr. L B
	Δ = ~72° Rt.
[B]	POT 104+13.07 Lord Fairfax Road Constr. B
	POT 122+78.18 U.S. Route 15,17,29 SB Constr. L B
	Δ = ~72° Rt.



DEVELOPED SECTION ALONG CONSTR'L

**VDOT**

COMMONWEALTH OF VIRGINIA  
DEPARTMENT OF TRANSPORTATION  
PROPOSED BRIDGE ON  
LORD FAIRFAX RD AND RTE. 15, 17, 29 BUS.  
OVER RTE. 15, 17 AND 29 NB AND SB  
FAUQUIER CO. - 0.53 MI. S. OF WARRENTON  
PROJ. 0029-030-121, B616

WALLACE MONTGOMERY

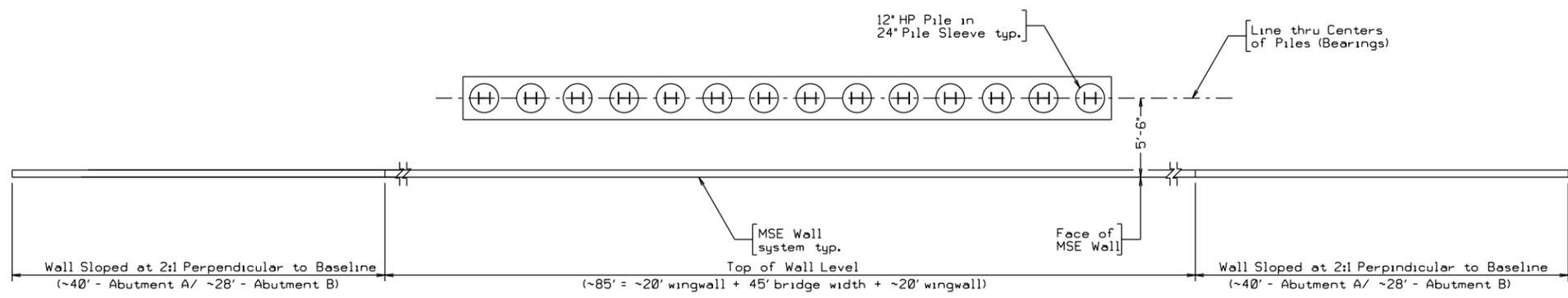
KCI TECHNOLOGIES

ALLAN MYERS

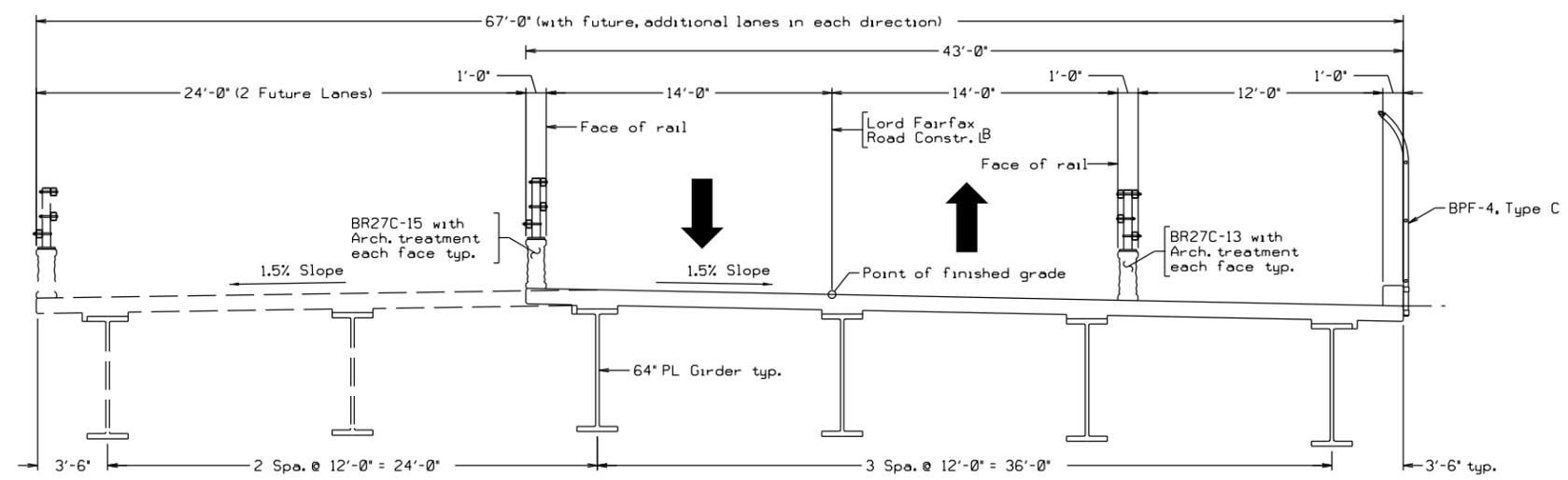
RECOMMENDED FOR APPROVAL FOR CONSTRUCTION	
VDOT PROJECT MANAGER	
DISTRICT CONSTRUCTION MANAGER	
PLANS BY:	KCI Technologies, Inc.
COORDINATED:	JBB
SUPERVISED:	JBB
DESIGNED:	JBB
DRAWN:	JBB
CHECKED:	EDA

No.	Description	Date
REVISIONS		
For Table of Revisions, see Sheet X.		

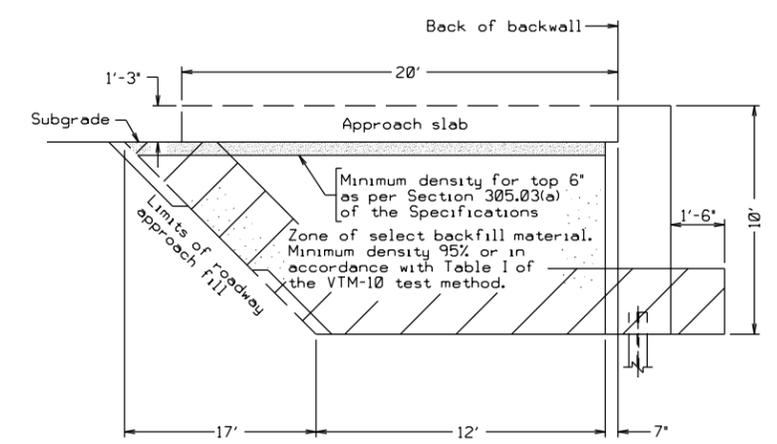
STATE	FEDERAL AID		STATE		SHEET
ROUTE	PROJECT	ROUTE	PROJECT	NO.	
VA.	--	XX	0029-030-121, B616	2	



PARTIAL PLAN - MSE WALL AND PILE CAP



TRANSVERSE SECTION - PROPOSED



SECTION THROUGH ABUTMENT - FILL SECTION  
Abutment drainage/ sleeper pad not shown  
Not to scale

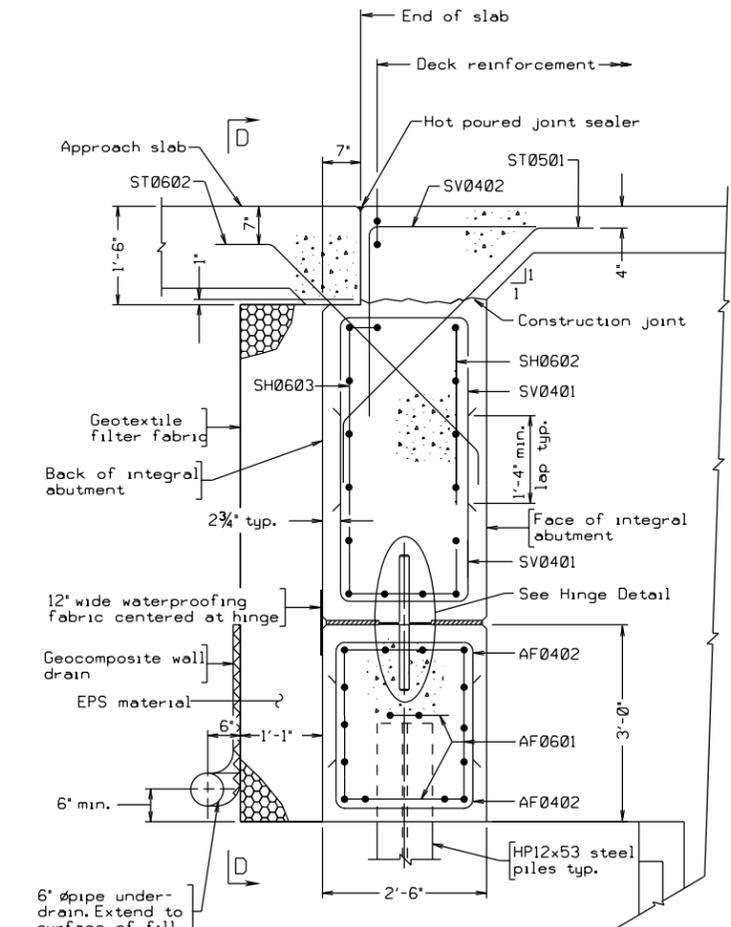
Material in the abutment select backfill zone shall be Select Material Type 1, minimum CBR 30, and shall be compacted in accordance with Sections 303 and 305 of the VDOT Road and Bridge Specifications. 21A or 21B may be substituted for Select Material Type 1, minimum CBR 30, at no additional cost to the Department.

In cut situations, material with strength characteristics greater than the select backfill may be left in place.

The final depth A of the embankment side slopes shall be regular embankment material placed and finished as required.

The estimated quantity given for the abutment select backfill zone has been reduced by the estimated quantity of MSE wall backfill in the zone.

At the Contractor's option and at no additional cost to the Department, the MSE wall backfill may be used for the entire abutment select backfill zone in lieu of Select Material Type 1, minimum CBR 30. If the MSE wall backfill is #8 or coarser, a separator fabric shall be used between the MSE wall backfill and roadway subgrade, and between the select backfill and the approach roadway cut or fill. The separator fabric shall be needle-punched, non-woven geotextile in accordance with Section 245.03 (d)2 of the Specifications or in accordance with the Special Provision located in VDOT's Manual of the Structure and Division, Part 2, File No. 17.13-8 at no additional cost when utilizing this option. (Note to be used when MSE walls compose all or part of the abutment.) (Delete note if MSE walls are not utilized.)



