

ORIGINAL

Submitted to:



Submitted by:



Archer Western

in association with

PARSONS

Volume I: Technical Proposal

FALL HILL AVENUE WIDENING AND MARY WASHINGTON BOULEVARD EXTENSION

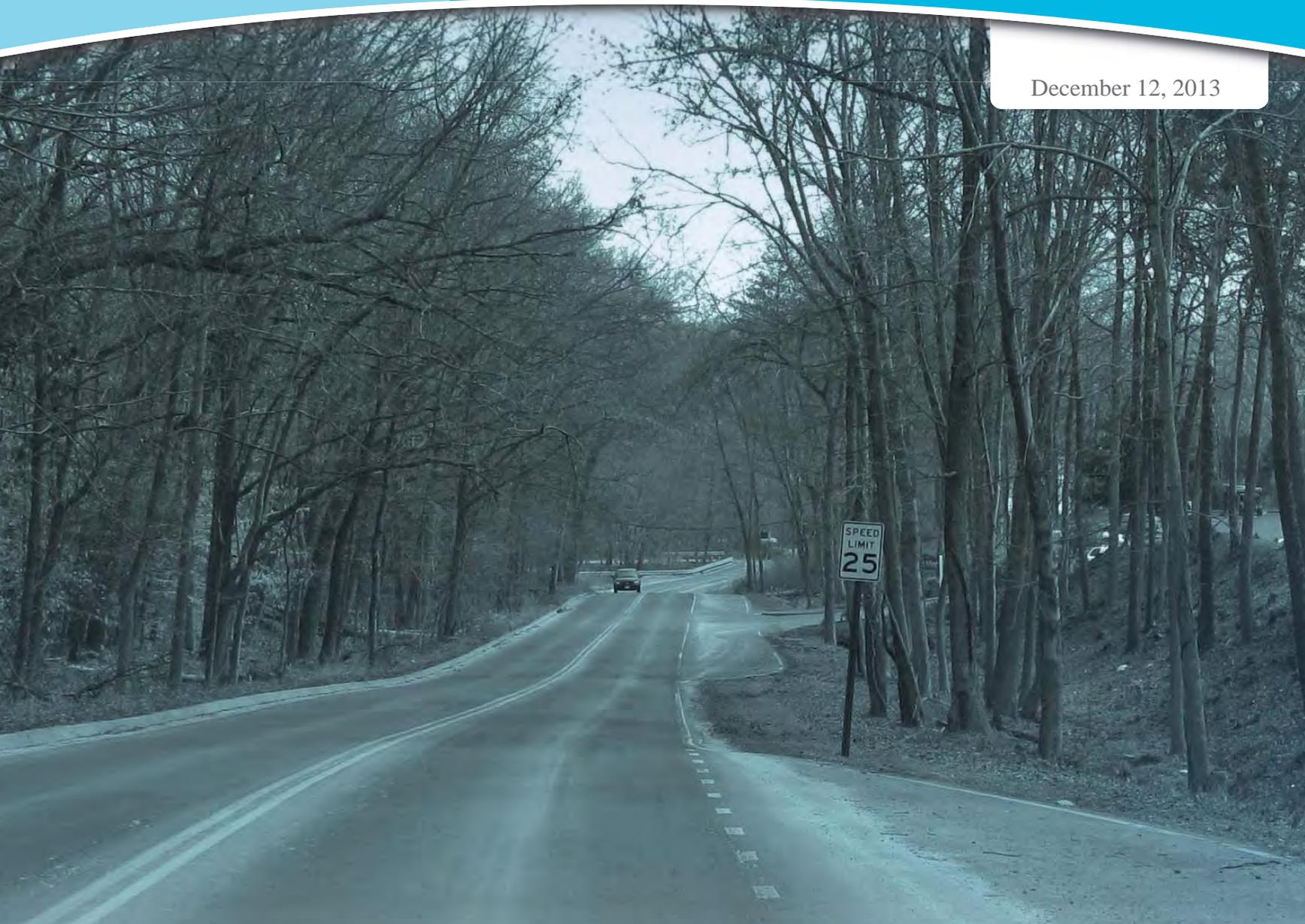
City of Fredericksburg, Virginia | A Design-Build Project

State Project Number: U000-111-233

Federal Project Number: STP-5A01 (181)

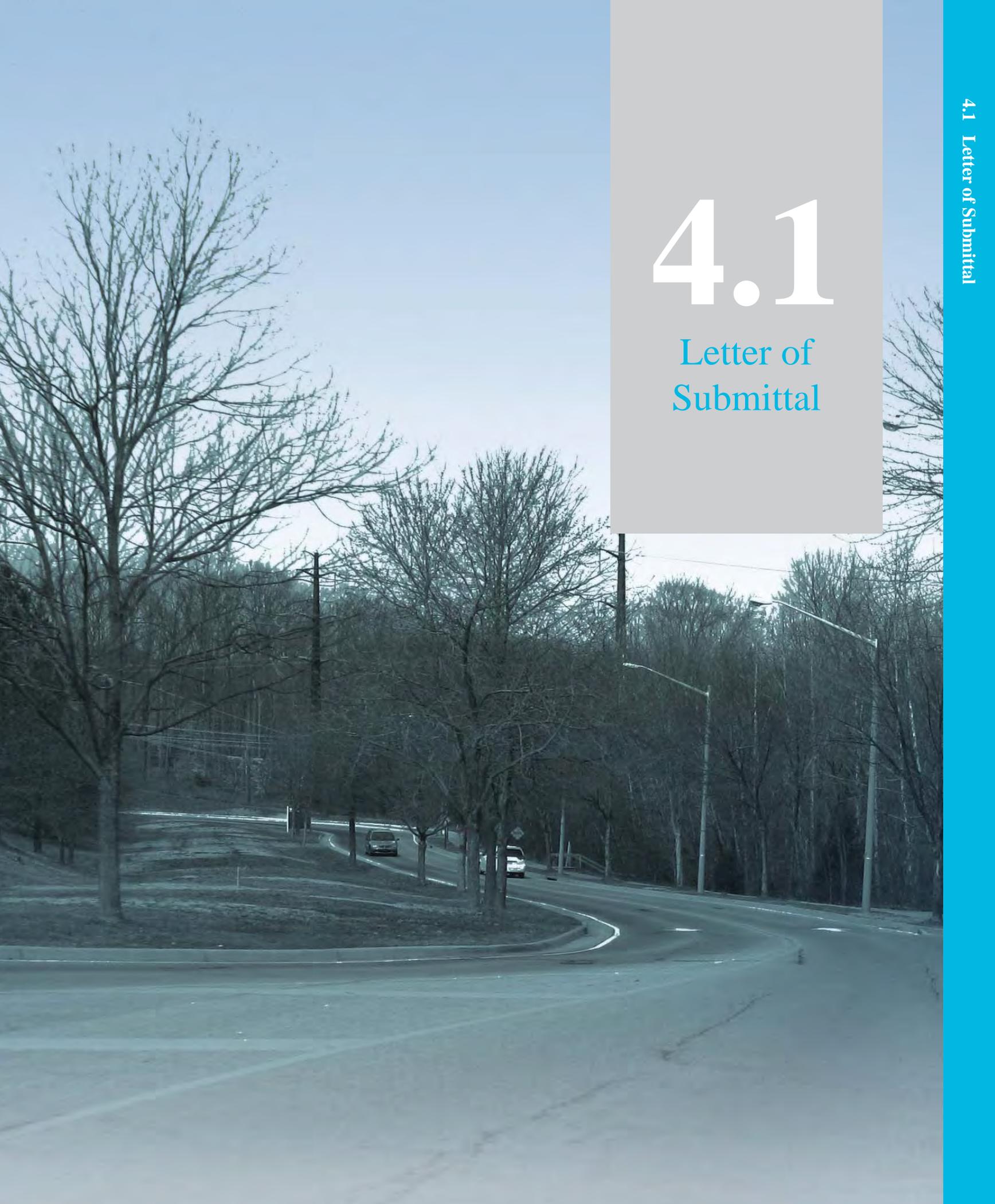
Contract ID Number: C00088699DB59

December 12, 2013



4.1

Letter of Submittal





Archer Western

December 12, 2013

Commonwealth of Virginia
Department of Transportation
1401 E. Broad Street
Richmond, Virginia 23219
Attention: Brenda L. Williams

***SUBJECT: Statement of Qualifications – Contract ID Number C00088699DB59
Fall Hill Avenue Widening and Mary Washington Boulevard Extension
State Project Number U000-111-233
Federal Project Number STP-5A01 (181)***

Dear Ms. Williams:

Archer Western Construction, LLC, teamed with Parsons Transportation Group Inc., is pleased to submit our technical proposal for the Virginia Department of Transportation Fall Hill Avenue Widening and Mary Washington Boulevard Extension Project. Our proposal is organized in accordance with the RFP. Volume I consists of our narrative and the required forms and appendices. Volume II consists of our design concept graphics.

4.1.1 FULL LEGAL NAME AND ADDRESS OF OFFEROR:

*Offeror: Archer Western Construction, LLC
Address: 2 Wisconsin Circle, Suite 200, Chevy Chase, MD 20815
Phone: 301-347-4614 Fax: 404-495-8701
Authorized Representative: Michael D. Manning, Vice President*

4.1.2 DECLARATION OF INTENT TO ENTER INTO A CONTRACT: Archer Western Construction, LLC, if selected will enter into a contract with VDOT for the Fall Hill Avenue Widening and Mary Washington Boulevard Extension Project in accordance with the terms of the RFP and subsequent addendum.

4.1.3 DECLARATION OF TECHNICAL AND PRICE PROPOSAL EFFECTIVE DATES: Pursuant to Part 1, Section 8.2, Archer Western Construction declares that the offer represented by our technical and price proposals will remain in full force and effect for one hundred and twenty (120) days after the date that the technical proposal is actually submitted to VDOT, currently December 12, 2013.

4.1.4 OFFEROR'S POINT OF CONTACT: Our proposed Design-Build Project Manager will serve as the Point of Contact:

*Offeror's Primary Contact: **Brian Quinlan, PE, Senior Project Manager**
Address: 2 Wisconsin Circle, Suite 200, Chevy Chase, MD 20815
Phone: 301-347-4614 Mobile: 443-744-2066 Fax: 404-495-8701
Email: bquinlan@walshgroup.com*

4.1.5 PRINCIPAL OFFICER OF THE OFFEROR: The Principal Officer of Archer Western is as follows:

*Offeror's Principal Officer: **Michael D. Manning, Vice President**
Address: 2410 Paces Ferry Road, Suite 600, Atlanta, GA 30339
Phone: 404-495-8700*

4.1.6 FINAL COMPLETION DATE:

Milestone	Date
Final Completion	1/24/17

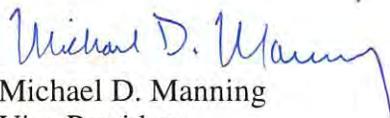
4.1.7 EXECUTED PROPOSAL PAYMENT AGREEMENT: Please refer to the Appendix for the Proposal Payment Agreement.

4.1.8 DEBARMENT FORMS: Please refer to the Appendix for executed debarment forms 11.8.6(a) and 11.8.6(b) from all team members.

4.1.9 TECHNICAL PROPOSAL COMPLIANCE: Our Technical Proposal is fully compliant with the Design Criteria Table and Tapers and Storage Table included in the RFP Technical Requirements (Part 2) and all other requirements of this RFP. Also, we certify that the our proposed limits of construction that include all stormwater management facilities are located within the right-of-way limits shown on the RFP conceptual plans with the exception of permanent and temporary easements and that our design concept only requires the Design Exception and/or Waivers identified in this proposal or included in the RFP or Addendum.

We appreciate the opportunity to submit our technical proposal for the design and construction of the Fall Hill Avenue Widening and Mary Washington Boulevard Extension. In consideration of our unique experience and project approach, we are confident that the Archer Western Team has the professional and financial resources to make the Fall Hill Avenue Widening and Mary Washington Boulevard Extension project a resounding success.

Sincerely,
Archer Western Construction, LLC


Michael D. Manning
Vice President

4.2

Offeror's Qualifications

4.2 Offeror's Qualifications

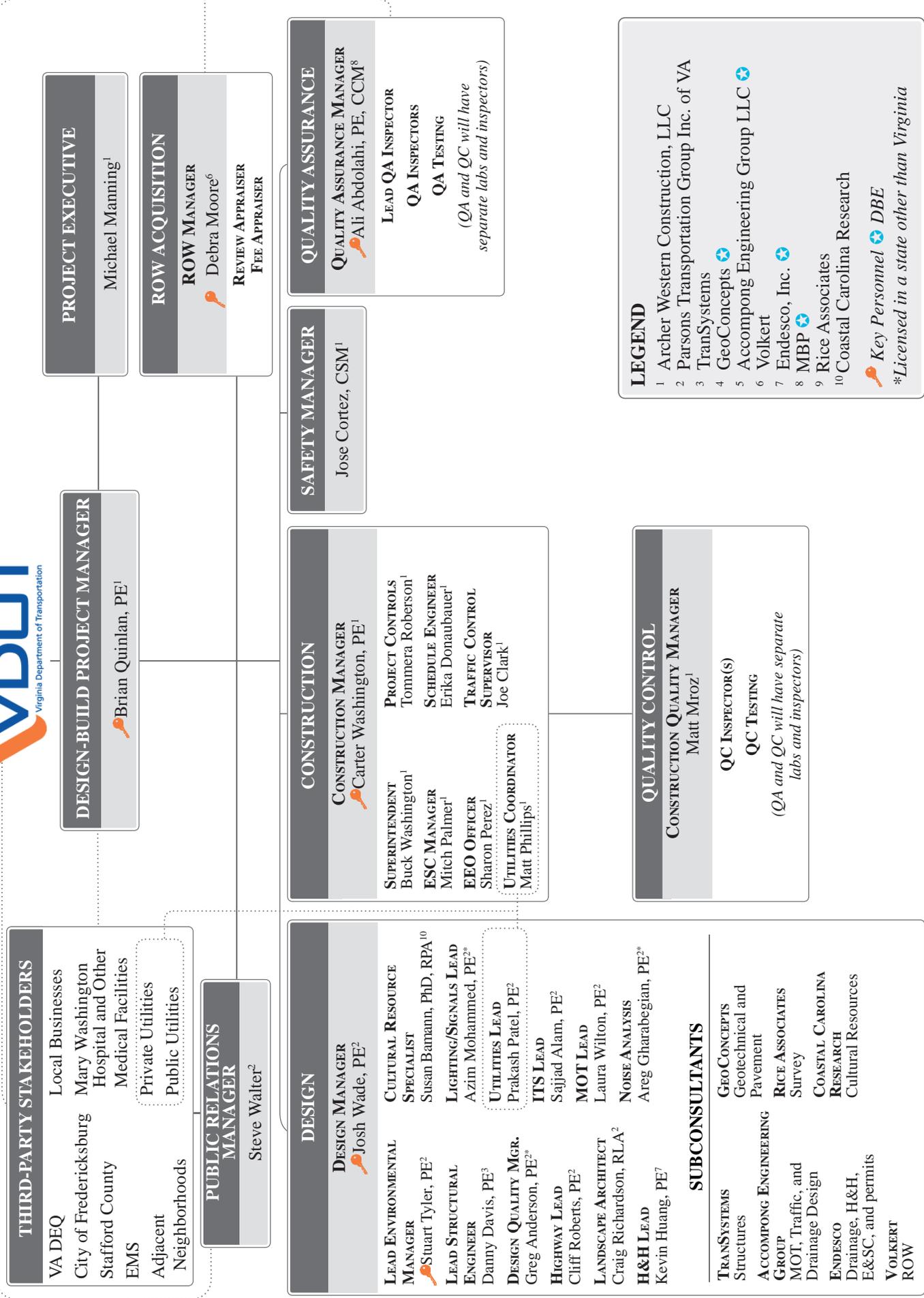
4.2.1 CONFIRMATION OF SOQ INFORMATION

Archer Western Construction, LLC, confirms that the information submitted in our Statement of Qualifications remains true and accurate in accordance with Section 11.4, with the exception of replacing David Casey with Michael Manning as the Project Executive and the addition of the lead QA inspector position listed under the Quality Assurance Manager, Ali Abdolahi, PE, CCM.

4.2.2 ORGANIZATIONAL CHART

Please see on the following page our team's organizational chart for this project. Michael Manning will replace David Casey as the Project Executive, and a lead QA inspector position has been identified under the Quality Assurance Manager, Ali Abdolahi, PE, CCM.

The lead QA inspector position is called out per Attachment 4.0.1.1 Technical Proposal Checklist and Contents. Per the RFP Part 2, Section 2.16.2, page 77 of 84, the QAM will assign a lead QA inspector to the project prior to the start of construction and will submit the resume of the proposed lead QA inspector to VDOT for review and approval. The QA team will include this lead QA inspector, who will be on site full time for the duration of construction and report to the QAM. The lead QA inspector will observe construction activities, which includes monitoring all QC activities and the proper correction of any non-conformities. As part of his responsibilities, the lead QA inspector will also direct the activities of other QA field staff, such as inspectors and technicians.



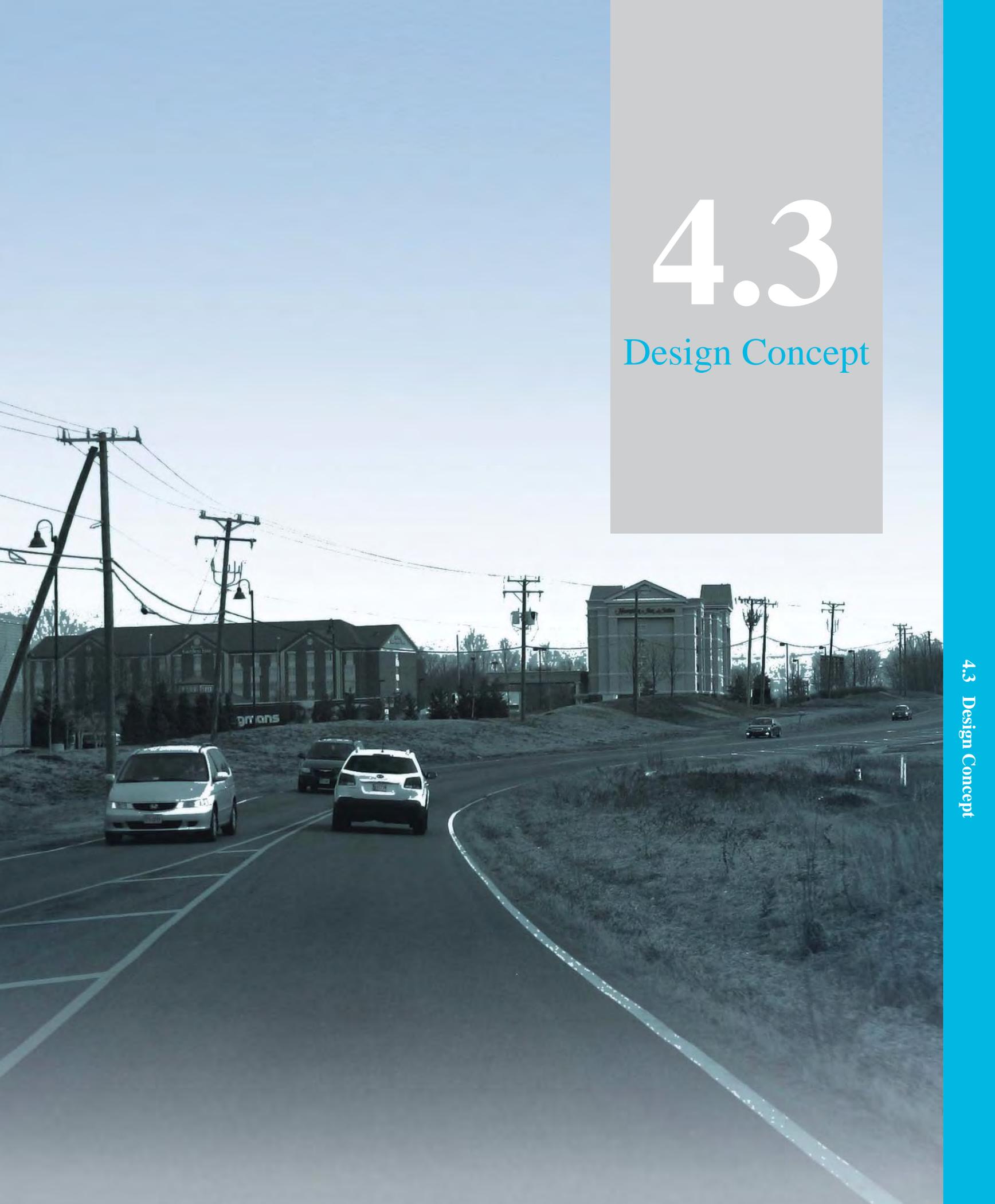
LEGEND

- ¹ Archer Western Construction, LLC
 - ² Parsons Transportation Group Inc. of VA
 - ³ TranSystems
 - ⁴ GeoConcepts
 - ⁵ Accompanying Engineering Group LLC
 - ⁶ Volkert
 - ⁷ Endesco, Inc.
 - ⁸ MBP
 - ⁹ Rice Associates
 - ¹⁰ Coastal Carolina Research
- [Icon] Key Personnel [Icon] DBE
 *Licensed in a state other than Virginia



4.3

Design Concept



4.3 Design Concept

4.3.1 INTRODUCTION

The Fall Hill Avenue Widening and Mary Washington Boulevard Extension project consists of the replacement of the existing two-lane bridge carrying Fall Hill Avenue over I-95, widening Fall Hill Avenue from two lanes to four, and extending Mary Washington Boulevard to a single-lane roundabout at Fall Hill Avenue just west of the Rappahannock Canal crossing. The project creates a new connector route between Route 1 and Route 3 in Fredericksburg and improves direct access to Mary Washington Hospital. The new four-lane bridge will be designed and constructed to accommodate the future widening of I-95. The project faces many challenges, including several cultural resources such as civil war elements, major utilities such as Dominion Virginia Power high tension lines, and the need for right of way (ROW) acquisitions, including parcels that are historically and culturally encumbered.

The Archer Western/Parsons team certifies that the design concept submitted in this technical proposal is fully compliant and will meet all technical requirements of the RFP and design criteria identified in the design criteria table (Attachments 2.3a and 2.3b of RFP Part 2); the limits of construction are within the existing/proposed ROW limits shown in the RFP plans with the exception of permanent and temporary easements and potential noise mitigation; and our design does not include elements that require design exceptions and/or design waivers unless they are identified or included in the RFP or addenda. During the proposal phase, considerable effort was expended to validate the design and to develop optimal solutions. We developed our design and construction methods, taking into consideration long-term asset performance and durability, resulting in our conceptual design, which reduces the need for future inspection and maintenance. The RFP design identifies no design exceptions, but it does identify three design waivers:

1. Buffer strip reduction along Fall Hill Avenue
2. Buffer strip elimination along Mary Washington Boulevard

3. Structure and bridge memorandum regarding waiver for semi-integral abutments

4.3.2 CONCEPTUAL ROADWAY DESIGN

4.3.2.1 GEOMETRY

Fall Hill Avenue: The improvements of Fall Hill Avenue begin west of I-95, 437.86 feet east of the center of the Carl D. Silver Parkway Intersection, tying into a 115-foot-wide section with two through lanes in each direction, right-turn lanes, and two left-turn lanes entering the intersection. From there, the typical section consists of two 12-foot lanes in both directions of Fall Hill Avenue, with access management consisting of protected median left-turn lanes, curb and gutter, and underdrain. The existing bridge over I-95 will be reconstructed in this section, including sidewalk and trail. Once east of the I-95 crossing, the section of two lanes in each direction is continued. However, at station 161+15.00, the width of the outside travel lane in each direction narrows to 11 feet to reduce the impacts to the historic properties on either side. Fall Hill Avenue construction baseline ends at station 184+07.85 and matches with the project U000-111-R38, C501 under construction by others.

Roundabout at the Intersection of Fall Hill Avenue and Mary Washington Boulevard: The center of the roundabout is at the Fall Hill Avenue station 182+57.53 (RFP design) with 42-foot inside circle diameter with 10 feet of shoulder, and 82 feet or radius at the north edge of the pavement. The minimum entrance width is 18 feet. Before entering the roundabout, Fall Hill Avenue has a 50-foot-wide roadway section with a 4-foot median and 23-foot-wide pavement accommodating two travel lanes in each direction; Mary Washington Boulevard has a 25-foot-wide pavement section with two southbound lanes from the roundabout and one northbound lane on 16 feet of pavement with a variable width median.

Mary Washington Boulevard: The majority of Mary Washington Boulevard is on a new alignment starting from the roundabout at the intersection with Fall Hill Avenue, with 25-foot-pavement in the southbound direction, 16-foot pavement in the northbound direction. It is divided by a 6-foot to

18-foot variable-width median between stations 201+00 to 216+64.92, and a 25-foot pavement width in both directions, divided by a 16-foot median between stations 216+64.92 to 236+00. Pavement widening will take place between Hospital Drive and Sam Perry Drive. Only milling and paving and median adjustments will be done between Sam Perry Drive and Jefferson Davis Highway. Similarly, on Jefferson Davis Highway, only median adjustments and turn lane construction will be performed at the intersection of Jefferson Davis Highway and Mary Washington Boulevard.

The Archer Western/Parsons team has optimized the design of the horizontal alignment to improve safety, reduce maintenance, improve maintenance of, and minimize impacts to the cultural, environmental, and other adjacent resources.

Horizontal

Our evaluation of the RFP alignment focused on determining whether the project complies with the VDOT and AASHTO design criteria and other project requirements such as the impact on cultural resources properties, and on minimizing the use of retaining walls while staying within the RFP ROW. Table 1 on the following page summarizes the refinements and enhancements that have been made to the RFP alignment to optimize design, save cost, and reduce construction schedule duration.

The revisions were made using a design speed of 40 miles per hour and VDOT's functional criteria of Urban Collector with rolling terrain divided roadway.

The horizontal construction baseline alignment was adjusted only on Mary Washington Boulevard. The alignment was shifted nearly parallel to the existing between station 209+50 and station 216+00. In this region, the required minimum curve radius for 4 percent superelevation is 593 feet; however, our design provided a 650-foot radius curve, improving safety. Additional benefits are summarized in Table 1, Enhancement Summary Table.

Vertical

During the evaluation process, it was noted that some locations along the roadway profile needed some improvements to further balance the cut and fill volumes and to reduce the height of retaining

walls. Table 1 on the following page summarizes the refinements and enhancements that have been made to the RFP profile to optimize design, balance cut and fill volume, and reduce cost and reduce impacts on the traveling public by early completion.

The revision was made using a design speed of 40 miles per hour and VDOT's functional criteria of Urban Collector with rolling terrain divided roadway.

The profile of the construction baseline was adjusted on Fall Hill Avenue between station 165+75 and 183+75. The slope of the profile between stations 176+00 to 182+00 was enhanced from 8.36 percent to 6.29 percent, which will be more user friendly for pedestrians. On Mary Washington Boulevard between station 200+22 and station 223+75 the increase in sight distance of 10 feet further improves safety. Additional benefits are summarized in Table 1, Enhancement Summary Table.

Roundabout

We have enhanced the roundabout design to improve mobility and minimize retaining walls. The enhancement consists of shifting the roundabout approximately 8 feet from the Fall Hill Avenue baseline toward the southwest along the Mary Washington Boulevard alignment. This change, coupled with the southwest turning radius reduction from 300 feet to 270 feet while holding the 18-foot lane widths at the intersection and reducing the length of the median section between the right-turn lane and the through lane on Fall Hill Avenue, reduces impacts and overall retaining walls while improving constructability. In addition, without increasing impacts to cultural resources, we have improved the northwest turning radius from 88 feet to 148 feet, thus improving traffic operations, level of services, and safety. Additional benefits are summarized in the Enhancement Summary Table.

4.3.2.2 RETAINING WALLS

The enhancement in RFP design has significantly reduced the proposed retaining walls. The total reduction in retaining wall length throughout the project corridor is approximately 580 linear feet, and the average exposed height was reduced by 3 to 4 feet, which amounts to a reduction of nearly 1,750 square feet of retaining wall. This not only reduces

Table 1 - Enhancement Summary

Enhancement to RFP Concept	Benefits
<p>Change 1: Location and geometrics of the roundabout: Fall Hill Avenue and Mary Washington Blvd. Intersection</p> <ol style="list-style-type: none"> a. Roundabout shift 8 feet from the FHA alignment towards the southwest direction along the MWB alignment. b. Southwest turning radius changed from 300 feet to 270 feet holding the 18-foot lane widths at the intersection with reduced length of the median section between the right-turn lane and the through lane on FHA. c. Northwest turning radius improvement from 88 feet to 148 feet. d. The southwest corner retaining wall is moved closer to the sidewalk. The RFP design is approximately 10 feet from the sidewalk vs. 1 foot from the proposed sidewalk in the alternative concept. <p>Change 2: Mary Washington Blvd. horizontal alignment shift from 0 to 5.5 feet between Station 209+50 to Station 216+00 to push the roadway away from Civil War trenches while keeping RFP curve radius.</p> <p>Change 3: FHA Profile raise by 2.5 from Station 165+75.00 to Station 183+75.00.</p> <p>Change 4: Mary Washington Blvd. profile raise by 3.5 feet from Station 200+22.65 to Station 223+75.00.</p> <p>Change 5: Throughout the project corridor, except in areas of historic resources, we have accommodated flatter than 2:1 fill side slopes wherever possible.</p>	<ol style="list-style-type: none"> 1. Improved intersections sight distance along FHA-NB, and MWB-WB by approximately 30 feet. 2. Accommodates WB-67 through roundabout for through movements, which was not available in the RFP design. 3. Improved overall earthwork balance throughout the project by reducing waste by nearly 33,000 cubic yards to approximately 4,000 cubic yards. 4. Reduced the overall retaining wall length by approximately 580 linear feet. 5. Reduced the average retaining wall height by 3 to 4 feet. 6. From Station 207+00 to Station 213+50, the limit of disturbance has been pulled in by approximately 5 feet for an average of 30 feet along the area of the Civil War trenches. 7. Reduced the overall impacts to the cultural resources. 8. Reduced the amount of needed ROW.

Table 2 - Retaining Wall Summary

Ret. Wall	Station Limits	ATC Length, feet	RFP Length, feet	Reduction, feet
RW-1	FHA-135+22.49-140+44.44 (LT)	509	509	0
RW-2	FHA-135+22.49-137+44.99 (RT)	223	276	53
RW-3	FHA-181+60.91-182+15.19 (RT)	234	530	296
	MWB-200+74.10-202+36.40 (RT)			
RW-4	MWB-205+21.92-206+29.56 (RT)	108	190	82
RW-5	MWB-206+03.94-207+06.63 (LT)	100	100	0
RW-6	MWB-212+61.18-213+73.82 (RT)	121	160	39
RW-7 (Std-RW-2)	MWB-218+20.89-219+13.21 (RT)	92	205	113

the cost of labor and material during construction, but it also helps expedite the schedule, as well as long-term maintenance. Table 2 on the previous page shows the approximate location and length of the retaining wall for ATC and RFP design concept and the corresponding reduction in retaining wall length.

4.3.2.3 NOISE WALLS

The final barrier locations and dimensions will be determined during the final design noise analysis. A noise abatement design report (NADR) will be furnished by the Archer Western/Parsons team per the VDOT *Noise Development Guidance Document*, updated August 16, 2013, and the VDOT *Highway Traffic Noise Impact Analysis Guidance Manual*, updated August 6, 2013, as well as the clarifications recently provided by Paul Kolher of VDOT's central office during the I-395 HOV ramp project regarding the discrepancies that exist between the two documents that are to be part of a future update of the documents. The final noise mitigation design will use the design-year traffic volumes defined in the *Fall Hill Avenue Roadway and the Mary Washington Extension Project Traffic Noise Report (March 19, 2012)* unless otherwise directed due to traffic updates.

Per VDOT's direction, Archer Western's price proposal will include the three noise barrier walls that have been identified as feasible and reasonable during the preliminary noise evaluation. However, if the final design noise analysis determines that one or more of these three walls is not necessary to mitigate the noise or is not voted for by those benefited properties and therefore not constructed, the contract will be adjusted via a work order. Similarly, if the final analysis requires that additional walls be constructed, the contract will be adjusted.

We understand that Noise Wall 1 as defined in the environmental assessment may extend beyond the NEPA footprint. If it is found to be reasonable and feasible and no other options exist, Archer Western will perform all necessary environmental technical studies and analysis required for the NEPA re-evaluation to extend the footprint.

4.3.2.4 STORMWATER MANAGEMENT

Hydraulics

The Archer Western/Parsons team has reviewed the proposed drainage layout for the construction of the roadways as shown on the RFP plans. The drainage design for storm sewers, culverts, open channels, underdrains, and bridge deck drainage assemblies and structures will be designed in accordance with the VDOT 2002 Drainage Manual, revised September 2011 (VDOT Drainage Manual) and all current VDOT Hydraulic Design Advisories. The layouts of these storm drainage systems are provided on the technical proposal plans and have been modified from the RFP plans to maintain existing drainage patterns as feasible, maximize impervious area draining to the proposed stormwater management (SWM) basins, and facilitate constructability. The high point at Station 215+50 of Mary Washington Boulevard was shifted to Station 216+50, eliminating three drainage structures and more than 150 linear feet of pipe. During final design, the detailed hydrologic and hydraulics analysis and studies will be performed and will include comprehensive roadway and bridge drainage, SWM and basins designs, river mechanics models and analysis, and phased and post-construction erosion and sediment control (E&SC) designs. The various tasks associated with this project will be based on the procedures and regulations as shown in the RFP, Part 2, Section 2.1.1, for the referenced project.

The Archer Western/Parsons team will provide the necessary additional field investigations to accommodate the final design of the proposed drainage systems; this work will include a site inventory (conducted during the scope validation period) of all existing drainage structures to determine whether rehabilitation or replacement of a specific drainage facility is warranted.

Hydrology

Drainage areas will be delineated using the available project survey and will be supplemented by GIS information and additional field investigations. Land use and land cover will be based on field survey, GIS information, and field visits. Peak flow discharges for

the various storm events (2-, 5-, 10-, 25-, 50-, 100-, and 500-year) will be computed using the following:

- Rational method for drainage areas that are less than 200 acres
- Applicable methods detailed in VDOT Drainage Manual for drainage areas that are greater than 200 acres

Stormwater Management and Erosion and Sediment Control

The SWM design will ensure compliance with applicable VDOT and DCR regulatory requirements. The proposed SWM facilities will be designed using the performance-based methodology and the calculated roadway runoff for the project. TMDL will be calculated for both existing and proposed conditions. The existing and proposed drainage areas that drain to Rappahannock Canal will be treated before leaving the construction site. Due to the amount of impervious area generated by this project and the percentage of increase in imperviousness, two wet ponds with Level 2 design will be proposed to ensure that the project meets the TMDL removal requirements. Both wet ponds will be used as sediment basins during the construction phases. To ensure compliance with the stormwater pollution prevention plan (SWPPP) and water quality (BMP) requirements, the team will take the following steps:

- Provide temporary E&SC during the proposed construction phases.
- Design permanent, post-construction SWM and water quality facilities in accordance with the most recent VDOT stormwater program regulations and information and instructional memoranda (IIM).

The Archer Western/Parsons team will accomplish this by isolating the project site from the surrounding area, controlling the sediment, and preventing its transport from the site. Each work site will be evaluated to determine the best means to prevent sediment from leaving the project site. Acceptable E&SC practices will be employed before, during, and sufficiently after project construction as directed by all state and local agencies. This process will be guided by BMP practices, where applicable.

Proper outfalls and downstream channel capacities will be investigated to satisfy minimum standards (MS-19) in addition to applicable Virginia E&SC requirements. VDOT's Drainage Manual, Road and Bridge Standards, IIMs, and Road Design Manual will be used in the preparation of the E&SC plan. This plan will provide a narrative and comprehensive plan employing various E&SC practices as required to stabilize the disturbed areas while retaining the sediment on the construction site. The Archer Western/Parsons team's certified DEQ plan reviewer will provide an independent review of the proposed E&SC items and will ultimately certify the E&SC plans for the VSMP permits. The team will also work with VDOT to obtain all necessary permits and certifications necessary for E&SC, SWM, and SWPPP for this project. The Archer Western/Parsons team will provide proper maintenance of sediment basins/traps, silt fences, inlet protections, check dams, and stabilized construction entrances to meet or exceed E&SC measures required for the project.

4.3.2.5 ROADWAY DRAINAGE

The roadway drainage runoff calculations will be based on the governing specifications included in the VDOT Drainage Manual, as described in the RFP documents, Part 2, Section 2.1. The roadway drainage runoff calculation will incorporate the existing and proposed roadway corridor within the project's limits. Curb and gutter are in use throughout the project, with curb inlets proposed where needed for the project. Where possible, the existing drainage system will be used after checking its capacity and integrity. The capacity and performance of the existing and proposed drainage systems located within the project limits will be optimized using the computed roadway runoff.

The design of the roadway drainage system will use a combination of roadside ditches, closed storm sewer systems, and curb and gutter, where applicable. The roadway drainage system design will be based on the proposed roadway plans and will use VDOT-approved software developed by Ensoftec. The Archer Western/Parsons team will complete the necessary VDOT LD-204, LD-229, LD-347, and LD-439 forms for storm sewer design computations and drainage information sheet, respectively.

The Archer Western/Parsons team will ensure proper freeboard depth in each ditch segment to ensure roadway overtopping protection. The team will revise profile grades, ditch typical sections, etc., as necessary to meet freeboard requirements within the project limits. Ditch velocities will be calculated, and proper ditch lining will be used to prevent erosion and minimize future maintenance.

H&HA Major Crossings

For the bridge waterways and major culverts with 100-year flows exceeding 500 cfs, we will apply the standard VDOT hydrologic and hydraulic analysis (H&HA). Only one major crossing is anticipated for this project; it is located at Station 203+30, Mary Washington Boulevard. A final H&HA report will be prepared and submitted for VDOT review and approval prior to commencement of construction; the report will include an established level of construction tolerance to allow for the designed hydraulic performance to be maintained. The design and analysis will also meet FEMA and FHWA requirements and guidelines. The preliminary H&HA report included in the RFP will be reviewed and used for source information as appropriate, but we will verify, and will be responsible for, all final hydrologic and hydraulic analyses for this design-build project. All standard VDOT forms will be provided for proper documentation, as necessary. To demonstrate that the performance of the built structures matches or is better than that of existing conditions, final as-built surveys (including related upstream and downstream appurtenances), as well as final H&HA reports, will be provided.

H&HA analyses will document that no adverse impacts will be created. Because the major waterway crossing is not in FEMA detailed zones, it will be necessary to show that the design will not increase base flood elevations more than one foot and that it will not adversely affect any property beyond the right-of-way. HEC-RAS modeling will be used for the hydraulic analysis of the crossings and will include appropriate lengths of upstream and downstream stream reaches. Discharges for the various storm events (OHW, 2-, 5-, 10-, 25-, 50-, 100-, and 500-year) will be computed using VDOT hydrologic methods outlined in the Drainage

Manual, and these will be based on planned future watershed development according to current zoning.

4.3.2.6 PAVEMENT SUBGRADES

Soils that are soft or loose, soils with a liquid limit greater than 45 and a plasticity index greater than 25, soils with a CBR value less than 5, and soils with a swell greater than 5 percent are not considered suitable for direct support of the proposed roadway and associated structures. Removal and replacement of these unsuitable soils are recommended to limit potential total and differential settlement of structures. Where these soils are encountered at pavement subgrades, they will be removed to a depth of at least 3 feet below pavement subgrade, according to the VDOT Manual of Instruction, Section 305.02, Chapter III, or in their entirety to competent subgrade material, whichever is less, and replaced with properly compacted material with a minimum CBR value of 5. A summary of the locations of unsuitable soils at the test boring locations will be presented in a separate memorandum.