SECTION THRU ABUTMENT  
Between girders

WALLACE MONTGOMERY  
KCI TECHNOLOGIES  
ALLAN MYERS  
VDOT S&B DIVISION  
RICHMOND, VA  
STRUCTURAL ENGINEER

COMMONWEALTH OF VIRGINIA DEPARTMENT OF TRANSPORTATION					
STRUCTURE AND BRIDGE DIVISION					
MISC DETAILS					
No.	Description	Date	Designed: JBR...	Date	Plan No.
			Drawn: JBR...	Nov. 2017	XXX-XX
			Checked: JBR...		2 of 2
Revisions					

Scale: not to scale © 2011, Commonwealth of Virginia

4.7

**PROPOSAL SCHEDULE**



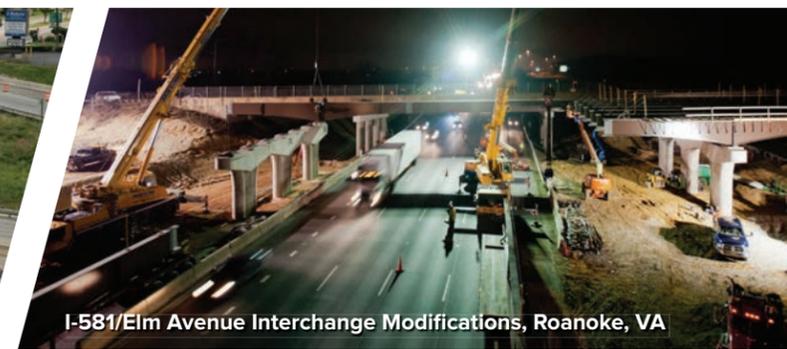
Saintsbury Drive Roundabout, Fairfax, VA



SR 29/I-276 New Interchange, Great Valley, PA



I-95/Contee Road New Interchange, Laurel, MD



I-581/Elm Avenue Interchange Modifications, Roanoke, VA

Activity ID	Activity Name	Original Duration	Start	Finish	2018												2019												2020														
					Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep						
<b>Warrenton Southern Interchange US 15/17/29</b>					632					26-Mar-18					03-Oct-20																												
MS00001030	Notice to Proceed (26-MAR-2018)	0	26-Mar-18*		◆ Notice to Proceed (26-MAR-2018)																																						
DSS0001000	Conduct General Reviews - Topographic Site Conditions	10	26-Mar-18	09-Apr-18	■ Conduct General Reviews - Topographic Site Conditions																																						
DSS0001010	Perform Supplemental Topographic Surveys - Mainline	20	10-Apr-18	07-May-18	■ Perform Supplemental Topographic Surveys - Mainline																																						
DSS0001020	Perform Supplemental Topographic Surveys - Eastern Project Segment	20	10-Apr-18	07-May-18	■ Perform Supplemental Topographic Surveys - Eastern Project Segment																																						
DSS0001030	Perform Supplemental Topographic Surveys - Western Project Segment	20	10-Apr-18	07-May-18	■ Perform Supplemental Topographic Surveys - Western Project Segment																																						
DSS0001040	Compile Topographic Survey - Basemap	10	08-May-18	21-May-18	■ Compile Topographic Survey - Basemap																																						
DSS0001050	Develop Topographic Survey Basemap	5	22-May-18	29-May-18	■ Develop Topographic Survey Basemap																																						
DSS0001060	SFI Topographic Survey - Basemap	3	30-May-18	01-Jun-18	■ SFI Topographic Survey - Basemap																																						
DSAA001030	AC - OTSR - Roadway Line and Grade Plans/Conceptual SWM	3	04-Jun-18	06-Jun-18	■ AC - OTSR - Roadway Line and Grade Plans/Conceptual SWM																																						
DSAA001050	SFA Conceptual SWM Plans/Design Waiver SUP	1	07-Jun-18	07-Jun-18	■ SFA Conceptual SWM Plans/Design Waiver SUP																																						
DSAA001060	VDOT R/A Conceptual SWM Plans/Design Waiver SUP	21	08-Jun-18	28-Jun-18	■ VDOT R/A Conceptual SWM Plans/Design Waiver SUP																																						
DSAA001070	VDOT Accepts Conceptual SWM Plans	21	29-Jun-18	19-Jul-18	■ VDOT Accepts Conceptual SWM Plans																																						
ENV0001000	Compile/Complete VPDES Construction Permit Registration Forms (LD-445's)	10	20-Jul-18	02-Aug-18	■ Compile/Complete VPDES Construction Permit Registration Forms (LD-445's)																																						
ENV0001010	SFA VPDES Construction Permit (VDOT Review)	3	03-Aug-18	07-Aug-18	■ SFA VPDES Construction Permit (VDOT Review)																																						
ENV0001020	VDOT R/A VPDES Construction Permit	1	08-Aug-18	08-Aug-18	■ VDOT R/A VPDES Construction Permit																																						
ENV0001030	VDOT Secures VPDES Construction Permit	60	09-Aug-18	07-Oct-18	■ VDOT Secures VPDES Construction Permit																																						
DSAC001120	VDOT Issues Limited Notice to Commence Construction - Phase 1 - TMP / MOT Plan	3	08-Oct-18	10-Oct-18	■ VDOT Issues Limited Notice to Commence Construction - Phase 1 - TMP / MOT Plans																																						
MS00001070	VDOT Issues - Limited Notice to Commence Construction - Phase 1 TMP / MOT Plan	0	11-Oct-18		◆ VDOT Issues - Limited Notice to Commence Construction - Phase 1 TMP / MOT Plans																																						
PAS0001000	Set-up VDOT Field Office	20	11-Oct-18	13-Nov-18	■ Set-up VDOT Field Office																																						
PAS0001010	Set-up Myers Field Office	20	11-Oct-18	13-Nov-18	■ Set-up Myers Field Office																																						
PAS0001030	Mobilize for Construction	20	11-Oct-18	13-Nov-18	■ Mobilize for Construction																																						
CNMAES1000	Install Erosion Control Measures - Mainline US 15/17/29 Bypass - Phase 1	5	14-Nov-18	21-Nov-18	■ Install Erosion Control Measures - Mainline US 15/17/29 Bypass - Phase 1																																						
CNEAES1000	Install Erosion Control Measures - Eastern Segment - Phase 1	10	26-Nov-18	11-Dec-18	■ Install Erosion Control Measures - Eastern Segment - Phase 1																																						
CNBASBA010	Excavate / Grade for Leveling Pad - MSE Wall - Abutment A - Bridge B616	5	12-Dec-18	19-Dec-18	■ Excavate / Grade for Leveling Pad - MSE Wall - Abutment A - Bridge B616																																						
CNBASBA020	Drive Test Pile - Abutment A - Bridge B616	3	20-Dec-18	02-Jan-19	■ Drive Test Pile - Abutment A - Bridge B616																																						
CNBASBA030	Drive Piles - Abutment A - Bridge B616	3	03-Jan-19	08-Jan-19	■ Drive Piles - Abutment A - Bridge B616																																						
CNBASBA040	Install Cans for Piles - Abutment A - Bridge B616	2	09-Jan-19	10-Jan-19	■ Install Cans for Piles - Abutment A - Bridge B616																																						
CNBASBA050	F/R/P Leveling Pad - MSE Wall - Abutment A - Bridge B616	3	14-Jan-19	17-Jan-19	■ F/R/P Leveling Pad - MSE Wall - Abutment A - Bridge B616																																						
CNBASBA060	Cure Leveling Pad - MSE Wall - Abutment A - Bridge B616	7	18-Jan-19	24-Jan-19	■ Cure Leveling Pad - MSE Wall - Abutment A - Bridge B616																																						
CNBASBA070	Set Panels / Drainage / Backfill - MSE Wall - Abutment A - Bridge B616	10	28-Jan-19	14-Feb-19	■ Set Panels / Drainage / Backfill - MSE Wall - Abutment A - Bridge B616																																						
CNBASBB070	Set Panels / Drainage / Backfill - MSE Wall - Abutment B - Bridge B616	7	18-Feb-19	28-Feb-19	■ Set Panels / Drainage / Backfill - MSE Wall - Abutment B - Bridge B616																																						
CNBASBB090	Settlement Period - Abutment B - Bridge B616	60	01-Mar-19	29-Apr-19	■ Settlement Period - Abutment B - Bridge B616																																						
CNBASBB100	F/R/P Pile Cap - Abutment B - Bridge B616	3	30-Apr-19	02-May-19	■ F/R/P Pile Cap - Abutment B - Bridge B616																																						
CNBASBB110	Cure Pile Cap - Abutment B - Bridge B616	7	03-May-19	09-May-19	■ Cure Pile Cap - Abutment B - Bridge B616																																						
CNBASP0010	Erect Girders - Bridge B616	2	10-May-19	13-May-19	■ Erect Girders - Bridge B616																																						
CNBASP0020	Complete Bolt-ups - Bridge B616	3	14-May-19	16-May-19	■ Complete Bolt-ups - Bridge B616																																						
CNBASP0030	Form Overhangs - Bridge B616	5	20-May-19	24-May-19	■ Form Overhangs - Bridge B616																																						
CNBASP0040	Install Deck Pans - Bridge B616	5	28-May-19	04-Jun-19	■ Install Deck Pans - Bridge B616																																						
CNBASP0050	Install Shear Connectors - Bridge B616	1	05-Jun-19	05-Jun-19	■ Install Shear Connectors - Bridge B616																																						
CNBASP0060	Install Rebar - Bridge B616	5	06-Jun-19	12-Jun-19	■ Install Rebar - Bridge B616																																						
CNBASP0070	Setup / Dry-Run Bidwell - Bridge B616	3	13-Jun-19	17-Jun-19	■ Setup / Dry-Run Bidwell - Bridge B616																																						
CNBASP0080	Pour Deck - Bridge B616	1	18-Jun-19	18-Jun-19	■ Pour Deck - Bridge B616																																						
CNBASP0090	Cure Deck - Bridge B616	14	19-Jun-19	02-Jul-19	■ Cure Deck - Bridge B616																																						





Activity ID	Activity Name	Original Duration	Start	Finish	2018												2019												2020														
					F	M	A	M	Jun	Jul	A	Sep	Oct	N	D	Jan	F	M	A	M	Jun	Jul	A	S	Oct	N	D	Jan	F	M	A	M	Jun	Jul	A	Sep	Oct	N	D				
<b>Warrenton Southern Interchange US 15/17/29</b>					676	23-Jan-18	03-Oct-20																																				
<b>Project Milestones</b>					676	23-Jan-18	03-Oct-20																																				
MS00001000	Notice of Intent to Award (23-JAN-2018)	0	23-Jan-18*		Notice of Intent to Award (23-JAN-2018)																																						
MS00001010	CTB Approval/Notice to Award (21-FEB-2018)	0	21-Feb-18*		◆ CTB Approval/Notice to Award (21-FEB-2018)																																						
MS00001020	Dsign-Build Contract Execution (23-MAR-2018)	0	23-Mar-18*		◆ Dsign-Build Contract Execution (23-MAR-2018)																																						
MS00001050	VDOT Shares Competitors ATC Proposals	60	23-Mar-18	21-May-18	■ VDOT Shares Competitors ATC Proposals																																						
MS00001030	Notice to Proceed (26-MAR-2018)	0	26-Mar-18*		◆ Notice to Proceed (26-MAR-2018)																																						
MS00001040	Scope Validation Period (23-JUL-2018)	120	26-Mar-18	23-Jul-18	■ Scope Validation Period (23-JUL-2018)																																						
MS00001060	Begin Construction Management Management / Planning	128	26-Mar-18	31-Jul-18	■ Begin Construction Management Management / Planning																																						
MS00001070	VDOT Issues - Limited Notice to Commence Construction - Phase 1 TMP/ MOT Plans	0	11-Oct-18		◆ VDOT Issues - Limited Notice to Commence Construction - Phase 1 TMP/ MOT Plans																																						
MS00001100	VDOT Issues Notice to Commence Construction - Bridge	0	11-Oct-18		◆ VDOT Issues Notice to Commence Construction - Bridge																																						
MS00001080	VDOT Issues - Limited Notice to Commence Construction - Phase 1 C&G/ ESC Plans	0	18-Oct-18		◆ VDOT Issues - Limited Notice to Commence Construction - Phase 1 C&G/ ESC Plans																																						
MS00001090	VDOT Issues - Notice to Commence Construction - Roadway	0	04-Mar-19		◆ VDOT Issues - Notice to Commence Construction - Roadway																																						
MS00005010	Phase 1 Completion	0		05-Nov-19	◆ Phase 1 Completion																																						
MS00005020	Phase 2 Completion	0		22-Apr-20	◆ Phase 2 Completion																																						
MS00005030	Phase 3 Completion	0		06-Aug-20	◆ Phase 3 Completion																																						
MS99999900	Interim Completion Milestone - All Roadways Open to Traffic	0		06-Aug-20	◆ Interim Completion Milestone - All Roadways Open to Traffic																																						
MS99999910	Final Completion - VDOT Issues C-5	0		03-Sep-20	◆ Final Completion - VDOT Issues C-5																																						
MS99999920	VDOT/Myers Complete Project Closeout	30	04-Sep-20	03-Oct-20	■ VDOT/Myers Complete Project Closeout																																						
MS99999930	Project Closeout Complete	0		03-Oct-20	◆ Project Closeout Complete																																						
<b>Project Administration</b>					655	21-Feb-18	03-Oct-20																																				
<b>Project Startup</b>					20	11-Oct-18	13-Nov-18																																				
PAS0001000	Set-up VDOT Field Office	20	11-Oct-18	13-Nov-18	■ Set-up VDOT Field Office																																						
PAS0001010	Set-up Myers Field Office	20	11-Oct-18	13-Nov-18	■ Set-up Myers Field Office																																						
PAS0001020	Install Project Wide Advance Work Zone Signage - Phase 1 MOT	10	11-Oct-18	25-Oct-18	■ Install Project Wide Advance Work Zone Signage - Phase 1 MOT																																						
PAS0001030	Mobilize for Construction	20	11-Oct-18	13-Nov-18	■ Mobilize for Construction																																						
<b>Management Submittals</b>					158	23-Mar-18	05-Nov-18																																				
PAM0002000	Prepare Right-of-Way (RW) Acquisition Plan	20	23-Mar-18	20-Apr-18	■ Prepare Right-of-Way (RW) Acquisition Plan																																						
PAM0002010	SFC Right-of-Way (RW) Acquisition Plan	3	23-Apr-18	25-Apr-18	■ SFC Right-of-Way (RW) Acquisition Plan																																						
PAM0002020	R/C Right-of-Way (RW) Acquisition Plan	21	26-Apr-18	16-May-18	■ R/C Right-of-Way (RW) Acquisition Plan																																						
PAM0002030	AC Right-of-Way (RW) Acquisition Plan Revision No. 1	10	17-May-18	31-May-18	■ AC Right-of-Way (RW) Acquisition Plan Revision No. 1																																						
PAM0002040	SFA Right-of-Way (RW) Acquisition Plan Revision No. 1	3	01-Jun-18	05-Jun-18	■ SFA Right-of-Way (RW) Acquisition Plan Revision No. 1																																						
PAM0002050	VDOT R/A Right-of-Way (RW) Acquisition Plan Revision No. 1	21	06-Jun-18	26-Jun-18	■ VDOT R/A Right-of-Way (RW) Acquisition Plan Revision No. 1																																						
PAM0002060	VDOT Approves Right-of-Way (RW) Acquisition Plan Revision No. 1	5	27-Jun-18	03-Jul-18	■ VDOT Approves Right-of-Way (RW) Acquisition Plan Revision No. 1																																						
PAM0001000	Prepare Site Specific Safety & Hazardous Materials Management Plan	20	01-Aug-18	28-Aug-18	■ Prepare Site Specific Safety & Hazardous Materials Management Plan																																						
PAM0001010	SFC Site Specific Safety & Hazardous Materials Management Plan	3	29-Aug-18	31-Aug-18	■ SFC Site Specific Safety & Hazardous Materials Management Plan																																						
PAM0001020	R/C Site Specific Safety & Hazardous Materials Management Plan	21	01-Sep-18	21-Sep-18	■ R/C Site Specific Safety & Hazardous Materials Management Plan																																						
PAM0001030	AC Site Specific Safety & Hazardous Materials Management Plan Revision No. 1	10	24-Sep-18	05-Oct-18	■ AC Site Specific Safety & Hazardous Materials Management Plan Revision No. 1																																						
PAM0001040	SFA Site Specific Safety & Hazardous Materials Management Plan Revision No. 1	3	08-Oct-18	10-Oct-18	■ SFA Site Specific Safety & Hazardous Materials Management Plan Revision No. 1																																						
PAM0001050	VDOT R/A Site Specific Safety & Hazardous Materials Management Plan Revision No. 1	21	11-Oct-18	31-Oct-18	■ VDOT R/A Site Specific Safety & Hazardous Materials Management Plan Revision No. 1																																						
PAM0001060	VDOT Approves Site Specific Safety & Hazardous Materials Management Plan Revision No. 1	3	01-Nov-18	05-Nov-18	■ VDOT Approves Site Specific Safety & Hazardous Materials Management Plan Revision No. 1																																						
<b>General Conditions/Misc. Payments</b>					653	21-Feb-18	30-Sep-20																																				
<b>Pursuit</b>					10	21-Feb-18	06-Mar-18	▼ 06-Mar-18, Pursuit																																			