Table 3 on the following page summarizes the California Bearing Ratio (CBR) test results presented in the Geotechnical Data Report (GDR). Eight CBR tests were performed for Fall Hill Avenue, and four CBR tests were performed for Mary Washington Boulevard. Based on the CBR test results for the materials expected at pavement subgrades, preliminary design CBR values of 3.8 and 4.9 for Fall Hill Avenue and Mary Washington Boulevard, respectively, are recommended for pavement design. These CBR values have been calculated considering the removal of unsuitable materials in accordance with VDOT Road and Bridge Specifications Section 303 and VDOT Special Provision for Section 303 - Earthwork. In addition, the design CBR values have been achieved by reducing laboratory CBR values by two-thirds.

If fill placed at the site is generated from off-site borrow areas, the actual CBR value for the pavement subgrades may be significantly different from the preliminary value presented herein. Therefore, CBR tests will be performed on the in-place subgrade after rough grading and installation of utilities within roadways. Final pavement sections will be based on CBR tests taken on subgrade soils at the time of construction.

Table 3 Boring Information Summary

Location	Test Boring No.	Soil Classification	CBR Value (%)	CBR Value Used (%)	Swell (%)
Fall Hill Avenue	12FH-03	SC	12.3	5	0.07
	12FH14	CH*	14.5	5	0.04
	12FH-17	CL	10.7	5	0.00
	12FH-25	CL	9.7	9.7	0.04
	12FH-29	CL	10.7	5	0.09
	12FH-36	CH*	8.9	5	0.52
	12FH-45	SC	12.4	5	0.46
	12FH-51	CH*	1.6#	5	5.02+
Mary Washington Boulevard	12MW-05	CL	4.9#	5	0.09
	12MW-08	CL	9.5	9.5	0.48
	12MW-17	SC	15.9	10&	0.52
	12MW-22	SC	8	5	0.65

* The CH soils are not suitable for subgrade, undercut and replace with soils with CBR value of at least of 5.

Low CBR value, undercut and replace with soils with CBR value of at least of 5.

& If the Design Mr is greater than 15,000 psi, then use a design Mr value of 15,000 psi (Mr = 1500xCBR).

+ Swell more than 5%, undercut and replace with soils with CBR value of at least of 5.

SC= clayey SAND, CH = Fat CLAY, CL = Lean CLAY

4.3.2.7 TRAFFIC CONTROL DEVICES

All traffic control devices will be designed and conform with the 2009 Edition with Revision Numbers 1 and 2 incorporated, dated May, 2012 and the Virginia Work Area Protection Manual Standard and Guidelines for Temporary Traffic Control 2011 Edition.

4.3.2.8 LIGHTING

Per RFP, Part 2, Section 2.10.7, isolated intersection lighting will be provided at the signalized intersections using cobrahead-style inductive luminaires with a twist lock photocell. The luminaires will have a minimum lamp life rating of 10,000 hours. The intersection illumination levels will meet IESNA, RP-8-00 with a Roadway Functional classification of Major/Major and Medium Pedestrian Area Classification.

Relocation or replacement of existing lighting will be coordinated with Dominion Virginia Power.

4.3.2.9 LANDSCAPING

Per RFP, Part 2, Section 2.9, the roadside development plan will not include tall fescue but will include native and low-growing grasses and ground covers, both for erosion and sediment control and permanent seeding.

4.3.2.10 POTENTIAL GEOHAZARDS

Abandoned Mines: The Spotsylvania County area was the site of extensive gold mining during the early 19th century and continued until the discovery of extensive gold deposits in California in the late 1840s. Limited mining was resumed in the 20th century, but on a much smaller scale. Approximately 39 mines and prospects have been identified in Spotsylvania County, extending along the strike of the so-called “gold-pyrite belt,” a band of sulfide-rich veins and mineralized zones in the highly deformed and metamorphosed igneous and sedimentary rocks of the western piedmont (Spears and Upchurch, 1997).

The gold-pyrite belt in Spotsylvania County extends from the Rappahannock River northeast of

Chancellorsville, southwest to near Stubbs, well north of the current project site. The closest mining site to the Fall Hill Avenue project is the Mott Prospect, located approximately 6 miles to the north. This “mine” is currently marked by only two small surface depressions (Sweet, 1980).

Based on these data, there is a low probability that the Fall Hill Avenue project will intercept any abandoned mines or subsurface workings.

Caverns, Cavernous Voids: The Fall Hill Avenue project is underlain by the sands and gravels of the Pliocene Upland Deposits, the porphyroblastic garnet-biotite gneiss of Proterozoic age, and the arkosic pebbly sands and sandy clays of the Potomac Formation of Cretaceous age. None of these units is prone to the development of karst terrain (caverns, sinkholes, etc.) via the dissolution of soluble bedrock; therefore, it is not expected that any karst-related cavernous voids or sinkholes will affect the project.

It should be noted that “pseudokarst” conditions may exist where failed or failing infrastructure installations (e.g., storm sewers or water mains) can induce soil piping and raveling and create subsurface soil voids. However, it is impossible to predict where this type of structure might be encountered.

Slickenside Clays: Landslide and mass slumping and wasting behavior have been attributed to the presence of slickenside clay facies within the sediments of the Potomac Formation in Virginia (Obermeier, 1984). The so-called “montmorillonite facies” of the southern outcrop zone of the Potomac Formation extends into Spotsylvania County, and this unit is known for the presence of landslide-prone slickenside clays.

Referencing the Geotechnical Data Report for the project by Froehling & Robertson, Inc., dated February 2013, sediments comparing favorably with the clay facies of the Potomac Formation were encountered in only two borings (12FH-42 and 12FH-43) located within the mapped outcrop zone of the Potomac Formation east of Weston Lane. The remainder of the boring returns in this area suggested the majority of the Potomac Formation consists of granular sediments, primarily silty arkosic sand. Therefore, the probability of the project intercepting

slickenside montmorillonitic clay is probably limited to the area of the aforementioned borings.

Faults: A significant mapped fault is intercepted by the project alignment: the Fall Hill Fault is located approximately 300 feet east of the intersection of Weston Lane and Fall Hill Avenue. In the area of the project, a low-angle thrust fault has occurred where the Potomac Formation sediments to the east comprise the hanging wall of the structure, and the Proterozoic gneiss to the west is the foot wall. Borings in this area have revealed that a thin layer of Potomac Formation sediments overlies the gneissic saprolite. The Potomac Formation sediments have undergone extensive reverse faulting, slumping, and sedimentation near the Fall Hill Fault, and numerous high-angle, soft-sediment faults are present in these facies. Slickenside clays would be expected to be associated with these soft-sediment faults at depth; however, the faults are generally not well preserved in the granular facies, except where large excavations have revealed the displacement structures in situ.

4.3.3 CONCEPTUAL STRUCTURAL DESIGN

4.3.3.1 GEOTECHNICAL CONSIDERATIONS

The following documents and plans have been reviewed to prepare this information, analysis, and designs:

- Geotechnical Data Report (GDR) dated February 21, 2013
- Preliminary Bridge RFP Plans
- Virginia Department of Transportation, Special Provision for Drilled Shaft, dated November 18, 2009
- Virginia Department of Transportation, Special Provision for Dynamic Pile Testing for Friction Piles for Load and Resistance Factor Design (LRFD), dated December 10, 2009
- As-Built Bridge Plans, dated April 17, 1961

Table 4 on page 12 presents the proposed bridge details as shown on the bridge plans provided by VDOT.

Abutments

Table 5 on page 12 presents the proposed footing elevations for the foundation at abutment locations.

The structural loading for the proposed bridges was not available at the time of submission of the technical proposal; however, according to the information provided in the RFP plans, we understand that driven piles and drilled shafts are part of the concept and are acceptable at the proposed bridge abutments and piers, respectively.

Driven H-piles of Grade 50 steel may be used to support the proposed bridge abutments. The piles should be driven at least 10 feet into Intermediate Geomaterial (IGM), or to prior refusal on bedrock. IGM is defined as residual material with SPT N-Values greater than 50 blows per 6 inches of penetration. Piles may be HP 10x42 or HP 12x53, depending on the required factored design axial loads. Piles should be fitted with driving points to protect the tips and improve penetration. Estimated highest H-pile tip elevations at the boring locations are presented in Table 6 on page 12.

The calculated factored axial structural and geotechnical resistances of the two proposed H-pile sections are presented in Table 7 on page 12.

A drivability analysis of the proposed H-pile sections will be required to determine if the necessary pile penetration can be obtained to achieve the governing geotechnical resistance. Based on the results of the drivability analysis, it may be necessary to increase the pile size or reduce the pile-factored resistance as presented in Table 4.

It should be noted that the test borings listed in Table 3 were not drilled at the proposed abutment locations, and that the estimated highest bearing elevations presented in Table 3 should be considered approximate. The bridge test boring logs are included with this memorandum.

Piers

Based on the RFP plans, drilled shafts are planned for the pier locations. A 4-foot-diameter drilled shaft is recommended on the RFP plans, Sheet 5 of 7.

Seven test borings were performed at the four pier locations. Table 8 on page 12 presents the subsurface profile information obtained from the test borings.

Factored axial resistances for drilled shafts were estimated in accordance with AASHTO LRFD 2012, Section 10.8.3.5. Table 9 on page 13 presents the unit tip resistance and unit side resistance for residual soil, IGM, and rock.

We have analyzed the factored axial resistance for four drilled shaft diameters, 3 feet to 6 feet in diameter. Table 10 on page 13 presents the drilled shaft factored axial resistances for shafts bearing on IGM or rock. Table 8 summarizes the highest bearing elevation for drilled shafts bearing on IGM or rock. Three borings (12FHB-07, 12FHB-09, and 12FHB-10) do not have sufficient IGM depth to achieve the capacities presented in Table 7.

The lateral capacity of drilled shafts located at the bearing elevation presented in Table 11, page 13 below has been analyzed with the computer software program LPILE 2013.7.0.2. The lateral capacities for drilled shafts have been evaluated using free head boundary conditions and a resistance factor of 1.0. A maximum deflection of 0.5 inch was used to determine the maximum lateral load, and the results are presented in Table 12 on page 13.

Drilled shafts will be constructed as straight shafts at least 36 inches in diameter to facilitate cleaning of the bottoms and to facilitate observations of drilled shaft end bearing materials. Prior to concrete placement, drilled shaft subgrades will be observed by a representative of the geotechnical engineer in order to verify that subgrades are suitable to support the design bearing pressures, and to ensure that subgrades are free of loose or disturbed material.

Based on the Special Provision for Drilled Shafts, Section XII, the final shaft depths will be measured with a suitable weighted tape or other approved method after final cleaning. Unless otherwise stated in the plans, a minimum of 50 percent of the base of each shaft will have less than one-half inch of sediment at the time of placement of the concrete. The maximum depth of sediment or any debris at any place on the base of the shaft will not exceed 1½ inches. Shaft cleanliness will be determined by

Table 4 - Bridge Detail Summary

Bridge	No. of Spans	Approximate Length (feet)	Maximum Span Length (feet)	Approximate Width (feet)
Fall Hill Avenue over I-95	5	413.25	93.16	80.5

Table 5 - Footing Elevation Summary

Bridge Structure	Top of Footing Elevation (feet)	Bottom of Footing Elevation (feet)	Footing Width (feet)
Abutment A	246	242.75	13.5
Abutment B	242	238.75	13.5

Table 6 - H-Pile Summary

Bridge Structure	Test Boring No.	Ground Surface Elevation (feet)	Bottom of Footing Elevation (feet)	Top of IGM Elevation (feet)	Top of Rock Elevation (feet)	Estimated Highest H-Pile Bearing Elevation (feet)
Abutment A	12FHB-01	269.0	242.75	227.0	179.2	217
	12FHB-02	268.21		211.2	170.0	201
Abutment B	12FHB-11	263.96	238.75	207.0	195.0	197
	12FHB-12	251.8		214.8	212.8	212

Table 7 - H-Pile Factored Resistance Summary

Pile Section	Factored Resistance (tons)		
	Structural Resistance	Geotechnical Resistance	Governing Resistance
HP 10x42	155	80	80
HP 12x53	194	100	100

Table 8 - Subsurface Profile

Bridge Structure	Test Boring No.	Ground Surface Elevation (feet)	Bottom of Pile Cap Elevation (feet)	Top of IGM Elevation (feet)	Top of Rock Elevation (feet)
Pier 1	12FHB-03	248.9	247.50	216.9	189.9
Pier 2	12FHB-05	247.8	247.50	219.3	192.2
	12FHB-06	246.8		219.8	194.5
Pier 3	12FHB-07	246.3	245.50	219.3	204.2
	12FHB-08	247.3		224.3	197.3
Pier 4	12FHB-09	247.7	250.00	215.4	203.4
	12FHB-10	245.8		198.8	196.3

Table 9 - Resistance Summary

Resistance Type	Soil	IGM	Rock
Unit Tip Resistance (qp) (ksf)	12	30	50
Unit Side Resistance (qs) (ksf)	0.65	2.2	10

Table 10 - Factored Axial Resistance Summary

Drilled Shaft Diameter (feet)	Factored Axial Resistance (tons)	
	IGM	Rock
3.0	240	350
4.0	350	500
5.0	470	650
6.0	610	850

Table 11- Pier Bearing Summary

Bridge Structure	Test Boring No.	Ground Surface Elevation (feet)	Highest Bearing Elevation - IGM (feet)	Highest Bearing Elevation - Rock (feet)
Pier 1	12FHB-03	248.9	196	187
Pier 2	12FHB-05	247.8	199	190
	12FHB-06	246.8	199	192
Pier 3	12FHB-07	246.3	**	202
	12FHB-08	247.3	204	195
Pier 4	12FHB-09	247.7	**	201
	12FHB-10	245.8	**	194

** Test boring does not have sufficient IGM thickness to achieve the capacities presented in Table 10.

Table 12 - Maximum Lateral Load Summary

Drilled Shaft Diameter (feet)	Maximum Lateral Load for 0.5-inch Deflection (kips)
3.0	40
4.0	50
5.0	60
6.0	70

visual inspection for dry shafts or other methods deemed appropriate by VDOT for wet shafts.

To determine whether soft or highly fractured bedrock seams are present, a minimum 5-foot-deep probe hole will be drilled in the bottom of at least one-fourth of the drilled shafts. The geotechnical engineer who monitors the drilled shaft installations will designate the actual number and locations of probe holes to be completed.

Steel casings extending to the bottom of the drilled shafts will be used to seal out groundwater and to aid in preventing sidewalls from caving. The casing may be extracted as the concrete is poured; however, a sufficient head of concrete will be maintained above the bottom casing during withdrawal to seal off groundwater and to prevent infiltration of soil into the shaft. Pumping of water at the bottom of the drilled shaft may be required to control groundwater during construction.

Based on the Special Provision for Drilled Shafts, Section VI (c), drilled shaft concrete will have a slump between 7 inches and 9 inches when placed using a wet method drilling fluid technique, and between 6 inches and 8 inches for all other placement techniques. It will be ensured that the drilled shaft concrete maintains a slump of 4 inches or more throughout the drilled shaft concrete elapsed time.

Load Testing

Based on the special provision for dynamic testing for end bearing piles for LRFD, dynamic testing of the H-piles will be performed in accordance with ASTM 4945-08. This testing will be performed to verify the design assumptions and recommended tip elevations. The test piles will be dynamically load tested during initial driving and at least 72 hours after driving. Adjustments to the pile hammer, pile lengths, etc., may result from this load test program. In addition, Archer Western will submit its proposed pile hammer information to the geotechnical engineer, supported by a wave equation analysis, to confirm that the pile hammer can drive the piles to the required bearing elevations without overstressing the piles.

The RFP requires a minimum of one test (non-production) shaft for each size and type of shaft. The

trial drilled shaft must be constructed in an identical manner as that proposed for the production shafts, including the method of installation, Crosshole Sonic Logging (CSL) tube installation and testing, steel reinforcement, and concreting. The diameter and depth of the trial drilled shafts will be the maximum diameter and maximum depth of any of the production drilled shafts shown on the plans unless otherwise directed by VDOT.

Based on the special provision for drilled shafts, axial load tests (ASTM D1143, D1143M-07C1) and lateral load tests (ASTM D3966) will be performed to verify the design assumptions.

According to the Special Provision for Drilled Shafts, Section XV, the nondestructive testing (NDT) method termed Crosshole Sonic Logging (CSL) will be used to check the integrity of newly placed concrete drilled shafts. Crosshole Sonic Logging (ASTM D-6760) will be performed for all drilled shafts. Therefore, all drilled shafts will be equipped with a minimum of one access pipe per foot of shaft diameter, with a minimum of four access pipes per shaft. If anomalies or defective shafts are discovered, additional testing will be performed at the direction of the geotechnical engineer.

4.3.3.2 BRIDGE OVER I-95

The existing Fall Hill Avenue Bridge over I-95 is located 1.2 miles north of the Plank Road interchange and 2.0 miles south of the Warrenton Road interchange along I-95. The existing bridge carries one lane of traffic in each direction for a total of two traffic lanes.

The proposed Fall Hill Avenue Bridge over I-95 will carry two lanes of traffic in each direction, a 14-foot, traffic-separated, shared-use path along the north side of Fall Hill Avenue, and a 6-foot raised sidewalk along the south side. The bridge will consist of five continuous spans to accommodate the proposed future improvements to I-95 as detailed in the RFP documentation.

The proposed bridge will be designed according to the AASHTO LRFD Bridge Design Specifications, Sixth Edition 2012 with 2013 Interim Revisions, and all applicable VDOT Structure and Bridge Division Instructional and Informational Memoranda,

including IIM-S&B-80.4, VDOT Modifications to the AASHTO LRFD Bridge Design Specification, 6th Edition. Bentley's LEAP Bridge Enterprise software package will be used to facilitate the design of the superstructure and substructure elements, with additional calculations performed in Microsoft Office Excel and Mathcad, as required. The design will use a 20-psf allowance for construction tolerances and construction methods, along with a 15-psf allowance for a future wearing surface.

An LRFR as-designed and as-built load rating will be performed using AASHTOWare Bridge Rating on the proposed bridge. The load ratings will be calculated in accordance with the AASHTO Manual for Bridge Evaluation, Second Edition 2010 with 2013 Interim Revisions, and all applicable VDOT Structure and Bridge Division Instructional and Informational Memoranda.

The superstructure of the proposed Fall Hill Avenue Bridge will consist of five continuous spans. Semi-integral abutments with buried approach slabs will be used at each abutment to reduce long-term maintenance costs for VDOT in accordance with the VDOT Manual of Structure and Bridge Division, Volume V – Part 2, Chapter 17. The use of semi-integral abutments and continuous span construction over the piers will eliminate any transverse expansion joints along the bridge, thereby reducing long-term maintenance costs for VDOT. Multi-column piers will be used at each of the intermediate supports along the bridge. All substructure elements will meet the crash-load guidelines of the AASHTO and VDOT Structure and Bridge Manual Volume V – Part 2, Chapter 15. Accordingly, traffic barriers will be used along each substructure element, and a wall will connect the columns of the multicolumn piers. The column connection wall will extend 4'-6" above the ground and 12" below the ground at each pier. The semi-integral abutments will be supported by steel H piles. Steel H piles were considered as one alternative foundation system for Piers 1 through 4. However, it was determined that construction of the steel H pile Pier 2 and 3 footings would require the inside shoulder and innermost travel lane to be closed along both northbound and southbound I-95 lanes, or significant use of sheet piling would be required. Therefore, to minimize the amount of

maintenance of traffic (MOT) and construction in near I-95, drill shaft foundations were selected for the pier foundation system as recommended in the Preliminary Engineering Report.

Two superstructure alternatives were investigated during the bid preparation process and compared to the cost estimates presented in the Preliminary Engineering Report on the Fall Hill Avenue Bridge. It was found that a more efficient steel plate girder alternative could be realized then presented in the Preliminary Engineering Report, but that the total cost of the alternative would still exceed that of a precast concrete Bulb-T girder alternate. The most efficient precast concrete Bulb-T girder alternate would consist of nine 53-inch Bulb-T girders as recommended in the Preliminary Engineering Report. The compressive strength and number of prestressing strands needed for the precast concrete Bulb-T girders will be determined during final design. Steel reinforced elastomeric bearings will be used at each bearing location for the precast concrete Bulb-T girders.

The typical section of the proposed Fall Hill Avenue Bridge will consist of nine 53-inch precast concrete Bulb-T girders. A raised median will be used to separate the two lanes of traffic in each direction. BR27C railings will be used along the edges of the bridge and to separate the shared use path from traffic. BPF-4 and PPF-5 pedestrian fences will be used along the north and south BRC27C railings, respectively. A 9-inch deck will be used, one-half inch greater than the minimum required by VDOT, ensuring adequate thickness for required deck and overhang reinforcing. Corrosion-resistant reinforcing steel will be used as required by VDOT IIM-S&B-81.5 for Class I structures. All other reinforcing steel will conform to ASTM A615 Grade 60.

Superstructure concrete including deck, sidewalks, rails, medians, approach slab, and substructure piers will be Class A4 concrete. The precast concrete Bulb-T girder will use Class A5 concrete. The abutment will be Class A3 concrete.

The proposed bridge will be constructed along an offset alignment to the existing Fall Hill Avenue Bridge. The offset alignment will allow for a phased construction of the proposed bridge. During Phase I

of construction, traffic will be maintained on the existing bridge while the Phase I portion of the new bridge is constructed along the offset alignment to the south. After Phase I construction of the new bridge is completed, traffic will be diverted to the new structure, consisting of one lane of traffic in each direction and a 6-foot raised sidewalk along the south side of Fall Hill Avenue. The existing bridge will then be demolished to accommodate construction of the remainder of the proposed bridge. Upon completion of the Phase II portion of the new bridge, traffic will be switched to the final proposed configuration of two lanes of traffic in each direction with a 14-foot shared-use path along the north side of Fall Hill Avenue and a 6-foot raised sidewalk along the south side of Fall Hill Avenue.

Construction of the substructure pier units and erection of the superstructure will require MOT along I-95. The construction of Piers 2 and 3 is anticipated to require partial closure of the inside shoulders of both the northbound and southbound lanes of I-95. Construction of Piers 1 and 4 is anticipated to require no lane or shoulder closures along I-95. Erection of the superstructure will require all lane closures along northbound and southbound I-95 lanes. Lane closures will be coordinated with VDOT and are anticipated to be limited to nonpeak travel periods. Single directional traffic is anticipated to be maintained at all times.

4.3.4 MATERIALS, METHODS, AND FUNCTIONALITY

During our investigation, validation, and enhancement of the RFP concept, much consideration was given to the materials, methods, and functionality of the improvements to reduce the overall inspection and maintenance requirements for VDOT and to maximize the facility's performance and durability. In doing this, we have several areas of improvement to note.

First, in adjusting the location and geometrics of the roundabout, we have improved sight distances in the area and have accommodated more of the anticipated movements throughout the roundabout. These enhancements will improve operations and will reduce the likelihood of accidents and damage

to the facility, including the roadside elements associated with vehicular accidents and by larger vehicles "hopping" curbs while making movements that otherwise would not be accommodated.

Second, the adjustments to the vertical and horizontal alignment of the facility have decreased the amount of waste material, reduced the length and height of walls, and reduced the amount of additional ROW needed for the project. These enhancements improve the performance, long-term maintenance, and sustainability of the project by reducing the following:

- Number of trucks and vehicle miles traveled needed to haul away the excess soil
- Impacts of those trucks on the air quality along the corridor
- Needed space at a spoil site
- Amount of future retaining wall inspections and maintenance
- Amount of right of way requiring maintenance

Third, by flattening the slopes in allowable areas, we have increased the safety of the corridor, reduced the amount of waste (which further increases the benefits listed above), and improved drainage flows in the area to allow runoff more time to infiltrate into the groundwater system naturally and reduce the load on the storm drainage system.

As mentioned in Section 4.3.3, the superstructure of the proposed Fall Hill Avenue Bridge will consist of five continuous spans. Semi-Integral abutments with buried approach slabs will be used at each abutment to reduce long-term maintenance costs for VDOT in accordance with the VDOT Manual of Structure and Bridge Division, Volume V – Part 2, Chapter 17. The use of semi-Integral abutments and continuous span construction over the piers will eliminate any transverse expansion joints along the bridge, and thereby reduce long-term maintenance costs for VDOT.

See Section 4.3.2 and the drawings contained in Volume II for more details on our proposed concept.

4.4

Project Approach

4.4 Project Approach

4.4.1 INTRODUCTION

Through our experience on projects such as the environmentally sensitive Intercounty Connector, and knowledge base developed from our many environmental impact statements, we have standard practices of care that include ROW acquisition and environmental protection processes. Initially, our design team will work with the environmental, ROW, and construction teams to further minimize the project's impacts; from then on, the team will ensure that the resources are protected in the field during construction. The following sections detail our proven processes in ROW and environmental resources.

4.4.1.1 RIGHT OF WAY ACQUISITION

Upon receipt of contract award, the Archer Western/Parsons team will immediately confer with our title examiner to conduct a review of the project maps and identify properties requiring title research. This initial title examination will provide valuable information with regard to historic easements and other encumbrances that may directly affect the proposed takings. Armed with this data, we will work with the design team to minimize takings on parcels with significant encumbrances. The goal of the project team is to resolve as many design issues as possible that could result in changes or additions to the ROW plans. Once we have completed all necessary reviews and made any necessary changes to the ROW plans, our ROW manager will prepare a Real Estate Acquisition Management Plan (RAMP). All appropriate documents will be submitted to VDOT for review in order to obtain a notice to commence ROW acquisition.

While VDOT is conducting its review, our team can move forward with establishing parcels and ownership information in the Right of Way and Utilities Management System (RUMS), setting up parcel files, creating project status reports, and generating appraisal inspection letters. These administrative tasks will save valuable time once the process begins. Upon receipt of the notice to proceed, a ROW kickoff meeting will be held immediately with project team members and all

subconsultants assisting in the acquisition process. A parcel-by-parcel review will be conducted to confirm changes that may have resulted during VDOT's review, identify issues that must be addressed, and establish a schedule for completion of all services. Manual revisions or recent policy changes will be addressed, and a review of RUMS requirements will be covered, in addition to a review of the team's safety standards.

As we officially launch the acquisition, several tasks must be expedited, including, but not limited to, notifying property owners of the impending acquisition, conducting appraisal inspections, and working with the Virginia Department of Historic Resources. In addition, a relocation plan will be prepared, identifying potential displacements that may occur. At this time, no relocations are anticipated, but this plan will be completed for the project file. This task must occur prior to initiation of negotiations.

While the appraisals are being prepared, our ROW specialist will review all parcels in RUMS and will begin preparation of negotiation packages for submission to VDOT after the appraisals have been approved. To keep VDOT abreast of our activities, we will make it our top priority to input all activities into RUMS as they occur. In addition, the ROW manager will distribute weekly progress reports to the team. As appraisals and appraisal reviews are completed, we will coordinate with VDOT's Fredericksburg District office in establishing approved compensation.

After this task is complete, we will immediately initiate negotiations with landowners and work diligently to reach settlement. Given the significant number of easements anticipated on this project, colorized drawings will be used to illustrate the interests being sought from each property owner. Offer packages will be hand delivered so that the maps, documents, and appraisal can be fully explained. Detailed logs of contacts will be prepared on all parcels for use in the event condemnation is required. All 24 ROW packages will be carefully reviewed prior to submittal to confirm compliance with current VDOT procedures. As certificates are filed, we will continue to work to obtain agreements

after certificate and work closely with fee counsel to provide litigation support as requested.

4.4.1.2 ENVIRONMENTAL MANAGEMENT

A successful design-builder must possess the depth and breadth of experience to efficiently and effectively coordinate, collaborate, and deliver the documented environmental commitments, including any needed ROW, additional permit modifications, and management of the overall environmental risk during design and construction, with the goal of delivering the project on time and without delays caused by environmental issues. Our team offers all of the following proven capabilities, experience, and benefits:

1. A strong environmental compliance team that knows how to:
 - a. Accurately document existing conditions and convey the data to the design-build team
 - b. Successfully communicate with VDOT and regulatory agencies
 - c. Correctly process permits, permit modifications, and documentation to facilitate and expedite approvals
2. A strong ROW expert with experience at VDOT and with handling ROW transactions for historically encumbered properties.
3. An intrinsic understanding of Virginia environmental requirements, including:
 - a. Knowing how to create, update, and maintain a commitment tracking database (CTD) and environmental constraint mapping used for each interdisciplinary review to ensure compliance and minimize impacts
 - b. Knowing why and how commitments are executed
 - c. Knowing what and when actions must be executed
4. A proven ability to manage environmental compliance by:
 - a. Putting controls in place to keep field operations in compliance at all times, such as

flagging, fencing, and signs alerting field staff and visitors of environmentally sensitive areas.

- b. Allocating appropriate resources to construct the project in compliance with commitments, including monitoring staff in the field during sensitive operations or tasks, such as excavation of cultural resource areas such as Earthwork 3.
5. A comprehensive environmental awareness and training process that works by:
 - a. Educating all project personnel on the environmental concerns and risks through an on-boarding process for all staff to inform workers and visitors of environmentally sensitive issues, warning markers (tape, fence, and signs), and special procedures and pre-activity meetings before each day or activity in the field to help identify and manage potential environmental risks
 - b. Implementing continual reminders and updates
 - c. Motivating all project participants to champion the cause
 - d. Providing experienced project staff with appropriate Virginia training certifications
 - e. Including environmental compliance checklists and signoffs before, during, and after construction activities

Each phase of the project will emphasize environmental awareness to help educate staff and to identify, manage, avoid, and minimize impacts and risks to environmental resources. This will be accomplished through field meetings and training and through interdisciplinary reviews in which environmental staff will review design submittals for environmental compliance and for possible avoidance and minimization opportunities.

Shortly after NTP is given and during the scope validation period, the project corridor will be walked to perform a preconstruction assessment of the project area. This assessment will include verification of the environmental inventory shown in the plans and documentation provided by VDOT. This will result in the creation of an environmental commitment database to track the commitments made, including specification and permit conditions

and requirements. This database will be used to flag, fence, and/or sign the resources in the field for their protection and in the environmental reviews of each design package performed during the interdisciplinary reviews. As discussed in the QA/QC section of this proposal, our design process will include the use of issue-/discipline-specific task forces to help guide the development of the design packages and resolve any major issues throughout the project duration. These task forces will allow for the open and honest discussion of the issues encountered and will allow for a higher quality project as a result. They will also involve ongoing over-the-shoulder reviews of the designs by a multidisciplinary group of experts, including environmental resource staff. These team members will help review the designs as they are developed with the goal of meeting the commitments contained within the database. Prior to formal submittal of the individual design packages, a formal environmental review will occur, along with multidisciplinary design and construction reviews. Any items found to be in conflict with the commitments will result in comments to be tracked and resolved prior to submittal of the package. This will ensure that all commitments are met and maintained through the design phase of the project.

During the construction phase of the project, before any work begins in the field, the environmental resources will be marked/flagged to indicate whether they are to be protected, temporarily impacted, or permanently impacted. Those physically present resources to be protected will be shielded from work through the use of orange construction fencing to further ensure that they are not misidentified during construction. The staff in the field will be briefed on the environmental aspects of the project, as well as the warning markers and protection measures in the field prior to their involvement on the site. This will be reiterated and detailed further on a daily basis during each preactivity meeting to ensure that all staff members working on the project are well aware of the environmental risks involved in each ongoing activity. In addition, all field QC checklists will include an environmental checking process based on that activity to ensure that commitments have not been compromised or unforeseen impacts created. This overall process was shown to be very

effective on the Intercounty Connector (ICC) project and will develop a culture on the project that ensures environmental commitments are valued and met by all project staff.

For this project, we have the following specific environmental conditions/areas of concern:

Adjacent Land Uses

- Residential neighborhoods (apartment buildings such as Fall Hill Apartments, Crestview Apartments, Forest Village Apartments, and townhomes such as Central Park Townhomes) individual properties, including one with a stone wall-lined entrance
- Commercial properties (e.g., Celebrate Virginia, car wash, 7-Eleven, Panaderia Aury, Fall Hill Professional Park, Mary Washington Hospital, Snowden Office Park, Snowden Executive Center, and CVS)
- Community features (e.g., the Rappahannock Canal Path)

Public Parks and Recreational Areas

- Snowden Recreation Park

Utilities

- Fiber-optic line
- DVP power easement and high-tension power lines

Historic Resources

- VDHR 088-5181 (Salem Church Battlefield)
- VDHR 111-5295 & VDHR 111-5296 (Battle of Fredericksburg I & II)
- 44SP0064/VDHR 111-0134 (Rappahannock Canal)
- Site 44SP0573/VDHR# 111-5272 (Earthwork 3)
- VDHR# 111-0149 (Fall Hill Property)
- Site 44SP0640 (Old Fall Hill Road Bed)

Natural Resources

- Wetlands
- Streams
- Floodplains

Each of the historic and natural resources will be identified in the field, marked, and fenced to protect them from unintended activities as discussed in the previous section. They will be included in the preactivity meeting discussions and the environmental training to increase the overall awareness of the entire team. The commitments associated with each resource will be documented in the commitment-tracking database, and each design submittal will be reviewed against the database to ensure that no commitments are missed. The historic site protection activities are discussed in more detail in Section 4.4.3 as the requested unique Project element. Moreover, these identification and protection activities will occur early in the project to allow the maximum time to determine if the potential exposure can be reduced and to avoid any potential surprises. Completing them early in the process also allows for the maximum amount of float if unknown conditions are discovered, including the discovery of unanticipated elements.

To minimize the impacts on the project of this occurrence, it is imperative that the team develop and provide procedures for implementation of an Accidental Discovery Plan or Unanticipated Finds Plan that will satisfy conditions of the MOA regarding the possibility of discovery of previously unidentified archaeological resources during ground-disturbing activities.

Our awareness processes during onboarding and preactivity meetings are the most important ways to avoid potential environmental risks. Our processes will emphasize how we will build the project in an environmentally sensitive and safe manner. The training will promote processes that expeditiously and safely resolve environmental emergency. The primary goal of our processes and training is to provide field crews with the tools and techniques to avoid actions that require emergency response. In doing so, environmental and safety risks are dramatically reduced. However, all supervisors will have detailed procedures and guidelines to follow for emergency situations and will have in-depth training in these matters.

Our environmental emergency response procedures are as follows:

1. Incident occurs
 - a. Report the incident immediately
2. Control the incident and prevent escalation of the impact
 - a. Cease the construction activity
 - b. Isolate the area
 - c. Implement best management practices (absorbent material, brooms, berms)
3. Immediately mobilize the environmental team
 - a. Categorize and prioritize the level of the incident
 - b. Document and quantify any impacts
4. Develop a corrective action plan
 - a. Develop a root cause analysis
 - b. Develop a corrective action plan to ensure no repeat occurrences
5. Implement corrective actions

Furthermore, during the construction phase, the National Weather Service will be used to determine if significant weather events, watches, or warnings are forecasted. If the forecast warrants, we will review the site and determine the necessary action to prepare the site for the forecasted weather event. Immediately after the event, we will review the site to determine needed repairs or erosion and sediment control (E&SC) maintenance.

The identification, minimization, and protection tasks occur early in the project to reduce the potential for impact to the schedule and maximize the flexibility of the team to handle any unforeseen challenges that arise through the scheduling and maintenance of maximum float in the project schedule.

4.4.2 UTILITIES

The Archer Western/Parsons team approach to design centers on minimum impact with existing utilities and maximum coordination with utility companies. We understand that early and regular communication with utility owners will be critical to the success of the project. Our intent is to provide a design that eliminates utility conflicts where possible and incorporates early utility owner input where conflicts cannot be avoided. Our active coordination

with utility owners from the beginning of design will be instrumental in minimizing extra costs and project delays.

The plans identified six utility owners within the project limits: the City of Fredericksburg, Columbia Gas, Verizon Virginia, Cox Communications, Comcast, and Dominion Virginia Power. In addition to these utilities, we will coordinate with VDOT on the installation of new fiber-optic lines adjacent to I-95, and with the City of Fredericksburg on the

utility relocations and improvement associated with the Fall Hill Canal Bridge Project.

Our utility manager has already visited the project site, contacted each utility owner, and coordinated the utility relocation plan with the design. We have already created a preliminary utility conflict matrix as shown in Volume II of this technical proposal.

The major impacts and anticipated relocations are described below.

Utility Owner	Type	Comments/Notes	Utility Design by	Cost of Utility Borne By
Dominion Virginia Power	Underground/Overhead Electric	Runs alongside Fall Hill Avenue from start of project to bridge over I-95, where it transfers to underground line. Several existing power poles are located within the cut/fill limits and will require relocation.	Dominion Virginia Power	Archer Western/Parsons
	Overhead Electric	Several existing overhead electric poles along Mary Washington Boulevard are located within the grading limits and may require relocation.	Dominion Virginia Power	Archer Western/Parsons
	Overhead Electric	High-tension power lines at Mary Washington Boulevard extension are located in the middle of the proposed roadway and will require relocation.	Dominion Virginia Power	Archer Western/Parsons
	Light Poles with Underground Electric	Several light poles fed by underground electric line are located along Mary Washington Boulevard. These light poles will require relocation.	Dominion Virginia Power	Archer Western/Parsons
	Overhead Electric	Existing overhead electric lines run along and cross Jefferson Davis Highway within the proposed project limits. These lines and associated power poles will require relocation.	Dominion Virginia Power	Archer Western/Parsons
Verizon, Comcast or Cox	Underground Fiber Optics and Telephone	Underground fiber and telephone lines run along Fall Hill Avenue from Station 113+93 to Station 124+66 and may require adjustment or relocation.	Utility Owner	Archer Western/Parsons
	Cable TV	Cable TV line running alongside Fall Hill Avenue from Station 152+55 to Station 160+31 will require relocation.	Utility Owner	Archer Western/Parsons
Columbia Gas of Virginia	Gas	Existing gas line crosses Mary Washington Boulevard at Station 201+70 and may require relocation depending on depth of line.	Columbia Gas	Archer Western/Parsons
City of Fredericksburg Dept. of Public Works	Water	Existing water line under shopping center entrance at Fall Hill Avenue Station 105+28 may require relocation, depending on depth of cut.	Archer Western/Parsons	Archer Western/Parsons
	Water	Existing water line along Fall Hill Avenue from Station 122+18 to Station 126+66 will require relocation.	Archer Western/Parsons	Archer Western/Parsons
City of Fredericksburg Dept. of Public Works	Sanitary Sewer	Existing sanitary sewer line along Fall Hill Avenue from Station 128+40 to Station 129+12 will likely need to be relocated outside the limits of proposed retaining wall.	Archer Western/Parsons	Archer Western/Parsons

Our approach to utility work during design will be as follows:

- As mentioned in the RFP, our utility manager will meet with VDOT's regional utilities office within 45 days of the date of commencement to gain a full understanding of what is required with each submittal.
- We will field verify all existing utilities and will perform subsurface utility investigations and test-holes.
- We will prepare UT-9 Forms and hold a UFI meeting with each utility.
- Our utility manager will personally meet with all affected utilities at required intervals to coordinate designs and relocations.
- We will notify each affected utility in person and in writing of our schedule, design, and cost approvals.

During construction, we will continue to effectively manage the utility work as follows:

- Our utilities manager, who was active throughout the design process, will coordinate the utility interface with construction activities.
- Utility companies typically will be granted early access to implement necessary relocations. Of particular importance, the Dominion Virginia Power (DVP) relocation of overhead power lines will receive constant attention and assistance. Such assistance will include the following:
 - Early identification of the scope of the DVP relocation work.
 - Early procurement of long lead time materials such as new power poles, anchor bolts, and conductors.
 - Early identification of any required power outages, followed by prompt requests to be placed on the DVP outage schedule. This is critically important when power transmission lines are involved.
 - Regular face-to-face meetings with DVP engineers to ensure that DVP's in-house design process for proposed relocation work is progressing as efficiently as possible, and to address any potential design issues early in the process.

- Regular face-to-face meetings with DVP's construction project manager to verify that material procurement and construction activities remain on schedule and on budget.
- The utilities coordinator will contact Miss Utility for utility locations prior to the start of work. Following up on this initial contact, the layout tickets will be routinely tracked and updated so that work is never performed without proper utility identification.
- Utility locating will include hand digging to locate lines. Once exposed, the line location will be surveyed and incorporated in an electronic composite Project Utility Plan. This plan will be continually updated as work commences, adding both additional existing and newly constructed utilities. This same survey effort will also provide all information necessary for the as-built drawings.
- The survey team will refresh utility-locate information prior to work.
- Preshift meetings will include discussion of expected utilities per the project utility plan and any special protective measures.
- Engineered utility support plans will be prepared for utilities that cross excavations that require a support of excavation system, or where deemed necessary for physical protection.