Activity ID	Activity Name	Original Duration	Start	Finish	2018												2019												2020											
					F	M	A	M	Jun	Jul	A	Sep	Oct	N	D	Jan	F	M	A	M	Jun	Jul	A	S	Oct	N	D	Jan	F	M	A	M	Jun	Jul	A	Sep	Oct	N	D	
PAGPR01000	Advanced Payment (Part 1, Section 8.4.3)	10	21-Feb-18	06-Mar-18	■ Advanced Payment (Part 1, Section 8.4.3)																																			
<b>Bonds &amp; Insurance</b>					▼ 06-Mar-18, Bonds & Insurance																																			
PAGBN01000	Secure Bond & Insurance	10	21-Feb-18	06-Mar-18	■ Secure Bond & Insurance																																			
<b>Schedule of Values</b>					▼ 01-Jun-18, Schedule of Values																																			
PAGSV01000	Prepare Schedule of Values	10	23-Mar-18	06-Apr-18	■ Prepare Schedule of Values																																			
PAGSV01010	SFC Schedule of Values	3	09-Apr-18	11-Apr-18	■ SFC Schedule of Values																																			
PAGSV01020	R/C Schedule of Values	21	12-Apr-18	02-May-18	■ R/C Schedule of Values																																			
PAGSV01030	AC Schedule of Values Revision No. 1	5	03-May-18	09-May-18	■ AC Schedule of Values Revision No. 1																																			
PAGSV01040	SFA Schedule of Values Revision No. 1	1	10-May-18	10-May-18	■ SFA Schedule of Values Revision No. 1																																			
PAGSV01050	VDOT R/A Schedule of Values Revision No. 1	21	11-May-18	31-May-18	■ VDOT R/A Schedule of Values Revision No. 1																																			
PAGSV01060	VDOT Approves Schedule of Values Revision No. 1	1	01-Jun-18	01-Jun-18	■ VDOT Approves Schedule of Values Revision No. 1																																			
<b>Certification for Payment Requests</b>					▼ 26-Mar-18 to 30-Sep-20																																			
PAGCP01000	Certification for Payment - Invoice No. 1 - April 2018	36	26-Mar-18	30-Apr-18	■ Certification for Payment - Invoice No. 1 - April 2018																																			
PAGCP01010	Certification for Payment - Invoice No. 2 - May 2018	31	01-May-18	31-May-18	■ Certification for Payment - Invoice No. 2 - May 2018																																			
PAGCP01020	Certification for Payment - Invoice No. 3 - June 2018	30	01-Jun-18	30-Jun-18	■ Certification for Payment - Invoice No. 3 - June 2018																																			
PAGCP01030	Certification for Payment - Invoice No. 4 - July 2018	31	01-Jul-18	31-Jul-18	■ Certification for Payment - Invoice No. 4 - July 2018																																			
PAGCP01040	Certification for Payment - Invoice No. 5 - August 2018	31	01-Aug-18	31-Aug-18	■ Certification for Payment - Invoice No. 5 - August 2018																																			
PAGCP01050	Certification for Payment - Invoice No. 6 - September 2018	30	01-Sep-18	30-Sep-18	■ Certification for Payment - Invoice No. 6 - September 2018																																			
PAGCP01060	Certification for Payment - Invoice No. 7 - October 2018	31	01-Oct-18	31-Oct-18	■ Certification for Payment - Invoice No. 7 - October 2018																																			
PAGCP01070	Certification for Payment - Invoice No. 8 - November 2018	30	01-Nov-18	30-Nov-18	■ Certification for Payment - Invoice No. 8 - November 2018																																			
PAGCP01080	Certification for Payment - Invoice No. 9 - December 2018	31	01-Dec-18	31-Dec-18	■ Certification for Payment - Invoice No. 9 - December 2018																																			
PAGCP01090	Certification for Payment - Invoice No. 10 - January 2019	31	01-Jan-19	31-Jan-19	■ Certification for Payment - Invoice No. 10 - January 2019																																			
PAGCP01100	Certification for Payment - Invoice No. 11 - February 2019	28	01-Feb-19	28-Feb-19	■ Certification for Payment - Invoice No. 11 - February 2019																																			
PAGCP01110	Certification for Payment - Invoice No. 12 - March 2019	31	01-Mar-19	31-Mar-19	■ Certification for Payment - Invoice No. 12 - March 2019																																			
PAGCP01120	Certification for Payment - Invoice No. 13 - April 2019	30	01-Apr-19	30-Apr-19	■ Certification for Payment - Invoice No. 13 - April 2019																																			
PAGCP01130	Certification for Payment - Invoice No. 14 - May 2019	31	01-May-19	31-May-19	■ Certification for Payment - Invoice No. 14 - May 2019																																			
PAGCP01140	Certification for Payment - Invoice No. 15 - June 2019	30	01-Jun-19	30-Jun-19	■ Certification for Payment - Invoice No. 15 - June 2019																																			
PAGCP01150	Certification for Payment - Invoice No. 16 - July 2019	31	01-Jul-19	31-Jul-19	■ Certification for Payment - Invoice No. 16 - July 2019																																			
PAGCP01160	Certification for Payment - Invoice No. 17 - August 2019	31	01-Aug-19	31-Aug-19	■ Certification for Payment - Invoice No. 17 - August 2019																																			
PAGCP01170	Certification for Payment - Invoice No. 18 - September 2019	30	01-Sep-19	30-Sep-19	■ Certification for Payment - Invoice No. 18 - September 2019																																			
PAGCP01180	Certification for Payment - Invoice No. 19 - October 2019	31	01-Oct-19	31-Oct-19	■ Certification for Payment - Invoice No. 19 - October 2019																																			
PAGCP01190	Certification for Payment - Invoice No. 20 - November 2019	30	01-Nov-19	30-Nov-19	■ Certification for Payment - Invoice No. 20 - November 2019																																			
PAGCP01200	Certification for Payment - Invoice No. 21 - December 2019	31	01-Dec-19	31-Dec-19	■ Certification for Payment - Invoice No. 21 - December 2019																																			
PAGCP01210	Certification for Payment - Invoice No. 22 - January 2020	31	01-Jan-20	31-Jan-20	■ Certification for Payment - Invoice No. 22 - January 2020																																			
PAGCP01220	Certification for Payment - Invoice No. 23 - February 2020	29	01-Feb-20	29-Feb-20	■ Certification for Payment - Invoice No. 23 - February 2020																																			
PAGCP01230	Certification for Payment - Invoice No. 24 - March 2020	31	01-Mar-20	31-Mar-20	■ Certification for Payment - Invoice No. 24 - March 2020																																			
PAGCP01240	Certification for Payment - Invoice No. 25 - April 2020	30	01-Apr-20	30-Apr-20	■ Certification for Payment - Invoice No. 25 - April 2020																																			
PAGCP01250	Certification for Payment - Invoice No. 26 - May 2020	31	01-May-20	31-May-20	■ Certification for Payment - Invoice No. 26 - May 2020																																			
PAGCP01260	Certification for Payment - Invoice No. 27 - June 2020	30	01-Jun-20	30-Jun-20	■ Certification for Payment - Invoice No. 27 - June 2020																																			
PAGCP01270	Certification for Payment - Invoice No. 28 - July 2020	31	01-Jul-20	31-Jul-20	■ Certification for Payment - Invoice No. 28 - July 2020																																			
PAGCP01280	Certification for Payment - Invoice No. 29 - August 2020	31	01-Aug-20	31-Aug-20	■ Certification for Payment - Invoice No. 29 - August 2020																																			
PAGCP01290	Certification for Payment - Invoice No. 30 - September 2020	30	01-Sep-20	30-Sep-20	■ Certification for Payment - Invoice No. 30 - September 2020																																			
<b>Project Schedule</b>					▼ 03-Aug-18, Project Schedule																																			
PAGPS01000	Prepare Baseline Schedule	40	23-Mar-18	18-May-18	■ Prepare Baseline Schedule																																			









Activity ID	Activity Name	Original Duration	Start	Finish	2018												2019												2020											
					F	M	A	M	Jun	Jul	A	Sep	Oct	N	D	Jan	F	M	A	M	Jun	Jul	A	S	Oct	N	D	Jan	F	M	A	M	Jun	Jul	A	Sep	Oct	N		
<b>Design Survey</b>					16-Aug-18, Design Survey																																			
DSS0001000	Conduct General Reviews - Topographic Site Conditions	10	26-Mar-18	09-Apr-18	■ Conduct General Reviews - Topographic Site Conditions																																			
DSS0001010	Perform Supplemental Topographic Surveys - Mainline	20	10-Apr-18	07-May-18	■ Perform Supplemental Topographic Surveys - Mainline																																			
DSS0001020	Perform Supplemental Topographic Surveys - Eastern Project Segment	20	10-Apr-18	07-May-18	■ Perform Supplemental Topographic Surveys - Eastern Project Segment																																			
DSS0001030	Perform Supplemental Topographic Surveys - Western Project Segment	20	10-Apr-18	07-May-18	■ Perform Supplemental Topographic Surveys - Western Project Segment																																			
DSS0002000	Conduct General Field Review - Roadways	1	01-May-18	01-May-18	Conduct General Field Review - Roadways																																			
DSS0002010	Document Existing Pavement Conditions	1	02-May-18	02-May-18	Document Existing Pavement Conditions																																			
DSS0002020	SFI Existing Pavement Condition Findings	1	03-May-18	03-May-18	SFI Existing Pavement Condition Findings																																			
DSS0001040	Compile Topographic Survey - Basemap	10	08-May-18	21-May-18	■ Compile Topographic Survey - Basemap																																			
DSS0001050	Develop Topographic Survey Basemap	5	22-May-18	29-May-18	■ Develop Topographic Survey Basemap																																			
DSS0001060	SFI Topographic Survey - Basemap	3	30-May-18	01-Jun-18	■ SFI Topographic Survey - Basemap																																			
DSS0003000	Perform Existing Sign Surveys	1	11-Jun-18	11-Jun-18	Perform Existing Sign Surveys																																			
DSS0003010	Prepare Existing Sign Inventory Report	20	12-Jun-18	10-Jul-18	■ Prepare Existing Sign Inventory Report																																			
DSS0003020	SFI Existing Sign Inventory Findings	1	11-Jul-18	11-Jul-18	SFI Existing Sign Inventory Findings																																			
DSS0004000	Assess / Inspect Existing Drainage Structures - Mainline	10	12-Jul-18	25-Jul-18	■ Assess / Inspect Existing Drainage Structures - Mainline																																			
DSS0004010	Assess / Inspect Existing Drainage Structures - Eastern Project Segment	10	12-Jul-18	25-Jul-18	■ Assess / Inspect Existing Drainage Structures - Eastern Project Segment																																			
DSS0004020	Assess / Inspect Existing Drainage Structures - Western Project Segment	10	12-Jul-18	25-Jul-18	■ Assess / Inspect Existing Drainage Structures - Western Project Segment																																			
DSS0004030	Compile Existing Drainage Structures	10	26-Jul-18	08-Aug-18	■ Compile Existing Drainage Structures																																			
DSS0004040	Develop Servicable Condition Assessment - Drainage	1	09-Aug-18	09-Aug-18	Develop Servicable Condition Assessment - Drainage																																			
DSS0004050	SFI Servicable Condition Assessment - Drainage	5	10-Aug-18	16-Aug-18	■ SFI Servicable Condition Assessment - Drainage																																			
<b>Geotechnical</b>					01-Nov-18, Geotechnical																																			
<b>Site Investigations</b>					03-May-18, Site Investigations																																			
DSGSS01000	Compile Geotechnical Information Basemap	10	26-Mar-18	09-Apr-18	■ Compile Geotechnical Information Basemap																																			
DSGSS02000	Prepare Geotechnical Investigation - Incident Management Plan	10	26-Mar-18	09-Apr-18	■ Prepare Geotechnical Investigation - Incident Management Plan																																			
DSGSS01010	Prepare Supplemental Geotechnical Investigation Plan - Roadways	5	10-Apr-18	16-Apr-18	■ Prepare Supplemental Geotechnical Investigation Plan - Roadways																																			
DSGSS01020	Prepare Supplemental Geotechnical Investigation Plan - Structures	5	10-Apr-18	16-Apr-18	■ Prepare Supplemental Geotechnical Investigation Plan - Structures																																			
DSGSS01030	Prepare Supplemental Geotechnical Investigation Plan - SWM Facilities	5	10-Apr-18	16-Apr-18	■ Prepare Supplemental Geotechnical Investigation Plan - SWM Facilities																																			
DSGSS02010	SFA Geotechnical Investigation - Incident Management Plan	1	10-Apr-18	10-Apr-18	SFA Geotechnical Investigation - Incident Management Plan																																			
DSGSS02050	VDOT R/A Geotechnical Investigation - Incident Management Plan	21	11-Apr-18	01-May-18	■ VDOT R/A Geotechnical Investigation - Incident Management Plan																																			
DSGSS01040	Compile Geotechnical Investigation Campaign Plan	10	17-Apr-18	30-Apr-18	■ Compile Geotechnical Investigation Campaign Plan																																			
DSGSS01050	SFI Geotechnical Investigation Campaign Plan	3	01-May-18	03-May-18	SFI Geotechnical Investigation Campaign Plan																																			
DSGSS02060	VDOT Approves Geotechnical Investigation - Incident Management Plan	1	02-May-18	02-May-18	VDOT Approves Geotechnical Investigation - Incident Management Plan																																			
<b>Supplemental Borings</b>					01-Jun-18, Supplemental Borings																																			
DSGSB01000	Locate Supplemental Geotech Borings - Roadway	5	04-May-18	10-May-18	■ Locate Supplemental Geotech Borings - Roadway																																			
DSGSB02000	Locate Supplemental Geotech Borings - Structures	5	04-May-18	10-May-18	■ Locate Supplemental Geotech Borings - Structures																																			
DSGSB03000	Locate Supplemental Geotech Borings - SWM Facilities	5	04-May-18	10-May-18	■ Locate Supplemental Geotech Borings - SWM Facilities																																			
DSGSB01010	Conduct Supplemental Geotech Borings - Roadway	10	11-May-18	24-May-18	■ Conduct Supplemental Geotech Borings - Roadway																																			
DSGSB02010	Conduct Supplemental Geotech Borings - Structures	10	11-May-18	24-May-18	■ Conduct Supplemental Geotech Borings - Structures																																			
DSGSB03010	Conduct Supplemental Geotech Borings - SWM Facilities	10	11-May-18	24-May-18	■ Conduct Supplemental Geotech Borings - SWM Facilities																																			
DSGSB01020	Compile Boring Logs - Roadway	5	25-May-18	01-Jun-18	■ Compile Boring Logs - Roadway																																			
DSGSB02020	Compile Boring Logs - Structures	5	25-May-18	01-Jun-18	■ Compile Boring Logs - Structures																																			
DSGSB03020	Compile Boring Logs - SWM Facilities	5	25-May-18	01-Jun-18	■ Compile Boring Logs - SWM Facilities																																			
<b>Laboratory Analysis</b>					29-Jun-18, Laboratory Analysis																																			
DSGLA01000	Conduct Boring Laboratory Analyses - Roadways	20	25-May-18	22-Jun-18	■ Conduct Boring Laboratory Analyses - Roadways																																			











Activity ID	Activity Name	Original Duration	Start	Finish	2018												2019												2020														
					F	M	A	M	Jun	Jul	A	Sep	Oct	N	D	Jan	F	M	A	M	Jun	Jul	A	S	Oct	N	D	Jan	F	M	A	M	Jun	Jul	A	Sep	Oct	N					
<b>Northern Long-eared Bat</b>					50	11-Jun-18	20-Aug-18	▼ 20-Aug-18, Northern Long-eared Bat																																			
ENTLE01000	Schedule / Perform Presence / Absence Surveys - Northern Long-eared Bat	5	11-Jun-18	15-Jun-18	■ Schedule / Perform Presence / Absence Surveys - Northern Long-eared Bat																																						
ENTLE01010	Prepare T&E Mitigation Measures (If applicable) - Northern Long-eared Bat	5	18-Jun-18	22-Jun-18	■ Prepare T&E Mitigation Measures (If applicable) - Northern Long-eared Bat																																						
ENTLE01020	SFA T&E Mitigation Measures (If applicable) - Northern Long-eared Bat	3	25-Jun-18	27-Jun-18	■ SFA T&E Mitigation Measures (If applicable) - Northern Long-eared Bat																																						
ENTLE01030	VDOT R/A T&E Mitigation Measures (If applicable) - Northern Long-eared Bat	21	28-Jun-18	18-Jul-18	■ VDOT R/A T&E Mitigation Measures (If applicable) - Northern Long-eared Bat																																						
ENTLE01040	Prepare Presence / Absence Findings - Northern Long-eared Bat	5	19-Jul-18	25-Jul-18	■ Prepare Presence / Absence Findings - Northern Long-eared Bat																																						
ENTLE01050	SFA Presence / Absence Findings - Northern Long-eared Bat	3	26-Jul-18	30-Jul-18	■ SFA Presence / Absence Findings - Northern Long-eared Bat																																						
ENTLE01060	VDOT R/A Presence / Absence Findings - Northern Long-eared Bat	21	31-Jul-18	20-Aug-18	■ VDOT R/A Presence / Absence Findings - Northern Long-eared Bat																																						
<b>Waters of the US Permit</b>					83	11-Jun-18	05-Oct-18	▼ 05-Oct-18, Waters of the US Permit																																			
ENP0001000	Confirm Preliminary Waters of the US Delineations	5	11-Jun-18	15-Jun-18	■ Confirm Preliminary Waters of the US Delineations																																						
ENP0001010	Prepare Waters of the US Delineation Report	10	18-Jun-18	29-Jun-18	■ Prepare Waters of the US Delineation Report																																						
ENP0001020	SFA Waters of the US Delineation Report/Request Jurisdictional Determination of Wetlands	5	02-Jul-18	09-Jul-18	■ SFA Waters of the US Delineation Report/Request Jurisdictional Determination of Wetlands																																						
ENP0001030	Agencies Approval of Jurisdictional Determination Request	30	10-Jul-18	20-Aug-18	■ Agencies Approval of Jurisdictional Determination Request																																						
ENP0001040	Develop Impact Plates - Confirm No Impacts to Jurisdictional Waters of the US	2	21-Aug-18	22-Aug-18	■ Develop Impact Plates - Confirm No Impacts to Jurisdictional Waters of the US																																						
ENP0001050	Develop Documentation that a Project Permit is Not Required	3	23-Aug-18	27-Aug-18	■ Develop Documentation that a Project Permit is Not Required																																						
ENP0001060	SFA Project Permit Requirements Letter to Agencies	5	28-Aug-18	04-Sep-18	■ SFA Project Permit Requirements Letter to Agencies																																						
ENP0001070	Agencies Confirm Project Permit Requirements	15	05-Sep-18	25-Sep-18	■ Agencies Confirm Project Permit Requirements																																						
ENP0001080	Provide VDOT PM with Project Permit Requirement Confirmation from Agencies (HOLD POINT)	3	03-Oct-18	05-Oct-18	■ Provide VDOT PM with Project Permit Requirement Confirmation from Agencies (HOLD POINT)																																						
<b>Pollution Prevention (P2) Plan (2.7.3)</b>					51	01-Aug-18	11-Oct-18	▼ 11-Oct-18, Pollution Prevention (P2) Plan (2.7.3)																																			
ENL0001000	Compile Pollution Prevention Plan	10	01-Aug-18	14-Aug-18	■ Compile Pollution Prevention Plan																																						
ENL0001010	SFC Pollution Prevention Plan (VDOT Review)	3	15-Aug-18	17-Aug-18	■ SFC Pollution Prevention Plan (VDOT Review)																																						
ENL0001020	VDOT R/C Pollution Prevention Plan	21	18-Aug-18	07-Sep-18	■ VDOT R/C Pollution Prevention Plan																																						
ENL0001030	Address Comments / Compile Final Pollution Prevention Plan	5	10-Sep-18	14-Sep-18	■ Address Comments / Compile Final Pollution Prevention Plan																																						
ENL0001040	SFA Final Pollution Prevention Plan	1	17-Sep-18	17-Sep-18	■ SFA Final Pollution Prevention Plan																																						
ENL0001050	VDOT R/A Final Pollution Prevention Plan	21	18-Sep-18	08-Oct-18	■ VDOT R/A Final Pollution Prevention Plan																																						
ENL0001060	VDOT Approves Final Pollution Prevention Plan	3	09-Oct-18	11-Oct-18	■ VDOT Approves Final Pollution Prevention Plan																																						
<b>Stormwater Pollution Prevention Plan</b>					152	26-Sep-18	08-May-19	▼ 08-May-19, Stormwater Pollution Prevention Plan																																			
ENS0001000	Develop SWPPP Compliance Notebook	10	26-Sep-18	09-Oct-18	■ Develop SWPPP Compliance Notebook																																						
ENS0001070	Update SWPPP - Include Approved Stage 2 Bridge Plans	3	10-Oct-18	12-Oct-18	■ Update SWPPP - Include Approved Stage 2 Bridge Plans																																						
ENS0001020	Update SWPPP - Include Approved P2 Plan	3	12-Oct-18	16-Oct-18	■ Update SWPPP - Include Approved P2 Plan																																						
ENS0001040	Update SWPPP - Include Approved Phase 1 - MOT / TMP Plans	3	22-Oct-18	24-Oct-18	■ Update SWPPP - Include Approved Phase 1 - MOT / TMP Plans																																						
ENS0001030	Update SWPPP - Include Approved Phase 1 - C&G / ESC Plans	3	05-Nov-18	07-Nov-18	■ Update SWPPP - Include Approved Phase 1 - C&G / ESC Plans																																						
ENS0001010	Update SWPPP - Include Approved Site Specific Safety & Hazardous Materials Management Plan	3	06-Nov-18	08-Nov-18	■ Update SWPPP - Include Approved Site Specific Safety & Hazardous Materials Management Plan																																						
ENS0001050	Update SWPPP - Include Approved Final Roadway Plans	3	28-Feb-19	04-Mar-19	■ Update SWPPP - Include Approved Final Roadway Plans																																						
ENS0001060	Update SWPPP - Include Approved Phase 2 - Final MOT / TMP Plans	3	25-Mar-19	27-Mar-19	■ Update SWPPP - Include Approved Phase 2 - Final MOT / TMP Plans																																						
ENS0001080	Update SWPPP - Include Approved AFC Lighting / ITS Plans	3	24-Apr-19	26-Apr-19	■ Update SWPPP - Include Approved AFC Lighting / ITS Plans																																						
ENS0001090	Update SWPPP - Include Approved Landscape Plans	3	24-Apr-19	26-Apr-19	■ Update SWPPP - Include Approved Landscape Plans																																						
ENS0001100	Refresh SWPPP Documents as Project Progresses	3	29-Apr-19	01-May-19	■ Refresh SWPPP Documents as Project Progresses																																						
ENS0001110	SWPPP Document Complete	5	02-May-19	08-May-19	■ SWPPP Document Complete																																						
<b>Hazardous Materials</b>					1	02-May-18	02-May-18	▼ 02-May-18, Hazardous Materials																																			
<b>Asbestos Abatement</b>					1	02-May-18	02-May-18	▼ 02-May-18, Asbestos Abatement																																			
ENHAA01000	Perform Project Assessment - Confirm No Asbestos Containing Materials On-site	1	02-May-18	02-May-18	■ Perform Project Assessment - Confirm No Asbestos Containing Materials On-site																																						
<b>Preconstruction Inspections and Monitoring</b>					26	26-Sep-18	31-Oct-18	▼ 31-Oct-18, Preconstruction Inspections and Monitoring																																			
<b>T&amp;E Surveys</b>					26	26-Sep-18	31-Oct-18	▼ 31-Oct-18, T&E Surveys																																			