Our team has a complete working knowledge of utility relocations and has implemented VDOT's Right of Way and Utilities Manual protocols and standards on several VDOT projects. Furthermore, as a result of our significant design-build experience, our team has developed close, positive working relationships with all of the utilities located within the project limits, which will result in a collaborative environment for successful completion of the project. We have a particularly beneficial relationship with the engineers and construction management personnel within DVP's power transmission division, having recently worked closely with them to "fast-track" the raising and relocation of a major transmission line in Richmond on the VDOT I-95 Bridge Replacement Project. Our highly successful collaboration with DVP in Richmond has given us valuable insight into the inner workings of DVP,

which will be vital to the successful and efficient relocation efforts necessary on the Fall Hill project.

4.4.3 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

The Archer Western/Parsons team includes leaders in the design and construction fields with years of proven performance. As a team and as individuals, we start with the premise that quality should be built into the project, rather than checked for and corrected at the end of the project. Simply put, we make quality an integral part of our engineering and construction practices and procedures.

The proper approach to quality is especially important in a design-build project. For a successful project outcome, a common understanding and agreement must be reached between the client and design-build team members. We propose implementing informal partnering as a key component of our project management. This partnering attitude will facilitate early mutual agreement and open discussions during the course of the project. A partnering atmosphere will be accomplished through the use of project task forces composed of key personnel from VDOT, Archer Western, and Parsons. Participation by additional entities, such as utility and agency representatives, will also be encouraged where appropriate. The task forces will be open forums for discussion to clearly define project criteria; to meet VDOT requirements; to address constructability, environmental, and safety issues; and to provide consistency in design and construction operations, all before they become schedule critical.

4.4.3.1 PROJECT QUALITY MANAGEMENT PLAN

Our Design-Build QA/QC Plan (Quality Management Plan or QMP) will be wholly compliant with the *VDOT Minimum Requirements for Quality Assurance & Quality Control on Design-Build and Public-Private Transportation Act Projects, January 2012 (VDOT Quality Requirements)*. At a minimum, the QMP will include the following:

- List of designers, contractors, utilities, and other agencies with a contact person, telephone, and fax numbers, and email addresses
- Team hierarchy and delineation of the lines of communication
- Identification of key individuals and responsibilities
- Protocols for design verification and certification for releasing for construction
- Guidelines for construction inspection, testing, sampling, and documentation, including identification of all quality activities that require specific training or certifications
- Sample quality provisions for inclusion in subcontracts and purchase orders to ensure an understanding of, and compliance with, project quality requirements
- Guidelines for acceptance of work and certification for payment
- Procedures for dealing with nonconforming work

The implementation of the QMP will be overseen by Ali Abdolahi, PE, CCM, an experienced Quality Assurance Manager (QAM) who has worked on multiple VDOT projects. The design quality manager and the construction quality manager are the primary project management personnel who will support and supplement his efforts. Reporting to the Design-Build Project Manager, Brian Quinlan, PE, Ali will communicate directly with VDOT and will be responsible for the development of, and adherence to, the QMP. To fulfill this role, he will have full authority to halt out-of-control operations and to direct the removal of noncompliant work. The QAM will have the necessary resources to fulfill these responsibilities, including an inspection team with a lead inspector, an independent testing laboratory, and independent certified technicians as needed for verification testing. Using Appendices 2 and 3 of the VDOT Quality Requirements, he will draw on his extensive VDOT experience to structure project recordkeeping and inspection to reflect and satisfy VDOT protocols so that VDOT can confidently rely on his certifications that all work has been completed in conformance with the approved QMP, the construction documents, and the contract. As part of this effort, the lead inspector or a designated

alternate will be on site whenever permanent work elements are being constructed.

4.4.3.2 DESIGN QUALITY MANAGEMENT

Parsons is ISO 9001:2008 certified. In fact, Parsons was the first engineering consultant to receive this certification. To be certified, Parsons developed and implemented stringent company-wide procedures to deliver quality, which is defined as “conformance to requirements.” Key aspects of these procedures are proactive measures for problem prevention, a performance standard of zero defects, and documentation and prompt remediation of nonconformance as a means of systematically measuring and improving quality.

At the project level, the Design Quality Plan (DQP) implemented by Parsons will be structured on the following tenets:

- Quality is achieved by making individuals clearly responsible for the quality of their work so that they perform work functions carefully, thoughtfully, and with innovation.
- Quality is controlled by adequate planning, coordination, supervision, and technical direction; proper definition of job requirements and procedures; and the use of appropriately skilled personnel.
- Quality is assured by assigning an independent manager to perform quality assurance (QA) functions consisting of surveillance and auditing of the work and of the procedures followed when performing the work.
- Quality is best verified by individuals who are not directly responsible for performing the initial work activity; it requires formal documentation of the findings of the reviewing, checking, and surveillance effort.

Our DQP will have the following goals:

- Designing features that are safe and meet VDOT regulations and Design Manuals
- Conforming to the standards and reference documents in RFP, Part 2, Section 2.1.1

- Design elements that meet project requirements, are constructible, durable, economical, and minimize maintenance
- Meeting design schedule, budget, and construction staging requirements
- Preparing and delivering an organized set of construction documents
- Minimizing VDOT review effort

4.4.3.3 DESIGN QUALITY STAFFING

Reporting to the Design-Build Project Manager, Design Manager Josh Wade, PE, has overall responsibility for implementation of the Design Quality Plan. In doing so, he will rely extensively on the Design Quality Manager (DQM), Greg Anderson, PE, whose only project responsibility is quality assurance for the design process.

A civil engineer with more than 30 years of experience, Greg’s primary project responsibility as DQM will be to ensure that quality control (QC) procedures are followed. He will also have responsibility for the following items:

- Program quality documentation
- Timely quality reports to the Design Manager and the QAM
- Design certification for compliance with the approved quality program

Greg will ensure that Parsons’ QA/QC procedures are followed by tracking and reviewing the compliance of design QC recordkeeping. As part of this process, all QC findings must be cleared prior to submitting design documents to the owner for review and to the contractor for construction, which includes a written approval form certifying that the DQM has audited and approved the submittal. Greg will also be responsible for coordinating external QC checks by seasoned design professionals who are not assigned to the project, ensuring that an “independent set of eyes” provides a fresh look at documents. Greg is very familiar with his role and understands the importance of robust peer review: he is also the Quality Assurance Engineering Director for Parsons.

4.4.3.4 DESIGN QUALITY PROCEDURES

Parsons will implement a multilevel Design Quality Control Plan that includes the following:

- Written documentation and definition of design standards, processes, and procedures in advance of initiating design
- Independent detailed checks of all design reports, calculations, drawings, and specifications
- Interdisciplinary reviews by engineers and project management staff to provide coordination and uniformity in design drawings and documents that clearly identify requirements and design intent
- As required by our subconsultant contracts, Parsons will ensure that all of the design team members from our subconsultants are trained in Parsons’ QC process of checking/backchecking and verifying design elements including plan, computations, and reports
- Routine constructability reviews to ensure contractor input early in the design process and to facilitate planning of construction activities
- Technical coordination reviews and documentation coordination reviews at milestone points in the design process
- Design quality audits under the direction of the DQM to assure that QC processes are followed and that required checking and reviews are performed

The Design Quality Plan will also include an initial environmental quality review to ensure that all environmental commitments are met (refer to Section 4.4.1 for more information), an interdisciplinary review to minimize conflicts and rework and ensure overall quality, and constructability reviews to ensure that the designs are buildable and meet the needs and requirements of the construction team. These steps will be outlined in the QMP, and will be documented and enforced by the Design Quality Manager.

Our Design Quality Plan will ensure that the design documents released for construction meet all professional and contractual project requirements. Procedurally, this requires that every construction document be audited by the DQM prior to receiving Released for Construction approval by the Design

Manager. As a prerequisite for that audit, we will achieve document consistency by applying common standards, procedures, and design processes on a team-wide basis. This means having an established format for specifications and drawings, including standard symbols, line weights, noting and dimensioning methods, detail and sheet numbering, titling standards, and information content checklists. One area of particular emphasis in the maintenance of consistency will be in document control. In the design-build environment, interim drawings are distributed for a variety of purposes. For this reason, it is imperative that in-progress drawings are title blocked with revisions noted at all times, and that no drawings are used in the field until they are formally released for construction.

4.4.3.5 CONSTRUCTION QUALITY MANAGEMENT

The mission statement for The Walsh Group includes a commitment “to set the highest standards for quality and safety.” To achieve that goal, Archer Western, as a member of The Walsh Group, has developed a comprehensive six-step approach to quality, with multiple processes contained within those steps. The Three-Phase Control diagram below graphically depicts our QC program, which promotes a total commitment to quality from top management



to craft workers and subcontractors. Reflecting this commitment, our project teams produce the highest quality finished product while reducing overall cost

by minimizing costly “rework.” This achievement is accomplished by making quality the responsibility of every team member and by using proven checks and balances throughout the course of the project to ensure a systematic approach to quality. These systems are used on all Archer Western projects and are formalized in a written job-specific Quality Control Plan (QCP). These QCPs include the following:

- Adoption of and compliance with the QCP by all subcontractors as a condition of working on the project.
- Development of task-specific work plans.
- Detailed coordination and review of shop drawings to ensure the procurement of the proper materials, proper fit, and coordination of shop drawings across multiple disciplines, and to identify any deviations from the contract requirements.
- Preactivity/preconstruction meetings to review specifications, approved submittals, and quality expectations for each segment of the work. These meetings include Archer Western personnel, the associated subcontractor, and project inspectors. For this project, they also may include Parsons and VDOT, if so desired.
- Regular QC testing, as well as QA testing when specified on this project, to ensure quality of the developing project.
- Oversight and review of the work as it is put into place (including preplacement checks prior to concrete placements, inspection of underground pipe installations prior to backfill operations, and verification of materials/equipment against approved submittals).
- Tracking and resolution of quality issues. This is essential to ensure that the work does not continue to be built over potentially substandard construction.

4.4.3.6 CONSTRUCTION QUALITY STAFFING

As noted at the beginning of this section, the quality staff for this project includes an independent QAM and QA inspection staff to perform verification (emphasis added) inspection and testing. Because

the emphasis of the QA staff is on verification, the direct responsibility for quality lies with the construction forces, as appropriate. Accordingly, Archer Western will have a full-time QC Manager on this project because of its scope and complexity. This QC Manager will be Matt Mroz, a degreed engineer who performed the same role in a recently completed Metropolitan Washington Airports Authority project at National Airport. Matt is thoroughly familiar with the requirements of the position, including how to prepare, conduct, and document preparatory meetings, initial inspections, and follow-up activities. He will promote the active participation of superintendents, engineers, and foremen in the QC effort, and will supervise the activities of certified field and lab technicians, where appropriate. Although most of the QC efforts are anticipated to be performed by production personnel, certain specialty tasks, such as concrete testing, various compaction testing, and various pavement marking inspections are anticipated to be performed by dedicated personnel due to certification requirements and time constraints.

Also noteworthy in terms of staffing, in addition to Matt and our Construction Manager, Carter Washington, PE, the project staff will include a number of other personnel with Virginia RLD, ESCCC, and MOT certifications.

4.4.3.7 CONSTRUCTION QUALITY PROCEDURES

Archer Western uses a wide array of QC methods during construction, including constructability reviews, work plans, three-phase controls, and employee training:

- **Constructability Reviews:** Regular constructability and design reviews are performed during the design phase. Most reviews occur during coordination meetings. For faster responses, details are distributed electronically or by courier, as needed. In addition, conference calls and face-to-face meetings are used to discuss the distributed information.
- **Work Plans:** For every major construction activity, a work plan is developed by the superintendent and engineer involved in the

operation. The draft plan is then expanded to incorporate feedback from the construction manager, the senior site superintendent, the site safety officer, and the QC manager. As the work plan nears completion, the crew that performs the activity in question is brought in to provide its input and to familiarize the crew with the plan. The work plan details significant aspects of the construction activity including materials, equipment, crew size and composition, special training requirements, QC concerns, tolerances, material testing requirements, and other pertinent information. In addition to the obvious benefit of highlighting and addressing areas of concern prior to actually starting work, a key goal of the work plan is to maximize team participation so that they “buy in” to the process.

- **Three-Phase Control:** This process is the key component in the Archer Western Q for Quality program. The first step is the preparatory meeting in which the upcoming task is reviewed to ensure all submittals are in place; all tools, equipment, and materials are on hand; and proper planning for means and methods has occurred. The next step is the initial inspection, in which the early stages of the work are inspected to ensure contract compliance and establish benchmark performance criteria. The final step is the follow-up inspection to verify ongoing compliance and accept completed work.
- **Personnel Orientation and Training:** Each person working on the project receives an orientation and training on the main areas of emphasis for this project, including safety, quality, environmental commitments, and teamwork. The goal is to instill a team approach and ensure that everyone is fully engaged in the project. Training classes are provided or made available for various topics, including QC courses, and equipment operator classes, as well as training in safety and first aid, MOT, environmental, and small tools. For example, a goal of the Archer Western safety program is that all employees receive 10-Hour OSHA training. Another example is that Archer Western conducts internal training and certification of all equipment operators, particularly crane operators.

4.4.3.8 UNIQUE ELEMENT DURING DESIGN AND CONSTRUCTION

A notable unique element on this project is the design and construction of the project while minimizing impacts to the cultural and historic resources in the corridor.

As presented in the NEPA document, Section 4(f) Evaluation and MOA, VDOT has completed the necessary coordination with the Virginia State Historic Preservation Office (VA SHPO) in compliance with the National Historic Preservation Act, Section 106, and has identified 10 historic properties in the Area of Potential Affect (APE). Of these cultural elements, four are directly impacted by the planned project:

- Fall Hill Property (VDHR ID# 111-0149) Easement
- Earthwork 3 (VDHR ID# 44SP0573/111-5271)
- Site 44SP0574/VDHR ID# 111-5723 (Civil War Earthwork4/Zig-Zag Trenches)
- Archaeological Site 44SP0642

In addition to these previously identified sites, due to the history of the area and being within two civil war battlefields, there is a potential for additional resources (linked to the known resources or independent of them) to be discovered. This situation requires additional focus during both the design and construction phases.

During the design phase, Susan Bamann, Stuart Tyler, and their teams will work with the design engineers to ensure that designs reduce impacts to the known cultural resources and to develop guidelines for responding to additional discoveries. We began this effort during the development of this technical proposal by refining the RFP concept. Details of our enhancements can be found in Table 1 on Page 5.

Drawing on our cultural resource and environmental staff’s knowledge of the resources and project area and their ongoing participation in the design effort, we will develop checklists that will be used to ensure that we minimize impacts and ensure that nothing is missed or forgotten. These checklists will then be used during the multidisciplinary reviews of each design submittal to ensure that all commitments are met and chances for project delays are reduced. The

following items will be included in each of the site-specific checklists:

- Fall Hill Property (VDHR ID# 111-0149) Easement
 - ROW acquisition completed and properly documented.
 - Clear marking, fencing, and signage as appropriate to delineate the resource, the limits of proposed construction, and off-limits areas.
 - Tree removal procedures to conform with the requirements of the historic preservation.
 - Preconstruction documentation of the two square gateway posts and wall segments and agency coordination completed prior to removal according to procedures outlined in “Special Provision for Relocation of Fall Hill Gateway,” dated May 23, 2013. The current location of the gateway posts is to be clearly marked on project plans with a notation that they should not be disturbed. If project activities, such as tree clearing, occur in the area of the posts prior to their recordation and relocation, they should be marked with highly visible barrier fencing and signage to ensure that they are not damaged.
- Earthwork 3 (VDHR ID# 44SP0573/111-5271)
 - Notes to be included in the drawing that an archeologist is to be present for the activity from the preactivity meeting through completion of earthmoving activities.
 - Clear marking, fencing, and signage as appropriate to delineate the resource, the limits of proposed construction, and off-limits areas to be completed or supervised by the cultural resource team representative.
 - Notes included in the drawings detailing the need for archaeologist monitoring before, during, and after construction to ensure compliance with limits of impact, early identification of potential unanticipated finds, and authorization for the stoppage of work as necessary to meet these needs.
 - Provisions for the implementation of the Unanticipated Finds Plan if the archeological monitoring suggests any such finds, including
 - the presence of cultural deposits or human remains.
- Site 44SP0574/VDHR ID# 111-5723 (Civil War Earthwork 4/Zig-Zag Trenches)
 - Ensure that 35-foot buffer is delineated on the construction plans through clear marking, fencing, and signage as appropriate to delineate the resource, the limits of proposed construction, and off-limits areas.
 - Notes that buffer markings, fencing, and signage are in place prior to the preactivity meeting and the construction itself.
 - Ensure that the trench slope is not undercut in any way that would destabilize or cause the earthworks to subside.
 - Avoidance of the introduction of significant visual barriers to the overall viewshed of the earthworks. For example, the proposed retaining wall will not extend significantly above the current slope surface.
 - Notes that before construction activities begin in the vicinity of the earthwork (the area to be protected), the marking, fencing, and signage is to be inspected by a member of the cultural resource team to ensure that it is properly protecting the resource.
- Archaeological Site 44SP0642
 - Data Recovery Plan been submitted and approval (VDOT, City and Agency).
 - Fieldwork, analysis, and reporting for data recovery (includes specialized analyses); project management and progress reports have been completed.
 - Notes included on drawings to include reference to the Data Recovery Plan and artifact curation.
 - Completion of the Supplemental Archaeological Survey. Based on the RFP concept plans, the archaeological survey is anticipated to involve approximately 15 additional shovel tests in the area southeast of 44SP0642. The shovel tests would be conducted by a qualified archaeologist and field assistant from the cultural resources subconsultant and will include shovel testing

and documentation per the guidelines of Virginia Department of Historic Resources (VDHR), and the results, including artifact analysis and interpretation/recommendations for any additional site components, will be reported in an addendum-style report.

- Notes that buffer (approximately 10 feet), including the markings, fencing, and signage, is in place prior to the preactivity meeting and the construction itself, and is to remain in place until such time that a management summary or the data recovery report is reviewed by the consulting parties and it is agreed that the terms of the MOA have been fulfilled. This marking is to be reviewed and approved by a member of the cultural resources team.
- Monitoring during removal of the basketball courts must involve a qualified archaeologist provided by the cultural resources team. The archaeologist would be notified in advance of the proposed removal and grading so that he/she can be on site to observe all earthmoving. It will be necessary to confirm the presence of sterile subsoil in order to ensure that intact features related to the site are not present. The archaeologist will have the authority and would be responsible for halting earthmoving for brief inspection if possible cultural features or significant artifact concentrations appear to be uncovered. The Unanticipated Finds Plan would be implemented if the brief inspection suggests the presence of significant cultural deposits or human remains.

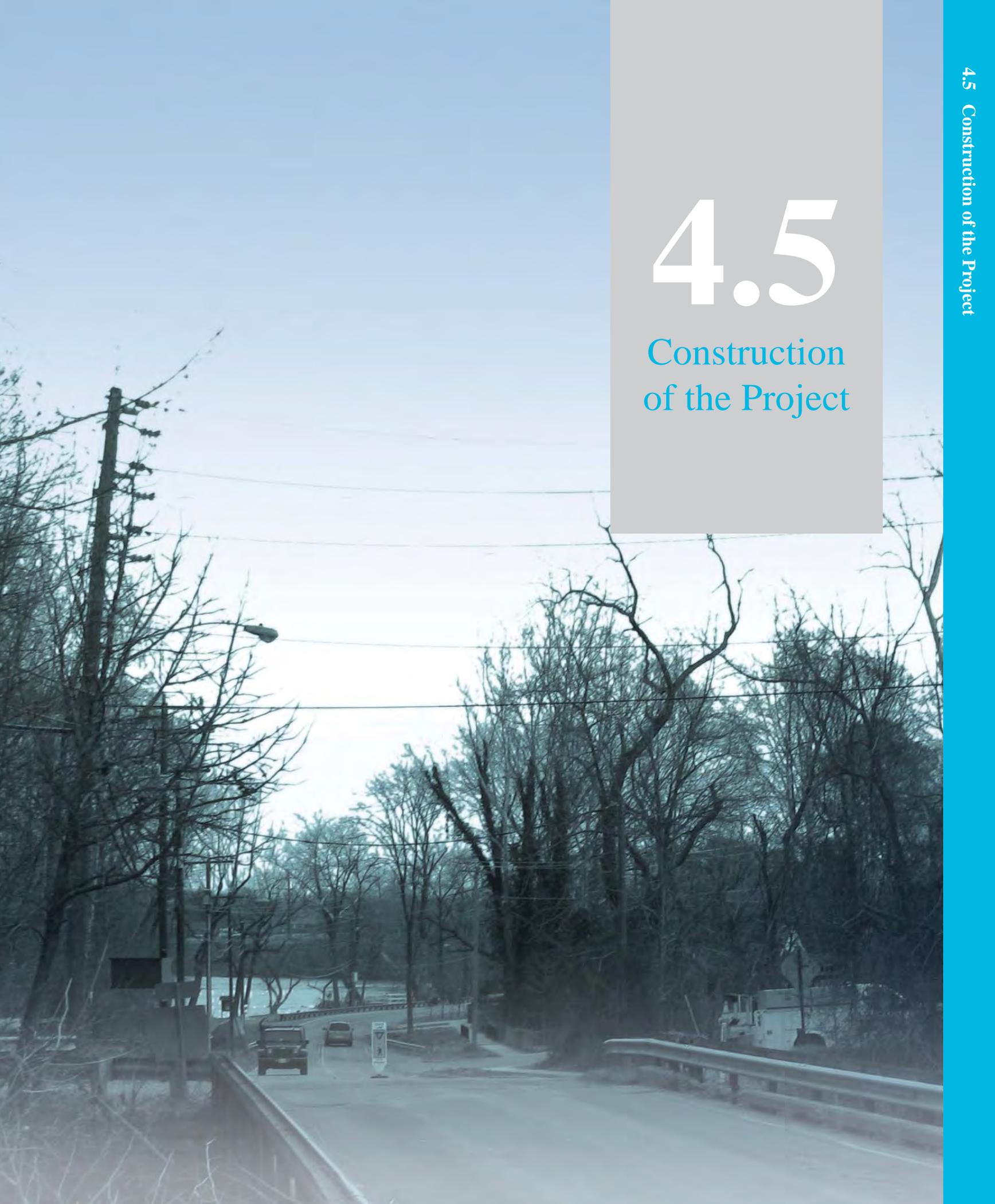
These checklists, along with the commitment-tracking database (CTD) discussed in Section 4.4.1.2 will be used to develop checklists and awareness training for use in the field during construction activities. These checklists will be reviewed on a daily basis as part of the prework start of shift field crew meetings. During the construction phase, on the days an activity is scheduled to occur that has the potential to impact any of the cultural resources, the preactivity checklist, developed from the design checklist and CTD, will be reviewed, completed, and signed off on by the task foreman. These checklists will include the requirement that all resources be marked clearly in the field, fenced off at the proposed

limits of construction, and signed appropriately to eliminate any accidental or increased impacts caused during construction.

The proper use and completion of the checklists and project standard operating procedures (SOPs) will be monitored through the overall QA measures maintained by the QAM. The QAM and his team will also ensure that the protective measures are in place and maintained throughout the necessary periods of construction.

4.5

Construction of the Project



4.5 – Construction of the Project

4.5.1 SEQUENCE OF CONSTRUCTION:

The project will consist of four major elements of work:

- Fall Hill Avenue Widening
- Mary Washington Boulevard Extension
- Replacement of Fall Hill Avenue Bridge over I-95
- U.S. Route 1 Improvements

4.5.1.1 CONSTRUCTION PHASING FOR FALL HILL AVENUE WIDENING

Fall Hill Avenue will be widened in two major phases. Work will begin with the construction of improvements south of the existing travel lanes. This work will include earthwork, utilities, paving, flatwork, entrances, retaining walls, sound wall, and sports facility relocations. This work will coincide with the construction of the new eastbound bridge structure over I-95 and will allow traffic to flow mostly in its current configuration during this work. At the conclusion of this phase, traffic will be shifted to the newly constructed lanes and the eastbound bridge to allow the construction of improvements on the north side of Fall Hill Avenue to begin. This work will coincide with the demolition and reconstruction of the existing Fall Hill Bridge structure and will include earthwork, utilities, paving, flatwork, entrances, retaining walls, and sound wall construction. Upon completion of this work, traffic will be placed in the far outside lanes to allow construction to begin in the median of the roadway. Paving and flatwork in the center median area will complete the proposed improvements in the Fall Hill Avenue corridor.

4.5.1.2 CONSTRUCTION PHASING FOR MARY WASHINGTON BOULEVARD EXTENSION

Construction in the Mary Washington Boulevard corridor will occur in two distinct areas. Area 1 covers the proposed extension of Mary Washington Boulevard and runs south from the proposed Fall Hill Avenue roundabout to the existing Mary

Washington Boulevard roadway. Area 2 covers the work along existing Mary Washington Boulevard from U.S. Route 1 north to the start of the new Mary Washington Boulevard extension. Construction in Area 1 of the Mary Washington Boulevard corridor can occur simultaneously with work in Area 2 without major impacts to traffic. This will be very beneficial: construction within Area 2 can proceed while more time-consuming activities related to the Area 1 utility relocations are occurring in the other. Construction work in Area 1 will not have to be phased because no existing traffic must be maintained through this work zone. In Area 2, traffic will stay in its existing configuration while improvements to the south side of the corridor are constructed. Traffic will then be shifted to the newly constructed pavement, and work will proceed on the north side of the existing roadway. Finally, traffic will be shifted away from the center of the roadway so that work can be completed in the median area.

4.5.1.3 CONSTRUCTION PHASING FOR REPLACEMENT OF FALL HILL AVENUE BRIDGE OVER I-95

Construction of the Fall Hill Avenue Bridge over I-95 will take place in two major phases. During the first phase, the new eastbound bridge structure will be constructed while two-way traffic remains on the existing bridge structure. This eastbound bridge work will coincide with the initial widening work along Fall Hill Avenue. When the eastbound bridge and widening work on Fall Hill is complete, all traffic will be shifted to the new eastbound bridge so that work can start on the existing bridge structure. During this phase of the bridge work, the existing bridge will be demolished and reconstructed. This work will coincide with the second phase of widening work along Fall Hill Avenue. Upon completion of this bridge work, westbound traffic will be shifted to the newly constructed westbound bridge.

4.5.1.4 CONSTRUCTION PHASING FOR U.S. ROUTE 1 IMPROVEMENTS

Construction within the Route 1 corridor will occur in three phases. During the first phase, the widening work adjacent to the existing southbound lanes

will be completed. During the second phase, work within the center median will be constructed. Finally, the proposed milling and overlay work within the corridor will occur in the final phase.

4.5.1.5 GEOTECHNICAL CONSTRAINTS

Geotechnical exploration and evaluation of the existing soils conditions will begin immediately upon NTP. Geotechnical considerations are not expected to have a major impact on project design and construction.

4.5.1.6 ENVIRONMENTAL IMPACTS

Our approach to overall environmental management is shown in Section 4.4.1.2 of this proposal. In addition to regular maintenance of all erosion and sediment (E&S) control measures, Archer Western/Parsons will immediately address any unforeseen E&S issues that occur during the course of the project. We will also take particular care in preventing the release of sediment into the Rappahannock Canal and into all protected cultural resource sites. This care will include monitoring the National Weather Service for any forecasted weather events that could create excessive runoff from the project limits.

4.5.1.7 RIGHT OF WAY ACQUISITION

ROW acquisition will begin upon VDOT's approval of the 60 percent/ROW plans. For more details, see Section 4.4.1 of this proposal.

4.5.1.8 STAGING AND STORAGE AREAS

This project will likely have a storefront office rather than an onsite trailer compound. If needed, we will secure a small offsite storage area, although we do not think it will be necessary. Instead, we intend to use available space within the project work zones for staging and storage of materials and equipment.

4.5.1.9 PUBLIC INVOLVEMENT/ STAKEHOLDER COORDINATION AND GOVERNMENT APPROVALS

Our traffic management plan specifically addresses public involvement (see Section 4.5.2.2). We will request weekly coordination meetings with VDOT's

Falmouth Intersection Project, and the City of Fredericksburg's Fall Hill Canal Bridge Project.

4.5.1.10 MAXIMIZING THE PROBABILITY OF ANTICIPATING AND MITIGATING ANY POTENTIAL DELAYS TO CONSTRUCTION

We will implement the following measures to maximize the probability of anticipating and mitigating potential construction delays associated with the following high-risk areas:

- **Cultural Resources:** Our concept for the project design involves limiting or otherwise avoiding the disturbance of areas with known cultural resources. We also anticipate a proactive approach to the identification and mitigation of unanticipated cultural resources encountered during construction. Details on our approach to this risk are presented at the end of Section 4.4.3 of this proposal, under Unique Elements During Design and Construction.
- **Relocation of DVP Transmission Lines:** One element of the project with a high risk of potential delay is the relocation of the DVP transmission lines along the Mary Washington Boulevard extension. Our recent collaboration with DVP to "fast track" the relocation of transmission lines on a VDOT project in Richmond provides insight into how the process works, and ways to best reduce the chances for delays during construction. Our specific approach to managing the DVP relocation work is detailed in Section 4.4.2 of this proposal.
- **Right of Way Acquisition on Properties with Historic Preservation Easements:** Experience has shown that the acquisition of fee simple title to parcels of land encumbered with historic preservation easements can often be a very lengthy process that can lead to project delays. If our team judges that a high likelihood of project delay is associated with the acquisition of this type of parcel during the course of the project, we would propose to mitigate the delay by suggesting the use of temporary construction easements. Temporary easements could allow

construction to proceed while these more difficult land acquisitions run their full course. Our general approach to ROW acquisition is shown in Section 4.4.1.1 of this proposal.

4.5.2 TRANSPORTATION MANAGEMENT PLAN

One of the primary goals for a successful Fall Hill Avenue project is the efficient handling of traffic through and around construction, while giving paramount importance to the safety of motorists, pedestrians, workers, and inspectors. We will prepare a comprehensive “Type B” Category IV Transportation Management Plan (TMP) and site-specific Temporary Traffic Control Plans (TTCP) consistent with VDOT’s IIM-241.5 (Work Zone Safety and Mobility) and TE 351 (Work Zone Speed Analysis) requirements.

Archer Western/Parsons’ TMP goals are as follows:

- Promote efficient and effective construction phasing and staging to minimize contract duration and control costs
- Reduce delay caused by work zones
- Improve work zone safety for construction workers and the traveling public
- Improve public awareness and minimize complaints from the traveling public and local businesses, communities, and stakeholders
- Improve intra- and inter-agency coordination

Our team is equipped with construction crews, engineers, and a wide array of critical support staff members who have extensive experience working on interstate highway bridge replacement and urban arterial reconstruction and widening projects. Our design staff consists of traffic control design specialists certified by VDOT and the American Traffic Safety Services Association (ATSSA). These designers have proven experience in applying the principles of the 2009 MUTCD and VDOT’s 2011 Virginia Work Area Protection Manual and delivering sensitive and important regional projects similar to this Fall Hill improvement project. During the design phase, we will consider any critical constraints desired by VDOT, as well as those from key stakeholders. During the construction phase, we

will hold regular meetings with VDOT personnel, any adjacent construction contracts, and other interested abutters/stakeholders to monitor traffic patterns. Our TMP will include well-coordinated TTCPs, a proactive public information and outreach plan, and effective operational strategies that will minimize impact for all identified stakeholders and other commuters.

4.5.2.1 TEMPORARY TRAFFIC CONTROL

Our team will develop and implement TTCPs in accordance with the VDOT 2011 Work Area Protection Manual. Temporary lane closures to facilitate construction will be limited to off-peak hours per RFP requirements (and approved as part of our TMP). Our team does not anticipate the need for regulatory speed reductions through the work zone because all geometry and lane shifts will be designed to meet minimum standards mentioned in the RFP. We are committed to maintaining all existing travel lanes with at least a 12-foot lane width on I-95 and 11-foot lane width on all other roadways during construction. A minimum shy distance of 2 feet will be maintained between the traffic lane and concrete traffic barrier service or Group II channelizing devices on I-95, while a minimum shy distance of 1 foot will be provided on all other roadways. On Fall Hill Avenue and Mary Washington Boulevard, one lane will be open in each direction at all times. A thorough work zone traffic analysis will be performed using analysis software such as VISSIM, Quick Zone, and HCS+ for any different traffic patterns, including lane closures to evaluate the impacts, and will be included in the TMP for VDOT’s approval. Our team does not anticipate any detours for this project.

4.5.2.2 PUBLIC INFORMATION AND OUTREACH

Our team will work with project stakeholders to develop a TMP that provides for safe and efficient access through the project for the duration of construction. This will be accomplished by deploying a proactive communications and outreach plan to keep the stakeholders informed about impacts before and during construction. In addition to major

stakeholders such as VDOT, City of Fredericksburg, and utility owners, several businesses and residents along the corridor will need constant updates on project progress. These include car dealerships, hotels, professional offices, Mary Washington Hospital and professional medical offices, other businesses such as Classic Car Wash and 7-Eleven, and residential communities such as Central Park Townhomes, Fall Hill Apartments, Forest Village Apartments, and Crestview Apartments.

The following strategies will be employed for successful public outreach for this project:

- A “Pardon Our Dust” meeting will be held early in the project to apprise the public of the project schedule, including temporary lane closures and other changes to traffic operations.
- A noise wall meeting will be held to discuss the feasibility of potential walls and to educate affected residents and benefited property owners of the noise barrier survey process.
- Portable Changeable Message Signs (PCMSs) will be provided in advance of the work zone when changing traffic patterns within the project limits.
- Advance notification will be provided to VDOT, Northwest Regional Traffic Operations (NWRO), and 511 Virginia.
- Stakeholders will be invited to monthly coordination meetings.
- Regular updates will be posted on the project website.

The TMP strategies will be coordinated with other nearby projects, including City of Fredericksburg Fall Hill Bridge project (UPC 91452), as well as VDOT’s Falmouth intersection (UPC 57044) improvement and all regional construction projects to include I-95 northbound and southbound pavement rehabilitation between mile markers 101 and 140. Updates will be given to VDOT for inclusion in the VDOT project website, including schedule and changes to traffic operations.

4.5.2.3 OPERATIONAL STRATEGIES

The Archer Western/Parsons team will develop transportation operations strategies to manage

work zone traffic operations, including monitoring traffic conditions and making adjustments to traffic operations based on changing conditions. The goal of these strategies will be to improve detection, verification, and response and clearance of crashes and other incidents in the work zone and along the project corridor. The following strategies will be used daily for oversight and evaluation:

- Temporary lane closure requests and the overall construction schedules will be submitted and coordinated with the Fredericksburg District Communications Office, as well as with the Northern Regional Operations (NRO) and the Central Regional Operations (CRO) Traffic Operations Centers (CRO). All lane closure hours and special event days will be in accordance with the RFP unless otherwise directed by VDOT.
- Virginia State Police presence will be requested during critical times, such as lane closures and shifts, signal installation/retiming, and bridge beam placement.
- Work activities within the construction work zone will not begin until the approved traffic control devices are in place in accordance with the approved traffic control plan.
- An ATSSA Certified Traffic Control Inspector will be assigned to monitor the approved traffic control plan and will have sufficient authority to make changes.
- Complete records of the management of the TCP will be maintained and will include when specific traffic control devices are placed and removed; when contract work activities are completed; and inspection time, date, and findings.
- Traffic crashes and injuries that occur within the construction work zone would be documented and reported to the QAM, the construction engineer, and the VDOT safety coordinator.
- Ensure that personnel assigned to the project are trained in traffic control to a level commensurate with their responsibilities in accordance with VDOT’s work zone traffic control training guidelines.
- Perform daily reviews of the work zone to ensure compliance with contract documents and establish specifications and standards.

4.5.2.4 INCIDENT MANAGEMENT CONTINGENCY PLAN

We will prepare a contingency plan that addresses incident management during construction. The plan will identify ways to minimize traffic impacts when unexpected events occur in the work zone (e.g., crashes, unforeseen traffic demand, and inclement weather). The following will be maintained for this project:

- A decision matrix with lines of communication and authority for use when unexpected events occur in the work zone.
- Names, phone numbers, and email addresses of TMP managers, resident engineers, maintenance supervisors, law enforcement commanders, local agency representatives, etc., would be accessible to the personnel working on site.
- A detailed contingency plan will be prepared for reopening closures to traffic.
- An emergency detour plan will be developed. In case of emergency, traffic on Fall Hill Avenue would be detoured on to Carl D. Silver Parkway to Cowan Boulevard to Jefferson Davis Highway (Route 1) and vice versa.

4.6

Disadvantaged Business Enterprises



4.6 – Disadvantaged Business Enterprises (DBE)

4.6.1 DBE PARTICIPATION

Archer Western is committed to meeting or exceeding the 15 percent DBE participation goal established for this project. In fact, Archer Western and Parsons have a successful history of meeting and exceeding project DBE goals. For this project, the Archer Western team will meet or exceed the established DBE goal by using services from DBE team members Accompong Engineering Group LLC; Endesco, Inc.; and GeoConcepts Engineering, Inc. Archer Western and Parsons have extensive experience working with each of these firms and their staff, which provides us with confidence in and knowledge of their capabilities, allowing us to successfully integrate them into the team and maximize their utilization on this project.

4.6.2 DBE SUBCONTRACTING NARRATIVE

Archer Western will provide subcontracting and purchasing opportunities to local DBE firms to meet or exceed VDOT's established goal of 15 percent DBE participation. Since we have been working in the local area for more than 20 years, we have established strong working relationships with many local DBE firms. We have built these strong relationships through the combined efforts of all parties and with our prompt payment system. In addition, we are always seeking new qualified DBE firms. We have been successful in meeting or exceeding the DBE goals for the projects we have completed for multiple agencies and owners throughout the region.

4.6.3 ASSISTANCE PROGRAMS AND OUTREACH TO DBE FIRMS

In addition to the composition of our team, we anticipate that additional subcontracting opportunities will be placed with disadvantaged business concerns qualified as DBE contractors following award. Our outreach efforts during the preconstruction phase will continue throughout the

entire project. These ongoing efforts will include, but are not limited, to the following:

- Encouraging DBEs to attend VDOT-sponsored networking/informational outreach meetings and Archer Western-hosted meetings to provide adequate information about the Fall Hill Avenue Widening and Mary Washington Boulevard Extension project and the requirements of the contract.
- Directly contacting DBE firms by phone, fax, email, and mail about contracting opportunities using Archer Western's bidder database and VDOT's qualification list.
- Partnering with DBE trade/professional associations, local chambers of commerce, and community organizations to deliver project information about upcoming contracting opportunities via member distribution lists.
- Advertising solicitations using a variety of local media targeting disadvantaged community-concentrated audiences.
- Inviting DBEs to come to our offices to review the drawings and specifications and ask questions concerning potential scopes of work.
- Coordinating and providing technical assistance to enhance the capacity and capability of DBE firms. Methods to accomplish this may include breaking work components into smaller packages to assist the smaller firms by giving them a scope of work they can handle.
- Facilitating the cash flow schedule of DBE subcontractors and suppliers through early payment on mobilization items, waived retainage on labor-only subcontracts, or joint checks to subcontractors that are unable to obtain sufficient credit.

During the design phase and the procurement process, workshops or one-on-one meetings may be conducted to provide DBE subcontractors/suppliers direct support and additional encouragement to participate in the bidding process.

4.7

Proposal Schedule

4.7 – Proposal Schedule

4.7.1 PROJECT MILESTONES

The VDOT Fall Hill Avenue and Mary Washington Boulevard Extension project schedule details our plan for all phases of the design-build process based upon achieving final completion by January 24, 2017.