Activity ID	Activity Name	Original Duration	Start	Finish	2018												2019												2020											
					F	M	A	M	Jun	Jul	A	Sep	Oct	N	D	Jan	F	M	A	M	Jun	Jul	A	S	Oct	N	D	Jan	F	M	A	M	Jun	Jul	A	Sep	Oct	N		
<b>ROW Parcel 012: Scott Beers and Dana Last</b>		72	17-Aug-18	29-Nov-18	29-Nov-18, ROW Parcel 012: Scott Beers and Dana Last																																			
RWAL001010	Perform Title Search - Parcel 012	5	17-Aug-18	23-Aug-18	■ Perform Title Search - Parcel 012																																			
RWAL001000	Develop Appraisal - Parcel 012	40	31-Aug-18	26-Oct-18	■ Develop Appraisal - Parcel 012																																			
RWAL001020	Review Appraisal & Phase 1 ESA - Parcel 012	5	29-Oct-18	02-Nov-18	■ Review Appraisal & Phase 1 ESA - Parcel 012																																			
RWAL001030	SFA Appraisal & Phase 1 ESA - Parcel 012	3	05-Nov-18	07-Nov-18	■ SFA Appraisal & Phase 1 ESA - Parcel 012																																			
RWAL001040	VDOT R/A Appraisal & Phase 1 ESA - Parcel 012	21	08-Nov-18	28-Nov-18	■ VDOT R/A Appraisal & Phase 1 ESA - Parcel 012																																			
RWAL001050	VDOT Issues Notice to Commence Acquisition - Parcel 012 (HOLD POINT)	1	29-Nov-18	29-Nov-18	■ VDOT Issues Notice to Commence Acquisition - Parcel 012 (HOLD POINT)																																			
<b>Negotiations</b>		109	30-Nov-18	10-May-19	10-May-19, Negotiations																																			
<b>ROW Parcel 003: Damon Stark / Carolyn Blackwell</b>		109	30-Nov-18	10-May-19	10-May-19, ROW Parcel 003: Damon Stark / Carolyn Blackwell																																			
RWNC01000	Present Offer Package to Property Owner - Parcel 003	10	30-Nov-18	13-Dec-18	■ Present Offer Package to Property Owner - Parcel 003																																			
RWNC01010	Initial Offer Negotiation Period - Parcel 003	60	14-Dec-18	15-Mar-19	■ Initial Offer Negotiation Period - Parcel 003																																			
RWNC01020	Submit Justification Letters (if applicable) - Parcel 003	5	18-Mar-19	22-Mar-19	■ Submit Justification Letters (if applicable) - Parcel 003																																			
RWNC01030	VDOT R/A Justification Letter (if applicable) - Parcel 003	21	23-Mar-19	12-Apr-19	■ VDOT R/A Justification Letter (if applicable) - Parcel 003																																			
RWNC01040	Perpare & Submit Acceptance/Refusal Package - Parcel 003	5	15-Apr-19	19-Apr-19	■ Perpare & Submit Acceptance/Refusal Package - Parcel 003																																			
RWNC01050	VDOT Review Acceptanve/Refusal Package - Parcel 003	21	20-Apr-19	10-May-19	■ VDOT Review Acceptanve/Refusal Package - Parcel 003																																			
<b>ROW Parcel 004: Francis &amp; Erica Fusco</b>		109	30-Nov-18	10-May-19	10-May-19, ROW Parcel 004: Francis & Erica Fusco																																			
RWND01000	Present Offer Package to Property Owner - Parcel 004	10	30-Nov-18	13-Dec-18	■ Present Offer Package to Property Owner - Parcel 004																																			
RWND01010	Initial Offer Negotiation Period - Parcel 004	60	14-Dec-18	15-Mar-19	■ Initial Offer Negotiation Period - Parcel 004																																			
RWND01020	Submit Justification Letters (if applicable) - Parcel 004	5	18-Mar-19	22-Mar-19	■ Submit Justification Letters (if applicable) - Parcel 004																																			
RWND01030	VDOT R/A Justification Letter (if applicable) - Parcel 004	21	23-Mar-19	12-Apr-19	■ VDOT R/A Justification Letter (if applicable) - Parcel 004																																			
RWND01040	Perpare & Submit Acceptance/Refusal Package - Parcel 004	5	15-Apr-19	19-Apr-19	■ Perpare & Submit Acceptance/Refusal Package - Parcel 004																																			
RWND01050	VDOT Review Acceptanve/Refusal Package - Parcel 004	21	20-Apr-19	10-May-19	■ VDOT Review Acceptanve/Refusal Package - Parcel 004																																			
<b>ROW Parcel 007: Alwington Farm, LLC</b>		109	30-Nov-18	10-May-19	10-May-19, ROW Parcel 007: Alwington Farm, LLC																																			
RWNG01000	Present Offer Package to Property Owner - Parcel 007	10	30-Nov-18	13-Dec-18	■ Present Offer Package to Property Owner - Parcel 007																																			
RWNG01010	Initial Offer Negotiation Period - Parcel 007	60	14-Dec-18	15-Mar-19	■ Initial Offer Negotiation Period - Parcel 007																																			
RWNG01020	Submit Justification Letters (if applicable) - Parcel 007	5	18-Mar-19	22-Mar-19	■ Submit Justification Letters (if applicable) - Parcel 007																																			
RWNG01030	VDOT R/A Justification Letter (if applicable) - Parcel 007	21	23-Mar-19	12-Apr-19	■ VDOT R/A Justification Letter (if applicable) - Parcel 007																																			
RWNG01040	Perpare & Submit Acceptance/Refusal Package - Parcel 007	5	15-Apr-19	19-Apr-19	■ Perpare & Submit Acceptance/Refusal Package - Parcel 007																																			
RWNG01050	VDOT Review Acceptanve/Refusal Package - Parcel 007	21	20-Apr-19	10-May-19	■ VDOT Review Acceptanve/Refusal Package - Parcel 007																																			
<b>ROW Parcel 010: Potomac District - The Assemblies of God, Inc.</b>		109	30-Nov-18	10-May-19	10-May-19, ROW Parcel 010: Potomac District - The Assemblies of God, Inc.																																			
RWNJ01000	Present Offer Package to Property Owner - Parcel 010	10	30-Nov-18	13-Dec-18	■ Present Offer Package to Property Owner - Parcel 010																																			
RWNJ01010	Initial Offer Negotiation Period - Parcel 010	60	14-Dec-18	15-Mar-19	■ Initial Offer Negotiation Period - Parcel 010																																			
RWNJ01020	Submit Justification Letters (if applicable) - Parcel 010	5	18-Mar-19	22-Mar-19	■ Submit Justification Letters (if applicable) - Parcel 010																																			
RWNJ01030	VDOT R/A Justification Letter (if applicable) - Parcel 010	21	23-Mar-19	12-Apr-19	■ VDOT R/A Justification Letter (if applicable) - Parcel 010																																			
RWNJ01040	Perpare & Submit Acceptance/Refusal Package - Parcel 010	5	15-Apr-19	19-Apr-19	■ Perpare & Submit Acceptance/Refusal Package - Parcel 010																																			
RWNJ01050	VDOT Review Acceptanve/Refusal Package - Parcel 010	21	20-Apr-19	10-May-19	■ VDOT Review Acceptanve/Refusal Package - Parcel 010																																			
<b>ROW Parcel 011: Lisa &amp; Paul Newcomb</b>		109	30-Nov-18	10-May-19	10-May-19, ROW Parcel 011: Lisa & Paul Newcomb																																			
RWNK01000	Present Offer Package to Property Owner - Parcel 011	10	30-Nov-18	13-Dec-18	■ Present Offer Package to Property Owner - Parcel 011																																			
RWNK01010	Initial Offer Negotiation Period - Parcel 011	60	14-Dec-18	15-Mar-19	■ Initial Offer Negotiation Period - Parcel 011																																			
RWNK01020	Submit Justification Letters (if applicable) - Parcel 011	5	18-Mar-19	22-Mar-19	■ Submit Justification Letters (if applicable) - Parcel 011																																			
RWNK01030	VDOT R/A Justification Letter (if applicable) - Parcel 011	21	23-Mar-19	12-Apr-19	■ VDOT R/A Justification Letter (if applicable) - Parcel 011																																			
RWNK01040	Perpare & Submit Acceptance/Refusal Package - Parcel 011	5	15-Apr-19	19-Apr-19	■ Perpare & Submit Acceptance/Refusal Package - Parcel 011																																			
RWNK01050	VDOT Review Acceptanve/Refusal Package - Parcel 011	21	20-Apr-19	10-May-19	■ VDOT Review Acceptanve/Refusal Package - Parcel 011																																			
<b>ROW Parcel 012: Scott Beers and Dana Last</b>		109	30-Nov-18	10-May-19	10-May-19, ROW Parcel 012: Scott Beers and Dana Last																																			





Activity ID	Activity Name	Original Duration	Start	Finish	2018												2019												2020											
					F	M	A	M	Jun	Jul	A	Sep	Oct	N	D	Jan	F	M	A	M	Jun	Jul	A	S	Oct	N	D	Jan	F	M	A	M	Jun	Jul	A	Sep	Oct	N		
<b>Warrenton Public Works</b>					31-Oct-18, Warrenton Public Works																																			
UTPW001000	Advance to Final Relocation Plan / Complete UT-9's - Warrenton Public Works	10	12-Sep-18	25-Sep-18	■ Advance to Final Relocation Plan / Complete UT-9's - Warrenton Public Works																																			
UTPW001010	SFA Final Utility Relocation Plan / UT-9's - Warrenton Public Works	3	26-Sep-18	28-Sep-18	■ SFA Final Utility Relocation Plan / UT-9's - Warrenton Public Works																																			
UTPW001020	VDOT R/A Final Utility Relocation Plan - Warrenton Public Works	21	29-Sep-18	19-Oct-18	■ VDOT R/A Final Utility Relocation Plan - Warrenton Public Works																																			
UTPW001030	VDOT Approves Utility Relocation Plan / Myers Issues NTP to - Warrenton Public Works	5	22-Oct-18	26-Oct-18	■ VDOT Approves Utility Relocation Plan / Myers Issues NTP to - Warrenton Public Works																																			
UTPW001040	Update VDOT RUMS with Utility Status Report Data - Warrenton Public Works	3	29-Oct-18	31-Oct-18	■ Update VDOT RUMS with Utility Status Report Data - Warrenton Public Works																																			
<b>Columbia Gas</b>					14-Nov-18, Columbia Gas																																			
UTPG001000	Advance to Final Relocation Plan / Complete UT-9's - Columbia Gas	20	12-Sep-18	09-Oct-18	■ Advance to Final Relocation Plan / Complete UT-9's - Columbia Gas																																			
UTPG001010	SFA Final Utility Relocation Plan / UT-9's - Columbia Gas	3	10-Oct-18	12-Oct-18	■ SFA Final Utility Relocation Plan / UT-9's - Columbia Gas																																			
UTPG001020	VDOT R/A Final Utility Relocation Plan - Columbia Gas	21	13-Oct-18	02-Nov-18	■ VDOT R/A Final Utility Relocation Plan - Columbia Gas																																			
UTPG001030	VDOT Approves Utility Relocation Plan / Myers Issues NTP to - Columbia Gas	5	05-Nov-18	09-Nov-18	■ VDOT Approves Utility Relocation Plan / Myers Issues NTP to - Columbia Gas																																			
UTPG001040	Update VDOT RUMS with Utility Status Report Data - Columbia Gas	3	12-Nov-18	14-Nov-18	■ Update VDOT RUMS with Utility Status Report Data - Columbia Gas																																			
<b>Utility Relocations</b>					11-Mar-19, Utility Relocations																																			
<b>Dominion Energy</b>					25-Feb-19, Dominion Energy																																			
UTUD001000	Perform Utility Relocations - Dominion Energy	55	15-Nov-18	11-Feb-19	■ Perform Utility Relocations - Dominion Energy																																			
UTUD001010	Relocations Complete - Secure UT-11's - Dominion Energy	5	12-Feb-19	18-Feb-19	■ Relocations Complete - Secure UT-11's - Dominion Energy																																			
UTUD001020	Complete Utility As-builts - Dominion Energy	5	19-Feb-19	25-Feb-19	■ Complete Utility As-builts - Dominion Energy																																			
<b>Verizon</b>					11-Mar-19, Verizon																																			
UTUV001000	Perform Utility Relocations - Verizon	55	03-Dec-18	25-Feb-19	■ Perform Utility Relocations - Verizon																																			
UTUV001010	Relocations Complete - Secure UT-11's - Verizon	5	26-Feb-19	04-Mar-19	■ Relocations Complete - Secure UT-11's - Verizon																																			
UTUV001020	Complete Utility As-builts - Verizon	5	05-Mar-19	11-Mar-19	■ Complete Utility As-builts - Verizon																																			
<b>Lumos</b>					04-Feb-19, Lumos																																			
UTUL001000	Perform Utility Relocations - Lumos	40	15-Nov-18	21-Jan-19	■ Perform Utility Relocations - Lumos																																			
UTUL001010	Relocations Complete - Secure UT-11's - Lumos	5	22-Jan-19	28-Jan-19	■ Relocations Complete - Secure UT-11's - Lumos																																			
UTUL001020	Complete Utility As-builts - Lumos	5	29-Jan-19	04-Feb-19	■ Complete Utility As-builts - Lumos																																			
<b>Warrenton Public Works</b>					30-Nov-18, Warrenton Public Works																																			
UTUW001000	Perform Utility Relocations - Warrenton Public Works	10	01-Nov-18	14-Nov-18	■ Perform Utility Relocations - Warrenton Public Works																																			
UTUW001010	Relocations Complete - Secure UT-11's - Warrenton Public Works	5	15-Nov-18	21-Nov-18	■ Relocations Complete - Secure UT-11's - Warrenton Public Works																																			
UTUW001020	Complete Utility As-builts - Warrenton Public Works	5	26-Nov-18	30-Nov-18	■ Complete Utility As-builts - Warrenton Public Works																																			
<b>Columbia Gas</b>					04-Feb-19, Columbia Gas																																			
UTUG001000	Perform Utility Relocations - Columbia Gas	40	15-Nov-18	21-Jan-19	■ Perform Utility Relocations - Columbia Gas																																			
UTUG001010	Relocations Complete - Secure UT-11's - Columbia Gas	5	22-Jan-19	28-Jan-19	■ Relocations Complete - Secure UT-11's - Columbia Gas																																			
UTUG001020	Complete Utility As-builts - Columbia Gas	5	29-Jan-19	04-Feb-19	■ Complete Utility As-builts - Columbia Gas																																			
<b>Procurement</b>					21-May-19, Procurement																																			
<b>Vendor Procurement</b>					29-Mar-19, Vendor Procurement																																			
PRVP001040	Procure Bridge Package Vendor	10	14-Aug-18	27-Aug-18	■ Procure Bridge Package Vendor																																			
PRVP001060	Procure MSE Wall Package Vendor	10	14-Aug-18	27-Aug-18	■ Procure MSE Wall Package Vendor																																			
PRVP001020	Procure MOT Package Vendor	20	05-Sep-18	02-Oct-18	■ Procure MOT Package Vendor																																			
PRVP001000	Procure Clearing / Grubbing Package Vendor	10	19-Sep-18	02-Oct-18	■ Procure Clearing / Grubbing Package Vendor																																			
PRVP001010	Procure E&S Package Vendor	10	19-Sep-18	02-Oct-18	■ Procure E&S Package Vendor																																			
PRVP001030	Procure Grading & Drainage Package Vendor	20	29-Nov-18	03-Jan-19	■ Procure Grading & Drainage Package Vendor																																			
PRVP001050	Procure Signing / Markings Package Vendor	20	29-Nov-18	03-Jan-19	■ Procure Signing / Markings Package Vendor																																			
PRVP001070	Procure Structures Package Vendor	20	29-Nov-18	03-Jan-19	■ Procure Structures Package Vendor																																			
PRVP001090	Procure Paving Package Vendor	10	29-Nov-18	12-Dec-18	■ Procure Paving Package Vendor																																			



Activity ID	Activity Name	Original Duration	Start	Finish	2018												2019												2020											
					F	M	A	M	Jun	Jul	A	Sep	Oct	N	D	Jan	F	M	A	M	Jun	Jul	A	S	Oct	N	D	Jan	F	M	A	M	Jun	Jul	A	Sep	Oct	N	D	
<b>Roadway</b>					24-Apr-19, Roadway																																			
CNMARW1000	Excavate Jack & Bore Pit - Sta. 130+xx - US 15/17/29 Bypass	4	04-Mar-19	11-Mar-19	█ Excavate Jack & Bore Pit - Sta. 130+xx - US 15/17/29 Bypass																																			
CNMARW1010	Jack & Bore 24" Pipe - Sta. 130+xx - US 15/17/29 Bypass	10	12-Mar-19	28-Mar-19	█ Jack & Bore 24" Pipe - Sta. 130+xx - US 15/17/29 Bypass																																			
CNMARW1500	Excavate Jack & Bore Pit - Sta. 140+xx - US 15/17/29 Bypass	4	01-Apr-19	04-Apr-19	█ Excavate Jack & Bore Pit - Sta. 140+xx - US 15/17/29 Bypass																																			
CNMARW1510	Jack & Bore 24" Pipe - Sta. 140+xx - US 15/17/29 Bypass	10	08-Apr-19	24-Apr-19	█ Jack & Bore 24" Pipe - Sta. 140+xx - US 15/17/29 Bypass																																			
<b>Phase 2</b>					18-Nov-19, Phase 2																																			
<b>General/Entire Segment/All Areas</b>					18-Nov-19, General/Entire Segment/All Areas																																			
CNMBES0010	Remove / Relocate Temporary Barrier - US 15/17/29 Bypass - Phase 2	5	06-Nov-19	13-Nov-19	█ Remove / Relocate Temporary Barrier - US																																			
CNMBES0020	Modify Temporary Signal - Temporary Southern Intersection - Phase 2	2	06-Nov-19	07-Nov-19	█ Modify Temporary Signal - Temporary South																																			
CNMBES0030	Remove Existing Signal @ Existing Bypass/Business US 15/17/29 Intersection - Phase 2	5	11-Nov-19	18-Nov-19	█ Remove Existing Signal @ Existing Bypass																																			
<b>Phase 3</b>					06-Aug-20																																			
<b>General/Entire Segment/All Areas</b>					06-Aug-20																																			
CNMCES0020	Relocate Temporary Barrier - US 15/17/29 Bypass - Phase 2	5	23-Apr-20	30-Apr-20	█ Relocate Temporary B																																			
CNMCES1000	Remove Crossover/Temporary Pavement - Temporary Southern Interchange - US 15/17/29 Bypass	5	01-Jun-20	05-Jun-20	█ Remove Crossove																																			
CNMCES1010	Place Topsoil Crossover/Temporary Pavement - Temporary Southern Interchange - US 15/17/29 E	2	08-Jun-20	09-Jun-20	█ Place Topsoil Crc																																			
CNMCES6000	Remove Existing Pavement - US 15/17/29 Bypass - Phase 3	10	08-Jun-20	19-Jun-20	█ Remove Existing																																			
CNMCES1020	Seed/Mulch Crossover/Temporary Pavement - Temporary Southern Interchange - US 15/17/29 By	1	10-Jun-20	10-Jun-20	█ Seed/Mulch Cros																																			
CNMCES6010	Place Topsoil - Existing Pavement - US 15/17/29 Bypass - Phase 3	5	22-Jun-20	26-Jun-20	█ Place Topsoil -																																			
CNMCES6020	Seed/Mulch - Existing Pavement - US 15/17/29 Bypass - Phase 3	1	29-Jun-20	29-Jun-20	█ Seed/Mulch - F																																			
CNMCES4000	Place Permanent Pavement Markings - NB - US 15/17/29 Bypass	1	28-Jul-20	28-Jul-20	█ Place Perma																																			
CNMCES4010	Place Permanent Pavement Markings - SB - US 15/17/29 Bypass	1	06-Aug-20	06-Aug-20	█ Place Pern																																			
<b>Roadway</b>					03-Aug-20																																			
CNMCRW1000	Mill - Contract Work - NB - US 15/17/29 Bypass	2	17-Jul-20	20-Jul-20	█ Mill - Contr																																			
CNMCRW1010	Overlay - Contract Work - NB - US 15/17/29 Bypass	3	21-Jul-20	23-Jul-20	█ Overlay - Cc																																			
CNMCRW2000	Mill - Contract Work - SB - US 15/17/29 Bypass	2	28-Jul-20	29-Jul-20	█ Mill - Cont																																			
CNMCRW2010	Overlay - Contract Work - SB - US 15/17/29 Bypass	3	30-Jul-20	03-Aug-20	█ Overlay - C																																			
<b>Eastern Segment</b>					20-Jul-20, E																																			
<b>Phase 1</b>					22-Jul-19, Phase 1																																			
<b>General/Entire Segment/All Areas</b>					19-Jul-19, General/Entire Segment/All Areas																																			
CNEAES0010	Install Temporary Barrier - Eastern Segment - Phase 1	1	12-Oct-18	12-Oct-18	█ Install Temporary Barrier - Eastern Segment - Phase 1																																			
CNEAES2000	Clear & Grub - Abutment A - Phase 1	5	29-Oct-18	05-Nov-18	█ Clear & Grub - Abutment A - Phase 1																																			
CNEAES1000	Install Erosion Control Measures - Eastern Segment - Phase 1	10	26-Nov-18	11-Dec-18	█ Install Erosion Control Measures - Eastern Segment - Phase 1																																			
CNEAES2010	Clear & Grub - Eastern Segment - Phase 1	15	12-Dec-18	15-Jan-19	█ Clear & Grub - Eastern Segment - Phase 1																																			
CNEAES6000	Remove Existing Pavement - Eastern Segment - Phase 1	3	25-Jun-19	27-Jun-19	█ Remove Existing Pavement - Eastern Segment - Phase 1																																			
CNEAES6010	Place Topsoil - Existing Pavement - Eastern Segment - Phase 1	1	28-Jun-19	28-Jun-19	█ Place Topsoil - Existing Pavement - Eastern Segment - Phase																																			
CNEAES6020	Seed/Mulch - Existing Pavement - Eastern Segment - Phase 1	1	01-Jul-19	01-Jul-19	█ Seed/Mulch - Existing Pavement - Eastern Segment - Phase																																			
CNEAES3000	Install Permanent Signs - Eastern Segment - Phase 1	2	18-Jul-19	19-Jul-19	█ Install Permanent Signs - Eastern Segment - Phase 1																																			
CNEAES4000	Place Temporary Pavement Markings - Eastern Segment - Phase 1	2	18-Jul-19	19-Jul-19	█ Place Temporary Pavement Markings - Eastern Segment - 1																																			
<b>Eastern Roundabout</b>					11-Jul-19, Eastern Roundabout																																			
CNEAER1090	Cut/Fill - Eastern Roundabout	3	01-May-19	03-May-19	█ Cut/Fill - Eastern Roundabout																																			
CNEAER1000	Finegrade Subgrade - Eastern Roundabout	2	14-May-19	15-May-19	█ Finegrade Subgrade - Eastern Roundabout																																			
CNEAER1010	Place Base Stone - Eastern Roundabout	1	16-May-19	16-May-19	█ Place Base Stone - Eastern Roundabout																																			
CNEAER5000	Construct Light Pole Foundations - Eastern Roundabout	5	22-May-19	29-May-19	█ Construct Light Pole Foundations - Eastern Roundabout																																			
CNEAER5010	Install Trenched Conduit - Eastern Roundabout	5	30-May-19	06-Jun-19	█ Install Trenched Conduit - Eastern Roundabout																																			