4.7.2 WORK BREAKDOWN STRUCTURE

Level 1 of the Work Breakdown Structure (WBS) groups the schedule into the phase of the design-build process as follows:

- **Milestones and Procurement:** Schedule section reserved for easy review of the project status
- **Design:** Includes preliminary engineering services, plan development, QA/QC reviews, submittal milestones, and VDOT reviews and approvals of design submissions. This section of the schedule includes a second level WBS structure to group design activities by type of design submission including right-of-way, environmental, geotechnical, roadway, bridge, traffic control, and utilities.
- **Construction:** This section of the schedule includes all elements of project construction, and is divided into the following major work areas:
 - Mary Washington Boulevard Extension
 - Fall Hill Avenue Widening
 - Fall Hill Avenue Bridge over I-95
 - U.S. Route 1 Improvements

Each area of construction is further subdivided and grouped by phase based on the anticipated sequence of construction.

4.7.3 CALENDARS

The following is a description of the calendars used for this project:

- **Global Calendar:** All calendars are based upon eight-hour work days and include the following holidays: New Year’s Day, Memorial Day, July 4th, Labor Day, Thanksgiving, the day after Thanksgiving, Christmas Eve, and Christmas Day.

- **Calendar 1 – “5 Day Workweek”:** This calendar is based on five working days per week and is used for all design and administrative activities that are unaffected by weather.
- **Calendar 2 – “7 Day Workweek”:** This calendar is assigned to activities that have durations based upon calendar days instead of work days.

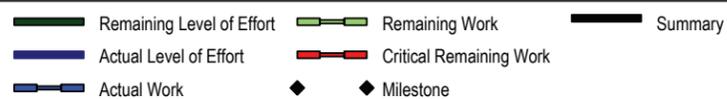
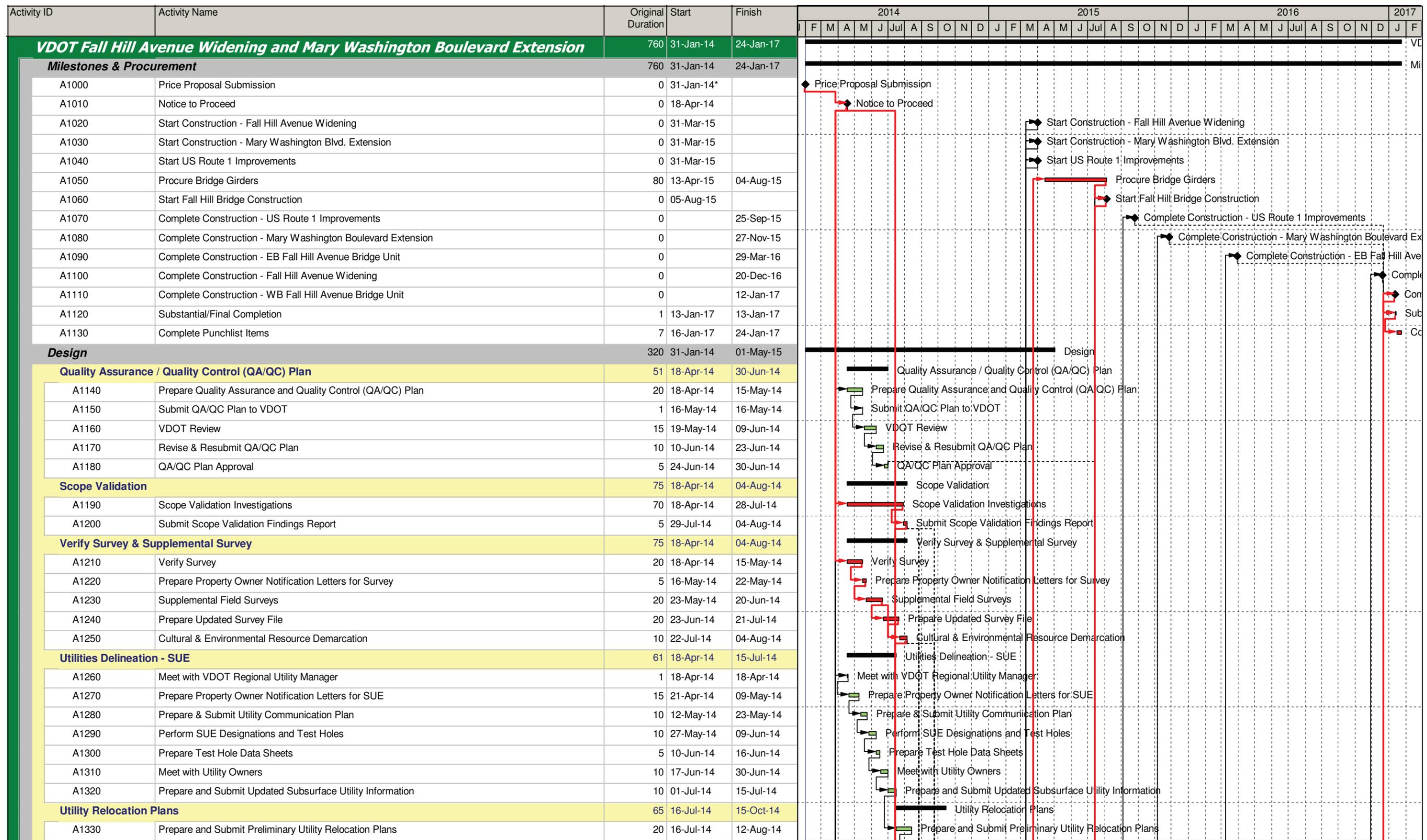
4.7.4 SCHEDULE TIMING AND CRITICAL PATH

Design Phase: The design phase includes scope validation, preparation of plans, QA/QC reviews, and submission of right of way/maintenance of traffic, roadway, bridge, retaining wall, and noise barrier plans at multiple stages of the design process with an activity for VDOT review after each submission. The design phase also includes non-critical activities for the completion of surveys, utility designations, SUE, utility relocation plans, and geotechnical investigations, including an activity for VDOT’s review of the geotechnical report prior to submission of the final roadway and bridge plans. Our team will begin the design phase of the project at our risk immediately upon Notice of Award in order to get an early jump on the noise studies and right of way, maintenance of traffic, roadway, and bridge plans. The first formal plan submission will include right of way, maintenance of traffic, and erosion and sediment control plans in an effort to get an early start on the right of way acquisition phase.

Construction Phase: Our planned sequence of construction is based on performing work in three major phases as follows:

- Phase 1A – During this first phase of construction, we will build all of the work associated with the Mary Washington Boulevard extension, the turn lane improvements on the west side of U.S. Route 1, major elements of the proposed widening on the south half of Fall Hill Avenue, and the new eastbound Fall Hill Avenue Bridge over I-95.
- Phase 1B – During this phase of construction, we will build the proposed turn lanes on the north side of Fall Hill Avenue near Crestview Way and Hospitality Lane.

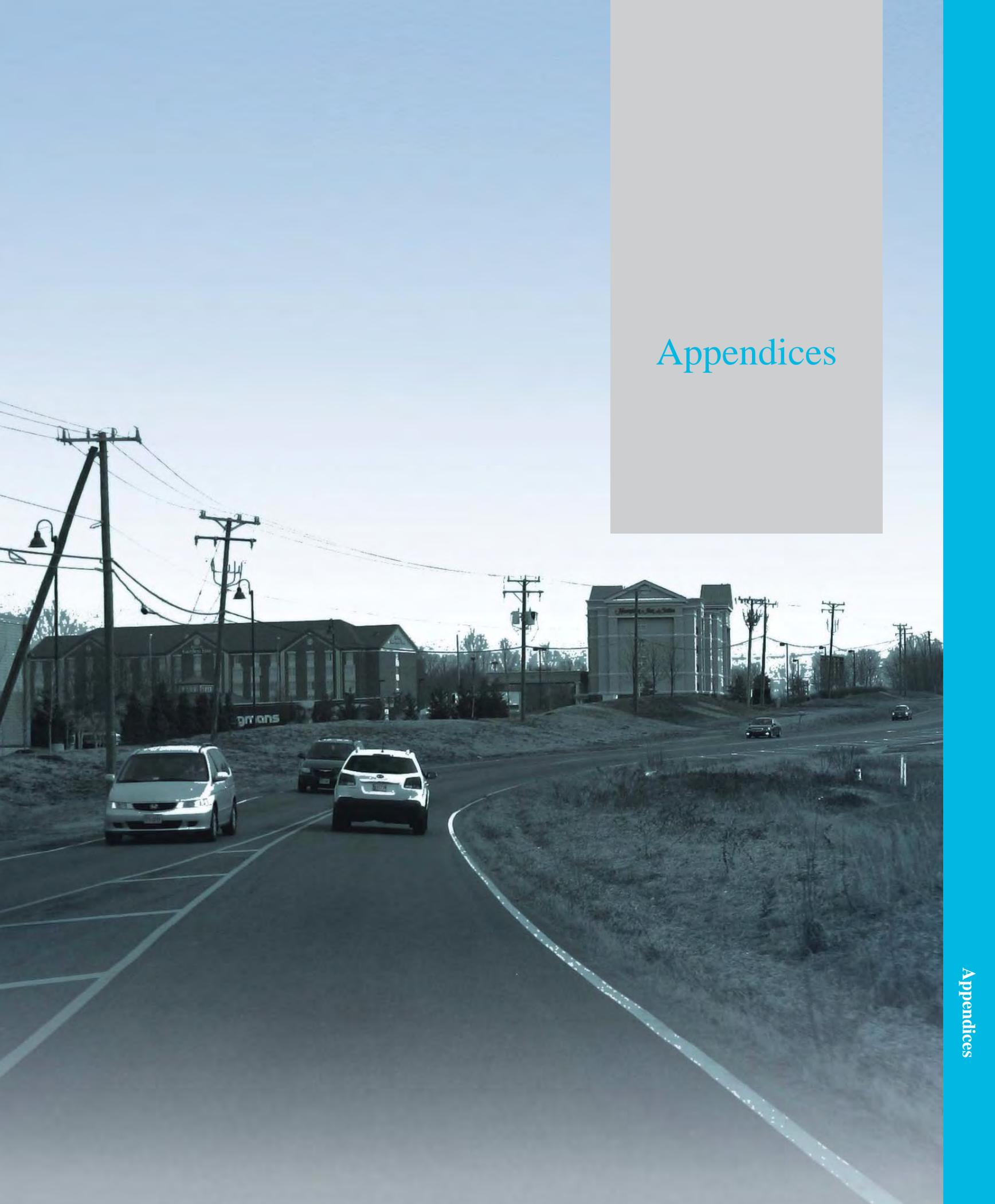
- Phase 2 – During this final phase of construction, we will utilize traffic “crossovers” to shift all Fall Hill Avenue traffic onto the new pavement, and the new eastbound bridge over I-95 constructed during Phases 1A & 1B. This will allow us to construct the balance of the major widening work on the north side of Fall Hill Avenue, along with the demolition and reconstruction of the westbound bridge over I-95. The phase will conclude with the removal of the “crossovers,” and the completion of all work remaining in the median area of Fall Hill Avenue.

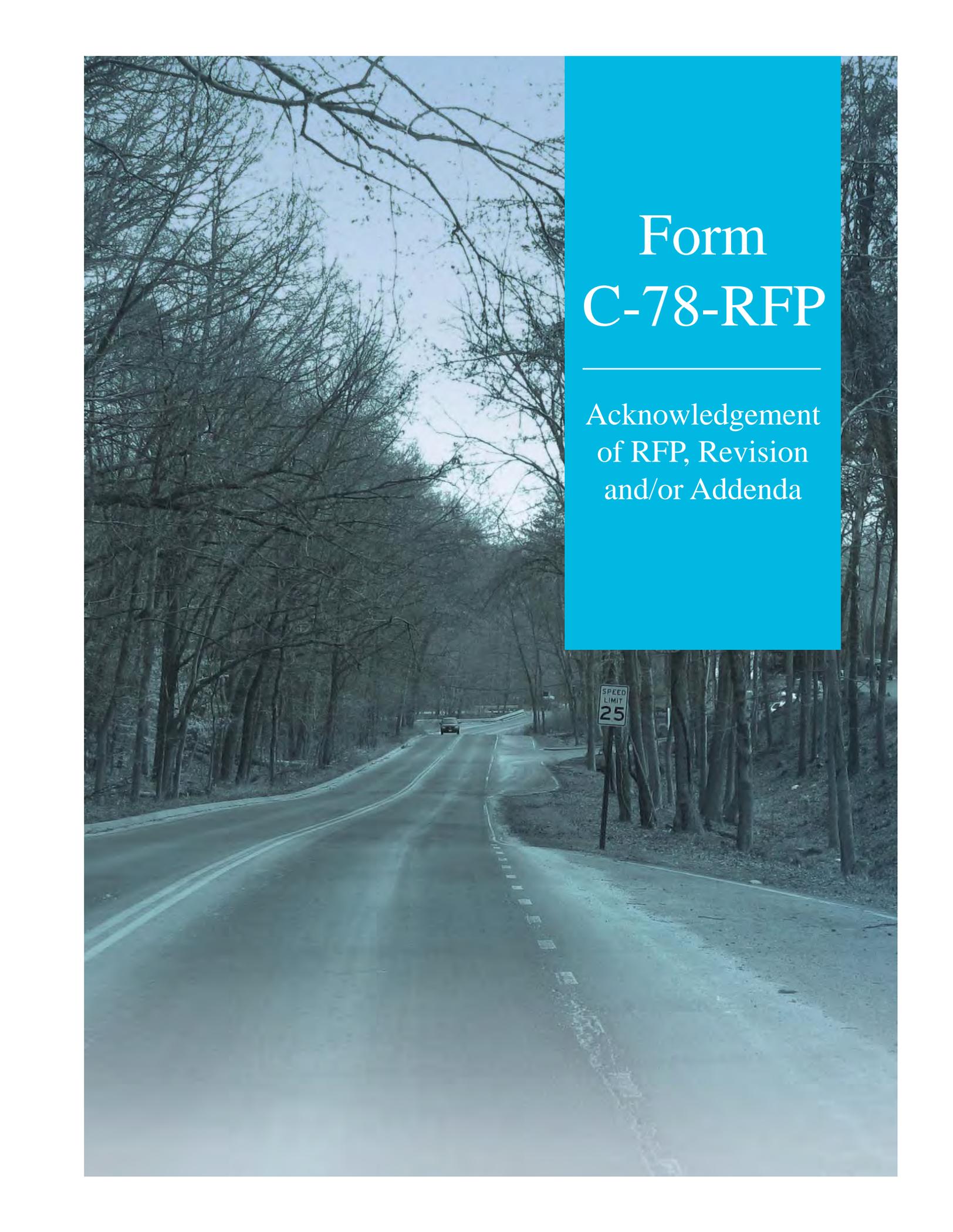


Virginia Department of Transportation
 Proposal Schedule - December 12, 2013

Fall Hill Widening
 Mary Washington Boulevard Extension
 Fredericksburg, VA

Appendices





Form C-78-RFP

Acknowledgement
of RFP, Revision
and/or Addenda

ATTACHMENT 3.6**COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION**

RFP NO. C00088699DB59
 PROJECT NO.: U000-111-233

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: August 19, 2013
(Date)
2. Cover letter of Addendum #1: November 7, 2013
(Date)
3. Cover letter of Addendum #2: November 15, 2013
(Date)

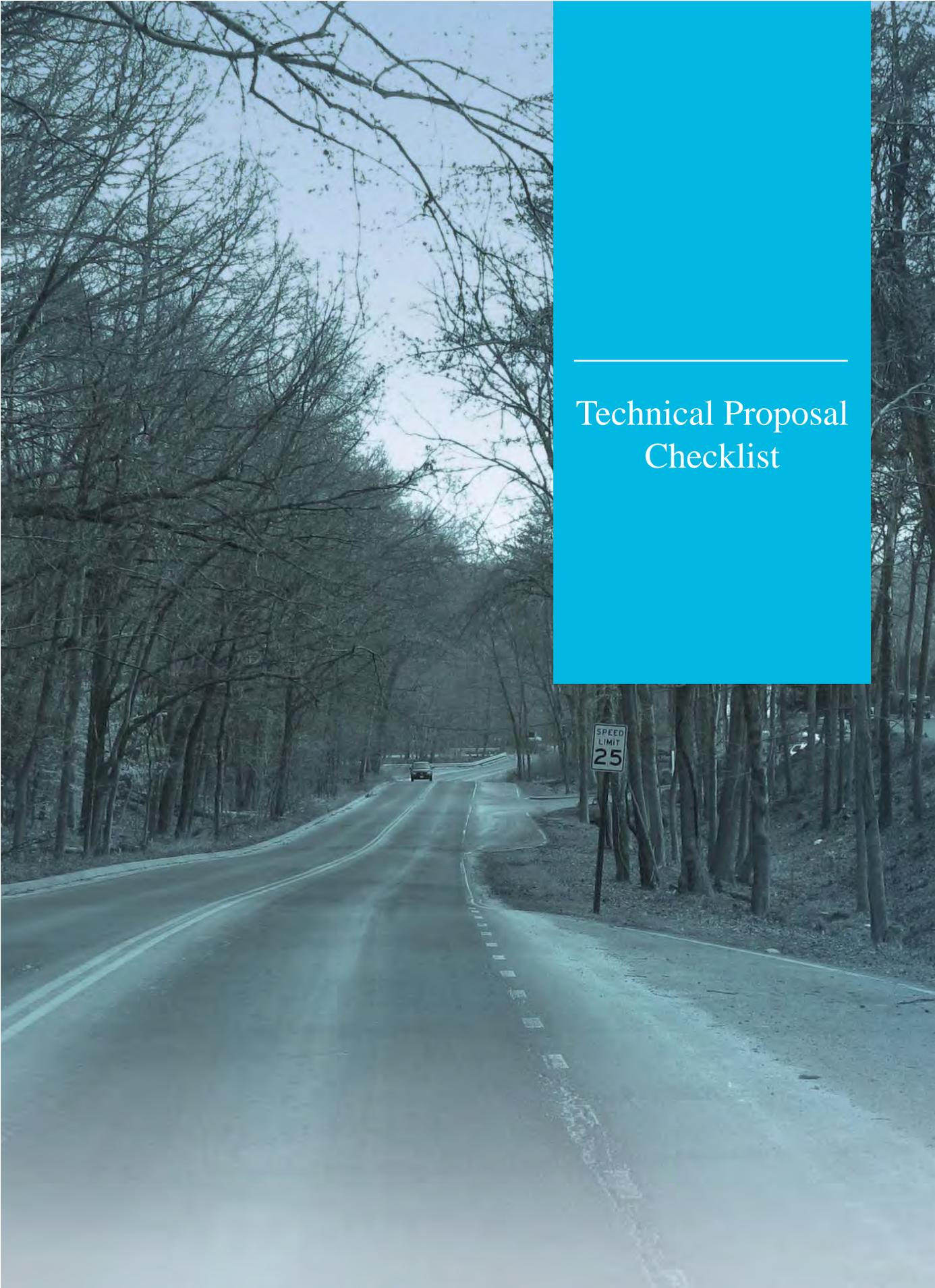


SIGNATURE

Michael D. Manning, Vice President
 PRINTED NAME AND TITLE

December 12, 2013

DATE



Technical Proposal Checklist

ATTACHMENT 4.0.1.1

Fall Hill Avenue Widening and Mary Washington Boulevard Extension

TECHNICAL PROPOSAL CHECKLIST AND CONTENTS

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

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

ATTACHMENT 4.0.1.1

Fall Hill Avenue Widening and Mary Washington Boulevard Extension

TECHNICAL PROPOSAL CHECKLIST AND CONTENTS

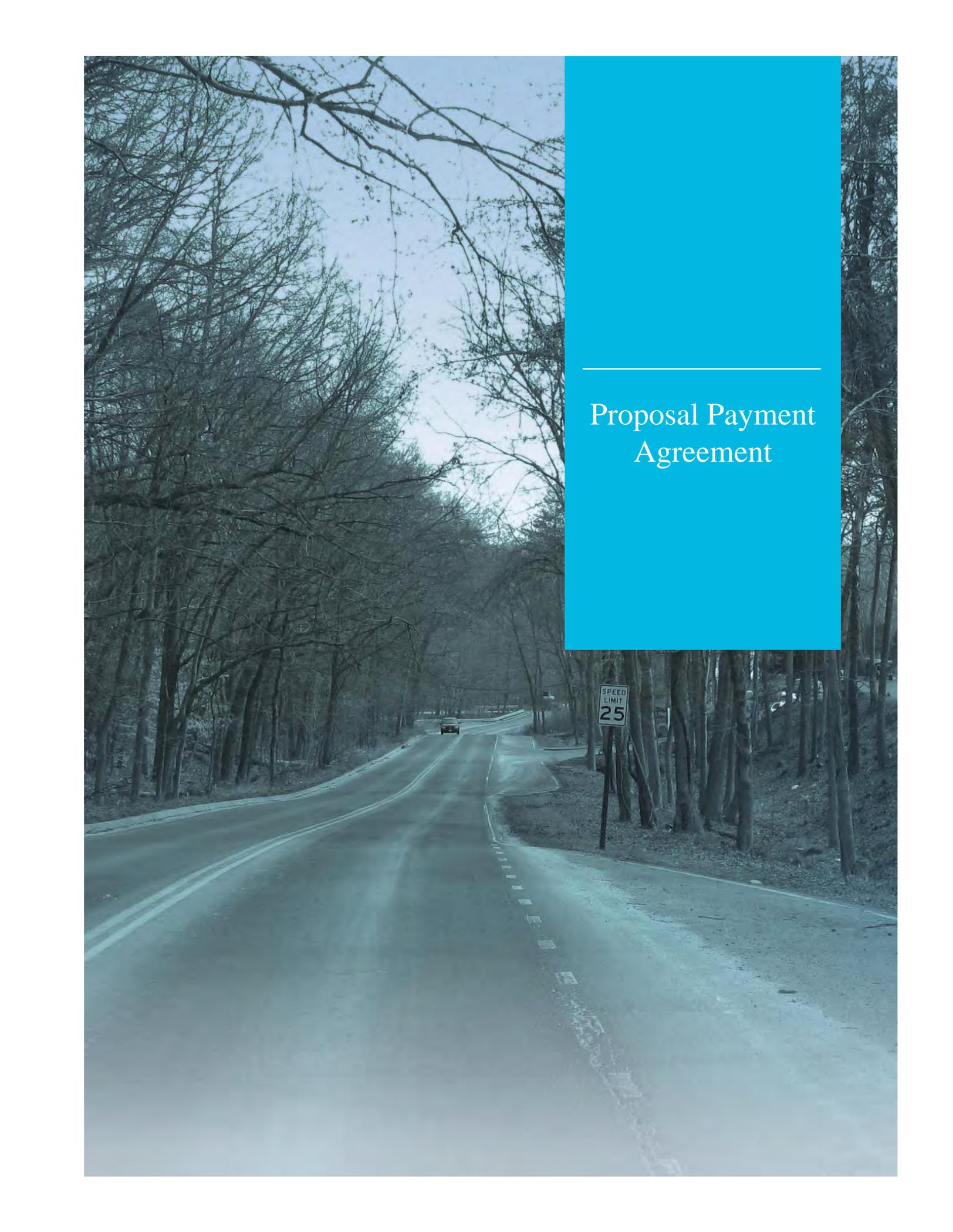
Technical Proposal Component	Form (if any)	RFP Part 1 Cross Reference	Included within page limit?	Technical Proposal Page Reference
Confirmation that the information provided in the SOQ submittal remains true and accurate or indicates that any requested changes were previously approved by VDOT	NA	Section 4.2.1	yes	Page 1
Organizational chart with any updates since the SOQ submittal clearly identified to include Lead QA Inspector	NA	Section 4.2.2	yes	Page 2
Revised narrative when organizational chart includes updates since the SOQ submittal to include Lead QA Inspector	NA	Section 4.2.2	yes	N/A
Design Concept	NA	Section 4.3		
Conceptual Roadway Plans and description	NA	Section 4.3.1.1	yes	Volume I-P.3 Volume II-P.1-21
Conceptual Structural Plans and description	NA	Section 4.3.1.2	yes	Volume I- P.10 Volume II-P.22-27
Project Approach	NA	Section 4.4		
Right of Way Acquisition / Environmental Management	NA	Section 4.4.1	yes	Page 17
Utilities	NA	Section 4.4.2	yes	Page 20
Quality Assurance / Quality Control (QA/QC)	NA	Section 4.4.3	yes	Page 23
Construction of Project	NA	Section 4.5		
Sequence of Construction	NA	Section 4.5.2	yes	Page 30
Transportation Management Plan	NA	Section 4.5.3	yes	Page 32

ATTACHMENT 4.0.1.1

Fall Hill Avenue Widening and Mary Washington Boulevard Extension

TECHNICAL PROPOSAL CHECKLIST AND CONTENTS

Technical Proposal Component	Form (if any)	RFP Part 1 Cross Reference	Included within page limit?	Technical Proposal Page Reference
Disadvantaged Business Enterprises (DBE)	NA	Section 4.6		
Written statement of percent DBE participation	NA	Section 4.6	yes	Page 35
DBE subcontracting narrative	NA	Section 4.6	yes	Page 35
Proposal Schedule	NA	Section 4.7		
Proposal Schedule	NA	Section 4.7	no	Section 4.7 Schedule p.3-8
Proposal Schedule Narrative	NA	Section 4.7	no	Section 4.7 Schedule p. 1-2
Proposal Schedule in electronic format (CD-ROM)	NA	Section 4.7	no	CD included

A photograph of a road winding through a wooded area. The road is paved and has a dashed white line on the right side. A speed limit sign is visible on the right side of the road, indicating a speed limit of 25. The trees are bare, suggesting a winter or late autumn setting. The sky is overcast. A blue vertical bar is overlaid on the right side of the image, containing the text 'Proposal Payment Agreement' in white serif font.

Proposal Payment
Agreement

ATTACHMENT 9.3.1
PROPOSAL PAYMENT AGREEMENT

THIS PROPOSAL PAYMENT AGREEMENT (this “Agreement”) is made and entered into as of this 12th day of December, 2013, by and between the Virginia Department of Transportation (“VDOT”), and Archer Western Construction, LLC (“Offeror”).

WITNESSETH:

WHEREAS, Offeror is one of the entities who submitted Statements of Qualifications (“SOQs”), to the Virginia Department of Transportation (“VDOT”), pursuant to VDOT’s April 8, 2013 Request for Qualifications (“RFQ”) and was invited to submit proposals in response to a Request for Proposals (“RFP”) for the Fall Hill Avenue Widening and Mary Washington Boulevard Extension, Project No. U000-111-233 (“Project”), under a design-build contract with VDOT (“Design-Build Contract”); and

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

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

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

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

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

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

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

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

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

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

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

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

9. **Miscellaneous.**

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

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

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

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

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

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

VIRGINIA DEPARTMENT OF TRANSPORTATION

By: _____

Name: _____

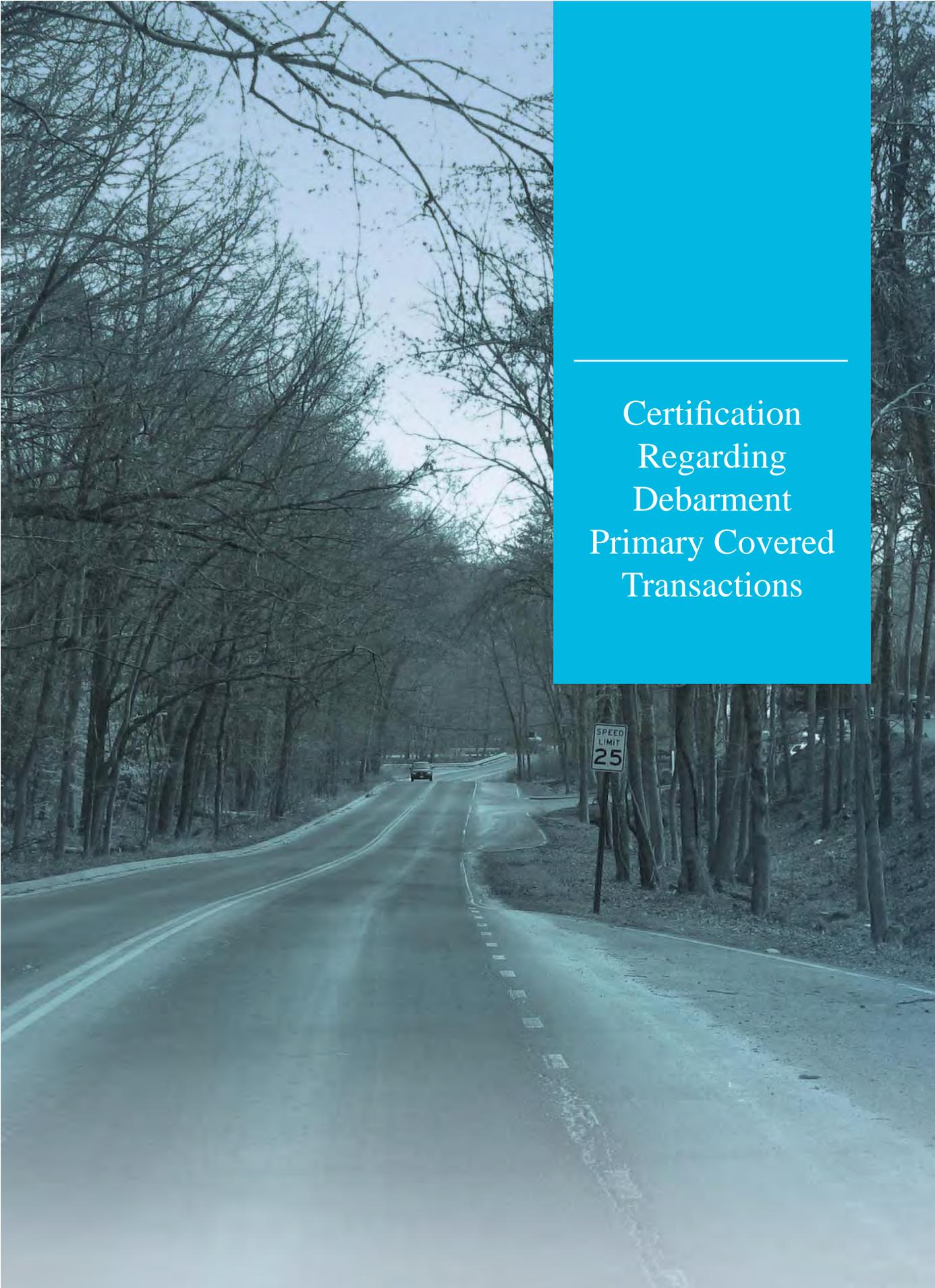
Title: _____

[Insert Offeror's Name]

By: Michael D. Manning

Name: Michael D. Manning

Title: Vice President



Certification
Regarding
Debarment
Primary Covered
Transactions

ATTACHMENT 11.8.6(a)
CERTIFICATION REGARDING DEBARMENT
PRIMARY COVERED TRANSACTIONS

Project No.: U000-111-233

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

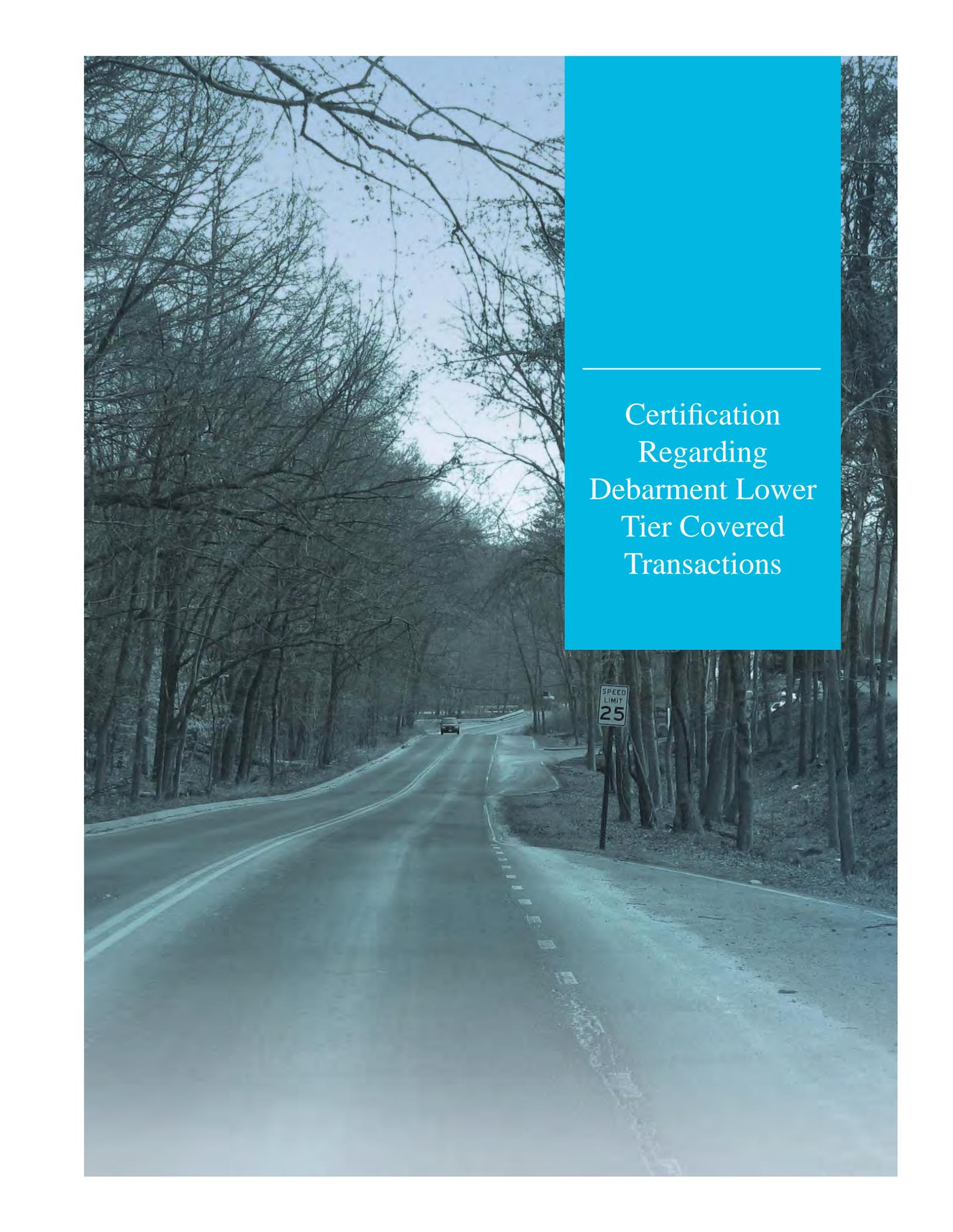
d) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

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>Michael D. Manning</u>	<u>December 12, 2013</u>	<u>Vice President</u>
Signature	Date	Title
Michael D. Manning		

Archer Western Construction, LLC
Name of Firm

A photograph of a road winding through a wooded area with bare trees, overlaid with a blue text box. The road is paved and has a dashed white line on the right side. A speed limit sign is visible on the right side of the road. The text box is blue and contains the following text:

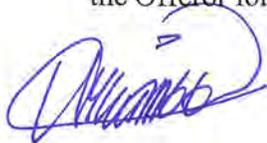
Certification
Regarding
Debarment Lower
Tier Covered
Transactions

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

Project No.: U000-111-233

- 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.



11/22/2013

Vice President

Signature

Date

Title

Parsons Transportation Group Inc.

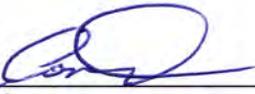
Name of Firm

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

Project No.: U000-111-233

- 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.

 _____ 11/22/13 President
Signature Date Title

Accompny Engineering Group, LLC
Name of Firm

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

Project No.: U000-111-233

- 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>11-22-2013</u>	<u>President</u>
Signature	Date	Title

Commonwealth Cultural Resources Group, Inc.
Name of Firm

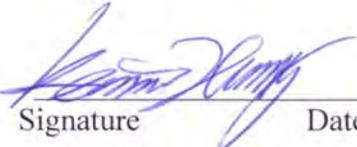
ATTACHMENT 11.8.6(b)
CERTIFICATION REGARDING DEBARMENT
LOWER TIER COVERED TRANSACTIONS

Project No.: U000-111-233

- 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	<u>11-22-2013</u> Date	<u>President</u> Title
<u>Endesco, Inc.</u> Name of Firm		

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

Project No.: U000-111-233

- 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 11/25/13 Title President

GeoConcepts Engineering, Inc.
Name of Firm

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

Project No.: U000-111-233

- 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.

	11/26/13	Vice President
Signature	Date	Title

McDonough Bolgard Peck, Inc. (MSP)

Name of Firm

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

Project No.: U000-111-233

- 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.

	November 22, 2013	President
Signature	Date	Title

Rice Associates, Inc.
Name of Firm

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

Project No.: U000-111-233

- 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.

	11/25/13	Senior Vice President
Signature	Date	Title

Volkert, Inc.

Name of Firm



Archer Western

in association with

PARSONS

Submitted to:



Submitted by:



Archer Western

in association with

PARSONS

Volume II: Design Concept Graphics

FALL HILL AVENUE WIDENING AND MARY WASHINGTON BOULEVARD EXTENSION

City of Fredericksburg, Virginia | A Design-Build Project

State Project Number: U000-111-233
Federal Project Number: STP-5A01 (181)
Contract ID Number: C00088699DB59

December 12, 2013



PROJECT MANAGER _____
 SURVEYED BY _____
 DESIGN SUPERVISED BY _____
 DESIGNED BY _____

SEQUENCE OF CONSTRUCTION

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

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	639	U000-III-233 RW-201, C-501	01

PHASE 1:
 MAINTAIN TRAFFIC ON EXISTING ROADWAY WHILE CONSTRUCTING NEW BRIDGE AND ROAD.
 CONSTRUCT NEW TURN LANES AND ENTRANCE ALONG WESTSIDE OF JEFFERSON DAVIS HIGHWAY.

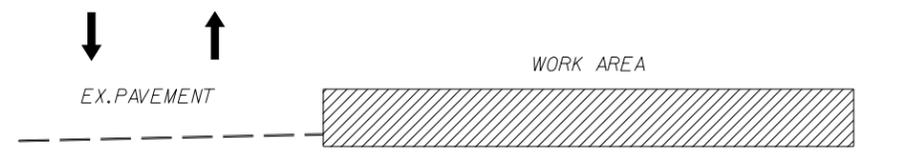
PHASE 1A:
 CONSTRUCT NEW MARY WASHINGTON BLVD. ALIGNMENT, NEW EASTBOUND FALL HILL AVENUE BRIDGE OVER I-95, AND WIDENING OF SOUTHSIDE OF FALL HILL AVENUE AS SHOWN.

PHASE 1B:
 CONSTRUCT NORTHSIDE OF FALL HILL AVENUE AS SHOWN.

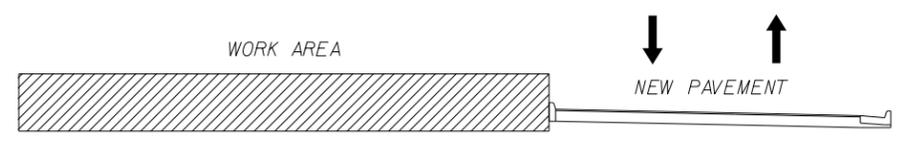
PHASE 2:
 CONSTRUCT CROSSOVERS AS SHOWN.
 CONSTRUCT REMAINING PORTION OF ROADWAY AND NORTHSIDE OF BRIDGE.
 CLOSE CROSSOVERS AND CONSTRUCT NEW ROADWAY AT CROSSOVER LOCATIONS.
 CONSTRUCT NEW MEDIAN AND LEFT TURN LANES ON JEFFERSON DAVIS HIGHWAY.

POST PHASE:
 CLOSE ANY GAPS IN MEDIANS AND REMOVE ANY TEMPORARY PAVEMENT REQUIRED FOR MAINTENANCE OF TRAFFIC AND PLACE FINAL PAVEMENT MARKINGS.

TYPICAL SECTIONS



PHASE 1 - REVERSE AS NECESSARY



PHASE 2 - REVERSE AS NECESSARY

SEE SHEET S02 FOR BRIDGE CONSTRUCTION PHASING

INDEX OF SHEETS

ROADWAY CONCEPTUAL PLANS	
SHEET #	DESCRIPTION
1 TO 3	MAINTENANCE OF TRAFFIC
4 TO 7	TYPICAL SECTIONS
8 TO 17	PLAN/PROFILES
18 TO 21	UTILITY CONFLICT MATRIX
STRUCTURAL CONCEPTUAL PLANS	
SHEET #	DESCRIPTION
S01 TO S06	FALL HILL AVENUE BRIDGE OVER I-95



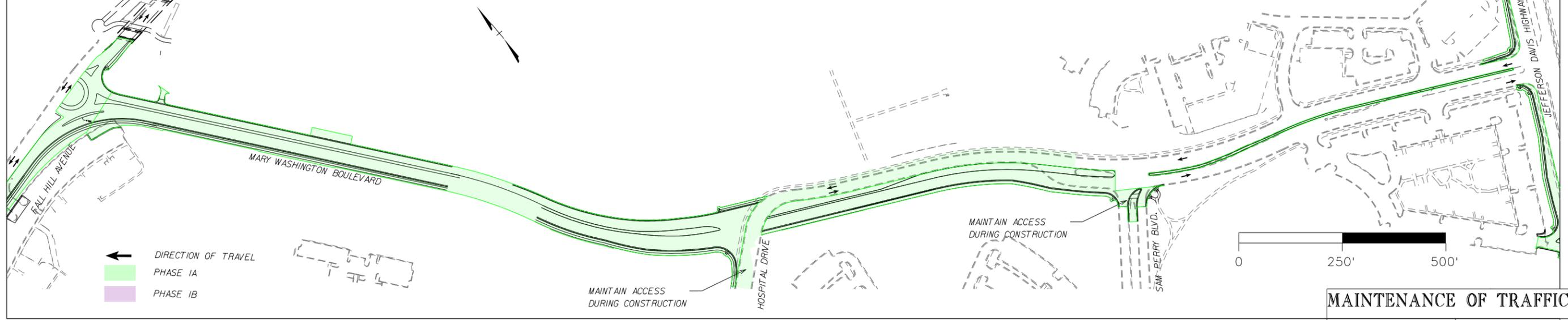
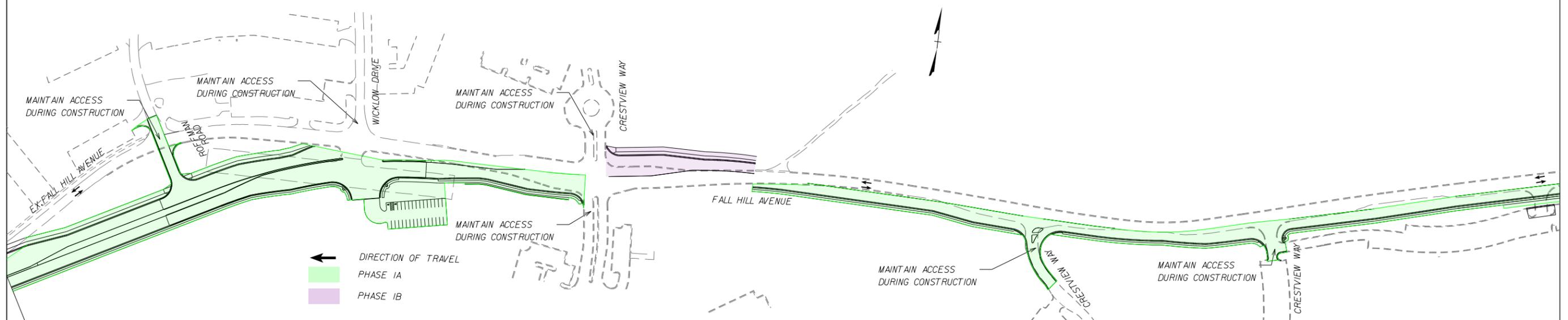
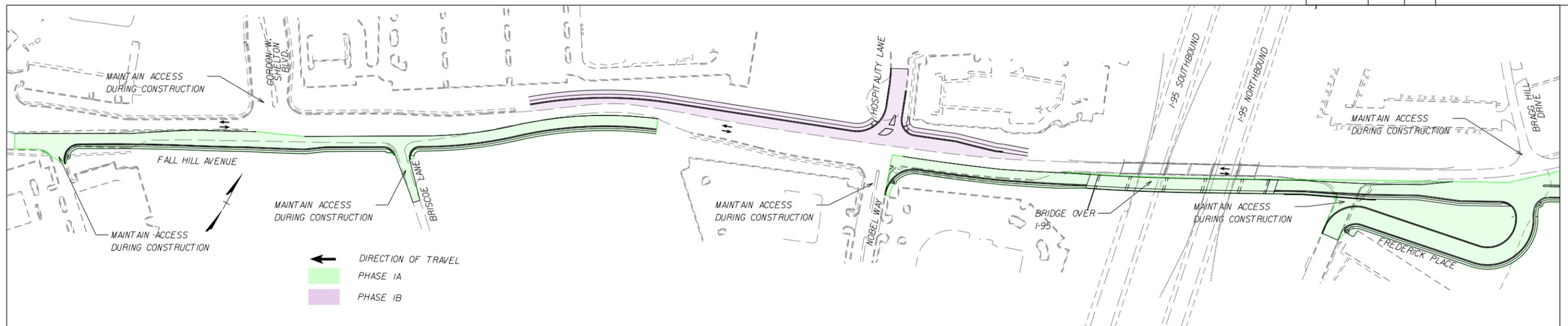
MAINTENANCE OF TRAFFIC - 1

PROJECT	SHEET NO.
U000-III-233	01

PROJECT MANAGER _____
 SURVEYED BY _____
 DESIGN SUPERVISED BY _____
 DESIGNED BY _____

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

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	639	U000-III-233 RW-201, C-501	02



MAINTENANCE OF TRAFFIC - 2

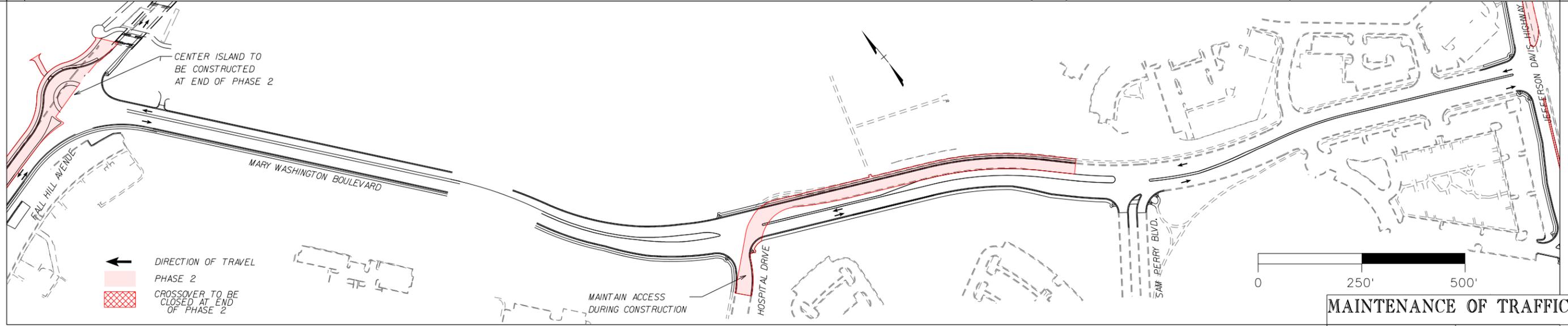
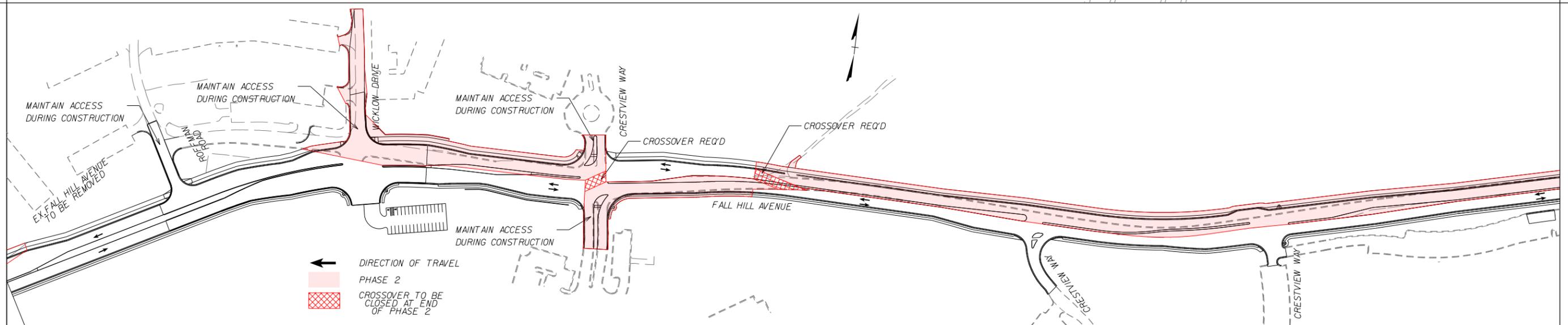
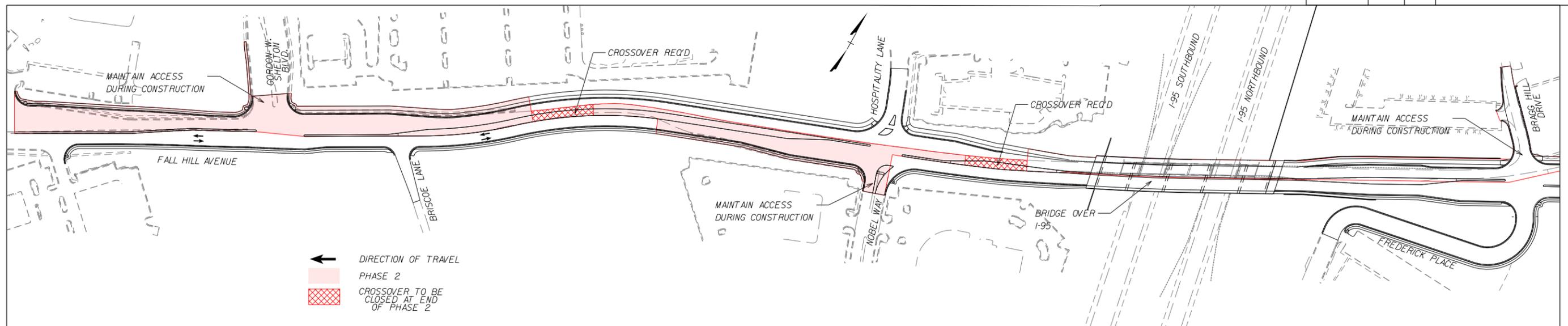
PROJECT	SHEET NO.
U000-III-233	02

\$USER# THIS DOCUMENT, TOGETHER WITH THE CONCEPTS AND DESIGNS PRESENTED HEREIN, IS AN INSTRUMENT OF SERVICES INTENDED ONLY FOR THE SPECIFIC PURPOSE AND CLIENT FOR WHICH IT WAS PREPARED. REUSE OF AND IMPROPER RELIANCE ON THIS DOCUMENT WITHOUT WRITTEN AUTHORIZATION AND ADAPTATION BY KINGSTON AND ASSOCIATES, INC. SHALL BE WITHOUT LIABILITY TO KINGSTON AND ASSOCIATES, INC.
 \$TIME#
 \$DATE#

PROJECT MANAGER _____
 SURVEYED BY _____
 DESIGN SUPERVISED BY _____
 DESIGNED BY _____

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

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	639	U000-III-233 RW-201, C-501	03



MAINTENANCE OF TRAFFIC - 3

PROJECT	SHEET NO.
U000-III-233	03

\$USER# THIS DOCUMENT, TOGETHER WITH THE CONCEPTS AND DESIGNS PRESENTED HEREIN, IS AN INSTRUMENT OF SERVICES INTENDED ONLY FOR THE SPECIFIC PURPOSE AND CLIENT FOR WHICH IT WAS PREPARED. REUSE OF AND IMPROPER RELIANCE ON THIS DOCUMENT WITHOUT WRITTEN AUTHORIZATION AND ADOPTION BY KINGSTON AND ASSOCIATES, INC. SHALL BE WITHOUT LIABILITY TO KINGSTON AND ASSOCIATES, INC.
 \$DATE#

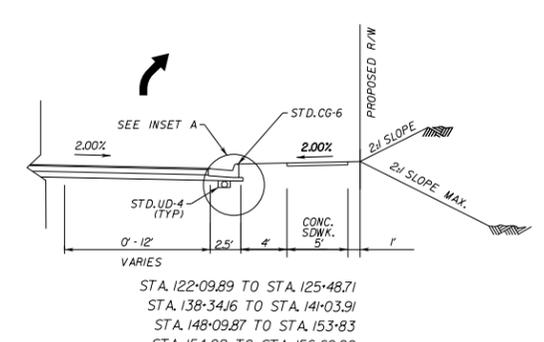
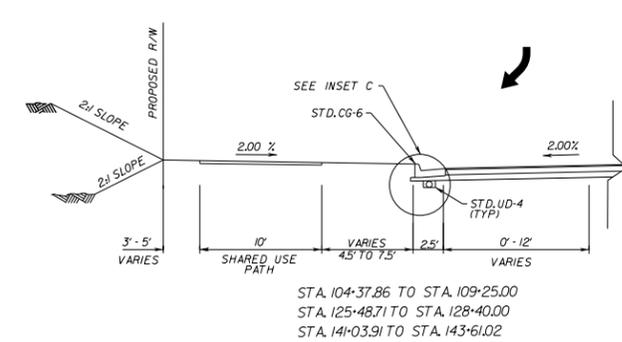
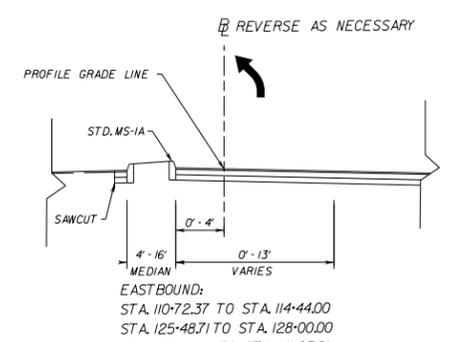
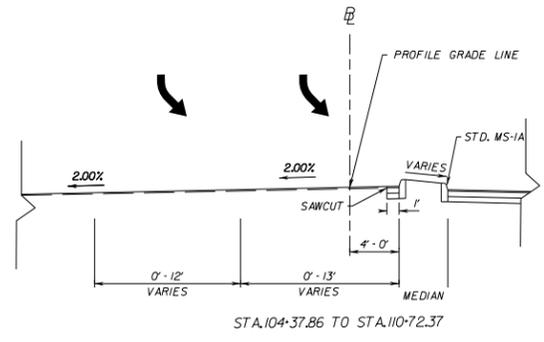
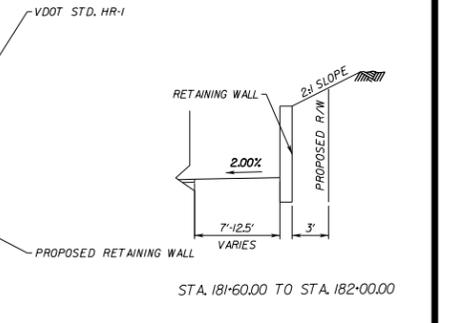
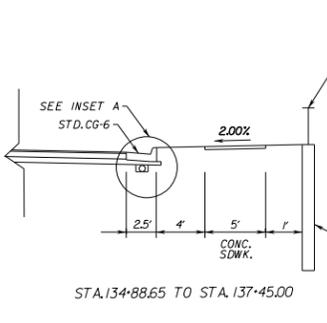
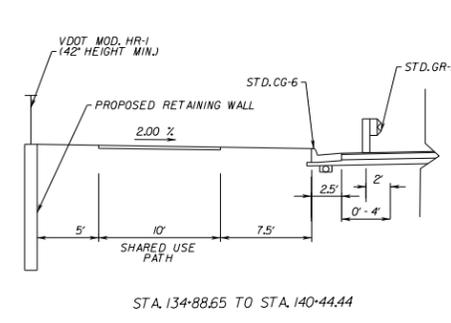
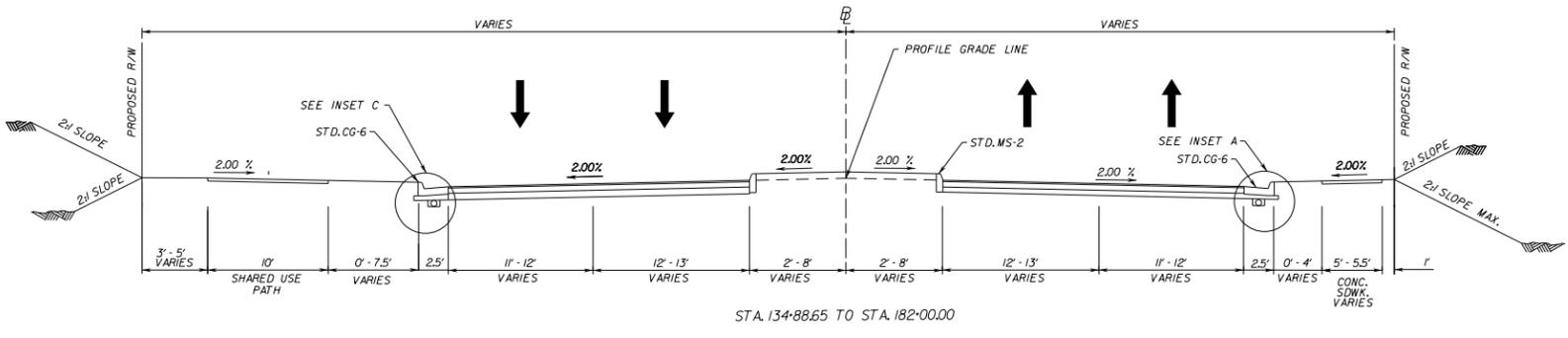
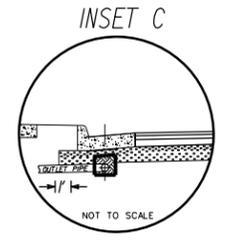
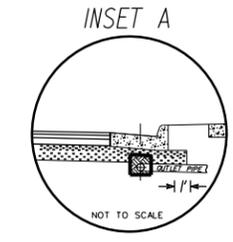
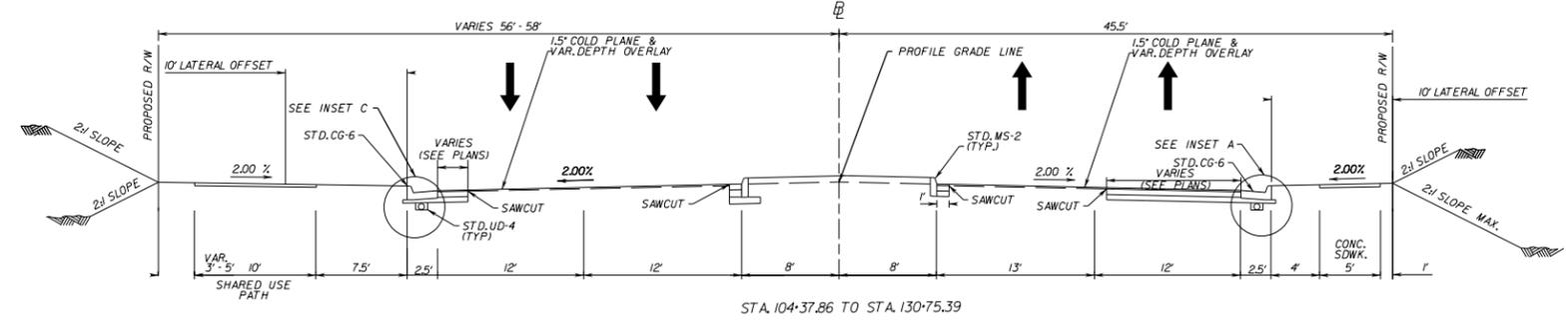
PROJECT MANAGER _____
 SURVEYED BY _____
 DESIGN SUPERVISED BY _____
 DESIGNED BY _____

TYPICAL SECTIONS

NOT TO SCALE
 FALL HILL AVENUE
 GS-7

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	639	U000-III-233 RW-201, C-501	04

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



EASTBOUND:
 STA. 110+72.37 TO STA. 114+44.00
 STA. 125+48.71 TO STA. 128+00.00
 STA. 138+34.16 TO STA. 141+03.91
 STA. 14+47.39 TO STA. 150+97.07
 STA. 154+22.00 TO STA. 156+60.22
 STA. 167+50.00 TO STA. 169+85.00
 STA. 173+50.00 TO STA. 174+50.00

WESTBOUND:
 STA. 107+25.00 TO STA. 110+72.37
 STA. 123+17.00 TO STA. 122+48.71
 STA. 141+03.91 TO STA. 143+51.19
 STA. 150+97.07 TO STA. 153+46.00
 STA. 156+60.22 TO STA. 158+95.00
 STA. 169+85.00 TO STA. 172+50.00

STA. 104+37.86 TO STA. 109+25.00
 STA. 125+48.71 TO STA. 128+40.00
 STA. 141+03.91 TO STA. 143+61.02
 STA. 146+55.26 TO STA. 149+03.79
 STA. 149+32.30 TO STA. 153+51.00
 STA. 156+60.22 TO STA. 159+00.00
 STA. 172+00.00 TO STA. 173+00.00

STA. 122+09.89 TO STA. 125+48.71
 STA. 138+34.16 TO STA. 141+03.91
 STA. 148+09.87 TO STA. 153+83
 STA. 154+02 TO STA. 156+60.22
 STA. 164+83.30 TO STA. 167+00.00

PAVEMENT DESIGN

FALL HILL AVENUE
 Surface 1.5" Asphalt Concrete, Type SM-9.5D (Estimated at 165 lbs/yd²)
 Intermediate 2.5" Asphalt Concrete, Type IM-19.0A (Estimated at 275 lbs/yd²)
 Base 6" Asphalt Concrete, Type BM-25.0A
 Subbase 8" Aggregate Base Material, Type I, Size No. 21B

MARY WASHINGTON BOULEVARD
 Surface 1.5" Asphalt Concrete, Type SM-9.5D (Estimated at 165 lbs/yd²)
 Intermediate 2.5" Asphalt Concrete, Type IM-19.0A (Estimated at 275 lbs/yd²)
 Base 5" Asphalt Concrete, Type BM-25.0A
 Subbase 9" Aggregate Base Material, Type I, Size No. 21B

TYPICAL SECTIONS - 1

PROJECT	SHEET NO.
U000-III-233	04

\$USER# THIS DOCUMENT, TOGETHER WITH THE CONTENTS AND DESIGNS PRESENTED HEREIN, IS AN INSTRUMENT OF SERVICES INTENDED ONLY FOR THE SPECIFIC PURPOSE AND CLIENT FOR WHICH IT WAS PREPARED. REUSE OF AND IMPROPER RELIANCE ON THIS DOCUMENT WITHOUT WRITTEN AUTHORIZATION AND ASSOCIATES, INC. SHALL BE WITHOUT LIABILITY TO KINGSTON AND ASSOCIATES, INC. \$DATE#

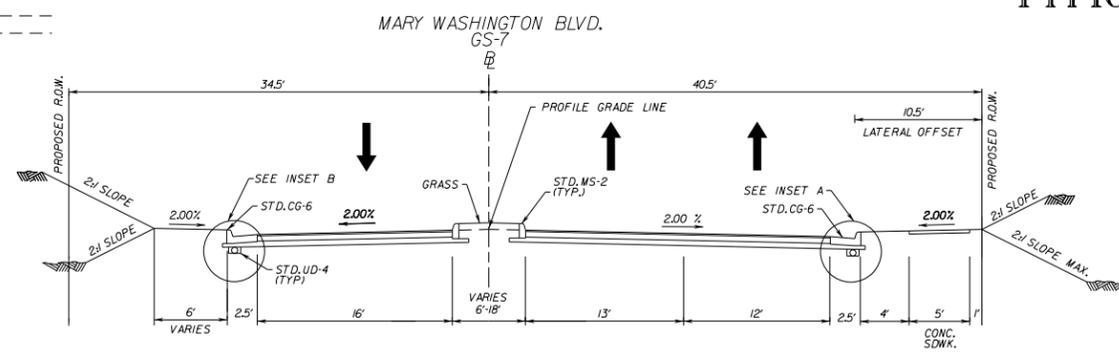
PROJECT MANAGER _____
 SURVEYED BY _____
 DESIGN SUPERVISED BY _____
 DESIGNED BY _____

TYPICAL SECTIONS

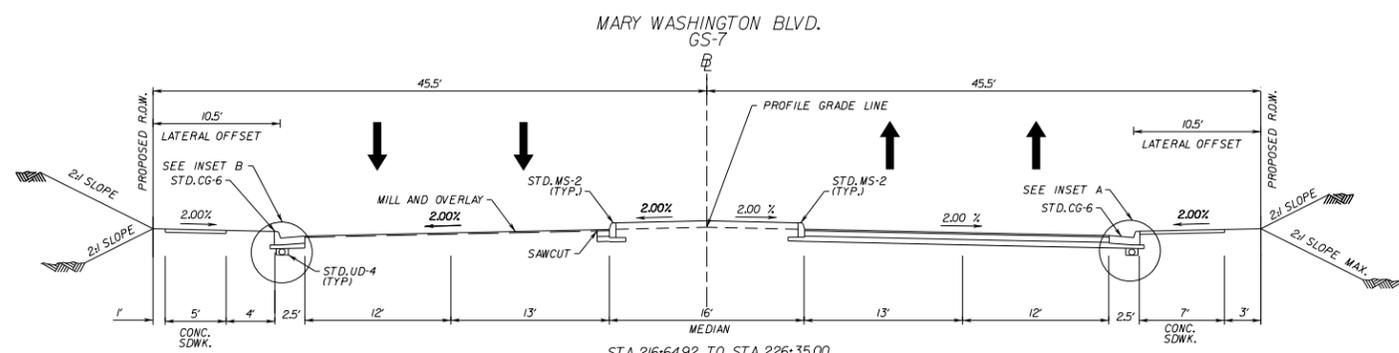
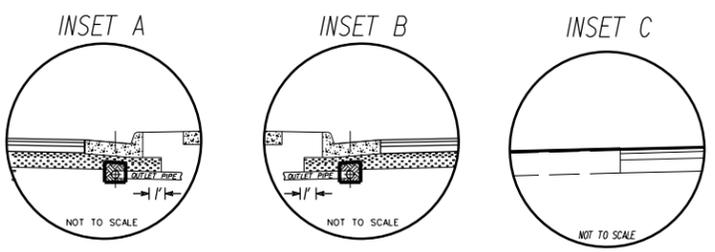
NOT TO SCALE

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	639	U000-III-233 RW-201, C-501	05

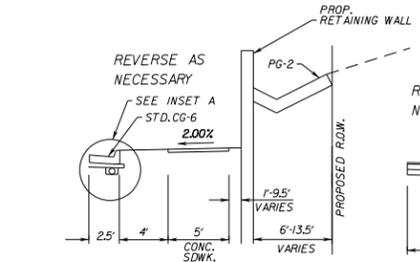
DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT



STA. 201+00.00 TO STA. 216+64.92

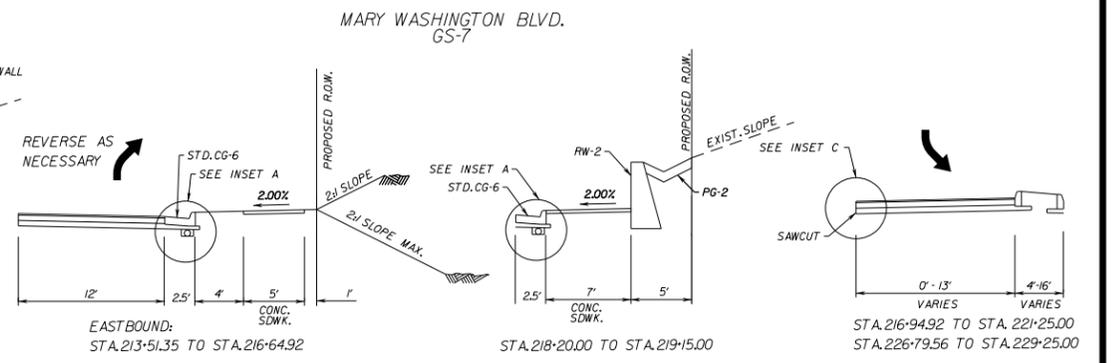


STA. 216+64.92 TO STA. 226+35.00



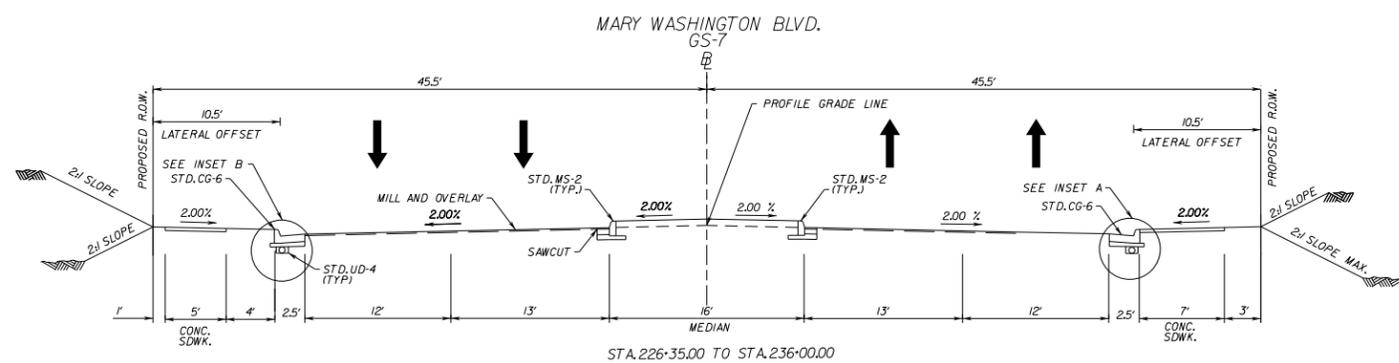
EASTBOUND:
 STA. 200+78.66 TO STA. 202+36.00
 STA. 205+25.00 TO STA. 206+30.00
 STA. 212+60.00 TO STA. 213+75.00

WESTBOUND:
 STA. 206+03.00 TO STA. 207+06.00



STA. 218+20.00 TO STA. 219+15.00

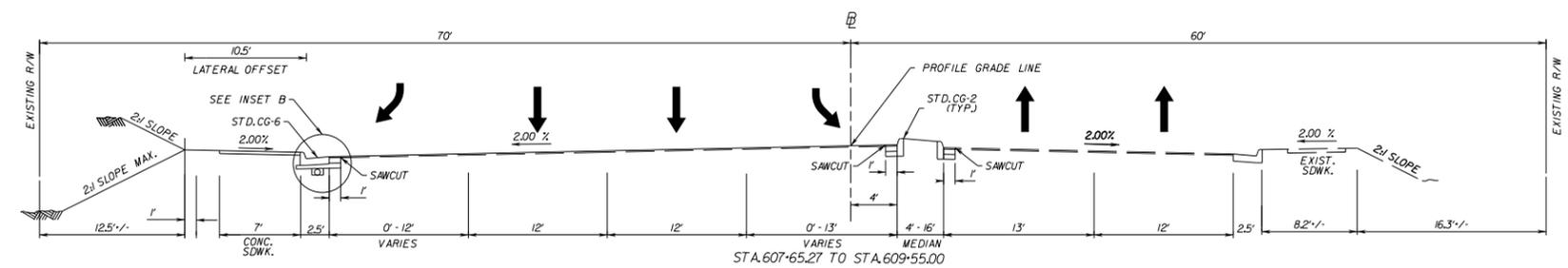
STA. 216+94.92 TO STA. 221+25.00
 STA. 226+79.56 TO STA. 229+25.00



STA. 226+35.00 TO STA. 236+00.00

JEFFERSON DAVIS HIGHWAY (US RT. 1)

GS-5



STA. 607+65.27 TO STA. 609+55.00

TYPICAL SECTIONS - 2

PROJECT	SHEET NO.
U000-III-233	05

\$USER\$
 \$TIME\$
 \$DATE\$

PROJECT MANAGER _____
 SURVEYED BY _____
 DESIGN SUPERVISED BY _____
 DESIGNED BY _____

TYPICAL SECTIONS

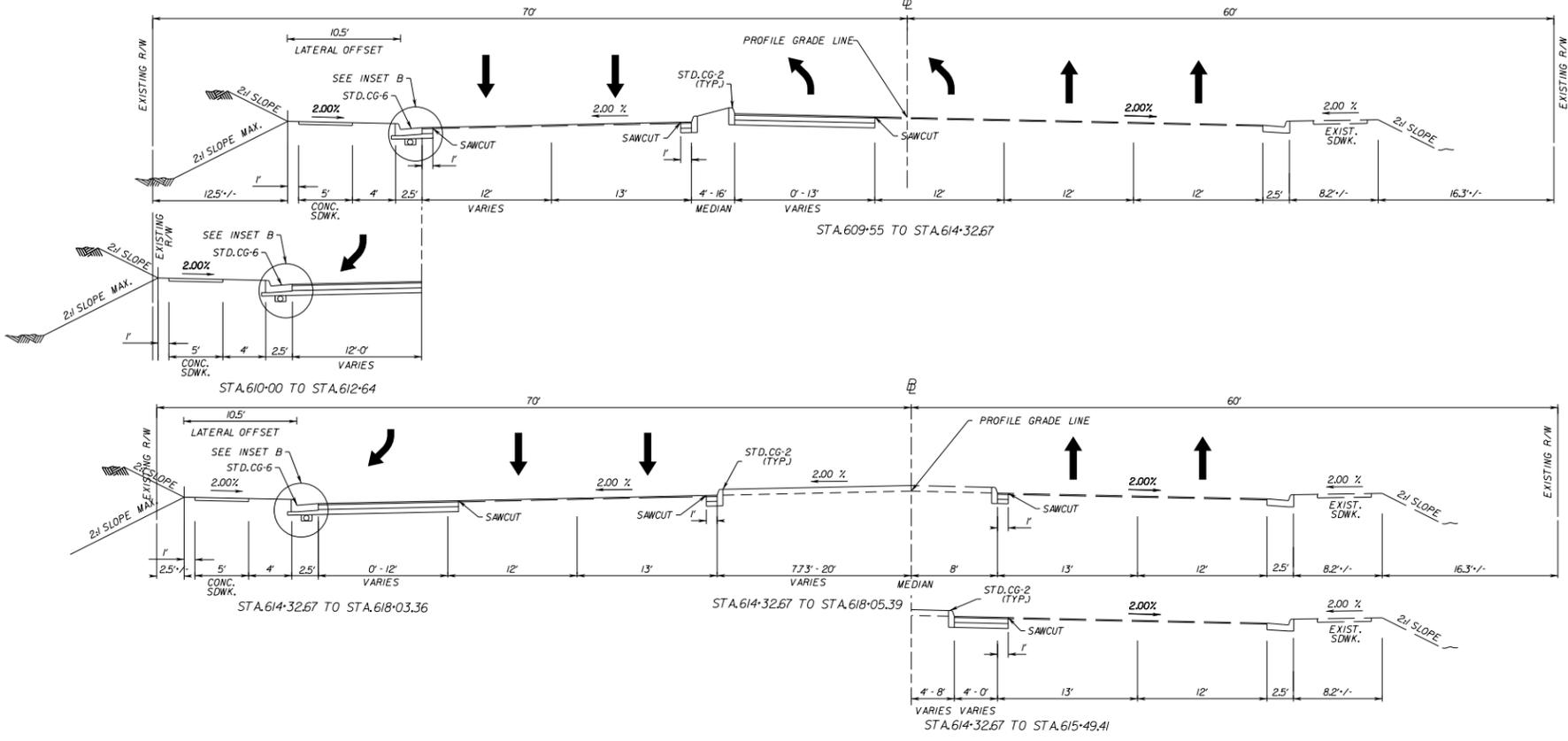
NOT TO SCALE

THESE PLANS ARE UNFINISHED AND UNAPPROVED AND ARE NOT TO BE USED FOR ANY TYPE OF CONSTRUCTION OR THE ACQUISITION OF RIGHT OF WAY.