Activity ID	Activity Name	Original Duration	Start	Finish	2018												2019												2020											
					F	M	A	M	Jun	Jul	A	Sep	Oct	N	D	Jan	F	M	A	M	Jun	Jul	A	S	Oct	N	D	Jan	F	M	A	M	Jun	Jul	A	Sep	Oct	N	D	
<b>Phase 2</b>					▼ 16-Dec-19, Phase 2																																			
<b>General/Entire Segment/All Areas</b>					▼ 16-Dec-19, General/Entire Segment/All Areas																																			
CNEBES0020	Remove Temporary Barrier - Eastern Segment - Phase 2	2	06-Nov-19	07-Nov-19	Remove Temporary Barrier - Eastern Segment - Phase 2																																			
CNEBES7000	Construct SWM "A" - Eastern Segment - Phase 2	10	27-Nov-19	16-Dec-19	■ Construct SWM "A" - Eastern Segment - Phase 2																																			
<b>Park &amp; Ride</b>					▼ 26-Nov-19, Park & Ride																																			
CNEBPR1000	Remove Existing Pavement - Park & Ride	1	11-Nov-19	11-Nov-19	Remove Existing Pavement - Park & Ride																																			
CNEBPR1010	Cut/Fill / Grade - Park & Ride	1	12-Nov-19	12-Nov-19	Cut/Fill / Grade - Park & Ride																																			
CNEBPR1020	Install Drainage - Park & Ride	2	13-Nov-19	14-Nov-19	Install Drainage - Park & Ride																																			
CNEBPR1140	Construct Light Pole Foundations - Park & Ride	1	13-Nov-19	13-Nov-19	Construct Light Pole Foundations - Park & Ride																																			
CNEBPR1150	Install Trenched Conduit - Park & Ride	1	14-Nov-19	14-Nov-19	Install Trenched Conduit - Park & Ride																																			
CNEBPR1030	Finegrade Subgrade - Park & Ride	2	18-Nov-19	19-Nov-19	Finegrade Subgrade - Park & Ride																																			
CNEBPR1170	Install Electrical Equipment - Park & Ride	3	18-Nov-19	20-Nov-19	Install Electrical Equipment - Park & Ride																																			
CNEBPR1040	Place Stone - Park & Ride	1	20-Nov-19	20-Nov-19	Place Stone - Park & Ride																																			
CNEBPR1160	Erect Light Poles - Park & Ride	1	21-Nov-19	21-Nov-19	Erect Light Poles - Park & Ride																																			
CNEBPR1050	Grade Slope & Respread Topsoil - Park & Ride	1	25-Nov-19	25-Nov-19	Grade Slope & Respread Topsoil - Park & Ride																																			
CNEBPR1060	Seed & Mulch - Park & Ride	1	26-Nov-19	26-Nov-19	Seed & Mulch - Park & Ride																																			
<b>Phase 3</b>					▼ 20-Jul-20, Phase 3																																			
<b>General/Entire Segment/All Areas</b>					▼ 20-Jul-20, General/Entire Segment/All Areas																																			
CNECES0010	Place Surface Course (SM-12.5) - Eastern Segment - Phase 3	4	13-Jul-20	16-Jul-20	■ Place Surface Course (SM-12.5) - Eastern Segment - Phase 3																																			
CNECES0020	Place Permanent Pavement Markings - Eastern Segment - Phase 3	2	17-Jul-20	20-Jul-20	■ Place Permanent Pavement Markings - Eastern Segment - Phase 3																																			
<b>Western Segment</b>					▼ 16-Jul-20, Western Segment																																			
<b>Phase 1</b>					▼ 31-Jul-19, Phase 1																																			
<b>General/Entire Segment/All Areas</b>					▼ 31-Jul-19, General/Entire Segment/All Areas																																			
CNWAES0010	Install MOT / Advanced Warning Signs - Western Segment - Phase 1	2	11-Oct-18	12-Oct-18	Install MOT / Advanced Warning Signs - Western Segment - Phase 1																																			
CNWAES0040	Modify Existing Signal - Western Segment - Phase 1	1	15-Oct-18	15-Oct-18	Modify Existing Signal - Western Segment - Phase 1																																			
CNWAES0020	Grade for Temporary Pavement - Western Segment - Phase 1	7	24-Oct-18	05-Nov-18	■ Grade for Temporary Pavement - Western Segment - Phase 1																																			
CNWAES0025	Construct Temporary Pavement - Western Segment - Phase 1	3	06-Nov-18	08-Nov-18	Construct Temporary Pavement - Western Segment - Phase 1																																			
CNWAES2000	Clear & Grub - Abutment B - Phase 1	5	06-Nov-18	13-Nov-18	■ Clear & Grub - Abutment B - Phase 1																																			
CNWAES0030	Install Temporary Barrier - Western Segment - Phase 1	2	07-Nov-18	08-Nov-18	Install Temporary Barrier - Western Segment - Phase 1																																			
CNWAES0050	Place Temporary Pavement Markings - Western Segment - Phase 1	1	12-Nov-18	12-Nov-18	Place Temporary Pavement Markings - Western Segment - Phase 1																																			
CNWAES1000	Install Erosion Control Measures - Western Segment - Phase 1	5	12-Dec-18	19-Dec-18	■ Install Erosion Control Measures - Western Segment - Phase 1																																			
CNWAES2010	Clear & Grub - Western Segment - Phase 1	15	17-Jan-19	14-Feb-19	■ Clear & Grub - Western Segment - Phase 1																																			
CNWAES3000	Install Permanent Signs - Western Segment - Phase 1	2	08-Jul-19	09-Jul-19	Install Permanent Signs - Western Segment - Phase 1																																			
CNWAES4000	Place Temporary Pavement Markings - Western Segment - Phase 1	1	08-Jul-19	08-Jul-19	Place Temporary Pavement Markings - Western Segment - Phase 1																																			
CNWAES7000	Construct SWM "C" - Western Segment - Phase 1	10	18-Jul-19	31-Jul-19	■ Construct SWM "C" - Western Segment - Phase 1																																			
<b>Western Roundabout</b>					▼ 26-Jun-19, Western Roundabout																																			
CNWAWR2010	Cut/Fill - Western Roundabout	15	04-Apr-19	30-Apr-19	■ Cut/Fill - Western Roundabout																																			
CNWAWR2000	Construct Wire Wall - Western Roundabout	15	23-Apr-19	14-May-19	■ Construct Wire Wall - Western Roundabout																																			
CNWAWR1000	Finegrade Subgrade - Western Roundabout	2	15-May-19	16-May-19	Finegrade Subgrade - Western Roundabout																																			
CNWAWR1010	Place Base Stone - Western Roundabout	1	20-May-19	20-May-19	Place Base Stone - Western Roundabout																																			
CNWAWR1020	F/R/P Inside Curb - Truck Apron - Western Roundabout	4	21-May-19	24-May-19	■ F/R/P Inside Curb - Truck Apron - Western Roundabout																																			
CNWAWR5000	Construct Light Pole Foundations - Western Roundabout	5	22-May-19	29-May-19	■ Construct Light Pole Foundations - Western Roundabout																																			
CNWAWR1030	Cure Inside Curb - Truck Apron - Western Roundabout	3	25-May-19	27-May-19	Cure Inside Curb - Truck Apron - Western Roundabout																																			
CNWAWR1040	F/R/P Outside Curb - Truck Apron - Western Roundabout	4	28-May-19	03-Jun-19	■ F/R/P Outside Curb - Truck Apron - Western Roundabout																																			











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