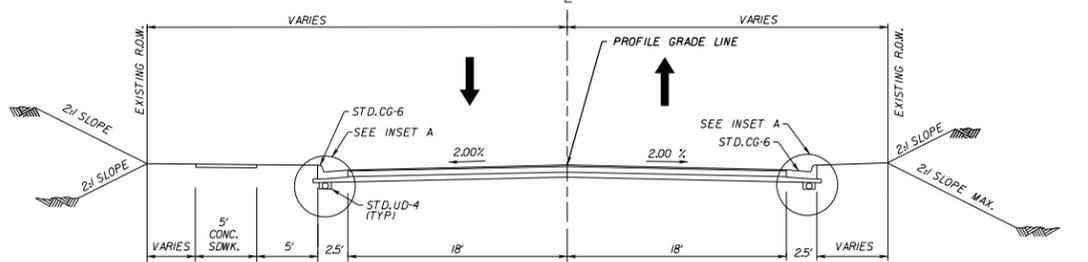
REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	639	U000-III-233 RW-201, C-501	06

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

JEFFERSON DAVIS HIGHWAY (US RT.1)
GS-5

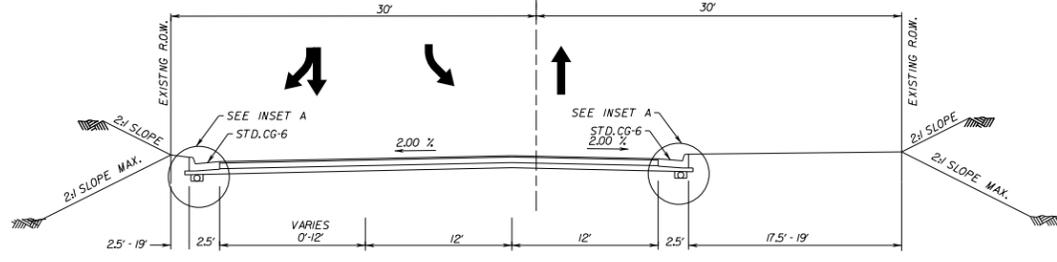


HOSPITAL DRIVE
GS-8



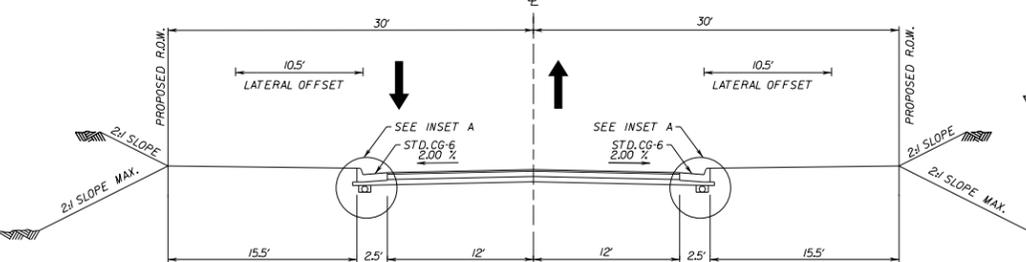
STA.276+30.09 TO STA.277+07.53

WICKLOW DRIVE
GS-8



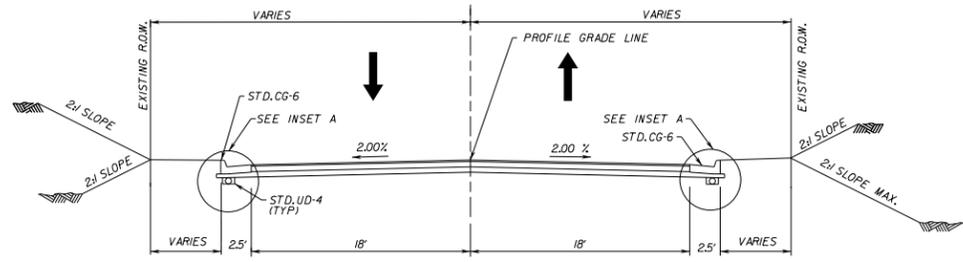
STA.62+25.00 TO STA.65+13.56

ROFFMAN ROAD
GS-8



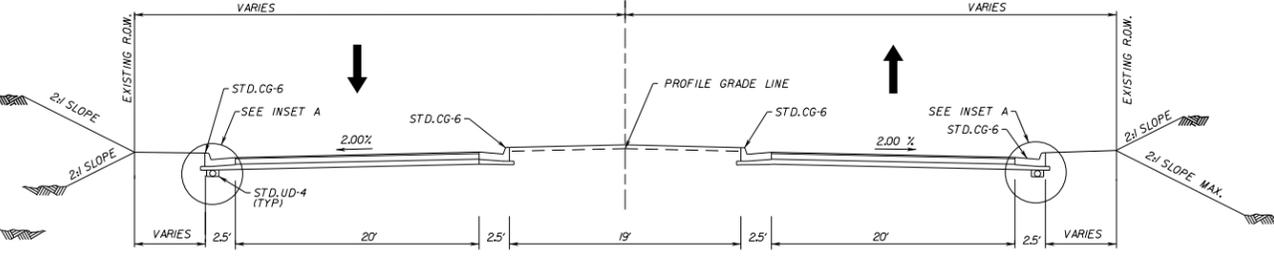
STA.50+00.00 TO STA.52+25.00

HOSPITALITY LANE
PRIVATE ROAD



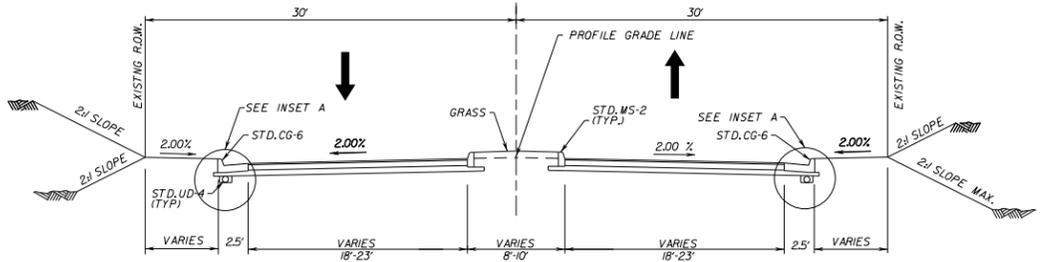
STA.31+00.00 TO STA.32+00.00

SAM PERRY BLVD.
PRIVATE ROAD



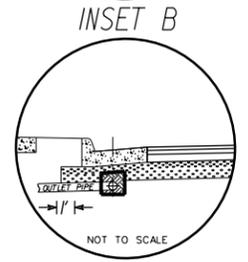
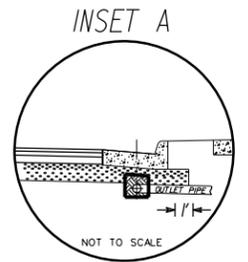
STA.251+65.00 TO STA.252+00.00

CRESTVIEW WAY AND WESTON LANE
PRIVATE ROAD



STA.71+25.00 TO STA.72+11.09

STA.73+53.30 TO STA.74+00.00



TYPICAL SECTIONS - 3

PROJECT	SHEET NO.
U000-III-233	06

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 *USER# *FILE# *DATE#

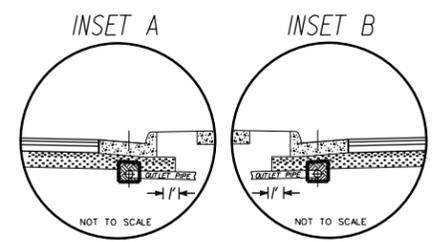
PROJECT MANAGER _____
 SURVEYED BY _____
 DESIGN SUPERVISED BY _____
 DESIGNED BY _____

TYPICAL SECTIONS

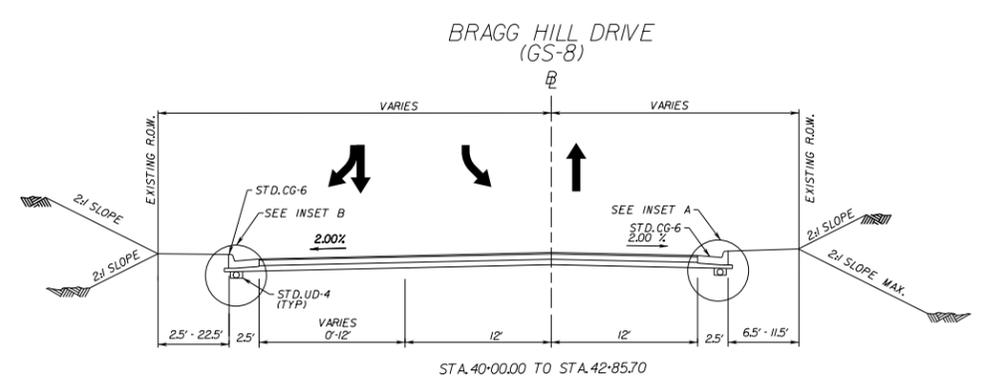
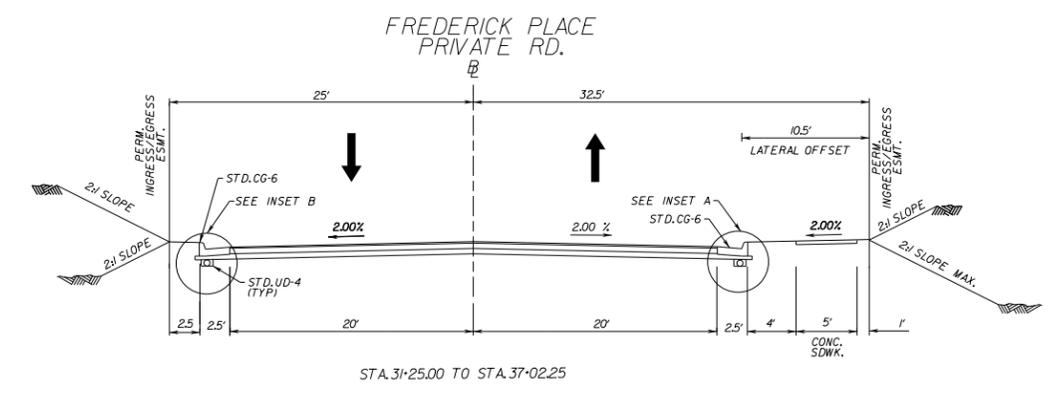
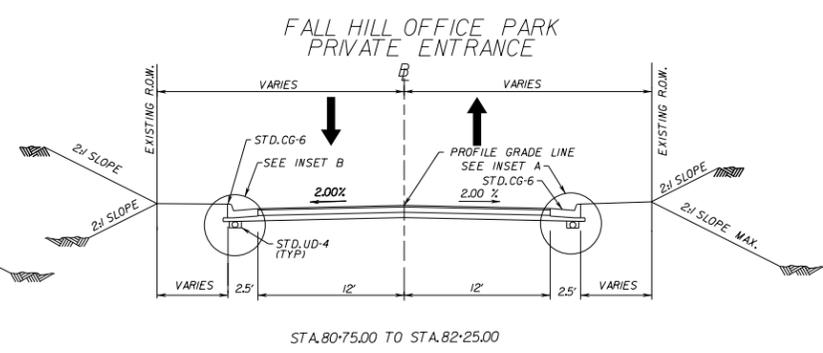
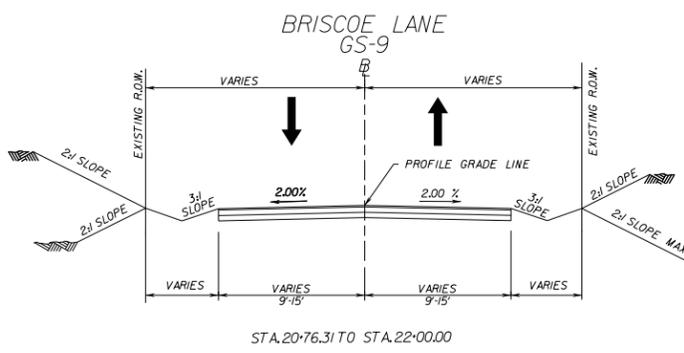
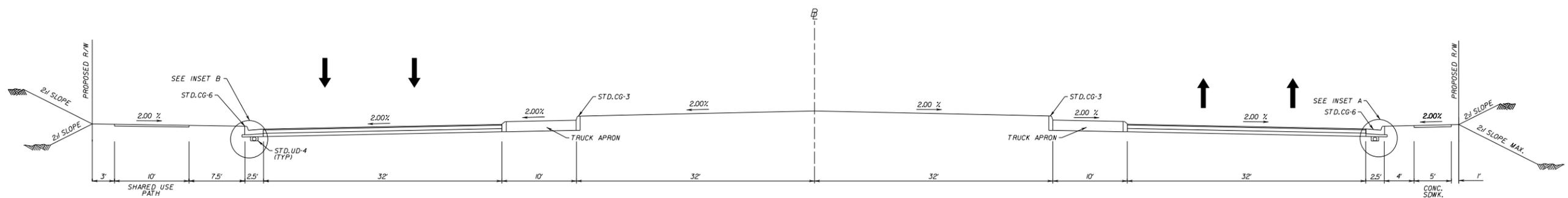
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REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	639	U000-III-233 RW-201, C-501	07

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



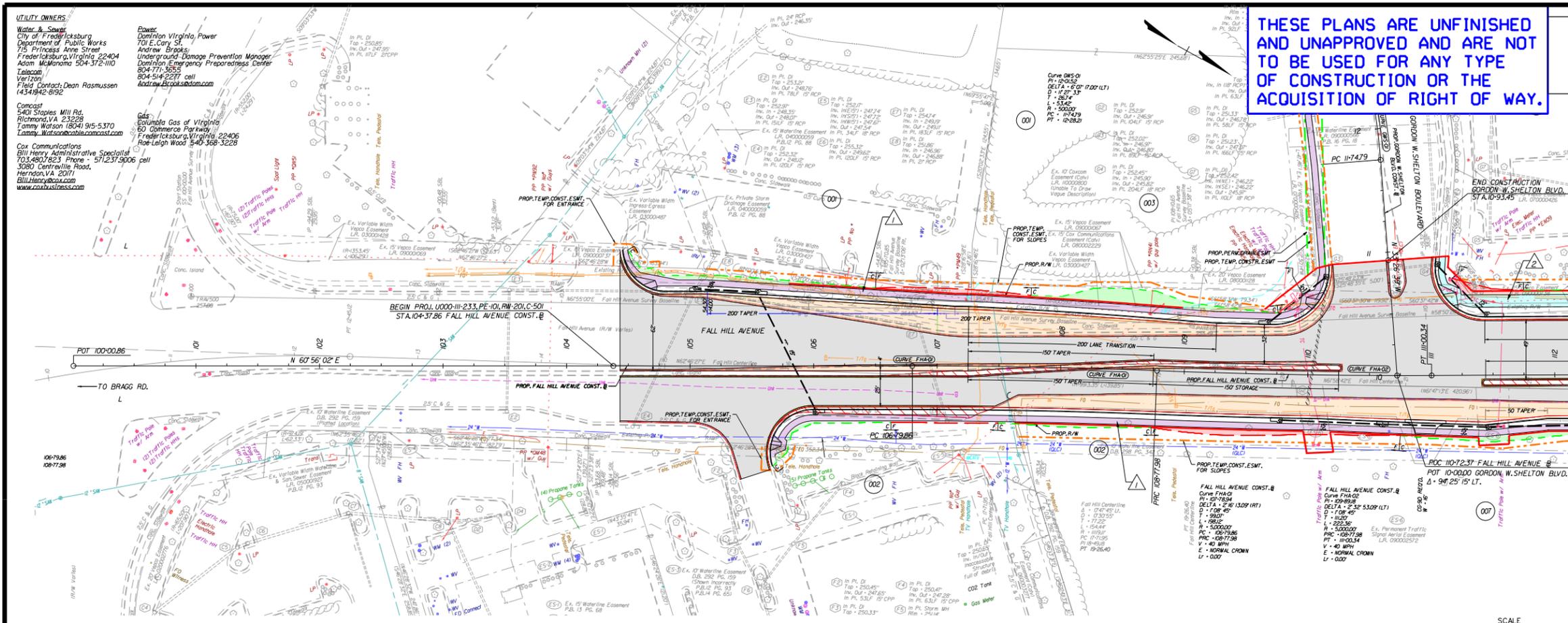
ROUNDBABOUT TYPICAL SECTION



TYPICAL SECTIONS - 4

PROJECT	SHEET NO.
U000-III-233	07

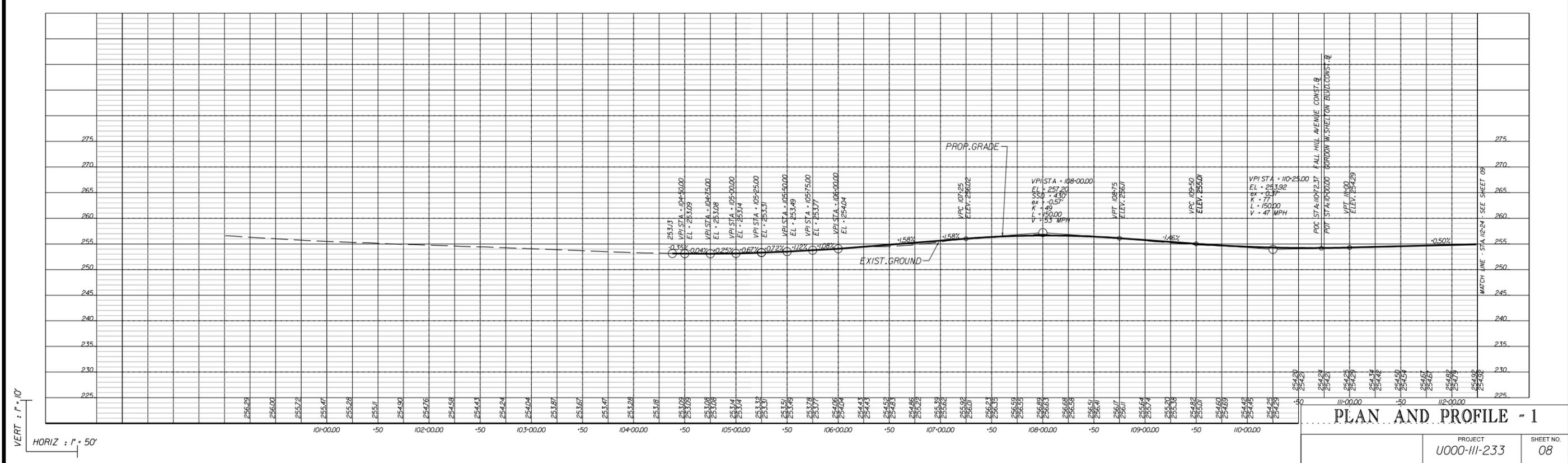
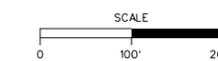
\$USER\$
 \$TIME\$
 This document, together with the contents and designs presented herein, is an instrument of service intended only for the specific purpose and client for which it was prepared. Plans of and/or proposed facilities on this document without written authorization and adaptation by Kingdon and Associates, Inc. shall be without liability to Kingdon and Associates, Inc.



STATE	ROUTE	PROJECT	SHEET NO.
VA.	639	U000-III-233 RW-201, C-501	08

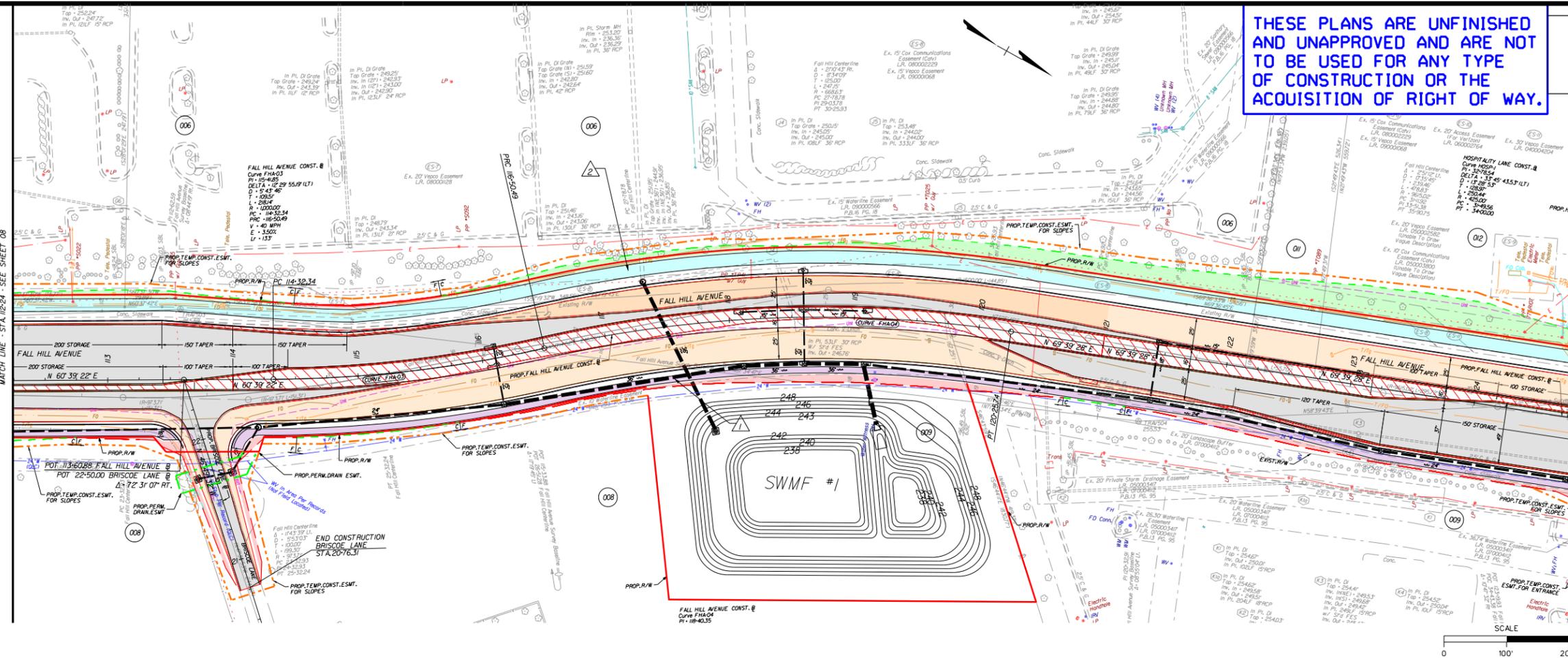
- LEGEND**
- ▲ PROP. 5' CONC. SIDEWALK
 - ▲ PROP. 10' SHARED USE PATH
 - ▲ PROP. RETAINING WALL

- Denotes Proposed Pavement
- Denotes Pavement Milling and Resurfacing
- Denotes Cut Area
- Denotes F III Area
- Denotes 5' Concrete Sidewalk
- Denotes 10' Shared Use Path
- Denotes Demolition of Pavement
- Denotes Obscuring of Pavement



PLAN AND PROFILE - 1

PROJECT	SHEET NO.
U000-III-233	08



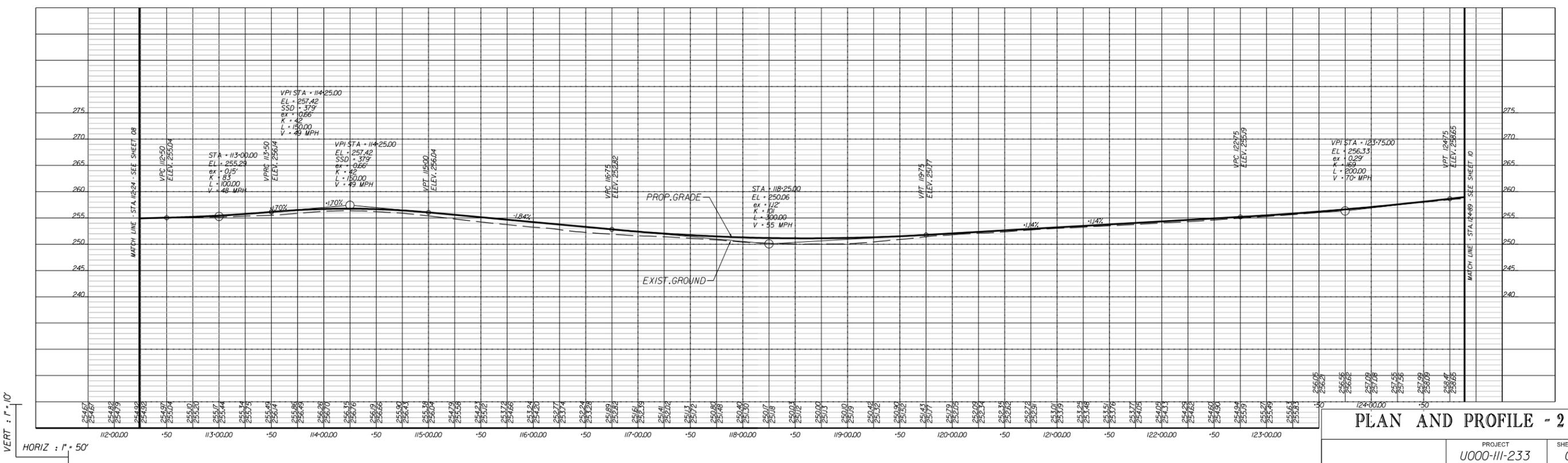
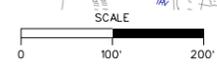
THESE PLANS ARE UNFINISHED AND UNAPPROVED AND ARE NOT TO BE USED FOR ANY TYPE OF CONSTRUCTION OR THE ACQUISITION OF RIGHT OF WAY.

REVISION	STATE	ROUTE	STATE	PROJECT	SHEET NO.
	VA.	639		U000-III-233 RW-201, C-501	09

LEGEND

- PROP. 5' CONC. SIDEWALK
- PROP. 10' SHARED USE PATH
- PROP. RETAINING WALL

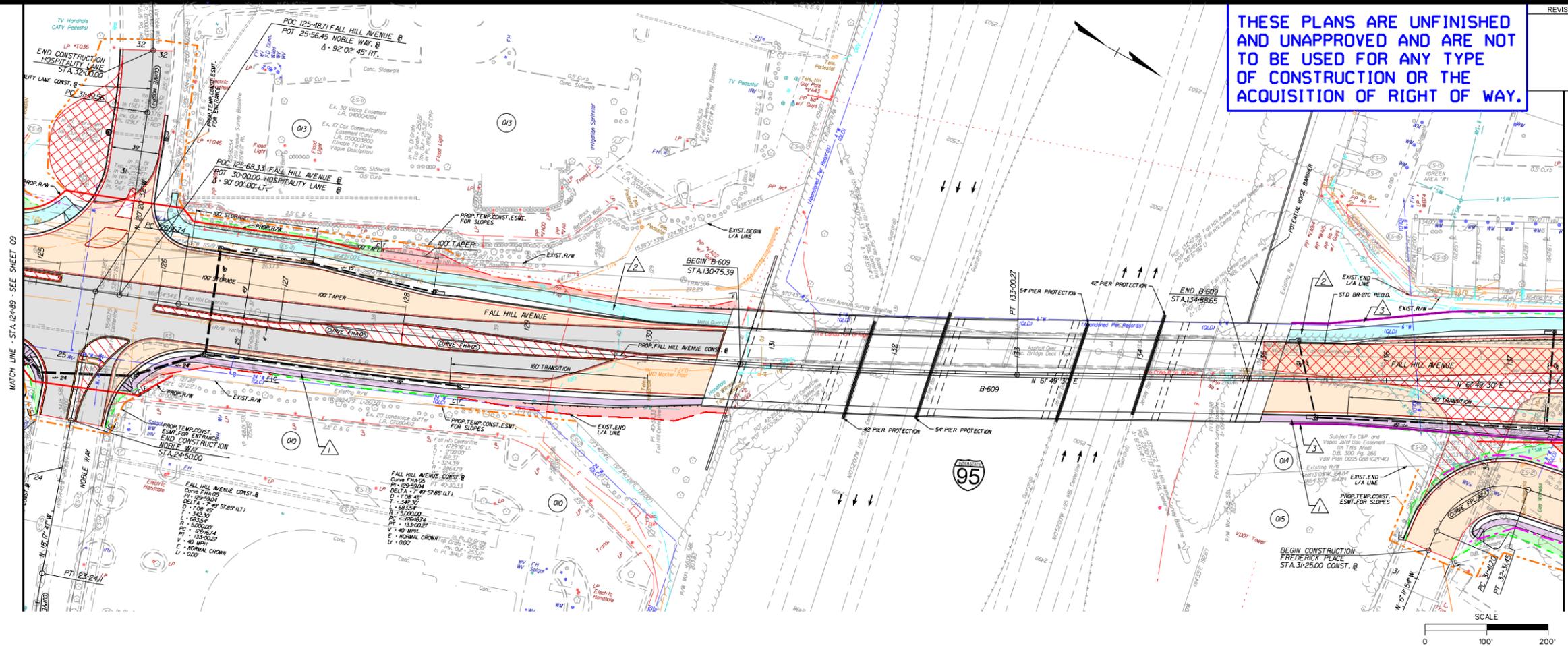
- Denotes Proposed Pavement
- Denotes Pavement Milling and Resurfacing
- Denotes Cut Area
- Denotes Fill Area
- Denotes 5' Concrete Sidewalk
- Denotes 10' Shared Use Path
- Denotes Demolition of Pavement
- Denotes Obscuring of Pavement



PLAN AND PROFILE - 2
PROJECT: U000-III-233
SHEET NO.: 09

THESE PLANS ARE UNFINISHED AND UNAPPROVED AND ARE NOT TO BE USED FOR ANY TYPE OF CONSTRUCTION OR THE ACQUISITION OF RIGHT OF WAY.

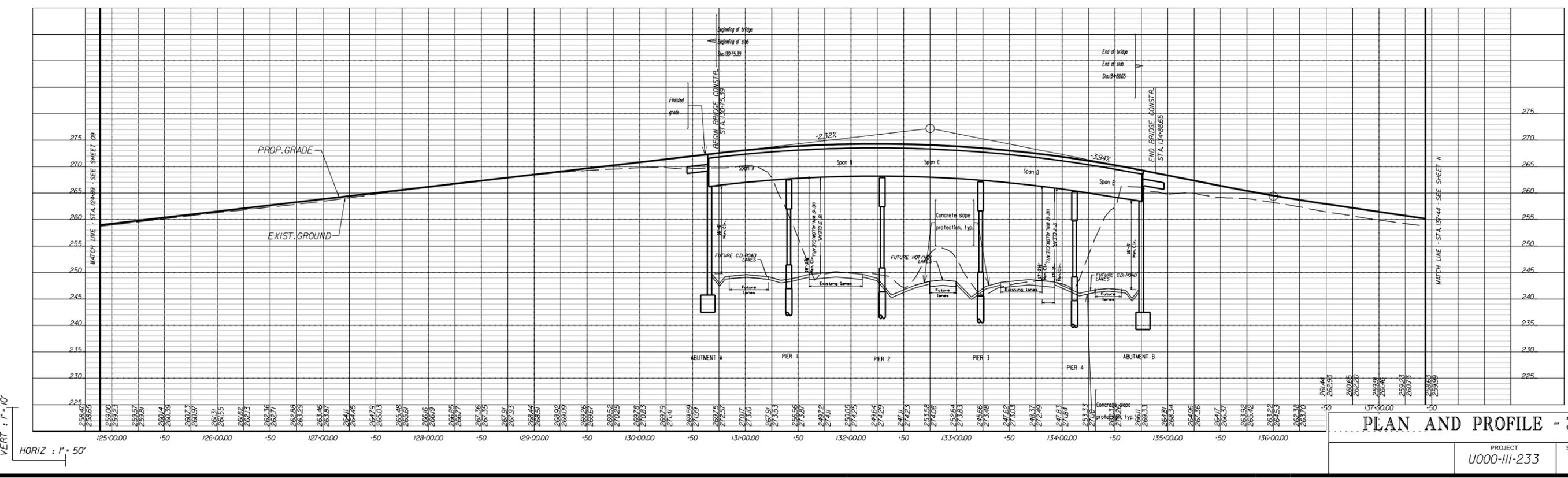
REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	639	U000-III-233 RW-201, C-501	10



LEGEND

- PROP. 5' CONC. SIDEWALK
- PROP. 10' SHARED USE PATH
- PROP. RETAINING WALL

- Denotes Proposed Pavement
- Denotes Pavement Milling and Resurfacing
- Denotes Cut Area
- Denotes F III Area
- Denotes 5' Concrete Sidewalk
- Denotes 10' Shared Use Path
- Denotes Demolition of Pavement
- Denotes Obscuring of Pavement



PLAN AND PROFILE - 3
PROJECT U000-III-233 SHEET NO. 10

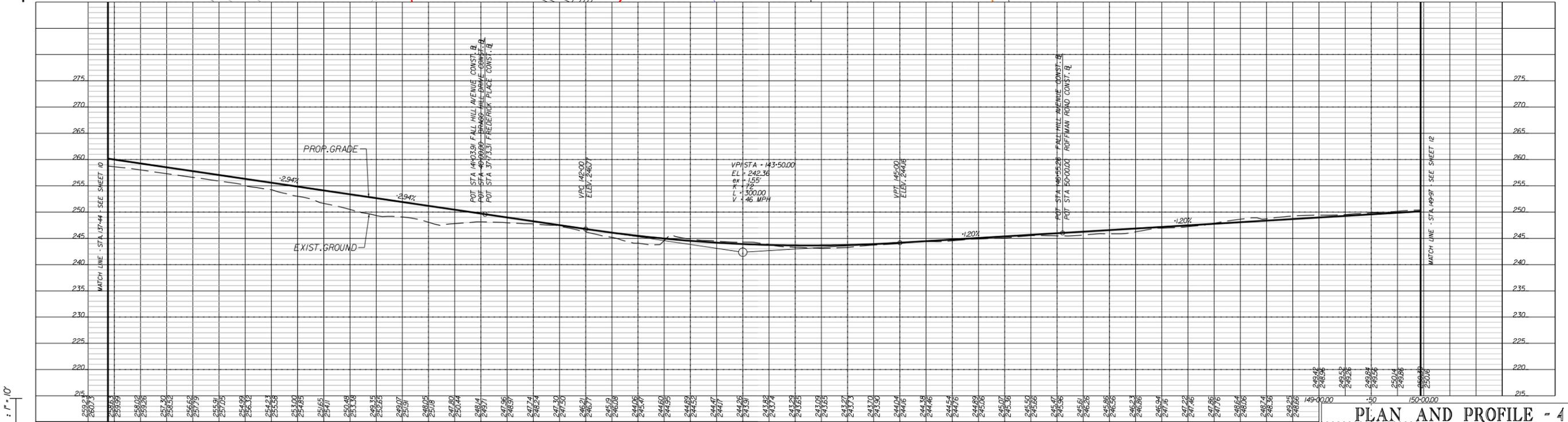
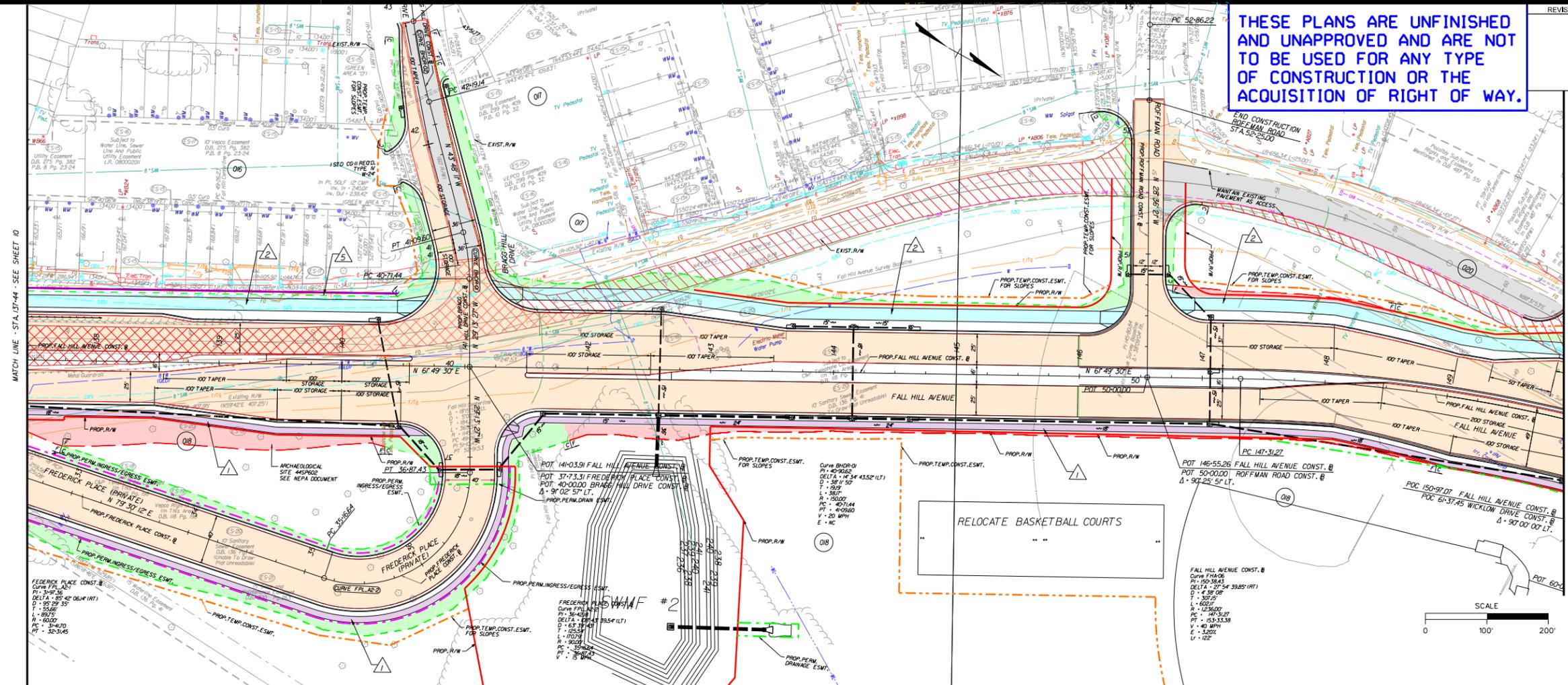
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STATE	ROUTE	PROJECT	SHEET NO.
VA.	639	U000-III-233 RW-201, C-501	11

LEGEND

- ▲ PROP. 5' CONC. SIDEWALK
- ▲ PROP. 10' SHARED USE PATH
- ▲ PROP. RETAINING WALL

- Denotes Proposed Pavement
- Denotes Pavement Milling and Resurfacing
- Denotes Cut Area
- Denotes F III Area
- Denotes 5' Concrete Sidewalk
- Denotes 10' Shared Use Path
- Denotes Demolition of Pavement
- Denotes Obscuring of Pavement



PLAN AND PROFILE - 4

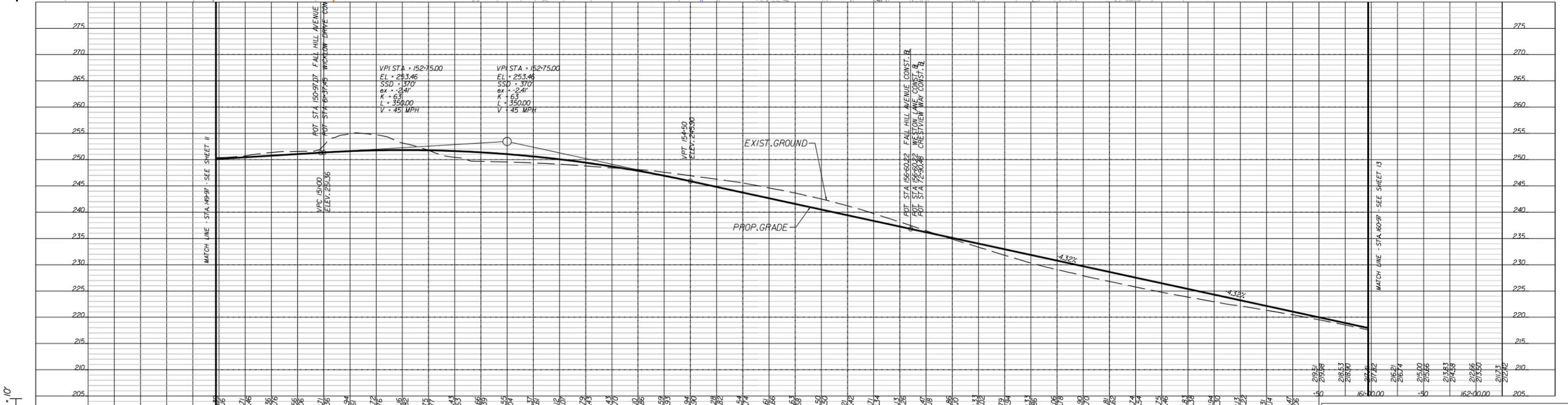
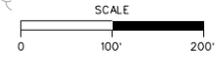
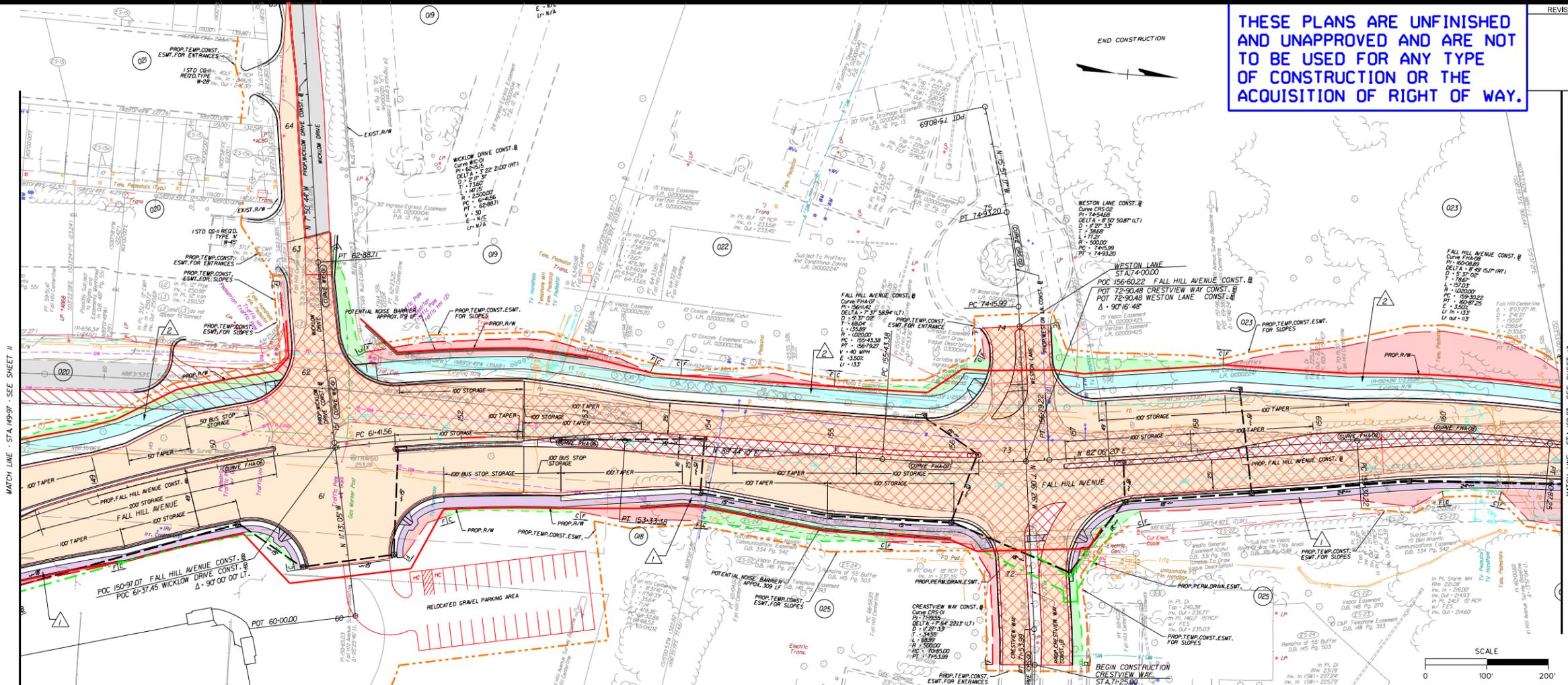
PROJECT	SHEET NO.
U000-III-233	11

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REVISION	STATE	ROUTE	STATE	PROJECT	SHEET NO.
	VA.	639		U000-III-233 RW-201, C-501	12

- LEGEND**
- ▲ PROP. 5' CONC. SIDEWALK
 - ▲ PROP. 10' SHARED USE PATH
 - ▲ PROP. RETAINING WALL

- Denotes Proposed Pavement
- Denotes Pavement Milling and Resurfacing
- Denotes Cut Area
- Denotes F/III Area
- Denotes 5' Concrete Sidewalk
- Denotes 10' Shared Use Path
- Denotes Demolition of Pavement
- Denotes Obscuring of Pavement

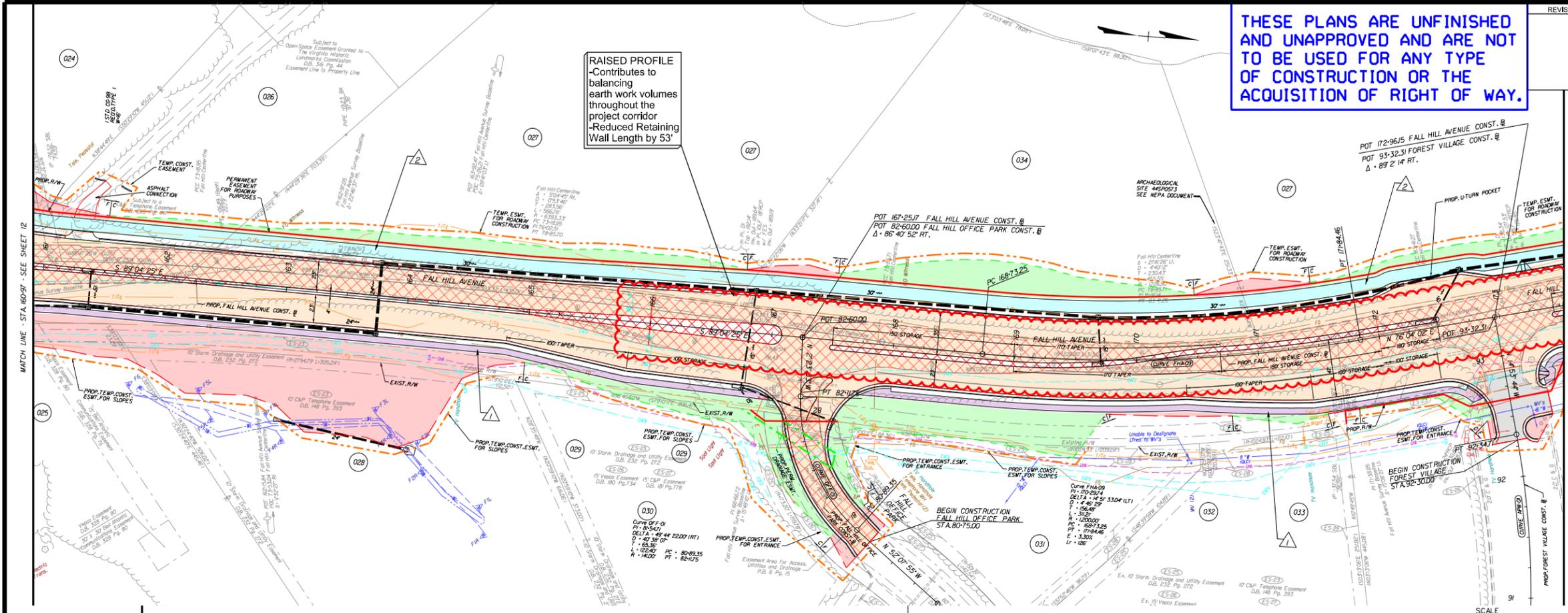


PLAN AND PROFILE - 5

PROJECT	SHEET NO.
U000-III-233	12

THESE PLANS ARE UNFINISHED AND UNAPPROVED AND ARE NOT TO BE USED FOR ANY TYPE OF CONSTRUCTION OR THE ACQUISITION OF RIGHT OF WAY.

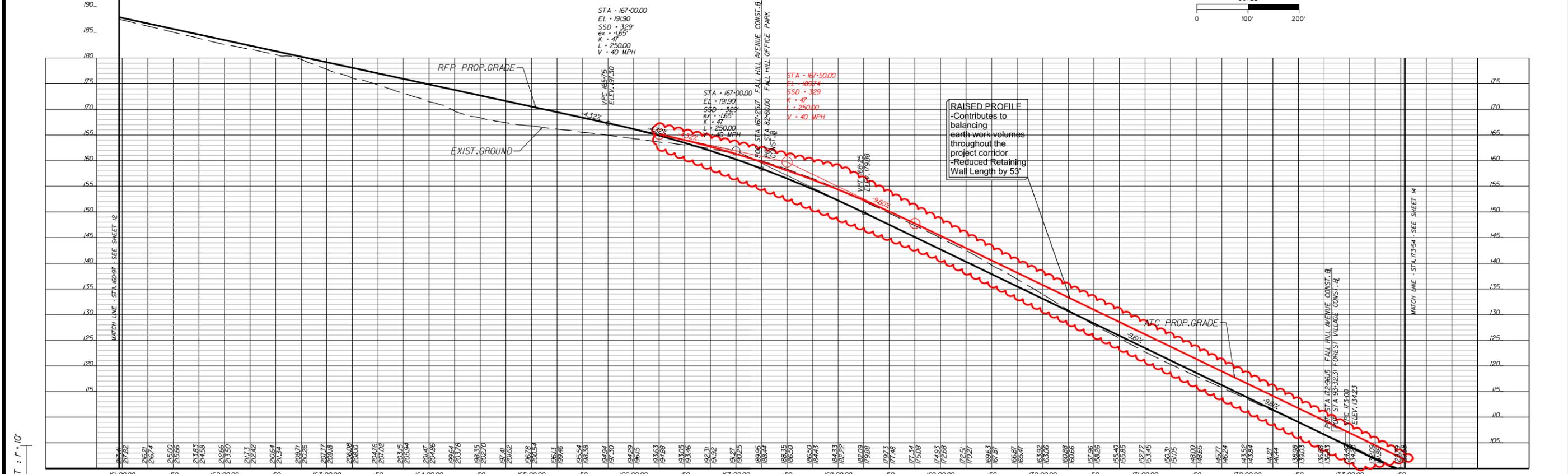
REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	639	U000-III-233 RW-201, C-501	13



LEGEND

- PROP. 5' CONC. SIDEWALK
- PROP. 10' SHARED USE PATH
- PROP. RETAINING WALL

- Denotes Proposed Pavement
- Denotes Pavement Milling and Resurfacing
- Denotes Cut Area
- Denotes F III Area
- Denotes 5' Concrete Sidewalk
- Denotes 10' Shared Use Path
- Denotes Demolition of Pavement
- Denotes Obscuring of Pavement

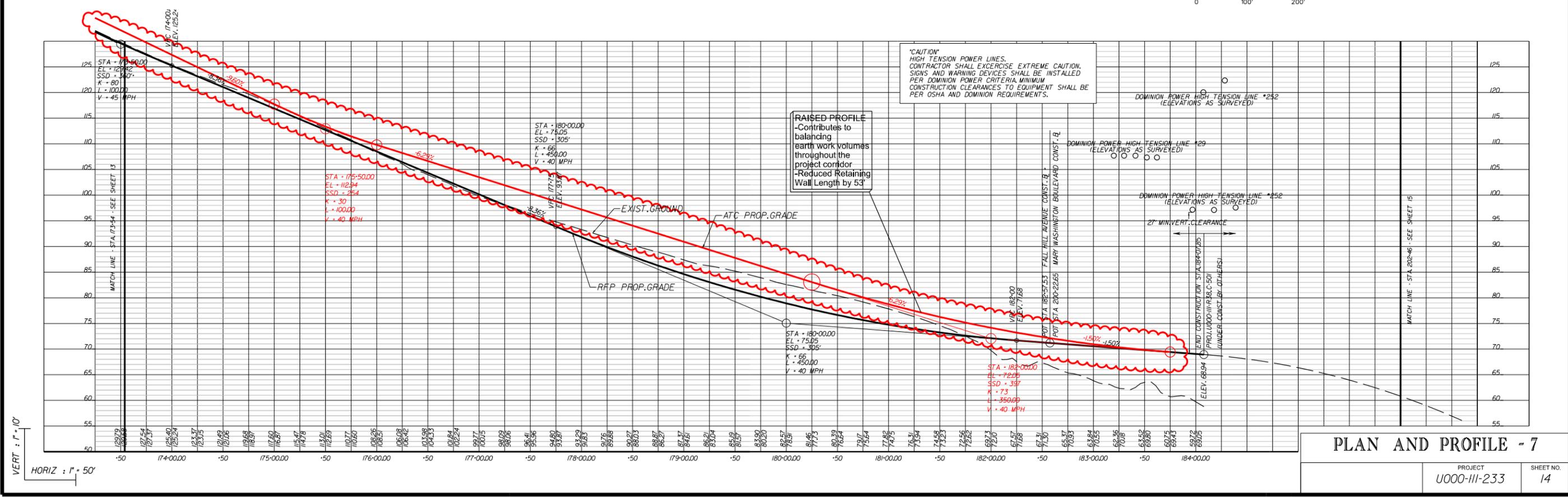
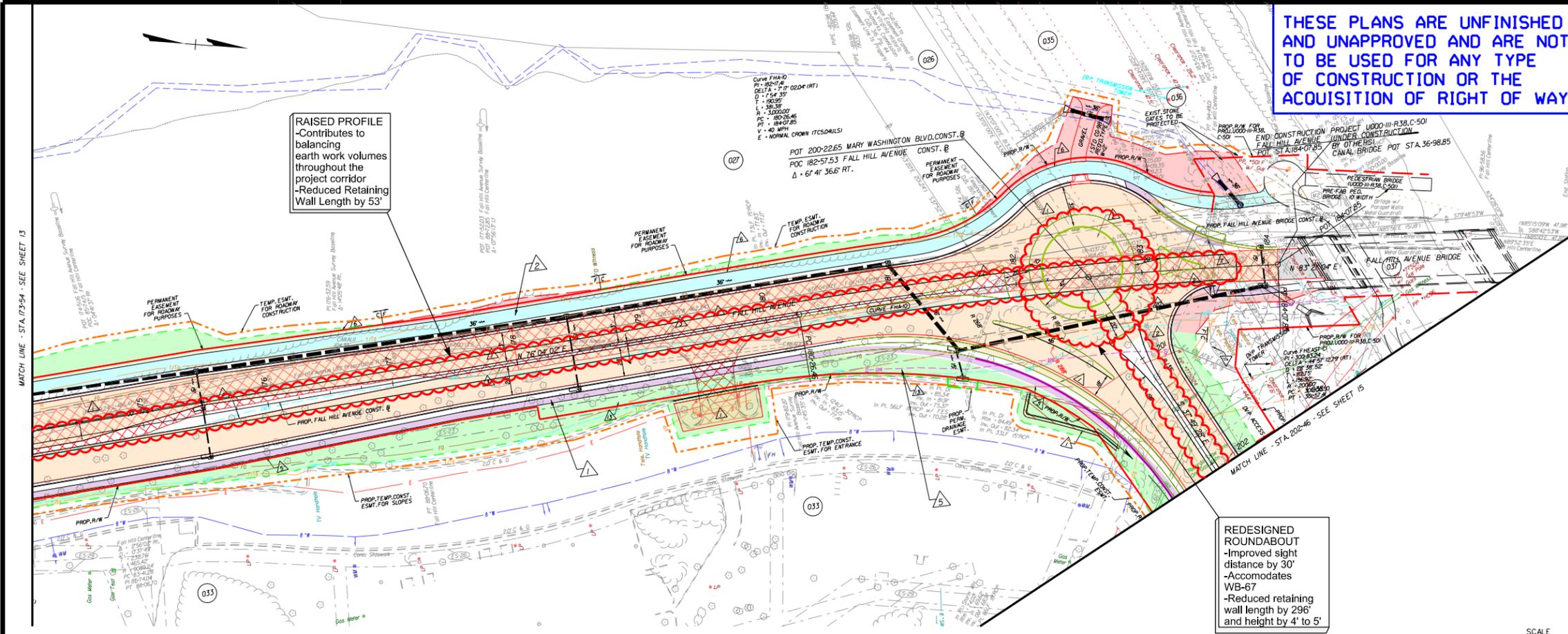


RAISED PROFILE
-Contributes to balancing earth work volumes throughout the project corridor
-Reduced Retaining Wall Length by 53'

PLAN AND PROFILE - 6

REVISED	STATE	ROUTE	STATE	PROJECT	SHEET NO.
	VA.	639		U000-III-233 RW-201, C-501	14

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REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	639	U000-III-233 RW-201, C-501	15

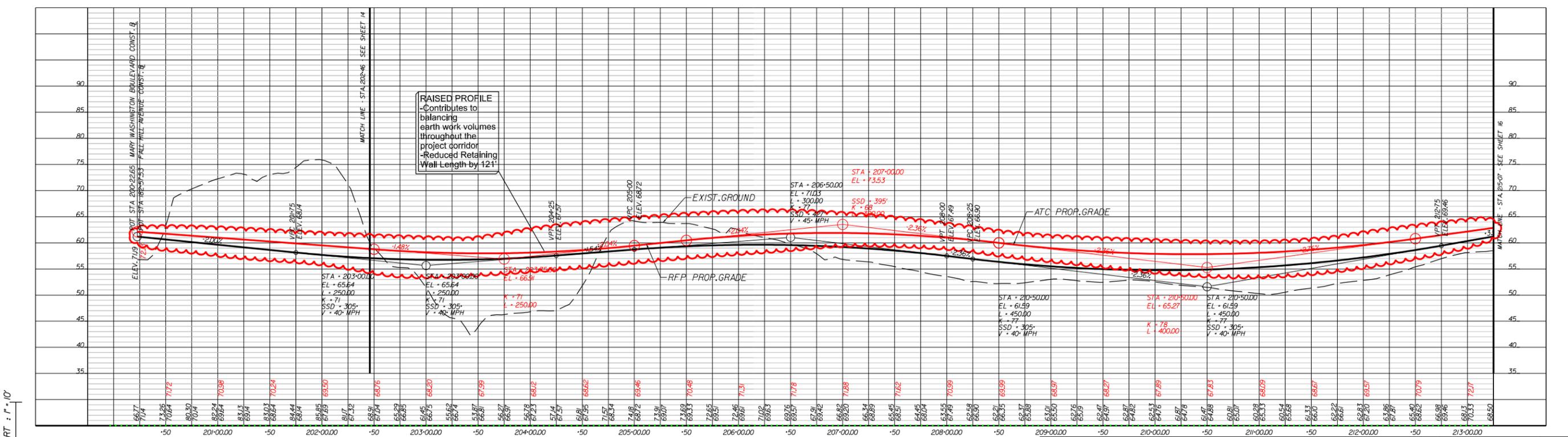
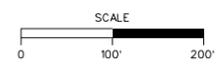
LEGEND

- △ PROP. 5' CONC. SIDEWALK
- △ PROP. 10' SHARED USE PATH
- △ PROP. RETAINING WALL

- Denotes Proposed Pavement
- Denotes Pavement Milling and Resurfacing
- Denotes Cut Area
- Denotes F III Area
- Denotes 5' Concrete Sidewalk
- Denotes 10' Shared Use Path
- Denotes Demolition of Pavement
- Denotes Obscuring of Pavement

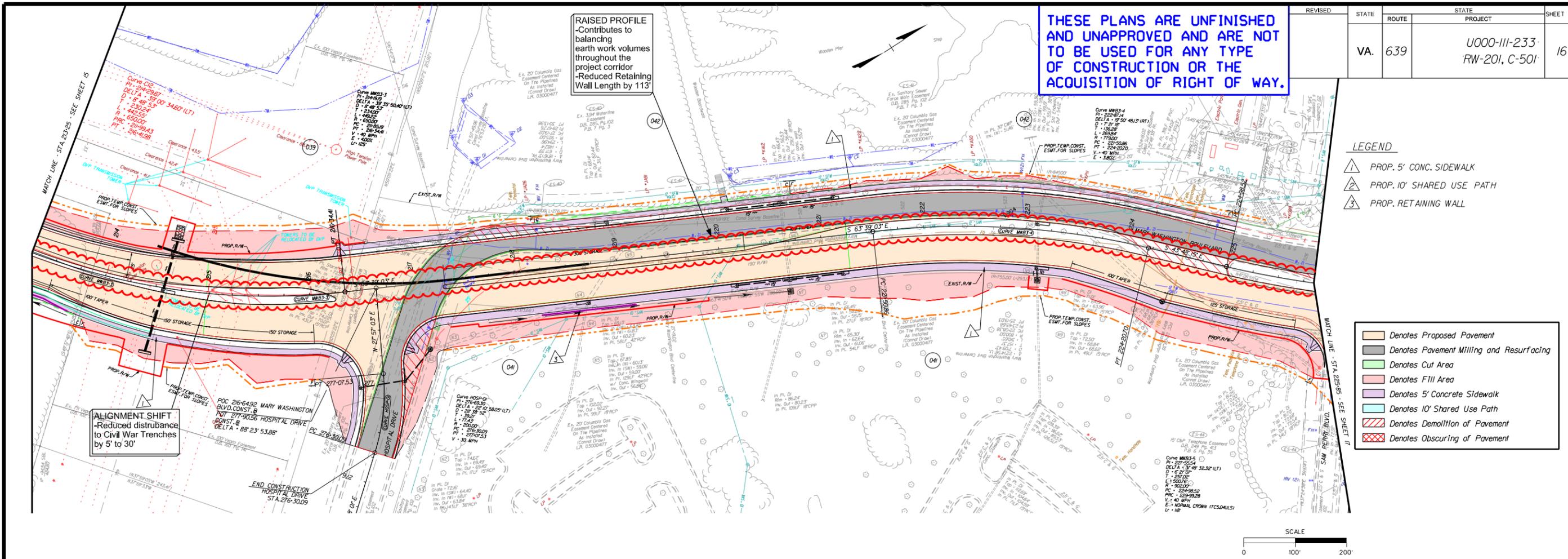
RAISED PROFILE
-Contributes to balancing earth work volumes throughout the project corridor
-Reduced Retaining Wall Length by 121'

ALIGNMENT SHIFT
-Reduced disturbance to Civil War Trenches by 5' to 30'

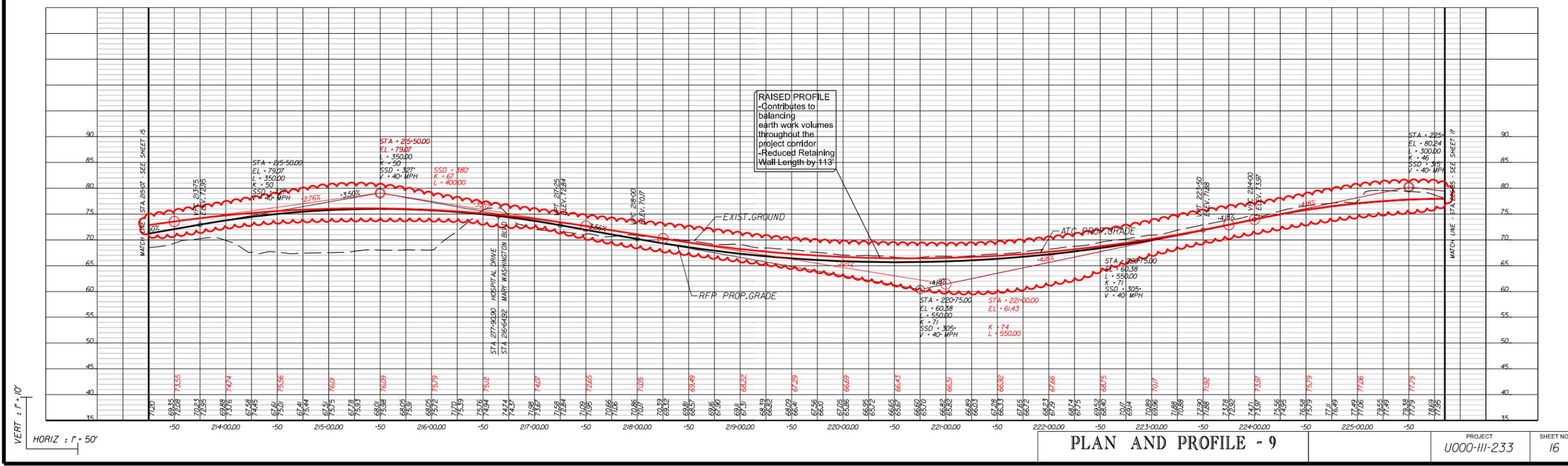


PLAN AND PROFILE - 8

PROJECT	SHEET NO.
U000-III-233	15

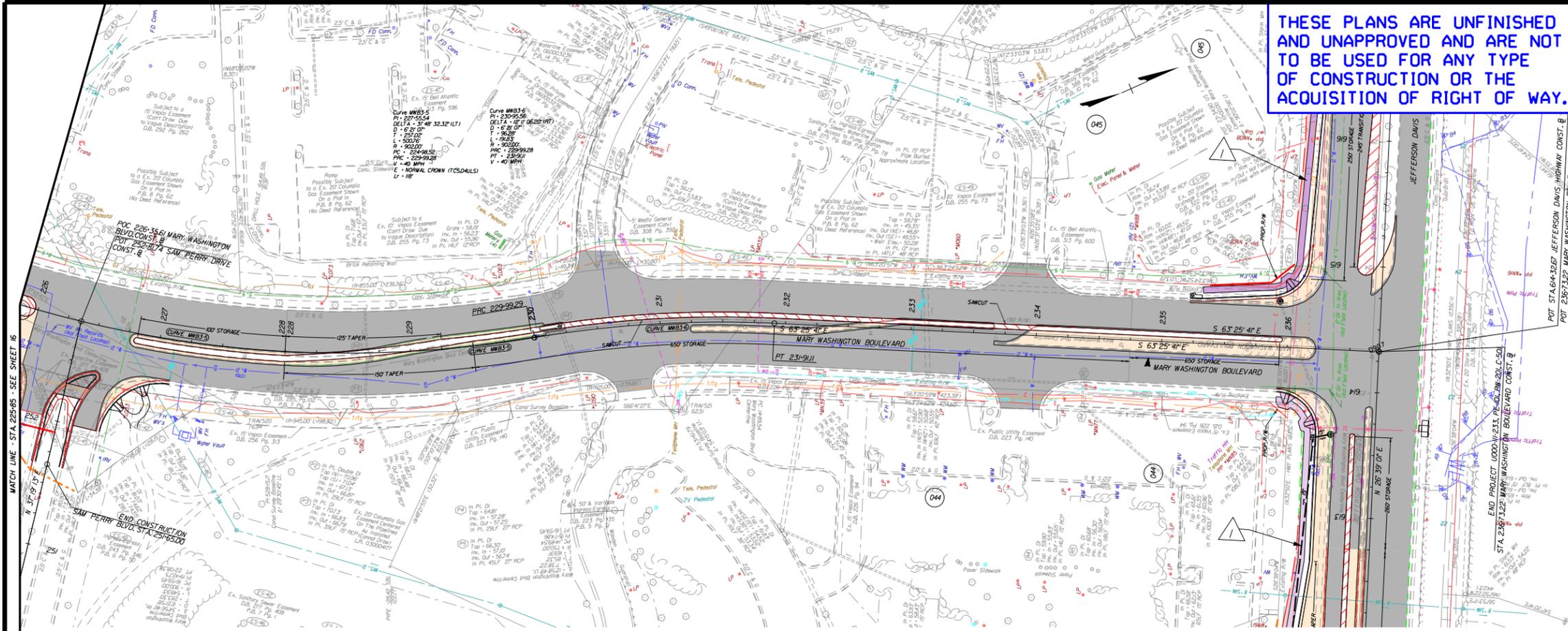


STATE	ROUTE	PROJECT	SHEET NO.
VA.	639	U000-III-233 RW-201, C-501	16



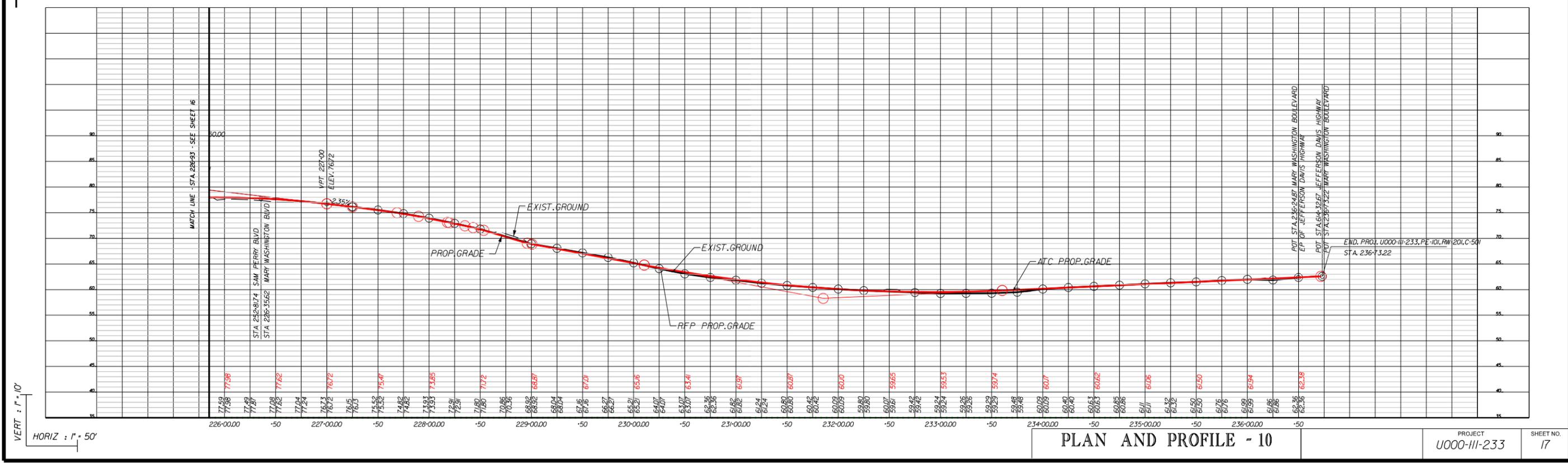
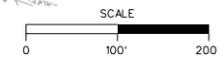
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REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	639	U000-III-233 RW-201, C-501	17



- LEGEND**
- △ PROP. 5' CONC. SIDEWALK
 - △ PROP. 10' SHARED USE PATH
 - △ PROP. RETAINING WALL

- Denotes Proposed Pavement
- Denotes Pavement Milling and Resurfacing
- Denotes Cut Area
- Denotes FIII Area
- Denotes 5' Concrete Sidewalk
- Denotes 10' Shared Use Path
- Denotes Demolition of Pavement
- Denotes Obscuring of Pavement



PLAN AND PROFILE - 10

PROJECT MANAGER _____
 SURVEYED BY _____
 DESIGN SUPERVISED BY _____
 DESIGNED BY _____

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	639	U000-III-233 RW-201, C-501	19

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

Utility Type	Location (Alignment/Station /Side/OH Buried)	Length	Comments	Notes:	Relocation (N=Not likely, P=Possible, L=Likely)
Sanitary	Fall Hill Avenue 128+40.00 (Right) Buried	191'	Sanitary line runs along side roadway under proposed sidewalk to manhole at Sta. 129+11.76, under proposed retaining wall.	Likely will need to be relocated outside of proposed retaining wall.	L
Electric	Fall Hill Avenue 129+22.12 (Left) Buried	112'	Underground electric runs from existing power pole at Sta. 129+22.12 across roadway to off project site.	Should not require relocation.	N
Fiber Optic	Fall Hill Avenue 130+00.51 (Right) Buried	49'	Underground fiber optic runs from existing hand hole at Sta. 130+00.51 under proposed roadway.	Hand hole will need to be relocated therefore line will need to be relocated.	L
Cable TV	Fall Hill Avenue 130+79.18 (Left) Buried	53'	Underground cable tv line runs from existing pole at Sta. 130+79.18 to existing tv hand hole at Sta. 130+75.98.	Power pole and hand hole will need to be relocated.	L
Fiber Optic	Fall Hill Avenue 130+92.23 (Left) Buried	51'	Underground fiber optic runs from off site to existing hand hole at Sta. 130+91.57.	Hand hole will need to be relocated therefore line will need to be relocated.	L
Cable TV	Fall Hill Avenue 130+75.98 (Right) Buried	41'	Underground cable tv line runs from existing hand hole at Sta. 130+75.98 to existing pole at Sta. 131+16.96.	Hand hole and pole will need to be relocated.	L
Fiber Optic	Fall Hill Avenue 130+91.49 (Right) Buried	26'	Underground fiber optic line runs from existing hand hole at Sta. 130+75.98 to existing pole at Sta. 131+16.96.	Hand hole and pole will need to be relocated.	L
Electric	Fall Hill Avenue 131+20.33 (Left) Buried	96'	Underground electric runs from existing power pole at Sta. 131+20.33 to existing conduit on bridge.	Existing power pole and existing conduit will need to be relocated.	L
Water	Fall Hill Avenue 131+39.18 (Left) Buried	320'	Underground water line runs under I-95 survey plans call out as abandoned utility.	Abandoned	N
Electric	Fall Hill Avenue 134+51.14 (Right) Buried	41'	Underground electric runs from conduit on existing bridge to off project site.	Conduit will need to be relocated.	L
Cable TV	Fall Hill Avenue 134+59.31 (Right) Buried	911'	Underground cable tv line runs from existing pole at Sta. 134+59.31 to off project site.	Pole will need to be relocated.	L
Fiber Optic	Fall Hill Avenue 134+59.31 (Right) Buried	600'	Underground fiber optic line runs from existing pole at Sta. 134+59.31 to existing pedestal at Sta. 140+34.18.	Pole and pedestal will need to be relocated.	L
Sanitary	Fall Hill Avenue 135+75.09 (Left) Buried	803'	Sanitary line runs along roadway with manholes at Sta. 136+55.78, 139+49.94, and 142+24.71.	Manholes will need to be adjusted/relocated.	P
Water	Fall Hill Avenue 136+19.99 (Left) Buried	101'	Water line runs across roadway.	Depending on depth of line may need relocation.	P
Water	Frederick Place 31+85.98 (Left) Buried		Water Valve in Roadway.	Water valve will need adjustment	L
Water	Frederick Place 31+98.21 (Right) Buried		Water Valve in Roadway.	Water valve will need adjustment	L
Telephone	Frederick Place 32+22.96 (Left) Buried		Pedestal in proposed roadway	Pedestal will need to be relocated	L
Telephone	Frederick Place 32+24.34 (Left) Buried		Pedestal in proposed roadway	Pedestal will need to be relocated	L
Gas	Frederick Place 32+47.59 (Right) Buried		Gas witness marker no gas line shown in survey.	Witness marker will need to be adjusted.	L
Water	Frederick Place 33+00.33 (Right) Buried		Fire hydrant and water valve located in proposed sidewalk.	Will need to be relocated.	L
Cable TV	Fall Hill Avenue 136+45.34 (Left) Buried	525'	Cable tv line runs along roadway under proposed roadway and sidewalk to offsite.	May require relocation.	P
Cable TV	Fall Hill Avenue 136+54.12 (Left) Buried	428'	Cable tv line runs from off project site to hand hole at Sta. 140+77.14.	Handhole will need to be relocated therefore line will need to be relocated	L
Telephone	Fall Hill Avenue 137+60.22 (Left) Buried	151'	Underground telephone runs along edge of project to pedestal at Sta. 139+12.44.	Pedestal will need to be relocated.	L

Utility Type	Location (Alignment/Station /Side/OH Buried)	Length	Comments	Notes:	Relocation (N=Not likely, P=Possible, L=Likely)
Telephone	Fall Hill Avenue 137+14.86 (Right) Buried	504'	Runs along roadway and across roadway from off site location to off site location.	May need to be relocated depending on depth of cut and depth of phone line.	P
Telephone	Fall Hill Avenue 137+15.79 (Right) Buried	706'	Runs along roadway and across roadway from off site location to off site location.	May need to be relocated depending on depth of cut and depth of phone line.	P
Water	Fall Hill Avenue 137+23.78 (Right) Buried	546'	Water line runs along roadway to water valve located within roadway at Sta. 142+33.04.	Water valve will need adjustment	P
Cable TV	Fall Hill Avenue 138+10.47 (Left) Buried	279'	Cable tv line runs in and out of cut file line to hand hole at Sta. 140+77.42.	Handhole will need to be relocated	L
Fiber Optic	Fall Hill Avenue 138+19.26 (Left) Buried	128'	Fiber optic line runs along roadway edge to hand hole at Sta. 139+47.401414	Handhole will need to be relocated therefore line will need to be relocated	L
Telephone	Fall Hill Avenue 139+12.44 (Left) Buried	45'	Telephone line runs from pedestal at Sta. 139+12.44 to pedestal at Sta. 139+59.85	Both pedestal's will need to be relocated.	L
Fiber Optic	Fall Hill Avenue 139+22.12 (Left) Buried	26'	Underground fiber optic line from off site to handhole at Sta. 139+47.40.	Handhole will need to be relocated therefore line will need to be relocated	L
Fiber Optic	Fall Hill Avenue 139+47.40 (Left) Buried	10'	Underground fiber optic line from handhole at Sta. 139+47.40 to offsite.	Handhole will need to be relocated	L
Fiber Optic	Fall Hill Avenue 139+47.40 (Left) Buried	43'	Underground fiber optic line from handhole at Sta. 139+47.40 to offsite.	Handhole will need to be relocated therefore line will need to be relocated	L
Telephone	Fall Hill Avenue 139+59.85 (Left) Buried	116'	Telephone line from pedestal at Sta. 139+59.85 to pedestal at Sta. 140+77.51.	Both pedestal's will need to be relocated.	L
Fiber Optic	Fall Hill Avenue 140+34.18 (Left) Buried	226'	Fiber optic line from handhole in median to off site location.	Handhole will need to be relocated therefore line will need to be relocated	L
Electric	Fall Hill Avenue 140+50.00 (Left) Buried	81'	Electric line runs under Bragg Hill Drive	Unlikely to be impacted.	N
Cable TV	Fall Hill Avenue 140+60.46 (Left) Buried	17'	Cable TV line runs from offsite to handhole at Sta. 140+77.42.	Handhole will need to be relocated therefore line will need to be relocated	L
Cable TV	Fall Hill Avenue 140+64.53 (Left) Buried	34'	Cable TV line runs from offsite to handhole at Sta. 140+77.42.	Handhole will need to be relocated therefore line will need to be relocated	L
Electric	Fall Hill Avenue 140+63.66 (Left) Buried	19'	Underground electric from offsite to existing light pole at Sta. 140+81.25	Light pole will need to be relocated.	L
Telephone	Fall Hill Avenue 140+77.51 (Left) Buried	93'	Underground telephone line from handhole at Sta. 140+77.51 to off project site.	Handhole will need to be relocated therefore line will need to be relocated	L
Sanitary	Bragg Hill Drive 41+53.08 (Right) Buried	79'	Sanitary line under Bragg Hill Drive.	Unlikely to be impacted.	N
Gas	Fall Hill Avenue 141+22.14 (Left) Buried	148'	Gas line located under roadway.	Unlikely to be impacted.	N
Gas	Fall Hill Avenue 141+62.01 (Left) Buried	157'	Gas line located under roadway.	Unlikely to be impacted.	N
Water	Fall Hill Avenue 142+03.79 (Left) Buried	61'	Water line running under roadway to existing water valve in roadway.	Water valve will need adjustment	P
Sanitary	Fall Hill Avenue 142+13.92 (Left) Buried	108'	Sanitary line from manhole at Sta. 142+13.92 across roadway.	Manholes will need to be adjusted/relocated.	P
Unknown	Fall Hill Avenue 142+57.05 (Left) Buried	74'	Unknown utility runs across roadway.	Unlikely to be impacted.	N
Water	Fall Hill Avenue 143+21.55 (Left) Buried	120'	Water line running under roadway to offsite.	Unlikely to be impacted.	N

Utility Type	Location (Alignment/Station /Side/OH Buried)	Length	Comments	Notes:	Relocation (N=Not likely, P=Possible, L=Likely)
Telephone	Roffman Road 51+04.28 (Left) Buried	42'	Telephone line running across roadway.	Unlikely to be impacted.	N
Cable TV	Roffman Road 51+38.73 (Left) Buried	55'	Cable TV line running across roadway.	Unlikely to be impacted.	N
Gas	Roffman Road 51+47.26 (Left) Buried	63'	Gas line running across roadway.	Unlikely to be impacted.	N
Unknown	Roffman Road 51+50.39 (Left) Buried	69'	Unknown utility running across roadway.	Unlikely to be impacted.	N
Fiber Optic	Roffman Road 51+77.93 (Left) Buried	31'	Fiber Optic line running across roadway.	Unlikely to be impacted.	N
Telephone	Roffman Road 51+88.90 (Left) Buried	31'	Telephone line running across roadway.	Unlikely to be impacted.	N
Cable TV	Roffman Road 51+96.30 (Left) Buried	33'	Cable TV line running across roadway.	Unlikely to be impacted.	N
Fiber Optic	Roffman Road 52+02.22 (Left) Buried	5'	Fiber optic line running from off site.	Unlikely to be impacted.	N
Water	Roffman Road 52+06.46 (Left) Buried	23'	Water line running from water meter to offsite.	Water meter may need to be relocated.	P
Cable TV	Roffman Road 52+09.34 (Left) Buried	17'	Cable TV line running from offsite.	Unlikely to be impacted.	N
Telephone	Fall Hill Avenue 148+07.88 (Left) Buried	560'	Telephone line running from offsite to telephone cabinet in proposed sidewalk.	Telephone cabinet will need to be relocated.	L
Gas	Fall Hill Avenue 148+98.51 (Left) Buried	549'	Gas line running under proposed roadway.	Unlikely to be impacted.	N
Unknown	Fall Hill Avenue 149+48.86 (Left) Buried	105'	Unknown utility under proposed roadway.	Unlikely to be impacted.	N
Cable TV	Fall Hill Avenue 149+43.44 (Left) Buried	261'	Cable TV line running under roadway to existing handhole at Sta. 151+81.98.	Handhole will need to be relocated therefore line will need to be relocated	L
Fiber Optic	Fall Hill Avenue 149+80.03 (Left) Buried	3446'	Fiber optic line runs under proposed roadway.	May need to be relocated depending on depth of cut and depth of phone line.	P
Unknown	Fall Hill Avenue 149+81.30 (Left) Buried	93'	Unknown utility running along side of roadway	Unlikely to be impacted.	N
Telephone	Fall Hill Avenue 149+82.90 (Left) Buried	91'	Telephone line running along side of roadway	Unlikely to be impacted.	N
Telephone	Fall Hill Avenue 149+83.38 (Left) Buried	302'	Telephone line running under proposed roadway to telephone cabinet	Cabinet will need to be relocated.	L
Electric	Fall Hill Avenue 149+83.85 (Left) Buried	79'	Electric line running to existing signal	Existing signal will need to be replaced.	L
Electric	Fall Hill Avenue 149+84.29 (Left) Buried	101'	Electric line running to existing electric meter	Meter may need to be replaced	P
Fiber Optic	Fall Hill Avenue 149+89.08 (Left) Buried	105'	Fiber optic line running to existing handhole at Sta. 150+70.91.	Handhole may need adjustment/relocation depending on depth of cut and line.	P
Cable TV	Fall Hill Avenue 150+63.18 (Left) Buried	1071'	Cable TV line running along side roadway with handholes at Sta. 152+54.93 and 160+30.52 running offsite.	Both hand holes will require relocation therefore line will need relocation.	L

UTILITY MATRIX - 2

PROJECT	SHEET NO.
U000-III-233	19

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PROJECT MANAGER _____
 SURVEYED BY _____
 DESIGN SUPERVISED BY _____
 DESIGNED BY _____

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	639	U000-III-233 RW-201, C-501	21

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

Utility Type	Location (Alignment/Station /Side/OH Buried)	Length	Comments	Notes:	Relocation (N=Not likely, P=Possible, L=Likely)
Electric	Mary Washington Boulevard 226+77.68 (Right) Buried	45'	Electric line running from existing light pole at Sta. 226+77.68 to offsite.	Light pole will need to be relocated.	L
Water	Mary Washington Boulevard 230+00.59 (Centerline) Buried	52'	Connects water line to existing fire hydrant.	Unlikely to be impacted.	N
Water	Mary Washington Boulevard 230+59.12 (Centerline) Buried	84'	Line from existing water line to offsite.	Unlikely to be impacted.	N
Unknown	Mary Washington Boulevard 230+91.60 (Centerline) Buried	147'	Unknown utility crossing roadway	Unlikely to be impacted.	N
Telephone	Mary Washington Boulevard 231+13.67 (Centerline) Buried	104'	Telephone line crossing roadway.	Unlikely to be impacted.	N
Unknown	Mary Washington Boulevard 231+77.41 (Centerline) Buried	100'	Unknown utility crossing roadway	Unlikely to be impacted.	N
Water	Jefferson Davis Highway 608+39.89 (Left) Buried		Water meter	Will need to be relocated.	L
Water	Jefferson Davis Highway 609+25.43 (Left) Buried		Fire Hydrant	Will need to be relocated.	L
Electric	Jefferson Davis Highway 609+36.56 (Left) OH	118'	Overhead power lines crossing roadway with power pole at Sta. 609+36.56.	Power pole likely to be relocated. Power lines crossing roadway will need proper clearance and marking during construction.	L
Electric	Jefferson Davis Highway 609+41.54 (Left) OH	904'	Overhead power lines running along roadway with poles at Sta. 610+11.23, 612+06.44, 613+82.39, 615+14.09, 615+99.48, and 617+92.57.	Power poles will need to be relocated.	L
Sanitary	Jefferson Davis Highway 609+61.95 (Left) Buried	415'	Sanitary line running along roadway under proposed sidewalk with manhole at Sta. 612+35.92 then crossing roadway.	May need to relocate from under proposed sidewalk.	P
Water	Jefferson Davis Highway 613+18.31 (Left) Buried	432'	Water line running under proposed curb and under proposed travel lane with valve and hydrant at Sta. 614+89.30.	Hydrant will need to be relocated.	L
Gas	Jefferson Davis Highway 613+17.50 (Left) Buried	430'	Gas line running under travel lanes	Unlikely to be impacted.	N
Unknown	Jefferson Davis Highway 613+21.18 (Left) Buried	43'	Unknown utility running under travel lanes	Unlikely to be impacted.	N
Traffic Control	Jefferson Davis Highway 613+70.78 (Left) Buried	493'	Traffic control with signal poles at Sta. 613+76.76, 61390.37, and 614+83.90. Traffic handholes at Sta. 613+70.68, 613+69.90, 613+94.83, 615+07.72. Signal loops and a control cabinet at Sta. 613+69.74.	Traffic signal will need to be rebuilt.	L
Telephone	Jefferson Davis Highway 613+80.30 (Left) Buried	380'	Telephone line running along side roadway under proposed sidewalk between manholes at Sta. 613+80.30 and 617+61.31.	Manholes will need to be adjusted/relocated.	L
Electric	Jefferson Davis Highway 613+86.82 (Left) Buried	113'	Light pole at Sta. 613+86.82.	Light pole will need to be relocated.	L
Electric	Jefferson Davis Highway 615+13.75 (Left) Buried	169'	Underground electric from existing power pole.	Power pole will need to be relocated.	L
Unknown	Jefferson Davis Highway 615+24.87 (Left) Buried	43'	Unknown utility under median.	Unlikely to be impacted.	N
Electric	Jefferson Davis Highway 615+99.48 (Left) Buried	10'	Underground electric from existing power pole.	Power pole will need to be relocated.	L
Water	Jefferson Davis Highway 618+05.57 (Left) Buried		Water meter	Meter will need to be relocated.	L

Utility Owners	
Gas	Columbia Gas of Virginia 60 Commerce Parkway Fredericksburg, VA 22406 Rae-Leigh Wood 540-368-3228
Electric	Dominion Virginia Power 701 E. Cary St. Andrew Brooks Underground Damage Prevention Manager Dominion Emergency Preparedness Center 804-771-3655 804-514-2277 cell
Telecommunications - Fiber Optic Cable Telephone	Verizon Field Contact: Dean Rasmussen (434) 942-8192
	Comcast 5401 Staples Mill Road Richmond, VA 23228 Tammy Watson (804) 915-5370 Tammy.Watson@cable.comcast.com
	Cox Communications Bill Henry Administrative Specialist 703-480-7823 Phone - 571-237-9006 Cell 3080 Centerville Road Herndon, VA 20171 Bill.Henry@cox.com www.coxbusiness.com
Water	City of Fredericksburg Department of Public Works 715 Princess Anne Street Fredericksburg, Virginia 22404 Adam McManama 540-372-1110
Traffic Control	Virginia Department of Transportation
Sanitary Sewer	City of Fredericksburg Department of Public Works 715 Princess Anne Street Fredericksburg, Virginia 22404 Adam McManama 540-372-1110
Unknown	Unknown

UTILITY MATRIX - 4

PROJECT	SHEET NO.
U000-III-233	21

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\$FILE\$
\$DATE\$

\$DATE\$

\$FILE\$

STATE	FEDERAL AID		STATE		SHEET
ROUTE	PROJECT		ROUTE	PROJECT	NO.
VA.			639	U000-111-233, B609	
NBIS Number:			UPC No.	88699	
Federal Oversight Code:			FHWA Construction and Scour Code:	X281-SN	

GENERAL NOTES:

Width: 78'-10" face-to-face of rails.
 Span layout: 78'-89'-94'-90'-66' prestressed concrete girder spans.
 Capacity: HL-93 loading.
 Specifications:
 Construction: Virginia Department of Transportation Road and Bridge Specifications, 2007.
 Design: AASHTO LRFD Bridge Design Specifications, 6th Edition, 2012; 2013 Interim Specifications; and VDOT Modifications.
 Standards: Virginia Department of Transportation Road and Bridge Standards, 2008.

These plans are incomplete unless accompanied by the Supplemental Specifications and Special Provisions Included in the contract documents.
 This project is to be constructed in accordance with the Virginia Department of Transportation Work Area Protection Manual, August 2011 and latest revisions.

Design loading includes 20 psf allowance for construction tolerances and construction methods.

All structural steel, including bearings, shall be ASTM A709 Grade 36.

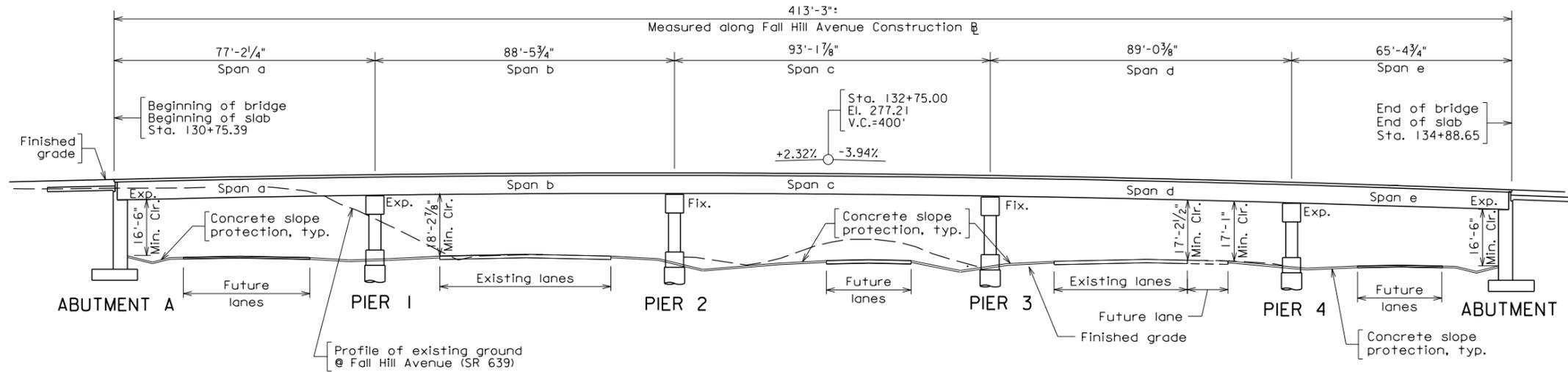
Concrete in prestressed members shall be Class A5. Concrete in superstructure including sidewalks, rolls, medians, piers and approach slabs shall be Class A4; in abutments Class A3

Low permeability concrete shall be used in this project.

All reinforcing steel shall be deformed and shall conform to ASTM A615, Grade 60 except for reinforcing steels noted as CRR (corrosion resistant reinforcing) which shall conform to applicable specifications noted in the special provisions. All reinforcing bar dimensions on the detailed drawings are to centers of bars except where otherwise noted and are subject to fabrication and construction tolerances.

Corrosion resistant reinforcing (CRR) steels shall conform to one or more of the three types (low carbon/chromium, stainless clad and solid stainless) listed in the special provision. The minimum yield strength shall be: 100 ksi for low carbon/chromium and 60 ksi for stainless clad steel and solid stainless steel. The type(s) of CRR steel(s) required on this project is/are noted on the plan sheets and in the reinforcing steel schedule.

Prestressing strands shall be uncoated, seven-wire, low-relaxation steel strands conforming to ASTM A416 Grade 270.



DEVELOPED SECTION ALONG CONST. B

PRELIMINARY PLANS
 THESE PLANS NOT TO BE USED
 FOR CONSTRUCTION

VDOT
 COMMONWEALTH OF VIRGINIA
 DEPARTMENT OF TRANSPORTATION
 PROPOSED BRIDGE ON
 FALL HILL AVENUE OVER ROUTE 1-95
 SPOTSYLVANIA CO. - 1.2 MI. N. OF RTE. 3
 PROJ. U000-111-233, B609

TRANSYSTEMS, INC. RICHMOND, VA STRUCTURAL ENGINEER
PLANS BY: TranSystems, Inc.
COORDINATED:
SUPERVISED:
DESIGNED:
DRAWN:
CHECKED:

No.	Description	Date
REVISIONS		
For Table of Revisions, see Sheet 2.		

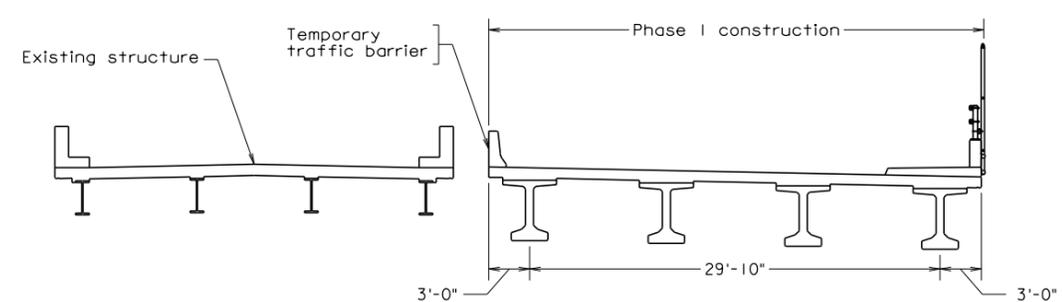
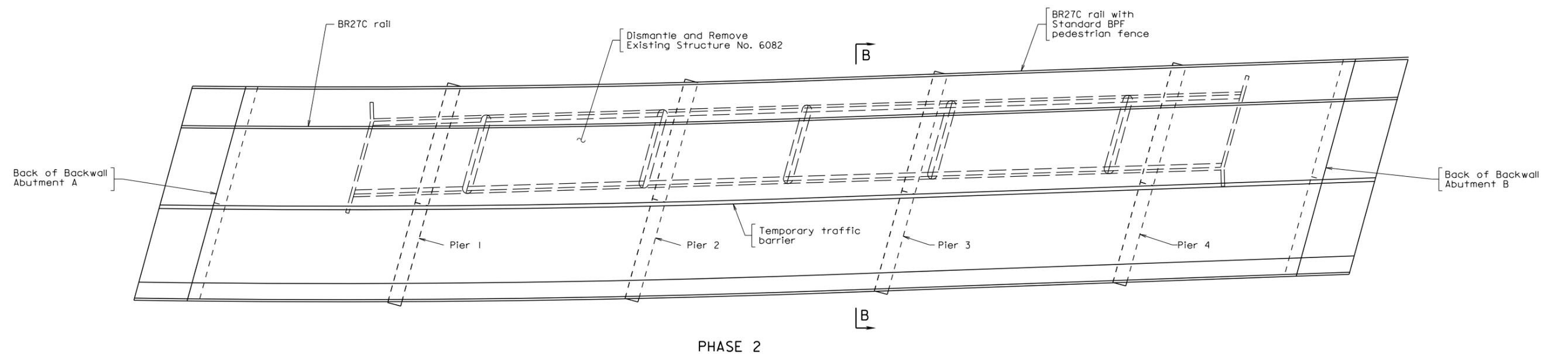
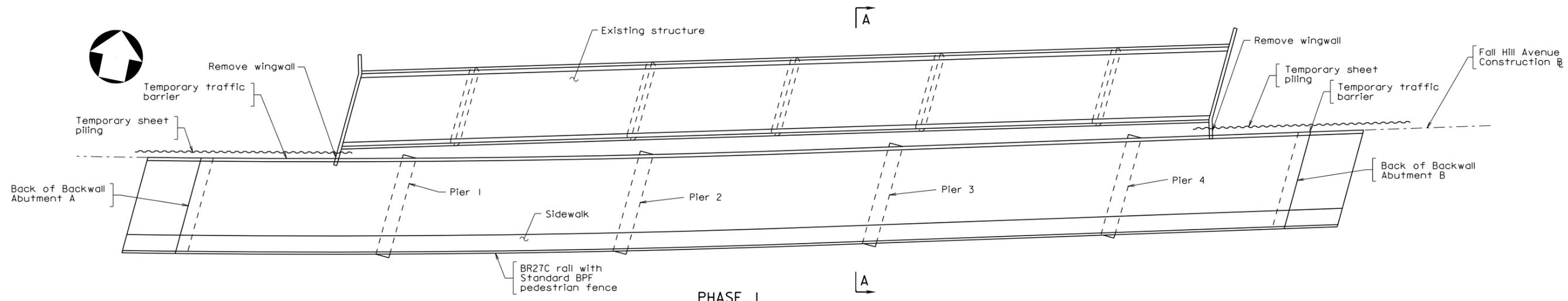
Recommended for Approval: _____ Date _____
 State Structure and Bridge Engineer

Approved: _____ Date _____
 Chief Engineer

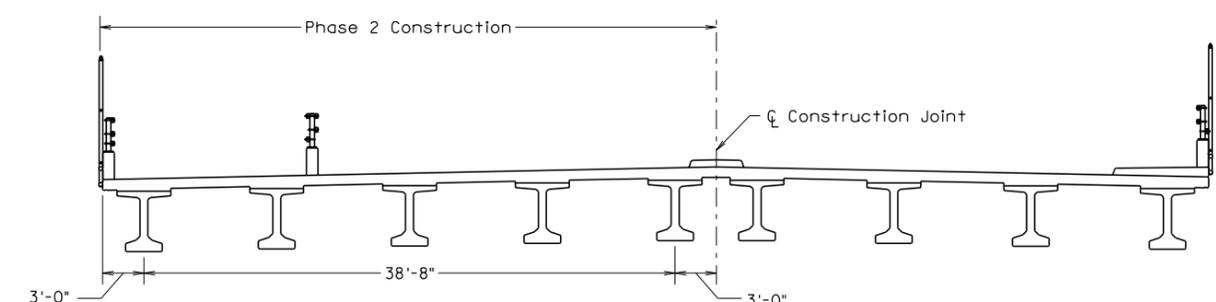
Date: Dec., 2013 © 2013, Commonwealth of Virginia Sheet 1 of 6

Scale: 1" = 20', unless otherwise noted

STATE	FEDERAL AID	STATE	SHEET NO.
VA.	PROJECT	ROUTE	PROJECT
		639	U000-111-233, B609



SECTION A-A, PHASE 1
Not to Scale



SECTION B-B, PHASE 2
Not to Scale

Stage Const.dgn

TRANSYSTEMS, INC.
RICHMOND, VA
STRUCTURAL ENGINEER

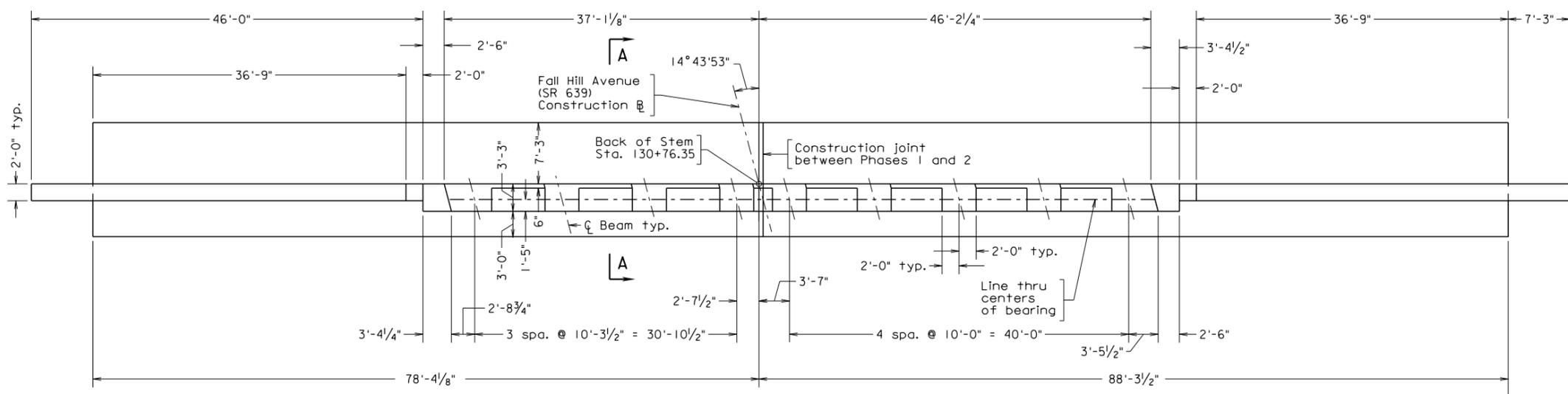
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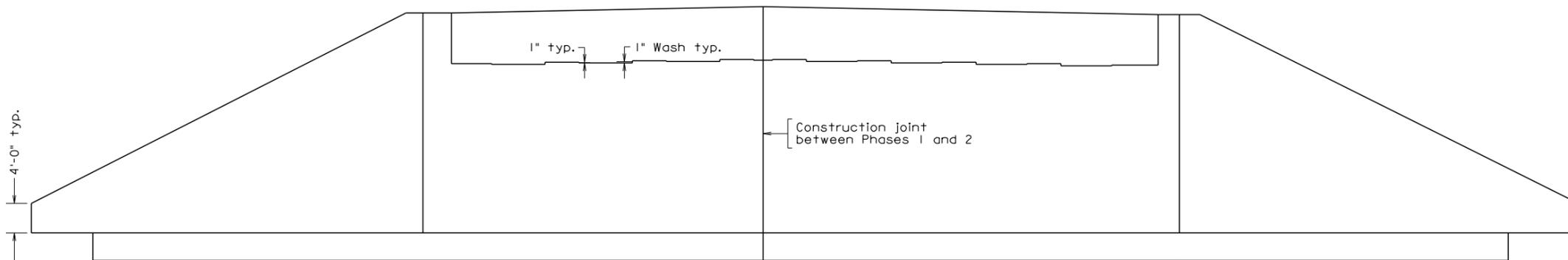
COMMONWEALTH OF VIRGINIA DEPARTMENT OF TRANSPORTATION			
STRUCTURE AND BRIDGE DIVISION			
PHASE CONSTRUCTION PLAN			
No.	Description	Date	Revisions
Designed:	Date	Plan No.	Sheet No.
Checked:	Dec., 2013	298-90	2 of 6

STATE	FEDERAL AID		STATE		SHEET
ROUTE	PROJECT		ROUTE	PROJECT	NO.
VA.			639	U000-111, 233, B609	

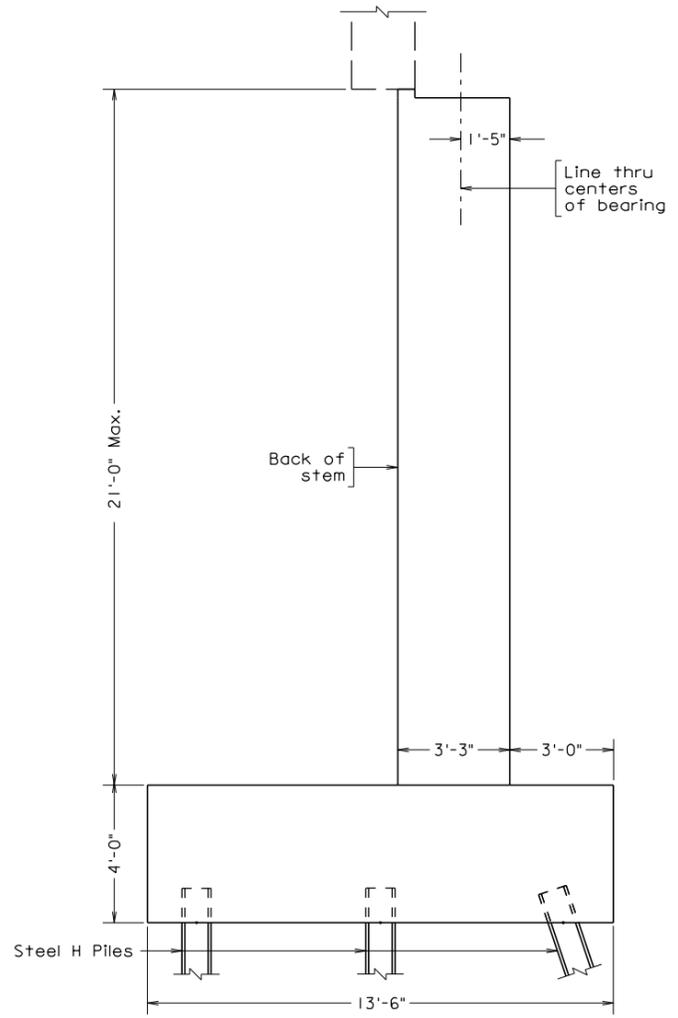
NOTE:



PLAN
Piles not shown



ELEVATION
Piles not shown



SECTION A-A
Scale: 3/8" = 1'-0"

Abut. A.dgn

PRELIMINARY PLANS
THESE PLANS NOT TO BE USED FOR CONSTRUCTION

TRANSYSTEMS, INC.
RICHMOND, VA
STRUCTURAL ENGINEER

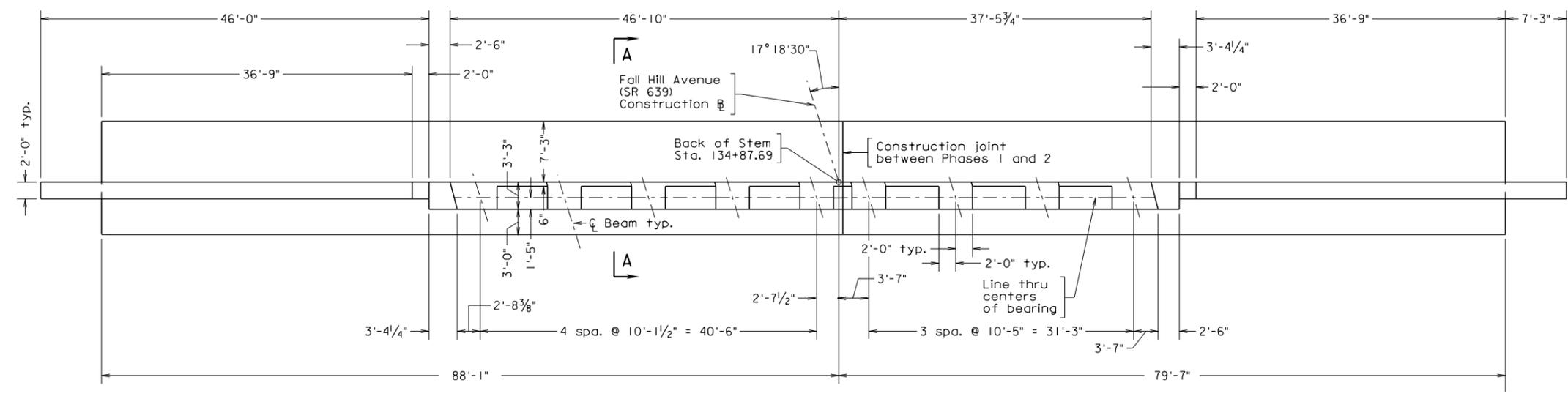
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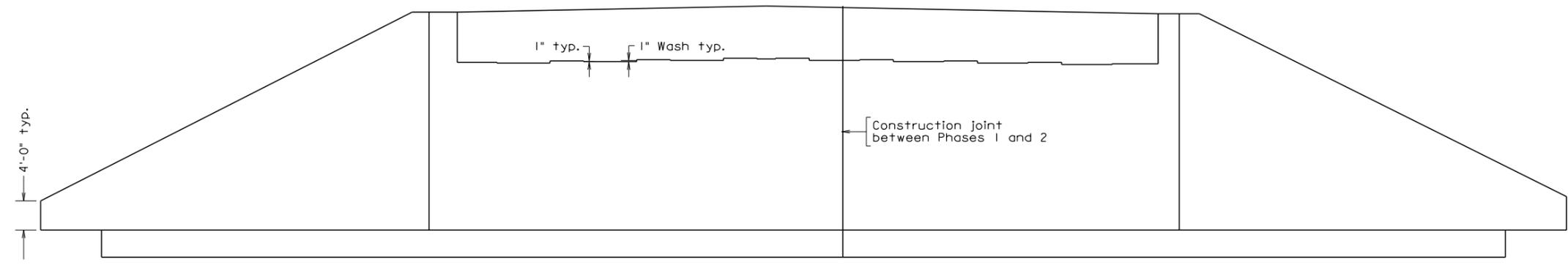
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STRUCTURE AND BRIDGE DIVISION			
ABUTMENT A PLAN AND ELEVATION			
No.	Description	Date	Designed:
			Drawn:
			Checked:
Revisions		Date	Plan No.
		Dec., 2013	298-90
			Sheet No.
			3 of 6

STATE	FEDERAL AID		STATE	SHEET
ROUTE	PROJECT	ROUTE	PROJECT	NO.
VA.		639	U000-111, 233, B609	

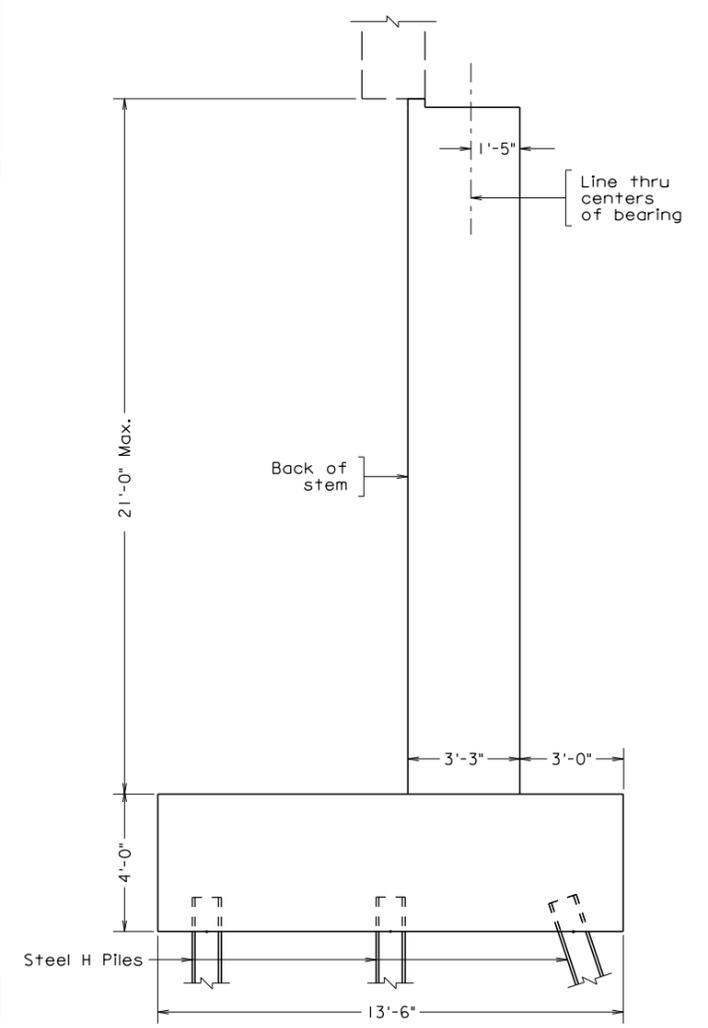
NOTE:



PLAN
Piles not shown



ELEVATION
Piles not shown



SECTION A-A
Scale: 3/8" = 1'-0"

PRELIMINARY PLANS
THESE PLANS NOT TO BE USED FOR CONSTRUCTION

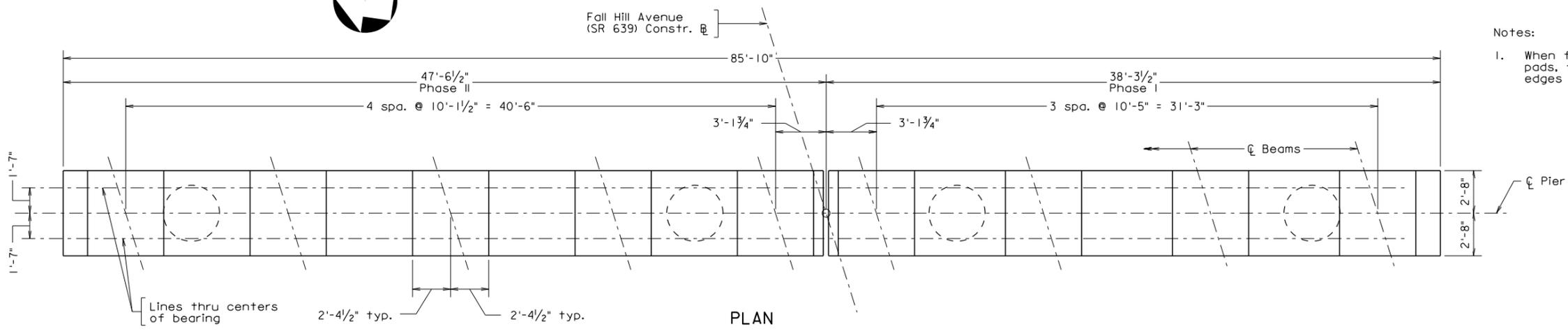
COMMONWEALTH OF VIRGINIA DEPARTMENT OF TRANSPORTATION			
STRUCTURE AND BRIDGE DIVISION			
ABUTMENT B PLAN AND ELEVATION			
No.	Description	Date	Designed:
			Drawn:
			Checked:
Revisions		Date	Plan No.
		Dec., 2013	298-90
			Sheet No.
			4 of 6

TRANSYSTEMS, INC.
RICHMOND, VA
STRUCTURAL ENGINEER

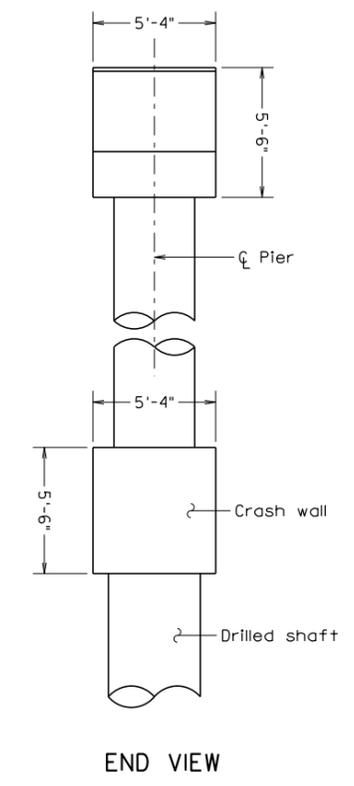
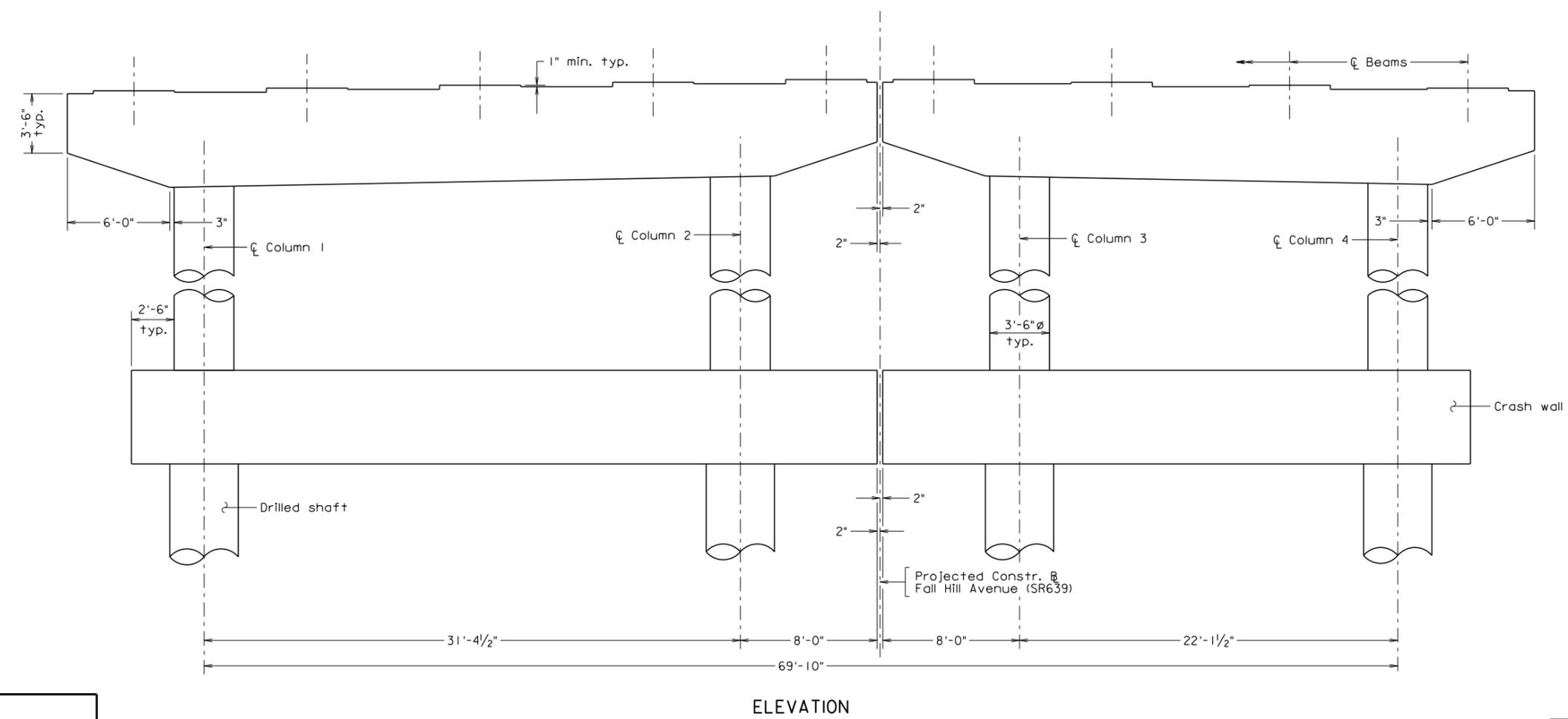
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STATE	FEDERAL AID		STATE		SHEET
ROUTE	PROJECT	ROUTE	PROJECT	NO.	
VA.		639	U000-111-233, B609		



Notes:
 1. When finishing concrete between and beyond pads, float surface to drain from CL pier to edges of cap.



Pier.dgn

TRANSYSTEMS, INC.
 RICHMOND, VA
 STRUCTURAL ENGINEER

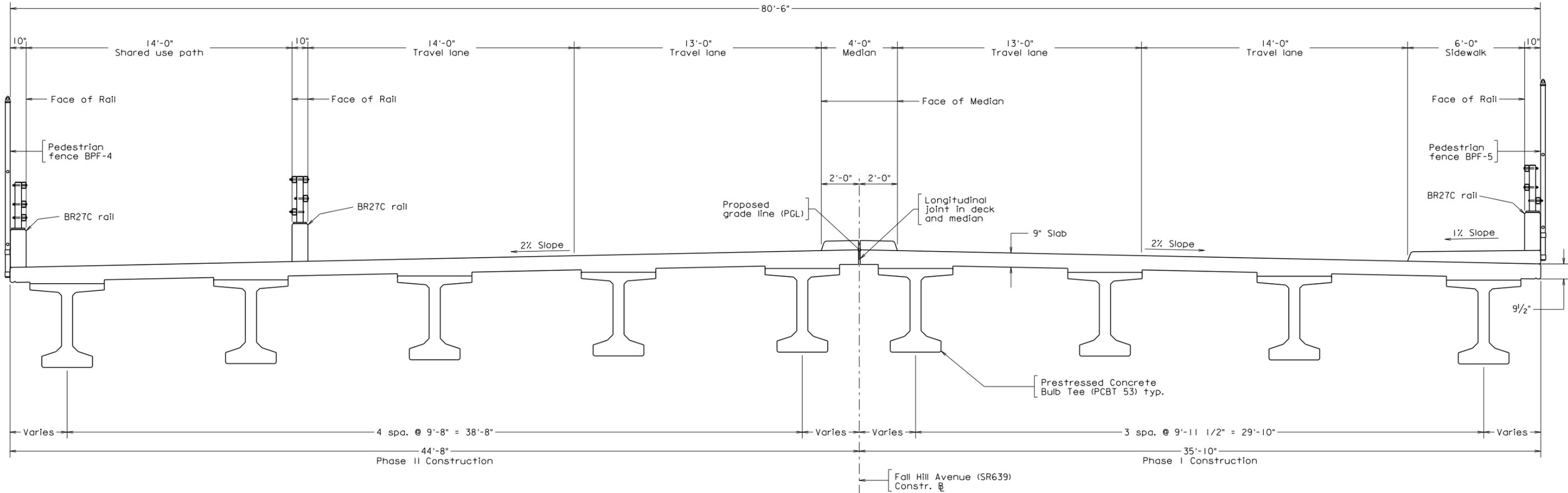
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 FOR CONSTRUCTION

Scale: 1/4" = 1'-0", unless otherwise noted

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COMMONWEALTH OF VIRGINIA DEPARTMENT OF TRANSPORTATION			
STRUCTURE AND BRIDGE DIVISION			
PIER PLAN AND ELEVATION			
No.	Description	Date	Designed:
			Drawn:
			Checked:
Revisions			Date
			Dec., 2013
			Plan No.
			298-90
			Sheet No.
			5 of 6

STATE	FEDERAL AID		STATE	SHEET
ROUTE	PROJECT	ROUTE	PROJECT	NO.
VA.		639	U000-111-233, B609	



TRANSVERSE SECTION

PRELIMINARY PLANS
THESE PLANS NOT TO BE USED
FOR CONSTRUCTION

Transverse Section.dgn

TRANSYSTEMS, INC.
RICHMOND, VA
STRUCTURAL ENGINEER

Scale: 3/8" = 1'-0", unless otherwise noted

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COMMONWEALTH OF VIRGINIA DEPARTMENT OF TRANSPORTATION			
STRUCTURE AND BRIDGE DIVISION			
TRANSVERSE SECTION			
No.	Description	Date	Designed:
			Drawn:
			Checked:
	Revisions		Date
			Dec., 2013
		Plan No.	298-90
		Sheet No.	6 of 6



Archer Western

in association with
PARSONS